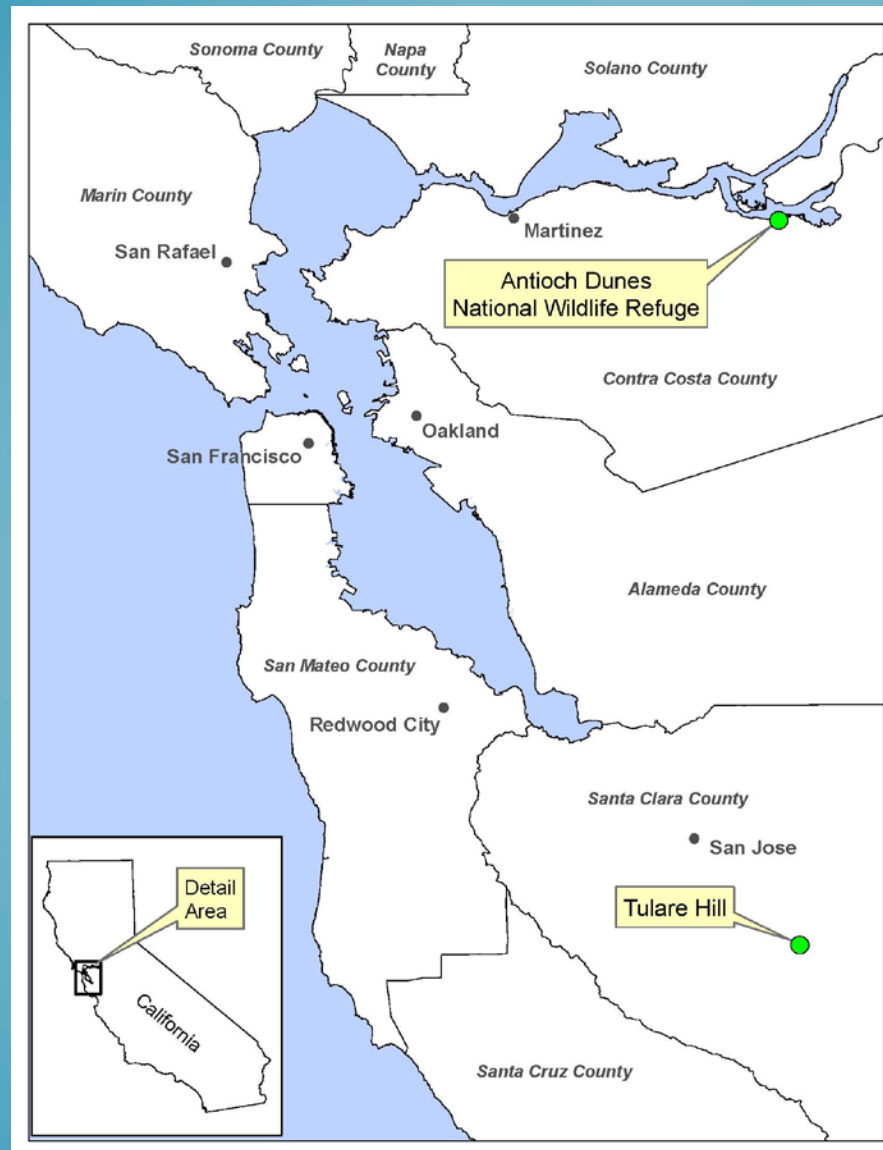


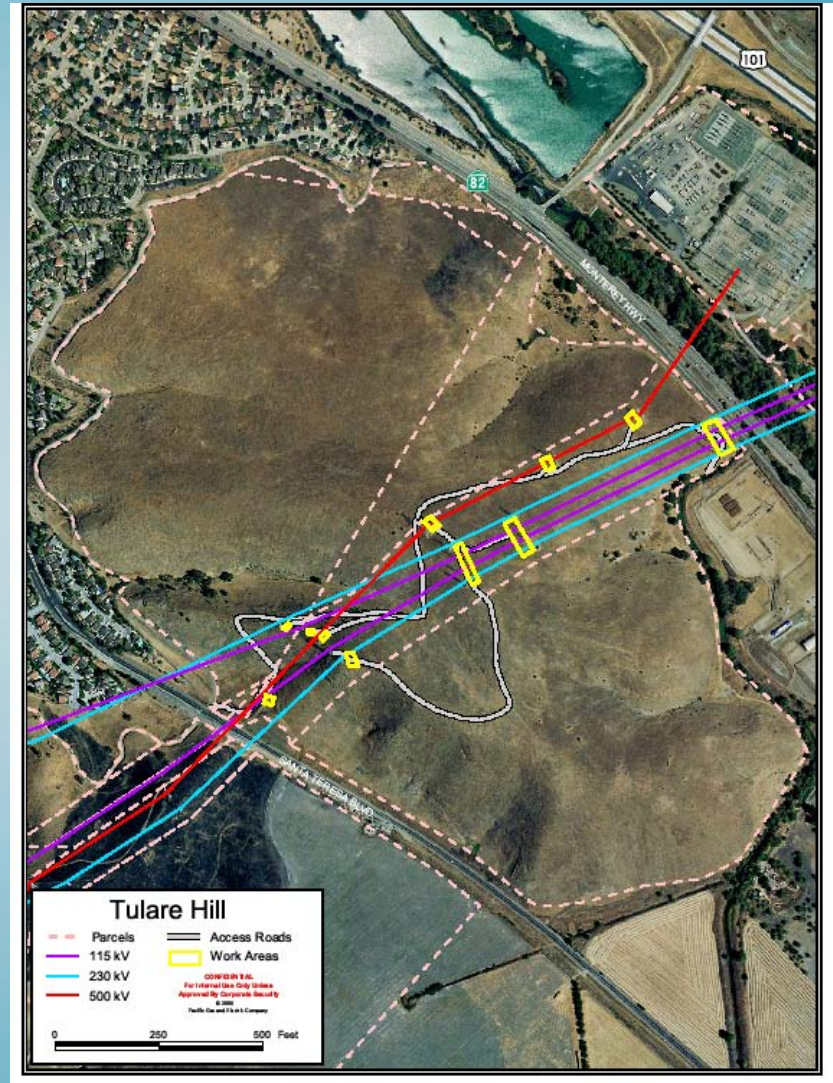
Pacific Gas and Electric Company's use of Safe Harbor Agreements to enhance habitat for endangered species in the San Francisco Bay Area





Tulare Hill

- 45 Acre Parcel
- 5 Transmission Lines
- Adjacent to Metcalf Energy Center and Silicon Valley Land Conservancy Nature Preserve



