

Create and Maintain Shaded Fuel Break along Pescadero Creek and Wurr Roads

Memorial County Park Wildfire Hazard Risk Reduction Project



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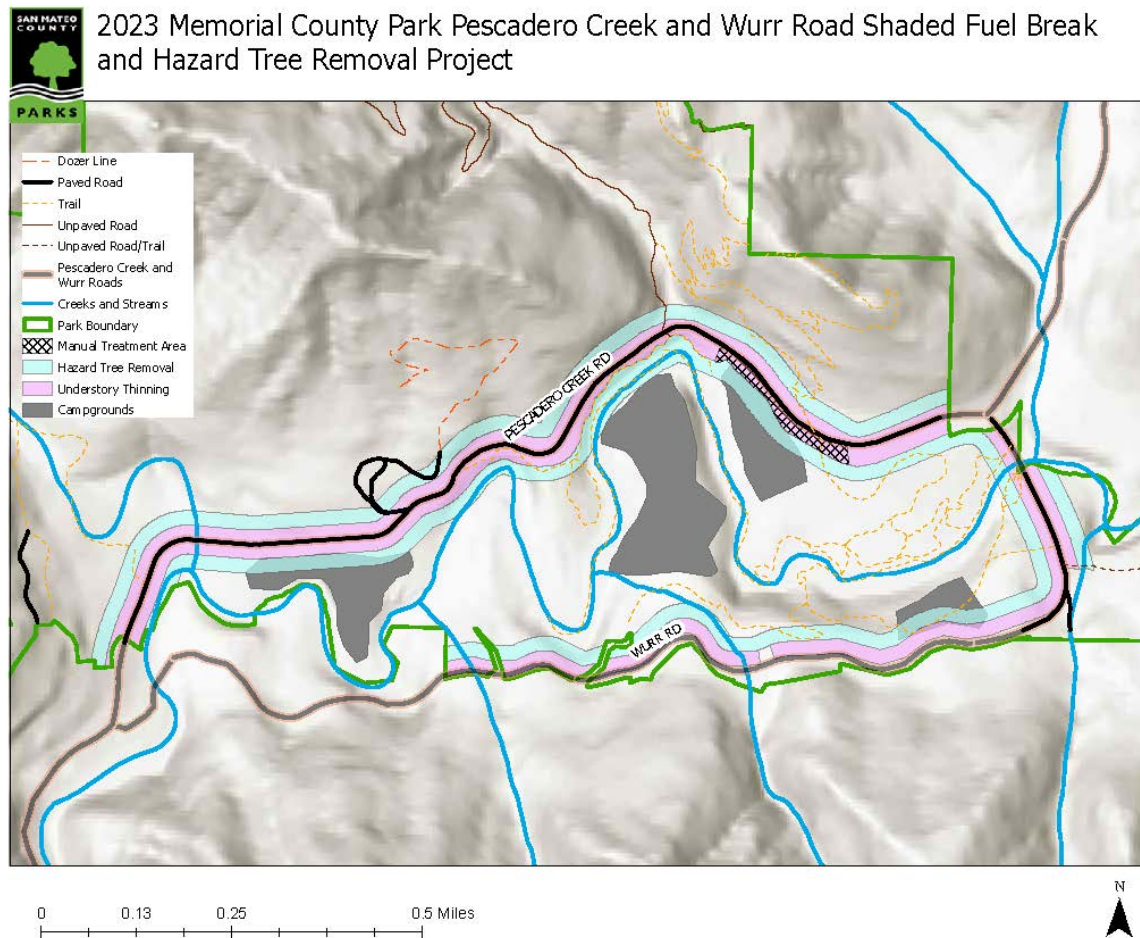
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Project Map



Scope of Work

Rationale

The Memorial County Park shaded fuel break project along Pescadero Creek and Wurr Roads (Project) is a high priority project for the San Mateo County Parks Department (Parks Department) due to the existing high density wildfire fuel load and location of the Project area in proximity to the rural community of Loma Mar. The Project Area is also within High Fire Hazard Area and near a Wildland Urban Interface (WUI) area. Within the Parks Department's 5-year Fuel Management Program, this project was assessed and ranked using a 14-criteria system for considering project benefits, feasibility, and priority and was determined to be a high priority project. The rural service center of Loma Mar, adjacent the project, houses an estimated population of 282 residents of unincorporated San Mateo County. The Project will implement the Wildfire Section of the Local Hazard Mitigation Plan and the Community Wildfire Protection Plan by reducing fuels within a high-priority treatment area. Completion of this project will improve public safety by improving quality of a local evacuation route by thinning understory vegetation, removing dead, and dying trees, and breaking the continuity of vertical and

horizontal fuels. This project will also reduce hazards to infrastructure, including water tanks which service Memorial Park Campground and the Town of Loma Mar.

Goals

The goals are to create and maintain a shaded fuel break along Pescadero Creek and Wurr Roads within the boundaries of Memorial County Park to improve visibility and safety along primary evacuation routes for nearby residents and enhance public safety. Shaded fuel breaks can slow the spread of a fire by altering the arrangement of fire fuels and breaking vertical and horizontal continuity of fuels along a community evacuation route. This shaded fuel break will also improve defensible space for Memorial Park campground. This project will facilitate fire suppression by reducing the rate of fire spread and the fire severity, improving access and defensible space for emergency crews, and creating buffers between evacuation routes and dense hazardous vegetation.

Location

The project area stretches along Pescadero Creek Road from the Loma Mar Redwoods parking lot at 8182 Pescadero Creek Road east to the intersection with Wurr Road, and then follows Wurr Road southeast and then west along the park boundary. The shaded fuel break will consist of understory thinning within 100 feet of the park boundary and removal of hazard trees within 200 feet of the park boundary or roadway as identified by Parks staff. Please see the map depicting project boundaries included above.

Summary of Treatment Approach and Outcome

The Project will selective thinning of over-dense trees with a diameter of 8 inches or less and understory shrubs within 100 feet of Pescadero Creek and Wurr Roads, as well as removal of identified hazard trees within 200 feet of Pescadero Creek and Wurr Roads. Initial project implementation will involve the bulk of the understory vegetation removal and removal of hazard trees where accessible. Project maintenance will occur during future years and will focus on invasive species control and re-treatment of rapidly re-growing understory vegetation. Following the initial treatment, there will likely be increased availability of light, water, and nutrients in the understory, and reduced competition for space for one or more growing seasons. These conditions can stimulate a flush in germination of previously dormant native and non-native seeds in the seed bank and can also facilitate rapid re-sprouting and growth from cut vegetation. To establish the desired longevity of this project and prevent the understory from growing in too rapidly, the Department will plan for additional annual or semi-annual treatments in the work area.

Selective thinning of overly dense stands of small diameter trees and shrubs will occur up to 100' from the property boundary (approximately 46 acres), and hazard trees will be identified for removal on an additional 50 acres. The total project area is approximately 96 acres.

Treatment will largely involve mechanical rearrangement of vegetation, though some manual treatment of vegetation may be necessary where slopes exceed 40%. Treatment methods for fuels reduction are directly related to vegetation type, terrain, and ease of access with equipment. For this project, the

majority of the workable area is less than 35% slope with access locations for heavy equipment. The proximity of Class I, II and III watercourses will also limit equipment use in some areas. Equipment exclusion zones will be installed to prevent alteration of streambeds or seasonal drainage patterns.

