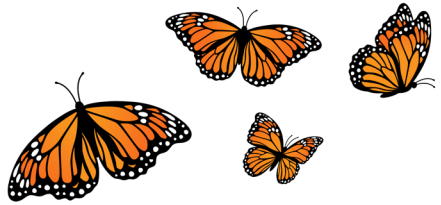
Santa Cruz County Parks

Moran Lake Monarch Habitat Management Plan Update Public Meeting #2

June 24, 2025



Agenda

- History
- Monarch Overview & Habitat
- Wind Study
- Proposed Tree/Habitat Management
- Habitat Management Plan Update & Next Steps
- Q + A

History

History

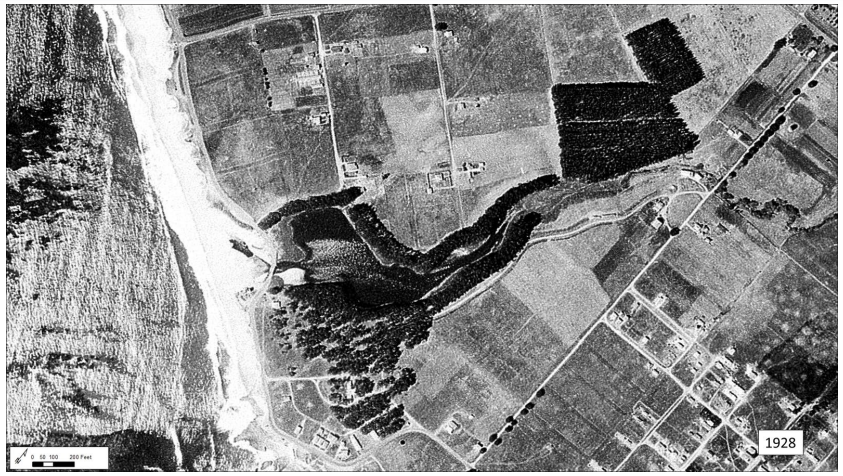
Tree Planting, Lagoon Fill, and Park Development

1900s - Woodlot & windbreak

1960s - Fill from Harbor creation

1975 – County acquired property

1988 – Parking lot and restroom installed



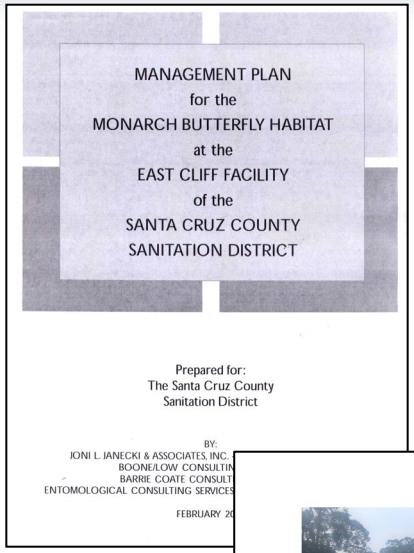
History

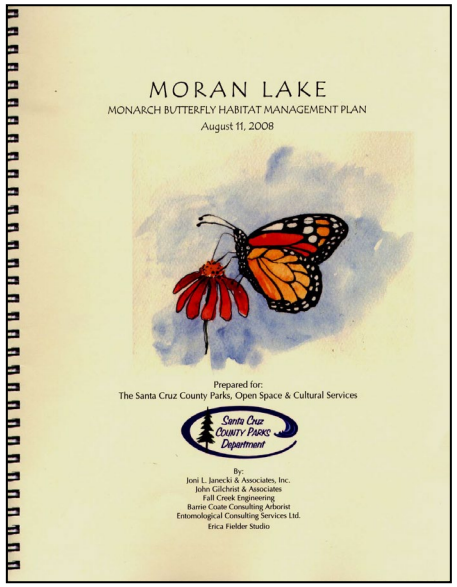
2006 – Separate Monarch Habitat Mgmt Plans

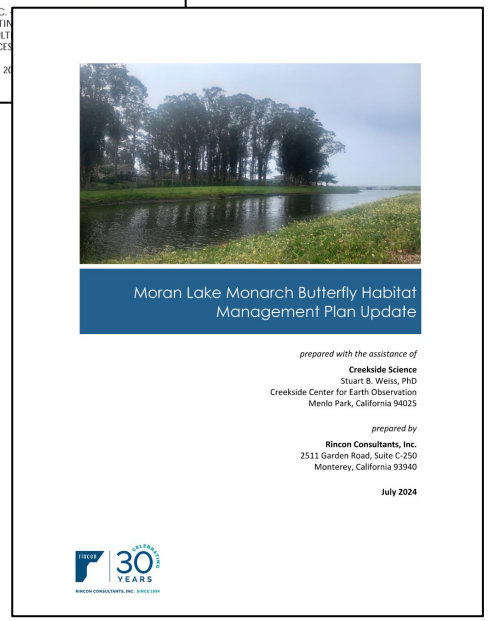
2010 – Combined Monarch Habitat Mgmt Plan

