ANNUAL NOTICE OF PROPOSED WORK FOR 2021 STREAM MAINTENANCE PROJECTS

CITY OF LIVERMORE STREAM MAINTENANCE PROGRAM

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East Alameda County Conservation Strategy Biological Opinion

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Acronyms and Abbreviations

ACRCD	Alameda County Resource Conservation District
BMP	Best Management Practices
CASQA	California Stormwater Quality Association
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
City	City of Livermore
CRLF	California red-legged frog
CTS	California tiger salamander
CY	Cubic Yards
EACCS	East Alameda County Conservation Strategy
FP	Fully Protected
FE/FT	Federally Endangered/Threatened
DBH	Diameter at breast height (4.5-feet)
LARPD	Livermore Area Regional Parks District
LF	Linear Feet
MND	Mitigated Negative Declaration
Project	Stream Maintenance Projects
RWQCB	Regional Water Quality Control Board
SF	Square Feet
SMP	Stream Maintenance Program
SSC	Species of Special Concern (California)
SE	State Endangered
ST	State Threatened (California)
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

2021 Stream Maintenance Projects

Introduction

The Livermore Stream Maintenance Program (SMP) was developed by the City of Livermore (City) to improve and define the management and maintenance of engineered and modified flood control channels and basins, and non-modified natural creeks within the City's SMP Area. The SMP establishes programmatic guidance to conduct maintenance activities and avoid and minimize environmental impacts. The SMP also provides the organizational framework to oversee routine creek and channel maintenance activities and ensure the program is compliant with the terms and conditions of its permits. Appendix D contains the complete SMP manual, which describes all elements of the program in detail. Pursuant to the California Environmental Quality Act (CEQA), a Mitigated Negative Declaration (MND) was prepared for the SMP. Pursuant to the Regional Water Quality Control Board General Order Item 68, a channel inventory was prepared and is contained within Appendix E.

The management and operation of the SMP occurs as an annual cycle of activities called the *work cycle*. The work cycle begins each year with a field-based creek and channel reconnaissance and assessment to determine the most critical stream maintenance projects.

The 2021 SMP work cycle includes nine (9) projects that involve a combination of sediment, vegetation, and debris management projects and seven (7) vegetation and debris management projects. This notification has been prepared for the City of Livermore's proposed 2021 Stream Maintenance Projects (project). Stream maintenance activities proposed are described in the sections below.

The activities proposed in 2021 were identified and further prioritized based on the following.

- Guidance provided by SMP Maintenance Principles (Chapter 4, *Pre-Maintenance Planning Approach and Impact Avoidance*, of the SMP).
- The relative severity of reach conditions and need for maintenance.
- SMP framing considerations, management goals, and management triggers, as described under the corresponding approach in Chapter 4.
- Consideration of past/recent flooding conditions.
- Benefits to water quality, habitat, and recreation.
- Available funding.

Background

The 2021 SMP projects consists of a total of 11 projects at 10 site locations and an additional five (5) yearly maintenance projects at five (5) locations. where site-specific investigation has determined that maintenance activities are necessary to restore stormwater conveyance capacity, reduce flood and fire hazards, and improve habitat value. All the proposed projects lie within the modified flood control channels and unmodified natural creeks within the City's SMP Area.

Of the total 11 SMP Projects, eight (8) projects will involve a combination of sediment, vegetation, and debris management and three (3) projects will involve vegetation and debris management. The five (5) Yearly Maintenance projects will involve one (1) sediment removal project, two (2) vegetation management projects and two (2) debris/trash removal projects. A discussion of the general project types and a list of specific projects is provided below, with brief summary descriptions of the work to be implemented at each site. Best Management Practices (BMP) will be implemented, as appropriate, at each project site to avoid and minimize adverse impacts. BMPs for the project activities are identified by project in Appendix C. Table 1 (below) summarizes project locations and stream reaches.

Impact Analysis and Documentation

For the purposes of this 2021 Notification, impacts are approximate and estimated based on preliminary site evaluations and pre-construction assessments. These estimates are subject to change based on changing site conditions from fluvial geomorphological changes between the time of authoring this report and project implementation. Other factors can also contribute to changes in impacts, including newly identified biological and cultural constraints, de-watering implications, and site access issues. Therefore, mitigation requirements for impacts to waters, riparian, and focal species will be finalized in the "Annual Post-Construction Report and Summary 2021 Stream Maintenance Projects", prepared by the ACRCD. All impact calculations will be based on as-built, post construction measurements.

Proposed Project Types

Sediment, Vegetation, and Debris Management

Eight (8) sites will involve a combination of sediment and vegetation management activities; primarily from or adjacent to engineered stream and stormwater conveyance structures. Five (5) of these projects involve outfall and outfall toe-drainage maintenance, involving sediment and vegetation maintenance operations. Three (3) projects include maintenance under and around culverts or bridges. These maintenance sites will be graded in a manner to ensure the transition between the maintained and unmaintained areas is smooth and does not result in increased erosion or impacts to water quality.

Vegetation Management (Native and Nonnative), Trash and Debris Removal

Vegetation management and debris removal activities will occur at three (3) sites and involve the limbing and pruning with select removal of nonnative and native trees. Two of these projects two are focused on invasive trees within riparian zones and one involves removing Himalayan blackberry infestations from an outfall zone and removal of one eucalyptus. While these projects will focus on invasive trees and shrubs, removal of arroyo willows will occur at one site. Debris and trash removal will be included with this work.

Yearly Maintenance Project Sites

The 2021 SMP Work Cycle will include five (5) yearly maintenance projects at five (5) sites. These sites have been determined to require regular maintenance and will therefore be included in the notification on an annual basis. These sites occur on pre-disturbed upland areas, sites where state waters mitigation has been previously fulfilled, and/or where minimal disturbance is anticipated.

Project Need

The projects identified in this annual notification have been evaluated by the ACRCD Stream Restoration Specialist, consulting biologists and City staff and represent the most urgent maintenance needs within the City's SMP Area. The urgency is based on the threat of flood or fire, risks to infrastructure, or hazards to habitat value for fish and wildlife. These projects were identified as maintenance priorities in the City's annual channel assessment, and were chosen from a larger group of maintenance needs in accordance with the maintenance prioritization procedures laid out in the SMP Manual (Ch. 9). The maintenance principles, triggers, and "no unnecessary intervention framework" from Section 4 of the SMP Manual have been used as the defining baseline for determining project need. Maintenance Principle number 5 from SMP Manual section 4 describes management for incremental ecological improvement, is also a primary focus in 2021.

Need for Sediment, Vegetation, and Debris Management

For 2021, eight (8) sites along Arroyo Las Positas, Arroyo Mocho, and Bear Creek Basins require maintenance to alleviate flooding risks while incorporating focus on enhancing natural resources (Sites 46, 47, 48, 49, 50, 51a, 53 and 54). These sites have problematic vegetation growth along with sediment and debris accumulation that have impacted storm drain and stream conveyance structures to function as designed.

One or more of following sediment management triggers from "Chapter 4, *Pre-Maintenance Planning Approach and Impact Avoidance"*, of the SMP have been met at each site.

- In-stream structures designed to direct flows for flood management are causing excessive sediment deposition.
- Sediment is accumulating in a way that supports excessive vegetation growth, threatening creek or channel capacity.
- In-stream hardscape requires sediment removal to maintain as-built functions.
- Sediment and vegetation management offers good opportunities to improve habitat value for fish and wildlife.

Need for Vegetation, Trash, and Debris Management

In 2021 all 11 sites require some form of vegetation management and/or debris removal in order to maintain channel capacity, minimize damage to infrastructure, reduce fire fuels, and improve water quality/habitat. One or more of the following triggers have been identified at these sites.

- Vegetation growth and annual die-off is significantly increasing fire risk adjacent properties are at risk.
- Invasive nonnative plants are reducing the success of native vegetation

- Vegetation management offers good opportunities to improve habitat value for fish and wildlife.
- Trash and debris accumulation are impacting flood conveyance capacity of hardscape stream structures.
- Trash removal offers good opportunities to improve habitat value for fish and wildlife.
- Trash and decaying debris present a threat to fish, wildlife, and public health.

Need for Sediment, Vegetation, Trash, and Debris Management at Yearly Maintenance Sites

In 2021 five (5) Yearly Maintenance Sites require some form of sediment, vegetation, debris, and/or trash management to maintain channel capacity, minimize damage to infrastructure, reduce fire fuels, enhance ecological function, and improve water quality. At least one or all of the triggers mentioned above can be applied to these Yearly Maintenance Sites.

Specific Projects and Locations

The following specific projects are proposed for the 2021 maintenance season (Table 1 provides details regarding the location and stream reach ID of each project). Appendix A contains figures which depict the regional context and local project site locations.

- *2021 SMP Work Cycle:*

  - Sediment Removal, Vegetation, and Debris Management (8 Projects)

    - Bear Creek Basins – Outfall maintenance (SMP #46,47,48)
    - Arroyo Las Positas –Outfall maintenance (SMP #49)
    - Arroyo Mocho – Outfall maintenance (SMP #50)
    - Arroyo Mocho – Stanley Bridge Apron Sediment and Vegetation Removal (SMP #51A)
    - Arroyo Las Positas – Culvert maintenance (SMP #53,54)

  - Vegetation Management, Trash, and Debris Removal (3 Projects)

    - Arroyo Mocho – Robertson Park Vegetation removal at Outfall (SMP #52)
    - Arroyo Mocho – Tree removal/ limbing between Railroad Bridges (SMP #51B)
    - Arroyo Las Positas – Upstream Bluebell Dr. Tree removal/ limbing (SMP #55)

  - Yearly Maintenance Projects (5 Annual Projects)

    - Arroyo Mocho – Holmes Street Bridge Sediment Removal (YM-1)
    - Arroyo Mocho (upland) – Medeiros Parkway fire breaks (YM-2)
    - Granada Channel – tree limbing and debris removal (YM-3)
    - Collier Canyon Creek - Debris rack cleaning Collier Canyon Road (YM-4)
    - Arroyo Las Positas – Trash/debris removal at Airway Blvd (YM-5)

Table 1. 2021 SMP Project Locations, Stream Reaches, and Land Uses

SMP Site	Location	Latitude	Longitude	Waterbody	Stream Reach ID[1]	Tributary	Adjacent Land Use	Ownership
46	Bear Creek Basins - Corner of Laughlin and Bluffs - sediment and vegetation management	37.727581	-121.711243	Basin	BS-1	Altamont Creek	Residential Development	City
47	Bear Creek Basins - Lake Drive - sediment and vegetation management - culvert maintenance	37.728881	-121.712807	Basin	BS-1	Altamont Creek	Residential Development	City
48	Bear Creek Basins - Meadowglen Dr. (north) - sediment and vegetation management	37.727247	-121.713784	Basin	BS-2	Altamont Creek	Residential Development	City
49	Basin outfall maintenance for HMP Basin 1 outfall below fish ladder	37.695043	-121.848615	Arroyo Mocho	ALP-1	Arroyo Mocho	Commercial Development	City/Zone 7
50	Vegetation and sediment management at outfall structure west of Holmes St Bridge	37.67461	-121.782008	Arroyo Mocho	AM-5	Arroyo de la Laguna	Residential Development	City
51A	Stanley Bridge vegetation management, sediment and debris removal	37.678124	-121.789208	Arroyo Mocho	AM-3 TDR - 1	Arroyo de la Laguna	Residential Commercial Development	City/Zone 7
51B	E. Stanley at RR bridge - vegetation management and debris removal	37.678445	-121.789266	Arroyo Mocho	AM-3 TDR - 1	Arroyo de la Laguna	Residential Commercial Development	City/Zone 7
52	Vegetation and debris management – eucalyptus removal West Robertson Park	37.67151	-121.763047	Arroyo Mocho	AM-7	Arroyo de la Laguna	Residential Development, Park	LARPD
53	Vegetation, debris, and sediment management both aprons and wingwalls Heather Lane	37.716259°	-121.734066	Arroyo Las Positas	ALP-12	Arroyo Mocho	Residential Development, Golf Course	City
54	Vegetation, debris, and sediment management both aprons and wingwalls Bluebell Drive	37.671390	-121.764940	Arroyo Las Positas	ALP-11	Arroyo Mocho	Residential Development, Golf Course	City

