

MEMORANDUM

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To: **Guidelines and Standards Work Group**
From: Dan Cloak
Subject: **Preparation for 3 December 2003 Meeting:
Expanded Problem Statement and Ideas for
Guidelines and Standards for General Plans**
Date: 25 November 2003

I. Introduction

At its 6 November 2003 meeting, the Collaborative's Guidelines and Standards Work Group selected nine problems (from a set of 45 problems) for initial development of Guidelines and Standards.

(The Work Group also planned a meeting to review the remaining 36 problems and develop a clearer understanding of the issues and interests at stake. See the Key Outcomes Memorandum from the 6 November 2003 meeting.)

The nine problems selected for initial development of Guidelines and Standards are:

- Development in Floodplains (#2)
- Encroachment (#19)
- Bed and Bank Erosion (#1)
- Urban Effects on Threatened Species (#11)
- Channelization (#4)
- Hardening of Channels (#5)
- Grading (#13)
- Peak Flows (#25)
- Sediment—Channel Capacity (#14)

Previously, on 30 October 2003, the Collaborative ratified an *Outline of Guidelines and Standards for Land Use Near Streams*. The *Outline* envisions that the Guidelines and Standards will assist municipal agencies and others to use land-use planning and development-review tools to address water resources protection issues. Those tools are:

- General Plans
 - Diagrams and Planning Proposals
 - Goals and Objectives
 - Policies, Standards, and Implementation Measures
- Specific Area Plans

- Ordinances and Zoning
- Design Guidelines
- Standard Details and Specifications
- CEQA

At a meeting scheduled for 3 December 2003, the Work Group will discuss ideas for applying these tools. The discussion will focus on which ideas are likely to be effective, and whether those ideas are likely to be accepted and implemented.

This memorandum will help Work Group members prepare for that discussion. The memorandum includes:

- Background on the origin and character of seven of the nine problems, how they are interrelated, and how they are connected to land use near streams.
- Analysis of how land-use-planning and development-review tools can be applied to address the problems.
- A draft set of ideas to be incorporated into Guidelines and Standards for General Plans. These include ideas for data and analysis, for goals and objectives, for policies, and for implementation measures. The ideas for implementation measures include using specific area plans, ordinances, zoning, design guidelines, standard details and specifications, and CEQA to address water resources protection problems.

II. Background on the Problems

II.A. Watershed Impacts and In-and-Near-Stream-Channels Impacts

Frequent flooding, erosion, sedimentation, and loss of habitat are among the typical problems of urban streams. The many causes of these problems can be grouped into two general categories: (1) changes in the watershed, and (2) impacts in and near stream channels.

The principal watershed changes that affect streams are denudation, compaction of soils, paving, and efficient drainage—all of which tend to increase the amounts and peak flows of runoff—and grading or other disturbances to soils, which tend to increase the transport of fine sediments. The Collaborative's *Matrix of Water Resources Protection Problems* documents how the Santa Clara Valley Urban Runoff Pollution Prevention Program and other programs aim to address these "watershed" impacts and to reduce the effects of increased flows and fine sediments. (See for example Problem #18–Imperviousness, and Problem #7–Sediment.)

In contrast, no comprehensive multi-agency program exists to address impacts caused by activities in and near stream channels. Seven of the nine problems that the Work Group selected for initial development of Guidelines and Standards fall into this group. (The exceptions are the problems of grading and peak flows.)

The common root of these problems—and the reason that they have recently received so much attention—has to do with the changes in the ideas and practice of flood control.

The following discussion examines the problems of Development in Floodplains (#2), Encroachment (#19), Bed and Bank Erosion (#1), Urban Effects on Threatened Species (#11), Channelization (#4), Hardening of Channels (#5), and Sediment (#14) in the context of changing paradigms for flood protection and of current District programs and activities.

II.B. The End of the Structural Era of Flood Control

In urban areas, the most widespread and severe impacts in and near stream channels are caused by measures to control flooding. Other impacts are caused by gravel mining, diversion of flows for water supply, and land uses in riparian areas.

Over the past several years, the District has been changing its approach to flood protection. This change echoes similar changes by Federal flood control agencies and by local flood-control agencies throughout the U.S.

Three factors have propelled this change: the failure of the structural approach to provide reliable and low-cost protection from flooding, environmental concerns, and a changed public perception of the value of urban streams.

Failure of the structural approach. The structural approach to flood control has failed in many locations throughout the U.S. The approach was supported by massive Federal investment, beginning with the response to the 1927 Mississippi floods and declining after President Carter's 1977 Executive Order to "restore and preserve the natural and beneficial values served by floodplains." The Federal response to the 1993 floods on the Mississippi marked the government's final abandonment of the structural approach.

Causes of these failures nationwide include:

- Sedimentation of channels—which may occur slowly over time or suddenly during high flows—created unexpected dredging costs or resulted in flooding.
- Channel designs failed to account for increased watershed imperviousness, which resulted in flooding.
- Construction of levees resulted in flood flows being carried high above surrounding urban landscapes. When levees were overtopped or failed, catastrophic inundation occurred.
- Engineering failed to account for the potential extent of bank erosion and scour, resulting in failure of floodwalls, piers, abutments, and other structures, or in high costs for remedial maintenance.

In an unintended consequence, structural flood control may actually stimulate development in high-risk areas. Flood control projects are built to protect areas from flooding, but this protection is tested only during rare, major events. If the structures fail then, property damage can be severe. Under the "structural" paradigm, agencies responded to failures by building bigger, more expensive flood control structures, creating a vicious circle of increasing public investment, increasing development, and increasing exposure to property damage and threat to public safety.