2022 – Updated Monarch Habitat Mgmt Plan

July 2024 – Community Meeting







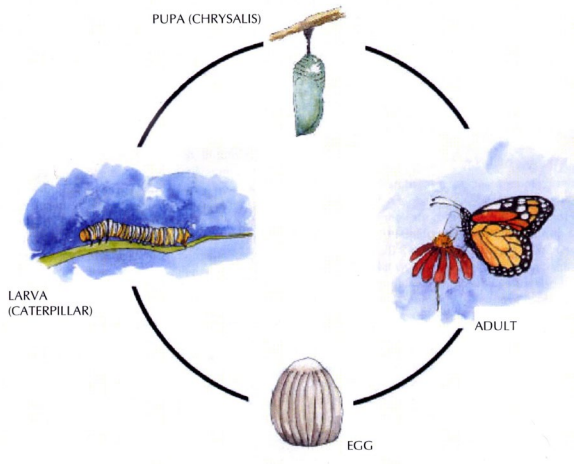
Monarch
Overview & Habitat

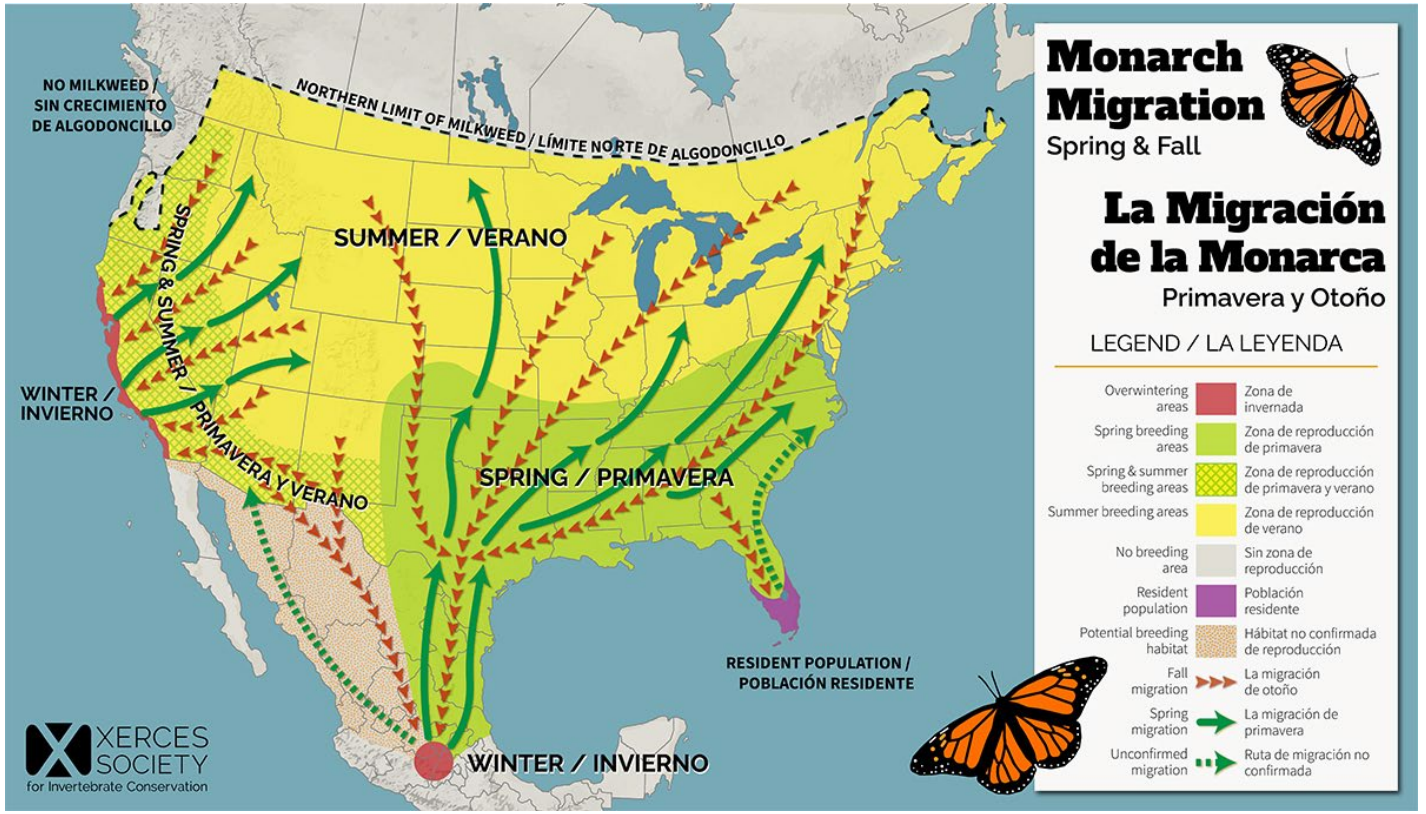
Monarch Overview

Monarchs are cold-blooded animals and require protection from freezing temperatures

Western Monarchs migrate from the western United States and Southern Canada to coastal California

USFWS proposed listing as Threatened under ESA





Monarch Overview

Small numbers of Monarch butterflies can be present at Moran Lake from mid-August through April, though most Monarchs arrive in October and leave in February.

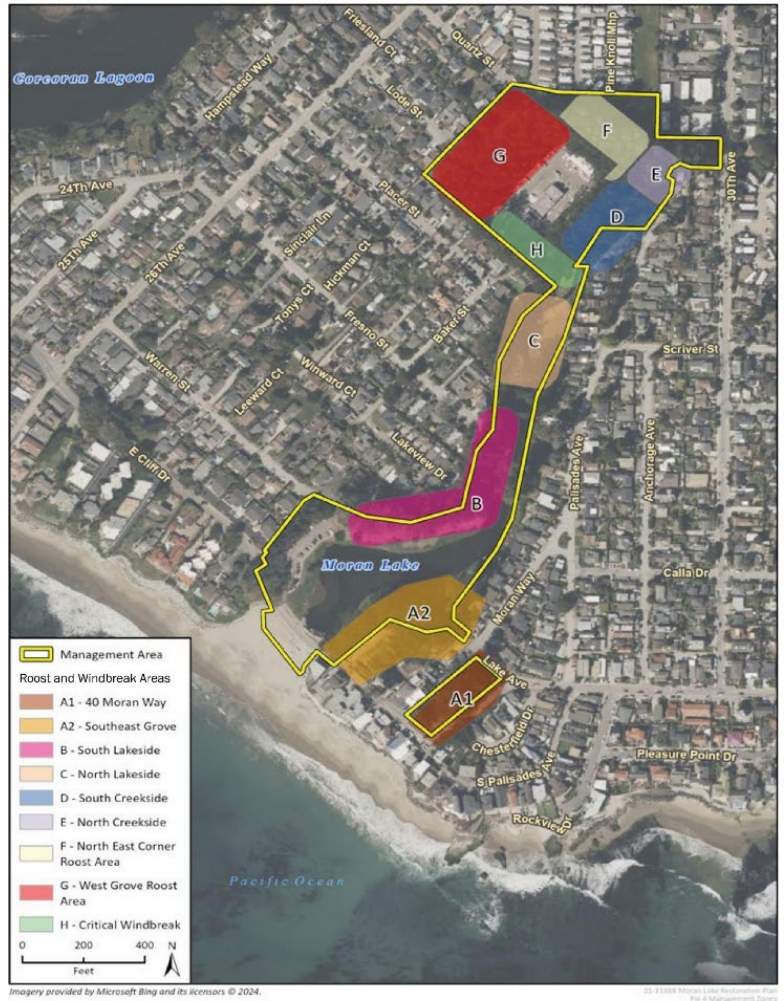
The monarch butterfly wintering habitat at Moran Lake is the third largest population of wintering monarchs in Santa Cruz County and holds up to 5% of the state-wide wintering population. Components of wintering habitat for butterflies include:

- **Roost trees***
- **Primary wind protection/dappled shade/sun trees***
- Secondary wind protection trees
- Nectar sources
- Water sources