Upon completion of the project treatments, the desired end condition will represent a swath of forest with mature trees and upper canopy retained, with a significant reduction in understory vegetation and small (under eight inch) diameter trees. To maintain public safety and evacuation routes, hazardous trees will be removed, including standing dead trees where primary or secondary risk to the roadway is apparent. Snags may be retained for wildlife habitat where risk of tree failure onto the roadway is improbable. The predominant vegetation remaining will be a redwood and Douglas-fir dominated mixed-evergreen forest, with select pockets dominated by mature hardwood species. Presently the understory is dominated by huckleberry, poison oak, native shrub species, and small diameter redwood, Douglas-fir, tanoak, oak and bay trees; the desired end conditions will be a reduced volume of understory vegetation and the prevention of invasion of broom or ivy, common invasive vegetation found in similar habitat types.

All appropriate protocols will be implemented to protect and avoid rare, threatened, endangered, and/or sensitive species and plant species of ecological significance will be retained in the project areas. Appropriate erosion control measures will be put in place to avoid sedimentation of nearby waterways.

See section(s) below for additional detail on the project specifications, operational considerations, and impact avoidance and minimization measures.

Project Related Tasks & Timeline

Initial Project Implementation		
Anticipated Timeframe	Task	Details
October 2022 – July 2023	Conduct site visits, refine scope and treatment areas and finalize implementation plan	This task involves site visits to assess the overall Project area and create treatment prescriptions for each portion of the Project Area. Upon completion of site visits, the Project team will summarize the results of the field work/site visits and prepare a refined scope of work and detailed implementation plan.
July – September 2023	Engage contractor, issue task order and provide Notice to Proceed	This task immediately follows Task 1 above and includes the selection of a contractor to complete the treatments and issuance of a Task Order and Notice to Proceed for the implementation plan related to the scope and treatment of identified locations in the Project area.
August – October 2023	Conduct Project biological surveys,	San Mateo County Parks staff and/or contracted biologist(s) will conduct Pre-Project biological surveys,

	identify BMPs, flag for impact avoidance and retention, flag staging and access as needed.	identify Best Management Practices (BMPs) for each treatment location based on the type and extent of treatment required, and flag areas for impact avoidance and selective retention. Staff will also identify and flag staging areas and access points to avoid sensitive resources identified during Pre-Project surveys. Biological monitoring will occur during the project implementation (see task below) to ensure project impact avoidance measures are followed. Impact avoidance measures are outlined later in this document.
September – November 2023	Implement fuel reduction and vegetation removals	After the surveys and flagging, the Project contractors will implement the fuel reduction treatment(s). This task includes the physical implementation of the fuel reduction project, as outlined in the project scope and operational specifications.
November 2023 – February 2024	Monitoring	After the initial treatment, the Project area and treated locations will be monitored and tracked to identify vegetation response and assess the need for retreatment.
Project Maintenance		
Timeframe	Task	Details
February 2024 – Ongoing annually	Site visits for follow-up retreatment	The Project area will continue to be monitored and San Mateo County Parks staff will conduct site visits to track the outcome, efficacy and success, of treatment and make determinations as to whether anything needs to be modified in the project maintenance stage. This work entails reaffirming the original assessment of the overall Project area, confirmation of treatment locations, and determination of any other necessary locations within the Project area and extent of needed treatment at each location within the Project area for retreatment, as well as the prescribed method of treatment. Information ascertained through the site visits will be recorded and used for implementation in maintenance/retreatment.
As needed	Coordinate contractors, issue task orders and provide Notice to Proceed	This task immediately follows Task 6 above and includes the coordination of contracts, issuance of Task Orders and provision of Notices to Proceed for maintenance and retreatment treatment of identified locations in the Project area.
As needed, timing to be determined	Biological surveys, BMPs, flagging for impact avoidance. Flag	County Parks staff will conduct maintenance related biological surveys, identify, and compile a list of BMPs for each treatment location based on the type and

(prior to and in conjunction with any retreatment)	staging & access as needed.	extent of retreatment required, and flag areas for impact avoidance. Further, staff will site staging areas and access points to protect sensitive resources identified during surveys .
As needed, timing to be determined	Implement fuel reduction and vegetation retreatment	Retreatment includes hand removal methods such as hand pulling or hand cutting, mechanical control methods, and limited use of chemical control methods. Invasive weed species and trees and perennial plants incompatible with the wildfire risk reduction goals of the project will be targets for retreatment. Access will also be improved at this stage for hand removal of additional dead-standing trees as needed
As needed, timing to be determined	Retreatment monitoring	After each maintenance effort, the Project area and treated locations will be monitored and tracked to identify vegetation response and determine the need for ongoing vegetation management.

Treatment Specifications

Understory Thinning

Tree Removal

1. Trees ≤ 8 inches diameter at breast height (DBH) shall be removed unless specifically marked for retention by the County. All live larger diameter trees shall remain.
 - a. The County may identify select trees for removal greater than 8" in diameter if trees are identified as a vector for disease or is an invasive species.
 - b. Contractor shall not remove any naturally occurring alder, California buckeye, or native willows. Additional species may be identified for retention at the discretion of the County and will be flagged accordingly.
2. Trees ≤ 8 inches DBH that do not have an overstory canopy shall be spaced leaving approximately 15-20 feet between tree crowns.
 - a. Consideration shall be given to maintaining a diversity of tree species in these areas where feasible.
3. Damage to remaining trees shall be minimized to the greatest extent feasible.
4. Any standing dead trees ≤ 12 inches DBH shall be removed. At the County's discretion, dead standing trees may be identified for retention as a habitat feature, or if access for removal and debris management is infeasible.
5. A tree of any size considered a hazard and direct threat to contractor safety may be removed, provided removal is communicated to Parks' Natural Resources Staff. Branches shall be delimited/chipped by hand or masticated where feasible and agreed upon by Park Natural Resources staff, and downed logs shall be separated by at least 10 feet from any other logs and left on site.

6. San Mateo County Parks or their supervised designee reserve the right to reasonably adjust tree treatments in areas where additional sensitive resources are identified and may adjust the treatment prescription as needed.

Tree Pruning Treatments

1. Retained trees >10 inches DBH will be pruned (live and dead limbs) up to a minimum height of 8 feet, except next to park infrastructure and road surfaces, where the minimum pruning height will be 12 feet. No pruning will be done to a height greater than 50% of total tree height.
2. Where use of a masticator is permissible or feasible, pruned ends shall have a smooth appearance with no frayed material visible especially in areas frequented by the public. In areas where damage to secondary lateral hardwood limbs is expected due to mechanical mastication, hardwoods shall be pruned by hand to facilitate access for mastication equipment and minimize damage to hardwoods species. San Mateo County Parks will provide instruction on hardwood pruning techniques.

Understory Vegetation, Brush, and Shrub Treatments

1. All understory vegetation, brush, and shrubs under the drip lines of trees shall be cut and masticated leaving root systems intact for resprouting except:
 - a. Contractor shall not masticate, or remove through handwork, hydrophytic riparian species such as chain fern (*woodwardia*), *Carex* sp., rushes, blue elderberry, red elderberry, and dogwood.
 - b. Where significant stands of desired shrub or riparian species occur under the drip line of trees, Contractor shall maintain a component of these species at a spacing between 25 – 50 feet for each species occurrence, whose shrub crown is approximately 10-15 feet wide. Spacing may be closer to 25 feet on flatter ground and 50 feet on steeper ground or proximity to infrastructure or homes within treatment areas.
2. Damage to residual understory vegetation and brush shall be minimized to the greatest extent feasible.
3. San Mateo County Parks or their supervised designee reserve the right to reasonably adjust understory vegetation and brush treatments in areas where additional sensitive resources are identified and may adjust the treatment prescription as needed.

