Plant, Wildlife, and Tree Survey Reports
For
Clover Flat Landfill Recycling Facility Expansion

Prepared for:

Edgar & Associates, Inc.
1822 21st Street
Sacramento, CA 95811

Prepared by:
Questa Engineering Corp.
1220 Brickyard Cove Rd.
Pt. Richmond, CA 94801

In Association with:

Bruce W. Hagen, ISA Certified Arborist, WE 0243A
Registered Professional Forester RPF #2440
Sebastopol, CA
and
Jane Valerius Environmental Consulting
Sebastopol, CA

July 14, 2010

Questa Project #1000031

TABLE OF CONTENTS

INTRODUCTION

This report presents the results of our Biological Reconnaissance and Tree Survey of a portion of the Clover Flat Recovery Facility, located at 4380 Silverado Trail, Calistoga, CA (**Figure 1**). Clover Flat has operated as a sanitary landfill and resource recovery/recycling center since 1963, and currently operates as a California Class III public landfill, with a resource recovery/recycling operation. Improvements to the landfill, including landfill expansion were addressed in an EIR prepared by ESA for Napa County in 1990. Current plans are to expand the existing 1.1 acre Recycling Pad to 3.2 acres in an area located near the entry gate and weigh station to the facility. The proposed grading plan for the 2.1 acre area is shown on **Figure 2.** The expansion work will include cut and fill needed to create a level bench or pad for the expanded recycling center in an area of steep, forested slopes, as well as extensive shrub and tree removal work. **Figure 3** shows the disturbance area associated with the facility expansion superimposed on an aerial photograph of the site, indicating the forested cover of this area. Photographs of the site are included following the Plant Survey section of the report.

The Napa County Conservation, Development, and Planning Department has requested the completion of a Biological Reconnaissance and Tree Survey to identify potential impacts to biological resources, including any special status plant and animal species, as well as a tree count by species and diameter.. The Biological/Tree Survey Report should also include recommended Mitigation Measures for resource protection and mitigation. For tree removal in Oak Woodlands in Napa County, this typically would include tree replacement/replanting on a 2:1 basis for all trees greater than 6" in diameter at a breast height of 4.5 feet. (dbh).

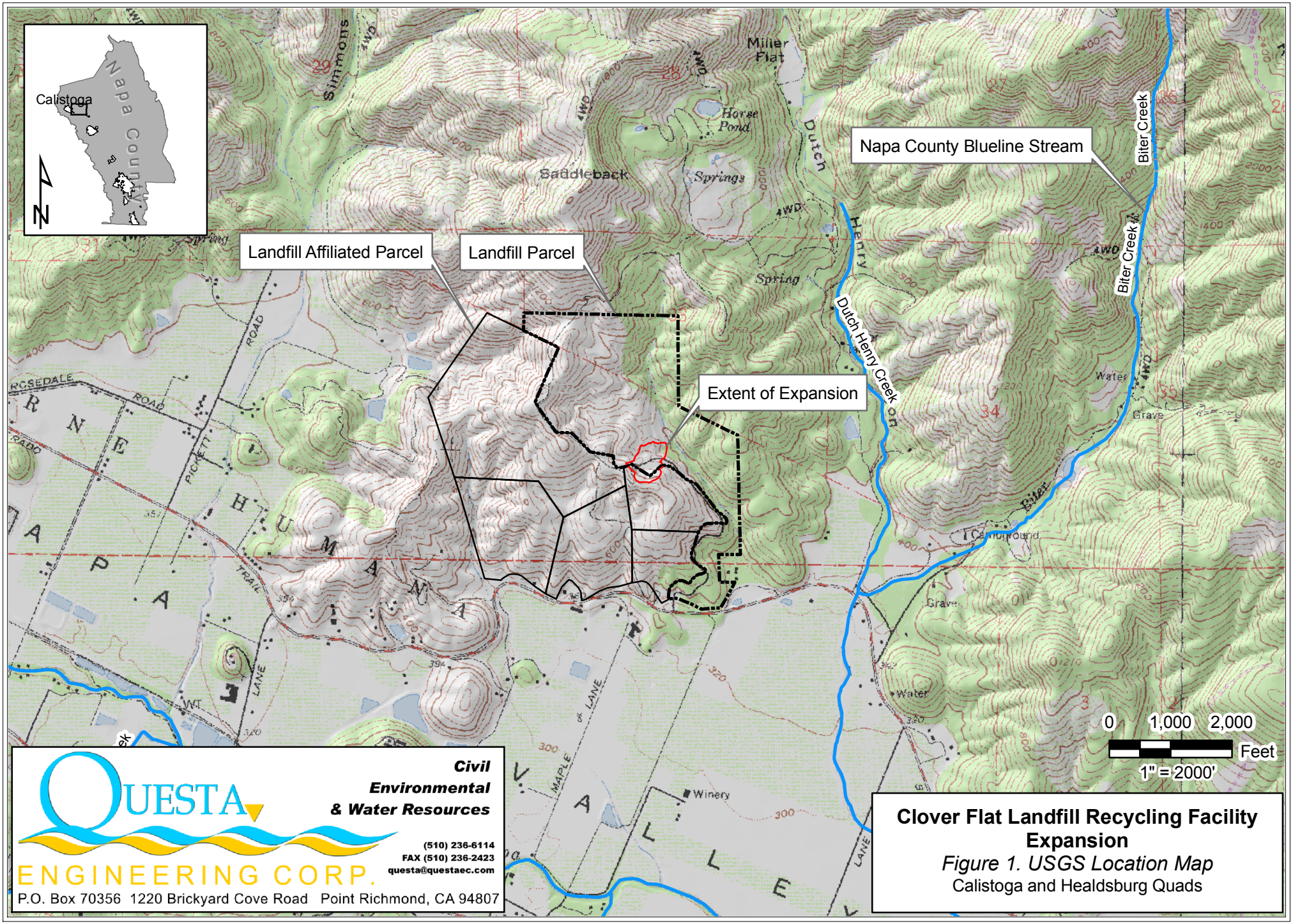
The following sections of this report include the information developed for the Plant, Wildlife, and Tree Surveys, respectively.

PLANT SURVEY

METHODS

A field reconnaissance survey for special status plant species was conducted on the Clover Flat Landfill site on May 4, 2010 by botanist, Jane Valerius. The purpose of the field survey was to characterize the existing botanical resources and generally evaluate the potential presence of sensitive biological resources in the study area, including creeks, seeps, and wetlands.

Prior to the site visit a search was conducted on the California Natural Diversity Data Base (CNDDB 2010) for records of special-status species and sensitive resources for the Calistoga USGS 7.5-minute quadrangle. A search of the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Plants of California was also conducted and a list of special status plant species with the potential to occur in the area was developed. This list of potential special status plants is provided as Table 1 (attached at the end of this report).

