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Swainson's Hawk Survey and Elderberry Shrub Mapping Report

Technical Memorandum

Date: Thursday, September 30, 2021

Project: Paradise Sewer Project

To: Town of Paradise

From: Dan Williams, Biologist, HDR

Subject: Swainson's Hawk Survey and Elderberry Shrub Mapping Report

Introduction

This memorandum provides the results of protocol-level Swainson's hawk (*Buteo swainsoni*) surveys and elderberry (*Sambucus* sp.) shrub mapping (field studies) performed by HDR in support of the Paradise Sewer Project (proposed project) during the spring of 2021. The Biological Study Area (BSA) for these field studies is defined as the proposed project area/footprint and a 0.5-mile buffer as shown in **Attachment 1** along with the locations of protocol Swainson's hawk survey points. Closer views of the Swainson's hawk survey points, as well as the locations of a Swainson's hawk nest and elderberry shrubs that were found during these field studies, are shown in **Attachment 2**. All plant and wildlife species observed during these field studies are included as **Attachment 3**.

Project Background

The Town of Paradise in Butte County, California is proposing to construct a new sewer collection system within Paradise and an 18-mile export pipeline to convey wastewater from Paradise to the City of Chico Water Pollution Control Plant (WPCP). The Paradise Sewer Project would replace individualized septic systems within the parcel boundaries of Paradise which are managed by property owners.

The proposed project area/footprint includes the following components:

- **Collection System** – a wastewater collection system consisting of service connections to individual parcels with a designated sewer service area. The collection system includes construction of buried gravity and pressure lines, manholes, and pump stations, and is located in Paradise.
- **Export Pipeline** - an 18-mile pipeline to convey wastewater from Paradise to the Chico WPCP. The export pipeline includes construction of pipelines, three horizontal directional drilling (HDD) borings under waterways, two microtunnel borings (one under Highway 99 and one under a railroad crossing), a Transition Chamber (near the eastern city limits of Chico where the sewer line would change from gravity downslope to a force main to cross the flat topography of the valley), and a Flow Control and Metering Structure located at or very near the Chico WPCP.
- **Connection to Chico WPCP** - the connection of the export pipeline to the Chico WPCP via the Flow Control and Metering Structure.

Project Location and Environmental Setting

Paradise is located in central Butte County, in the western foothills of the Sierra Nevada Mountains, and is situated approximately 12 miles east of the City of Chico which sits on the Sacramento Valley floor. Elevations in the BSA range from approximately 2,320 feet above sea level at the highest point of the sewer service area to approximately 135 feet above sea level at the Chico WPCP.

The sewer service area is completely within the Town of Paradise, and is composed mostly of montane hardwood-conifer, ponderosa pine, and mixed chaparral habitats. The export pipeline would run from the southwest corner of Paradise, downslope under Skyway (the main arterial road connecting Paradise and Chico) through blue oak-foothill pine and valley oak savanna habitats, to just east of the city limits of Chico. At this point, the pipeline would leave the roadway for a little over a mile, crossing annual grassland habitat with vernal pools, then crossing under Butte Creek and its associated valley foothill riparian habitat via trenchless HDD boring. After crossing under Highway 99, the pipeline would rejoin roadway for the remainder of the route, to be installed under county roads through mostly agricultural land, the majority of which is almond or walnut orchard. West of Highway 99 the pipeline would cross under two more creeks (Comanche Creek and Little Chico Creek) via trenchless HDD boring before reaching its connection to the Chico WPCP.

Methodology

Desktop Review

Prior to performing the field studies, the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) QuickView Tool in BIOS 5 (CDFW 2021), and the U.S. Fish and Wildlife Service (USFWS) Information Planning and Conservation (IPaC) System (USFWS 2021) were queried to determine which special-status wildlife species have the potential to occur in the BSA. A query of the CNDDDB provided a list of processed and unprocessed occurrences for special-status species in the California USGS 7.5-minute quadrangles (quads) which the Proposed Project intersects (Paradise East, Paradise West, Cherokee, Hamlin Canyon, Chico, and Ord Ferry) and all the quads surrounding these six quads. A shapefile of the proposed project area/footprint was entered into the USFWS IPaC System, and the system was queried to produce an official list of federally protected species that have the potential to occur in the BSA as well as designated critical habitat. The CNDDDB query results showed that there were occurrences of the state threatened Swainson's hawk and federal threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) in the vicinity of the BSA. Valley elderberry longhorn beetle was also on the Official Species List returned by the IPaC system.

The CNDDDB query showed that there are no Swainson's hawk occurrences from the BSA. However, there are several occurrences in central Butte County, most of them concentrated along the Sacramento River, with the exception of one nesting record from southeast of the Chico State University Farm. Within 5 miles of the BSA, there are no occurrences of Swainson's hawk east of Highway 99. There is one CNDDDB occurrence of valley elderberry longhorn beetle from the BSA along Butte Creek, as well as other occurrences within 5 miles of the BSA along Big Chico Creek, and the Feather and Sacramento Rivers. No designated critical habitat for either species was found to exist in the BSA.

Swainson's Hawk Surveys

From February 23-25, 2021, HDR biologists Kelly Bartron and Dan Williams performed habitat assessment surveys of all portions of the BSA that were publicly accessible. Access away from the public roadways was not permitted for this field effort. Areas that were not accessible were scanned with binoculars and a high-powered spotting scope. In accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (CDFW 2000), all trees within a 0.5-mile radius of the proposed project area/footprint were examined closely for large nest structures which had the potential to be Swainson's hawk nests.

Suitable foraging habitat for Swainson's hawk includes open grasslands, pastures, and agricultural fields planted in row crops (especially irrigated alfalfa or rice fields) with an ample small mammal prey base. It is important to note that orchards are not considered suitable foraging habitat for Swainson's hawk because the dense woody cover makes it difficult for them to stoop on prey. Suitable nesting habitat for Swainson's hawk includes valley foothill riparian woodland adjacent to suitable foraging habitat, or solitary trees surrounded by, or on the margins of, suitable foraging habitat. Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), walnut (*Juglans* sp.), and willow (*Salix* sp.) are the most frequently selected nest trees, though non-native trees in suitable habitat such as gum (*Eucalyptus* sp.) or Australian pine (*Casuarina equisetifolia*) are also often utilized (CDFW 2016).

Based on this information, as well as the distribution of mapped occurrences returned by the database queries, 10 survey points were identified from which to perform protocol Swainson's hawk surveys along the proposed project corridor. The locations of these survey points are shown in **Attachments 1 and 2**. Survey points were distributed between the Chico WPCP at the western end of the proposed project area/footprint, to as far east as Tuscan Ridge Golf Club at Skyway and Santa Rosa Road (at approximately 765 feet in elevation). From this point east, the topography steepens quite rapidly (reaching 1,000 feet in elevation just 1 mile east along Skyway) and the habitat transitions from predominately grassland, to blue oak-foothill pine, chaparral, and eventually montane hardwood-conifer dominated landscape. Based on the lack of suitable Swainson's hawk habitat in the BSA east of Tuscan Ridge Golf Club, including throughout the Town of Paradise sewer service area, and the lack of known occurrences of the species in the BSA east of Highway 99 (CDFW 2021), it was determined that protocol surveys would only be performed from Tuscan Ridge Golf Club west to the Chico WPCP. Survey points and the habitat within a 0.5-mile radius around them are described below in **Table 1**.

Table 1. Protocol Swainson's Hawk Survey Points

Survey Point	Location Description	Habitat Description
SWHA-01	Along Chico River Road approximately 0.3 mile west of the pipeline connection to the Chico WPCP	0.5-mile radius is bisected by an irrigation canal running along the west flank of Chico WPCP, then bending northwest toward Sacramento River. Confluence of Big Chico Creek and Sacramento River is approximately 1.5 miles to west. Some open agricultural fields within 0.5 mile, but majority of 0.5-mile radius is almond and walnut orchards.

