A Better Way to Accommodate Floodwater in Kentfield

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On January 4, 1982, the 10-year-old Corte Madera Creek flood-control channel in Marin County, California, faced its first significant test. As rains fell, record flood flows occurred upstream from the channel. Most of the overbank floodwater was diverted from the project, leaving only about 5,000 cfs—equivalent to the 20-year flood—to enter the channel. But the waters overtopped the channel's banks, even though the flow was well below design capacity. The Corte Madera incident illustrated the problems of traditional flood-control channelization—converting a natural stream to a uniform channel cross section.
Source: Philip B. Williams. 1990. Rethinking flood-control design. Civil Engineering, American Society of Civil Engineers, New York.

The US Army Corps of Engineers (USACE) Corte Madera Creek Flood Control Project began in the late 1960s. The lower part of the project includes an earthen channel in Larkspur and Kentfield with College of Marin (COM) athletic facilities on one side and residential and recreational areas on the other. Upstream, a concrete channel begins by the COM softball field, passes beside Kent Middle School (KMS), crosses under College Avenue, divides the core of the COM campus, and reaches into the Town of Ross. In 1971, after the concrete channel had been built as far upstream as Ross, the project was stopped by lawsuits and was not completed. Over the last several years there has been an on-again-off-again effort to officially complete the project, complicated by the cumbersome USACE processes and the need for Congressional authorization to fund the work. Now the USACE and Marin County Flood Control District are attempting to complete the project and improve its performance. The alternatives they have presented for reducing flooding in Kentfield include combinations of setback walls, berms, and lowering the existing multiuse path, with the concrete channel left intact or modified.

PHASE 2/3 - PROPOSED CONDITIONS

It has long been the position of Friends of Corte Madera Creek Watershed that it would be more beneficial to the local community and environment to remove the channel than to retain it and add walls and berms to provide more capacity. If these barriers are added, the concrete will probably remain in place for decades more. To provide an alternative, Friends decided to fund conceptual designs for total or partial removal of the concrete channel in Kentfield to improve flood management and achieve major environmental benefits. Matt Smeltzer and Scott Walls produced the preliminary concept designs shown below, to be implemented in three phases. The alternative requires widening the channel on one side, replacing the concrete wall with a vegetated slope, and removing the concrete bottom of the channel. A multiuse path will be retained, probably on the side of the creek where the concrete wall will be retained. If approvals from landowners needed for widening cannot be obtained, then walls and/or berms must be used to contain the water entering the channel upstream. The COM Board of Trustees has authorized continued design and evaluation for Phase 1 and Phase 3 on COM property. The Kentfield School District has requested less channel widening in Phase 2; designs have not yet been revised to reflect those changes.

Concrete Removal Alternative

Phase 1: Removes the channel floor and bank of the channel beside COM athletic fields from the Stadium Way Footbridge to the downstream end of the channel (approx. 400 feet); removes both channel walls in the downstream 150 feet

- Produces about 20% of the total flood protection benefit of the three phases
- Provides major visual screening for the COM Maintenance & Operations, Police Department, and Repro facilities scheduled for construction beginning May 2018.

Phase 2: Removes the channel floor and concrete wall adjacent to KMS—if a design acceptable to the Kentfield School District can be developed—from the College Avenue Bridge downstream to the Stadium Way Footbridge (approx. 1,200 feet); however, the KMS gym sits close to the creek and a wall is required on both sides of the channel in this area

- Produces about 45% of the total flood protection benefit of the three phases
- Requires increased capacity at College Avenue (alternatives are being developed by the USACE)
- Requires replacing Stadium Way Footbridge (in collaboration with Marin County Parks)
- Probably requires modification of a Marin Municipal Water District 20" water main adjacent to the existing Stadium Way Footbridge.

Phase 3: Removes the channel floor and concrete channel wall on the COM parking lot side of the creek, extending from the College Avenue Bridge to the upstream end of the campus (approx. 1,100 feet).

- Produces about 35% of the total flood protection benefit of the three phases
- Provides visual enhancement of the core of the COM campus
- Requires replacing the old footbridge leading to core of campus, already in COM's plans, but retains the new footbridge leading to the COM science building.