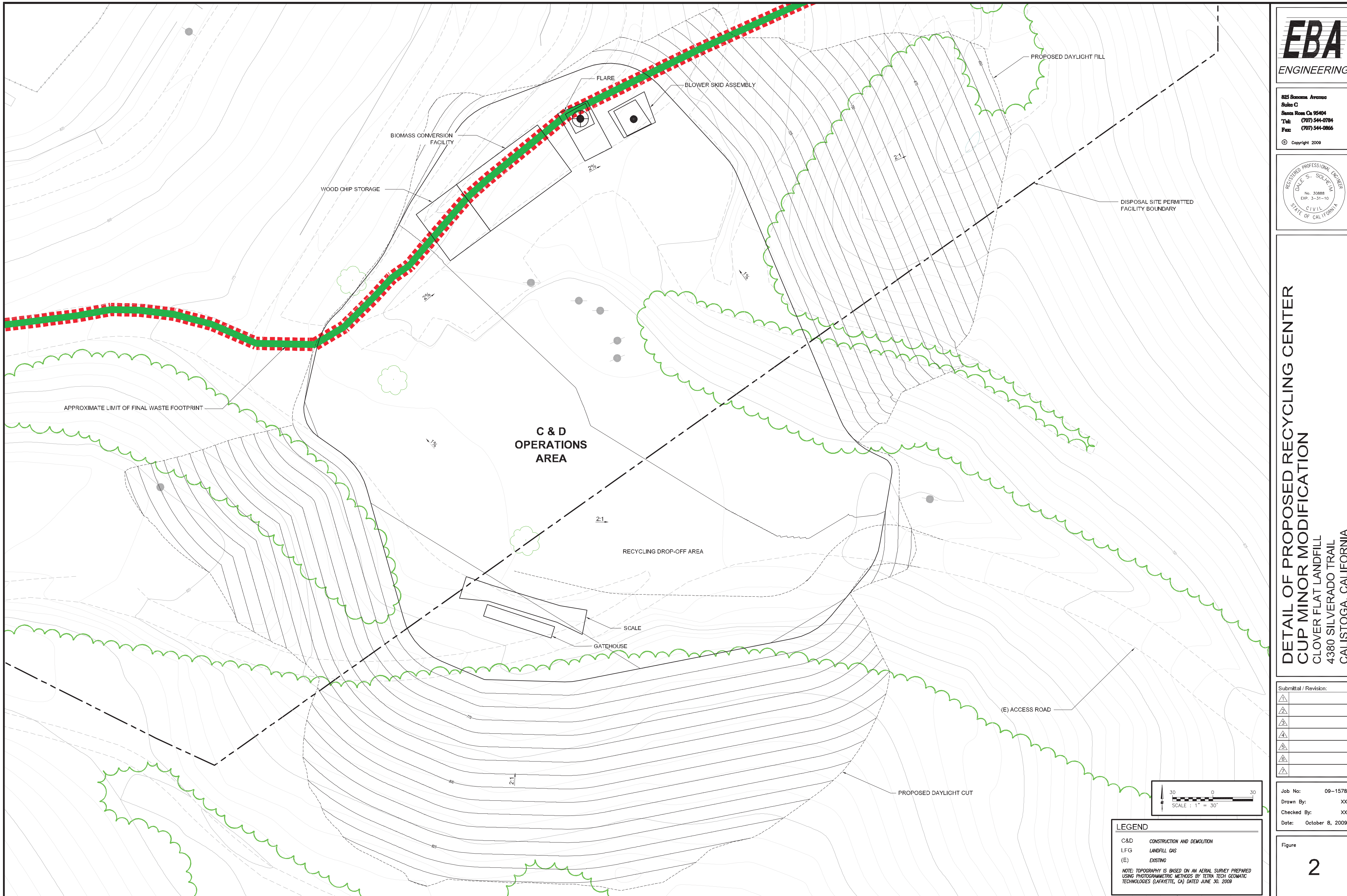


QUESTA ENGINEERING CORP.
Civil
Environmental
& Water Resources
(510) 236-6114
FAX (510) 236-2423
questa@questaec.com
P.O. Box 70356 1220 Brickyard Cove Road Point Richmond, CA 94807

Clover Flat Landfill Recycling Facility Expansion

Figure 1. USGS Location Map

Calistoga and Healdsburg Quads



U:\2009\1578\Civil\Modification Detail.dwg, Fig 2, 11/16/2009 12:07:28 PM

P:\2010\1000031_CLOVER_FLAT_RECOVERY\CAD\INITIAL GOOGLE EARTH MAP.DWG LAST SAVED: 6/28/2010 PLOT DATE: 6/28/2010 8-SIZE PRINT PAGE SETUP: ----- PLOT STYLE: -----

CALISTOGA, CA

QUESTA ENGINEERING CORP.
Civil
Environmental
& Water Resources
P.O. Box 70356 1220 Brickyard Cove Road Point Richmond, CA 94807
(510) 236-6114
FAX (510) 236-2423
questa@questaec.com

Sht:	Rev:	Date:	By:	Description:	App'd:

Design:
Drawn: BJV
Checked:
Appr'd:

CLOVER FLAT LANDFILL RECYCLING FACILITY EXPANSION

FIGURE
3

Also prior to the site visit the Vegetation and Wildlife section of the January 1990 Clover Flat Landfill Expansion Environmental Impact Report was reviewed along with maps provided of the proposed expansion area.

Surveys for special status plants were conducted on May 4, 2010 by Jane Valerius, botanist. Special status plant surveys were conducted in accordance with California Department of Fish & Game (CDFG) guidelines and were conducted at the time when special status plants that could potentially occur on the property were in flower or otherwise most identifiable. Plant surveys focused on the areas proposed for development/expansion. As required by CDFG guidelines, plant surveys were floristic in that all species identifiable at the time of the surveys were recorded and all plants were identified to a level at which their rarity status could be determined. A list of plant species observed during the surveys is provided in **Table 2**. Botanical nomenclature used in this report conforms to Hickman (1993) for plants.

RESULTS

Plant Communites

Plant communities within the proposed expansion area consist of a remnant community that is a mix of forested/woodland with coast live oak (*Quercus agrifolia*), black oak (*Quercus kelloggii*), blue oak (*Quercus douglasii*), madrone (*Arbutus menziesii*,) Douglas fir (*Pseudotsuga menziesii*) and foothill pine (*Pinus sabiniana*) comprising the tree canopy. Understory shrub species include poison oak (*Toxicodendron diversilobum*), coyote bush (*Baccharis pilularis*), buckeye (*Aesculus californica*), manzanita (*Arctostaphylus manzanita* ssp. *glaucescens*), toyon (*Heteromeles arbutifolia*) and coffeeberry *(Rhamnus californica*). Chaparral species such as sticky monkeyflower (*Mimulus aurantiacus*) and yerba santa (*Eriodictyon californicum*) occur on the drier, more exposed areas. On the downhill or western portion of the expansion area the area is more shaded and species associated with this more mesic area include bay (Umbellularia californica) and big-leaf maple (*Acer macrophyllum*). Herbaceous plants include both native and non-native species. Native grasses include blue wildrye *(Elymus glaucus*), California fescue (*Festuca californica*) and bluegrass (*Poa secunda*). Native forbs, ferns and vines include maidenhair fern (*Adiantum jordanii*), pipevine (*Aristolochia californica*), elegant brodiaea (*Brodiaea elegans*), yellow fairy lantern (*Calochortus amabilis*), Indian paintbrush (*Castilleja affinis*), soap root (*Chloragalum pomeridianum* ssp. *pomeridianum*), clarkia (*Clarkia gracilis*), Chinese houses (*Collinsia sparsiflora*), blue dicks (*Dichelostemma captiatum*), California poppy (*Eschscholzia californica*), checker lily (*Fritillaria affinis*), coffee fern (*Pellaea andromedifolia*), and lupine (*Lupinus densiflorus*).

Non-native annual grasses and weedy forb species are dominant on the cut slopes below the existing landfill. Plants associated with the non-native annual grassland include wild oat (*Avena* spp.) annual ryegrass (*Lolium multiflorum*), rip gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), hare barley (*Hordeum murinum* ssp. *leporinum*), large quaking grass (*Briza maxima*) and dog-tail grass (*Cynosurus echinatus*).

One very invasive weedy species occurs within the forest/woodland/shrub areas and that is French broom (*Genista monspessulana*). This invasive species is common on the landfill site. Removal of this highly invasive plant species will be a benefit to the area.

Riparian Resources

Although portions of the eastern expansion area are located as close as 75 feet west of the centerline of an un-named intermittent drainageway as shown on the US Geological Survey Calistoga 7.5' Quadrangle, none of the study area contains typical riparian vegetation and there is no apparent influence on the oak woodland plant community associated with its location on the slopes above the un-named drainageway. **(see Figure 1**).

