

LOWER SILVER CREEK WATERSHED PROJECT

BEST MANAGEMENT PRACTICES

**Santa Clara Valley Water District
Coyote Creek Watershed Program
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Introduction

Best management practices (BMPs) are routine methods, measures, or practices that avoid, reduce or minimize a project's effects on various resources. BMPs include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, and after activities to reduce or eliminate environmental effects. BMPs are part of the project design and/or constitute routine procedures of the District.

The BMPs included in this document will be included into work plans for Lower Silver Creek, as appropriate. This document is an integration of BMPs listed in Table 3 of the *Lower Silver Creek Watershed Project, 1983 Recommended Plan as Modified by the 1998 Plan Update Final Initial Study/Negative Declaration*, December 2000 (SCH # 2000102034) and selected BMPs from the District's Final Best Management Practices Manual for the San Francisco Bay Region Multi-Year Stream Maintenance Program (BMP Manual) (Appendix E), Dated December 2001, currently under review.

The BMPs listed here are accepted standards of practice and are included in Lower Silver Creek Watershed Project to reduce the construction impacts to less-than-significant levels. The BMPs further reduce less-than-significant impacts caused by the changes to even lower impact levels as part of the District's commitment to environmental stewardship. In addition to the BMPs listed herein, work can also be performed using BMPs as listed in the *California Storm Water Best Management Practice Handbook for Construction Practices* (Camp, Dresser, McKee et al., 1993). Additional sources for BMPs are the *Erosion and Sediment Control Field Manual* published by the SF RWQCB (1999), the Bay Area Stormwater Management Agencies Association: Operational Permits Committee Flood Control Maintenance Manual (BASMAA/OPC 2000), the District's standard provisions for construction activities, and the Bay Area Air Quality Management District's CEQA Guidelines (BAAQMD, 1999).

The BMPs listed and the BMPs contained in the referenced documents, should be viewed as a menu of options available to District personnel and contractors to select from as being the most appropriate for a particular location and set of problems. In addition, the most current District protocols will be used. Examples of protocols that may be periodically updated are the District's breeding bird survey, sediment sampling plans, water quality testing and monitoring plans. Monitoring and reporting are elements of the District's Best Management Plan.

1. Water Quality		
The District shall implement measures to protect water quality and to reduce short-term increases in turbidity.		
BMP	Title	Description
1.1	Conduct Work During Low Flow Periods	Work instream shall be performed from the spring to fall months when low to no flows are present in the channels.
1.2	Dewater/ Bypass Water at Non-tidal Sites	<p>If water is present at the work site, diversion structures (which can be made of sheet piles, inflatable dams, sand bags, river run gravel, or other similar materials) shall be constructed, as needed, to isolate the work area and avoid or minimize downstream water quality impact. Depending on the channel configuration, water is allowed to either continue flowing downstream or is diverted around the work site in a pipe (pumped or gravity) or open channel.</p> <ol style="list-style-type: none"> 1. All water shall be discharged in a non-erosive manner (e.g., gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices, etc.). 2. Sumps or basins may also be used to collect water, where appropriate (e.g., in channels with low flows). 3. Where feasible and appropriate, diversion structures shall be installed on concrete sections of the channels or constructed of materials other than imported earthen fill. Earth fill cannot be used for cofferdams in non-tidal areas. 4. In conjunction with diversion structures, pumps or gravity-fed pipe systems are used to de-water sites. In such cases, or if high levels of groundwater are encountered, water is pumped outside of the work area into infiltration basins made from straw bales or silt fences for example, or into a fabric bag which is capable of collecting silt as clean water filters out from all sides.
1.3	Avoid Erosion When Restoring Flows	<p>All temporary diversion structures shall be removed within 7 days of completion of work. Flows shall be restored in a manner that minimizes erosion.</p> <ol style="list-style-type: none"> 1. When diversion structures are removed, to the extent practicable, the ponded flows will be directed into the low-flow channel within the work site to minimize downstream water quality impacts. 2. Flows shall gradually be restored to the channel to avoid a surge of water that would cause erosion or scouring. 3. Passed flows can be slowly reintroduced into the dewatered area by leaving a silt barrier in place to allow water to slow and drop sediment to the extent possible.

