

Monitoring Study Group Meeting Minutes

November 13, 2002

Howard Forest

The following people attended the MSG meeting: Tharon O'Dell (BOF-chair), Clay Brandow (CDF), Rob DiPerna (EPIC), John Corbett (NCRWQCB), Roger Poff (R.J. Poff and Associates), Tom Shorey (FGS), Ted Oldenburg (Hoopa Tribal Forestry), Brad Valentine (DFG), Mike Anderson (Anderson Logging Co.), Charles Martin (CDF), Peter Ribar (Campbell Timberland Management), Stephen Levesque (Campbell Timberland Management), Syd Brown (CDPR), Dr. Rich Walker (CDF-FRAP), Julie Bawcom (CGS), Tom Spittler (CGS), Bernie Bush (SRCO), Dean Lucke (CDF), Robert Darby (PALCO), Paul Peters (Hoopa Fisheries), Joe Croteau (DFG), John Siperek (DFG), Dwight Hostler (Hoopa Fisheries), Joel Chase (Hoopa Fisheries), Richard Gienger (SSRC/HWC), Holly Lundborg (NCRWQCB), Dr. Mary Ann Madej (USGS), Samantha Hadden (HSU), John Munn (CDF), Dr. Richard Harris (UCCE), Dr. Robert Ziemer (USFS-PSW), Christine Wright-Shacklett (NCRWQCB), and Pete Cafferata (CDF).

[Note: action items are shown in bold print].

We began the meeting with general monitoring related announcements:

- Richard Harris stated that a two day conference titled “*California’s North Coast Riparian Forests—The Link Between Wood and Fish*” is scheduled for May 2nd and 3rd. The first day will be at the Mendocino Community College in Ukiah, while the second day will be a field trip to Mendocino County watersheds. This conference is focused on measurement, monitoring, and management of large wood in North Coast stream systems. The first day will consist of four sessions: 1) keynote/overview of issues, 2) field measurement and monitoring of wood in streams, 3) management of wood in streams (retention, placement, riparian zone management), and 4) regulatory and cost-sharing incentives for managing wood in streams. For further information, including a registration packet, contact Sherry Cooper, UCCE, shcooper@ucdavis.edu or (530) 224-4902. Information is also available online at: <http://danr.ucop.edu/ihrmp/nrn.html>
- Peter Ribar and Pete Cafferata announced that the CLFA Spring Workshop this year will be on *Watercourse Crossings*, at the suggestion of the Monitoring Study Group, due to the Hillslope Monitoring Program results to date. The workshop is scheduled for March 6, 2003 in Sacramento. The contact for further information is Hazel Jackson, CLFA, clfa@volcano.net or (209) 293-7323. Also, information is available at CLFA’s website: <http://www.clfa.org/workshops.htm>
- Richard Gienger stated that Randy Klein, RNP Hydrologist and private consultant, has been hired to conduct a two-year monitoring project studying the impacts associated with removal of numerous watercourse crossings in the Mattole River watershed. Landowners include the Sanctuary Forest and 50 to 60 watercourse crossings will be monitored during the first year. Measurements will be made before, during, and after crossing removal. Parameters to be monitored include: turbidity and suspended sediment concentration above and below the crossing site, cross sectional area, and video and still photography.

The next agenda item was a Power Point presentation by Dr. Mary Ann Madej, Research Geologist, USGS Redwood Field Station, on research completed to date for the *Composition of Suspended Load as a Measure of Stream Health* project. Assisting Mary Ann with this presentation was Samantha Hadden, graduate student at Humboldt State University working under the direction of Dr. Peggy Wilzbach. Mary Ann began by providing a brief introduction to the project. The primary objective of the research is to establish the relative importance of size-specific, inorganic vs. organic components of the suspended load in influencing stream health, as reflected in the efficiency of growth of juvenile salmonids and their invertebrate food base. More specifically, one objective of this study is to determine the influence of organic and inorganic material on turbidity. Mary Ann stated that previous work by R.L. Beschta (OSU) reported 10 to 15% of the suspended load in Oregon was typically composed of organic material, while R.G. LaHusen (USGS) published that up to 64% of turbidity in Bull Run Creek near Portland may be due to organic material. Another objective is to test whether the organic fraction of the load can be predicted by timber harvesting history, roading, season, etc. The organic fraction is an important food source for filter feeders, which influences nutrient cycling. This affects macroinvertebrate abundance and fish feeding, as well as eutrophication in estuaries. Organics in the suspended load can also affect drinking water quality due to the bi-products that result from the use of disinfection chemicals, such as chlorine (i.e., production of tri-halomethanes or THMs).

