

## **Description of the Proposed Actions**

### **Covered Maintenance Activities**

The District conducts routine maintenance activities in streams, catch basins, seeps, springs, ponds, lakes, beaches, tidal marshes, and shoreline levees. The purpose of these activities is to maintain existing facilities, protect water quality, to reduce erosion, provide public and emergency access, and maintain natural resources that support a variety of listed, special status, and other native species. A variety of routine maintenance activities will occur in several watersheds, including: Alameda, Alhambra, Claremont, Garrity, Rheem, Kirker, Marsh, Mount Diablo, Pinole, San Pablo, San Leandro, San Lorenzo, Walnut and Wildcat Creeks, San Francisco Bay, San Pablo Bay, and Suisun Bay. Covered routine maintenance activities include replacement of culverts, replacement and upgrade of culverts with new head and tail walls, installation of new culverts with new head/tail walls, installation of culvert energy dissipaters, installation of articulated armored stream ford crossings, maintenance of existing articulated fords, installation of natural rock fords, vegetation and debris removal from streams and drainages, bank stabilization, removal of sediment- debris from existing culverts, maintenance of clear span bridges, installation of clear-span bridges, repair and maintenance of existing spring boxes, installation of new spring boxes, routine dredging of silt basins, ponds and lakes; maintenance of existing shoreline facilities, docks, fishing piers, boat launches, marsh board walks and overlooks; removal of hazardous man-made structures and vessels from various waterbodies; re-construction of earthen pond dams and spillways; stream, pond, and tidal wetland restoration.

The overall area (acres) of disturbance or impact to aquatic resources for each activity type is included in Enclosure B and the following descriptions.

#### *Culvert Repair, Replacement and Maintenance:*

Existing degraded culverts will be replaced with same-size culverts, or if existing culverts are inadequate to convey peak flows, culverts of a larger size (diameter and/or length). Culverts will be installed at existing channel grade.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads, trails, or

levees and avoid wetted channels or other waterbodies. These activities, including the potential effects riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.018 acres (mean per culvert = 0.007 acres) with no permanent impacts being anticipated. Removal of riparian vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is four to five culverts per year. The total anticipated effect for five years ranges from 0.002 – 0.45 acres of temporary impact to aquatic resources.

### *Replacement Upgrade of Existing Culverts:*

Existing degraded culverts will be replaced with same-size culverts, or if existing culverts are inadequate to convey peak flows, culverts of a larger size (diameter and/or length). This work includes the installation of new rock head and/or tail walls to stabilize the streambank and prevent head cutting and/or down cutting of stream channels. Culverts will be installed at existing channel grade.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation will have temporary disturbance impacts ranging from 0.0001 acres to 0.018 acres. Permanent impacts to aquatic resources are minimal and range from 0.0001 acres to 0.018 acres. Removal of riparian and upland vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is eight to ten culverts per year. The total anticipated effect for five years ranges from 0.004 – 0.90 acres of temporary impact and 0.004 – 0.90 acres of permanent impact to aquatic resources.

### *Installation of New Culverts:*

When no other alternative channel crossing is feasible new culverts will be installed in man-made or natural drainages, ephemeral, intermittent, and perennial streams, or utilized as outflow discharge structures in man-made ponds or wetlands.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0006 acres to 0.018 acres. Permanent impacts to aquatic resources are minimal and range from 0.0039 acres to 0.0203 acres. Removal of riparian vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is two to three culverts per year. The total anticipated effect for five years ranges from 0.006 – 0.27 acres of temporary impact and 0.039 – 0.30 acres of permanent impact to aquatic resources.

#### *Maintenance of Sediment-Debris from Culverts:*

During and/or prior to high winter flows, accumulated sediment and debris will be removed from culverts using equipment operated from the top of banks and levees, or by hand crews to maintain flow and prevent flooding. Some mechanized equipment may be required, and could include backhoe, ten-wheel dump truck, or four wheel drive truck. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. Woody debris that does not block flow will be left in place to provide habitat for fish and wildlife. These activities will have minimal temporary impacts to aquatic resources ranging from 0.0001 acres to 0.043 acres with no permanent impacts being anticipated. The expected frequency of this activity type is four to five culverts per year. The total anticipated effect for five years ranges from 0.002 – 1.075 acres of temporary impact to aquatic resources.