Survey Point	Location Description	Habitat Description
SWHA-02	Along Chico Avenue between Crouch Avenue and Taffee Avenue	0.5-mile radius is bisected by Little Chico Creek and its associated riparian woodland corridor. Majority of surrounding land is almond and walnut orchards, but there are some open agricultural fields, including an approximately 8-acre area between the survey point and Little Chico Creek.
SWHA-03	Crouch Avenue at Little Chico Creek	0.5-mile radius is bisected by Little Chico Creek and its associated riparian woodland corridor. Majority of surrounding land is almond and walnut orchards, but there are some open agricultural fields, including an approximately 8-acre area near the corner of Crouch Avenue and Chico River Road.
SWHA-04	Crouch Avenue at Comanche Creek	0.5-mile radius is bisected by Comanche Creek and its associated riparian woodland corridor. There are also multiple irrigation canals and an artificial lake within 0.5 mile. Majority of surrounding land is almond and walnut orchards, but there are some open disturbed/ruderal areas.
SWHA-05	Intersection of Hegan Lane and Nicholas C. Shouten Lane	While a slight majority of the 0.5-mile radius around this point is almond and walnut orchard, the most notable feature in this area is the Chico State University Farm, featuring nearly 100 acres of open pasture dotted with a few dozen well-spaced mature fruit trees.
SWHA-06	Glen Oaks Memorial Park	Cemetery at the southern city limits of Chico with well-spaced mature valley oak and some non-native ornamental trees. There are some almond and walnut orchards within 0.5 mile, but majority of 0.5-mile radius is made up of developed and disturbed/ruderal areas.
SWHA-07	McFadden Lane	On the southeastern outskirts of Chico. Within 0.5-mile radius of this point is a mixture of developed areas, disturbed/ruderal areas, and almond and walnut orchards to the north and west, as well as valley oak woodland, annual grassland, and a baseball/softball complex to the south and east.
SWHA-08	Butte Creek Crossing	North end of the Virgin Valley Unit of Butte Creek Canyon Ecological Preserve where the export pipeline for the proposed project is to cross under Butte Creek via HDD boring. Within 0.5-mile radius of the point, there is extensive valley foothill riparian woodland habitat along Butte Creek, and annual grassland with vernal pools which are also used as grazing rangeland to the southeast.
SWHA-09	Skyway at The Bluffs / Spanish Gardens	0.5-mile radius is bisected by Skyway. To the north of Skyway are bluffs with a residential neighborhood, beyond which is the Canyon Unit of Butte Creek Canyon Ecological Reserve with extensive valley foothill riparian woodland. To the south of Skyway are annual grasslands with vernal pool complexes which are also used as grazing rangeland.

Survey Point	Location Description	Habitat Description
SWHA-10	Skyway at Tuscan Ridge Golf Club	0.5-mile radius is bisected by Skyway. To the north of Skyway are bluffs with annual grassland and valley oak transitioning to blue oak-foothill pine. Beyond the bluffs is a steep drop-off into Butte Creek Canyon through mixed chaparral habitat to extensive valley foothill riparian woodland at the canyon bottom. To the south of Skyway is Tuscan Ridge Golf Club with a mixture of valley oak and blue oak savanna interspersed with developed and ruderal/disturbed areas. Extensive annual grasslands with vernal pool complexes are interspersed with the oak savanna habitat beyond the golf community development.

In accordance with the CDFW 2000 methodology, HDR biologist Dan Williams performed protocol Swainson’s hawk surveys between sunrise and 10 am on 3 dates between March 20 and April 5, 2021 (Protocol Survey Period II), and on 3 dates between April 5 and April 20, 2021 (Protocol Survey Period III). On successive rounds of surveys, the points were surveyed from east to west, and west to east in order to visit all points both earlier and later in the mornings. At each survey point, the biologist checked all known large nests with a high-powered spotting scope, scanned in all directions with binoculars for perched or flying raptors, recorded all raptors observed, and recorded all Swainson’s hawks and their behaviors exhibited in or flying over the BSA. Results of these surveys are detailed below.

Elderberry Shrub Mapping and Assessment

In accordance with the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017), all elderberry shrubs found within 165 feet of the proposed project area/footprint during the protocol Swainson’s hawk surveys were mapped, and those that were close enough to the public roadway to allow close examination were thoroughly checked for exit holes; small oval-shaped holes in the stems of the shrubs which indicate the past or current presence of valley elderberry longhorn beetles. Since the overwhelming majority of known occurrences of valley elderberry longhorn beetle are from below 500 feet in elevation (USFWS 2017), and the highest elevation point for the protocol Swainson’s hawk surveys was situated at 765 feet in elevation, elderberry shrub mapping in the BSA was also not conducted east of (higher than) this point.

Results

Swainson’s Hawk Surveys

Results of the protocol-level Swainson’s hawk surveys conducted between March 20 and April 5, 2021 are listed below in Table 2.

Table 2. Protocol Swainson’s Hawk Survey Results

Survey Point	Swainson’s Hawks Observed	Other Notable Observations
SWHA-01	None	The only raptor species observed from this point was a single American kestrel (<i>Falco sparverius</i>) on March 30.

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Survey Point	Swainson's Hawks Observed	Other Notable Observations
SWHA-02	One Swainson's hawk observed on March 25: an immature bird that was observed flying high over Little Chico Creek from east to west and was then pursued and chased away by resident pairs of red-shouldered (<i>Buteo lineatus</i>) and red-tailed hawks (<i>Buteo jamaicensis</i>).	An active red-tailed hawk nest was observed during each round of surveys in a California sycamore (<i>Platanus racemosa</i>) along Little Chico Creek approximately 900 feet north by northwest of this point. A northern harrier (<i>Circus hudsonius</i>) was observed coursing low over the open agricultural field between the point and Little Chico Creek on April 5.
SWHA-03	None	No raptors observed from this point.
SWHA-04	None	A pair of red-tailed hawks was observed well to the south of this point perched along and soaring over Comanche Creek on April 5 and April 9. A red-shouldered hawk was observed soaring high over an orchard approximately 0.3 mile to the northwest on March 25. Multiple large nests in roadside trees in this vicinity were determined to be built by yellow-billed magpies (<i>Pica nuttalli</i>).
SWHA-05	A Swainson's hawk pair was observed building a nest in one of the large fruiting orchard trees in the Chico State University Farm on April 9. The nest tree was approximately 0.3 mile southeast of the proposed export pipeline route along Hegan Lane east of Hengst Drive.	On April 14, the Swainson's hawk pair was not observed in the area, and a great horned owl (<i>Bubo virginianus</i>) was present in the nest tree which would seem to indicate that the Swainson's hawk pair may have abandoned their nest attempt at this location.
SWHA-06	None	A pair of red-tailed hawks appeared to be residents in the cemetery trees as they were present during every round of surveys.
SWHA-07	None	A pair of red-tailed hawks was observed in a small grove of valley oaks approximately 500 feet southeast of the point on March 25.
SWHA-08	One adult Swainson's hawk was observed briefly soaring high above Butte Creek and continuing well to the north and out of sight on April 14.	A pair of bald eagles (<i>Haliaeetus leucocephalus</i>) was seen during multiple rounds of the surveys (March 25, March 30, April 9, and April 14) from this point and from SWHA-09. Sometimes they were observed soaring high overhead and other times they were observed perched in large trees overlooking Butte Creek or patrolling low over the creek, often with recently caught fish. Based on these observations it is possible this pair was nesting in a portion of the Butte Creek Canyon Ecological Reserve which could not be viewed from the public roadway. A ferruginous hawk (<i>Buteo regalis</i>) was observed from this point foraging over the annual grasslands to the southeast on March 30.

