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Technical Memorandum

September 27, 2022 Project# 25492

To: Darin Grossi, Dore Bietz, and Shannon Thaggard
Tuolumne County Transportation Council and Tuolumne County Office of Emergency Services

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Project: TCTC Evacuation Analysis Study

RE: Task 3: Evacuation Circulation System Improvements

INTRODUCTION

This memorandum presents summary sheets of the nine potential evacuation circulation system improvements for Tuolumne County. These improvements were identified and prioritized through the roadway network deficiency analysis documented in the *Task 3: Identification of Roadway Network Deficiencies Technical Memorandum* (July 2022). The prior memorandum documented modeled evacuation constraints for the seven wildfire scenarios modeled by Jensen Hughes based on input from the Project Development Team (PDT), Fire Safety Advisory Committee, Tuolumne County Transportation Council and Tuolumne County Office of Emergency Services staff.

The seven wildfire scenarios identified locations, such as Washington Street in Sonora, that were congested under multiple scenarios, as well as sets of locations with similar characteristics where similar treatments would be effective. Based on these results, nine representative locations were chosen in consultation with staff to best address potential evacuation capacity constraints and illustrate potential strategies that could be employed across the County to help alleviate evacuation congestion. The nine improvement locations include:

1. CA-49/108 West of Sonora
2. CA-120 West of Groveland
3. Washington Street in Sonora
4. Phoenix Lake Road
5. Pine Mountain Lake
6. Tuolumne City & Tuolumne Road
7. Pinecrest and Strawberry
8. Mill Villa
9. Southwest Tuolumne County

Each improvement project is summarized in the following cutsheets. Each project summary provides:

- context for the improvement's selection;
- the potential treatment strategy and description;
- mapping of the project extents; and,
- typical sections (where applicable).

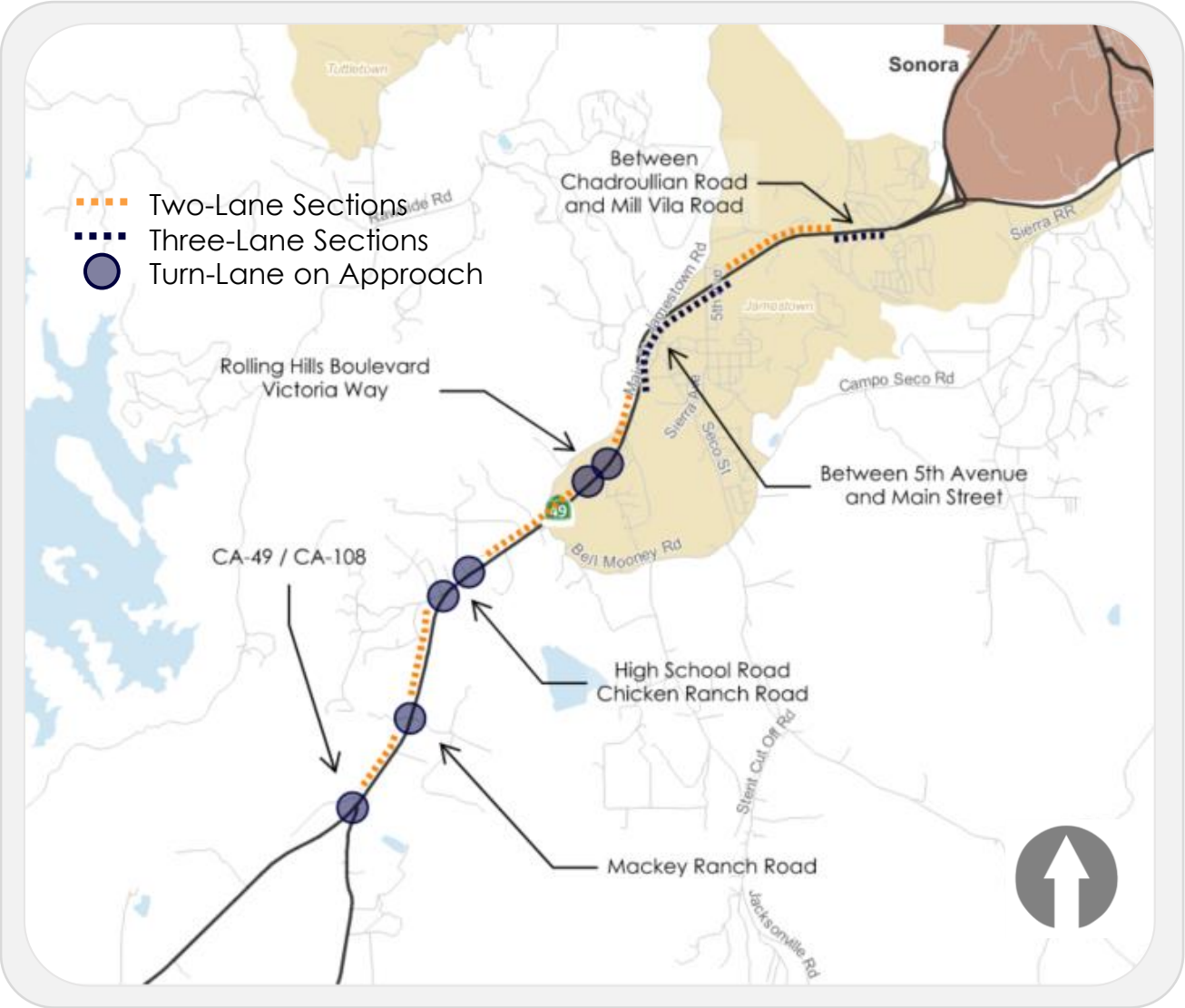
The projects were selected to present multiple strategies and contexts throughout the County while also addressing the locations most likely to be constrained for evacuation capacity in the identified wildfire scenarios. More information on the modeled capacity constraints and wildfire scenarios can be found in the *Task 3: Identification of Roadway Network Deficiencies Technical Memorandum* (July 2022) and additional discussion of potential strategies identified can be found in the *Task 3: Strategies for Increasing Evacuation Capacity and Efficiency Technical Memorandum* (May 2022).