Environmental concerns. The second factor propelling changes to the “structural” approach is that more stringent environmental protections have greatly increased the cost and time required to construct structural projects. Even where adequate on- and off-site mitigation measures can be identified, they are expensive, have uncertain prospects for success, and require extended agency commitments for monitoring and adaptive management.

Changed public perception of urban streams. The third and most decisive impetus to change the “structural” approach is that the public’s perception of urban streams has changed. Once misused as dumps and sewers, urban streams are now recognized as amenities—as opportunities to create space for recreation and access to nature. The District is changing its approach to flood protection in response to the preferences of its taxpayers and ratepayers.

The “structural” flood control era is ending, but the new (post-structural?) era is still being defined. A new approach to flood protection will minimize flood damages while also minimizing the use of “hard” structures, preserve and enhance habitat values, and provide streamside recreational amenities.* These significant, wide-ranging changes in flood management require, in turn, significant, wide-ranging changes in the way that land use near streams is managed.

The changes in the approach to flood protection, and to land use near streams, can be organized into five areas:

1. Floodplain Management
2. Alignment and design of stream channels
3. Stream maintenance and protection of beds and banks
4. Protection of riparian features
5. Recreational amenities

II.C. Floodplain Management.

During the “structural” flood control era, state and Federal agencies adopted the “100-year-flood” as a criterion for evaluating the risks from flooding. Adoption of this actuarial criterion has inadvertently led to many misperceptions about actual flooding risks:

- The “100-year-flood” simply means that there is a 1% risk of flooding in any given year. Statistically, a property at the outer edge of the “100-year floodplain” actually has about a 26% chance of flooding during a given 30-year period.
- Projected flooding frequencies are based on past rainfall records and on estimates of watershed imperviousness. As more rainfall data is gathered, as our climate changes, and as watersheds develop, new calculations may predict that the “100-year-flood” actually occurs much more frequently.

* It is not always possible to forgo floodwalls and other structures, but the general preference is to adopt them only when other solutions are infeasible—usually due to the encroachment of urban development.

- The maps of areas inundated by a “100-year-flood” may show areas predicted to have a 1-foot depth of floodwaters, but damage can occur with substantially less flooding depth.
- There is the potential for much larger (though infrequent) flooding events. Many communities are now considering the “reasonably foreseeable flood” in making land use and flood management decisions.
- Some types of flooding are less predictable than others. Large-scale flooding of relatively flat valley floors is the most predictable, but some urban areas in the Santa Clara Valley also experience localized flooding. In the latter case, flows of water and debris may unexpectedly become diverted across developed areas and into other streams during peak flood events.

The District and Santa Clara Valley municipalities have a history of working together to qualify local homeowners for FEMA’s National Flood Insurance Program (NFIP). Most Santa Clara Valley municipalities have adopted floodplain management ordinances based on FEMA requirements. In 1990, FEMA added the Community Rating System (CRS), which offers opportunities to lower homeowners’ flood insurance premiums if the municipalities undertake additional floodplain-management activities.

The CRS endorses a comprehensive, multi-objective approach to floodplain management, but even with the CRS, the NFIP should still be regarded as a “baseline” program. By working with the District’s CRS Coordinator, municipalities can provide local homeowners low flood insurance premiums; however, premium reductions are only a small portion of the benefits that Santa Clara Valley residents could obtain from more comprehensive floodplain management.

Some communities in California and around the U.S. are updating their previous approach to delineating and managing floodplains and are developing new strategies to protect public health and safety. These strategies include new methods for delineating flood hazard areas and more broadly applied requirements that newly developed and redeveloped sites be designed to pass flood flows and to minimize flood damages.

II.D. Alignment and Design of Stream Channels.

One reason that some “structural” flood control projects have failed is that they were designed to move only flood waters—absent the recognition that streams must move sediment as well.

In a stable stream reach, the amount of sediment entering and being deposited is roughly equal, over time, to the amount of sediment eroding and being washed downstream. Any number of factors can, individually or in concert, upset this “dynamic equilibrium.” For example, increased runoff from the stream’s watershed can cause erosion, or increased sediment in runoff can cause deposition.

Changes to the stream itself are the most typical causes of disequilibrium. Dams may hold back sediment and cause downstream erosion, or they can reduce flushing flows and cause sedimentation. Straightening a meandering stream will increase its slope (because there is now a shorter distance between upstream and downstream points) and

accelerate erosion within the reach; the eroded sediments will then be deposited in a less-steepened downstream reach. A wide, flat-bottomed flood-control channel will tend to accumulate sediment, while a narrowed, constricted channel will tend to incise.

There is no “cookbook” way to diagnose and fix a stream in disequilibrium. By integrating different schools of expertise—including hydrology, hydraulics, fluid mechanics, geology, geomorphology, and ecology—stream restorationists have developed a consistent and rigorous approach to the study and remedial design of streams. By determining the recurrence of different-sized flows and the erodibility of stream beds and banks throughout an entire stream system, they are able to design alignments and cross-sections that will neither erode away nor fill with sediment—while using few or no floodwalls, gabions, or other in-stream structures.

The ability to avoid using those structures—with their attendant maintenance costs, loss of habitat, loss of aesthetics, and risk of failure—depends, in large part, on having the flexibility to realign and reshape the stream channel. One basic design strategy is to reconfigure a trapezoidal, U-shaped, or incised channel so that it has benches on one or both sides. This mimics a natural stream channel and dissipates the energy of high flood flows while allowing lower flows to continue to transport sediment. Another strategy, applicable to lower-gradient streams on the valley floor, is to restore the natural meander pattern. The added length makes the slope of stream bed less steep. Both of these strategies require widening the area influenced by the stream.