<p>1.4</p>	<p>Erosion and Sediment Control Measures</p>	<p>Erosion control methods shall be used as appropriate to control sediment and minimize water quality impacts. The District shall prevent erosion on steep slopes by using erosion control material according to manufacturer’s specifications. Appropriate measures include, but are not limited to, the following:</p> <ol style="list-style-type: none"> 1. Silt Fences 2. Straw Bale Barriers 3. Brush or Rock Filters 4. Storm Drain Inlet Protection 5. Sediment Traps 6. Sediment Basins 7. Erosion Control Blankets and Mats 8. Soil Stabilization i.e.: Tackified straw with seed, jute or geotextile blankets, etc. <p>The following Bay Area Stormwater Management Agency Association BMPs provide guidance and specifications as to implementation of the erosion control measures described:</p> <ol style="list-style-type: none"> 1. SC-3. Sediment Basins 2. SC-4. Straw or Sand Bag Barriers 3. SC-5. Sediment Traps 4. SC-6. Silt Fences 5. SS-1. Erosion Control Blankets, Mats, and Geotextiles 6. VR-1. Brush or Rock Filters 7. VR-2. Check Dams 8. VR-4b. Temporary Outlet Protection 9. VR-4b. Storm Drain Inlet Protection 10. WD-1. Earth Dike 11. WD-1. Slope Drain 12. WD-3. Temporary Drains and Swales
<p>1.5</p>	<p>Pump/Generator Set Operations and Maintenance</p>	<p>Pumps and generators shall be maintained and operated in a manner that minimizes impacts to water quality and aquatic species.</p> <ol style="list-style-type: none"> 1. Pumps and generators shall be maintained according to manufacturers’ specifications to regulate flows to prevent dryback or washout conditions. 2. Pumps shall be operated and monitored to prevent low water conditions, which could pump muddy bottom water, or high water conditions, which creates ponding. 3. Pump intakes shall be screened to prevent uptake of fish and other vertebrates.

<p>1.6</p>	<p>Handle Sediments So As to Minimize Water Quality Impacts</p>	<p>Sediments shall be stored and transported in a manner that minimizes water quality impacts.</p> <ol style="list-style-type: none"> 1. Wet sediments may be stockpiled outside of a live stream or may be stockpiled within a dewatered stream so water can drain or evaporate before removal. This measure applies to saturated, not damp, sediments and depends upon the availability of a stockpile site. 2. For those stockpiles located outside the channel, water draining from them will not be allowed to flow back into the creek or into local storm drains that enter the creek, unless water quality protection measures recommended by the RWQCB are implemented. 3. Trucks may be lined with an impervious material (e.g., plastic), or the tail gate blocked with dry dirt or hay bales, for example, or trucks may drain excess water by slightly tilting their loads and allowing the water to drain out. 4. Water shall not drain directly into channels (outside of the work area) or onto city streets without providing water quality control measures 5. Streets shall be cleaned of mud and/or dirt by street sweeping, as necessary, and not by hosing down the street.
<p>1.7</p>	<p>Soil Stockpiles</p>	<p>If soil is to be stockpiled, no run-off will be allowed to flow back to creek.</p>
<p>1.8</p>	<p>Concrete Use Near Waterways</p>	<p>Concrete that has not been cured is alkaline and can increase the pH of the water; fresh concrete will be isolated until it no longer poses a threat to water quality.</p> <ol style="list-style-type: none"> 1. Wet sacked concrete shall be excluded from the wetted channel for a period of two weeks after installation. During that time, the wet sacked concrete shall be kept moist (such as covering with wet blanket) and runoff from the wet sacked concrete shall not be allowed to enter a live stream. 2. Poured concrete shall be excluded from the wetted channel for a period of two weeks after it is poured. During that time, the poured concrete shall be kept moist, and runoff from the wet concrete shall not be allowed to enter a live stream. Commercial sealants (e.g., Deep Seal, Elasto-Deck Reservoir Grade) may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If a sealant is used, water shall be excluded from the site until the sealant is dry. 3. Dry sacked concrete shall be excluded from the wetted channel for a period of 30 days after installation. Each day during that time, it shall be watered down without causing runoff to the live stream. 4. Designate an area outside of the channel and floodplain to clean out concrete transit vehicles.

