



# Ekwill Street and Fowler Road Extensions Project

## Tree Inventory and Protection Plan

*prepared for*

**City of Goleta**

Public Works Department

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# 1 Introduction

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This Tree Inventory and Protection Plan has been prepared for the Ekwill Street and Fowler Road Extensions Project (Project; EkFo) to document the native trees that will be impacted as part of implementation of the Project, as well as to document mitigation for those trees that are damaged or removed and to document protection measures for those trees that are located in close proximity to the Project that have the potential to be impacted. This Tree Inventory and Protection Plan has been prepared in accordance with the following Mitigation Measure (MM) from the Project Environmental Impact Report (EIR; City of Goleta 2011), which requires a tree inventory for the Project, which then informs the tree mitigation/replacement and tree protection effort.

**NA-2: Implement Native Tree Inventory and Protection Plan:** A detailed inventory of native trees and a tree protection plan shall be developed by a certified arborist or qualified expert prior to Project construction. The tree protection plan shall be submitted to Goleta for review. Any mature native trees damaged or removed shall be replaced at a ratio of 10:1, and, as noted above, any trees lost in the coastal zone shall be replaced in the coastal zone. Suitable restoration areas will be selected along Old San Jose Creek or San Jose Creek. Native trees shall be grown from local seed stock in 5-gallon containers and planted at 8- to 10-foot spacing.

**Plan Requirements and Timing:** The tree protection plan must be submitted to resource agencies and the City for review prior to construction.

**Monitoring:** All mitigation restoration areas shall be monitored and maintained for a 5-year period to ensure successful establishment. In addition, an inventory of native trees and a Tree Protection Plan shall be developed by a certified arborist or qualified expert prior to Project construction. Goleta staff or the authorized monitor shall inspect the Project site to verify implementation of the approved tree protection plan during construction.

A previous native inventory was conducted as part of the Biological Resources Report for the Project in 2014, with tree surveys occurring in 2012 and 2014 (AECOM 2014). The inventory was utilized to determine tree replacement requirements in the Biological Mitigation and Monitoring Plan (BMMP) prepared by AECOM in 2016 and revised in 2022 (Rincon 2022). The BMMP was prepared consistent with the EIR. The BMMP also satisfies requirements of the California Coastal Commission (CCC), U.S. Army Corps of Engineers (Corps), California Department of Fish and Wildlife (CDFW), and Central Coast Regional Water Quality Control Board (RWQCB). As such, this updated tree inventory and protection plan has been prepared consistent with or improves upon the methodology from the previous native tree inventory.

The Biological Resources Report and BMMP define protected trees based on the County Deciduous Oak Tree Protection and Regeneration Ordinance (County of Santa Barbara 2003), which protects deciduous oak trees measuring 4 inches in diameter at breast height (DBH). The Biological Resources Report states that although the Project is not required to meet the standards of this ordinance, the EIR does not state the definition of a mature native tree; as such, to err on the conservative side, any oak or other native tree measured to be 4 inches or greater in DBH was considered mature and given the status of “protected” based on the Deciduous Oak Tree Protection and Regeneration Ordinance. In addition, the City does not currently have an urban tree protection ordinance in place, but the General Plan Conservation Element (CE) Policy CE-9 states that new development shall be sited and designed to preserve native trees and prevent encroachment into

their protection zones, and that removal of mature native trees shall be mitigated. The General Plan CE-9 does not, however, define mature native trees. The City's Urban Forest Management Plan (UFMP, City 2017) contains guidelines to protect heritage trees from removal. While the UFMP does not currently identify designated heritage trees, Rincon understands that tree #166 (known as the Witness Tree) meets the criteria for designation in accordance with the UFMP and City Municipal Code Section 17.33.040 – Historic Landmarks. As such, the City is proposing to protect this tree to the maximum extent feasible. The City also adopted the Santa Barbara County Grading Ordinance Guidelines for Native Oak Tree Removal under Municipal Code Chapter 15.09.010 – Grading, Erosion and Sediment Control Ordinance, which apply to inland rural areas outside of the coastal zone and urban boundaries and therefore does not apply to this project. Municipal Code Chapter 15.09.060 also prohibits significant environmental impact to occur as a result of new grading, including oak tree removal that involves grading. The project is consistent with this ordinance as project impacts have been evaluated to be less than significant with mitigation under the FEIR.

## 1.1 Project Description

The Project is located within the Old Town area of the City of Goleta (City), in Santa Barbara County (County), California (Figure 1 and Figure 2). The Project consists of three main segments: 1) the construction of one new road segment of Ekwill Street (Ekwill Street Extension); 2) the reconstruction and extension of a section of James Fowler Road (Fowler Road Extension); and 3) the construction of roundabouts and other public infrastructure improvements at Hollister Avenue in the vicinity of the State Route 217 interchange (Hollister Avenue Improvements). The Project also includes implementation of habitat restoration at three mitigation locations: Off-site within City-owned property along Devereux Creek and its northwest tributary (Ellwood Mesa), on-site at Fowler Road Drainage Ditch and Old San Jose Creek, and on-site at Old San Jose Creek (East Ekwill Street). The restoration will compensate for Project-related impacts to riparian woodland and individual native trees.

Project areas with the potential to impact protected trees include:

### Permanent impact area

- Tree Removal
- Grading/Excavation
- Installation of permanent infrastructure (roads and roundabouts)

### Temporary impact area

- Staging
- Grading/Excavation

Figure 1 Regional Location



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Bio Figures  
Fig 1 Regional Location

★ Project Location

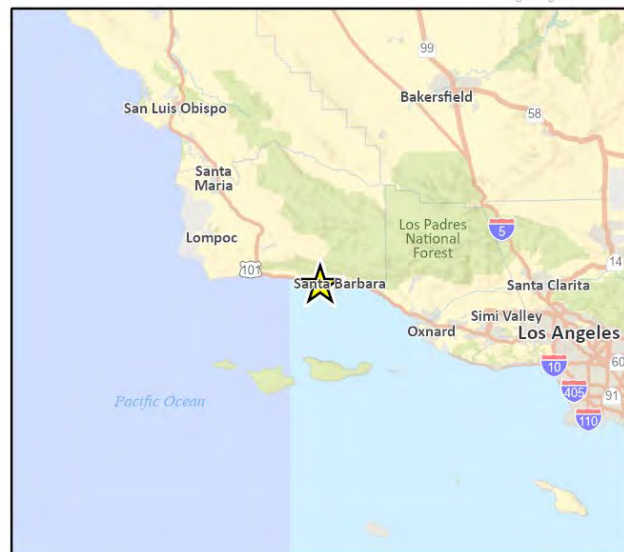
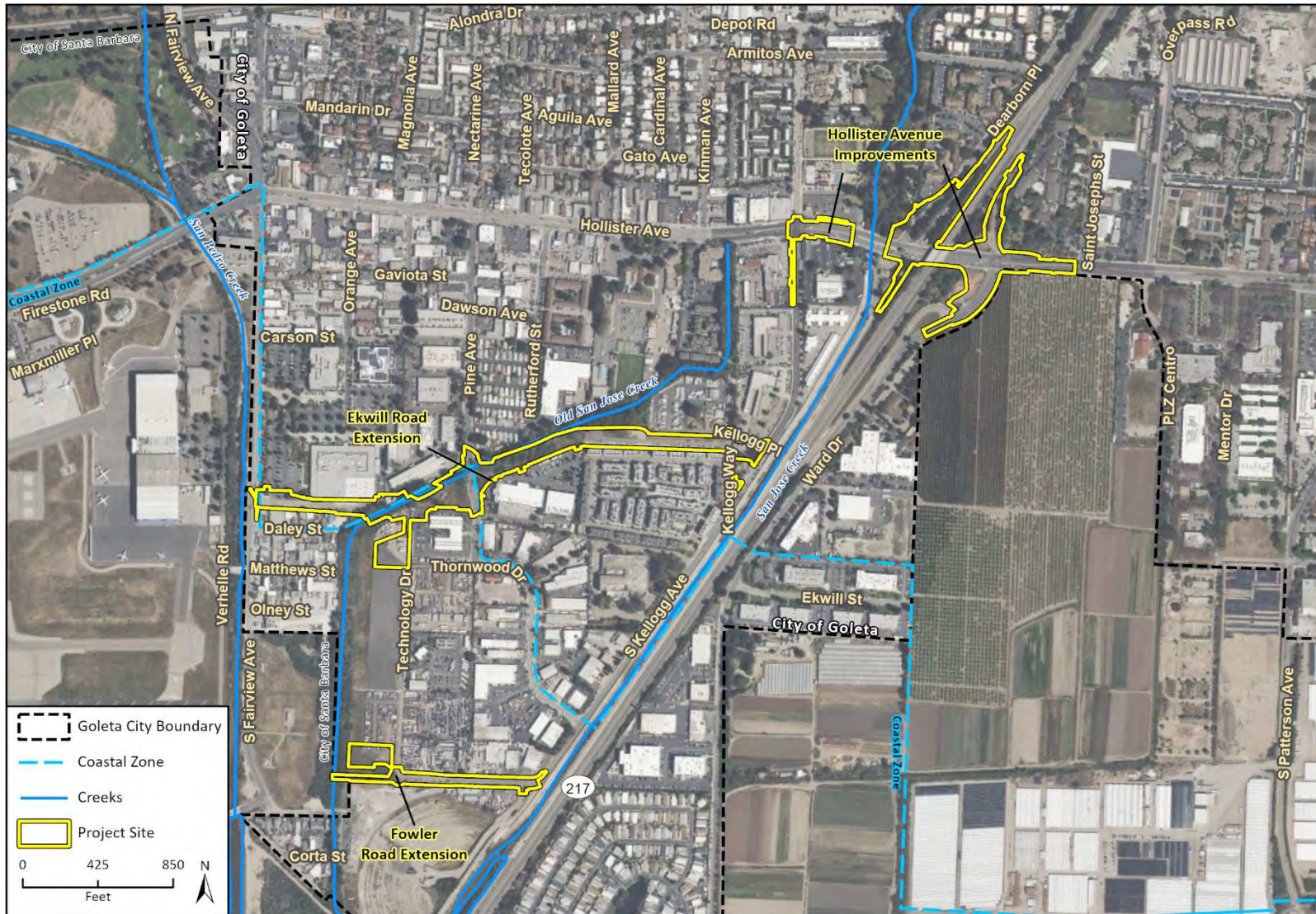




Figure 2 Project Site



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Additional data provided by the National Hydrography Dataset (2022).

Bio Figures  
Fig X Project Site

## Hollister Avenue Bridge Replacement Project

The Hollister Avenue Improvements segment of this Project will be constructed concurrently with the City's Hollister Avenue Bridge Replacement Project (HAB). HAB will replace the existing four-lane bridge spanning San Jose Creek with a new four-lane bridge and include widening of the San Jose Creek channel immediately downstream of the bridge to conform to the recently completed San Jose Creek Capacity Improvement and Fish Passage Project. Several protected trees overlap with both the Project and HAB impact areas. As these are both City projects and the Hollister Avenue Improvements segment and HAB are anticipated to be constructed concurrently, impacts to protected trees from both areas will be cumulative and mitigation will be assigned to the project with the greater impacts.

## 2 Methodology

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### 2.1 Tree Survey Methods

On September 21, 22, 28, and 29, 2022, ISA Certified Arborist Yuling Huo (#WE-11975A), with the assistance of ISA Board Certified Master Arborist Nate Faris (IN-3274B) and biologist Kat Christensen, surveyed for all protected trees with driplines overlapping or adjacent to the Project permanent and temporary impact areas.

Tree locations were mapped using a Geode global positioning system (GPS) device capable of submeter accuracy. All trees were assigned a unique identification number and tagged with a corresponding round metal tag on the most accessible side of the trunk, except where inaccessible (i.e. due to location within poison oak, private property, or highway medians). The temporary impact area east of Daley Street and northwest of Technology Drive was inaccessible due to being on private property, however no protected trees are present based on review of aerial imagery. Relationships among the trees (i.e., multiple trunks arising from the same root, mature clones of a no longer present parent tree) were not determined, as only above ground portions of the trees were examined. An assessment of risks or hazardous conditions was not included as part of this survey.

For each tree, the arborist measured trunk DBH; estimated tree height, and dripline (crown spread in eight cardinal directions), and tree age class (young = less than 20 percent life expectancy, mature = 20 to 80 percent life expectancy, overmature = greater than 80 percent life expectancy); and assigned an overall condition rating. A general health assessment, including evidence of disease, insect pests, structure, damage, and vigor, was assessed to determine an overall condition rating based on archetype trees of the same species, using the criteria described in Table 1 below. Trees that were inaccessible were estimated from a distance using binoculars. If the tree was dead, only the DBH was measured. Appendix A summarizes the data for all surveyed trees.

Table 1 Overall Condition Rating Criteria

Rating	Structure
Excellent	The tree exhibits a well-developed root flare and is structurally stable. The crown is balanced and full of dark green leaves. Tree exhibits excellent vigor and there are no signs or symptoms of biotic or abiotic disorders. Provides shading and is aesthetically pleasing.
Good	Trunk is well developed with well attached limbs and branches; some flaws exist but are hardly visible. Good foliage cover and density, annual shoot growth above average. Provides shading and has minor aesthetic flaws.
Fair	Flaw in trunk, limb and branch development are minimal and are typical of this species and geographic region. Minimal visual damage from biotic or abiotic disorders, such as insect infestation, disease, or fire damage, respectively; average foliage cover and annual growth.
Poor	Limbs or branches are poorly attached or developed. Canopy is not symmetrical and/or tree is leaning. Branches or trunks are unnaturally contacting the ground. May exhibit fire damage, responses to external encroachment/obstructions or existing insect/disease damage.
Dead	Trunk, limbs, and branches have no visible sign of life. Canopy leaves are non-seasonally absent or uniformly brown throughout, with no evidence of new growth.



Observations of the existing conditions were included as they are important in understanding the causes of tree health and structural issues as well as estimating potential impacts (i.e., estimating where roots are likely to occur).

Several areas of dense arroyo willow (*Salix lasiolepis*) thickets were present within the impact areas where it was difficult to accurately observe or access individual willow trees. In these cases, the approximate dripline of the thicket was mapped as a polygon and assigned a unique identification number, and the number of protected trees was estimated.

## 2.2 Tree Mapping Methods

All protected trees surveyed were mapped in ArcGIS and overlaid onto the current Project site plan provided by Dewberry. The trunk location is based on the GPS waypoint location that was recorded by the arborist from one side of the tree's trunk. The dripline, structural rooting radius (SRR) and optimal tree protection zone (OTPZ) were mapped for each tree (see the Section 2 Methodology for the definitions of these terms). This information, including Arroyo Willow Thickets, are shown on the Tree Location Map in Appendix B. No SRR or OTPZ was determined for dead trees because they do not require impact analysis.

## 2.3 Root Zone Determination Methods

Most tree roots occur within 8 to 12 inches below the soil surface and rarely extend past 4 feet in depth (Sanborn 1989). Tree roots typically extend laterally from the trunk and gradually become less concentrated the further away from the trunk.

The dripline is the area located directly under the outer extent of a tree's canopy. The dripline area is sometimes used to approximate the area containing the majority of a tree's roots and as such, it is sometimes used as the area by which to calculate root encroachments and/or the root area that is important to protect from construction impacts. The driplines of the trees covered in this report were based on estimated crown spread collected at eight cardinal directions.

The OTPZ is the area around the trunk in which both structural roots (important for tree stability), and smaller feeder roots that collect water and nutrients (important for tree health), are likely to be found. The following formula from *Trees and Development: A Technical Guide to Preservation of Trees During Land Development* (Matheny and Clark 1998) was used to determine OTPZ radius from the trunk:

$$\text{OTPZ radius (in feet)} = (\text{Protection Factor})(\text{Trunk DBH inches})$$

The formula utilizes the two qualitative factors, tree age (young, mature, overmature) and species tolerance of construction impacts (listed in Appendix B of Matheny and Clark 1998), to determine the protection factor (0.5, 0.75, 1.0, 1.25, or 1.5).

The SRR for a tree is the area around the trunk in which the structural roots that physically hold the tree upright are likely to be found. The following formula developed by Dr. Kim Coder was used to determine the SRR (Coder 2010):

$$\text{SRR (in feet)} = 0.5[(\text{Trunk DBH inches})(0.9)].$$

In the case of trees with multiple trunks, the aggregate DBH was calculated using the formula<sup>1</sup>:

$$D = \sqrt{(d^2+d^2+d^2\dots)}.$$

The dripline, OTPZ, and SRR for each individual tree overlaid onto the Project site plan to determine permanent and temporary impact areas as shown in Appendix C – Tree Impact Index.

The overall dripline of the arroyo willow thickets are shown on the Tree Location Map (Appendix B).

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<sup>1</sup> The aggregate DBH formula is based on the ISA Guide for Plant Appraisal, 9<sup>th</sup> edition. The total cross-sectional area of multi-trunk trees is measured by adding the cross-sectional area of each trunk using the formula  $A=0.7843(d^2+ d^2+ d^2\dots)$ , where d=diameter of each individual trunk.  $A=0.7854(D^2)$ , where D=aggregate diameter of the total trunk cross-sectional area. As such,  $D=\sqrt{(d^2 + d^2 + d^2\dots)}$ .