Over the past few years, District watershed management staff and local environmental advocates alike have begun to adopt the perspective that achieving geomorphic stability is a prerequisite for sustainable flood management and for stream restoration. (The WMI Flood Management Subgroup, Regional Board staff, and the Guadalupe-Coyote Resource Conservation District have been involved in this ongoing conversation.) The new view has already had some influence on major flood control projects, but is almost certain to have greater influence on projects that are currently in planning and design.

The District is currently developing criteria for evaluating whether new project designs meet the “natural flood protection” goal of the 2000 voter-approved “Clean Safe Creeks and Natural Flood Protection” special tax. Draft criteria for achieving safe, durable protection from flood damage, for maintaining or enhancing ecological functions and processes, for integrating physical stream functions and processes, and for minimizing maintenance requirements mark the most significant change in course. As existing structures age, it seems possible that, over the coming decades, concrete will actually be removed from creeks in favor of the new “post-structural” approach to maintaining creek stability.

II.E. Stream Maintenance and Protection of Beds and Banks.

When it isn’t possible to realign or rechannel an unstable stream—or when interim measures are needed—some problems can be addressed by direct intervention at the place where erosion or sedimentation is occurring. To preserve habitat and aesthetics, the amount of “hard” structures used to stabilize beds and banks must be minimized. Bank-

and-bed stabilization techniques include rock vanes, which redirect flows and erosive energy away from banks; rock weirs, which trap sediment and slow downcutting; biotechnical bank stabilization, which uses willows and other suitable plants to hold together soils and deflect shear stresses, and toe-of-bank armoring, which slows undercutting.

Where fish habitat is desired, these in-stream stabilization measures must be coordinated with habitat-enhancing measures such as anchoring large woody debris to make a more complex in-stream structure and constructing undercut banks for fish refuge.

In stream reaches where sedimentation occurs—including many areas on the floor of the Santa Clara Valley—dredging is required to maintain the channel's capacity to carry flood flows.

These stream maintenance activities typically require access by heavy equipment. In many cases, banks must be cut back to install stabilization measures correctly. This can conflict with structures built near the top of bank. To be maintained cost-effectively, and with minimal environmental impact, urban streams need some clear space around them.

The District's *Stream Maintenance Program* (SMP), completed in 2001, includes protocols for stream maintenance activities. The SMP was prepared by way of a stakeholder process that involved regulatory agency staff, municipal staff, and environmental advocates, as well as District staff. The SMP specifies the bank stabilization and other maintenance practices to be used and stipulates that mitigation, in the form of habitat enhancement, be performed in proportion to the amount of habitat disturbed.

II.F. Riparian and In-Stream Habitat Protection and Enhancement.

As is noted in the Santa Clara Basin Watershed Management Initiative's *Watershed Action Plan*:

Riparian zones are especially important in the semi-arid Santa Clara Basin. The linear shape of stream corridors creates a long boundary between the cooler, wetter, shaded riparian microclimate and the hot, dry, exposed hillside or plain. This edge provides a wider variety of food sources and places for animals to rest or hide and supports more complex assemblages of plant and animal species. Stream corridors with continuous riparian areas are most valuable. Next best are those that are not too fragmented.

Riparian vegetation is essential to maintaining fish habitat. In a stream bounded by a healthy riparian forest, roots, shrubs, and vines bind the stream bank and resist erosion. Exposed, undercut roots and overhanging vegetation allow fish to rest and avoid predatory birds. The shade moderates water temperatures, and the overhanging trees contribute leaves, fruit, cones, insects, and other detritus to the aquatic food chain.

Woody debris slows flood velocities and forms pools and storage for sediment that might otherwise reach spawning areas. The organically rich soils store water along the corridor during the rainy winters and keep the zone damp during the dry summers.

In July 1996, the Guadalupe-Coyote Resource Conservation District, Trout Unlimited, and the Pacific Coast Federation of Fisherman's Association filed a complaint with the State Water Resources Control Board. The complaint alleged that the California Constitution, Water Code, Fish and Game Code, and public trust doctrine required additional reservoir releases for the protection of fisheries. In response, the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) was created. FAHCE culminated, after nearly seven years of study and negotiation, in a Fish Habitat Management Plan (FHMP).

The FHMP requires additional reservoir releases, removal of barriers to fish passage, evaluation of the potential to restore geomorphic functions, and restoration of fish spawning and rearing habitat. Initial habitat restoration efforts are focused in the following areas:

- Approximately four miles below Stevens Creek Reservoir
- Approximately five miles total in areas below Anderson Dam and in Upper Penitencia Creek
- Below Guadalupe Dam to the confluence with the Guadalupe River
- Below Calero and Almaden dams to the confluence with Lake Almaden
- Los Gatos Creek from Camden Avenue to the confluence with the Guadalupe River.

Restoration of rearing habitat includes planting of trees and efforts to restore riparian forests. About \$126 million has been committed to fund these projects.

To mitigate the impacts of flood protection projects on the Guadalupe River, the District is committed to plant 2,944 linear feet of native riparian vegetation in the project area and an additional 12,044 linear feet of vegetation along Guadalupe Creek.

Additional investments are likely to be committed in the future. A Habitat Conservation Plan (HCP), designed to provide for the recovery of the red-legged frog and other species in the Coyote and Uvas/Llagas watersheds, will be implemented jointly by the City of San Jose, the District, the County, and the Valley Transportation Authority. The HCP will require creation of preserves, including riparian areas.

