

**CMER**  
**May 24, 2005**  
**NWIFC**  
**Lacey, WA**  
**Minutes**

---

**Attendees**

Barreca, Jeannette	Ecology
Black, Jeannelle	NWIFC, CMER Staff
Dieu, Julie	Rayonier, UPSAG Co-Chair
Heide, Pete	WFPA
Hofmann, Lynda	WDFW, SAGE Co-Chair
Jackson, Terry	WDFW, BTSAG Co-Chair
Johns, Marcus	DNR, Compliance Monitoring
Knutzen, John	Tetra-Tech FW
MacCracken, Jim	Longview Fibre
Martin, Doug	Martin Environmental, CMER Co-Chair
McConnell, Steve	NWIFC
McDonald, Dennis	DNR, Water Typing Project Manager
McNaughton, Geoffrey	DNR, AMPA
Peterson, Pete	Upper Columbia United Tribes
Pleus, Allen	NWIFC
Pucci, Dawn	Suquamish Tribe, WSAG Co-Chair
Ray, Kris	Colville Confederated Tribes, SAGE Co-Chair
Roorbach, Ash	NWIFC, CMER Staff
Rowton, Heather	WFPA, CMER Coordinator
Schuett-Hames, Dave	NWIFC, CMER Staff
Smitch, Curt	Thompson Smitch, Facilitator
Smith, Kendra	Skagit County
Sturhan, Nancy	DNR, CMER Co-Chair

---

**Minutes, Decisions/Tasks Review, General Updates:**

**CMER Consensus:** Minutes from the April CMER meeting were approved as amended.

Pleus commented that final minutes on the website are still titled draft many times. Rowton will take care of this and ensure they are noted as final minutes.

Decisions and Tasks from April were reviewed as follows:

- The SAGE Eastern Washington Nomograph Project was approved for CMER review.
- UPSAG provided an implementation plan for the Roads Sub-basin Scale Effectiveness Monitoring Design as an FYI to CMER.
- CMER approved moving the Draft Study Plan for Extensive Riparian Status and Trend Monitoring forward to SRC for review.
- SAGs agreed to work with Sturhan on unfinished documents and Sturhan agreed to bring a proposal forward for CMER consideration about how to complete these documents.
- CMER formed a group to review the Intensive Monitoring whitepaper. Group members include Bob Palmquist, Angela Stringer, Steve McConnell and Doug Martin.
- Numerous assignments were made to the Protocols and Standards Manual Workgroup
- Dispute resolution was initiated for the Water Typing Model Field Performance Assessment Pilot Study. Participants include Chris Mendoza, Geoffrey McNaughton, Brian Fransen, Nancy Sturhan, Dennis McDonald, Doug Martin, Terry Jackson, Michelle Stevie and Allen Pleus. This group did not meet but will attempt to schedule a meeting today.

---

**Compliance Monitoring Update:** Johns is the lead for the Compliance Monitoring Project and has been in the field for about nine months. He is now back and is working on Compliance monitoring. Johns works for Gary Graves and policy concerns should be directed to Graves. Compliance monitoring is designed to ensure that forest practices are being implemented according to the rules on the ground. There is an internal state group working on this project and they are using a phased in approach for compliance monitoring. This group has come up with ideas and these are shared with the external review committee which includes all caucuses. The protocol is then used in the field to generate information. A sample protocol has been conducted already and involved S and F waters. Compliance monitoring is time consuming because there are many options for landowners to use. DNR looked at the types of data they need to answer compliance monitoring questions. Several handouts were distributed via e-mail and at the meeting. Compliance monitoring has been stratified by eastside/westside. Compliance monitoring began with FPAs initiated in 2000 and 2001; this was to ensure that most of the harvests had been completed. Landowners were contacted ahead of time to gain access to property and DNR received a good response from landowners. This effort was about designing a strategy to implement compliance monitoring. On the eastside it is difficult to see when trees were harvested because they grey quickly; DNR will try to initiate compliance monitoring on the eastside quickly after harvest. Different survey crews did things differently so consistency was an issue. Data analysis has been looked at quickly (compliant/non-compliant). Where there is non-compliance, how to deal with that is still a question; sometimes the non-compliance does not have a potential to impact public resources.