Project Components

At the present time, the conceptual designs for all three phases assume that the concrete wall on the generally north or east side of the creek across from KMS and several COM parking lots (the left side of the channel, looking downstream) would remain in place because a large RVSD sewer was installed next to the wall when the current channel was constructed. The only exception is the 150 feet of Phase 1 furthest downstream, where the sewer leaves the wall and is routed to RVSD's Kentfield Pump Station. As budgets and designs are developed, the feasibility of moving the sewer in some locations will be studied. If there is adequate space and no conflicts with other infrastructure, it may be feasible to move and replace the 50-year-old sewer, and eliminate that part of the wall. This would most likely happen upstream of College Avenue.

Local Benefits

Implementing all three phases would provide significant lowering of water surface elevations compared to the setback walls and berms. The capacity of the larger channel would reduce frequency of flooding in Granton Park, on the KMS campus, and at the COM athletic facilities, parking, and geothermal field. The additional capacity would also allow for lower walls in residential areas upstream of the campus. These are benefits not only for KMS and COM, but also for their neighbors.

Watershed Benefits

Several bridges in Ross, San Anselmo, and Fairfax are scheduled for replacement beginning in 2020. Most of these bridges constrict stream flow and cause flooding behind them; the new bridges will keep more flow in the channel and reduce uncontrolled out-of-bank flow (i.e., flooding). The new channel would accommodate 5,400 cubic feet per second, the proposed design flow for the USACE's Corte Madera Creek Project, with lower water surface elevations and without any setback walls or berms.

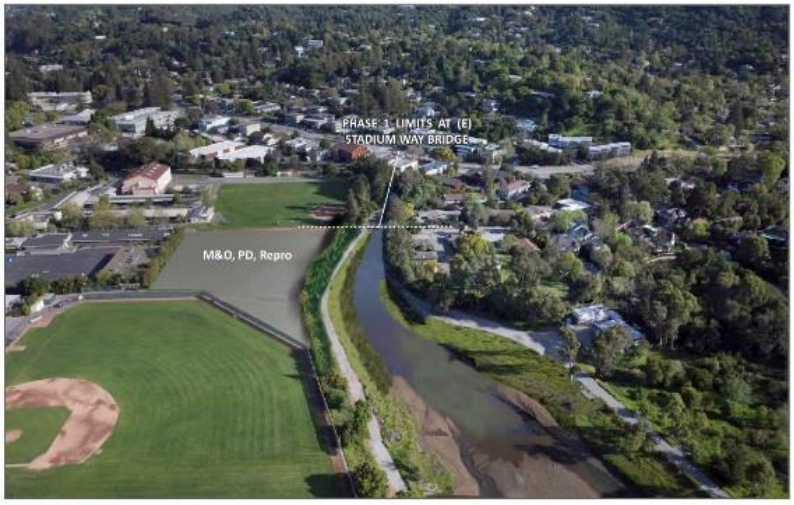
Educational, Environmental, and Aesthetic Benefits

EXISTING CONDITIONS

Students could have hands-on experience with restoration. The KMS and COM campuses, instead of hosting a textbook example of a failed flood control project from the 1960s, would demonstrate effective, properly engineered, environmentally responsible flood management. Tidal wetland and channel habitat would be restored, providing more carbon sequestration. These habitats also benefit plants, fish, and wildlife, including steelhead trout and Ridgway's rail, endangered species that use the creek and its wetland habitats. Finally, there would be aesthetic benefits of trading a concrete box for a more natural environment.

Next Steps

There are a number of challenges ahead. To meet a 2020 deadline for completion of construction, quick action is needed in approximately this order: property owners agree to the design, funding is obtained, the USACE approves modifications to the channel, permit applications are submitted, environmental review is completed, the designs are completed, permits are issued, and, finally, the project is constructed. Let the Board of Supervisors, which also sits as the Flood Control District Board of Directors, know if you support removal of part of the concrete channel!



PROPOSED CONDITIONS - PHASE 1