

I. RIPARIAN CORRIDOR PROTECTION

Introduction: An adequate riparian corridor is essential to protect water quality, fish/aquatic life and other biological values, bank stability and other designated beneficial uses. Guidelines and standards related to planting and removal of plants in this section are applicable in conjunction with a development proposal where city/county reviews landscaping plans. Additional efforts to guide the protection of the riparian corridor through the types of plants installed or removed will occur through outreach and educational methods. Guidance for single family additions and remodels is to make site development's relation to the creek in a better condition than existing through such measures as: redirection of drainage to the street, planting of native vegetation, creating a native buffer along the creek edge, increase the setback from the creek, providing erosion protection measures or repair, removing invasive species.

I.A.1 Protection of the Riparian Zone

Enforce existing City/County/SCVWD general plans, policies, or ordinances related to riparian areas, water quality and source water protection.

I.A.2 Protection of the Riparian Zone

City, County and SCVWD to develop criteria to determine allowable uses within riparian corridor and develop measures to protect existing riparian areas. This may require an assessment of onsite biotic and riparian conditions by a qualified expert and consultation with the appropriate resource and regulatory agencies.

I.A.3 Protection of the Riparian Zone

Riparian corridor buffers should be adopted by jurisdictions, as appropriate, consistent with onsite biotic conditions which may be determined a qualified professional to protect existing riparian habitat. Areas adjacent to streams should be considered for future restoration opportunities. Sensitive habitat areas should be identified and assigned appropriate buffers.

I.A.4 Environmental and water quality related to Structures Built Near Streams

Supplement CEQA guidance and checklist to include environmental impacts relative to temperature and water quality for aquatic life.

I.B. Native Plant Removal

Native riparian vegetation is not allowed to be removed (see Design Guide for list of native species).

EXCEPTION: Native riparian vegetation may be removed if there is a threat to public health and safety including an imminent danger of induced flooding. In addition, riparian vegetation may be removed if it will improve the stream ecology or habitat (a biologist/arborist must concur, as required by the permitting agency and recommend referral to SCVWD). If vegetation is proposed for removal in conjunction with a development project, mitigation will be provided as defined through the CEQA process and as agreed to by the local agencies and appropriate regulatory agencies.

I.C. Planting

Non-native species are not allowed to be planted between top of banks, or within an existing riparian corridor. Non-native invasive species are not allowed to be planted adjacent to an existing riparian corridor. Recommend watershed specific natives for major development restoration landscaping. Refer to California Native Plant Society "Guidelines for Landscaping to Protect Vegetation from Genetic Degradation". (www.cnps.org/archives/landscaping.pdf)

EXCEPTION: May be allowed if approved by SCVWD and appropriate state and federal regulatory agencies.

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

I.C2. Planting

Do not plant invasive species. (see Design Guide for list of invasive species). For single family units, outreach and education materials will be employed to promote use of native plants. Discourage use of listed invasive species and encourage removal of invasive species by providing guidance on invasive species removal techniques. Refer to California Invasive Plant Council plant lists.

I.C3. Planting

Planting appropriate vegetation between top of banks is encouraged as an alternative to hardscape bank protection in locations where flood capacity is sufficient, in order to promote bank stability, improve habitat, and provide other water quality benefits. However, planting efforts should not reduce channel capacity significantly below design flows. This would be regulated as an encroachment between top of banks and assume mature vegetation.

EXCEPTION: See Activity—Encroachment between top of banks.

I.C4. Planting

No trees may be planted on a levee unless additional fill is placed against the levee. See Design Guide for example drawing.

I.C5. Planting

Trees must not be planted within easement or right-of-way of SCVWD water supply pipelines or the minimum required by other jurisdictions, as appropriate.

I.D. Irrigation

Irrigation runoff must not be allowed to cause erosion. If within outboard levee slope, irrigation must be bubbler or drip-type systems, and must be used for establishment purposes only. No main lines may be installed in levees.

I.D2. Irrigation and Planting

Follow efficient water use landscape ordinance requirements for drought tolerant plants and water conservation. Include measures to address stream side planting guidance.

I.E. Pesticide and Herbicide Use

Use of pesticides and delineation of responsibility for maintenance on District property or easements shall be conducted as defined by current practice. Outreach and educational materials will be employed to provide guidance on appropriate pesticide and herbicides for use near aquatic resources as per the District's Integrated Pest Management plan and its presentation of the use of alternatives to pesticides/herbicides when possible.