***Limiting factors at Moran**

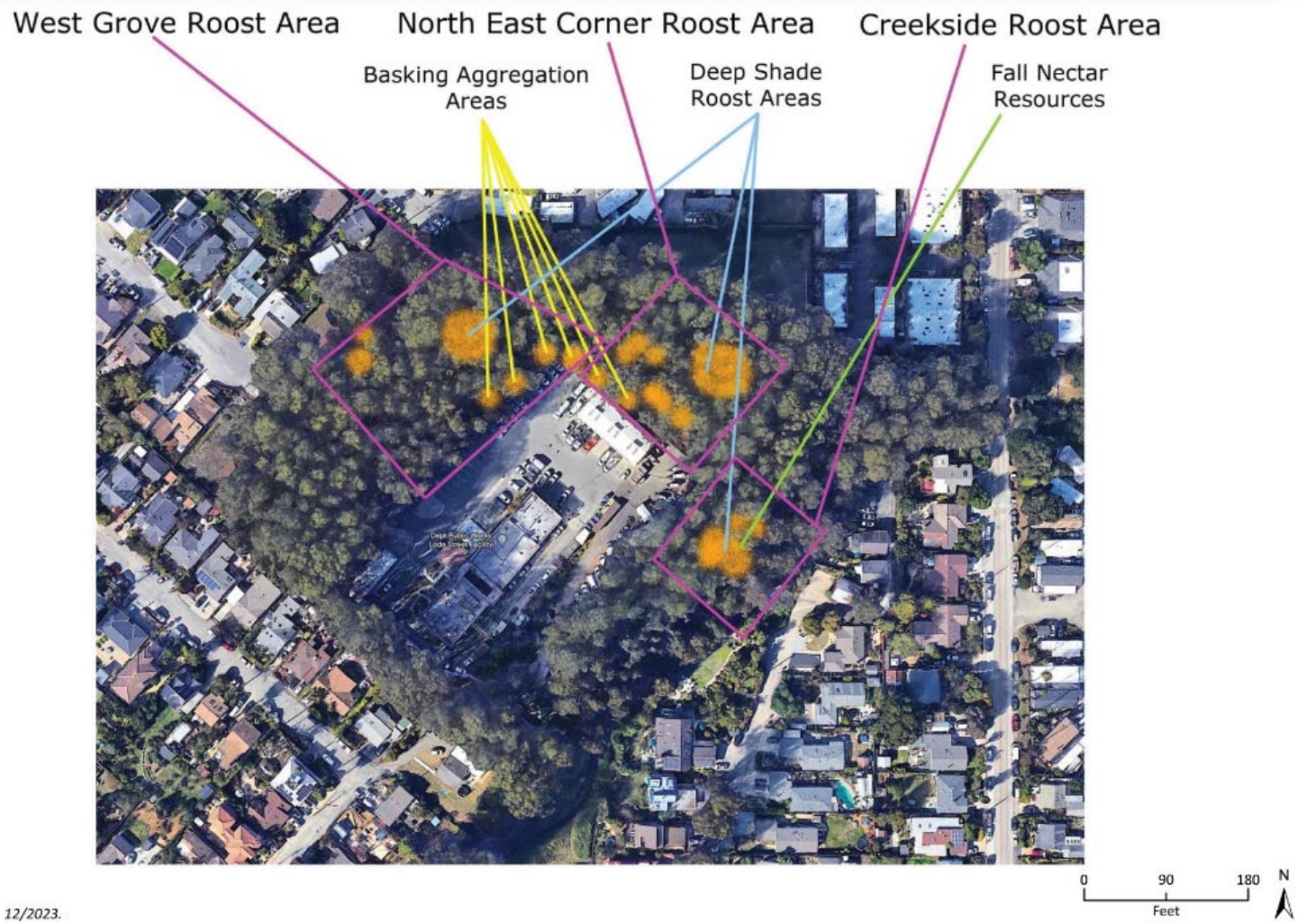
Monarch Habitat

Habitat Zones & Areas



Monarch Habitat

Winter Roost Locations



12/2023.

Habitat Management

Included in July 2024 Public Draft HMP

Previously planned habitat management consists of:

- Tree planting
- Removal/trimming of hazardous trees & limbs
- Nectar source planting
- Drainage improvements

Community Feedback:

- Understand relationship between tree height and habitat
- Greater emphasis on public safety
- Proactive tree management
- Planting required mitigation trees
- Improving drainage

Habitat Management

Recent Actions

Hazardous Tree Removal and Pruning - Summer 2024
Drainage Improvements – Summer 2024
Tree planting - December 2024:

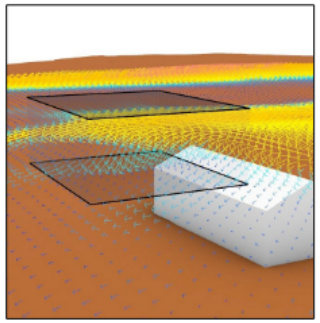
- 53 Monterey Cypress
- 11 White Alders

Wind Study

Wind Study

Moran Lake Monarch Butterfly Habitat and Tree Management Assessment
May 2025

Monarchs at Moran Lake



Wind Model Output

Stuart B. Weiss
Creekside Science

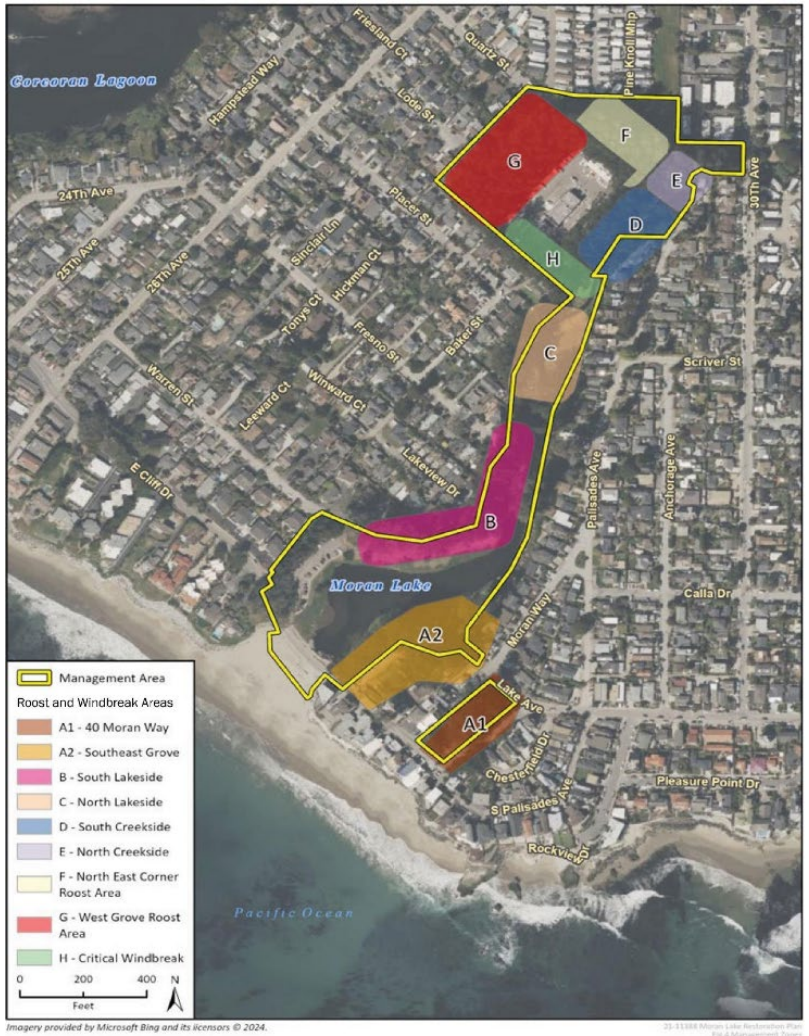
Corbin Matley
Althouse and Meade, Inc.

CREEKSIDE SCIENCE

ALTHOUSE AND MEADE, INC.