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### 3 Tree Survey Results and Discussion

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A total of 255 protected trees were surveyed that are adjacent to the Project's permanent and temporary impact areas. This includes 128 individually surveyed trees and an estimated 127 arroyo willow trees within the thicket polygons depicted on the Tree Location Map. Species included arroyo willow (*Salix lasiolepis*), black cottonwood (*Populus trichocarpus*), blue elderberry (*Sambucus nigra*), southern California black walnut (*Juglans californica*), California sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), and red willow (*Salix laevigata*). The amount of each species surveyed is provided in Table 2. The trees had overall conditions ranging from good to dead, and willows within the thicket polygons were estimated to be in generally good condition. Data collected for each tree is summarized in Appendix A.

Table 2 Tree Species Summary

	Arroyo willow	Black cottonwood	Blue elderberry	California black walnut	California sycamore	Coast Live Oak	Red willow
Number of trees	142	37	3	7	6	52	8

The surveyed protected trees are located within landscaped areas adjacent to roads/highways and commercial/residential buildings, as well as within natural vegetation communities adjacent to drainages/streams.

In the Ekwil Street Extension and Fowler Road Extension components, the majority of the protected trees are located along Old San Jose Creek within natural vegetation communities such as arroyo willow thickets, black cottonwood forests, and eucalyptus groves. In the Hollister Avenue Improvements component, most of protected trees are located along San Jose Creek and in landscaped medians along Dearborn Place and Highway 217, and some trees are in developed residential/commercial areas.

- The conditions in the developed portions of the Project consist of limited tree wells surrounded pavement or concrete. Where hardscapes and buildings are present within the OTPZ/SRR, the soil is likely compacted and roots are likely less abundant.
- The soil in the natural vegetation communities along Old San Jose and San Jose Creeks, as well as in the landscaped medians, have an accumulation of natural leaf litter beneath tree canopies (which provides nutrients, reduces soil compaction, and improves moisture retention). These trees do not appear to be regularly maintained. Soil in this area is likely minimally compacted and is conducive to normal root growth.
- None of the protected trees appeared to be diseased or damaged to the point of requiring removal.

## 4 Tree Impacts

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As shown on the Tree Location Map (Appendix B), the tree data was overlaid onto the current (100 percent complete) Project site plan. Due to the complexity of the site plan and scale of the Project, Rincon conducted a general analysis of temporary and permanent impacts, consistent with the BMMP. Rincon understands that the Project will generally involve grading, excavation, and trenching throughout the site. Trees with trunks located within the permanent impact areas are assumed to be removed and trees with trunks located within temporary impact areas are anticipated to have major impacts but may not need to be removed. These impacts include the assumption that the Tree Protection Plan provided in Section 3 will be implemented to minimize tree impacts to the extent feasible, including specific measures to minimize impacts to tree #166.

ArcGIS was used to calculate the percentage by which construction impact areas (both temporary and permanent) would encroach the dripline, OTPZ, and SRR of each tree. Impacts to the arroyo willow thickets assume complete removal of all trees located entirely within permanent impact areas or minor impacts to all trees located at the edge of permanent/temporary impact areas.

Impacts were categorized as no impact, minor, major, and removal based on the criteria below:

- **No impact** – The dripline, OTPZ, and SRR of each tree would be completely avoided by construction activities and post-Project conditions are not expected to negatively impact the tree.
- **Minor impact** – Not likely to compromise the health or structural integrity of the tree, and/or would encroach approximately 30 percent or less of the dripline and/or the OPTZ and avoid the SRR. The post-construction health effects for trees in this category are expected to be minor and temporary at most.
- **Major impact** – May compromise the health or structural integrity of the tree (such as from grading, excavation, fill, soil compaction, or substantial branch removal) and/or would encroach approximately 30 percent or more of the dripline and/or OTPZ and a portion of the SRR. The post-construction health effects for trees in this category are expected to be minor to severe and temporary or permanent (including dieback, decline, decay, and possibly death), and these trees may be at increased risk of failure during atypical weather events that produce high winds and oversaturated soils. Trees in this category should be mitigated because their long-term health and survival are unknown, but they may not need to be removed (if an arborist determines that failure would not be imminent or probable due to loss of structural roots).
- **Remove** – Complete removal of the tree (including trees with trunks located within or directly adjacent to permanent impact areas).

If the tree is being impacted by and protected under both EkFo and HAB projects, impacts are considered cumulative because the projects are being constructed at the same time by the same entity (City). Mitigation for cumulative major impacts or removal will be required by the project with greater impacts and which requires replacement for the tree based on permit conditions.

Project activities with the potential to impact protected trees include:

- Grading and other ground disturbance – root severance
- Equipment access and staging – soil compaction and mechanical damage

- Equipment and public access clearance – crown pruning/trimming
- Tree removal – soil disturbance, mechanical damage, and elemental exposure (wind and sun) of surrounding trees

Due to the nature of excavation, grading, and trenching; the greatest concern to tree health and mortality associated with the Project is root damage. Proposed tree root impacts can be estimated based on the approximate percent of encroachment of Project areas or construction activities within the root zone and severity of impacts to the tree. In general, encroachments within the dripline and OTPZ, such as root severance and soil compaction, increase the likelihood that the tree will experience temporary or permanent negative health impacts including dieback, decline, decay, and death. Encroachments within the SRR, particularly root severance of larger roots (lateral or sinker roots and roots greater than two inches in diameter), increase the likelihood of tree destabilization (tree failure).

The existing conditions are also referenced in estimating the tree's root zone and susceptibility to construction impacts. In general, tree roots are expected to be less abundant in hardscaped areas, under roads and sidewalks, and within existing building footprints due to the compacted nature of the soil where roots may be deprived of water and oxygen. Trees that are leaning typically have roots that extend further in the direction away from the lean. Similarly, trees that are on slopes are expected to have roots that extend further on the uphill side to anchor the tree. In addition, roots may be impeded or previously severed by physical barriers such as retaining walls or drainages.

Actual impacts at the time of construction may be more or less because of the following factors: root systems vary by depth and lateral extent based on tree species, age, slope, and soil type; the health of trees may change drastically over time due to drought or anthropogenic effects; and the exact location/extent of construction activities may vary (e.g., trench depth and width, need for trimming of canopy for equipment clearance, and shifts in Project alignment). If construction encroachments result in a change from minor/no impacts to major impacts (as determined by a Tree Expert during construction), additional replacement is anticipated to be required. Trees that will not be removed should be protected to the maximum extent feasible while allowing for construction.

## 4.1 Results

Of the 255 protected tree surveyed, 190 will be removed (including an estimated 107 arroyo willow trees within the thickets and four dead trees), 18 will have major impacts, 31 will have minor impacts (including 20 arroyo willow trees within the thickets), and 22 will not be impacted. Tree #166 (Witness Tree) will be incur cumulatively minor impacts by both the EkFo and HAB projects.

A summary of impacts is provided in Table 3 and Table 4 below.

Table 3 Trees with Minor or No Impacts

Tree ID #	Common Name	DBH (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>5</sup>	Notes
1	black cottonwood	14	Good	Minor	Temporary	EkFo	Y	N	
2	black cottonwood	6, 9	Good	No Impact	None	EkFo	Y	N	
7	coast live oak	13	Fair	No Impact	None	EkFo	N	N	
8	coast live oak	6, 17	Good	No Impact	None	EkFo	N	N	
9	coast live oak	1, 1, 3, 4	Good	No Impact	None	EkFo	N	N	
10	coast live oak	27	Good	Minor	Both	EkFo	N	N	
14	arroyo willow	14	Fair	Minor	Temporary	EkFo	N	N	
32	black cottonwood	17	Fair	Minor	Both	EkFo	N	N	main trunk broken off, massive cavity
49	California sycamore	7	Good	No Impact	None	EkFo	N	N	
56	black cottonwood	5	Good	No Impact	None	EkFo	N	N	
57	black cottonwood	40	Dead	No Impact	None	EkFo	N	N	downed
60	black cottonwood	5	Fair	No Impact	None	EkFo	N	N	
61	black cottonwood	10	Good	No Impact	None	EkFo	N	N	
62	coast live oak	7	Fair	No Impact	None	EkFo	N	N	competition with locusts
73	red willow	9, 14	Dead	No Impact	None	EkFo	Y	N	
100	coast live oak	18	Good	No Impact	None	EkFo/HAB	N	N	light flagging
135	California black walnut	6, 2, 2	Fair	No Impact	None	EkFo/HAB	N	N	previously pruned, somewhat sparse
139	California black walnut	9, 7, 6	Fair	No Impact	None	EkFo	N	N	somewhat sparse, no access, behind fence
147	coast live oak	10	Good	No Impact	None	EkFo	N	N	
148	coast live oak	16, 13	Good	Minor	Permanent	EkFo	N	N	
149	coast live oak	16	Good	No Impact	None	EkFo	N	N	
150	coast live oak	6, 6, 5, 4, 2, 1	Good	No Impact	None	EkFo	N	N	
151	coast live oak	25, 35, 9	Good	Minor	Permanent	EkFo	N	N	



Tree ID #	Common Name	DBH (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>5</sup>	Notes
152	coast live oak	12	Good	Minor	Permanent	EkFo	N	N	growing into fence
153	coast live oak	8	Fair	Minor	Permanent	EkFo	N	N	
155	California sycamore	32	Good	Minor	Permanent	EkFo/HAB	N	N	
165	California sycamore	19	Good	Minor	Temporary	EkFo	N	N	
166	California sycamore	80	Good	Minor	Both	EkFo/HAB	N	N	large cavity at base, building constructed around tree; Witness Tree
167	California black walnut	11, 9, 8	Fair	No Impact	None	EkFo	N	N	sparse canopy may be due to deciduous tree and fall season
168	coast live oak	8, 11	Good	No Impact	None	EkFo	N	N	no access, estimated, not tagged
177	coast live oak	17	Good	No Impact	None	EkFo	N	N	some flagging throughout canopy, no access, estimated, not tagged
178	coast live oak	15	Good	No Impact	None	EkFo	N	N	some flagging, no access, estimated, not tagged
179	coast live oak	12	Good	No Impact	None	EkFo	N	N	
Poly-gon 1	arroyo willow	>4	Good	Minor	Temporary	EkFo	Y	N	5 individual trees
Poly-gon 2	arroyo willow	>4	Good	Minor	Temporary	EkFo	Y	N	10 individual trees
Poly-gon 5	arroyo willow	>4	Good	Minor	Temporary	EkFo	Y	N	5 individual trees

Table 4 Trees with Major Impacts or To Be Removed

Tree ID #	Common Name	Individual DBHs (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (y/n)	EkFo Mitigation (Y/N)	Notes
11	coast live oak	13, 4, 4	Good	Major	Both	EkFo	N	Y	
12	black cottonwood	24	Dead	Remove	None	EkFo	N	N	downed
13	black cottonwood	24	Dead	Remove	None	EkFo	N	N	downed
15	black cottonwood	19	Good	Remove	Permanent	EkFo	N	Y	
16	California sycamore	43	Fair	Major	Both	EkFo	N	Y	
17	coast live oak	23	Good	Major	Both	EkFo	N	Y	
18	black cottonwood	2, 4	Fair	Major	Both	EkFo	N	Y	
19	black cottonwood	26	Fair	Major	Both	EkFo	N	Y	
20	coast live oak	4	Good	Remove	Permanent	EkFo	N	Y	
21	black cottonwood	10	Good	Remove	Permanent	EkFo	N	Y	main trunk prostrate
22	black cottonwood	7	Fair	Remove	Both	EkFo	N	Y	
23	black cottonwood	6	Fair	Remove	Permanent	EkFo	N	Y	
24	black cottonwood	37	Good	Remove	Both	EkFo	N	Y	
25	coast live oak	12, 3	Good	Remove	Both	EkFo	N	Y	8" basal pruning wound
26	coast live oak	15	Good	Remove	Permanent	EkFo	N	Y	
27	coast live oak	8, 8	Good	Remove	Permanent	EkFo	N	Y	
28	black cottonwood	6	Fair	Remove	Permanent	EkFo	N	Y	
29	black cottonwood	8	Fair	Remove	Permanent	EkFo	N	Y	

Tree ID #	Common Name	Individual DBHs (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (y/n)	EkFo Mitigation (Y/N)	Notes
30	black cottonwood	32	Dead	Remove	Permanent	EkFo	N	N	downed
31	black cottonwood	24	Good	Major	Both	EkFo	N	Y	cavities on both sides of trunk
33	black cottonwood	14	Fair	Remove	Permanent	EkFo	N	Y	main trunk broken but still alive, decay at wound
34	black cottonwood	6	Fair	Remove	Permanent	EkFo	N	Y	broken branches, sparse canopy
35	coast live oak	10, 2	Good	Remove	Permanent	EkFo	N	Y	
36	coast live oak	5	Fair	Remove	Permanent	EkFo	N	Y	uneven canopy, overcrowded
37	black cottonwood	4	Good	Remove	Permanent	EkFo	N	Y	
38	black cottonwood	26	Good	Remove	Both	EkFo	N	Y	broken branches
39	black cottonwood	4	Fair	Remove	Permanent	EkFo	N	Y	uneven canopy, sparse
40	coast live oak	8	Fair	Remove	Permanent	EkFo	N	Y	sparse canopy
41	black cottonwood	16	Good	Remove	Both	EkFo	N	Y	main trunk prostrate
42	black cottonwood	29	Good	Major	Both	EkFo	N	Y	
43	coast live oak	8	Good	Remove	Permanent	EkFo	N	Y	somewhat sparse
44	coast live oak	11	Fair	Remove	Permanent	EkFo	N	Y	somewhat sparse
45	black cottonwood	11	Fair	Remove	Permanent	EkFo	N	Y	trunk prostrate, broken branches
46	black cottonwood	6	Fair	Remove	Both	EkFo	N	Y	sparse canopy
47	coast live oak	7	Fair	Remove	Permanent	EkFo	N	Y	sparse canopy
48	black cottonwood	11	Good	Remove	Both	EkFo	N	Y	

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Tree ID #	Common Name	Individual DBHs (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (y/n)	EkFo Mitigation (Y/N)	Notes
50	black cottonwood	10	Good	Remove	Both	EkFo	N	Y	
51	black cottonwood	14, 11, 4	Good	Remove	Both	EkFo	N	Y	
52	black cottonwood	11	Good	Remove	Permanent	EkFo	N	Y	second trunk dead and prostrate
53	black cottonwood	22	Good	Remove	Both	EkFo	N	Y	
54	coast live oak	15, 5	Good	Remove	Permanent	EkFo	N	Y	
55	black cottonwood	30	Fair	Remove	Both	EkFo	N	Y	
58	black cottonwood	15	Good	Major	Both	EkFo	N	Y	
59	black cottonwood	12	Fair	Remove	Both	EkFo	N	Y	
63	coast live oak	26	Good	Remove	Permanent	EkFo	N	Y	
64	arroyo willow	9, 8, 6, 3	Fair	Remove	Permanent	EkFo	Y	Y	1 trunk dead, dead branches
65	arroyo willow	16, 6	Fair	Remove	Both	EkFo	Y	Y	2 trunks previously failed
66	arroyo willow	4	Good	Remove	Permanent	EkFo	Y	Y	
67	arroyo willow	12	Fair	Remove	Permanent	EkFo	Y	Y	main trunk prostrate and decaying, branches growing upright are vigorous
68	blue elderberry	9	Fair	Remove	Permanent	EkFo	Y	Y	sparse foliage may be due to tree being deciduous and fall season
69	blue elderberry	12	Fair	Remove	Both	EkFo	Y	Y	sparse canopy may be due to deciduous tree and fall season
70	blue elderberry	6	Dead	Remove	Permanent	EkFo	Y	N	downed
71	red willow	20, 22	Poor	Major	Permanent	EkFo	Y	Y	prostrate, one trunk broken and decaying, sparse canopy may be partially due to deciduous tree and fall season

