

**Washington State
Cooperative Monitoring, Evaluation, and Research
Committee (CMER)**

Protocols and Standards Manual

State of Washington Forest Practices Board's Adaptive Management Program

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1. Introduction

1.1 Cooperative Monitoring, Evaluation, and Research Committee

The purpose of the Cooperative Monitoring, Evaluation, and Research Committee (CMER) is to advance the science needed to support adaptive management. CMER also has ongoing responsibility to continue research and education in terrestrial resource issues. CMER is made up of members that have expertise in a scientific discipline that will enable them to be most effective in addressing forestry, fish, wildlife, and landscape process issues. Members represent timber landowners, environmental groups, state agencies, county governments, small forest landowners, federal agencies, and tribal governments from a scientific standpoint, not a policy view. CMER members are approved by the Washington Forest Practices Board (Board). Board approval does not preclude others from participating in and contributing to the CMER process or its subcommittees. CMER develops and manages as appropriate:

- (A) Scientific advisory groups and subgroups;
- (B) Research and monitoring programs;
- (C) A set of protocols and standards to define and guide execution of the process including, but not limited to, research and monitoring data, watershed analysis reports, interdisciplinary team evaluations and reports, literature reviews, and quality control/quality assurance processes;
- (D) A baseline data set used to monitor change; and
- (E) A process for policy approval of research, monitoring, and assessment projects and use of external information, including the questions to be answered and the timelines.

Washington Administrative Code (WAC) 222-12-045(2)(b)(i)

1.2 Purpose of the Manual

The CMER Protocols and Standards Manual (PSM) provides an organizational framework, guidance, and instructions for CMER participants. Portions of the PSM will also be useful to recipients and technical reviewers of CMER products, and observers of the regulatory adaptive management process. The PSM provides guidelines for operating and governing the organization; developing its Work Plan; operating Scientific Advisory Groups that report to CMER; proposing, conducting, and documenting research studies; adhering to budget and contracting requirements; storing information; and providing information. Where templates, forms, or examples are provided, they are intended as tools and guidance.

Standards and protocols in this manual promote and protect both scientific rigor and administrative accountability for the participants. The Adaptive Management Program (AMP) for forest practices involves a large number of stakeholders and interested parties, including large and small forest landowners, tribes, state and federal agencies, counties, conservation groups, and the research community. Because the AMP was created by the Board – a regulatory rules-making state agency, the AMP must be conducted in an open and transparent manner and must follow administrative procedure guidelines. Furthermore, CMER and its scientific products are publicly funded and are, therefore, subject to fiscal scrutiny and demands for efficiency. With all of these demands and the normal and expected turnover among the personnel of agencies and other interested parties, a thorough and usable Protocols and Standards Manual (PSM) for CMER operations is needed to guide a consistent and efficiently functioning organization. Additional guidance for CMER activities can be found in Section 22 (Guidelines for the Adaptive Management Program or “AMP”) of the Forest Practices Board Manual (Board Manual). The AMP Board Manual and the CMER PSM together are intended to fulfill the requirements of the forest practices rules (Washington Administrative Code (WAC) 222-12-045(2)(b)(i)).

1.3 Protocols and Standards Manual is an Evolving Document

This manual has been created and compiled from stakeholder experience. The PSM reflects an evolving process within the regulatory context of the Board's AMP. Over time, CMER will refine and improve this manual to better serve the needs of CMER and the various users of the manual.

Continuing experience and the use of the procedures outlined in this manual may lead to suggestions for modification of CMER's structure, governance, operation, protocols, or activities. An AMP participant can initiate requests for changes to this PSM. Requests are directed to a CMER co-chair or the AMPA for discussion and consideration of action at a CMER meeting.

Formal recommendations for substantive changes to the PSM should be provided in writing to CMER for approval by consensus at a CMER meeting. Minor changes for clarification and technical editing may be made orally at a CMER meeting. New versions of the PSM will be produced as needed. Changes approved between versions will be added to electronic files.

2. Overview, History, and Context

2.1 Adaptive Management Program

The Board established the Forest Practices AMP in concurrence with the Forests and Fish Report¹ (FFR) and subsequent legislation (RCW 76.09.370). In 2006, the US Fish and Wildlife Service and National Marine Fisheries Service accepted a 50-year Forest Practices Habitat Conservation Plan² (FP HCP) from Washington State based on the Forest and Fish rules that resulted from the 1999 Forest and Fish Report and RCW 76.09.370. As a component of the FP HCP, the AMP is responsible for providing, "...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." (Forest Practices Rules, WAC 222-12-045)

Forest practice regulations as a whole address a broad range of objectives including protecting forest soils, fisheries, wildlife, water quantity and quality, air quality, recreation, and scenic beauty (RCW 76.09.010(1)). However, resource objectives listed in the WAC which guide the AMP are more narrowly focused to ensuring that "...forest practices, either singularly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

- (A) Support harvestable levels of salmonids;
- (B) Support the long-term viability of other covered species; or
- (C) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and anti-degradation)."

(WAC 222-12-045(2)(a)(ii))

An additional outcome of the AMP is to ensure the application of quality controls to study design and execution and to the interpretation of results.

(Board Manual Sect 22 part 1 overview)

To provide the science needed to support the AMP, the Board established CMER to "...impose accountability and formality of process, and to conduct research and validation and effectiveness monitoring to facilitate achieving the resources objectives."

(Forest Practices Rules, WAC 222-12- 045).

2.2 Governing Statutes and Rules

The Legislature established the Board in 1974 to consider and adopt rules to govern forest practices in the State of Washington. The Board operates to fulfill the provisions of the Forest Practices Act, RCW 76.09.³ In 1999, as part of the Forests and Fish legislation, the Legislature added a provision to the act that requires the Board to establish a scientifically based adaptive management process. The Act now states, with the exception of changes required by legislative or court action, that "new rules covering aquatic resources may be adopted by the Board only if the changes or new rules are consistent with recommendations resulting from the scientifically based adaptive management process established by rule of the Board." (RCW 76.09-370(7))

¹ Forest and Fish Report. 1999. Washington Department of Natural Resources.
(<http://www.dnr.wa.gov/forestpractices/rules/forestsandfish.pdf>)

² Washington DNR. 2005. Final Forest Practices Habitat Conservation Plan. Washington Department of Natural Resources, Forest Practices Program, Olympia, Washington.
(http://www.dnr.wa.gov/BusinessPermits/Topics/ForestPracticesHCP/Pages/fp_hcp.aspx)

³ The complete text of the Forest Practices Act, RCW 76.09, can be found in the back of the Forest Practices Rule Book published by DNR.

The Board responded in July of 2001 by adopting rules for a science-based AMP (WAC 222-12-045). The Board left open the opportunity to use the prescribed adaptive management process to address resource issues other than those identified in the Forests and Fish Report.

2.3 Historical Context

CMER began in 1987 as the technical arm of the Timber, Fish, and Wildlife Agreement (TFW). Under TFW, CMER's tasks were similar to its current ones, though aquatic issues did not take precedence over other potential resource impacts of forest practices. Research and monitoring projects were initiated to address concerns raised at the TFW Policy table or by the Board. From 1987 through 1997 CMER operated much as it does today, through a number of subcommittees organized around either a task, such as a field implementation committee, or a resource function, such as the Sediment Hydrology and Mass Wasting Steering Committee. Each subcommittee planned, contracted, and reviewed research in its area of specialization. Although there was no formal independent peer review of the research products, CMER performed a technical review of each paper brought forward by the subcommittees. After approval, final papers were published by the Department of Natural Resources (DNR) as a series of Timber/Fish/Wildlife reports. From 1987 through 1996, CMER and its subcommittees produced 86 reports on the physical and biological relationships between forest practices and fish, water, and wildlife resources.

During the Forests and Fish negotiations of the late 1990s, CMER suspended its functions. It reorganized as soon as there was policy agreement on the 1999 Forests and Fish Report. In July of 2001, the Board formally established the reorganized CMER, giving it the role of advancing the science needed to support the Board's Adaptive Management Program.

2.4 Goals and Objectives

The goals of the Forest Practices legislation as they relate to regulating forest practices on non-Federal and non-tribal forestlands are (1) to provide compliance with the Endangered Species Act for aquatic and riparian-dependent species, (2) to restore and maintain riparian habitat to support a harvestable supply of fish, (3) to meet the requirements of the Clean Water Act for water quality, and (4) to keep the timber industry economically viable in the State of Washington (Washington DNR 2005, pg. 1). As part of the AMP, CMER conducts research to further the first three of those goals.

The Board has adopted a series of key questions, resource objectives, and performance targets related to the aquatic resource issues pertinent to the Forests and Fish Report. These are collectively known as Schedule L-1 (see Appendix B of this PSM).

2.5 Overview of the Adaptive Management Process

The adaptive management process is a continuous loop. It includes the Board, the TFW Policy Committee, the AMPA, Washington Department of Natural Resources (DNR), CMER, and a process for independent scientific peer review (ISPR) (Figure 2-1). The AMPA, an employee of the DNR, administers the entire process.

Adaptive management research begins by posing resource-based questions that can be addressed by using accepted scientific methods. Adaptive management research topics which guide CMER research were originally listed in the 1999 Forests and Fish Report schedule L-1. Each biennium CMER develops a Work Plan describing how these topics are being addressed, along with additional questions that emerge as studies are developed and study results become available.

CMER maintains and updates (for TFW Policy Committee review and Board approval) the Forests and Fish key questions, resource objectives and performance targets (Schedules L-1 and L-2) and the CMER work plan. (Forest Practices Rules, Board Manual, section 22, 2.3).

Each year, CMER submits the CMER Work Plan and budget to TFW Policy, which in turn recommends to

the Board a funding package that includes many individual research projects. The Board is responsible for allocating state and federal adaptive management funds to specific research projects.

The Board Manual directs CMER to produce “...credible, peer-reviewed technical reports based on best available science and guided by the Monitoring Design Team report”⁴ (Forest Practice Rules, Board Manual section 22, 2.2).

The Board Manual defines best available science as:

“...relevant science from all credible sources including peer-reviewed government and university research, other published studies, and CMER research products. Applicable historic information, privately produced technical reports, and unpublished data may have value and are considered as long as they can be assessed for accuracy and credibility. CMER is responsible for understanding available scientific information that is applicable to the questions at hand, selecting the best and most relevant information and synthesizing it into reports for TFW Policy and the Board.” (Board Manual section 22, 2.2)

TFW Policy reviews CMER reports, considers the political and economic elements of the Forest Practices Act and the Board’s goals, and develops recommendations to the Board for rule or guidance changes. Under the Forest Practices Act, the Board is responsible for establishing forest practices rules that are “consistent with sound policies of natural resource protection” and that “recognize both the public and private interests in the profitable growing and harvesting of timber” (RCW 76.09. 10) and that are expected to meet the state water quality standards (RCW 90.48.420(1)).

2.6 Role and Responsibilities of CMER

CMER conducts objective scientific inquiry into questions posed by the Board and TFW Policy and to provide technical information and consensus-based recommendations to the Board.

To meet its responsibility, CMER will:

1. Maintain and update for TFW Policy review and Board approval the Forests and Fish key questions, resource objectives, and performance targets (Schedules L-1) (Board Manual, Section 22, Part 2.3).
2. Maintain and update for TFW Policy review and Board approval the CMER Work Plan (including budget recommendations) (Board Manual, Section 22, Part 2.3).
3. Forward to TFW Policy and the Board research proposals (Forest Practices Rules, WAC 222-12-045(2)(d)(ii)).
4. Conduct research and monitoring (research types below) to facilitate achieving the resource objectives⁵ (WAC 222-12-045(2)(b)(i)).
5. Conduct periodic reviews (as a part of the biennial CMER work plan development) of the design of the Forest Practices Program compliance monitoring program(s) to ensure that it will provide requisite information to support the effectiveness and validation monitoring components of the AMP (Board Manual Section 22, Part 2.3).

⁴ Monitoring Design for the Forestry Module of the Governor’s Salmon Recovery Plan. 2006. Benkert, K., B. Bilby, B. Ehinger, P.Farnum, D. Martin, S. McConnell, R. Peters, T. Quinn, M. Raines, S. Ralph, D. Schuett-Hames.
(http://www.dnr.wa.gov/Publications/fp_am_mdt_rprt_final_18Jul02.pdf)

⁵ “Resource objectives are intended to ensure that forest practices, either singularly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

- (A) Support harvestable levels of salmonids;
- (B) Support the long-term viability of other covered species; or
- (C) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and antidegradation).”

(WAC 222-12-045(2)(a)(ii))

6. Produce credible, peer-reviewed technical reports⁶ based on best available science (Board Manual, Section 22, Part 2.3).
 - a. Synthesize research results into coherent analysis of rule effectiveness.
 - b. Use generally accepted scientific and statistical techniques.
 - c. Include technical recommendations and a discussion of rule and/or guidance implications (Forest Practices Rule, WAC 222-12-045, (2)(d)(v)).
7. Develop a findings report that includes the CMER approved final study report, answers to the CMER/TFW Policy framework questions 1 through 6 and all technical implications generated through the CMER consensus process. Findings reports should be completed within 3 months of CMER approval of the final study report (Board Manual, Section 22, Part 3.3).
8. Develop and manage a set of protocols and standards to define and guide the CMER process (Forest Practices Rule, WAC 222-12-045(2)(b)(i)(C)).

The scientific research CMER conducts typically falls into the following general categories:

1. *Effectiveness Monitoring:*
 - Evaluates the performance of forest prescriptions effectiveness (harvest patterns, road construction/maintenance, etc.) in achieving resource goals and objectives at the site or landscape scale.
2. *Extensive Status and Trends Monitoring:*
 - Evaluates the current status of key watershed input processes and habitat condition indicators across FP HCP lands.
 - Documents trends in these indicators over time as the forest practices prescriptions are applied across the landscape.
3. *Intensive (Cumulative Effects) and Validation Monitoring:*
 - Evaluates cumulative effects of multiple forest practices at the watershed scale.
 - Identifies causal relationships and cumulative effects.
 - Integrates the effects of multiple management actions over space and through time within the watershed.
 - Evaluates the effects of individual actions on a site and the interaction of those responses through the system.
4. *Rule Implementation Tool Development:*
 - Develops, refines, or validates tools used to implement forest practices rules.
 - a. Methodology Tool Development Projects: develop, test, or refine protocols, models, and guides used in forest practices rule–specified management guidelines.
 - b. Target Verification Projects: verify performance targets developed during FFR negotiations.
5. *Literature reviews to help with study design and the synthesis of study findings.*
6. *Other forest-practices-related research as directed by the Board.*

⁶ “Products that must be reviewed include Final Reports of CMER funded studies, certain CMER recommendations, and pertinent studies not published in a CMER-approved, peer reviewed journal. Other products that may require review include, but are not limited to, external information, Work Plans, requests for proposals, subsequent study proposals, the final Study Design, and progress reports.” (WAC 222-12-045, 2 (c))

2.7 Findings Reports

Upon finalization of technical reports, CMER produces findings reports which provide “...technical recommendations and discussion of rule and/or guidance implications analysis” (Forest Practices Rules, WAC 222-12-045(2)(d)(v)). Findings Report should include technical reports and final answers to the Six Questions from the ‘CMER/TFW Policy Interaction Framework.’ See chapter 7, section 7.8.3 for more information on what is included in Findings Reports. Findings Reports are provided to the TFW Policy Committee or to the Board who make the public policy decision on whether or not to use the findings as a basis to establish or revise Forest Practices rules or guidance. All final reports are available to the general public (<https://www.dnr.wa.gov/AdaptiveManagementResearchDocs>).

2.8 Relation of CMER to Other Committees

The following chart provides a general overview of the relationships among the committees and groups currently involved in the AMP. For more information on participant relationships, please refer to WAC 222-12-045.

The general public can provide input directly to the Board at its regular quarterly meetings or by public petition for rule making or by oral or written request at any time. In addition, science developed outside the CMER adaptive management process may be brought into the process through a Scientific Advisory Group, CMER (FFR Appendix L.2(b)(i)), or by public comment at a Board meeting.

Relationships between Adaptive Management Program (AMP), Operations, Policy, and Science Participants

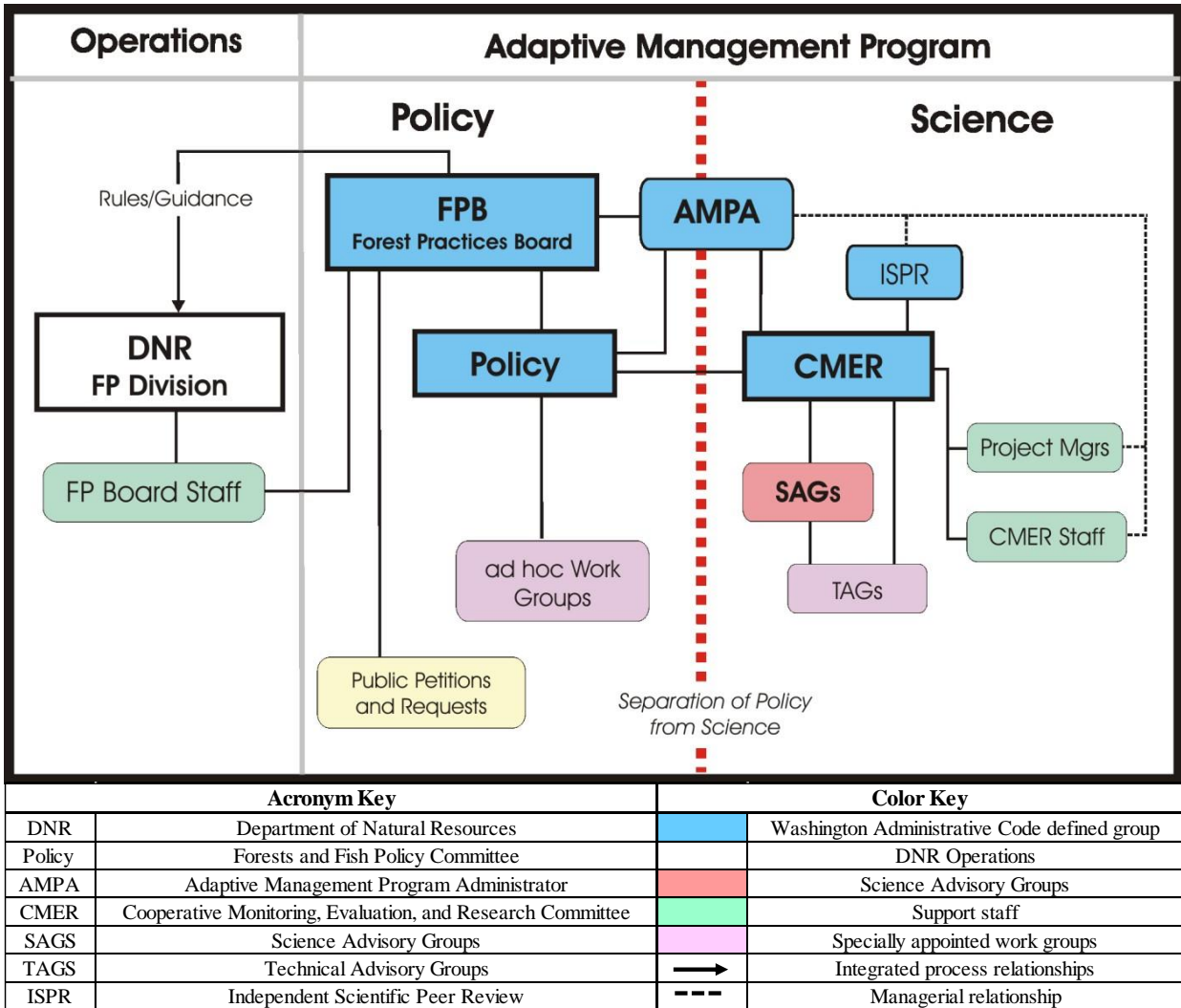


Figure 2-1: Flow chart showing the various Adaptive Management Program entities and how they are connected.

3. CMER Organization

This chapter contains a description of CMER's structure and functions, the roles and responsibilities of its participants, and the way it governs itself.

3.1 Structure

The CMER committee is made up of the Board-approved scientific representatives of the Timber, Fish, and Wildlife (TFW) caucuses (forest landowners, tribes, state agencies, county governments, federal agencies, and environmental organizations). Committee members have expertise in scientific disciplines that enable them to be effective in addressing forestry, fish, wildlife, and landscape process issues. The official composition of the committee will not preclude others from participating in and contributing to the processes of CMER or its subcommittees.

Responsibility for CMER leadership is shared by two co-chairs and the AMPA. A CMER Coordinator helps facilitate CMER meetings and events and maintains records.

CMER appoints subcommittees called scientific advisory groups (SAGs) to provide advice, develop proposals, and provide scientific oversight and integrity. CMER also appoints other subcommittees to complete tasks as needed.

3.2 Roles and Responsibilities

3.2.1 Members and Participants

The CMER core members, who are official CMER voting members and represent the various Washington State Forests and Fish caucuses, are approved by the Board. However, participation is open to all who are interested in CMER scientific and administrative discussions and subcommittee activities. All participants are expected to contribute time and professional expertise to the AMP.

All members and participants in CMER are expected to agree to the ground rules, which are provided in Section 3.3.1.

3.2.2 CMER Co-chairs

CMER co-chairs provide scientific and administrative leadership to CMER to help the committee accomplish its tasks in a timely and efficient manner. Many of their responsibilities are shared with the AMPA. It is up to the individuals in these positions to work out the appropriate working relationship and task assignments.

In general, the CMER co-chair duties are as follows:

1. Facilitate the preparation, revision, and implementation of the adaptive management research Work Plan in accordance with the research priorities of TFW Policy and the Board.
2. Support an atmosphere of high-quality, unbiased science in the development, implementation, analysis, reporting, and technical review of CMER work products.
3. Maintain a regular meeting schedule with a posted agenda at least a week in advance.
4. Communicate with key CMER participants between meetings to ensure that issues of concern are placed on the agenda and topics are properly framed for discussion at the meetings.
5. Facilitate CMER meetings and strive to manage a consensus process for decision-making.
6. Ensure that meeting notes are recorded, reviewed, approved, and distributed.
7. Communicate with the AMPA to maintain a working knowledge of the status of CMER budget and spending issues.

8. Collaborate with the AMPA to prepare and present reports to TFW Policy, the Board, and other interested parties.
9. Maintain open communication with the AMPA, CMER participants, TFW Policy co-chairs, and DNR Board staff.
10. Facilitate Scientific Advisory Group support/coordination.
11. Communicate the results of research and monitoring studies clearly and accurately, in a timely fashion to the AMPA and TFW Policy.
12. Ensure CMER ground rules and other CMER rules, protocols, and guidelines are followed.
13. Facilitate and coordinate dispute resolution.

3.2.2.1 CMER Co-chair Term

The term for a CMER co-chair is two years, with each co-chair starting and ending on alternate years. Ideally, terms will start on July 1 and end on June 30 to coincide with the start of each new fiscal and Work Plan year. This will provide the highest level of continuity in the transition of these positions. Incumbents may serve more than one term but must be nominated and approved each time. When a co-chair cannot fulfill the two-year commitment, a minimum two-month notice is desired. An interim co-chair may be appointed, or a new selection process started to find a person to complete the remaining term. If there is no consensus on an interim co-chair, CMER may choose to function under one chair until the next nomination cycle or may request that TFW Policy make a decision.

3.2.2.2 CMER Co-chair Qualifications and Skills

Desirable qualifications for co-chair are:

1. Advanced degree (master's or PhD) and experience in related natural resources science.
2. Experience in designing, implementing, and reporting on research in natural resources sciences.
3. Experience in oral and written communications, project management, and public meeting facilitation and management.
4. Experience working in contentious situations and working with diverse groups to find solutions.
5. Approval from employer to commit time to the position.

Critical knowledge, skills, and abilities (KSAs) for co-chairs are listed in Appendix F to this PSM.

3.2.2.3 CMER Co-chair Nomination and Selection Process

Co-Chair Term and Eligibility:

CMER Co-chairs serve two-year terms when selected. It is preferable to find a new co-chair, when possible, to serve consecutive terms to keep with the practice of rotating caucuses filling that position. Co-chairs may serve more than one term, but no more than two terms consecutively if they are nominated and selected each time. Ideally, terms will start on July 1 and end on June 30 to coincide with the start of each new fiscal and work plan year. To avoid two vacancies at the same time, CMER will select one co-chair at the beginning of a biennium (May of odd years) with the term beginning July 1. The second co-chair will be selected in May of the even year of the same biennium with the term beginning July 1. This approach is intended to avoid a scenario where CMER will have two vacancies at the same time. In the event of two concurrent vacancies, to maintain the CMER co-chair stagger rotation, CMER may select a co-chair to a one-year, three-year term, or a one-year extension to restore the order of selection. If for any reason CMER needs to select two co-chairs at the same time, each must be treated as a separate vacancy for purposes of nomination and selection.

Board approved CMER members and any CMER/SAG participant are eligible to be nominated and selected

as CMER co-chairs. Nominations are not limited to Board approved CMER members. If a non-voting member is nominated and selected as the CMER co-chair, the AMPA will request the Board to approve them as a non-voting member of CMER.

Nomination:

CMER will use an open system of nomination and selection. The CMER co-chair Nomination will be a CMER meeting agenda item. The CMER selection will occur at a subsequent meeting. Board approved CMER members may each nominate a CMER member or CMER/SAG participant to serve as co-chair. Ideally all caucuses would cycle through contributing to CMER by supporting a participant to serve a co-chair term on a rotating basis. CMER should reference the caucus rotation table when making a nomination. Because each vacancy is filled separately, each CMER member may only nominate one person per vacancy. The two-year vacancy will be filled first. Each person that has been nominated must accept the nomination to become a candidate for the co-chair position. When nominations are complete for the vacancy, the AMPA will close the nomination process and read out the names of candidates for the co-chair position.

Selection:

Once the nomination process is closed, the AMPA will confirm that the CMER representatives accept the nomination and then requests a roll-call vote. CMER members may vote for their preferred candidate by calling their names. Because each vacancy is filled separately, CMER members can only vote for one candidate at a time. CMER Coordinator records the votes and submits the final tally to the AMPA who will read out the tallies. The candidate with the most votes becomes the chair.

In the event of a tie, the nomination and selection process is repeated until there is a candidate with the most votes. CMER will strive to complete multiple nomination and selection process in the same meeting. The AMPA, however, may choose to repeat multiple nomination and selection processes in a subsequent meeting.

If CMER has two vacancies at the same time, the AMPA will continue to preside over regular CMER meetings until CMER has at least one co-chair selected.

3.2.3 Adaptive Management Program Administrator (AMPA)

The AMPA is a DNR employee assigned full time to the AMP. In conjunction with the responsibility for overseeing and managing the full AMP, the AMPA is the lead administrator for CMER. The AMPA is responsible for managing an efficient, unbiased research and monitoring program.

The AMPA's CMER-related tasks are as follows:

1. Transmit CMER reports and funding recommendations to TFW Policy.
2. Answer questions during TFW Policy discussion of CMER monitoring and research reports.
3. Communicate CMER research results, reports and recommendations to TFW Policy and the Board.
4. Assess the implications of CMER research on forest practices rules and/or board manual guidance and report to Policy and the Board.
5. Communicate pertinent information to the adaptive management participants.
6. Manage the AMP, including research and monitoring projects, contracting, budgets, and Work Plans.
7. Coordinate with the Board to ensure that its guidance and priorities are implemented, and effectively communicate to the Board information and results produced by the AMP.
8. Ensure the scientific integrity of the program and facilitate appropriate scientific peer review.
9. Bring project results forward promptly, and effectively communicate the activities of the

program and the project results. (This duty is shared with the CMER co-chairs.)

10. Oversee the AMP Project Managers.
11. Coordinate and facilitate, as needed, dispute resolution.
12. Track projects and budgets in consultation with Project Managers.
13. Implement DNR and Office of Financial Management (OFM) contracting procedures.
14. Coordinate website postings and manage the content of the site with the assistance of the CMER Coordinator.
15. Ensure the WAC, Board Manual, and CMER Protocol and Standards Manual are adhered to by TFW Policy, CMER and the SAGs.
16. Coordinate with other major monitoring organizations related to forest practices.
17. Identify appropriate potential outside funding opportunities.
18. Oversee the Work Plans of CMER staff and assign projects.

More details of the AMPA's functions in relation to CMER are in Chapter 8, "Support Services and Requirements."