Field sites for this work include several drainages in the Redwood Creek watershed (including Prairie Creek, Lacks Creek, Panther Creek) and the North and South Forks of Caspar Creek on Jackson Demonstration State Forest. Data was collected during the winter of 2001/2002, with ongoing data collection and laboratory analysis this winter. Results to date show that, with low stream discharges, organics can be a significant component of the suspended load, while the load has a higher percentage of inorganic material during higher discharge events (i.e., the ratio of organic to inorganic material goes down as discharge goes up). Organics affect the suspended sediment concentration- turbidity relationship, since a greater percentage of the suspended load and overall turbidity is due to organics during the falling limb of the hydrograph. This is because organics are lighter in weight and can stay in suspension for a long time, and preliminary analysis shows that organics can make up 30% of the total load during this part of the hydrograph. Mary Ann is investigating the organic component of the suspended load with differing land uses (Caspar Creek) and geology (Redwood Creek tributaries). For example, the percent organics vs. turbidity differs in upper and lower Prairie Creek, a large tributary of Redwood Creek. In upper Prairie Creek, the percent organics is higher for a given turbidity when compared to lower Prairie Creek. Upper Prairie Creek is an undisturbed reference stream, while lower Prairie has roading impacts.

Samantha Hadden continued the presentation and addressed what the effects outlined above can mean to the stream biology. Samantha stated that there are direct effects for both types of the suspended load. Inorganic material has direct food web effects, while inorganic material produces biofilms on the outside of surfaces that facilitates the binding of other particles. Indirect effects occur when turbidity reduces light penetration, resulting in decreased visibility and less anadromous fish feeding. Hypotheses being tested include that salmonid condition/feeding activity is inversely proportional to suspended load, and that macroinvertebrate density/biomass is directly proportional to microbial respiration. Field sampling last winter

focused on NF and SF Caspar Creek, Prairie Creek, and Little Lost Man Creek. Field parameters included microbial respiration (indexed by measurement of dissolved oxygen (DO) in the field), turbidity, fluorescence (as an index of chlorophyll-a presence), abundance of macroinvertebrate functional feeding groups (shredders, collectors, scrapers, and predators), and the organic/inorganic fraction of the suspended load. YSI Sonde probes were used to collect some of this data. Originally, salmonid feeding was to have been measured with a feeding tube apparatus developed by Dr. Wilzbach, but this has been eliminated from the project due to difficulty in direct observation with high flows, and feeding will be evaluated by snorkeling.

Preliminary data analysis has been completed on ratios of functional feeding groups for tributary watersheds (e.g., scrapers/shredders and collectors), as well as baseline fish feeding under summer clear water conditions. Fish feeding measurements under high water winter conditions will occur during the winter of 2002/2003. The literature (based on laboratory studies) suggests that fish are able to see reasonably well for feeding up to 20 to 30 NTUs (see for example Newcombe and Jenson 1996). Samantha stated that she will correlate the inorganic fraction of the suspended load with fish feeding as well as the organic load. Additionally, laboratory fish feeding under varying turbidity levels will occur this winter.

Samantha anticipates writing her Masters thesis the summer of 2003. The contract for this project with CDF goes to December 31, 2003. Drs. Madej and Wilzbach will develop a final report summarizing data compilation and analysis. Additional project deliverables include a web-available database and manuscripts prepared for publication derived from thesis results.

The next agenda item was a discussion of progress made on cooperative THP-scale instream effectiveness monitoring projects with Campbell Timberland Management and SPI. Pete Cafferata briefly summarized past work related to this topic. The proposed projects largely grew out of recommendations from the Interagency Water Quality Monitoring Workshop held on January 15, 2002, in Santa Rosa, and from the NCRWQCB for THP scale projects to determine Basin Plan compliance with water quality standards. Both Campbell Timberland Management and SPI offered to participate with the BOF/CDF/MSG on cooperative projects. CDF will contribute to the projects by providing \$40,000/yr with multiple year contracts. A small workgroup met at the Redwood Sciences Laboratory on September 18th to discuss a scientific framework for THP-scale studies. Notes from this meeting were distributed at the current MSG meeting. It was agreed at the September 18th meeting that the basic question to answer for the North Coast project was “does the project, as implemented, cause turbidity to exceed 20% over background conditions,” and that there needs to be a pre-project data collection period of 2-3 years, with the overall project envisioned to take 9-10 years.

Following this introduction, Stephen Levesque and Peter Ribar described two candidate watersheds for the North Coast project: 1) Wages Creek (500 to 700 ac), in the headwaters of South Fork Wages Creek, and 2) Patsy Creek (~1500 ac), in the headwaters of the North Fork Ten Mile River watershed. Both have relatively uniform vegetation conditions. The Wages Creek basin has an old-style road system (mid-slope with inside ditches) and was logged most recently in 1974 with tractors. The Patsy Creek watershed was last logged 22 years ago, 80% with crawler tractors, and has more landslide features (including earthflows) than the Wages

Creek basin. Stephen and Peter stated that the Wages Creek site best fits the criteria for an instream monitoring project. Both candidates have perennial streams, but only Patsy Creek has fish present. Treatments in these watershed could include both road upgrading and timber harvesting.