Tree ID #	Common Name	Individual DBHs (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (y/n)	EkFo Mitigation (Y/N)	Notes
72	red willow	16	Poor	Major	Permanent	EkFo	Y	Y	trunk broken and decaying, sparse canopy may be partially due to deciduous tree and fall season
74	red willow	7	Fair	Remove	Permanent	EkFo	Y	Y	trunk is prostrate, somewhat sparse canopy
75	California black walnut	12, 8	Good	Major	Permanent	EkFo	N	Y	growing north of concrete retaining wall
76	coast live oak	20	Good	Remove	Permanent	EkFo	N	Y	no access, estimated
77	coast live oak	18	Good	Remove	Both	EkFo	N	Y	growing on utility line behind fence
78	coast live oak	9, 3	Good	Major	Temporary	EkFo	Y	Y	
79	arroyo willow	14, 9	Good	Remove	Both	EkFo	N	Y	
80	arroyo willow	13	Good	Major	Both	EkFo	N	Y	
81	coast live oak	25	Good	Major	Both	EkFo	N	Y	minor flagging
107	California black walnut	12	Fair	Remove	Permanent	EkFo/HAB	N	Y	previously heavily pruned
136	California black walnut	7, 3, 3, 2, 2, 2	Fair	Remove	Permanent	EkFo	N	Y	trunks previously topped, canopy is lateral branches that have assumed dominance
137	coast live oak	10	Fair	Remove	Permanent	EkFo	N	Y	covered in ivy, somewhat sparse canopy
138	California black walnut	4, 6	Fair	Remove	Permanent	EkFo	N	Y	crowded by oleander, somewhat sparse
140	coast live oak	24, 12	Fair	Remove	Both	EkFo	N	Y	somewhat sparse, trunk is prostrate
141	coast live oak	16, 11	Good	Major	Both	EkFo	N	Y	
142	coast live oak	21	Good	Remove	Permanent	EkFo	N	Y	growing into palm tree, sparse canopy
143	coast live oak	14	Good	Remove	Permanent	EkFo	N	Y	
144	coast live oak	11, 12	Good	Remove	Permanent	EkFo	N	Y	
145	coast live oak	6	Fair	Remove	Permanent	EkFo	N	Y	somewhat sparse
146	coast live oak	14	Good	Remove	Permanent	EkFo	N	Y	
169	coast live oak	9	Good	Remove	Permanent	EkFo	N	Y	estimated, in median, not tagged
170	coast live oak	5	Good	Remove	Permanent	EkFo	N	Y	light flagging
171	coast live oak	4	Good	Remove	Permanent	EkFo	N	Y	no access, estimated, not tagged

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Tree ID #	Common Name	Individual DBHs (inches)	Overall Condition Rating	Impact	Impact Area	Project	Coastal Zone (y/n)	EkFo Mitigation (Y/N)	Notes
172	coast live oak	4	Good	Remove	Permanent	EkFo	N	Y	no access, estimated, not tagged
173	coast live oak	15	Fair	Remove	Permanent	EkFo	N	Y	sparse canopy and dieback, no access, estimated, not tagged
174	coast live oak	10	Good	Remove	Permanent	EkFo	N	Y	no access, estimated, not tagged
175	coast live oak	10	Good	Remove	Permanent	EkFo	N	Y	light flagging , no access, estimated, not tagged
176	coast live oak	4, 4	Good	Remove	Permanent	EkFo	N	Y	estimated, no access, not tagged
180	coast live oak	13	Good	Remove	Permanent	EkFo	N	Y	not tagged
181	arroyo willow	28	Good	Remove	Permanent	EkFo	Y	Y	large prostrate limbs
182	arroyo willow	22	Fair	Remove	Permanent	EkFo	N	Y	majority of canopy is epicormic growth on previously damaged limbs
183	arroyo willow	18, 9, 33	Good	Remove	Permanent	EkFo	N	Y	two prostrate trunks
184	arroyo willow	22	Good	Remove	Permanent	EkFo	N	Y	prostrate limbs, growing above culvert
185	arroyo willow	10, 18	Good	Remove	Permanent	EkFo	N	Y	one trunk prostrate
186	arroyo willow	8, 18	Fair	Remove	Permanent	EkFo	N	Y	prostrate trunks, smaller trunk broken
187	arroyo willow	10, 15	Good	Remove	Permanent	EkFo	N	Y	ivy on trunk
188	arroyo willow	7, 9, 2	Fair	Remove	Permanent	EkFo	N	Y	one trunk prostrate, previous leading trunk topped, no access, estimated, not tagged
189	red willow	15, 17	Good	Remove	Both	EkFo	N	Y	one trunk prostrate, no access, estimated, not tagged
190	red willow	10	Good	Remove	Both	EkFo	N	Y	no access, estimated, not tagged
191	red willow	7	Fair	Major	Both	EkFo	N	Y	somewhat sparse, no access, estimated, not tagged
192	red willow	15	Good	Major	Both	EkFo	N	Y	no access, estimated, not tagged
193	California sycamore	25	Good	Major	Temporary	EkFo	Y	Y	no access, estimated
Poly-gon 4	arroyo willow	>4	Good	Remove	Permanent	EkFo	Y	Y	15 individual trees
Poly-gon 6	arroyo willow	>4	Good	Remove	Permanent	EkFo	N	Y	92 individual trees



## 5 Tree Protection Plan

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Of the 255 protected trees surveyed, 71 are anticipated to be retained on site. The following avoidance and minimization measures should be implemented to reduce impacts to these trees from proposed construction activities. A tree protection zone (TPZ) was not defined in the IS-MND or General Plan CE-9 or previous reports; as such the TPZ is defined for the purposes of this report as the combined area of the tree's dripline, structural rooting radius (SRR), and optimal tree protection zone (OTPD) as explained in Section 2 Methodology. The TPZ is depicted in the Tree Impact Index (Appendix C) and colored based on impact category.

### 5.1 Oversight of Impacts to Trees

No person shall impact the roots or canopy of trees without oversight of a certified arborist. The arborist shall conduct a site walk with the Project engineer or construction manager prior to ground disturbance to determine anticipated impacts and measures to minimize impacts to protected trees. Following the site walk, the arborist shall determine what activities shall be monitored by the arborist or a qualified biologist in direct communication with the arborist. A daily log shall be completed by the monitor when construction activities occur within TPZs, to document all root and branch cuts for each tree. A copy of this report and appendices shall be always on site.

### 5.2 Fencing

Minimum 6-foot-tall chain-link fencing or orange snow fence (only where chain-link fencing is not feasible) shall be placed between the construction area and the dripline. Fencing shall be verified by a certified arborist after installation and be maintained and in place through the duration of construction activities and until all equipment has been removed from the site. Signage shall be placed in visible areas along the fencing that indicate tree protection zones.

### 5.3 Root Impacts

Cutting or disturbing a large percentage of a tree's roots increases the likelihood of the tree's failure or death. The following recommendations can help minimize root impacts:

- Where grading, cut-and-fill, trenching, or any other ground disturbing activity occurs or is specifically shown on the Project plans within the dripline, the activity shall be done slowly to avoid ripping or tearing roots. Ripping or tearing roots can lead to rotting and decay and reduce stability and health in the tree. Hand tools or small hand-held power equipment shall be used when feasible within the TPZ.
- Roots that are two inches or more in diameter that are encountered shall be avoided to the extent feasible.
- Any root pruning shall be performed carefully. The roots shall be exposed through hand digging and cut at a 90-degree angle with a clean sharp blade. Roots shall not be torn or left jagged, as this can lead to rotting and decay and reduce stability and health in the tree. Excessive root pruning is not recommended. Root pruning can contribute to the quick decline of a tree that is stressed or lacking in health and vigor.

- New cuts shall be wetted and covered with absorbent tarp or heavy cloth fabric and remain in place until the trench/excavation is backfilled with soil and immediately watered. Fabric shall be removed just prior to backfilling. Roots shall not be left in a pool of water during construction as this can also cause rotting and decay.
- Backfill with native soil and reduce compaction to the extent feasible.
- Within no more than one week prior to excavation, trenching, or other subsurface work that would occur within the root zone, the soil within the dripline of the tree should be deep irrigated. This can be accomplished using a soaker hose for approximately 2 to 6 hours, depending on the volume of water and soil texture. This will allow water to be absorbed by the roots. This can be performed a few days before the root pruning is to be performed.

If the arborist determines that construction may compromise the tree's health or structural integrity and there are no construction alternatives to minimize impacts, removal and/or replacement may be required.

## 5.4 Soil Compaction

Soil compaction imposes a complex set of physical, chemical, and biological constraints on tree growth. Principal components leading to limited growth are the loss of aeration and pore space, poor gas exchange with the atmosphere, lack of available water, and mechanical impedance of root growth. Soil compaction is the largest single factor responsible for the decline of trees on construction-sites. The following guidelines are recommended to protect trees from soil compaction that may occur due to Project activities:

- No equipment or materials shall be stored under canopies, or within the dripline of trees. On-site staging, storage and washing of construction materials and equipment shall be limited to designated and approved areas.
- In areas where vehicles or equipment may impact tree roots, temporary steel plates or plywood shall be installed to protect the root zone as needed.
- No washing of equipment or vehicles or dumping of hazardous/toxic materials shall occur within 50 feet of a preserved tree.

## 5.5 Mechanical Damage

Inadvertent damage to limbs and branches (i.e., mechanical damage) from equipment may occur if work, including staging and access, are within the TPZ. If damage occurs to limbs and branches, the arborist will be notified immediately, and branches shall be pruned immediately with clean and sharp pruners according to best practices as determined by the arborist. If damage to the bark or trunk occurs, wound dressings are not recommended. Treatment of said damages shall be applied in accordance with the ANSI A300 Management of Trees and Shrubs during Site Planning, Site Development, and Construction, Section 8.3 Wound Treatment (ANSI 2012).

## 5.6 Pruning

Pruning/trimming of protected trees shall be limited to only what is necessary for construction and conducted under the direct supervision of a certified arborist. Climbing spurs and spikes shall not be

used. A thorough inspection of the canopy shall be conducted to determine pruning specifications. Pruning shall rely on best practices as determined by the arborist.

## 6 Tree Replacement

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The Project will replace removed or majorly impacted mature native trees located within CDFW jurisdiction. Replacement will occur in accordance with the Project EIR Mitigation Measure NA-2 as outlined in the BMMP:

- Any mature native trees damaged or removed are to be replaced at a ratio of 10:1.
- Any trees lost in the Coastal Zone shall be replaced in the Coastal Zone.
- Suitable restoration areas for native trees will be selected along Old San Jose Creek or San Jose Creek. (Note: As described in Section 2.0, the mitigation sites have been established along Old San Jose Creek and Devereux Creek.)
- Native trees shall be grown from local seed stock in 5-gallon containers and planted at 8- to 10-foot spacing. (Note: As described in the Addendum to the FEIR [City of Goleta 2019b], 1-gallon containers will be used in select areas; within the erosional scars along Devereux Creek, 1-gallon containers are more appropriate since installing larger containers may cause additional erosional issues and space is restrained along the bottom of the incised erosional scars.)
- All mitigation restoration areas shall be monitored and maintained for a 5-year period to ensure successful establishment.
- The plan shall be submitted to the City of Goleta and resource agencies for review prior to construction.
- Prior to construction, the above measures shall be incorporated into the construction contract document.
- City of Goleta staff or the authorized monitor shall inspect the Project site to verify implementation of the approved tree protection plan during construction.

In addition to the standards defined in the EIR, although not a requirement for the Project, the City of Goleta Municipal Code Section 15.09.080, Appendix A Grading Ordinance Guidelines for Native Oak Tree Removal (City of Goleta 2013), and the County Deciduous Oak Tree Protection and Regeneration Ordinance (County of Santa Barbara 2003), were referenced to provide additional guidance for native tree establishment. The following standards have been adapted from these resources for all native trees requiring mitigation (in accordance with the EIR):

- Provide the replanting schedule and nurturing regime for the trees.
- Replacement trees that are planted must come from nursery stock grown from locally-sourced acorns/seeds, or use acorns/seeds gathered locally, preferably from the same watershed in which they are planted.
- Replacement trees shall be established in a location suitable for their growth and survival as determined by a certified arborist or restoration biologist.
- The replacement trees shall be nurtured for 5 years, the last 2 without supplemental watering, using techniques for oak trees consistent with the most current version of the University of California publication “How to Grow California Oaks” (University of California 2016) and for other native trees the watering will be determined by the restoration biologist. At the end of the 5 years, 10 trees for every protected tree removed must be alive, in good health as determined by the certified arborist/restoration biologist, and capable of surviving without nurturing and protection.

- Each replacement tree must be protected against damaging ground disturbance, soil compaction, or over-irrigation within the dripline. It must be fenced to protect it from grazing or browsing by animals both below and above ground until it has reached a minimum of 8 feet in height. (Note: Fencing is not anticipated to be necessary in the proposed mitigation sites due to lack of grazing animals in the area.)
- Where conditions warrant and where agreed to by the certified arborist/restoration biologist, tree planting designs and nurturing practices (e.g., protective structures, watering schedules) may be adjusted to improve the probability that replacement trees will be established successfully.
- All replacement trees are considered protected trees regardless of size.

## 6.1 Required Tree Replacement

The Project will result in the removal of or major impacts to 198 living mature native trees (121 arroyo willow, 27 black cottonwood, two blue elderberry, four California black walnut, two California sycamore, 35 coast live oak, and seven red willow tree. Note that tree #s 100 and 107 will be subject to major impacts by both EkFo and HAB projects, however since the trees are not protected under the HAB permit requirements, they will be mitigated under the EKFO project. This also does not include tree #s 12, 13, 30, and 70 which are dead and do not require mitigation. This will require 1,980 replacement trees. This includes an estimated removal of 105 arroyo willow trees within the willow thickets identified as numbers 4 and 6 on the Tree Location Map. The total required tree replacement is consistent with the BMMP, which states that the maximum number of replacement trees (1,980 trees) will be grown and installed at the Devereux Creek mitigation sites, even if it is determined during construction that a lesser number of replacement trees are needed due to less trees being impacted. If it is determined during construction that some protected trees can be avoided, then the excess replacement trees can be applied toward the riparian mitigation. Replacement trees shall consist of 1-gallon or 5-gallon containers, or as live cuttings for arroyo willow replacement trees. Additionally, additional replacement trees may be installed within the temporarily impacted areas associated with the Project. Replacement tree locations are shown in Figure 6a through Figure 6c of the BMMP (Appendix D). Final replacement tree quantities per species and locations will be determined following construction completion and will be incorporated into as-built site plans for the project per BMMP requirements. Replacement trees will adhere to the performance criteria and maintained and monitored for the 5-year monitoring and maintenance period per the BMMP.

Table 5 Trees Removals/Major Impacts and Required Replacements

Common Name	Coastal Zone	Noncoastal Zone	Total Trees	Required Replacement
Arroyo willow	20	101	121	1,210
Black cottonwood	0	27	27	270
Blue elderberry	2	0	2	20
California sycamore	1	1	2	20
Coast live oak	1	34	35	350
Red willow	3	4	7	70
Sandbar willow	0	0	0	0
Southern California black walnut	0	4	4	40
<b>Total</b>	<b>27</b>	<b>171</b>	<b>198</b>	<b>1,980</b>

<sup>1</sup> Individual trees will be replaced at 10:1 per EIR MM NA-1.

## 6.2 Tree Planting Recommendations

In addition to the planting guidelines provided in the BMMP, the following tree planting recommendations are provided herein to help ensure long term tree survival and can be implemented as needed and as feasible.

- Trees (particularly oaks) should be planted outside the TPZ of existing protected trees and dripline of other trees, to the extent feasible.
- Replacement trees should be inspected by a horticulturalist, arborist, or professional landscape for pests, disease, or structural issues prior to planting.
- Weeds should be removed and controlled by no less than three feet from each replacement tree prior to planting.
- Planting holes should be at least twice the diameter and the same depth as the root ball. Slightly backfill the hole and plant the tree so that the buttress is slightly above grade to allow for settling. Planted trees will not survive if they are planted too deep.
- Create a tree well approximately two to three feet around each tree to retain irrigation water throughout the monitoring period.
- A 2- to 4-inch layer of coarse, live organic mulch should be spread a minimum of 3 feet in diameter around the base of each tree. Care should be taken to avoid having the mulch contact the trunk at any time to avoid fungal development.
- Oak trees should be inoculated with mycorrhizae at the time of planting to encourage root growth and establishment.
- Gopher prevention should be implemented as-needed (trapping, fencing, or caging), for trees up to 15-gallon.
- Support stakes should be installed as needed to prevent trees from falling over due to high winds and removed as soon as it is determined that the tree has established a supportive root structure.
- A temporary drip irrigation system should be installed to water the trees during establishment period (typically 2 to 3 years) if hand watering is not feasible. Irrigation needs should be based on the amount and timing of winter rains during the year the trees are planted.



- Native trees should be pruned back only to remove broken limbs or dead wood. It may be necessary to conduct corrective pruning to help train or balance the individual tree crowns. Otherwise, pruning should not be performed. Industry standard arborist pruning practices should be followed for all pruning activities. Oak tree pruning should occur during cool weather conditions, typically from mid-November to mid-February to prevent tree stress.

