Authorization of the Completion of the Upland Monitoring Initiative

SCV GSA Board Meeting
June 2, 2025
Item No. 3.1

GSP IMPLEMENTATION AND DATA GAPS

1. Water levels within the GDE area
2. Reference point elevation for all monitoring locations, including the riverbed in selected areas by GDE monitoring wells
3. Subsidence benchmarks for monitoring land surface elevation
4. Upland GDE verification and assessment
5. Domestic well water quality

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UPLAND HABITAT DATA GAP

Stakeholder Input During GSP Development

- Concern about oak tree die off in upland areas including near Interstate 5 and Placerita Canyon
- Note- Leading up to GSP adoption by the GSA Board (January 2022) the basin had been in critical dry year conditions. (Critical Dry Years in WY 2021 and 2022)

GSA Team Consideration at that time

- GSA Team did not see a correlation between groundwater extraction and upland habitat health, but agreed data gaps existed
- An implementation step was to work to fill the data gaps and then determine if an ongoing monitoring program was necessary

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WORK CONDUCTED

- 2023 and 2024
  - Field Studies by Registered Consulting Arborist
  - Three Locations in 2023, Four in 2024
  - Findings about tree health
    - Evidence of past drought stress, and/or fire damage
    - Wetter conditions in 2023 contributed to tree recovery
  - Oak tree root systems depend on soil moisture in the unsaturated soil (the vadose zone). Not contact with the groundwater table.
  - Review of Geology

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KEY FINDING

“The oak woodlands selected in this study are all located in upland habitat regions that are dependent on water located in the vadose zone. The vadose zone is a undersaturated portion of the subsurface zone that is located above the groundwater table. The hydration of the vadose zone is highly dependent on precipitation as it is a link for water movement from the land surface to the underlying aquifer. Vegetation that occurs above the vadose zone are generally drought tolerant for small periods of time however during longer drought periods this zone is desiccated. During these extended drought periods vegetation, particularly coast live oaks and valley oaks will experience drought stress resulting in dieback. Overall, these oak woodlands are not dependent on water located in the groundwater table but more so on water available within the vadose zone where water availability is highly related to current precipitation patterns.”

Ryan Gilmore, Registered Consulting Arborist, ESA

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CONSIDERATION OF SOIL AND GEOLOGIC INFORMATION

Quigley Canyon, Riverdale Park, Wildwood Canyon

- Similar soil and geologic conditions in these three areas
- Tree root systems in soil formed in alluvium, or Saugus Formation

Placerita Canyon

- Different geologic terrain than first three areas
- Tree root systems in soil formed in alluvium, Saugus Formation, or crystalline bedrock

- Groundwater deeper than tree root systems- depth on the order of 10s of feet or more
- Some locations may have increased groundwater elevations following infiltration of precipitation, but no indication of persistent high groundwater conditions