3.2.4 CMER Coordinator

A CMER Coordinator is responsible for the following:

1. Schedule CMER regular monthly meetings and arrange locations.
2. Distribute correspondence and information to the CMER committee upon approval by the AMPA.
3. Assist CMER co-chairs and AMPA with agenda development.
4. Work with CMER co-chairs to ensure that meeting agendas are distributed one week in advance of regularly scheduled CMER meetings.
5. Receive and organize all background materials relating to the agenda, and ensure that these materials are distributed, whenever possible, one week in advance of the CMER meeting.
6. Record and distribute meeting minutes and decisions.
7. Assist with CMER meeting management (i.e., remind people of previous decision points when needed).
8. Assist in scheduling CMER-related meetings (e.g., CMER Science Conference).
9. Maintain records of all CMER meetings and any SAG distributions that are important for the record or CMER activities.
10. Assist CMER co-chairs and the AMPA with other administrative tasks as needed.
11. Assist with website postings and content management of the site.

3.2.5 CMER Staff

CMER staff provides scientific support to CMER and the SAGs. Direction and work priorities are provided by the AMPA in consultation with the SAG and CMER co-chairs, PMs, and CMER staff. CMER staff duties may include:

1. Providing technical scientific support with project scoping, study design development, and final report development.
2. Selecting sites and implementing projects.
3. Assisting with literature reviews.
4. Acting as Principal Investigator of projects.

5. Acting as Project Manager, if needed and as assigned.
6. Preparing field protocols and conducting QA/QC.
7. Training field crews, collecting and analyzing data, and/or providing oversight of data collection/analysis.
8. Analyzing data, writing reports, and responding to peer review comments.
9. Assisting CMER when revising Work Plan.
10. Providing general scientific support under the direction of the AMPA.

3.2.6 CMER Project Managers

The CMER Project Managers (PM) report to the AMPA. The AMPA is principally responsible for ensuring all aspects of project management, as described in Chapter 7, are assigned and carried out effectively.

A key to successful project management is the assignment of a Project Manager who provides project management oversight of the project and its individual steps in consultation with the SAGs and CMER. The AMPA oversees the work plans of PMs and assigns projects according to workload capacity, PM expertise, geographic considerations and other factors.

3.2.7 Scientific Advisory Groups (SAGs)

The Board has given CMER authority to appoint subcommittees, including scientific advisory groups (SAGs) to design and implement research and monitoring programs within specific areas of expertise. SAGs conduct or manage studies on behalf of CMER. The formation, composition, governance, and operation of SAGs are discussed in more detail in Chapter 5.

3.2.8 General Public Participation

Meetings of CMER are open to the general public in accordance with RCW Chapter 42.30.

3.2.9 Other CMER Roles

As a whole, CMER shall also develop and manage:

- SAGs/sub-groups,
- research and monitoring programs,
- sets of protocols and standards,
- a baseline data set used to monitor change, and
- a process for TFW Policy approval of research, external science, and critical questions to be answered.

3.3 CMER Internal Relations

3.3.1 General

The core values of CMER are predicated upon the agreement of each CMER participant that adaptive management is based upon sound science and it is the responsibility of every participant to follow sound scientific principles and procedures. Participants will also adhere to the purpose of the AMP, as defined in WAC 222-12-045(1):

... 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 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.

Individual policy positions should not be the basis for CMER decisions; if they are, the credibility of CMER research can be questioned and CMER will fail in its function to provide impartial results to the AMP.

Participation in CMER is predicated upon adherence with the ground rules below, which were developed collectively by CMER to ensure that CMER produces credible scientific results that have a broad base of support.¹

3.3.2 CMER Ground Rules

CMER participants will engage in actions that promote productive meetings and will encourage the active participation of each individual member. Examples of these actions are:

1. To understand.
2. Pursue win/win solutions.
3. State motivations and justifications clearly. Discuss issues openly with all concerns on the table.
4. Avoid hidden agendas.
5. Ensure that each individual has a chance to be heard.
6. Help others move tangent issues to appropriate venues by scheduling a time to discuss these issues later.
7. Start and stop meetings on time.
8. Take side conversations outside – listen respectfully.
9. Define clear outcomes for each agenda item and designate a discussion/agenda item leader.
10. Respect discussion leaders.
11. Be trusting and trustworthy.
12. Acknowledge and appreciate the contributions of others, even when you disagree.

CMER participants agree to spend the time necessary to prepare for meetings so that their participation is both meaningful and relevant, and to refrain from participation when they are unprepared. CMER meeting materials are sent out one week prior to the CMER meeting. CMER participants are expected to review all materials related to action items on the CMER meeting agenda prior to the meeting.

When choosing to review documents, CMER participants will provide their comments to the appropriate person in the agreed upon review timelines. If they cannot provide their comments within the agreed upon timelines, they will notify the appropriate person as soon as possible and before the relevant meeting to make other arrangements if possible. If comments or notification is not provided within the agreed upon review timeline, they will not delay the document from moving forward.

CMER participants agree to participate in the AMP's scientific Dispute Resolution process (section 3.3.3) when consensus cannot be reached and to make a good-faith effort to resolve the dispute.

CMER participants recognize that information and results are preliminary until the final report is approved by CMER. Documents must be clearly labeled and presented as DRAFT until approved by CMER as a final product.

At no time shall any potential contractor² for a project be involved in the drafting of a Request for Proposals (RFP), Request for Qualifications (RFQ), or Scope or Statement of Work (SOW)³, unless part of a formal

¹ CMER ground rules are expected to be refined and added to as necessary over time by CMER consensus.

² For the purposes of this ground rule, "contractor" is defined as owner or employee of a private business and is restricted to contracts identified as open to public bid. These contracts are different from tasks and contracts directed to CMER staff, interagency agreements, and cooperative participation where availability, specialized knowledge and skills, timeliness, and advantage of in-kind contributions are deemed important to project success.

³ This ground rule applies unless the SOW drafting is awarded as part of the contract.

pre-RFP/RFQ meeting. No bidding contractor can be part of the selection process for the specific project.⁴

3.3.3 CMER Dispute Resolution Process⁵

CMER, as part of the Washington State Forest Practices AMP, is mandated to “...strive to use a consensus-based approach to make decisions at all stages of the process,” (WAC 222-12-045(2)(b)).

CMER interprets consensus-based approach to mean that committee deliberations in both CMER and SAGs are:

- Agreement seeking,
- Collaborative,
- Cooperative,
- Egalitarian,
- Inclusive, and
- Participatory.

Decisions during regular deliberations in CMER and in the SAGs only move forward after consensus is reached. During regular deliberation a single no vote (i.e., thumbs down) can prevent ‘consensus’ until that vote changes or until formal Dispute Resolution is conducted. The CMER process allows individuals to abstain or ‘step aside’, thereby consenting to let a decision/process move forward without that individual necessarily agreeing to the decision (i.e., thumb sideways), so that disagreements do not always result in blocking decisions or progress.

If during regular SAG or CMER deliberations it becomes clear to SAG/CMER participants or to the AMPA that progress towards making a decision has stalled, any participant or the AMPA can invoke the Guided Decision-Making Process (i.e., Dispute Resolution). Initiating the Guided Decision-Making Process sets into motion a series of steps and check-in points with deadlines to facilitate resolution of an impasse in a timely manner.

3.3.4 Guided Decision-Making Process

The general approach of the Guided Decision-Making Process is to divide CMER decision making into 3 broad steps (Figure 3-1). The first step is to convene an informal meeting between the parties to determine if the dispute(s) can be resolved outside of a regular SAG or CMER meeting. If this is not successful, the second step is for the AMPA and CMER co-chairs to assign the issue(s) that are in dispute into one of four categories: Stylistic, CMER Process, TFW Policy, and Technical. The process to resolve issue(s) in step 2 depends on to which category(s) the dispute has been assigned (see below). If the issue is categorized as Technical and there is still no consensus at the end of step 2, a third step is to refer the issue to TFW Policy. *(Please refer to accompanying flow chart below)*

3.3.4.1 Step 1: Convene an informal meeting

When there is an impasse at CMER or in a SAG and decision making breaks down and becomes insoluble or unacceptably slow using regular deliberations, any participant or the AMPA can initiate the formal

⁴ The intent of this ground rule is to comply with state law and DNR contracting procedures. Chapter 19.36 RCW, Statute of Frauds; Chapter 39.19 RCW, Office of Minority and Women’s Business Enterprises (see also Title 326 WAC); Chapter 39.29 RCW, Personal Services Contracts; Chapter 39.34 RCW, Interlocal Cooperation Act (Interagency Agreements); Chapter 40.14 RCW (WAC 434-635-010), Destruction, Disposition of Official Public Records or Office files and Memoranda; Chapter 1.06 RCW, State Civil Service Law; Chapter 42.17 RCW (WAC 32-10-020–170), Public Records; Chapter 42.53 RCW, State Ethics Law; OFM Regulation (chapter 3, Part 4, Section 1), State of Washington Policies, Regulations, and Procedures; OFM Guide to Personal Service Contracting; DNR Policy Number P004-001, Interagency Agreements and Memoranda of Understanding; and the DNR Contract Manual.

⁵ “The CMER co-chairs, with the guidance and assistance of the Administrator, are responsible for setting up a dispute resolution discussion and can employ a variety or combination of methods to attempt to resolve the dispute.” (Board Manual Part 5. Dispute Resolution, Sect. 5.4 Guidance for Dispute Resolution Stage 1, paragraph 5).

Guided Decision-Making Process. The first step is for representatives on both sides of the non-consensus issue/question to meet together and with the AMPA and other interested parties within 30 days to attempt to resolve the impasse.

If the issue/question cannot be resolved at this meeting, tabling the discussion and resolution to a future date should be discussed. Some issues may not be time-sensitive or critical for moving them, or other CMER work, ahead. If a better time can be identified to resolve the issue/question and there is consensus within CMER or the affected SAG to table the issue, a future date should be specified for re-engaging the discussion.

3.3.4.2 Step 2: Categorize and resolve the issue

If the issue/question cannot be resolved at the ‘informal’ meeting and there is no consensus to table the issue/question, then the disputing parties need to clearly articulate in position papers their interpretation of the issue/question and their positions. If the non-consensus is occurring in a SAG, the issue is elevated to CMER to continue the Guided Decision-Making process. The position papers should be submitted to the AMPA and CMER co-chairs within 14 calendar days after the decision to move forward, but no later than in time for the next CMER meeting mail-out if within the 14- day period, unless an alternate date is agreed upon by the AMPA. If a SAG or CMER participant(s) blocking consensus is unable or unwilling to provide this document in this time frame, it will be treated going forward the same as if the individual stood aside, and that consensus has been reached.

If all parties submit position papers, the AMPA and CMER co-chairs will assign the issue/question(s) to one (or more) of four categories based on the position papers: Stylistic, CMER Process, TFW Policy, or Technical.

Resolving Stylistic Issues: Stylistic issues include format or other non-technical issues related to reports or other documents. The basis for categorizing issues/questions as stylistic rests on the interpretation of the position papers that the issues/questions do not affect the integrity of a study’s results or are not technically substantive in nature⁶. Documents may include Charters, Scoping Documents, Study Designs, maps, tables, figures and other work products. When the AMPA and co-chairs categorize an issue/question as stylistic, the AMPA makes the final decision (thus resolving the dispute) after consulting with the author(s) or creators of the document or work product. At this point, the CMER/SAG Guided Decision-Making Process has been completed. The AMPA should make a decision and inform the affected SAG or CMER in writing no later than 14 days after receiving the position papers.

Resolving CMER Process Issues: CMER process issues include questions or disputes that relate to 1.) interpretation of CMER process guidelines (as described in the PSM), including whether ground rules were followed (see PSM, Chapter 3, section 3.3.2), and 2.) whether comments on a CMER product (Scoping Document, Study Design, Charter, Final Report, Comment Matrix, etc.) relate to an issue that has already been decided by CMER. For example, a dispute over appropriate field methods during review of a draft final study report may be classified as a CMER Process Issue. When the AMPA and co-chairs categorize an issue/question as a CMER Process Issue, the AMPA makes the final decision (thus resolving the dispute). At this point, the Guided Decision-Making Process has been completed. The AMPA should make a decision and inform the affected SAG or CMER in writing no later than 14 days after receiving the position papers.

Resolving TFW Policy Issues: A TFW Policy non-consensus issue/question relates to rule interpretation, board manual interpretation, or to research priorities/questions that are primarily policy in nature or are directions from TFW Policy. When the AMPA and CMER co-chairs categorize an issue/question as policy, there are several steps in the guided decision-making process. The AMPA will inform the parties which

⁶ Examples of causes of stylistic issues: People have varying writing styles, which should generally be left up to the discretion of the author, unless unclear, etc. Some people are splitters, while others are lumpers – neither is right or wrong. Some people want to include the bare minimum necessary, while others prefer more context and details – again, neither is right or wrong. These are matters of personal choice.

issues have been categorized as policy issues and inform them of the date the issue(s) will be discussed at TFW Policy. The AMPA will write an introductory statement to provide background on the issue/question and describe the kind of guidance that SAG/CMER is requesting. This will be done within 14 days after the issue has been categorized as a policy issue, using the original or revised position papers. The AMPA will combine all the policy issues into a single document and identify critical timelines for resolution. The non-consensus CMER representatives will have 7 days to review and comment on this document.

The next step includes the AMPA forwarding the document to the TFW Policy Committee along with a recommendation. The disputing parties and other interested CMER/SAG participants should attend the TFW Policy meeting when the issue/question is discussed. At the conclusion of this meeting, TFW Policy will be asked to make a decision by no later than the next TFW Policy meeting. At this stage, TFW Policy can:

1. Resolve the issue and inform CMER,
2. Choose to initiate Stage 1 dispute resolution within TFW Policy, or
3. Return the issue to CMER with guidance for resolution.

Resolving Technical Issues: Technical issues are scientific in nature. When the AMPA and co- chairs categorize a non-consensus issue/question as technical, the first step is to forward the issue/question to CMER voting members for their consideration if the dispute/question arose in a SAG and has not yet been discussed in CMER. CMER voting members should come prepared to vote at the next CMER meeting after receiving the dispute, unless the AMPA agrees to an alternate timeline. If CMER voting members are in consensus on an issue/question, then a final decision has been made and the Guided Decision-Making Process has been completed.

If CMER voting members are not in agreement and non-consensus remains over a technical issue, the party that wants a project or recommendation to move forward to the next step (for example Scoping Documents, Study Designs, Final Reports, Charters, Work Plans, etc.) should invoke formal (CMER) Dispute Resolution. This is the party that objects to another CMER/SAG participant blocking a decision to move forward.

If formal dispute resolution is invoked, CMER has up to six months to resolve the dispute. The initial step is for CMER to decide whether to form an arbitration or mediation panel. The default is for the AMPA to convene an arbitration panel. The arbitration will be binding, and will have up to 3 months, or the shortest practical time frame, to resolve the question/issue. At the conclusion of the arbitration step the issue(s) will be considered resolved.

If there is consensus in CMER to form a mediation panel instead, the AMPA will form an ad hoc committee made up of SAG/CMER participants to work on resolving the issue/question outside of CMER meetings. Depending on the issue/question, the AMPA may pull together an external panel (using DNR contracting if necessary) to provide expertise for the ad hoc committee to sort out the technical questions and issues. The ad hoc committee will have up to 3 months, or the shortest practical time frame, to resolve the question/issue (i.e., no blocking vote). If the ad hoc committee does come to consensus, the decision is brought back to CMER for formal adoption and the Guided Decision-Making Process is complete. If the ad hoc committee does not come to consensus by the assigned deadline, the AMPA and CMER co-chairs make the decision and forward it to CMER. Again, the expectation is that this would complete the Guided Decision- Making Process.

3.3.4.3 Step 3: Refer Technical disputes to TFW Policy

At the conclusion of the above CMER Guided Decision-Making Process for issues categorized as Technical with the consensus for the CMER mediation panel, if the steps of Stage 1 Dispute Resolution have been followed within CMER. and a voting CMER member does not accept the decision, the dispute is referred to TFW Policy, as described in the Board Manual (Section 22, Part 5). The dispute remains in Stage 1 and TFW Policy has up to an additional six months to resolve the dispute within Stage 1 within TFW Policy. If that does not occur the dispute may be elevated to Stage 2 (TFW Policy process).

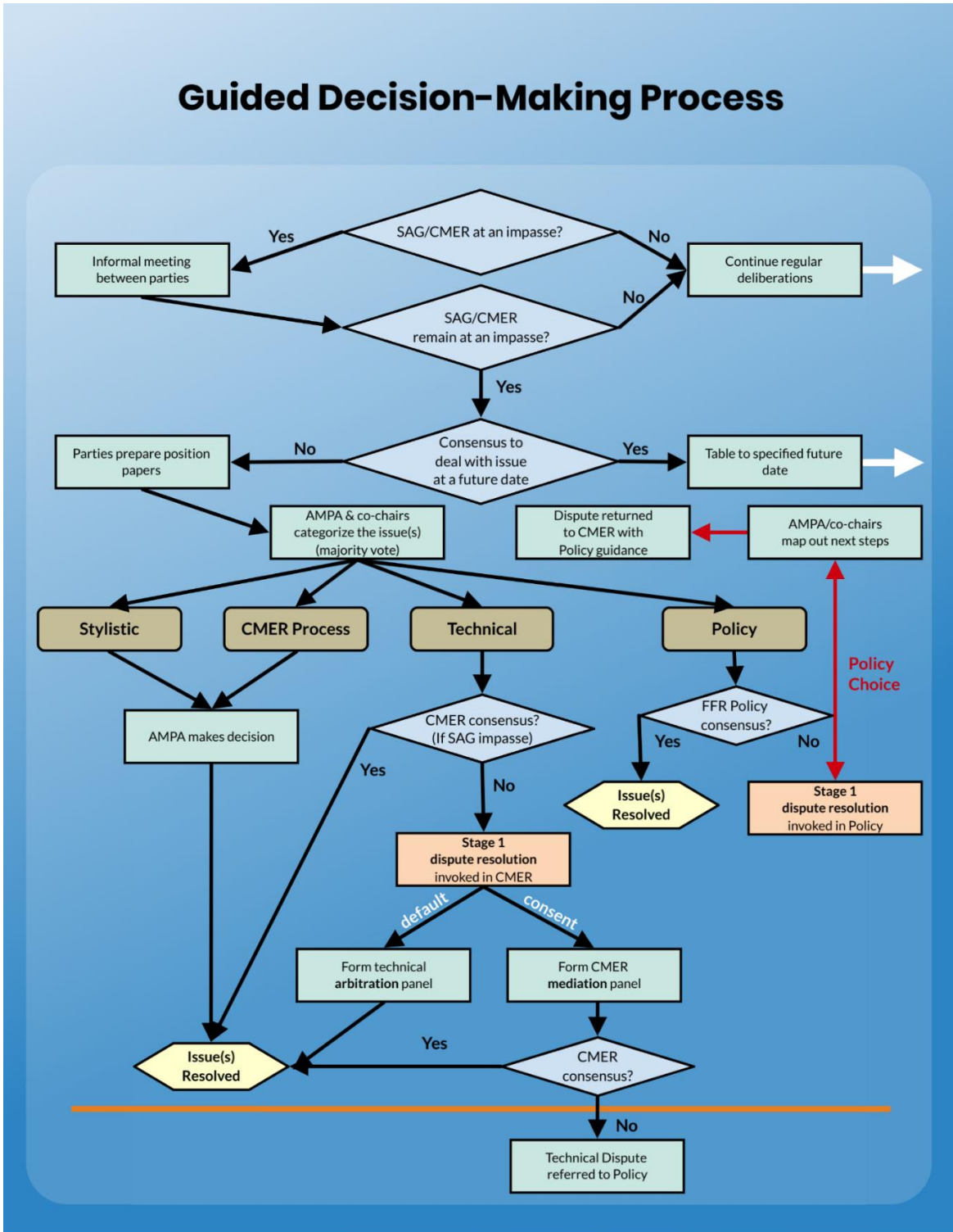


Figure 3-1: Flow chart showing the Adaptive Management Program Guided Decision-Making Process

4. CMER Meetings and Meeting Management

This chapter outlines the frequency and content of CMER committee meetings, the procedures for calling and holding meetings, and the roles of CMER co-chairs, CMER Coordinator, the AMPA, and members in meetings.

4.1 Meeting Requirements

4.1.1 Regular Monthly Meetings

Regular CMER meetings are held once a month (typically the fourth Tuesday of each month). Meeting dates for the year are determined at that year's January meeting and are included in the meeting minutes. Meeting dates shall be scheduled so as not to conflict with predetermined Board meetings and TFW Policy meetings. All CMER meetings are public, and public notice is required.

4.1.2 Special meetings

Special meetings can be called by the co-chairs, by the AMPA, or by consensus of CMER members. Notice of special meeting location, time, and agenda is to be distributed to CMER participants no less than seven days prior to the special meeting. Only those topics detailed on the distributed agenda are to be addressed at the special meeting.

4.2 Meeting Process

Agendas are developed for all CMER meetings by the AMPA, CMER co-chairs, and CMER Coordinator. CMER's agenda generally includes the following items, as needed:

- Introductions
- Agenda review and alterations
- Approval of minutes
- Review of CMER action items
- Scheduled science session
- Budget update
- SAG requests
- Independent Scientific Peer Review (ISPR) update
- SAG issues and updates
- CMER Work Plan update
- New business
- Review of new decision points and action items
- Public comment
- TFW Policy meeting updates

4.3 Meeting Coordination

Meeting arrangements are made by the CMER Coordinator (see Chapter 3).

4.3.1 Notices of Meetings

Monthly meeting locations are posted on the DNR website a year in advance. The CMER Coordinator sends an agenda and meeting material to the CMER listserv one week before each scheduled meeting. This announcement includes the time, location, and background information needed for that month's meeting. CMER members can access all meeting materials on the AMP SharePoint Online workspace (not available to the public).

4.3.2 Dissemination of Agenda Items and Decision Points

The meeting information that the CMER Coordinator sends out will include an agenda detailing new business and decision points. Any decision points for any topic on the agenda should be clearly identified as an action item on the agenda, and background information for these decisions will be made available prior to the meeting.

For CMER requests, subgroups (e.g., SAGs) will use a standard form (CMER Request Form, see Appendix F) to present the request to CMER. The SAG co-chairs, Project Manager, or project lead will complete, or facilitate the completion, of this form and send it to the CMER Coordinator for distribution through the CMER listserv and posted to the CMER SharePoint Online workspace) no less than one week prior to the CMER meeting.

CMER participants are expected to review materials before the meeting and contact sponsors of items where there are questions that may be resolved before the meeting. If materials were not reviewed on time, and no effort was made to request additional review time before the CMER meeting, the participant will not delay the document from moving forward (i.e., abstention vote). Occasionally, the CMER Coordinator sends a late mailing to CMER members. It is the discretion of the CMER members whether or not to take action, if requested, on any items that are disseminated in a late mailing.

4.4 Meeting Management

Meetings are managed by the CMER co-chairs. Typically, CMER co-chair's rotate monthly meeting responsibilities thus the assigned CMER co-chair leads a meeting and has responsibility for meeting management. The CMER co-chairs start and adjourn the meeting, ensure that the agenda is followed, introduce the presenters, and facilitate the discussions. When many members want to speak on the same topic, the co-chairs recognize the speakers in order and prevent interruptions. The CMER co-chairs ensure that everyone present has an equal opportunity to participate in the conversation and solicits input from silent members to ensure true consensus.

Action items, issues, and proposals are presented or reviewed consistent with the agenda distributed before the meeting (unless a change in the agenda is agreed to at the start of the meeting). The presenters elaborate on the facts as necessary and answer any clarification questions that members ask. The group then discusses issues and identifies concerns. Individuals expressing concerns are responsible for working productively with the group to resolve them. Typically, the CMER co-chairs formally call for a vote on the decision/action being discussed and read the specific language that will record the decision/action. Any CMER member may make a motion.

4.4.1 Decision Making

Decisions are made by consensus. All opinions or positions are to be shared, and all members must agree before an action can proceed. Full agreement by CMER Board-approved members, Board-approved alternates, or proxies is ideal. If proxy is being utilized, the Board-approved CMER member will email CMER co-chairs with their proxy designation prior to the meeting. The possible outcomes of the consensus process are as follows:

1. Full consensus, in which the proposal is unanimously supported.
2. Stand-aside consensus (abstention) in which one or more Board-approved CMER members (or their proxies) abstain from voting and allow the proposal to move forward. Members are not to stand aside if they have concerns that may affect their ability to support the proposal/project at later stages. Lack of consensus in which at least one Board-approved CMER member (or their proxy) votes no on an issue or proposal, resulting in an action is not approved, and one of the following options may be used to resolve the issue:
 - a. a consensus alternative proposal can be identified at the meeting, or
 - b. The issue is submitted for CMER internal dispute resolution - Guided Decision-Making

Process (see chapter 3 and Figure 3-1).

4.4.2 Documenting CMER Decisions/Action Items and Discussions¹

4.4.2.1 Meeting Matrix

CMER and the Science Advisory Groups (SAGs) are expected to maintain a record of decisions and actions items by filling out, and updating as necessary, a running table listing all decisions, action items, and relevant updates. The CMER Coordinator documents the record of decisions and action items for each CMER meeting. The SAG co-chair(s) is responsible for documenting the record of decisions and action items (see Matrix example below). Information in the table should include the following fields:

- Date that the decision or action item was made. Include what type of meeting (e.g. monthly meeting, special meeting, etc.).
- Project/Issue - name of project, issue, or topic that the decision/action item refers to. If the committee is a SAG or other CMER sub-group, focus on specific topic(s) related to the project/issue. If the committee is a SAG or CMER, list the project or issue as well as the specific topic (e.g., “Soft Rock Study/Site selection criteria”).
- Decision - concise (1 to 3 sentences) summary of decision or action item(s).
- Person responsible - list the group or individual identified as being responsible for carrying out the decision or action item (if appropriate).
- Date to be completed - date that an action item, deadline, or resolution of the issue is to be completed (if appropriate).
- Consensus - note/update; add either the phrase ‘consensus reached,’ or ‘consensus reached with stand asides,’ to emphasize that the decision was by consensus. Also include any qualifying or relevant information about the decision/action item, or any update related to the decision.

An example template for the meeting matrix table can be found below (Table 4-1).

The meeting matrix is to be updated continuously as decisions are made. A SAG co-chair, CMER subgroup lead, or CMER Coordinator ensures the meeting minutes or matrix is updated based on meeting topics and outcomes. When a decision is reached, the SAG co-chair, CMER subgroup lead (or an alternatively designated note taker) will discuss with attendees how the decision will be recorded in the table.

The updated table should be reviewed before each meeting adjourns. A copy of the table should accompany the meeting minutes when they are distributed and approved. If no meeting minutes exist, then the meeting matrix should still be maintained and made available on SharePoint Online workspace for review.

¹ This guidance applies to all CMER related committees.

Table 4-1: Example meeting matrix to record discussions and decisions at Project Team and SAG meetings.

SAG				
Meeting Matrix				
Date/In person, Hybrid or Virtual				
Attendees:	Joe Smith, John Doe, Jane Doe, etc			
Project/Topic	Issue	Person Responsible	Date to be completed	Consensus on Decision/ Action
Project 4 needs contracting changes	Change contract to include: a report of the methods used to collect data, delivery of the 'raw' data for all 16 sites to CMER staff at the NWIFC, and field notes/ observations that are pertinent to the data collected.	PM	10/22/2024	Consensus reached. Contingent on RSAG/CMER approval
Final Report	Though the analyses and the final report will be completed in-house by RSAG and CMER staff, the consultants will maintain co-authorship of the final report. They will provide specified sections, which will be incorporated into the report, and they will provide review of the draft report..	NA	NA	NA
Project Status Update	PT is working on P6Q document	PT	11/1/2024	NA

CMER Meeting Minutes

The CMER Coordinator takes meeting minutes, including a list of all attendees, affiliation, action items, decision points, and key discussions.

The CMER Coordinator submits the draft minutes to the CMER co-chairs and AMPA for initial review of decisions and topics/issues discussed during the meeting. The CMER Coordinator incorporates comments from the CMER co-chairs and AMPA and sends the draft minutes to the CMER listserv (and posted to the CMER SharePoint Online workspace). The coordinator receives and documents comments from attendees at the CMER meeting with the objective of bringing the revised minutes to the next CMER meeting for approval. Revisions are described, and minutes are approved as amended. Disputes concerning the minutes can be dealt with in the dispute resolution process, if necessary. The CMER Coordinator is responsible for presenting minutes for approval. Before adjournment of a meeting, the CMER Coordinator will restate all decision points and action items recorded during the meeting.