## 7 References

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# Appendix A

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Tree Matrix

Tree Matrix

Tree ID #	Scientific Name	Common Name	Number of Trunks	Individual DBH (inches)	Aggregate DBH (inches) <sup>1</sup>	Height (feet)	Overall Condition Rating <sup>2</sup>	SRR Encroachment (Y/N) <sup>3</sup>	OTPZ Encroachment % <sup>4</sup>	Dripline Encroachment %	Impact <sup>5</sup>	Impact Area <sup>6</sup>	Project <sup>7</sup>	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>8</sup>	Notes
1	<i>Populus trichocarpa</i>	black cottonwood	1	14	14	50	Good	N	11	20	Minor	Temporary	EkFo	Y	N	
2	<i>Populus trichocarpa</i>	black cottonwood	2	6, 9	11	30	Good	N	0	0	No Impact	None	EkFo	Y	N	
7	<i>Quercus agrifolia</i>	coast live oak	1	13	13	15	Fair	N	0	0	No Impact	None	EkFo	N	N	
8	<i>Quercus agrifolia</i>	coast live oak	2	6, 17	18	30	Good	N	0	0	No Impact	None	EkFo	N	N	
9	<i>Quercus agrifolia</i>	coast live oak	4	1, 1, 3, 4	5	15	Good	N	0	0	No Impact	None	EkFo	N	N	
10	<i>Quercus agrifolia</i>	coast live oak	1	27	27	50	Good	N	0	7	Minor	Both	EkFo	N	N	
11	<i>Quercus agrifolia</i>	coast live oak	3	13, 4, 4	14	40	Good	N	1	38	Major	Both	EkFo	N	Y	
12	<i>Populus trichocarpa</i>	black cottonwood	1	24	24	n/a	Dead	n/a	n/a	n/a	Remove	None	EkFo	N	N	downed
13	<i>Populus trichocarpa</i>	black cottonwood	1	24	24	n/a	Dead	n/a	n/a	n/a	Remove	None	EkFo	N	N	downed
14	<i>Salix lasiolepis</i>	arroyo willow	1	14	14	20	Fair	N	0	2	Minor	Temporary	EkFo	N	N	
15	<i>Populus trichocarpa</i>	black cottonwood	1	19	19	50	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
16	<i>Platanus racemosa</i>	California sycamore	1	43	43	70	Fair	N	28	23	Major	Both	EkFo	N	Y	
17	<i>Quercus agrifolia</i>	coast live oak	1	23	23	50	Good	Y	32	16	Major	Both	EkFo	N	Y	
18	<i>Populus trichocarpa</i>	black cottonwood	2	2, 4	5	15	Fair	Y	78	22	Major	Both	EkFo	N	Y	
19	<i>Populus trichocarpa</i>	black cottonwood	1	26	26	60	Fair	N	26	32	Major	Both	EkFo	N	Y	
20	<i>Quercus agrifolia</i>	coast live oak	1	4	4	15	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
21	<i>Populus trichocarpa</i>	black cottonwood	1	10	10	30	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	main trunk prostrate
22	<i>Populus trichocarpa</i>	black cottonwood	1	7	7	20	Fair	Y	85	99	Remove	Both	EkFo	N	Y	
23	<i>Populus trichocarpa</i>	black cottonwood	1	6	6	20	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	
24	<i>Populus trichocarpa</i>	black cottonwood	1	37	37	70	Good	Y	52	61	Remove	Both	EkFo	N	Y	
25	<i>Quercus agrifolia</i>	coast live oak	2	12, 3	12	40	Good	Y	75	52	Remove	Both	EkFo	N	Y	8" basal pruning wound
26	<i>Quercus agrifolia</i>	coast live oak	1	15	15	50	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
27	<i>Quercus agrifolia</i>	coast live oak	2	8, 8	11	35	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	

Tree ID #	Scientific Name	Common Name	Number of Trunks	Individual DBH (inches)	Aggregate DBH (inches) <sup>1</sup>	Height (feet)	Overall Condition Rating <sup>2</sup>	SRR Encroachment (Y/N) <sup>3</sup>	OTPS Encroachment % <sup>4</sup>	Dripline Encroachment %	Impact <sup>5</sup>	Impact Area <sup>6</sup>	Project <sup>7</sup>	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>8</sup>	Notes
28	<i>Populus trichocarpa</i>	black cottonwood	1	6	6	25	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	
29	<i>Populus trichocarpa</i>	black cottonwood	1	8	8	25	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	
30	<i>Populus trichocarpa</i>	black cottonwood	1	32	32	n/a	Dead	n/a	n/a	n/a	Remove	Permanent	EkFo	N	N	downed
31	<i>Populus trichocarpa</i>	black cottonwood	1	24	24	70	Good	N	27	44	Major	Both	EkFo	N	Y	cavities on both sides of trunk
32	<i>Populus trichocarpa</i>	black cottonwood	1	17	17	20	Fair	N	8	0	Minor	Both	EkFo	N	N	main trunk broken off, massive cavity
33	<i>Populus trichocarpa</i>	black cottonwood	1	14	14	15	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	main trunk broken but still alive, decay at wound
34	<i>Populus trichocarpa</i>	black cottonwood	1	6	6	35	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	broken branches, sparse canopy
35	<i>Quercus agrifolia</i>	coast live oak	2	10, 2	10	20	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
36	<i>Quercus agrifolia</i>	coast live oak	1	5	5	30	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	uneven canopy, overcrowded
37	<i>Populus trichocarpa</i>	black cottonwood	1	4	4	25	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
38	<i>Populus trichocarpa</i>	black cottonwood	1	26	26	70	Good	Y	99	100	Remove	Both	EkFo	N	Y	broken branches
39	<i>Populus trichocarpa</i>	black cottonwood	1	4	4	25	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	uneven canopy, sparse
40	<i>Quercus agrifolia</i>	coast live oak	1	8	8	45	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	sparse canopy
41	<i>Populus trichocarpa</i>	black cottonwood	1	16	16	40	Good	Y	59	100	Remove	Both	EkFo	N	Y	main trunk prostrate
42	<i>Populus trichocarpa</i>	black cottonwood	1	29	29	70	Good	N	28	23	Major	Both	EkFo	N	Y	
43	<i>Quercus agrifolia</i>	coast live oak	1	8	8	55	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	somewhat sparse
44	<i>Quercus agrifolia</i>	coast live oak	1	11	11	50	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	somewhat sparse
45	<i>Populus trichocarpa</i>	black cottonwood	1	11	11	10	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	trunk prostrate, broken branches
46	<i>Populus trichocarpa</i>	black cottonwood	1	6	6	35	Fair	Y	100	88	Remove	Both	EkFo	N	Y	sparse canopy
47	<i>Quercus agrifolia</i>	coast live oak	1	7	7	25	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	sparse canopy
48	<i>Populus trichocarpa</i>	black cottonwood	1	11	11	60	Good	Y	58	70	Remove	Both	EkFo	N	Y	
49	<i>Platanus racemosa</i>	California sycamore	1	7	7	55	Good	N	0	0	No Impact	None	EkFo	N	N	
50	<i>Populus trichocarpa</i>	black cottonwood	1	10	10	40	Good	Y	92	95	Remove	Both	EkFo	N	Y	
51	<i>Populus trichocarpa</i>	black cottonwood	3	14, 11, 4	18	70	Good	Y	86	95	Remove	Both	EkFo	N	Y	

Tree ID #	Scientific Name	Common Name	Number of Trunks	Individual DBH (inches)	Aggregate DBH (inches) <sup>1</sup>	Height (feet)	Overall Condition Rating <sup>2</sup>	SRR Encroachment (Y/N) <sup>3</sup>	OTPZ Encroachment % <sup>4</sup>	Dripline Encroachment %	Impact <sup>5</sup>	Impact Area <sup>6</sup>	Project <sup>7</sup>	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>8</sup>	Notes
52	<i>Populus trichocarpa</i>	black cottonwood	1	11	11	60	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	second trunk dead and prostrate
53	<i>Populus trichocarpa</i>	black cottonwood	1	22	22	40	Good	Y	86	94	Remove	Both	EkFo	N	Y	
54	<i>Quercus agrifolia</i>	coast live oak	2	15, 5	16	25	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
55	<i>Populus trichocarpa</i>	black cottonwood	1	30	30	40	Fair	Y	53	99	Remove	Both	EkFo	N	Y	
56	<i>Populus trichocarpa</i>	black cottonwood	1	5	5	15	Good	N	0	0	No Impact	None	EkFo	N	N	
57	<i>Populus trichocarpa</i>	black cottonwood	1	40	40	n/a	Dead	n/a	n/a	n/a	No Impact	None	EkFo	N	N	downed
58	<i>Populus trichocarpa</i>	black cottonwood	1	15	15	30	Good	Y	54	53	Major	Both	EkFo	N	Y	
59	<i>Populus trichocarpa</i>	black cottonwood	1	12	12	30	Fair	Y	55	19	Remove	Both	EkFo	N	Y	
60	<i>Populus trichocarpa</i>	black cottonwood	1	5	5	20	Fair	N	0	0	No Impact	None	EkFo	N	N	
61	<i>Populus trichocarpa</i>	black cottonwood	1	10	10	40	Good	N	0	0	No Impact	None	EkFo	N	N	
62	<i>Quercus agrifolia</i>	coast live oak	1	7	7	15	Fair	Y	100	100	No Impact	None	EkFo	N	N	competition with locusts
63	<i>Quercus agrifolia</i>	coast live oak	1	26	26	50	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
64	<i>Salix lasiolepis</i>	arroyo willow	4	9, 8, 6, 3	14	25	Fair	Y	100	100	Remove	Permanent	EkFo	Y	Y	1 trunk dead, dead branches
65	<i>Salix lasiolepis</i>	arroyo willow	2	16, 6	16	30	Fair	Y	100	100	Remove	Both	EkFo	Y	Y	2 trunks previously failed
66	<i>Salix lasiolepis</i>	arroyo willow	1	4	4	20	Good	Y	100	100	Remove	Permanent	EkFo	Y	Y	
67	<i>Salix lasiolepis</i>	arroyo willow	1	12	12	15	Fair	Y	100	100	Remove	Permanent	EkFo	Y	Y	main trunk prostrate and decaying, branches growing upright are vigorous
68	<i>Sambucus nigra</i>	blue elderberry	1	9	9	30	Fair	Y	100	100	Remove	Permanent	EkFo	Y	Y	sparse foliage may be due to tree being deciduous and fall season
69	<i>Sambucus nigra</i>	blue elderberry	1	12	12	35	Fair	Y	100	100	Remove	Both	EkFo	Y	Y	sparse canopy may be due to deciduous tree and fall season
70	<i>Sambucus nigra</i>	blue elderberry	1	6	6	n/a	Dead	n/a	n/a	n/a	Remove	Permanent	EkFo	Y	N	downed
71	<i>Salix laevigata</i>	red willow	2	20, 22	30	40	Poor	Y	38	36	Major	Permanent	EkFo	Y	Y	prostrate, one trunk broken and decaying, sparse canopy may be partially due to deciduous tree and fall season
72	<i>Salix laevigata</i>	red willow	1	16	16	40	Poor	Y	23	50	Major	Permanent	EkFo	Y	Y	trunk broken and decaying, sparse canopy may be partially due to deciduous tree and fall season
73	<i>Salix laevigata</i>	red willow	2	9, 14	17	n/a	Dead	n/a	n/a	n/a	No Impact	None	EkFo	Y	N	

Tree ID #	Scientific Name	Common Name	Number of Trunks	Individual DBH (inches)	Aggregate DBH (inches) <sup>1</sup>	Height (feet)	Overall Condition Rating <sup>2</sup>	SRR Encroachment (Y/N) <sup>3</sup>	OTPZ Encroachment % <sup>4</sup>	Dripline Encroachment %	Impact <sup>5</sup>	Impact Area <sup>6</sup>	Project <sup>7</sup>	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>8</sup>	Notes
74	<i>Salix laevigata</i>	red willow	1	7	7	10	Fair	Y	95	87	Remove	Permanent	EkFo	Y	Y	trunk is prostrate, somewhat sparse canopy
75	<i>Juglans californica</i>	California black walnut	2	12, 8	14	60	Good	Y	37	33	Major	Permanent	EkFo	N	Y	growing north of concrete retaining wall
76	<i>Quercus agrifolia</i>	coast live oak	1	20	20	50	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	no access, estimated
77	<i>Quercus agrifolia</i>	coast live oak	1	18	18	40	Good	Y	100	100	Remove	Both	EkFo	N	Y	growing on utility line behind fence
78	<i>Quercus agrifolia</i>	coast live oak	2	9, 3	9	25	Good	Y	93	63	Major	Temporary	EkFo	Y	Y	
79	<i>Salix lasiolepis</i>	arroyo willow	2	14, 9	17	20	Good	Y	85	94	Remove	Both	EkFo	N	Y	
80	<i>Salix lasiolepis</i>	arroyo willow	1	13	13	20	Good	Y	71	77	Major	Both	EkFo	N	Y	
81	<i>Quercus agrifolia</i>	coast live oak	1	25	25	55	Good	Y	46	60	Major	Both	EkFo	N	Y	minor flagging
100	<i>Quercus agrifolia</i>	coast live oak	1	18	18	55	Good	Y	43	42	No Impact	None	EkFo/HAB	N	N	light flagging
107	<i>Juglans californica</i>	California black walnut	1	12	12	15	Fair	Y	100	100	Remove	Permanent	EkFo/HAB	N	Y	previously heavily pruned
135	<i>Juglans californica</i>	California black walnut	3	6, 2, 2	7	10	Fair	Y	100	100	No Impact	None	EkFo/HAB	N	N	previously pruned, somewhat sparse
136	<i>Juglans californica</i>	California black walnut	6	7, 3, 3, 2, 2, 2	9	15	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	trunks previously topped, canopy is lateral branches that have assumed dominance
137	<i>Quercus agrifolia</i>	coast live oak	1	10	10	20	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	covered in ivy, somewhat sparse canopy
138	<i>Juglans californica</i>	California black walnut	2	4, 6	7	15	Fair	Y	48	80	Remove	Permanent	EkFo	N	Y	crowded by oleander, somewhat sparse
139	<i>Juglans californica</i>	California black walnut	3	9, 7, 6	13	35	Fair	N	0	0	No Impact	None	EkFo	N	N	somewhat sparse, no access, behind fence
140	<i>Quercus agrifolia</i>	coast live oak	2	24, 12	27	45	Fair	Y	65	87	Remove	Both	EkFo	N	Y	somewhat sparse, trunk is prostrate
141	<i>Quercus agrifolia</i>	coast live oak	2	16, 11	19	55	Good	Y	48	56	Major	Both	EkFo	N	Y	
142	<i>Quercus agrifolia</i>	coast live oak	1	21	21	65	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	growing into palm tree, sparse canopy
143	<i>Quercus agrifolia</i>	coast live oak	1	14	14	60	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
144	<i>Quercus agrifolia</i>	coast live oak	2	11, 12	16	55	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	
145	<i>Quercus agrifolia</i>	coast live oak	1	6	6	35	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	somewhat sparse
146	<i>Quercus agrifolia</i>	coast live oak	1	14	14	55	Good	Y	59	61	Remove	Permanent	EkFo	N	Y	
147	<i>Quercus agrifolia</i>	coast live oak	1	10	10	40	Good	N	0	0	No Impact	None	EkFo	N	N	

Tree ID #	Scientific Name	Common Name	Number of Trunks	Individual DBH (inches)	Aggregate DBH (inches) <sup>1</sup>	Height (feet)	Overall Condition Rating <sup>2</sup>	SRR Encroachment (Y/N) <sup>3</sup>	OTPZ Encroachment % <sup>4</sup>	Dripline Encroachment %	Impact <sup>5</sup>	Impact Area <sup>6</sup>	Project <sup>7</sup>	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>8</sup>	Notes
148	<i>Quercus agrifolia</i>	coast live oak	2	16, 13	21	50	Good	N	13	19	Minor	Permanent	EkFo	N	N	
149	<i>Quercus agrifolia</i>	coast live oak	1	16	16	55	Good	N	0	0	No Impact	None	EkFo	N	N	
150	<i>Quercus agrifolia</i>	coast live oak	6	6, 6, 5, 4, 2, 1	11	15	Good	N	0	0	No Impact	None	EkFo	N	N	
151	<i>Quercus agrifolia</i>	coast live oak	3	25, 35, 9	44	60	Good	Y	27	8	Minor	Permanent	EkFo	N	N	
152	<i>Quercus agrifolia</i>	coast live oak	1	12	12	40	Good	N	0	27	Minor	Permanent	EkFo	N	N	growing into fence
153	<i>Quercus agrifolia</i>	coast live oak	1	8	8	20	Fair	N	0	23	Minor	Permanent	EkFo	N	N	
155	<i>Platanus racemosa</i>	California sycamore	1	32	32	70	Good	Y	100		Minor	Permanent	EkFo/HAB	N	N	
165	<i>Platanus racemosa</i>	California sycamore	1	19	19	50	Good	N	2	5	Minor	Temporary	EkFo	N	N	
166	<i>Platanus racemosa</i>	California sycamore	1	80	80	80	Good	Y	58	20	Minor	Both	EkFo/HAB	N	N	large cavity at base, building constructed around tree; Witness Tree
167	<i>Juglans californica</i>	California black walnut	3	11, 9, 8	16	50	Fair	N	0	0	No Impact	None	EkFo	N	N	sparse canopy may be due to deciduous tree and fall season
168	<i>Quercus agrifolia</i>	coast live oak	2	8, 11	13	30	Good	N	0	0	No Impact	None	EkFo	N	N	no access, estimated, not tagged
169	<i>Quercus agrifolia</i>	coast live oak	2	9	9	20	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	estimated, in median, not tagged
170	<i>Quercus agrifolia</i>	coast live oak	1	5	5	15	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	light flagging
171	<i>Quercus agrifolia</i>	coast live oak	1	4	4	15	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	no access, estimated, not tagged
172	<i>Quercus agrifolia</i>	coast live oak	1	4	4	15	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	no access, estimated, not tagged
173	<i>Quercus agrifolia</i>	coast live oak	1	15	15	35	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	sparse canopy and dieback, no access, estimated, not tagged
174	<i>Quercus agrifolia</i>	coast live oak	1	10	10	25	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	no access, estimated, not tagged
175	<i>Quercus agrifolia</i>	coast live oak	1	10	10	25	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	light flagging , no access, estimated, not tagged
176	<i>Quercus agrifolia</i>	coast live oak	2	4, 4	6	10	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	estimated, no access, not tagged
177	<i>Quercus agrifolia</i>	coast live oak	1	17	17	35	Good	N	0	0	No Impact	None	EkFo	N	N	some flagging throughout canopy, no access, estimated, not tagged
178	<i>Quercus agrifolia</i>	coast live oak	1	15	15	35	Good	N	0	0	No Impact	None	EkFo	N	N	some flagging, no access, estimated, not tagged
179	<i>Quercus agrifolia</i>	coast live oak	1	12	12	30	Good	N	0	0	No Impact	None	EkFo	N	N	
180	<i>Quercus agrifolia</i>	coast live oak	1	13	13	50	Good	Y	47	71	Remove	Permanent	EkFo	N	Y	not tagged



