

SWANSON HYDROLOGY + GEOMORPHOLOGY

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NCRWQCB

December 13, 2007

DEC 14 2007

Mr. John Perry
Syar Industries, Inc.
P.O. Box 2540
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RE: Comment regarding instream gravel mining and North Coast Regional Water Quality Control Board Work Plan to control excessive sediment in sediment- impaired watersheds (dated November 14, 2007).

Dear John,

As requested, SH+G has prepared the following comments regarding the North Coast Regional Water Quality Control Board's Public Review Draft Workplan to control excessive sediment discharges in sediment-impaired watersheds (NCRWQCB, November 14, 2007). Specifically, we are addressing the Work Plan tasks regarding regulation of instream gravel mining along the main stem of the Russian River within the Alexander Valley and the Middle Reach near Healdsburg in Sonoma County (Figure 1).

Syar Industries, Inc. is a major landowner and lease holder for numerous instream gravel mining bars along the Russian River. Syar has been proactive over the past 15 years in developing elements of a river management plan that incorporates instream gravel mining activity into a multiple objective program addressing salmonid, aquatic and riparian habitats, and erosion and flooding issues. Syar has invested nearly \$2 million in data collection, geomorphic and biological assessments and recently, has undertaken a comprehensive

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geomorphic assessment. Syar is engaging with NOAA Fisheries and others as a part of this effort and would welcome participation by the NCRWQCB.

Syar also recently completed a five-year instream mining permit that allowed removal of over 500,000 cubic yards of sediment from two bars in the Middle Reach. The permit included extensive monitoring and consultation with regulatory agencies and review and adaptive management input from the Sonoma County Scientific Review Committee (SRC). All of monitoring data and analysis and the SRC reviews found that instream mining can be accomplished without causing significant effects to fisheries or riparian habitats. Syar's mining plans are in full compliance with NOAA Fisheries instream gravel removal guidelines (NOAA, 2004) and are subject to review by California Department of Fish and Game as well as NCRWQCB.

The five-year mining permit was effective for two bars between 2002 and 2007 and was supported by a certified comprehensive 1997 EIR/EIS document during environmental review (California Resources Agency, Mining and Geology Board, 1997). The EIR/EIS found a significant and unavoidable impact with the no-action (i.e. no mining alternative) alternative caused by excessive sediment buildup on gravel bars in the Middle Reach and consequent lateral erosion and loss of flood capacity. Recent assessments have confirmed and quantified these findings and are discussed below.

Syar is in the process of planning and permitting a new set of instream mining plans for historically mined areas in the Alexander Valley and Middle Reach. As discussed above, Syar has committed to providing resource agencies and the public with high quality and detailed data for documenting the effects of their operations and for promoting the understanding of the Russian River system so that effective choices can be made. Syar is interested in working with regulatory agencies and others with respect to the following:

1. The ongoing geomorphic processes and evolution of the Russian River,

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2. A distinction between the effects of modern mining and the historic legacy of instream dredge mining and reclamation of floodplain lands, and
3. An understanding of the effects and potential benefits of bar skimming operations in the modern era.

The available data collected over the past 15 years is detailed and defines the effects of past and present mining well. Some of the key conclusions are contrary to what has been published in the 1994 Sonoma County ARM Plan and what has been published as negative effects of instream mining in the technical literature. It is also revealing opportunities to demonstrate and merge water quality improvements including reductions in bank erosion and fine sediment supply as well as developing sustained and long-term habitat benefits. Syar desires to have a comprehensive set of river management goals reflecting all of the resource agencies and stake holders view, rather than the piecemeal and inefficient process of satisfying one agency at a time, as has been done in the past. Syar feels it can dedicate more resource to on the ground ecological enhancement if less time and resources are spent on process. Based upon recent experience with the NCRWQCB in 2007, Syar is being held to piecemeal and potentially counterproductive mitigation measures.

In the early stages of gaining the scientific consensus, our main concern with the Work Plan are the underlying assumptions that modern instream mining is a source of excessive sediment, that bar skimming operations today are causing non-beneficial bank erosion, and that removal of gravel is depleting gravel supply in the river to a degree that causes channel incision. These findings were once advocated in the past, but are now contrary to the results of the data analysis and more thorough geomorphic assessment. The objective of these comments is to correct the record and give the RWQCB information to align instream mining activities to water quality and habitat benefits.

Syar wishes to highlight the following points with respect to the excessive sediment in the Russian River in order to guide more effective RWQCB policy with regard to regulation of instream mining.

Bank Erosion in many cases is driven by an excess of sediment in bars within the channel

Geomorphic analysis has found that lateral erosion of fine bank sediments along the Russian River is compounded, and in some cases, primarily driven by buildup or aggradation of bars that have not been recently skimmed. This phenomenon is readily viewed on sequential historical aerial photographs and topographic surveys, especially within reaches of the Russian River that are hydraulically favorable for sediment deposition. In general, lateral erosion by bar buildup occurs in portions of the Alexander Valley Reach above and below the Geyserville Bridge and in the Middle Reach below Digger Bend and downstream of Highway 101 near Healdsburg.