Pleus said the question of whether public resource damage is likely is difficult to answer and may be more of a cumulative impacts issue. Johns said that when he reviewed the work of TFW in the early 1990's, ratings were assigned to the non-compliance. Pucci said this project is designed to find out where non-compliance exists and some of this cannot be quantified and a qualitative analysis may be more appropriate. Johns said that monitoring was designed as

research only and local foresters are contacted when violations were found. Landowners who have denied access are being noted. Peterson said landowners have no right to deny access. Johns said that for actual compliance issues, Peterson is correct but compliance monitoring research, landowners can deny access. Heide said the external group has been mentioned but that group has only met once and had many questions. Heide highly recommends that the external group work on a regular basis to provide input. Landowners want to see this move forward especially since funding has been provided. Pleus said that for material damage issues, they should be couched as short term violations that need to be dealt with.

Martin asked for an update on the schedule. Johns said that DNR is developing a schedule for implementation which will include a timeline. The internal group will meet on June 9<sup>th</sup>. Martin asked if any CMER members are on the external group. Martin said there are many CMER participants with expertise on the issues that are being monitored.

Johns said DNR will continue with the RMZ monitoring and will add the roads monitoring soon. The external review committee will be re-engaged. There are logistical and recording concerns and phases will continue to be added. Johns will also be meeting with regional TFW groups and other interested parties. Martin said that he hopes DNR explains this is not a CMER effort to avoid confusion. Smitch suggested that the external group have technical and policy members. Heide asked about the structure of this. Johns said there would be a dedicated crew to do this work with two crews (one for the eastside and one for the westside). Johns clarified that wetlands is part of the compliance monitoring effort. Schuett-Hames asked if the study design would be going through SRC review. Johns said there is no plan for peer review at this time but it needs to be peer-reviewed for credibility.

---

**SRC Update:** McNaughton said Martin and he met with the University last week to talk about a number of issues. The SRC process has gone well over the last year and many lessons have been learned about how to conduct the reviews. The University is still having problems finding reviewers. The SAGE Literature review should be completed in 3-4 weeks. The Interagency agreement will be renewed in June. Heide asked if the response from the Science community is improving. McNaughton said they have not discussed it but it does not appear to be improving.

---

**Budget Update:** McNaughton said some of the CMER contracts are winding down now. Eight of the contracts and interagency agreements expire at the end of June and only some will be renewed, seven are asking for extensions and McNaughton will be recommending extensions for these studies. There are good reasons for extending many of these agreements. When the roads monitoring project was taken to Policy, there was reluctance to approve the project though it did get through. Smitch said that Policy has reserved the right to decide whether they want to continue funding for projects that have not been initiated and those that have and are already ongoing. Heide said that it does seem like CMER needs a better understanding of what needs to be approved by Policy. There was significant discussion of the budget retreat scheduled for July 7<sup>th</sup>.

---

**Unfinished Projects and Documents Residing in SAGs:** Sturhan said that she would like to move this to the end of the agenda and have it with the disclaimer discussion.

---

Sturhan said she is unsure where we are with the requests needing money.

### **SAG Requests**

- **LWAG:** requested \$11,000 for the Amphibian Detection/Relative Abundance Methodology Project to identify giant salamanders. MacCracken said this is to do the DNA analysis to separate the two species of giant salamanders. The samples are collected and just need analysis. This was already planned and this is just spending the money sooner. This money was planned to be spent in 2006. MacCracken said this can wait to be analyzed later after Policy has their July retreat. Smitch said CMER should approve the expenditure and take it to Policy in June. Martin said the issue we are stuck with is that when Policy approved the roads project, they asked if there more proposals for this fiscal year. McDonald said his first question is whether this is a high priority project; MacCracken said yes. Rowton suggested that CMER representatives talk with their Policy representatives about the importance of this expenditure. Smitch suggested that Policy be asked to approve the expenditure beginning on July 1<sup>st</sup>.

