Green Valley revival reconnects creek to floodplain

Green Valley Creek is gets a makeover in 2925 (Dewey Watson/Sonoma County gazette)

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A partnership between Iron Horse Vineyards, the property owner, and the Gold Ridge Research Conservation District (Gold Ridge), with funding from California Fish and Wildlife and the National Oceanic and Atmospheric Administration Restoration Center (NOAA), has restored and improved a large part of the middle reach of Green Valley Creek to provide overwintering habitat for coho and steelhead salmon. Construction on the project, which took years of planning, began in April and has recently been completed.

“Now it is up to nature, assisted by teams of workers planting native grasses and willows to restore what has been lost for over a century and bring back healthy salmon to the creek and the Russian River,” said chief scientist and project manager John Green.

Green Valley Creek was once considered critical habitat for salmon because of its proximity to the Atascadero Plain, offering one of the largest basins for young salmon to grow strong enough to survive ocean challenges and return to breed.

This area of the creek, at the bottom of the Iron Horse vineyard property, was once a flat field, prone to annual flooding and quick drainage. It offered no shelter for fish or the insects that support them. Now, after years of planning and months of construction reshaping, the site hums with quiet anticipation as a stream begins to come back to life.

Green explains that the creek’s natural rhythm had been lost. Over time, people, storms and erosion carved out an entrenched channel that cut off the floodplain — the broad, low-lying areas where water used to spread and slow during high flows. Without that connection, fish had nowhere to go when the water surged. Juvenile salmon, once abundant here, were swept downstream, unable to find the calm, food-rich shallows they depended on.

“You see all this?” Green says, gesturing to the recently carved side channel. “This is where fish can come out when the velocities in the main creek get too high. Here they've got slow-moving water, bugs to feed on, and a place to rest."

That's the essence of the restoration work — rebuilding complexity into a system that had become simplified and sterile. Nature thrives on variety: deep pools, shallow riffles, woody debris and wetlands that rise and fall with the seasons. The old, single-threaded channel had lost that diversity, leaving the ecosystem fragile.

"What we're learning," says Iron Horse Vineyards co-owner and chief operating officer Laurence Stirling, "is that it's not just about the salmon or the steelhead. This creek is alive. It's an amazingly vibrant place."

Making it fish friendly

By building side channels and adding woody material, the team is recreating the types of habitats fish evolved to depend on. "It's all about giving them options," Green says. "They evolved with wood in the creek — logs and branches falling in from forests that used to line these banks. That wood slowed the water, provided shade and offered insects places to live. Without it, the whole system falls apart."

The project was initially proposed by Gold Ridge, which had been exploring ways to restore salmon to Green Valley Creek. Since the creek is entirely on private land, any actions would require the landowners' cooperation.

"When I was first approached, I was asked if I would allow a dam on the property to be removed. I didn't even know it existed. It wasn't functional for anything, so of course I consented," said Stirling.

Gold Ridge initiated the project while collaborating with Iron Horse on dam removal efforts. They secured funding to design the project as early as 2018 but had to apply twice to Fish and Wildlife for build-out funding. "The first time was for the entire project, but we had to revise our application to cover only half of the project, which Fish and Wildlife funded in late 2022. The NOAA opportunity came up in 2023, and since NOAA was looking to finance large projects, we included the balance of our Iron Horse needs in that proposal," says Green.

Once the project starts, the owner has little involvement. "I have no idea who runs it anymore," Stirling says. "There's Fish and Wildlife, the Conservation District (Gold Ridge), NOAA — everybody's in the mix. They all meet, discuss it, and they've got excellent contractors doing the work. You go out there, and they're setting stakes, taking levels, doing beautiful work."

The project is a design wonder

The project includes three floodplain areas — upper, middle and lower — each designed to interact with the creek at different flow levels. For example, the middle floodplain only becomes active during higher winter flows when water overflows from the main channel. "That's when fish need it most," says Green. These floodplains are connected by side channels that offer what Green describes as "low velocity refuge."

These offshoots are built to activate only during specific flow stages, mimicking the pulse of a natural system. "Basically, we're trying to restore the conversation between the creek and its floodplain," Green says. "For decades, that connection was shut down."

The excavation is extensive — about 13,000 cubic yards of earth were removed. The team's approach combined engineering precision with ecological awareness. Before starting construction, they removed compacted topsoil and replaced it with a mix of native wetland plants — sedges, rushes and grasses. These plants help stabilize the soil and provide shelter for young fish.