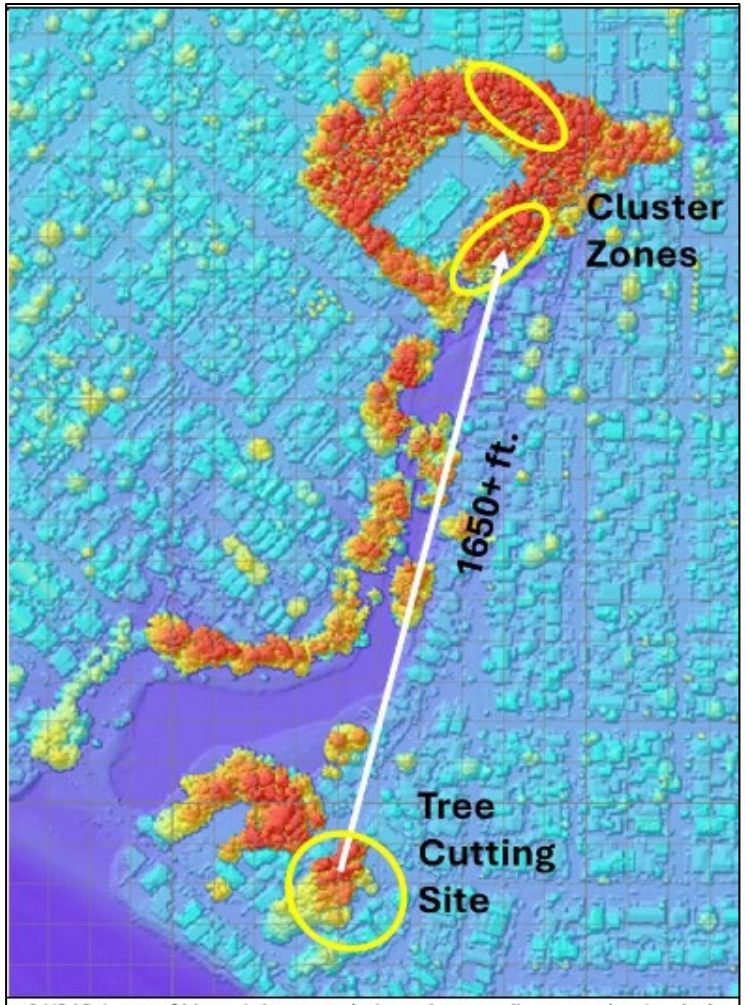
May 2025

Prepared for Robert Tidmore
Santa Cruz County Parks



Wind Study

Methods



re 2 LiDAR image of Moran Lake monarch site and surrounding trees, showing the loca cluster zones and the tree cutting site at 40 Moran Way. The light grid lines are 100 ft.

Figure 1. Oblique View of Placer Street Windbreak in the model, showing the same gaps as in the photo above. Vectors are wind conditions 30 feet above ground. Canopy voxels shown. The cluster zone is the white box visible at the end of the yard.

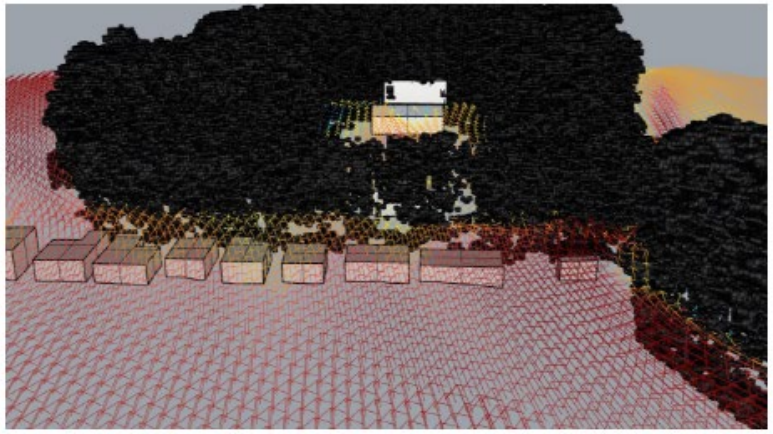


Figure 2. Oblique View of Placer Street Windbreak, Canopy Voxels Hidden. Current wind conditions 30 feet above ground.

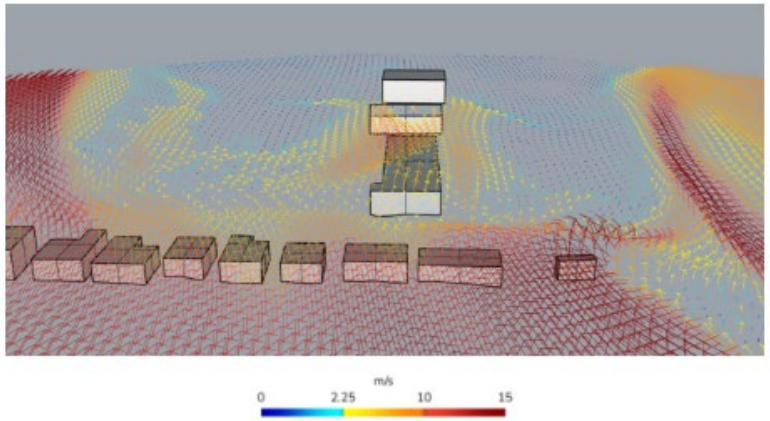


Figure 3. Vertical slice profile of wind through center of yard. Note the vertical variations in direction. From now on the vertical slice profile will be standard graphic.

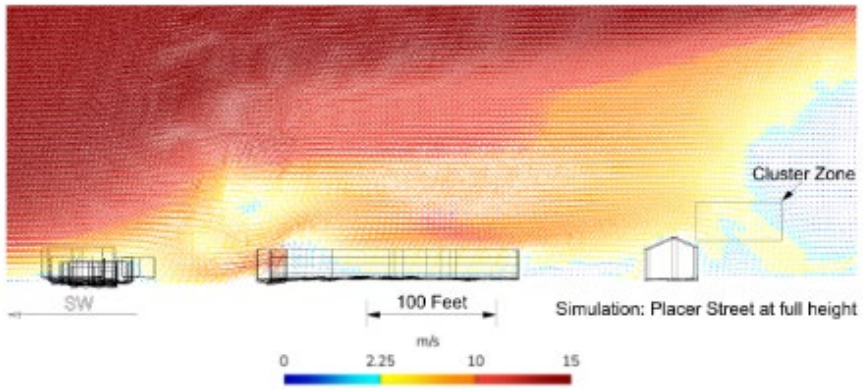
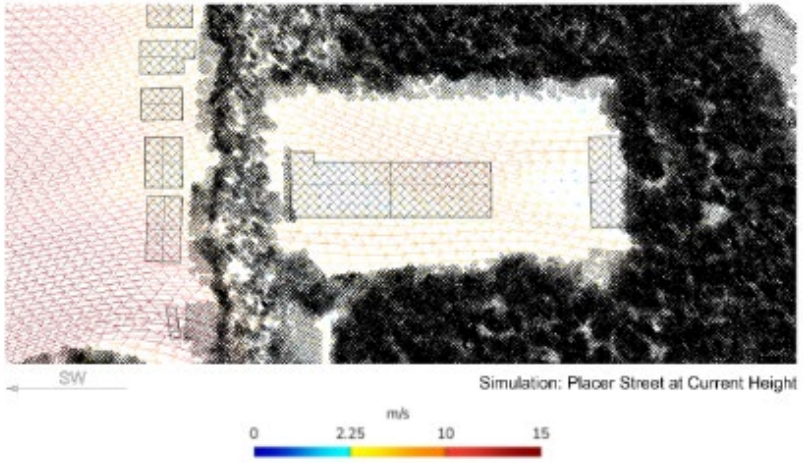


Figure 4. Bird's-eye View of Yard with incoming SW wind, tree voxels shown. Note the changes in wind direction within the yard.



