

COMMENTS ON THE ST HELENA NAPA RIVER FLOOD CONTROL STUDY
Prepared for Friends of the Napa River

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1. Is the Proposed Flood Control Plan Developed in Accordance with the Living River Principles?

The short answer to this question is a qualified 'No'.

Unfortunately neither of the two planning studies contained a definition of what the Living River Principles are, and how they influenced the proposed design. The clearest articulation of these principles is contained in "A Citizens Guide to the City of Napa, Napa River Flood Protection Project" by the US ACE and the Napa County Flood Control District, pp7-9.

'As defined by the Citizens for Napa River Flood Management: 'A living Napa River would consist of a river system with structure, function, and diversity. It would have the physical, chemical, and biological components that function together to produce complex, diverse communities of people, plants, and animals'.

A living Napa River:

- *Conveys variable flows and restores habitat in the floodplain.*
- *Balances sediment input with sediment transport*
- *Provides natural fish and wildlife habitat*
- *Maintains high water quality and supply*
- *Offers improved recreation opportunities*
- *Maintains its aesthetic qualities*
- *Generally enhances the human environment*

The approach of Citizens for Napa River Flood Management is based on the natural processes and characteristics of the Napa River itself, incorporating the following principles of geomorphology:

- *Maintaining the natural slope of the river.*
- *Maintaining the natural width of the river.*
- *Maintaining the natural width to depth ratio of the river.*
- *Maintaining or restoring the connection of the river to the floodplain.*
- *Allowing the river to meander as much as possible.*
- *Maintaining channel features..*
- *Maintaining a continuous fish and riparian corridor along the river.'*

The CDM study team was instructed that ‘Alternatives shall be consistent with the ‘Living River Principles’ [p1-2], placing the Living River Principles as a constraint on, instead of a key goal of, the plan. The CDM Draft Feasibility Report [DFR] does not articulate nor does it explain consistency of the alternatives it does develop with the Living River Principles. Instead, as far as we can tell, alternatives have been developed primarily based on flood control principles –specifically intended to reduce peak flood elevations in the Vineyard Valley Mobile Home Park [VVMHP] by increasing channel conveyance. These alternatives do not constitute a fully integrated multi-objective plan that balances ecologic and human needs as directed by the Living River Principles.

Because of the Plan’s flood control emphasis, important elements of the Living River Principles have been missed. Specifically: the understanding that the Napa River is an integral physical and ecologic *system* that sustains a *continuous fish and riparian corridor*. Instead the focus of the plan is increasing flood conveyance through grading a larger channel along about 2000ft of river, without acknowledging that implicit in this design is a requirement to maintain about a 1500ft reach downstream in what would probably be a permanently ecologically degraded and degrading state.

Unstated in all the alternatives is an assumption that there will be no channel incision upstream of the Pope Street Bridge presumably because a concreted rip rap sill at the bridge prevents about 4ft of channel bed incision moving upstream. Therefore, there has been an implicit decision essential for the success of the plan, but not discussed in the report, that this sill must be maintained and repaired by the City in perpetuity. In so doing, the City will be perpetuating a barrier to fish passage and precluding the opportunity to restore ‘*the natural slope of the river*’. Whether or not it is actually feasible to restore the natural slope, [which could significantly reduce flood levels upstream], has not been addressed, nor have ways of mitigating this fish barrier impact, because the plan has not incorporated the Living River Principles as objectives equal in weight to those of flood control.

Another example of where the plan conflicts with the Living River Principles is its implicit acceptance of the need for maintaining or even expanding rip-rapped channel banks upstream of the Pope St Bridge to stabilize the river planform. The ecologic consequences of this requirement for the riparian community have not been described in either of the reports.

Grading overflow channels or floodplain terraces in the 2000ft reach further upstream does provide significant opportunities to restore vital floodplain and riparian functions. However, whether these opportunities can actually be realized in a way that is consistent with the Living River Principles is uncertain. The primary reason for this uncertainty is due to the way the plan has been defined as a flood control project –grading a new channel- rather than as a long-term multi-objective river corridor management plan. This has meant that the management implications of the future geomorphic evolution of the river has not been considered, that assumptions about maintenance have not been integrated into the plan design, and important long-term management dilemmas that will confront the City as the river evolves have not been addressed.

Implementation of this plan, while potentially providing some ecologic benefits, would likely preclude the opportunity to achieve substantially greater ecologic benefits through a management and restoration plan directed by the Living River Principles.