CA-49/108 West of Sonora
Treatments: Reversible Lane / Contraflow & Expanded Shoulder

Context: Primary egress route for evacuation traffic leaving the County. Modeling indicates operational limits during evacuations. The route currently includes a mix of two-lane cross-sections with shoulders and three-lanes with a turn lane.

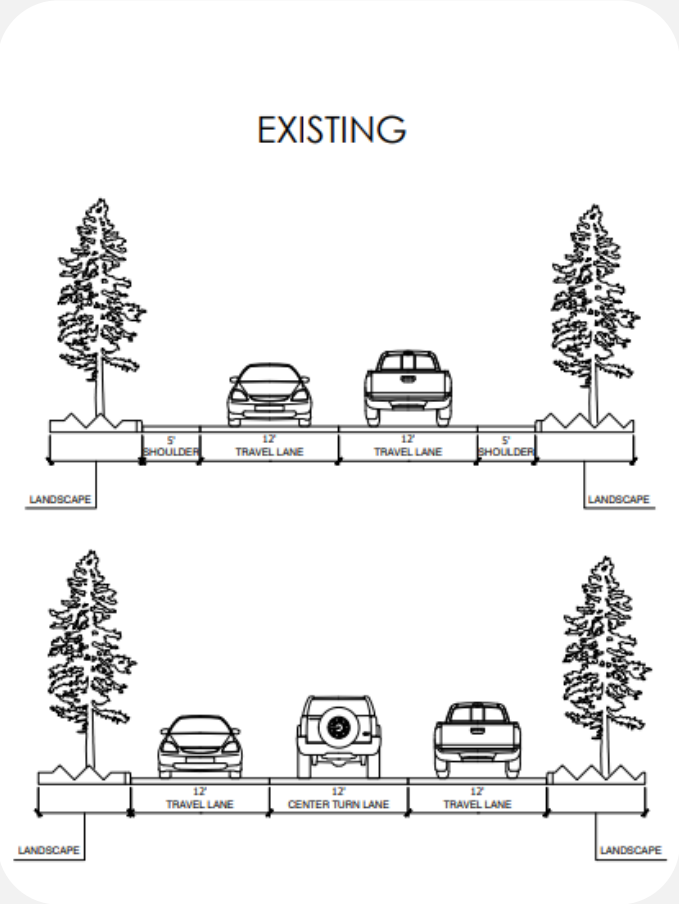
Treatment: Consider using coning to convert two-lane sections of the corridor to three lanes using the shoulder. Where necessary, shoulder(s) may need to be expanded to provide sufficient roadway width. Convert left-turn lane to an evacuation lane. Consider maintaining one lane for emergency vehicle inbound access. When applying the treatment, consider closing or managing minor intersections based on roadway alignment, available staffing, and access to alternative routes.