5. Scientific Advisory Groups (SAGs)

Scientific Advisory Groups (SAGs) are subcommittees formed by CMER to recommend, manage, conduct, or facilitate, and evaluate scientific research projects and programs to help CMER fulfill its mission. This chapter outlines the formation, roles, responsibilities, operation, and dissolution of SAGs.

Active SAGs include:

- ISAG- Instream Scientific Advisory Group
- LWAG- Landscape and Wildlife Advisory Group
- RSAG- Riparian Scientific Advisory Group
- SAGE- Scientific Advisory Group Eastside
- WETSAG- Wetlands Scientific Advisory Group
- UPSAG- Upslope Processes Scientific Advisory Group

5.1 Formation

CMER may create a SAG whenever it determines a need for a subcommittee to address a particular science-related question or set of questions. CMER will define a clear purpose, desired outcome, and focus of the SAG. CMER may recommend the type(s) of expertise desired of participants in a SAG. All caucuses are encouraged to appoint representatives to each SAG. SAG participants are scientists and practitioners qualified in the scientific discipline that the SAG is intended to address. No confirmation is necessary for participation. Co-chairs keep a list of active SAG participants, available upon request.

5.2 Roles and Responsibilities

5.2.1 Committee

SAGs conduct or facilitate research and monitoring to answer questions posed by the Board or TFW Policy, or as otherwise articulated in the CMER Work Plan. SAGs may propose programs and projects to be considered for inclusion in the Work Plan. All SAG recommendations and results are provided to CMER for review and further action. (See Section 2.6 on Roles and Responsibilities of CMER)

Specifically, responsibilities of SAGs include:

- Developing research and monitoring strategies;
- Updating the CMER Work Plan as needed;
- Developing project budgets;
- Working with contractors, Project Teams, and AMP Project Managers to meet project objectives;
- Responding to requests from CMER;
- Reviewing, approving, and forwarding Study Designs, Scoping Documents, reports, and other research and monitoring related documents to CMER; and
- Initiating the guided decision-making process in Chapter 3

5.2.2 SAG Participants

SAG Participants are expected to follow the CMER ground rules (see CMER Internal Relations in Chapter 3, “CMER Organization”), read materials in preparation for meetings, attend meetings of the SAG, contribute to discussions, participate in decision making, take on assignments, and, when needed, serve as a scientific advisor to AMP Project Managers. SAG members should keep their CMER and/or TFW Policy committee counterparts informed on SAG business, as needed. SAG members may also participate in CMER research development (e.g., Study Designs, Scoping Document).

5.2.2.1 SAG Co-chair(s) Election and Term

The term for a SAG co-chair is two years, with each co-chair starting and ending on alternate years. SAG co-chair elections will occur each May. Ideally, terms will start on July 1 and end on June 30 to coincide with the start of each new fiscal and Work Plan year. This will provide the highest level of continuity in the transition of these positions. Incumbents may serve more than one term but must be nominated and approved each time. When a co-chair cannot fulfill the two-year commitment, a minimum two-month notice is desired. An interim co-chair may be appointed, or a new selection process started to find a person to complete the remaining term. If there is no consensus on an interim co-chair, the SAG may choose to function under one chair until the next nomination cycle. Eligible voters will be comprised of active participants in the SAG. The SAG shall notify the AMPA and CMER co-chairs of SAG co-chair names.

5.2.2.2 Duties

Duties of SAG co-chairs include:

1. Be familiar with the CMER Protocols and Standards Manual.
2. Facilitate SAG research and monitoring activities, including review and approval of documents, SAG requests, direction/input to project principal investigators and contractors, etc.
3. Maintain contact lists of members and interested parties for notification of meetings and providing meeting minutes.
4. Ensure that meeting agendas and other materials are provided to members at least one week before each meeting.
5. Facilitate SAG meetings.
6. Ensure that action items and decisions are recorded as per guidance in Section 5.3.4 below and Meeting Matrix is updated and distributed at least one week prior to before each meeting.
7. Assist with locating expertise from outside the SAG when needed.
8. Appoint ad hoc committees as needed.
9. Attend CMER meetings.
10. Present to CMER proposals, reports, SAG requests and any other documentation required for any phase of a project or program. PMs, PIs, or Project Team members may assist with this task, as needed.
11. Facilitate updates to the CMER Work Plan for all projects being overseen by the SAG.
12. Appoint SAG members to be contacts for each SAG project.
13. Convey to the SAG any relevant information and decisions from CMER, TFW Policy, and the Board.

The duties of a SAG co-chair may be assigned to SAG members or shared with CMER co-chairs, AMP Project Managers, Project Team members, CMER voting members or others. However, the SAG co-chair is responsible for ensuring that duties are completed.

5.3 Meeting Management and Decision Making

Each SAG uses a consensus-based decision process. Consensus means that all opinions or positions are shared, and a mutually agreed-upon solution reached and supported by all members. When consensus cannot be achieved, SAG members are to follow the dispute resolution – Guided Decision-Making Process described in section 3.3.4. CMER is responsible for ensuring that SAG recommendations represent consensus among and participants active in the SAG. SAG meetings should follow the guidelines for CMER

meetings (described in Chapter 4). Each SAG, by consensus of all its members, may modify the CMER meeting guidelines to suit its needs.

5.3.1 Regular Meetings

Each SAG is encouraged to hold regular meetings at consistent intervals. Monthly meetings are recommended. The number of projects or timeline of a particular project may determine the frequency of meetings.

5.3.2 Special Meetings

When a decision is needed between regular meetings, or a topic/issue needs additional discussion, the co-chairs may call a special meeting. This could be an extra SAG meeting or a standing meeting, etc. One week's notice should be provided if possible. A SAG may meet remotely or in person. As in regular meetings, when meeting remotely, decisions must be made by consensus. Not all regularly participating members of a SAG need to attend a special meeting for it to occur; however, before the special meeting convenes, the SAG will decide whether decisions reached at the special meeting need to be reviewed at a regular SAG meeting before becoming final. Any decision made in a special meeting must be communicated to all participating SAG members before the next regular SAG meeting.

5.3.3 Notices of Meetings

Notice of each meeting shall be provided to all members of the given SAG and CMER at least one week before the scheduled meeting date. In addition, annual publication of all meeting dates and times for a year may facilitate participation. A list of agenda issues should accompany the notice of meeting. The agenda should clearly indicate which issues require a decision. Background materials to be read before the meeting should be attached, linked to an electronic location, or directions for obtaining them should be provided.

5.3.4 Meeting Matrix

A Meeting Matrix capturing key topics and issues is preferred (see Section 4.4.4.1). At a minimum, SAGs and other CMER sub-groups are expected to maintain a record of decisions and actions by filling out the Meeting Matrix. See 4.4.2 Documenting CMER Decisions/Actions Items and Discussions for further guidance.

5.4 Dissolution

SAGs may be dissolved or integrated into another SAG when:

1. A SAG has completed the work for which it was formed,
2. CMER finds that a SAG is not performing its duties adequately,
3. Workload changes, such that CMER may split one SAG into two or merge two SAGs into one, or
4. The programs on which a SAG is working receive a low priority or are dropped from the Work Plan.

6. CMER Work Plan Process

The CMER Work Plan is a document that describes AMP research and monitoring programs, critical questions, and individual projects. The Work Plan contains completed projects, projects under development, and currently active projects as well as projects identified for future design and implementation. The CMER Work Plan provides the backbone for establishing CMER research and monitoring priorities for a given fiscal year.

The cycle of Work Plan development follows the fiscal year of the State of Washington government, which begins on July 1 and ends on June 30 of the following year. Each fiscal year, CMER prepares project summary sheets for all active projects with associated and estimated budgets for TFW Policy review to inform the development and/or refinements to the CMER Master Project Schedule (MPS). Within the overall AMP cycle, revisions to the Work Plan and project list generally start September 1. Under this schedule, proposed changes to the Work Plan and associated project summary sheets are approved by CMER by December and sent to TFW Policy by January for concurrence. It comes before the Board in May for consideration. In the subsequent fiscal year, CMER members and SAGs proceed with implementing the Board-approved project list contained within the CMER Work Plan and MPS.

This chapter describes the process for revising the Work Plan. The nature of the Work Plan and the types of information it contains are summarized, including the criteria and the process CMER uses to rank proposed projects according to their relative importance for meeting FFR goals and objectives.

To view or download the current CMER Work Plan, follow the link at <https://www.dnr.wa.gov/about/boards-and-councils/forest-practices-board/cooperative-monitoring-evaluation-and-research>.

6.1 Purpose of the CMER Work Plan

The purpose of the Work Plan is to outline an integrated strategy for research and monitoring of the effectiveness of Washington State Forest practices rules, guidance, and department policies as prioritized by TFW Policy and the Board. The Work Plan is critical to conducting CMER business, fulfilling the priorities of the Board's AMP, and informing the general public who are interested in CMER's activities.

6.2 Organization of the Work Plan Document

The Work Plan is organized in a hierarchical format (Figure 6-1). Forest practices rule groups form the highest level, programs occur within rule groups, and projects are defined within programs.

Research and monitoring questions are identified at the rule group level and are assigned to programs. Then projects are developed within each program. In the remainder of this section, we further define the rule groups and programs and introduce the monitoring task framework that is being used by CMER.

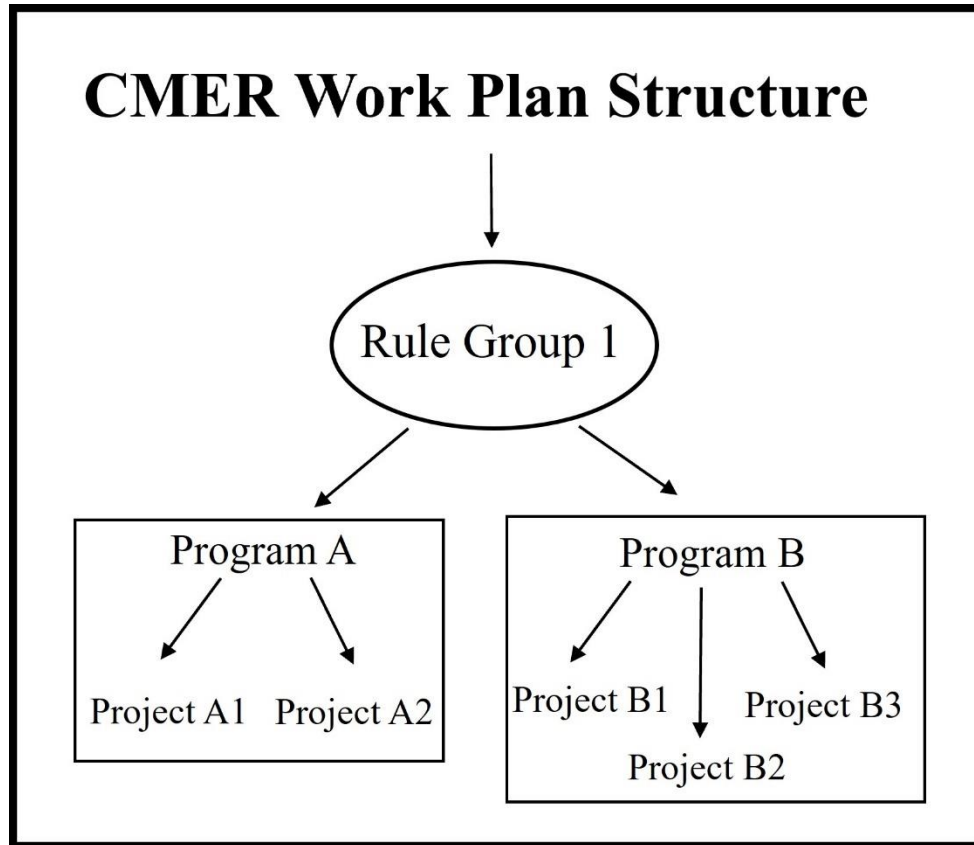


Figure 6-1: Schematic of the CMER workplan Structure.

6.2.1 Rule Group Structure and Definition

A rule group is a set of forest practices rules relating either to a particular resource, such as wetlands or fish-bearing streams, or to a particular type of forest practice, such as road construction and maintenance.

The rule groups are organized to reflect the WA Forest Practices Habitat Conservation Plan (FPHCP Appendix H, 2005):

- Riparian Strategy, which includes five subgroups:
 - Stream Typing
 - Type N Streams
 - Type F streams
 - Bull trout
 - Channel Migration Zones (CMZ)
- Unstable Slopes
- Forest Roads
- Fish Passage
- Pesticides
- Wetland Protection
- Wildlife

6.2.2 Program Structure and Definition

A program is a combination of one or more projects designed to address the scientific questions underlying a specific rule group. Four general types of programs may be identified for each rule group: rule tools (evaluation of the tools needed to implement the rules), effectiveness monitoring, extensive status and trends monitoring, or intensive monitoring. A description of each current program, including its purpose and objectives and the strategy for accomplishing them, is in the current Work Plan (see Appendix G for URL).

6.2.3 Project Structure and Definition

One or more projects comprise a program within the rule group structure. A CMER or SAG project is defined as one research or monitoring task resulting in a final report or product. Each project is comprised of several steps including project Charter, Project Management Plan, Scoping Document, literature review, Study Design, field and data collection and management, and final report. Project management of those process documents is discussed in Chapter 7. The process by which CMER programs and projects are proposed and developed is described in this section.

6.3 Proposal Initiation

The term *proposal* is used generically to identify anything with an end product intended to inform TFW Policy and/ the Board about forest practices rules or guidelines, or otherwise meet one of the AMP's goals and objectives.

Research and monitoring proposals enter the AMP through several pathways (as outlined in Board Manual, Section 22).

1. **Work Plan (CMER initiated):** CMER developed and ranked the original Work Plan programs and project list based on the FFR Schedule L-1, later revised and adopted under DNR's FPHCP (2005).
2. **New Proposed Work (CMER initiated):** CMER work may also lead to additional studies proposed to TFW Policy by CMER. These may be prioritized and included in the Work Plan and annual budget approved by the Board. SAGs may recommend that CMER consider project proposals that may address research gaps.
3. **Policy Request (TFW Policy initiated):** Some CMER work originates from questions from TFW Policy or the Board. These projects are written up, prioritized and included in the work plan.
4. **Forest Practices Board (Board initiated):** Some CMER work originates directly from the Board (e.g., PHB Validation study, Anadromous Fish Floor validation). These projects are written up, prioritized and included in the work plan.
5. **General Proposal (initiated by any AMP participant or the general public):** Formal proposal to the Board – anyone can make a proposal to the Board which may enter the AMP process and be evaluated by the AMPA as to relevance and priority. The AMPA will make a recommendation to TFW Policy on how to address the proposal. A new project resulting from the proposal recommendation may be added to the CMER work plan and prioritized. WAC 222-12-045 (2) (d) describes this pathway in detail. Board Manual 22 also describes this pathway.

6.4 Setting Program and Project Priorities for the Work Plan

The AMP focuses its research and monitoring efforts on critical areas by ranking and prioritizing its research and monitoring programs and projects. The original Schedule L-1 in the 1999 Forests and Fish Report contained an unprioritized list of research and monitoring needs. At the time, CMER prioritized the various research and monitoring programs (not individual projects at that point) to direct limited human resources toward the highest priority programs. No programs were eliminated. Because research funding is

limited, CMER continues to focus on completing the highest priority work. Projects are incorporated into the work plan based on either their scientific priority (i.e., scientific uncertainty and resource risk) or their priority as determined by TFW Policy or the Board who also considers political, economic, or social needs.

6.4.1 CMER Strategy for Setting Priorities

The original CMER strategy for annual program ranking and work priority was based on discussions with TFW Policy. Although the Board is the final approving authority, TFW Policy has been given oversight responsibility for reviewing CMER priorities and budget prior to making a recommendation to the Board. The program prioritization strategy is as follows:

1. Determine the importance or priority of **individual projects** within a program on a case-by-case basis.
2. Based on 1., Rank at the program level (number of prioritized projects within a program).
3. Provide a separate ranking of effectiveness/validation monitoring programs on the basis of scientific uncertainty and risk to aquatic resources.
4. Provide a separate ranking of extensive status and trends monitoring programs on the basis of scientific uncertainty and risk to aquatic resources.
5. Consult with DNR on ranking of rule tool programs, with DNR taking the lead.
6. Proceed with scoping.

This next section presents CMER's original criteria and process for ranking effectiveness/validation and extensive status and trends monitoring programs. TFW Policy and the Board have reviewed and accepted the rankings (Appendix A). Consultation with DNR facilitated ranking of rule tool programs.

6.4.1.1 CMER Ranking Criteria

The ranking approach applied to effectiveness monitoring, validation research, and extensive status and trends monitoring programs was designed to assess the merit of each program by asking two questions:

1. How certain are we of the science and/or assumptions underlying the rule?
2. How much risk is there to the protected resource if the science and/or assumptions underlying the rule are incorrect?

To obtain a uniform set of scores, the ranking approach constrains subjectivity by carefully defining the two assessment criteria and by establishing a numerical evaluation scale for each criterion. The sum of the assessment scores indicates the project's rank relative to other projects in the program.

The ranking process is firmly rooted in the FFR, (1999) later adopted by DNR's FPHCP (2005). The rules established during the FFR negotiations are based on science as well as certain assumptions as to the application of the known science to the forest practice. The authors understood that uncertainties and gaps existed in the scientific foundation of the rules and that consequently some of the underlying assumptions contain uncertainties. CMER was charged with reducing these uncertainties through effectiveness and validation monitoring and research. Any necessary modifications to the rules would then go through the adaptive management process.

Criterion 1: Scientific Uncertainty

Scientific uncertainty is defined by the following question:

How much is NOT known about the science and the assumptions on which the rule is based?

Uncertainty is a measure of confidence in the science underlying a rule, including the scientific relationships providing the conceptual foundation for the rule, the assumptions incorporated into the prescription, or the response to the prescription when it is applied on the ground. High uncertainty (low certainty) indicates that little is known about the underlying science and the rule is likely based on speculation or poorly tested assumptions. It may also indicate that the prescription treatment is untested, and the performance under field conditions is unknown. Low uncertainty (high certainty) indicates that the science underlying the rule is well known and accepted, or that the prescription (or similar treatments) has already been evaluated under similar conditions. Examples:

High Uncertainty: At the time of FFR negotiations, few studies describe the factors controlling the initiation of perennial flow in headwater streams, and the rule is based on assumptions derived from limited data. At the time, no studies had been done evaluating the Type N patch buffer system (clear-cut strategy) relative to buffer survival or riparian functions.

Low Uncertainty: At the time of FFR negotiations, numerous studies described the effects of forest practices on slope stability and the unstable-slope rules have a firm scientific/technical foundation. (This firm foundation does not necessarily imply that all aspects of the unstable- slope rules have a similarly firm scientific foundation.)

Criterion 2: Risk to Resources

Risk to FFR and FPHCP resources is defined by the following question:

What is the potential impact on FFR and FPHCP resources if the rule is flawed?

A deficient rule has the potential for detrimental impacts on aquatic resources, impacts that can undermine the FFR and FPHCP goals. A high-risk assignment indicates the rule component under study has a greater potential to alter the resource because of its high magnitude, frequency, or direct linkage to the resource. A low-risk assignment indicates that the rule component has a lesser potential to alter the resource because of its low magnitude, frequency, or indirect linkage to the resource.

High Risk: Mass wasting is a major contributor of sediment to forest streams. Increased rates of mass wasting from forest practices can have a high impact on critical salmon and amphibian habitat, and thus the unstable slopes rule has a high-risk ranking.

Low Risk: The Type F riparian prescriptions require a minimum leave tree requirement in the outer zone, however because of the small number of trees and their distance from the stream, there is only limited risk to riparian functions and aquatic resources from thinning in the outer zone.

6.4.1.2 CMER Scoring System

The range of scores for each criterion is 1 (lowest) through 5 (highest). To increase scoring consistency the high (5), medium (3) and low (1) scores were defined for each criterion. The intermediate scores (i.e., 2 and 4) allow for a more refined estimation of value or as a vehicle to resolve uncertainties.

6.4.1.3 CMER Initial Project Ranking Process

Effectiveness/validation and extensive status and trends monitoring programs were ranked using the system described above by CMER members in attendance at the December 19, 2002, CMER meeting. The individual scores were averaged to obtain a mean score for risk and a mean score for uncertainty for each program. The mean risk and mean uncertainty scores for each program were multiplied to get a combined score, and programs were ranked based on the combined scores. Additional prioritization of CMER projects occurred with Ecology's CWA milestones, the Stillwater Report, and the Settlement Agreement between WFPA, Conservation and DNR.

6.4.2 TFW Policy Strategy for Setting Priorities

Although CMER limits its focus to scientific uncertainty and technical issues during ranking, TFW Policy and the Board may apply economic, legal, or other criteria before approving the final work plan and associated project list. For example, since 2009 CMER projects that address Department of Ecology Clean Water Assurances have been given top priority over other projects in the CMER work plan.

7. Project Management

7.1 Project Management Overview

Successful completion of projects requires effective project management. This chapter provides guidance to Project Managers, Project Teams, SAGs, and CMER on how CMER research and monitoring projects should be managed to help meet the obligations of CMER: scientific credibility (e.g., applying best available science), operational efficiency, and fiscal accountability. These guidelines recognize that CMER is a collaborative and cooperative process. This process does not preclude any SAG or SAG participant from working on any of the project elements (i.e., scoping, study design, literature review, or other elements) in advance of the formal project initiation process. A suite of project management documents is described in this chapter.

7.2 Project Development

Project management requires completing documents that initiate, develop, guide, update, and ultimately communicate results from the project to CMER, TFW Policy, and the general public. These documents are intended to accommodate regular CMER processes, products, or reports and facilitate appropriate review and approval by CMER. If it is determined by the Project Team and SAG that a CMER project does not require one of the documents, explanations of omissions should be described in the Project Management Plan (described below).

7.3 AMPA Role in Project Management

In a project management role, the AMPA has three general areas of responsibility, though this summary is not intended to be exhaustive:

- 1) Facilitation:
 1. Manages the dispute resolution process (Section 3.3.3).
 2. Oversees project proposal initiation development (Section 6.3).

- 2) Communication with TFW Policy:

The AMPA is the primary link between science emerging from CMER and TFW Policy, who evaluates and recommends whether that science justifies policy changes or changes in Forest Practices Rules. In this context, the AMPA:

 1. Drafts cover letters and transmits findings report to TFW Policy (Section 7.14)
 2. Presents biennial budgets for the AMP for TFW Policy and Board approval.
 3. Determines if any CMER-approved revisions to project elements (e.g., problem or purpose statement, study objectives, or critical questions) of a project require additional approval by TFW Policy (Section 7.9).

- 3) Approves DNR and CMER staff participation in Project Teams and spending of AMP project funds (Section 7.4):
 1. Assigns DNR Project Managers to Project Teams;
 2. Assigns CMER staff to Project Teams and works with SAGs and CMER to assemble effective Project Teams; and
 3. Approves selection of Principal Investigators and other Project Team members who require AMP funds.

7.4 Project Team

7.4.1 Project Team Overview

Scientific Advisory Groups (SAGs) and CMER work with the AMPA to assemble and maintain Project Teams to implement CMER research and monitoring projects. Project Teams report to the oversight committee and are responsible for completing all project tasks and milestones, with support from the Project Manager.

Project Teams can be assembled in several ways and typically include a Project Manager along with some combination of SAG members, CMER members, CMER staff (including scientists), outside cooperators and/or contractors. Project Teams shall include members with appropriate technical expertise about the project topic. The DNR will manage the contracts of Project Team members who are brought onto a team as paid consultants. The AMPA evaluates the possibility of a conflict of interest when a Project Team member is contracted for a project.

All members of the Project Team are expected to commit to the timely success of the project, and as such will not raise concerns without also immediately providing sound alternatives and pathways for consensus. Project Team members are expected to work in a cooperative and committed manner to complete identified tasks and resolve issues as they develop, while providing solutions to problems/issues that both they and other members raise.

The Project Charter provides the names, affiliations, and roles of the Project Team members and notes the tasks expected from each member. The Communication Plan section (section 7.7.14) includes specific guidance on Project Team member roles and responsibilities related to communication.

Participation in a project gives team members access to unpublished data – the expectation is that CMER and Project Team members will not present or publish these data without approval of the CMER committee and the AMPA (per Section 10). Agreements should be put in place to ensure that data collected in cooperation with private entities is jointly available to CMER and its participants.

Members of the Project Team may change as project milestones are met and different skills and expertise are needed with new project tasks, when individuals retire, or Project Team members are not fulfilling their obligations. Generally, the Project Team consists of the following:

7.4.2 Project Managers (PMs)

Pursuant to AMPA delegation, PMs help guide projects through the CMER process, and coordinate with CMER and SAGs to facilitate the work of Project Teams to successfully complete projects on behalf of the AMP. In this effort, PMs are responsible for managing program funds, budgets, and contracts to ensure projects are carried out as set forth in RCW 39.29 Personal Service Contracts, RCW 39.34 Inter-local Cooperation Act, the internal contracting requirements of DNR, and other rules and regulations indirectly related to contracting; ensure optimal and proper use of program resources; and pursue continuous improvement in program organization, consistency, and accountability. In brief, PMs are responsible for facilitating project guidance through established steps as a project moves through its various phases to completion. Requests for a DNR PM to be assigned to a Project Team are made to the AMPA.

Project Manager responsibilities include:

1. Provide Oversight

- a) Monitor project activities and the performance of Project Teams.
- b) Communicate progress, problems, and problem resolution to the AMPA, CMER, and SAGs.
- c) Work with the SAGs/CMER, and Project Teams to help develop project process documents and keep them updated as needed over time.

- d) Work with the AMPA, SAGs/CMER, and Project Teams to develop and review proposals, RFPs or RFQs, review contractor proposals, monitor contract performance, and provide input on budgeting, schedule, scope changes, and contract amendments.
- e) Work with CMER, SAGs, and Project Teams (including PIs, contractors, and Other Team Members) to resolve problems and build consensus.
- f) As member of the Project Team, work with PI and Project Team members to develop interim and final draft reports.
- g) Ensure communication between all team members is clear, concise, and consistent.
- h) Ensure coordination between SAGs/CMER, Project Teams and landowners.
- i) Coordinate with other PMs.
- j) Coordinate all technical reviews and responses in a timely fashion.
- k) Facilitate archiving of all data and documents.
- l) See that contract provisions are followed.
- m) Provide direction and support to the Project Team to achieve clear and specific scopes of work, schedules, and budgets within approved contracts.

2. Facilitate Communication with Contractors

Project Managers are responsible for communicating or authorizing communication with all project-related contractors. See Communication Plan (section 7.7.14) for guidance specifics on communication between PMs, Project Teams, and contractors. The PM authorizes communication between Project Team members and Contractors on substantive project elements (see section 7.7.14).

3. Ensure Accountability

The PM maintains sole responsibility for all aspects of project management even if other individuals (meaning co-operators who may or may not be contracted under the project) are completing or helping complete parts of the project.

7.4.3 Principal Investigators (PIs)

Principal Investigators are responsible for executing the technical and scientific components of the project according to the Project Management Plan, and as such, take the lead in developing, writing, and updating technical documents and plans. Principal Investigators can be CMER staff, a paid contractor, caucus scientists, or other appropriate individual. The sponsoring committee (SAG or CMER) generally selects/assigns PI for the Project Team, in consultation with the PM if the Project Team already has an assigned PM. Depending on the size or complexity of a project, a sponsoring committee may assign multiple PIs to a project. However, one of the PIs will serve as a lead contact for technical questions/issues. If a project uses AMP funds, PI selection is approved by the AMPA. Requests for CMER staff to be assigned to a Project Team as the PI are made to the AMPA.

Principal Investigator responsibilities may include:

1. Primary point person for developing detailed implementation plans and communicating implementation needs to the Project Manager.
2. Help develop project Charters;
3. Work with the PM and the SAG to identify additional technical expertise and time commitments needed for successful completion of the project;
4. Provide materials needed by the PM;
5. Develop/write Scoping Documents, prospective Six Questions document, literature reviews, and Study Designs;
6. Help implement Study Designs, including site selection, data QA/QC, managing field crews, collecting data;

7. Analyze data;
8. Write interim and final draft reports;
9. Present technical findings to CMER, TFW Policy, and at science conferences.

The lead PI is responsible for communicating project status and issues to the Project Team as described in the Communication Plan (see section 7.7.14).