Management of Existing Downed Large Woody Debris

1. For existing downed trees, branches shall be delimited/chipped by hand or masticated where feasible and agreed upon by Park Natural Resources staff, and logs shall be placed flush with the ground and separated by at least 10 feet from any other logs left on site.

Treated Vegetation within Treatment Areas

1. The residual chipped or masticated (where permitted) material shall be uniformly broadcast to the extent feasible within the project area, shall not exceed a depth of six inches (6") and should average approximately three inches (3"). Any individual masticated pieces shall not exceed two feet (2') in length or three inches (3") in diameter at the large end to support regeneration in the understory.

2. Excessive residual chipped or masticated (where permitted) material shall not obstruct water flow in drainage features such as ditches and culverts. Such material shall be removed by the contractor prior to a forecasted 30% precipitation event or upon completion of operations, whichever occurs first.
3. Residual chipped or masticated (where permitted) material should be utilized to cover approximately 75% of any areas bared during operations and shall not be piled at the base of remaining trees or sensitive vegetation.
4. Upon completion of a treatment area the contractor shall ensure that trails are left open and passable by the public with respect to all possible park users.
 - a. Scattered debris is acceptable on the trail surface but not to the point that it creates any significant tripping hazards.
5. Damage to residual trees and brush shall be minimized to the greatest extent feasible. If there is excessive damage to residual trees or brush, the contractor shall remove those specimens.
6. All stump heights will be cut no higher than 6 inches above the ground. All cuts will be a flat or parallel cut to the ground and will have a smooth appearance with no frayed material visible.
7. San Mateo County Parks or their supervised designee reserve the right to reasonably adjust vegetation and brush treatment if sensitive resources are identified and adjust the treatment prescription as necessary to provide adequate protections.

Hazard Tree Removal

1. San Mateo County Parks Staff or other authorized personnel will identify and mark hazard trees for removal. Branches shall be delimited/chipped by hand or masticated where feasible and agreed upon by Park Natural Resources staff, and logs shall be placed flush with the ground and separated by at least 10 feet from any other logs left on site.

Operational Specifications

General

1. A pre-designated Contractor foreman will be required to be on site at all times while the crew is working. The foreman must be able to address concerns from San Mateo County Parks, their supervised designee, park users, or adjacent landowners.
2. Operations may occur from 8:00 a.m. to 5:00 p.m. (or 30 minutes after sunrise and 30 minutes before sunset depending on available daylight conditions) Monday through Thursday and from 8:00 am until 12:00 pm on Friday. Work is prohibited on legally designated holidays.
3. The Contractor will ensure that a toilet and garbage disposal facilities are available for crews and are used in staging areas identified for operations.
4. Contractor is responsible for assessing treatment areas to determine where traffic control may be needed. Masticated or treated material of any kind should not make contact with any public road. If any masticated material contacts public roads it should be cleaned up immediately.

5. The Contractor will be responsible for preserving survey markers and will replace damaged markers at their own expense using surveyors acceptable to the landowner.
 - a. The Contractor will also be responsible for any damage to park infrastructure or private property and will replace or repair these items at their own expense through means acceptable to San Mateo County Parks or the landowner.
6. Prior to beginning operations, San Mateo County Parks and their supervised designee will conduct a pre-operational meeting to discuss project implementation, special protection measures and any potential operational constraints regarding the conduct of this contract that may impact project completion; including, but not limited to, planned start date, special protection measures, operational constraints, operating schedule, and order of project completion.

San Mateo County Parks or their supervised designee shall flag an example treatment area for Contractor review at the pre-operational meeting, which shall include sample marking of the treatment boundary. Contractor is responsible for identifying, marking, and maintaining operation in bounds of the permitted treatment area.

7. Crew members and all heavy equipment operators are required to utilize the Avenza application on phones or tablets capable of viewing PDF georeferenced operations maps provided by San Mateo County Parks to identify the Contractors location, stay within project treatment areas or infrastructure approved for operational use, and avoid sensitive resource areas. The contractor will also use the Avenza application to map work performed on the project on a weekly basis.
 - a. There is a free version of the application available for download that allows up to 3 active maps to be stored and viewed per account/device.
 - b. Training will be provided to the Contractor on how to use the Avenza application.

Fire Safety

1. All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors.
2. During the high fire danger period (April 1–December 1), work crews will:
 - a. Maintain compliance with state Public Resources Code governing fire tools in the wildland (**PRC § 4428**).
 - b. Have appropriate fire suppression equipment available at the work site. When heavy equipment is on site, the minimum required fire suppression equipment will include a filled water buffalo and McLeod/round point shovel.
 - c. Keep flammable materials, including flammable vegetation slash, at least 10 feet away from any equipment that could produce a spark, fire, or flame.
 - d. Not use portable tools powered by gasoline-fueled internal combustion engines within 25 feet of any flammable materials unless a round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area).
3. Contractor shall prepare and keep record of a daily checklist made available at the request of San Mateo County Parks or their supervised designee that checks the following for daily operations:

- a. Inspections around the equipment and staging area for any wildlife that may have decided to occupy the area.
 - b. Inspections for any equipment leaks.
 - c. Ensure all water tanks for fire suppression are full.
 - d. Confirm that necessary pre-work biological surveys have been completed.
 - e. Record wind speed and relative humidity measurements at the beginning of operations, 12:00 p.m. and at the conclusion of operations each day.
4. CALFIRE, San Mateo County Parks, or their supervised designee, reserves the right to restrict operating hours or operations in total during critical fire weather.

Acceptable Heavy Equipment

1. Small, tracked tractor such as a skid steer, mini excavator or low-profile – remote controlled masticator with forestry mulching head capable of working under 8-foot canopies.
2. Track chipper with capacity to process woody material up to 12" in diameter.
3. Other heavy equipment may be proposed for use by the Contractor and must be approved by San Mateo County Parks. To propose other heavy equipment, the Contractor should be prepared with equipment dimensions, weight, and photos of equipment.

Ground Disturbing Activities within Treatment Areas

1. Ground disturbance shall be minimized to the greatest extent feasible. Berms, ruts, and other operator caused ground disturbance over 12 inches in height/depth shall be smoothed out to original contours before leaving the immediate work area.
2. Equipment shall operate parallel to the slope (up and down the fall line) to the greatest extent feasible.
3. The cutting or mulching head of the masticator shall be kept at or above the duff layer and not into mineral soil to the greatest extent feasible.
4. Equipment shall not enter areas outside of the designated project areas unless authorized by San Mateo County Parks, or their supervised designee.
5. Heavy equipment operation between October 15 – June 15 shall only be implemented during dry-rainless periods and on unsaturated soils (see GEN-16 below). If soil conditions do not permit use of heavy equipment during this timeframe operations must cease until a time when soil conditions improve.
6. Upon completion of a treatment area the contractor shall ensure that roads and trails are left open and passable by the public with respect to all possible park users.
 - a. Scattered debris is acceptable on the road or trail but not to the point that it creates any significant hazards for park staff or users.

Watercourse Protections

1. Where treatment with heavy equipment is possible in proximity to Class I or II watercourses, San Mateo County Parks staff will flag an equipment limitation zone (ELZ) buffer with yellow and white striped equipment exclusion zone flagging. Class III watercourses centerlines will be flagged using blue tape in proximity to where operations will occur and an appropriate ELZ will be flagged or communicated with the contractor.
2. Adhere to BMPs GEN-1, GEN-7, GEN-9, GEN-10 as outlined below for staging and access in proximity to watercourses, spill prevention and control, vehicle maintenance and parking, and equipment maintenance and fueling as it pertains to protection measures and impact avoidance around watercourses.