**CMER Consensus:** CMER approved the expenditure of this \$11,000 and will seek Policy approval on June 2<sup>nd</sup> to spend the money beginning on July 1<sup>st</sup>.

- **LWAG:** requested \$100,000 for the Type N Feasibility Study for continuation of the site feasibility assessment. MacCracken said this can be reduced to \$30,000 until Policy can meet in July but the \$30,000 is needed now to keep the contractor working. The other \$70,000 will be requested later. Pucci asked if the \$100,000 has already been approved. McNaughton said the FPB has approved \$741,000 for this study. CMER has not seen a response plan based on SRC review either. The feasibility study is to see if sites can be found. There are 500 sites statewide that have potential to meet the criteria. Thirty of the sites have been examined and six of them meet the criteria. Barreca said to reiterate, this does not increase the cost of the study. MacCracken said the money is simply being moved to fiscal year 2006. Pucci said her concern is that we are spending money for a CMER study plan that has not been approved by CMER yet. Martin said it does not make sense to stop this project when the person could be lost if funding is not provided. CMER will also lose money if a new contractor is needed to complete the project. Pucci said this sets a precedent for CMER to approve spending money before they see a study plan that has been reviewed by SRC and has an implementation plan. Martin said this is not a precedent; Palmquist has been researching roads sites long before that project was approved. Pleus said he agrees with Pucci's point; CMER needs to wrestle with this. There was \$98,000 approved one year ago and an additional \$17,000 to augment that and now there is a request for an additional \$100,000. These are good questions about our project and how we are going to do this. Pucci asked if there any fatal flaws identified in SRC review. MacCracken said there were no fatal flaws. Smitch said that the caucuses should check with their Policy folks prior to the meeting to see if there is anyone who is concerned with this study.

**CMER Consensus:** CMER approved the expenditure of \$30,000 and will seek Policy approval on June 2<sup>nd</sup> to spend the money beginning on July 1<sup>st</sup>. CMER participants agreed to inform their Policy representatives about the study and seek input about their ideas on amphibian studies continuing over time.

- **WSAG:** requested CMER approval of the response plan for the Forested Wetland Regeneration Pilot Study. There were three CMER reviewers for this project and when the edits are completed the study will go back to the reviewers for concurrence. There will be no request for SRC review. WSAG anticipates bringing this back to CMER for final approval in July. Pleus asked whether this response plan needs to be approved by CMER. He said that it may be better for CMER to approve the response plan after the reviewers agree to it. The final document will include the six questions.

**CMER Consensus:** CMER approved the response plan.

- **WSAG:** requested approval to post the proceedings from the Forested Wetlands and Silviculture Workshop on the CMER website. Pucci said there have been questions about this conference and posting the proceedings would be helpful. The proceedings are eight PowerPoint presentations.

**CMER Consensus:** CMER approved posting the proceedings for the Forested Wetlands workshop.

---

**CMER Monthly Report to Policy:** Martin said the budget retreat is scheduled for July 7<sup>th</sup>. The fish passage subgroup of Policy stated they agree that much of the CMER proposed research is good research to conduct. They want this research to go forward and asked CMER to start a process for this research to begin. ISAG has been asked to begin work on this and have something ready for Policy consideration in July. CMER was notified that the ISAG technical subgroup is being formed. If you are interested, please call Dave Price.

