

Upper Colgan Creek Restoration Plan

Introduction

The City of Santa Rosa contracted with Quadriga to develop a conceptual habitat and urban open space enhancement plan for Colgan Creek between Santa Rosa Avenue and Petaluma Hill Road. The plan is designed to take advantage of the opportunities an urban creek can provide while retaining current adjacent land-uses. The objectives of the plan are to:

- a) Improve the ecological function as a wildlife corridor and habitat for indigenous flora and fauna.
- b) Build community stewardship through neighborhood linkages. Create cohesion between neighborhoods via user friendly, aesthetically inviting common space.
- c) Enhance recreational opportunities within the community by providing functional linkage and alternative transportation options.

Project Need

Colgan Creek, within the project area, provides an opportunity to enhance a creek corridor adjacent to undeveloped, residential, and commercial lands. The degraded flood control channel lacks adequate riparian vegetation to shade the stream and provide habitat for fish and wildlife. The channel was also artificially straightened and lacks habitat diversity to support robust populations of fish and wildlife species. Public amenities are also lacking along the reach and improvements are needed to furnish recreational facilities and foster community stewardship.

Existing Conditions

Colgan Creek originates on the north side of Taylor Mountain, flows westerly into Santa Rosa, and then southwesterly before joining the Laguna de Santa Rosa downstream of Llano Road. Within the project reach, the creek is owned by the Sonoma County Water Agency (SCWA) and has been channelized in an earthen and riprap channel. The channelization straightened the creek and removed most of the woody vegetation. Habitat diversity is limited and the dominant plant species include cattail, Himalayan blackberry, and nutsedge, with some plantings of live oak, valley oak, and walnut on the upper banks. A few willow and cottonwood have come into the channel naturally within the reach. Invasive species present include Himalayan blackberry, pampas grass, and eucalyptus. A 10-foot asphalt pathway exists on the south side of the creek along the entire project area.

Near the upstream end of the project area, the channel is dominated by Himalayan blackberry, small oak trees, and willow in the channel. The vegetation is not tall enough to provide adequate shade to the creek channel. The substrate is dominated by riprap, cobble, and gravel. The banks are steeper near this part of the project as compared to downstream areas.

Adjacent to Colgan Creek Park, the channel is wide with area to add creek and recreational amenities. A low water crossing is actively used to traverse the channel during the low water season. The substrate is comprised of gravel and silt and riprap is present near storm drain outfalls.

Colgan Creek flows adjacent and under the Santa Rosa Marketplace parking lot near the downstream portion of the project area. Riprap reinforced areas exist along the banks and small oak trees dominate the woody vegetation. Himalayan blackberry and grasses comprise the herbaceous vegetation. The channel has little to no shade canopy and substrate is dominated by gravels and silt. Trash from the parking lot is regularly scattered in the channel and detracts from the creek experience.

Land use immediately surrounding the project site is dominated by residential uses through most of the reach. Residential uses include urban and rural single-family housing. Adjacent to the downstream end of the project area, land uses are comprised of current or zoned commercial properties. The Santa Rosa Marketplace encompasses a major commercial development on the south side of the creek. Colgan Creek Park (parkland) is also adjacent to the channel within the project area.

Public Input

Public input has been an important step in developing the Plan. A public workshop was held on March 31, 2001 to gather ideas and concerns from the community. Public meetings were also held before the Waterways Advisory Committee (September 27, 2001) and City Council (December 18, 2001) to gather additional public input. The input helped develop the concept plan with the following comments for habitat, water quality, recreation, and visual enhancements:

- Offer a varied educational experience.
- Dedicate open space and establish setbacks.
- Work with the creek and not just for human amenities.
- Plant native riparian vegetation for habitat and shading of the creek.
- Create an outdoor meeting place.
- Create a skateboard park.
- Establish regional and local trail connections for bicyclist and pedestrians.
- Preserve existing creek habitat.
- Encourage future development to bring people to the creek.
- Install visual enhancements to encourage use of the area.
- Consider future encroachment into the creek area by development.
- Creek Crossing needed near Colgan Creek Park.

Plan Components

The plan takes advantage of the opportunities a creek in an urban area can provide while retaining current land uses. Details are shown graphically and also described in narrative on the attached plan sheets. The primary focus is to restore the creek corridor ecologically and aesthetically. This approach addresses the creek corridor by defining the low-flow channel and adjacent banks to emulate natural dimensions based on a review of historical photos. The adjacent banks would be configured into curvilinear and varied topography, giving a more natural look and feel to the corridor. The corridor would also be revegetated to promote an adequate shade canopy to support native fish and wildlife species. Icons would also be developed to give the creek an identity based on environmental and cultural characteristics of the area. Adjacent structures would also be introduced or improved upon to visually enhance, provide improved access, augment

transitions and buffers, and present educational opportunities. The project would include the following specific components:

Restoration Grading: The channel would be graded to introduce meanders and other features and enlarged to accommodate the 100-year storm. The low-flow channel would be redesigned to emulate a form that more closely reflects the historic meander pattern of the creek, to the extent feasible within the existing SCWA right-of-way. Aquatic habitat diversity would be introduced to encourage development of pools, riffles, and other habitats. The adjacent banks would be reconfigured into the curvilinear and varied gradients, giving a more natural appearance to the creek corridor.