Special Status Plants

No special status plant species were found during the May 4, 2010 site visit. Sixteen special status plants have the potential to occur based on the CNDDB and CNPS searches (Table 1). The site does not support habitat for nine (9) of these species. The remaining seven (7) special status plants have the potential to occur, based on the presence of potential habitat, but none of these species were found on the site. The survey was conducted at the time of year when these 7 species would have been identifiable. Although the site supports a number of native plants none of these have a special status.

TABLE 1

Special status plants potentially occurring in the Clover Flat Landfill Expansion Area based on CNDDB search for Calistoga Quadrangle, May, 2010.

Scientific Name **Common Name**	**Status: Federal/ State/CNPS List**	**Flowering Period**	**Habitat and Notes**	**Potential for Occurrence**
Amorpha californica var. *napensis* Napa false indigo	-/-/L1B	April-July	Broadleafed upland forest (openings), chaparral, cismontane woodland.	None. Not observed during survey.
Astragalus claranus Clara Hunt's milk-vetch	FE/CT/L1B	March-May	Chaparral (openings), cismontane woodland, grassland-serpentinite or volcanic, rocky, clay.	None. Not observed during survey.
Brodiaea californica var. *leptandra* Narrow-anthered California brodiaea	-/-/L1B	May-July	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, grassland/volcanic.	None. Not observed during survey.
Ceanothus confusus Rincon Ridge ceanothus	-/-/L1B	February-June	Closed-cone coniferous forest, chaparral, cismontane woodland-volcanic or serpentinite.	None. Not observed during survey. No serpentinite on site.
Ceanothus divergens Calistoga ceanothus	-/-/L1B	February-March	Chaparral (serpentinite or volcanic, rocky).	None. Not observed during survey. No serpentinite on site.
Centromadia parryi ssp. *parryi* Pappose tarplant	-/-/L1B	May-November	Chaparral, coastal prairie, meadows & seeps, coastal salt marshes & swamps, grassland	None. Not observed during survey. Typical habitat not

Scientific Name **Common Name**	**Status: Federal/ State/CNPS List**	**Flowering Period**	**Habitat and Notes**	**Potential for Occurrence**
			(vernally mesic)/ often alkaline.	present.
Eryngium constancei Loch Lomond button-celery	FE/CE/L1B	April-June	Vernal pools.	None. No habitat on site. Not observed during survey.
Lasthenia burkei Burke's goldfields	FE/CE/L1B	April-June	Meadows & seeps (mesic), vernal pools.	None. Not observed during survey. No habitat on site.
Leptosiphon jepsonii Jepson's leptosiphon	-/-/L1B	March-May	Chaparral, cismontane woodland, usually volcanic.	None. Not observed during survey.
Lupinus sericatus Cobb Mountain lupine	-/-/L1B	March-June	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest.	None. Not observed during survey.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	-/-/L1B	April-July	Cismontane woodland, lower montane coniferous forest, meadows & seeps, grassland, vernal pools/ mesic.	None. Not observed during survey. Typical habitat not on site.
Penstemon newberryi var. *sonomensis* Sonoma beardtongue	-/-/L1B	April-August	Chaparral (rocky).	None. Not observed during survey.
Plagiobothrys strictus Calistoga popcorn-flower	FE/CT/L1B	March-June	Meadows & seeps, grassland, vernal pools – alkaline areas near thermal springs.	None. No habitat on site. Not observed during survey.
Poa napensis Napa blue grass	FE/CE/L1B	May-August	Meadows & seeps, grassland-alkaline, near thermal springs.	None. No habitat on site. Not observed during survey.
Sidalcea hickmanii ssp. *napensis* Napa checkerbloom	-/-/L1B	April-June	Chaparral/rhyolitic.	None. Not observed during survey.
Trifolium depauperatum var. *hydrophiulum* Saline clover	-/-/L1B	April-June	Marshes & swamps, grassland (mesic, alkaline), vernal pools.	None. No habitat on site. Not observed during survey.
Plant Communities				
Coastal and Valley Freshwater Marsh			This habitat type is not present on the site.	

STATUS:

FE: Federal endangered.
CE: State endangered.
CT: State threatened.
L1B: CNPS list rare and endangered in California and elsewhere.
L2: CNPS list rare and endangered in California but more common elsewhere.

TABLE 2
List of plants observed within the proposed Clover Flat landfill Expansion Area, May, 2010

Scientific Name	**Common Name**
Acer macrophyllum	Big-leaf maple
Achillea millefolium	Yarrow
Adiantum jordanii	Maiden hair fern
Aesculus californica	California buckeye
*Anagallis arvensis**	Scarlet pimpernel
*Anthriscus caucalis**	Bur-chervil
Arbutus menziesii	Madrone
Arctostaphylos manzanita ssp. *Glaucescens*	Common manzanita; glaucescent manzanita
Aristolochia californica	Pipe vine
*Avena barbata**	Slender wild oat
*Avena fatua**	Wild oat
Baccharis pilularis	Coyote bush
*Brassica nigra**	Black mustard
*Briza maxima**	Large quaking grass
Brodiaea elegans	Elegant brodiaea
*Bromus diandrus**	Ripgut brome
*Bromus hordeaceus**	Soft chess
Bromus laevipes	Brome
Calochortus amabilis	Yellow fairy lantern
Cardamine californica	Milk maids
*Carduus pycnocephalus**	Italian thistle
Castilleja affinis	Indian paintbrush
*Centaurea solstitialis**	Yellow star thistle
Centranthus ruber	Red valerian
*Cerastium glomeratum**	Chickweed
Chloragalum pomeridianum ssp. *pomeridianum*	Soap root
Clarkia gracilis	Clarkia
Claytonia perfoliata	Miner's lettuce
Collinsia sparsiflora	Chinese houses
Crassula connate	Crassula
Cynoglossum grande	Hound's tongue
*Cynosurus echinatus**	Dog-tail grass
Dichelostemma capitatum	Blue dicks
Elymus glaucus	Blue wildrye
Eriodictyon californicum	Yerba santa
*Erodium botrys**	filaree
*Erodium cicutarium**	Red-stemmed filaree
Eschscholtzia californica	California poppy

Scientific Name	**Common Name**
Festuca californica	California fescue
*Filago gallica**	filago
Fritillaria affinis	Checker lily
Galium sp.	Bedstraw
*Genista monspessulana**	French broom
*Geranium dissectum**	Cut-leaf geranium
*Geranium molle**	Dove-leaf geranium
Glyceria occidentalis	Mannagrass
Gnaphalium californicum	Pearly everlasting
Heteromeles arbutifolia	Toyon
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley
Hordeum murinum ssp. *leporinum**	Hare barley
*Hypochaeris radicata**	Rough cat's-ear
Iris douglasiana	Douglas iris
Juncus bufonius	Toad rush
*Lamarkia aurea**	Goldentop
Lasthenia californica	California goldfields
Lathryrus sp.*	Sweet pea
*Lolium multiflorum**	Annual wildrye
*Lotus corniculatus**	Bird's-foot trefoil
Lupinus bicolor	Bicolor lupine
Lupinus densiflorus	Lupine
Luzula comosa	Wood rush
*Lythrum hyssopifolium**	Hyssop loosestrife
*Marrubium vulgare**	White horehound
*Medicago polymorpha**	Bur clover
*Melilotus officinalis**	Yellow sweet clover
Mimulus aurantiacus	Sticky monkey flower
Opuntia sp.*	Ornamental cactus
*Oxalis pes-caprae**	Bermuda buttercup
Pedicularis densiflora	Indian warrior
Pellea andromedifolia	Coffee fern
*Petrorhagia prolifera**	Petrorhagia
Pinus sabiniana	Foothill or gray pine
Piperia elongate	Dense flower rein orchid
Plantago erecta	
*Plantago lanceolata**	English plantain
*Poa annua**	Annual bluegrass
Poa secunda	Bluegrass
*Polypogon monspeliensis**	Rabbits-foot grass
Pseudotsuga menziesii	Douglas fir
Quercus agrifolia	Coast live oak
Quercus douglasii	Blue oak
Quercus kelloggii	Black oak
Ranunculus occidentalis	Western buttercup
Rhamnus californica	Coffeeberry
*Rubus discolor**	Himalayan blackberry
Salix lasiolepis	Arroyo willow

