

Monitoring Study Group Meeting Minutes

April 23, 2002

Howard Forest

The following people attended the MSG meeting: Tharon O'Dell (BOF-chair), Zack Larson (Mill Creek Fisheries Program), Chris Howard (Mill Creek Fisheries Program), Tom Spittler (CGS), Richard Gienger (HWC/SSRC), Robert Darby (PALCO), Peter Ribar (Campbell Timberland Management), Dawn Pedersen (CDF), Graham Matthews (Graham Matthews and Associates), Dr. Richard Harris (UCCE), John Munn (CDF), Christine Wright-Shacklett (NCRWQCB), John Woolsey (ECORP), Mike Anderson (Anderson Logging), Mark Rentz (CFA), Rob DiPerna (EPIC), Tom Shorey (FGS), Dean Lucke (CDF), Dr. Rich Walker (CDF-FRAP), Chris Hipkin (SFS), JB (NMFS), Stephen Levesque (Campbell Timberland Management), David Wright (Campbell Timberland Management), Clay Brandow (CDF), Gerri Finn (CDF), Jeanette Pedersen (CDF), Gabriel Schultz (CDF), Adam Frese (CDF), Gaylon Lee (SWRCB), Ted Oldenberg (Hoopa Tribal Forestry), Dave Hope (NCRWQCB), Bill Snyder (CDF), and Pete Cafferata (CDF). **[Note: Action items are bolded].**

We began the meeting with general monitoring related announcements:

- Richard Gienger informed the group that the NCRWQCB met in Eureka on April 18th and 19th to discuss possible Waste Discharge Requirements for the Elk River, Freshwater, Bear, Jordan and Stitz Creek watersheds. The Board's decision was stated in 3 parts: 1) move forward with 3rd party mediation, 2) Executive Officer to provide status reports on monitoring, and 3) direction to staff to consider further use of Clean Up and Abatement Orders.
- Richard Harris announced that there will be a Large Woody Debris Recruitment Modeling Workshop in Sacramento on April 29th and 30th. Additionally, Richard stated that he is progressing on developing the field program for the DFG contract for restoration project effectiveness evaluation. UCCE is seeking good, very recent project sites, or sites proposed for restoration. Field work is anticipated to begin May 1st and continue through January.
- Rich Walker stated that the North Coast Watershed Assessment Program (NCWAP) program has been granted an extension to October 1, 2002, for the first three watersheds (Redwood Creek, Mattole River, and Gualala River). This will allow more extensive peer review and incorporation of comments received on the draft reports. All 3 reports are available on the web (www.ncwatershed.ca.gov).
- Tom Spittler announced that the California Geological Survey (CGS) held its first workshop titled "Engineering Geology for Timber Harvesting, Wildland Management, and Watershed Restoration" in Santa Rosa on April 12th and 13th, with upcoming sessions in Eureka on April 26/27 and Sacramento on May 17/18. All the upcoming sessions are currently full.

Graham Matthews presented preliminary suspended sediment and turbidity monitoring results from the 2001/2002 winter for the South Fork Ten Mile River watershed in coastal Mendocino County. The goal of the program is to improve knowledge of sediment transport in the basin. This is to be accomplished through data collected from tributaries showing their relative contributions of sediment—thereby providing information on general watershed condition in the sub-basins. Data collection began in November 2001. The South Fork is 37.5 square miles, and

sites selected within the South Fork included: Redwood Creek, SF Ten Mile below Redwood Creek, Smith Creek, Campbell Creek, SF Ten Mile below Smith Creek, SF Ten Mile Crossing (above Campbell Creek), and SF Ten Mile above Redwood Creek. Two of the sites were manual sites with crest stage gages and 5 sites had pressure transducers installed with data loggers for continuous discharge measurement. Problems with the data loggers at some sites caused lost data for part of the winter. Approximately 20 manual suspended sediment concentration (SSC) samples were collected per station, as well as 1-2 Helly Smith bedload samples per station. Several storm events occurred but no very large discharge events were experienced. Preliminary data indicates much higher unit area discharge for the Smith Creek tributary—possibly due to topographic orientation (further data is needed to confirm such a large difference). Suspended sediment rating curves (SSC vs discharge) for all sites yielded a relationship with high scatter, as expected ($r^2 = \sim 0.4$). While discharge was not found to be a good predictor of SSC, the turbidity vs SSC relationships for individual tributaries were very good, with r-squared values over 0.9. Sediment yield on a unit area basis was estimated to range from 17 tons/square mile/yr to 654 tons/square mile/yr for the various sampling sites. Stations with low yields (e.g., SF Ten Mile below Redwood Creek) are likely due to limited access during high discharge events, while the station with the highest discharge (Smith Creek) is largely explained by the higher unit area water discharge rate.