New Items for June 2<sup>nd</sup> Policy Meeting:

- Request for \$11,000 and \$30,000 for the amphibian studies
- General updates
- Change in CMER Priority for Extensive Fish Passage Study (see Science Discussion below)

---

**Preparation for Budget Retreat:** Sturhan said she is working with SAGs to get information for this retreat. Sturhan is also developing a schedule for projects to be initiated. Smitch said the underlying goal is to have a real workplan and budget for Policy consideration. She will keep working with the SAG co-chairs on this and if people will schedule a half-day meeting with Sturhan that would be appreciated. A draft of the workplan will be completed after the retreat. Smitch said that everything for 2006 will be reviewed. Projects that are two-thirds or more done are not very vulnerable, however Policy may ask that the budget be trimmed by some amount. If Policy decides that \$2 million per year is the limit, they will ask for reductions. Sturhan will

attempt to bring information to the next CMER afternoon science session whatever information is available. Martin said everything prepared for Policy will be shared next month. Pleus said there are two bottlenecks going on here: 1) how many projects can CMER do with too much money and 2) how many projects can CMER do with reduced funding in the future. Smitch said that is a very good point and Policy should be made aware of that information.

---

### **SAG Issues:**

- **UPSAG:** Dieu said that UPSAG will have two SAG requests for next month and they are both large. UPSAG will ask for CMER approval on the Regional Landform project which does not need to be a big review effort by CMER. This was done at the regional level by those who know the issues best. UPSAG has also provided a technical review of these documents. The role of CMER is to answer whether this project is complete and whether the results are reasonable and how does this get transmitted to Policy. The original vision was that these would become part of the rule, but there is now agreement that rules are not necessary. They are potentially better placed into the LHZ project. There are also some landforms that did not get sufficient study and cannot be considered a regional landform. Thus, UPSAG will be proposing that these landforms are a way to help LHZ prioritize their workload. If more information is needed by CMER, please contact the local region or Venice Goetz at DNR. UPSAG's second request is for a discussion of the landform identification process. UPSAG wants to know how people are dealing with these landforms in the field. There is a draft whitepaper on this but it needs work. UPSAG would rather come in with a conceptual idea and get feedback before seeking approval. There is an easy answer to the accuracy question but the bias question is more complicated. This request will come in as a three or four page document with specific questions. McDonald asked if this is more of an afternoon scientific discussion. Dieu said that it could take time if people want to engage in discussion. Pucci suggested bringing this up at the next meeting, seeing how it goes, and then if additional discussion is necessary, the topic can be scheduled for an afternoon session. Pleus said a workshop would also be a way to handle this. Dieu said that is a good idea but UPSAG is only seeing one way to address the question and would like to discuss it with CMER. Heide said this is tightly woven with the DNR rule implementation so part of this is how DNR will be viewing this regional landform data and information. CMER needs to hear from forest practices on how this will be used. Dieu said there is very wide agreement that these are a good screening tool. Heide said that is good, but we need to hear this from DNR.
- **SAGE:** Hofmann said the SAGE workplan is moving forward and an outline has been developed. A map is being developed for FFR lands on the eastside and Laura Vaugeois is working on something that may help. In the mean time, Masson Bruce and Gerard are working to finalize a draft of the workplan for CMER review.
- **WSAG:** The Literature Review and Synthesis document will come to CMER for final approval in June. The CMER reviewers will be contacted to ensure their comments were accurately reflected. They will then request this be posted on the CMER website. If anyone is willing to help WSAG with participation, it would be appreciated; they only have three people at this time. Anyone with information on wetland maps is asked to submit that information to

Pucci.

- **ISAG:** McDonald said that based on the presentation from Young at the last meeting, ISAG is looking at reformulating the model performance study. Even though Young encouraged the westside seasonal variability study get started this summer, it is not likely to move forward this year. ISAG plans to integrate the westside seasonal variability study with the model performance study. This will impact the performance study's scope, so ISAG plans to provide CMER with two new scoping documents for review and approval. Eastern Washington seasonal variability is moving along.
- **Rowton Absence:** Rowton will be out for most of June and SAG requests should be sent to Nancy and Doug as well as to Rowton. Someone at WFPA will forward the requests to CMER so that people are prepared for the July meeting. This will result in CMER participants needing to track distributions for the July meeting more closely because they will be sent as they come in rather than all at once.