I.F. Post-Construction Water Quality

Post construction water quality mitigation measures are to be included in the proposed development conditions (see Construction-related Permit Conditions for Streamside Resource Protection in Guidelines and Standards User's Manual).

I.G. Land Uses Next to Riparian Corridors/Streams:

Avoid locating loading docks, trash enclosures, chemical storage areas and stationary noise producing mechanical equipment adjacent next to streams and riparian corridors. These facilities are not allowed in streams.

Refrain from locating new paved areas, active recreational areas, agricultural growing areas and grazing activities within riparian corridors. Refer to Standard Development Requirements for Golf Courses prepared by Santa Clara County for golf courses or large turf areas. Refer to the Start as the Source (www.scvurppp_w2k.com/basmaa_satm.htm) and SCVWD's "Streamside Planning" guide for street layout next to streams.

I.H. Light

Avoid bright colors and glossy or glare producing building finishes on structures facing the stream or riparian areas. Avoid nighttime lighting in riparian corridors, direct lighting away from riparian corridor and maximize distance of lighting from riparian corridor.

I.I. Monitoring

For projects subject to mitigation/monitoring requirements, riparian plantings for mitigation and bank repair/protection projects will be monitored to ensure successful establishment.

I.J. Protection of Fish and Aquatic Life

Preserve in and near-stream riparian vegetation whose canopies provide shade and nutrients for aquatic life.

I.J2. Protection of Fish and Aquatic Life

Protect/maintain stream characteristics suitable for fish habitat, including riffles, pools, gravel beds, stable undercut banks, overhanging vegetation & in-stream woody debris.

II. BANK STABILITY/STREAMBED CONDITIONS**A. Slope Stability Requirements for New and Major Redevelopment**

Introduction: Slope stability protection area for watercourses will be determined based on geomorphic and hydrologic conditions, the bank's physical characteristics, such as composition and height, the potential for instability or erosion, other environmental considerations, structure loading and flood potential as determined by the applicant's engineer. In addition, construction activities proposed below the top of bank and/or in the riparian corridor are subject to review and permit authorization from the Regional Water Quality Control Board, California Department of Fish and Game (DFG), and in most cases, the US Army Corps of Engineers and their Federal consulting agencies.

The slope stability protection area or trigger is designed to assist permitting staff in identifying those situations in which a proposed structure may threaten bank stability and/or bank instability may threaten the integrity of a structure and the health and safety of its occupants. If a property owner is proposing development/construction within the trigger area, the permitting agency should require further study of soil and slope stability in order to determine whether or not the location of a proposed structure may threaten bank stability and/or bank instability may threaten structures. For banks of larger streams, or for streams that are deeply incised or have highly erodable banks, a permitting agency may need to increase the protection area or trigger area in order to protect water quality and other resources.

II.A. Bank Stability for Structures Built Near Streams

Establish a bank stability protection area or trigger that applies to construction of new roads, parking lots, pools, and structures subject to the UBC. The bank stability protection area or trigger should be measured from top of bank and should be based upon stream characteristics including protection of existing riparian vegetation, natural or modified stream banks, and condition of bank.

For all new development and major redevelopment, the slope stability trigger will be set to be the greater of:

- 1) 2 to 1 structural slope stability protection area or trigger (This is measured using a hypothetical 2 horizontal to 1 vertical line projected from the toe of bank to a point where it intersects the adjacent ground.) This protection area or trigger would allow for biotechnical methods for slope repair should erosion occur. See Design Guide for explanatory drawing. The protection area should allow for construction access and access around the structure. There may be circumstances where the bank or

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

channel instability requires a greater no construction area. In these cases, 2:1 may be inadequate to offer protection and to provide room for erosion repair, or;

- 2) 20 feet from top of bank or property line, whichever is greater

Where the property line falls within the stream, the definition of top of bank will be adopted by municipalities and used to determine protection area or triggers outlined in municipal codes.

For information on the proposed triggers for Single Family Units (SFU's), please refer to slope stability measures packages (Attachment).

For construction proposed within the protection area or trigger area, the applicant would need to conduct a stability analysis by stream type and demonstrate that the development would not require the introduction of hardscape in order to maintain active floodplain or active channel slope. Applicant would also be required to show how maintenance or repair of the stream could be provided. Stability based on stream types described below:

- **EARTHEN BANK STREAM**—geotechnical analysis must be provided considering static soil characteristics, stream dynamics, tractive forces on the slope, and the geomorphic functions of the stream. The improvement must be designed such that it will be supported in the event of bank failure.
- **HARDENED BANK or LINED STREAM**—load analysis must be provided to assure no impacts to the stability of the stream lining.