Overall, sediment loads appear, with the limited data collected to date, to be slightly lower for the SF Ten Mile watershed than those predicted with regional regression equations developed with sediment data collected in the 1960's and 70's. Graham stated that: 1) access is critical—especially for high flow measurements, 2) it is better to use high quality data loggers, and 3) it is necessary to consider possible backwater effects of larger channels on the tributaries. Graham was able to operate these gaging stations for approximately \$2,000 to 3,000 per year, as opposed to \$37,000 per year for USGS operation. Preliminary conclusions include: 1) WY 2002 data generally fit the suspended sediment regional relationship developed from earlier data fairly well, 2) Smith Creek has higher unit discharge and sediment loads than the other sites, and 3) SF Ten Mile below Redwood Creek has lower sediment loads than the other sites. Both Graham and Campbell Timberland Management hope to continue this work into the future.

Following Graham's presentation, Stephen Levesque, Campbell Timberland Management, spoke to the MSG about a conceptual approach for THP-level effectiveness monitoring for the Hawthorne Timberlands ownership in Mendocino County. Stephen began the presentation with background information on the Hawthorne ownership—including major drainages, existing road network, and past management practices. The goal is to develop a long-term instream aquatic monitoring program for suspended sediment and turbidity that includes sufficient pre/post treatment data for statistical confidence in conclusions generated. Campbell/Hawthorne is looking for technical assistance and cooperative support from the MSG/BOF/CDF. Stephen stated that this would allow the MSG to: 1) expand its efforts further into instream monitoring, 2) increase our knowledge of sediment supply, storage, and transport, and 3) link hillslope and instream monitoring in the same watershed. For Campbell/Hawthorne, it would: 1) produce valid monitoring for a limited number of projects—since they cannot afford to develop instream monitoring projects for all THPs, 2) evaluate the effectiveness of current FPRs and Hawthorne's aquatic strategy—including its road improvement program, 3) quantitatively demonstrate trends in sub-basin and/or watershed condition, and 4) support the development of regional data.

Stephen spoke about the conceptual approach for breaking planning watersheds into two pieces—stream zones and slide areas, and upslope areas with no slide prone areas. He illustrated

these concepts with two recent Campbell THPs—Vallejo Gulch and Little Bear. The goal is to test the effectiveness of the whole suite of aquatic protection strategies developed for these THPs—not a simple above/below clearcut comparison. Strategy components include road abandonment, road upgrading, timber stand improvement, WLPZ enhancement, etc. He also reviewed suspended sediment concentration and turbidity sampling fundamentals—including inherent high variability, storm and seasonal hysteresis effects, the impact of one large mass failure event on monitoring results, etc. Stephen illustrated fine sediment variability and the difficulty in meeting TMDL targets with McNeil data collected in Noyo/Ten Mile River drainages over 10 years. Summer sampling has yielded estimates of 16 to 23% fines <0.85 mm (wet sieved), while winter sampling has produced estimates of 9 to 17% in the same riffles. These data suggest it is possible to have a reduction of 30-40% fine sediment depending on the season sampling occurs. The target of 14% was stated as being unobtainable. Additionally, Stephen cited Kramer et al.'s (2001) review of 9 TMDLs produced for North Coast Watersheds in the Watershed Management Council's Networker (Summer 2001, volume 10, no. 1) demonstrating that: 1) harvest unit erosion is generally not huge, and 2) road-related erosion is the major issue needing to be addressed (see Table 2 in Kramer et al. 2001).

The conceptual approach for THP scale effectiveness monitoring was then described in more detail. The goal would be to design a SSC/turbidity monitoring program sampling strategy to test the following hypotheses:

- a) Road upgrade techniques reduce delivery to the stream network.
- b) Current harvesting techniques do not significantly increase delivery of erosional products to the stream network.

More specifically:

H_o: Current road upgrade techniques (outslope with rolling dips, berm removal, etc.) significantly reduce the delivery of erosion products to streams.

- Isolate individual road segments for study
- Focus on surface erosion products from native surfaced roads
- Pre-treatment data adequate
- Upstream/downstream stations
- Continuous flow and turbidity measurements

H_o: Current harvesting techniques do not significantly increase delivery of erosional products to the stream network hillslope.