Through these and other projects, the District, municipalities, and Federal and state agencies are making major public investments in restoring the valley's riparian ecosystems. In the main, these investments and allocations of land are piecemeal, made up of project-by-project mitigation measures. Further, planning for these areas has not been integrated with other land use planning for housing, transportation, or recreation.

This disconnect between riparian restoration and land-use planning could lead to unfortunate outcomes. Land uses and land use decisions could unwittingly impact areas under restoration, or impacts to other riparian areas could undo some of the ecosystem benefits achieved through restoration.

II.G. Recreation.

Since its inception in 1956, the Santa Clara County Parks system has grown to 27 parks with a total of 45,000 acres. Acquisition has been focused on creating a network of regional parks and trails along the hillsides adjacent to the urban fringe, and along urban creeks. The Parks Department's August 2003 *Strategic Plan* updated this "necklace of parks" concept to an "emerald web" of intensively used public parks and open spaces with outer rings that offer opportunities for dispersed recreation and solitude. The *Strategic Plan* vision incorporates the conservation and protection of natural resources.

The means to accommodate riparian resource protection, intensive recreation, and streamside trails exists on paper—if not always in practice. The Santa Clara County Interjurisdictional Trails Committee's 1999 *Uniform Interjurisdictional Trail Design, Use, and Management Guidelines* provide a template for designs that balance the objectives of riparian habitat protection, maintenance access, and trails and other recreational facilities.

The *Guidelines* state:

When parallel to a stream or riparian zone and not located on top of a levee, new trails shall be located behind the top of bank or at the back or outside edge of the riparian zone, except where topographic, resource management, or other constraints of management objectives make this not feasible or undesirable.

In general, all objectives can be achieved when it is possible to locate trails, recreational facilities, and access roads within the floodplain but away from the top of bank, leaving some area for a riparian buffer. However, when there is only a narrow strip to work with—sometimes it's just a few feet along the top of bank—one or all of these objectives will be compromised.

Preservation and restoration of streamside floodplains could dovetail with the Parks Department's efforts to meet demands for more intensive recreation areas such as ballfields and picnic areas. These uses are ideal for floodplain areas, because occasional flood damage to these areas (typically, deposition of sediments) can be repaired at relatively low cost.

II.H. Summary of the Problems Related to Land Use Near Streams

In summary, the "structural" era of flood control—when it was assumed that streams, floodplains, and riparian areas could be managed within narrow, well-defined boundaries—has ended.

In the new era, it is recognized that streams and flooding must be managed as an integral part of the urban landscape. Much of the Santa Clara Valley is either low-lying or on alluvial fans, and its ongoing growth brings an increasing public demand for urban parks and access to nature. Here, the wise management of floodplains and riparian areas is a community-wide concern.

The management of urban land uses must accommodate all of the issues and changes now challenging the management of streams: the needs to reduce potential flood damages, to create stable, maintainable stream

designs, to maintain stream beds and banks, to preserve and enhance riparian habitat, and to provide for trails and recreation.

Over the coming decades, the District—in cooperation with resource agencies, state and Federal regulatory agencies, local municipalities, environmental advocates, and other stakeholders—will remove many in-stream structures, restore stream geomorphic functions where possible, and replant riparian vegetation throughout the County.

This effort should be supported and complemented by comprehensive land use planning. This planning should weave the restored urban streams into the fabric of the neighborhoods through which they flow, and should promote complementary efforts throughout the watersheds.

As planned in the *Outline*, accommodating these needs will require, in various combinations, all of the “tools” that municipalities currently use to plan and manage land use: General Plans, Specific Area Plans, CEQA, Zoning, Ordinances, Design Guidelines, and Standard Details and Specifications. Code enforcement and public outreach will also come into play.

III. Overview of Land Use Planning and Development Review Tools

The *Outline* identifies the following “tools” that municipalities and others can use to address water resources protection problems:

- General Plans
 - Diagrams and Planning Proposals
 - Goals and Objectives
 - Policies, Standards, and Implementation Measures
- Specific Area Plans
- Ordinances and Zoning
- Design Guidelines
- Standard Details and Specifications
- CEQA

Following is a general description of these tools, their relationship to each other, and an analysis of how they might be applied to address the problems identified.

III.A. General Plans and Specific Area Plans

As stated in the Governor’s Office of Planning and Research (OPR) *General Plan Guidelines*, the General Plan “identifies the community’s land use, circulation, environmental, economic, and social goals and policies as they relate to land use and development.”

General Plans must include seven mandated elements: land use, circulation, housing, conservation, open space, noise, and safety. Other elements are optional. For example, the *General Plan Guidelines* include guidance for preparing a floodplain management element. Elements may be combined. Importantly, the elements must be consistent with one another, and all elements have equal weight—no one element may be privileged over another.

Other municipal policies, such as ordinances, zoning, design guidelines, and standard details and specifications, and thresholds of significance, are tools that are used to implement the goals and objectives expressed in the general plan.

Area and community plans may be part of the general plan. In contrast, a specific plan is a tool for implementing the general plan, but is not itself part of the general plan. Specific plans are often used to address requirements for a single project such as urban infill or a planned community, and so typically emphasize specific development standards and criteria, including drainage and other infrastructure.

The OPR *General Plan Guidelines* state that general plans should follow a particular structure, which is intended to make clear the relationships between goals, objectives, policies, and implementation measures.

- *Goals* are direction-setters or ideal future ends.
- *Objectives* are specific, achievable ends that are intermediate steps toward attaining goals.
- *Policies* are specific statements that guide decision-making, and commit the Council or Board to a particular course of action.
- *Implementation measures* are actions, procedures, programs, or techniques that carry out policies. Examples of implementation measures include specific plans, ordinances, zoning, and financing mechanisms.