Wind Study

Results – Placer St Edge Critical Height

Figure 5A. Vertical Slice for Current Conditions, canopy voxels not shown

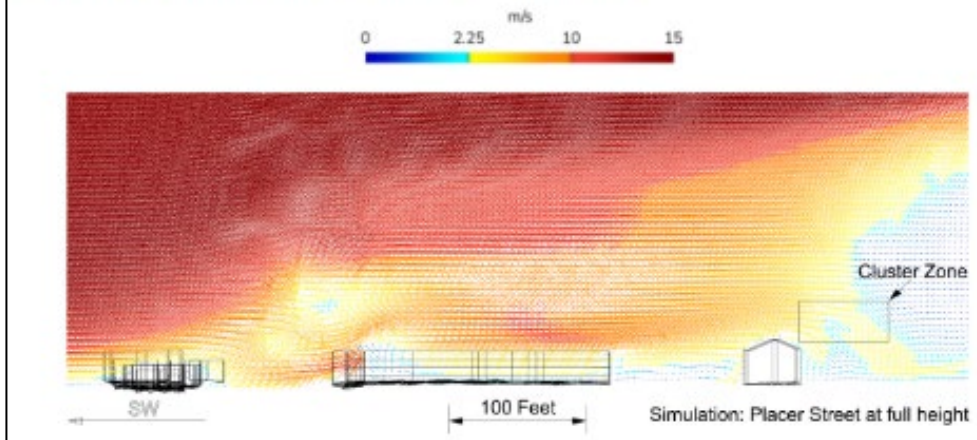


Photo 1. Panorama of Placer Street windbreak looking NE showing large gap in center

Figure 5B. Vertical Slice for Complete Removal.

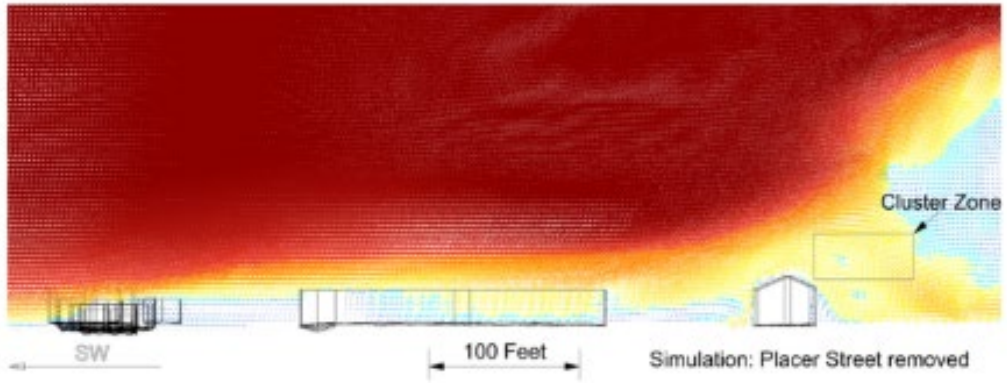
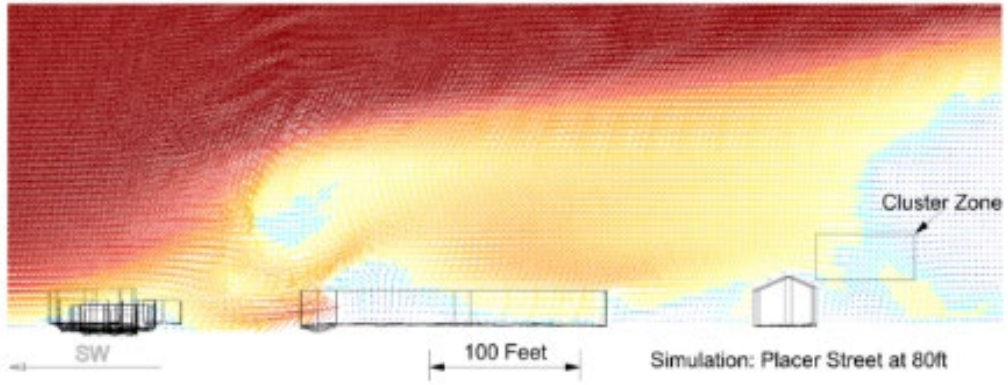


Figure 5C. Vertical Slice for 80 ft Placer Height



Wind Study

Results – Placer St Edge Partial Removal

Figure 19. Scenario 8 Vertical Slice Side Profile

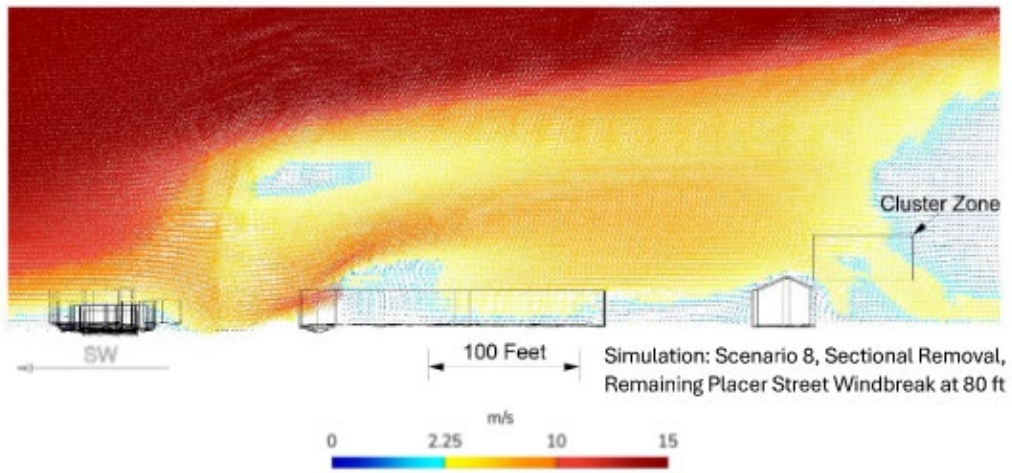


Photo 1. Panorama of Placer Street windbreak looking NE showing large gap in center