Other exceptions, such as fences > 6' high, meeting prescribed design criteria and location relative to stream bank to be developed and included in the Design Guide

II.A.2 Bank Stability for Structures Built Near Streams

Supplement CEQA guidance and checklist to include stream stability impacts from and to proposed development project.

II.B. Flood Protection for Structures Built Near Streams

Structures will meet FEMA requirements if within a special flood hazard area. Refer to SCVWD Watershed Stewardship Plans and verify with SCVWD the status of any planned or anticipated flood protection projects and their right of way requirements. SCVWD may request dedication of land rights for flood protection or maintenance access in conjunction with new or redevelopment projects.

For levee sections, recommend 18 to 25 foot building setback from toe of levee See descriptive drawing in Design Guide

EXCEPTION: Exceptions are allowed as consistent with City or County flood hazard ordinances.

III. BANK STABILITY/STREAMBED CONDITIONS

B. Slope Stability Requirements for Single Family Units

The Purpose of Slope Stability Requirement For Single Family Units: Structures built near streams may negatively affect streams and streamside resources as well as the structure itself. Some potential issues include:

1. Adverse effects on streamside slopes, including effects on slope stability and erosion, and related hazards to structures built on streamside properties
2. Adverse effects on flood control facilities and related infrastructure

3. Adverse effects on local drainage facilities and related infrastructure
4. Adverse effects on riparian corridors and associated vegetation and related erosion impacts
5. Adverse effects to streams, including the effects of down-slope sedimentation and altered stream hydrology, and related impacts to water quality in streams
6. The structure itself can be undermined over time as the streambank erodes due to the dynamic nature of the stream resulting in health and safety hazards

The following Slope Stability Requirements are intended to serve as development standards, that when used, will help enable the location of structures on streamside properties in a manner that avoids or minimizes impacts to streams, streamside natural resources, flood control facilities, local infrastructure and the structure itself.

Slope Stability Requirements as a ‘Geotechnical Trigger’ for Permit Review

If a structure is proposed to be located closer to the Top of Bank than indicated by the following Slope Stability Requirements, this may serve as a trigger for local permitting agencies to require site-specific technical information related to precise slope conditions. If a property owner is proposing to place structures closer to a streamside slope than allowed by the Slope Stability Requirements, the permitting agency should require further study of on-site geotechnical soil and slope stability conditions. The purpose of the study is to determine:

1. whether or not the location of a proposed structure may threaten bank stability, and
2. whether or not the bank instability may threaten structures and/or potentially cause a health and safety hazard.

For banks of larger streams, or for streams that are deeply incised or have highly erodable banks, a permitting agency may need to require on-site geotechnical analyses even if the Slope Stability Requirement are met.

II.C Slope Stability Protection Area for Single-Family Units¹

The “Slope Stability Protection Area” is a no build area between a structure and the stream². In some cases, a range of numbers is indicated. The assumption is that each local jurisdiction will select one of the numbers based on their existing priorities, permitting processes, and on-site conditions. It is also assumed that the channel depth of most streams in urban Santa Clara County is 10 feet deep or less. For streams, deeper than 10 feet, there should be a 2 to 1 protection area as measured from the toe of the bank.

	Stream with Little or No Hardening	Structurally ³ Engineered System	Ephemeral Stream
Size of Protection Area (as measured from Top of Bank) ⁴	25 - 20 ft.	15 ft.	10 - 15 ft.

Note: Potential Additions to the Slope Stability Protection Area

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

2. For a large lot (greater than 10,000 sq. ft), add 5 feet.
3. For a large home in which the FAR triggers a discretionary review, work with applicant to ensure that impacts such as drainage are redirected away from a stream and pursue opportunities to increase the slope stability protection area to better protect the stream (and home) from impacts. For example, consider decreasing the required front yard setback in order to accommodate an increased rear yard setback/slope stability area.

III. Encroachments between the Top of Bank (e.g. bridges, retaining walls)

Introduction: In addition to the G&S's below, any construction activities proposed below the top of bank are subject to review and permit authorization from the Regional Water Quality Control Board, California Department of Fish and Game, and in most cases, the US Army Corps of Engineers and their Federal consulting agencies.

III.A.STANDARD: Overhang Top of Bank

Decks, pathways, buildings or any other structures (excluding road crossings, outfalls, and bank protection structures) may not overhang or encroach beyond or within the top of bank. When illegal structures are identified, which cause public health and safety problems and/or damage to stream resources, appropriate jurisdiction should take actions to have them removed or modified.