The engineering design and construction supervision were managed by PCI Environmental, a Sebastopol-based firm and long-time partner of Gold Ridge with extensive experience in stream restoration.

Mike Jensen, landscape architect and project lead, emphasized that this was a community effort. “The project was an incredible team effort that involved many specialized disciplines, including engineers, landscape architects, geomorphologists, modelers, vegetation ecologists, wildlife biologists, environmental planners and experienced constructors.”

He highlighted that during the implementation phase, equipment operators, foremen, laborers, dump truck drivers, specialty inspectors, local quarry and timber operators, nurseries and construction supply vendors all contributed and benefited.

Overall, it was a nine-year effort that almost ended in January, when PCI learned of potential federal funding cuts that could have excluded the contribution from the NOAA Restoration Center. Luckily, that didn’t happen, and with the ongoing support and patience of Iron Horse Vineyards, the project was completed.

The numbers clearly show how extensive this effort has been. The construction contract alone was about $2.6 million, and when you include administration, oversight, environmental monitoring and compliance, the total comes to roughly $3.5–4 million.

“People don’t always realize how much of that goes into studies and permits — cultural resource monitoring, biological studies, paleontology checks, even labor compliance. It all adds up,” Green says.

But beyond the budget lines and cubic yards of earth moved, the core of the project is about restoring the creek’s natural rhythm. “We’re not just building a channel,” he says. “We’re rebuilding a process.”

The precision of ecological engineering demonstrates this. The crew carefully graded the land to imitate the natural slopes fish use for navigation. They also made sure that each new side channel carried a “signal” — a subtle flow cue that guides salmon and steelhead on where to go when water levels change.

Laurence Stirling likes the idea that fish know where they are. “They just need time to make that change before they go to sea — to become saltwater fish. That’s what this is really about: giving them that little window.”

But, as he’s quick to point out, not everything goes the fish’s way. “The herons like the little ones.” Then, with a shrug, he adds, “Like Kermit said, it’s not easy being green.”

As the property owner, Iron Horse benefited from this work, including an upgrade to the bridge surface over the main creek. In exchange, they permanently gave up use of the floodplain. “My only complaint,” jokes Laurence, “is that it’s so well done I can’t hear when someone’s on it anymore. I used to know when cars were crossing.”

The project also included rebuilding the road that crosses the site. It was previously a gravel track, which was prone to flooding and erosion. “Once water came over the road, it was stripping gravel into the creek,” Green explains. “So we paved it to reduce sediment.”

The new elevation not only keeps the road passable but also reduces habitat disturbance — a win for both people and fish.

The challenges are not just physical but also ecological. Without wood and vegetation, creeks lose not only their structure but also the life they support. Bugs that usually hatch and fall into the water vanish. Birds lose their feeding grounds. Fish have fewer places to hide from predators. “It’s all connected,” Green says. “You can’t take out one piece and expect the rest to function.”

In this project, each fallen branch and muddy depression serves a purpose. The wood slows the flow, helping sediment settle and plants take hold. The pools behind those logs offer fish a place to rest and feed. Even the smallest backwater channel can be a lifeline during heavy rain or sudden floods.

Waiting for nature

As we walk along the bank, Green reflects on how much of this work is about patience. Restoring a creek isn’t a one-season job. It takes years for roots to knit the soil together, for wood to shift and settle, for water to carve new paths through the landscape. “We’re early in the season,” they say, “so we’re not seeing the full picture yet. But already you can feel it — the system’s waking up.”

“Every time the water rises and falls,” Green says, “the creek remembers what it used to be. We’re just giving it a little help to get there again.”

Looking to the future

The work on this section is mainly complete. For now, the focus is upstream, in the upper Green Valley reach, and to some extent into the floodplain of Atascadero Creek, which is the real motherlode for feeding juvenile fish.

“Green Valley has enough spawning habitat, and then you’ve got this big buffet at Atascadero. So juvenile fish that move down this time of year and through the winter will feed on this huge population of invertebrates that come out of the Atascadero swamp. The fish can hang out on the creek down here or actually go up into the swamp when there’s enough oxygen in the water.”

“We go where the landowners are willing to work with us,” Green says. “That’s what makes or breaks these projects. Without them, none of this happens.”

Laurence Stirling agrees and points to other landowners along the creek who have approached him, asking what they can do. “There’s this sense now,” Stirling says, “that we’re all part of something bigger — that this creek connects us.”

Please note: This entire project is on private property. Do not enter the area without permission from Iron Horse Vineyards.