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STUDY AREAS

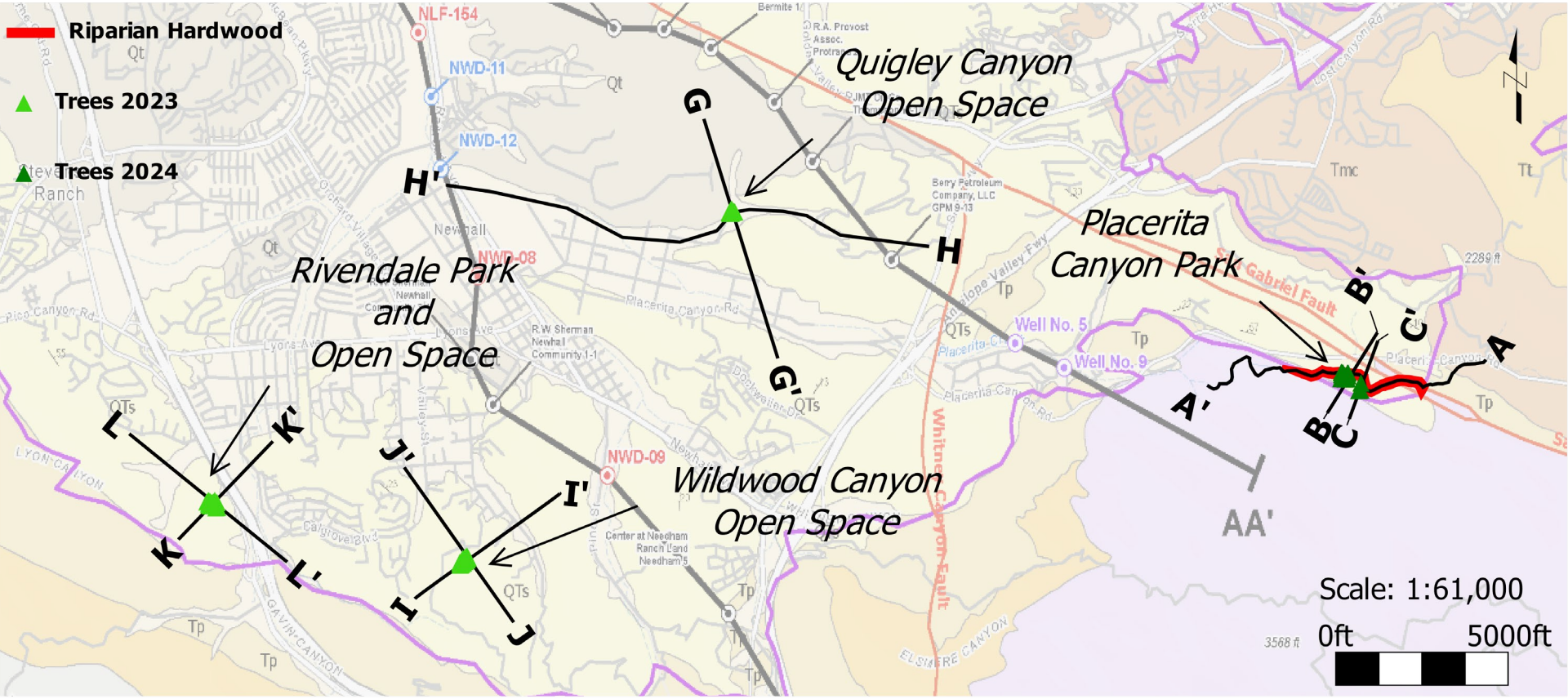
SOURCE: ESA, 2024

Santa Clara River Watershed Oak Woodland Monitoring Project

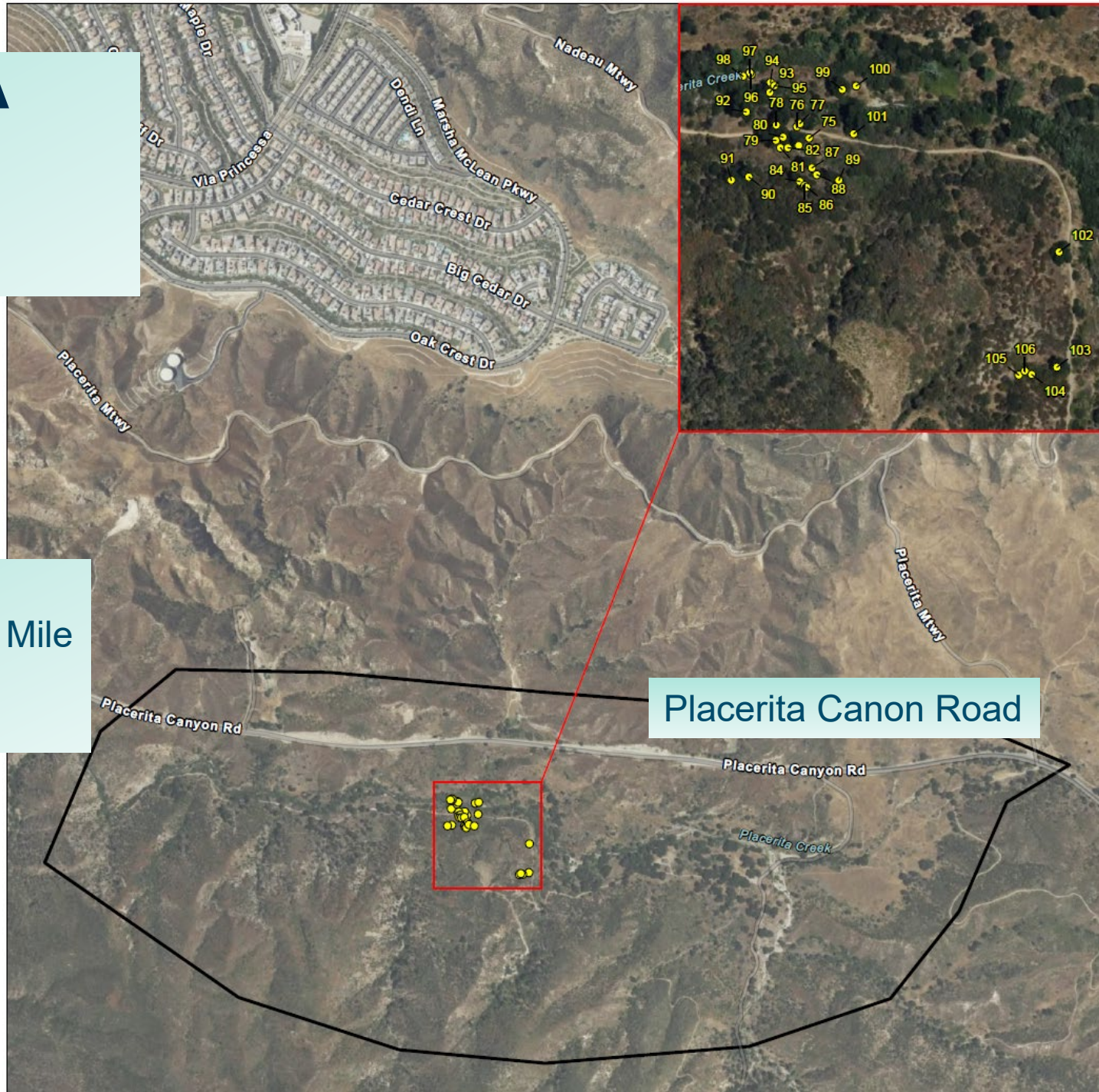
Figure 2
Project Vicinity

ESA

BASE MAP


Riparian Hardwood
Trees 2023
Trees 2024
Quigley Canyon Open Space
Placerita Canyon Park
Rivendale Park and Open Space
Wildwood Canyon Open Space
NLF-154
NWD-11
NWD-12
NWD-08
NWD-09
Well No. 5
Well No. 9
Whitney Canyon Fault
San Gabriel Fault
G
G'
H
H'
I
I'
J
J'
K
K'
L
L'
A
A'
B
B'
C
C'
AA'
Scale: 1:61,000
0ft
5000ft