III.B. Ordinances, Zoning, Design Review, and Design Guidelines

General plans set the general direction for future development; zoning implements general plan policies by spelling out immediate, allowable uses of each parcel of property. Zoning must comply with the general plan, except in charter cities. (Gilroy, Mountain View, Palo Alto, San Jose, Santa Clara, and Sunnyvale are charter cities.)

Zoning can be used to protect floodplains from future development. For example, open space zones generally allow only the construction of ballfields, playgrounds, stables, and other recreational facilities. Zoning ordinances can also be used to closely control the characteristics of development in floodplains.

As a specific requirement governing particular types of development or development in particular zones, municipalities may implement a design review process. In design review, the site design, architectural, and other features of a proposed project are reviewed by planning staff or by an appointed design review committee or planning commission. This is a discretionary* review—the staff or commission is expected to deliberate and make a judgment that reflects the values and preferences of the community.

* A discretionary project requires the exercise of judgment or deliberation when making a project decision. See *CEQA Guidelines* §15357. By contrast, a ministerial decision applies fixed, objective standards with little or no judgment as to the wisdom or manner of carrying out the project. See *CEQA Guidelines* §15369.

This is important in addressing water resources protection problems, because decisions about development in floodplains and riparian areas are seldom “cut and dried.” Instead, they require balancing and trade-offs between competing interests and objectives—i.e., discretion.

Most Santa Clara Valley municipalities require design review in all zones. Some exempt single-family dwellings, including additions or alterations.

To implement design review, planning staff or planning commissions may adopt design guidelines. Often, design guidelines apply to specific zones or types of development; for example, hillside areas or a specific redevelopment area. Design guidelines are used to facilitate consensus between project applicants and the reviewing staff or planning commission. They employ words and pictures to convey a sense of the design features that the municipality prefers. Applicants’ architects and landscape architects can use these guidelines as they prepare site designs and architectural drawings. Reviewers can use the guidelines to evaluate the extent to which the applicant’s proposal fulfills the municipalities’ preferences. The decision on whether to approve a particular proposal is ultimately up to the reviewers’ discretion.

Design guidelines can be an important tool for guiding development near streams, because they provide an opportunity to describe and illustrate characteristics and features that minimize impacts or are beneficial to water resources. To be effective, design guidelines must be adopted by a planning commission or other legislative body for use in a discretionary design review process that has been authorized by municipal ordinance—otherwise there is no effective mechanism to promote use of the guidelines.

In addition to zoning, most Santa Clara County municipalities have adopted flood damage prevention or floodplain management ordinances. These ordinances refer to flood hazard maps prepared to determine insurance requirements. The ordinances focus on reducing damages to structures (primarily by requiring a minimum first floor elevation)—and on preventing the construction of fill or structures that may block flood flows and increase water surface elevations during floods. However, analysis of flooding impacts is project-by-project; an analysis of cumulative effects is not generally required. Under the typical ordinance, individual structures may increase flood elevations by up to a foot.

III.C. Standard Specifications and Details

Planning and zoning review is inherently discretionary. In contrast, reviewing building plans and issuing building permits are ministerial functions. The “plan check” simply confirms that the proposed construction complies with the City’s building code.

When municipalities approve subdivisions, they typically require that some portion of the subdivided land be deeded to the public as streets and other public spaces. Municipalities may also require, as a condition of subdivision approval, that the developer construct utilities and other improvements that will become the property of the municipality. As authorized by the Subdivision Map Act, municipalities may adopt standard specifications and details for this public works construction. The purpose of these standards and details is to insure the quality and consistency of these features so to maximize public benefit and minimize

municipal maintenance costs. In addition, these same specifications and details may be used by municipalities in their own capital improvement projects.

Standard specifications and details may be useful for addressing very specific water resources problems that relate to infrastructure design. One example is the erosion caused by poor placement of outfalls; it may be possible to specify outfall designs that will mitigate this erosion.

III.D. California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies to decisions made by public agencies. Therefore projects which undergo discretionary review are also reviewed for compliance with CEQA, as are projects for which the municipality expends public funds. On the other hand, issuance of a building permit does not by itself trigger CEQA review.

CEQA has been progressively reshaped by the California Legislature and by case law. OPR regularly updates the *CEQA Guidelines*. The CEQA Guidelines do not have the force of law, but have been regularly referenced in interpretations of the CEQA statutes.

Public understanding of CEQA review tends to focus on the checklist which municipalities and other lead agencies use to prepare the initial study for a project. The initial study is a screening tool to determine if the project requires preparation of an Environmental Impact Report. Agencies may adopt their own checklist, but most avoid potential legal challenges by using the OPR checklist in Appendix G of the *CEQA Guidelines*.

The checklist is in the format of general questions about potential impacts of the project. Issues relating to water resources impacts of land use near streams—flooding, erosion, siltation, effects on riparian habitat, fish migration, stormwater pollution, and other issues—are specifically addressed in the checklist.

To evaluate these questions, municipalities must apply thresholds of significance for various potential environmental impacts. Although the *CEQA Guidelines* encourage adoption of thresholds as municipal policy, this is rarely done, and thresholds are usually determined project-by-project. Lead agencies must also determine whether proposed mitigation measures will successfully mitigate impacts to a level of insignificance. Where a standard already exists—whether a standard adopted by a regulatory agency, such as water-quality criteria, or a less formal but still generally recognized standard—the lead agency must apply that standard. For many impacts, however, there are no clearly applicable standards.