---

**Disclaimer Discussion and Unfinished Projects and Documents residing in SAGs:** Sturhan said that she has talked with SAGs about languishing documents and these discussions are continuing. Some of the problems with not completing these documents are that information gets stale and they can be forgotten. Martin said he has developed a proposal for documenting CMER reports and work products. This proposal was distributed in hard copy form at the meeting. For a copy, contact Rowton.

Martin said there are different types of CMER documents. Sometimes the documents are intended to inform scientists and other times there is a broader audience. Some of these documents are sufficient with less information while others will need to be very formal. For example, CMER technical reports are intended to inform the adaptive management process and since that is the case, much review is required. Exploratory reports are used by scientists and assist or inform scientists in the implementation of research. These are less formal and are not intended to inform the adaptive management process directly. Thus, they are less formal. This information should still be retained as they are important, but they are less formal. An explanation of the purpose of the report and the amount of review done should be stated up front. Data reports and study design reports are other examples of the types of reports that could be defined by CMER. The document proposal will be sent electronically, with a version, draft, etc. on it and Martin is soliciting comments on the document. Jackson asked if this helps us determine what is considered a formal CMER document or whether it will help with all CMER documents. Comments should be directed to Doug Martin and this will be discussed at the next meeting as well. Pleus encouraged CMER members to review the PSM as well.

**Disclaimers will be moved to the June meeting and will be discussed before SAG requests. A discussion on authorship will also be had during the June meeting.**

Martin asked CMER members to think about this in the context of some of these documents. If a document is an Exploratory Report and there is something incomplete, acknowledge it in the beginning of the report.

---

---

**Science Topic for June:** Type N Experimental formation of options. LWAG provided an opportunity for people to talk about the Type N Experimental buffer study. LWAG have the SRC comments back and are exploring different options to cut costs. Since this is critical to discussions on July 7<sup>th</sup>, CMER should have the opportunity to discuss those options and bring forward an option to pursue. MacCracken said he thought they decided to bring forward the full package first and see if there was pushback on this. Pleus said he would like CMER to look at the entire package that may take up to twenty years to complete. Martin said CMER needs to review the SRC response plan before moving forward with this and MacCracken said he hopes to bring this in June. Martin said Policy will ask about a proposal that costs so much money and CMER needs to be prepared to respond to those inquiries. Heide said this must be simplified for Policy; the science should come first and then the study should be prioritized and questions about options will need to be answered. Smitch said that if Policy really gets into this, they will need to talk about what they really need, instead of what is nice to know. If they confront this reality, they will ask questions about funding. Thus, CMER should drill down on what CMER needs to know rather than what would be nice to know. Pleus said this is something that many SAGs are dealing with and other projects will also need to be discussed.

The official title of this topic will be retreat preparation.

---

**Science Topic: ISAG Extensive Fish Passage Study; discussion of the technical and Policy questions**

A PowerPoint presentation was delivered by Dave Price along with a CMER briefing. For electronic copies, contact Rowton.

CMER Science Topic – Extensive Fish Passage Study – May 24, 2005

Dave Price and Kristen Ryding did a fine presentation to CMER on the “Status and Trend Monitoring for Fish Passage in Washington Forestlands: Methodology Review and Preferred Study Design” as the Science Topic in the afternoon session.

Summary of the discussion:

- Is this study driven by the FFR? – No, it was developed as a part of the “Monitoring Design for the Forest Model of the Governor’s Salmon Recovery Plan”, July 18, 2002 and commonly referred to as the MDT report.
- What is DNR doing for the reporting responsibilities for RMAPs? And what is the current method DNR is using by region?
- What other reports have been reviewed, i.e. Washington Trout, WRIA efforts to inventory barriers?
- Trend – The discussion led to a key question: do we need a trend study if we already have an RMAP report that might provide almost similar information for an additional cost?
- What about the Roads Study? Could we add questions/protocols to their survey to gather information about trends for Fish Passage?