Scientific Name	Common Name
Sanicula crassicaulis	Sanicle
*Senecio vulgaris**	Groundsel
Silene gallica	silene
*Silybum marianum**	Milk thistle
Sisrynchium bellum	Blue-eyed grass
Stachys ajuoides var. *rigida*	Hedge nettle
Toxicodendron diversilobum	Poison oak
*Trifolium hirtum**	Rose clover
Trifolium wildenovii	Tomcat clover
Umbellularia californica	California bay laurel
Vicia sp.	Vetch
*Vicia villosa**	Hairy vetch
*Vulpia myuros**	Rat-tail fescue
Wyethia angustifolia	Mule's ears
*Xanthium strumarium**	Cocklebur

* = non-native species

WILDLIFE SURVEY

METHODS

A field reconnaissance survey for wildlife was conducted on the Clover Flat Landfill site on May 4, 2010 by staff biologist Michael Marangio. The purpose of the field survey was to characterize the existing biological resources and generally evaluate the potential presence of sensitive biological resources in the study area.

The survey was conducted on foot during daylight hours. The perimeter of the study area, and any distinct habitats were visited and searched. All wildlife species that were detected were recorded. This survey was intended only as a reconnaissance-level evaluation of habitats and to assess the potential for the presence of special-status species.

Focused special-status animal surveys were not conducted as part of this effort. Information on special-status plant species was compiled through a review of the California Natural Diversity DataBase (**Figure 4**) (CNDDB 2010). Other background information was taken from the Clover Flat Landfill Expansion EIR, prepared by ESA (EAS-1990).

The central portion of the project area is already disturbed, with active use for recycling of discarded materials. This portion of the site would not be expected to provide notable wildlife habitat. The wildlife survey had a focus on a generally north-facing vegetated slope on the southern portion of the site, and on a small vegetated ridge to the northeast. The vegetated area on the southern portion of the site contained a mixture of trees and shrubs with enough openings in the upper plant layers to allow a diverse growth of herbaceous species. Portions of the site contained rocky outcrops that provide habitat for western fence lizard (*Sceloporus occidentalis*), several of which were observed. Other reptiles that would be expected include rubber boa

Photo 1. View from tank pad looking North East – east ½ of site. Expansion area is left center of photo. Small intermittent drainageway runs diagonally upper left to lover right of photo.

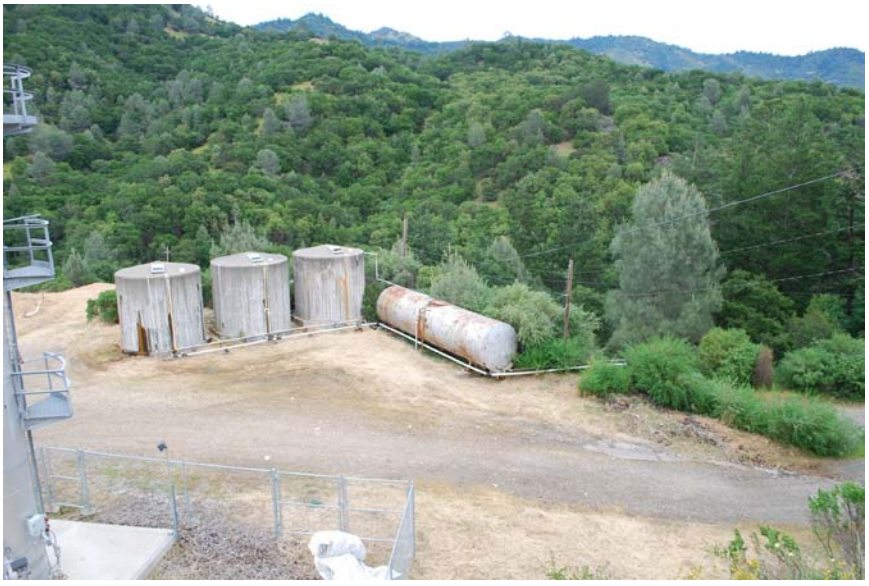
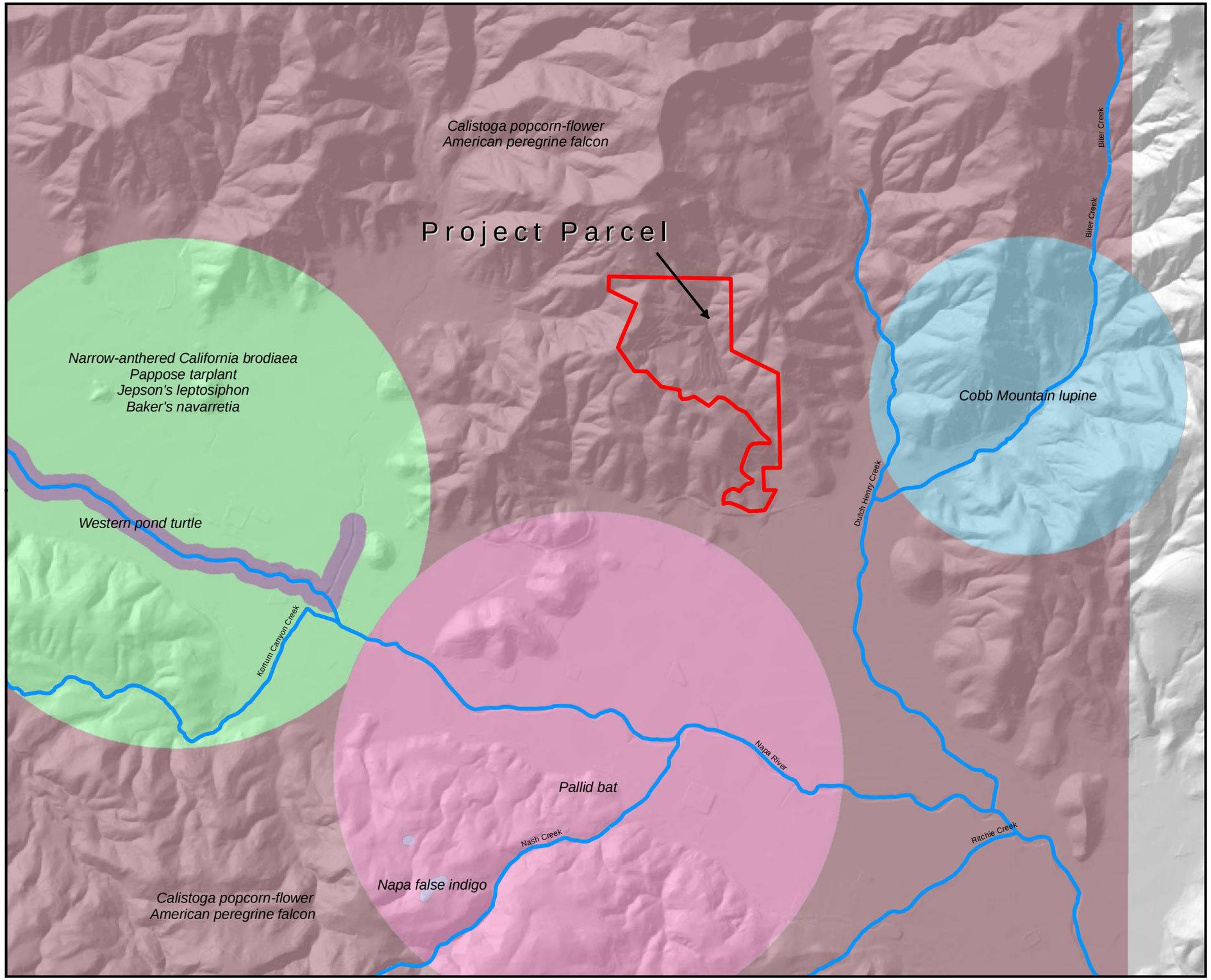


Photo 2. Closer view of Photo 1. Gray pines are foothill pines. Note fairly dense cover of small (4” to 6” dbh) Coast live oaks. Douglas fir far right center of plate, behind power pole.