CEQA is a potentially powerful and far-reaching tool for identifying and mitigating potential water resources impacts of land use near streams. Its weaknesses arise from the lack of established thresholds and standards for determining when an impact may be significant and when the impact has been successfully mitigated.

IV. Proposed Approach for Developing Land Use Planning Tools to Address Water Resources Protection Problems

As shown in the *Outline*, the Collaborative's *Guidelines and Standards for Land Use Near Streams* will apply each of the land-use-planning tools described above to address one or more of the identified water resources protection problems.

General plans are the starting point for addressing water resources protection problems because they are the accepted and mandated means of insuring that land-use decisions are consistent with other objectives, including environmental protection, environmental justice, economic development, and public health and well-being.

As recommended in OPR's *General Plan Guidelines*, general plans are structured to identify goals, objectives, policies, and implementation measures. Implementation measures include specific area plans, zoning, ordinances, CEQA, code enforcement, public outreach, public education, interagency coordination, financing mechanisms, and other actions.

It is proposed to begin by developing guidelines for general plans, including goals, objectives, policies, and implementation measures. This will set the stage for developing more detailed guidelines (including design guidance) which can be implemented through ordinances, zoning, and CEQA.

V. Ideas for Addressing the Initial Set of Water Resources Protection Problems in General Plans

The organization of this section is similar to that of OPR's *General Plan Guidelines*.

V.A. Ideas for Data and Analysis

- In cooperation with SCVWD, analyze the potential extent of flooding based on the reasonably foreseeable flood, potential alluvial fan flooding, and local flooding.
- Evaluate and map the extent of "natural floodplains" based on historical data, considering historical changes to stream and floodplain morphology such as stream incision, land subsidence, and rerouting of streams, and also considering potential failure or removal of flood-control structures.
- Inventory and map land uses, recreational resources, natural resources, and riparian habitat near streams and within floodplains.
- Identify, evaluate, and document known areas with bank failure, downcutting, gulying, erosion, or where dredging of accumulated sediments is required.
- Identify and evaluate plans and proposals for alteration, improvement, or restoration of stream channels.
- Inventory storm drainage systems, including age, condition, and outfall design.
- Inventory and evaluate street, highway, and utility crossings of streams, including ownership, age, condition, and impacts (e.g., geomorphic impacts of abutments or grade controls).

- Identify and evaluate plans and proposals for trails and recreational facilities near streams or within floodplains.
- Identify and evaluate other agencies' plans for transportation projects and other projects that will cross or parallel floodplains.
- Identify watershed and in-stream measures that can effectively prevent excessive bed and bank erosion.
- In cooperation with SCVWD, map existing riparian areas and areas to be restored to support the Fish Habitat Management Plan.

V.B. Ideas for Goals and Objectives

- Acknowledge and minimize potential flood damages through a comprehensive evaluation of potential flooding and implementation of floodplain management measures throughout the potentially affected area.
- Retain and preserve connectivity between streams and their floodplains to preserve floodplain functions and natural processes.
- Incorporate the goals and objectives of the Clean Safe Creeks and Natural Flood Protection voter-approved measure into General Plan goals and objectives.
- Incorporate the goals and objectives of the Fish Habitat Management Plan, Habitat Conservation Plans/Natural Communities Conservation Plans, and other species-recovery plans as General Plan goals and objectives.
- Develop and adopt a vision for the key floodplain and riparian corridors within the municipality, including channel restoration, preservation and enhancement of habitat, recreational values and connection to nature, and an enhanced quality of life.
- Prepare diagrams and plan proposals that execute the vision by showing current and potential future land uses within floodplains, including existing and planned residential, commercial, and industrial uses, trails and recreational facilities, and protected habitat.
- Meet regulatory requirements and cost-effectively address problems of the geomorphic stability of streams.
- Preserve options for maintaining and renovating stream banks, levees, and other stream structures by restricting construction near stream banks and insuring maintenance access.

V.C. Ideas for Development Policies

- Work cooperatively with the Santa Clara Valley Water District, Santa Clara County Parks, and other agencies to develop and implement a shared vision of floodplains and riparian corridors that serve the multiple uses of protection from flood damages, protection of habitat, and recreation and connection to nature.
- Do not permit development that would interfere with implementation of this vision.
- Do not permit development that would prevent necessary maintenance of existing stream beds and banks, levees, or flood

control structures or that would interfere with implementation of in-stream measures to mitigate the impacts of hydromodification.

- Do not permit development that would prevent planned restoration of stream alignments and channels as shown in [cite plan documents], or updated plans for the same project.
- Support the Fish Habitat Management Plan by designating riparian areas along the targeted stream reaches for protection and restoration.
- Adopt stringent land use, zoning, and building code regulations limiting new construction in the already urbanized floodplain.
- Regulate closely all types of habitable development in natural flood plains. This includes prohibiting fill materials and obstructions that may increase flood potential or modify the natural riparian corridor.
- Encourage compatible agricultural, recreational, and park uses in floodplains.

V.D. Ideas for Implementation Measures

Ordinances and Zoning

- Revise existing floodplain ordinances to reference maps of “natural” floodplains in addition to the areas defined in flood insurance studies.
- Adopt, by ordinance, zoning overlays that provide for more detailed review of construction in floodplains.
- By ordinance, apply design review to all development, including single-family residences and additions, within the floodplain (or portions of the floodplain).
- By ordinance, adopt design guidelines for development within floodplains, including measures to protect against flood damages and to maintain habitat values where development intrudes into existing or restored riparian areas.
- Issue use permits, subject to performance standards, for existing developments within the floodplain that do not meet new zoning requirements. By this means, require future renovations or upgrades to incorporate management practices for floodproofing, impervious surface reduction, and riparian stewardship.