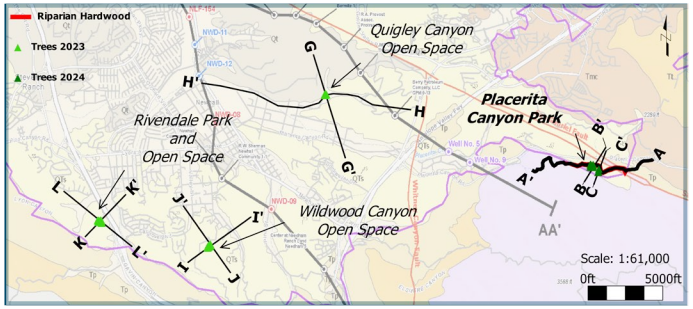
PLACERITA CANYON LOCATION

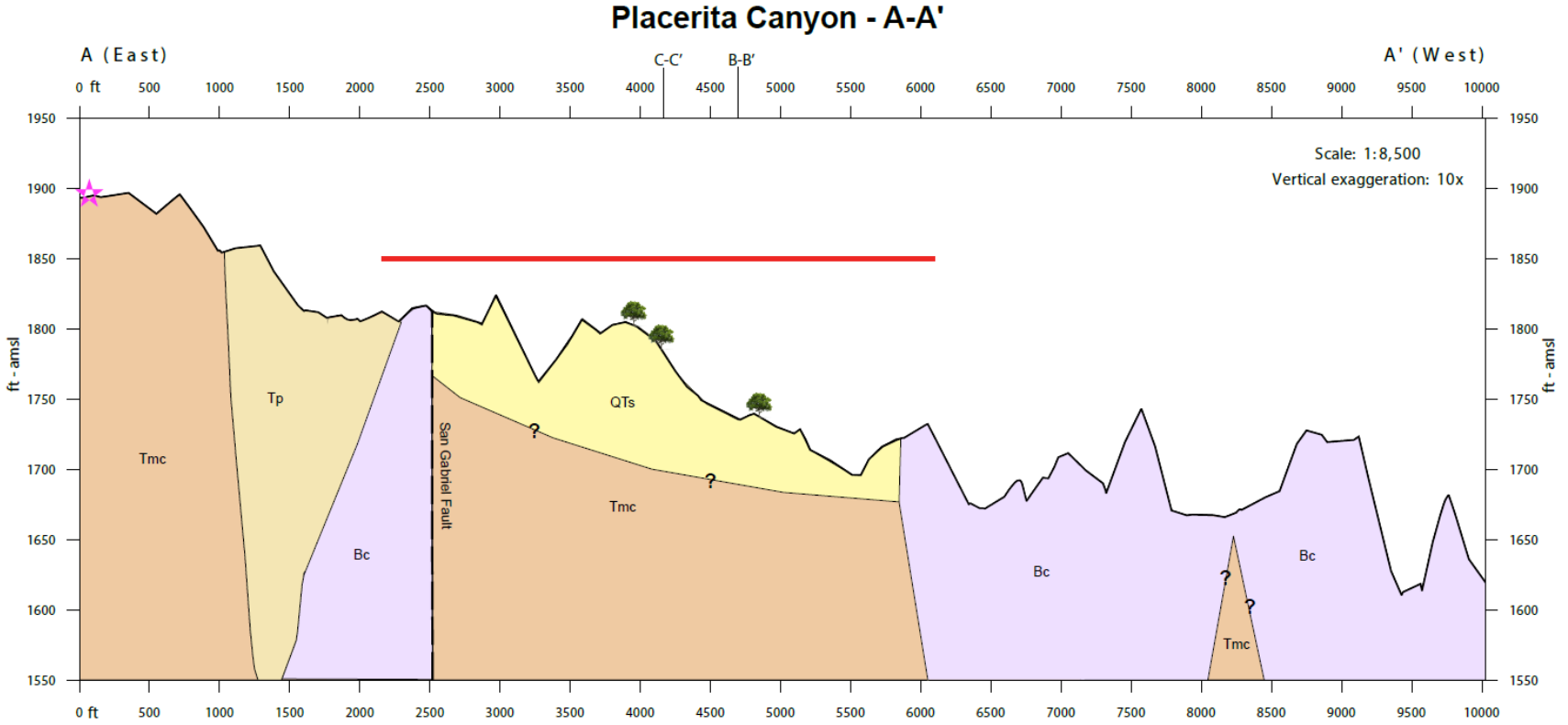


Placerita Canyon Nature Center ~.9 Mile Downstream from Study Site

Placerita Canon Road

PLACERITA CANYON - A-A'





Trees 2024

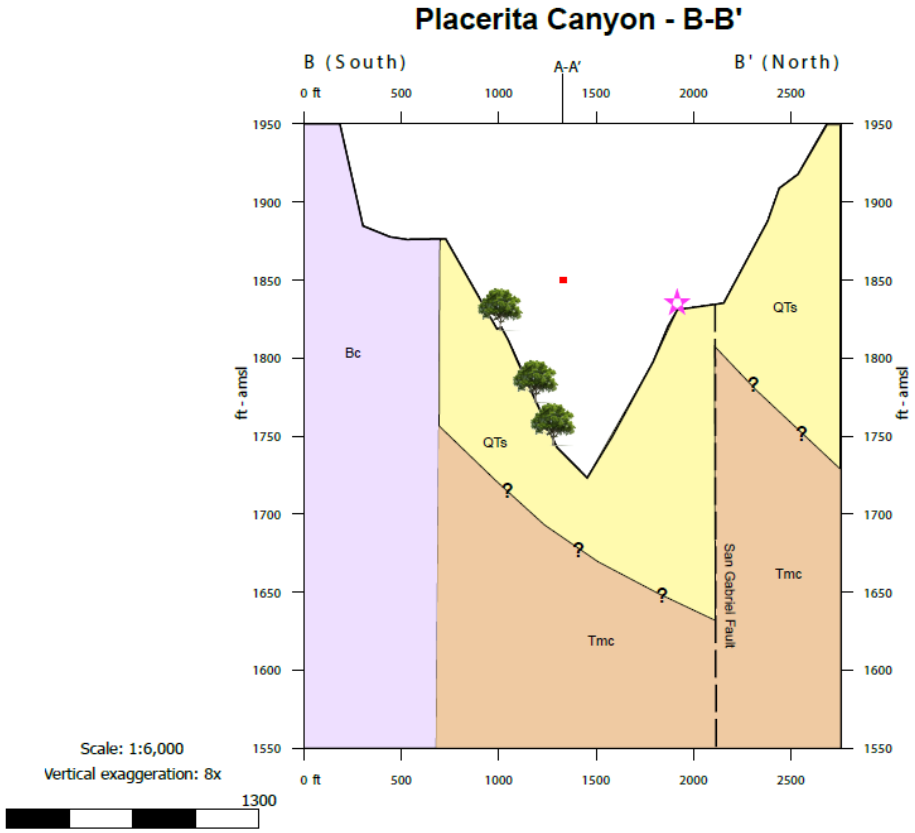
GM faulted
- 5. Tp - Pico Formation
- 9. Tmc - Mint Canyon Formation
- 10. Bc - Basement Complex
- 3. QTs - Saugus Formation