Survey Point	Swainson's Hawks Observed	Other Notable Observations
SWHA-09	None	<p>A pair of bald eagles was observed from this point and from SWHA-08 during multiple rounds of the surveys.</p> <p>A juvenile red-tailed hawk was observed in a small grove of valley oaks immediately southwest of the point on March 25 and 30.</p> <p>A ferruginous hawk was observed soaring over the annual grasslands well to the south of the point on April 14.</p>
SWHA-10	None	<p>Many turkey vultures (<i>Cathartes aura</i>) were observed soaring over this point during every round of surveys.</p> <p>One prairie falcon (<i>Falco mexicanus</i>) was observed soaring well to the northeast over the high bluffs above Butte Creek Canyon on April 5.</p>

Elderberry Shrub Mapping and Assessment

Elderberry shrubs were found at three locations in the BSA: along Butte Creek at the location of the proposed HDD crossing, and along Little Chico Creek at both the Crouch Avenue and Taffee Avenue proposed HDD crossings. Due to the lack of access away from the public roadways for these surveys, an accurate count of the total individual elderberry shrubs within 165 feet of the proposed project footprint was not possible, nor could the biologist examine many of the shrubs that could be identified from the public roadway close enough to determine if exit holes were present.

What could be determined from the public roadway was that at least one large elderberry shrub was present on the west bank of Butte Creek in the area of the proposed HDD crossing, while at least 12 elderberry shrubs were present on the north bank of Little Chico Creek near the proposed Crouch Avenue HDD crossing, and at least 15 elderberry shrubs were present on the north bank of Little Chico Creek near the proposed Taffee Avenue HDD crossing. No exit holes were observed in the few elderberry shrubs that were growing near enough to Taffee Avenue and Crouch Avenue to allow close examination, but several shrubs at each of these locations, and the one shrub identified across Butte Creek from SWHA-08 were too far from public access to allow proper examination for exit holes.

Summary and Recommendations

Swainson's Hawk

Multiple rounds of protocol Swainson's hawk surveys in the BSA during Spring 2021 identified one active Swainson's hawk nest, and two incidental sightings of individual Swainson's hawks in high flight which were likely migrating through the BSA. While the BSA east of Tuscan Ridge Golf Club, as well as the extensive almond and walnut orchards in the BSA between Highway 99 and the Chico WPCP are not considered suitable habitat for Swainson's hawk, the valley foothill riparian woodland along Butte Creek, Comanche Creek and Little Chico Creek, and the well-spaced mature fruit trees in the Chico State University Farm do provide suitable nesting habitat for Swainson's hawk.

Given that one pair of Swainson's hawks was confirmed nesting in the BSA, it is recommended that additional Phase II and Phase III protocol-level surveys for Swainson's hawks be conducted in the appropriate survey windows (March 20 through April 20) during the spring prior to the start of

construction activities related to the Proposed Project. A 2081 Incidental Take Permit from CDFW may be warranted for the Proposed Project to minimize the risk of unauthorized take of the species.

Valley Elderberry Longhorn Beetle

Elderberry shrubs were found to be present in the BSA along Butte Creek and Little Chico Creek, and while exit holes were not observed in shrubs that were growing close enough to the public roadway to allow thorough examination, there were several shrubs that could not be examined closely enough to confirm whether or not exit holes were present.

Given that elderberry shrubs were found to be present within riparian habitat in the BSA, valley elderberry longhorn beetle has the potential to occur in the BSA. Therefore, it is recommended that in the year prior to the start of construction, a more thorough mapping and examination of all elderberry shrubs within 165 feet of the proposed project footprint be conducted, including areas away from the public roadway which were not accessible during the Spring 2021 survey effort. If it is determined that all construction activities associated with the proposed project can avoid all mapped elderberry shrubs (i.e., by ensuring that entry and exit pits for HDD operation and all staging areas are sited at least 165 feet from all mapped shrubs), then informal consultation in the form of a Letter of Concurrence seeking a No Effect determination from USFWS shall be carried out. If it is determined that any mapped elderberry shrubs could be impacted by construction activities associated with the proposed project, then Section 7 consultation through USFWS should be initiated.

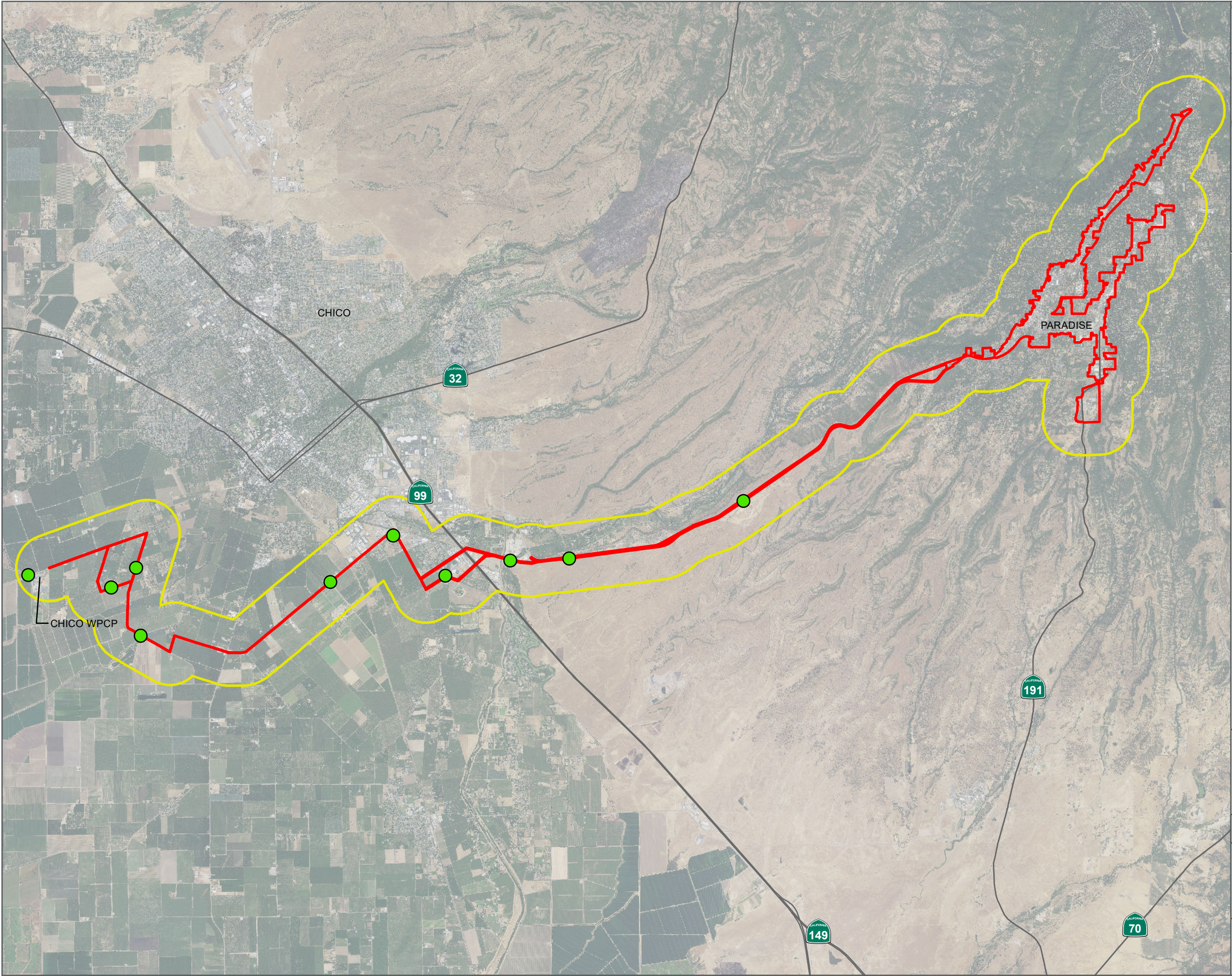
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- _____. 2016. *Status Review: Swainson's Hawk (Buteo swainsoni) in California*. Reported to: California Fish and Game Commission. 2016 Five-Year Status Report. CDFW. Sacramento, CA
- _____. 2021. California Natural Diversity Data Base (CNDDDB) Quickviewer. Online Database. California Natural Diversity Database (CNDDDB) search for special-status species in the following USGS 7.5-minute quadrangles: Paradise East, Paradise West, Cherokee, Hamlin Canyon, Chico, Ord Ferry, Hamilton City, Glenn, Llano Seco, Nelson, Shippee, Oroville, Oroville Dam, Berry Creek, Pulga, Richardson Springs, Nord, Foster Island, Campbell Mound, Cohasset, Stirling City, and Kimshew Point. Accessed online February 2021 at <https://wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>
- United States Fish and Wildlife Service (USFWS). 2017. *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)*. USFWS; Sacramento, CA.
- _____. 2021. Information, Planning, and Conservation System (online edition). Accessed online February 2021 at <https://ecos.fws.gov/ipac/>