Wind Study

Results – North Side

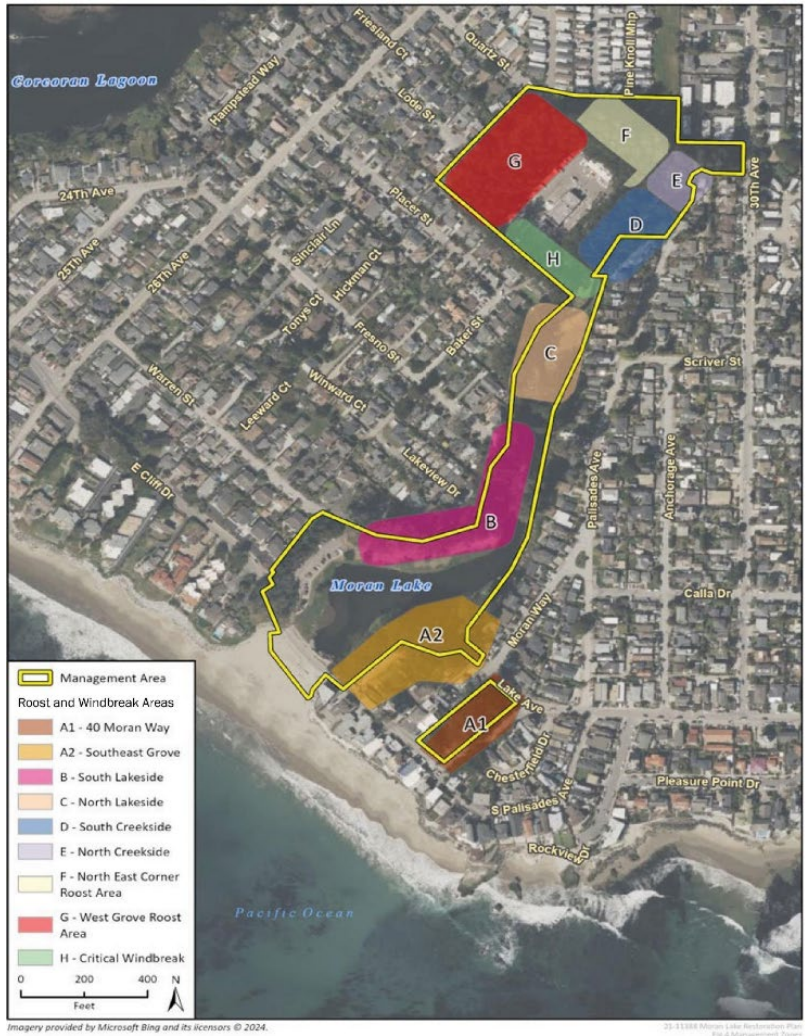


Figure 15A. North-Edge Current Conditions

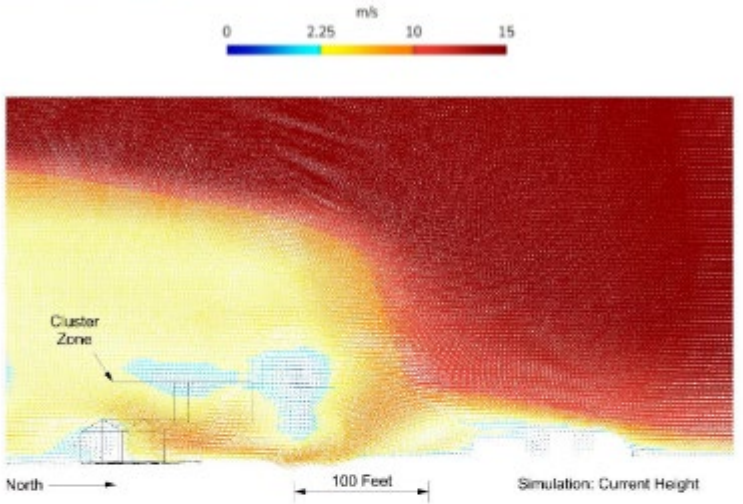
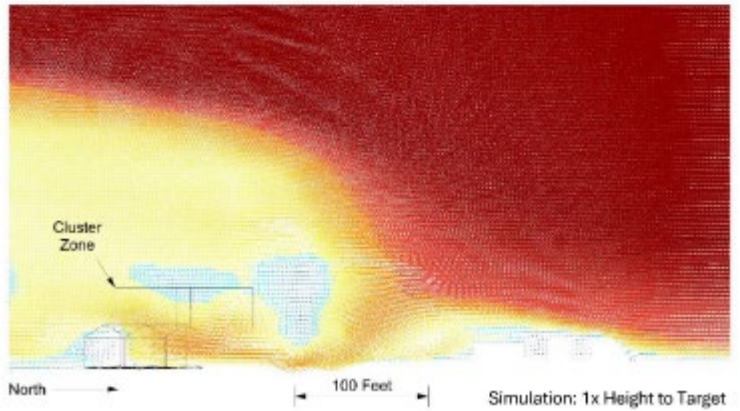
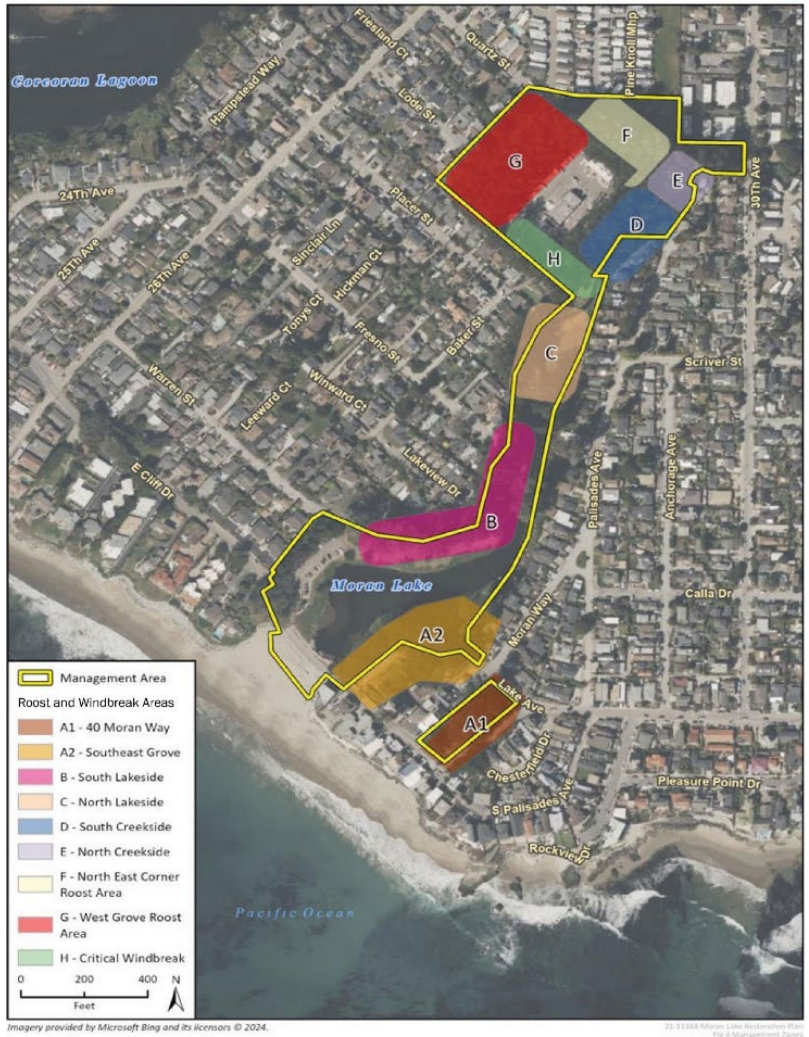


