Final Report
Mattole Basin Channel Monitoring, 2002-2003

Baseline Channel Monitoring in 14 Tributary Reaches
Associated with Sediment-Reduction Treatments

Mattole Good Roads, Clear Creeks Program
Mattole River Watershed, Summer/Fall 2002 & 2003

Data report submitted by the Mattole Salmon Group
under subcontract to the Mattole Restoration Council
in fulfillment of

Task 6.2, State Water Resources Control Board Agreement No. 01-102-251-0
Clean Water Act Section 319(h) Grant Program

and

Task 8.2, State Water Resources Control Board Agreement No. 01-151-251-0
Costa-Machado Water Act of 2000 (Proposition 13)

Prepared by
Gary D. Peterson, Mattole Salmon Group, gary@mattolesalmon.org
Bill Lydgate, Streamfellows, lydgate@humboldt1.com
Eli Asarian, Institute for Fisheries Resources, eli@krisweb.com
and
Tabi Bolton, Mattole Salmon Group, aob1@humboldt.edu

Mattole Salmon Group
P.O. Box 188
Petrolia, CA 95558
707-629-3433
msg@mattolesalmon.org

February 2003

Funding for the 319(h) portion of this project has been provided in part by the U.S. Environmental Protection Agency (USEPA) pursuant to Assistance Agreement No. C998998901-0 and any amendments thereto which has been awarded to the State Water Resources Control Board (SWRCB) for the implementation of California’s Nonpoint Source Pollution Control Program. Funding for the Proposition 13 portion of this project has been provided in full or in part through a contract with the State Water Resources Control Board (SWRCB) pursuant to the Costa-Machado Water Act of 2000 (Proposition 13) and any amendments thereto for the implementation of California’s Nonpoint Source Pollution Control Program. The contents of this document do not necessarily reflect the views and policies of the USEPA or the SWRCB, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.
Executive Summary

It has been well established that the Mattole River’s water quality and native salmonid populations have declined as a result of excessive anthropogenic sedimentation. This has resulted in a loss of aquatic habitat complexity, increased summertime water temperatures, and a loss of suitable habitat for salmonid spawning and rearing. The Mattole River watershed is particularly impacted by sedimentation because of the geologic instability of the Triple Junction, high rainfall (often over 100” annually), and land-use impacts such as deforestation and road construction.

In 2001, the Mattole Restoration Council (MRC), Mattole Salmon Group, Sanctuary Forest, Inc., the Middle Mattole Conservancy and the Bureau of Land Management initiated the Mattole Good Roads, Clear Creeks (GRCC) Program, a multi-organization collaborative effort coordinated by MRC. The GRCC Program is a watershed restoration strategy designed to identify and correct potential sediment delivery sites in a tributary watershed context, to enlist the cooperation of a majority of landowners, and to use appropriate monitoring protocols to determine the effect of sediment-reduction projects on water quality, aquatic habitats and salmonid populations in priority sub-basins throughout the Mattole.

Mill Creek and Thompson Creek, two key coho-producing tributaries in the lower and upper Mattole watershed, respectively, were prioritized as GRCC demonstration projects and in 2002 MRC secured a 319(h) grant from the State Water Resources Control Board (SWRCB) to implement sediment-reduction treatments identified in previous inventories of site-specific erosion. Components of the 319(h) grant relevant to the present report included the following: Task 3 (Quality Assurance Project Plan [QAPP] for channel monitoring protocols), finalized on 10 September 2002; Task 4 (Mill Creek Watershed Restoration Implementation Project), completed by MRC in fall 2002; Task 5 (Thompson Creek Road Rehabilitation Project), subcontracted to the Mattole Salmon Group (MSG) and completed in fall 2002; and Task 6 (Instream Habitat Monitoring), subcontracted to MSG and completed by submitting this Final Report.

