

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
OLYMPIA, WASHINGTON



REQUEST FOR PROPOSALS  
RFP NO. 08-146

PROJECT TITLE: **Eastside Type N Characterization Project:  
Forest Hydrology**

PROPOSAL DUE DATE: **December 3, 2007**

EXPECTED TIME PERIOD FOR CONTRACT: **January 9, 2008 – June 30, 2008**

CONSULTANT ELIGIBILITY: This procurement is open to those Consultants who satisfy the minimum qualifications stated below and who are available for work in Washington State.

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**NOTICE**

*“Persons with disabilities may request this information in alternate forms by calling the RFP Coordinator listed in Section 2.1 of this RFP. Persons with hearing impairments may call 1-800-422-7941 (TTY relay service).”*

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## SECTION 1 INTRODUCTION

The Washington State Department of Natural Resources, called DNR, solicits proposals from firms interested in participating on a project described below:

*The Request for Proposal (RFP) pertains to the Design of the Hydrology element of the Eastside Type N Channel Characterization Project.* Solicitors will design a study to describe the spatial and temporal existence of surface water discharge in Type N streams across eastern Washington forest lands that are covered by the 2001 Forest Practices Rules. The study must be consistent with the attached scoping document for Eastside Forest Hydrology: A proposed study for the Eastside Type N Characterization Project (Exhibit D). The study design should include an evaluation of process relationships between stream hydrology, landforms and management activity, and the design must address the need to develop criteria for characterizing and mapping streams with similar characteristics across the landscape.

Note that this RFP refers only to the development of a study design/workplan, NOT to conduct the study itself.

**1.01 Background.** Washington State Forest Practice Rules group natural waters into one of four types: shoreline (S), fish bearing (F), non-fish bearing perennial (Np) and non-fish bearing seasonal (Ns). WAC 222-16-030(3) defines non fish-bearing perennial streams (Np) as “all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat streams. Perennial streams are waters that do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow” (Washington Forest Practices Board, 2005). Type Ns includes all segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np and deliver to another typed waterbody. WDNR has classified 81% of the stream network length in Eastern Washington as N<sub>P</sub> and N<sub>S</sub> waters (Washington Department of Natural Resources, 2006). Given the large spatial extent of Type N channels, some stakeholders have requested research to examine the relationships between timber harvest prescriptions specified in the Forest Practice rules and their effect on stream function in these non fish-bearing channels.

According to WAC 222-16-010, riparian protections contribute to “bank stability, the recruitment of woody debris, leaf litter fall, nutrients, sediment filtering, shade, and other riparian features that are important to both riparian forest and aquatic system conditions.” Type Np streams are believed to provide habitat necessary to support the long-term viability of state-protected amphibians and water conditions that support harvestable levels of salmonids in downstream fish-bearing streams. For these reasons, the riparian areas along Type Np streams are given specific protections that are not required for Ns streams (WAC 222-30-022(2)). However, some stakeholders have questioned whether the Np/Ns break reflects a real and significant change in the functional attributes of stream channels in eastern Washington and what functions are provided by discontinuous or intermittent reaches of Np streams. Stakeholders continue to disagree about appropriate riparian buffer requirements for these reaches due to a lack of scientific information.

Additionally, difficulty associated with determining the Np/Ns break was acknowledged in the 1999 Forest and Fish Report (FFR) and in the Type N Stream Demarcation Pilot Study (PIP Report). The Forest Practices Board has currently eliminated default basin criteria from forest practice rules, and a Type N subgroup of Policy is currently in the process of revising rules for the delineation of Np streams. Regardless of a decision on Np/Ns breaks or the development of new Type N stream designation criteria, scientific questions regarding relationships between forest management and aquatic function in Type N streams are likely to remain. The eastern Washington Type N stream research program, including this study, means to improve our knowledge of the character, distribution, and function of these streams in order to help stakeholders agree on appropriate forest practice rules for these stream channels.

**1.02 Purpose.** The purpose of this current study is to examine and characterize the hydrologic attributes of non fish-bearing stream channels on eastern Washington lands subject to forest practice rules to determine the extent of various flow regimes and their distribution across the landscape.

The objectives are to determine:

- 1) The spatial and temporal characteristics of surface water discharge in Type N streams across eastern Washington FFR lands;
- 2) Which landforms, management activities, and/or independent physical characteristics (e.g. geology, climate, etc...) are related to different flow characteristics across eastern Washington FFR lands; and
- 3) What set of readily identified external characteristics might be used to group and/or remotely identify streams that exhibit similar hydrologic characteristics.

**1.03 Minimum Qualifications.** The Consultant must be licensed to do business in the State of Washington. The Consultant must have at least a masters degree in hydrology, geology, or a related environmental field; experience working in forestlands of the inland Northwest; experience with the hydrology of non-fish bearing streams; and substantial study design experience.

Proposals from Consultants who do not meet these minimum qualifications shall be rejected.

**1.04 Funding.** The DNR budgeted \$60,000 for the study design. Proposals exceeding this amount will be rejected. A contract award from this solicitation is contingent upon available funding.

**1.05 Period of Performance.** The period of performance of the contract resulting from this Request for Proposals (RFP) is tentatively scheduled for December 2007 through spring of 2008. Any amendments extending the period of performance shall be at DNR's sole discretion.

**1.06 Definitions.** Definitions of terms used in this Request for Proposals include:

**DNR -** The State of Washington Department of Natural Resources.

- Consultant -** Person or company submitting a proposal in order to obtain a contract with DNR.
- Contractor -** Person or company whose proposal has been accepted by the DNR and is awarded a formal written contract.
- FFR lands -** Forestlands covered by the State Forest Practices Rules. This includes State and private timberlands as well as DNR lands that may be covered by a Habitat Conservation Plan (HCP) in locations where the HCP riparian buffer rules do not differ from the State Forest Practices Rules.
- CMER -** The Cooperative Monitoring, Evaluation and Research committee. Part of the DNR's Forest Practices Adaptive Management Program. The cooperative committee assigned the task of performing and advising on the science aspects of the Washington State Forest Practices rules.
- SAGE -** The Scientific Advisory Group for Eastern Washington.
- RFP -** Request for Proposal - A formal procurement process where a service or need is planned but no specific service or method has been chosen. The purpose of an RFP is to permit the Consultant community to suggest various approaches to meet the need at a given price.

**1.07 Americans with Disabilities Act (ADA).** The DNR complies with the Americans with Disabilities Act. Consultants may call the RFP Coordinator to receive this Request for Proposals in alternate forms. Persons with hearing impairments may call 1-800-422-7941 (TTY relay service). This document can be prepared in Braille or on audiotape.

## SECTION 2 GENERAL INFORMATION FOR CONSULTANTS

**2.01 RFP Coordinator.** The RFP Coordinator is the sole point of contact in the DNR for this procurement. All communication between the Consultant and the DNR shall be with the RFP Coordinator, as follows:

Name	Dawn Hitchens, Contract Specialist
Phone Number	360.902.1388
Fax Number	360.902.1428
City, State, Zip Code	1111 Washington Street S.E. 4th Floor P.O. Box 47012 Olympia, Washington 98504-7012
Internet/E-mail Address	<a href="mailto:dawn.hitchens@dnr.wa.gov">dawn.hitchens@dnr.wa.gov</a>

Communication with individuals other than the RFP coordinator will be considered unofficial and non-binding on the DNR. Consultants are to rely on written statements issued by the RFP Coordinator. Communication directed to parties other than the RFP Coordinator may result in disqualification of the Consultant.

A copy of the RFP is available on DNR's website at <http://www.dnr.wa.gov/forestpractices/adaptivemanagement/contracts>.

**2.02 Submitting Proposals.** Consultants must submit five (5) paper copies and one electronic version of their proposal. Two copies must have original signatures while three copies may have photocopied signatures. The proposal, whether mailed or hand delivered, *must* arrive at the DNR no later than 5:00 pm, Pacific local time, on **December 3, 2007**.

The proposal is to be sent to the RFP Coordinator at the address listed in Item 2.01 above. The envelope should be clearly marked to the attention of the RFP Coordinator.

Consultants who mail proposals should allow for normal mail delivery time to ensure timely delivery of their proposals to the RFP Coordinator. Consultants assume the risk for the method of delivery they choose. The DNR assumes no responsibility for delays caused by a delivery service. Proposals may not be transmitted electronically.

Late proposals will not be accepted and will be automatically disqualified from further consideration. All proposals and any accompanying documentation become the property of the DNR and will not be returned.

**2.03 Proposal Format.** Proposals must be on eight and one-half by eleven (8 1/2 x 11) inch paper and placed in binders with tabs separating the major sections of the proposal. The four major sections shall include:

- 1) Letter of Submittal, including the signed Certifications and Assurances (Exhibit A);
- 2) Technical Proposal (Work Plan);
- 3) Management Proposal; and,
- 4) Cost Proposal.

Responses to each RFP question or request for information must appear in the proposal in the order presented in this RFP with the same headings.

**2.04 Letter of Submittal.** The letter must be written on the Consultant's official business letterhead stationery. It must include the following, in the order given:

1. An itemized list of all materials and enclosures that collectively form the proposal.
2. A reference to all RFP amendments received by the Consultant by amendment issue date, or a statement that none were received.
3. A statement that the Consultant believes the proposal addresses all the mandatory requirements described in the RFP.
4. A statement which acknowledges and agrees to all of the rights of DNR including the procurement rules and procedures, terms and conditions, and all other rights and terms specified in the RFP.

5. An expression of the Consultant's willingness to enter into an agreement with the DNR that includes the terms and conditions of the contract included as an Exhibit to the proposal.
6. The Consultant's guarantee that the proposal as submitted will remain in full force for 60 days from the proposal due date specified in the RFP.
7. The Consultant may include any other topics or statements in the letter that the Consultant feels are appropriate.
8. The letter must be signed by an individual who has full authority to legally bind the entity submitting the proposal to the contents of the proposal.
9. The letter must provide the Consultant's FAX number.

**2.05 PRE-PROPOSAL QUESTIONS.**

Consultants may FAX or E-mail questions about the RFP to the RFP Coordinator. The RFP coordinator will accept questions until November 15, 2007, by 5:00 PM, local time. Questions received after this date and time will not be answered unless the RFP Coordinator decides that it is in the DNR's best interests to answer them. A copy of the question(s) received, along with DNR's official answer(s), will be posted on DNR's website. This copy will become an addendum to the RFP. The DNR shall be bound only by written answers to questions. Oral responses given on the telephone will be considered unofficial.

**2.06 Estimated Schedule of Activities.**

Place advertisement in Washington Newspaper	November 5, 2007
Issue Request for Proposals	November 5, 2007
Pre-proposal Questions	November 15, 2007
Issue addendum to RFP detailing responses to questions from the Pre-proposal Questions	November 19, 2007
Proposals Due	December 3, 2007
Evaluate Proposals	December 10-12, 2007
Conduct oral interviews with finalists, if required	December 14, 2007
Announce apparent Successful Contractor and provide fax Notification to Unsuccessful Proposer(s)	December 17, 2007
Hold Debriefing Conferences (if requested)	December 21, 2007
Negotiate Contract	December 17-21, 2007
File contract with OFM (if required)	December 21, 2007
Sign Contract and begin Work	January 9, 2008

*The DNR reserves the right to revise this schedule.*

**2.07 Failure to Comply.** If the Consultant fails to comply with any requirement of the RFP, DNR will reject the proposal.

**2.08 Signatures.** Proposals must be signed and dated by a person authorized to bind the Consultant to a contractual arrangement, e.g., the President or Executive Director if a corporation, the managing partner if a partnership, or the proprietor if a sole proprietorship.

**2.09 Revisions to the RFP.** The DNR reserves the right to revise the RFP and/or to issue addenda to the RFP. The published questions and answers from the Pre-proposal conference/questions shall be an addendum to the RFP.

The DNR also reserves the right to cancel or to reissue the RFP in whole or in part, prior to execution of a contract. If DNR finds it necessary to revise any part of the RFP, addenda will be provided to all those who received the RFP.

**2.10 Rejecting Proposals.** The DNR reserves the right at its sole discretion to reject any and all proposals received without penalty and not to issue a contract from this RFP. The DNR also reserves the right at its sole discretion to waive minor administrative irregularities contained in any proposal.

**2.11 Most Favorable Terms.** The DNR reserves the right to make an award without further discussing a submitted proposal. The RFP Coordinator may contact the Consultant for clarification of a portion of the Consultant's proposal. There will be no best and final offer process. The Consultant should submit the proposal on the most favorable terms that he/she can propose. The Consultant must be prepared to accept the provisions of his /her proposal for incorporation into a contract. Contract negotiations may incorporate some or the entire Consultants proposal. The proposal will become property of DNR at no cost to DNR.