2. Developing a Sustainable Multi-objective River Corridor Management Plan

The City of St. Helena has the opportunity, possibly through this planning process, to develop a long-term management and restoration plan that fully integrates the Living River Principles with flood management and social needs and significantly enhances this reach of the Napa River system.

It is generally recognized that the Napa river ecosystem is in a degraded and degrading state and increasing attention and resources are being focused on ways to restore important ecologic functions. The appropriate way to plan for restoration is through developing an integrated multi-objective river corridor plan –not as ecologic amenities attached to a flood control plan. The restoration goal would be develop a sustainable management plan that minimizes flood hazards while improving and maintaining ecologic and community values of the river. To do this would require taking the following steps:

1. Establish measurable objectives and indicators for achieving this goal. These objectives would be consistent with those identified by resource and regulatory agencies such as the RWQCB, DFG, and NMFS.
2. Understand the physical and ecologic context of the river, spatially and temporally. This means recognizing the river we see now is a snapshot of an evolving system still responding to major human interventions that continue to alter the landscape.
3. Identify the study scope, e.g. The Napa River within the City limits; over a 50 year planning horizon.
4. Define and analyze the no action alternative. This provides the rationale for management action. With no-action, continuing with present ad hoc management practices, the river is on a trajectory to a different state. It is possible to articulate this state and its associated habitat values and flood hazards over the planning horizon.
5. Develop alternative approaches to restore and manage the river corridor while reducing flood hazards.
6. Assess these alternatives, including the no-action alternative, based on how they would perform over the next 50 years, measuring this performance based on predictions of indicators of achievement of objectives.
7. Select and design a management plan in which maintenance planning is fully integrated in any structural modification.
8. Set up a management system to make sure the plan is implemented for succeeding generations.

3. Suggestions for Incorporating a Multi-objective River Corridor Management Plan as an Alternative in the EIR process

The RWQCB, is a key agency that will be reviewing the EIR on the proposed plan. In its letter of 2/25/02 to the City, [attached], the RWQCB has explained its expectations of the analysis of the plan's impacts. Because the plan has not followed the methodology described above, nor has clearly explained its own methodology, we do not believe that a sound environmental assessment of the proposed flood control plan will be able to properly satisfy the agency concerns described in this letter.

Specifically:

Significant Issues

- a. Main stem channel incision and simplification has not been adequately analyzed. A significant portion of the plan will perpetuate simplification in an extensive reach of the river and not address limiting factors identified by the RWQCB.
- b. Migration barriers that will be perpetuated at the Pope St Bridge are not acknowledged.
- c. Although up to 2000ft of riparian/floodplain habitat could be significantly enhanced,[depending on the actual design of the proposed Adam St. Bridge], the tradeoff inherent in the plan –a permanently hardened, and/or frequently maintained channel edge along the lower reach may not be beneficial for reversing declines in endangered species.

Reasonable Alternatives

- The plan does not describe the definition and evolution of the no-action alternative.
- The proposed plan would probably require mitigation of some type for maintenance activities and bank protection maintenance. Future mitigation for additional bank hardening may be necessary.
- An integrated multi-objective river corridor management plan could be designed as a self- mitigating alternative.

Mitigation Measures

The future geomorphic and ecologic evolution of the project –critical for success in improving habitat, has not been described.

We believe a multi-objective river corridor management plan that gives equal weight to flood management and the objectives of the Living River Principles is a valid alternative that could be addressed in the proposed EIR.

4. Specific Comments and Questions on the CDM Draft Feasibility Report [DFR] and the SH&G Geomorphology and Riparian Vegetation Assessment [GRVA]

It should be noted that most of these comments relate to what is not contained or explained in these reports, rather than disagreement over their content. We believe these important omissions are mainly a result of how the project has been formulated: without an explicit rationale or explicit balancing of ecologic enhancement needs with flood control requirements.

1. Rationale for the project is not established

The proposed plan is described in the DFR as a ‘flood damage reduction’ alternative intended to provide 100-year flood protection and remove flood prone areas from the FEMA 100year floodplain. There is no discussion of what flood damages occur in the 100 year flood or why this is an appropriate level of protection. Floodplain terraces are graded down to a 2-year flood level to provide increased 100-year flood conveyance, but no rationale is provided for determining the ecologic value of the aerial or linear extent of these terraces. The extent and cost-effectiveness of flood damage reduction or of habitat enhancement in comparison with the no-action alternative has not been established.