III.B1. Design/Construction Related to Encroachments between the Top of Bank

The construction of clear span structures is preferred for new and replacement bridges. Bridge piers may be allowed if length of span makes clear span infeasible as determined by the local jurisdiction. If bridge piers are used they should be pier walls or large diameter (4') piers and if feasible not be placed in the active channel (see definition in Glossary).

III.B2. Design/Construction Related to Encroachments between the Top of Bank

If a structure must be placed in the active channel (See definition in Glossary) due to structural requirements, feasibility, or otherwise, a geomorphic, biological impacts, and/or hydraulic analysis will be required. SCVWD must be consulted and it will usually require a Streambed Alteration Agreement (SAA), Regional Water Board Water Quality Certification, US Army Corps authorization, and other state and federal approvals. For construction of new bridges, loss of riparian, or aquatic habitat beneath the bridge should be mitigated and located as close to the new bridge as possible.

III.B3. Design/Construction Related to Encroachments between the Top of Bank

Have footings and pile caps that are designed based on channel scour to prevent erosion. The appropriate foundation depth should be determined by a licensed engineer and should be at minimum three (3) feet below active channel invert.

If depth of waterway allows, clearance under the bridge should be a minimum 12 feet for maintenance access or access to the stream should be provided from road.

¹ Single Family Unit refers to both (a) new single family units on existing lots of record and (b) new single family remodels/rebuilds as defined by local regulations/policy/ guidelines.

²In addition to protecting this area, BMP's should be used that are reflective of Guidelines and Standards, for activities adjacent to this areas where discretionary review is used (i.e redirecting drainage away from the stream and no removal of native riparian plants.

³ A "structurally engineered system" is designed to provide slope stability. It may be a concrete-lined channel (U-frame or trapezoidal) or a stream substantially modified with riprap, gabions, structurally engineered sacked concrete, etc.

⁴ Area measured for Slope Stability Requirement to be measured based on location of Top of Bank, whether stream is on or off of property.

III.B4. Design/Construction Related to Encroachments between the Top of Bank

Structures must not reduce the active channel or active floodplains' conveyance area or redirect flow to the detriment of another bank or the river bed. Designs in SCVWD jurisdictional areas must be capable of conveying 100-year design flow and meet SCVWD's freeboard requirements explained in Design Guide.

EXCEPTION: If structure may reduce the conveyance area or encroach into freeboard area, a hydraulic analysis will be required to demonstrate no increase in erosive velocity or flood elevations. Hydraulic analysis must be in HECII or HEC-RAS format (small rural streams may utilize simpler hydraulic analysis methods) and must model debris loading on piers (3 times the pier width) and include a scour analysis. Analysis must be acceptable to SCVWD.

III.B5. Design/Construction Related to Encroachments between the Top of Bank

Encroachments in active channels and active floodplains must provide for fish passage and not impact aquatic life.

EXCEPTION: Consideration of exceptions for fisheries impacts must be coordinated with NMFS, USFWS, CDFG, RWQCB and would require biological impacts analysis as well as a Streambed Alteration Agreement.

III.C. Water Rights Related to Encroachments between the Top of Bank

SCVWD permits required for diversion of surface water (removal of water from stream) in areas where District releases water to stream. Construction-related water diversions must also conform to DFG water diversion guidelines, and are subject to a biological assessment.

EXCEPTION: Stream owners may have riparian rights to water in stream. Owners must file statements with State Water Resources Control Board.

V. EROSION PREVENTION AND REPAIR - PROPOSED GUIDELINES AND STANDARDS

Introduction: Any project that may impact a watercourse requires at minimum notification to DFG and the Water Quality Control Board, and may require an Streambed Alteration Agreement (SAA) and/or a water quality certification. Notification to the Corps, NOAA, and USFWS would depend on the activity and jurisdiction.)

IV.A. The potential for erosion needs to be evaluated and steps must be taken to eliminate or significantly reduce the chance of erosion for each proposed project. Where known, the root cause and extent of any erosion must be identified, described and reported to the appropriate agency or agencies prior to any attempts to repair erosion sites so that the actual source of the problem can be corrected. All repair project proposals should include an evaluation for the potential impacts on both downstream and upstream banks.