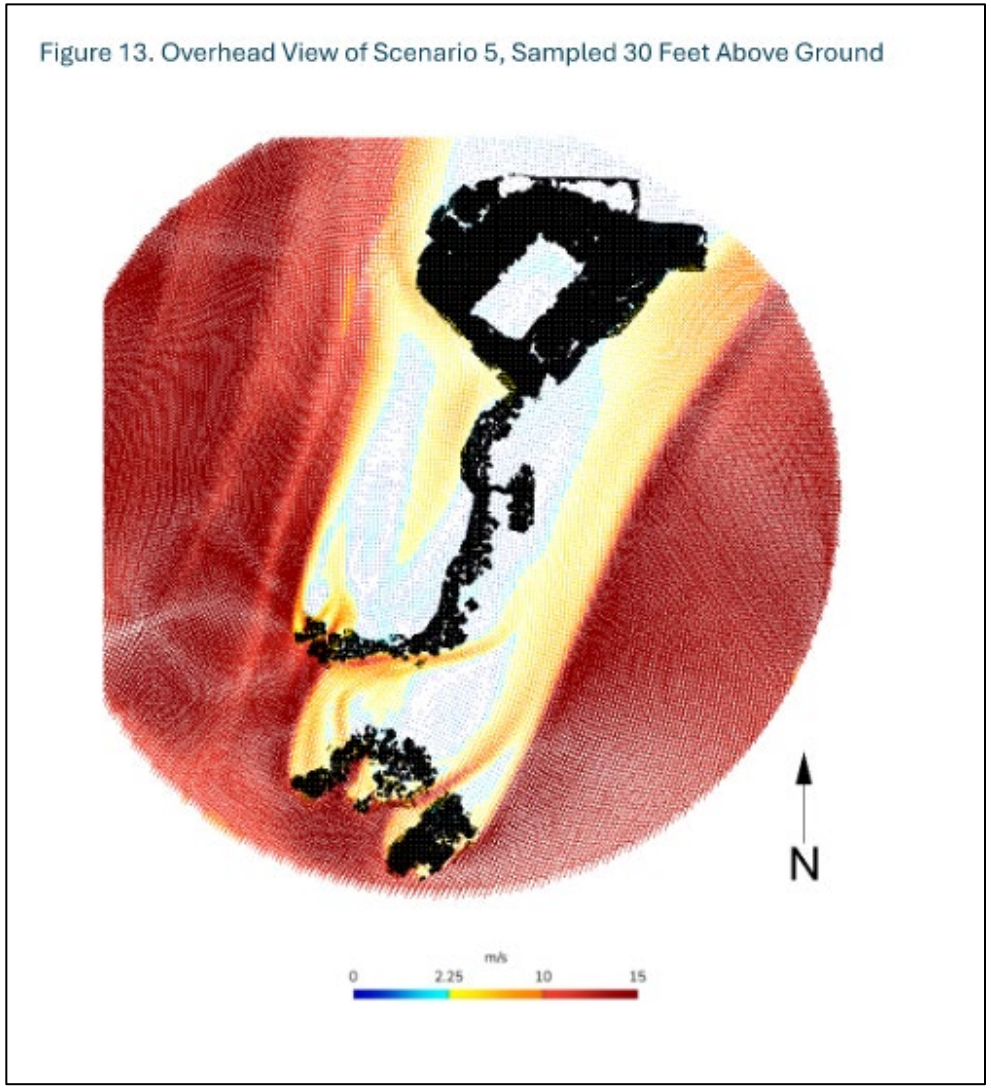
Figure 15B. North-Edge 1x Height to Target



Wind Study

Results – Moran Lake





Proposed Tree/Habitat Management

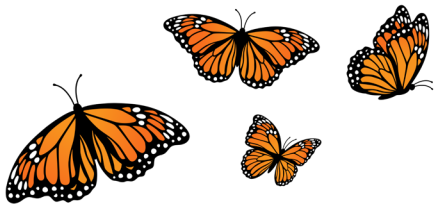
Tree/Habitat Management

Goals of Tree/Habitat Management

1. Prioritization of public safety
2. Protection of monarch habitat
3. Restoration of native species and habitat for biodiversity

Types/Timelines of Tree/Habitat Management

1. Immediate
2. Medium term
3. Ongoing and Proactive
4. Long term

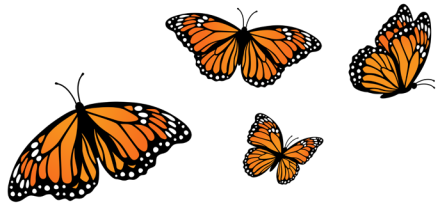


Tree/Habitat Management

Immediate

Ongoing and upcoming tree/habitat management Summer 2025

- Removal of remaining trees at 40 Moran Way (A1)
- Trimming to reduce risk of failure at North and South Lakeside (B and C)

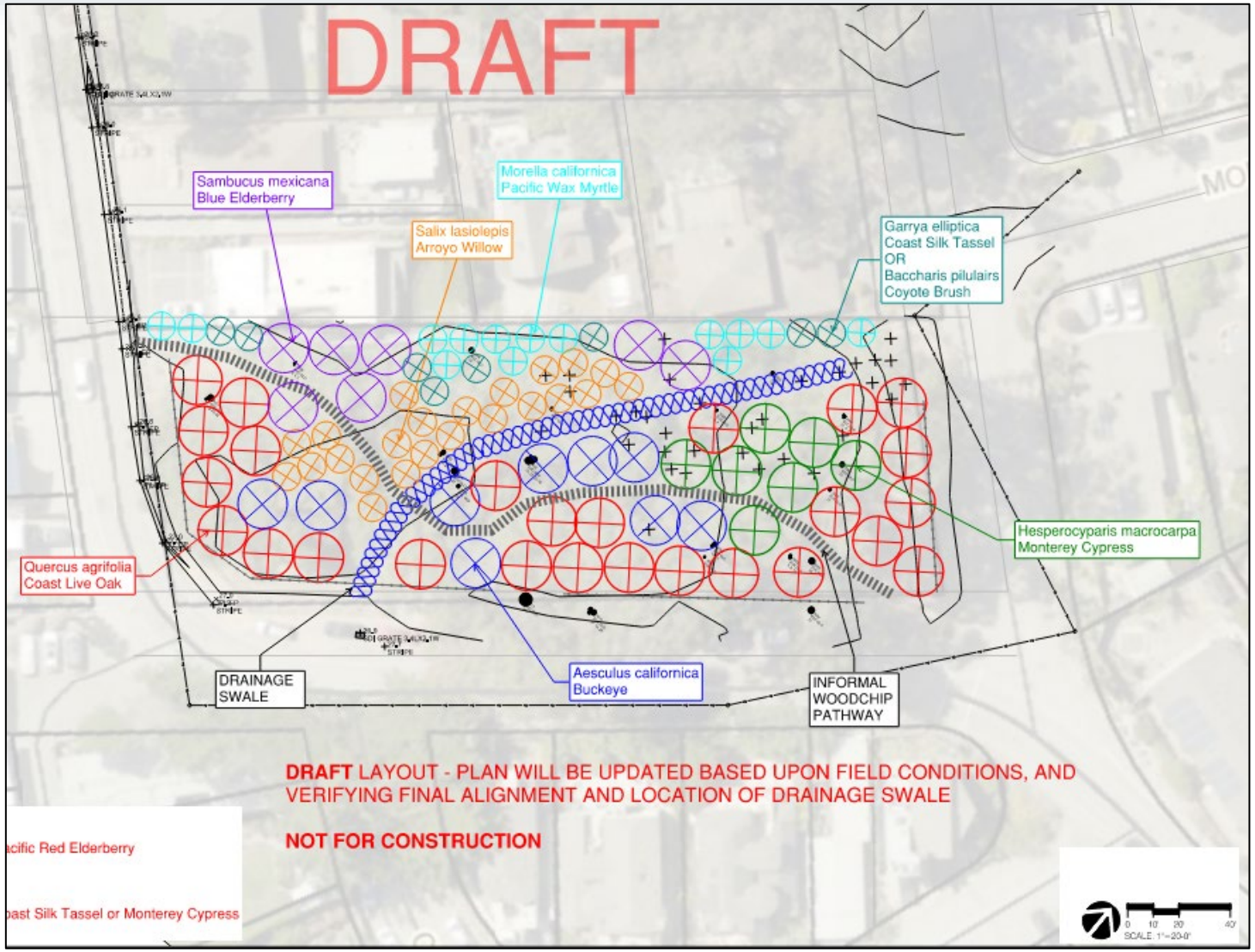


Tree/Habitat Management

Immediate

Upcoming tree/habitat management Summer-Winter 2025

- Drainage improvements at 40 Moran Way
- Habitat restoration at 40 Moran Way
- Infill of windbreak in South Creekside