- Isolate harvest effects
- Focus on Class II watercourses with upstream/downstream stations
- 2-3 years of pretreatment data collection
- May require more intense silvicultural system to generate a clear signal

Stephen offered the MSG/BOF/CDF the opportunity to help design a statistically valid monitoring program and develop a THP to fit the monitoring program requirements—providing a great deal of flexibility that is generally not available for THP scale monitoring. He requested that a MSG Workgroup provide comments and technical review for such an endeavor. Additionally, he requested that the MSG/BOF/CDF consider providing funding this type of project. There was insufficient time for a detailed discussion from the MSG on Stephen's request, but further discussion will occur at the next MSG meeting.

Following lunch, Chris Howard and Zack Larson provided the MSG with a presentation on the fisheries monitoring program for Mill Creek, tributary of the Smith River in Del Norte County. Mill Creek has historically been commercial timberland, with a long management history going back to 1909. Rellim Redwood Company began harvest in 1954 and Miller Redwood Company operated a mill until 1993, with the last logs being removed from Mill Creek in 2001. At this time, the majority of the Mill Creek block timber inventory is less than or equal to 40 years in age. In July 2001, Stimpson Lumber Company and the Save-the-Redwoods League entered into an option agreement for purchase of approximately 25,000 acres in the Mill Creek block. The purchase is slated for closing this spring. On March 11, 2002, Stimpson Lumber Company, Save-the-Redwoods League, and Del Norte County reached an agreement to replace anticipated lost revenue to Del Norte County from the sale of the tract. **With this change of ownership, the Mill Creek fisheries program is seeking funding to continue with a long-term monitoring program. Currently, funding is available through late summer 2002. Chris and Zack are applying for SB 271 funding, and would welcome additional state funding—such as through the MSG/BOF/CDF if possible.**

Mill Creek is noted for its healthy wild coho salmon population, one of five anadromous fish runs in the watershed. Development of the fish monitoring program began in 1979 when CH2M Hill evaluated the drainage for overall anadromous fish potential. Spawning surveys began in 1980, with Jones and Stokes concluding in 1992 that extensive coho spawning and rearing exist in the basin. In 1994, Rellim Redwood began aquatics monitoring in Mill Creek. The Mill Creek Fisheries Monitoring Objectives include: 1) monitor anadromous fish populations, 2) determine freshwater carrying capacity, 3) follow trends in overwinter survival, and 4) follow trends in freshwater vs. ocean survival. The monitoring project has 3 main components:

- Spawner escapement surveys—chinook and coho salmon
- Juvenile outmigrant trapping—all species
- Summer population monitoring—coho, steelhead, and cutthroat trout

Escapement surveys cover 10 miles of Mill Creek, or 57% of the available habitat, and are conducted from November through February. Data collected includes: minimum escapement estimate, run timing, age class information, redd locations, and hatchery influence. Data since 1980 show a slight upward trend for both chinook and coho salmon. Chinook numbers have been particularly high the winters of 2000 and 2001 in the West Branch of Mill Creek. Outmigrant trapping occurs in both the West Branch and the East Fork of Mill Creek. Trap duration is from February through July. Species captured include: coho, chinook, steelhead, coastal cutthroat, chum salmon, and non-salmonid species—indicating a high diversity of fish. Data collected includes: species diversity and composition, length frequencies, outmigrant timing, and long-term smolt population trends. Coho peak outmigration occurs in May, and is generally increasing over time, particularly one life cycle—with high numbers in 1995, 1998, and 2001 (coho have a 3 year life cycle). Steelhead have a peak in their outmigrant run considerably earlier (before mid April)—so some of the data is missing. Chinook numbers are generally increasing, with very high numbers in 2001 (approximately 90,000 in the West Branch trap). Summer population estimates of coho young-of-the-year and yearling steelhead and cutthroat trout are made in September. The Modified Hankin and Reeves sampling method is utilized. Additionally, overwintering survival is estimated—often thought to be the key limiting factor for coho survival. Use of over-wintering data helps identify needs for habitat improvement. Coho salmon over-winter survival estimates for the West Branch of Mill Creek were 34% in 1994, 30% in 1995, 13% in 1996, and 50% in 1997. Over wintering survival rates

in other watersheds have often been estimated to be 10-15%, so the estimates for Mill Creek indicate relatively good over-wintering survival here. This is probably due to significant areas of velocity refuge for the fish. **Chris and Zack's overall conclusion for Mill Creek is that it is a good candidate reference watershed for the MSG's Watershed Reference Catalog. For further information on the project or a field visit, contact Zack Lason at (707) 954-1085 or zack_larson@yahoo.com.** Also, the data collected to date is available to the public.