Waterbreaks

1. Where necessary on existing park roads and/or trails used for access, waterbreaks shall be re-installed in their original locations and original configuration on appurtenant seasonal roads or staging areas used by the Contractor following operations and prior to October 15th on any year that operations occur.
2. Where waterbreaks need to be additionally placed following operations, they shall be placed similarly to other existing waterbreaks. At minimum, waterbreaks placed shall be placed at an approximate 45-degree angle, be cut diagonally to a minimum 6 inches into the firm roadbed or disturbed area, have a continuous firm embankment of at least 6 inches in height, and a width of 6 inches immediately adjacent to the lower edge of the waterbreak cut-out flow.
3. If the installation of additional waterbreaks cannot be accomplished by heavy equipment due to inability to access a site, then hand-dug waterbreaks may be constructed with less than the requisite 6 inches above grade and 6 inches below grade where appropriate but must be functional and maintain a 6-inch-wide outlet.
4. Waterbreaks shall be located to allow water to be discharged into some form of vegetative cover, duff (forest floor detritus), slash, rocks, or less erodible material wherever possible, and shall be constructed to provide for unrestricted discharge at the lower end of the waterbreak so that water will be discharged and spread in such a manner that erosion shall be minimized.
5. Waterbreaks may be located and adjusted outside of the maximum waterbreak spacing specified at the discretion of San Mateo County Parks, or their supervised designee in order to reduce any potential impacts and allow for the beneficial use of water. The waterbreaks shall be situated in a manner as to allow water to drain into stable soil configurations.
6. Waterbreak spacing shall conform with the table below. The waterbreak spacing may also be adjusted by San Mateo County Parks, or their supervised designee to create a greater level of protection than identified under general soil stabilization measures.

Maximum Distance Between Waterbreaks Measured in *Feet			
U.S. Equivalent Measure Road or Trail Gradient in percent			
10% or less	11-25%	26-50%	>50%
100	75	50	50

*** Feet = Measured along the ground based on slope**

- a. Where vegetation is not adequate to act as a sediment filter at waterbreak outlet locations that have the potential to discharge sediment to a watercourse, the Contractor shall armor the road drainage outlets with slash, chunks of wood, rock, or other methods in consultation with San Mateo County Parks, or their supervised designee.

Appendix A: Environmental Impact Avoidance Measures

The following specifications will act as the requirements for the County and Contractor to operate safely and efficiently while protecting and conserving sensitive resources and protecting the beneficial uses that San Mateo County Parks provides to the public.

General Measures

5. GEN-1: Staging and Access
 - a. Staging, access, and parking areas will be located outside of sensitive habitats to the extent feasible.
 - b. Staging areas will be located at least 30 feet from the top of bank (or as far as feasibly possible). See additional watercourse protection measures in the section below.

6. GEN-2: Minimize Area of Disturbance and Site Maintenance
 - a. Areas of disturbance will be limited to the smallest footprint necessary and a single access pathway, where feasible. For maintenance activities near waterways or other sensitive habitat, the designated work area shall be clearly identified in the field using highly visible material, and work will not be conducted outside this area.

7. GEN-7: Spill Prevention and Control
 - a. Keep spill cleanup materials (rags, absorbents, etc.) available at the construction site at all times.
 - b. Inspect vehicles and equipment frequently for and repair leaks promptly. On-site monitor should inspect beneath all vehicles that have been parked more than 15 minutes before they leave the work area. Use drip pans to catch leaks until repairs are made.
 - c. Clean up spills or leaks immediately and dispose of cleanup materials properly.
 - d. Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
 - e. Sweep up spilled dry materials immediately. Do not try to wash them away with water or bury them. If water must be used, the Contractor shall collect the water and spilled fluids and dispose of it as hazardous waste.

- f. Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- g. Small spills (less than 18 inches in diameter) including small quantities of oil, gasoline, paint, or other materials should be controlled by the first responder (maintenance staff) and do not necessarily require an emergency response team. Medium spills (greater than 18 inches but less than 6 feet in diameter) are typically controlled by the first responder (maintenance staff) but police or fire department HAZMAT teams may be called based on conditions. Report significant spills (larger than 6 feet in diameter and any “running” spill) immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill, contact the San Mateo County Environmental Health Services Division, or other emergency office (e.g., local fire or police department) as warranted, immediately and document the spill using the spill documentation form. Alternatively, 1) dial 911, the local emergency response number, 2) the National Response Center at (800) 424-8802; or 2) call the Governor’s Office of Emergency Services Warning Center, (800) 852-7550 (24 hours). As appropriate, contact other agencies including California Occupational Safety and Health Administration or the Regional Water Quality Control Board. All chemical spills shall be reported as soon as possible to the emergency site contact.

8. GEN-9: Vehicle Maintenance and Parking

- a. Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- b. Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- c. Conduct vehicle and equipment cleaning at County corporation yards and ensure that rinse water does not run into gutters, streets, storm drains, or surface waters.
- d. If refueling or vehicle maintenance must be done on-site, work in a bermed area (e.g., sandbags, gravel bags, compost socks, or other barrier material) at least 150 feet away from creek channels, away from storm drains and over a drip pan big enough to collect fluids.
- e. Refuel vehicles at least 150 feet away from the active stream channel.
- f. Keep an ample supply of spill clean-up materials near fueling vehicle maintenance and hazardous materials/hazardous waste storage areas. Inventory clean-up materials monthly and restock as needed.
- g. Post proper fueling and spill clean-up instructions at fueling areas. Never leave the area while equipment is being filled.
- h. Recycle or dispose of fluids as hazardous waste.
- i. Do not clean vehicle or equipment on-site using soaps, solvents, degreasers, steam cleaning equipment, etc.
- j. Perform vehicle and mobile equipment steam cleaning, pressure washing or degreasing only over a containment designed to collect any generated wash water. Collect wash water and discharge to sewer via an oil water separator. Do not pour wash water down storm drains or sewers connected to septic systems.

9. GEN-10: Equipment Maintenance & Fueling

- a. A separate area should be designated for equipment maintenance and fueling, away from any slopes, watercourses, or drainage facilities.
- b. Equipment should not be stored in areas that will potentially drain to watercourses or drainage facilities. If equipment must be stored in areas with the potential to generate runoff, drip pans, berms, gravel bags, or absorbent booms should be employed to contain any leaks or spills.
- c. Equipment should be inspected daily for leaks or damage and promptly repaired.
- d. Fueling and maintenance of vehicles should take place at least 65 feet away from waterways.
- e. In the event of a spill, follow procedures outlined in BMP GEN-7.