IV.B. Erosion Design/Construction

- a. Remediate source of erosion if onsite ie, roof downspouts or overbank drainage.
- b. Design of erosion protection must utilize the softest possible method appropriate for the stream characteristics. This would range from biotechnical (using watershed specific native vegetation) slope protection techniques to hybrid slope protection such as vegetative slope with rock boulders at toe.
- c. Use of hardscape materials like rock or concrete should be avoided. If used, hardscape elements will require project proponents to mitigate impacts by planting appropriate native riparian vegetation onsite or at another suitable location. Mitigation requirements will need approval by regulatory agencies.

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

- d. Retaining walls placed within the banks of the watercourse for development or erosion repair should be discouraged (Refer to Design Guide for options on erosion repair techniques and SCVWD Stream Maintenance Program).

EXCEPTION: In some instances, constructability may be used as justification to select another method. But it must be demonstrated that all softer methods have been evaluated and that any proposed method will reduce erosion and not cause erosion or negatively impact proper stream function in other areas.

IV.B2. Erosion Design/Construction: Cutoff walls or keys used for bank protection and erosion repairs should be designed anticipating scour depth. Must be a minimum of 3 feet deep.

IV.B3. Erosion Design/Construction:

- a. If erosion protection extends into active channel, evaluate post construction erosion potential due to change in stream dynamics caused by design. This can be done through hydraulic analysis in combination with tractive force or allowable velocities.
- b. Channel repairs should match the contour of the upstream and downstream banks to prevent constrictions and increased potential for erosion.
- c. Over-steepened banks should be laid back to a more stable configuration whenever possible.

EXCEPTION: Exceptions to hydraulic analysis requirements are allowed for small repairs (generally less than 20 feet in channel length) but review by the District and appropriate regulatory agencies will help determine whether smaller repairs have the potential to negatively impact the stream

IV.B4. Erosion Design/Construction: Evaluate flood potential if the repair method reduces stream cross-section or increases stream roughness a hydraulic analysis is required to demonstrate no increase in flood elevations (flooding on adjacent properties or reduction in minimum freeboard requirement). District should be consulted to ascertain whether there are channel reaches that have sufficient freeboard to accommodate vegetation without a full hydraulic analysis. This may help facilitate the use of vegetation and reduce the burden on homeowners. Hydraulic analysis must be in HECII or HEC-RAS format (exceptions may be made for small rural streams).

IV.B5. Erosion Design/Construction:

For construction, require implementation of erosion and sediment control measures. (See the "Erosion and Sediment Control Field Manual" developed by the Water Quality Control Board.)

Bare earthen slopes resulting from work must be treated to minimize erosion and prevent sediment from entering streams and other aquatic habitats. See Design Guide for recommendations for seed mixes to be used with/without native plants.

EXCEPTION: In general, all bare earth slopes must be treated to prevent erosion and control sediment. Exceptions can be allowed on bare earth slopes if it can be shown that the bank will not erode or runoff/sediment will not go to the stream or other aquatic habitats.

VI. GRADING

Introduction: In addition to the G&S's below, grading activities proposed below the top of bank and/or in the riparian corridor are subject to review and permit authorization from the Regional Water Quality Control Board, California Department of Fish and Game, and in most cases, the US Army Corps of Engineers and their Federal consulting agencies.

V.A. Drainage Related to Grading

Grading must address drainage. Drainage that avoids the need for outfalls, or reduces the size and/or number of outfalls is encouraged. See outfalls and drainage section and Design Guide for grading options next to streams.

EXCEPTION: See outfalls and drainage section for explanation of exceptions.

V.B. Construction Related to Grading

Grading adjacent to streams must be in compliance with NPDES general permit, where applicable, but must at a minimum provide for buffer areas and vegetated swales between the stream and graded areas. As appropriate, follow the SCVURPPP BMPs for construction activities, as contained in "Blueprint for a Clean Bay", and the "California Storm Water Best Management Practice Handbook for Construction."

In compliance with the statewide General Permit for Construction, grading activities that disturb one acre or more of land require the project proponent to prepare and have on site a Storm Water Pollution Prevention Plan. Contact the Regional Water Quality Control Board for details.

EXCEPTION: Exceptions are allowed per each municipality's drainage ordinance and NPDES permits. Exceptions from swale and BMP's are allowed if there are other run-off controls in place to protect water quality.

V.B.2. Construction Related to Grading

Recommend that fill be placed adjacent to dry side of the levee to minimize the levee height. (see example in Design Guide)

EXCEPTION: Fill not recommended if it causes drainage problems, disturbs wetlands, creates safety concerns, or impacts aesthetics of property.

V.B.3. Construction Related to Grading

Modifications to levees are allowed if a slope stability analysis is performed and any structure that provides support to the levee is designed with long-term life span (50-100 years).