SMP Site	Location	Latitude	Longitude	Waterbody	Stream Reach ID[1]	Tributary	Adjacent Land Use	Ownership
55	Vegetation management east of Bluebell Drive	37.671390	-121.764940	Arroyo Las Positas	ALP-11	Arroyo Mocho	Residential Development, Golf Course	City
YM-1[2]	Holmes Street Bridge Annual Sediment Maintenance	37.693969°	-121.847168°	Arroyo Mocho	AM-6	Arroyo de la Laguna	Residential Development, Park	City/Zone 7
YM-2[2]	Medeiros Parkway Firebreak	37.674051	-121.777169	Arroyo Mocho	AM-6	Arroyo de la Laguna	Residential Development	Zone 7
YM-3[2]	Granada Channel Vegetation Management	37.675293	-121.795844	Granada Channel	GC-1 to CG-2	Arroyo Mocho	Residential Development	City
YM-4[2]	Collier Canyon Trash Rack - Debris Removal	37.711069	-121.805568	Collier Canyon Creek	CCC-7	Arroyo las Positas	Residential Development, Rangelands	City
YM-5[2]	Airway Blvd Trash and Debris Removal	37.698611	-121.818161	Arroyo Las Positas	CCC-7	Arroyo Mocho	Commercial Development	City/Zone 7
Mitigation Site	Robertson Park - Planting Extension	37.670833	-121.7606	Arroyo Mocho	AM 8	Arroyo de la Laguna	Residential Development and Park	LARPD
Mitigation Site	Golf Drive Planting - Springtown	37.715642	-121.745342	Arroyo Las Positas	CCC-7	Arroyo Mocho	Residential Development, Golf Course	City
Mitigation Site	Robertson Park Invasive Plant Management Plan	37.667998	-121.751201	Arroyo Mocho	AM-9	Arroyo de la Laguna	Public Facilities, Vineyards, Park	City/LARPD

[1]Stream Reaches and Storm Drain Feature Acronyms (From SMP Manual Map Book):
AM: Arroyo Mocho, ALP: Arroyo Las Positas, CCC: Collier Canyon Creek, GC: Granada Channel , SDO: Storm Drain Outfall
[2]YM = Yearly Maintenance Projects

Table 2. Impacts to Waters of the United States and the State of California[1]

Site	Maintenance Activity[2]	Estimated Impacts on Waters of the U.S./State[3]				Volume Excavated Sediment	Riparian Vegetation Impacts (trees >4" DBH)
		Permanent Impacts[4]		Temporary Impacts[4]			
		(SF)	(LF)	(SF)	(LF)	(CY)[5]	
46	Vegetation, Sediment, and Debris Management - Laughlin and Bluffs	16	4	400	12	3	One willow tree>4" DBH remove. <4-" DBH to be removed ornamental privet trees, willow scrub, and two coast live oaks
47	Vegetation, Sediment, and Debris Management – Lake Drive	16	4	500	10	5	One willow tree>4" DBH remove. <4-" DBH willow scrub and ornamental trees to be pruned
48	Vegetation, Sediment, and Debris Management – Outfall Meadow Glen	25	5	350	63	3	One coyote brush
49	Vegetation, Sediment, and Debris Management – HMP Basin Outfall	0	0	354	30	--	Native and non-native herbaceous and wetland vegetation growing on outfall soil deposits
50	Vegetation, Sediment, and Debris Management – West of Holmes Street	0	0	4,700	92	--	Sandbar and arroyo willow <4" DBH
51A	Vegetation, Sediment, and Debris Management – Stanley Bridge Apron	--	--	9,050	90	425	Cottonwood, willow, mulefat and nonnative trees,<4" DBH
51B	Vegetation and Debris Management – Between Railroad Bridges	--	--	3,450	260	--	9 hazard eucalyptus trees, 2 dead trees, 2 palm trees, one ash tree, one diseased elm tree
52	Invasive Vegetation Management at Outfalls and Dying Eucalyptus Removal - West of Robertson Park	--	--	--	--	--	One hazard eucalyptus, blackberry at outfalls
53	Vegetation, Sediment, and Debris Management - Heather Lane Culvert	--	--	1,810	15	10	Cattail and tule
54	Vegetation, Sediment, and Debris Management - Bluebell Drive Culvert	--	--	5,000	30	135	Cattail and tule
55	Vegetation Management – Bluebell Drive Upstream Riparian	--	--	--	--	--	·14 >4" DBH willow tree removals = (14x3) = 42 trees Tier 1 mitigation ·Raise canopy 6' Remove vegetation (< 4" DBH) entire stretch. ·Prune 36 palms

Site	Maintenance Activity[2]	Estimated Impacts on Waters of the U.S./State[3]				Volume Excavated Sediment	Riparian Vegetation Impacts (trees >4" DBH)
		Permanent Impacts[4]		Temporary Impacts[4]			
		(SF)	(LF)	(SF)	(LF)	(CY)[5]	
YM-1	Sediment Removal - Holmes Street	--	--	23,748	350	700	In channel native and non-native herbaceous, weedy vegetation
YM-2	Vegetation Management – Mederios Parkway Fire Break	--	--	--	--	--	Annual grasses and weeds. Regularly disturbed fire break footprint.
YM-3	Vegetation and Debris Management - Granada Channel	--	--	--	--	--	Pruning of native and nonnative trees, no removal
YM-4	Debris and Trash Removal - Collier Canyon Debris Rack	--	--	--	--	--	None
YM-5	Debris and Trash Removal – Airway Blvd.	--	--	--	--	--	None
Totals		**57**	**13**	**49,362**	**602**	**1,287**	

[1] Table 2 summarizes total estimated waters impacts regardless of whether mitigation has already been fulfilled. Table 5 summarizes the true mitigation requirements for 2021.

[2] RWQCB Order No. R2-2016-0036 Table 1; No impacts to waters are assumed for upland staging areas (outside OHWM and top of bank)

[3] These 2021 SMP projects impacts occur where in-stream, wetland, and riparian features can be considered both waters of the US and State

[4] Impact areas account for actual as built impacts and will be mitigated for based on these final calculations

[5] Excavation quantity determinations are the estimated maximums based on excavation dimensions, not considering local topography. Actual as built excavation quantities will be documented in the 2021 SMP Annual Report.

SF = square feet; LF = linear feet; CY = cubic yards; DBH = diameter at breast height (in inches); YM = Yearly Maintenance;

Project Descriptions

A total of 11 project activities are proposed at 10 site locations. An additional 5 yearly maintenance projects are proposed at 5 additional locations. The extent of each project location is included in Appendix A. Representative photos of each of the project sites are provided in Appendix B.

Site 46 – Sediment and Vegetation Outfall Management at Laughlin Road

Proposed work at Site 46 will consist of sediment removal and vegetation management from a storm drain outfall that is a component of The Bluffs neighborhood stormwater basin system. The outfall is located at the northwest corner of Laughlin Road and Bluffs Drive in northeast Livermore. Riprap was installed at this site in 2017 to keep vegetation growth from obstructing the pipe, however, vegetation has grown in the riprap, capturing sediment and blocking flow. The work will occur at the outfall discharge area that accepts stormwater from Laughlin Road and surrounding drainage areas. The outfall discharge area is obstructed with sediment and vegetation, triggering flooding hazards to surrounding streets and homes.

The proposed work requires excavating 3 CY of sediment and removing the previously installed riprap (installed under the SMP in 2017) from a permanently impacted (and previously permanently mitigated) 4-foot by4-foot area (16 SF) at the storm drain outfall to a depth of approximately 24-inches. A 4-foot by 4-foot (16 SF, 5CY) concrete pad will be installed in place of the riprap that was previously installed in 2017 because the riprap did not adequately minimize vegetation and sediment from filling in and obstructing the pipe. The concrete pad will allow for regular maintenance of the outfall area limiting the need to repeatedly impact aquatic resources and disturbance to surrounding habitat. This work will require minor localized grading around the storm drain outfall to reestablish the as-built grades and contours around the concrete pad. Approximately 3 CY of sediment and riprap will be excavated at the outfall and grading the surrounding area to original as-built design (temporary impact 400 SF).

Vegetation management will also need to occur along with sediment removal, as several trees are clustered around the outfall opening and are causing sediment accumulation issues. One willow tree with a trunk diameter greater than 4-inches DBH will be removed. Trees less than 4-inches DBH to be removed include ornamental privet trees, willow scrub, and two coast live oaks. Upon removal of sediment and vegetation, the outfall pipe will be hydro-cleaned using a vacuum truck to ensure the storm drainpipe is clear and functions correctly.

The work will be conducted with an excavator from south side of the basin slope (for access and staging see Figures in Appendix A). The site will be accessed from a ruderal access road that runs parallel with the sidewalk and fence line along Bluffs Drive. Staging will occur within the access limits and on Bluffs Drive.

Activities at Site 46 includes removal of a single pampas grass approximately 375 LF to the northwest of the Laughlin culvert at the Dry Creek Court cul-de-sac. Work will be performed by hand with assistance from an excavator to remove the root mass (temporary impact of 16 SF). Equipment will stage on the ruderal disturbed area between the end of the cul-de-sac

and top of basin. No other work is proposed at the Dry Creek Court outfall. Dewatering is not anticipated to be necessary for the activities occurring at Site 46 as work is being conducted within the ephemeral stormwater basin that typically only receives flows on a seasonal basis.

Site 47 – Sediment and Vegetation Outfall Management at Lake Drive

Proposed work at Site 47 will consist of sediment removal and vegetation management from a storm drain culvert inlet area that is a component of The Bluffs neighborhood stormwater basin system in northeast Livermore. Riprap was installed at this site in 2017 to keep vegetation growth from obstructing the pipe, however, vegetation has grown in the riprap, capturing sediment and blocking flow. The work will occur at the upstream side of a 100-foot-long portion of a 12-inch basin culvert pipe that conveys flows under Lake Drive. The inlet is burdened with sediment and vegetation that is obstructing stormwater flows and is causing localized flooding to surrounding streets and homes.

The proposed work requires excavating 5 CY of sediment and removing the previously installed riprap from a permanently impacted (and previously permanently mitigated) 4-foot by 4-foot area (16 SF) at the culvert inlet area to a depth of approximately 24-inches. A 4-foot by 4-foot (16 SF, 5 CY) concrete pad will be installed as the riprap that was previously installed in 2017 has been filled in by sediment. The concrete pad will allow for regular maintenance of the outfall area limiting the need to repeatedly impact aquatic resources and disturbance to surrounding habitat. This work will require minor localized grading around the storm drain outfall to reestablish the as-built grades and contours around the concrete pad. Once sediment and riprap are excavated the surrounding area will be regraded to original as-built design (temporary impact 500 SF).

Vegetation management will also need to occur with sediment removal, as one arroyo willow tree is blocking the culvert opening and is contributing to sediment accumulation issues. This arroyo willow tree with a trunk diameter greater than 4-inches DBH will be removed. Some willow scrub and nonnative ornamentals less than 4-inches DBH will be pruned for access, but none will be removed completely. Upon removal of sediment and vegetation, the culvert pipe will be hydro-cleaned using a vacuum truck to ensure the storm drainpipe is clear and functions correctly.

The work will be conducted with an excavator from the north of the inlet culvert pipe along the side of the basin slope (for access and staging see Figures in Appendix A). Dewatering is not anticipated to be necessary at Site 47, as work is being conducted at an ephemeral stormwater basin that typically only receives flows on a seasonal basis.

Site 48 – Sediment and Vegetation Outfall Management at Meadow Glen Drive

Proposed work at Site 48 will consist of sediment removal and vegetation management from a storm drain outfall that is a component of The Bluffs neighborhood stormwater basin system. The outfall is located near the dead end of the northern portion of Meadow Glen

Drive in northeast Livermore. Sediment buildup and an adjacent coyote brush shrub along with nonnative grass/forb growth have affected the function of the outfall. Included with the outfall work is erosion repair. An erosion rill has formed from the outfall discharges, likely caused from outfall obstruction and improper function.

The proposed work consists of excavating and removing the coyote brush shrub and sediment from a 5-foot by 5-foot area (25 SF) at the storm drain outfall to a depth of 18-inches and grading the surrounding area to original as-built design (temporary impact 75 SF). Once excavated, a silt barrier fabric and 6-inch layer (1 CY) of ungrouted riprap will be placed in the bottom of the impacted excavated area to minimize erosion and vegetation regrowth (permanent impact 25 SF). Erosion repair will involve using a backhoe to repair the incised rill and regrade a 3-foot by 60-foot (180 SF) drainage that will result in temporary impacts. Approximately 3 CY of sediment will be excavated at the outfall and grading will involve 1.5 cubic yards of soil movement within the work area. The erosion repair will be regraded and a non-mesh coconut blanket with native seed mix will be installed.

The work will be conducted with an excavator and backhoe, immediately adjacent to the outfall and erosion rill area. The work area will be accessed from a previously disturbed access road at the end of Lake Court (for access and staging see Figures in Appendix A, impacts to waters are not anticipated for access as the route is at the top of the basin bank and is regularly disturbed. Dewatering is not anticipated to be necessary at Site 48, as work is being conducted at an ephemeral stormwater basin that typically only receives flows on a seasonal basis.