**2.12 Obligation to Contract.** This RFP does not obligate the State of Washington or the DNR to contract for services described.

**2.13 Costs to Propose.** The DNR will not be liable for any costs that the Consultant incurs in preparing a proposal related to this RFP, in conducting a presentation, or any other activities related to responding to this RFP.

**2.14 Commitment of Funds.** The Commissioner of Public Lands or his delegates are the only individuals who may legally commit the DNR to the expenditures of funds for a contract resulting from this RFP. DNR cannot pay for any costs related to the proposal that are incurred before a contract is fully executed.

**2.15 Certifications and Assurances.** The Certifications and Assurances form, Exhibit A, must be signed by an individual with authority to obligate the Consultant to a contractual arrangement and be returned as part of the proposal.

**2.16 Proposal Requirements.** A Checklist of Proposal Requirements (Responsiveness) is attached as Exhibit B. The checklist is designed to assist the Consultant in preparing a proposal

**2.17 Insurance Coverage.** A Consultant who eventually becomes a Contractor shall, at all times during the term of the contract at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in the termination of the contract at DNR's option.

Companies admitted to do business in the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports unless otherwise approved by DNR shall issue all insurance. Any exception must be reviewed and approved by the DNR Financial Management Division (FMD) Risk Manager or in the absence thereof, the DNR Contracts Specialist at FMD, before the contract is accepted. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

Before starting work, the Contractor shall furnish DNR, with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the bid/proposal, if applicable, and contract. Said certificate(s) shall contain the **Contract number 08-146**, name of DNR Project Coordinator, a description, and include the State of Washington, DNR, its elected and appointed officials, agents, and employees as additional insured on all general liability, excess, umbrella and property insurance policies.

The Contractor shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each subcontractor. Subcontractor(s) must comply fully with all insurance requirements stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit the Contractor's liability or responsibility.

All insurance provided in compliance with this contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by DNR. The Contractor waives all rights against the DNR for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this agreement.

DNR shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications.

- Insurers subject to Chapter 48.18 RCW (Admitted and Regulated by the Insurance Commissioner): The insurer shall give the DNR 45 days advance notice of cancellation or non-renewal. If cancellation is due to nonpayment of premium, the DNR shall be given 10 days advance notice of cancellation.
- Insurers subject to Chapter 48.15 RCW (Surplus lines): The DNR shall be given 20 days advance notice of cancellation. If cancellation is due to nonpayment of premium, the DNR shall be given 10 days advance notice of cancellation.

In lieu of the coverage required under this section, DNR at its sole discretion may accept evidence of self-insurance by the Contractor, provided the Contractor provides the following:

- The Contractor shall provide a statement by a CPA or actuary, satisfactory to the DNR that demonstrates the Contractor's financial condition is satisfactory to self-insure any of the required insurance coverage.
- DNR may require the Contractor to provide the above from time to time to ensure the Contractor's continuing ability to self-insure. If at any time the Contractor does not satisfy the self-insurance requirement, the Contractor shall immediately purchase insurance as set forth under this section.

By requiring insurance herein, DNR does not represent that coverage and limits will be adequate to protect the Contractor and such coverage and limits shall not limit the Contractor's liability under the indemnities and reimbursements granted to DNR in this contract.

The limits of insurance, which may be increased by DNR, as deemed necessary, shall not be less than as follows:

Commercial General Liability (CGL) Insurance: Contractor shall maintain general liability (CGL) insurance, and, if deemed necessary as determined by DNR, commercial umbrella insurance with a limit of not less than \$1,000,000 per each occurrence and \$2,000,000 for a general aggregate limit. The products-completed operations aggregate limit shall be \$2,000,000.

CGL insurance shall be written on ISO occurrence form CG 00 01 (or substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent Contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract), and contain separation of insured (cross liability) conditions.

Employers Liability (Stop Gap) Insurance: If Contractor shall use employees to perform this contract, Contractor shall buy employers liability insurance, and, if deemed necessary as determined by the DNR, commercial umbrella liability insurance with limits not less than \$1,000,000 each accident for bodily injury by accident or \$1,000,000 each employee for bodily injury by disease.

Business Auto Policy (BAP) Insurance: Contractor shall maintain business auto liability and, if deemed necessary as determined by DNR, commercial umbrella liability insurance with a limit not less than \$1,000,000 per accident. Such insurance shall cover liability arising out of "any Auto." Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage and cover a "pollution cost or expense" as provided in the 1990 or later editions of CA 00 01.

The Contractor waives all rights against DNR for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

Workers' Compensation Insurance: The Contractor shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of the Contractor and employees of any sub contractor or sub-subcontractor. Coverage shall include bodily injury (including death) by accident or disease, which arises out of or in connection with the performance of this contract. Except as prohibited by law, the Contractor waives all rights of subrogation against the DNR for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability or commercial umbrella liability insurance.

The Contractor shall indemnify DNR for all claims arising out of the Contractor's, its subcontractor's, or sub-subcontractor's failure to comply with any State of Washington worker's compensation laws where DNR incurs fines or is required by law to provide benefits to or obtain coverage for such employees. Indemnity shall include all fines, payment of benefits to the Contractor or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees. Any amount owed to DNR by the Contractor pursuant to the indemnity agreement may be deducted from any payments owed by DNR to the Contractor for performance of this contract.

The Contractor shall maintain minimum limits no less than \$1,000,000 per incident, loss, or person, as applicable. If defense costs are paid within the limit of liability, the Contractor shall maintain limits of \$2,000,000 per incident, loss, or person, as applicable. If the policy contains a general aggregate or policy limit, it shall be at least two times the incident, loss or person limit.

### SECTION 3 TECHNICAL PROPOSAL

**3.01 Project Scope of Work.** Develop a study design for the study described in the attached scoping document (Exhibit D). The study will require collecting data that will resolve both the temporal and spatial extent of flow on streams on FFR lands in eastern Washington (defined in WAC 222.16-010), though we leave open the possibility of collaboration with other agencies which may result in a modification of the geographic extent of the study.

Proposals should provide an outline briefly describing how the Consultant intends to incorporate the need for spatial and temporal data in the data collection effort. In addition, the proposal should provide information on how the Consultant would attempt to do so such that the sources and magnitude of flow and its associated relationships with external characteristics (including landform and management activity) can be evaluated.

One concept that has been partially investigated by the CMER staff geomorphologist is to use very high density LiDAR to characterize valley and channel morphology, riparian vegetation, and presence/absence of surface water. While LiDAR has been used to create DEM's for a long time, and riparian characteristics more recently, LiDAR has not as yet been used to characterize surface water presence. That said, knowledgeable sources agreed that it was possible if the

LiDAR data were collected under the right conditions. Capacitance or temperature probes could potentially be used to collect temporal data at a number of fixed locations. Using both the temporal and spatial information, one could relate different flow characteristics with landscape characteristics. Sampling might best be stratified by EPA level III ecoregion and precipitation. (This is merely one approach concept and should by no means be considered direction to respondents or a preferred approach.)

Consultants should state the techniques with which the Consultant has experience (e.g. field work, modeling, remote sensing, etc...) and how those may be used in the development of the study design. Because representative sampling will most likely be used to generalize local observations back to the FFR landscape, proposals should give some indication of the variables that are likely to be used for stratification (e.g. lithology, climate, elevation, ect...).

The Contractor should expect to interact with SAGE and CMER throughout development of the study design. Especially, consider that SAGE and CMER staff will be included in the site selection and permitting process when the study is implemented due to the necessity of coordinating with other projects and our previously-established relationships with landowners.

**3.02 Work Plan.** The technical proposal must contain all work or project requirements necessary to accomplish the scope of work defined in this RFP. Include a complete description of the proposed approach and methodology for the project, all project requirements, and the tasks required to accomplish the project. The plan must be in sufficient detail to convey to members of the evaluation team the Consultant's knowledge of the subjects and skills necessary to the project. Include any required involvement with DNR, SAGE, and CMER staff representatives in the study design or implementation phases.

The Consultant may present any creative approaches that might be appropriate. The Consultant may also provide supporting documentation that would be pertinent to this RFP.

**3.03 Schedule.** Provide a separate schedule indicating when the elements of the work will be completed and when products will be provided.

**3.04 Products.** Documents must be complete, organized, and legible enough for reviewers to understand easily, with a minimum of typographical errors, misspelled words, grammatical errors, and organizational flaws. CMER drafts and ISPR drafts must be reviewed by a technical editor prior to submission. Documents received that do not meet the stated standards for understandability will not be accepted by the DNR. The CMER project manager will assess the suitability of documents prior to submission to SAGE and any other reviewers and will recommend to the DNR whether or not products are to be accepted.

The Contractor shall be responsible for submitting the following deliverables:

- 3.04.1 Regular conference calls with DNR project manager and SAGE representatives.** Deliverables will be minutes of the conference call meeting, especially noting any decisions reached.
- 3.04.2 Attendance at all SAGE meetings.** Deliverables will be minutes of relevant discussion relevant to project and including record of any decisions, as well as electronic copies of project presentations. SAGE meets monthly, usually on the second Tuesday of the month at various locations around eastern Washington.
- 3.04.3 Description of study conceptual approach.**
- 3.04.4 Outline of study design.** Submitted electronically in MS Word to facilitate commenting. Include:
- Site selection criteria and screening process;
  - Sample size estimate;
  - Plan for, goals of, and use of results from any preliminary sampling effort;
  - Analyses to be done and figures to be included clearly indicating how each critical question and objective will be answered or addressed;
  - Specifications for Quality Assurance program elements (kinds of variance to be measured);
  - Approximate cost estimates. CMER has tentatively budgeted \$250,000 for implementation of the Type N Characterization Project. This amount should be used as guidance for study development, though consultants have the options of presenting a list of alternatives with different costs and benefits.
  - Timeline.
- 3.04.5 Presentation to CMER.** At one CMER meeting. CMER usually meets in Olympia, Washington on the fourth Tuesday of every month.
- 3.04.6 Up to four draft study design document versions.** Submitted electronically in MS Word to facilitate commenting.
- 3.04.7 Comment response matrix to CMER comments.** Table of comments and response to each. Table will follow CMER prototype (Attachment B). Submitted electronically in MS Word to facilitate commenting.
- 3.04.8 Comment response matrix to Independent Scientific Peer Review (ISPR) comments.** Table of proposed responses and itemized estimates of costs to complete each of the responses that are described. Table will follow CMER Prototype Comment Action Plan (Exhibit E). Submitted electronically in MS Excel to facilitate commenting.

## **SECTION 4 MANAGEMENT PROPOSAL**

This project will be managed on the part of the DNR by a CMER project manager designated by the DNR. The CMER project manager works closely with SAGE and the Contractor to implement any contract arising out of this RFP. Although the CMER project manager works most closely with SAGE (or a SAGE subgroup) to implement this project, he/she reports to the DNR Adaptive Management Administrator and is responsible to the legal interests of the DNR and overall objectives of CMER as well as the immediate objectives of SAGE. The same project management structure will exist for the study resulting from the study design to be developed

from this RFP. The CMER project manager for the implemented study may or may not be the same as that for the study design phase.

Consultants shall provide all information requested in the exact order specified below:

**4.01 Identifying Information.**

- 1) State the business name, address, and principal place of business, telephone number, and fax number of legal entity or individual with whom contract would be written.
- 2) Provide the names, addresses, and telephone numbers of principal officers (President, Vice President, Treasurer, Chairperson of the Board of Directors, etc.).
- 3) Specify the legal status of the Consultant (sole proprietorship, partnership, corporation, etc.) and the year the entity was organized to do business, as the entity now substantially exists.
- 4) Describe the proposing organization including size, areas of specialization and expertise, client base, and any other pertinent information in such a manner that the proposal evaluators may reasonably formulate a determination about the stability and financial strength of the proposing organization.
- 5) Include the Federal Employer Tax Identification number or Social Security number and the Washington Uniform Business Identification (UBI) number issued by the State of Washington Department of Revenue.
- 6) State the location of the facility from which the Consultant would operate.
- 7) If the Consultant or any party named previously contracted with the State of Washington during the past 24 months, indicate the name of the agency, the contract number and description and/or other information available to identify the contract.
- 8) If the Consultant or any party named previously was an employee of the State of Washington during the past 24 months, or is now an employee, identify the individual by name, the agency previously or currently employed by, job title or position held and separation date.
- 9) Consultants that employ or have on their governing board State employees or former State employees, as of the date of their proposal, shall identify such persons and their position and responsibilities within the Consultant's organization. If DNR determines that a conflict of interest exists, the Consultant may be disqualified from further consideration for award of a contract.