Tulare Hill Endemic Species



©Roxanne Bittman

Metcalf Canyon Jewelflower



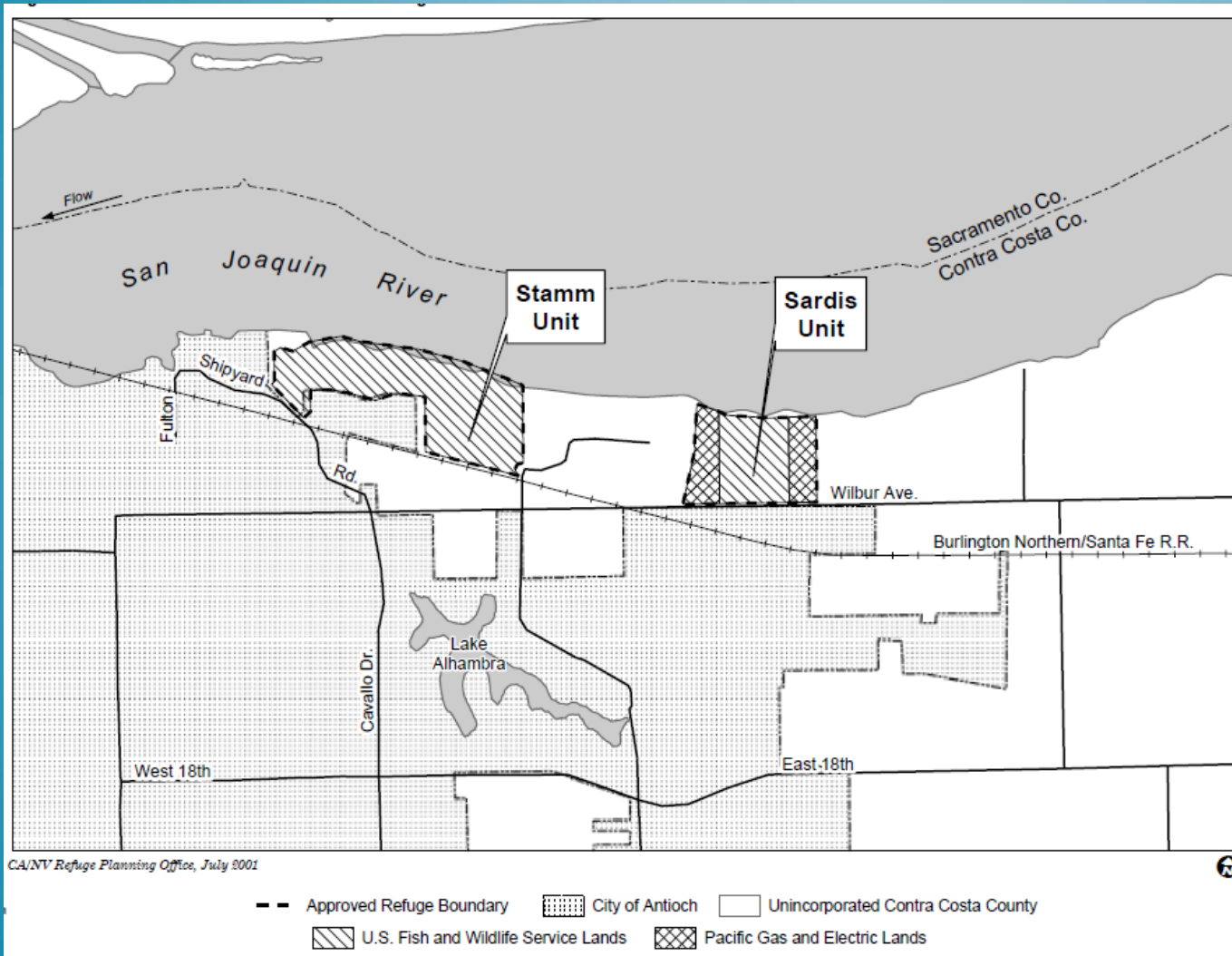
Bay checkerspot butterfly



Santa Clara Valley Dudleya



Antioch Dunes



Antioch Dunes Endemic Species



Lange's Metalmark
Butterfly



Antioch Dunes
Evening Primrose



Contra Costa
Wallflower

Control of Invasive Plants

- During the early 1980's weed control methods appear to have been restricted by the ESA to manual techniques alone; herbicides were not allowed for control of weeds at the Dunes (de Becker and McKinney 1987)
- Of primary concern, then as now, was control of ripgut brome (*Bromus diandrus*), yellow starthistle (*Centaurea solstitialis*), vetch (*Vicia* spp.), Russian thistle (*Salsola tragus*), and tree of heaven (*Ailanthus altissima*)
- Later USFWS identified herbicide products that could be used, but not in close proximity to listed species (USFWS 2001)

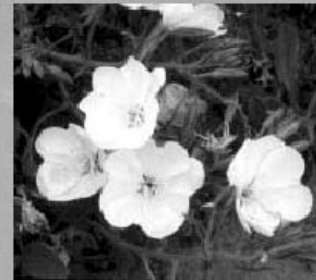


Land & En
Environm

U.S. Fish & Wildlife Service

Antioch Dunes *National Wildlife Refuge*

*Draft Comprehensive Conservation Plan
Plan and Environmental Assessment*



Safe Harbor Agreement

- Sections 2, 7, and 10 of the federal *Endangered Species Act*, allow USFWS to enter into SHA
- The purpose of the SHA is for enrolled parties to collaborate and implement *conservation measures* for covered species. This is accomplished through a permit that authorizes implementation of conservation measures as well as *incidental take* of covered species
- Baselines are agreed upon for protected species or the habitat that affects them