Bill Snyder, CDF Deputy Chief for Resource Management in Santa Rosa, provided the group with a presentation on monitoring that has been required for THPs to date. Bill summarized the Forest Practice Rules that allow THP monitoring: 916.10 (Domestic Water Supply Protection) and 916.11 (Effectiveness and Implementation Monitoring). He provided a list of 8 THPs that have been approved by CDF with mandatory monitoring requirements (including Jenner Gulch THPs, Lompico Creek, Beith Creek, Freshwater Creek THPs, Ten Mile River) and an additional list of 3 THPs that have been approved with voluntary monitoring requirements (Bear Creek THPs). The general elements of the monitoring plans have been: 1) criteria for initiation of monitoring (x inches of cumulative precipitation in the fall months), 2) triggering mechanism (e.g., x inches/day), 3) sampling procedures (hillslope elements include evaluation of roads, crossings and landings, instream has included turbidity samples above and below existing and abandoned crossings), and 4) data recording/reporting. To date, triggers for monitoring have included: 1) notification of high turbidity by a water agency, 2) large rainfall events, and 3) criteria denoted in existing landowner monitoring programs. Issues that have necessitated monitoring requirements include flooding/public safety, hillslope instability/culvert blockage and city flooding, road density, and cumulative watershed effects from multiple recent harvests. The key consideration for CDF mandated THP monitoring has been the 916.10 FPR clause calling for the information requested by CDF to be judged in light of reasonableness and practicality, and considerable disagreement with other agencies has occurred over what are appropriate monitoring requirements for THPs. CDF's focus has been on evaluating the effectiveness of prescribed practices and locating correctable sources of sediment prior to the production of instream sediment, rather than compliance monitoring for a Basin Plan requirement. CDF has taken the position that this type of monitoring would require a more comprehensive sampling scheme with adequate pre-treatment data collection. As stated at the January 15th Interagency Water Quality Monitoring Workshop, CDF does not have the authority to ask for 1-2 years of pre-project data. Bill then briefly summarized the monitoring plans that have been required for the various THPs.

Pete Cafferata summarized the monitoring plan very recently developed for THP 1-02-439 SCR (still currently in the Review Process) located in the San Vicente Creek watershed (Santa Cruz County). RMC Pacific Materials/Lonestar is the landowner and has water supply uptakes for the town of Davenport in the San Vicente Creek and adjacent Mill Creek watersheds. There has been considerable concern over potential impacts to the Davenport water supply from timber operations and recommendations for instream water monitoring from the Central Coast Regional Water Quality Control Board and the County of Santa Cruz, among others, have been made to CDF. The current proposal calls for hillslope inspections of roads, crossings and landings following a rainfall trigger and turbidity sampling above and below 2 existing crossings and one crossing to be abandoned through the Erosion Control Maintenance Period. These monitoring measures will: 1) provide an indication of amount of sediment contributed from road surfaces, road drainage, and road abandonment—including changes over time, and 2) indicate where significant problems may exist that will require rapid corrective action.

Considerable discussion followed these presentations on THP monitoring. Christine Wright-Shacklett stated that the CDF and the NCRWQCB have different perspectives on monitoring. The Water Board is interested in determining if the Basin Plan standards are met and whether beneficial use protection has occurred, in addition to CDF's primary focus of locating correctable sediment source areas in a timely manner and making improvements if possible. Richard Gienger and Tom Spittler added information about possible crossing monitoring techniques, including the use of photo points. Stephen Levesque stated that if the agencies make proper crossing abandonment too burdensome, landowners will likely reduce the amount of road improvement work that is accomplished. JB informed the group that he has been starting to see a trend that it is easier for landowners to not complete road improvement work—and that this is a real problem. Dave Hope stated he has observed that a very high percentage of crossings are not properly abandoned.

During the public comment period, continued discussion of crossing monitoring took place. **Richard Gienger asked if crossing monitoring approaches would be an appropriate future MSG agenda item. Bill Snyder suggested that it may be appropriate to ask Bill Weaver, Pacific Watershed Associates, to address crossing monitoring and it was agreed that this was a good suggestion.**

It was agreed that the next MSG meeting will be held on June 11, 2002, 10:00 a.m., at Howard Forest.