10. GEN-16: Timing of Work

- a. In general, routine maintenance and construction activities that take place in sensitive habitat and/or in channels below ordinary high water will be conducted during the dry season (June 15 through October 15). Maintenance activities that are in upland areas and that would not affect streams may occur during low rainfall years at times when there is no predicted rainfall (chance of precipitation is less than 30 percent chance of rain). Activities that are subject to permit requirements will be conducted during the period authorized by the permits.
- b. **Operations from October 15th – June 15th:** For operations between October 15th to June 15th heavy equipment and vehicle operations may only occur during dry, rainless periods and shall not be conducted on saturated soil conditions as defined below:
 - i. Saturated soil is defined as soil and/or surface material pore spaces that are filled with water to such an extent that runoff is likely to occur. Indicators of saturated soil conditions may include but are not limited to areas of ponded water, pumping of fines from the soil or road surfacing material during operations, loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, spinning or churning of wheels or tracks that produces a wet slurry, or inadequate traction without blading wet soil or surfacing materials.
 - ii. In addition, operations on roads, trails, or staging areas may only occur from a stable operating surface defined as follows: A surface that can support vehicular traffic and that routes water off the road surface or into drainage facilities without concentrating flow in ruts (tire tracks), pumping of the roadbed, or ponding flow in depressions. A stable operating surface shall include paved roads, structurally sound road base, unsaturated hard packed seasonal roads, and all must be appropriate for intended use.

11. GEN-17: Maintain Traffic Flow

- a. To the extent feasible, work shall be staged and conducted in a manner that maintains two-way traffic flow on roadways in the vicinity of the work site.

- b. Heavy equipment and haul traffic shall be prohibited in residential areas to the greatest extent feasible. When no other route to and from the site is available, heavy equipment and haul traffic through residential areas shall be restricted to the hours of 8 a.m. to 5:30 p.m., Monday through Friday.
- c. If heavy equipment or hauling is required beyond the hours above, the County or their contractor would provide notice to adjacent property owners 48 hours in advance of such activities

12. GEN-18: Traffic Control and Public Safety

- a. In the event that work activities require the temporary closure of any traffic lanes, the County shall implement measures to guide traffic (such as signage and flaggers), safeguard construction workers, provide safe passage of vehicles, and minimize traffic impacts through the duration of work activities. The County also shall notify local emergency service providers regarding any planned lane closures.
- b. For any other work within or near the roadway that could pose a hazard to the public, the County shall install/implement appropriate measures, such as fences, barriers, flagging, guards, and/or signs, to give adequate warning and provide protection from the potentially dangerous condition.
- c. For work activities along or near roadways with sidewalks and bike lanes, the County shall implement measures to ensure the safe passage of pedestrians and bicyclists around the work site.
- d. Where work is proposed at a recreational park or trail, warning signs will be posted several feet beyond the limits of work. Signs will also be posted if trails will be temporarily closed.
- e. Public transit access and routes will be maintained in the vicinity of the work site. If public transit will be affected by temporary road closures and require detours, affected transit authorities will be consulted and kept informed of project activities.

13. GEN-19: Dust Management Controls

- a. The County will implement the Bay Area Air Quality Management District (BAAQMD) Basic Dust Control Measures. Current measures stipulated by the BAAQMD Guidelines include the following:
 - i. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
 - ii. All vehicle speeds on unpaved roads shall be limited to 15 mph.
 - iii. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
 - iv. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California

Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- v. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.

14. GEN-27: Vegetation and Tree Removal

- a. The disturbance or removal of vegetation shall not exceed the minimum necessary to complete maintenance activities. The use of bulldozers, backhoes, or other heavy equipment to remove vegetation along stream banks shall be avoided wherever feasible.
- b. Hazard trees targeted for removal as part of this project will be identified based on evaluation criteria consistent with Best Management Practices for tree inspection as defined by the International Society of Arboriculture. Hazard trees may include; dead or dying trees, dead parts of live trees, or unstable live trees (due to structural defects or other factors) that are within striking distance of people or property (a target) that have the potential to cause death, injury, or substantial property damage.
- c. Removal of non-hazard trees greater than 8 inches in diameter at breast height shall be prohibited.
- d. Debris generated from hazard tree removals shall be chipped and broadcast on site averaging 4-6" in depth, with a maximum acceptable depth of 8".

Fire Safety

1. GEN-23: Fire Prevention

- a. All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors.
- b. During the high fire danger period (April 1–December 1), work crews will:
 - i. Have appropriate fire suppression equipment available at the work site.
 - ii. Keep flammable materials, including flammable vegetation slash, at least 10 feet away from any equipment that could produce a spark, fire, or flame.
 - iii. Not use portable tools powered by gasoline-fueled internal combustion engines within 25 feet of any flammable materials unless a round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area).

Biological Resource Avoidance Measures

1. BIO-1: Environmental Awareness Training

- a. Prior to commencing maintenance activities in a given year, all participating maintenance personnel will attend a worker environmental awareness training program. The training will include a brief review of special-status species, sensitive habitats, and other sensitive resources that may exist in the project area, including field

identification, habitat requirements, and the legal status and protection of each relevant species, as well as locations of sensitive biological resources. The training will include materials concerning the following topics: sensitive resources, resource avoidance, permit conditions, and possible consequences for violations of State or Federal environmental laws. The training will cover the maintenance activity's conservation measures, environmental permits, and regulatory compliance requirements, as well as the roles and authority of the monitors and biologist(s). It will include printed material and an oral training session by a qualified biologist.

2. BIO-8: Minimize Impacts on Dusky-footed Woodrat Nests

- a. If suitable habitat for San Francisco dusky-footed woodrat is determined to exist in the work area, the following measure will be followed:
 - i. No more than two weeks prior to the beginning of ground disturbance or other routine maintenance activities that could disturb woodrat nests, a qualified biologist will survey the work areas scheduled for maintenance. If any dusky footed woodrat nests are found, the nests shall be flagged and construction fencing or flagging that will not impede the movement of the SFDW shall be placed around the nest to create a 10-foot buffer (where feasible). If the nest is located adjacent to a road or trail, the nest shall be clearly flagged so equipment/truck drivers accessing sites can see the nest. If a dusky-footed woodrat nest is identified in a work area, the following measure will be implemented by the County.
 - ii. The County will avoid physical disturbance of the nest if feasible. Ideally, a minimum 10-foot buffer should be maintained between maintenance construction activities and each nest to avoid disturbance. In some situations, a smaller buffer may be allowed if in the opinion of a qualified biologist removing the nest would be a greater impact than that anticipated as a result of maintenance activities.
 - iii. If a dusky-footed woodrat nest cannot be avoided and the nest is located in urban or bayside areas where woodrat populations are small and isolated from larger populations, the County will consult with CDFW regarding the appropriate measures to minimize impacts.
 - iv. If a dusky-footed woodrat nest cannot be avoided and the nest is located in more rural or natural areas and/or where woodrat populations are large and have connectivity to large populations, one of the following two relocation measures will be implemented by the County:
 1. If the woodrat nest site and the proposed relocation area are connected by suitable dispersal habitat for the woodrat, as determined by a qualified biologist, the following relocation methodology will be used: Prior to the beginning of construction activities, a qualified biologist will disturb the woodrat nest to the degree that all woodrats leave the nest and seek refuge outside of the maintenance activity area. Relocation

efforts will avoid the nesting season (February - July) to the maximum extent feasible. Disturbance of the woodrat nest will be initiated no earlier than one hour before dusk to minimize the exposure of woodrats to diurnal predators. Subsequently, the biologist will dismantle and relocate the nest material by hand. All material from dismantled nests will be placed in a pile, preferably against a log or tree trunk, in suitable habitat located at least 20 feet from, but otherwise as close as possible to, the original nest locations, to provide material for woodrats to construct new nests. During the deconstruction process, the biologist will attempt to assess if there are juveniles in the nest. If immobile juveniles are observed, the deconstruction process will be discontinued until a time when the biologist believes the juveniles will be fully mobile. A 10-foot-wide no-disturbance buffer will be established around the nest until the juveniles are mobile. The nest may be dismantled once the biologist has determined that adverse impacts on the juveniles would not occur. All disturbances to woodrat nests will be documented in a construction monitoring report and submitted to CDFW.

