Sonoma Ecology Center TMDL Implementation Project Update

April 5, 2013

Funded by EPA, Managed by SFEP, Administered by MMWD, and north bay partnership organized and overseen by NBWA



Sonoma Creek Sediment TMDL

steelhead trout

 Best trout rearing habitat in the upper watershed – Sonoma Creek mainstem

 Significant erosion and sediment production

 Good opportunities for habitat enhancements – willing landowners.



TMDL Implementation Site Prioritization RECAP

- Site selection began with the sub-watersheds defined as high sediment producers by the Sonoma Creek Sediment Source Analysis.
- Prioritization process: Ranked by aquatic habitat value, sediment source, and restoration amenability assessment
- Completed 54 site assessments on 22 properties.
- 18 sites selected on 8 properties.
- Methods selected for sediment reduction projects include biotechnical erosion control, vegetated filtration strips, native plant restoration, and energy dissipator/detention basin installations at storm drain outfalls.



QAPP Development

Sediment/turbidity monitoring QAPP – approved by EPA

BMI monitoring QAPP – approved by EPA

Implementation QAPP – approved by EPA

Monitoring

Water quality data collection in progress - Turbidity sampling at Station A

BMI monitoring completed on mainstem, final Fryer Creek samples this year. Samples to be analyzed with assistance from Sonoma State interns

Permitting

Vegetation Management permits/CEQA extended.

 Encroachment permit for vegetated swale in right-ofway secured from County PRMD, fees waived

Stormwater Management feature permits will be secured upon final design approval by County and DFW.

Capacity Building

Sonoma County Water Agency: Collaborated with SCWA staff on Prop 1E proposal for multi-benefit flood control, sediment reduction, and habitat enhancement grant proposal. Awaiting contract for proposed zone 3a project for Stormwater management LID demonstration project at the SEC managed Sonoma Garden Park.

Sonoma County Dept. of Public Works: Partnering on the design and implementation of storm drain outfall remediation with energy dissipator / detention basin installation.

 City of Sonoma: Proposed pathogen TMDL implementation and working on implementation agreement.



Agency Participation

- Basin Advisory Panel
- Groundwater Advisory Committee
- •IRWMP Nathanson and Fryer creeks
- •SCWA Sonoma Valley Integrated Projects
- NBWA Habitat/Flood Subcommittee
- NBCAI Climate plan

Kerwin Outfall





Detention basin /energy dissipator

post construction 3D fabric exposed

Native Plant Revegetation

flagging plant locations



Planting at toe and top of bank

SFEP 12/4/12) Jorgensen Bearing: 170° Benchmark: 176

Vegetated Swale at Lawndale Road



Current Restoration



Willow revetment installation on Sonoma Creek in Kenwood, CA Jorgenson property

Boy Scouts prepping the weaving material



Lashing the weavings

A job well done



Biotechnical Bank Repairs Before and After



Before. Merle property Vinca and bank failure

After. Merle willow revetment



Merle Revetment



Bayly revetment





After: Jorgenson willow revetment



Before. Jorgenson failed metal post revetment



Planting and Buffer Area Measurements

Property	Area of planting	Area buffered	Density of	Density Increase
			planting	each year
				(estimated)
Merle	1000 ft ²	400 ft ²	3 ft centers	10 %
Otellini	7500ft ²	60000 ft ²	5 ft centers	10 %
Mulcahy	2000 ft ²	5000 ft ²	3 ft centers	10 %
Jorgensen	5000 ft ²	10000 ft ²	5 ft centers	10 %
Sitkin	3400 ft ²	850 ft ²	1.5 ft centers	10 %
Bayly	1200 ft ²	1200 ft^2	3 ft centers	10 %
Lawndale	700 ft ²	21210 ft ²	1.5 ft centers	10 %

Buffer Planting Sediment Savings

- <u>Merle Property</u>: Kohler Subwatershed, sediment yield 0.84 tons/ac/yr Area buffered, 400 sq ft or 0.01 acre = 0.008 tons/yr
- <u>Otellini Property</u>: Warm Springs West Subwatershed, sediment yield 0.06 tons/ac/yr Area buffered, 60,000 sq ft or 1.38 acre = 0.083 tons/yr
- Mulcahy Property: Graham Creek Subwatershed, sediment yield 0.06 tons/ac/yr Area buffered, 5,000 sq ft or 0.115 acre = 0.007 tons/yr
- Jorgensen Property: Adobe Canyon West Subwatershed, sed yield 0.04 tons/ac/yr Area buffered, 10,000 sq ft or 0.23 acre = 0.009 tons/yr
- Sitkin Property: Graham Creek Subwatershed, sediment yield 0.06 tons/ac/yr Area buffered, 850 sq ft or 0.02 acre = 0.001 tons/yr
- <u>Bayly Property</u>: Kohler Subwatershed, sediment yield 0.84 tons/ac/yr Area buffered, 850 sq ft or 0.02 acre = 0.001 tons/yr
- Lawndale Property: Frey Subwatershed, sediment yield 0.06 tons/ac/yr Area buffered, 21,210 sq ft or 0.49 acre = 0.029 tons/yr
- Total annual sediment savings from stream from buffer areas .138 tons/yr

Predicted Sediment Savings

<u>Merle Property</u>: saves sediment from toe of near-stream slide in Kohler Subwatershed Reach average sediment supply in Kohler = 15.5 cu ft/ft = 0.57 cu yd/ft * 33 ft = 18.81 cu yd * 1.6 tons/ cy bulk density = 30 tons total annual savings

Otellini Property: two revetments will save sediment from toe of near-stream slide OR streambank in Warm Springs West Subwatershed Reach average sediment supply in Warm Springs West = 50.83 cu ft/ft = 1.88 cu yd/ft * 60 ft = 112.80 cu yd * 1.6 tons/cy bulk density = 180.48 tons total annual savings

Jorgensen Property: saves sediment from streambank in Adobe Canyon West Subwatershed Reach average sediment supply in Adobe West = unmeasured, Felton supply rate used. Reach average sediment supply in Felton = 410.20 cu ft/ft = 15.19 cu yd/ft * 60 ft = 911.40 cu yd * 1.6 tons/cy bulk density = 1,458.24 tons total annual savings

<u>Bayly Property</u>: saves sediment from toe of near-stream slide in Kohler Subwatershed Reach average sediment supply in Kohler = 15.5 cu ft/ft = 0.57 cu yd/ft * 15 ft = 8.55 cu yd * 1.6 tons/ cy bulk density = 13.68 tons total annual savings

Total annual sediment savings from stream from revetments: 1,682.40 tons/year

Sediment savings estimates based on linear reach-based sediment source analysis conducted by Laurel Collins, Watershed Sciences.