#### **4.02 Project Management.**

- 1) Explain the Consultant's proposed methodology for conduct of the project. Provide a description of the proposed project staffing/organization to be used during the course of the project, including any subcontractors.
- 2) State the name, the title or position, and telephone number of the individual who would have primary responsibility for the project resulting from this RFP. Disclose who within the firm will have prime responsibility and have final authority for the work under the proposed contract. Name other individuals providing service on the project.
- 3) Identify responsibilities and qualifications of staff that will be assigned to the potential contract and the amount of time each will be assigned to the project. Provide resumes' for the named staff, which include information on the individual's particular skills related to this project, education, experience, significant accomplishments and any other pertinent information. The Consultant must commit that staff identified in its proposal will actually perform the assigned work. Any staff substitution must have the prior approval of the DNR.
- 4) Provide an organizational chart of your firm indicating lines of authority for personnel involved in performance of this potential contract and relationships of this staff to other programs or functions of the firm. This chart must also show lines of authority to the next senior level of management.

#### **4.03 Experience of the Consultant.**

- 1) Indicate the experience the Consultant has in the following areas:
  - a. Hydrology of small headwater streams.
  - b. Geomorphology / Hydrogeology.
  - c. Landscape analysis.
  - d. Arid forests of the inland Northwest.
  - e. Spatial statistics.
  - f. Study design.
- 2) Describe any other experience that shows the Consultant's qualifications to perform the potential contract.
- 3) List contracts the Consultant may have had during the last five years that relate to the Consultant's ability to perform the services called for under this RFP. List contract reference numbers, contract period of performance, contact persons, and telephone numbers.

- 4) Consultant will supply letters from three (3) business references for whom work has been accomplished during the last three (3) years from the date the proposal is submitted. The letters shall briefly describe the type of service(s) provided, date(s) performed, and an objective evaluation of the quality of service(s) provided by the Consultant. Each letter shall include a name, address, and telephone number of a business representative and alternate to be contacted by the DNR, if deemed necessary. By submitting a proposal, the Consultant grants DNR permission to contact the references. Current DNR staff may not be included as references.
- 5) If the Consultant has had a contract terminated for default in the last five years, describe such incident. Termination for default is defined as notice to stop performance due to the Consultant's non-performance or poor performance and the issue of performance was either (a) not litigated due to inaction on the part of the Proposer or (b) litigated and such litigation determined that the Proposer was in default.

Submit full details of the terms for default including the other party's name, address, and phone number. Present the Consultant's position on the matter. The DNR will evaluate the facts and may, at its sole discretion, reject the proposal on the grounds of the past experience.

If the Consultant has experienced no such termination for default in the past five years, so indicate.

**4.04 Subcontractor Information Required.** If the Consultant intends to subcontract any of the proposed work described in its technical proposal, the Consultant shall submit the information required in Sections 4.1 and 4.3 for each proposed subcontractor.

**4.05 Minority and Women-Owned Business Enterprises (MWBE) Participation.**

NOTE: The use of federal funds may require the use of MWBE or small disadvantage business goals.

Minority and women-owned Business Enterprises (MWBE) are encouraged to participate in performing contract work resulting from this RFP. State agency goals are to award a minimum of 10% of their personal service contract dollars to minority-owned firms and a minimum of 4% to women-owned firms. Consultants are asked to voluntarily participate in assisting the state meet these goals.

Proposals, which meet any of the following criteria, shall be considered appropriate in assisting DNR meet state MWBE goals:

- The Consultant submitting the proposal is owned and operated by minorities or women and has been certified as an MWBE by the Washington State Office of Minority and Women's Business Enterprises. DNR will verify MWBE certification. The Consultant voluntarily

agrees to subcontract a minimum of ten percent (10%) of the contracting amount with a minority-owned business and/or four percent (4%) of the contracted amount with a woman-owned business. The subcontractor(s) must be identified in the Consultant's proposal and be certified as an MWBE by the Washington State Office of Minority and Women's Business Enterprises. DNR will verify MWBE certification.

- Indicate the anticipated percent of the total bid for each minority and/or woman-owned business and the amount of compensation anticipated for each.

MWBE specifications become part of the terms and conditions of any contract awarded from this RFP.

## **SECTION 5 COST PROPOSAL**

**5.01 Identifying Costs.** In this section of the proposal, the Consultant is to identify all costs to be charged for performing the tasks necessary to accomplish the objectives of the contract. The Consultant is to submit a fully detailed budget including staff costs and any non-labor expenses necessary to accomplish the tasks and to produce the products.

This contract will be paid by product, so delineate costs by product. Each task will have an associated product and price, which will be paid when that product is accepted. Products will include at least those identified in Section 3.04 above. The "Conference Call" task maybe delineated by units of time (for instance, by hour; each call to be billed by the number of person-hours). Please include in the cost estimate a Microsoft Excel-compatible table that shows Task, Deliverable, Quantity, Price, and Total Cost for all the proposed tasks and deliverables. In addition to the summary table, the Consultant is to submit a fully detailed budget including staff costs and any non-labor expenses necessary to accomplish the tasks and to produce the deliverables under the contract.

**5.02 Rates.** Identify proposed staff by name, hourly rate, and expected use during contract performance. The Consultant shall charge the DNR only for staff specifically authorized by the DNR to perform work at the rates established in the contract.

**5.03 Award Not Based on Price Alone.** DNR will award a contract to the Consultant who proposes the best combination of skills and abilities based upon the evaluation criteria, not necessarily to the Consultant of least cost. However, Consultants are encouraged to submit proposals, which are consistent with the DNR's efforts to conserve state resources.

**5.04 State Sales Tax.** Consultants are required to collect and pay Washington state sales tax, if applicable.

**5.05 Subcontractors.** The Consultant must set out in the Cost Proposal the portion to be paid to certified MBE and/or WBE firm(s). Costs for subcontractors that are not certified are also to be broken out separately.

**5.06 Computation.** The cost/price proposal will be assessed for Completeness and Realism. The cost/price of the expected work to be performed will be scored according to the following and will be closely considered in performing an integrated assessment of the proposals leading to selection of the best value offered.

1. **Completeness:** To be complete, the Consultant must provide all the cost/pricing data that is necessary to adequately evaluate the proposal. The DNR will assess the extent to which the cost/price proposal complies with the content and format requirements set forth in the solicitation.
2. **Realism:** realism is evaluated by assessing the compatibility of proposed costs with the proposal scope and efforts. Cost realism analysis seeks to ensure that proposed costs are consistent with the Scope of Work requirements. If the Consultant's proposed cost/price is evaluated as unrealistically low or high, compared to anticipated costs of performance, it may be interpreted by the DNR as an inherent lack of understanding of the requirements and adversely affect the Consultant's evaluation rating and potential to be awarded the contract.

## **SECTION 6 EVALUATION AND CONTRACT AWARD**

**6.01 Evaluation Team.** DNR will designate an evaluation team to evaluate proposals. The evaluation team will find the proposal that most closely meets the requirements stated in this RFP. Proposals will be evaluated according to the requirements outlined in this RFP and any addenda that are issued.

**6.02 Administrative Requirements.** The RFP Coordinator will review all proposals to determine compliance with administrative requirements and instructions specified in the RFP. Only proposals meeting the minimum requirements will be forwarded to the evaluation team for further review. See Exhibit B for a Checklist of Proposal Requirements.

**6.03 Responsibleness.** When evaluating proposals, the evaluation team will consider a prospective Contractor's responsibleness. A prospective Contractor is responsible if it:

- Has adequate financial resources to perform the contract, or the ability to obtain them;
- Is able to comply with the required or proposed delivery or performance schedule, taking into consideration all existing commercial and governmental business commitments;
- Has a satisfactory performance record. A prospective Contractor shall not be determined responsible or non-responsible solely on the basis of a lack of relevant performance history, unless the DNR determines special standards are appropriate. Any special standards will be properly identified in this solicitation and will apply to all Consultants/Contractors. A prospective Contractor that is or recently has been seriously deficient in contract performance

shall be presumed to be non-responsible, unless the DNR determines that the circumstances were properly beyond the Consultant's control, or that the Consultant has taken appropriate corrective action. Past failure to apply sufficient tenacity and perseverance to perform acceptably is strong evidence of non-responsibility. Failure to meet the quality requirements of the contract is a significant factor to consider in determining satisfactory performance. The DNR shall consider the number of contracts involved and the extent of deficient performance in each contract when making this determination.

**6.04 Oral Presentations May Be Required.** The DNR may elect to select the top scoring finalists for an oral presentation and final determination of contract award. If the Consultant makes commitments at the oral interview, those commitments will be binding.

**NOTE:** The scores of the written proposals and oral presentations may be added together to determine the apparent successful Contractor.

**6.05 Information Used for Evaluation.** Evaluators will use the information in the Consultants' proposals and information gathered from Consultants' references. No other information will be supplied to or used by the evaluation team.

**6.06 Evaluation Scoring.** The following weights will be assigned to the proposal components for evaluation purposes:

Technical Proposal	50%
<hr/>	
<ul style="list-style-type: none"><li>• Proposed project approach and methodology and adequacy of work plan 35%</li><li>• Description of products 5%</li><li>• Feasibility of schedule 10%</li></ul>	
Management Proposal	40%
<hr/>	
<ul style="list-style-type: none"><li>○ Firm's relevant experience 5%</li><li>○ Staff qualifications 20%</li><li>○ Team structure 10%</li><li>○ References 5%</li></ul>	
Cost Proposal	10%
<hr/>	
<ul style="list-style-type: none"><li>○ Completeness 5</li><li>○ Realism 5</li></ul>	
Total for Written Proposals	100%
<hr/>	

Oral presentations, if required, will be scored separately with a maximum value of 30 points. Evaluation criteria for oral presentations will include such elements as:

- Understanding of project requirements

- Proposed project approach and methodology
- Quality of Work Plan
- Feasibility of proposed schedule
- Description of products
- Project team structural/internal contracts
- Firm's relevant experience
- Staff qualifications and experience
- References
- Others

**6.07 Notification to Unsuccessful Proposers.** Firms whose proposals have not been selected for further negotiation or award will be notified via FAX at the FAX number given in the management proposal.

**6.08 General Terms and Conditions.** The apparently successful Contractor will be expected to enter into a contract with the DNR which is substantially the same as the contract attached as Exhibit C, including the DNR's General Terms and Conditions.

A Consultant may not submit its own standard contract terms and conditions in response to this RFP. The Consultant may submit exceptions or modifications that their firm may have to the proposed terms and conditions.

**6.09 Debriefing of Unsuccessful Proposers.** Consultants who submitted a proposal that was not selected will be given the opportunity for a debriefing conference. Consultants wishing a debriefing conference must contact the RFP Coordinator within three (3) business days after the Notification of Unsuccessful Consultant award letter are faxed to the Consultant. The debriefing must be held within three (3) business days of the Consultant's request.

Discussion will be limited to a critique of the requesting Consultant's proposal. Comparisons between proposals or evaluations of the other proposals will not be allowed. Debriefing conferences may be conducted in person or on the telephone and will be scheduled for a maximum of one hour.

**6.10 Protest Procedure.** Consultants who responded to this solicitation and participated in a debriefing conference may file a protest to the selection of the winning proposal with the RFP Coordinator within three (3) business days after the debriefing conference.

Consultants protesting this selection shall follow the procedures described below. DNR will not consider protests that do not follow these procedures. This protest procedure constitutes the sole administrative remedy available to Consultants under this procurement.

All protests must be in writing and signed by the protesting party or an authorized Agent. The protest must state the grounds for the protest with specific and complete statements of the

action(s) being protested. A description of the relief or corrective action being requested should also be included. All protests shall be addressed to the RFP Coordinator.

Only protests stipulating an issue of fact concerning the following subjects shall be considered:

- a matter of bias, discrimination or conflict of interest on the part of the evaluator;
- errors in computing the score;
- non-compliance with procedures described in the procurement document.

When DNR receives a protest, DNR will hold a protest review. The Commissioner of Public Lands or his delegate will consider all available facts and issue a decision in five business days of receiving the protest. If additional time is required, the protesting party will be notified of the delay.