<p>1.9</p>	<p>Prevent Erosion Downstream of Bank Protection Sites</p>	<p>Increased water velocity at bank protection sites may increase erosion downstream. Bank stabilization site design will assess hydraulic effects immediately upstream and downstream of the work area. If the hardscape revetment would cause significant increase in erosion potential, downstream energy dissipation features such as pools or grade control structures shall be considered in the design. If the evaluation identifies possible downstream impacts, proactive protection of these areas shall be provided. Such measures include, but are not limited to, coir logs, riparian enhancement planting, strategic placement of rock, and flow deflectors.</p>
<p>1.10</p>	<p>Water Quality Monitoring</p>	<p>The <u>Final Self-Monitoring Program Water Quality Sampling Plan for the San Francisco Bay Region Multi-Year Stream Maintenance Program (Plan)</u> will be implemented.</p>

2. Vegetation		
The District shall strive to minimize vegetation removal and shall revegetate sites as appropriate to provide erosion control and restore riparian habitat value.		
BMP	Title	Description
2.1	Native Trees	Existing mature native trees would be relocated where feasible. This would minimize the time needed for each reach to regain full habitat value and function for riparian birds.
2.2	Mulching	<p>Bark and other wood products shall be used as needed to prevent erosion of bare soil after construction is completed.</p> <ol style="list-style-type: none"> 1. All newly planted and/or bare soil (excluding bare channel bottoms) in construction areas shall have a minimum 3" thick layer of bark or mulch installed except when the area is seeded. In that case, the thickness of the mulch layer shall not exceed ½ inch. Mulch should not be added within active creek flow area to avoid being washed downstream. 2. This bark or mulch can be ground-up woody products and/or leaves from either native material or from soil suppliers. 3. No non-native material that has allelopathic compounds (<i>Eucalyptus</i> spp.) or weed seeds shall be used as mulch in areas where it has the potential to inhibit native revegetation. Such areas would include floodplains and revegetation sites. 4. Any material imported from outside the District that is to be used as mulch will be certified as weed-free to the extent that certification is possible.
2.3	Seeding	<p>For banks that are scraped during sediment removal, an erosion control seed mix will be used.</p> <ol style="list-style-type: none"> 1. A typical mix may consist of California native grasses (e.g., <i>Hordeum brachyantherum</i>, <i>Elymus glaucus</i> 'Berkeley,' <i>Bromus carinatus</i>) on slopes flatter than 3:1. <i>Vulpia microstachyes</i> may be added to the mix where slopes are steeper (e.g., 2:1). 2. Another seed mix may be of 'Escort' sterile wheat to provide a year's worth of protection. This mix is used only if further work is required the following year. 3. Temporary earthen access roads will be seeded when site and horticultural conditions are suitable.