Tree ID #	Scientific Name	Common Name	Number of Trunks	Individual DBH (inches)	Aggregate DBH (inches) <sup>1</sup>	Height (feet)	Overall Condition Rating <sup>2</sup>	SRR Encroachment (Y/N) <sup>3</sup>	OTPZ Encroachment % <sup>4</sup>	Dripline Encroachment %	Impact <sup>5</sup>	Impact Area <sup>6</sup>	Project <sup>7</sup>	Coastal Zone (Y/N)	EkFo Mitigation (Y/N) <sup>8</sup>	Notes
181	<i>Salix lasiolepis</i>	arroyo willow	1	28	28	25	Good	Y	100	100	Remove	Permanent	EkFo	Y	Y	large prostrate limbs
182	<i>Salix lasiolepis</i>	arroyo willow	1	22	22	25	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	majority of canopy is epicormic growth on previously damaged limbs
183	<i>Salix lasiolepis</i>	arroyo willow	3	18, 9, 33	39	35	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	two prostrate trunks
184	<i>Salix lasiolepis</i>	arroyo willow	1	22	22	30	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	prostrate limbs, growing above culvert
185	<i>Salix lasiolepis</i>	arroyo willow	2	10, 18	21	25	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	one trunk prostrate
186	<i>Salix lasiolepis</i>	arroyo willow	2	8, 18	20	25	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	prostrate trunks, smaller trunk broken
187	<i>Salix lasiolepis</i>	arroyo willow	2	10, 15	18	35	Good	Y	100	100	Remove	Permanent	EkFo	N	Y	ivy on trunk
188	<i>Salix lasiolepis</i>	arroyo willow	3	7, 9, 2	12	20	Fair	Y	100	100	Remove	Permanent	EkFo	N	Y	one trunk prostrate, previous leading trunk topped, no access, estimated, not tagged
189	<i>Salix laevigata</i>	red willow	2	15, 17	23	25	Good	Y	68	58	Remove	Both	EkFo	N	Y	one trunk prostrate, no access, estimated, not tagged
190	<i>Salix laevigata</i>	red willow	1	10	10	15	Good	Y	76	100	Remove	Both	EkFo	N	Y	no access, estimated, not tagged
191	<i>Salix laevigata</i>	red willow	1	7	7	15	Fair	Y	95	98	Major	Both	EkFo	N	Y	somewhat sparse, no access, estimated, not tagged
192	<i>Salix laevigata</i>	red willow	1	15	15	20	Good	Y	31	42	Major	Both	EkFo	N	Y	no access, estimated, not tagged
193	<i>Platanus racemosa</i>	California sycamore	1	25	25	85	Good	Y	100		Major	Temporary	EkFo	Y	Y	no access, estimated
Poly-gon 1	<i>Salix lasiolepis</i>	arroyo willow	n/a	>4	>4	n/a	Good	n/a	n/a	n/a	Minor	Temporary	EkFo	Y	N	5 individual trees
Poly-gon 2	<i>Salix lasiolepis</i>	arroyo willow	n/a	>4	>4	n/a	Good	n/a	n/a	n/a	Minor	Temporary	EkFo	Y	N	10 individual trees
Poly-gon 4	<i>Salix lasiolepis</i>	arroyo willow	n/a	>4	>4	n/a	Good	n/a	n/a	n/a	Remove	Permanent	EkFo	Y	Y	15 individual trees
Poly-gon 5	<i>Salix lasiolepis</i>	arroyo willow	n/a	>4	>4	n/a	Good	n/a	n/a	n/a	Minor	Temporary	EkFo	Y	N	5 individual trees
Poly-gon 6	<i>Salix lasiolepis</i>	arroyo willow	n/a	>4	>4	n/a	Good	n/a	n/a	n/a	Remove	Permanent	EkFo	N	Y	92 individual trees

<sup>1</sup> Diameter of the total cross-sectional area of a multi-trunk tree;  $D=\sqrt{d^2 + d^2 + d^2...}$

<sup>2</sup> Overall condition rating criteria: Excellent, good, fair, poor, dead

<sup>3</sup> Encroachment into the structural rooting radius (SRR)

<sup>4</sup> Percent encroachment of the optimal tree protection zone (OTPZ)

<sup>5</sup> Impact categories: No impact, Minor, Major, Remove

<sup>6</sup> Impact area overlapping TPZ (for live trees) or in which the trunk is located (for dead trees)

<sup>7</sup> Project site overlapping or closest to TPZ

<sup>8</sup> Per EkFo EIR MM NA-2, mature native trees that are majorly impacted or removed must be replaced at a 10:1 ratio. If the tree is being impacted by both EkFo and HAB projects, impacts are considered cumulative because the projects are being constructed at the same time by the same entity (City). Mitigation for cumulative major impacts or removal will be required by the project with greater impacts and which requires replacement for the tree based on permit conditions.

# Appendix B

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Tree Location Maps

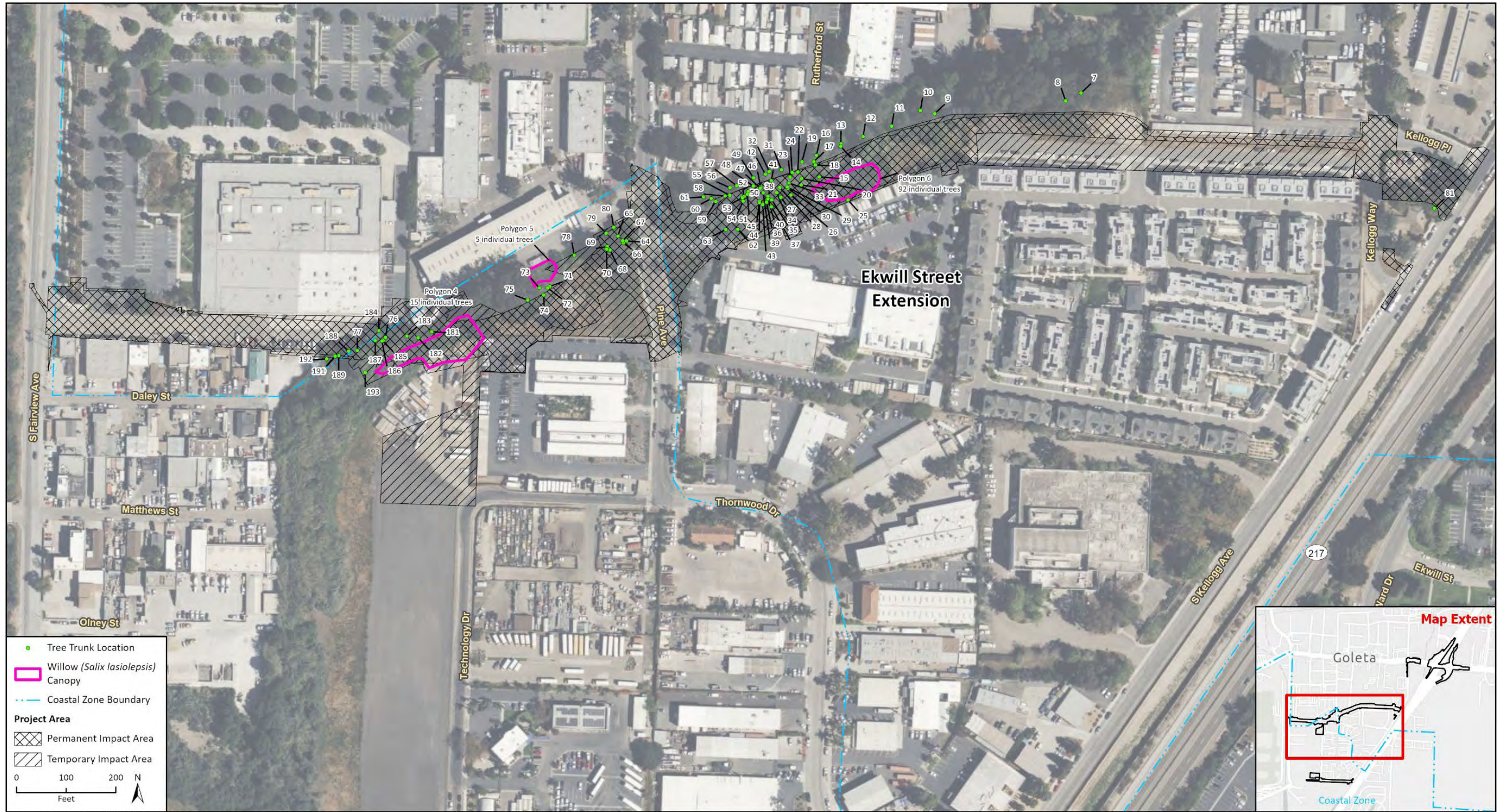




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18-06029 Tree Analysis  
Fig X EkFo Tree Map Landscape

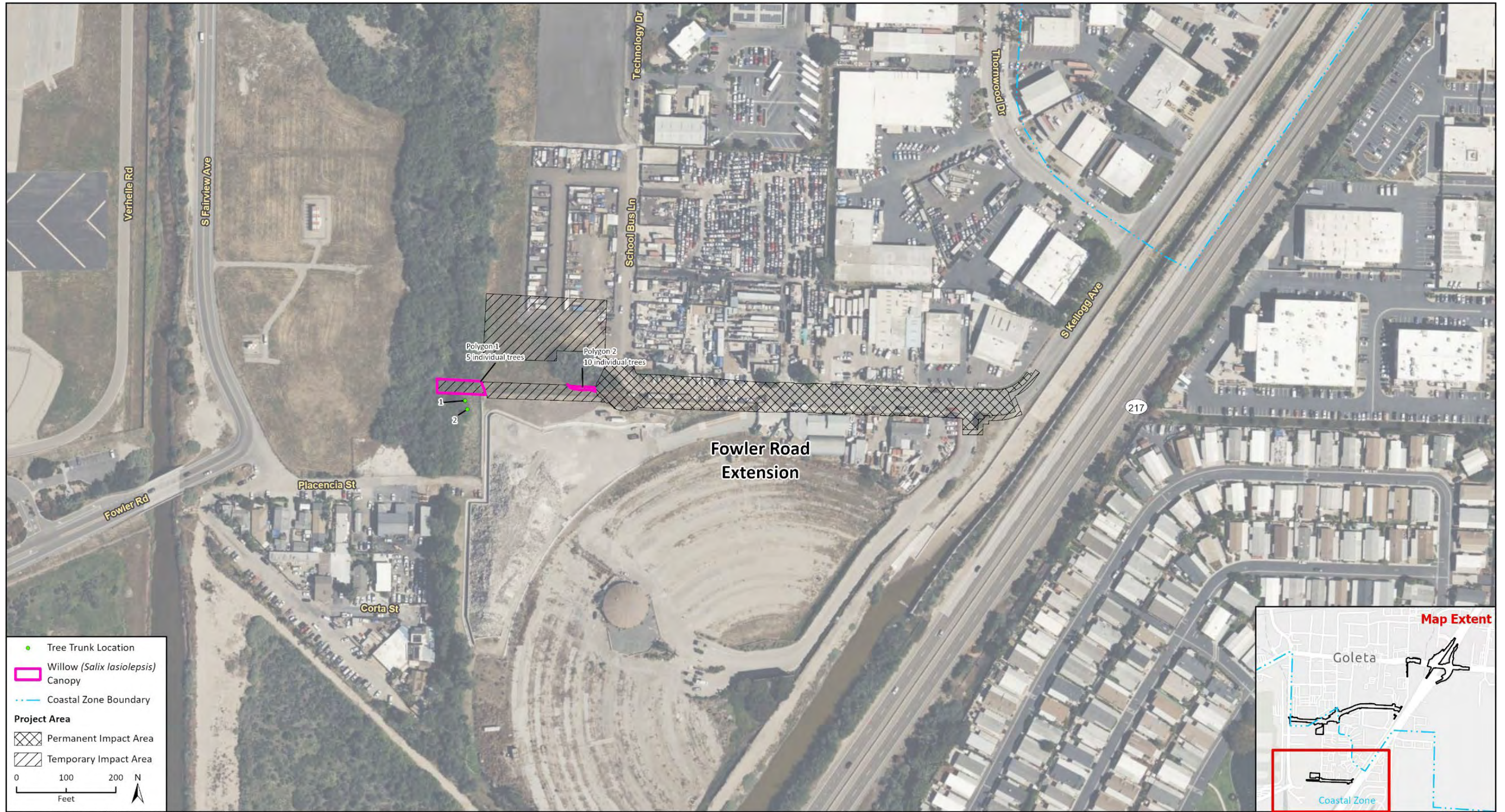




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18-06025 Tree Analysis  
 Fig X EkFo Tree Map Landscape





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18-06029 Tree Analysis  
Fig X EkFo Tree Map Landscape



# Appendix C

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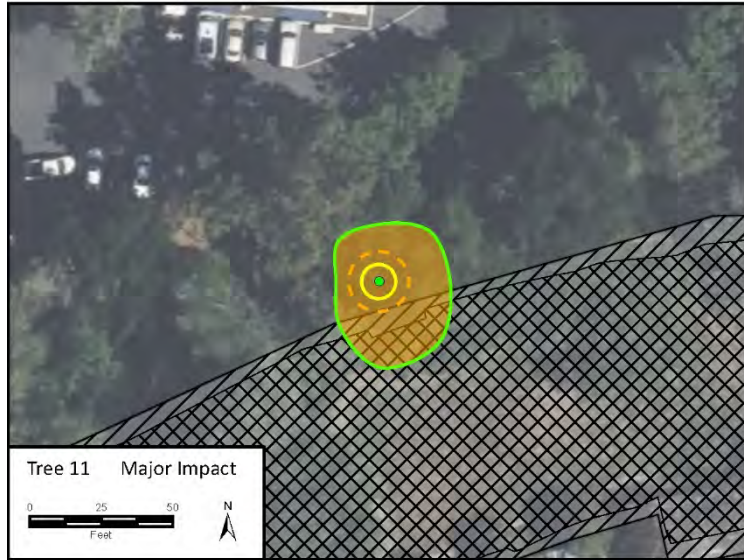
Tree Impact Index

Legend

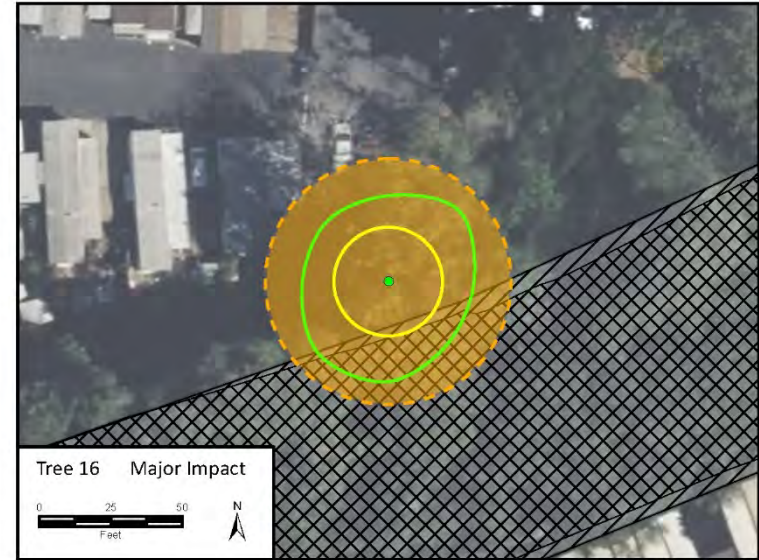
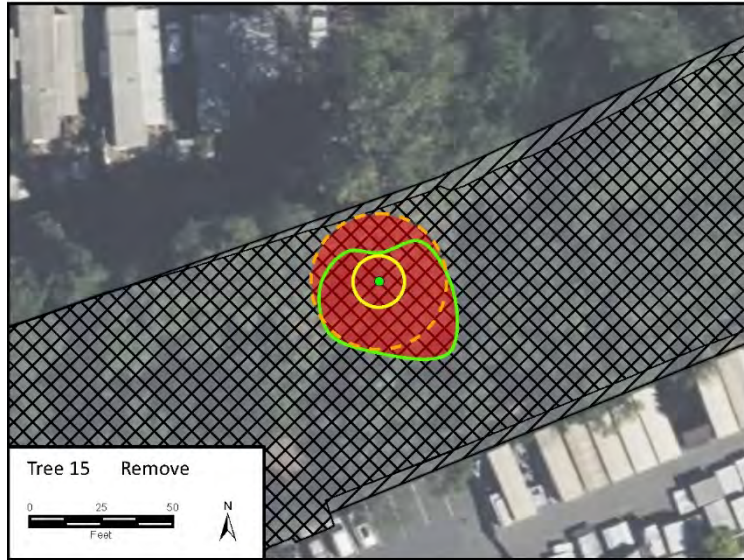
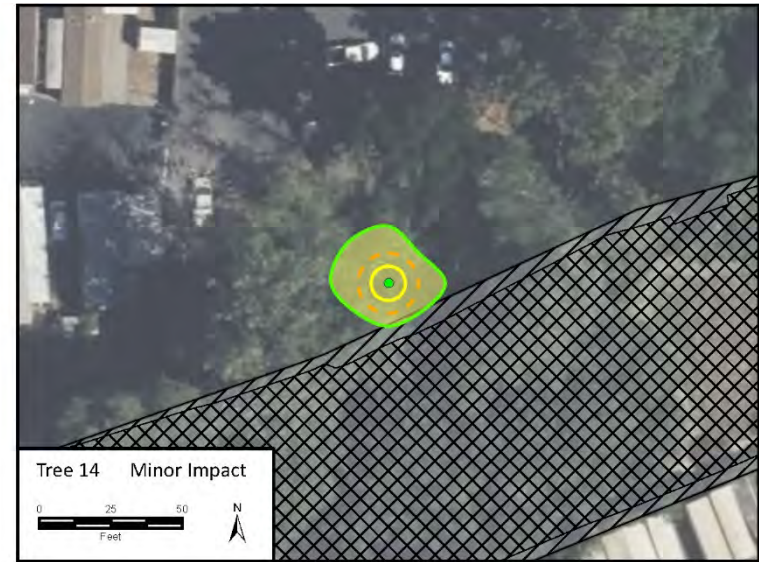