7.4.4 Other Project Team Members

Project Teams typically include members who are not the PM or the PI who provide specific skills that contribute to the success of the project. Other Project Team Members can include CMER and SAG participants, volunteer (non-CMER) experts, paid consultants/contractors, and CMER staff. The PM and PI in association with the SAG and/or CMER will help identify additional personnel with the skills and expertise needed to successfully complete the project. The SAG will forward to CMER proposed Team Members for approval.

The PM and PI determine the minimum time commitments necessary for participation as a Project Team member. SAG or CMER members are encouraged to be Project Team members as long as they can meet the work commitments. Requests for CMER staff to be assigned to work on a project as a Project Team member are made to the AMPA.

Project Team Members are expected to play an active role in document writing and project implementation. To ensure timely completion of project milestones, the recommended composition of Project Team members is the PI, PM, and 3-4 other Project Team members (LEAN 2012).

Other Project Team Members' responsibilities can include:

10. Help design and implement projects; Provide expertise necessary for successful completion of projects;
11. Help write technical documents;
12. Assist in communicating with their caucus (if CMER member); and
13. Provide constructive and timely feedback.

Project Team members should support consensus decisions when discussing projects at CMER. Project Team members, whether Board-approved CMER members or not, do not have a role in approving project documents.

7.5 Project Budget

Project budgets, listed in the CMER Master Project Schedule (MPS), are approved by the Board based on TFW Policy recommendations. Typically, these budgets are initial estimates based on prior project experience and are revised once a project is scoped and designed. Any supplemental funding may need Board approval.

The PM maintains the most current budget estimates for a specific project, along with current allocations and total funds spent to date. This budget will include the following information: (1) the existing CMER MPS project budget total; (2) an estimate of the detailed project budget components and tasks for each project year, and (3) total funds spent to date. Project Teams should update budgets as necessary throughout the year and develop budgets for each fiscal year a project is active. In-kind contributions by participants should also be identified by the PM and communicated to the AMPA.

As work on a project proceeds, budget adjustments will occur and be communicated to the AMPA. The PM will develop, with the Project Team and sponsoring SAG/CMER, updated budgets along with any requests for additional funds. The PM will provide regular budget updates to the Project Team, SAG, and to CMER.

The CMER request should describe the need for supplemental funds and present the reasons for the underestimation in the approved budget. If total cost estimates are substantially over the budget allocated in the CMER MPS, research/monitoring options for the project may need reevaluation or a request for a budget increase to the Board.

A detailed project budget may include, but is not limited to, accounting for costs associated with the following:

- A list of contractors and their associated compensation(s)
- Personnel benefits
- Travel expenses
- Equipment/Supplies
- Goods and services, including any field crew expenses

7.6 Project Charter

7.6.1 Project Charter Overview

Information contained in the CMER Work Plan (e.g., problem statement, purpose statement, project objectives, critical questions) should be used as the starting place for developing Project Charters. The purpose of the Project Charter is to describe the project and establish an initial project budget. The PM is responsible for writing the Project Charter and works with the coordinating SAG or CMER and the PI and other Team Members identified for the project. In general, Project Charters should be brief and updated as needed as the project is implemented to accurately, reliably, and concisely communicate basic elements and objectives. TFW Policy, CMER and the Project Team are the primary audiences for the Project Charter.

Project Charters should be created even when incomplete information exists. SAG/CMER and TFW Policy review and approve Project Charters. Generally, as projects develop and are implemented, changes to the scope, critical questions, objectives, or budgets will require updates. The AMPA will determine whether updates require review and approval by CMER and TFW Policy.

The most recent draft of the approved Project Charter will be stored on the SharePoint Online and the AMP Dashboard. Information contained in the CMER Work Plan should be used as the starting place for developing Project Charters (e.g. problem statement, purpose statement, project objectives, critical questions).

Elements that should be included in the Project Charter are listed below (Sections 7.6.2-7.6.12). The most recent Project Charter template is available on the AMP SharePoint Online site (See Appendix F for template links)

7.6.2 Title

If the CMER Work Plan does not contain a title for this project and the project does not yet have a title, create one. Titles should strive to be brief, distinct from other projects, and descriptive of the project's purpose.

7.6.3 Project Charter Approval Dates

List date(s) that CMER and TFW Policy amended and approved the charter.

7.6.4 Oversight Committee

The Project Oversight Committee is typically the Science Advisory Group (SAG) that proposed the project or to which a project was assigned by CMER. However, in some cases the Project Oversight Committee could be CMER (i.e. Roads Project).

7.6.5 Problem Statement

Information contained in the CMER Work Plan should be used as the starting place for developing a problem statement. If the project is not yet in the CMER Work Plan, does not yet have an approved problem statement, or has an outdated problem statement, the PM will work with the Project Team, CMER, and/or the Project Oversight Committee to generate or update a problem statement. If project development is in response to TFW Policy guidance for CMER to answer specific questions or inform a general topic or issue, the problem statement should reflect the direction of, or information provided by TFW Policy.

An effective problem statement for a CMER research project should concisely incorporate the following:

- The issue/problem the project addresses.
- A brief background on the issue; explain why the issue/problem is important such as the potential risk(s) to resources if the project is not implemented.
- The spatial and/or temporal scope (e.g., regional/statewide, near/long term), if known.
- The scientific uncertainty about the issue/problem.
- The proposed solution to the issue/problem, or how the proposed research can reduce uncertainty to inform a solution.

7.6.6 Purpose Statement

State the purpose of the project and describe how the project will help resolve the issues identified in the problem statement. The purpose statement should relate directly to the problem statement, providing a proposed solution to the problem or describing how the project will reduce uncertainty relative to the problem. When drafting a purpose statement, one should generally start with a sentence that begins with something like, “The purpose of this project is…” Briefly explain how this project complements any other projects that address the same or a similar issue/problem, if known. This may include any additional project phases or anticipated/potential follow-up studies.

Identify how the results of this project will inform the relevant resource objectives, functional objectives, and/or performance targets outlined in the Forest Practices HCP.

7.6.7 Project Objective

Describe the project objective(s). Project objectives are clear, concise declarative statements that describe anticipated project outcomes and achievements. Project objectives may be revised during the scoping phase of the project.

7.6.8 Critical Questions

The CMER Work Plan contains Critical Questions at both program and project levels. Critical Questions are the pivotal AMP questions that projects seek to answer, either in part or in full. Critical Questions may be revised during the project’s scoping phase. If an updated Charter includes revised Critical Questions, briefly explain why the Critical Questions were updated. If the project is not currently in the CMER Work Plan, the Critical Questions will be developed during the scoping phase. Project Charters help clarify that project deliverables will satisfy the Critical Questions and Problem Statements.

7.6.9 CMER Rule Group and Program

List the Rule Group and Program that the project is associated with from the CMER Work Plan. If the project is not in the current CMER Work Plan, identify which rule group and program the project informs.

7.6.10 Project Deliverables and Project Timeline

List the expected project deliverables. Include a best estimate of the project timeline, recognizing that it may need revision as the project moves through the Study Design and Implementation phases, and priorities established during CMER MPS development, update and approval.

7.6.11 Budget

State the current total budget allocated for the project from the CMER MPS. This is an initial budget estimate that may change pending the scoping and alternatives analysis process and/or Study Design development. The estimate may include projected costs of potential future phases as a separate budget estimate.

7.6.12 Project Team Roles and Responsibilities

Provide names, titles, affiliations, and roles (i.e., PM, PI, Team Members) of the Project Team members, if available (see section 7.4 for descriptions of Project Team Members roles and responsibilities). If not available, identify specific expertise that will be necessary for successful completion of the project. The Project Charter will note the level of time commitment expected from Project Team members.

7.7 Project Management Plan

An initial draft of the Project Management Plan is prepared once a Project Charter is completed. Project Management Plans are not static, but instead are iteratively revised and updated as needed (e.g. project nearing implantation phase) through a project's life.

A Project Management Plan also lists the other complementary documents/plans (e.g., Scoping Document, Project Risk Management Plan, Communication Plan) that currently exist or will be created to effectively plan and implement the project. The PM updates the Project Management Plan as necessary and stores the most recent drafts of this document in the SharePoint Online for easy access and reference by the SAGs, Project Team, CMER, and AMP staff.

Below are the section headers and a description of the content that should be included in the Project Management Plan. The Project Management Plan template link can be found in Appendix F.

7.7.1 Project Title and Date

Record the project's formal title as it appears in the TFW Policy-approved Project Charter. Under the Title record the date that the Project Management Plan is approved by CMER.

7.7.2 Project Management Plan Overview

Generally, the below text is included as the overview but can be edited as necessary.

The Project Management Plan breaks down project work into logical steps to help provide a framework to efficiently allocate resources, reliably estimate project costs, and help guide schedule, budget development and project scope. Previously in the CMER Protocols and Standards manual (PSM), this document was titled an implementation plan. The Project Management Plan documents and tracks the progress of a CMER project through its various stages. The contents of the Project Management Plan will vary depending on the type and complexity of the project. The Project Team is the primary audience for the Project Management Plan; however, SAG/CMER members are encouraged to provide feedback on the plan.

7.7.3 Oversight Committee

List the Oversight Committee as identified in the TFW Policy-approved Project Charter.

7.7.4 Background

Provide a brief background of the AMP and how this project fits into the AMP research priorities.

7.7.5 Project Milestones and Tasks

List the milestones and deadlines for the project. Examples of milestones include completion of a field manual, a QA/QC plan, site selection, fieldwork initiation or completion, data analysis, pilot study completion, project phase completion, and SAG or CMER approval of documents such as interim reports.

Identify tasks related to milestones and schedule to be completed to meet each milestone deadline.

The milestones and tasks can be represented in an outline format, organization chart, or just listed, depending on the size and complexity of the project (i.e., case study, pilot, or phasing). The milestones and tasks should be presented chronologically with expected dates of completion.

7.7.6 Project Deliverables

List all the deliverables for the project. Deliverables are the tangible products that result from the project, according to specified quantitative or qualitative measures of quality. For example: field data that is completed according to the field manual, submitted on a specific medium, and approved by the SAG or by CMER; an interim report approved by the SAG or by CMER; a SAG/CMER approved QA/QC report that will identify any deviations of the field protocol, and a final report reviewed by ISPR that is CMER approved; among others.

7.7.7 Project Team Members

List the Project Team members as identified in the Project Charter. Provide name, title, affiliation, contact information (phone number and e-mail address) and role (PM, PI, Other Team Member), of the individuals who are involved in completing the project. Clarify, to the extent known, responsibilities for team members participating in each role (see section 7.4 for descriptions of Project Team Members roles and responsibilities).

Individuals may be added or dropped from a team with changes in project needs and the capacity of individuals to meet minimum time commitments. See section 7.4 for more information on Project Teams. Update the Project Management Plan when members join or leave a Project Team. Identify which members are participating in the project through DNR contracting.

7.7.8 Project Constraints and Assumptions

Describe known project constraints and assumptions that will impact the project.

Project constraints are limiting factors (internal or external) that may affect the initiation, planning, execution, monitoring and control, and close-out of a project. Constraints restrict or dictate the actions of the Project Team. Constraints may be organized into the following categories: schedule, budget, materials and equipment, access to study sites, time to obtain permits for access or implementation, and human resources. As the project evolves, constraints will materialize. In the planning phase, the identification of constraints is based on current scientific, policy, logistic, and budget considerations. If constraints within the categories below do not exist, state nonexistent or unknown.

Schedule constraints:

Limitations on the project schedule that may affect when an activity can be scheduled. This is usually a fixed or imposed date or relationships with other projects that can strain resources.

Budget constraints:

Limitations on the project budget such as the availability of funds over time, fiscal year considerations, and grant considerations.

Human resource and/or resource constraints:

Limitations anticipated due to lack of human resources, such as what skills are limited during a specified time frame, technical resources, study sites, or product acquisitions necessary to complete the project.

Project assumptions are factors in the planning process that are considered true, real, or certain, without proof or demonstration and are outside the total control of the Project Team. It is important that the Project Team, SAG/CMER identify project assumptions and describe the potential impact on the project if the assumption proves untrue (ex. cost associated with hiring of seasonal staff, indirect costs, cost of living

adjustments, unanticipated changes in availability or cost of equipment, etc.).

A separate Risk Management Plan will not be developed unless one of these constraints or assumptions occurs or if one is deemed necessary. The process for developing a detailed Risk Management Plan is outlined in section 7.13 of the PSM. A Risk Management Plan identifies potential actions to avoid, reduce, and/or mitigate impacts to a project. Project constraint and assumption information will be used to develop the Project Risk Management Plan.

7.7.9 Decision-Making Authority

Describe how decisions are made for the project. See also Project Communication tables 7-1, 7-3 and 7-4. The Board FPHCP AMP strives for a consensus decision-making process. Decision-making authority described in this section needs to be consistent with CMER process and ground rules (Adaptive Management Board Manual, Section 22).

- Describe the Project Team organization and approval authority (i.e., Project Team members, Project Manager, Principal Investigator, SAG, CMER, TFW Policy).
- Identify when official reviews and approvals are needed to move the project forward. Describe the approval process of major decisions within the Project Team, the SAG, CMER, and TFW Policy.
- Describe how changes within the scope of work, contract, or Study Design will be addressed.

7.7.10 Project Resource Needs

List or describe any infrastructure or specialized equipment that will be necessary to complete the project (e.g., aerial photographs, orthophotos, special maps, vehicles, GPS unit, computer, software programs, field gear, thermographs, etc.).

7.7.11 Project Budget

Provide an estimated project budget that is linked to the project timeline, schedule, and deliverables (see section 7.5) and includes estimated budgets by fiscal year and provide a project total.

7.7.12 Project Sites

Discuss what is known about project site selection to assess project resources and scheduling requirements. Much of this information may not be known until after the scoping and/or Study Design steps are done. Reference the location where this information is provided in detail if available.

7.7.13 Companion CMER Documents

List other stand-alone CMER documents that currently exist or will be created to complete the project, such as:

- Project Charter
- Literature Review
- Scoping Document and Alternatives Analysis
- Study Design
- Site Selection and Data Collection Plan
- Risk Management Plan
- Final Project Report
- Document/Data Management and Closure Plan

For each document, include date of approval of the most recent draft, or a forecasted completion date.

7.7.14 Project Communication Overview

Transparent and accurate communication between adaptive management parties (Project Team, SAG,

CMER, AMPA, TFW Policy) is critical for the Program to guide and oversee the work of the Project Team. This section provides a framework to manage and coordinate the communications needed for all phases of a project. Two primary pathways exist for project communication to occur when working on CMER projects – (1) between the Project Team and project oversight committees (i.e., SAGs, CMER, TFW Policy), and (2) communication within the Project Team. Project communication is typically integrated into the Project Management Plan and is part of the PMP template, but may be created as a separate document if needed. If a separate Communication Plan is needed, it will be retained in DNR records in compliance with DNR policy.

7.7.15 Project Oversight Committee Communication

This section covers communication between the Project Team and the Project Oversight Committees (CMER/SAG/TFW Policy). Communication within the Project Team is covered in Section 7.4. Project oversight communication includes (1) project management documents that communicate how projects will be managed, (2) project tracking to track project progress and facilitate guidance and approvals, and (3) communications with contractors.

Project management documents

The PM is the lead author for the Project Charter, Project Management Plan, and other project management documents (Table 7.1). If the PI has been identified at the time of project launch, the PM will work with the PI to draft the Project Charter and Project Management Plan, in consultation with the oversight committee. Project management documents (Table 7-1), such as the Project Charter, Project Management Plan, are described in more detail in other parts of this chapter.

Table 7-1: Project management and project tracking and guidance documents (document templates can be found in Appendix F) and the primary author and collaborators for each, who has the authority for final approval, and the intended audience.

	Document	Primary Author	Collaborators	Final Approval¹	Primary Audience
Project Management Documents	Project Charter	PM	PI/Project Team (If Identified)	SAG, CMER, TFW Policy	Project Team, TFW Policy, CMER, SAG
	Project Management Plan	PM	PI	SAG, CMER	Project Team, CMER, SAG
	Document Management and Closure Plan	PM	PI	N/A	Project Team, CMER, SAG
Project Tracking and Guidance Documents	Project Updates	PM	PI	N/A	Project Team, CMER, SAG, TFW Policy, AMPA
	Project Summary Sheets	PM	PI, Project Team	CMER	TFW Policy
	CMER Requests	PM	Project Team	CMER ²	CMER
	TFW Policy Requests/Check-ins	AMPA	Project Team	CMER	TFW Policy
	Public Presentations	PM or PI	Project Team	N/A	Public

¹ Committees that review and approve the document.

² CMER ultimately ‘approves’ CMER requests, but the actual wording of the request does not require CMER approval.

Project Tracking and Guidance

The PM is responsible for ensuring that all reporting tasks are complete and provided on schedule.

The format of the communication between a Project Team and the Project Oversight Committee depends on which committee is providing oversight, and the type of communication (Table 7-2).

Table 7-2: The different types of communication and documentation required when a Project Team communicates with the Project Oversight Committee, depending on whether oversight is provided by the SAG, CMER or TFW Policy.

Type of Communication from Project Team	Project Oversight Committee		
	SAG	CMER	TFW Policy
Monthly Project Updates	Verbal	CMER SAG Updates	CMER SAG Updates
CMER & TFW Policy Requests	Agenda Item	CMER Request Form	TFW Policy Request Form
Decisions	Meeting Minutes	Meeting Minutes	TFW Policy Response Form

Project Updates

Project updates are provided to the oversight committee (SAG(s)/CMER) monthly, or as requested. Updates are verbal descriptions of the project’s current status and include information on project tasks and milestones (e.g., site selection, data collection, report writing). If an update to CMER or to SAG results in a substantive change to a project, the PM will maintain written documentation of the change. What constitutes a substantive change will be determined on a case-by-case basis depending on specific project issues and is determined by the Project Team.

Occasions may also exist when the PM or PI will be asked to provide an update on the project to TFW Policy beyond the regular CMER project updates.

CMER Requests

CMER requests are written documents from the SAG or Project Team that, with PM support, formally seek SAG-approved project approvals, changes to prior agreed upon project elements, guidance and/or resources. The PM is responsible for preparing CMER requests, though depending on the nature of the request, may delegate this task to the PI, Project Team, or SAG co-chair, with prior agreement. For requests that ask for guidance on project direction, changes in scope, priorities, or any other substantive issue, the PM may consult with the SAG and Project Team when drafting the request. For CMER requests that are procedural in nature, such as asking for CMER review of a specific document, the PM will inform the SAG or Project Team when drafting the request prior to forwarding the request to CMER.

CMER requests are frequently accompanied by additional documents, such as a report that is to be reviewed/approved, or a short memo that describes in detail the issue surrounding the CMER request. The memo may briefly summarize issues or questions that the Project Team would like to discuss with CMER related to completing project milestones or deliverables. This can include anything that may result in a change to project scope, timeline, budget or quality. If the Project Team seeks answers to or discussion surrounding specific questions or issues, each question/discussion point should be presented with sufficient information to provide a basic understanding of the context within which the questions are being asked.

Any attachments that accompany a CMER request will be distributed to and approved by the Project Oversight Committee before forwarding to CMER. If CMER is the Oversight Committee the CMER request will be distributed directly to CMER. Depending on the nature of the issue/request, either the PM or PI can take the lead on developing the memo, though ultimately it is the responsibility of the PM to ensure memos and associated materials are ready for distribution to CMER at the appropriate time (i.e., with the CMER mailing).

TFW Policy Requests

TFW Policy requests are written requests submitted by CMER seeking approval of a document (e.g., Project Charter, scoping documents, final reports, project budgets); or asking for clarification or guidance on specific issues identified by the Project Team or CMER. The AMPA facilitates communication between CMER and TFW Policy, and depending on the nature of the request can delegate preparation/presentation of the request/update to either the PM, PI or other CMER member/Project Team member with prior agreement.

The AMPA works with members of the Project Team and CMER to draft the request in a way that clearly and concisely communicates the issues, purpose, and/or decision identified in the submittal. Often a TFW Policy request includes a presentation to TFW Policy about the CMER document, report, or issue, which can be given by the PM, PI, or the AMPA, depending on the nature of the request. When a TFW Policy request originates from a Project Team, the PM consults with the AMPA and submits it to CMER for approval before forwarding to TFW Policy.

Contractor Communications

In all cases, the PM is primarily responsible for facilitating open and transparent communication between contractor(s) and Project Oversight Committee and/or Project Team members. Project Oversight Committee or Project Team members should generally not directly communicate with the contractor(s) about substantive project elements outside of formally organized meetings, conference calls or PM-facilitated group e-mail discussions, unless specifically authorized in pre-established contract terms or approved in advance to do so by the PM. The PM may verbally grant authorization, and the rest of the Project Team and Oversight Committee should be informed when this occurs. The PM is responsible for informing the contractor(s) of this policy as well.

7.7.16 Intra-Project Team Communication

The following section outlines expectations for open and effective communication among Project Team members. It is intended to guide communication, not restrict it. The expectation is that Project Team members, including PMs and PIs, who communicate outside of normal project meetings, conference calls, and other venues will share substantive conversations they have with the rest of the team.

Project Manager

The PM assists the Project Team by coordinating communication (e.g., team and one-on-one meetings, conference calls) and maintaining an e-mail distribution list for the Project Team. The PM also ensures that any communication resulting in a formal decision about the project occurs in a transparent and inclusive way.

In all cases, the PM is responsible for communicating any changes to a contractor's scope of work. Other Project Team members are not authorized to provide such guidance. Conversations affecting the scope of a contractor's work on a project, or a substantive change in project objectives or tasks, need to include the entire Project Team and SAG.

The PM is responsible for tracking project status. Project status and progress will be reported on by the PM at scheduled project team meetings and should include information on the status of project, tasks, milestones (e.g., site selection, data collection, report writing), and budget as well as any issues that require Project Team input. With prior agreement, the PM may delegate preparation or presentation of the project status and progress reports to the PI or another Project Team member. Project status reports will also be included in the SAG updates memo to CMER, as appropriate.

Principal Investigator

The PI is responsible for preparing and writing technical reports for CMER (Table 7-3). How the PI communicates and works with the Project Team to produce reports will vary based on the nature of the project and dynamics of the Project Team. The PI works together with the PM to coordinate

communications with the Project Team as described in the above section concerning the PM role in Intra-Project Team Communication.

The PI is responsible for communicating to the PM concerns or issues that may come up throughout project implementation.

Table 7-3: Technical project documents.

Technical Document	Primary Author	Co -Authors	Review/Approval ¹	Primary Audience
Stand-Alone Literature Review	PI	Project Team	SAG, CMER	SAG, CMER
Scoping Document			SAG, CMER, TFW Policy	SAG, CMER, TFW Policy
Study Design			SAG, CMER	SAG, CMER
Prospective Six Questions Document			SAG, CMER	SAG, CMER, TFW Policy
Site Selection and Data Collection Protocols			--	SAG, CMER
Draft and Interim Reports			SAG	SAG
Final Six Questions Document			SAG, CMER	SAG, CMER, TFW Policy
Final Project Reports			SAG, CMER	SAG, CMER, TFW Policy

¹Committees which review and approve the document.

Project Team Members

Communication by Project Team members includes participation at meetings and conference calls, providing feedback on draft documents, researching specific topics/issues, taking the lead on writing report sections, and/or acting as co-author(s) of CMER documents. The PM will document expectations on individual team member roles, responsibilities, tasks, deliverables, and levels of participation in the Project Management Plan. Other Project Team members may engage in ‘off-line’ communications about the project with other Project Team members and/or adaptive management participants. In the spirit of transparency, team members will share the elements of any substantive, project-related conversation with the Project Team.

Other Communication

Presentations

Findings from CMER studies are often formally presented at CMER science conferences, at CMER and TFW Policy meetings, as well as in other venues based on solicitations from outside groups and organizations. The PM works with the Project Team to identify the appropriate presenter based on the nature of the presentation. Any presentation that uses adaptive management funding should explicitly acknowledge CMER and AMP contributions. The Project Team should be part of the preparation/review of project presentations.

7.8 Literature Review

7.8.1 Literature Review Overview

‘Literature review’ in the context of the AMP refers to reports that support development of scoping, design or reporting that inform CMER on the best available science for a specific scientific issue, question, subject, method, and/or research approach. The topics, issues, or questions reviewed in literature reviews are developed by the Project Team, SAG or CMER, and are approved by CMER.

Stand-alone literature reviews can be one of the following:

Annotated bibliography – An annotated bibliography is a broad list of citations to books, articles, and documents. Each citation is followed by an annotation – a brief description and evaluation that informs the reader of the relevance, accuracy, and quality of the cited source.

Literature synthesis – A literature synthesis identifies what is known and not known about a specific subject, but also typically distills information not necessarily readily evident from the literature upon which it is based. This information may be used to frame or evaluate a potential CMER project. A literature synthesis may either be a final product or an early phase of a more complex project that supports project scoping and/or development of the Study Design.

Systematic literature review – A systematic literature review is similar to a literature synthesis but focuses on answering specific, carefully worded research questions by systematically identifying and synthesizing the most appropriate research evidence relevant to those questions. Depending on the question(s) asked in the systematic literature review, literature will be ranked for inclusion based on its strength, reliability and appropriateness to answering the question(s). The process of identifying and selecting literature for inclusion in the systematic literature review must be carefully planned and documented (See Pullin and Stewart 2006; Burnett et al. 2008).¹

Literature included in a review should be selected based on relevance and quality, with preference should be given to peer-reviewed publications that are publicly available. Gray literature should be used with caution but is acceptable if the content can be evaluated for accuracy and credibility, and it is available to CMER and the general public. Internal reports, papers presented at conferences, articles in preparation, and other types of scientific information should be treated as unpublished and assessed for quality (accuracy and credibility). Regardless of source, authors of CMER reports may provide literature referenced in a Study Design or report if requested during a CMER review process.

The Project Team, SAG, CMER and TFW Policy members are the primary audiences for literature reviews.

Archiving: (See section 7.15 below). All documents associated with literature review development and finalization (e.g., pre- and post-ISPR drafts, ISPR response letters, ISPR cover letter) will be archived in the SharePoint Online and in the DNR contract file if it is a contract deliverable.

7.8.2 Document Creation

Literature reviews as stand-alone documents are developed and written by the PI, a contractor, and/or Project Teams under the direction of the Project Oversight Committee.

Depending on the type and need, a literature review can include the following five elements: background, methods, results, discussion, and conclusions, depending on the type of literature review being produced.

7.8.3 Background

This section describes the need for the review, its purpose, and the questions to be answered.

7.8.4 Methods

The methods section should delineate the types of literature reviewed, the span of publication dates, and any other limits on the review. For all stand-alone literature reviews, the methods section should include how the literature sources were identified (search engines, key words, screens for relevance and acceptance). For systematic literature reviews, the methods section should additionally include explanation

¹ Burnett, K. M., G. R. Giannico, and J. Behan. 2008. A Pilot Test of Systematic Review Techniques: Evaluating Whether Wood Placements in Streams of the Pacific Northwest Affect Salmonid Abundance, Growth, Survival, and Habitat Complexity. Institute for Natural Resources, Oregon State University, Corvallis, OR.
Pullin, A. S. and G. B. Stewart. 2006. Guidelines for systematic review in conservation and environmental management. *Conservation Biology*. Vol 20, pg. 1647 – 1656.

of how types of literature were ranked.

7.8.5 Results

The results section is generally either an alphabetical listing of annotated reviews, or a summary of the findings in a systematic or synthesis review. In systematic or synthesis reviews, it may be appropriate to combine the results and discussion sections.

7.8.6 Discussion

A discussion will place the findings in context of the issue described or questions posed in the background and should include:

- Limitations
- Significance
- Generalizations
- Discussion of the level of confidence in the answers to the questions provided by the literature.

7.8.7 Conclusions

State the salient conclusions drawn from the results of the review or explain why conclusions cannot be drawn. Depending upon the purpose of the review, the conclusion may suggest a direction for further research or policy considerations.

7.9 Scoping Document and Alternatives Analysis

7.9.1 Scoping Documents and Alternatives Analysis Overview

The purpose of a Scoping Document and Alternatives Analysis is to facilitate the process of designing CMER projects. The Scoping Document is a key communication tool for all levels of the AMP and is the vehicle for the Project Team to communicate to the SAG, CMER, and TFW Policy on how they would like to proceed to successfully meet a project's objectives. The Scoping Document template is located in Appendix F.