2. Project definition is not clear

The extent of the project is unclear and differs in different versions of the plan, possibly because these are still drafts. The RWQCB considers the plan to include 9500ft; the focus of the plan appears actually to be on approximately 4000ft adjacent to the VVMHP. Important elements of the plan are not described, specifically bank erosion treatment throughout this reach, the need to maintain scour protection at the Pope St. Bridge, and the maintenance program needed to achieve flood management and ecologic objectives.

3. Rationale for selecting alternatives not stated

A set of alternatives between what is termed ‘maximum’ and ‘minimum’ have been presented, but without a clear rationale for distinguishing between them. It appears that the main tradeoff is between the extent of floodplain terrace and relocation of mobile homes, but without a clear ecologic rationale it is difficult to understand the logic, particularly as the benchmark ‘no action’ alternative has not been addressed.

4. Conflicts between the two reports.

There are some important discrepancies between the two reports. The GRVA assumes terraces at a lower elevation [up to 12 ft lower], which function differently than those described in the DFR. The GRVA presents a design that includes distributary overflow channels, which are valuable habitat but provide different ecologic functions from periodically flooded wooded floodplain terraces. The rationale for this change is not explained.

The report also describes the proposed flood control plan as requiring “some bank protection” which will “likely be bioengineered structures that utilize rock rip rap and native vegetation plantings. Rip rap would be placed on an irregular shoreline with vegetation plantings where protection is located at the low water channel.” These important features are not described or reflected in the hydraulic analysis of the DFR.

5. Maintenance requirements not specified

Although maintenance for flood conveyance is recognized [though not described], other important requirements are not. For example, the need to maintain the erosion resistant sill at the Pope St Bridge is not discussed. If this were to wash out during an extreme flood the channel bed upstream will erode, undermining rip-rapped and natural banks as well as the newly restored floodplains. In addition continued maintenance of hardened banks, as well as eroding natural banks opposite will be required. Debris removal from the Pope St. Bridge piers will be required.

6. Maintenance not integrated into hydraulic design

The success of the flood control plan requires the City to maintain adequate channel conveyance. This conveyance will be degraded by sedimentation and vegetation growth. Although a design channel roughness of 0.05 has been specified, because the maintenance plan is apparently being developed sequentially, it is not clear whether these assumptions are achievable or whether more conservative allowances will save the City maintenance costs as well as preventing frequent ecologic disruption during maintenance activities.

7. Geomorphic stability assumed

The Plan does not examine how proposed alternatives will evolve in response to the future geomorphic evolution of the river. The GRVA assumes that the current channel reflects a stable condition that has changed little in the last 150 years and concludes that it will likely remain the same in the future. “The channel pattern in the project reach has changed little since the mid 1800s, indicating that the Napa River in the project reach has been very stable historically against lateral erosion and meandering.” This conclusion of channel stability may be a misreading of a plan form that has been artificially stabilized due to bridge placement, rock slope protection, and filling. The dynamic nature of the evolving river channel is described in Stillwater Sciences’ Limiting Factors Analysis that estimates of 4-6 ft of incision since the 1940’s. The Pope St Bridge has arrested [perhaps temporarily], this channel incision in the vicinity of the VVMHP as can be seen in the channel profile [appendix B fig2]. There has evidently been significant past geomorphic change requiring extensive hardening of channel banks. A geomorphic analysis of future changes is required.

8. Resilience of plan not examined

Actual water levels during major floods can sometimes be significantly higher than predicted due to a variety of mechanisms. It is therefore prudent to examine the resilience of any flood hazard reduction plan to possible failure. In this case factors that should be examined include:

- Potential for obstruction of the Pope St Bridge. In the present analysis it is assumed there would be no constriction of flow due to large trees and debris caught on the bridge piers. Any such obstruction has a significant potential for increasing flood levels upstream
- Potential for toe scouring and bank protection failure during large floods. If the toe of the bank protection were to fail causing bank slumping, the proposed floodwall could fail allowing inundation of the VVMHP. If the hardened sill at Pope St were to fail during a major flood event bank failure upstream would be probable.
- Increased roughness due to failure to clear vegetation
- Sedimentation in the channel.

9. Sustainability of plan not examined

Because the river is viewed as geomorphically static, the long term sustainability and quality of important ecologic habitats has not been assessed, nor has their compatibility with long-term maintenance requirements for flood control. For example, with regrowth of the riparian canopy large trees are expected to grow and fall into the river recreating important complex habitat –but which may increase flood hazards. Because the flood control plan is not a management plan, these dilemmas are not reconciled.