If a protest might affect the interest of other Consultants that submitted a proposal, those Consultants will be given an opportunity to submit its views and any relevant information on the protest to the RFP Coordinator.

The final determination of the protest shall:

- Find the protest lacking in merit and uphold the DNR's action; or
- Find only technical or harmless errors in the DNR's acquisition process conduct and determine the DNR to be in substantially compliance and reject the protest; or
- Find merit in the protest and provide the DNR options which may include:
  - Correct the errors and re-evaluate all proposals, and/or
  - Reissue the solicitation document.
  - Make other findings and determine other courses of action as appropriate.

If the DNR determines that the protest is without merit, the DNR will enter into a contract with the apparently successful Contractor.

**6.11 Proprietary Information/Public Disclosure.** Materials submitted in response to this competitive procurement become the property of the DNR.

All proposals received shall remain confidential until the contract, if any; the Commissioner of Public Lands or designated representative and the apparent successful Contractor sign resulting from this RFP. After signing, the proposals become public records as defined in RCW 42.17.250 to .340, Public Records.

The Consultant must clearly mark information in the proposal that the Consultant desires to claim as proprietary and exempt from disclosure under the provisions of RCW 42.17.250 to .340. The page must be identified by printing the word "Proprietary" on the lower right hand corner

of the page and the particular portion of the page that the Consultant claims as proprietary must be clearly marked.

The DNR will consider a Consultant's request for exemption from disclosure. DNR will make a decision based on applicable laws. Marking the entire proposal exempt from disclosure will not be honored. The Consultant must be reasonable in designating information as confidential. If any information is marked as proprietary in the proposal, such information will not be made available until the affected proposer has been given an opportunity to seek a court injunction against the requested disclosure.

DNR will charge for copying and shipping, as permitted by RCW 42.17.300. No fee shall be charged for inspection of contract files. Twenty-four (24) hours notice to the RFP Coordinator is required. All requests for information should be directed to the Coordinator.

## **SECTION 7 RFP EXHIBITS**

Exhibit A	Certification and Assurances
Exhibit B	Checklist of Proposal Requirements
Exhibit C	Sample Personal Service Contract Format including General Terms and Conditions
Exhibit D	Scoping Document
Exhibit E	CMER Prototype Comment Action Plan SAMPLE

## EXHIBIT A

### CERTIFICATIONS AND ASSURANCES

I/we make the following certifications and assurances as a required element of the bid or proposal to which it is attached, understanding that the truthfulness of the facts affirmed here and the continuing compliance with these requirements are conditions precedent to the award or continuation of the related contract(s):

1. The prices and/or data have been determined independently, without consultation, communication, or agreement with others for the purpose of restricting competition. However, I/we may freely join with other persons or organizations for the purpose of presenting a single proposal or bid.
2. The attached proposal is a firm offer for a period of 60 days following receipt, and it may be accepted by the DNR without further negotiation (except where obviously required by lack of certainty in key terms) at any time within the 60-day period.
3. In preparing this proposal, I/we have not been assisted by any current or former employee of the state of Washington whose duties relate (or did relate) to this proposal, bid, or prospective contract, and who was assisting in other than his or her official, public capacity. Neither does such a person nor any member of his or her immediate family has any financial interest in the outcome of this proposal bid. (Any exceptions to these assurances are described in full detail on a separate page and attached to this document.)
4. I/we understand that the DNR will not reimburse me/us for any costs incurred in the preparation of this proposal. All proposals become the property of the DNR, and I/we claim no proprietary right to the ideas, writings, items, or samples, unless so stated in this proposal.
5. Unless otherwise required by law, the prices and/or cost data which have been submitted have not been knowingly disclosed by the Proposer and will not knowingly be disclosed by him/her prior to opening, directly or indirectly to any other Proposer or to any competitor.
6. No attempt has been made or will be made by the Proposer to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition.

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Signature of Proposer

## EXHIBIT B

### CHECKLIST OF PROPOSAL REQUIREMENTS (RESPONSIVENESS)

- \_\_\_\_\_ Proposal was formatted with 4 major sections: letter of transmittal, technical specification, management specification and cost proposal.
- \_\_\_\_\_ Letter of transmittal was signed by a person authorized to legally obligate the Consultant, including therein all the requirements stated under Letter of Transmittal of the RFP.
- \_\_\_\_\_ Five copies and one electronic version of the proposal were submitted.
- \_\_\_\_\_ Proposal was submitted on or before 5:00 p.m. on December 3, 2007.
- \_\_\_\_\_ The Consultant has a masters degree in hydrology, geology, or a related environmental field; & experience in:
- a. Hydrology of small headwater streams.
  - b. Geomorphology / Hydrogeology.
  - c. Landscape analysis.
  - d. Arid forests of the inland Northwest.
  - e. Spatial statistics.
  - f. Study design.
- \_\_\_\_\_ Consultant is licensed to do business in the state of Washington.
- \_\_\_\_\_ The contract price is not greater than \$60,000.
- \_\_\_\_\_ The letter of submittal included a statement that the Certificate of Insurance would be provided, as a condition of award.
- \_\_\_\_\_ Proposal provided 60 days for acceptance of its terms from the due date of proposals.
- \_\_\_\_\_ The Certifications and Assurances, Exhibit A to the RFP, was signed and returned.

**FOR EXAMPLE ONLY DO NOT COMPLETE**

**EXHIBIT C**

**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
DOUG SUTHERLAND, Commissioner of Public Lands**

**PERSONAL SERVICES CONTRACT**

**Contract No. PSC EXAMPLE**

This Contract is between the State of Washington Department of Natural Resources, referred to as the DNR, and \_\_\_\_\_, referred to as the Contractor, for the express purposes described in the following provisions of this Contract.

The purpose(s) of this Contract are to:

The parties mutually agree to the terms, conditions and covenants described below, attached, or incorporated by reference as follows:

**1.01 Rights and Obligations.** Attachment A contains the General Terms and Conditions governing work to be performed under this Contract, the nature of the working relationship between the DNR and the Contractor, and specific obligations of both parties. All rights and obligations of the parties to this Contract shall be subject to and governed by Attachment A and other attachments each incorporated by reference, and by the Special Terms and Conditions.

**SPECIAL TERMS AND CONDITIONS**

**2.01 Scope of Work.**

- (1) The Contractor will provide the following:
- (2) The Contractor shall produce the following:

All required products must be delivered to the DNR Project Manager. All oral reports must be presented at the location requested by the DNR.

- (3) Attachment B contains the detailed Scope of Work or in Contractor's Proposal.

The Contractor shall complete all specified Contract work including submission of reports, and/or other required documentation within the time periods set forth in the Contract.

**3.01 Conduct of Work.** The Contractor shall furnish all necessary qualified personnel, material, and equipment, and manage and direct the same to timely complete the work described in this Contract.

**4.01 Period of Performance.**

(1) Effective Date: Subject to its other provisions, the period of performance under this Contract shall begin on \_\_\_\_.

The provisions of chapter 39.29 RCW require DNR to file this contract with the Office of Financial Management (OFM). This contract is not effective, work may not be commenced nor payment made until ten (10) working days following the date of filing, and, if required, until reviewed or approved by OFM. If OFM fails to approve the contract, the contract shall be void.

(2) Completion Date: This contract shall terminate on \_\_\_\_ or when all of its terms and conditions have been satisfied, whichever is earlier, unless sooner terminated as provided herein.

**5.01 Compensation and Payment.**

(1) Amount of Compensation: Total compensation including expenses payable to Contractor for satisfactory performance of the work under this Contract shall not exceed \_\_\_\_\_ (\$\_\_\_\_\_). Contractor's compensation for services rendered shall be based on the following rates or as follows:

(2) Time of Payment: Payment for work performed shall be made in accordance with the following.

Payment is timely if DNR pays within 30 days after receiving properly completed invoice vouchers. Payments shall be sent to the address designated by the Contractor. The DNR may terminate the Contract or withhold payments claimed by the Contractor for services rendered if the Contractor fails to satisfactorily comply with any term or condition of this Contract.

(3) Invoices: Payment for services rendered shall be payable when the Contractor submits properly completed invoice vouchers. The Contractor shall submit invoices monthly/quarterly, or

The Contractor shall make requests for payment on invoice voucher forms. Invoice vouchers shall include all information necessary for the DNR to determine the exact nature of all expenditures and shall identify all personnel for whom compensation is sought, the amount of hours each individual worked, and the rate of compensation for each. The rate of compensation for each of the Contractor's personnel shall not exceed the amount agreed to. Each voucher will clearly indicate that it is for the services rendered in performance under this Contract. Requests for payment shall be submitted to the DNR Project Manager.

(4) Expenses: Contractor shall receive reimbursement for travel and other expenses as authorized in advance by the DNR as reimbursable. The maximum amount is to be \_\_\_\_ (\$ \_\_\_\_). This amount is included in the contract total in Paragraph 5.01(1). Expenses are limited to: airfare (economy or coach class only), lodging and subsistence necessary during periods of required travel, and expenses incurred during travel for telephone, copying and postage. Contractor shall receive compensation for travel expenses at current State travel reimbursement rates. Receipts must be attached for any expenditure of \$25.00 or more.

Expenses: No additional costs or expenses are allowable. All costs and expenses associated with the Contractor fulfilling the terms and conditions of the contract are included in the amount of payment stated in section 5.01(1) and no additional payment shall be made under this Contract.

[INSTRUCTION: OR Optional Alternative to (4)].

(5) Biennial Closures: Under biennial closing procedures, the Contractor must submit all invoices and/or billings for services or material supplied under this Contract through June 30, 20\_\_, to DNR no later than July 10, 20\_\_. If DNR does not receive invoices and bills by July 10, a considerable delay in payment may result.

**6.01 Federal Subcontract.** When the DNR is passing federal funds to the Contractor, the Contractor will be considered a "sub-recipient", and shall

(1) Adhere to the Federal Office of Management & Budget (OMB) Circular A-133 and other applicable federal and State regulations.

(2) Provide access to independent auditors to its financial records.

The Contractor may obtain a copy of the federal agreement governing this Contract by contacting the DNR Project Manager.

**7.01 Acceptance.** Progress payments shall become due and payable when the Contractor delivers each product and DNR favorably accepts the product. If a product is not acceptable to DNR, the DNR shall within ten (10) working days from receipt, notify the Contractor in writing of the nature of defects in the product and any proposed remedy. The Contractor shall respond to this notice in writing within ten (10) working days specifying the action to be taken to make the product acceptable to the DNR.

**8.01 General Insurance Requirements** At all times during the term of this contract, the Contractor shall, at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in the termination of the contract at DNR's option.

Companies admitted to do business in the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports unless otherwise approved by

DNR shall issue all insurance. Any exception must be reviewed and approved by the DNR Risk Manager or in the absence of, the DNR Contracts Specialist, before the contract is accepted. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

Before starting work, Contractor shall furnish DNR, with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the bid/proposal, if applicable, and Contract. Said certificate(s) shall contain the Contract Number \_\_\_\_\_, name of DNR Project Manager, a description, and include the State of Washington, DNR, its elected and appointed officials, agents, and employees as additional insured on all general liability, excess, umbrella and property insurance policies.

Contractor shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each sub-Contractor. Subcontractor(s) must comply fully with all insurance requirements stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit Contractor's liability or responsibility.

All insurance provided in compliance with this contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by DNR. Contractor waives all rights against the DNR for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this Contract.

DNR shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications.

- (1) Insurers subject to Chapter 48.18 RCW (Admitted and Regulated by the Insurance Commissioner): The insurer shall give the DNR 45 days advance notice of cancellation or non-renewal. If cancellation is due to nonpayment of premium, the DNR shall be given 10 days advance notice of cancellation.
- (2) Insurers subject to Chapter 48.15 RCW (Surplus lines): The DNR shall be given 20 days advance notice of cancellation. If cancellation is due to nonpayment of premium, the DNR shall be given 10 days advance notice of cancellation.

In lieu of the coverage required under this section, DNR at its sole discretion may accept evidence of self-insurance by the Contractor, provided Contractor provides the following:

Contractor shall provide a statement by a CPA or actuary, satisfactory to the DNR that demonstrates Contractor's financial condition is satisfactory to self-insure any of the required insurance coverage.

DNR may require the Contractor to provide the above from time to time to ensure the Contractor's continuing ability to self-insure. If at any time the Contractor does not satisfy the

self-insurance requirement, the Contractor shall immediately purchase insurance as set forth under this section.

By requiring insurance herein, DNR does not represent that coverage and limits will be adequate to protect the Contractor and such coverage and limits shall not limit the Contractor's liability under the indemnities and reimbursements granted to DNR in this contract.