Attachment 1

Project Area/Footprint and
BSA

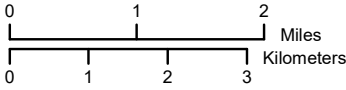


- Legend**
- Project Area/Footprint
 - Biological Study Area
 - Swainson's Hawk Survey Points

Service Layer USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information. U.S. Coastal Relief Model. Data refreshed May, 2020.
Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.
Projection is NAD 1983 UTM Zone 10 North

**PROJECT AREA/FOOTPRINT AND
BIOLOGICAL STUDY AREA**
PARADISE SEWER PROJECT

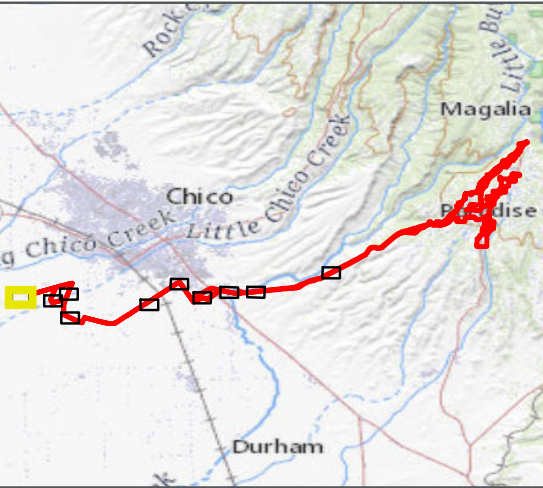
September 29, 2021





Attachment 2

Swainson's Hawk Survey Points and Locations of Key Observations



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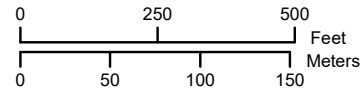
- Project Area/Footprint
- Chico WPCP Parcel
- Swainson's Hawk Survey Points

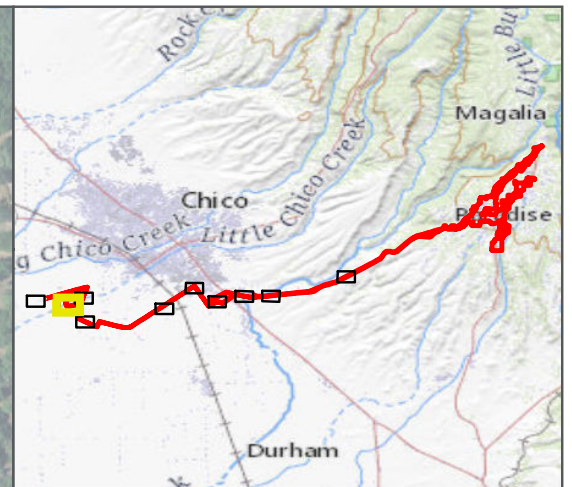
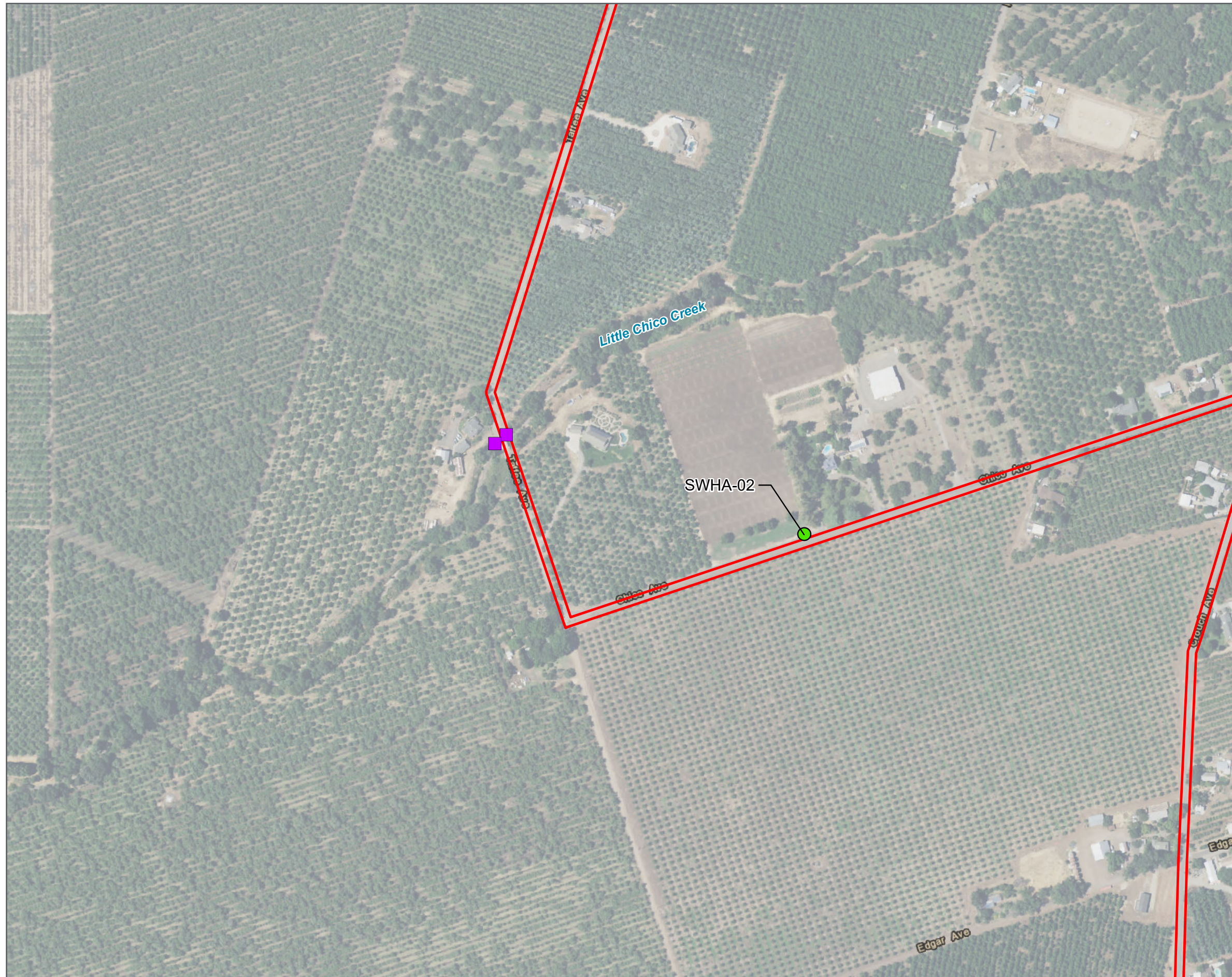
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**SWAINSON'S HAWK SURVEY
POINTS AND LOCATIONS OF
KEY OBSERVATIONS
PARADISE SEWER PROJECT**

September 29, 2021





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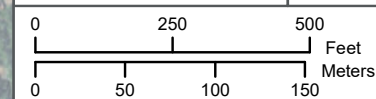
- Project Area/Footprint
- Elderberry Shrub Locations
- Swainson's Hawk Survey Points