Specific Area Plans

- In floodplain areas that are being newly developed or redeveloped, establish specific area plans to coordinate flood protection with land use, habitat protection, infrastructure development or replacement, and recreation.
- As part of a specific area plan for a floodplain, adopt plan lines that effectively prohibit development other than what is contemplated in the plan.

Capital Improvements

- In drainage master plans, minimize the number and size of storm drains entering streams and provide trash racks and energy dissipators as necessary and appropriate.

- When replacing culverts, bridges, and other stream crossings, set back abutments as far as possible. If piers are required, they should be designed to minimize effects on the movement of water and sediment.
- When planning joint projects with Caltrans, VTA, County Parks, and other agencies, advocate for bridges and other crossings that minimize impacts on streams and riparian corridors.
- Review and revise standard details and specifications to incorporate designs that minimize the effects of storm drainage and storm drain outfalls on stream beds and banks.
- Incorporate into standard details and specifications designs for stilling basins, detention basins, trash racks, and energy dissipators at outfalls to streams.

CEQA

- Develop guidance for planning staff on how to evaluate potential water resources impacts of development in floodplains and riparian areas.
- Adopt thresholds of significance for impacts to water resources in floodplains and riparian areas.
- For projects within the floodplain, conduct joint reviews with SCVWD staff to identify potential impacts and appropriate mitigation measures.

VI. Selected References and Resources

Background on Stream Science and Policy

- Federal Interagency Stream Restoration Work Group. *Stream Corridor Restoration: Principles, Processes, and Practices*. United States Department of Agriculture, 1998.
www.usda.gov/stream_restoration/
- Leopold, Luna B., M. Gordon Wolman, and John P. Miller. 1964. *Fluvial Processes in Geomorphology*. Mineola, NY: Dover Press (republished 1995).
- Riley, Ann L. *Restoring Streams in Cities: A Guide for Planners, Policymakers, and Citizens*. Washington, D.C.: Island Press, 1998.
- Riley, Ann L. "A primer on stream and river protection for the regulator and program manager." Technical Reference Circular, W.D. 02-#1. California Regional Water Quality Control Board for the San Francisco Bay Region.
<http://www.swrcb.ca.gov/rwqcb2/Agenda/04-16-03/Stream%20Protection%20Circular.pdf>
- Watson, Chester C., and William Annable. *Channel Rehabilitation: Processes, Design, and Implementation*. Notes for Applied Fluvial Geomorphology and River Restoration Short Course, sponsored by the Guadalupe-Coyote Resource Conservation District. Held at the Santa Clara Valley Water District, San Jose, CA, July 14-18, 2003.

Floodplain Management

- Federal Emergency Management Agency (FEMA) Floodplain Management Page <http://www.fema.gov/fima/floodplain.shtm>
- American Institutes for Research, Pacific Institute for Research and Evaluation, and Deloitte & Touche LLP. *A Chronology of Major Events Affecting the National Flood Insurance Program*. October 2003.
<http://www.fema.gov/pdf/nfip/chronology.pdf>
- Floodplain Management Association <http://www.floodplain.org/>
- California Department of Water Resources Floodplain Management www.fpm.water.ca.gov
- Colbey-Alquist Floodplain Management Act (California Water Code §8400-8415) <http://www.leginfo.ca.gov/calaw.html>

State Land-Use Planning Guidelines

- California Governor's Office of Planning and Research.
- *General Plan Guidelines*. Revised October 2003. 200 pp. + appendices. www.opr.ca.gov.
- *Planning, Zoning and Development Laws*, 328 pp. 2000.
www.opr.ca.gov
- *CEQA Guidelines*. As amended July 22, 2003. Online at http://ceres.ca.gov/topic/env_law/ceqa/guidelines/
- *A Citizen's Guide to Planning*. Brochure, 14 pp. 2001.
www.opr.ca.gov

- Institute for Local Self Government website on charter cities.
www.ilsg.org/chartercities

Santa Clara Basin Watershed Management Initiative

- *Watershed Action Plan* (Final, August 2003)
<http://www.valleywater.org/wmi/Actiondraft0803.htm>
- *Watershed Characteristics Report* (2000)
<http://www.scbwmi.org/PDFs/watershed-characteristic-d8.pdf>

Santa Clara Valley Water District Program Documentation

- *Draft Stream Maintenance Program*
http://www.valleywater.org/Water/Technical_Information/Technical_Reports/Reports/SMP/Stream_Maintenance_Program_Document.shtm
- *Clean Safe Creeks and Natural Flood Protection: A 15-year plan to preserve and protect our quality of life.* July 25, 2000.

Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)

- *Fisheries and Aquatic Habitat Collaborative Effort Summary Report: A multi-agency fisheries plan for Coyote Creek, Stevens Creek, and Guadalupe River in Santa Clara County.* February 26, 2003.