The limits of insurance, which may be increased by DNR, as deemed necessary, shall not be less than as follows:

(1) Commercial General Liability (CGL) Insurance: The Contractor shall maintain general liability (CGL) insurance, and, if deemed necessary as determined by the DNR, commercial umbrella insurance with a limit of not less than \$1,000,000 per each occurrence and \$2,000,000 for a general aggregate limit. The products-completed operations aggregate limit shall be \$2,000,000.

CGL insurance shall be written on ISO occurrence form CG 00 01 (or substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent Contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract), and contain separation of insured (cross liability) conditions.

(2) Employers Liability (Stop Gap) Insurance: If the Contractor shall use employees to perform this contract, Contractor shall buy employers liability insurance, and, if deemed necessary as determined by the DNR, commercial umbrella liability insurance with limits not less than \$1,000,000 each accident for bodily injury by accident or \$1,000,000 each employee for bodily injury by disease.

(3) Business Auto Policy (BAP) Insurance: The Contractor shall maintain business auto liability and, if deemed necessary as determined by the DNR, commercial umbrella liability insurance with a limit not less than \$1,000,000 per accident. Such insurance shall cover liability arising out of "any Auto." Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage and cover a "covered pollution cost or expense" as provided in the 1990 or later editions of CA 00 01.

The Contractor waives all rights against DNR for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

(4) Workers' Compensation Insurance: The Contractor shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of the Contractor and employees of any subcontractor or sub-subcontractor. Coverage shall include bodily injury (including death) by accident or disease, which arises out of or in connection with the performance of this contract. Except as prohibited

by law, the Contractor waives all rights of subrogation against the DNR for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability or commercial umbrella liability insurance.

The Contractor shall indemnify DNR for all claims arising out of the Contractor's, its subcontractor's, or sub-subcontractor's failure to comply with any State of Washington worker's compensation laws where DNR incurs fines or is required by law to provide benefits to or obtain coverage for such employees. Indemnity shall include all fines, payment of benefits to the Contractor or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees. Any amount owed to DNR by the Contractor pursuant to the indemnity may be deducted from any payments owed by DNR to the Contractor for performance of this Contract.

(5) Professional Liability Insurance: Professional liability insurance is required if services delivered pursuant to this agreement, either directly or indirectly, involve or require providing professional services. Such coverage shall cover injury or loss resulting from the Contractors' rendering or failing to render professional services.

The Contractor shall maintain minimum limits no less than \$1,000,000 per incident, loss, or person, as applicable. If defense costs are paid within the limit of liability, the Contractor shall maintain limits of \$2,000,000 per incident, loss, or person, as applicable. If the policy contains a general aggregate or policy limit, it shall be at least two times the incident, loss or person limit.

**9.01 Project Manager.**

- (1) The Project Manager for the Contractor is \_\_\_\_\_, Telephone Number \_\_\_\_\_.
- (2) The Project Manager for the DNR is \_\_\_\_\_, Telephone Number \_\_\_\_\_.

**IN WITNESS WHEREOF, the parties have executed this Agreement.**

**CONTRACTOR NAME**

Dated: \_\_\_\_\_, 2007

By: \_\_\_\_\_

Name & Title

Address: \_\_\_\_\_

City, State: \_\_\_\_\_

Telephone: \_\_\_\_\_

FTIN: \_\_\_\_\_

UBI Number: \_\_\_\_\_

**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES**

Dated: \_\_\_\_\_, 2007

By: \_\_\_\_\_

Leonard S. Young

Forest Practices Division Manager

P.O. Box 47012

Olympia, WA 98504-7012

Personal Services Contract  
Approved as to Form 29 September 1997  
By the Assistant Attorney General  
State of Washington

**GENERAL TERMS AND CONDITIONS**

**1.01 Identification.** The Contract number must appear on all documents, correspondence, invoices and all other written material submitted or prepared in conjunction with this Contract.

**2.01 Independent Capacity of Contractor:** The Contractor and its employees or agents performing under this Contract are not employees or agents of the DNR. The Contractor will not represent itself nor claim to be an officer or employee of the DNR or of the State of Washington by reason hereof, nor will the Contractor make any claims of right, privilege or benefit which would accrue to an employee under Washington law.

**3.01 Deductions.** The DNR shall make no deductions from the stated amount of compensation for income tax, social security taxes, medical insurance, industrial insurance, license fees or deductions of any other kind. Contractor is responsible for all deductions for which the Contractor may be liable.

**4.01 Retention of Records.** The Contractor shall maintain books, records, documents and other materials that sufficiently and properly reflect all direct and indirect costs of any nature expended in the performance of this Contract. These materials shall be available at all reasonable times for inspection, review, or audit by personnel duly authorized by the DNR, and State or federal officials so authorized by law, rule, regulation or contract. The Contractor will retain these materials for six (6) years after settlement or termination.

If any litigation, claim or audit is started before the expiration of the six (6) year period, the records shall be retained until all litigation, claims, or audit findings involving the records have been resolved.

**5.01 Right of Inspection.** The Contractor shall provide right of access to its facilities to the DNR, any of its officers, or to any other authorized agent or official of the State of Washington or the federal government at all reasonable times, in order to monitor and evaluate performance, compliance, and/or quality assurance under this Contract.

**6.01 Treatment of Assets.** Title to all property furnished by the DNR shall remain property of the DNR. Titles to all property furnished by the Contractor, the cost of which the Contractor is entitled to be reimbursed as a direct item of cost under this Contract, shall pass to and vest in the DNR upon delivery of such property by the Contractor.

Any property of the DNR furnished to the Contractor shall, unless otherwise provided herein or approved by the DNR, be used only for the performance of this Contract.

The Contractor shall be responsible for any loss or damage to DNR property resulting from the Contractor's negligence or which results from the Contractor's failure to maintain and administer

that property according to sound management practices. If there is loss or damage to DNR property, the Contractor shall notify the DNR of the loss and shall take all reasonable steps to protect that property from further damage.

The Contractor shall surrender to the DNR all property of the DNR prior to settlement upon completion, termination or cancellation of this Contract.

**7.01 Close-out.** The Contractor must submit all requests for reimbursement for work performed under this Contract to the DNR so that they are received no later than thirty days (30) following the termination of this Contract. If an earlier date is specified in this Contract, the earlier date shall take precedence.

**8.01 Non-discrimination.** During the performance of this Contract, the Contractor shall comply with all federal and State nondiscrimination laws, regulations and policies. In the event of the Contractor's noncompliance or refusal to comply with any nondiscrimination law, regulation, or policy, this Contract may be rescinded, canceled or terminated in whole or in part, and the Contractor may be declared ineligible for further contracts with the DNR.

**9.01 Assignability.** This Contract, and any claim arising under this Contract, is not assignable or delegable by the Contractor either in whole or in part.

**10.01 Subcontracting.** Neither the Contractor nor any Subcontractor shall enter into subcontracts for any of the work contemplated under this contract without obtaining prior written approval of the DNR.

**11.01 Changes/Extras.** The DNR may at any time, by written order, make changes within the general scope of this Contract. No payment for changes or extras shall be made unless the DNR Project Manager has authorized such changes or extras and the price in advance in writing. No extension of time because of changes or extras will be allowed, unless the DNR Project Manager has authorized such extension.

No contract work shall be commenced nor any payment rendered for any work or services to be performed in connection with this Contract until both parties have signed a contract amendment.

**12.01 Disputes.** The DNR Project Manager shall decide disputes concerning questions of fact that are not resolved by agreement. The DNR Project Manager shall furnish the Contractor a written, signed copy of the decision. The DNR Project Manager's decision is final unless the Contractor appeal in writing to the DNR Project Manager within 30 days of receiving the latter's decision. The Commissioner of Public Lands or his authorized representative will decide the appeal. The decision will be final.

This dispute resolution process shall precede any action in a judicial or quasi-judicial tribunal. The Contractor does not waive any right to seek review of the DNR's decision. The Contractor may seek review only in the Superior Court of Thurston County. Pending final decision, the

Contractor shall proceed diligently to perform according to the contract and according to DNR's decisions.

**13.01 Conflict of Interest.** The DNR may, by written notice to the Contractor, terminate this Contract if it is found that there is a violation of the State Ethics Law, chapter 42.52 RCW or any similar statute involving the Contractor in the procurement of, or performance under, this Contract.

In the event this Contract is terminated as provided above, the DNR shall be entitled to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the Contract by the Contractor. The rights and remedies of the DNR provided for in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law.

**14.01 Termination of Contract for Cause.** The DNR may terminate this Contract in whole, or in part, at any time after thirty days (30) notice whenever it is determined that the Contractor has failed to comply with the terms and conditions of the Contract. The DNR shall promptly notify the Contractor in writing of the termination and the reasons for termination, together with the effective date of termination.

**15.01 Termination for Funding Reasons.** The DNR may unilaterally terminate this Contract in the event that funding from federal, State or other sources becomes no longer available to the DNR, or is not allocated for the purpose of meeting the DNR's obligation hereunder. Such action is effective when the DNR sends written notification of termination.

**16.01 Termination for Convenience.** The DNR may terminate this Contract in whole or in part by giving fifteen days (15) written notice to the Contractor when it is in the best interest of the DNR. If this Contract is so terminated, the DNR shall be liable only for payment in accordance with the terms of this Contract for services rendered prior to the effective date of termination.

**17.01 Hold Harmless and Indemnification.** To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless DNR, its officials, agents and employees, from and against all claims arising out of or resulting from the performance of the contract. "Claim" as used in this agreement means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible property including loss of use resulting therefrom. Contractor's obligation to indemnify, defend, and hold harmless includes any claim by Contractor's agents, employees, representatives, or any subcontractor or its employees. Contractor expressly agrees to indemnify, defend, and hold harmless DNR for any claim arising out of or incident to Contractor's or any subcontractor's performance or failure to perform the contract. Contractor's obligation to indemnify, defend, and hold harmless DNR shall not be eliminated or reduced by any actual or alleged concurrent negligence of DNR or its agents, agencies, employees and officials. Contractor waives its immunity under Title 51 RCW to the

extent it is required to indemnify, defend and hold harmless DNR and its officials, agents or employees.

**18.01 Publication Rights, Rights to Data, Patents and Inventions.** The Contractor shall not publish any of the results of the contract work without the advance written permission of the DNR. DNR will not be unreasonably withhold permission and will respond to publishing request within thirty days (30).

Unless otherwise provided, the data that originates from this Contract shall be "works for hire" as defined by the U.S. Copyright Act of 1976 and shall be owned by the DNR. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes and sound reproductions. Ownership includes the right to copyright, patent, register and the ability to transfer these rights.

Data which is delivered under the Contract, but which does not originate therefrom, shall be transferred to the DNR with a nonexclusive, royalty-free, irrevocable license to publish, translate, reproduce, deliver, perform, dispose of, and to authorize others to do so; provided, that such license shall be limited to the extent which the Contractor has a right to grant a license.

In accordance with Chapter 39.29 RCW, Contractor shall not charge additional costs to the DNR, the Joint Legislative Audit and Review Committee (JLARC) or the Office of the State Auditor for access to data generated under this contract. Contractor shall provide access to data generated under this contract to the DNR, the Joint Legislative Audit and Review Committee (JLARC), and the Office of the State Auditor during the term of this Contract and thereafter. For purposes of this section, "data" includes all information that supports the findings, conclusions, and recommendations of the Contractor's reports, including computer models and the methodology for those models.

**19.01 Licensing, Accreditation and Registration.** The Contractor shall comply with all applicable local, State, and federal licensing, accreditation and registration requirements or standards necessary for the performance of this Contract.

**20.01 Confidentiality.** Contractor shall not disclose to any third party any proprietary or confidential information received from the DNR, or acquired during the course of work under this Contract and shall not use for its own benefit or that of others, any such information, whether developed in the course of this Contract or derived from the DNR, except as may be authorized by the DNR in writing. All information developed in the performance of this Contract shall be considered the DNR's proprietary information.

**21.01 Governing Law.** The laws of the State of Washington shall govern this Contract. In the event of an inconsistency in this Contract, unless otherwise provided herein, the inconsistency shall be resolved by giving precedence in the following order:

- (1) Applicable federal and State statutes and regulations;

- (2) The Special Terms and Conditions as contained in the main contract instrument;
- (3) The General Terms and Conditions contained in this Attachment A;
- (4) Any Statement of Work attached hereto and incorporated by reference herein; and
- (5) Any other provisions or attachments of the Contract whether incorporated by reference or otherwise.