2. If a qualified biologist determines that the woodrat relocation area is separated from the nest site by major impediments, or a complete barrier, to woodrat movement, trapping for woodrats will be conducted prior to relocation of nest material. Prior to the start of nest relocation activities, artificial pine box shelters will be placed at each of the sites selected for relocation of nest materials. The dimensions of the artificial shelters will be approximately 8" long x 8" wide x 6" high. Each shelter will include two interior chambers connected by an opening. At the relocation sites, the artificial pine box shelters will provide basement structures for the relocated woodrat nest materials, allowing woodrats to enter, use, and modify the relocated nests. A qualified biologist will set two traps around each of the woodrat nests to be relocated. Traps will be set within one hour prior to sunset, and baited with a mixture of peanut butter, oats, and apples. Traps will also be equipped with cotton bedding and covered with cardboard. The traps will be checked the following morning, within one and-a-half hours of sunrise. If a woodrat is captured it will be placed in a quiet area while its nest material is relocated; the animal will then be released at the relocated nest. If no woodrats are captured after the first night, the biologist will set the traps for one additional evening to increase the probability of capturing the animal and ensuring a safe relocation. If no woodrats are captured at a given house after two nights, it will be assumed that the house is not currently occupied.
3. Trapping will only be conducted outside the breeding season, which for woodrats is from February through the end of July. If a litter of young is

found or suspected while dismantling a nest for relocation, the nest material will be replaced, any trapped woodrats will be returned to the nest, and the nest will be left alone for 2 to 3 weeks, after which time the nest would be rechecked to verify that the young are capable of independent survival, as determined by the lead woodrat biologist, before proceeding with nest dismantling.

3. BIO-9: Measures to Protect Nesting Migratory Birds

- a. To the extent possible, conduct vegetation removal activities prior to nesting bird season (February 1 through August 31).
- b. For maintenance activities or tree removal that are scheduled to occur between February 1 and August 30, a qualified biologist will survey the work area and a minimum of 300 feet surrounding the work area for raptor nests and 100 feet for nests of non-raptors. This survey will occur no more than three days prior to starting work. If a lapse in maintenance-related work of 7 days or longer occurs, another focused survey will be conducted before maintenance work can be reinitiated.
- c. If nesting birds are found, a no-work buffer will be established around the nest and maintained until the young have fledged. A qualified biologist will identify an appropriate buffer based on a site-specific evaluation. Typical appropriate buffers are 300 feet for raptors, herons, and egrets (though larger for bald and golden eagles, as discussed in BIO-14); 100 feet for non-raptors nesting on trees, shrubs, and structures, and 25 feet for ground-nesting non-raptors.
- d. The boundary of each buffer zone will be marked with fencing, flagging, or other easily identifiable marking if work will occur immediately outside the buffer zone.
- e. Install physical barriers to nesting where appropriate (e.g., install netting over entryways to cavities, bridge ledges, culverts) and check regularly for any trapped birds. Work will not commence within the buffer until fledglings are fully mobile and no longer reliant upon the nest or parental care for survival.
- f. No trees or shrubs shall be disturbed that contain active bird nests until all eggs have hatched, and young have fully fledged (are no longer being fed by the adults and have completely left the nest site). To avoid potential impacts to tree or shrub-nesting birds, any project-specific trimming or pruning of trees or shrubs shall be conducted during the time period of September 1 to February 14 unless a preconstruction nesting bird survey has been conducted by a qualified biologist. No habitat removal or modification shall occur within the Ecologically Sensitive Area fenced nest zone even if the nest continues to be active beyond the typical nesting season for the species, until the young have fully fledged and will no longer be adversely affected by the project.
- g. Within areas subject to CDFW regulation under Section 1600 of the Fish and Game Code, nesting bird protection measures required as conditions of the Streambed Alteration Agreement will be implemented.

4. BIO-10: Measures to Protect Nesting Marbled Murrelet

- a. During marbled murrelet breeding/nesting season (March 24 to September 15), if suitable marbled murrelet nesting trees are present within 300 feet of the project area or if a marbled murrelet nest is detected, Permittee shall consult with CDFW before proceeding. If habitat trees are present within ¼-mile of the project site but are greater than 300 feet from the work area, Permittee may proceed with the following conditions:
 - i. Work within the ¼-mile buffer shall be confined to the period of September 15 to October 15.
 - ii. If activities cannot be performed during this window and would thus occur during the marbled murrelet breeding season (March 25 to September 15), seasonal disturbance minimization buffers as listed in the USFWS document, Estimation of the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California (2006) shall be followed. Permittee shall measure ambient noise and estimate construction activity noise to calculate seasonal buffer widths using that reference.
 - iii. Alternatively, if protocol-level surveys are conducted and do not indicate that the habitat is occupied by marbled murrelet, seasonal and distance work restrictions may be lifted with written approval from CDFW. Protocol level survey procedures and information can be found at:
http://www.pacificseabirdgroup.org/publications/PSG_TechPub2_MAMU_ISP.pdf

5. BIO-14: Measures to Protect Bat Colonies

- a. If high-quality habitat for roosting bats (i.e., large trees with cavities of sufficient size to support roosting bats, or buildings providing suitable roost sites, as determined by a qualified bat biologist) is present within 100 feet of a maintenance site, a qualified bat biologist will conduct a survey to look for evidence of bat use within two weeks prior to the onset of work activities. If evidence of bat occupancy is observed, or if high-quality roost sites are present in areas where evidence of bat use might not be detectable (such as a tree cavity), an evening survey and/or nocturnal acoustic survey may be necessary to determine if a bat colony is present and to identify the specific location of the bat colony.
- b. If no active maternity colony or non-breeding bat roost is located, project work can continue as planned.
- c. If an active maternity colony or non-breeding bat roost is located, the project work will be redesigned to avoid disturbance of the roosts, if feasible.
- d. If an active maternity colony is located, and the project cannot be redesigned to avoid removal or disturbance of the occupied tree or structure, disturbance will not take place during the maternity season (March 15 – July 31), and a disturbance-free buffer zone (determined by a qualified bat biologist) will be observed during this period.
- e. If an active non-breeding bat roost is located, and the project cannot be redesigned to avoid removal or disturbance of the occupied tree or structure, the individuals will be safely evicted between August 1 and October 15 or between February 15 and March 15

(as determined by a Memorandum of Understanding with CDFW). Bats may be evicted through exclusion after notifying CDFW. Trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