- Monitoring determines if baseline agreements are being achieved.
- The incidental take aspect of the permit protects PG&E during the performance of routine operation and maintenance of its facilities



Tulare Hills Conservation Measures

- **PG&E agrees to adaptive cattle management on property**
- **PG&E M&O activities included in plan**
- **Silicon Valley Land Conservancy to manage cattle on entire Hill**
- **Net Conservation Benefits include**
 - Increased availability of foraging & breeding habitat**
 - Greater likelihood of increased BCB population**



Tulare Hills Baselines

- **Baselines were established for each of the covered species**
- **Bay checkerspot butterfly baseline was established with two measures-**
 - **whether the property is grazed or not grazed.**
 - **vegetative cover estimates that relate specifically to the life history of the bay checkerspot butterfly**
- **Metcalf jewelflower- baseline set at zero**
- **Santa Clara Valley dudleya- baseline set at 1,000 plants**



Tulare Hills Monitoring includes...

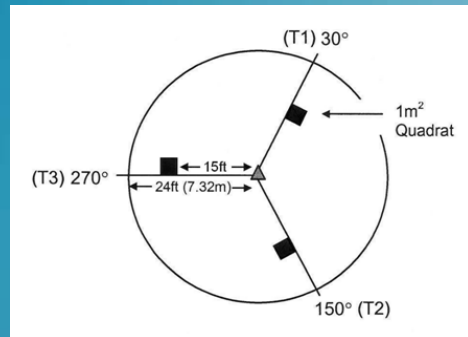
- **Plot photographs,**
- **Bay checkerspot butterfly larval and adult counts,**
- **vegetative cover estimates that relate specifically to the life history of the bay checkerspot butterfly,**
- **Santa Clara Valley dudleya counts with comparisons between grazed and ungrazed plots, and**
- **Metcalf Canyon jewelflowers observed.**
- **The Agreement also requires cattle grazing to resume on the property to control non-native grasses.**