**22.01 Jurisdiction/Venue.** This Contract shall be construed and interpreted under the laws of the State of Washington and the venue of any action brought under this Contract shall be in the Superior Court for Thurston County. The Contractor, by execution of this Contract, acknowledges the jurisdiction of the courts of the State of Washington in this matter.

**23.01 Waiver.** A failure by the DNR to exercise its rights shall not constitute a waiver of any rights under this Contract unless Stated to be such in writing signed by an authorized representative of the DNR and attached to the original Contract.

**24.01 Entire Contract.** This document contains all covenants, stipulations and provisions agreed by both parties. No agent or representative of either party has authority to make, and the parties shall not be bound by or be liable for, any Statement representation, promise or agreement not set forth herein except for extension of the completion date. No changes, amendments or modifications of the terms hereof shall be valid unless reduced to writing and signed by the parties as an amendment to this Contract.

**25.01 Severability.** If any provision of this Contract or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Contract which can be given effect without the invalid provision, and to this end the provisions of this Contract are declared to be severable.

**SCOPE OF WORK - EXAMPLE**

**1.01 Background**

**2.01 Description of all project requirements**

**3.01 Description of plan to accomplish tasks, study, project, etc**

**4.01 Project schedule for conduct of work**

**5.01 Products and Timelines**

The Contractor shall be responsible for submitting the following reports and a final report on the dates specified as follows:

- 1.
- 2.

**6.01. Acceptance Criteria for Products**

DNR reserves the right to request additional reports relating to various aspects of the project.

Washington State  
Cooperative Monitoring Evaluation and Research Committee  
(CMER)

Scoping Document  
Eastside Forest Hydrology:  
A proposed study for the Eastside  
Type N Characterization Project

Prepared by  
Scientific Advisory Group for the Eastside (SAGE)

For the  
State of Washington  
Forest Practices Board Adaptive Management Program

**February 14, 2007**

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## **Context**

The Scientific Advisory Group Eastside (SAGE), a subcommittee of Cooperative Monitoring, Evaluation and Research (CMER), has been assigned the task of testing the assumptions underlying the eastside riparian prescriptions as part of the Forest and Fish Adaptive Management Program. Type N issues have been given a high priority by the Forest Practices Board due to the level of scientific uncertainty with the prescriptions and the potential risk to aquatic resources (CMER Workplan 2006). In particular, policy makers would like to know ‘whether prescriptions will achieve resource objectives while taking into account the natural spatial and temporal variability inherent in forest ecosystems’ and ‘whether current management practices are the right ones to achieve performance goals’ (US Fish and Wildlife and 11 other organizations, 1999)?

To address these questions SAGE has worked to identify specific issues related to the management of eastern Washington non-fish bearing streams that require scientific investigation. The project is referred to as the Eastside Type N Characterization Project and is listed in the FY 2007 CMER work plan under the Type N Riparian Prescriptions Rule Group (Table 4, line 15; CMER, 2007).

The Eastside Type N Characterization project is the first in a series of SAGE proposed studies that will examine eastern Washington headwater streams. Other related SAGE projects include the Eastside Type N Function Project (not included in Table 4), Eastside Type N Water Quality/Downstream Effects Study (Table 4, line 16), Eastside Type N Classification Project (Table 4, line 18), and Type N Performance Target Validation Project (Table 4, line 17).

Following CMER approval of this scoping document, the next steps will be 1) development of a study plan that includes testable hypotheses, time tables and cost estimates, 2) Independent Scientific Review Committee (ISRC) review; and 3) design finalization and implementation.

## **Problem Statement**

Washington State Forest Practice Rules group natural waters into one of four types: shoreline (S), fish bearing (F), non-fish bearing perennial (Np) and non-fish bearing seasonal (Ns). WAC 222-16-030(3) defines non fish-bearing perennial streams (Np) as “all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat streams. Perennial streams are waters that do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow” (Washington Forest Practices Board, 2005). Type Ns includes all segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np and deliver to another typed waterbody.

Type Np streams are believed to provide habitat necessary to support the long-term viability of state-protected amphibians, and water conditions that support harvestable levels of salmonids in downstream fish-bearing streams. For these reasons, the riparian areas along Type Np streams are given specific protections that are not required for Ns streams (WAC 222-30-022(2)). According to WAC 222-16-010, riparian protections contribute to “bank stability, the

recruitment of woody debris, leaf litter fall, nutrients, sediment filtering, shade, and other riparian features that are important to both riparian forest and aquatic system conditions.”

### **FFR Adaptive Management Issues**

WDNR has classified 81% of the stream network in Eastern Washington as Type 4 and 5 waters ( $N_{\text{Perennial}}$  and  $N_{\text{Seasonal}}$ , respectively) (Washington Department of Natural Resources, 2006). Some stakeholders have questioned whether the  $N_p/N_s$  break reflects a real and significant change in the functional attributes of stream channels in eastern Washington. Given the large spatial extent of Type N channels, some stakeholders have requested research to examine the relationships between FFR timber harvest prescriptions and their effect on stream function. CMER has been tasked with evaluating FFR prescription effectiveness. Stream functions of concern include bank stability, the recruitment of woody debris, leaf litter fall, nutrients, sediment filtering, shade, and other riparian features that are important to both riparian forest and aquatic system conditions (US Fish and Wildlife and 11 other organizations, 1999).

Difficulty associated with determining the  $N_p/N_s$  break was acknowledged in the 1999 Forest and Fish Report (FFR) and in the Type N Stream Demarcation Pilot Study (PIP Report). The Forest Practice Board has eliminated default basin criteria from forest practice rules and a Type N subgroup of Policy is currently in the process of revising rules for the delineation of  $N_p$  streams. Regardless of a decision on  $N_p/N_s$  breaks or the development of new Type N stream designation criteria, scientific questions regarding relationships between forest management and aquatic function in Type N streams are likely to remain. Some eastern Washington stakeholders have specific questions about what functions are provided by discontinuous or intermittent reaches of  $N_p$  streams, and there is disagreement about appropriate riparian buffer requirements for these reaches.

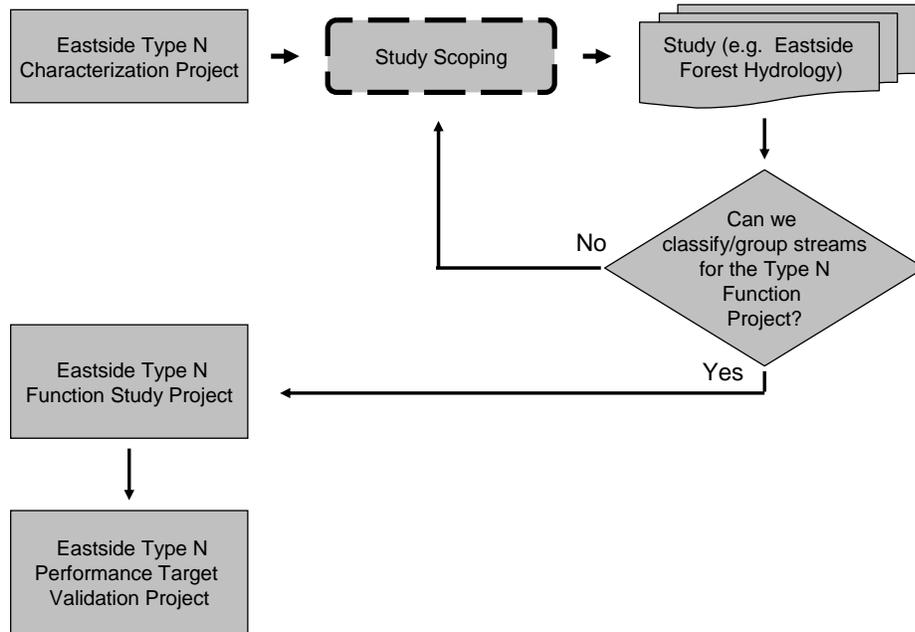
### **Research Strategy**

SAGE has proposed a series of research projects that will produce information needed to evaluate the eastern Washington riparian prescriptions to determine if they appropriately protect headwater stream functions (i.e., Type N Performance Target Validation Project). Because performance target validation is likely to be expensive in terms of both time and money and have low power without stratification, is important that we identify an appropriate population of streams for study.

To help identify a population of streams for the Type N Performance Target Validation Project, SAGE has proposed to characterize (temporally and spatially) the physical attributes of eastern Washington streams that are likely to contribute to stream function (Eastside Type N Characterization Project) and then evaluate and describe key riparian and instream process linkages (Eastside Type N Function Project).

Because no single study can succeed in describing the complete spatial and temporal distribution physical features that affect stream function over an area as large as the forest lands of eastern Washington, it was decided that the Characterization project would be broken into a series of individual studies. Each study will examine a subset of attributes that contribute to stream

function. These studies will collectively contribute to a classification scheme in which streams that appear to exhibit similar characteristic, and which may therefore function similarly, may be grouped. Results from the Eastside Forest Hydrology study will determine which studies or projects are subsequently scoped (See CMER Workplan 2008 pg 28).



**Figure 1 - SAGE workplan flow chart showing the decision tree for characterization studies.**

While CMER funding will focus on streams on FFR lands in eastern Washington (defined in WAC 222.16-010), we leave open the possibility of collaboration with other agencies which may result in a modification of the geographic extent of the study.

### **Scientific Background and Justification**

Headwater streams make up a large portion of the total river network and are important sources of sediment, water, nutrients, and organic matter to downstream fish bearing streams (Gomi et al., 2002; Leopold et al., 1964). How headwater streams function depends on the viewer’s perspective. To the downstream consumer (e.g. fish), headwater streams function by delivering material and energy from upstream. To headwater stream residents, essential stream functions are those that contribute to survival and reproductive success. Thus, headwaters streams are important because of their large spatial extent and ability to accumulate, process, assimilate, and transfer material and energy of value.

Energy pathways are affected by external independent factors (e.g., vegetation, geology, climate or basin position) that influence system features or processes (Hayes et al., 2005) (Figure 1). While shown as a hierarchy in Figure 2, process relationships contain interdependencies and feedback loops that are not well understood or easily charted.

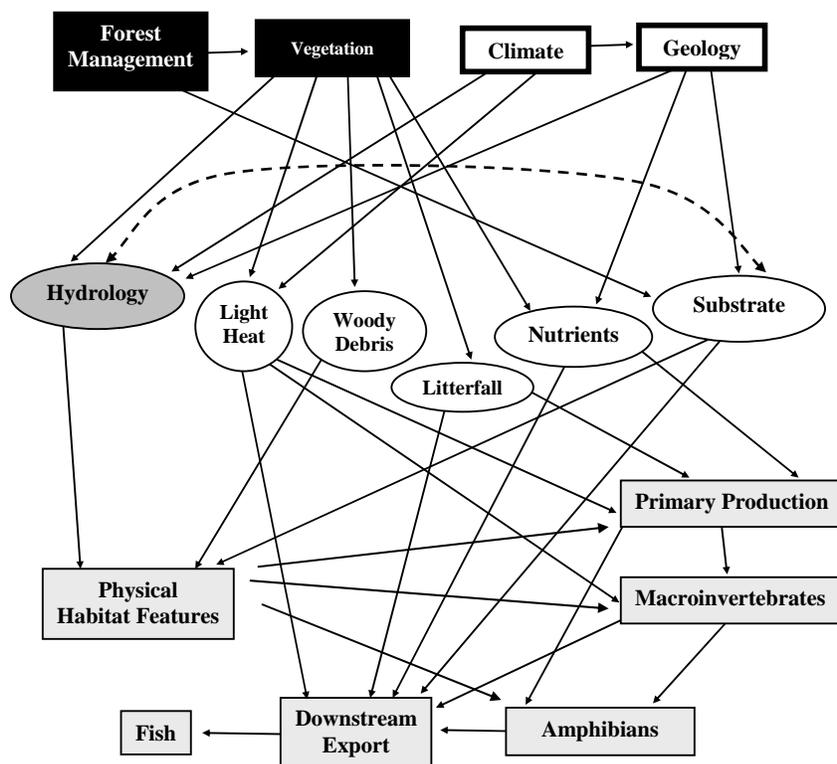


Figure 2 – Energy pathway conceptual model (adapted from Hayes et al 2005).

Because forested headwater streams are typically narrow with closed riparian canopies, they provide a maximum interface between flowing water and the terrestrial environment (Vannote et al., 1980). Up to 90% of the energy that fuels food webs in headwater streams comes from material that originates from outside the stream channel (allochthonous) and both the quantity and type of material has a large impact on the productivity of stream food webs (Cummins et al., 1989; Fisher and Likens, 1973; Johnson et al., 2003; Richardson, 1991; Richardson et al., 2005; Wallace et al., 1999).