6. BIO-16: Avoid Special-Status Plant Species

- a. For projects located in areas where special-status plants have been identified as potentially occurring (see Table 4-1), a qualified biologist will assess habitat suitability for the potential occurrence of special-status plant species within the work area. If determined to be warranted, a qualified botanist will conduct appropriately timed surveys for the focal plant species in accordance with CDFW's special-status plant survey methodology. If a special-status species is observed in or near the project site, the County will follow the measures below as well as any additional measures that might be contained in the forthcoming Biological Opinion issued by the USFWS for the Maintenance Program.
 - i. If discovered, the population size and occupied area of special-status plant populations identified during the field survey, and with potential to be impacted, will be estimated. A "population" will be defined as the group of individuals of a species present within a 0.10-mile radius. In addition, the population will be photographed and flagged to maximize avoidance, as well as to estimate the percentage of the population affected. If feasible, the project shall be redesigned or modified to avoid direct and indirect impacts on special-status plant species.
 - ii. Special-status plants to be avoided will be protected from disturbance by installing environmentally sensitive area fencing (orange construction barrier fencing or a suitable alternative). Protective fencing will be installed under the direction of a qualified biologist as necessary to protect the plant and its habitat; where feasible, the environmentally sensitive area fencing will be installed at least 50 ft from the edge of the population. The location of the fencing will be shown on the maintenance design drawings and marked in the field with stakes and/or flagging. The design specifications will contain clear language that prohibits maintenance-related activities, vehicle operation, material and equipment storage, and other surface disturbing activities within the fenced environmentally sensitive area. For nonground disturbing vegetation management activities conducted using only hand-held equipment, the non-disturbance buffer may be reduced to a minimum of 3 feet and flagging of the population may be used in place of environmentally sensitive fencing.
 - iii. Vegetation management activities in sensitive plant areas will be conducted under the guidance of a qualified botanist. These activities will be timed following the blooming periods of potentially occurring listed species.
 - iv. If any impacts to individual state-listed plants are unavoidable, or if more than 5 percent of a population of a federally listed plant species or species with

California Rare Plant Ranks of 1 or 2 would be impacted, then the County will stop work in the vicinity of the plant(s) and consult with the appropriate regulatory agencies.

- v. If impacts to state or federally listed plants are unavoidable and less than 5 percent of a population would be impacted, prior to any ground-disturbing activities the County will preserve the seedbank within the impact area by removing and retaining the topsoil prior to the implementation of maintenance activities. Following completion of the maintenance activity, the County will monitor the impact area for two years. Any non-native invasive plant species occurring within this area during the monitoring period will be removed under the supervision of a qualified biologist.
- vi. If appropriately timed focused botanical surveys cannot be conducted prior to maintenance activities in areas identified by a qualified biologist as potentially supporting listed plants, then the County will assume presence of the plant species in question.

7. BIO-17: Sudden Oak Death Controls

- a. Before entering maintenance sites located in areas infested with Phytophthora, field workers will receive training that includes information on Phytophthora pathogens and how to prevent the spread of these and other soil-borne organisms by following approved phytosanitary procedures.
- b. The exterior and interior of all vehicles, construction equipment, and tools should be clean and free of debris, soil, and mud (including mud on tires, treads, wheel wells and undercarriage) prior to arrival at a new job site, especially during the wet season.
- c. Work shoes should be kept clean by inspecting shoe soles and removing mud, debris, and soil off treads before moving to a new job site.
- d. Do not collect or transport host plants from an infested or quarantined area.
- e. Vehicles should stay on established roads whenever possible.
- f. To minimize the potential for spreading potentially contaminated soil and time required for decontamination, if possible, avoid vehicle traffic and field work when soils are wet enough to stick readily to shoes, tools, equipment, and tires.
- g. Delivered nursery plants that will be held before planting will be transferred to cleaned and sanitized raised benches and maintained in accordance with the "Guidelines to Minimize Phytophthora Pathogens for holding (non-production) nurseries at restoration sites, Section 3."
- h. A portion of purchased nursery plants will be tested for Phytophthora using the pear-baiting methodology in which pear baits are placed in soil samples, water samples and root samples of nursery purchased plants. Incubation temperatures with diurnal fluctuations from 21 degrees Celsius to 27 degrees Celsius are generally suitable for detecting Phytophthora species using pear baits. If dark lesions appear on pears, the sample likely has Phytophthora inoculum. For additional information for the pear-baiting methodology, see: phytosphere.com/BMPsnursery/test3_2bait.htm

- i. Nursery plants will be transported on or in vehicles or equipment that have been cleaned before loading the stock.
 - j. Nursery stock will not be placed on the soil or other potentially contaminated surfaces until they are placed at their specific planting sites.
 - k. Minimize unnecessary movement of soil and plant material within a planting area, especially from higher to lower risk areas.
 - l. On-site or off-site collection of plant materials, including seed and cuttings for direct planting, will be conducted in a phytosanitary manner.
 - m. Only uncontaminated water or water that has been effectively treated to remove or kill *Phytophthora* should be used for rinsing or irrigating plant material.
8. BIO-18: Invasive Plant Control
- a. In order to minimize the spread of invasive plants, all equipment (including personal gear) will be cleaned of soil, seeds, and plant material prior to arriving on the project site to prevent introduction of undesirable plant species.
 - b. Prior to implementation of Program activities at a given site, the proposed staging area, as well as any areas to be graded, will be surveyed for the presence of invasive weed species. Invasive weed species occurring within locations of construction clearing and grubbing shall be flagged for removal by the biological monitor or qualified biologist. Any invasive weeds with a Cal-IPC rating of “moderate” or “high” found within the survey area will be removed and disposed of in a sanitary landfill, incinerated off-site, or disposed in a high-temperature composting facility that can compost using methods known to kill weed seeds, taking care to prevent any seed dispersal during the process by bagging material or covering trucks transporting such material from the site.
 - c. Suitable onsite disposal areas should be identified to prevent the spread of weed seeds. Invasive plant material should be rendered nonviable (partially decomposed, very slimy or brittle) when being treated onsite. Maintenance staff shall desiccate or decompose invasive plant material until it is nonviable. Depending on the type of plant, disposed plant material can be left out in the open as long as roots are not in contact with moist soil, or can be covered with a tarp to prevent material from blowing or washing away. Permittee shall monitor all sites where invasive plant material is disposed onsite and treat any newly emerged invasive plants. Invasive plant material removed during work activities shall be bagged and appropriately incinerated or disposed of in a landfill or permitted composting facility.
 - d. No invasive plants shall be planted at maintenance work areas. Prohibited exotic plant species include those identified in the California Invasive Plant Council’s Inventory Database, which is accessible at: <https://www.calipc.org/plants/inventory/>.
9. BIO-21: General Wildlife Protection Measures
- a. If any wildlife is encountered during project activities, said wildlife shall be allowed to leave the area unharmed and on their own volition, except in cases where relocation by a qualified biologist is permitted by conditions below.

10. BIO-24: Pathogen Control

- a. In order to minimize the spread of plant and animal pathogens, all equipment (including personal gear such as boots) will be cleaned of soil, seeds, and plant material prior to arriving on a maintenance site. All organic matter will be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water or potentially contaminated sediments.
- b. Equipment, including maintenance equipment and field gear used to capture and relocate special-status species such as frogs, will be disinfected after exiting one aquatic habitat and before entering the next aquatic habitat, unless the waters are hydrologically connected to one another. Cleaning equipment in the immediate vicinity of aquatic habitats will be avoided (e.g., clean in an area at least 100 feet from aquatic features).
- c. Boots, nets, gloves, and any other equipment used to handle amphibians or aquatic organisms will be scrubbed with a bleach solution (0.5 to 1.0 cup per 1.0 gallon of water), Quat-128™ (1:60), or a 3 to 6 percent sodium hypochlorite solution and thoroughly rinsed clean with water between maintenance sites. Care will be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.
- d. When working at sites with known or suspected disease problems, disposable gloves will be worn and changed between handling each animal. Gloves will be wetted with water from the site or distilled water prior to handling any amphibians. Gloves will be removed by turning inside out with hands cleaned using a hand cleaner and water rinse to minimize cross-contamination.