Restoration Planting: Riparian vegetation including trees and understory plants would be planted along the lower banks of Colgan Creek. Trees, understory plants, native grasses, and wildflowers would be planted along the upper banks. The corridor would be revegetated to stabilize banks and provide an adequate shade canopy to support native fish and wildlife species. Vegetation stock should be gathered from sources within the watershed and existing trees should be retained, wherever feasible. Planting on the south side of the channel would provide shade for the low-flow channel.

Bicycle and Pedestrian Paths: The existing 10-foot asphalt path along the southern edge of the Colgan Creek would be retained and realigned in some reaches providing greater aesthetic interest along the channel. An 8 feet wide bicycle/pedestrian path would be built along the northern side of the channel. Adjacent to the planned extension of Lumas Court, the path would be placed within a 47 foot right of way allowed for the roadway extension. In addition, unpaved spur trails would provide opportunities for walking closer to the water's edge. A footbridge would also be installed adjacent to Colgan Creek Park to connect trails on both sides of the channel and allow crossing during winter flows. A future connection would be provided to the pedestrian crossing at Petaluma Hill Road and Breeze Way through the adjacent residential neighborhood. Streetscape enhancements would be provided along Petaluma Hill Road to Kawana Springs Road and along Colgan Avenue to Santa Rosa Avenue. Pedestrian linkage enhancements would be provided between Santa Rosa Marketplace and Colgan Avenue.

Trail Markers: Trail markers using natural materials and a trail icon would be placed at both ends of the trail and at key connection points along the creek. The trail marker is particularly important on the west end of the project area where the creek disappears into a concrete culvert. The trail markers would help to identify the creek corridor and create a connection to the riparian corridor. Overlooks, interpretive signage, and improved access points will enhance the overall experience of this linear creek corridor.

Fence Treatment at Bedford Street: The existing fence at Bedford Street would be softened to create more inviting passage for pedestrians at this location. The existing 6-7 foot fence creates a barrier to the creek. The fence would be designed as a stepped wooden fence, providing a more inviting entrance to the creek corridor.

Fish/Wildlife Accessibility: Rocks and other materials would be used at the east end of the project area to allow fish and other wildlife easier access through the culvert under Petaluma Hill Road, providing a connection to the riparian corridor upstream of Petaluma Hill Road.

Hydrology and Hydraulics

Philip Williams and Associates, Ltd. (PWA) supplied input to the conceptual design of the Upper Colgan Creek Enhancement Project in terms of project hydrology (flow rate) and hydraulics (flow stage and velocity). Flow rates and downstream flow depth were based on the draft Southern Santa Rosa Drainage Study conducted by Winzler and Kelly since that was the best available information at the time the analysis was being conducted. PWA's hydraulic model of proposed channel conditions was developed in HEC-RAS, a software model developed by the US Army Corps of Engineers for the purpose of analyzing open channel hydraulics. A hydraulic roughness value of 0.05 was used to model the conceptual design, which is higher than the roughness value of 0.035 used in the design of the existing channel. The proposed channel geometry and planting plan is consistent with the assumed roughness value. The roughness value is also consistent with Sonoma County Water Agency guidance as the lower end of a range of values appropriate for "constructed natural waterways".

The proposed conceptual plan for Upper Colgan Creek, when evaluated with the most current understanding of hydrologic and hydraulic conditions, maintains the conditions that have previously been assumed to exist in the project reach. This conceptual plan is also consistent with the hydrologic and hydraulic design requirements of the Sonoma County Water Agency.

Maintenance

Colgan Creek, through the project reach, is owned by the Sonoma County Water Agency and it is their responsibility to maintain the hydraulic capacity of the channel. Once the project is constructed, periodic maintenance would likely be needed to maintain constructed slopes, replant riparian plantings, remove exotic species, and remove vegetation reducing the hydraulic capacity.

As the creek adapts to its new channel minor work may be needed as the creek reaches equilibrium. Minor bank areas could need maintenance to alleviate any erosion. Riparian plantings may also need maintenance to reduce competition and promote their growth. Volunteer vegetation could also need maintenance as cattails and willows develop in the newly constructed channel. Plantings will likely not be large enough to shade out these species and removal or trimming could be needed for up to 3 years after construction.

Cost Estimate

A preliminary cost estimate was developed based on recent estimates and restoration projects for the Brush Creek Restoration Project (\$800 per linear foot), Lower Colgan Creek Restoration Project (\$1,000 per linear foot), and the Pierson Reach of the Prince Memorial Greenway (\$2,000 per linear foot). \$1,500 per linear foot was used for restoration work along Upper Colgan Creek. Recreation, access, and transportation amenity costs were generalized and based on the quantities of individual items. Estimated costs include the following:

Recreation, Access, & Transportation	\$423,211.00
Restoration	\$3,750,000.00
Construction Overhead (21%)	\$876,374.31
Planning, Design, & Management (35%*)	\$148,123.85
Total	\$5,197,710.16

* Applies to Recreation, Access, & Transportation project costs only.