3. Wildlife and Fisheries		
The District shall implement measures to minimize impacts to native species, especially special-status and riparian dependent species.		
BMP	Title	Description
3.1	Minimize Impacts to Special-status Plants and Animals Via Site Assessments and Avoidance Measures	<p>To avoid and minimize impacts to special-status species, such as California red-legged frog, western pond turtles and burrowing owls, construction areas where such species are likely to occur because suitable habitat exists, will be visited by a biologist or qualified personnel under the direction of a biologist. The site surveys will be no more than 30 days prior to the start of construction or during the time of the year the species is expected to occur on-site. Information regarding the presence of special-status species on a particular creek reach shall be based on the District’s GIS database and professional experience of qualified staff.</p> <ol style="list-style-type: none"> 1. The District shall use its GIS database to identify potential special-status plant and animal habitats. All projects falling within sensitive habitats will be discussed with biological staff to identify avoidance and minimization measures. 2. All populations detected during the surveys will be assessed and mapped. This information will be entered into the District’s GIS system for future management purpose. 3. If construction activities are scheduled in the vicinity of extant populations, qualified personnel under the direction of a biologist will clearly identify the populations on site and stake or flag a buffer zone around the population in which activities are to be avoided. 4. If sensitive animals such as western pond turtles or California red-legged frogs are found, a qualified biologist will remove them to suitable habitat outside of the project limits. Moving animals will be consistent with applicable Fish and Wildlife Service and Fish and Game permits. 5. The results of all sensitive species surveys will be reported to the Fish and Wildlife Service, National Marine Fisheries Service and the California Department of Fish and Game in an annual report. All surveys will be reported to the CNDDDB. 6. The District will develop and distribute informational pamphlets entitled “Sensitive Plants, Wildlife, and Fish at your Worksite.” These pamphlets are designed to inform staff about sensitive species and environmental protocols and procedures.
3.2	Minimize Impacts to Nesting Birds Via Site Assessments and Avoidance Measures	<p>District personnel shall conduct construction work in a manner consistent with the protocols established by the most current version of the District’s Nesting Migratory Bird Procedure:</p> <ol style="list-style-type: none"> 1. Project areas will be checked by qualified personnel under the direction of biologists for nesting birds prior to starting work if the work has the potential to impact nesting birds. 2. If nesting birds are found, implementation of a project may be delayed until after nesting is completed. Work may occur if an adequate buffer, as determined by a qualified biologist, can be established between the maintenance activity and nests.

3.4	Mitten Crab Control Measures	Sediment from the San Francisco Bay Watershed, including that for reuse, will not be removed to areas any farther south than Coyote Valley or outside of the San Francisco Bay watershed unless previously authorized by CDFG. This measure is to avoid transporting mitten crabs, a highly invasive, exotic species, to areas where they are not currently found.
3.5	Salvage Native Aquatic Vertebrates from Dewatered Channels	Prior to the start of work or during the installation of water diversion structures, native aquatic vertebrates will be captured in the work area and transferred to another reach as determined by a qualified biologist (refer to Fish Relocation Guidelines) Aquatic invertebrates will not be transferred (other than incidental catches) because of their anticipated abundance and colonization after completion of the repair work.
3.6	Remove Temporary Fills as Appropriate	Temporary fills, such as for access ramps, diversion structures, or cofferdams, shall be completely removed upon finishing the work.
3.7	Minimize Disturbance to Wildlife	Construction Equipment access and staging will remain within the reach currently under construction. A buffer zone will be established to minimize disturbance to wildlife in the adjacent reach.

