

Accomplishments for 2005

Watershed Watch, led by Clark Fenton, deployed another Turbidity Threshold Sampling (TTS) station in HY 2005 bringing the total to 4. The new station on Freshwater Creek – Site HHB - was made possible by a grant from RCAA and the State Water Quality Board. Watershed Watch is able to determine annual suspended loads for almost all of the Freshwater Watershed with the addition of the HHB site. The 2005 suspended sediment load for both Elk River and Freshwater watersheds was over 45 million pounds flowing downstream towards Humboldt Bay. See attached summary.

The SunnyBrae Sediment Lab (SSL), managed by Clark Fenton, processed over 1200 turbidity and suspended sediment samples from Continuous Turbidity Monitoring Stations primarily in the Freshwater and Elk River Watersheds. Freshwater Creek yielded 576 samples and 540 samples were pumped from Elk River. Turbidities ranged from 1 to over 1600 ntu.

The SSL provided lab equipment for the processing over 160 suspended sediment samples for Randy Klein and the Jacoby Creek Land Trust. These samples were used to calculate the annual suspended sediment load for Jacoby Creek watershed which lies just to the north of Freshwater Creek watershed. The SSL also ran 12 suspended sediment samples for Ridges to River, a non-profit working on the Garcia River in Mendocino County.

Watershed watch ran several training sessions in Field Water Sampling, Stream Discharge measurement and Lab Suspended Sediment and Turbidity Processing. HSU Work Study students and watershed residents attended.

At our TTS station FTR in upper Freshwater Creek we began long term collaboration with a Canadian company called Forest Technology Systems and the Redwood Sciences Lab. They sell weather and water monitoring instruments. They make the DTS-12 Digital Turbidimeters that are now deployed at all of our TTS stations. They contributed a second set of stage and turbidity sensors to test their own version of TTS sampling software developed by Redwood Sciences Lab that we use. A real world environment was used to check the triggering / sampling of both systems. Their software performed well and more is planned for HY 2006.

Over 20 Discharge (cubic feet per second) water measurements were taken at four sites in the Freshwater and Elk River watersheds. Storms were braved and people got wet but many important measurements were collected. An accurate picture of discharge and flow is vital to accurate suspended sediment load calculations. Local residents helped on numerous occasions.

Watershed Watch began using software called TTS Adjuster developed by the Redwood Sciences Lab to correct raw stage and turbidity data. Early data was corrected on Redwood Sciences Lab mainframe computers but was not easy to do. Requests to RSL were finally fulfilled for PC based correction software. This software is available for free to the public now

on the RSL website with numerous implementation files, some with input from Watershed Watch.

Using a modem provided by the North Coast Regional Water Quality Control Board, water depth and turbidity data was on-line in real time for the HY 2005 season. Residents and researchers were able to monitor flood conditions in upper Freshwater Creek as they happened.

Projects for 2006

Watershed Watch is a beta tester for FTS this winter for the stage, turbidity and suspended sediment analysis software called StreamTrac at Site FTR. This software is the future PC version of Redwood Sciences Lab's data analysis software developed by Jack Lewis. This is a culmination of our technology transfer program with RSL. FTS is contributing equipment and sampling software and we provide the site and personnel. We expect a product on the market next year. It will be much easier to deploy TTS systems in the future for agencies, companies and grass roots water quality monitoring.

Watershed Watch has been approached by the HSU math and Fisheries Departments to collaborate on a CICORE project. CICORE stands for Center for Integrative Coastal Observation – Research and Education. They are a NOAA and HSU collaboration on monitoring coastal waters in Northern California for many things including turbidity. A HSU graduate math major is interested in exploring a correlation between turbidity peaks in Freshwater Creek and the corresponding turbidity peaks in Humboldt Bay at a site on Dock B in Eureka. This may give us insight to sediment transport from the watersheds into Humboldt Bay.

Watershed watch will continue Field and Lab operations with 4 TTS Stations.

Annual Suspended Sediment Loads will be used for TMDL development in Freshwater Creek and Elk River.

The SSL continues to train HSU work study student in lab and field techniques in water quality monitoring. Four more students have started working in the lab and field for HY 2006. Students of past years have gone on to positions in the California Fish and Game Dept. and US Forest Service and others.

Freshwater Creek Site FTR data will be live on the web again for HY 2006 using FTS equipment

Discharges / Rating Curves will continue to be collected in Freshwater and Elk River. Suspended Sediment Samples will probably be run for Randy Klein and his Jacoby Creek Project.

Training Sessions in Field and Lab methods will be conducted.

Freshwater Creek and Elk River - HY 2005
Total Annual Suspended Sediment Loads - Provisional
 Watershed Watch / C. Fenton / 2-21-06

	Total		Total Sed Load Metric Tonnes	Total Sed Load Cubic Yds	Max Sed lbs per 10 min.	Wshed Sq. Mi.*	Wshed Sq. KM*	Tons Sq. Mi	M Tonnes Sq. Km	DTS-12	Peak
	Total Sed Load Lbs	Total Sed Load Tons								Max NTU	Discharge CFS
Site FTR	6,790,380	3395	3080	1521	25,217	13.12	34.0	259	91	1012	1114
Site HHB	9,598,470	4799	4354	2149	90,236	27.78	71.9	173	61	1095	1821
Lower Freshwater only	2,808,090	1,404	1,274	629	65,019	14.66	37.9	96	34		
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Site KRW	14,651,204	7326	6646	3281	46,016	22.19	57.5	330	116	1028	1062
Site SFM	21,498,815	10870	9752	4868	84,718	19.30	50.0	563	195	1638	1041
Elk River all	36,150,019	18196	16398	8149	130,733	41.49	107.5	439	153		
Elk River and Freshwater into Humboldt Bay	45,748,489	22,995	20,752	10,298	220,969	69.3	179.4	332	116		

Site HHB is downstream of FTR and includes Upper Freshwater, Graham Gulch, Cloney Gulch, McCreedy Gulch and Little Freshwater combined
 Lower Freshwater only - Taking Site FTR loads away from Site HHB will leave loads for Graham Gulch, Cloney Gulch, McCreedy Gulch and Little Freshwater combined

Site KRW is the North Fork Elk River approximately 1 mile above the confluence with the South Fork Elk River
 Site SFM is the South Fork Elk River approximately 1/2 mile above the confluence with the North Fork Elk River

Cubic Yards conversion factor of 2.65 grams per cubic centimeter or 2.2329 tons per cubic yard for solid dry sediment

	Sq. Miles	Sq. Km
FTR	13.12	34.0
HHB	27.78	71.9
L. Freshwater	14.66	37.9
NF Elk	22.19	57.5
SF Elk	19.30	50.0
Elk River All	41.49	107.5
Total	69	179.4

* Watershed Area from N Coast Water Quality Control Board - 10 meter digital resolution