Writing the Scoping Document allows the Project Team to work on and clarify how the project will meet CMER goals and objectives. During this process, the Project Team can review and propose updates as necessary to refine any existing Problem and Purpose Statements, Project Objectives and Critical Research Questions. However, in the case where these goals have been developed through prior consensus, the Project Team should get agreement by CMER and in some cases TFW Policy for any substantive changes prior to moving the project forward. A Scoping Document will include an evaluation of alternative approaches for achieving the project objectives to determine a recommended approach. The Scoping Document should include a general description of scientific, statistical and implementation issues to the extent known to facilitate a better understanding and evaluation of the project.

For projects where the opportunity for integration exists, compare the following:

- Rule Group critical questions that are comparable to both projects.
- Additional program research, or sub-questions to the rule group questions that are identified in the Work Plan that can be supported by both projects.
- Is work duplicated with other research? What work has been completed on this topic outside of the CMER program? Can other scientific research be incorporated into the project to reduce costs, improve effectiveness, and reduce duplication?
- Can multiple projects use the same study sites?

The Scoping Document is submitted by the PM to the SAG and CMER for review and approval. Once approved by CMER, the scoping document is submitted to TFW Policy for review and approval. The final

approved Scoping Document is stored on SharePoint Online and becomes a part of DNR records.

7.9.2 Context

This section contains the basic identification information for the project. It introduces the reader to the project and the adaptive management/regulatory context for the project.

Project Title: Record the project's title as it appears in the Project Charter.

Rule Group: Record the Rule Group and Program under which the project is listed in the Project Charter.

Forest Practices Rules: Identify the forest practices rules by Washington Administrative Code (WAC), guidance by board manual section number and part to be evaluated, tested, or informed by the project. Describe the scientific basis that underlies the rule, numeric target, performance target, or resource objective that the project informs and how much of an incremental gain in understanding the study results will represent.

Links to Adaptive Management: Describe the connection between the project and other projects, questions, and strategies identified in the CMER Master Project Schedule (MPS), CMER work plan, TFW Policy initiatives, Board proposals, etc.

Timeline: Identify the fiscal year(s) the project is proposed to occur, as described in the Project Charter. During the scoping phase the Project Team may recommend modifying the timeline. If a timeline affects the budget, the recommendation requires SAG and CMER approval. Any modifications to the timeline and budget need to be reflected in a Project Charter update, which must be delivered to TFW Policy for review and approval.

Resource Objectives, Issues and Performance Targets: List, and describe as necessary, the Forest and Fish Report schedule L-1 resource objectives and performance targets, and Schedule L-2 projects that this project will address. Describe the potential risks to resources and forest practices management effects.

7.9.3 Problem Statement

Include the problem statement that was approved by CMER and TFW Policy in the Project Charter. If the Project Team identifies modifications to the Problem Statement during scoping, the Project Team must seek SAG and CMER consensus. These changes need to be brought to TFW Policy for review and approval.

7.9.4 Purpose Statement

Include the Purpose Statement as defined in the Project Charter. If during scoping the Project Team recommends updating the Purpose Statement, the Project Team needs SAG and CMER consensus for these revisions. These changes need to be brought to TFW Policy for review and approval.

7.9.5 Project Objectives and Critical Questions

Include the project Objectives and Critical Questions identified in the Project Charter.

7.9.6 Testable Research Hypotheses

The study objectives, as expressed through the specific critical questions may be reduced to a testable hypothesis or hypotheses, where applicable, to facilitate scientific resolution. A literature review or baseline monitoring project does not necessarily include a hypothesis.

7.9.7 Data Requirements

Identify the type of data/information needed to answer the objectives and critical questions.

7.9.8 Alternatives Analysis

The alternatives analysis uses best available science (BAS) to compare and propose methods, Study Design frameworks, and costs to answer the critical questions (see Appendix M for CMER memo on Best Available

Science (2013). The analysis should include anticipated outcomes describing acceptable accuracies. If CMER has already conducted a BAS review relevant to the project in a stand-alone literature review, incorporate the appropriate elements in the alternatives analysis (see section 7.8, Literature Reviews). Otherwise, review relevant literature and summarize the following:

- Current understanding of the topic, consistent with the process outlined under literature review (from both within and outside of CMER).
- Approaches and general methods/analyses that have been used successfully in similar projects.

Based on the results of the BAS review, describe different options and approaches that could effectively answer the critical questions and accomplish the study objectives. Summarize the advantages and disadvantages of various approaches. Include logistics, cost, time, staffing, environmental or landowner limitations, and other appropriate elements, as well as scientific and technical merit. This comparison of the various options provides the basis for making and explaining key decisions concerning the project design. A table listing the various options is recommended.

Consider the following BAS elements in the alternatives analysis (BM22-9):

1. Information source
2. Spatial scale
3. Temporal scale
4. Study Design
5. Methods
6. Data
7. Quantitative analyses
8. Context
9. References
10. Logical conclusions and reasonable inferences
11. Level of peer review

7.9.9 Recommended Approach

State the approach recommended by the Project Team based on the alternatives analysis. Describe any trade-offs between expected costs and anticipated statistical power and inference, if known. Be specific about the reasons the selected approach will meet the project's stated objectives.

7.9.10 Budget

Provide a budget range for each alternative and describe the underlying assumptions used.

7.10 Study Design

7.10.1 Study Design Overview

The Study Design provides the scientific design for a CMER project. The Study Design is based on the approved alternative from the scoping document. This is the primary decision document that supports funding the project and provides guidance to implement the project. It needs to be detailed, scientifically correct, and suitable for technical scientific review. The Study Design is intended to assure adaptive management participants and others that the project is technically sound.

The Study Design is developed by the PI and Project Team under the direction of the Project Oversight Committee. CMER reviews and approves the Study Design. The Study Design must complete the ISPR process outlined in Section 8.5.

Any substantial changes from the approved Scoping Document should be highlighted and potential implications explained in a memo that will be delivered to CMER and included in the Study Design. The Study Design should typically include the elements described in the following subsections.

7.10.2 Introduction

Explain the context within which this project will be conducted, including the relationship to AMP issues and existing research. Include in the introduction the problem statement from the scoping document.

7.10.3 Project Purpose/Study Objectives/Critical Questions

The Project Purpose, Study Objectives and Critical Questions should be consistent with the scoping document (See section 7.9). However, while writing the Study Design, the Project Team may recommend additions and refinements to the Study Objectives and Critical Questions. These proposed revisions should be forwarded to CMER for review and approval prior to transmittal to TFW Policy for their approval.

7.10.4 Literature Summary

Include a brief summary of the literature pertinent to Study Design. This material should have been summarized in the scoping document.

7.10.5 Research/Monitoring Approach

Describe the research approach (e.g., experimental, observational, monitoring) and explain how the objectives and critical questions will be addressed. If an experimental approach will be used, clearly state the hypothesis to be tested.

7.10.6 Study Population

Describe the study population (i.e., the physical and spatial criteria informing site selection) and implications for scope of inference.

A. Site Selection

Describe the methods used to identify the population from which study sites will be selected and the method for selecting sites from that population. List factors that will be used to screen potential study sites, such as logistics and feasibility of data collection. Specific site selection protocols are described in Site Selection Strategy (Section 7.10.3).

B. Experimental Unit

Describe the unit of the population for which measurements will be taken and used in analysis.

C. Sample Size

Where sufficient data exist, identify the precision and confidence objectives for the data. Estimate the numbers of samples needed and the procedures or other basis used to develop this estimate.

D. Data Parameters

Identify the study variables for which data will be collected and how it will be used in the analysis. Indicate the role of various data parameters in the analysis (i.e., whether they will be used as response variables, covariates, descriptive parameters, monitoring metrics).

7.10.7 Methods

Describe the general methods, including any tools that will be necessary to collect the data. The description should be detailed enough for peer review. Specific data collection protocols are described in Field Data Collection (Section 7.10.4).

7.10.8 Quality Assurance/Quality Control (QA/QC)

Describe the plan for conducting QA/QC, including protocols on how to ensure data are collected, processed, and documented appropriately and correctly. Describe how the project will ensure quality data

handling, how the project will minimize errors, recognize and correct errors, quantify errors, and how errors will be handled during analysis and in conclusions.

7.10.9 Statistical Analysis Procedures

Describe the methods for data analysis. Depending on the approach, these may include the use of descriptive statistics to characterize populations or statistical tests or analyses to test hypotheses. The description should contain enough detail for peer review.

7.10.10 Project Risk Analysis

Discuss any anticipated problems in data collection, the data, or data analysis. Contingencies for dealing with these problems should be offered and developed. Describe sensitivity of potentially losing study sites.

7.11 Prospective Six Questions

The PI and Project Team prepare answers to the Prospective Six Questions (P6Q) (see Appendix xxx for final Six Questions), usually after the Study Design is complete, including conclusion of the ISPR process (see Section 8.5). However, the document can be prepared after scoping, at the discretion of the Project Team/ Oversight Committee. The P6Q document should be concise, directly and briefly answering the questions. Responses to the P6Q should be narrowly focused, directly relating to the Study Design and issues raised during ISPR. There should not be extensive background, history, or context verbiage as this information should all be in the Study Design which can be referenced in the P6Q document.

The answers to the P6Q will be reviewed by the appropriate Project Oversight Committee. Once the P6Q has approval they are delivered to CMER. CMER has 30-days to review these documents and provide feedback. CMER concerns at this stage must be based on problems created by the revisions to the Study Design or new issues brought to light by the ISPR review that were not directly settled to the satisfaction of the ISPR editor. Once CMER approves the P6Q this is sent to Policy along with the approved Study Design.

7.12 Site Selection and Data Collection Plan

7.12.1 Site Selection and Data Collection Plan Overview

The project Site Selection and Data Collection Plan provides detailed logistical information about the project's site selection, field and data management, and in-progress reporting. It identifies any existing applicable cooperator agreements and new agreements that need completion as part of the project. The Project Team can decide how site selection and data collection elements will be included in various planning documents (e.g., Project Management Plan, Study Design, Field Manual).

The Site Selection and Data Collection Plan details the site selection process and plans for data collection, and highlights logistical needs, including equipment, human resources, and sequence of activities needed to effectively implement the Study Design. Site Selection and Data Collection Plan development occurs after Study Design approval to minimize the potential for revisions.

The primary audience of the Site Selection and Data Collection Plan is the Project Team. It is not submitted to CMER for review and approval though PMs will notify CMER members when the Site Selection and Data Collection Plan are complete as members are welcome and encouraged to provide comments and suggestions to the plan. However, any modifications to the Site Selection and Data Collection Plan that change the project scope or increases the budget will be submitted to CMER for review and approval.

Archiving: all site selection and data collection documents should be archived in the CMER SharePoint Online portal, including the most current draft of the Site Selection and Data Collection Plan, landowner/cooperator names and contact information, all versions of field manuals used to guide collecting

data (including early manuals that were later updated as the data collection progressed) and any QA/QC reports.

7.12.2 Site Selection Strategy

The site selection strategy section of the plan should include the following elements:

- 1) Study site criteria
- 2) Site selection process
- 3) Site access

1. Study Site Criteria

Describe specific site selection criteria as described in the Study Design (section 7.10). Include a contingency plan describing exceptions to the selection criteria and implications for losing sites due to unforeseen circumstances.

- Explain whether the project includes the need to identify study sites (i.e., field study vs. literature review, modeling exercise).
- Briefly describe the geographic extent of the study area
- List the site selection criteria
- If sites will be stratified, describe the basis for stratification
- Describe the minimum number of sample sites needed for the study

2. Site Selection Process

Describe the process of identifying potential study sites based on site selection criteria, and the process for accepting and rejecting sites. This may involve GIS, LiDAR, and other mapping tools to generate pools of potential sites. Include landowner participation and considerations, as well as logistics, such as accessibility constraints. Develop a schedule for site selection, including appropriate milestones for steps in the site selection process. Identify the people who will be doing the site selection and their roles and responsibilities. List any other projects that share any or all proposed study sites.

Describe what data/information needs to be collected/compiled for each site during the site selection process, either in the office and/or as part of site visits.

- Describe how the site selection process and access and treatment implementation communications/relationship with landowners, if applicable, will be maintained throughout the life of the project.
- Identify the most likely risks to finding sites meeting selection criteria and the steps taken to maximize the success of study site identification.

3. Site Access

The Project Team or representatives will work with landowners (private, state, federal, tribal) to get permission to use specific sites for CMER research. SAG members, agency staff, or contractors may make preliminary contact with landowners during the project development phase of a project. A brief description of the study, study site criteria, data to be collected, estimated study duration, and how the data will be used in adaptive management will be helpful when communicating with potential cooperators. However, prior to landowner contact, a lead person should be identified as the focal point of landowner contact (with an alternative identified in case the lead becomes inaccessible) to minimize confusion that can occur if multiple project members are contacting landowners. The PM should send the formal request on CMER letterhead. A Project Summary that includes participant expectations will accompany the request (see Cooperator Agreement below). Landowner participation in CMER projects is voluntary.

Defining access requirements is the responsibility of individual landowners. CMER interaction with landowners is not limited to formal requests for permission to access research sites. Landowners may be requested to assist in site selection during project development.

The PM may want to communicate with the Washington Forest Protection Association and the Washington Farm Forestry Association when formal site access requests are being made. This will help them respond in case any of their members have questions about a specific request. Consider presenting the study objectives and site criteria to these organizations.

Once permission to use a site is granted, it is the responsibility of the PM and his or her delegate(s) to maintain contact and process access agreements. It is the responsibility of the field teams to follow stipulations contained in the access permits.

Cooperator Agreements

Cooperator agreements should include (as appropriate):

- Time commitments.
- Landowner roles and responsibilities within the project.
- Operational and managerial contacts applicable to each site.
- Site treatments (List the people/agency/company/etc. responsible for implementing any site treatments once known).
- Access considerations for research participants (keys needed, and conditions of access including required safety equipment such as carrying a hand saw or wearing a hard hat). Describe the expected frequency and timing of sampling/visits over the life of the project and expected date of data sampling completion.
- Documenting research exemptions (with assistance from DNR).
- Determination of who will be responsible for site treatment lay out.
- Limitations on activities permissible within study sites and surrounding areas (i.e., logging, road building, etc.) and for what time period.

Because the time required for site selection and landowner access agreement development is typically long, it may be advisable to conduct landowner outreach and initiate discussions regarding access agreements and expectations early in the overall study timeline, and prior to identifying Principal Investigators or contractors who will complete the field work. If site selection or access negotiations are contracted, the inherent uncertainty of the time and effort required should be clearly noted, and arrangements negotiated to accommodate modifications to the timeline without incurring excessive costs to the project budget.

Landowner Access to Research Data

Upon request, the PM or the AMPA will provide the landowner with the QA/QC'd data collected on their property as part of a CMER project.

Permits

The Site Selection and Data Collection Plan will identify all permits required for the project, such as Forest Practices Applications, Alternative Plans, Section 10 (a)(1)(A) Endangered Species Act, Hydraulic Permit Applications, or Section 404 Clean Water Act permits. Some projects may need Board approval as pilot/feasibility projects. The scope of landowner cooperation will be identified to inform landowners if any action, such as the timing and design restrictions on timber harvest is expected.

The access permits/agreements need not be complete at the time the Site Selection and Data Collection Plan

is approved. However, permit processing is encouraged where possible prior to plan approval for permit requests with long lead-time requirements.

7.12.3 Field Data Collection

This section covers the following topics:

- 4) Equipment and materials
- 5) Field methods
- 6) Field crew training and safety
- 7) Quality control & management
- 8) Data collection and storage

The PI is responsible for oversight of preparation for data collection. The following guidance applies to all members of the Project Team that collect data.

1. Equipment and materials

The Site Selection and Data Collection Plan should provide a list of the equipment and material types and quantities needed for field implementation. In most cases, equipment will be gathered or provided from diverse sources. With support as needed from the PM, the PI will verify that all survey equipment and materials have been obtained, that measuring equipment is of the quality and accuracy required by the study and that equipment is in good condition. The PI will also identify which equipment has special calibration needs.

2. Field Methods

The PI is responsible for ensuring that the field crews start data collection on schedule and that data collection proceeds on schedule over the survey period. The field crew will be trained in and follow the approved data collection protocols. Logistical preparation is critical to efficient data collection and management. Common problems to anticipate during this part of the field and data management stage include:

- Loss of field crew members, either temporary (due to sickness) or permanent (due to resignation/termination)
- Equipment failure or loss
- Contracting problems/changes
- Implementation schedule adjustments due to study site conditions and access
- Loss or rejection of study sites (due to, e.g., low or loss of water flow, disturbance, landowner complications). Questions about protocol application and data documentation
- Site access limitations

The PI is responsible for notifying the PM within 3 business days if any problems arise that may affect the data collection schedule or their ability to follow the approved data collection protocol.

Data collection protocols

The quality of data collection protocols is directly related to the quality of the data collected. The general components found in comprehensive data collection protocols include:

- a) Pre-survey preparation instructions
- b) Data collection methods
- c) Data dictionary
- d) Protocols for consistent application of methods for survey
- e) Field forms with completed examples

f) Data management system and protocols.

The PI is responsible for preparing, obtaining, or collating the data collection protocols as well as reviewing them for suitability. The PI ensures that proper data collection protocols are followed and is required to archive the protocols as described in the project closure plan. Once the protocols have been assembled, the PI will ensure that each field crew has a copy.

Existing data collection protocols may be suitable for use in the project with or without modification. In all cases, the protocols must be clear and specific so that crews can replicate data collection procedures and interested parties can assess the robustness of data collection procedures.

Where protocols are unavailable or incomplete, the budget and schedule must reflect the time and cost needed to finalize protocols before beginning field data collection.

3. Field Crew Safety and Training

The PI in consultation with the PM will ensure that all crew members meet minimum qualifications. Crew qualifications must be clearly identified.

Crew training

Good training or evaluation of experience with the collection procedures provides confidence that the data collected represent actual field conditions and not crew variability in method interpretation or field application.

Crew safety

Field crew safety is paramount in any CMER study. Field locations are usually remote and rugged. It is the responsibility of the PI to ensure field staff are prepared for known and potential field hazards, including safety trainings and supply and access to safety equipment and the expectations surrounding use of equipment.

The PM confirms safety procedures are in place that address personnel, vehicles, fire, and other specific site/environmental safety issues. The PI ensures that safety procedures are followed. Field vehicles should carry safety gear such as citizen band (CB) radio for use on forest roads. Field crews must follow landowner fire and safety protocols. Significant problems with access to unsafe survey sites may require modifications to the Study Design, the Site Selection Data Collection Plan, or both. Such modifications should be resolved cooperatively among PI, PM, field crews and Project Team representatives, before data collection begins when possible.

4. Quality Control and Management

For each CMER project, the PI ensures a quality control (QC) plan is prepared so that data are collected according to data collection protocols. The scope of this plan depends upon the project type. The QC information must be documented and appear in the in-progress and final reports. Ideally a field lead for data collection would be identified and trained by the PI with the hope that the field lead could help to implement data collection quality control strategies and to provide consistency in field implementation across multiple field data collection seasons if they exist. A field crew lead cannot substitute for the careful oversight of field crews by the PI.

Several strategies exist to ensure quality control, including:

Field assistance: The PI and/or their designee shall train and oversee field crews during the field season—preferably conducting multiple field visits with the crew throughout the sampling period to ensure consistency and understanding of methods, and to check for “protocol drift.” These visits provide hands-on assistance and additional training as needed to ensure that the field crews remain competent and consistent in field data collection, and ensures consistency in applying the protocols within and among field crews.

Crew observational survey: Observational surveys of the field crew while conducting field sampling provides an additional degree of quality control. These are qualitative surveys and are most often conducted with prior notice to the crews. The general approach is for the PI or designee to observe the field crews over a specified reach length or time and record strengths and weaknesses of their parameter-specific application of the protocol. The approach for the crew observational survey must be clearly identified in advance, including procedures and expectations. After completion of the survey, the PI or designee immediately reviews their findings onsite with the field crews to discuss the results. This review is critical to understanding the underlying causes for substantial variability and correcting any deficiencies.

Replicate methods: Replication provides the highest degree of quality control and can help reduce the variability in field data measurements. Some protocols and parameters lend themselves better to replicate surveys such as habitat unit, large wood, and stream discharge. Replicate surveys take careful planning to ensure that comparisons between crews cover the exact same stream reaches and field conditions. Multiple types of replicate surveys can be employed, including open (where the field crew knows what is being tested), or blind (where the field crew is unaware of the testing).

Data entry QA/QC and management: Data entry has the potential for introducing errors that are difficult to find once data entry is complete. Besides the common “typographical error,” errors can arise when field data are recorded inconsistently, e.g., diverse or unspecified units of measure, different coordinate systems, use of undefined notations of inconsistent categories. Ensure that collected data are recorded consistently, with limited and standard data entry options, double checking inputs in the field prior to leaving a site, and randomized checking of data entered. When collecting field samples for offsite analysis, double tag the sample(s) to ensure sample identification integrity and use daily sample log(s).

Equipment: The PI is responsible for assuring that data collection/recording equipment is in good working condition and calibrated correctly. It is also important to identify and make contingency plans for critical equipment and material elements that would cause significant problems if broken or lost during data collection. Often a contractor will provide the necessary equipment, and in these cases, the PI or some delegate is responsible for assessing its condition and overseeing its proper calibration. In other cases, equipment will be gathered or provided from diverse sources, and the PI is responsible for determining its usability and calibrating it.

5. Data Collection and Storage

Describe how the data will be recorded and, if applicable, transcribed or transferred to spreadsheets or databases. Describe how field samples will be collected, stored, analyzed, and documented (see section 7.13). Describe how copies of the raw and QC data will be transferred to the PM as part of contract deliverables. DNR Contracts include language regarding any data collected being transferred at the conclusion of the study.

7.12.4 In-Progress Results Reporting and Strategy

Describe how the PI will inform the PM and CMER on site selection and data collection progress. A schedule of updates should be established based on project milestones (e.g., site selection completion, field season ending) that inform the PM and Project Team on project status. Any problems that arise during site selection/data collection should be reported to the PM. The in-progress reporting strategy should agree with the strategy outlined in the Communication Section of the Project Management Plan (Section 7.7).

7.12.5 Budget

The budget contained in the Site Selection and Data Collection plan should provide a detailed breakdown of the expected cost to complete each part of the project. These parts include, but are not limited to, field and data management (including any equipment that needs to be purchased, sent to calibration, and repaired), data analysis, and report writing and revisions. This is a refinement of the budget in the Study Design, not an addition to that budget. This refinement is based on the project information developed during

preparation of the Site Selection and Data Collection Plan.

7.13 Risk Management Plan

The Risk Management Plan is not a required document and should be developed as needed, determined by the Project Team or PI, when risks to project completion arise.

7.13.1 Risk Management Overview

Project Teams assess potential risks (e.g., a lack of acceptable study sites, budget cuts, changes in landowner participation, etc.) to projects and identify potential actions to reduce, avoid or mitigate impacts to projects. The level of detail needed in the risk management plan should reflect project complexity. Risk assessments can contain estimates of likely risks with both high and low impact, as well as mitigation strategies to help the project avoid being derailed should common problems arise. CMER will be consulted if the Project Team determines that risk(s) to the project could significantly impact the project scope, budget, timeline, results, or other elements.

Broadly, three potential strategies exist, with numerous variations. Projects may choose to:

- Avoid risk — Change plans to circumvent the problem or develop a plan that avoids the most common risks;
- Control/Mitigate risk – Reduce impact or likelihood of risk (or both) through intermediate steps;
- Accept risk – Take the chance of negative impact, and plan ahead by providing an estimate of the cost if the issue arises (e.g., via a contingency budget line).

7.13.2 Elements to Consider When Assessing Project Risks

- 9) Identify Potential Risks and describe anticipated consequences.
- 10) Prioritize risks and their likelihood of occurrence based on probability and impact. This process prioritizes identified risks and their probability of occurring along with the corresponding impact to the project objectives and other factors (time, budget, etc.).
- 11) Select a strategy for risk response. Depending on how the PI or Project Team would like to proceed, at a minimum, a strategy should identify high-priority risks. In developing a risk response strategy, the Project Team should define the risk including the potential impacts to project timelines, budget, scope or quality of the project.
- 12) Monitor Risk. The PM and PI monitor current potential risks and identify new risks as the project develops. When a risk event occurs, the PI, PM, or Project Team can then refer to the risk assessment and respond appropriately. Elements for monitoring risks include:
 - Monitor for adequacy as project is implemented,
 - Monitor for unanticipated risks,
 - Report status at regular intervals, and
 - Upon a risk event, execute the response strategy.

7.14 Final Project Reports

7.14.1 Final Project Reports Overview

Final reports inform CMER, TFW Policy, and the Board on the study findings relative to addressing the problem statement, research objectives and the extent to which the study was able to answer the critical questions.

All final report documents should be archived in the [DNR AMP Research and Monitoring Documents](#),

SharePoint Online, and in the DNR contract file. Pre- and post-ISPR drafts and associated ISPR communication documents, comment matrices, finding reports and the answers to the prospective and final Six Questions documents are available on SharePoint Online.

7.14.2 Executive Summary

Provide a short summary of the major elements of the study, including overarching objectives, high-level methods, and focal findings.

7.14.3 Introduction

Provide a concise description of the study purpose, objectives, and background. Include recent and appropriate citations in support of the methodology and current understanding of the literature leading to the hypothesis statement. Avoid rewriting the literature review. The study purpose and objectives should match those listed in the Study Design.

7.14.4 Study Sites

Provide a description of the study site characteristics. Briefly restate the selection methodology from the Study Design and justification for any deviations. Site descriptions should also include information of site condition(s) that help the reader interpret the results. A map is a useful way to show the distribution of the study sites and their relationship to the state boundaries and follows the same data requirements listed in section 7.12.

7.14.5 Methods

The precise and thorough description of the methodology permits evaluation of the quality of the data and analyses and permits replication of the study. This section should be based on the methods section of the Study Design, and any modifications from that plan should be noted and explained.

Describe the overall Study Design, equipment, materials, protocols, data collection and quality control strategies, laboratory analyses, and statistical methods. Published descriptions of equipment or procedures may be cited rather than repeated. Complex protocols, equipment, or parameters can be displayed in a table, figure, or relegated to an appendix.

Document the sample selection criteria and screening process. This section should be based on the methods section of the Study Design, details from the Site Selection Strategy, and any modifications from that plan should be noted and explained.

7.14.6 Results

Present the data in a meaningful form, using tables, figures, and text as appropriate, but avoid interpretation. Each figure and table should stand alone and be clearly understood without the need to search through the text for explanation. Large data sets are difficult for a reader to interpret, and they should be placed in one or more appendices, with summary statistics presented in the results section. Figures are useful for showing trends and summarizing categorical data. Figures and tables must be numbered in order and should be referred to by number in the accompanying text. The text should emphasize important aspects of the data but should not simply repeat what is in tables or figures.

7.14.7 Discussion/Conclusions

The Discussion/Conclusions sections is the place for interpreting the results. The merits of a report can be greatly enhanced by a fully informed discussion. This is the place to provide synthesis of results in relation to the available literature, to relate what has been learned to what is known, to identify important information gaps or limitations, to search for generalities, and to establish basic principles. In it, authors should indicate the significance of their research, levels of inference to the landscape, how it relates to current knowledge, and any avenues that it suggests for further research. Here the results can be placed in

context with the current state of knowledge expressed in the literature review.

The Discussion/Conclusions section should include pertinent literature used when developing the project Study Design, as well as any pertinent literature published during the course of completing the study. Interpretations of the study results should draw on relevant CMER and non-CMER BAS. The literature incorporated in the Discussion is intended to integrate findings in the context of BAS to provide the most supportable answers to research questions. Throughout the Discussion, the tables and figures in the Results should be cited to unambiguously link the two sections and support focal assertions.

Authors should avoid merely restating their results and/or (re)summarizing the literature. The weakest discussions are brief literature surveys appended to mechanical restatements of the results. Avoid wordiness and speculation. Any speculation or extrapolation should be clearly identified as such and supporting evidence presented.

The Discussion/Conclusions section should provide context as to how the results have improved knowledge beyond past research while addressing limitations of the projects. New hypotheses or scientific questions that are logical extensions of findings and conclusions may also be presented in this section. Finally, the section should close with an overview or summary of important points and/or conclusions of the study.

7.14.8 Recommendations

If recommendations are proposed, they may include suggestions for further research or potential follow-up studies. Technical recommendations may also be made depending on the study's objectives. Recommendations should not include rule change suggestions. See Findings Report (see chapter 2, section 7) for the process on communicating results to TFW Policy with potential policy implications.