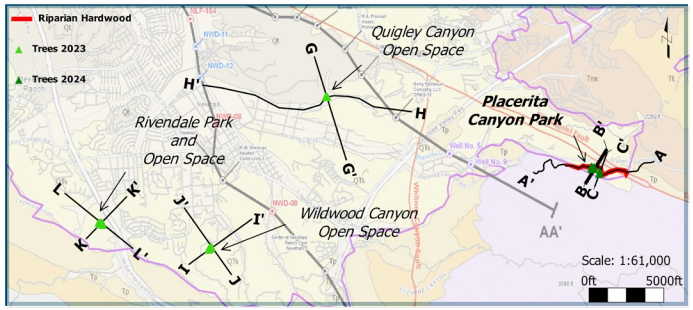
Fault System
- San Gabriel Fault

Roads
- Placerita Canyon Road

Surfaces
- Riparian Mixed Hardwood

PLACERITA CANYON B-B’





Trees 2024

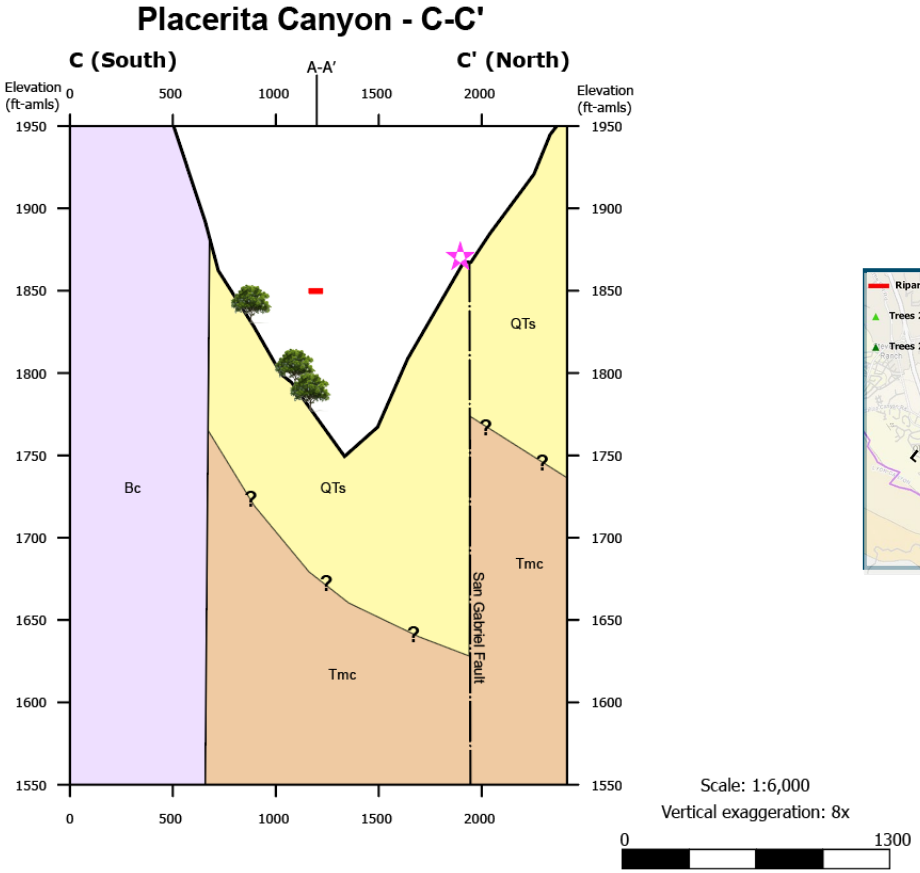
Surfaces
- Riparian Mixed Hardwood

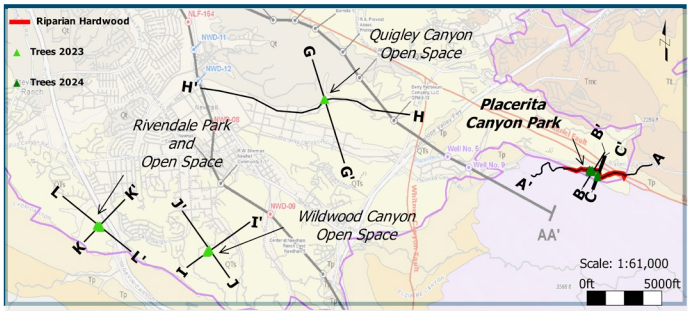
GM faulted
- 9. Tmc - Mint Canyon Formation
- 10. Bc - Basement Complex
- 3. QTs - Saugus Formation

Fault System
- San Gabriel Fault

Roads
- Placerita Canyon Road

PLACERITA CANYON - C-C'





Trees 2024

Surfaces
- Riparian Mixed Hardwood

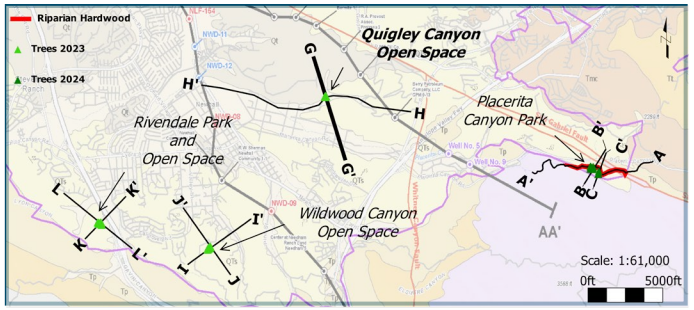
GM faulted
- 9. Tmc - Mint Canyon Formation
- 10. Bc - Basement Complex
- 3. QTs - Saugus Formation