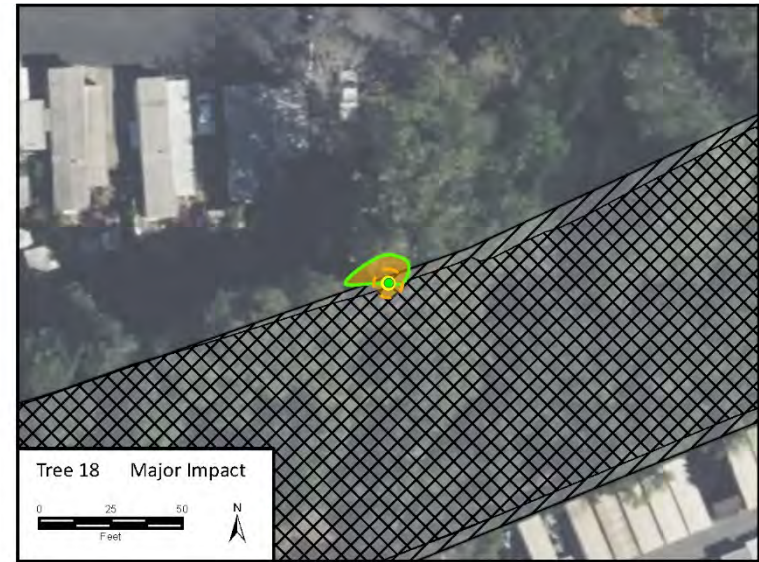




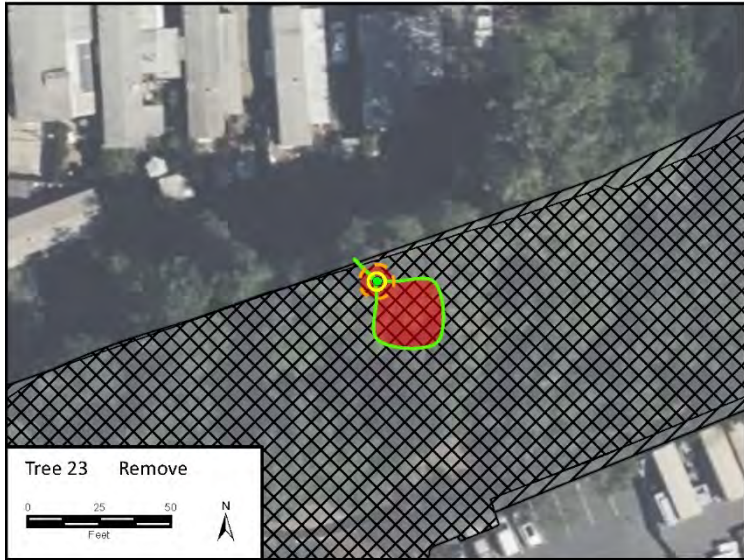
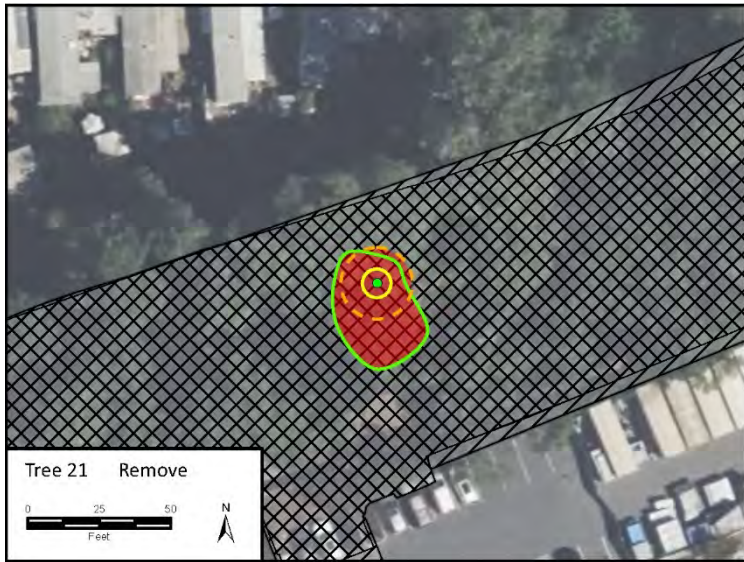












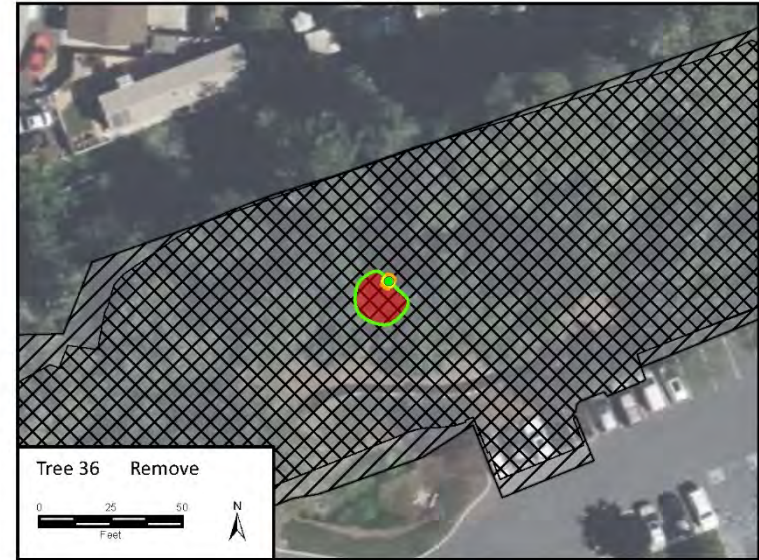
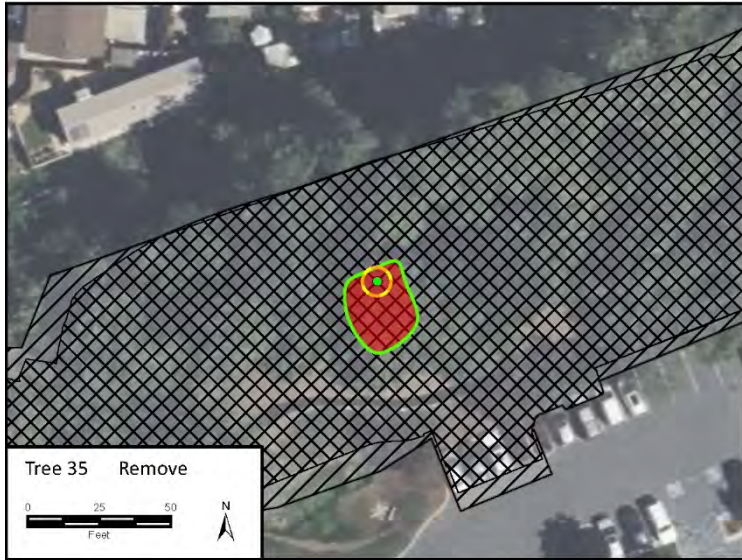
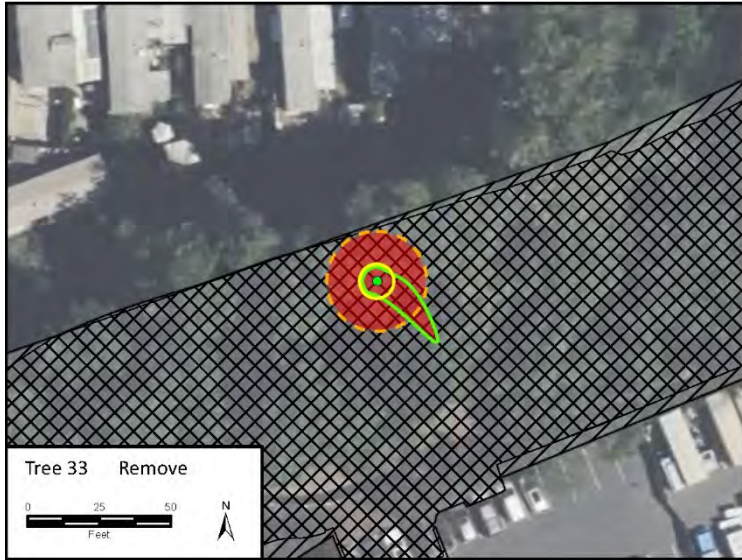




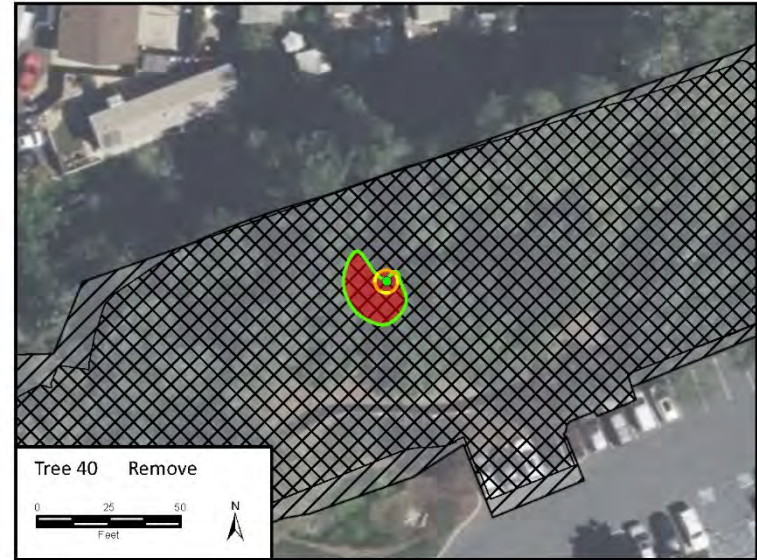
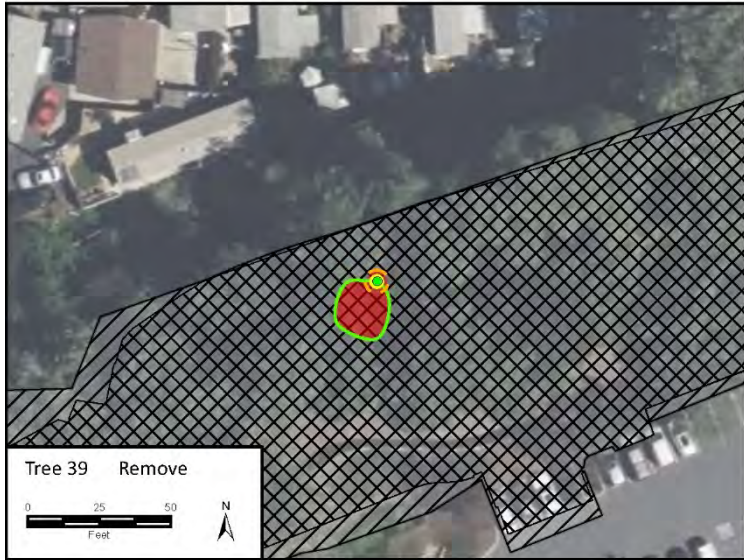
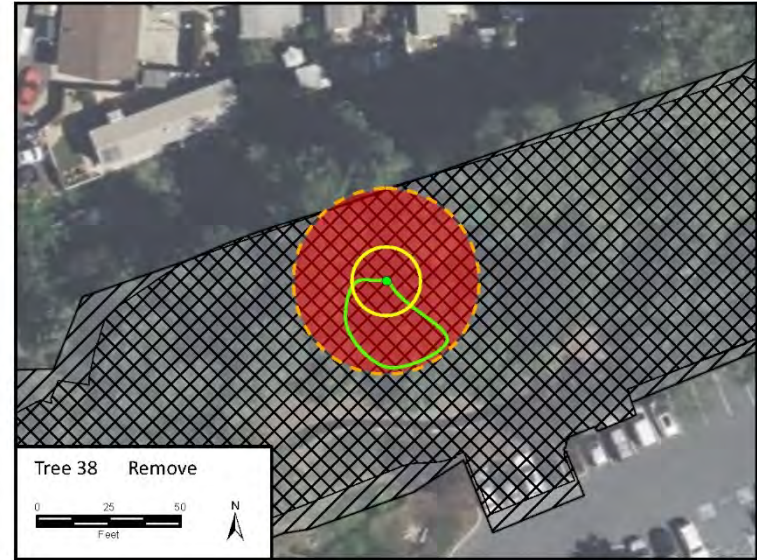
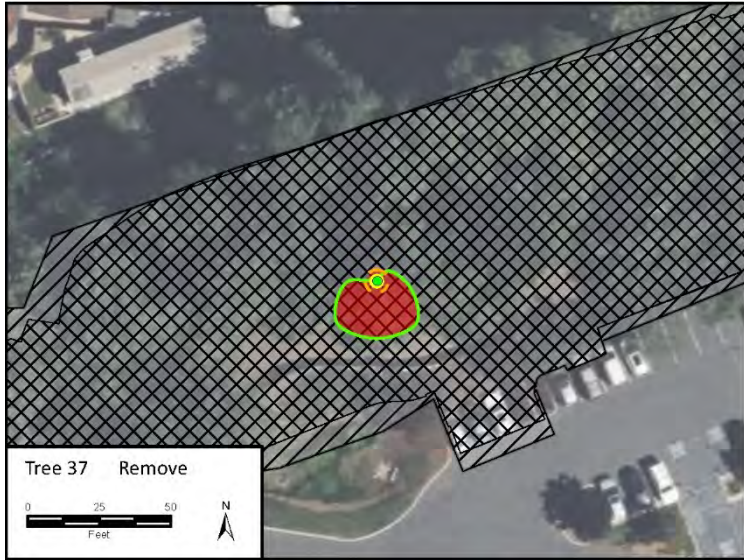