Cultural and Archaeological Resources

1. If evidence of archaeological or cultural resources are discovered during project operations, all operations will cease in the vicinity of the potential resource and the area shall be avoided. San Mateo County Parks, or their supervised designee shall be notified immediately.
2. CUL-4: Construction Monitoring
 - e. The County will retain a qualified archaeologist to be present on-site during ground-disturbing activities within areas identified as highly sensitive for cultural areas unless the qualified archaeologist determines otherwise after the field inventory conducted under CUL-2. Similarly, after conducting the field study under CUL-2, the qualified archaeologist may determine that areas originally identified as moderately sensitive for cultural resources warrant monitoring during construction. The reasons for conducting monitoring in areas initially considered of moderate sensitivity would be discussed in the inventory report.
 - f. The qualified archaeologist will have the authority to stop work if cultural resources are discovered.
 - g. If any cultural resources are discovered during construction monitoring, BMP CUL-6 would be implemented as appropriate

11. CUL-5: Conduct Pre-Maintenance Educational Training

- a. At the beginning of each maintenance season, and in concert with implementing BMP BIO-1, as well as before conducting activities subject to BMP CUL-2 through CUL-4, all maintenance personnel will participate in an educational training session conducted by a qualified cultural resources specialist. This training will include instruction on how to identify historic and prehistoric resources that may be encountered and will describe the appropriate protocol to be followed if resources are discovered during maintenance work.

12. CUL-6: Address Discovery of Cultural Remains or Historic or Paleontological Artifacts

Appropriately

- a. Unanticipated discoveries of cultural and paleontological resources may occur during maintenance construction activities. Examples of cultural remains are obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or significant areas of tool-making debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period artifacts may include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. Paleontological artifacts are fossilized remains of plants and animals. Work will be restricted or stopped in areas where remains or artifacts are found until proper protocols are met.
- b. Protocol for treatment of prehistoric or historic cultural resources:
 - i. 1. Work at the location of the find will halt immediately within 50 feet of the find. A “no work” zone will be established utilizing appropriate flagging to delineate the boundary of this zone, which will measure at least 50 feet in all directions from the find.
 - ii. 2. The County will retain the services of a consulting archaeologist, who will visit the discovery site as soon as practicable and perform minor hand excavation to describe the archaeological or paleontological resources present and assess the amount of disturbance.
 - iii. 3. The consulting archaeologist will provide to the County and USACE, at a minimum, written, and digital photographic documentation of all observed materials, utilizing the CRHR and NRHP guidelines for evaluating archaeological resources. Based on the assessment, the County and USACE will identify the CEQA and Section 106 cultural resources compliance procedures to be implemented.
 - iv. 4. If the consulting archaeologist determines that the find appears not to meet the CRHR or NRHP criteria of significance, and a USACE archaeologist concurs with the consulting archaeologist’s conclusions, construction may continue while monitored by the consulting archaeologist. The authorized maintenance

work will resume at the discovery site only after the County has retained a consulting archaeologist to monitor and the Maintenance Manager has received notification from USACE allowing work to continue.

- v. 5. If the find appears significant, avoidance of additional impacts is the preferred alternative. The consulting archaeologist will determine if adverse impacts to the resources can be avoided.
- vi. 6. Where avoidance is not practical (e.g., maintenance activities cannot be deferred or must be completed to satisfy the Maintenance Program objective), the County will develop an action plan (also known as a data recovery plan) and submit it to USACE within 48 hours of determining that maintenance activities cannot be deferred. The action plan will be submitted by email to the appropriate archeological/cultural resources contact at the USACE. The action plan is equivalent to a data recovery plan. It will be prepared in accordance with the current professional standards and state guidelines for reporting the results of the work and will describe the services of a Native American consultant and a proposal for curation of cultural materials recovered from a non-grave context.
- vii. 7. The recovery effort will be documented in a report prepared by the consulting archaeologist in accordance with current archaeological standards. Any non-grave artifacts will be placed with an appropriate repository.
- viii. 8. In the event of discovery of human remains (or if a find consists of bones suspected to be human), the field crew supervisor will take immediate steps to secure and protect such remains from vandalism during periods when work crews are absent.)
- ix. 9. The maintenance crew supervisor will immediately notify the San Mateo County Coroner and provide any information that identifies the remains as Native American. If the remains are determined to be those of a prehistoric Native American or a Native American from the ethnographic period, the Coroner will contact NAHC within 24 hours of being notified about the remains. NAHC will designate and notify a Most Likely Descendant (MLD) within 24 hours. The MLD will have 24 hours to consult and provide recommendations for the treatment or disposition, with proper dignity, of the human remains and grave goods.
- x. 10. Preservation in situ is the preferred option for human remains. Human remains will be preserved in situ if continuation of the maintenance work, as determined by the consulting archaeologist and MLD, will not cause further damage to the remains. The remains and artifacts will be documented, the find location carefully backfilled (with protective geo-fabric if desirable), and the information recorded in County Maintenance Program files.
- xi. 11. If human remains or cultural items are exposed during maintenance that cannot be protected from further damage, they will be exhumed by the consulting archaeologist at the discretion of the MLD and reburied, with the concurrence of the MLD, in a place mutually agreed upon by all parties.

- c. Protocol for treatment of paleontological resources:
- i. 1. Work at the location of the find will halt immediately within 50 feet of the find. A “no work” zone will be established utilizing appropriate flagging to delineate the boundary of this zone, which will measure at least 50 feet in all directions from the find.
 - ii. 2. The County shall retain the services of a consulting paleontologist. The consulting paleontologist will meet the Society for Vertebrate Paleontology’s criteria for a qualified professional paleontologist (Society of Vertebrate Paleontology 2010).
 - iii. 3. The consulting paleontologist shall visit the discovery site as soon as practicable and perform minor hand excavation to describe the paleontological resources present and assess the amount of disturbance. The consulting paleontologist will follow the Society for Vertebrate Paleontology’s guidelines (2010) for treatment of the artifact. Treatment may include preparation and recovery of fossil materials for an appropriate museum or university collection and may include preparation of a report describing the finds. The County will be responsible for ensuring that the consulting paleontologist’s recommendations for treatment are implemented.

Appendix B: Flagging Key

1. **Blue and white striped flagging** – Water Course and Lake Protection Zones (WLPZ) for Class I and II watercourses (none present in the project area).
2. **Blue flagging** – Marks the centerline of a Class II or Class III watercourse. May also be utilized to mark the location of a waterbreak that needs to be constructed. The location of the waterbreak will be designated by placing a flag at the waterbreak inlet and an additional flag at the waterbreak outlet.
3. **Yellow and white striped flagging** – Equipment Exclusion Zone.
4. **Orange and white striped flagging** – Special Treatment Zone
5. **Orange glo** – Identifies areas or species for retention as desired or selected by County Parks. Can include specific trees or habitat features desired for retention, or retention for species diversity. Sensitive resources are flagged in pink glo as specified below
6. **Pink glo** – Identifies areas of avoidance for sensitive vegetation, sensitive wildlife resources, or other advisories for avoidance.
7. **Solid pink glo flagging accompanied by solid white flagging** – Special instructions to the Contractor written on the white flagging in black permanent pen.
8. **Yellow flagging with the words “SKID TRAIL” on it** – Location where heavy equipment may travel off-road to access trees marked for removal.
9. **Orange flagging with the words “TRUCK ROAD” on it** – Location where vehicles licensed for use on county roads and state highways may travel.
10. **Solid blue accompanied by solid white and either SKID TRAIL (yellow) or TRUCK ROAD (orange) flagging** – Stream crossing approved for equipment use indicated by appropriate color yellow SKID TRAIL or orange TRUCK ROAD.
11. **Black and yellow flagging** – Caution, Wasp or Bee’s nest
12. **Red flagging** – Indicates a potential property boundary.