7.15 Document/Data Management and Closure Plan

7.15.1 Document/Data Management and Closure Plan Overview

The Document/Data Management and Closure Plan outlines where project documents and data will be archived, i.e., the AMP Dashboard and/or [AMP Research and Monitoring Documents](#). The guidance provided here serves as the default document management plan for all CMER projects.

The following list of documents, reports, data and other products (e.g., photos, ISPR letters) serves as a checklist of items to be stored. The PM is responsible for ensuring these products are forwarded to the appropriate contact person for archiving in either the AMP Research and Monitoring Documents webpage, SharePoint Online, and/or DNR records.

Some CMER projects may generate products not listed in the tables. It is up to the Project Team, PM and/or CMER to determine whether to archive these products.

7.15.2 DNR Records

The PM will ensure all relevant project related materials, including data, documents, photos, contracts and contract addendums, RFPs/RFQs, or other relevant items are stored/archived as necessary in DNR records.

7.15.3 CMER Work Plan Updates

The PM will ensure the CMER Work Plan is updated with the most recent TFW Policy-approved project elements (e.g., problem statements, objectives, critical questions). The PM will also ensure that final study results and findings are incorporated into the CMER Work Plan. The PM may delegate tasks related to updating the CMER Work Plan to SAG co-chairs, SAG members, Project Team members or CMER co-chairs/members. All changes to the Work Plan will be reviewed as outlined in Section 6.

7.15.4 Contract Closure

The PM will ensure that all project-related contracts are closed out appropriately according to DNR contracting guidelines.

8. Adaptive Management Program Document Review and Approval Process

This chapter describes the requirements and process for review and approval of documents generated in the course of an Adaptive Management Program (AMP) project.

8.1 General Review and Approval Guidelines

This section describes the requirements and process for review and approval of documents generated in the course of developing and finalizing an AMP project. The AMP review and approval process is typically comprised of Scientific Advisory Group (SAG) review, Cooperative Monitoring Evaluation and Research (CMER) Committee review, and Independent Scientific Peer Review (ISPR) for some documents, followed by CMER approval of final documents (Table 8-1).

SAGs are typically assigned to review all project reports, including reports developed by Project Teams (See Chapter 7, Table 7.3). The SAG determines whether to conduct the review internally before forwarding to CMER for review (sequential review) or to conduct concurrent review of the document with CMER. CMER review and approval is required for final documents, stand-alone literature reviews, Study Designs, project charters, reports with final results (i.e., final reports), and as specifically identified in Project Management Plans. The ISPR (WAC 222-12-045(2)(c), Board Manual Section 22.4.1) process is applied on stand-alone literature reviews that are not part of larger research reports, Study Designs for projects whose final reports would require ISPR (and others as determined by CMER), and on all reports with final results that may be used to support TFW Policy or Board decision-making on rules or program guidance (see section 8.3 below for complete list). The report authors are expected to respond to the reviewer comments with the appropriate response documents and revise the document as needed to obtain SAG, CMER, and ISPR approval.

The Project Manager (PM), in coordination with the SAG and CMER co-chairs, is responsible for facilitating communication and logistics necessary to complete the SAG and CMER review process. The AMPA is responsible for facilitating the ISPR process. The PM, and AMPA when in ISPR, guides the process and ensures that products meet contractual requirements and quality standards prior to initiating SAG and/or CMER review. After a final report has been approved by ISPR and CMER, a Findings Report¹ (defined in section 8.6) is prepared by CMER and the AMPA to inform TFW Policy on technical implications to forest practice rules² and Board Manual guidance. Based on the Finding's Report, TFW Policy then decides whether to make an adaptive management recommendation to the Board.

¹ Refer to the Framework for successful CMER/TFW Policy Interaction established in the Forest Practices Board Manual Section 22.

² The findings report may inform numeric targets, performance targets, resource objectives, Forest Practices Board Manual guidelines, or Schedules L-1 or L-2.

Table 8-1: Roles and responsibilities in the AMP document review and approval process

Responsible	Role
Adaptive Management Program Administrator	<ul style="list-style-type: none"> • Ensures documents are appropriately reviewed by SAGs, CMER and ISPR. • Facilitates a TFW Policy or Board response to questions of policy interpretation that may arise in the course of CMER scientific work. • Coordinates with the Board to ensure that its guidance and priorities are implemented and that the information and results produced by the AMP are effectively communicated to the Board. • Facilitates ISPR process, including coordinating with Managing Editor and PM. • Responsible for ensuring the deliverables in the ISPR contract are met. • Prepares transmittal letter to Managing Editor that may incorporate additional background information and review questions approved by CMER. • Manages dispute resolution process as necessary.
Project Manager	<ul style="list-style-type: none"> • Works with the Principal Investigator(s) (PI) to ensure reports are ready for review. • Works with the PI to develop comment matrices, as required. • Monitors progress on comment responses and incorporation into new drafts. • Delivers original and revised products to SAGs and CMER in a timely manner. • Ensures that contract provisions are followed throughout review process. • Updates CMER on review and any substantive changes to reports from review (CMER and ISPR). • Coordinates the review of documents and ensures review steps are followed.
Principle Investigator	<ul style="list-style-type: none"> • Ensures that draft reports are ready for review. • Coordinates with PM for review and response to comments. • Prepares new drafts for review by agreed-upon timelines. • Provides timely response to SAG, CMER, and ISPR questions or recommendations.
Other Project Team Members	<ul style="list-style-type: none"> • Assist PI as requested to respond to comments and revise documents.
SAG co-chairs	<ul style="list-style-type: none"> • Ensures projects and reviewers follow the review process, including adhering to agreed-upon deadlines and review steps. • Delivers products to CMER that have SAG consensus. • Works with the PM and any non-consensus reviewers to summarize issues and elevate to CMER as necessary.
CMER co-chairs	<ul style="list-style-type: none"> • Ensures projects and reviewers follow the review process, including adhering to agreed-upon deadlines and review steps. • Works with the AMPA, PM, CMER members and other reviewers to resolve non-consensus comments and strive to reach consensus, if possible.
CMER and SAG Reviewers	<ul style="list-style-type: none"> • Meets comment deadlines as agreed upon by SAG and CMER. • Provides comments in a professional manner as described below.
ISPR Managing Editor	<ul style="list-style-type: none"> • Coordinates the ISPR process with the AMPA. • Identifies an appropriate Associate Editor and transfers the documents along with review questions to the reviewers. • Forwards the synthesis report with supporting rationale for the recommendations along with individual reviewer comments to the AMPA within the established timeline.

8.2 AMP Review

The AMP review process (Figure 8-1) is intended to provide confidence in the scientific merit of the AMP's documents by soliciting reviews first from SAG members, then CMER members, and then from a group of independent scientists who are recognized experts. The AMPA has the ultimate responsibility for ensuring the review and approval process is followed. The documents requiring SAG and CMER review, and potentially ISPR, include but are not limited to:

- Literature reviews
- Project Scoping Documents
- Study Designs
- Study results
- Final reports
- Answers to CMER Six Questions (prospective and final)
- Project charters
- Project Management plans
- CMER work plans

The PM and SAGs are integral to the successful review of AMP documents. When a Project Team is ready to forward a document to a SAG and/or CMER for review, the first step is for the PM to review the document to ensure it meets the basic standards of grammar, spelling, literature citations, clarity of graphics, and other copy-editing details as well as adherence to the CMER Protocols and Standards Manual (PSM). Each review document should include line numbers. The PM will not accept the document for further review until it meets these standards. Edits to the document at this stage are the responsibility of the author(s). The PM review is an important step to make efficient use of SAG and CMER time by ensuring documents meet basic quality standards before formal review. The PM is responsible for delivery of documents to the Co-chairs to facilitate the review process. The Co-chairs are responsible for distributing documents to SAG and/or CMER members as appropriate.

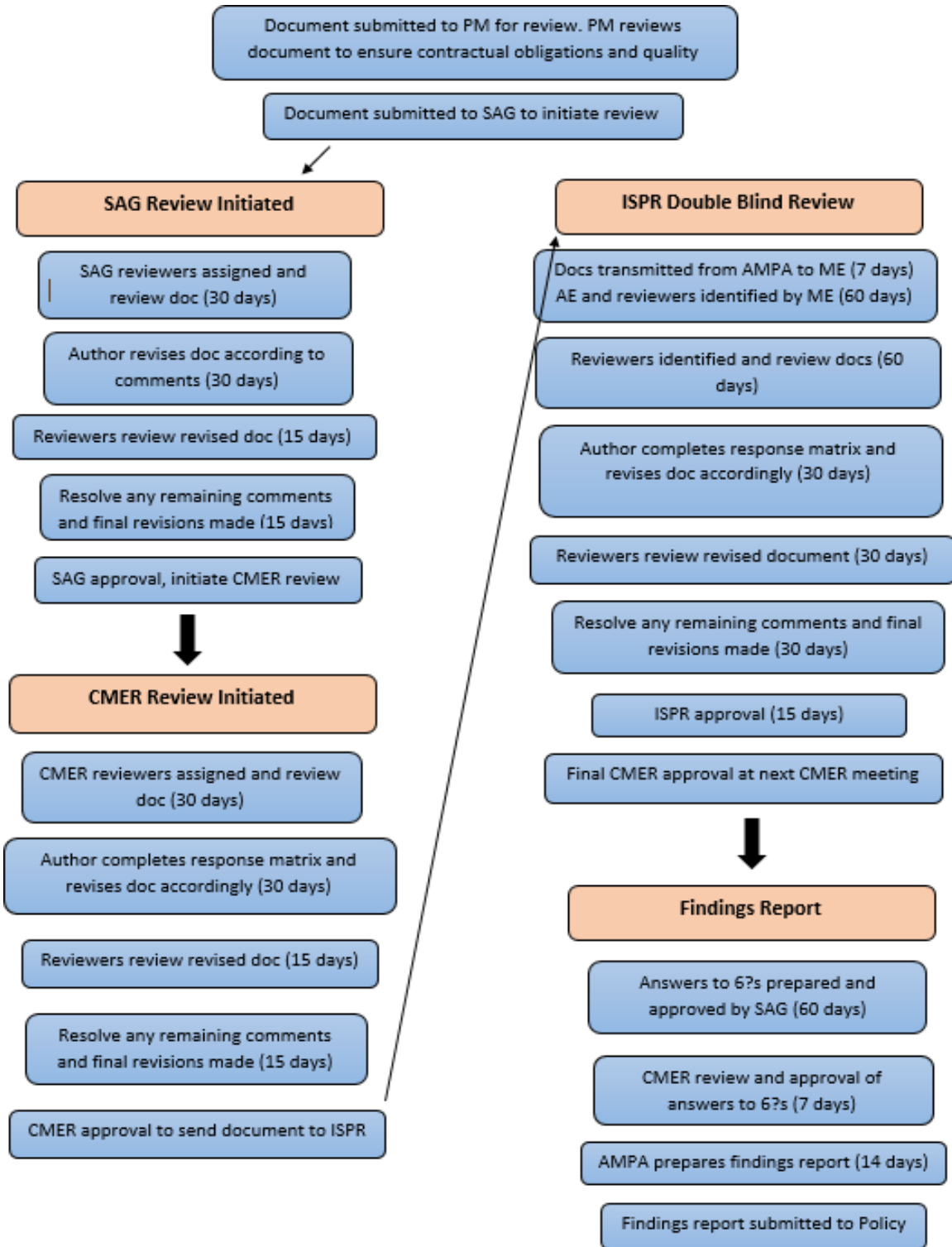


Figure 8-1: Typical AMP review and approval process which includes SAG review, CMER review and ISPR. Recommended time to complete a process step are in parenthesis. Depending on the document in review and necessary revisions and re-review, process steps may be shorter or longer. The process as outlined here assumes that SAG and CMER review are sequential, if the SAG/CMER review is concurrent the timeline would be adjusted accordingly. If/when a document requires revision and re-review, the timeline would be adjusted accordingly and would extend the timelines noted below.

8.2.1 Review Color Codes

Reviewers are encouraged to label their comments using a color code to indicate the level of importance of the comment to the reviewer in order to make more efficient use of the author's time responding to comments. The color codes are defined as:

- Green for comments that are up to the author's discretion on whether and how to address,
- Yellow for comments related to clarification of a statement or subject that may require additional information before acceptance, and
- Red for comments that appear to be critical and if the author does not incorporate them satisfactorily, the reviewer will not approve the document.

Comments without a color code are presumed to be green. Reviewers are particularly encouraged to provide specific recommendations on how to resolve red comments and use citations or other evidence to support their recommendations. Red comments should be infrequent, but where they are used the reviewer has an obligation to provide well thought out and science-based arguments supporting their position. Ultimately, if there are any comments that cannot be resolved in the review, the issue may move into CMER's Guided Decision Making Process for dispute resolution (see Chapter 3, section 3.3.4, Board Manual Section 22.5.4).

8.3 SAG Review

When the SAG Co-chair(s) delivers a document to the SAG for review, the SAG determines whether to conduct that review internally before forwarding to CMER for additional review (sequential review) or to recommend to CMER a concurrent review of the document with CMER.

8.3.1 Sequential SAG/CMER Review

When the SAG accepts the document for internal SAG review (sequential review) all SAG members who are not on the Project Team are encouraged to review the document. Project Team members, whether Board-approved CMER members or not, do not have a role in approving project documents originating from the Project Team either within the SAG or within CMER. The SAG will agree to a review timeline, typically 30 days (Figure 8.1). SAG members review documents for technical quality, best available science standards, completeness, and clarity. SAG Co-chair(s) are responsible for orchestrating the review, which involves requesting reviewers, and working with reviewers and the PM to ensure that agreed upon review timelines are met. The basic elements of a review include the following:

1. **Reviewers:** SAG members who are not on the Project Team are encouraged to read all documents and be prepared to engage in project discussions/decisions. CMER staff may also review documents and submit comments if they are not part of the Project Team. It is recommended that SAG members that are also Board-approved CMER members, participate in the review of a document at the SAG level to address issues early in the review process and not delay their review until the CMER review. Reviewers may solicit assistance at their own expense from an outside expert(s).
2. **Timeline:** Due dates for review are established by the SAG. As a default, reviewers are given 30 days to review a document and provide comments to the PM, but a different timeline may be agreed to in advance by the SAG and reviewers. If a reviewer cannot provide comments by the agreed upon due date, they must notify the PM prior to the due date. The PM is not obligated to extend beyond the agreed upon due date to accommodate any reviewer. If a reviewer's comments are not provided by the agreed upon timeline and no arrangements are made for an alternate due date, the review and approval process will proceed according to the original timeline. Extensions of any length should not be allowed when doing so would cause delay in meeting contractual deadlines or increase the cost of the project. Extensions beyond 30 days should never be considered, even with

consensus support at the SAG level.

3. **Comments:** Reviewers are expected to provide constructive, professional comments that may include suggested language and/or recommendations for edits. Reviewers should provide, or be prepared to provide, supporting materials reinforcing their positions on technical issues. Reviewers are also asked to use a color code with their comments – see section 8.2.1 Review Color Codes. If a color code is not used, those comments are presumed to be green.
4. **Response to comments:** The Project Team and document author(s) will address all reviewer comments and incorporate them into the document as appropriate within 30 days. The PM and SAG co-chairs will work with the author(s) to ensure comments are responded to in a timeframe agreed upon in advance, typically 30 days (Figure 8-1). When a reviewer comment does not result in a revision, the Project Team and authors are responsible for explaining why. The recommended format for providing responses to reviewer comments is to create a comment matrix, however this isn't required for the SAG review. The PM and SAG will determine if creating a comment matrix is appropriate for the document in review. The matrix distills the reviewer's comments into definitive issues, articulates the author's action (or no action) in response to each, and clearly states the rationale behind a decision if no action is taken. Table 8-2 provides an example of a comment matrix. Responses to specific comments should refer to specific document version and initial line number and/or the section and paragraph number. If the reviewers suggest substantive edits, additional review cycles may be required prior to SAG approval.

Table 8-2: Example of comment matrix for use in responding to comments on CMER documents.

Comment #	Reviewer Initials or Number	Location in Original Document (Page, Line, Section Number)	Location in Revised Document (Page, Line, Section Number)	Color Code	Reviewer Comment	Author Response	Author Question/ Comment to Reviewer	Reviewer Response

8.3.2 SAG Approval

The PM submits the revised document to the SAG members to determine if SAG reviewer comments were addressed to their satisfaction. The SAG should strive to reach consensus on approval so the document can be finalized and submitted to CMER for review. Once comments are adequately addressed, the SAG approves the document by vote and records the decision in their meeting notes. Once approved by the SAG, the document is distributed to CMER at least one week prior to a CMER meeting with a SAG request to initiate CMER review.

If SAG members determine their comments have not been adequately addressed, they need to identify unresolved comments and provide recommendations on how to incorporate them sufficiently into the document within 30 days. The PM provides these recommendations to the author(s) to address. If the comments cannot be addressed by the author(s) to the SAG's satisfaction after 60 days following the receipt of the document, the issues are elevated to CMER for guidance on how to move forward, unless the SAG agrees by consensus to extend the timeline beyond 60 days. When forwarding unresolvable issues to CMER, the SAG co-chair(s) are responsible for working with the PM and the reviewer(s) who are in non-consensus to summarize the issue(s) and forward the document to CMER for resolution.

8.3.3 Concurrent SAG/CMER review

When documents are recommended by the SAG for a concurrent review, the SAG co-chair(s) identifies the SAG reviewers and submits a request to CMER that they are recommending the document for concurrent SAG/CMER review. This request should include a brief update of the project and all relevant information necessary for CMER to make an informed decision on whether to agree to a concurrent review, or whether to send it back to the SAG for a sequential review. Examples of when a concurrent review is appropriate are if the SAG has already informally reviewed the document and no yellow or red issues remain unresolved or to expedite the review process due to financial or contractual time constraints or when a Project Team is comprised by all or the majority of active SAG members. If CMER decides a concurrent review is appropriate, then the review steps outlined in section 8.4 for CMER review will be followed. If a document is approved by CMER for concurrent review it does not go back to the SAG for approval. Comments from both SAG and CMER reviewers will be included in the comment matrix developed during CMER review.

8.4 CMER Review

When a document is distributed to CMER to initiate review, a presentation is typically given by the document author(s) that gives an overview of the project. The basic elements of CMER review are similar to a SAG review and include the following:

1. **Reviewers:** Each CMER review requires at least three reviewers from different caucuses that are not authors and did not participate in the SAG review. All Board-approved CMER members are expected to read all documents and be prepared to engage in project related discussions and decisions. Project Team members, whether Board-approved CMER members or not, do not have a role in approving project documents. Non-Board approved CMER participants may review and comment on project documents, but as non-voting CMER members, their consent of approval is not required to move a document or decision forward. If needed, a reviewer can ask an outside subject area expert(s) to assist in the review.
2. **Timeline:** Due dates for the review are established by CMER. As a default, reviewers are given 30 days to review a document and provide comments to the PM, but a different timeline may be agreed to in advance by CMER and the reviewers. If a reviewer cannot provide comments by the agreed upon due date, they must notify the PM prior to the due date. The PM is not obligated to extend beyond the agreed upon due date to accommodate any reviewer. If a reviewer's comments are not provided by the agreed upon timeline and no arrangements are made for an alternate due date, the review and approval process will proceed according to the original timeline. Extensions, even by consensus agreement, beyond 30 days should not occur where doing so would cause conflict with meeting contractual obligations or critical project timelines that would increase the cost of the project.
3. **Comments:** Reviewers are expected to provide constructive, professional comments that may include specific language and/or recommendations. Additionally, reviewers should provide, or be prepared to provide, supporting materials reinforcing their positions on technical issues. Reviewers are also asked to use a color code with their comments – see section 8.2.1 Review Color Codes. If a color code is not used, those comments are presumed to be green.
4. **Response to comments:** The Project Team and document author(s) will address all reviewer comments and incorporate them into the document as appropriate within 30 days. Should additional time be needed, the document author(s) will request an extension with a proposed response time. The PM and co-chairs will work with the document author(s) to approve the request and ensure comments are responded to in a timely manner. The Project Team and author(s) are responsible for explaining how and why reviewer recommendations were not used. The recommended format for providing responses to CMER comments on any report that goes to ISPR is to create a comment matrix. The matrix distills the reviewer's comments into definitive issues, proposed author actions

(or no action) to remedy, and the rationale behind the decision if no action is taken. Table 8.2 provides an example of a comment matrix. Responses to specific comments should refer to specific document version and the line number, as appropriate. The PM and CMER or AMPA will determine if creating a comment matrix is necessary for other types of CMER documents (e.g. documents not slated to go to ISPR). If the reviewers decide a document requires substantive editing or that a complete rewrite is necessary, additional review may be required prior to approval.

8.4.1 CMER Approval

The PM submits the revised document to the reviewers to determine if their comments were adequately addressed. If the comments were adequately addressed, the document is distributed to CMER for approval. If the reviewers determine their comments have not been adequately addressed, they need to identify unresolved comments and provide recommendations on how to incorporate them sufficiently into the document within 30 days. The PM provides these recommendations to the author(s) to incorporate appropriately. If the comments cannot be incorporated by the author(s) to the reviewers' satisfaction after 60 days, it goes to CMER for an approval vote unless CMER agrees by consensus to extend the review timeline beyond 60 days. If consensus cannot be reached by the CMER Board-approved members, then the CMER members that are in dispute will enter into the Guided Decision-Making Process for dispute resolution (see PSM Chapter 3, section 3.3.4, Board Manual Section 22.5.4).

CMER should strive to reach consensus so the document can be finalized and approved to submit to ISPR. Once approved by CMER Board-approved members, documents slated for ISPR are put in final draft form and forwarded by the PM to the AMPA for transmittal to the ISPR Managing Editor with a cover letter, recommended reviewers if identified, and any helpful background information to start the ISPR process.

8.5 Independent Scientific Peer Review

WAC 222-12-045(2)(c) “establishes an independent scientific peer review (ISPR) process to determine if the scientific studies that address program issues are scientifically sound and technically reliable; and provide advice on the scientific basis or reliability of CMER’s reports” (Board Manual Section 22.4.1). The ISPR process is required for certain types of CMER documents (Board Manual Section 22.4.3) and is a valuable tool for CMER for ensuring robust Study Designs and adding credibility to final products.

The purpose of the ISPR process is outlined in Board Manual 22 Part 4.1. Submission of a document to ISPR requires CMER approval. Not all documents need to go through ISPR, but the ones that typically do include:

- Research and monitoring Study Designs
- Final reports
- Stand-alone literature reviews

Other reports that may go through ISPR are identified in Board Manual Section 22, Part 4.3, such as: “certain CMER recommendations, pertinent studies not published in a CMER approved, peer-reviewed journal, and unpublished reports.” Literature reviews and short-term and finite pilot/exploratory project results also typically do not go through ISPR but should be considered on a case-specific basis after considering implications to the AMP.

The ISPR Associate Editor (AE) and reviewers operate externally to CMER to prevent conflicts of interest and to minimize bias. To this point, ISPR reviewers must not be affiliated with CMER. The default for CMER reports is to go through a double-blind review process however, CMER may request by consensus an interactive (open) ISPR.

8.5.1 Double Blind Reviews

A double-blind review is where the reviewers and the authors are not identified to each other. The default for CMER reports is to go through a double-blind review process where the document author(s) and the

reviewers do not directly interact. To the extent feasible, the identities of the author(s) of the CMER report should not be shared with the reviewers. It is important that the PM ensures author names are not contained in the reports going to ISPR.

8.5.2 Interactive (open) ISPR Reviews

This type of review is typically implemented for Study Designs where study authors can benefit from open interaction with technical experts concerning the technical approach, sample population, field methods and analyses, critical questions, and CMER context of the proposed study. Unlike the double-blind ISPR, this approach provides more of a consulting service, where parties interact, and the identity of the authors and reviewers is known. In certain cases, CMER may request an interactive ISPR review for a final report. The CMER members requesting an interactive review must provide technical rationale along with a request for approval by CMER.

The AMPA and the AE coordinate the interactive review process. They identify specific questions or issues to be addressed during interactive sessions. The AMPA or PM will provide an update to CMER regarding the issues being addressed during the interactive sessions.

The reviewers give feedback after an initial review, then a meeting is held with the authors to respond to ISPR reviewer comments. Further follow-up or iterative interaction may occur (see Section 8.5.2). Substantive changes made during the interactive review process and the basis for making them need to be documented for transparency. In some cases, authors may request ISPR reviewers participate in development or refinement of the Study Design by addressing unresolved questions raised during development, to inform specific technical questions. This request will be shared at a CMER meeting and CMER will decide if that request is appropriate, and if not will recommend an alternate course of action. In other cases, the authors may only want the opportunity to discuss specific comments with ISPR reviewers for clarification.

8.5.3 Preparation and Review

The process described below applies to both double blind and interactive peer reviews. ISPR staff include a Managing Editor, an AE, and three or four specialists that conduct the review. The Managing Editor receives the request for review from the AMPA, evaluates the documents readiness for review, and then transfers them to the appropriate AE. The AE selects three or four reviewers independently to provide expert peer review. CMER may also include a list of subject-appropriate reviewers for consideration by the AE. Reviewers are expected to provide an unbiased technical review of the document and provide recommendations pertinent to the study.

ISPR reviewers will be asked to address CMER's standard eight questions:

1. Are rigorous, transparent, and sound research and statistical methods followed?
2. Is there sufficient detail in the document to reproduce the study?
3. Were data reasonably interpreted?
4. Do the stated conclusions logically flow from the results?
5. Do the literature citations include the latest applicable information and represent the current state of scientific understanding on this topic?
6. Are uncertainties and limitations of the work stated and described adequately?
7. Are assumptions stated and described adequately?
8. Is the information presented in an accurate, clear, complete, and unbiased manner and in a proper context?

The request can also include additional CMER approved focal questions beyond the standard questions listed above, if CMER agrees by consensus. If consensus is not reached on the additional question(s), the standard eight questions are submitted by default. CMER may choose to provide supplementary materials for context or to help focus the review.

After a review is completed, the AE returns the document and reviewers' comments to the Managing Editor with a statement of scientific acceptability which is based on the standard 8 questions and/or supplemental materials provided (e.g., key questions are adequately addressed, sound experimental design, accepted methodology, and proper statistical analysis) and on the professional opinion of the ISPR reviewers and AE. The review will proceed according to the procedures outlined in the DNR contract. ISPR reviewers are currently contractually required to be available for 30 days after their comments have been received by the AMPA. It is important the authors act quickly to get clarifications of comments they do not understand. This is done by making a request for clarification through the AMPA.

ISPR findings, whether from a double blind or interactive review, come back to the AMPA in the form of a synthesis report from the AE along with comments from individual reviewers. The AMPA distributes the ISPR comments to the PM who then distributes them to the authors, Project Team and CMER reviewers. Other CMER members may request a copy of the ISPR comments. Per Board Manual section 22 part 4.4, the Associate Editor (AE), "...summarizes all reviewer comments into a separate synthesis report that identifies the key observations, provides general suggestions, outlines any contradictions in comments, and includes a recommendation for addressing contradictions. If the individual reviews are inconsistent, the Managing Editor, the appropriate AE and an outside AE will address and resolve the inconsistencies. It should be noted that while synthesis reports are disclosable under public disclosure law, confidentiality of the reviewers and their individual comments is maintained." The AE forwards the synthesis report, supporting rationale for the recommendations, together with the individual reviewer comments to the Managing Editor, who then returns the documents to the AMPA.

8.5.4 Response to ISPR Comments

The PM is responsible for coordinating the response to the peer review comments within 4-6 weeks. The document author(s) will address all comments including summary comments from the AE and individual reviewer comments. In cases where conflicting comments between reviewers exist, the AE will resolve those comments and provide reasoning for their decision before forwarding to the AMPA.

In response to ISPR comments, the author(s) may:

- Adopt reviewer comments and recommendations,
- Request further clarification within 20 days, or
- Request reconsideration of comments after clarifications.

The author's response to ISPR comments will, at a minimum, include a:

- Comment matrix that describes author actions (e.g., edit, no action) and any written responses to all reviewer comments. If the author(s) choose not to make changes in response to a review comment, they must provide a clear and technically sound explanation for doing so,
- Revised document in track changes, and
- Summary letter for the AE.

The AMPA, author(s), and AE will attempt to resolve comments that:

- Are clearly based on a misunderstanding or are off topic,
- Do not reflect current scientific methods,
- Do not fit into the context or purpose of the study informing the AMP, or
- Do not answer CMER's questions.