Site 49 – Sediment and Vegetation Management at El Charro Specific Plan HMP Dual Pipe Outfall along Arroyo Las Positas

Proposed work at Site 49 will encompass one day of work and consist of sediment and vegetation removal from a storm drain outfall consisting of two concrete pipes with a cemented rock-lined spillway that conveys capacity flows from the El Charro Specific Plan Hydromodification Management Plan (HMP) Basins #1 and #2 into Arroyo Las Positas in west Livermore. The two (36-inch and 24-inch) concrete outfalls pipes discharge storm flows into the stream approximately 100 LF downstream of the Zone 7 fish ladder. Invasive plants and sapling willow scrub with accompanying sediment buildup are affecting the function of the outfall to adequately discharge.

The proposed work consists of removing plant root masses and sediment from a 354 SF area within the storm drain outfall cemented rock spillway. Approximately 5 CY of sediment will be removed with invasive plant and willow scrub roots (temporary impacts 354 SF).

This area has been previously impacted under the El Charro Specific Plan and impacts to waters of the US and Waters of the State previously permanently mitigated. Therefore, no additional mitigation is required for work being conducted at this location. The work will be conducted with an excavator working from a developed pedestrian trail to the north of the outfall, above the top of bank. The work area will be accessed from the pedestrian trail (for access and staging see Figures in Appendix A).

Site 50 – Sediment and Vegetation Management at Baffle Outfall Structure along Arroyo Mocho

Proposed work at Site 50 will encompass one day of work and consist of sediment and vegetation removal from a storm drain outfall concrete drainage and baffles that discharges into Arroyo Mocho, approximately 500 LF downstream of Holmes Street Bridge. Nonnative herbaceous plants and sapling sandbar willow scrub with accompanying sediment buildup are affecting the function of the outfall to adequately discharge as designed. The proposed work consists of removing plant root masses and associated sediment from a 140 SF area of the storm drain outfall concrete drainage. Approximately 5 CY of associated sediment will be removed with invasive plant and willow scrub roots will be temporarily impacted.

In addition to the outfall maintenance 10 CY of native course gravel fill from Holmes Street Bridge will be placed in scour depressions that have formed in the streambed from the outfall apron runoff points. The scour has likely formed from uneven flow caused by the vegetation and sediment growing on the concrete, resulting in channelized flow patterns. The repurposed native fill scour repair area will be compacted and graded to the existing channel bed contours. In total the work along the outfall and within the channel bed is estimated to account for 4,700 SF (maximum) of temporary impacts and as-built conditions will be documented in the annual report.

Work will be conducted with an excavator from the banks and channel bed. The work area will be accessed from the pedestrian trail (for access and staging see Figures in Appendix A). Dewatering is not expected to be necessary for work at this site. The Arroyo Mocho is naturally ephemeral and as of this report, Zone 7 does not plan to release aqueduct flows for groundwater recharge

Site 51A – Sediment, Vegetation, and Debris Management between Stanley Blvd Bridge and the Old Railroad Bridge along Arroyo Mocho

Proposed work at Site 51A will consist of sediment, vegetation, and debris removal from a concrete bridge apron between the Stanley Blvd. Bridge and the decommissioned railroad bridge. Invasive plants including eucalyptus, sapling cottonwoods, and sapling willow growth along with accompanying sediment buildup are affecting the ability of the concrete lined channel section to convey stream flows. Work was completed at this site in 2017 and in the general vicinity in 2020, however, sediment and vegetation continue to accumulate at the site.

The proposed work consists of removing plant root masses and sediment from a 9,050 SF area that have built up on top of the concrete bottom. Approximately 425 CY of sediment will be removed with plant roots and this area will be temporarily impacted. In addition to the outfall maintenance, 25 CY of native course gravel fill from Holmes Street Bridge and quarter ton rip rap will be placed in scour depressions that have formed at the toe of the concrete apron from the Old Railroad Bridge and streambed. The scour depressions have likely formed from uneven overland flow caused by the vegetation and sediment establishing

on the concrete apron, resulting in irregular channelized flow patterns. The repurposed native fill work area will be compacted and graded to the existing channel bed contours. In total the work along the apron and within the channel bed is estimated to account for 9,050 SF (maximum) of temporary impacts and as-built conditions will be documented in the annual report.

Work will be conducted with a backhoe from the channel bed. The work area will be accessed from the eastern pedestrian trail (for access and staging see Figures in Appendix A). Vegetation will be chipped onsite and spread for upper terrace erosion control along the trail boundary, trash and debris will be off hauled and properly disposed. Dewatering is not expected to be necessary for work at this site. The Arroyo Mocho is naturally ephemeral and as of this report, Zone 7 does not plan to release aqueduct flows for groundwater recharge.

Site 51B – Invasive Vegetation Management Downstream of Stanley Blvd Decommissioned Railroad Bridge along Arroyo Mocho

Proposed work at Site 51B involves limbing and tree removal of non-native eucalyptus, elm, ash and palm trees. Work will occur along a 92 LF portion of the Arroyo Mocho downstream of the decommissioned railroad bridge and north of the Stanley Blvd Bridge. The eucalyptus, elm, ash and palm trees (and associated downed woody debris) are posing fire fuel hazards and negatively impacting native habitat quality.

The total invasive vegetation management area encompasses 18,000 SF with no ground disturbance proposed, therefore, tree removal quantities will be calculated on an individual basis. Nonnative tree removal will include 9 diseased or hazardous eucalyptus, 2 palms, and one ornamental ash tree (all greater than 4-inches DBH) under the direction of a certified arborist and biologist. Trees will be to be cut at the base and herbicide will be applied directly to the stump, along with other limbing, pruning, and debris removal operations. Small (less than 4-inches DBH) eucalyptus and nonnatives will also be targeted for removal. Approximately 10% of the canopy will be removed. Agencies will be notified prior to any herbicide application within the stream corridor and SMP BMPs outlined in Chapter 7 of the SMP manual will be implemented.

Work will be conducted with chainsaws, a boom truck, and front-end loader. A clearly identified access route has been delineated for the front-end loader entering the stream corridor, this is considered a temporary impact of 3,450 SF. The work area will be accessed from the adjacent pedestrian trails and staging will occur at the previously disturbed staging area at the northwest corner of Stanley Blvd and Murrieta Blvd (for access and staging see Figures in Appendix A). Eucalyptus cuttings will be chipped and repurposed as mulch for adjacent upland landscaping. Palms will be off hauled and properly disposed..

Work at site 51B will occur in September and October, after the conclusion of nesting bird season. This work entails only invasive tree management that will enhance riparian habitat and local ecological function; therefore, the work is assumed to be self-mitigating. Other than the 3,450 SF of access impacts, no other impacts to waters, habitat, or species is assumed.

Site 52 – Invasive Vegetation and Debris Management at Arroyo Mocho Outfalls

Proposed work at Site 52 will encompass one day of work and consist of vegetation and debris management at two Arroyo Mocho storm drain outfalls downstream of Robertson Park. One outfall is positioned along the south mid-bank and one along the north top-bank. The functionality of both outfalls is being affected by overgrowth of invasive Himalayan blackberry and associated debris.

The proposed work consists of pruning Himalayan blackberry thickets in order to remove the blockage of the outfall and to assess outfall conditions to determine the need for future SMP maintenance. An adjacent diseased eucalyptus will also be removed as a part of work at Site 52. To reduce blackberry and eucalyptus regrowth, herbicide will be applied directly to cut stumps. Agencies will be notified prior to any herbicide application within the stream corridor and SMP BMPs outlined in Chapter 7 of the SMP manual will be implemented.

This work entails only invasive plant management and will enhance riparian habitat and local ecological function; therefore, the work is considered self-mitigating and no impacts to waters, habitat, or species is assumed. Work will be conducted with chainsaws and hand tools. The work area will be accessed from the adjacent pedestrian trails (for access and staging see Figures in Appendix A).

Site 53 - Debris, Sediment, and Vegetation Management at Heather Lane Culvert Along Arroyo Las Positas

Proposed work at Site 53 consists of one day of work managing debris, vegetation, and sediment at the box culvert structure upstream and downstream of the Heather Lane culvert along Arroyo Las Positas. Work was done at this site in 2017 and in the general vicinity in 2019, but debris, vegetation, and sediment have reaccumulated. This work is focused on maintaining the low-flow channel connectivity. This work will keep the stream functioning as designed and reduce localized flooding. Cattail and tule reestablish annually in the channel and impact storm flow conveyance at this location. The culvert area also catches debris and trash from upstream non-point sources.

A concrete apron with wingwalls lines the channel bed and banks 20-feet on both sides of the bridge where the channel is 50-feet wide (top-of-bank to top-of-bank). Debris and sediment have accumulated at the upstream culvert central pier wall and at the upstream and downstream wingwalls. Cattail and tule management will be performed, cutting problematic clusters at the stem above the water surface in select locations within the 1,810 SF area (maximum estimated temporary disturbance). Approximately 10 CY of associated sediment will be removed with plant material/debris and the area will be temporarily impacted.

Debris and sediment removal will be accomplished with an excavator and vacuum truck from the road, which, will occur in dry areas along the wingwalls and surface of debris piles (mostly consisting of trash) above the waterline. The work area will be accessed from Heather

Lane and the adjacent pedestrian trails with equipment staged outside of the stream, no equipment will enter the creek for project work (for access and staging see Figures in Appendix A). Prior to excavation or vacuum, the debris piles will be inspected for wildlife and cautiously broken apart with hand tools. Excavated or vacuumed materials will be off hauled and properly disposed of. Work will only occur along dry portions of the culvert central wingwall and apron wingwalls, therefore no dewatering or diversions are proposed.

Site 54 - Debris, Sediment, and Vegetation Management at Bluebell Drive Culvert Along Arroyo Las Positas

Proposed work at Site 54 consists of managing debris, vegetation, and sediment at the box culvert structure of the Bluebell Drive culvert along Arroyo Las Positas. Work was done at this site in 2017 and in the general vicinity in 2019, but debris, sediment and vegetation (cattail, tule and watercress) have reaccumulated. This work is focused on maintaining the connectivity of the low-flow channel and keep the stream functioning and reduce flooding. Cattail, tule, and Nasturtium ssp. reestablish annually in the channel and impact storm flow conveyance at this location. The culvert area also catches debris and trash from upstream non-point sources.

A concrete apron with wingwalls lines the channel bed and banks 20-feet on both sides of the bridge where the channel is 75-feet wide (top-of-bank to top-of-bank). Debris, sediment, and vegetation (cattails) have accumulated at the downstream south wingwall and cattail, watercress, and tule populations have accumulated on the upstream apron in the past 2 years. A maximum estimate of 135 CY of associated sediment will be removed with plant material/debris and the area will be temporarily impacted.

Debris, sediment and vegetation removal will be conducted with an excavator, small hand-push compact track loader (under culvert) and vacuum truck within a 5,000 SF area (maximum estimated temporary disturbance). The work area will be accessed from Bluebell Drive and the adjacent pedestrian trails (for access and staging see Figures in Appendix A).

Excavated or vacuumed materials will be off hauled and properly disposed of. A clear water diversion consisting of a gravel bag berm wrapped in visqueen plastic will be installed prior to work on the downstream side from the southern culvert box pier to the low flow channel interior bank. Flows will be temporarily diverted to the other side of the stream to maintain flow through the extensive cattail and tule covered braided channels that comprise the stream reach habitat and flow regime.

Site 55 – Invasive Vegetation Management and Willow Limbing Upstream of Bluebell Drive along Arroyo Las Positas

Proposed work at Site 55 involves willow and palm tree limbing with invasive canary and Mexican fan palm tree removal. Work will occur along a 500 LF course upstream of the Bluebell Drive culvert along Arroyo Las Positas. The density of arroyo willows combined with the invasive canary palm trees is negatively impacting native habitat quality while creating potential fire fuel concerns.

The total invasive vegetation management area encompasses 47,000 SF with no ground disturbance proposed, therefore, tree removal quantities will be calculated on an individual basis. Fourteen arroyo willows greater than 4-inches DBH are proposed to be removed under the direction of a certified arborist and biologist. Canary date palms will be limbed and pruned to provide equipment access, palms will be further assessed for future removal under the SMP. Removed trees will be cut at the base and herbicide applied directly to the stump. Small (<4-inches DBH) nonnative and native trees and plants will be removed as well. Approximately 5-10% of the total canopy will be removed. Work will be conducted with chainsaws and a crane operating from the pedestrian trail to ensure low-impact removal operations. Select limbs of preferred native tree species will be identified and marked for pruning in the winter of 2021-2022. Once the trees have become dormant, the limbs and branches will be repurposed as woody riparian poles, stakes, and fascines for Tier 1 restoration efforts.