#### *Installation of New Culvert Head and Tailwalls:*

At locations with existing culverts the installation of new rock head and/or tail walls will be used to stabilize the streambank and prevent head and/or down cutting. These rock structures will be installed in the channel bed and bank.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to

riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.002 acres to 0.005 acres. Permanent impacts to waterbodies are minimal and range from 0.002 acres to 0.005 acres. Removal of riparian vegetation will be minimized; the work typically only requires the removal of lateral limbs to provide access. The expected frequency of this activity type is two to three head and/or tailwalls per year. The total anticipated effect for five years ranges from 0.02 – 0.075 acres of temporary impact and 0.02 – 0.075 acres of permanent impact to aquatic resources.

### *Installation of Energy Dissipaters:*

Energy dissipaters will be installed to prevent erosion associated with flow discharge from existing culverts. These structures consist of drain to rip-rap size rock and are similar to or an extension of a culvert tail-wall structure. Energy dissipaters are very effective in reducing channel erosion and down cutting.

Mechanized equipment, including excavator, backhoe and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees, avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.001 acres to 0.01 acres (mean per culvert = 0.0046 acres). Permanent impacts to aquatic resources are minimal and range from 0.001 acres to 0.01 acres. Removal of riparian vegetation will be minimized; the work typically includes the loss of bank or shoreline vegetation. The expected frequency of this activity type is one to two energy dissipaters per year. The total anticipated effect for five years ranges from 0.005 – 0.10 acres of temporary impact and 0.005 – 0.10 acres of permanent impact to aquatic resources.

### *Installation of Armored or Natural Rock Ford-Stream Crossings:*

Armored concrete pre-cast, open-cell, interlocking blocks will be laid within road crossings and/or trails and on top of the streambed and drainages. These fords will be installed in select locations to replace existing culverts and at natural drainage crossings to provide stability and minimize channel bed erosion. Ford crossings will be installed at the ground surface of the channel banks and bed. The armored crossings are designed and installed to maintain or improve flow and reduce erosion.

Hand tools are used for most of these construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. Ford crossings are approximately 10 to 12 feet wide and equivalent to the width of the corresponding road or trail crossing. The length of the crossing from bank to bank and the total area of the crossing vary based on the width of the channel. These activities, including the potential impacts to riparian, or wetland vegetation, will have a temporary disturbance ranging from 0.004 acres to 0.009 acres per project. Permanent impacts to aquatic resources range from 0.004 acres to 0.009 acres per project. The expected frequency of this activity type is two to three crossings per year. The total anticipated effect for five years ranges from 0.04 – 0.135 acres of temporary impact and 0.04 – 0.135 acres of permanent impact to aquatic resources.

#### *Maintenance of Existing Ford Crossings:*

The repairs made to existing armored or natural rock fords will help maintain road and/or trail crossings within streambed and drainages. These fords have been installed in select locations to replace existing culverts and at drainage crossings to provide stability and minimize channel bed erosion. Armored and rock ford crossings are installed at surface level and are designed to-maintain flow in the channel bed and reduce erosion.

Hand tools are used for most of the construction activities. Some mechanized equipment may be required and could include the use of an excavator, backhoe, ten-wheel dump truck, water truck, and soil compactors. This equipment will access the project sites and operate mostly on existing roads, trails, or levees and completely avoid wetted channels or other waterbodies. Ford crossing dimensions are equivalent to the width of corresponding road or trail crossings. The length of the crossing from bank to bank and the total area of the crossing vary based on the width of the channel. These activities, including the potential effects to riparian, or wetland vegetation, will have a temporary disturbance impact ranging from 0.005 acres to 0.01 acres per project. Permanent impacts to aquatic resources should be minimal and have an un-measurable effect. The expected frequency of this activity type is one crossing per year. The total anticipated effect for five years ranges from 0.025 – 0.05 acres of temporary impact to aquatic resources.

### *Maintenance and Installation of Clear Span Bridges:*

Clear-span bridges will be installed to replace existing culverts and natural (unarmored) stream crossings. Bridge concrete footings and abutments will be poured in place from above the top of the bank and will not have contact with channel flow. Each bridge span will be lowered into place by a crane operated from above the bank or tidal channel.

Other mechanized equipment, including excavator, backhoe, and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.01 acres per project with no permanent impacts to aquatic resources being anticipated. The expected frequency of this activity type is one bridge per year. The total anticipated effect for five years ranges from 0.0005 – 0.05 acres of temporary impact to aquatic resources.