Response to ISPR comments follows these general steps:

1. **Create Comment Matrix.** A typical format for organizing a response is to create a comment matrix. The matrix can organize the peer reviewer's comments into definitive issues or by a specific question that the comment refers to along with comment color code. The matrix also includes the

author's proposed actions (or no action) to remedy and a clear and technically sound explanation if no action is proposed. Figure 8.2 provides an example of a comment matrix. In the example, comments are numbered, specific reviewers are identified (by letter or number if blind review), comments are presented and cited by location within the document, i.e., page, paragraph, bullet within a paragraph, and/or initial line number. Similar comments from different reviewers may be grouped together for a single integrated response. The comment matrix clearly identifies general and specific comments that raise substantive issues (an issue addressing an assumption, procedure, finding, or recommendation) or requests for clarification (a question or comment addressing the intent or meaning of a word, sentence, or paragraph). Once the author(s) has completed the comment matrix, the PM will review to ensure it is complete.

2. **Author(s) revise report.** The author(s) will revise the document according to the proposed actions in the comment matrix. The AMPA will forward the revised document (clean and track changes versions), the completed comment matrix, and letter outlining how comments were addressed to the AE and Managing Editor. The Managing Editor will typically depend on the AE to determine if the proposed responses and revisions to the document are adequate. The AE may need to consult with the original reviewers to make this determination. If the AE does not approve revisions to the document, it will be returned to the AMPA within two weeks. The AE will identify revisions that are considered inadequate to the reviewers and provide recommendations on how the document can be revised appropriately. The AMPA will send to the PM who will then forward to the Project Team for the author(s) to revise the document accordingly and resubmit to ISPR for approval within 60 days. If there are disputes between the author(s) and Project Team on how to revise the document, the AMPA will facilitate resolution. The PM and/or AMPA will provide a status update to CMER. If ISPR reviewers do not agree with the revisions, the author(s) will continue to make changes to reach ISPR approval.
3. **Resubmittal of document for ISPR approval.** When the report author(s) and the AE cannot come to agreement on whether the author(s) have adequately responded to ISPR comments, the AMPA will establish a fair and unbiased process to resolve any disagreements in consultation with the Managing Editor, AE, PM, and author(s). The process will be designed to maintain the integrity, especially the double-blind requirement, of the review process, and may involve bringing in additional outside experts as arbiters. If comments cannot be resolved to reviewer satisfaction, preventing ISPR approval, the AMPA may recommend:
 - A dispute resolution panel be formed to resolve the issue within the ISPR process (preferred),
 - Change the review to an open review (see section 8.5.2),
 - Selection of another peer review panel, or
 - Withdrawal of the document from further ISPR and return to CMER to determine how to proceed.

8.5.5 Final CMER Approval

Once approval of the document is obtained by the AE through the ISPR process, and after the AE has provided provided written approval of the final draft document, or by the CMER reviewers for non-ISPR reviewed documents, the PM forwards the revised document, response matrix, and/or approval memo to CMER for final review and approval. The documents will also be distributed to the appropriate SAG as an FYI. At this stage the final CMER review approval step is limited to revisions in response to substantive changes that were made during ISPR. Final CMER approval is not intended to raise issues related to language and materials presented in the original CMER approved report but shall be limited in scope to their review to any substantive changes made to the report in response to the ISPR review. If a Board-approved CMER member does not approve a document at this stage, they must provide a detailed summary, including a clear

rationale for doing so. Then the AMPA may invoke the Guided Decision-Making Process (PSM Chapter 3, section 3.3.4).

8.6 CMER Findings Report for Completed Studies

After a final report has been approved by CMER, a Findings Report is compiled to inform TFW Policy on implications to forest practice rules. CMER is responsible for ensuring development and approval of the CMER answers to the Final Six Questions (See PSM Ch. 7 for Six Questions, Board Manual Section 22 Appendix B) that will be submitted to TFW Policy by the AMPA as part of the Findings Report. Typically, the SAG develops the answers to the Final Six Questions with input from the Project Team before submitting to CMER for approval. The answers to the Final Six Questions should be concise, typically no longer than three pages. Pertinent context or history should be limited and rely on references to the final report and Study Design. CMER approval of the answers to the Six Questions should occur within 3 months of CMER approval of a final report. A complete Findings Report should include the final report, Final Six Questions from the ‘CMER/TFW Policy Interaction Framework’ (see PSM Ch. 7 and Board Manual section 22, Appendix B) and a cover letter from the AMPA. The Findings Report is provided to the TFW Policy Committee who then decides whether to make an adaptive management recommendation to the Board.

8.7 Publishing study results outside of the Adaptive Management Program

Once CMER approves a final report, author(s) are free to publish work related to the project. Author(s) should not submit manuscripts for potential publication prior to this approval step without permission. If authors would like to publish prior to final report approval, they should notify the AMPA before submitting a manuscript to an external publisher. The AMPA will notify TFW Policy and CMER that the report will be submitted for outside publishing, along with the anticipated publish date. Prior to publishing, the final manuscript will be forwarded to CMER and TFW Policy. In the publication article, the author(s) will acknowledge that CMER funding was used to implement the study and provide proper acknowledgement to authors, PMs, and CMER. Here is an example of appropriate language, however journals may have their own guidelines:

This work was developed with public funding through the DNR Adaptive Management Program. As such it is within the public use domain. However, the concept of this work originated with the Washington State Forest Practices Adaptive Management Program and the authors. The document was prepared for the Cooperative Monitoring, Evaluation and Research Committee (CMER) and was intended to inform and support the Forest and Fish Adaptive Management program. The project is part of the CMER Adaptive Management Program and was conducted under the oversight of the [...name of SAG...]. As a public resource document, this work should be given proper attribution and be properly cited. [Insert Full reference citation as appropriate.]

If a report contains management implications or recommendations TFW Policy will review (approval is not necessary) that section prior to being submitted for publishing.

8.8 Review and Use of non-CMER Project Documents

As stated in Board Manual Section 22, Part 3, external science studies may be brought to CMER in two ways: 1) as part of the body of science reviewed by CMER in addressing work plan projects and tasks; or 2) directly in the form of specific technical reports to be reviewed and reported on by CMER as directed by TFW Policy or the Board. When CMER evaluates outside science for inclusion in the AMP, CMER should take into consideration its relevance to CMER research and AMP priorities, adherence to scientific methods, and where available, an examination of any QA/QC processes used in collecting and assessing the accuracy of the data (Hotvedt et al. 2014).

When evaluating studies and Study Designs CMER should consider a hierarchical process for assessing

quality:

1. Experimental studies (i.e., randomized control trials),
2. Quasi-experimental studies (i.e., studies without randomization),
3. Controlled observational studies,
4. Cohort studies,
5. Case control studies,
6. Observational studies without control groups, and
7. Expert opinion based on theory, laboratory research, or consensus.

When a final technical non-CMER report is formally evaluated by CMER for inclusion in the AMP, peer-reviewed publications that are widely available and referenced in the area of scientific inquiry of interest are preferable. Gray literature should be evaluated with caution but can be acceptable if the content can be evaluated for accuracy and credibility and is available to CMER and the public. Internal reports, papers presented at conferences, articles in preparation, and other types of scientific information should be treated as unpublished and assessed for quality (accuracy and credibility). For additional guidance see the CMER memo to TFW Policy and the Board “Use of Non-CMER Science in the Forest Practices Adaptive Management Program” Hotvedt et al, 2014 (PSM Appendix M).

9. Data Gathering, Documentation, and Information Management

This chapter explains the sources of CMER information (data, reports, and maps) produced by or on behalf of CMER and the collection and storage of that information.

Additional intentions and goals of this chapter include the following:

1. Guidance to DNR staff and CMER cooperators in how CMER documents and data will be stored.
2. Guidance for minimum data standards for CMER reports.
3. Setting the stage for public sharing of information and the provision of accurate data and learning for policy setting.
4. Minimizing the loss or corruption of CMER work products.
5. A system of storage that minimizes staff time and space in filing and storage.
6. Linking CMER data and reports to the contracting process and to the project management process that generates the CMER reports and data.

9.1 Protocols and Process Steps for Data Gathering, Storage and Distribution of Reports

1. The work plan identifies a research and reporting need.
2. An RFQ or other solicitation is sent out, and a contract is awarded for research implementation and report development.
3. The contractor generates data through field research, literature review/synthesis and/or desktop/remote analysis.
4. The contractor generates a final written report.
5. The contractor creates a geographical map of the research site(s).
6. The contractor delivers all data, reports, and maps including sampling protocols and/or metadata to describe the dataset (e.g., fields, values, definitions, accuracy, units of measure) to DNR at the close of the contract.
7. DNR makes reports available to CMER and SAGs for review.
8. Data, reports, and maps are stored on SharePoint Online and on the DNR J drive. GIS data will be made available to CMER members.
9. Other data and emails are stored by DNR Information Technology as required by law.
10. Contractor/contract file is closed and records stored according to DNR's retention policy.
11. Data are periodically reviewed for proper conditions, formats, and applications.

9.2 Data Generation

CMER data or information is generated by contractors performing research and writing reports to fulfill CMER projects identified in the work plan. Data are generated in three forms: original research or field data, geographical maps or descriptions of research sites, and final reports.

9.3 Data Quality Standards

All CMER-funded projects must meet DNR minimum standards for data formatting, metadata, GIS layers, and other data considerations, such as sample size. The purpose of these standards is to assure CMER of scientifically credible data that can be used to develop sound policy. Since standards are lengthy and dynamic, they are incorporated here by reference.

9.3.1 Principles of Data Quality

All data collected to fulfill the objectives of a study design must be managed for quality by the PI or contractor identified to conduct the research. Data quality is contextual, and what constitutes quality data may vary based on specific research objectives and needs. Relevance to the intended purpose is the ultimate measure of data quality. Data management should aim to maintain the integrity, usefulness, and accuracy of data. Key principles of data management shall include an assessment of data quality throughout the various stages of data collection, from data acquisition to processing and distribution. Monitoring data quality ensures that data are accurate and reliable.

9.3.2 Quality Control

Quality control of data refers to the method or process by which one determines if data meet overall quality goals and defined quality criteria for individual values. Quality control shall include an evaluation of the data for quality (subset for continuous data) and identification of any data with known issues. Data quality control may include the following components:

- *Timeliness: Are the data available when needed?*
- *Completeness: Are the data complete and comprehensive?*
- *Accuracy: Do the data reflect reality?*
- *Consistency: Do the data match other relevant data? Are relationships well defined?*

One or more of the following may be useful when applying quality control measures to data: checking for missing data, checking to see if data are within a reasonable range, and checking for erroneous duplicates.

9.4 Metadata & Data Dictionary

Metadata helps researchers or end users work with data effectively, while a data dictionary serves as a structured repository for metadata. Both play a crucial role in understanding and managing data within a database.

9.4.1 Data Dictionary

A data dictionary should accompany any project data submitted for archiving. A data dictionary is a structure that stores metadata as a centralized collection of information about a database. It serves as a reference guide that provides details about the data elements within the database. The purpose of the data dictionary is to ensure data integrity and accuracy by recording essential definitions related to the database, including information about tables. The data dictionary should include the number of files and list them by name, and provide any other information needed to facilitate use of the data.

9.4.2 Metadata

Metadata is the data about the data. It provides information regarding the organization of raw data and provides context and information related to how, when, and by whom certain data were collected. Metadata should accompany all data delivered to DNR and shall include researcher name, date, project title, details of the research or analysis including purpose and methods used, and the sources of other data used in the research or analysis. Metadata should also describe the data objects (e.g., names and definitions), detailed properties of data elements (e.g., data type, size, nullability, optionality), and missing data and quality-indicator codes. It should outline the data structure of each file and describe the data fields in each file, including column descriptions, metrics, measurement units, relationships, constraints, and data types.

9.5 Data Ownership

Most CMER data are obtained via DNR contracts and so are legally owned by DNR.

Copies of all adaptive management contract deliverables are physically stored in the contract file that is maintained in the Forest Practices Division. This includes study plans, interim and final reports, paper and digital data, maps, publications, and presentations. The contract file should have a copy of all items that were generated as part of work paid for by the state; investigators should have nothing in their personal possession (including raw data) that is not part of the contract file. Whether CMER or the contractor will be considered the author is determined by the contract terms.

9.6 Data Storage and Document Retention

DNR stores CMER data generated through contract work. DNR follows a file retention policy for storage of CMER data. Generally, CMER data are kept indefinitely and are periodically reviewed and updated as necessary to ensure that the storage format and data format (e.g. .xls, ascii) both meet our needs and so that a file type or storage method does not become outdated and hence inaccessible.

DNR file retention policies must be followed for data collected through DNR contracts. In general, a staggered 5-year retention schedule (2 years at DNR, 3 years in archives) is appropriate for most CMER-related products. However, some products, such as final reports, may have longer retention periods. Products that have exceeded the retention schedule will and should be archived or destroyed as appropriate.

10. Information Access and Communication

This chapter specifies CMER’s obligations to provide information to the public and describes the ways in which the information will be requested and provided. It also outlines reporting requirements. External peer review is *not* covered in this chapter (see Chapter 8).

Additional intentions and goals of this chapter include the following:

12. Guidance to DNR staff and CMER cooperators on CMER document retrieval and distribution (phone request, internet, kept by project manager, etc.).
13. Guidance to CMER cooperators and the public in requesting data and other CMER information.
14. Requirements, structure, and procedures for distribution and use of CMER products
15. A system and procedures for CMER scientists to gain access to data for scientific purposes and for landowners to obtain data collected on their lands.
16. A system of distribution that minimizes staff time in servicing requests.

10.1 Access to Data

10.1.1 Public Disclosure

All data should be disclosed as a matter of public record since public funds are used for this research. Certain personal and other records are exempt from public disclosure (RCW 42.17.310). Nearly all of these specific exemptions are completely unrelated to any CMER process or product. The only exemption remotely applicable is the “valuable formula” exemption for “research data obtained by any agency within five years of the request for disclosure.” It is doubtful that any CMER project conducted in an open stakeholder approach would produce products of this nature, so it is typical to disclose all CMER products.

For some special types of data, the DNR charges a fee, these include the transportation and hydrography GIS layers, aerial photos, and some types of maps. If a CMER project specifically requires these data, it should be documented in a letter or, ideally, included in the contract language as a DNR deliverable to the contractor (“DNR will provide XYZ at no costs....”).

Although DNR-owned data are fully available through public disclosure, data are not considered to be in the public record until DNR accepts the data from the contractor. Until DNR accepts these data, they remain the property of the contractor. The intent here is to allow the contractor to perform quality assurance, and to allow the DNR to correctly incorporate the new data into DNR databases and GIS systems.

Landowners that allow access to their lands for CMER projects should have a Memorandum of understanding (MOU) in place with the DNR prior to access if they desire early release of raw data. The MOU should clearly state that the data may contain errors and should caution landowners about the risk of making management decisions on these preliminary data.

10.1.2 Data and Document Requests

Data and document requests are made electronically at publicdisclosure@dnr.wa.gov. The request is processed by the DNR Public Disclosure Officer, who clarifies the request, processes it, and tracks the public request records. For information on Public Disclosure Requests visit: [Submit a Public Disclosure Request | WA – DNR](#).

10.2 Dissemination and Sharing of Data

CMER and the AMPA actively share information in several ways:

1. Final Reports, Study Designs, Scoping Documents, and TFW Policy findings package(s)

2. Presentations.
3. Encouraging scientists to use data in their conferences and professional presentations.
4. Publishing papers in professional journals.
5. Sharing information on the AMP Dashboard, AMP Research and Monitoring Documents website, and at the CMER Science Conference to make broadly available to the public.

Appendix A: Forest Practices Rules for Adaptive Management

WAC 222-08-035 Continuing review of forest practices rules. (p. 8-1)

***(2) Adaptive management program.** The adaptive management program will be used to determine the effectiveness of forest practices rules in aiding the state's salmon recovery effort and provide recommendations to the board on proposed changes to forest practices rules to meet timber industry viability and salmon recovery. The program provides assurances that rules and guidance not meeting aquatic resource objectives will be modified in a streamlined and timely manner. The board may also use this program to adjust other forest practice rules and guidance in order to further the purposes of chapter 76.09 RCW. The specific components of the adaptive management program are set forth in WAC 222-12-045.

WAC *222-12-045 Adaptive management program. (p. 12-7) In order to further the purposes of chapter 76.09 RCW, the board has adopted and will manage a formal science-based program, as set forth in WAC 222-08-035(2). Refer to board manual section 22 for program guidance and further information.

(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.

(2) **Program elements:** By this rule, the board establishes an active, ongoing program composed of the following initial elements, but not to exclude other program elements as needed:

(a) **Key questions and resource objectives:** Upon receiving recommendations from the TFW policy committee, or similar collaborative forum, the board will establish key questions and resource objectives and prioritize them.

- (i) Projects designed to address the key questions shall be established in the order and subject to the priorities identified by the board.
- (ii) Resource objectives are intended to ensure that forest practices, either singularly or cumulatively, will not significantly impair the capacity of aquatic habitat to:
 - (A) Support harvestable levels of salmonids;
 - (B) Support the long-term viability of other covered species; or
 - (C) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and anti-degradation).
- (iii) Resource objectives consist of functional objectives and performance targets. Functional objectives are broad statements regarding the major watershed functions potentially affected by forest practices. Performance targets are the measurable criteria defining specific, attainable target forest conditions and processes.
- (iv) Resource objectives are intended for use in adaptive management, rather than in the regulatory process. Best management practices, as defined in the rules and manual, apply to all forest practices regardless of whether or not resource objectives are met at a given site.

(b) **Participants:** The board will manage the program and has empowered the following entities to

participate in the program: The cooperative monitoring evaluation and research committee (CMER), the TFW policy committee (or similar collaborative forum), the AMPA, and other participants as directed to conduct the independent scientific peer review process. The program will strive to use a consensus-based approach to make decisions at all stages of the process. Specific consensus-decision stages will be established by CMER and approved by the board. Ground rules will follow those established by the TFW process as defined in the board manual.

- (i) **CMER.** By this rule, the board establishes a cooperative monitoring evaluation and research (CMER) committee to impose accountability and formality of process, and to conduct research and validation and effectiveness monitoring to facilitate achieving the resource objectives. The purpose of CMER is to advance the science needed to support adaptive management. CMER also has ongoing responsibility to continue research and education in terrestrial resource issues. CMER will be made up of members that have expertise in a scientific discipline that will enable them to be most effective in addressing forestry, fish, wildlife, and landscape process issues. Members will represent timber landowners, environmental interests, state agencies, county governments, federal agencies and tribal governments from a scientific standpoint, not a policy view. CMER members will be approved by the board. This will not preclude others from participating in and contributing to the CMER process or its subcommittees. CMER shall also develop and manage as appropriate:
 - (A) Scientific advisory groups and subgroups;
 - (B) Research and monitoring programs;
 - (C) A set of protocols and standards to define and guide execution of the process including, but not limited to, research and monitoring data, watershed analysis reports, interdisciplinary team evaluations and reports, literature reviews, and quality control/quality assurance processes;
 - (D) A baseline data set used to monitor change; and
 - (E) A process for policy approval of research, monitoring, and assessment projects and use of external information, including the questions to be answered and the timelines.
- (ii) **TFW policy committee (policy).** TFW, or a similar collaborative forum, is managed by a policy committee (hereafter referred to in this section as “policy”). Policy membership is self-selecting, and at a minimum should include representatives of the following caucuses: Timber landowners (industrial and nonindustrial private landowners); environmental community; tribal governments; county governments; state departments (including fish and wildlife, ecology, and natural resources); and federal agencies (including National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency and U.S. Forest Service). Policy members will participate without compensation or per diem.
- (iii) **Adaptive management program administrator (program administrator).** The department will employ a full-time independent program administrator to oversee the program and support CMER. The program administrator will have credentials as a program manager, scientist, and researcher. The program administrator will make reports to the board and have other responsibilities as defined in the board manual.
- (c) **Independent scientific peer review process.** By this rule, the board establishes an independent scientific peer review process to determine if the scientific studies that address program issues are scientifically sound and technically reliable; and provide advice on the scientific basis or reliability of CMER’s reports. Documents that must be reviewed include final reports of CMER funded studies, certain CMER recommendations, and pertinent studies not published in a CMER-approved, peer-reviewed journal. Other documents that may require review include, but are not limited to, external information, work plans, requests for proposal, subsequent study proposals,

the final study plan, and progress reports.

- (d) **Process:** The following stages will be used to affect change for managing adaptive management proposals and approved projects. If consensus cannot be reached by participants at any stage, the issue will be addressed within the dispute resolution process.
- (i) **Proposal initiation:** Adaptive management proposals can be initiated at this stage by any of the participants listed in (2)(b) of this subsection to the program administrator, or initiation may be proposed by the general public at board meetings. Proposals must provide the minimum information as outlined in the board manual and demonstrate how results of the proposal will address key questions and resource objectives or other program rule and/or guidance issues. The board may initiate proposals or research questions in the course of fulfilling their duties according to statute.
 - (ii) **Proposal approval and prioritization:** The program administrator will manage the proposal approval and prioritization process at this stage and consult with CMER on the program work plan. CMER proposals will be forwarded by the program administrator to policy and then to the board. The board will make the final determination regarding proposal approvals and prioritization. The board will act on proposal approval and prioritization in a timely manner.
 - (iii) **CMER implementation of proposal:** Board approved proposals are systematically implemented through CMER at this stage by the program administrator.
 - (iv) **Independent scientific peer review:** An independent scientific peer review process will be used at identified points within this stage of implementation depending upon the study and will be used on specified final studies or at the direction of the board.
 - (v) **CMER committee technical recommendations:** Upon completion, final CMER reports and information will be forwarded at this stage by the program administrator to policy in the form of a report that includes technical recommendations and a discussion of rule and/or guidance implications.
 - (vi) **Policy petitions for amendment:** Upon receipt of the CMER report, policy will prepare program rule amendments and/or guidance recommendations in the form of petitions for amendment. When completed, the petitions and the original CMER report and/or other information as applicable will be forwarded by the program administrator to the board for review and action. Policy recommendations to the board will be accompanied by formal petitions for rule making (RCW 34.05.330). Policy will use the CMER results to make specific petitions to the board for amending:
 - (A) The regulatory scheme of forest practices management (Title 222 WAC rules and board manual);
 - (B) Voluntary, incentive-based, and training programs affecting forestry;
 - (C) The resource objectives; and
 - (D) CMER itself, adaptive management procedures, or other mechanisms implementing the recommendations contained in the most current forests and fish report.
 - (vii) **Board action to adopt petitions for amendment:** Upon receiving a formal petition for amendment to rules and/or guidance, the board will take appropriate and timely action. There will be a public review of all petitions as applicable. The board will make the final determination.
- (e) **Biennial fiscal and performance audits.** The board shall require biennial fiscal and performance audits of the program by the department or other appropriate and accepting independent state agency.
- (f) **CMER five-year peer review process.** Every five years the board will establish a peer review

process to review all work of CMER and other available, relevant data, including recommendations from the CMER staff. There will be a specified, but limited, period for public review and comment.

- (g) **Funding.** Funding is essential to implement the adaptive management program, which is dependent on quality and relevant data. The department shall request biennial budgets to support the program priority projects and basic infrastructure needs including funding to staff the adaptive management program administrator position. A stable, long-term funding source is needed for these activities.
- (h) **Dispute resolution process.** If consensus cannot be reached through the adaptive management program process, participants will have their issues addressed by this dispute resolution process. Potential failures include, but are not limited to: The inability of policy to agree on research priorities, program direction, or recommendations to the board for uses of monitoring and/or research after receiving a report from CMER; the inability of CMER to produce a report and recommendation on schedule; and the failure of participants to act on policy recommendations on a specified schedule. Key attributes of the dispute resolution process are:
 - (i) Specific substantive and benchmark (schedule) triggers will be established by the board for each monitoring and research project for invoking dispute resolution;
 - (ii) The dispute resolution process will be staged in three parts and may be applied at any level of the adaptive management process. Any participant, or the board, may invoke each succeeding stage, if agreement is not reached by the previous stage, within the specified time (or if agreements are not substantially implemented) as follows:
 - (A) Stage one will be an attempt by CMER and policy to reach consensus. On technical issues, CMER shall have up to six months to reach a consensus unless otherwise agreed upon by policy. Parties may move the process to stage two after an issue has been before policy for six months unless otherwise agreed. The time periods commence from referral of technical issues to CMER, report by CMER to policy, or the raising of a nontechnical issue (or matter not otherwise referable to CMER) directly at policy.
 - (B) Stage two will be either informal mediation or formal arbitration. Within one month, one or the other will be picked, with the default being formal unless otherwise agreed. Stage two will be completed within three months (including the one month to select the process) unless otherwise agreed.
 - (C) If stage two does not result in consensus, stage three will be action by the board. The board will consider policy and CMER reports, and majority and minority thinking regarding the results and uses of the results can be brought forward to the board. The board will make the final determination regarding dispute resolution.

WAC 222-12-046 Cumulative effects. (p. 12-11) The purpose of this section is to identify how the forest practices rules address changes to the environment caused by the interaction of natural ecosystem processes with the effects of two or more forest practices. This interaction is referred to as “cumulative effects.” The following approaches have been taken:

- (3) Certain rules are designed to focus on specific aspects of cumulative effects of forest practices. For example:
 - (a) WAC 222-08-035 requires continuing review of the forest practices rules and voluntary processes and adopts the concept of adaptive management. WAC 222-12-045 also adopts adaptive management.

WAC 222-12-090 Forest practices board manual. (p. 12-12) When approved by the board the manual serves as an advisory technical supplement to these forest practices rules. The department, in cooperation

with the departments of fish and wildlife, agriculture, ecology, and such other agencies, affected Indian tribes, or interested parties as may have appropriate expertise, is directed to prepare, and submit to the board for approval, revisions to the forest practices board manual. The manual shall include:

(22) **Guidelines** for adaptive management program.

Appendix B: Schedule L-1

[Board-approved version: 02-14-01]

Key Questions, Resource Objectives, and Performance Targets for Adaptive Management

[This schedule contains implementation details and will be subject to further revisions and clarifications as the provisions of the agreement are implemented through rule, statutes, and programs.]

Overall Performance Goals: Forest practices,¹ either singly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

- a) Support harvestable levels of salmonids;
- b) Support the long-term viability of other covered species; or
- c) Meet or exceed water quality standards (protection of designated uses, narrative and numeric criteria, and anti-degradation).

Resource Objectives are defined below for the key aquatic conditions and processes affected by forest practices. These resource objectives are intended to meet the overall performance goals. Resource objectives consist of:

- **Functional Objectives**, which are broad statements of objectives for the major watershed functions potentially affected by forest practices; and
- **Performance Targets**, which are the measurable criteria defining specific, attainable target forest conditions and processes.

Resource objectives are intended for use in adaptive management, rather than in the regulatory process. Best management practices, as defined in the rules and manual, apply even if resource objectives are met at a given site.

Key Questions. The key questions driving adaptive management can be summarized as follows:

1. *Are forest practices being conducted in compliance with the prescriptions contemplated in this Report?*

Compliance monitoring will answer this question. Compliance monitoring will be conducted by DNR and is outside the scope of this adaptive management process.

2. *Will the prescriptions produce forest conditions and processes that achieve resource objectives while taking into account the natural spatial and temporal variability inherent in forest ecosystems?*

Effectiveness monitoring and research will answer this question. Performance targets are not attainable in all places, even under natural conditions. The adaptive management process will take into account the extent to which a given performance target can actually be achieved given the natural spatial and temporal variability within forest ecosystems.

¹ “Forest practices” are defined in the Forest Practices Rules (76.09.010 RCW) and include road construction, timber harvesting, reforestation, brush control, etc

In addition, reasonable timeframes to achieve targets will be part of the process. There will be identification of performance targets that can be met within short (0-10 years), mid (10-50 years) and long-term (50-200 years) ranges of time measured at the landscape scale. There will also be consideration for the time required for the quantity of prescriptions to be applied on the ground to ensure adequate sample sizes for implementing adaptive management. Effectiveness monitoring and research should also test whether less costly alternative prescriptions would be effective in producing conditions and processes that meet resource objectives or where more conservative prescriptions may be necessary.

3. *Are the resource objectives the right ones to achieve the overall performance goals?*

Validation monitoring and research will answer this question. Validation monitoring and research should be designed to validate or verify the assumptions underlying the resource objectives. Resource objectives must work to achieve the overall performance goal, yet also be attainable within the context of a viable forest products industry. Current targets are those the authors believe will be met by the prescriptions in this Report. Progress towards achieving resource objectives within appropriate timeframes will be tracked through time. Changes to targets should be guided by evaluating two general questions aimed at defining the appropriate level of accuracy needed to change targets: (1) what level of statistical significance, scientific confidence or trend analysis is the monitoring effort intended to achieve and was it achieved; and (2) what level of significance for biological or habitat change is expected?