One example is found in the history of Bar 9, which located along the west bank of the Russian River in the Middle Reach approximately 1.0 mile south of Healdsburg and just downstream of the Dry Creek confluence (Figure 1). Tracking aerial photographs and topography over the past 30 years shows that after cessation of bar skimming in 1976 (Figure 2), Bar 9 grew significantly and aggraded in height (up to 18 feet above summer low water) and area which drove lateral erosion into the 20+ foot high east bank and consumed 5.5 acres (Figure 3) of terrace and mature riparian forest. While other bars in the immediate reach were skimmed and kept low, sediment accumulated on Bar 9 during a series of moderate and large floods (e.g. 1983, 1986, 1995, 1997, and 2005) and it became a point bar. As the bar was raised up, it constricted flow between Bar 9 and the outer (east) bank, increased velocity and erosive force and exceeded the resistance of the east bank, which is composed of an upper bank of silty sands and a lower bank of gravel. Consequently, the east bank eroded and retreated eastward over 200 feet and released over 186,000 tons of sediments over the 20 year period. In this case, it could be reasoned that the “excessive sediment” was the buildup on Bar 9 which was responsible for erosion and releasing fine sediments. Continuing erosion threatens private vineyard lands, which if it progresses any farther, would reduce choices to expensive rip rap armoring and/or other harmful and expensive treatments.

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It is worth noting that the Lahontan Regional Water Quality Control Board in the Lake Tahoe Basin recently adopted a TMDL for bedded sediment for Blackwood Creek, which addresses reducing the effect of large gravel bars causing lateral erosion of fine grained terrace streambanks. One could argue a similar point in the Russian River, based upon recent observations.

Bar skimming is a cost-effective solution to reduce erosion and fine sediment supply into the Russian River and to protect riparian vegetation and agricultural land. It would relieve the constriction and suppress the lateral erosion and meandering process. As sediment accumulates in the Middle Reach, other aggraded bars show similar behavior (Bars 2 and 19 for example).

Bar buildup and lateral erosion also occurs at many sites in Alexander Valley as a result of filling after historic riverbed reclamation for agriculture and channel straightening. Higher rates of extraction in the 1970s and 1980s maintained the channel capacity and suppressed lateral erosion, but after bar skimming ceased in the late 1980s, channels have been filling and widening. Figure 2 shows rates of filling up to 20+ feet in the Middle Reach between 1987 and 2006. Measurements of channel narrowing and widening show the efforts in the 1940s to reclaim land from the riverbed in Alexander Valley and the subsequent lateral erosion in large floods, much of it driven by sediment deposition on bars (Figures 4 and 5).

Instream Mining removes fine sediments from the Russian River

Syar has mined sediments from bars in the Russian River for over 20 years and effectively removed significant quantities of excessive fine sediments. Over the last 30 years, Syar has found that 10% of the raw material is fine sediments. This has amounted to over 2.7 million tons of fine sediment removed from the channel over the past 60 years. Since these are directly removed from the channel, they are also removed as a ready source of fine sediment near sensitive ecological areas, such as the low water channel, substrate and gravel riffles. Removal of bar materials also creates depositional areas that traps more sediment and

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removes it from supplying downstream areas. Syar recognizes the importance of allowing the through-flow of sediment to replenish downstream reaches, and in following NOAA guidelines, this is accomplished.

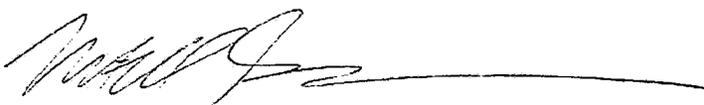
Loss of flood capacity by sediment aggradation means the overflow will subject exposed agricultural soils to erosion more often.

One significant source of fine sediments along the Russian River is from overbank flow onto agricultural lands that cover the valley floors in Alexander Valley and the Middle Reach. SH+G has conducted detailed topographic and hydraulic analyses in the Middle Reach and found that aggrading bars (i.e. Figure 2) and a significant increase in vegetation growth has caused a 6-foot increase in stage for a 30-year flood between the period when the channel was last mined in 1987 and now. This trend is continuing and if left untreated or addresses, overbank flow into exposed agricultural soils will allow for entrainment for fine sediments into the Russian River. A coordinated instream mining program could recover lost flood capacity and help minimize erosive events.

Conclusions

The RWQCB's efforts to reduce excessive sediment and sources of fine sediments should acknowledge and not penalized instream mining along the Russian River since there is good evidence that mining can actually reduce erosion and fine sediment sources.

Sincerely,



Mitchell Swanson
President
Swanson Hydrology + Geomorphology
Attachments – Figures 1 through 5