Activities associated with Site 55 includes performing cattail management at a south bank outfall located approximately 300 LF upstream of Bluebell Drive. Work will involve cutting cattails with hand labor only along a linear course to reconnect the outfall to the existing low flow channel. Trash removal will accompany this work.

This work entails limbing native arroyo willows for tree health and habitat improvements along with invasive plant management, therefore no impacts to waters assumed. The work will likely enhance the local ecological function while reducing fire fuels. The work area will be accessed from the adjacent pedestrian trails and decommissioned golf course. For north bank access, staging will occur beyond the top of bank along the landscaped parkway between the pedestrian trail and neighborhood fence line. For south bank access, staging will occur along the old golf course fairway near Bluebell Drive. Willow cuttings will be chipped and repurposed as mulch for onsite landscaping and restoration. Palms will be off hauled and properly disposed. Work at site 55 will occur in September and October, after the conclusion of nesting bird season.

SMP Yearly Maintenance Projects (Annual Maintenance Sites)

SMP Yearly Maintenance Site 1 (YM-1) – Holmes Street Annual Sediment Management

Proposed work at Site YM-1 will consist of sediment removal from the channel of the Arroyo Mocho, in an area extending 150 feet upstream and 169 feet downstream of the Holmes Street bridge, as well as the area of the channel beneath the bridge. Work within the proposed 2021 project site footprint has already occurred three times during the 2017, 2018, and 2020 SMP work cycles (see Table # 3). Annual sedimentation issues require sediment removal at this site to be performed on an annual basis which is a reason why it is now included as a Yearly Maintenance Project.

This bridge is a concrete structure supported by piers. Continued sediment buildup around this bridge has restricted the storm flow conveyance in the channel and flood capacity of the stream. The design and location of the bridge structure has created conditions that causes

excessive and chronic sediment deposition issues. The proposed work consists of excavating and grading gravel and debris from a 355 linear foot area under and surrounding the bridge (23,748 SF total) to a depth of 1 to 4-feet. Grading and channel restoration will be performed in an area extending approximately 150 feet upstream and 169 feet downstream and beneath the bridge (totaling 355 LF), to tie-in to the existing unmaintained stream section grades. SMP work at this site is proposed within the same 2020 project footprint. The 2021 work will occur within the same boundaries of the 2020 footprint, which accounted for the third temporary impact requiring state waters/riparian mitigation (SMP 8.2.1 Footnote [1]). Final impacts will be calculated based on post-construction as-built disturbance dimensions.

Work will be conducted with a bulldozer and a compact track loader (under bridge) to push substrate to an area of the streambed that is accessible to an excavator operating from the top-of-bank. Equipment will not be operated or tracked across any surface water. The upland gravel areas adjacent to the access roads will be utilized for equipment and material staging. Sediment will be eventually transported to off-site staging locations or immediately repurposed at other sites, including SMP Sites 50 and 51A via dump trucks operating from the eastern or western paved trails. Any woody debris in the channel that is removed will be relocated in beneficial upland locations for habitat, or, if necessary, disposed as green waste at a landfill. Depending on saturation levels, the sediment removed from the channel will be temporarily stockpiled to dry in an upland area that is greater than 100-feet away from the streambank with sediment control BMPs. In total, approximately 700 CY of sediment will be excavated, this estimate is based on quantities removed in 2020.

Upstream and downstream areas of the reach are characterized predominantly by barren gravel and cobble with mixed annual grasses and wetland herbaceous species with no vegetation growth beneath the bridge. Once the work is complete, the channel will be graded so that the transition between excavated area and existing channel is smooth and continuous. Final impacts will be documented in the 2021 SMP Annual Report. Water is not expected to be present at the time of work as the Zone 7 Water Agency controls flows along Arroyo Mocho and at this point they have no plans to release aqueduct flows in the summer of 2021. If dewatering is necessary, a cofferdam, pump, and re-routing pipeline will be used together to dewater the section of creek. Cofferdams will be constructed of gravel bags and plastic sheeting or, if necessary, an inflatable rubber cofferdam will be used. Pumping rates will be set to match inflows to the cofferdam with the downstream release of the diverted flows. The diverted flows will be released back into the creek as close as possible to the downstream end of the project area. Silt bags will be used at the end of the diversion pipe to reduce any sediment discharge downstream and to dissipate flow velocity and prevent scour at the discharge site. Dewatering activities will be conducted in accordance with BMP BR-4, Impact Avoidance and Minimization During Dewatering, to ensure impacts on water quality and special-status species are avoided or minimized to the maximum extent practicable.

SMP Yearly Maintenance Site 2 (YM-2) – Medeiros Parkway Fire Break Vegetation Management

Proposed annual maintenance at Medeiros Parkway will consist of vegetation management along existing fire roads on the north and south side of the Arroyo Mocho, within the floodplain of the stream but outside the waters of the US. This work is carried out every year

in the late spring, vegetative regrowth requires annual maintenance. This area is a linear polygon along existing access roads and accounts for approximately 143,000 SF. This work will be conducted by a bulldozer to remove overgrown vegetation along fire roads to reduce fuel loads and ensure floodplain capacity. Heavy equipment and vehicles will remain on existing fire breaks. This area is characterized by nonnative annual grasses mixed with scattered almond trees and native trees and woody shrubs. Wildfires pose a significant threat to homes near this site and fires have historically occurred within this reach. As such, the proposed vegetation management work at this site is intended to reduce fuel loads and the threat of fire as described in the Order R2-2016-0036. No impacts are assumed because of the regular maintenance occurring along the fire break corridors. SMP BMPs and biological conservation measures will occur to protect listed species, nesting birds, and water quality.

SMP Yearly Maintenance Site 3 (YM-3) – Granada Channel Vegetation Management

Proposed annual maintenance along Granada Channel consists of pruning and occasional removal of landscape trees and shrubs (native and ornamental species) planted along the eastern top of bank above the concrete channel. While the channel offers little habitat value to amphibians or focal species, the trees provide a riparian canopy over the engineered stormwater drainage feature. Pruning and removal activities will be documented and reported to regulatory agencies. No other impacts are assumed due to the urban context of Granada Channel. Impacts to trees will occur outside of nesting bird season (September-October).

SMP Yearly Maintenance Site 4 (YM-4) – Debris Removal at Collier Canyon Creek Debris Rack

Annual maintenance of the Collier Canyon Creek debris rack and baffles is necessary to prevent flow impediment and reduce flood risk. The work is conducted by hand during dry stream conditions. A backhoe will be utilized, working from the top of bank with maintenance staff hand removing and placing debris by hand into the backhoe bucket. Due to the debris rack's proximity to suitable listed species' habitat the work will be monitored by a program approved biologist.

SMP Yearly Maintenance Site 5 (YM-5) – Trash and Debris Removal at Airway Boulevard along Arroyo Las Positas

Proposed work at Site YM-5 will consist of trash and debris removal. Trash and debris have accumulated inside the culverts during 2019-2020 storm events (the culvert consists of three oblong corrugated metal culverts that convey flows beneath Airway Blvd). Delayed removal of this trash and debris is compromising the culvert's as-built capacity design and poses threats to downstream habitat and public health. The trash and debris removal is not considered an impact, work will be conducted by hand. The work will likely only require one day; no equipment or material staging area will be necessary or will be staged offsite at the end of the workday.

Access to the culverts will not require crossing flowing or standing water as the site will be accessed from the north and the perennial low-flow channel is positioned along the south bank. Dewatering is not anticipated to be necessary.

Sediment Management

Based on the volume of material removed and the sampling thresholds outlined in the SMP manual, and as specified by the Regional Water Quality Control Board (RWQCB) and CDFW, sediment sampling, analysis, and reporting is required for any sediment removal project in excess of 50 cubic yards that has not previously been sampled and tested. As per this specification, sediment sampling is not necessary in 2021, the only projects exceeding 50 CY of sediment is Stanley Blvd Bridge (SMP #51A), Bluebell Drive Culvert (SMP 54), and Holmes Street Bridge (YM-1), all were sampled in 2017 and 2018. As per this specification, sediment sampling is not proposed for any sites in 2021. Previous SMP Sediment Sampling reports are available upon request.

Material Disposal

Excavated sediment will be placed at specified locations or will be properly disposed as identified in the site descriptions for Sites 46, 47, 48, 50, 51, 53, 54, and YM-1. Specifically, clean gravel and cobble removed from Arroyo Mocho at Holmes Street (Site YM-1) will be repurposed to backfill the scour depressions along Arroyo Mocho at Sites 50 and 51A. Sediment reuse activities will incorporate BMPs such as burrow avoidance, compaction, and hydro-seed application (upper bank). If excavated sediment, gravel, or substrate cannot feasibly be repurposed it will be taken via dump truck to either an upland area of the old Springtown golf course for Sites 53 and 54, the interior upland area of Medeiros Parkway for Site YM-1, the upland gravel roadway at Stanley Blvd near Site 51A, the Robertson Park Rodeo Grounds parking area, Zone 7 staging areas, or the City of Livermore's Water Resources Department yard (101 Jack London Blvd) for staging and later alternative repurposing. Trash and non-beneficial debris will be taken to Altamont or Vasco Landfill. Debris generated as part of vegetation management projects may be relocated in upland areas for habitat enhancement or chipped and/or lopped and used as erosion control on upland sites or taken to landfills for green-waste composting.

Post Project Monitoring

Geomorphic Shaping Activities

The City will monitor all maintenance projects that require "geomorphic shaping activities" to determine the sustainability of the grading. For the first year following completion of the 2021 in-channel ground disturbance (SMP Sites 46, 47, 48, 50, 51A, 53, and 54) the City shall inspect the sites following larger storm events to determine structural integrity and if the project BMPs are adequately functioning to stabilize soil and prevent excessive erosion. After the first year, the sites will be inspected annually in the spring for structural stability and functionality. Photos will be taken, and results will be reported in the Annual Post-Construction Report.

Existing Conditions and Project Impacts

Several of the 2021 stream maintenance projects will result in impacts on waters of the U.S. and State. The SMP project sites generally fall into one of three categories: other waters at Bear Creek Basins, other waters and in-channel wetlands within Arroyo Las Positas, other waters and mixed riparian woodland resources within the Arroyo Mocho. These features are described in further detail below and in the "Aquatic Resources Delineation Report for the Livermore 2021 SMP", prepared by Swaim Biological, Inc., located in Appendix F. Representative photographs are provided in Appendix B.

Stream Resources

In-Channel Wetlands

In-channel wetlands are present at the project sites along the Arroyo Las Positas sites located at the old Springtown Golf Course including the Arroyo Las Positas Tributary at Heather Lane (Site 53) and Bluebell Drive culverts (Sites 54). These wetlands occur entirely within Arroyo Las Positas, a manmade perennial steam. Dense stands of cattail and bulrush occur in the creek channels and around the culvert aprons except where previous maintenance efforts have cleared open water. In stream wetlands have also established on the on concrete apron at Site 51A. At Site 49 in the Arroyo Las Positas, the concrete outfall has sediment deposits that are supporting growth of instream wetland species.

Non-Wetland Waters and Riparian Resources

Non wetland waters are present at all 11 project locations. The culvert outfalls at the three Bear Creek Basin sites (46, 47, and 48) all occur within engineered detention basins in a mixture of riparian canopy and shrub layer comprised of native coyote brush, wild rose, willow, sycamore and coast live oak, non-native trees including London planetree, ornamental maples, purple locust, and privets. The understory is comprised of native and non-native herbaceous species and grasses.

Riparian resources are found along Arroyo Mocho at Sites 50, 51A/B, and 52 and along the Arroyo Las Positas at Site 55. The riparian corridors of the Arroyo Mocho support willow, coast live and valley oak, cottonwood, sycamore and nonnative species including eucalyptus. The streambed of Arroyo Mocho is comprised of cobble, gravel, and fine substrates sediment.

The riparian corridor along the Arroyo Las Positas is dense upstream of Bluebell Drive at Site 55 comprised of a dense willow thicket that makes up the majority of the riparian shrub layer. Various non-native trees are interspersed. The dense canopy prevents very little in terms of in-stream channel growth of cattails or other wetland vegetation.

Project Impacts

Upland Impacts

2021 SMP work activities along Bear Creek Basins (Sites 46, 47 and 48, Arroyo Mocho (SMP Sites 50, 51A/B, 52, YM-1, YM-2,YM-6), and Arroyo Las Positas (SMP Sites 49, 53, 54,55, YM-5) include upland access along upland grasses, terraces and berms. Debris and vegetation staging at SMP Site 51B will occur on a previously disturbed area to the east near Murrieta Blvd. Staging at Site 55 will be located to the north near the pedestrian trail and to the south along the golf fairway, temporarily impacting "golf course land cover".