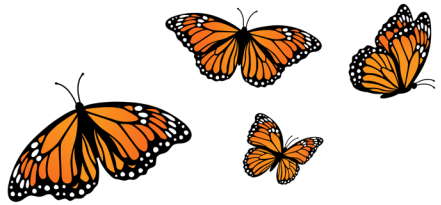
Tree/Habitat Management

Medium-Term

Medium-term work occurring in next ~3 years (funding dependent)

- Trimming Critical Windbreak along Placer St (H)
- Trimming Southeast Grove (A2)

- Infill of windbreak trees along Placer St (H)
- Infill of windbreak trees on North Side of Grove (F)



Tree/Habitat Management

Ongoing

Ongoing, proactive management activities to reduce risk:

- Regular arborist inspections to assess grove risk
  - Scheduled inspections each Spring & Fall
  - Following major storm events as needed
  - Identification of new risks
- Hazard abatement as identified
- Regular maintenance of trimmed trees (~3 years)
- Continued drainage improvements to reduce ponding at base of trees
- Other recommendations by arborist

Ongoing habitat restoration & enhancement:

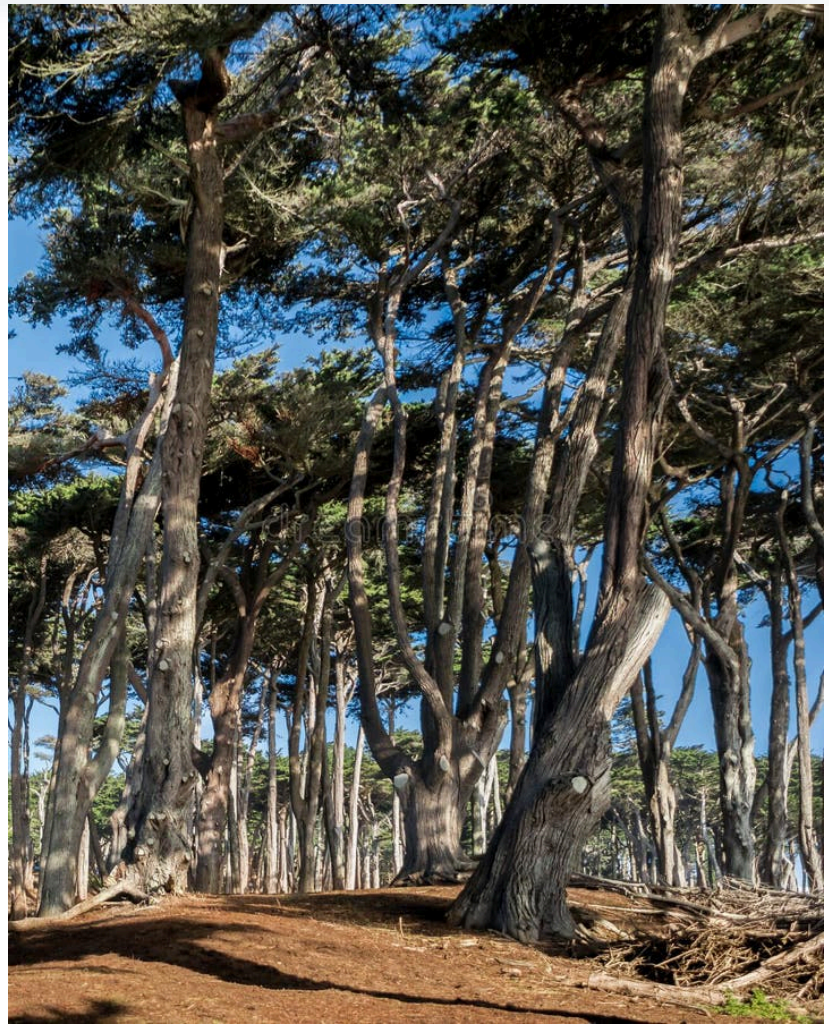
- Native tree/shrub planting and maintenance per HMP
- Removal of invasive species

Tree/Habitat Management

Long-Term

Long-term tree management objectives (30+ years)

- Moran Lake – partial replacement of eucalyptus with native species (once mature)
- Sanitation Property – maintenance of eucalyptus grove



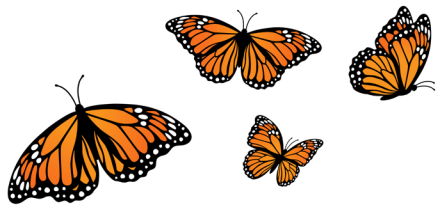
Habitat Management Plan

Next Steps & Schedule

Habitat Management Plan

Next Steps & Schedule:

- Finalization of Habitat Management Plan (Summer 2025)
  - Add findings of wind study to HMP
  - Update Chapter 5.3 – Habitat/Forest Management to include new findings & recommendations
- Complete CEQA (Fall 2025)
- HMP approval at Board of Supervisors (Late 2025)



County Parks' monarch specialists and ISA-certified arborists will continue to assess the management area at least once a year to identify any potential issues and develop strategies for planting or replanting of trees that comprise the habitat.

The management area will be monitored for a change in predators, such as increased rat dens and observations of Steller's jays. If predators increase the County will consult with the monarch specialist regarding changes that can be made. The management area will continue to be kept clear of trash and food.

Tools that can be used as the standard protocols and data sheets for assessing grove health (Habitat Assessments) are available at www.westernmonarchcount.org and are included in Appendix D.

Action	Year 1	Every Year	Every 3 to 5 Years
Monarch Habitat Monitoring	X	X	

5.3 Habitat/Forest Management

Management of the overwintering habitat will be approached as a forest versus single trees and in compliance with Section 2.1.3. above. The forest is comprised of thousands of trees; it is dynamic and changes continually due to a number of factors, including weather and storm events. As discussed in Section 4.3, the spacing and composition of the tree canopy is what creates the overwintering habitat and wind protection for the monarchs. Because of this, replacing trees that have been removed or succumb to die-off with another single tree may or may not be advisable. The number, placement, and species of the replacement trees will be determined in collaboration with a certified arborist and the County's monarch specialist. This will be done with the primary goal of maintaining the health and wind protection dynamics of the management area.

The recommendations below for Year 1 have been developed in collaboration with County Parks staff, the County's ISA-certified arborists, and the County's monarch butterfly specialists and entomologists after viewing the management area conditions and dynamics as a group in December 2023. Figure 6 shows the general approach for planting replacement trees and nectaring plants, and locations where drainage management is needed.

The most important forest management action is to plant trees that will add/replace canopy that was previously lost or is absent in the eucalyptus groves and windbreaks. Specific management recommendations are addressed in subsections below that correspond to the different areas shown on Figures 4 and 5.

Hazardous trees will be addressed as quickly as possible by removing or trimming the trees to alleviate risk to the public and the roosting and basking sites. If, at some time in the future the trees become crowded, forest thinning could be considered to promote an increase in the health condition and vigor in the grove. Thinning will only be done with the input of the certified arborist and monarch butterfly specialist. Nectaring plants will be planted to boost overwintering population numbers. A simple drainage system will be created at the southeastern windrow, at the 40 Moran Way parcel, and in other problematic areas around the margins of the lagoon to reduce ponding water and saturated soils at the tree bases. See section 5.3.5 for more information on drainage.

Questions?

Thank You