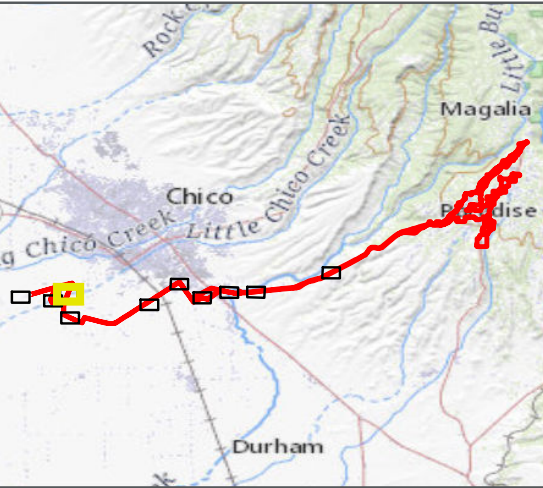
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**SWAINSON'S HAWK SURVEY POINTS AND LOCATIONS OF KEY OBSERVATIONS
PARADISE SEWER PROJECT**

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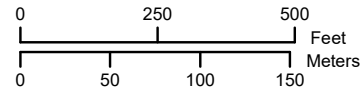
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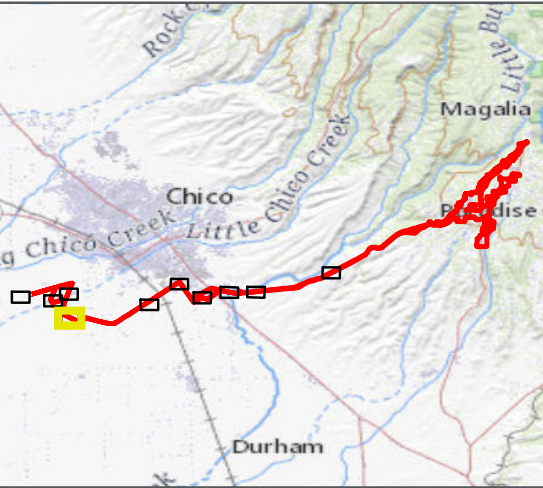
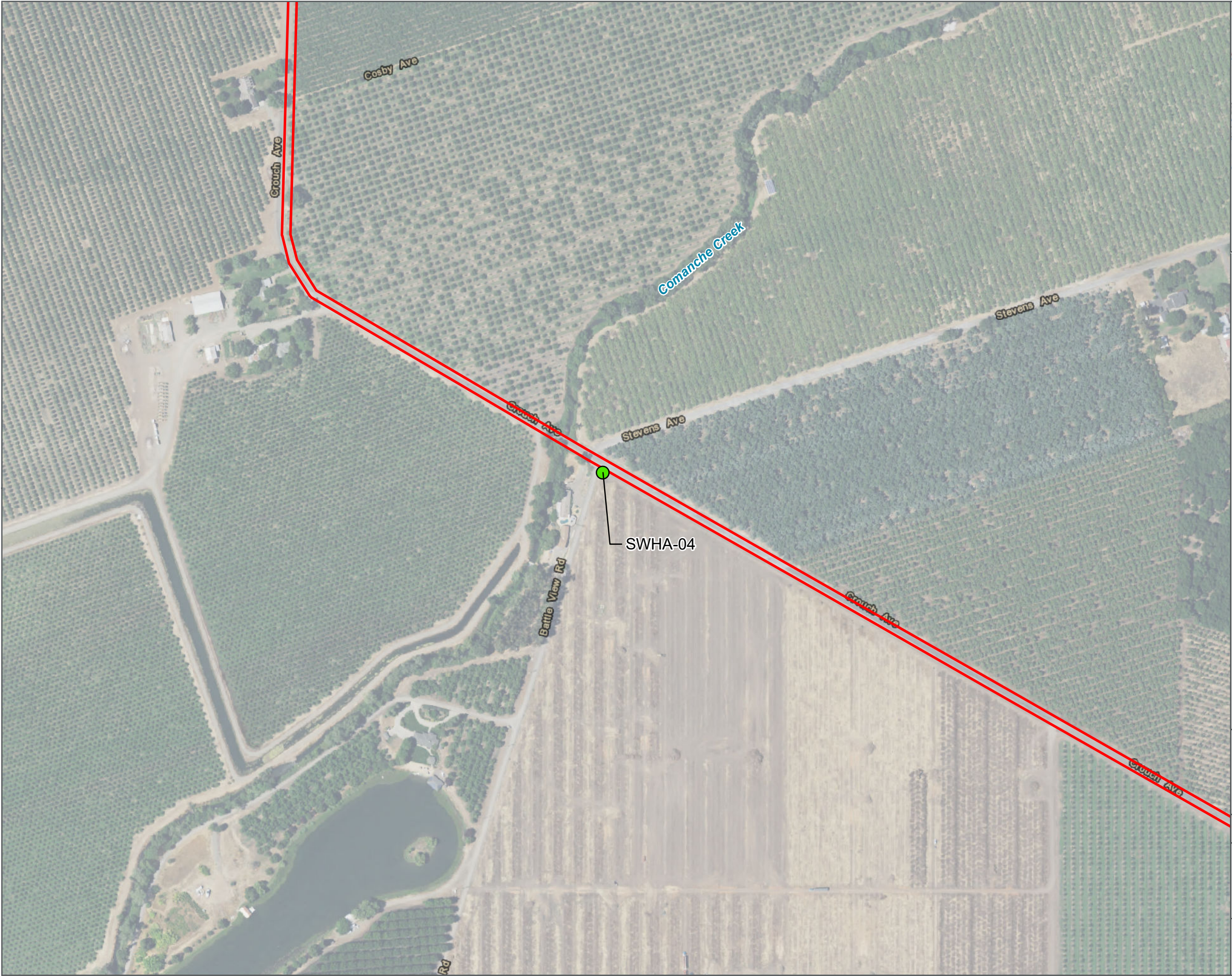
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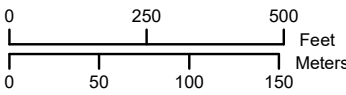
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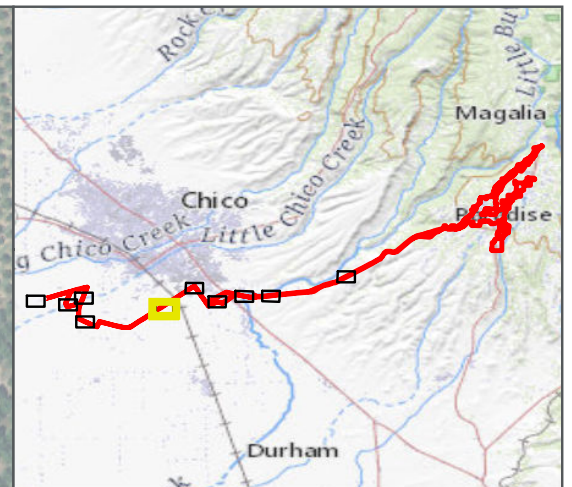
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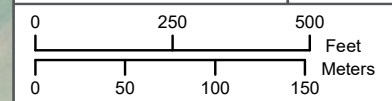
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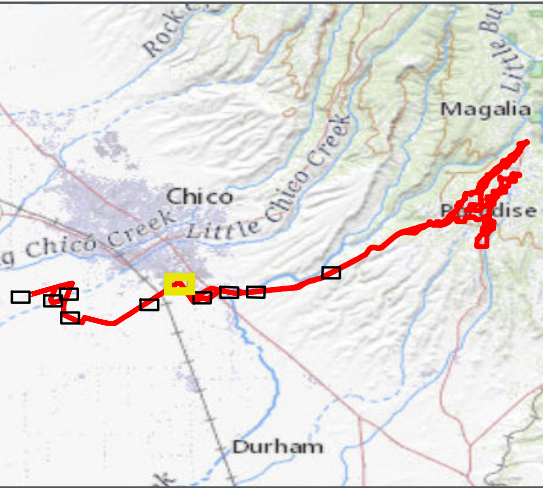
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SWAINSON'S HAWK SURVEY POINTS AND LOCATIONS OF KEY OBSERVATIONS
PARADISE SEWER PROJECT