Project Impacts on Jurisdictional Areas

The 2021 stream maintenance projects will result in temporary impacts to waters of the US and State of approximately 49,362 SF (1.13 acres). These impacts are summarized in Table 2.

Repeat SMP Sites Mitigation Tracking

Table 3 below summarizes the past impacts to waters at regularly maintained SMP sites where repeated maintenance has occurred since 2017. This table is intended to track when, where, and the extent of previously mitigated impacts to waters. According to the SMP Manual, impacts to waters that were permanently mitigated or temporarily mitigated three times do not require ongoing or additional mitigation. This table is also intended to show the differences in site areas and where work occurred within the site each year, as these differ from year to year.

All locations included in Table 3 reference Therefore, previous work occurred in different portions of the sites and work in 2021 does not necessarily encompass the previously mitigated areas. This tracking process can often be confusing, to help clarify the As-Built Figures from SMP Annual Reports are provided via the links at the bottom of the table and can be provided upon request.

Table 3. Repeat SMP Sites: Mitigated Impact to Waters of State/US Tracking Sheet

Repeat SMP Maintenance Site	Year(s) Perm Impacts	Year(s) Temp Impacts[1]	SMP Site # For Corresponding Year	Mitigated Temp Imp (SF)	Temp Mitigated Imp (LF) Upstream Side of Structure	Temp Mitigated Imp (LF) Downstream Side of Structure	Total Mitigated Linear Feet Temp Impact (Including Beneath Structure)	Total "Touch" Count for Temp Impacts[1]	Mitigated Perm Imp (SF)	Perm Mitigated (LF) Upstream Side of Structure	Perm Mitigated (LF) Downstream Side of Structure	Total Mitigated (LF) Perm Impact (Including Beneath Structure)	Sediment Sampling Completed	Maximum SF or LF where work can be performed without "Impact to Waters/Riparian/Wetland". Mitigation fulfilled (permanently impacted or temporarily impacted three times)
Holmes Street	--	2017	15a	80,000	400	320	700	1	--	--	--	700	Yes	3rd final temporary impact 2020 see as built, 169 LF downstream and 120 LF upstream have been temporarily mitigated 3 times. **Mitigation not required in 2021.**
	--	2018	15a	23,748	125	150	355	2	--	--	--	355	Yes	
	--	2020	37	22,680	169	120	350	3	--	--	--	--	No	
	--	2021	YM-1	--	--	--	--	--	--	--	--	--	No	
Stanley Blvd	2017	2017	16 a,b,c	3,078	30	90	--	1	22,650	40	130	265	Yes	Permanently mitigated impacts in 2017 includes under and downstream of Stanley Blvd. bridge and streambed to center, upstream of bridge west streambed. **4,995 SF mitigation required in 2021.**
	--	2020	43	125	--	--	15	2	--	--	--	--	No	
	--	2021	51 a,b	4,995	--	150	172	3	--	--	--	--	No	
Bluebell Drive Culvert	2017	2017	17 a,b	2,250	--	--	--	1	9,000	30	30	120	Yes	Work on aprons (30LF up and downstream) and under culvert have been permanently mitigated. **Mitigation not required in 2021.**
	2018		17 a,b	2,250	--	--	--	2	--	--	--	--	No	
	2019		35a	1,000	--	20	--	3	--	--	--	--	No	
	2021		54	--	--	--	--	--	--	--	--	--	No	
Heather Lane Culvert	2017		7 a,b	675	--	--	--	1	1,500	15	15	--	No	Work on aprons have been permanently mitigated. **Mitigation not required in 2021.**
	2018		7 a,b	1,500	--	--	--	2	--	--	--	--	No	
	2021		53	--	--	--	--	3	--	--	--	--	No	

Repeat SMP Maintenance Site	Year(s) Perm Impacts	Year(s) Temp Impacts[1]	SMP Site # For Corresponding Year	Mitigated Temp Imp (SF)	Temp Mitigated Imp (LF) Upstream Side of Structure	Temp Mitigated Imp (LF) Downstream Side of Structure	Total Mitigated Linear Feet Temp Impact (Including Beneath Structure)	Total "Touch" Count for Temp Impacts[1]	Mitigated Perm Imp (SF)	Perm Mitigated (LF) Upstream Side of Structure	Perm Mitigated (LF) Downstream Side of Structure	Total Mitigated (LF) Perm Impact (Including Beneath Structure)	Sediment Sampling Completed	Maximum SF or LF where work can be performed without "Impact to Waters/Riparian/Wetland". Mitigation fulfilled (permanently impacted or temporarily impacted three times)
Springtown Outfalls	2018	2018	30-34	--	--	--	--	--	--	--	--	--	No	2018 Perm Impact at Galaxy Ct
Bear Creek Basin - Laughlin and Bluff	2017	2017	23	1,350	--	--	--	1	840	--	--	--	No	120 SF impacts at outfall permanently mitigated. **Mitigation for permanent impacts not required in 2021.**
	2020	2020	46	400	--	--	--	2	--	--	--	--	No	
Bear Creek Basin - Lake Drive	2017	2017	1	75	--	--	--	1	100	--	--	--	No	100 SF impacts at culvert inlet permanently mitigated. **Mitigation for permanent impacts not required in 2021.**
	2021	2021	47	500	--	--	--	2	--	--	--	--	No	
Bear Creek Basin - Meadow Glen	2017	2017	6	750	--	--	--	1	100	--	--	--	No	2021 footprint outside of 2017 footprint, mitigation for impacts necessary in 2021. -- see as-built
	2021	2021	48	350	--	--	--	2	25	--	--	--	No	
Bear Creek Basin – Basins at Preserve and end of Lake Ct.	2017	2017	3 & 4	--	--	--	--	1	425	--	--	--	No	425 SF impacts permanently mitigated at basins -- see as built
Springtown Golf Drive		2020	41	1,945	--	--	320	1	--	--	--	--	No	Habitat impact mitigation not fulfilled, only one temporary impact
Airway Blvd		2018	28	13,000	20	35	140	1	--	--	--	--	No	Habitat impact mitigation not fulfilled, only one temporary impact
		2021		--	--	--	--	--	--	--	--	--	No	Only one temporary impact
As Built Figures Links:	2017 As-builts		2018 As-builts			2019 As-builts			2020 As-builts					

SF = square feet; LF = linear feet; CY = cubic yards; YM = Yearly Maintenance Sites

[1] Three temporary impacts may be treated as permanent impacts for the purpose of mitigating effects to habitat.

Project Impacts on Focal Species

This section evaluates the effects of the 2021 Stream Maintenance Project on focal species identified in the SMP. The focal species list in the SMP was developed to identify listed and sensitive species occurring in the SMP Area that could be affected by project activities. The focal species list in the SMP is based, in large part, on the East Alameda County Conservation Strategy (EACCS) and includes the following species.

California red-legged frog (*Rana draytonii*) – FT, SSC

California tiger salamander (*Ambystoma californiense*) – FT, ST

Alameda whipsnake (*Masticophis lateralis euryxanthus*) – FT, ST

Longhorn fairy shrimp (*Branchinecta longiantenna*) – FE

Vernal pool fairy shrimp (*Branchinecta lynchi*) – FT

Tricolored blackbird (*Agelaius tricolor*) – ST

American badger (*Taxidea taxus*) – SSC

Golden eagle (*Aquila chrysaetos*) – FP

Burrowing owl (*Athene cunicularia*) – SSC

Callippe silverspot butterfly (*Speyeria callippe callippe*) – FE

San Joaquin kit fox (*Vulpes macrotis mutica*) – FE, ST

San Joaquin spearscale (*Atriplex joaquiniana*) – 1B.2

Congdon's tarplant (*Centromadia parryi ssp. congdonii*) – 1B.2

Palmate-bracted bird's-beak (*Cordylanthus palmatus*) – FE, SE, 1B.1

Livermore tarplant (*Deinandra bacigalupii*) – SE, 1B.1

State Status

FP	=	Fully protected
SE	=	State endangered
ST	=	State threatened
SSC	=	Species of special concern

Federal Status

FE	=	Federally endangered
FT	=	Federally threatened

California Native Plant Society Ranking

1B	=	Rare or endangered in California and elsewhere.

Rare plant threat rank

.1	=	Seriously threatened in California (high degree/immediacy of threat).
.2	=	Fairly threatened in California (moderate degree/immediacy of threat).

Table 4 quantifies direct permanent and temporary impacts on focal species by site. The details of those impacts are described for each species in the sections below. Indirect impacts from project activities could include invasive, nonnative species introduction; eroded, destabilized slopes; release of hazardous materials, such as oil or other chemicals; fire danger; and effects on air quality. Additionally, disturbed areas of previously stabilized soil could erode into focal species habitat later in time, and could affect the hydroperiod, flow dynamics, aquatic habitat diversity, thermal conditions, and amount of escape refugia associated with focal species habitat. Indirect impacts will be minimized and avoided through implementation of BMPs identified in Table 7-1 of the SMP.

A Biological Assessment will be completed for the 2021 Stream Maintenance Projects. with the intent to append to the US Fish and Wildlife Services Programmatic Biological Opinion for the East Alameda County Conservation Strategy.

Table 4. Impacts on Focal Species

Site ID	Focal Fauna													Focal Flora			
	CRLF		CTS		LHFS and VPFS		TRBL	BUOW	SJKF	AMBA	CSBU	GOEA	AWS	LVTP	CGTP	PMBB	SJSS
	Perm	Temp	Perm	Temp	Perm	Temp											
	SF	SF	SF	SF	SF	SF											
46	16	400	16	400	--	--	--	--	--	--	--	--	--	A	A	A	A
47	16	500	16	500	--	--	--	--	--	--	--	--	--	A	A	A	A
48	25	350	25	350	25	350	--	A	--	--	--	--	--	A	A	A	A
49	A	A	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
50	A	A	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
51A	A	A	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
51B	A	A	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
52	A	A	--	--	--	--	--	--	--	--	--	--	--	A	A	A	A
53	--	1810	--	--	--	--	A	--	--	--	--	--	--	A	A	A	A
54	--	5000	--	A	--	--	A	A	--	--	--	--	--	A	A	A	A
55	--	A	--	A	--	--	A	A	--	--	--	--	--	A	A	A	A
YM-1	--	A	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
YM-2	--	A	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
YM-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	A	--	--
YM-4	--	A	--	A	--	--	--	A	A	A	--	--	--	--	A	--	--
YM-5	--	A	--	--	--	--	A	--	--	--	--	--	--	--	A	--	--
Total 2021 Impacts	57		57	1036	25	350	--	--	--	--	--	--	--	--	--	--	

A = Suitable habitat is present, but impacts will be avoided via implementation of best management practices described in Table 7-1 of the SMP.

[1]Species abbreviations

CRLF California red-legged frog
CTS California tiger salamander
LHFS Longhorn fairy shrimp
VPFS Vernal pool fairy shrimp
TRBL Tricolored blackbird
BUOW Burrowing owl
SJKF San Joaquin kit fox
AMBA American badger
CSBU Callippe silverspot butterfly
GOEA Golden eagle
AWS Alameda whipsnake
LVTP Livermore tarplant
CGTP Congdon's tarplant
PBBB Palmate bracted birds beak
SJSS San Joaquin spearscale

California Red-legged Frog and California Tiger Salamander

Direct Effects:

Potential direct effects on both California Tiger Salamander (CTS) and California red-legged frog (CRLF) exist at SMP Sites 46, 47, and 48. Potential direct effects to CRLF exist at SMP Sites 46-51A and 53, 54, YM-1, YM-2, YM-4 and YM-5.

Habitat-related effects on CRLF and CTS include permanent effects to aquatic habitat where maintenance actions require placement of riprap or other hardscape and temporary effects to both aquatic and upland habitat. Temporary effects to CRLF and/or CTS habitat would occur where sediment removal and/or vegetation management activities disturb wetland and/or adjacent upland habitat that will be left to revegetate naturally (e.g., excavations not filled with riprap or a concrete slab) or replanted with native vegetation (e.g., riparian trees and shrubs, native grass seed mix). Habitat that might provide forage, shelter, or protection from predators would not be available to frogs during this time period and could increase the chance for predation or desiccation. Small mammal burrows providing upland refugia for frogs may also be affected during these activities and would have a similar effect on frogs looking for shelter, but new burrows would likely be created by onsite burrowing mammals within a year of activity completion. Implementation of SMP conservation measures 14 (Removal of Existing Vegetation), 15 (Invasive Plant Species Control Measures), and 17 (Planting and Revegetation after Soil Disturbance) would reduce the potential for such effects.

Indirect Effects:

Potential indirect effects on CRLF and/or CTS include degradation of nearby habitat due to increased nonnative plant cover and temporary siltation of downstream reaches (from excess sediment generated during excavation activities and vegetation management). Implementation of SMP conservation measures 14 (Removal of Existing Vegetation), 15 (Invasive Plant Species Control Measures), and 18 (Planting and Revegetation after Soil Disturbance) would minimize such effects.