Concurrent with the 319(h) grant, MRC entered into a Proposition 13 contract with SWRCB to expand the Good Roads, Clear Creeks Program in key tributaries of the upper Mattole basin. The upper 9 miles of the Mattole, from Bridge Creek to the headwaters, contains the highest quality and most heavily utilized salmon spawning and rearing habitat in the entire watershed. Within this refugia habitat, MSG, under subcontract to MRC, conducted channel monitoring in 12 tributary reaches (see list of streams in the table on the following page). Components of the Prop. 13 grant relevant to the present report included the following: Task 2 (QAPP for channel monitoring protocols, the same as Task 3 in the 319(h) grant); and Task 8 (Channel Assessment and Prescription Development), completed by MSG through submittal of this Final Report.

Using protocols specified in the Mattole Channel Monitoring QAPP, MSG surveyors collected baseline data on the following channel parameters in summer/fall 2002 and 2003:

- longitudinal profile surveying (thalweg profiles)
- 3 channel cross-sections per stream (4 in Helen Barnum Creek)
- pebble counts
- V-Star pool sediment measurements
- substrate embeddedness estimation
- riparian canopy density
• large wood inventory (all streams except Mill Creek and N. Fk. Thompson Creek)
• juvenile salmonid surveys
• photographic documentation
• summertime water and air temperature monitoring (protocols are described in a separate MSG
document titled “QAPP for Mattole Watershed Temperature Monitoring Project” (EPA
QA Program Document Control Number: WATR170Q98VSF3; approved by EPA
Region 9 QA staff on 18 December 2000).

A variety of specialized tools and instruments were used to conduct channel assessments, including a
Sokkia B20 automatic level (32x magnification), domed-head tripod, telescoping leveling rods
(feet/10ths/100ths), measuring tapes (feet/10ths), a “gravelometer” template for pebble counts,
calibrated probes and rods for V-Star (meters/cm), a spherical densiometer for canopy density
measurements, clinometers, compasses, a digital camera (Olympus C-3040 Zoom, 3.3 mega-pixel),
and a Garmin 12XL handheld GPS unit. Readers are referred to the QAPP document for detailed
descriptions of assessment protocols and equipment.

In all streams the monitoring reach (length at least 30 to 40 times the mean bankfull width) was located
adjacent to, and primarily downstream from, streamside and upslope worksites where sediment-
reduction work was proposed or scheduled for implementation. The following table is an alphabetical
listing of Mattole tributaries where channel monitoring was conducted in 2002-2003. Also shown is
the contract affiliation of each monitoring reach, and the implementation status of road-related
sediment-reduction work. [Note: The abbreviation SFI-PWA refers to Sanctuary Forest, Inc. and
Pacific Watershed Associates, who worked jointly in the Mattole headwaters area to complete
contracts funded by the California Department of Fish and Game for road inventories (Agreement No.
P9985156, completed in 2001) and road upgrades/decommissioning (Agreement No. P0110505,
conducted in 2002-2003).]