Photo 3. View of western expansion area from entry road near scale house. Note dense cover of Foothill pine, coast live oak, toyon and manzanita. Access road to west ½ of expansion site just above dumpster.

Photo 4. View of western expansion area from access road showing dense cover of pines, oak, toyon, manzanita and other shrub species. Not rock out crops lower right and shallow soils exposed in road cut center of photo.

Photo 5. View of expansion area from scale. Note dense brush and small oak understory.



QUESTA ENGINEERING CORP
Civil
Environmental
& Water Resources
(510) 236-6114
FAX (510) 236-2423
questa@questaec.com
P.O. Box 70356 1220 Brickyard Cove Road Point Richmond, CA 94807

Legend

CNDDB Species

- American peregrine falcon
- Baker's navarretia
- Calistoga popcorn-flower
- Cobb mountain lupine
- Jepson's leptosiphon
- Napa false indigo
- Narrow-anthered California brodiaea
- Pallid bat
- Pappose tarplant
- Western pond turtle
- County Blue Line Streams

0 1,000 2,000
Feet

SPECIAL SPECIES STUDY MAP

CLOVER FLAT RECOVERY PROJECT

FIGURE

4

FILE :1000031_CNDDB_FIG1.mxd

(*Charina bottae*), northern alligator lizard (*Elgaria coerulea*), and Western rattlesnake (*Crotalus viridis*).

Bird life that was observed on the project site included acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), bushtit (*Psaltiparus minimus*), oak titmouse (*Baeolophus inornatus*), Bewick's wren (*Thryomanes bewickii*), spotted towhee (*Pipilo maculatus*), turkey vulture (*Cathartes aura*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), scrub jay (*Aphelocoma coerulescens*), American crow (*Corvus brachyrhynchos*), and California quail (*Callipepla californica*). A variety of additional species of birds would also be expected to utilize the project area as habitat.

Much of the ridge on the northeastern portion of the site contained a dense growth of trees and more moist soil conditions than the southern portion. In addition to the birds previously noted, this area provides habitat for slender salamander (*Batrachoseps attenuatus*), one of which was detected under a log. Other salamanders such as yellow-eyed salamander (*Ensatina eschscholtzii*), and arboreal salamander (*Aneides lugubris*) would also be expected, among others. Tunnels indicating the presence of Trowbridge shrew (*Sorex trowbridgei*) or broad-footed mole (*Scapanus latimanus*) were observed along the edges of the wooded areas, tracks of California mule deer (*Odoicoileus hemionus californicus*) and turkey (*Meleagrus gallopavo*) and scat of coyote (*Canis latrans*) were also observed.

Special Status Species

Table 3 displays the special status species that are known from the vicinity of the project site. Sources of information include ESA (1990), CNDDB (2010), and Bremer et al (2003). One bird species, Cooper's hawk, has the potential to nest in the project area. The other species are not likely to nest on the site because their specialized habitat requirements are not present.

TABLE 3
Special Status Wildlife potentially present at the Clover Flat Landfill Site

Scientific Name	Common Name	Fed/State Status	Preferred Habitat	Likelihood of Occurrence in the Project Area
Invertebrates				
Syncaris pacifica	California freshwater shrimp	FE/SE	Low-gradient and low- elevation smaller streams with moderate to heavy riparian cover in shallow pools away from main streamflow.	None: no aquatic habitat is present at the project site.
Vertebrates				
Fishes				
Oncorhynchus mykiss irideus	steelhead - central California coast ESU	FT/--	Anadromous - Pacific Ocean to streams and rivers	None: no aquatic habitat present

Reptiles				
Actinemys marmorata marmorata	Northwestern pond turtle	SC/SSC/--	Inhabits a variety of habitats with permanent or nearly permanent water. Requires basking sites.	None. Suitable habitat not present in the project area.
Birds				
Falco peregrinus anatum	American peregrine falcon	delistedFE/ delisted SE	Near wetlands, lakes, rivers or other water. Nests on cliffs	Unlikely to nest on site. Known to nest in Dutch Henry Canyon adjacent to the project site and at Table Rock within several miles of the project site (Berner et al 2003).
Accipiter striatus	sharp-shinned hawk	None/None	Prefers forests of Ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffery pine. Nests near water.	Unlikely to nest - habitat suboptimal
Accipiter cooperii	Cooper's Hawk	None/SSC	Prefers riparian and oak habitats, but will use a variety of habitats near water.	Potentially present. Known to nest over 2mi to the south. "Possibly" nest in the project area (Berner et al 2003).
Asio otus	Long-eared owl	None/SSC	Prefers riparian areas with adjacent open habitats	Not known to nest in the area (Berner et al 2003).
Mammals				
Myotis thysanodes	fringed myotis bat	None/SSC	Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood conifer forests. Uses caves,mines, buildings, or crevices for maternity colonies and roosts.	Unlikely to be present. Habitat not present.
Antrozous pallidus	pallid bat	None/None	Deserts, grasslands, shrublands, woodlands and forests. Mostly common in open, dry habitats with rocky areas for roosting	Unlikely to be present - habitat not present

Legal Status Definitions
U.S. Fish and Wildlife Service (USFWS):
FE Federal Endangered
FT Federal Threatened
California Department of Fish and Game (DFG):
SE State Endangered
SSC Species of Special Concern

IMPACTS

The landfill expansion project would generally result in minimal habitat destruction to wildlife species that inhabit the site. However, the loss of trees could result in significant impacts to nesting birds under protection by the Migratory Bird Treaty Act.

This federal regulation provides that it is unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (United States Code Title 16, Section 703 [16 USC 703]). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds.

A reconnaissance-level survey of the site resulted in the observation of a variety of birds, which, although not listed as special status species, are nevertheless protected under the MBTA. For

this reason, tree removal and construction disturbance during the nesting season could result in potential nest destruction or abandonment and mortality of young. In addition, Cooper's Hawk may nest within the project site. Disturbance to nesting birds is a potentially significant impact that can be reduced to less-than-significant with the following mitigation measures incorporated:

RECOMMENDED MITIGATION MEASURES;

The removal of any trees or shrubs shall occur outside of the avian nesting season. If removal of trees, or shrubs occurs, or construction begins between February 1 and August 31 (nesting season for passerine (perching) or non-passerine land birds), a nesting bird survey shall be performed by a qualified biologist within one week prior to the removal or disturbance of potential nesting habitat such as trees or shrubs. During this survey, a qualified biologist shall inspect all potential nesting habitat in and immediately adjacent to the impact areas for nests.