The increase in water amounts and channel flow rates from sediment, debris and vegetation removal will not result in adverse permanent effects to frog and/or or salamander habitat. In the channels, stormflows will be slightly increased as stormwater will more readily enter the channels from outfall and underpass features, but these areas will continue to be accessible for dispersal movement. At Sites 53-55, removal of existing stands of dense cattails and excess sediment may benefit CRLF during wet periods by creating more open water than currently exists. Dispersal and aquatic non-breeding habitat for CRLF is present at all sites and would continue to be present after the completion of maintenance activities.

Dense riparian areas at sites 51B and 55 include invasive tree removal that will improve riparian habitat conditions. Restoration along the Arroyo Mocho and Arroyo Las Positas near the project sites will avoid placing trees that keep water temperature too cool for breeding too close to potential reeding pools. The EACCS identifies the Arroyo Mocho as a priority area for restoration activities for the California red-legged frog. The proposed vegetation management projects will improve open water conditions creating new potential breeding pools by allowing sunlight to warm the pools in areas currently too shaded to provide warm

enough water for tadpole growth. Native plantings at all sites would provide more dispersal cover and foraging habitat for frogs during upland dispersal.

Vernal Pool Branchiopods

Habitat-related effects on vernal pool fairy shrimp and longhorn fairy shrimp (collectively termed "vernal pool branchiopods") include permanent impacts in seasonal wetlands and freshwater marsh where cysts may be present. Site 48 is adjacent to Bear Creek Basin 1 which provides suitable habitat for vernal pool branchiopods although protocol level surveys conducted in 2017 never detected listed branchiopods in this basin or any of the 59 suitable habitat pools sampled within SMP reaches and basins 2017. Given the project work is outside of the basin itself and impacts will not occur within the sediment basin floor, it is therefore not anticipated for the projects to have any impacts to these species or their habitat.

Alameda Whipsnake

Alameda whipsnake require scub habitat as their core habitat, however, they use grassland, oak woodland and riparian areas for dispersal. There is no scrub habitat within the project sites, the nearest core scrub habitats are over 3-miles to the northeast of Springtown Arroyo Las Positas Sites and over 1.75-miles to the southwest from Arroyo Mocho Sites. There are agricultural and suburban land uses between the SMP sites and the core habitat. BMPs will be implemented, and it is not anticipated to have any impacts on Alameda whipsnakes or their habitat for the 2021 SMP projects.

Tricolored Blackbird

Tricolored blackbird breeding colony sites require open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony (Hamilton et al. 1995, Beedy and Hamilton 1997, 1999). There is potential habitat within flooded wetland emergent vegetation along Arroyo Las Positas at Sites 53 and 54 and dense riparian vegetation at Site 55. There is limited habitat present along Arroyo Mocho (blackberry thickets) near Site 52. The remaining sites do not contain suitable vegetation necessary to support a breeding colony. If tricolored blackbirds were breeding in the suitable vegetation adjacent to Sites 52, 53, 54 or 55 , sediment and vegetation removal could impact or destroy the breeding habitat and cause the potential loss of tricolored blackbird adults, young, or eggs. Additionally, indirect impacts from noise and an increase in human activity near nesting habitat could cause nest abandonment. Impacts on tricolored blackbirds would be fully avoided with implementation of SMP BMP BR-18, which prohibits construction during the nesting season (February 1–September 1) at active nest colonies. Preconstruction nesting bird surveys would identify nesting birds prior to any work that did occur during the nesting season.

American Badger

American badgers occur in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub. The principal habitat requirements for this species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground. None of the proposed project sites in 2021 provide the open, arid habitat necessary to support American badger.

Golden Eagle

Golden eagles occupy open and semi-open habitats, avoiding developed areas and uninterrupted stretches of forest. They primarily nest on cliffs, as well as trees, on the ground, or in human-made structures such as windmills, electrical transmission towers, and nesting platforms. Sites 46-48 within the sediment basins and Sites 53-55 in Springtown do not provide suitable structures for nesting (no large trees anticipated to support a nest). However, Sites 50, 51AB, and 52 along the Arroyo Mocho contain trees such as large eucalyptus and Site 49 supports large cottonwoods upstream and downstream that could support nests, however, the surrounding urban development at these sites makes it extremely unlikely golden eagles would nest at these locations. Impacts on golden eagles could involve removal of nest trees or shrubs as well as indirect impacts from noise and an increase in human activity near nesting habitat. An increase in noise and human activity could reduce the quality of that habitat and ultimately change the behavior of nesting birds, resulting in nest abandonment. Proposed maintenance activities have the potential to produce higher noise levels than those that currently exist at these locations. Impacts on golden eagle would be avoided with implementation of SMP BMP BR-17, which prohibits construction near active nests from February 1 to September 1 or establishing a no-activity buffer during that time. Preconstruction nesting bird surveys would identify nesting birds prior to any work that did occur during the nesting season.

Burrowing Owl

Burrowing owls require habitat with three basic attributes: open, well-drained terrain; short, sparse vegetation; and underground burrows or burrow facsimiles. Burrowing owls occupy grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, and urban vacant lots, as well as the margins of airports, golf courses, and roads (Haug et al. 1993). Suitable conditions for burrowing owl are present adjacent to the Bear Creek Basins (Sites 46-48) and old Springtown Golf Course (near Sites 54 and 55). However, there are no proposed ground disturbing activities at these sites where suitable nesting or wintering burrows are known within the work area. Therefore, disruption to burrowing owls foraging or nesting activities would only be caused by disruption from the nearby construction activities. If burrows are present adjacent to the work area and occupied by burrowing owls (either wintering or nesting), movement of heavy equipment within the work area could disturb nesting burrowing owls which could result in the removal of an occupied breeding or unoccupied wintering burrow site and loss of burrowing owl adults, young, or eggs. Staging and sediment/debris drying areas will be inspected for burrows prior to off-loading and burrows will be avoided. Impacts on western burrowing owl would be fully avoided with implementation of SMP BMP BR-19, which prohibits construction near active nests from February 1 to September 1, establishing a no-activity buffer during that time, or development of a site-specific nesting season avoidance plan. Preconstruction nesting bird surveys would identify nesting birds prior to any work that did occur during the nesting season.

Callippe Silverspot Butterfly

Callippe silverspot is highly unlikely to occur in annual grassland within the action area due to the sites' location on an urban valley floor that lacks hilly terrain and ridgetop habitat that characterizes known population sites in the Bay Area.

San Joaquin Kit Fox

San Joaquin kit fox occurs in numerous habitat types, but dens are typically constructed in relatively open, flat areas with short vegetation. None of the 2021 Sites provide large flat areas with short vegetation and there is a lack habitat connectivity to areas supporting this habitat.

Focal Plant Species

Plants with potential to occur in the SMP Area, specifically work in northeast Livermore (Sites 46-48) include palmate-bracted bird's beak (*Cordylanthus palmatus*), Livermore tarplant (*Deinandra bacigalupii*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), and San Joaquin spearscale (*Atriplex joaquiniana*). Livermore tarplant occurs in seeps and meadows, often associated with alkali meadows. Congdon's tarplant occurs in annual grassland on lower slopes, flats, and swales. San Joaquin spearscale typically occurs in alkali grassland and alkali meadow, or on the margins of alkali scrub. Palmate-bracted bird's beak occurs in areas that are seasonally flooded, with saline-alkali soils, in lowland plains and basins, which include the edges of channels and drainages, alkali scalds, and grassy areas (U.S. Fish and Wildlife Service 2009). The alkali species have the highest potential to occur along Site 46, 47, 48, 53, 54, 55 in the Springtown area. Congdon's tarplant has the potential to occur at all project sites although is not as likely due to the urbanization of the areas and the high level of historic disturbance.

In the event these species were present, impacts could occur from ground-disturbing activities—including vehicle and equipment access—removing, crushing or burying individual plants. However, impacts on focal plants species will be fully avoided with implementation of SMP BMP BR-7, which requires a preconstruction survey be conducted by a qualified botanist during the appropriate blooming period for each species and avoidance of any identified populations.

Cultural Resources

A cultural resources analysis has been conducted for the proposed 2021 Stream Maintenance Projects. The findings of the analysis are presented in the report titled "Cultural Resources Technical Report", prepared by ICF, under the guidelines of Section 106 of the National Historic Preservation Act and CEQA. The report is provided in Appendix G and documents and presents a brief environmental setting, prehistory, ethnography, and history of the project area; the results of the background research of cultural resources within 0.25-mile of the project area; the results of the correspondence with interested parties; and the methods and results of the archaeological field survey conducted for the proposed 2021 stream maintenance projects. The background research includes a records search for previously recorded cultural resources at the Northwest Information Center, correspondence with local Native American representatives and historical societies, and archaeological and architectural field surveys of all the project sites.

Avoidance and Minimization Measures

Chapter 7, *Impact Reduction and Minimization*, of the SMP presents a comprehensive approach to avoiding and minimizing impacts and lists minimization measures and BMPs.

The avoidance and minimization approach rely heavily on Tables 7-1 and 7-2 in the SMP. Table 7-1 presents program-wide BMPs according to the following topics.

General impact avoidance and minimization

Air quality

Biological resources (including species-specific measures)

Cultural resources

Construction and seismicity

Hazardous materials safety

Vegetation management

Water quality and creek/channel protection

Good neighbor policies

A table of required BMPs by project site is provided in Appendix C. The City will rely on Appendix C, in conjunction with Table 7-1, to implement the appropriate BMPs and ensure impacts to natural resources are minimized and/or avoided to the maximum extent practicable.

Planting and Revegetation After Soil Disturbance

2021 SMP Sites where maintenance activities result in exposed soil will be stabilized to prevent erosion and revegetated with native vegetation as soon as feasible after maintenance activities are complete. This management practice applies to revegetation activities not associated with mitigation actions. Mitigation actions will have project-specific requirements and success criteria.

Revegetation will occur at a ratio of at least 1.5 to 1 to account for initial mortality of plantings. If soil moisture is deficient, new vegetation will be supplied with supplemental water until vegetation is firmly established. To the extent possible, native grass seed will be used when seeding a project site. Erosion control fabric, hydro-mulch, or other mechanism will be applied as appropriate to provide protection to seeds, hold them in place, and help retain moisture. .

Where soil disturbance occurred, revegetation will be regularly monitored for survival for five years or until 80% minimum relative survival/cover is reached (80% native cover relative to pre-construction native cover condition) is achieved. If invasive species colonize the area, action shall be taken to control their spread; options include hand and mechanical removal and replanting or seeding with native species.

Annual Mitigation Plan

The 2021 Stream Maintenance Program Project impacts occur on three sensitive resources types: wetlands/waters, riparian habitat, and focal species. In general, mitigation will seek to maintain functional agreement (in-kind mitigation) between impacts and mitigation as well as locate the mitigation site as close to the impacts as possible. The proposed approach to mitigate for impacts on these sensitive resources is described below. Mitigation ratios were established in Chapter 8, *Program Mitigation*, of the SMP. Table 5 details the vegetation impacts and mitigation requirements. Species mitigation for state and federally listed species will be based on the final mitigation requirements from the USFWS Programmatic Biological Opinion Appendage and the CDFW Incidental Take Permit. Summary of Proposed Mitigation Concepts and Approach

For project impacts on focal species and associated suitable habitat, the City is proposing to purchase mitigation credits from an agency-approved conservation bank or protect City owned suitable habitat in perpetuity.

For impacts on wetlands/waters and riparian resources, the mitigation approach follows a three-tiered system where mitigation opportunities are sought first onsite at the project location (Tier 1), and second in other SMP Area reaches (Tier 2). Mitigation actions implemented within the SMP Area on City-owned lands will be protected in perpetuity through placement of a deed restriction. Tier 3 mitigation will occur regardless of the location of Tier 1 and 2 mitigation and is intended to address temporal loss. The three-tier mitigation approach ensures that mitigation is first and foremost directed to compensate for the impacts occurring at the specific project reach, then expanded if necessary, to consider reaches within the SMP Area and the watershed as a whole, should opportunities within the project reach be insufficient to compensate for impacts.

Mitigation for wetlands/waters and riparian will continue to occur along Arroyo Mocho at Robertson Park and along Golf Drive Creek and Arroyo Las Positas in Springtown. These mitigation projects are already in the implementation and advanced planning stages. The sites were designed with sufficient extra area to mitigate in advance of anticipated 2021 SMP impacts. Mitigation will also occur along Arroyo Mocho and Arroyo Las Positas for individual nonnative and native tree removal in accordance with Table 1 from the R2-2016-0036 general permit. A description of the approach specific to each mitigation site is described below. Table 5 below summarizes impacts and associated mitigation ratios required for compensation. These impact areas differ from Table 2 “Impacts to Waters of the US and State” because they only quantify areas where the City has not already fulfilled the mitigation requirements. Tables 6 and 7 summarize the mitigation sites, including the location and year of mitigation for each of the impact sites. For reference, the figure named “Table 7 SMP Mitigation Site Locations Map” is also included below the tables.