Fault System
- San Gabriel Fault

Roads
- Placerita Canyon Road

QUIGLEY CANYON OPEN SPACE

QUIGLEY CANYON - G-G'



Trees 2023

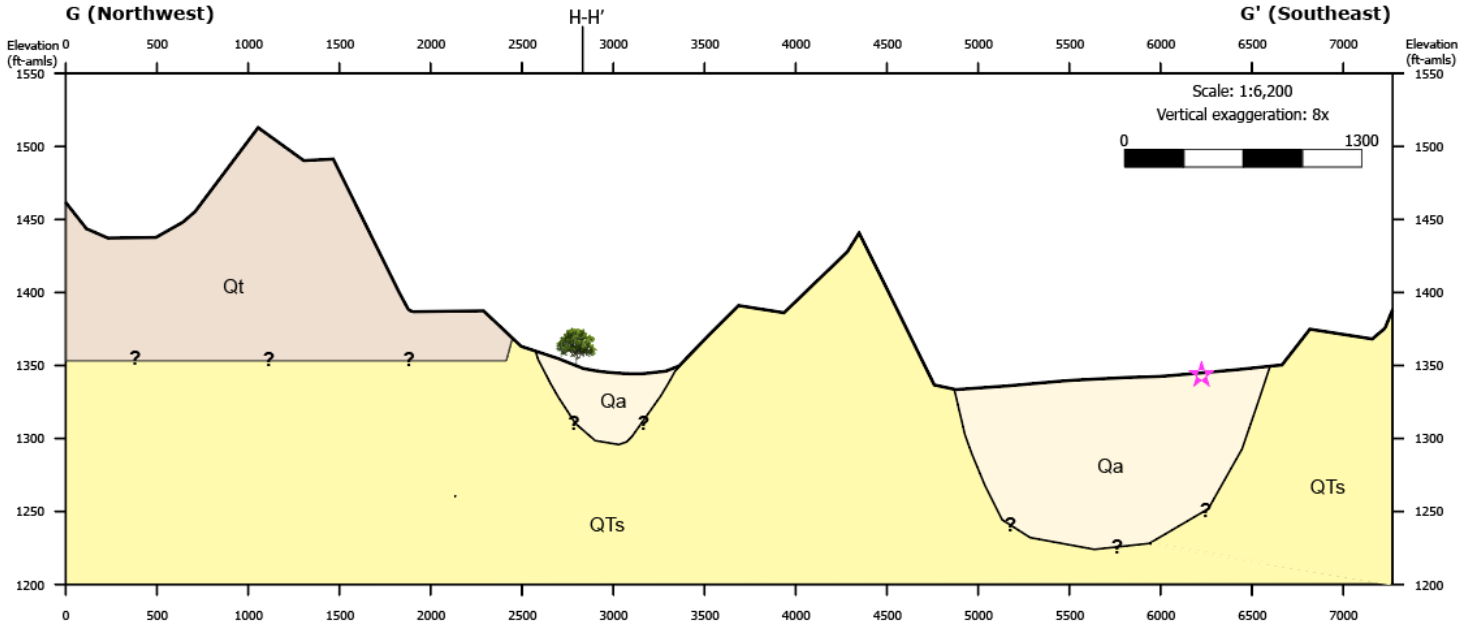
GM faulted

- 1. Qa - Undifferentiated Alluvium
- 3. QTs - Saugus Formation
- 2. Qt - Terrace Deposits

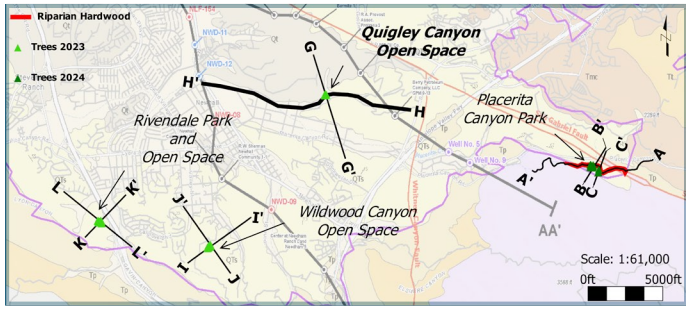
Roads

- Placerita Canyon Road

Quigley Canyon - G-G'



QUIGLEY CANYON - H-H'