Local Planning Policies

County of Santa Clara

- *General Plan*
http://www.sccplanning.org/planning/content/PlansPolicy/PlansPolicy_General_Plan.jsp
- *Zoning Ordinance*
http://www.sccplanning.org/planning/content/PropInfoDev/PropInfoDev_Zoning_Ordinance.jsp
- *County of Santa Clara Riparian Corridor Study: A Background Document for the Development of a Riparian Protection Ordinance for the County of Santa Clara.* June 5, 2003. 24 pp. + appendices.
<http://www.sccplanning.org/planning/content/PlansPolicy/RiparianCorridorStudy.pdf>

Santa Clara County Parks

- *Strategic Plan*
<http://www.parkhere.org/scc/assets/docs/346915strategicplanfinal.pdf>
- *Santa Clara County Interjurisdictional Trails Committee. Uniform Interjurisdictional Trail Design, Use, and Management Guidelines.* (1999). In fulfillment of County General Plan Policy PR-TW(i) 6A).
http://www.parkhere.org/scc/assets/docs/47660ctywide_use-n-mgmt_guidelines.pdf
- *Countywide Trails Master Plan Update.* 1995.
http://www.parkhere.org/scc/assets/docs/47616ctywide_trails_masterplan.pdf

City of Campbell

- General Plan <http://www.ci.campbell.ca.us/cityservices/planningdept/generalPlanPage.htm>
- Zoning Code <http://bpc.iserver.net/codes/campbell/ DATA/TITLE21/index.html>

City of Cupertino

- General Plan Update and General Plan Administrative Draft http://www.cupertino.org/city_government/departments_and_offices/planning_and_building/general_plan_update/index.asp
- Municipal Code
 - Chapter 152: Flood Damage Prevention
 - Chapter 155: Planning
 - Chapter 156: Zoninghttp://www.amlegal.com/cupertino_ca/

City of Gilroy

- General Plan <http://www.ci.gilroy.ca.us/planning/genplan.html>
- Zoning Ordinance http://www.ci.gilroy.ca.us/planning/zoning_ordinance.html
- Municipal Code Chapter 21: Subdivisions and Land Development <http://livepublish.municode.com/LivePublish/newonlinecodes.asp?infobase=10533>

City of Los Altos

- General Plan <http://www.ci.losaltos.ca.us/planning/generalplan/index.html>
- Municipal Code
 - Chapter 12.60 Flood Hazard Area Regulations
 - Title 13, Subdivisions
 - Title 14, Zoning<http://ordlink.com/codes/losaltos/index.htm>

Town of Los Altos Hills

- General Plan <http://www.losaltoshills.ca.gov/government/town-documents.html>
- Municipal Code
 - Title 9, Subdivisions and Plan Lines
 - Title 10, Zoning and Site Development
 - Title 7, Chapter 5, Floodplain Management<http://www.bpcnet.com/codes/losaltoshills/>

Town of Los Gatos

- General Plan <http://www.town.los-gatos.ca.us/government/11.html>
- Municipal Code
 - Chapter 29, Zoning
 - Chapter 29, Article 9, Floodplain Management

<http://livepublish.municode.com/LivePublish/newonlinecodes.asp?infobase=11760>

City of Milpitas

- General Plan
<http://www.ci.milpitas.ca.gov/citydept/planning/generalplan.pdf>
- Zoning Ordinance
http://www.ci.milpitas.ca.gov/citydept/planning/zone_ordinance.pdf
- Municipal Code
 - Title XI, Chapter 15, Floodplain Management Regulations
 - Title XI, Chapter 16, Section 9, Watercourse Protection
<http://municipalcodes.lexisnexis.com/codes/milpitas/>

City of Monte Sereno

- Municipal Code
 - Title 10, Chapter 08, Site Development Permit Required
<http://www.montesereno.org/municodes.php>

City of Morgan Hill

- General Plan <http://www.morgan-hill.ca.gov/Upload/Document/D240000201/GeneralPlan.pdf>
- Municipal Code
 - Title 17, Subdivisions
 - Title 18, Zoning
 - Chapter 18.42, Flood Damage Prevention
 - Chapter 18.70, CEQA Guidelines
 - Chapter 18.74, Design Review
<http://www.bpcnet.com/codes/morganhill/>

City of Mountain View

- Municipal Code
 - Chapter 28, Subdivisions
 - Chapter 36, Zoning
<http://bpc.iserver.net/codes/mtnview/index.htm>

City of Palo Alto

- Comprehensive Plan <http://www.cityofpaloalto.org/compplan/>
- Municipal Code
 - Title 11, Environmental Impact Procedure
 - Title 19, Master Plan
 - Section 19.06, Specific Plans
 - Section 19.10, Coordinated Area Plans
 - Title 20, Precise Plans
 - Section 20.04, Plan Line Regulations
<http://www.cityofpaloalto.org/government/municipalcode.html>

City of San Jose

- General Plan http://www.ci.san-jose.ca.us/planning/siplan/gp/2020_text/index.htm
- Municipal Code
 - Title 17, Buildings and Construction
 - Chapter 17.08, Special Flood Hazard Area Regulations
 - Title 20, Zoning
 - Title 21, Environmental Clearancehttp://www.amlegal.com/sanjose_ca/
- *Riparian Corridor Policy Study*. 1994. The Habitat Restoration Group and Jones and Stokes Associates, Inc. 53 pp. + appendices.

City of Santa Clara

- General Plan <http://cho.ci.santa-clara.ca.us/3081.html>
- Zoning Ordinance <http://cho.ci.santa-clara.ca.us/3082.html>

City of Saratoga

- Municipal Code
 - Chapter 15, Zoning
 - Article 15-45, Design Review for Single-Family Dwellings
 - Section 15.45.045, Creek Protection Setbacks
 - Section 15.45.055, Residential Design Handbook
 - Chapter 16, Building Regulations
 - Article 16-66, Floodplain Management<http://www.bpcnet.com/codes/saratoga/>

City of Sunnyvale

- General Plan <http://sunnyvale.ca.gov/Departments/Community+Development/General+Plan/>
- City-wide Design Guidelines <http://sunnyvale.ca.gov/Departments/Community+Development/Planning+Division/Design+Guidelines/Planning+-+City-Wide+Design+Guidelines.htm>
- Municipal Code
 - Title 19, Zoninghttp://ordlink.com/codes/sunnyval/_DATA/index.html