EXCEPTION: Exceptions are allowed (although discouraged) to cuts in levees if for a temporary purpose and repair is completed by the beginning of October and a performance bond is used to assure completion.

V.B.4. Construction Related to Grading

Grading adjacent to drinking water reservoirs (Calero, Anderson, Lexington, Coyote, Almaden) must be acceptable to the District, which may require water quality monitoring depending on project's potential for adverse impacts. Consider protective measures in source water protection zones and sensitive areas of reservoir watersheds. See Section I. Erosion and sediment control measures are required to prevent sediment contribution from the construction area to the reservoir.

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

VII. OUTFALLS, PUMP STATIONS AND SITE DRAINAGE

Introduction: A discharge to a watercourse requires notification to DFG, RWQCB, and Corps.

VI.A. Site Drainage

1. Runoff must not be directed across stream watershed boundaries as a result of grading or through storm drain system design.
2. Direct site drainage through vegetated areas or stilling basins prior to discharge or collection in storm drain system. No concentrated overbank drainage is allowed (e.g. roof overhangs or downspouts). If overbank drainage will occur, use vegetative buffer strips or direct drainage to landscaped areas. Follow Efficient Water Use Landscape Ordinances to minimize runoff.

VI.B. Outfalls

Prefer that there are no new outfalls, However, if there is no way to avoid new outfalls then the following applies:

1. Minimize the number of outfalls.
2. New channel outfalls must conform to the local municipality's drainage master plan.
3. Slope protection for outfalls must meet SCVWD minimum engineering standards using softer slope protection methods if possible (see Design Guide). Outfalls should not overhang the bank or bed as this can lead to excessive channel erosion.
4. Minimum diameter is 12 inches and discharge must be oriented downstream and pipe invert should be at least 2 feet above the stream bottom in areas where sediment deposition is anticipated.
5. Flap gates will be installed when 100-year water surface is above adjacent ground at inlet. Outfalls with flap gates require dormers or similar designs to isolate the flap gate and keep them out of flow area (see Design Guide).
6. Outfalls on federal projects (Coyote Creek downstream of Montague Expressway, Guadalupe River downstream of Blossom Hill, Llagas Creek downstream of Buena Vista, and Uvas Creek downstream of Santa Teresa) must be submitted to SCVWD to coordinate federal review and approval.
7. In conjunction with new or redevelopment, abandoned outfall pipes and slope protection must be removed and the stream bank restored to similar condition existing upstream and downstream of site.
8. Permits are needed from Dept of Fish and Game, U.S. Army Corps, and RWQCB. See Design Guide.

VI.B2. Outfalls Discharge must not pollute receiving water or cause channel erosion. Non storm water discharges not already subject to existing NPDES requirement will be subject to approval and permit from RWQCB.

VI.C1. Storm Drainage Pump Stations

Limit pump discharges to the extent feasible during peak flows to minimize potential impacts from flooding. When a development requires a storm drain pump station that discharges to a stream, require discharge management plan that addresses pump operation during high water (flood) events. See Design Guide for list of criteria needed to prepare a discharge management plan.

VIII. CHANNELIZATION

VII.A. Undergrounding Creeks

Watercourses must not be buried or put into culverts. The exception for culverts only is for road crossings though they should be clear-span whenever possible

If culverts are used they must carry the bankfull flow, accommodate a modified floodplain drainage and where feasible accommodate a 100 year flow rate. This is accomplished with multi-stage culverts with cross-sections designed to carry different flows. Regional debris or sediment basins that will be owned or maintained by SCVWD must be designed for 50-year sediment capacity.

Filling creeks to accommodate grading and construction for developments is not permissible until impact avoidance and minimization efforts are maximized. In the event that impacts are determined to be unavoidable, adequate mitigation must be proposed.

EXCEPTION: CEQA document must be prepared to provide mitigation for impacts of burying stream and appropriate regulatory agency permits, such as a Streambed Alteration Agreement (SAA) must be obtained. The city/county storm drain system, whether in pipes or roadside ditches, is not included in this standard.

VII.B. Open Channel Modification

For modifications to open channels the following applies:

1. The design must consider stream dynamics and induced flooding. A hydraulic analysis as described in Section II acceptable to SCVWD will be required.
2. Recommend restoration of natural stream processes if possible.
3. Impacts to habitat must be avoided or mitigated.
4. Stream conveyance area must be designed for 100-year design flow with freeboard, if along a SCVWD jurisdictional area.
5. SCVWD will request dedication of right-of-way for stream modification projects, including an 18-22 foot wide maintenance area.
6. Notification and securing of appropriate state and regulatory permits, such as a SAA.