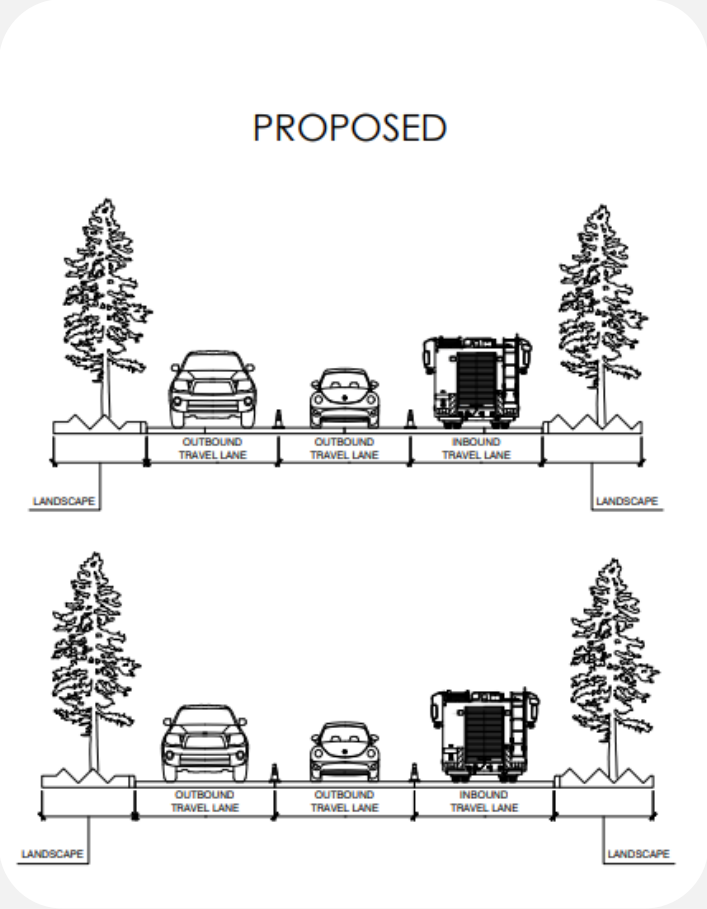
** Cross-section detail provided on next page.*



** Note long-term plans to widen CA-49 / CA-108 to five-lanes as noted in the RTP would also increase evacuation capacity. However, portions of the widening are not currently funded.*

CA-49/108 West of Sonora
Treatments: Reversible Lane / Contraflow & Expanded Shoulder