Instream bacteria and macroinvertebrates decompose organic matter over relatively short periods of time. Herbaceous plants and shrubs may be entirely processed in 30-50 days, tree leaves in 4-6 months, and conifer needles between 1 and 2 years (Gregory et al., 1991). Leaves from hardwood trees are typically more nutritious (higher N:C ratio) than conifer needles and are therefore processed faster. In streams with intermittent or discontinuous flow, organic material that accumulates in dry reaches may be stored in the channel for long periods before being delivered downstream (Richardson et al., 2005; Wallace et al., 1995b).

The chemistry of streams and small rivers is highly variable and the amount of dissolved organic matter (DOC) and particulate organic matter (POM) in streams varies on daily, seasonal and yearly time scales and in accord with local geology and hydrologic events (Allan, 1995). Roughness elements and variable flow dynamics allow particulate organic matter (POM) to

gather until transformed into smaller particles prior for export downstream (Kiffney et al., 2000; Wallace et al., 1995b). This may be particularly true in stream reaches with woody debris where organic matter may accumulate and become 'hot spots' for biological activity (Wallace et al., 1995a).

Headwater channels support complete life-cycles for many aquatic macro-invertebrates and a number of taxa are adapted to headwater streams in which flow may be perennial, intermittent, or ephemeral (Merritt and Cummins, 1996). Perennial streams are those that flow all year long, intermittent streams flow for a portion of the year and then dry up, and ephemeral streams flow only during storm events (2000)(Hansen, 2001). Muchow and Richardson (2000) have recorded aquatic insects emerging from even the smallest dry intermittent streams in British Columbia. Price and others (2003) have found that species richness may be similar between perennial and intermittent streams, but lower in ephemeral streams; while shredder abundance (insects that shred coarse particulate matter for consumption) is likely to be greatest in non-perennial streams. Studies suggest that temporary streams with flow durations greater than 4 to 5 months are likely to have similar faunal assemblages compared with streams that have less than 3 months of surface flow (Gomi et al., 2002), and intermittent streams may harbor faunal assemblages distinct from nearby perennial streams.

Organic matter and invertebrates delivered from connected fishless headwaters contribute significantly to downstream fish-bearing streams. In a study of 17 fishless headwater streams in southeastern Alaska, Wipfli and Gregovich (2002) found that an average of 163 mg of invertebrate dry mass and 10.4 g detritus dry mass were exported from fishless forested headwater streams each day. Based on these numbers, Wipfli and Gregovich estimated that food subsidies from these fishless headwater streams could support between 100 and 2000 young of year salmonids per kilometer of fish bearing channel.

Stream water temperature is considered a key water quality parameter in the protection of stenothermic fish, including salmonids (Baxter and Hauer, 2000; Nielsen et al., 1994), and has been the topic of at least one CMER workshop. Water temperature is simply a measure of heat energy in surface streams. Direct solar radiation is the primary driver for raising stream temperatures above ambient conditions, while groundwater inflow is primarily responsible for lowering temperature (EDAW, 2001). While external drivers determine total heat, buffers internal to the stream control the temporal and spatial distribution of within-stream heat energy.

The hyporheic zone is the region beneath and adjacent to streams and rivers where surface and ground water mix. The movement of water into and out of the hyporheic zone (hyporheic exchange) is enhanced by channel bedforms that generate subsurface head gradients (Harvey and Bencala, 1993) and coarse sediment with large hydraulic conductivities (Packman and Salehin, 2003). Hyporheic exchange occurs across multiple scales including salmon redds (spawning nests), pool-riffle sequences, gravel bars, and beneath riparian terraces (Kasahara and Wondzell, 2003). Hyporheic exchange removes heat from the channel when temperature is high and releases heat to the channel when stream temperatures are low (Poole and Berman, 2001). Hyporheic exchange also transports dissolved oxygen and nutrients into the hyporheic zone

where relatively long residence times and contact with microbes in sediment leads to extensive biological activity and nutrient transformation (Baxter and Hauer, 2000; Findlay, 1995; Grimm and Fisher, 1984; Holmes et al., 1996; Mulholland et al., 2000; Triska et al., 1993). The presence of upstream surface water in a headwater channel does not imply that hyporheic flow is present in all downstream dry reaches: Sometimes the hyporheic flow is completely lost to evaporation, transpiration, and return flow to the groundwater (Hunter et al., 2005).

In dryland river systems, evaporation and seepage into banks and bends can result in significant losses during the downstream transmission of surface water (Graf, 1988). The rate and volume of seepage into beds and riverbanks is largely a function of groundwater table elevation, channel bed porosity, and sediment hydraulic conductivity. Porosity is the void space between rock particles. The higher the porosity the more water a volume of sediment can hold. Hydraulic conductivity, the rate at which water moves through gravel, is a product of both porosity and fluid viscosity. As water temperature increases, kinematic viscosity is reduced and a temperature increase from 0° to 25°C in porous material can double the ponded infiltration rate (Constantz and Murphy, 1991).

Hyporheic exchange is enhanced by accumulations of wood and coarse sediment. Large wood is introduced to channels through a variety of processes including mass wasting, tree fall and bank erosion which operate intermittently (Hassan et al., 2005). Once instream, wood increases bed roughness and dissipates stream energy which result in the long-term accumulation of sediment wedges which promote hyporheic exchange (Hunter et al., 2005; May and Gresswell, 2003). In headwater streams, large wood and sediment loads may accumulate for 40-50 years until the structures collapse or a debris flow or other extreme event redistributes wood and sediment downstream (Gomi et al., 2002; Hassan et al., 2005).

In a recent study of flow patterns in headwater channels of southwestern Washington, Hunter and others (2005) found that surface flow was often perennial near channel heads but became discontinuous over some distance downstream. While the spatial patterns of flow were highly variable, the overall length of discontinuous channel increased over the dry season and often extended below the location of the last observed fish (fish surveys were taken in the spring). Hunter and others (2005) noted that flow typically went subsurface in areas with steep slopes and deep alluvium.

Factors influencing connectivity and response of FFR identified between type N and F streams are shown in Table 1. As is evident, hydrologic variables dominate the list of controlling factors and are important in determining F segment response. As noted in the issue statement, there are stakeholder concerns that require research to determine spatial and temporal extent of surface water discharge. There is also justification for a study of eastern Washington hydrology given its direct contribution to the proposed Eastside Type N Function Project. Because no single study is likely to succeed in describing the distribution of all features that affect stream function over an area as large as the forest lands of eastern Washington, the Characterization project has been conceived as a series of individual studies that characterize individual stream attributes and their

interdependencies. Given the importance of flow as the key transport mechanism between non-fish and fish-bearing streams, SAGE has decided to study this component of hydrology first.

**Table 1 - Variables linking headwater processes to downstream fish habitat and water quality.**

<b>Key variable</b>	<b>Factors controlling connectivity to F segment</b>	<b>Factors or conditions in N segment that influence significance of key variable on downstream F segment habitat and water quality</b>	<b>Factors or conditions influencing significance of F segment response</b>
Summer water temperature	flow regime (perennial, intermittent, ephemeral)	discharge (summer low flow) shade / wind depth groundwater input hyporheic exchange	discharge (summer low flow)
Sediment supply	flow regime gradient ch. confinement storage potential	discharge (peak) flood potential basin size bank erosion potential	discharge (peak) gradient ch. confinement position in stream network
LWD supply	debris flow or fluvial dominated ch. confinement storage potential	discharge (peak) flood potential basin size bank erosion potential	discharge (peak) gradient ch. confinement
Food Supply/ Nutrients	flow regime	discharge (all) riparian tree composition geomorphology LWD supply	discharge (all) position in stream network fish community composition

### **Hydrology**

Surface water discharge in headwater streams varies in both time and space. In the published literature, the terms perennial, intermittent, and ephemeral are used when discussing temporal variations in flow condition. Perennial streams are those that flow all year long, intermittent streams flow for a portion of the year and then dry up, and ephemeral streams flow only during storm events (Hansen, 2001). The term discontinuous is used when referring to spatial discontinuities in surface flow. Spatial and temporal discontinuities require different terminology because they are not mutually exclusive. Discontinuous flow occurs in perennial, intermittent, and ephemeral streams.

In a regional water balance, atmospheric precipitation is the largest water source and rivers are generally the largest water exporters. Other sources of water export include evaporation, transpiration, and groundwater flow. Within a given basin, surface water discharge typically increases with increasing basin area and the perennial initiation point often reflects the basin area needed to support seeps, springs, or a surface water channel (Palmquist, 2005). Forest harvest and regrowth affect water yields by changing canopy interception, evaporation, snow pack accumulation and melt, and soil moisture storage.

Forest effects on stream flow are strongly seasonal and depend on the age or successional stage of the forest (Jones and Post, 2004). In the 1 to 5 year period after conifer harvest, daily

streamflow may increase by several hundred percent because of reduced transpiration. Streamflow increases are likely to be greatest during warm wet periods. By 25 to 35 years after forest removal, streamflow surpluses during the snowmelt periods are likely to persist, but increased water use during later summer and early fall are likely to result in streamflow deficits (-30 to -50%) (Jones and Post, 2004). Road cutslopes can intercept groundwater and route it through the surface water drainage system (Wemple and Jones, 2003). The interception and routing of sub-surface flow through the surface water drainage during spring snowmelt or periods of rainfall has the potential to increase peak flow and decrease groundwater recharge.

### **Purpose/Objective of the Eastside Forest Hydrology Study**

The purpose of this study is to contribute to the eastern Washington Type N Characterization, Function, and Effectiveness studies by characterizing hydrologic attributes of eastern Washington lands subject to forest practice rules to determine the extent of various flow regimes and their patterns of occurrence across the landscape.

Study objectives include:

1. Determine the spatial and temporal characteristics of surface water discharge in Type N streams across eastern Washington FFR lands.
2. Investigate process relationships between stream hydrology, landforms and management activity.
3. Develop criteria for characterizing and mapping streams with similar characteristics across the FFR landscape.

### **Critical Questions**

This study will answer the following questions:

1. What are the spatial and temporal characteristics of surface water discharge in Type N streams across eastern Washington FFR lands?
2. What landforms, management activities, and/or independent physical characteristics (e.g. geology, climate, etc...) are related to different flow characteristics across eastern Washington FFR lands?
3. Is there a set of readily identified external characteristics that can be used to group and/or remotely identify streams that exhibit similar hydrologic characteristics?

### **Data Requirements**

This study requires collecting data that will resolve the temporal and spatial extent of flow, its likely source and magnitude, and its relationship with external characteristics including landform and management activity.

### **Potential Study Approaches**

SAGE has considered a variety of options for this study and believes that some combination of field work, modeling, and/or remote sensing will be required to accomplish the objectives and answer the critical questions outlined above. Factors that affect study design options include the need to characterize the spatial and temporal characteristics of flow and geomorphology over a

wide spatial extent. Some technologies and study approaches are more appropriate to the collection of these data than are others. Potential advantages and disadvantages of approaches considered by SAGE include the following:

- 1) Field Studies – Field studies allow for the collection of ‘high resolution’ data over small temporal and spatial scales. Because some of characteristics associated with flow variability (e.g., geomorphology / sediment depth) are likely to require field data to adequately resolve, we believe that some amount of field data must be collected. In addition, data recording devices like capacitance probes can provide high resolution field data over relatively long periods of time. But, field studies cannot provide data over the entire spatial extent proposed for this study (i.e. eastern Washington)
- 2) Computer modeling – Modeling carries many advantages in terms of its ability to describe land attributes over large temporal and spatial extents. Additionally, high resolution digital elevation models (DEM’s), distributed rainfall models, hydrographic and other mapped data layers are becoming increasingly available at low cost. To accurately model a physical process or attribute, a conceptual understanding of the underlying physics, or empirical relationship to other available datasets, are required. While analytical and empirical models exist, significant effort would be required for parameterization and validation in stream reaches with attributes of interest to this study.
- 3) Remote Sensing – Remote sensing offers many advantages in terms of the ability to evaluate conditions over large spatial and temporal domains without the need for landowner access. The utility of remote sensing technology is largely a function of sensor type/quality, platform, and attribute of interest. When the attribute of interest is not visible from the remote sensing platform, utility is significantly diminished for any given sensor type or quality. Given the channel size, watershed location, and attributes of interest in this study; remote sensing may prove cost prohibitive. That said, airborne thermal imagery has the potential to identify flow continuity and groundwater inputs over long river reaches and aerial photography may be the most appropriate technology for determining landscape level geomorphic characteristics.
- 4) Coordinated studies with other government agencies – At least two other government agencies (WDNR and Environmental Protection Agency (EPA)) are involved in efforts to map streams with variable flow characteristics. The WDNR maintains a statewide hydrography Geographic Information System (GIS) data layer in support of Forest Practices, and the EPA has an Environmental Monitoring and Assessment Program (EMAP) whose goal is to develop the scientific understanding for translating environmental monitoring data from multiple spatial and temporal scales into assessments of current ecological conditions and forecasts of future risks to natural resources. Both of these efforts overlap with the goals of this project and coordinated studies could result in cost sharing. It is unresolved at this time whether a coordinated study could be accomplished that would meet multi-party goals.
- 5) Literature review - This option could be incorporated into the current scoping, but is listed here as a stand alone option. A literature review is unlikely to meet the purposes and objectives of this study, though it may provide context and information regarding

factors that affect flow variability and may provide information on their relative importance (e.g., large vs. small scale drivers).