EXCEPTION: If active channel and floodplain will not contain the design 100-year flow, then the design can be based on existing capacity with the allowance for providing additional active floodplain width in the future to contain the design 100-year flow. Streams to be dedicated to SCVWD must include an 18-22 foot wide maintenance area. In addition, flood capacity less than the 100-year flow is acceptable if the community in the flood zone is willing to accept less protection and ongoing flood insurance requirements.

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

IX. UTILITY ENCROACHMENTS

Introduction: In addition to the G&S's below, such encroachments may require other State and Federal permits such as a Streambed Alteration Agreement (SAA).

A. Longitudinal (parallel) encroachments. Longitudinal (parallel) encroachments are not allowed in SCVWD right-of-way.

EXCEPTION: Longitudinal encroachments are discouraged and may only be considered with demonstration that all other alternatives have been considered, there is a benefit to SCVWD and future removal will not be necessary considering SCVWD interests. No water pipelines may be installed within a levee.

B. Utilities Crossings

1. Utility pipes or conduits must go under the stream or be in or attached to the downstream face of a bridge and must go under any levees. Provide locations for future utility crossings in design of new or replacement bridges.
2. Any utilities under the stream must be concrete encased or placed in sleeve.
3. Borings must be 5 feet below lined channels and 8 feet below unlined channels. Recommend under-channel utilities be installed by directional bore.
4. For cut and cover, clearance must be a minimum of three (3) feet and based on scour depth and replacement of fill in levees is subject to SCVWD specifications.
5. Any aerial utility crossings (e.g. PG&E and phone lines) meet minimum OSHA vertical clearance criteria. (22 feet for non-power lines, 26 feet for power lines less than 600 volts, 30 feet for power lines from 600 to 50,000 volts) to allow safe use of maintenance equipment.
6. Crossings of treated (potable and recycled) water pipelines must meet Department of Health Services clearance requirements. (see Design Guide for standards for crossings of SCVWD pipelines and City/ County requirements for other pipeline clearances)
7. Directional drilling projects using bentonite or other lubricants to go beneath or near streams and aquatic habitats will require development of a fracout prevention and response plan describing how water quality will be protected in the event of fracout

EXCEPTIONS: If not feasible to go under or attach to the downstream face of bridge, the utility crossing may be located on the upstream face of bridge if the design would not catch debris, would be capable of surviving impacts from floating debris in high flow and would not hinder emergency debris removal or maintenance operations.

IX. TRAIL CONSTRUCTION

IX.A. Design/Construction Related to Trail Construction

Joint Use Pedestrian/Bicycle Paths are encouraged along creeks. Trails must be located so as to avoid impacts to the stream and riparian areas. Paved multi use trails should be placed so as to maximize distance from stream and riparian areas. Construction must not require deep excavation within tree root zones.

- Minimize trail alignments and footprints and locate them at a distance from streams that will best protect stream and riparian resources.
- Trail projects will not result in negative impacts to riparian areas or streams.

EXCEPTION: Exceptions may be allowed if impacts are addressed and determined to be unavoidable in a CEQA document and approved by appropriate regulatory agencies.

IX.A2. Design/Construction Related to Trail Construction

Design must be consistent with the Santa Clara County Parks and Recreation Department's Interjurisdictional Trail Guidelines (Appendix X). Night lighting of trails along riparian corridors should be avoided.

EXCEPTION: Exceptions may be allowed if impacts are addressed and mitigated in a CEQA document and approved by appropriate regulatory agencies.

IX.A3. Design/Construction Related to Trail Construction

Memorial plaques along trail corridors on SCVWD right of way are subject to jurisdiction review and approval.

EXCEPTION: With appropriate planning and community contribution, a memorial area recognizing community members will be considered.

IX.B. Trails on SCVWD right of way require an agreement that defines maintenance, management, and liability responsibilities of facilities.

X. SEPTIC SYSTEMS

X.A. Design Of Septic Systems

Follow requirements of RWQCB or Santa Clara County as applicable including: Leach field setback 100' from top of bank, 50' from swale, 200' from high water mark of reservoir, prohibited in 10 year floodplain or areas observed to flood from field observations. Consult with SCVWD to determine whether land feature is an active floodplain or swale and assist in determining high water marks at reservoirs.

EXCEPTION: Exceptions or variances are allowed per RWQCB or Santa Clara County requirements. Please note that since 10 year floodplain maps do not exist, any area of historical flooding should be assumed to be in the 10-year floodplain.