- Could we ask DNR to include Trend questions to collect and report data in the RMAP process?
- Question to ask Policy:
  - Do they need trend information for a Fish Passage Study vs. other methods / for the estimated cost?
  - Do we need to stratify the data for large and small landowner? Which would be the priority?

Table developed to display information about existing and proposed efforts

Processes/Reports	Large Landowner	Small Landowner	Orphaned Roads	Sample Populations
RMAPs	Yes	No	No	N/Y(LLO)
DNR Compliance	Y	Y	?	N
WDFW HPA	Y	Y	Y	N
CMER Roads Study	Y	Y	N	Y
CMER Extensive Riparian	?	?	?	Y
WRIA groups				
CMER Extensive Fish Passage	Y	Y	Y	Y

**STRATEGY:**

1. Propose that this project be listed as “DELAY” on the CMER spreadsheet.
2. CMER Co-chairs report the status of the Fish Passage Study to Policy June 2
3. Be prepared to discuss the questions and different proposed approach options with Policy at the budget retreat July 7 as described in Dave Price’s Options (see Attached).
4. ISAG agree that WDFW product is final to close out contract (reviews have been completed and do not anticipate need for Peer Review).

## **Extensive Fish Passage Study – a discussion primer for including small forest landowners in the sampling frame, and costs associated with various study options.**

### **A brief history**

The Monitoring and Design Team (MDT) Report (2000) was developed to facilitate status and trend monitoring of forest practices activities regulated under the Forest and Fish Agreement. A study design for fish passage trends on FFR lands was included (pp. 42-49). In 2004, ISAG proposed to CMER that a scoping of fish passage trend monitoring was necessary for two reasons: the use of RMAP or cluster sampling may save limited CMER money, and results may be obtained more quickly with alternative designs. CMER subsequently awarded a contract to WDFW to review the MDT report and alternative designs.

### **Small Forest Landowner Database Problems**

Both the MDT design and WDFW's preferred alternative relied on a sampling methodology rather than using RMAP reporting mechanisms. Both sampling schemes require the use of a GIS-based layer describing forest and fish lands. One such layer is the Atterbury layer, which has been the primary layer (coverage) used to describe forestlands. Unfortunately, this coverage is an accumulation of large land ownerships, and lacks small forest landownership information. Alternative databases for small forest landowners also have been insufficient for monitoring purposes. For example, efforts to assemble parcel information from county governments have been slowed due to budget and other constraints.

### **Small Forest Landowner Database Solution**

Recently, DNR and UPSAG have developed alternative coverages for forestlands that have not previously been available. Notable differences between the two coverages are apparent, but both appear to be far more complete than the original Atterbury data layer. Laura Vaugeois (DNR) has developed a concept to merge the most explanatory attributes of these coverages into a common GIS layer. Merging these datasets into a common coverage will result in a forestlands layer that will feature large and small land ownerships. DNR has expressed a willingness to develop this tool.

### **Small Forest Landowner Fish Passage Sampling**

WDFW strongly believes that small forest landowners should be considered separately from large ownerships in the analysis of fish passage status and trends monitoring. Repairing all fish passage barriers on small forest landowners within 15 years is a policy goal of FFR, whereas the 15-year completion date is a requirement for large ownerships. State funding has been obtained to establish and implement the FFFPP program, which prioritizes and repairs barriers on small ownerships. Large ownerships are funded privately. Adjustments to the FFFPP program and the need for future funding are adaptive management links for small ownerships in FFR. Adaptive management for large ownerships may mean adjustments to RMAPs or other regulatory measures.