- 6) Experimental study – Experimental studies are excellent methods for determining causal relationships between phenomena. Given the lack of information on stream distributions, however, an experimental study at this stage would seem prohibitively expensive for the information it would provide. Results would most likely be limited to the stream on which the study occurred.

The combination of computer modeling and field studies appear most likely to provide spatially explicit datasets over the spatial and temporal domains of interest in this study. Additionally, it is possible that the use of aerial remote sensing will be used where feasible to reduce land access issues and increase the spatial extent of empirical data collection.

## **CMER / Policy Interaction**

### **Project Relationship to FFR Adaptive Management**

The adaptive management process dictates that rule changes and management guidelines be developed from science-based solutions. Designing a strategy to quantify and test the assumptions of the prescriptions has been a complex and challenging task due to the diversity of riparian stands, the multiple objectives of the eastside riparian prescriptions, and the dearth of quantitative data on eastside riparian stands, their functions, and their response to management.

### **Role in the CMER Type N Program**

As illustrated in the scientific background section of this document, non-fish bearing streams influence critical functions on connected Type F waters. Developing studies to collect information on riparian stand dynamics and stream functions is critical to determining the degree of variability of Type N streams, and is needed to test the effectiveness of the new rules in meeting the goals of FFR.

### **Relationship of the Project to Schedule L-1 and L-2**

This project will inform two key questions concerning the overall performance goals as described in Appendix B of the CMER Protocols and Standards Manual (Pleus and Rowton, 2005).

#### **L1:2 - 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?**

- This study will evaluate spatial and temporal variability in eastern Washington FFR Type N streams and will provide information on their spatial distribution and relationship to eastside riparian prescriptions.

### **L1:3 - Are the resource objectives the right ones to achieve the overall performance goals?**

- This study will form the basis for additional studies to critically examine whether FFR resource objectives are appropriate for achieving performance goals in eastern Washington.

### **Relationship to other CMER Studies**

The CMER 2007 work plan includes an Extensive Type N Riparian Status and Trend Monitoring Program (Budget line 41) designed by the Riparian Scientific Advisory Group (RSAG). The purpose of the project is to evaluate the landscape-scale effects of implementing the FFR forest practices riparian prescriptions and to provide the data needed to assure that forest practices rules meet Clean Water Act requirements and achieve riparian resource objectives. Critical questions for the Extensive Type N include: 1) What proportion of stream length on FFR lands meets water quality standards for water temperature, and how is the proportion changing over time as the FFR prescriptions are implemented? And 2) What are current riparian stand attributes on FFR lands, and how are stand conditions changing over time as the FFR prescriptions are implemented? The program ranked as “urgent”, ISRP review was completed in November of 2005 and RSAG is currently reviewing comments. Depending on the study methods, it is likely that data collected for the Eastside Type N Characterization Project could be used to answer two of the critical Extensive Type N questions on the eastside (question 1 and 2 above).

In the future, we see this study leading into an *Eastside Type N Function Project* and *Type N Performance Target Validation Project* listed in the 2007 CMER work plan. This study is also expected to inform other items in the work plan but which have not yet been scoped, including:

- 1) Annual/Seasonal Variability Project (line 7)
- 2) Type N Buffer Integrity, Characteristics and Function Project (lines 10, 11)
- 3) Eastside Type N Water Quality/Downstream Effects Study (line 16)
- 4) Eastside Type N Classification Project (line 18)
- 5) Type N Performance Target Validation Project (line 17)
- 6) SAA Sensitive Sites (line 31)
- 7) Type F Riparian Prescription Monitoring Project- Eastside (line 35)
- 8) Eastside Temperature Nomograph Project (line 54)
- 9) Eastside Riparian Current Condition Assessment Project (line 52)
- 10) Eastside Channel Wood Project (line 53)

### **Timetable**

A tentative timeline agreed to within SAGE has been established with the expectation of starting the field portion of this study in DNR fiscal year 2008.

### **Project Ranking**

Study design for *Eastside Type N Characterization Project* should be given the CMER ranking of URGENT because it informs the stream typing and Type N rule groups within the CMER work plan and is associated with significant scientific uncertainty and risk to aquatic resources.

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## EXHIBIT E

### *CMER Prototype Comment Action Plan -SAMPLE*

Comment Source	Comment ID	Comment	Comment Type	Respondent	Response Status	Response	Proposed Action	Cost
Associate Editor	General				Complete	The associate editor did not have the benefit of knowing that multiple riparian studies are in design by CMER, thus recommendations were naturally focused on the lack of integration on this study between riparian and in-stream processes/geomorphology, etc. However, information provided will be useful at the data analysis stage and for Phase II planning.		\$ -
	Objective 1		substantive	SAGE	Complete	For instance, the references to Crowe and Clausnitzer (1997) and to Kovalchik (2001) for alternative riparian classifications may be helpful when Phase I data are analyzed for possible stratification.	No Action	\$ -
	Objectives 2,3,4 and 5	Suggestions for potential site distribution and selection strategies	substantive	SAGE	Complete	Thank you for suggestions. In Phase 1 sites will be randomly-distributed and then data explored to investigate what are appropriate stratification parameters. These suggestions will be revisited during Phase II, when site stratification and appropriate distribution is implemented based on results of Phase I.	Add description of planned analysis and Phase II site selection strategy to design text	
	Objectives 4 and 5	Incorporate spatial-landscape perspectives that use land cover and DEMs.	substantive	SAGE	Complete	A parallel/complimentary investigation is being considered that will couple data from such a spatial-landscape scale investigation with results from this investigation. The reviewer's comments will be referred to that investigation.	Proceed with development of parallel study	
	Objectives 3 and 5	Suggestions regarding study approach	substantive	SAGE	Complete	This is not a research study; it is an investigation into existing conditions that are relevant to current forest practices rules in Washington State. We agree that the reviewers suggested studies would be useful in furthering the knowledge of riparian ecology in this state. However, they are well outside the scope and intent of this project.	No Action	\$ -
SRC Reviewer1	1	No confidence in ability to relate channel morphology to riparian stand characteristics	substantive	SAGE	Complete	Focus of the study is on assessing riparian stand conditions to help validate the F&F rules concerning elevation bands, basal area targets and site class information; ability to relate channel morphology to	No Action	\$ -

Comment Source	Comment ID	Comment	Comment Type	Respondent	Response Status	Response	Proposed Action	Cost
						riparian stand characteristics is incidental, if feasible.		
	2	Suitability of EMAP approach: The EMAP protocols were not designed for hypothesis testing (i.e., addressing specific key questions about the relation between geomorphological context and biotic conditions) but were intended to provide a snapshot of conditions and for monitoring of trends independent of such contextual understanding.	substantive	SAGE	Complete	The primary purpose of this investigation is to provide a snapshot of conditions for monitoring of trends independent of contextual understanding. Although some hypothesis testing will be undertaken, that is not the fundamental purpose. Therefore, we conclude from your statement that the EMAP site selection process is, in fact, appropriate.	No Action	\$ -
	3	Suitability of Rosgen channel classification	substantive	SAGE	Complete	Rosgen was only to be used to provide a coarse description of channel type. SAGE will consider using Montgomery and Buffington channel classification for this study, or deleting this element entirely - as other studies currently in design are focusing on in-channel processes and characteristics of Type F channels.	Remove from Study Design.	
	4	Adopt stratified random sampling	substantive	SAGE	Complete	Stratified random sampling is likely to be implemented in Phase 2, based on results from Phase 1 with random sampling.	Make this more clear in Study Plan text	
	5	Montgomery and Buffington more appropriate to use than Rosgen	substantive	SAGE	Complete	Comment noted.	We will consider using Montgomery and Buffington classification of channel types.	
	6	Is the goal of the study to relate riparian conditions to instream conditions?	substantive	SAGE	Complete	No, the goal of the study is to assess riparian conditions as noted in 1 above.	No Action	
	7	Identify all side channels encountered along survey lines.	substantive	SAGE	Complete	Comment noted; will include in survey.	Add text to Study Design	
	8	Use a gridded plot pattern for meandering streams	substantive	Consultant		After consideration, we have determined that such a plot layout is impractical and too intensive for this study.		

Comment Source	Comment ID	Comment	Comment Type	Respondent	Response Status	Response	Proposed Action	Cost
SRC Reviewer2	1	Should stratify sampling	substantive	SAGE	Complete	Phase I is designed to determine how best to stratify in Phase II.	Make this more clear in Study Plan text	
	2	Use fixed-width ribbon plots	substantive	SAGE	Completed	Ribbon plots parallel to the stream channel edge were considered but were deemed inappropriate due to limitations that layout imposes on the data analysis.	No Action	
	3	Proposal does not adequately address how the five objectives and key questions will be answered.	substantive	Consultant		Final Workplan will more clearly link Objectives listed on page 1 with various elements of the Workplan. New subsections under each of the major existing sections will be added restating the objective(s), and how it will be met with the methods presented.		
	4	The sampling protocol should account for fine-scale variations in site conditions.	substantive	Consultant		As proposed, the Workplan allows evaluation of fine-scale variations in a range of conditions and vegetational attributes.		
	5	Analysis and hypothesis testing should be more closely aligned with the objectives and key questions.	substantive	Consultant		As above, hypotheses will be added (if appropriate) under major headings of the existing workplan.		
	6	All hypotheses to be evaluated should be listed.	substantive	Consultant		As noted above.		
	7	The data and statistical approach to be used to assess each hypothesis should be noted.	substantive	Consultant		Suggested statistical approaches are described in Section 7 of the Workplan.		
	8	Consideration should be given to using exploratory analytical analysis that has been developed for examining vegetation data.	substantive	Consultant		Comment noted. Analyses discussed in Section 7 are only suggested approaches, not exhaustive. Exploratory tests will be suggested in revised Workplan.		
	9	All trees that are in regardless of diameter should be tallied in the cruise.	substantive	SAGE	Completed	All trees are counted, regardless of the diameter. However, smaller trees are counted in the area subplot samples rather than in the prism cruise in the interest of efficiency.	No Action	
	10	Omit species of downed wood	substantive	SAGE	Completed	Will omit species of downed wood.	modify text	

Comment Source	Comment ID	Comment	Comment Type	Respondent	Response Status	Response	Proposed Action	Cost
	11	What is the procedure for selecting site potential trees?	substantive	Consultant		Site potential trees will be those dominant or co-dominant trees (major species) that are judged to have been free to grow.		
<i>SRC Reviewer3</i>	1	Define riparian areas from a regulatory or ecological perspective.	substantive	SAGE	Completed	Part of the results will help define both. Current regulations will be evaluated during data analysis. Data from this study may also help in the definition of appropriate ecological definitions for eastern Washington.	No Action	
	2	Proposal does not explain how failures or success in Phase I will be modified for phase II.	substantive	Consultant	Comment noted	The final Workplan will discuss how Phase 2 may be modified based on analysis of the Phase 1 data.	Revise text.	
	6	It will be important to adjust critical significance values during analysis.	substantive	Consultant	Comment noted	The Final Workplan will suggest that significance values may be adjustable based on professional judgment.		
	7	Is there interest in determining whether sites exhibit criteria for properly functioning condition?	curiosity question	SAGE	Completed	Yes, eventually. Although purpose of this investigation is not to decide on PFCs, data from this may be used to determine if sites meet PFCs or for input into growth models to determine whether stands are on a trajectory toward meeting PFC.	No Action	