Heat/Water Temperature

Functional objective: Provide cool water by maintaining shade, groundwater temperature, flow, and other watershed processes controlling stream temperature.²

Measures	Performance targets	Time-Frame
Stream temperature	Water quality standards—current and anticipated in next triennial review (e.g., for bull trout ³).	<i>(Note--need to be completed by scientific advisory groups)</i>
Groundwater temperature	To be developed.	
Shade	<ul style="list-style-type: none"> • Type F & S streams, except Eastside bull trout habitat: that produced by shade model or, if model not used, 85-90% of all effective shade. • Westside and eastside high elevation, Type N streams: shade available within 50’ for at least 50% of stream length. • Eastside: all available shade within 75’ of designated bull trout habitat per predictive model. 	

² Stream temperature is affected by the interaction of a complex set of factors, including shade, air temperature, pool depth and frequency, flow, and groundwater influences. These factors are addressed in resource objectives for other conditions or processes (e.g., hydrology, sediment, LWD) in addition to the targets selected for stream temperature.

³Bull trout temperature standards are expected to be an outcome of DOE’s triennial review of water quality standards

LWD/Organic Inputs

Functional objective: Develop riparian conditions that provide complex habitats for recruiting large woody debris and litter.⁴

Measures	Performance targets			Time-Frame
Riparian condition	<ul style="list-style-type: none"> Westside and high elevation Eastside habitats: riparian stands are on pathways to meet Desired Future Condition (DFC) targets (species, basal area, trees per acre, growth, mortality). Eastside (except high elevation): DFC; current stands on pathways to achieve Eastside condition ranges for each habitat series. 			
Litter fall	<ul style="list-style-type: none"> Westside Type N⁵: at least 50% of recruitment available from within 50’. Eastside Type N: at least 70% of recruitment available from within 50’. 			
Pool frequency	< 2 channel widths per pool.			
In-stream LWD	Westside: <ul style="list-style-type: none"> Streams <20 m (or 65.6 ft.) bankfull width: > 2 pieces (total wood) per channel width Streams <10 m (or 32.8 ft.) bankfull width: >0.30 key pieces per channel width Streams >10 m (or 32.8 ft.) bankfull width: >0.50 key pieces per channel width Eastside: (To be developed.)			
Residual pool depth	Mean Segment Bankfull Width in meters and (feet)	Minimum Unit Size in meters and (feet)	Minimum Residual Pool Depth in meters and (feet)	
	0 to <2.5 (>0 to 8.2 ft.)	0.5 (5.4 ft.)	0.10 (0.33 ft.)	
	∃2.5 to <5.0 (≥ 8.2 to 16.4 ft.)	1.0 (10.8 ft.)	0.20 (0.66 ft.)	
	∃5.0 to <10.0 (≥ 16.4 to 32.8 ft.)	2.0 (21.5 ft.)	0.25 (0.82 ft.)	
	∃10.0 to <15.0 (≥ 32.8 to 49.2 ft.)	3.0 (32.3 ft.)	0.30 (0.98 ft.)	
	∃15.0 to <20 (≥ 49.2 to 65.6 ft.)	4.0 (43.1 ft.)	0.35 (1.15 ft.)	
	∃20 (≥ 65.6 ft.)	5.0 (53.8 ft.)	0.40 (1.31 ft.)	

⁴ Litter is defined to include leaves, needles, twigs, branches, and other organic debris that is recruited to aquatic systems and riparian forest floor.

⁵ Targets for Westside and Eastside Type S and F streams are a low priority because adequate leaf litter is expected to be a by-product of riparian stand conditions.

Sediment

Functional objective: Provide clean water and substrate and maintain channel forming processes by minimizing to the maximum extent practicable, the delivery of management-induced coarse and fine sediment to streams (including timing and quantity) by protecting stream bank integrity, providing vegetative filtering⁶, protecting unstable slopes, and preventing the routing of sediment to streams.

Measures	Performance targets	Time-Frame						
Mass wasting sediment delivered to streams	<ul style="list-style-type: none"> • Road-related: virtually none is triggered by new roads; favorable trend on old roads. • Timber harvesting-related: no increase over natural background rates from harvest on a landscape scale on high risk sites. 							
Road sediment delivered to streams	<ul style="list-style-type: none"> • New roads: virtually none. 							
Ratio of road length delivering to streams / Total stream length (miles/mile)	Old roads: Not to Exceed: <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Coast (Spruce)</td> <td style="width: 33%;">West of Crest</td> <td style="width: 33%;">East of Crest</td> </tr> <tr> <td>0.15-0.25</td> <td>0.15-0.25</td> <td>0.08-0.12</td> </tr> </table>	Coast (Spruce)	West of Crest	East of Crest	0.15-0.25	0.15-0.25	0.08-0.12	
Coast (Spruce)	West of Crest	East of Crest						
0.15-0.25	0.15-0.25	0.08-0.12						
Ratio of road sediment production delivered to streams/Total stream length (tons per year/mile)	Old roads: Not to Exceed: <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Coast (Spruce)</td> <td style="width: 33%;">West of Crest</td> <td style="width: 33%;">East of Crest</td> </tr> <tr> <td>6-10 T/yr</td> <td>2-6 T/yr</td> <td>1-3 T/yr</td> </tr> </table>	Coast (Spruce)	West of Crest	East of Crest	6-10 T/yr	2-6 T/yr	1-3 T/yr	
Coast (Spruce)	West of Crest	East of Crest						
6-10 T/yr	2-6 T/yr	1-3 T/yr						
Streambank/equipment limitation zone disturbance (caused by forest practices)	<ul style="list-style-type: none"> • Type S&F: no streambank disturbance outside road crossings. • Type N: ≤10% of the equipment limitation zone. 							
Fines in Gravel	Less than 12% embedded fines (<0.85 mm).							

⁶ Vegetative filtering can be measured by riparian vegetation, which is covered under the target for riparian condition under L WD.

Hydrology

Functional objective: Maintain surface and groundwater hydrologic regimes (magnitude, frequency, timing, and routing of stream flows) by disconnecting road drainage from the stream network, preventing increases in peak flows causing scour, and maintaining the hydrologic continuity of wetlands.

Measures	Performance Targets	Time-Frame
Road run-off	Same targets as road-related sediment.	
Peak flows	West side: Do not cause a significant increase in peak flow recurrence intervals resulting in scour that disturbs stream channel substrates providing actual or potential habitat for salmonids, attributable to forest management activities.	
Wetlands	No net loss in the hydrologic functions of wetlands	

Chemical Inputs

Functional objective: Provide for clean water and native vegetation (in the core and inner zones) by using forest chemicals in a manner that meets or exceeds water quality standards and label requirements by buffering surface water and otherwise using best management practices.

Measures*	Performance targets	Time-Frame
Entry to water	No entry to water ⁷ for medium and large droplets; minimized for small droplets (drift).	
Entry in RMZs	Core and inner zone: levels cause no significant harm to native vegetation.	

* These measures and performance targets are not intended to override label requirements

Stream Typing and Fish Passage

Functional objective (stream typing): Type “fish habitat” streams to include habitat which is used by fish at any life stage at any time of the year, including potential habitat likely to be used by fish which could be recovered by restoration or management, and including off-channel habitat, by using a multi-parameter, field-verified, peer reviewed, GIS logistic regression model using geomorphic parameters such as basin size, gradient, elevation and other indicators.

Functional objective (fish passage): Maintain or restore passage for fish in all life stages and provide for the passage of some woody debris by building and maintaining roads with adequate stream crossings.

Measures	Performance targets	Time-Frame
Accuracy of predictive models	Fish habitat model: statistical accuracy of +/- 5%, with line between fish and non-fish habitat waters equally likely to be over and under inclusive.	
Access barriers	Eliminate road-related access barriers over the time-frame for road management plans.	

⁷ Targets are for forest chemicals other than Bt and fertilizer. BMPs for both are not priorities for adaptive management.

Appendix C: Other References and Links

Adaptive Management

Salafsky, Nick, Richard Margoluis, and Kent Redford. 2001. Adaptive Management: A Tool for Conservation Practitioners. Biodiversity Support Program Publication # 112. 1250 24th Street, NW, Washington D.C. 20037. Available from the Internet. URL: <http://www.BSPonline.org>.

Walters, Carl. 1997. Challenges in adaptive management of riparian and coastal ecosystems. Conservation Ecology [online] 1(2):1. Available from the Internet. URL: <http://www.consecol.org/vol1/iss2/art1>

Best Available Science

Hotvedt, J., M. Hayes, M. Hicks, A.J. Kroll, L. Lingley, D. Martin, C. Mendoza, and N. Sturhan. 2013. Use of Non-CMER science in the Forest Practices Adaptive Management Program. 14pp.

Science Guiding Policy

Adams, Paul W. and Anne B. Hairston. 1996. Using science to direct policy. J. Forestry 94(4):27- 30.

Binkley, Clark S. 199X. From the Dean's desk. Branch Lines 4(2), Faculty of Forestry Newsletter, The University of British Columbia. *Note: This is an editorial on the use and limitations of scientific information for policy decisions.*

Gieben, Helmut. 1995. The misplaced search for objectivity in resource management. Watershed Management Council newsletter 6(3): 9

Meyers, Doug. 2001. Integrating the science of habitat-maintaining processes into natural resource policy. Earth Systems Monitor September:9-11. Puget Sound Water Quality Action Team, Washington Department of Ecology.

Mills, Thomas J. 2000. Position advocacy by scientists risks science credibility and may be unethical. Northwest Science 74(2): 165-168.

Washington State Office of Community Development. 2002. Citations of the Best Available Science for designating and protecting Critical Areas. Available from the Internet. URL: http://www.oecd.wa.gov/info/lgd/growth/bas/BAS_Citations_Final.pdf

Appendix D: Stakeholders and Key Contact Information

CMER Cooperators

Environmental Protection Agency

<https://www.epa.gov/aboutepa/epa-region-10-pacific-northwest>

National Marine Fisheries Service West Coast Region

<https://www.fisheries.noaa.gov/region/west-coast>

Northwest Indian Fisheries Commission

<http://www.nwifc.org/>

Washington Conservation Action (Conservation Caucus)

<https://waconservationaction.org/>

Washington Department of Natural Resources

<http://www.dnr.wa.gov/>

Washington Department of Ecology

<https://ecology.wa.gov/>

Washington Department of Fish and Wildlife

<http://www.wdfw.wa.gov/>

Washington Forest Protection
Association

<http://www.wfpa.org/>

<https://www.forestsandfish.com/>

Washington Farm Forestry Association

<http://www.wafarmforestry.com/>

United States Fish & Wildlife Service

<https://www.fws.gov/pacific/>

Upper Columbia United Tribes (UCUT)

<https://ucut.org/>

Key Contacts for CMER

For current contact information for the Adaptive Management Program Administrator (AMPA), Project Managers, and the CMER Coordinator, see:

<https://www.dnr.wa.gov/programs-and-services/forest-practices/adaptive-management>

For current list of CMER representatives and Co-Chairs, see:

<https://www.dnr.wa.gov/about/boards-and-councils/forest-practices-board/cooperative-monitoring-evaluation-and-research>

Appendix E: Critical Knowledge, Skills, and Abilities (KSAs) for CMER Co-chairs

The KSAs were taken from the Washington State Manager Development and Performance Plan (PER SF-MCPP2000 4/93) and edited to better reflect the CMER Co-chair position. The eight KSAs represent broad areas of ability deemed critical to most state managerial positions. “Prompters” included for each KSA are indicators to better guide the Co-chairs’ performance expectations.

KSAs	“Prompters”
Communication	<ul style="list-style-type: none"> ○ Adapt communications to diverse audiences ○ Deliver quality oral presentations ○ Demonstrate consistency between verbal and nonverbal communication ○ Share appropriate information internally and externally ○ Manage meetings effectively ○ Possess effective listening skills ○ Write clearly and concisely ○ Speak clearly and concisely
Decision Making	<ul style="list-style-type: none"> ○ Take calculated risks ○ Use a logical rational approach ○ Make timely/responsive decisions ○ Take responsibility for decisions ○ Modify decisions based on new information when appropriate ○ Involve appropriate others in the decision making process
Interpersonal Skills	<ul style="list-style-type: none"> ○ Relate well with others ○ Demonstrate trust, sensitivity and mutual respect ○ Provide timely and honest feedback in a constructive and non- threatening way ○ Maintain confidentiality ○ Accept constructive criticism ○ Demonstrate consistency and fairness ○ Negotiate effectively
Leadership	<ul style="list-style-type: none"> ○ Coach and mentor; inspire and motivate ○ Delegate responsibility with associated authority ○ Demonstrate self-confidence ○ Lead by example; serve as appropriate role model ○ Promote a cooperative work environment ○ Set clear, reasonable expectations and follows through ○ Remain visible and approachable and interacts with others on a regular basis ○ Demonstrate high ethical standards ○ Gain support and buy-in through participation of others

<p>Planning</p>	<ul style="list-style-type: none"> ○ Maintain a clear focus on internal and external customer needs ○ Work with Policy and SAGs to plan future budgets and resource requirements ○ Anticipate problems and develops contingency plans ○ Work with CMER members to: <ul style="list-style-type: none"> ▪ Set priorities ▪ Establish challenging, attainable goals and objectives ▪ Identify short and long range organizational needs ▪ Look to the future with a broad perspective
<p>Human Resource Management</p>	<ul style="list-style-type: none"> ○ Recruit, select and retain capable, productive volunteers ○ Promote volunteer safety and wellness ○ Demonstrate knowledge of volunteer support/coordination ○ Recognize and reward good performance ○ Assess and provide for volunteer development and training ○ Encourage and assist volunteers to achieve full potential ○ Evaluate volunteers timely and thoroughly ○ Take timely, appropriate corrective/dispute resolution action
<p>Program/Project Management</p>	<ul style="list-style-type: none"> ○ Monitor and verify ongoing cost effectiveness (AMPA task only?) ○ Ensure protocols and standards are met ○ Respond effectively to unforeseen problems ○ Understand policy and Board needs ○ Ability to lead CMER in achieving results ○ Use resources efficiently and manages effectively within budget limits
<p>Interacting with the External Environment</p>	<ul style="list-style-type: none"> ○ Work effectively within the political environment ○ Exhibit knowledge and show cooperation regarding intra- and inter- agency programs/ activities/ responsibilities ○ Display sensitivity to public attitudes and concerns ○ Understand and cultivate stakeholder relationships ○ Demonstrate team play

Appendix F: Project Management Forms

This appendix contains the links to templates for many documents and forms that are used in project management.

- Access Permit - [Template CMER Model Access Permit Final Revised.doc](#)
- Charter - [AMP project charter template August2020.docx](#)
- CMER Memo - [CMER Memo Template 23.docx](#)
- CMER Request Form - [Template CMER SAG Request form.docx](#)
- Contractor Progress Report - [Progress Report Template.docx](#)
- DNR Memo - [DNR Memo Template 23.docx](#)
- Document Cover Sheet - [CMER Document Cover Sheet Template 20240207.doc](#)
- Final 6 Questions - [AMP Policy Final 6 Questions template guidance.docx](#) and [AMP Policy Final 6 Questions template Dec2020.docx](#)
- ISPR Comment Matrix - [Comment matrix template.xlsx](#)
- Project Management Plan - [AMP project management plan template 19Nov2020.docx](#)
- Prospective 6 Questions - [AMP Policy Prospective 6 Questions template Jul2023.docx](#)
- Scoping Document - [Scoping Document Package Template 11_23.docx](#)
- Site Selection and Data Collection Plan - [Site selection and data collection plan template March 2020.docx](#)
- Study Design - [AMP study design template 4Jan2021_final.docx](#)
- TFW Policy Template - [TFW Memo Template 23.docx](#)

Appendix G: Standard Document Elements and Format Conventions

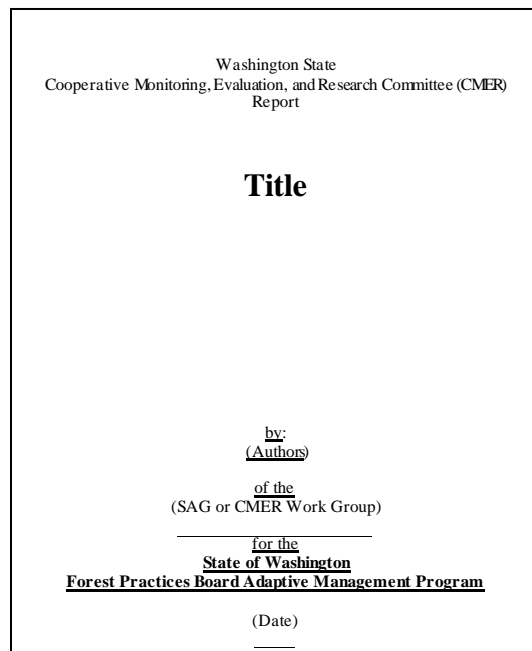
The following guidelines are based on a variety of sources including a Lee MacDonald paper²⁴; Transactions of the American Fisheries Society, Canadian Journal of Fisheries and Aquatic Sciences, and the North American Journal of Fisheries Management author guidelines. This information provides the front and end pieces around a CMER document.

Standard Document Elements

1. Title, Table of Contents, and Other Information

This is the information that starts the report and is standard in most scientific texts.

- **Title Page:** See example at right. At the top of the page, put “Washington State Cooperative Monitoring, Evaluation, and Research Committee Report.” Next, put the title of the study. The title of the report should clearly indicate the scope and duration of the monitoring project. The title serves two functions: 1) it allows the reader to judge whether or not the article is of potential interest; and 2) it provides enough information to judge the document’s potential importance. Underneath the title should be the name(s) of the author(s) with their affiliations. If the authors are CMER members, then the appropriate SAG or CMER work group should be identified. Next put “for the Washington State Forest Practices Board Adaptive Management Program.” At the bottom of the page put the date of completion or that version.
- **Citation Information:** Provide the official citation and reference information that should be used by others to reference this document. This may be included with the contributors section or placed on the back of the title page.
- **Table of Contents:** In most situations, the table of contents page identifies chapter and sub-chapter headings down to the third level (e.g., 6.2.3) and their page start locations. The table of contents also identifies the front and end materials and their page numbers found both before and after the contents.
- **Contributors:** The name, title, affiliation, email address, and full mailing address of all listed authors should be provided as a courtesy to the readers. This may be extended for the final published version into brief biographies of each author.



2. Abstract/Executive Summary

This section should summarize the "meat" of the report, briefly telling the reader what you did, how you did it, the primary results, and the implications of those results. Keep it as objective and as factual as possible. Usually, it is best to write this after you've completed the rest of the report, as only then will you have the clarity and understanding to do a good job on this section. Remember not to include abbreviations or other jargon that may not be known to the reader. This section should stand on its own, as many readers

²⁴ Lee H. MacDonald. 1992. Components of a Monitoring Report. Department of Forest, Rangeland, and Watershed Stewardship, Colorado State University. Fort Collins, CO 80523-1472. (970) 491-6109

will read only this section. This section does not include tables or figures but should specify the most important numerical results.

3. Introduction

The introduction is critical, as it: (1) sets the stage for all that follows, and (2) either hooks or loses the reader. It is all too easy for an introduction to be rambling and include a variety of extraneous information. The first paragraph needs to come to the point--why are you monitoring some particular variable(s) in the selected locations. You then need to provide the context of your study--what has been done in the past, what is known about the system being monitored, and what is the technical basis for your study. This should not be an exhaustive review, but a concise summary.

The introduction should then clearly list the objectives of the study. These objectives should be both concise and precise, and they should stand out. The logic and structure developed here should be reflected in all the other sections of the report, as the reader knows what to expect and is ready for it. Often the introduction you write at the beginning will not fit the report once it's finished, so you may need to go back and revise the introduction to fit the results and discussion. Footnotes generally should be avoided here and in the rest of the report because they can distract the reader and break up the flow of the report.

4. Key Elements

The key elements provide the main substance of the report. The specific elements vary somewhat with the type of report. Refer to Chapter 7 of this manual, particularly the sections on literature reviews (7.8) and reporting final results (7.14).

5. Acknowledgments

Most monitoring projects involve a variety of people, and this is your chance to give credit where credit is due. If people can see that their efforts helped produce a usable and tangible result, they are more likely to be interested and willing participants in the future. Having interested and willing participants will then greatly improve the quality and reliability of your future monitoring efforts. Key people may include technicians, managers, and peer reviewers. Funding sources may also be acknowledged in this section whether monetary or in-kind. Recognize these contributions! Acknowledgments may appear in the front matter of the document instead of this position.

6. References

This is where you list all the source material cited in your report, including published literature, previous monitoring reports, unpublished documents, personal communication, and computer software. "Literature cited" is a more restrictive term, and for most monitoring reports "references" is more appropriate.

Use the author-date system—e.g., (Smith 1992)—rather than a numbering system. Two advantages of author-date are that (1) you don't have to renumber your citations each time you add or delete a reference, and (2) many readers can readily identify a reference from the author and date. A numeric system forces the reader to keep flipping from the text to the references to see exactly what you are referencing each time.

Text lifted verbatim from a source should be enclosed in quotation marks. Such quotes should be referenced not only by author and date, but also by page number. Paraphrased text requires a reference but need not be enclosed in quotation marks; information considered general knowledge and not subject to argument can be used without an accompanying citation.

Be sure your citation is sufficiently complete to allow the reader to track down and obtain any reference. Referencing a personal communication by name only is not adequate; include the person's organization so that the reader knows exactly whom you mean and could contact that person if desired. Your attention to detail in the references is another clue to the type of work you do; a sloppy and incomplete reference list

suggests that your monitoring efforts are sloppy and unreliable. Credibility is a resource that generally takes a great deal of time to build up but can be rapidly destroyed. To be effective, a monitoring report must be credible, useful, and clear.

7. Appendix

The appendix holds all the extra information that makes the report complete and documents the CMER process on how it got to that point. Most material is placed here to make the heart of the report readable and efficient. Common appendix elements include CMER process documentation as noted in the manual by chapter, supportive data, a glossary of terms and definitions used, etc.

Appendix H: Glossary and Acronyms

TERM OR ACRONYM	DEFINITION
Access [to data]	Availability of information
Adaptive management	A resource management approach in which practices are adjusted in response to new information
Adaptive management participant	A person or body empowered by the Forest Practices Board to participate in the adaptive management program. Adaptive management participants include “the cooperative monitoring evaluation and research committee (CMER), the TFW policy committee (or similar collaborative forum), the adaptive management program administrator, and other participants as directed to conduct the independent scientific peer review process” (WAC 222-12-045 (2)(B))
Adaptive management process	A continuous loop that begins with policy questions about the effectiveness of the forest practices rules in meeting established resource objectives and continues through research to answer those questions, recommendations based on the research, affirmation or revision of rules, and more questions
Adaptive management program administrator	The DNR staff member responsible for managing the adaptive management program
AMP	Adaptive management program
AMPA	Adaptive management program administrator
Authorship	Recognition and responsibility for the content of a document
Board	The Forest Practices Board
BTSAG	Bull Trout Scientific Advisory Group
CMER	Cooperative Monitoring, Evaluation, and Research Committee
CMER Budget	The funds the Forest Practices Board authorizes for CMER for a fiscal year (July 1–June 30). These funds are allocated for specific purposes as projects are developed and move forward.
CMER cooperators	The agencies and associations that are members of the six adaptive management caucuses
CMER data	Field data from research—e.g., data on forms and informal field notes

CMER Member	A representative appointed by one of the six adaptive management caucuses and confirmed by the Forest Practices Board to serve on the Cooperative Monitoring, Evaluation, and Research Committee
CMER publication	An official CMER report
CMER report	A report that summarizes, analyzes, and draws conclusions from research conducted as part of the CMER work plan.
Consensus	Agreement by all members of a group to allow an action to proceed (See Chapter 4 for a complete description of CMER consensus.)
Cooperative agreement (CA)	A contract that public and private parties can enter into when the scope is covered by one of several chapters of the RCW
Cooperative monitoring	Process in which groups with varied interests work together to gather and interpret data on natural resources
Cooperator	See <i>CMER cooperators</i> .
Core members	A term sometimes used to distinguish CMER members appointed by the Forest Practices Board from other interested parties
Dissemination	Formal publication or presentation of information
DFC	Desired future outcome
DNR	Washington Department of Natural Resources
Effectiveness monitoring	Evaluation of the performance of the prescriptions in achieving resource objectives at one site
Extensive status and trends monitoring	Evaluation of the current status and future trends of key watershed input processes and habitat conditions within FFR lands statewide
FFR	Forests and Fish Report
FFR Policy Group	Same as TFW Policy Committee
Forest Practices Board	A state administrative body established in 1974 by the Forest Practices Act and charged with establishing rules to protect the state’s public resources while maintaining a viable timber industry
Forests and Fish Report	A 1999 report containing recommendations for protecting aquatic resources on forested lands in Washington State. The report was later legislated (ESHB 2091) and then adopted as rules by the Forest Practices Board.
FPB	Washington State Forest Practices Board

FPD	DNR Forest Practices Division – Olympia Headquarters
FREP & ROSP	Forestry Riparian Easement Program & Riparian Open Space Program
Geographical map	Location reports or legal description or literally a map of research areas
Ground rules	Code of conduct that group members agree to use in their meetings
Independent scientific peer review	The process for securing evaluation by scientists outside CMER of proposals, Study Designs, research reports, and other CMER work
Intensive monitoring	Watershed-scale monitoring that is designed to evaluate the cumulative effects of multiple forest practices and to provide information that will improve our understanding of causal relationships and biological effects of FFR rules on aquatic resources
Interagency agreement (IAA)	A contract between public agencies to implement joint or cooperative projects. The terms are binding on all parties. See RCW 39.34.
Internal dispute resolution	Processes for dealing with disagreements within CMER
ISAG	Instream Scientific Advisory Group
LWAG	Landscape and Wildlife Advisory Group
Memorandum of understanding (MOU)	A document used to identify areas of cooperation and coordination. It is not a contract, and its terms are not legally binding.
Peer review	Independent scientific peer review
Personal service contract (PSC)	Agreement for professional or technical services to be provided by a consultant to accomplish a specific study, task, or other work statement. See RCW 39.29.
Policy	The TFW Policy Committee or the Forests and Fish Policy Group
Program	A group of projects designed to answer related questions about forest practices rules within a rule group
Project	A research study or monitoring task
Protocols and standards	Routine tasks, standard operating procedures, rules, requirements, responsibilities, and measures of quality
PSMWG	Protocols & Standards Manual Work Group
Ranking criteria (work plan)	The factors, such as scientific uncertainty and risk to public resources, considered in determining the priority of projects and programs
Regions	Northeast, Southeast, Northwest, Pacific Cascade, Olympic

RFP	Request for proposal (sometimes used also as a catch-all to refer to RFQ or RFQQ)
RFQ	Request for qualifications
RFQQ	Request for qualifications and quotation
RSAG	Riparian Scientific Advisory Group
Rule group	A category of forest practices rules based on similar resource protection goals
Rule tool program	A program to help DNR develop tools for rule implementation and testing
SAG	Scientific advisory group
SAGE	Scientific Advisory Group - Eastside
Schedule L-1	A portion of the 1999 Forests and Fish Report that defines resource objectives, performance targets, and key questions related to aquatic forest practices rules
Scientific advisory group	A subcommittee formed by CMER to address a particular set of scientific issues
SFLO & AC	Small Forest Landowner Office & Advisory Committee
SFLWG	Small Forest Landowner Work Group
SOW	Scope of work
SRC	An acronym for <i>Scientific Review Committee</i> , sometimes used to refer to independent scientific peer review
TFW	Timber, Fish, and Wildlife Forum
TFW CC	Timber/Fish/Wildlife Cultural Committee
TFW Policy Committee	The group responsible for recommending policy changes in response to CMER reports; also referred to as <i>FFR Policy Group</i> or <i>Policy</i>
Timber, Fish, and Wildlife Agreement	A 1987 agreement among government, forest industry, tribal, and environmental groups for cooperative management of resources
UPSAG	Upslope Processes Scientific Advisory Group
WETSAG	Wetlands Scientific Advisory Group
Work Plan	An annual document developed by the adaptive management participants, with assistance from the SAGs, and approved by the Forest Practices Board to guide CMER's work for a given year