September 29, 2021





Legend

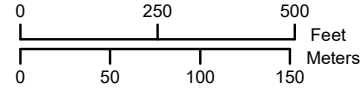
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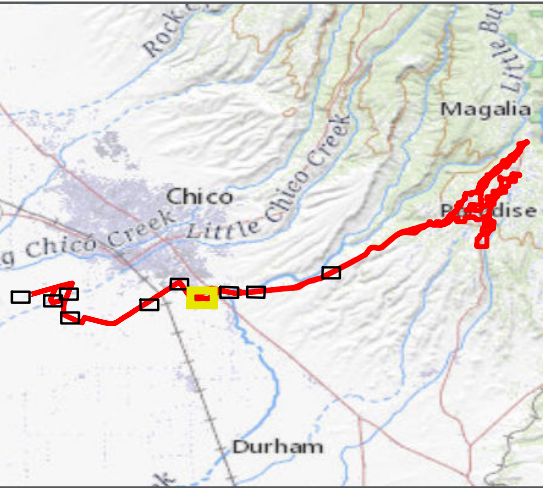
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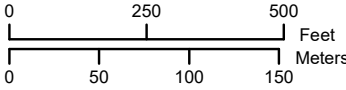
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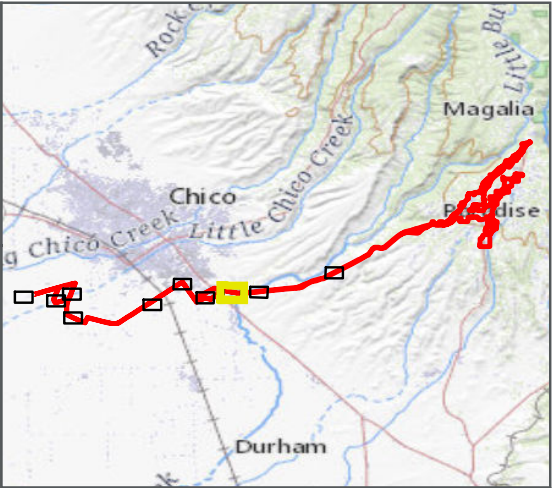
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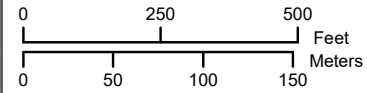
- Project Area/Footprint
- Elderberry Shrub Locations
- Swainson's Hawk Survey Points

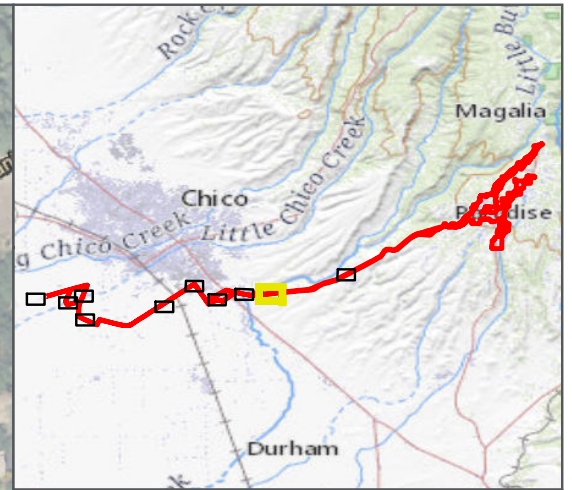
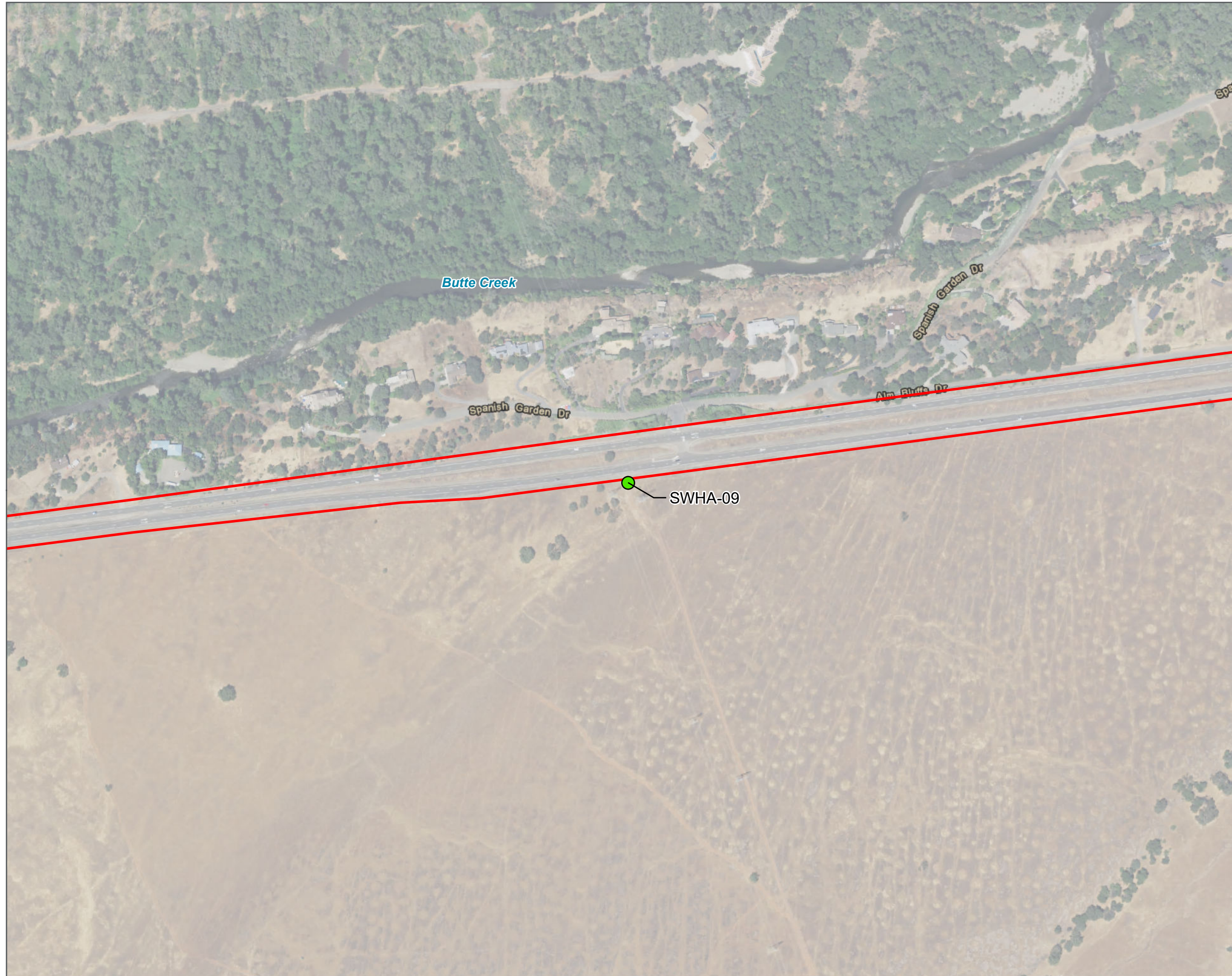
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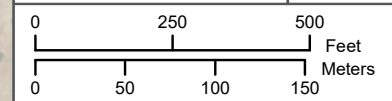
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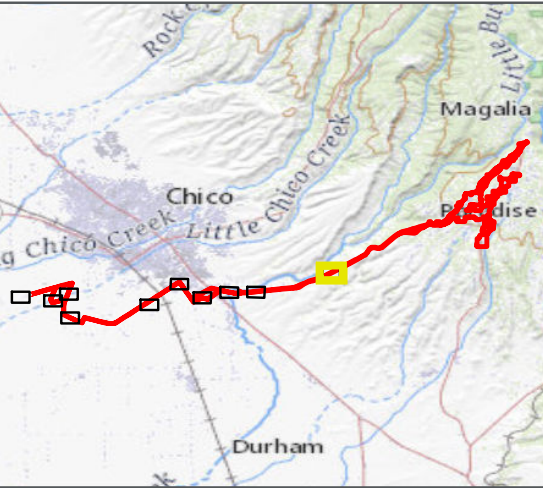
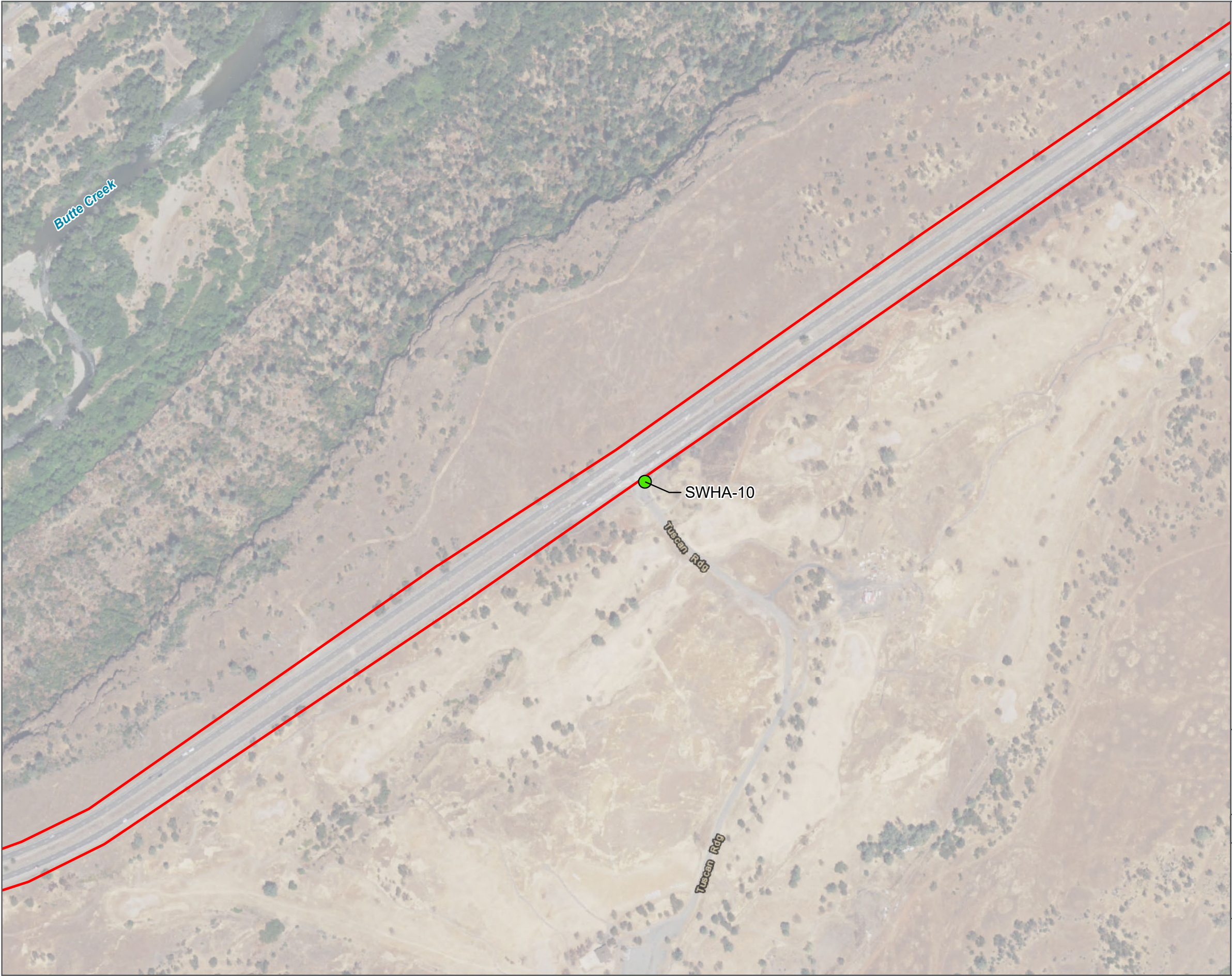
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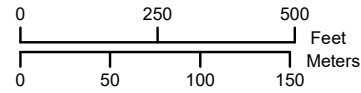
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Attachment 3