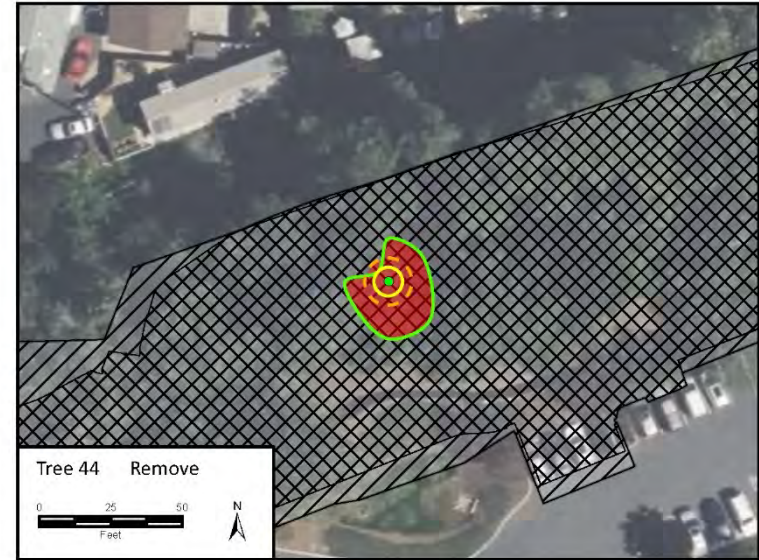
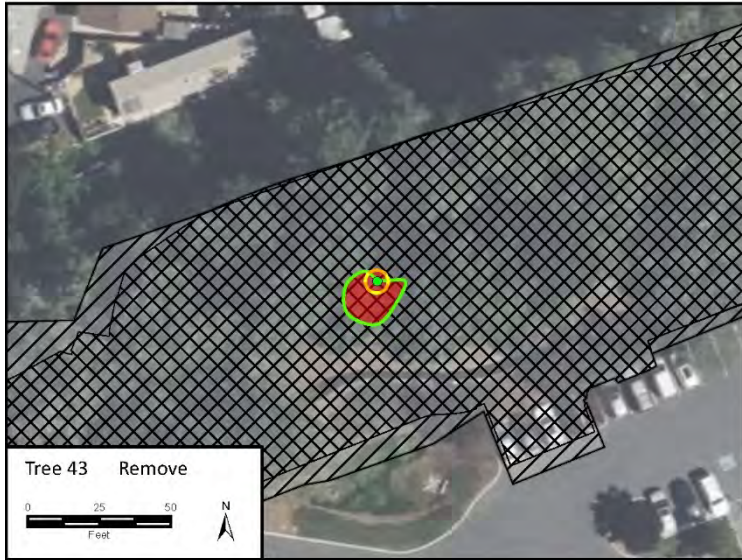
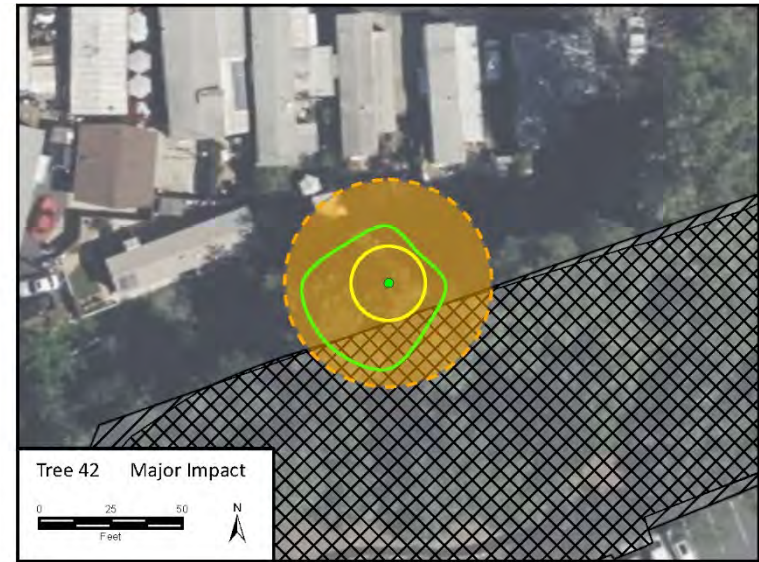




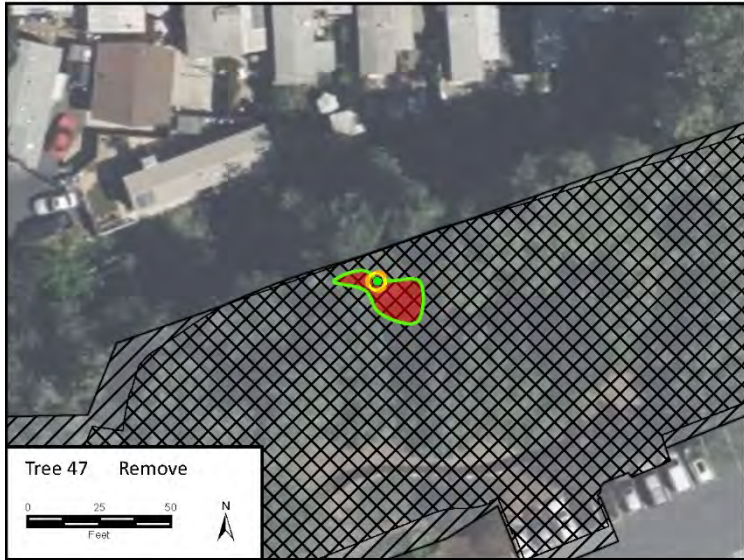
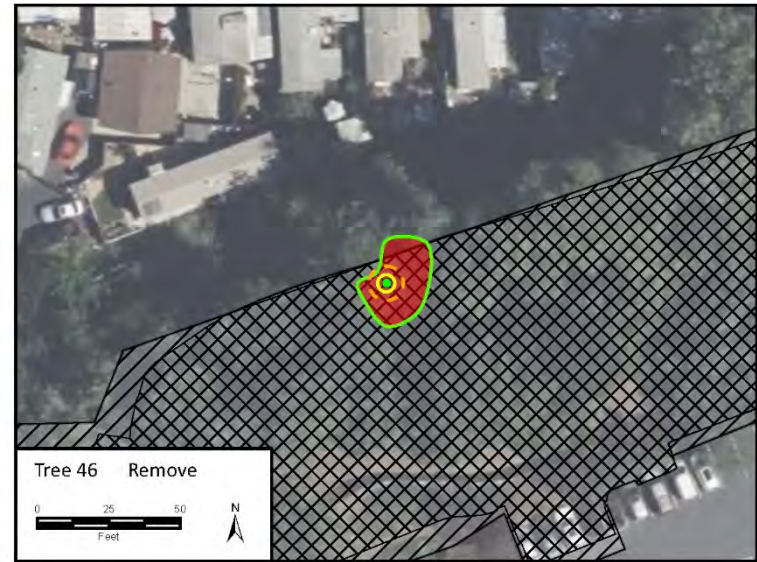
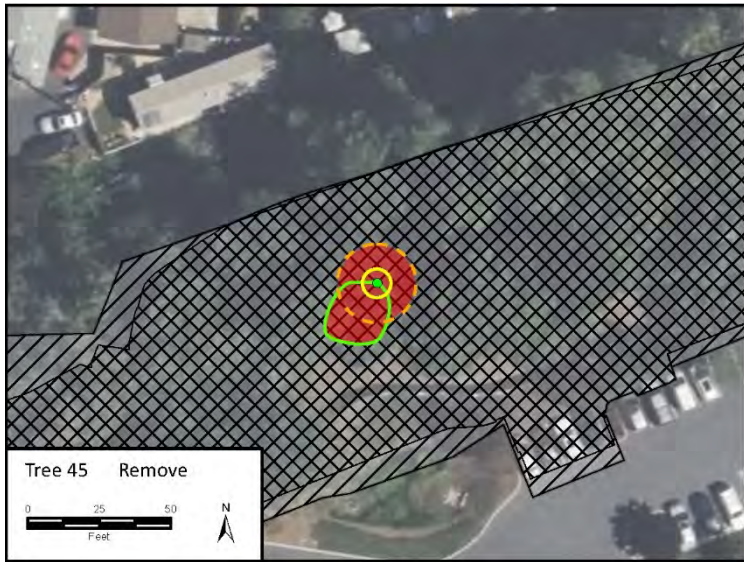