**Study options and costs.**

Unfortunately, sampling small forest ownerships separately results in increased costs. Efforts to reduce costs will result in trade offs. For example, reducing the number of sample sites or the number of sample years will have consequences in statistical power. In general, reducing sample years, especially early in the study, will have more profound statistical consequences than reducing sample sites. To facilitate discussion, we outline options with rough costs in the following table.

**Costs associated with various options for fish passage status and trend monitoring.**

Costs exclude COLAs and adjustments to sample sizes after FY 06.

<b>Option</b>	<b>FY 06</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY10</b>
<b>1</b>	\$223,450	\$180,950	\$180,950	\$180,950	\$180,950
<b>2</b>	\$233,500	\$191,000	\$191,000	\$191,000	\$191,000
<b>3</b>	\$446,900	\$358,000	\$358,000	\$358,000	\$358,000
<b>4</b>	\$305,200	\$216,400	\$216,400	\$216,400	\$216,400
<b>5</b>	\$315,200	0	\$226,400	0	\$226,400
<b>6</b>	\$233,500 + DNR	\$191,000 + DNR	\$191,000 + DNR	\$191,000 + DNR	\$191,000 + DNR
<b>7</b>	\$318,000	0	0	0	0

**Option 1: Implement WDFW study design with 100 LLO sample sites for each sample year, and no SLO sample sites.** This design was WDFW’s originally proposed concept prior to the new forestland coverage development.

**Option 2: Implement WDFW study design with 100 SLO sample sites for each sample year, and no LLO sample sites.** Sampling costs associated with small land ownerships are more expensive than efforts on large ownerships. We estimate about \$10,000/year will be needed to accommodate incorrect land use determinations (e.g., agriculture), misidentification of small (vs. large) ownerships, additional consultation with DNR foresters, greater need to access county records, and more attention to trespass/property rights concerns.

**Option 3: Implement WDFW study design with 100 LLO sample sites, and 100 SLO sample sites for each sample year.** We believe that 100 samples will adequately determine the level of effort that will be needed to adequately detect trends. The number of sample sites may need to increase, or could decrease, depending on proportions of barriers in year 1 and the inter-annual variability among years.

**Option 4: Implement WDFW study design with 60 LLO sample sites, and 60 SLO sample sites for each sample year.** We believe that 60 samples per stratum is the minimum number of samples based on the discussion in Option 3.

**Option 5: Implement WDFW study design with 60 LLO sample sites, and 60 SLO sample sites, but combining east- and west-side data collection each year.** In other words, data would be collected for both east and west side every other year. This scheme would increase travel costs during sample years; decrease the amount of work

accomplished per day, may decrease east/west inference, and may increase the time needed to detect trends. However, cost savings are advantageous.

**Option 6: Implement WDFW study design with 100 SLO sample sites, and use RMAPs for LLOs.** The use of RMAPs for LLOs requires a cost estimate from DNR.

**Option 7: Abandon trend monitoring and simply conduct periodic status assessments using a Single Random Sampling Design.** This method is included as an option to greatly reduce costs. Trend detection is not possible, but comparisons of periodic status assessments can be obtained. We recommend that if this option is selected, 3 assessments be conducted in FY 06, FY 11, and FY 15. Sample sizes can be adjusted to obtain desired precision. Costs in Table 1 represent 100 LLO samples and 100 SLO samples statewide.

**Option 8: Combine sampling efforts with fish passage status and trend monitoring being considered by the Governor's forum on monitoring. Cost savings may be realized if enough data are collected so that post stratification can occur by ownership type.** The Governor's Forum on monitoring has expressed some interest in conducting fish passage status and trend monitoring. A partnership could allow a greater chance of successfully post-stratifying among landowner size and land use due to the increased sample size that conceivably would occur. This is merely a concept at this point, and would require at least two years to coordinate.

**Option 9: Develop a cost estimate based on the proportion of acreage by ownership (e.g., 80/20).** This option is not advised because SLO's would likely be under-represented in the sampling frame, and cost savings are negligible.

**Option 10: Do not study.** Always an option.