### *Streambank, Shoreline, and Levee Stabilization:*

Bank and levee stabilization methods will be used in locations where bank or shoreline erosion has resulted in: (1) the release of sediment exceeding that generated by natural processes; (2)-unstable road, trail, pathway, or levee structures; (3) erosion around a culvert or bridge abutments; and (4) major environmental or structural damage. Stabilization methods include the installation of log crib walls, replacing existing rip-rap, extending rip-rap sections, upland and riparian vegetation planting, and other bio-engineering techniques.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, and soil compactors, will operate mostly on existing roads and levees avoiding wetted channels or waterbodies. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.09 acres per project. Permanent impacts to aquatic resources range from 0.0001 acres to 0.09 acres per project. The expected frequency of this activity type is three to four stabilization projects per year. The total anticipated effect for five years ranges from 0.0015 – 1.8 acres of temporary impact and 0.0015 – 1.8 acres of permanent impact to aquatic resources.

### *Maintenance and Installation of Spring Boxes:*

Spring box repairs include the maintenance of existing wood, metal, and slotted vertically placed collector pipe located to collect water in a seep or spring. The placement of new spring boxes mostly consists of installing slotted vertical collector pipe within these waterbody types. Spring box maintenance and development may also include the installation or repair of above or underground pipelines for conveying water from these water sources to alternative locations, including water tanks or troughs in conjunction with improving the distribution of livestock. Whenever possible, pipelines will be installed in existing roads and trails. All troughs will have escape ramps for wildlife.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.0001 acres to 0.0016 acres per project. Permanent impacts to aquatic resources range from 0.005 acres to 0.01 acres per project. The expected frequency of this activity type is four to five spring boxes per year. The total anticipated effect for five years ranges from 0.002 – 0.04 acres of temporary impact and 0.1 – 0.25 acres of permanent impact to aquatic resources.

### *Maintenance Dredging of Silt Basins, Ponds, and Lakes:*

Maintenance dredging would occur in silt basins, ponds, lakes, and muted tidal wetlands to restore silt capacity and open water habitat for listed and/or aquatic species. Sediment removal may also incorporate design features to improve flow to and from receiving waters.

Mechanized equipment including excavator, backhoe, ten-wheel dump truck, and small trucks, will operate mostly on existing roads, trails, levees, and disturbed areas. These activities, including the potential effects to riparian, or wetland vegetation, have temporary disturbance impacts ranging from 0.014 acres to 0.03 acres per project. The expected frequency of this activity type is eight to ten dredging projects per year. The total anticipated effect for five years ranges from 0.56 – 1.5 acres of temporary impact to aquatic resources.

### *Maintenance of Existing Recreational-Shoreline Facilities:*

Maintenance to existing recreational facilities would include repairs and/or replacement of docks, fishing piers, boat launches, marsh boardwalks and overlooks. The maintenance and replacement of these structures will preserve public access and ensure public safety. Non-toxic materials will be used in all repairs and replacement structures.

Mechanized equipment, including excavator, backhoe, crane, and ten-wheel dump truck, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Small water craft could also be used in open water to provide access and conduct repairs. These activities, including the potential effects to riparian, or wetland vegetation, will have temporary disturbance impacts ranging from 0.005 acres to 0.02 acres per project.

Permanent impacts to aquatic resources range from 0.005 acres to 0.02 acres per project. The expected frequency of this activity type is one to two shoreline projects per year. The total anticipated effects for five years ranges from 0.025 – 0.20 acres of temporary impact and 0.025 – 0.20 acres of permanent impact to aquatic resources.

### *Removal of Hazardous Man-made Structures:*

Abandoned structures acting as a barrier to fish and wildlife movements or hazards to public safety will be removed from various waterbodies including streams, ponds, lakes, tidal channels estuaries, and bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of objects.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, and all-terrain vehicles (ATV's), will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Various water craft could also be used in open water to provide access and remove objects. These activities, including the potential effects to riparian, or wetland vegetation, will have minimal temporary disturbance impacts and un-measurable permanent effects to waterbodies. This activity type will be conducted as needed. Overall, for a five and ten year period, this activity is anticipated to have minimal adverse effect to various aquatic resources.



### *Removal of Vessels:*

Abandoned vessels acting as a barrier to fish and wildlife movements or hazards to navigation or public safety will be removed from various waterbodies including streams, ponds, lakes, tidal channels, estuaries, and bay waters. If possible, structures will be removed in their entirety. Excavated and disturbed areas will be restored following removal of objects.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, and ATV's, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. Various water craft would be used in open water to provide access and remove objects. These activities, including the potential effects to riparian, or wetland vegetation, will have minimal temporary disturbance impacts and un-measurable permanent effects to waterbodies. This activity type will be conducted as needed. Overall, for a five and ten year period, this activity is anticipated to have a minimal adverse effect to various aquatic resources.