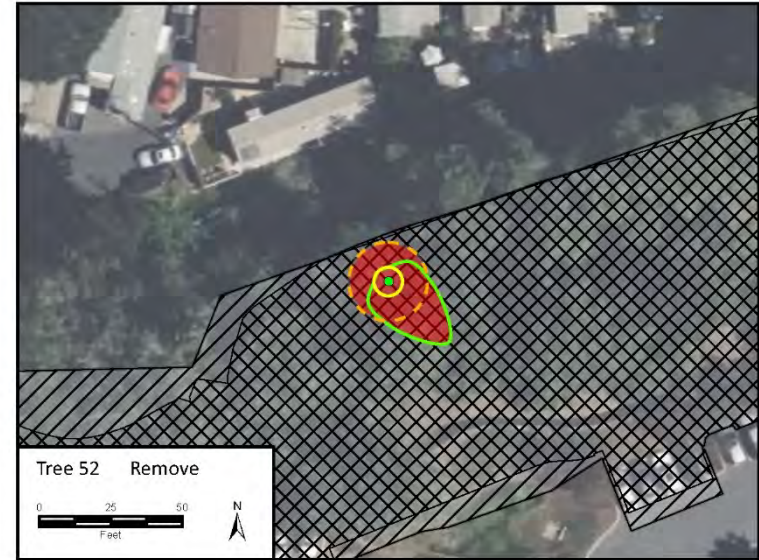




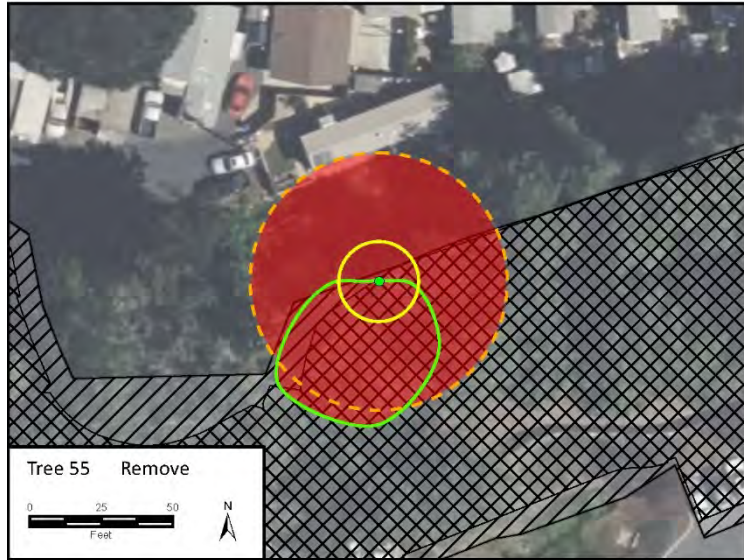




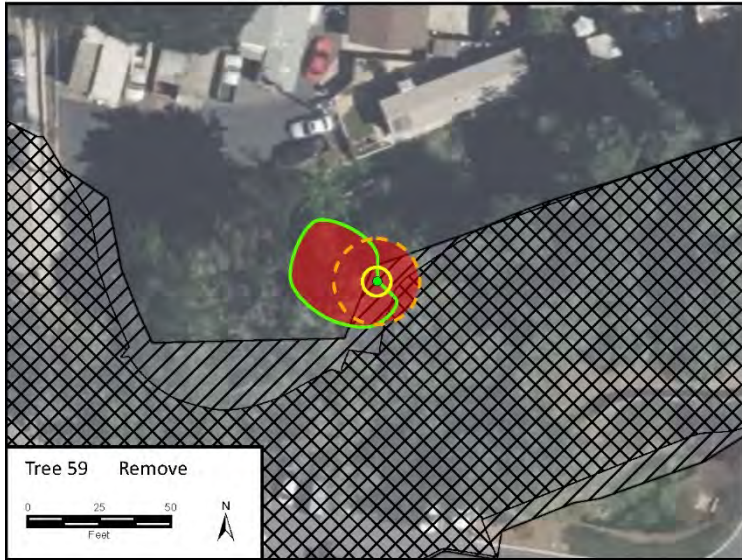




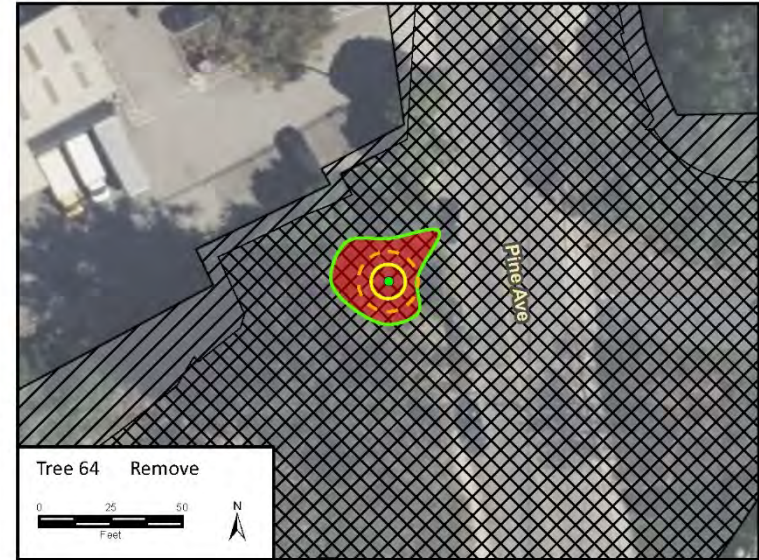




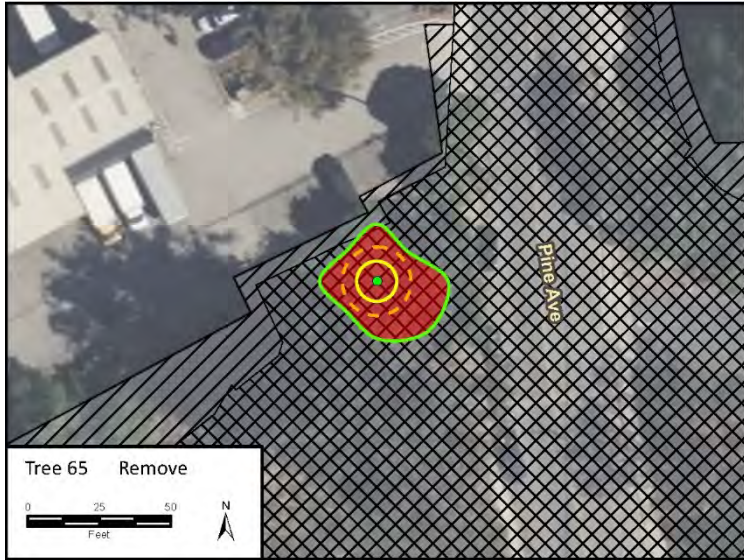








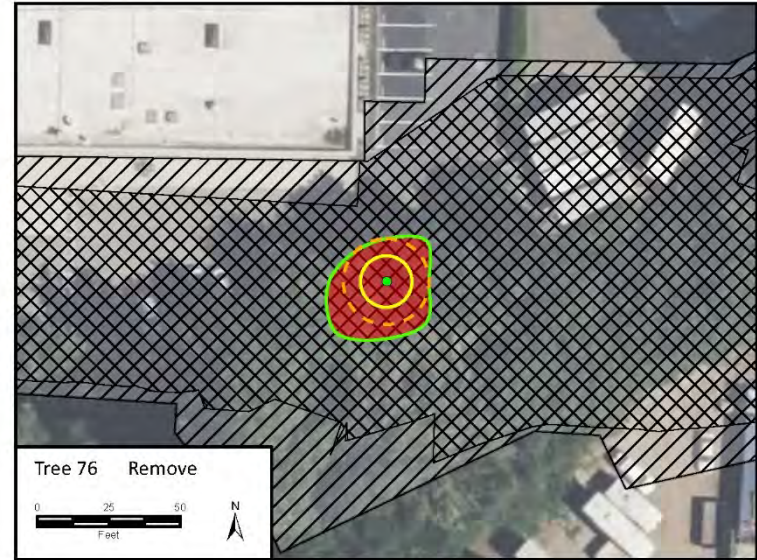




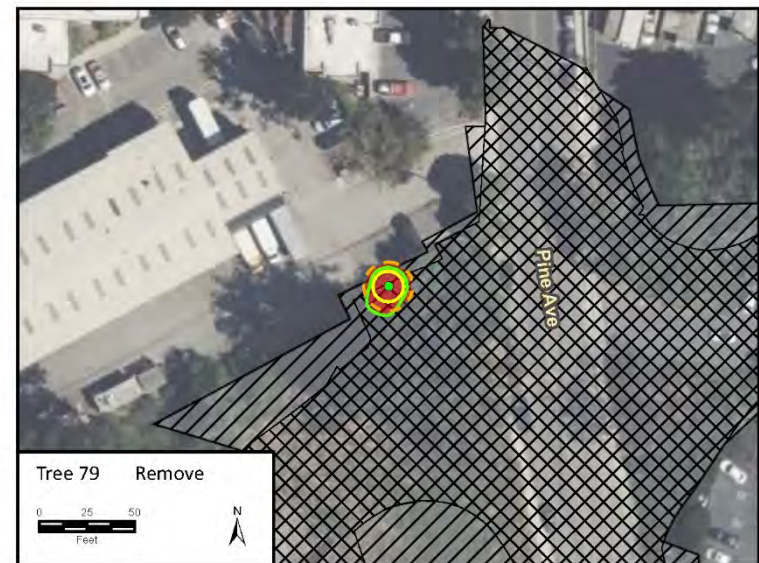








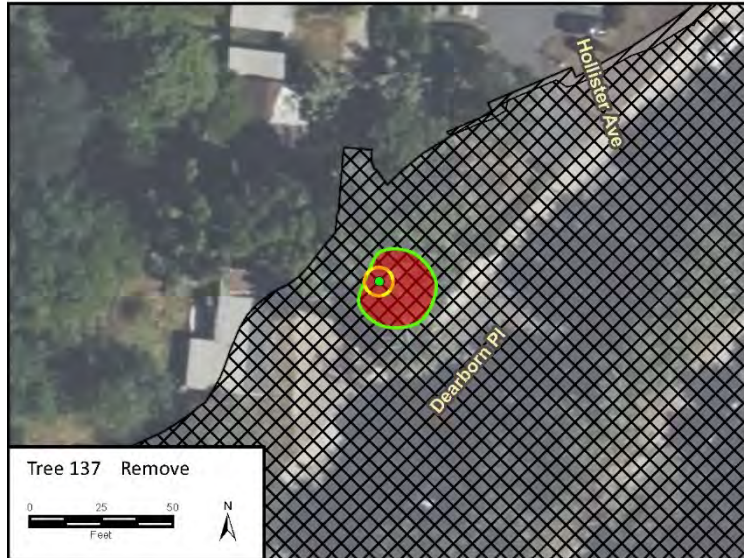








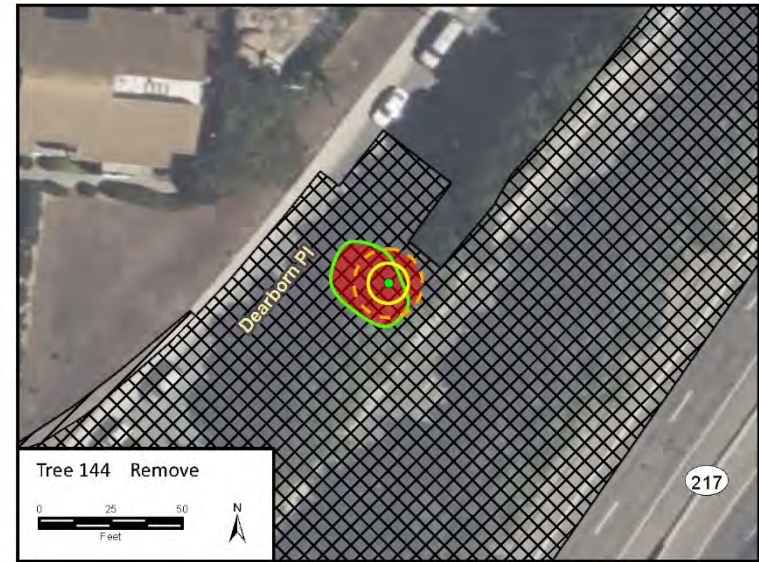








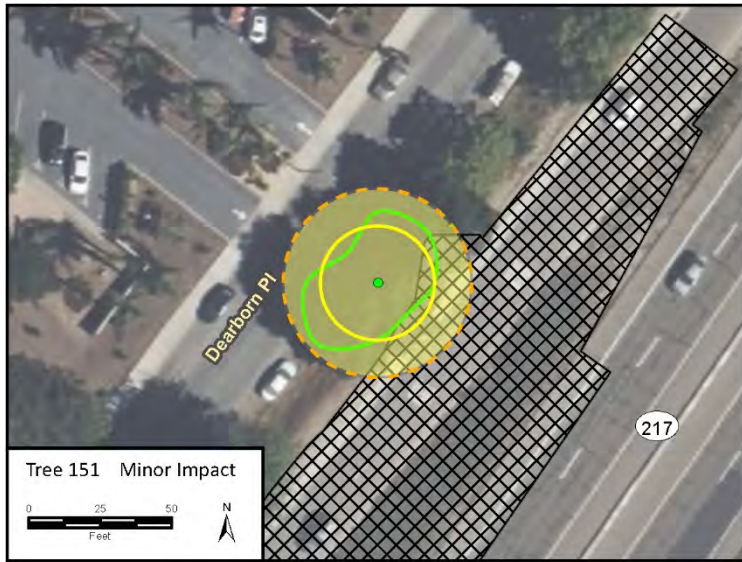




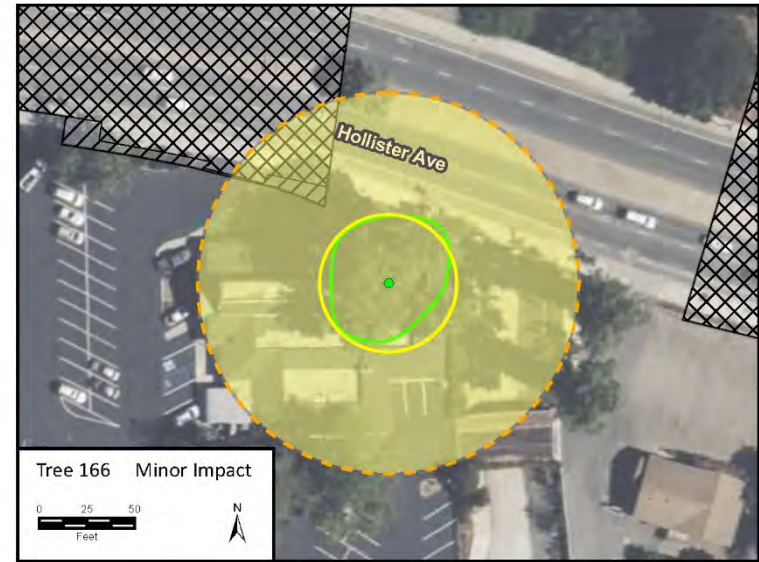
















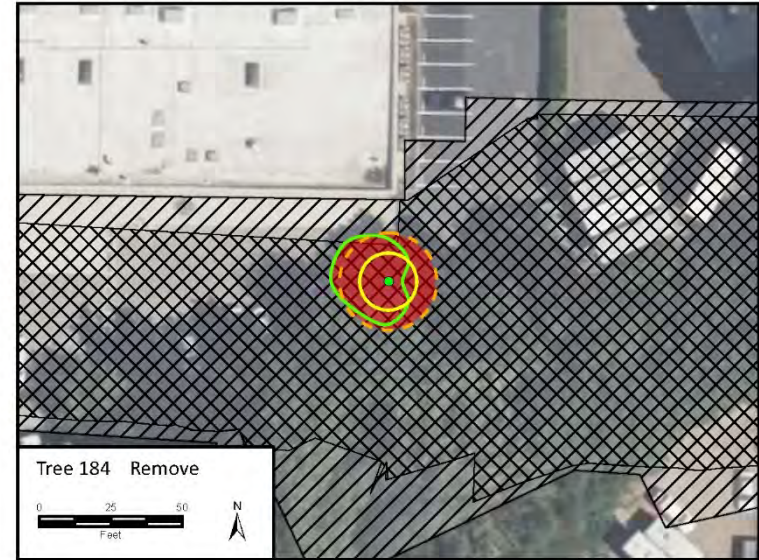
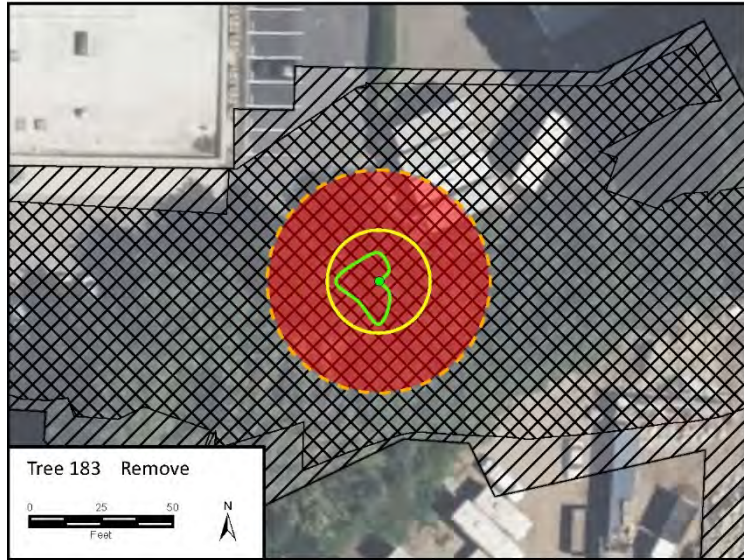
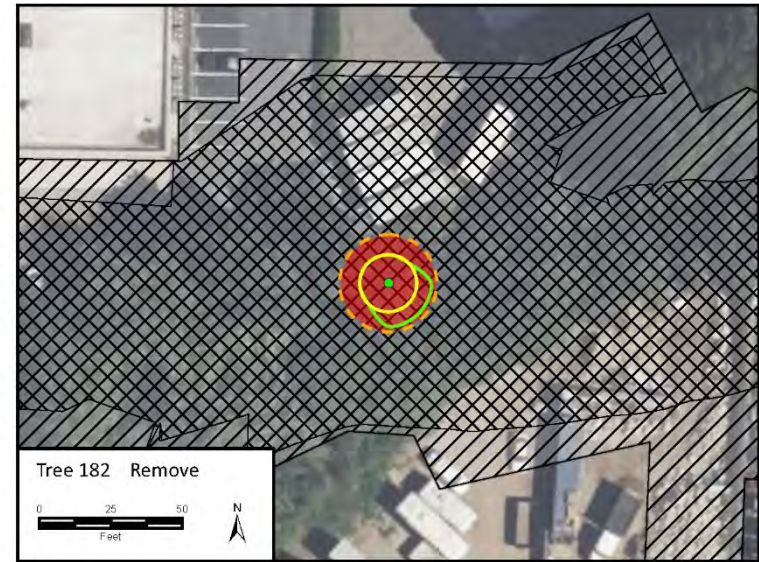
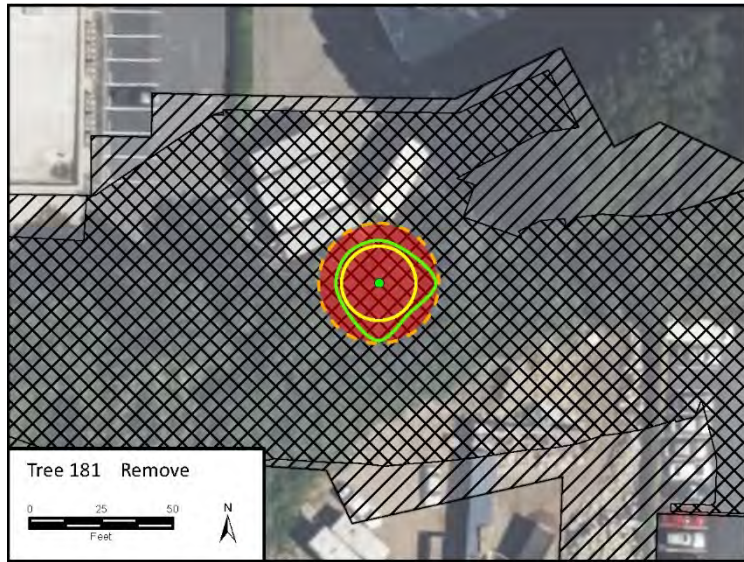




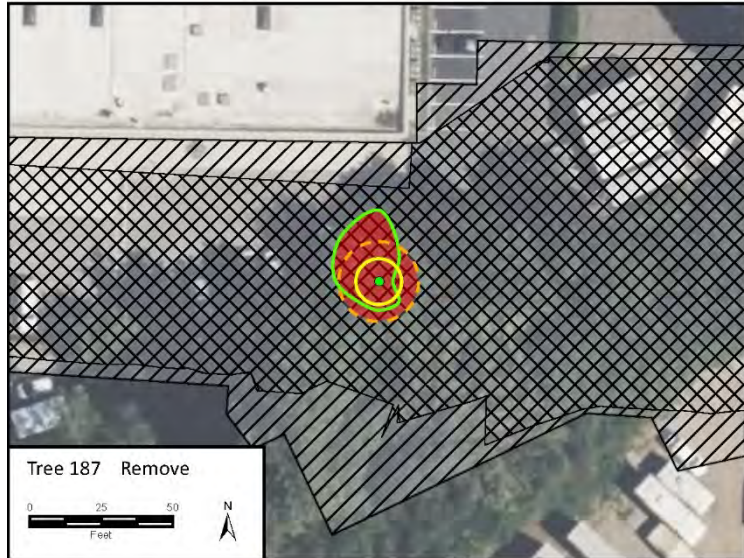
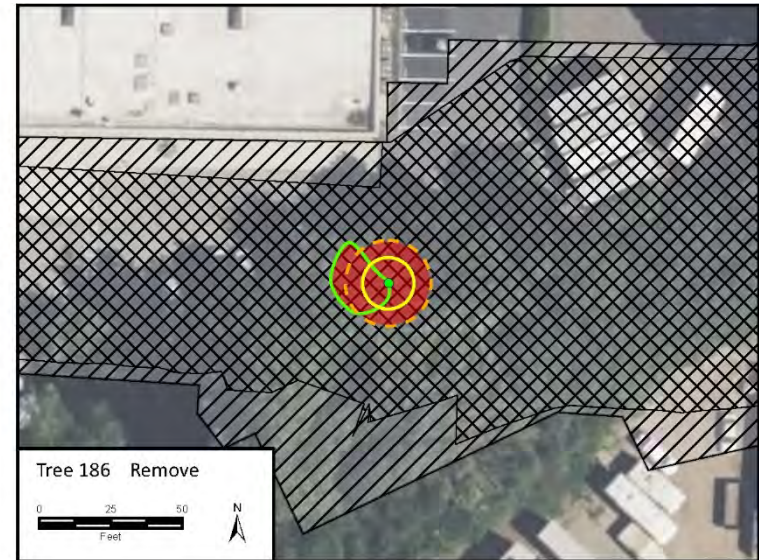
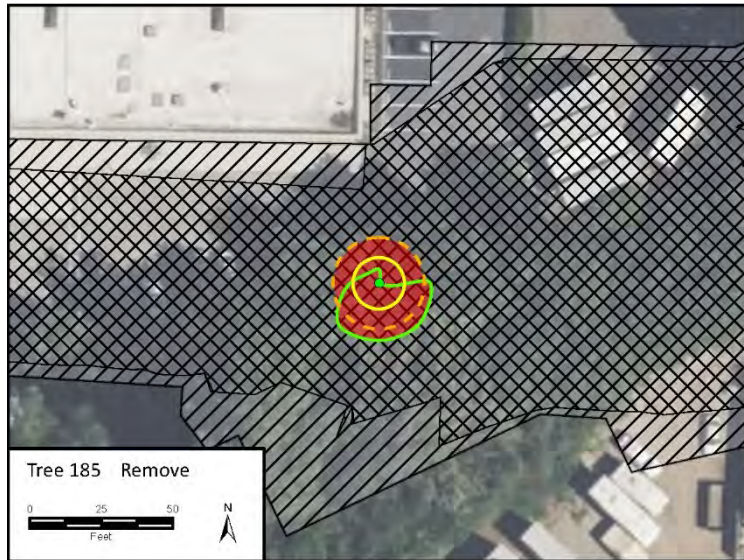




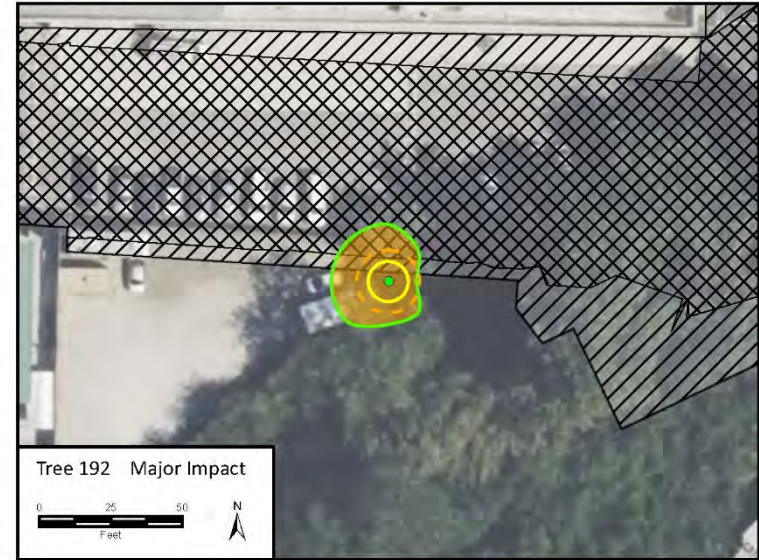
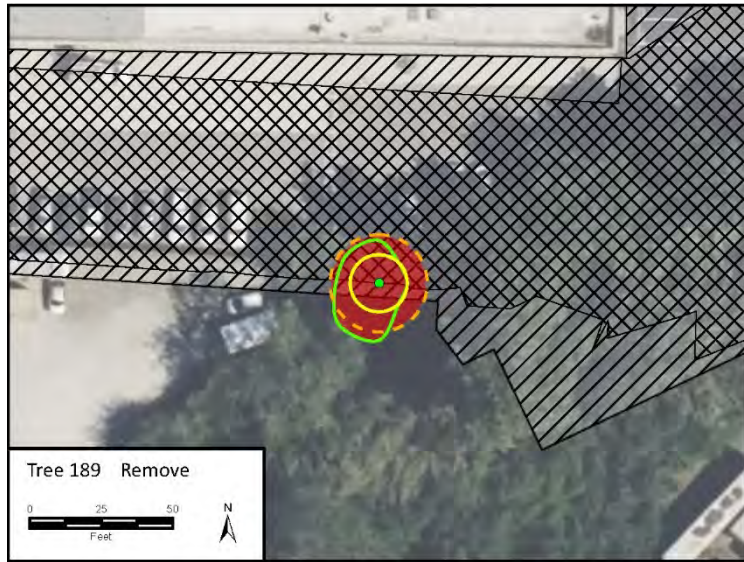
















# Appendix D

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Rincon 2022 Biological Mitigation and Monitoring Plan