If a nest is not found, mitigation is not required. If a nest is found onsite, then all vegetation with active nests shall be flagged and an appropriate non-disturbance buffer zone shall be established around the nesting tree. The size of the buffer zone shall be determined by the Project biologist in consultation with CDFG, shall be submitted to the County for review and will depend on the species involved, site conditions, and type of work to be conducted in the area. Typically, if active nests are found, construction activities shall not take place within 500 feet of the raptor nests and within 75 - 100 feet of other migratory birds until the young have fledged. A qualified biologist shall monitor active nests to determine when the young have fledged and are feeding on their own. The Project biologist and CDFG shall be consulted for clearance before construction activities resume in the vicinity.

TREE SURVEY

METHODS

The Tree Survey was completed by Bruce Hagen, Ca. Registered Professional Forester and ISA Arborist on May 12, 18, and 26, 2010. The Scope of Work was to determine species composition and provide an approximate count of trees by species and size (diameter classes and heights) of the trees in the areas proposed for clearing and excavation for the recycling facility expansion. The purpose of the survey was to determine approximate numbers by size and species for mitigating the planned tree removals.

Dense brush and steep terrain made it impractical to accurately measure all the trees or to view them close up to make definitive species identification. Therefore, tree diameters and heights (when taken) were estimated. In general, tree height and diameter are correlated. Where possible, diameters were measured using a D-tape to better calibrate estimates. In general, mitigation is determined on the basis of tree species and diameters measured at standard height (4.5 feet above the ground). Height is seldom used for the purposed of mitigation.

A survey of this nature does not involve a 360 degree inspection of each tree. There were far too many trees; the terrain was steep and the footing unstable. In some areas, the survey work was

completed by doing a a zigzag survey meandering around to count trees and estimate diameters. Dense brush, poison oak, and a steep, rocky surface prevented me from doing a more thorough, methodical survey. tree counts and diameter estimates were also made while walking along the access road above or below the tree stands. It is possible that some trees were missed or counted twice. In most cases tree height had to be estimated when working under the dense forest canopy or when the bottoms of the trees were obscured by vegetation, necessitating the identification of some trees from a distance using high power binoculars. Many of the madrones have regenerated as stump sprouts following cutting or fire damage years ago. Such trees develop in clumps of smaller stems growing around the dead trunks bases. Estimating size is difficult because the stems vary greatly in size. For example a clump may consist of 5 stems ranging in size from 2 to 6 inches. The question is whether to count it as an individual (multi-stemmed) tree or individual stems. The latter method would generate large numbers of trees to mitigate.

Another issue is that the perimeter of the proposed excavation site was not flagged and the satellite imagery provided was of low resolution. There were few recognizable landmarks to delineate the outer periphery of the work area was. Consequently, the boundary was estimated and the survey may have wandered off the proposed cut areas. However, the survey represents a reasonable (conservative) representation of the species composition and stem diameters by species. This should serve for determining levels of mitigation. In general trees under 3 inches in diameter were ignored Most trees preservation ordinances use a minimum diameter of 4 to 6 inches for mitigation purposes.

RESULTS

The Clover Flat Landfill site is situated in the foothills of coastal mountain ranges several miles south of and to the east of Calistoga, (CA Napa County). The tree canopy cover is best described as mixed evergreen, including coast live oak (*Quercus agrifolia*), Douglas-fir (*Pseudoastuga menziesii*), foothill pine (*Pinus sabiniana*), and Pacific madrone (*Arbutus menziesii*). The canopy, though, is dominated by coast live oak. Other oak species included blue oak (*Quercus douglasii*), black oak (*Quercus kelloggii*), an occasional interior live oak (*Quercus wislizenii*), and a few valley oak (*Quercus lobata*). A small number of California bay (*Umbellularia californica*), and big leaf maple (*Acer macrophyllum*) were also noted.

The county's Mediterranean climate has a maritime influence, characterized by winter rainfall and dry summers. The area lies in the Coastal cool zone, moderated by cool marine air and summer fog. The cooler temperatures and greater soil moister levels allow for the development of evergreen trees, e.g., Coast live oak, Douglas-fir, Pacific madrone, foothill pine, and California bay laurel as well as deciduous trees such as black oaks and big leaf maple.
Understory plants include ferns, poison oak, toyon, and honeysuckle. Associated plants in the canopy openings include *Baccharis* spp., manzanita and Scotch broom. The areas that were cleared when the landfill was first developed are regenerating well. The cut slope above the paved recycling area is regenerating naturally. The vegetation there consists largely of small seedlings and saplings of Douglas-fir and foothill pine. There is also a lot of Scotch broom and Baccharis in the area and on the cut slope below the facilities.

The terrain ranges from fairly flat along the ridge top to the south of the proposed excavation site. From there it slopes down steeply, particularly where the site was previously excavated to develop the current recycling area. To the north of the recycling area the grade drops off precipitously to the access road below. There are some relatively steep drainages to the area further north.

The forest stands are second growth as the trees were undoubtedly harvested around 1900. Some of the resulting regeneration has probably been harvested since then as well. It is likely that there have apparently been several wildfires on the site since the original clearing, and the survey noted that many of the trees had basal fire scars on their lower trunks resulting from wildfire within the last 30 to 40 years.

With more than 900 trees (see **table 4**) and tree like shrubs present on this slightly over one acre parcel, the stand is very over-stocked with young, sapling trees, There are however also a number of large or mature Coast live oak, Valley oak and Douglas fir trees present, some with diameters over 20 inches. Many of the young trees are suppressed and will die in time as they become over-topped (shaded) by more vigorous native trees. Mortality of young trees in over-stocked stands like this on dry sites are quite high and they are especially prone to intense crown fires that typically destroy most of the trees.

In general, the health of the trees is reasonably good. There were no signs of *Phytophthora ramorum* the pathogen that causes Sudden Oak Death. Nearly all of the madrones are showing symptoms of madrone canker, an introduced pathogen that greatly reduces their lifespan. With the exception of a handful of large Douglas fir, most of the trees are relatively young, probably less than 40 years of age. Also counted were 6 dead coast live oaks in the 6 to 12 inch range. Approximately 8 trees with small basal cavities that could provide habitat for some organisms were observed, but only two trees with minor cavities in their upper crowns. Such large, older oaks with hollows due to stem breakage or fire injury provide ideal habitat for certain birds and bats, but there were no obvious 'habitat trees aside from the handful of smaller dead trees.

Napa County does not have a separate Tree Protection Ordinance per se, but elements for protection of native trees are included in the Napa County General Plan, as well as the County Erosion Control Ordinance. In addition, native tree protection along riparian corridors is included in the Creek Protection Ordinance.

The focus of the Erosion ordinance is on documenting native trees greater than 6 inches in diameter, and protection of native trees for erosion control. The Goals for Tree Protection in the General Plan are broader and include wildlife habitat, while the Creek Protection Ordinance is focuses on aquatic habitat, fisheries, and water quality. Although tree replacement can be determined on a case by case basis as part of the project review and CEQA approval process, often a 2:1 replacement ratio used utilized.

As summarized in **Table 4** below and detailed in **Attachment A**, some ***362*** native trees 6 inches in diameter (DBH) or greater would be removed in association with the recovery/recycling pad area expansion.**:** These are primarily various species of oaks and Douglas Fir, but also include some California Bay, big leaf maple, and madrone.

TABLE 4.