List of Species Observed During Surveys

Paradise Sewer Project – Species Observed during Spring 2021 Field Studies

PLANTS

INVASIVE = classified as an invasive species by the California Invasive Plant Council (Cal-IPC)

Abies concolor (white fir)
Acacia dealbata (silver wattle) INVASIVE: moderate
Acer macrophyllum (bigleaf maple)
Acer negundo (boxelder)
Achillea millefolium (common yarrow)
Acmispon americanus (American bird's foot trefoil)
Aesculus californica (California buckeye)
Agrostis exarata (spike bentgrass)
Alisma triviale (northern water plantain)
Alnus rhombifolia (white alder)
Ambrosia psilostachya (ragweed)
Ammannia coccinea (purple ammannia)
Amsinckia sp. (fiddleneck sp.)
Arceuthobium campylopodum (pine mistletoe)
Arctostaphylos manzanita (common manzanita)
Arctostaphylos viscida (whiteleaf manzanita)
Aristolochia californica (California pipevine)
Artemisia douglasiana (California mugwort)
Avena sp. (oat sp.) non-native
Blennosperma nanum (common stickyseed)
Brassica nigra (black mustard) INVASIVE: moderate
Briza maxima (big rattlesnake grass) INVASIVE: limited
Brodiaea elegans (harvest brodiaea)
Bromus diandrus (ripgut brome) INVASIVE: moderate
Bromus hordaceus (soft brome)
Calocedrus deccurens (incense cedar)
Cardamine hirsuta (hairy bittercress) non-native
Carduus pycnocephalus (Italian thistle) INVASIVE: moderate
Carex sp. (sedge sp.)
Ceanothus integerrimus (deerbrush)
Cedrus deodara (deodar cedar) non-native
Cerastium fontanum (common chickweed) non-native
Cercis occidentalis (western redbud)
Cercocarpus betuloides (birch leaf mountain mahogany)
Claytonia sp. (miner's lettuce sp.)
Convolvulus arvensis (field bindweed) non-native
Cortaderia selloana (Uruguayan pampas grass) INVASIVE: HIGH
Cotoneaster pannosus (silverleaf cotoneaster) INVASIVE: moderate
Crassula connata (sand pygmy weed)
Croton setiger (turkey-mullein)
Cynodon dactylon (Bermuda grass) INVASIVE: moderate

Cynoglossum grande (western houndstongue)
Cynosurus echinatus (dogtail grass) INVASIVE: moderate
Cyperus eragrostis (tall flatsedge)
Cytisus scoparius (Scotch broom) INVASIVE: HIGH
Erodium botrys (red-stemmed filaree) non-native
Erodium cicutarium (stork bill filaree) INVASIVE: limited
Erythranthe guttata (seep monkeyflower)
Eschscholzia californica (California poppy)
Eschscholzia lobbii (frying pan poppy)
Eucalyptus camaldulensis (red gum) INVASIVE: limited
Euphorbia maculata (spotted spurge) non-native
Festuca perennis (Italian rye grass) INVASIVE: moderate
Ficus carica (common fig) INVASIVE: moderate
Fraxinus latifolia (Oregon ash)
Genista monspessulana (French broom) INVASIVE: HIGH
Geranium dissectum (cutleaf geranium) INVASIVE: limited
Gilia tricolor (bird's eyes)
Heteromeles arbutifolia (toyon)
Juglans hindsii (northern California black walnut)
Juglans regia (English walnut) non-native
Juniperus californica (California juniper)
Lactuca seriola (prickly lettuce) non-native
Lamium amplexicaule (giraffe head) non-native
Lasthenia sp. (goldfields sp.)
Lepidium nitidum (shining peppergrass)
Lupinus sp. (lupine sp.)
Malva sp. (mallow sp.) non-native
Matricaria discoidea (pineapple weed)
Medicago polymorpha (California burclover) INVASIVE: limited
Medicago sativa (alfalfa) non-native
Mentha canadensis (wild mint)
Minuartia californica (California sandwort)
Narcissus pseudonarcissus (daffodil) non-native
Nerium oleander (oleander) non-native
Phoenix canariensis (Canary Island date palm) INVASIVE: limited
Phoradendron leucarpum (American mistletoe)
Phytolacca americana (pokeberry) INVASIVE: limited
Pinus ponderosa (ponderosa pine)
Pinus sabiniana (California foothill pine)
Plantago lanceolata (English plantain) INVASIVE: limited
Platanus racemosa (California sycamore)
Polypogon monspeliensis (rabbitsfoot grass) INVASIVE: limited
Populus fremontii (Fremont cottonwood)
Prunus dulcis (almond) non-native
Pseudognaphalium beneolens (cudweed)
Pseudotsuga menziesii (Douglas fir)
Quercus berberidifolia (inland scrub oak)
Quercus douglasii (blue oak)