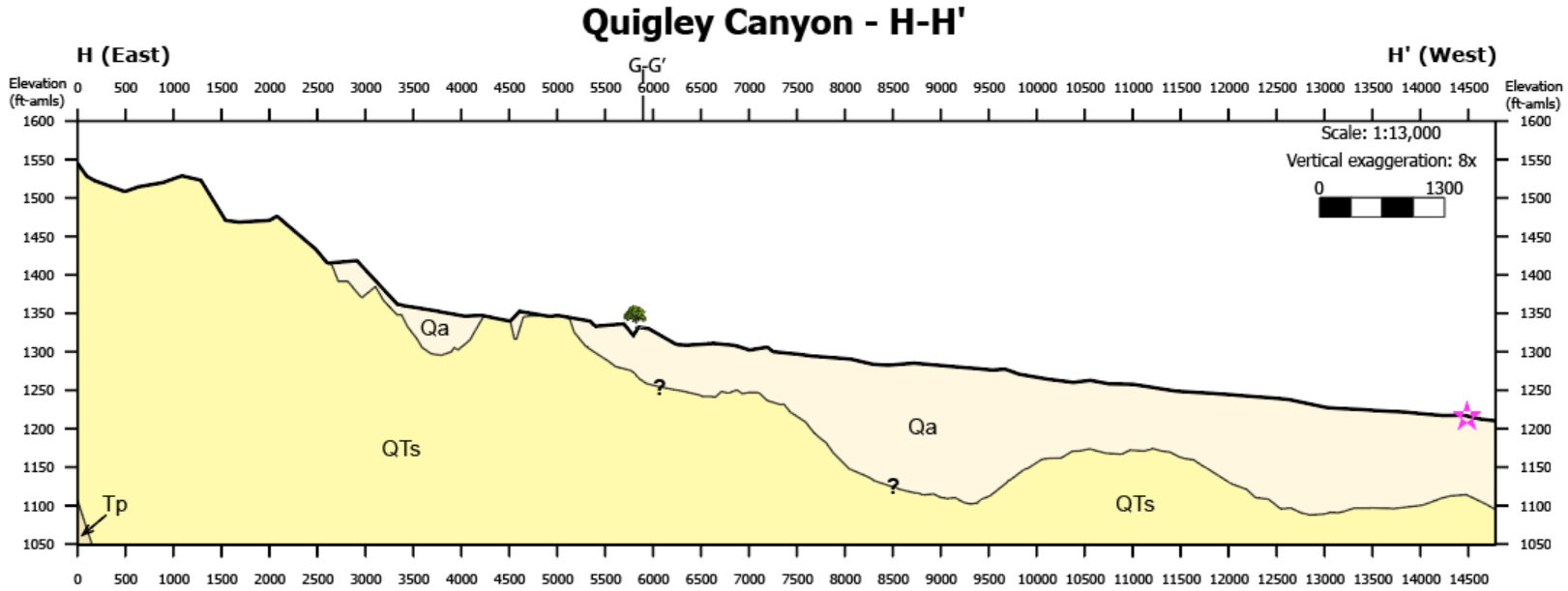
Trees 2023

GM faulted

- 1. Qa - Undifferentiated Alluvium
- 3. QTs - Saugus Formation
- 5. Tp - Pico Formation

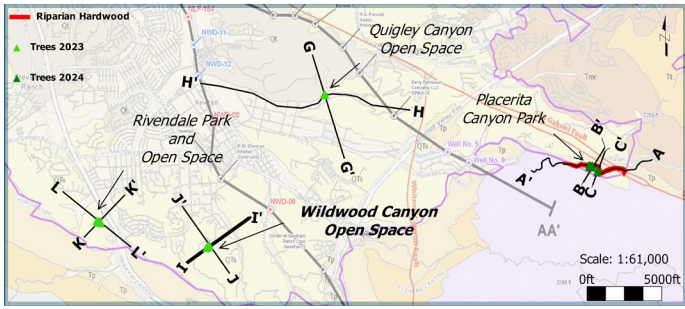
Roads

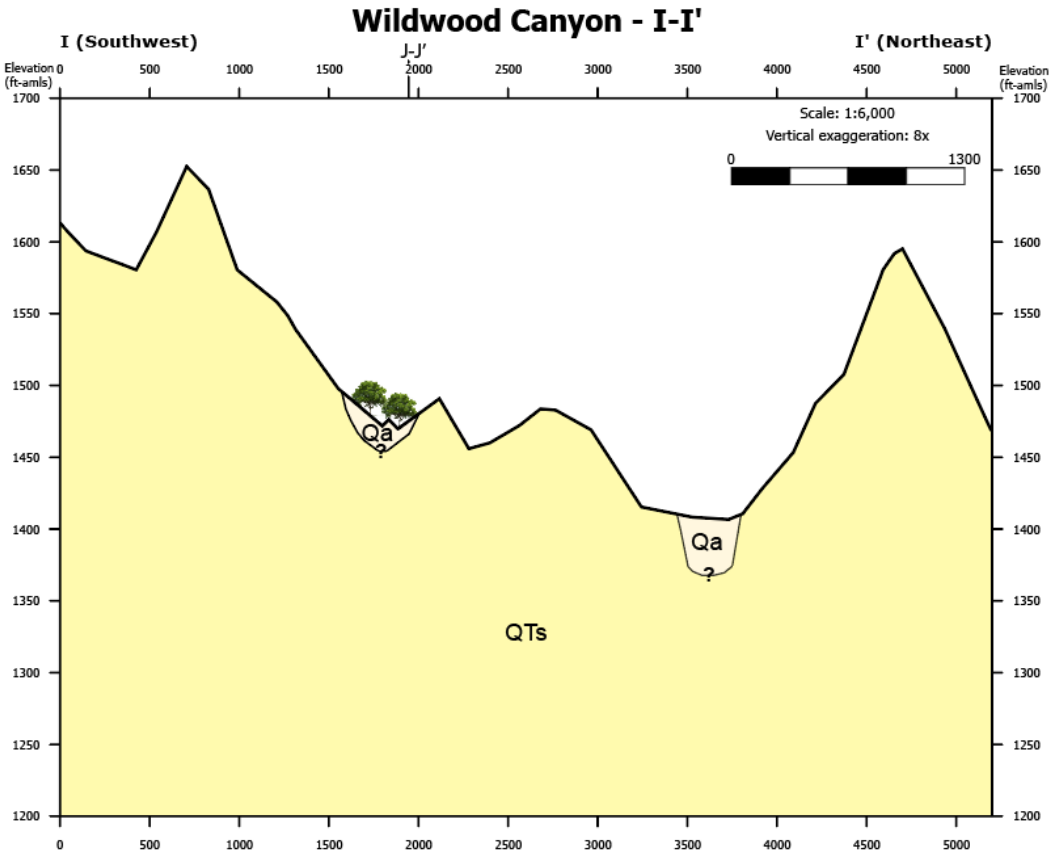
- Railroad Avenue



WILDWOOD CANYON OPEN SPACE

WILDWOOD CANYON - I-I'