Number of Native Tree Species by Diameter

Diameter In Inches	1 to 3 "	4 to 5"	6 to 9"	10 to 12"	14-16"	18-23"	24-27"	28-30"	Total	Total +6">
Coast live oak		79	94	38	12	2	1		226	147
Black oak		1	2	8	1		2		14	13
Blue oak			14	14	8	1	1		38	38
Interior live oak				1					1	1
Valley oak							2		2	2
California bay		8	1						9	1
Big leaf maple			4						4	4
Douglas fir	167	43	14	19	20	1		1	265	55
Madrone	15	96	58	3	2				174	63
Foothill pine	4	95	20	8	6	3	1		137	38
Totals:	**186**	**322**	**207**	**91**	**49**	**7**	**7**	**1**	**870**	**362**

RECOMMENDED MITIGATION MEASURES; TREE REMOVAL

Because of the over-stocked nature of the site's oak woodland forest, tree replacement should not be based only on a count of the larger trees to be removed, A reasonable mitigation plan would involve replanting with about 300 trees (at an approximately 12-foot spacing) per acre, if the – replacement planting were to occur at this -site in an area with similar soils and aspect. Planting more densely than this in this area would be wasteful. The proposed 300 replacement or mitigation trees for the 2.1 acre site (+/-150 trees/acre) planting density will allow for some natural mortality at this dry site. In time, natural thinning will cull the weaker trees and improve spacing. The mitigation goal would be to end up with about 60 to 80 trees per acre at early maturity, depending on species, with a planned mortality of about 50 to 60% over a period of time. If the site were to be irrigated, for 3 to 5 years during the plant establishment period, a lower initial planting density could be utilized. Plant survival in an irrigated and managed site is typically 75% after 5 years.

Tree replacement would include Blue Oak, Black Oak, Coast Live Oak, Douglas Fir, Foothill Pine, and perhaps a few California bay trees.

Although madrone is a native tree, and was included in the tree inventory it should not be included in the mitigation planting plan. . Madrone is a pioneer species that develops on disturbed sites. It is relatively short-lived and prone to a new disease (madrone canker). If planted, in time it will be eliminated by the native oaks and fir.

REFERENCES

Berner, M., B. Grummer, R. Leong, M. Rippey. 2003. Breeding birds of Napa County, California. Napa-Solano Audubon Society, Vallejo, CA.

CNDDB, 2010. Database printout for Calistoga 4.5 minute quad sheet.

ESA, 1990. Clover Flat Landfill Expansion EIR

ATTACHMENT A

Result Summary:
I counted 836 native trees 4 inched in diameter (DBH) or greater within the work site.
By species they include:
Quercus agrifolia (coast live oak): 226
Quercus douglasii (blue oak): 38
Quercus kellogii (black oak): 14
Quercus wislizeni (interior live oak): 1
Quercus lobata (valley oak): 2
Pinus sabiniana (foothill pine): 133
Pseudotsuga menziesii (Douglas-fir): 98
*Umbellularia calif*ornica (California bay): 9
Arbutus menzseii (Pacific madrone): 159
Acer macrophylum (big leaf maple): 4
Arctosphylos spp. (Manzanita): 144
Heteromeles arbutifolia (Toyon): 8

I also counted 8 non-indigenous trees on the site. They include:
Prunus spp (apricot) 1
Eucalyptus viminialis (manna gum): 2
Schinus molle (California pepper):1
Washingtonia filifera (California fan palm): 1
Pinus radiate (Monterey pine): 3

Clover Flat Landfill tree survey in the area proposed for clearing and excavation

Area near administrative trailer, recycling dumpsters and near water tanks

Non-natives:
1 apricot (*Prunus* spp.) 6 inch, 10 feet
2 eucalypts (*Eucalyptus viminialis*) 11 inch, 35 feet
1 California pepper (*Schinus molle*) 3 inch (non-indigenous) 10 feet, 10 feet
1 California fan palm (*Washingtonia filifera*) (juvenile), not native to site) 9 feet
Total: 5 (4 inches (DBH) and above)

Manzanita (*Arctostaphylos* spp.) (8-10 feet)
2 Manzanita 4 inch (multi)
Total: 2 (4 inches (DBH) and above)

Black oak (*Quercus kellogii*)
1 Black oak 12 inch (multi) (30 feet)
Total: 1 (4 inches (DBH) and above)

Coast live oak (*Quercus agrifolia*)
5 Coast live oak 4 inch (10 feet)
4 Coast live oak 5 inch

10 Coast live oak 6 inch
6 Coast live oak 8 inch
3 Coast live oak 10 inch (25 feet)
4 Coast live oak 12 inch (30 feet)
Total: 32 (4 inches (DBH) and above)

Douglas-fir (*Pseudotsuga menziesii*)
1 D-fir 2 inch (8 feet)
5 D-fir 4 inch
4 D-fir 6 inch
1 D-fir 8 inch (25 feet)
1 D-fir 12 inch (30 feet)
Total: 11 (4 inches (DBH) and above)

Foothill pine (*P. sabiniàna*)
2 Foothill pine 2 inch
1 Foothill pine 8 inch
1 Foothill pine 20 inch (multi) (35 feet)
Total: 4 (4 inches (DBH) and above)

AREA WEST OF TANKS
Coast live oak (*Quercus agrifolia*)
4 Coast live oak (*Quercus agrifolia*) 2 inch
20 Coast live oak 4 inch
16 Coast live oak 6 inch
11 Coast live oak 8 inch
4 Coast live oak 12 inch (multi)
1 Coast live oak 16 inch
2 Coast live oak 14 inch
1 Coast live oak 22 inch (35 feet)
1 Coast live oak 26 inch (40 feet)
Total: 56 (4 inches (DBH) and above)

California bay (*Umbellularia californica*)
8 California bay (*Umbellularia californica*) 4 inch
1 California bay 9 inch
Total: 9 (4 inches (DBH) and above)

Douglas-fir (*Pseudosuga menziesii*)
1 D-fir 2 inch
1 D-fir 6 inch
1 D-fir 8 inch
16 D-fir 12 inch
13 D-fir 14 inch
3 D-fir 16 inch
1 D-fir 22 inch

1 D-fir 28 inch (70 feet)
Total: 36 (4 inches (DBH) and above)

Foothill pine (*Pinus sabianiana*)
2 Foothill pine 3 inch
2 Foothill pine 6 inch
1 Foothill pine 8 inch
2 Foothill pine 12 inch
1 Foothill pine 16 inch (45 feet)
Total: 6 (4 inches (DBH) and above)

Madrone (*Arbutus menziesii*)
1 Madrone 4 inch
1 Madrone 12 inch
2 Madrone 16 inch (30)
Total: 4 (4 inches (DBH) and above)

Toyon (*Heteromeles arbutifolia*)
1 Toyon 4 inch
Total 1 (4 inches (DBH) and above)

Big leaf maple (*Acer macrophyllum*)
4 Big leaf maple 6 inch
Total: 4 (4 inches (DBH) and above)

AREA TO THE SOUTH OF THE RECYCLING FACILITY
Coast live oak (*Quercus agrifolia*)
25 Coast live oak 4 inch (10 feet)
6 Coast live oak 5 inch
5 Coast live oak 6 inch (20 feet)
13 Coast live oak 8 inch
7 Coast live oak 10 inch
14 Coast live oak 12 inch
9 Coast live oak 14 inch (25 feet)
2 Coast live oak 16 inch (30 feet)
1 Coast live oak 22 inch (35 feet)
Total: 82 (4 inches (DBH) and above)

Blue oak (*Quercus douglasii*)
6 Blue oak 6 inch (20feet)
8 Blue oak 8 inch
6 Blue oak 10 inch
8 Blue oak 12 inch
6 Blue oak 14 inch
2 Blue oak 16 inch
1 Blue oak 18 inch (35 feet)

1 Blue oak 24 inch (40 feet)
Total: 38 (4 inches (DBH) and above)

Black oak (*Quercus kellogii*)
2 Black oak 10 inch (30 feet)
6 Black oak 12 inch
1 Black oak 14 inch
1 Black oak 24 inch (4 feet)
1 Black oak 26 inch (40 feet)
Total: 9 (4 inches (DBH) and above)

Foothill pine (*Pinus sabiniana*)
85 Foothill pine 4 inch (14 feet)
3 Foothill pine 6 inch
10 Foothill pine 8 inch
2 Foothill pine 10 inch
2 Foothill pine 12 inch
1 Foothill pine 14 inch
4 Foothill pine 16 inch
1 Foothill pine 18 inch (45 feet)
1 Foothill pine 24 inch (60 feet)
Total: 109 (4 inches (DBH) and above)