Quercus kelloggii (California black oak)
Quercus lobata (valley oak)
Quercus wislizeni (interior live oak)
Ranunculus sp. (buttercup sp.)
Raphanus sativus (cultivated radish) INVASIVE: limited
Robinia pseudoacacia (black locust) INVASIVE: limited
Rubus armeniacus (Himalayan blackberry) INVASIVE: HIGH
Rumex crispus (curly dock) INVASIVE: limited
Salix sp. (willow sp.)
Sambucus nigra (black elderberry)
Sedella pumila (Sierra mock stonecrop)
Senecio vulgaris (common groundsel) non-native
Torilis arvensis (hedge parsley)
Toxicodendron diversilobum (poison oak)
Trifolium sp. (clover sp.)
Triphysaria eriantha (butter 'n' eggs)
Typha latifolia (broadleaf cattail)
Umbellularia californica (California bay laurel)
Verbascum thapsus (woolly mullein) INVASIVE: limited
Vitis californica (California wild grape)
Washingtonia robusta (Mexican fan palm) INVASIVE: moderate

INVERTEBRATES

Pipevine swallowtail (*Battus philenor*)
Western tiger swallowtail (*Papilio rutulus*)
West Coast lady (*Vanessa annabella*)
Mourning cloak (*Nymphalis antiopa*)

AMPHIBIANS

Pacific chorus frog (*Pseudacris sierrae*)
American bullfrog (*Lithobates catesbeianus*) non-native

REPTILES

Western pond turtle (*Emys marmorata*) California Species of Special Concern
"Northern Pacific" western rattlesnake (*Crotalus oreganus oreganus*)

FISH

Chinook salmon - Central Valley spring-run ESU (*Oncorhynchus tshawytscha* pop. 11) Federal Threatened / State Threatened

BIRDS

Greater white-fronted goose (*Anser albifrons*) flyover
Snow goose (*Chen caerulescens*) flyover

Ross's goose (*Chen rossii*) flyover
 Canada goose (*Branta canadensis*)
 Wood duck (*Aix sponsa*)
 Mallard (*Anas platyrhynchos*)
 American wigeon (*Mareca americana*)
 Common merganser (*Mergus merganser*)
 California quail (*Calipepla californica*)
 Wild turkey (*Meleagris gallopavo*)
Double-crested cormorant (*Phalacrocorax auritus*) CDFW Watch List (for colonies only)
White-faced ibis (*Plegadis chihi*) CDFW Watch List (for colonies only) - flyover
 Turkey vulture (*Cathartes aura*)
Osprey (*Pandion haliaetus*) CDFW Watch List
Northern harrier (*Circus hudsonius*) California Species of Special Concern
Cooper's hawk (*Accipiter cooperii*) CDFW Watch List
Sharp-shinned hawk (*Accipiter striatus*) CDFW Watch List (nesting only) project not in nesting range
 Red-shouldered hawk (*Buteo lineatus*)
 Red-tailed hawk (*Buteo jamaicensis*)
Swainson's hawk (*Buteo swainsoni*) State Threatened
Ferruginous hawk (*Buteo regalis*) USFWS Bird of Conservation Concern, CDFW Watch List
Bald eagle (*Haliaeetus leucocephalus*) USFWS Bird of Conservation Concern, State Endangered (pair was likely nesting at Butte Creek Canyon Ecological Preserve)
Greater sandhill crane (*Antigone canadensis tabida*) CA Threatened, CA Fully Protected (flyover)
 Killdeer (*Charadrius vociferus*)
 Spotted sandpiper (*Actitis macularius*)
 Rock pigeon (*Columba livia*) non-native
 Eurasian collared-dove (*Streptopelia decaocto*) non-native
 Mourning dove (*Zenaida macroura*)
 Great horned owl (*Bubo virginianus*)
 Belted kingfisher (*Megaceryle alcyon*)
 Anna's hummingbird (*Calypte anna*)
 Acorn woodpecker (*Melanerpes formicivorus*)
 Nuttall's woodpecker (*Dryobates nuttallii*)
 Downy woodpecker (*Dryobates pubescens*)
 Hairy woodpecker (*Dryobates villosus*)
 Northern flicker (*Colaptes auratus*)
 American kestrel (*Falco sparverius*)
Prairie falcon (*Falco mexicanus*) USFWS Bird of Conservation Concern, CDFW Watch List
 Black phoebe (*Sayornis nigricans*)
 Ash-throated flycatcher (*Myiarchus cinerascens*)
 Western kingbird (*Tyrannus verticalis*)
 California scrub-jay (*Aphelocoma californica*)
Yellow-billed magpie (*Pica nuttalli*) USFWS Bird of Conservation Concern
 American crow (*Corvus brachyrhynchos*)
 Common raven (*Corvus corax*)
 Tree swallow (*Tachycineta bicolor*)
 Violet-green swallow (*Tachycineta thalassina*)
 Northern rough-winged swallow (*Stelgidopteryx serripennis*)
 Cliff swallow (*Petrochelidon pyrrhonata*)

Barn swallow (*Hirundo rustica*)
 Oak titmouse (*Baeolophus inornatus*)
 Bushtit (*Psaltriparus minimus*)
 White-breasted nuthatch (*Sitta carolinensis*)
 Brown creeper (*Certhia americana*)
 Bewick's wren (*Thryomanes bewickii*)
 House wren (*Troglodytes aedon*)
 Ruby-crowned kinglet (*Regulus calendula*)
 Western bluebird (*Sialia mexicana*)
 Hermit thrush (*Catharus guttatus*)
 American robin (*Turdus migratorius*)
 Northern mockingbird (*Mimus polyglottos*)
 European starling (*Sturnus vulgaris*) non-native
 Cedar waxwing (*Bombycilla cedrorum*)
 Phainopepla (*Phainopepla nitens*)
 Yellow-rumped warbler (*Setophaga coronata*)
 Black-throated gray warbler (*Setophaga nigrescens*)
 Spotted towhee (*Pipilo maculatus*)
 California towhee (*Melospiza crissalis*)
 Savannah sparrow (*Passerculus sandwichensis*)
 Song sparrow (*Melospiza melodia*)
 Lincoln's sparrow (*Melospiza lincolnii*)
 "Oregon" junco (*Junco hyemalis*)
 White-crowned sparrow (*Zonotrichia leucophrys*)
 Golden-crowned sparrow (*Zonotrichia atricapilla*)
 Lark sparrow (*Chondestes grammacus*)
 Western tanager (*Piranga ludoviciana*)
 Black-headed grosbeak (*Pheucticus melanocephalus*)
 Brewer's blackbird (*Euphagus cyanocephalus*)
 Brown-headed cowbird (*Molothrus ater*)
 Western meadowlark (*Sturnella neglecta*)
 Bullock's oriole (*Icterus bullockii*)
 Cassin's finch (*Haemorhous cassinii*)
 Purple finch (*Haemorhous purpureus*)
 House finch (*Haemorhous mexicanus*)
 Pine siskin (*Spinus pinus*)
 Lesser goldfinch (*Spinus psaltria*)
 American goldfinch (*Spinus tristis*)
 House sparrow (*Passer domesticus*) non-native

MAMMALS

Western gray squirrel (*Sciurus griseus*)
 California ground squirrel (*Otospermophilus beecheyi*)
 Botta's pocket gopher (*Thomomys bottae*)
 Coyote (*Canis latrans*)
 Mule deer (*Odocoileus hemionus*)