### *HABITAT RESTORATION PROJECTS:*

The District will restore various water-based ecosystems, including lentic, lotic, and tidal habitat. Restoration activities will focus on enhancement and/or creation of these aquatic ecosystems, with the primary objective to promote the conservation and recovery of listed species.

#### *Lentic Waterbody (Pond) Restoration Projects*

Pond restoration projects would include major repairs and restoration of man-made lentic waterbodies. These ponds provide water for livestock and support a variety of wildlife species. Projects will be designed to enhance aquatic habitat for wildlife, reduce erosion and sedimentation to receiving waters, and improve livestock water availability and grazing distribution. Activities could include the re-construction of failed ponds, removal of sediments or de-siltation, and modifications of existing ponds to restore the original capacity and inundation period, repair and/or replacement of structural components such as spillways, overflow discharge pipes, earthen dam and embankment stabilization; removal of man-made obstructions or debris, control of noxious weeds, establishment of native vegetation, and control of non-native predators. Exotic predator control may involve the de-watering or draining of the

pond. The implementation of these activities will mostly be temporary impacts to upland, riparian, or wetland vegetation and will have minimal permanent impact. It is anticipated that between 6 and 20 pond restoration projects will be proposed during a five-year duration of the authorization.

Mechanized equipment, including excavator, backhoe, ten-wheel dump truck, four wheel drive trucks, soil compacters, and ATV's, will access the project sites and typically operate on existing roads and earthen dam levees avoiding wetted channels. The implementation of these activities will mostly be temporary impacts to riparian, or wetland vegetation and will have minimal permanent impact.

#### Stream (Lotic Waterbody) Restoration Projects

Stream restoration activities would involve the enhancement or restoration of ephemeral, intermittent, or perennial streams and riparian corridors to improve habitat characteristics for listed and other native species. Restoration projects will incorporate hydrologic, hydraulic, biological, and geomorphic processes and will be designed to enhance stream function, promote dynamic equilibrium, reduce erosion, improve water quality to receiving waters, and improve aquatic habitat characteristics and/or riparian vegetative structure within the restored stream reach.

Restoration may include installation of in-stream structures to stabilize and protect degraded streambanks could include using boulder riprap, boulder wing deflectors, rock weirs, root wad deflectors, log cribbing, live vegetated crib walls, tree or native material revetment, brush mattresses, and native re-vegetation. Geomorphological design could include, but not be limited to, changes in gradient, sinuosity, channel slope and type, cross-section and flood plain profile, and bankside vegetation. To the extent practicable, invasive noxious weeds will be controlled or removed. Appropriate native vegetation will be used for riparian restoration or for replanting exposed banks in a way that will replicate the existing biological conditions to stream reach corridor.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, soil compacters, and ATV's, will access the project sites and operate mostly on existing roads, trails, and levees avoiding wetted channels or waterbodies. The implementation

of these activities will result in mostly temporary impacts to riparian, wetland vegetation, stream substrate and bank, but will have minimal permanent impact. It is anticipated that between 4 to 6 stream reach projects will be proposed over the five-year duration of the authorization.

#### Tidal Emergent Wetland Restoration Projects

Wetland restoration projects would involve restoration and enhancement efforts to improve the habitat quality of tidal emergent wetlands or shorelines. This may include various restoration activities in tidal flats and wetlands, diked baylands, and directly adjacent transitional upland habitats.

Project designs could include, but not be limited to, changes in tidal action, flood plain profile, and vegetation types in degraded wetland areas. To the extent practicable, this will include the control of non-native species and predators in tidal wetlands and/or adjacent transitional upland habitats. Invasive noxious plant species will be controlled or removed. Exposed wetland areas will be replanted with the appropriate native vegetation that will be determined using reference sites of other functional wetlands with similar profiles dominated by native vegetation types.

Mechanized equipment, including excavator, backhoe, crane, ten-wheel dump truck, four wheel drive trucks, soil compactors, and ATV's, will access the project sites and operate mostly on existing roads and levees avoiding wetted channels or waterbodies. The implementation of these activities will result in mostly temporary impacts to wetland vegetation, or tidal substrate, and will have minimal permanent impact. The anticipated tidal wetland restoration projects may include, but not be limited to, the removal of non-native vegetation, the removal of man-made debris or hazardous materials, and the re-establishment of native tidal and high marsh vegetation to enhance habitat conditions. It is anticipated that between 2 to 4 tidal marsh projects will be proposed over the five-year duration of the authorization.