Douglas-fir (*Pseudotsuga menzseii*)
165 D-fir 1-3 inch (*Not included in total*)
34 D-fir 4 inch
5 D-fir 6 inch
1 D-fir 8 inch
1 D-fir 12 inch
2 D-fir 14 inch
2 D-fir 16 inch (40 feet)
Total: 44 (4 inches and above)

Manzanita (*Arctostaphylos* spp.)
2 Manzanita 4 inch
120 Manzanita 6 inch (10 feet
18 Manzanita 8 inch
2 Manzanita 10 inch
2 Manzanita 12 inch (20 feet)
Total: 144 Manzanita > 4 inches (DBH)

Madrone (*Arbutus menzseii*)
15 Madrone 3 inch (multi) *(not included in count)*
80 Madrone 4 inch (multi)
45 Madrone 6 inch (multi)
2 Madrone 8 inch

1 Madrone 10 inch (35 feet)
Total: 143 (4 inches (DBH) and above)

Toyon (*Heteromeles arbutifolia*)
5 Toyon (*Heteromeles arbutifolia*) 4 inch
2 Toyon 6 inch
Total: 7 (4 inches (DBH) and above)

AREA NEAR WEIGH STATION:
Coast live oak (*Quercus agrifolia*)
11 Coast live oak 4 inch
4 Coast live oak 5 inch
26 Coast live oak 6 inch (2 dead)
7 Coast live oak 8 inch
3 Coast live oak 10
3 Coast live oak 12 inch
1 Coast live oak 14 inch
1 Coast live oak 16 inch (35 feet)
Total: 56 (4 inches (DBH) and above)

Black oak (*Quercus kelloggii*)
1 Black oak 5 inch
1 Black oak 6 inch
1 Black oak 8 inch
1 Black oak 12 inch
Total: 4 (4 inches (DBH) and above)

Interior live oak (*Quercus wislizeni*)
1 Interior live oak 12 inch
Total 1 (4 inches (DBH) and above)

Valley oak (*Quercus lobata*)
1 Valley oak (*Quercus lobata*) 24 inch (35 feet)
1 Valley oak 26 inch (40 feet)
Total: 2 (4 inches (DBH) and above)

Douglas-fir (*Pseudotsuga menzseii*)
3 Douglas-fir 4 inch
1 Douglas-fir 5 inch
1 Douglas-fir 8 inch
1 Douglas-fir 10 inch (35 feet)
Total: 6 (4 inches (DBH) and above)

Foothill pine (*Pinus sabiniana*)
8 Foothill pine 4 inch
2 Foothill pine 5 inch

1 Foothill pine 6 inch
2 Foothill pine 8 inch
1 Foothill pine 10 inch
1 Foothill pine 12 inch
1 Foothill pine 20 inch (65 feet)
Total: 16 (4 inches (DBH) and above)

Monterey pine (*Pinus radiata*) not native to the site
2 Monterey pine 8 inch
1 Monterey pine 12 inch (30 feet)
Total: 3 (4 inches (DBH) and above)

Madrone
9 Madrone 4 inch
6 Madrone 5 inch
9 Madrone 6 inch
2 Madrone 8 inch
1 Madrone 12 inch
Total: 27 (4 inches (DBH) and above)

Manzanita
2 Manzanita 6 inch
2 Manzanita 8 inch
Total: 4 (4 inches (DBH) and above)

TOTALS BY SPECIES AND DIAMETER CLASS
Coast live oak (*Quercus agrifolia*)
45 Coast live oak 4 inch
34 Coast live oak 5 inch
57 Coast live oak 6 inch (2 dead)
37 Coast live oak 8 inch
13 Coast live oak 10
25 Coast live oak 12 inch
12 Coast live oak 14 inch
2 Coast live oak 22 inch
1 Coast live oak 26 inch
Total: 226 Coast live oaks > 4 inches (DBH)

Black oak (*Quercus kelloggii*)
1 Black oak 5 inch
1 Black oak 6 inch
1 Black oak 8 inch
2 Black oak 10 inch
6 Black oak 12 inch

1 Black oak 14
1 Black oak 24
1 Black oak 26
Total: 14 Black oaks >4 inches (DBH)

Blue oak (*Quercus douglasii*)
6 Blue oak 6 inch
8 Blue oak 8 inch
6 Blue oak 10 inch
8 Blue oak 12 inch
6 Blue oak 14 inch
2 Blue oak 16 inch
1 Blue oak 18 inch (35 feet)
1 Blue oak 24 inch (40 feet)
Total: 38 blue oaks >4 inches (DBH)

Interior live oak (*Quercus wislizeni*)
1 Interior live oak 12 inch
Total: 1 interior oak >4 inches

Valley oak (*Quercus lobata*)
1 Valley oak 24 inch (35 feet)
1 Valley oak 26 inch (40 feet)
Total: 2 valley oak >4 inches (DBH) and above

California bay (*Umbellularia californica*)
8 California bay 4 inch
1 California bay 9 inch
Total: 9 California bay >4 inches (DBH)

Big leaf maple (*Acer macrophyllum*)
4 Big leaf maple 6 inch
Total: 4 big lead maple >4 inches (DBH

Douglas-fir (*Pseudotsuga menzseii*)
167 Douglas fir 1-3 inch
42 Douglas fir 4 inch
1 Douglas fir 5 inch
10 Douglas fir 6 inch
4 Douglas fir 8 inch
1 Douglas fir 10 inch
18 Douglas fir 12 inch
15 Douglas fir 14 inch
5 Douglas fir 16 inch
1 Douglas-fir 22 inch
1 Douglas-fir 28 inch

Total: 98 Douglas-fir >4 inches (DBH) [167 1-3 inch trees]

Madrone (*Arbutus menzseii*)
15 Madrone 3 inch
90 Madrone 4 inch
6 Madrone 5 inch
54 Madrone 6 inch
4 Madrone 8 inch
1 Madrone 10 inch
2 Madrone 12 inch
2 Madrone 16 inch
Total: 159 Madrone >4 inches (DBH)

Foothill pine (*Pinus sabiniana*)
2 Foothill pine 2 inch
2 Foothill pine 3 inch
93 Foothill pine 4 inch
2 Foothill pine 5 inch
6 Foothill pine 6 inch
14 Foothill pine 8 inch
3 Foothill pine 10 inch
5 Foothill pine 12 inch
1 Foothill pine 14 inch
5 Foothill pine 16 inch
1 Foothill pine 18 inch
2 Foothill pine 20 inch
1 Foothill pine 24 inch
Total: 133 Foothill pines > 4inches

Manzanita (*Arctostaphylos* spp.)
2 Manzanita 4 inch
120 Manzanita 6 inch
18 Manzanita 8 inch
2 Manzanita 10 inch
2 Manzanita 12 inch
Total: 144 Manzanita >4 inches (DBH)

Toyon (*Heteromeles arbutifolia*)
6 Toyon 4 inch
2 Toyon 6 inch
Total: 8 Toyon >4 inches (DBH)

Grand total: 836 indigenous trees

Non indigenous trees:
2 Monterey (*Pinus radiate*) pine 8 inch

1 Monterey pine 12 inch (30 feet)
1 apricot (*Prunus* spp.) 6 inch, 10 feet
2 eucalypts (*Eucalyptus viminialis*) 11 inch, 35 feet
1 California pepper (*Schinus molle*) 3 inch (non-indigenous) 10 feet, 10 feet
1 California fan palm (*Washingtonia filifera*) (juvenile), not native to site) 9 feet
Total: 8 specimens > 4 inches (DBH) or greater