XI. Trash Control and Removal

XI.A. Locate trash bins away from streams and follow other measures outlined in NPDES guidance.

DESIGN GUIDES FOR GUIDELINES AND STANDARDS

APPENDIX B

XII. PROTECTION OF WATER QUALITY

XII.A. Water Quality

Cities, County, and SCVWD should comply with applicable provisions of stormwater permits, such as C.3.i. of SCVURPPP's stormwater permit (Water Board Order No. 01-119) and/or Stormwater Phase II regulations. Implement Infiltration Guidelines in the SCVRPPP C.3 handbook. Retention ponds and infiltration trenches that do not meet guidelines will be reviewed by the SCVWD and the Regional Water Quality Control Board.

XIII. GROUNDWATER PROTECTION

XIII.A. Groundwater

Require groundwater resource assessments (See Design Guide) when potential for significant groundwater supply or groundwater quality impacts. The changes in land use where these impacts may be significant are anticipated to be subject to CEQA

XIII.A2 Groundwater

To protect Santa Clara County groundwater recharge areas, new high risk activities defined by DHS should be prohibited in well head protection areas as designated on District GIS Maps. Manage (limit, monitor and implement best management practices) existing high-risk activities in recharge areas of basin (District GIS maps area available).

XIII.A3. Groundwater

The owners must show any existing wells on the plans. The wells must be properly registered with the SCVWD and either be maintained or destroyed in accordance with SCVWD standards. Property owners or their representative must contact the SCVWD's Wells and Water Production Unit for more information regarding well permits and registration or destruction of any wells.

XIV. FLOOD PROTECTION

XIV.A. Flooding Protection

For development within special flood hazard zones A, AE, AH, AO, the project must comply with FEMA requirements as implemented by the City or County. Consider when and how to recommend increased levels of protection as described in Dept of Water Resources Model Floodplain Ordinance, recommendations of California Floodplain Management Task Force (Dec 2002), and SCVWD's Community Rating System Program.

EXCEPTION: Exceptions or variances allowed per City or County Ordinances, Policies, or other implementation documents.

XIV.A2. Flooding Protection

In zone A (areas where base flood elevations have not been determined) require a hydraulic analysis to determine the base flood elevation for subdivisions greater than 5 acres or 50 lots whichever is lesser. For other construction and substantial improvements, utilize any other available base flood elevation data as criteria for meeting NFIP requirements. Refer to FEMA publication "Managing Floodplain Development in Approximate Zone A Areas".

EXCEPTION: Not required for existing homes/non-substantial improvements.

XIV.A3. Flooding Protection

If a proposed project will result in a significant increase in land use density¹ (i.e. an agricultural area changes to residential or industrial), the local jurisdiction should work cooperatively with SCVWD to determine (1) what information is needed on a project specific basis to evaluate potential increases in flood flows and (2) what mitigation measures can be implemented to mitigate for impacts to flood conveyance capacity and/or flood protection.

For example, in terms of information and analysis needs, a hydrologic analysis may be needed to identify the impacts (water surface increases cannot exceed 0.1 foot) so that flooding will not increase and improved flood protection facilities will maintain the minimum freeboard requirements). SCVWD will provide technical assistance in the form of existing hydraulic model runs where available, and hydrologic information.

In terms of possible mitigation options, detention basins may be used to mitigate the impact, but they must be properly designed (see Design Guide) and maintained. Design should be in concert with hydromodification facilities and consider regional solutions. SCVWD can also provide technical assistance regarding mitigation actions.

XIV.A4. Flood Protection

For major developments near streams subject to CEQA review that are compatible with the General Plan utilized for developing District hydrology and FEMA floodmaps, development must not, increase site runoff so as to increase depth (0.1 foot increase in water surface) or lateral extent of flooding or increase discharge in local streams as outlined in the storm water permit for the SCVURPPP. A hydraulic analysis prepared by registered civil engineer demonstrating that any flood impacts will not be created is required.

¹ The District's hydrology and design flood flow rates were developed in the late 1970's using the land use designations shown on General Plans in place at that time. These flow rates have recently been updated, but the impact has not yet been analyzed. In general, the changes in land use that could significantly impact runoff quantities are typically those outside the urban service area, in south county and those developments where the change in land use will be subject to CEQA review. The impacts to be addressed are to flood conveyance facilities designed using 1978 (or prior) flow rates and built to provide 100 year flood protection and impacts to flood prone areas which were also determined using the 1978 flow rates.