<table>
<thead>
<tr>
<th>Stream &amp; year(s) of channel monitoring</th>
<th>Contract</th>
<th>Status of road-related sediment-reduction work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancestor Creek, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2003</td>
</tr>
<tr>
<td>Anderson Creek, 2003</td>
<td>Prop. 13</td>
<td>Road inventories completed by MRC 2003; implementation proposal to be submitted by MRC 2004</td>
</tr>
<tr>
<td>Baker Creek, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA in “3 V’s” tributary, fall 2002</td>
</tr>
<tr>
<td>Bridge Creek, 2003</td>
<td>Prop. 13</td>
<td>Road inventories completed by MRC 2003; implementation proposal to be submitted by MRC 2004</td>
</tr>
<tr>
<td>Helen Barnum Creek, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2002</td>
</tr>
<tr>
<td>Lost River, upper reach, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2002</td>
</tr>
<tr>
<td>Mattole headwaters below Mercer Cr., 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2002</td>
</tr>
<tr>
<td>McNasty Creek, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2003</td>
</tr>
<tr>
<td>Mill Creek, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2003</td>
</tr>
<tr>
<td>Thompson Cr., upper reach, 2002 &amp; 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2003</td>
</tr>
<tr>
<td>Thompson Cr., lower reach, 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2003</td>
</tr>
<tr>
<td>Thompson Cr., North Fork, 2003</td>
<td>Prop. 13</td>
<td>No sediment-reduction work conducted in this “control” sub-basin</td>
</tr>
<tr>
<td>Upper Mill Creek, 2003</td>
<td>Prop. 13</td>
<td>Road inventories completed by MRC 2003; implementation proposal to be submitted by MRC 2004</td>
</tr>
<tr>
<td>Yew Creek, 2003</td>
<td>Prop. 13</td>
<td>Completed by SFI-PWA, fall 2003</td>
</tr>
</tbody>
</table>
During summer 2004 the Mattole Salmon Group will conduct one additional year of channel monitoring in 12 of these same study reaches (i.e., all twelve Prop. 13 study streams, but not the two 319(h) reaches). This monitoring is funded as Task 2.4 of the Mattole River and Range Partnership, Phase 1 (California Coastal Conservancy, Agreement No. 02-128, with the Mattole Restoration Council). Ideally, channel monitoring will be conducted periodically over the long term following peak-flow events, for instance after every 5-year flood, to document trends in recovery and help gauge the success of instream, riparian and upslope restoration projects. While current watershed restoration contracting practices make it difficult to assure long-term monitoring, the Program cooperators feel that collection of pre- and post-project channel data can play a major role in validation of sediment-reduction efforts through the Mattole Good Roads, Clear Creeks Program.

This Baseline Monitoring Report represents the distillation of massive amounts of quantitative data, and should be considered a document subject to revision and/or updating in the future. Information and data are displayed in a series of charts, figures, tables, maps and photographs. Due to the bulkiness of the report (approximately 550 pages total), it is being issued only in electronic format on a CD, and includes the following components as separate .pdf files. Not submitted but available upon request in hard-copy format are plan-view sketches of all cross-sections, copies of original data on field forms, and the QAPP for temperature monitoring.

2002-2003 FinalReport,MattoleChanMon.pdf
The present document, consisting of the title page, Executive Summary, and location maps.

[StreamName],ChanMon DATA [Year(s)] – [Prop 13 or 319(h)].pdf
14 data appendices, one for each monitoring reach, containing an introductory table, location maps, and a series of figures and charts displaying the baseline channel data collected over one or two seasons.

[StreamName],ChanMon PHOTOS [Year(s)] – [Prop 13 or 319(h)].pdf
Appendices of photographic documentation depicting channel and riparian conditions at cross-sections and along the thalweg profile.

QAPP_MattoleChannelMonitoring09-10-02.pdf
This is the Quality Assurance Project Plan, approved on 10 September 2002, which describes the channel monitoring protocols utilized by the Mattole Salmon Group in 2002-2003. Protocols for temperature monitoring are covered in a separate QAPP document that is not available electronically.

RoadSedimentMon_RandyKleinSanctuaryForestREVISED8-03.pdf
This is included on the CD for informational purposes only, and not as a deliverable of either the 319(h) or Prop. 13 contracts. A 34-page final report, dated August 2003, prepared by consulting hydrologist Randy Klein for Sanctuary Forest, Inc., and titled Erosion and Turbidity Monitoring Report: Sanctuary Forest Stream Crossing Excavations in the Upper Mattole River Basin, 2002-2003. The report describes and presents the results of a monitoring program implemented to evaluate erosion and sedimentation at selected road decommissioning sites in the Mattole headwaters area. Klein’s report is also available on the Internet at the following URL:
Figure 1. Location map of the Mattole River watershed, showing towns and key tributaries.
Figure 2. Shaded relief map of the Mattole River watershed, showing the concentration of Channel Monitoring Reaches in the upper basin, 2002 and 2003.
Figure 3. Location of Channel Monitoring Reaches in the upper Mattole River watershed, 2002 and 2003.
Figure 4. Location of temperature monitoring stations in the upper Mattole River watershed, summer/fall 2002 and 2003.