4. Land Use and Public Safety		
The District shall minimize disturbance to the public and ensure public safety.		
BMP	Title	Description
4.1	Minimize Disturbances to Surrounding Neighborhoods	<p>The District shall implement construction practices that minimize disturbances to neighborhoods surrounding work sites.</p> <ol style="list-style-type: none"> 1. In general, work shall be conducted during normal working hours. Extending weekday hours and working weekends may be necessary to complete some projects. 2. Internal combustion engines shall be equipped with adequate mufflers. 3. Excessive idling of vehicles will be prohibited. 4. Levee traffic shall be limited to a speed of 15 miles per hour. 5. Access roads shall be watered as needed to control dust. 6. Dry sediment shall be wetted down or covered as needed to control dust during transport.
4.2	Sanitary/ Septic Waste Management	Temporary sanitary facilities shall be located on jobs that last multiple days. All temporary sanitary facilities shall be placed outside of the creek channel and floodplain.
4.3	Vehicle and Equipment Cleaning	Construction vehicles shall be washed only at District approved area . No washing of vehicles shall occur at job sites.
4.5	Work Site Solid Waste Management	District employees shall clean the work site before leaving by removing all litter and construction related materials. The District's maintenance crews shall be responsible for all debris incurred as a result of construction and for cleaning up dumped material.
4.6	Implement Public Safety Measures	<p>The District shall implement public safety measures during maintenance:</p> <ol style="list-style-type: none"> 1. Construction signs shall be posted at job sites warning the public of construction work and to exercise caution. 2. When necessary, a person shall be provided for traffic control. 3. If needed, a lane shall be blocked off to allow for trucks to pull into and out of the access points. 4. Where work is proposed adjacent to a recreational trail, warning signs shall be posted several feet beyond the limits of work.

5. Air Quality		
The District shall implement dust control measures at work sites to protect air quality and minimize effects on adjacent neighborhoods.		
BMP	Title	Description
5.1	BAAQMD Basic Dust Control Measures	<p>The District shall implement BAAQMD Basic Control Measures at work sites less than four acres in size. Current measures stipulated by the BAAQMD CEQA Guidelines include the following:</p> <ol style="list-style-type: none"> 1. Active maintenance areas shall be watered at least twice per day unless soils are already sufficiently moist to avoid dust. 2. Trucks hauling sediments and other loose material shall be covered or shall maintain at least two feet of freeboard. 3. Tailgates of trucks shall be sealed. 4. Trucks shall be brushed down before leaving the maintenance site. 5. Unpaved access roads and staging areas that are being used for the maintenance activity shall be watered three times daily, or non-toxic soil stabilizers shall be applied to control dust generation. 6. Paved maintenance site access roads shall be swept when visible soil material is carried onto the roadway. 7. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
5.2	BAAQMD Enhanced Dust Control Measures	<p>For work sites greater than four acres, the District shall implement BAAQMD Enhanced Dust Control Measures. These measures include the following:</p> <ol style="list-style-type: none"> 1. Inactive areas shall be sprayed with soil stabilizer or seeded. 2. Exposed stockpiles shall be watered, enclosed, covered, or sprayed with soil stabilizers. 3. Traffic speeds shall be limited to 15 mph. 4. Sandbags or other bank protections shall be installed to prevent silt runoff to roadways. 5. Vegetation in disturbed areas shall be replanted as soon as horticulturally appropriate. For example, plant material may not be ready as soon as the job is done (e.g. willow cuttings have to be collected during winter dormancy). 6. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
5.3	Avoid Stockpiling Potentially Odorous Sediments	<p>Some of the excavation sites will have sediment that is rich in organic matter decaying in an anaerobic conditions, which generates assorted malodorous gases, such as reduced sulfur compounds. These sediments shall be handled in a manner that avoids impacting sensitive receptors.</p> <ol style="list-style-type: none"> 1. The District shall avoid stockpiling potentially odorous sediments within 1000 feet of residential areas or other odor sensitive land uses. 2. Where appropriate, odorous stockpiles shall be disposed of at an appropriate landfill.

6. Hazardous Materials		
The District shall implement hazardous materials protocols to protect environmental quality and public safety.		
BMP	Title	Description
6.1	Spill Prevention	<p>The District shall prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.</p> <ol style="list-style-type: none">1. District field personnel will be appropriately trained in spill prevention, hazardous material control, and clean-up of accidental spills.2. No fueling, repair, cleaning, maintenance, or vehicle washing shall be performed in the creek channel or in areas at the top of the channel bank that may flow into the creek channel.