Table 5. 2021 SMP Site Impacts and Associated Mitigation Ratios

Maintenance Activity		Impacts Summary					Tier 1 and 2				Comments
		Permanent Impacts		Temporary Impacts		Mitigation Type[1]	Permanent		Temporary		
Site	Regular Maintenance	SF	LF	SF	LF		SF (2:1)[2]	LF (2:1)	SF (1.1:1 - 2.5:1)[2]	LF (1.1:1)	
46	Vegetation, Sediment, and Debris Management - Outfall Laughlin and Bluffs	*16*	*4*	400	12	Tier 2 SF	0	0	444	18	1.5 to 1 ratio assuming pre-mitigation at Golf Drive
47	Vegetation, Sediment, and Debris Management - Culvert Lake Drive	*16*	*4*	500	10	Tier 2 SF	0	0	303	15	1.5 to 1 ratio assuming pre-mitigation at Golf Drive
48	Vegetation, Sediment, and Debris Management - Outfall Meadow Glen	25	5	350	63	Tier 2 SF	50	10	525	95	1.5 to 1 ratio assuming pre-mitigation at Golf Drive
49	Vegetation, Sediment, and Debris Management - HMP Basin Outfall	0	0	0	0	Tier 2 SF	0	0	0	0	No mitigation required, previously mitigated under ECSP?
50	Vegetation, Sediment, and Debris Management - Outfall Baffle Outfall West of Holmes Street	0	0	4,700	92	Tier 2 SF	0	0	11,750	230	2.5 to 1 ratio assuming pre-mitigation at Robertson Park Invasive Plant Management Site
51A	Vegetation, Sediment, and Debris Management - Stanley Bridge	0	0	800	80	Tier 2 SF	0	0	1,200	120	1.5 to 1 ratio assuming pre-mitigation at Robertson Park South Bank Expansion
51B	Vegetation and Debris Management - Stanley Bridge	0	0	3,450	260	Tier 2 SF	0	0	3,795	520	Equipment access impacts. Invasive tree removal assumed to be self-mitigating, enhancing riparian habitat.
52	Invasive vegetation management at outfalls and dying eucalyptus removal - West of Robertson Park	0	0	0	0	None Assumed	0	0	0	0	Invasive plant removal, no impacts assumed, self-mitigating
53	Vegetation, Sediment, and Debris Management - Heather Lane Culvert	0	0	0	0	None Assumed	0	0	0	0	Sediment to be removed associated with debris and vegetation

Maintenance Activity		Impacts Summary					Tier 1 and 2				Comments
		Permanent Impacts		Temporary Impacts		Mitigation Type[1]	Permanent		Temporary		
Site	Regular Maintenance	SF	LF	SF	LF		SF (2:1)[2]	LF (2:1)	SF (1.1:1 - 2.5:1)[2]	LF (1.1:1)	
54	Vegetation, Sediment, and Debris Management - Bluebell Drive Culvert	0	0	0	0	None Assumed	0	0	0	0	Sediment to be removed associated with debris and vegetation
55	Vegetation Management Bluebell Drive Upstream	0	0	0	0	Tier 1 Indiv. Trees	0	0	0	0	·14 >4" DBH willow tree removals = (14x3) = 42 trees Tier 1 mitigation ·Raise canopy 6' Remove vegetation (< 4" DBH) entire stretch. ·Prune 36 palms
YM-1	Sediment Removal - Holmes Street	0	0	0	0	None Assumed	0	0	0	0	Mitigated three times, no mitigation impacts to waters assumed
YM-2	Vegetation Management	0	0	0	0	None Assumed	0	0	0	0	Non-native annual grasses and weeds. No impacts assumed regularly disturbed fire break footprint.
YM-3	Debris and Trash Removal	0	0	0	0	None Assumed	0	0	0	0	No impacts, hand removing debris from rack
YM-4	Debris and Trash Removal (Debris Rack)	0	0	0	0	None Assumed	0	0	0	0	No impacts, hand removing debris from rack
YM-5	Debris and Trash Removal	0	0	0	0	None Assumed	0	0	0	0	No impacts, hand removing debris and trash
TOTAL SF/LF		25 SF	5 LF	10,200 SF	517 LF	Tier 1 & 2	50 SF	10 LF	18,017 SF	998 LF	

[1] Tier 2 mitigation ratios for enhancement is 1.5:1, Tier 2 ratio for invasive vegetation management is 2.5 to 1, no mitigation for impacts to waters is assumed at sites that have been permanently mitigated or temporarily mitigated three times under the SMP

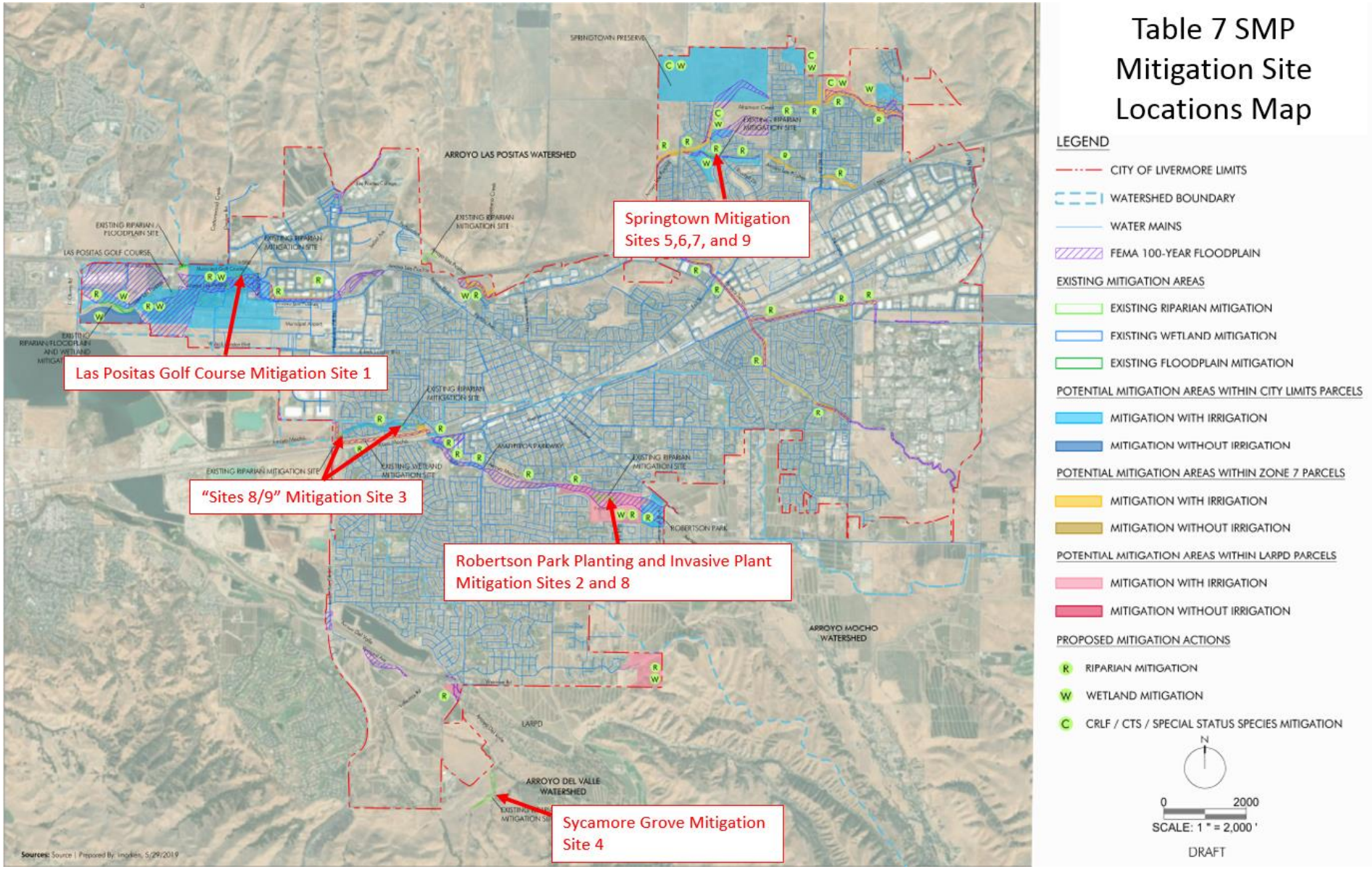
[2] The 2:1 Permanent and 1.3:1 SF Mitigation Ratios apply to sites mitigated for with Invasive Plant Management (See Table 1 RWQCB R2-2016-0036).

Table 6. Mitigation Site Assignment for 2021 SMP Impacts

Stream Impacted	Mitigation Site		Mitigation Type	Impact Site(s) Covered	Mitigation Req (SF)	Total Size of Mitigation Site SF	Comments
Arroyo Mocho	8	Invasive Plant Management along Arroyo Mocho	Tier 2 2.5 to 1 Invasive Plant Management	50, 51B	11,750	55,310	Vegetation management projects with only accompanying sediment removal can be included.
Arroyo Mocho	2	Robertson Park Expansion	Riparian SF	51A	4,995	211,702	Mitigation site total area excludes2017 and 2020 mitigated areas. Sediment removal projects included.
Bear Creek Basins and Arroyo Las Positas	9	Restoration and Enhancement along Golf Drive Creek	Tier 2 Wetland and Riparian SF	46-48 55	1,322	13,300	Mitigation site total area includes 2019 and 2020 mitigated impacts.

Table 7. SMP Multiple Year Mitigation Site Tracking

Mitigation Site #	Mitigation Location (see figure on page 39)	Stream ID	Tier	2017 SMP Sites	2018 SMP Sites	2019 SMP Sites	2020 SMP Sites	2021 SMP Sites
1	ALP Golf Course	Arroyo Las Positas	1 & 2	18 - 20				
2	Robertson Park	Arroyo Mocho	1&2	1-6, 15a, 16a, 16b, 16c, 21 - 25	15a, 27	36	37	51A
3	Sites 8/9	Arroyo Mocho	1 & 2	7-10, 8,9, 11a, 12a				
4	Sycamore Grove Park	Arroyo del Valle	1	13, 14				
5	Springtown	Arroyo Las Positas	3	Temporal impact				
6	Bluebell	Arroyo Las Positas	1 & 2	17a, 17b				
7	Heather Lane	Arroyo Las Positas	1 & 2		7A/B, 17A/B, 18, 28, 30-34	35a, 35b		
8	Arroyo Mocho Invasive Plant Management Plan	Arroyo Mocho	1 & 2			24, 25, 27, 29, 36, 38	39,40,42,43,44	50, 51B
9	Restoration and Enhancement along Golf Drive Creek	Creek Golf Drive (ALP-10)	1				41	46-48



SMP Mitigation Site Locations Map

Tier 1 and 2 Restoration

Tier 1 and 2: SMP Mitigation Site 9 – Restoration and Enhancement of Stream Resources along Golf Drive Creek and Bluebell Drive in Springtown

Tier 1 and 2 mitigation for impacts to habitat includes restoration and enhancement of riparian habitat between along the creek that runs parallel to Golf Drive and near Bluebell Drive. Parallel to Golf Drive is a spring-fed perennial creek is approximately 1,500 LF long and discharges into the Springtown Golf Course diversion pond, near the confluence of Arroyo Las Positas and Altamont Creek. Planting at Golf Drive Creek began in 2020 and will be completed in 2021. Based on the temporary maintenance impacts from 2021 for Sites 46, 47, 48 and 55 the mitigation required for restoration and enhancement of stream resources is 1,803 SF (to be fulfilled at Golf Drive) and the number of individual tree mitigation is 42 (to be fulfilled at Golf Drive and Bluebell Drive). Since the Golf Drive mitigation site will include both 2020 and 2021 impacts, the entire size of the site is 13,300 SF. The site incorporates both riparian and wetland mitigation components to compensate for impacts to both landcover types in 2021 in Bear Creek Basins (Sites 46, 47, 48) and Arroyo Las Positas (Site 55) impacts from 2020 at Golf Drive.

Riparian and wetland mitigation planting will be finished in 2021 and will involve revegetation elements to develop a mosaic of riparian canopy over cattails with intermittent wetland plantings in lower floodplain locations. Tier 1 individual tree planting mitigation will occur at Bluebell Drive riparian zone adjacent to impacts. Mitigation will involve planting of native species in available channel zones (i.e., at the toe of slope, on channel banks, and/or along the top of bank) and in the understory for enhancement. Wetland species are identified as those planted within the channel bed, while riparian species consist of those planted from the toe to the top of bank.