A group discussion followed on the overall project design. Bob Ziemer outlined four principle reasons that these types of monitoring projects fail: 1) the monitoring question to answer is not defined clearly enough, 2) the inability to find adequate locations to install instruments to fit the defined objective, 3) the inability to collect relevant data (for example data during very large storm events), and 4) the inability to analyze the data collected. If any one of these problems is present, the project will fail. In reference to the monitoring question problem, many questions remain regarding testing the hypothesis about elevating turbidity above 20% over background conditions. For example, 20% where and when—how long? [During a storm event, for the first year following logging, following a discharge event of x years recurrent interval, chronic turbidity, etc.] These types of questions need to be answered and agreed upon prior to beginning the project. Help from the NCRWQCB staff is needed to answer these questions. Bob also stressed that no one study is going to address all the questions that can be asked. Tom Spittler stated that a relevant question to address would be “do road improvement work and timber harvesting affect water quality in a way that adversely affects the beneficial uses of water present?”

Robert Darby stated that PALCO is currently undertaking a considerable amount of turbidity and SSC monitoring in the Freshwater Creek and Elk River watersheds in Humboldt County. PALCO is willing to share what it has learned in instrumenting these sites, as well as the Standard Operating Procedures (SOPs) developed for quality assurance/quality control (QA/QC).

Christine Wright-Shacklett stressed the need for a comprehensive assessment of the watershed as part of the monitoring process. Stephen Levesque stated that Wages Creek and Patsy Creek are considerably different. Tom Spittler added that Patsy Creek has high background sediment loads due to the geologic composition of the basin (faulting, mélange material, etc.). This level of background sediment could easily overwhelm any signal from road upgrade work.

It was agreed that a MSG Workgroup meeting should be held to further flesh out the appropriate question(s) and field sites. This meeting will be held on February 10th, 10:00 a.m., Howard Forest.

Following lunch, Pete Cafferata provided a brief update on the 2002 Hillslope Monitoring Program contract. As of November 13th, ECORP Consulting, Inc. had three THPs left to complete in Mendocino County and one THP remaining in Calaveras County. Forty-six of the 50 THP and NTMP NTOs had been completed during the summer and fall of 2002. A blank replicate database was delivered to ECORP in October for data entry.

Next, Pete Cafferata provided a short Power Point presentation updating progress made on the Hillslope Monitoring Program (HMP) report being prepared for the BOF. A previous Power Point Presentation by Pete to the MSG in September and the BOF at their November meeting described most of the results developed from queries run on data from 300 THPs and NTMP

projects. The first draft of the HMP report was delivered to Tharon O'Dell, Ross Johnson, Jerry Ahlstrom, and John Munn on November 6th. The second version of the draft report was delivered to MSG members on November 20th. The primary chapters of the report are: Introduction, Background Information, Summary of Related Studies, Study Design, Methods, Results, Discussion and Conclusions, and Recommendations. The Results chapter includes information on Roads, Skid Trails, Landings, Watercourse Crossings, Watercourse Protection Zones (WLPZs/ELZs/EEZs), Large Erosion Events, and Non-Standard/Additional Mitigation Measures. Pete presented detailed information on the Non-Standard/Additional Mitigation Measures section, since this was new material that had not previously been summarized or presented. For each of the 300 projects evaluated in the field, four responses were requested for non-standard practices and additional mitigation measures: 1) Was an alternative, non-standard, or in-lieu practice approved? 2) Were additional mitigation measures included in the plan? 3) Have practices/measures been implemented as described? and 4) Provide comments on implementation and effectiveness.

In general, the total numbers of non-standard practices and additional mitigation measures are very low and do not include all types of practices actually used on the THP and NTMP NTOs monitored. This was mostly due to the fact that site specific measures and practices often did not apply to the randomly located transect locations. It was stressed that this work is to be considered an initial, first phase review of these types of practices. Summary data was presented for roads, skid trails, landings, crossings, and watercourse protection zones. There was considerable discussion regarding the whether it was appropriate to summarize the data in the manner that was initially utilized. Some of the group felt that a verbal description of the results without figures should be used in the report. It was agreed that bar-type charts would not be included in the final report and further analysis of the data would be undertaken.

Pete summarized the 10 main Discussion and Conclusion topics included in the Hillslope Monitoring Report, as well as the 10 recommendations made at the end of the document. Recommendations relate to training and education, a road management plan, changes to the Hillslope Monitoring Program, and work needed to complement the HMP. The group worked through each of the recommendations and made numerous suggested changes, with a general consensus reached on how they should read for the final report. **Pete stated that he would distribute the report to MSG members by Thanksgiving, with comments due back by December 16th. The final report will be distributed to the BOF at their January meeting in Sacramento.**

Due to the length of discussions on the above agenda items, the agenda items on "Discussion on guidance to CDF on how to make changes/improvements in the HMP," and "Update on Modified Completion Report monitoring" were not started and will be moved to the next MSG meeting agenda.

Under the Public Comment agenda item, it was briefly mentioned that the MSG should consider taking field trips for future meetings.

The next MSG meeting was scheduled for February 11th, 10:00 a.m., at Howard Forest.