Antioch Dunes Conservation Measures

- **PG&E undertakes annual weed control on its two parcels**
- **PG&E established baseline conditions through field sampling in 2008, and monitors weed cover biennially on its parcels**
- **Herbicides identified by the USFWS as safe for use on the Refuge and adjacent parcels are used as well as other techniques**
- **USFWS is restoring native plants at suitable sites on PG&E lands**
- **PG&E sponsors two volunteer weed control days each year (March/May and May/July)**

Vegetation Monitoring Antioch Dunes



(2008 Sampling) invasives = 81.8%



(2010 Sampling) invasives = 68.4%

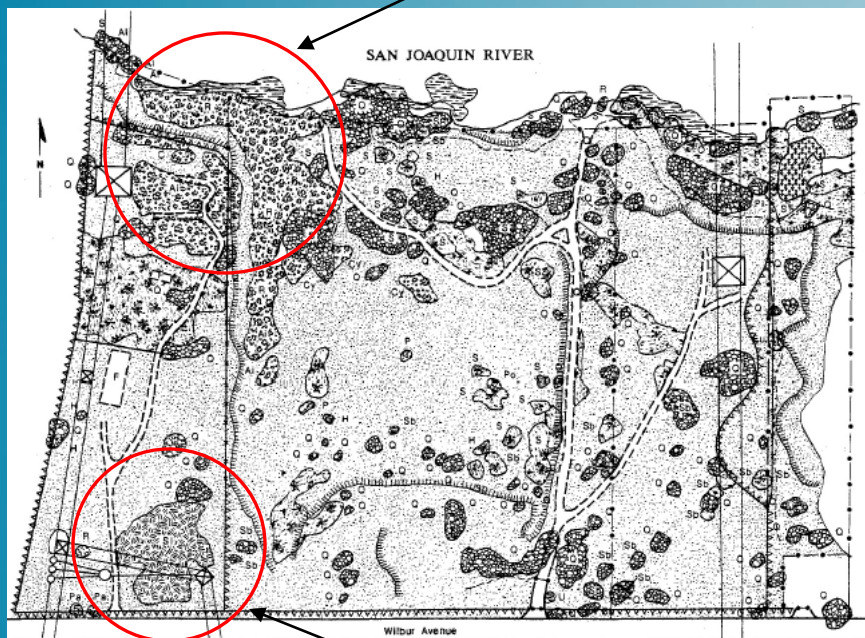


Figure 2: Sampling Plot Locations Antioch Dunes SHA Baseline Monitoring



Managed Vegetation Change (Unofficial Baseline Condition)

1987



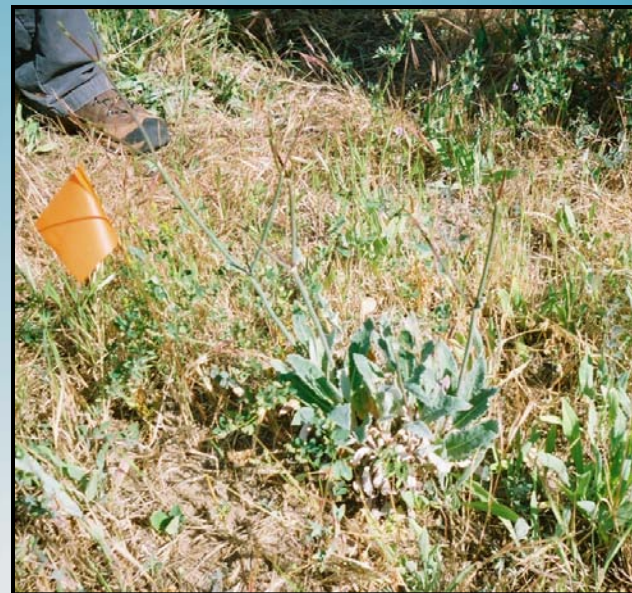
Non-native trees not controlled

Non-native shrubs controlled

2009



Volunteers Gather to Hand-pull Weeds Antioch Dunes, Spring 2010



Summary

- **The unique habitats at Tulare Hill and Antioch Dunes support legally protected Endemic species that presented operational challenges for PG&E.**
- **Invasive plants have encroached on the endemic species and active management of invasive plants is needed to maintain the endemics.**
- **The Safe Harbor Agreement provides the vehicle for enrolled parties to perform habitat enhancement measures while receiving legal protection from incidental take of protected species.**