To meet the native wetland-species cover criteria, the planting plan will also include facilitation of volunteer native plant populations (e.g., salt grass, creeping wildrye, gumplant, heliotrope, and alkali heath), specifically, invasive weed management around populations of these plants will be included in the replanting plan. Invasive weed management will be conducted in late winter and early spring, before nonnative weeds drop seed and will involve selective mowing, mulching, and hand weeding. Combining this weed control approach, it is anticipated that the site should continue to recruit native wetland species towards meeting the 5-year wetland cover success criteria. The report titled "2021 Mitigation Planting Plan for Golf Drive Creek" is currently being revised to incorporate the 2021 mitigation areas and will be sent to agencies for approval.

The plant palette for this mitigation site will be drawn from the SMP Preferred Plant Palette (SMP Manual, Appendix D, Table 8.2). Special attention will be given to the alkaline soil types along this corridor and specific plants will be selected to be installed in the following locations along the channel edge (grasses, rushes, and sedges), on the banks (trees) and at the top of bank (trees and shrubs) to support the restoration and enhancement of stream resources and aquatic habitat.

Tier 2 SMP Mitigation Site 8 - Invasive Plant Management Expansion for Square Footage impacts along Arroyo Mocho, West of Concannon Bridge, near Robertson Park

The SMP impacts along Arroyo Mocho for 2021 Site 50 will be incorporated into the invasive plant management project along Arroyo Mocho near Concannon Bridge. Site 50 is primarily a vegetation removal project and therefore qualifies for the invasive plant management option listed in RWQCB R2-2016-0036 Table 1. Based on the total temporary impact areas associated with SMP activities in 2020 (11,705 sf) and 2021 (3,161 sf), the required invasive plant management area needed as Tier 2 mitigation for these impacts

is approximately 14,866 SF. The City proposes an invasive plant management project area of approximately 46,721 SF) to serve as mitigation for the 2020 and 2021 impacts as shown in Appendix H.

An increase in abundance of native vegetation following removal of nonnative vegetation improves overall riparian health and supports a more diverse assemblage of wildlife species including insects, birds, small mammals, amphibians, and reptiles. Native trees and shrubs currently occur within the target area but are overwhelmed and outcompeted by invasive and exotic species.

The site has been assessed by the consulting botanists, biologists and restoration specialists with assistance from WRA consultants to determine site-specific weed removal needs. Highly and moderately invasive plants from the Cal-IPC Invasive Wetland Plant list were identified at these sites and will be managed. The plant species currently present at the proposed weed management area are identified in a detailed Invasive Plant Management Memorandum, including specific proposed performance standards and success criteria goals agreed to in writing with regulatory agencies. This memorandum is included in Appendix H of this Annual Notification.

Tier 2 SMP Mitigation Site 2 - Restoration and Enhancement of Stream Resources Mitigation Site Expansion at Robertson Park

This proposed mitigation option involves linear Tier 2 riparian restoration and enhancement. The mitigation planting area will compensate for impacts from 2021 Site 51A and 51 B and will be incorporated with the planting area expansion from 2020 impacts. The maximum mitigation required from 2021 is 1,200 SF, which incorporates the additional disturbance that extends beyond the permanently mitigated impact areas from 2017 (see Table #4). The total mitigation requirement may be reduced (but not increased) based on as-built post construction impact calculations, this will be documented in the 2021 Annual Report.

The mitigation for SMP Site 51A will involve up to 1,200 SF of additional riparian planting immediately upstream of the Robertson Park pedestrian bridge along the south bank of Arroyo Mocho. The new site will connect to the existing interior Robertson Park planting site. Currently this bank is infested with invasive weeds including poison hemlock, Himalayan blackberry, and perennial pepperweed; weed management will occur prior to planting. The mitigation plantings will not only provide habitat benefits, but also improve stabilization of the incised bank in this area, possibly reducing the need for future maintenance work.

To meet the SMP mitigation performance standards, the planting plan will also include facilitation of volunteer native plant populations, specifically, invasive weed management around populations of native plants. Invasive weed management will be conducted in late winter and early spring before nonnative weeds drop seed and will involve selective mowing and hand weed removal. The report titled “Riparian Enhancement at Robertson Park” is currently being revised to incorporate the new area and will be sent to agencies for approval prior to implementation.

The plant palette for this mitigation site will be drawn from the SMP Preferred Plant Palette (SMP Manual, Appendix D, Table 8.2). Special attention will be given to the gravel and clay soil types along with the surrounding vegetation community along this corridor. Specific plants will be selected to be installed in the following locations: along the channel edge (grasses, rushes, sedges, and willows), on the banks (trees) and at the top of bank (trees and shrubs) to support the restoration and enhancement of stream resources and aquatic habitat.

Tier 3

Tier 3 mitigation includes a contribution equaling 10% the total approved SMP 2021 implementation costs to the Living Arroyo's Program. Living Arroyos will use this funding to conduct some or all of the following work:

- Management of Adopt-A-Creek spot program which includes invasive plant management and trash removal along Arroyo Las Positas from Bluebell Avenue to Central Avenue
- Volunteer planting and expansion of existing mitigation sites (not counted towards mitigation requirements)
- Expansion of existing Tier 3 mitigation site at Springtown Central (additional riparian plantings)

Focal Species

To compensate for unavoidable impacts on suitable, potentially occupied habitat for focal species where avoidance measures may not ameliorate the risk of take, the City will purchase credits from a USFWS- and CDFW-approved mitigation/conservation bank with a service area covering the impacted sites. Mitigation ratios for focal species are outlined in Table 8-4 in Chapter 8, *Program Mitigation*, of the SMP. Table 4 above summarizes the 2021 stream maintenance projects mitigation targets by species. The City intends to fulfill their focal species mitigation requirements for the 2021 stream maintenance projects through the purchase of credits from the Ohlone West Conservation Bank. The City will purchase credits based on the final cumulative as built impact calculations in 2021.

Planting Plan and Implementation Details

Planting Plan

The majority of the proposed mitigation sites will involve a native species planting/revegetation element. Depending on the site, the planting plan will consist of the installation of native species in suitable locations. The intent of the planting/revegetation is to establish native vegetation on the selected mitigation sites that, at maturity, blends with and approximates natural communities found in the SMP Area under similar environmental conditions.

The SMP planting strategy focuses on introducing native plants and propagules that will be strong competitors for undesirable species such as Himalayan blackberry and cattail species, which can result in unfavorable flood management conditions. Similarly, for sites with an understory enhancement component, shrubs, grasses, and vines have been selected for their particular ability to compete and establish despite the existing vegetation.

Planting layout and densities will be calculated by planting zone and based on area in square feet. In general, the following guidelines will be adhered to for the plant installation/revegetation activities at the mitigation sites:

Trees: Trees will be planted on 30-foot centers relative to each other (1 every 900 square feet). Trees will be distributed regularly on both sides of the channel, as appropriate given future access considerations and existing plant community structure, to encourage canopy closure and increase shading over the water surface.

Shrubs: Shrubs will be planted on 10-foot centers (1 every 100 square feet). Shrubs will be placed strategically in groups to mimic natural distribution patterns over approximately 20% of the area available for planting.

Grasses, Sedges and Ferns: Grasses, sedges and ferns will be planted in clusters at approximately 10-foot intervals along the toe of bank(s) to provide natural cover and improve channel stability. Emergent plantings are generally limited to 20% of the channel/basin bottom area.

A plant palette specific to each of the proposed mitigation sites is provided above.

Implementation

Plant material will be obtained from local sources preferentially as feasible. Trees will be in the treepot-4 size range. Shrubs will be treepot-4 to 1-gallon size, and herbaceous species will be planted from seed or liners. Seed mixes will be obtained from a commercial seed supplier that can authenticate regionally local sources. Plants on the upper bank will be top dressed with a 3-inch thick layer of certified weed-free fir bark mulch to reduce weed growth and retain moisture. Irrigation systems will be installed when feasible to water the plants until they are adequately established. An irrigation basin 2–3 feet in diameter will be formed around each planting hole where feasible. Plants will be installed and mulched so that root crowns are at, or slightly above, the soil/mulch surface.

To further support the restoration and enhancement of mitigation sites, all disturbed soils resulting from mitigation implementation activities will be hydroseeded and stabilized (as specified in project-specific design specifications) with native grasses to discourage erosion and encourage a native herbaceous understory. Landscape fabric will be used for erosion control on slopes and disturbed areas.

In general, planting will be conducted from late fall to early winter in the same year as the maintenance activities occurred. However, toe of slope/bank plantings can be installed any time of the year if the channel remains moist and flow velocities are amenable. During implementation, the project botanist or restoration specialist will coordinate and direct the planting efforts at each mitigation site and will either position the plants themselves or place color-coded pin flags in specific planting locations for each shrub and tree species.

Maintenance of Mitigation Sites

Planted mitigation sites without access to irrigation lines will be irrigated manually during the dry season for 3 years. Irrigation frequency will be determined by the project botanist or restoration specialist based on the site conditions, but will occur approximately weekly the first year, every two weeks the second year, and monthly during the third year.

Success Criteria

The SMP defines a *performance standard* as a measure of a habitat characteristic used to assess the progress of the restored habitat toward meeting a success criterion. A *success criterion* is a measure that indicates whether the mitigation goals have been achieved at the end of the performance monitoring period.

Performance standards for wetland, riparian shrub, and riparian willow plantings are applied during the first 4 years of the monitoring period, and success criteria are applied at the end of the 5-year monitoring period. Performance standards for riparian trees are applied during the first 9 years of the monitoring period, and success criteria are applied at the end of the monitoring period. Performance standards for riparian trees change from individual plant success to vegetative cover trends at Year 5 due to the density of vegetation and the ultimate success criteria. The mitigation plantings will be evaluated annually using the annual performance standards. The performance standards and success criteria for wetland and riparian plantings are summarized in Table 8-3 of the SMP.

Per the SMP Manual Chapter 8.3, channel bed plantings are considered wetland plantings. Channel toe of slope, floodplain bench, lower slope, upper slope, and top of bank plantings are considered riparian plantings.

Performance standards for invasive plant management are applied during the first 4 years of the monitoring period, and success criteria are applied at the end of the 5-year monitoring period. The goal is to achieve a reduction of invasive plant cover, to achieve dominance of native vegetative cover (canopy and/or wetland), and to reduce the ratio of invasive trees to native trees.

In the event of poor plant survival or failure to meet stated performance criteria, corrective measures will be implemented, including replanting or seeding to reach the 75% goal. The number of plant replacements will be above the threshold to meet the target percent survival. The monitoring period for replacement plants will be reset to Year 1, while the original surviving plantings remain on the original monitoring schedule. As a last resort, new mitigation would be provided elsewhere, should a project not be capable of meeting performance criteria.

Monitoring and Reporting

Monitoring will be conducted for up to 10 years following planting of woody riparian species and up to 5 years following planting of non-woody wetland species or invasive plant management. Information collected will include the number and species planted at each site, square footage of channel planted, estimated percent canopy cover, plant vigor, and the number or percent of planted trees and shrubs surviving.

Vegetative cover will be determined using a visual estimate of cover and species composition for both wetland plantings and riparian plantings as outlined in Table 8-3 of the SMP.

Plant vigor will be determined by assigning a vigor rating of good, fair, or poor to each plant. Dead plants will not be assigned a vigor rating. The ratings are defined below.

Good: a seedling with less than 25% of its aboveground growth exhibiting one or more of the factors listed above.

Fair: a seedling with 25–75% of its aboveground growth exhibiting one or more of the factors listed above.

Poor: a seedling with more than 75% of its aboveground growth exhibiting one or more of the factors listed above.

Dead: a seedling that is no longer visible or that does not appear capable of growth.

Invasive and exotic plant management monitoring will include the number and type of invasive trees removed (as applicable), square feet of removal for shrub or ground-cover species (as applicable), and the percent of managed area re-colonized by invasive weeds. The success criteria will define whether the removal project is intended to eradicate or manage an invasive plant population. In addition, the removal sites will be monitored for at least 5 years to verify that the success criteria are successfully met.

Monitoring of invasive and exotic plant removal will include tracking the overall percentage of invasives and nonnatives, area of removal activities for shrub or ground-cover species and annual surveys to assess the area's plant composition percentages.

Site conditions will be documented annually by taking repeat photographs at set reference locations. The monitoring data will be reviewed annually to evaluate the overall success of the revegetation approach.

Reporting on the performance monitoring conducted for the mitigation activities will be included in the Annual Report prepared at the conclusion of the annual work cycle each maintenance season. The Annual Report will be submitted to the regulatory agencies by December 15 each year.

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