6.2	Spill Kit Location	<p>Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations).</p> <ol style="list-style-type: none"> 1. Prior to entering the work site, all field personnel will know the location of spill kits on crew trucks and at other locations within District facilities. 2. All field personnel will be advised of these locations and trained in their appropriate use.
6.3	Hazardous Materials Management	<p>The District shall implement measures to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means when removing sediments from the streams.</p> <ol style="list-style-type: none"> 1. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. 2. The discharge of any hazardous or non-hazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations shall be conducted in accordance with applicable State and federal regulations. 3. All handling and disposal of sediments shall be performed in accordance with the WDR issued by the RWQCB.
6.4	Vehicle and Equipment Fueling	<p>No fueling shall be done in the stream channel or immediate floodplain, unless equipment stationed in these locations is not readily relocated i.e., pumps, generators. For stationary equipment that must be fueled on site, containment will be provided in such a manner that any accidental spill of fuel will not be able to enter the water or contaminate sediments that may come in contact with water. Any equipment that is readily moved out of the channel will not be fueled in the channel or immediate floodplain. All fueling done at the job site will provide containment to the degree that any spill will be unable to enter the channel or damage stream vegetation .</p>
6.5	Vehicle and Equipment Maintenance	<p>No equipment servicing shall be done in the stream channel or immediate floodplain, unless equipment stationed in these locations cannot be readily relocated i.e., pumps, generators.</p> <ol style="list-style-type: none"> 1. Any equipment that can be readily moved out of the channel will not be serviced in the channel or immediate floodplain. 2. All servicing of equipment done at the job site will provide containment to the degree that any spill will be unable to enter the channel or damage stream vegetation. 3. If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in the channel or floodplain. 4. If emergency repairs are required, containment will be provided equivalent to that done for fueling or servicing.
6.6	Employee/ Contractor Training	<p>All appropriate District staff and contractors shall receive training on Lower Silver Creek Project BMPs.</p>

7. Cultural Resources		
The District will protect cultural resources.		
BMP	Title	Description
7.1	Discovery of Cultural Remains or Historic Artifacts	<p>Work in areas where remains or artifacts are found will be restricted or stopped until proper protocols are met.</p> <ol style="list-style-type: none"> 1. Work at the location of the find will halt immediately within 30 feet of the find. If an archaeologist is not present at the time of the discovery, SCVWD will contact an archaeologist for identification and CEQA evaluation. 2. If the find is not significant, construction can continue. The archaeologist will prepare a brief informal memo/letter that describes and assesses the significance of the resource, including a discussion of the methods used to determine significance for the find. 3. If the find appears significant, the archaeologist will determine if the resource can be avoided and will detail avoidance procedures. 4. If the resource cannot be avoided, the archaeologist will develop within 48 hours an Action Plan to avoid or minimize impacts. The SCVWD field crew will not proceed until the Action Plan is approved by the SCVWD Watershed Manager. 5. The recovery effort will be detailed in a report prepared by the archaeologist in accordance with current archaeological standards. Any non-grave artifacts will be placed with an appropriate repository. 6. In the event of discovery of human remains, the field crew supervisor shall take immediate steps to secure and protect such remains. 7. The Santa Clara County Coroner shall be notified and informed of the find and of any efforts made to identify the remains as Native American. If the remains are determined to be from a prehistoric Native American, the medical examiner is responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours of notification. The NAHC then designates and notifies within 24 hours a <i>Most Likely Descendant</i> (MLD). The MLD has 24 hours to consult and provide recommendations for the treatment or disposition, with proper dignity, of the human remains and grave goods. 8. Preservation in situ is the preferred option, and if the District can do this without incurring potential future disturbance, then the MLD will usually recommend no further action. The remains and artifacts will be documented and the find location carefully backfilled to avoid further disturbance. 9. Human remains or cultural items exposed during maintenance that are subject to further disturbance will be exhumed archaeologically at the discretion of the MLD and reburied with the concurrence of the MLD in a place mutually agreed upon by all parties.