Trees 2023

GM faulted

1. Qa - Undifferentiated Alluvium
3. QTs - Saugus Formation

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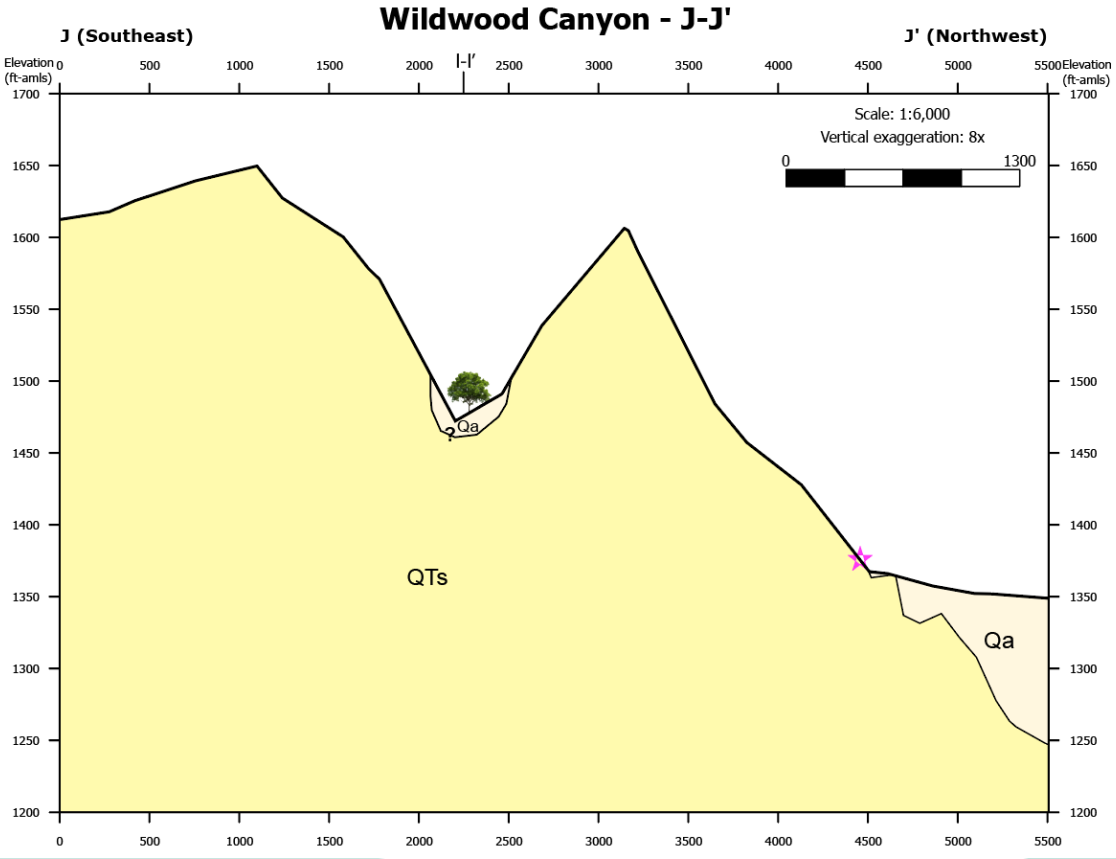
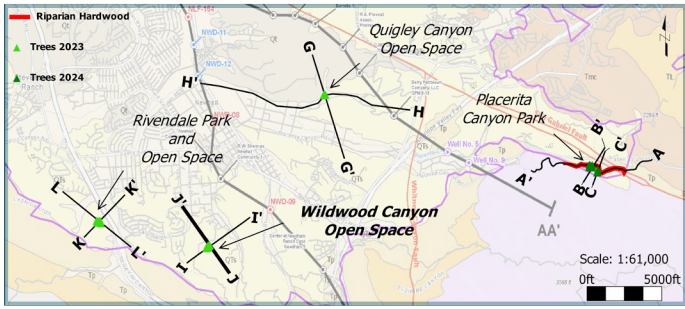
WILDWOOD CANYON - J-J'





Trees 2023

GM faulted

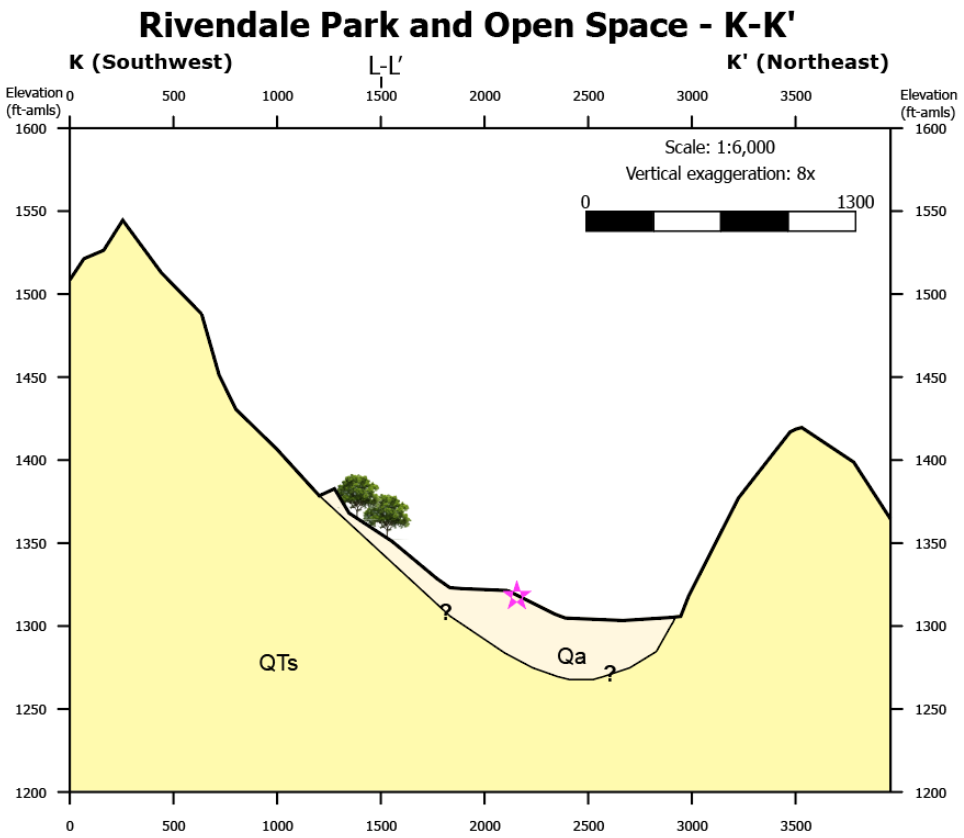
1. Qa - Undifferentiated Alluvium
3. QTs - Saugus Formation

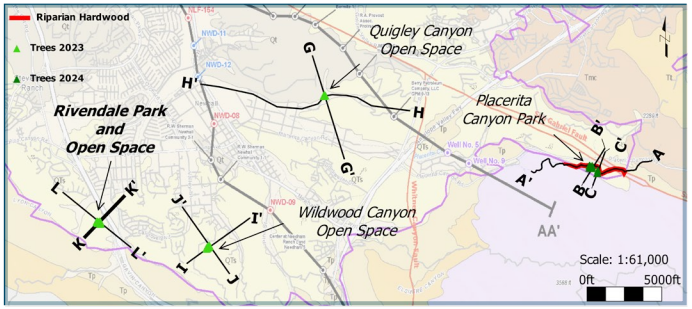
Roads

Calgrove Blvd

RIVENDALE PARK AND OPEN SPACE

RIVENDALE PARK AND OPEN SPACE - K-K'





Trees 2023

GM faulted

1. Qa - Undifferentiated Alluvium
3. QTs - Saugus Formation

Roads

Interstate 5

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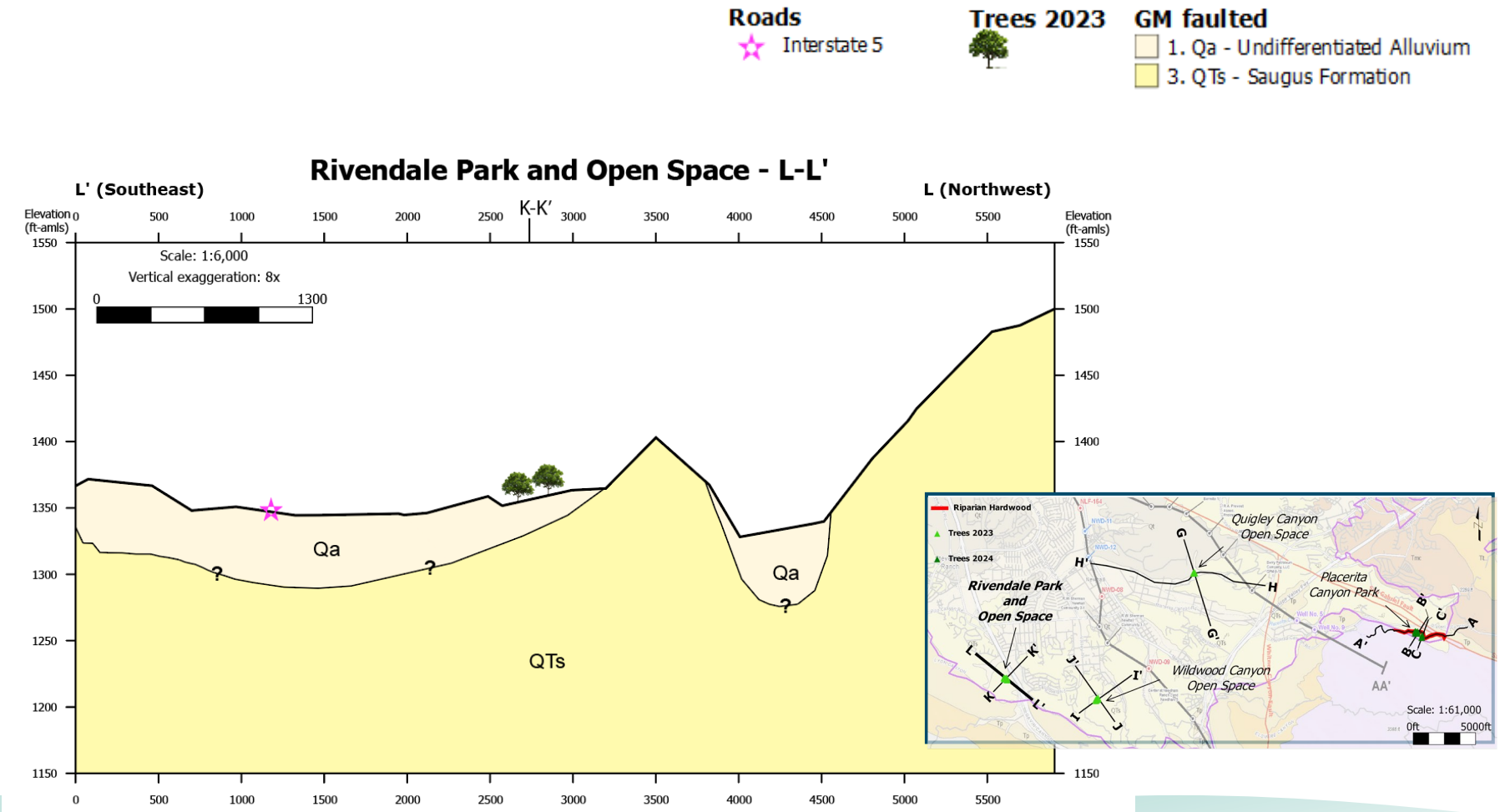
RIVENDALE PARK AND OPEN SPACE - L-L'



CONCLUSION

- Two years of upland monitoring completed
- Oaks rely on soil moisture in the unsaturated zone
- Sensitive to dry conditions, fire obviously, and show recovery in wet periods
- Evaluation of soils and geology at sites find groundwater depths in the 10s of feet or more
- We do not find evidence that groundwater extraction affects these upland habitats

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RECOMMENDATION

That the Board of Directors authorize completion of the upland monitoring initiative described above

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GSA