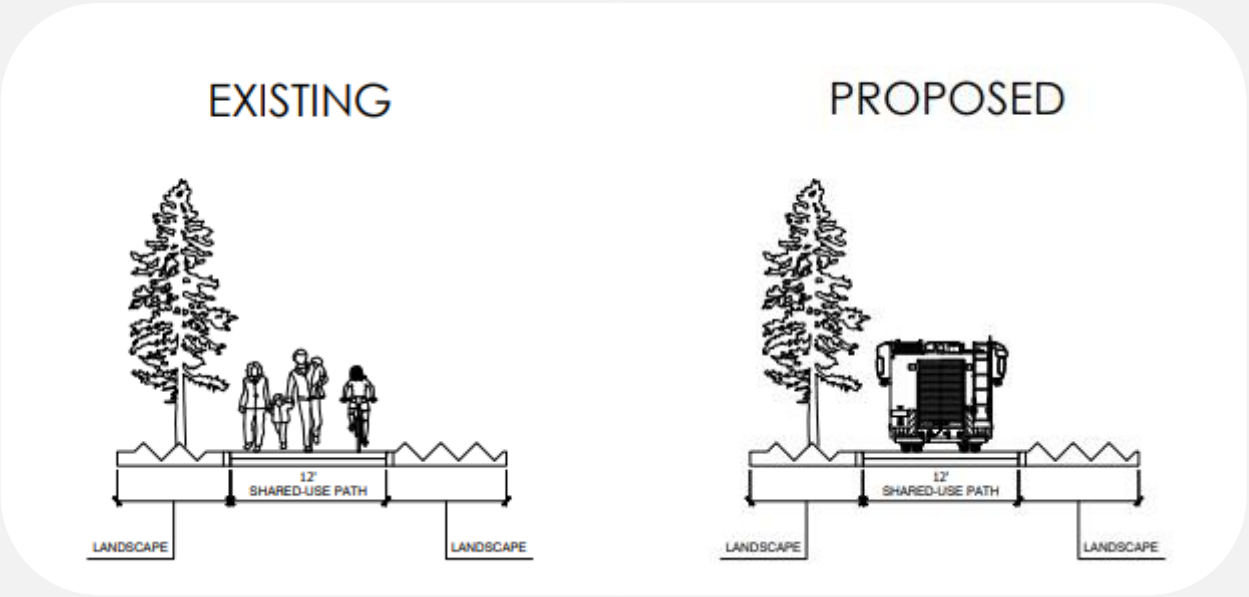


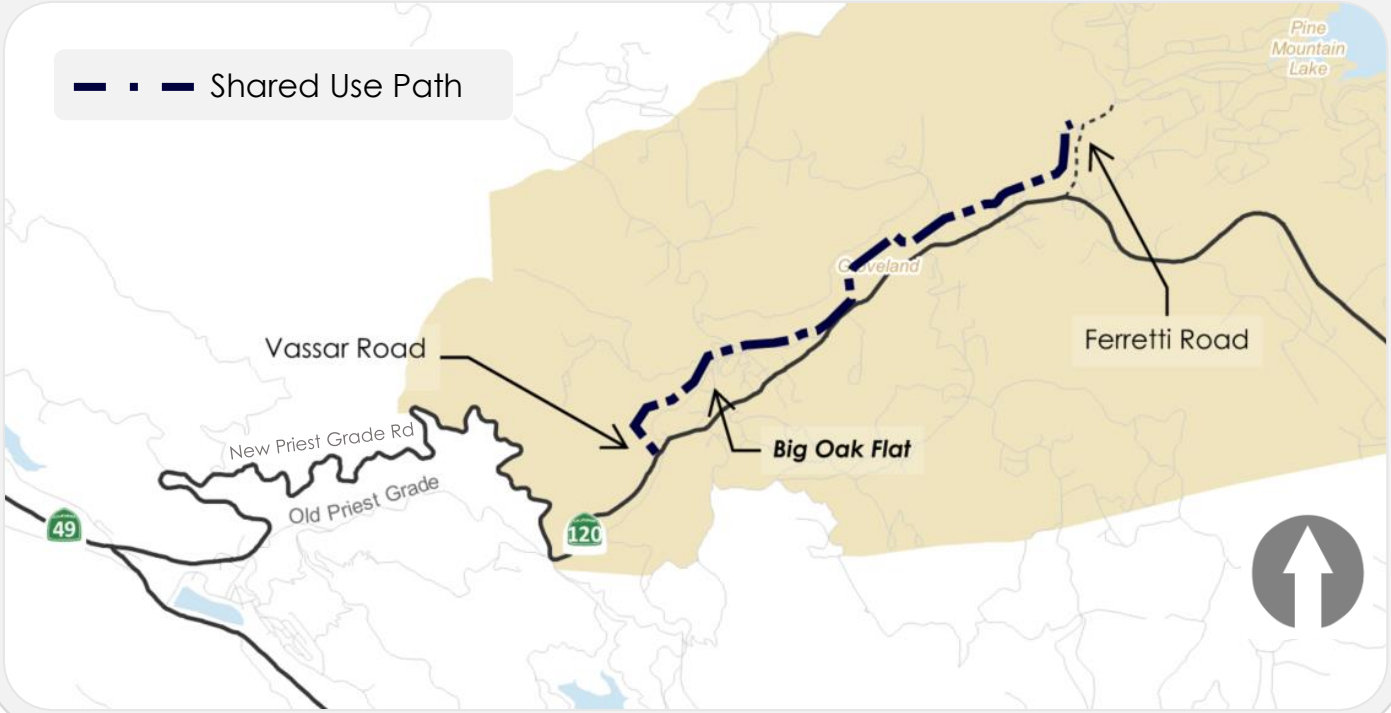
CA-120 West of Groveland
Treatment: Shared Use Path that Supports Vehicles

Context: Primary egress route for traveling west from Pine Mountain Lake and Groveland area. Modeling indicates greatest potential for congestion during evacuations immediately south of Pine Mountain and parallel to Big Oak Flat.

Treatment 1: Consider constructing the Groveland Regional Trail Project to support potential egress or emergency vehicle access.

Treatment 2: Consider construction of traversable shoulders to allow for three-lanes with coning along sections of the corridor.





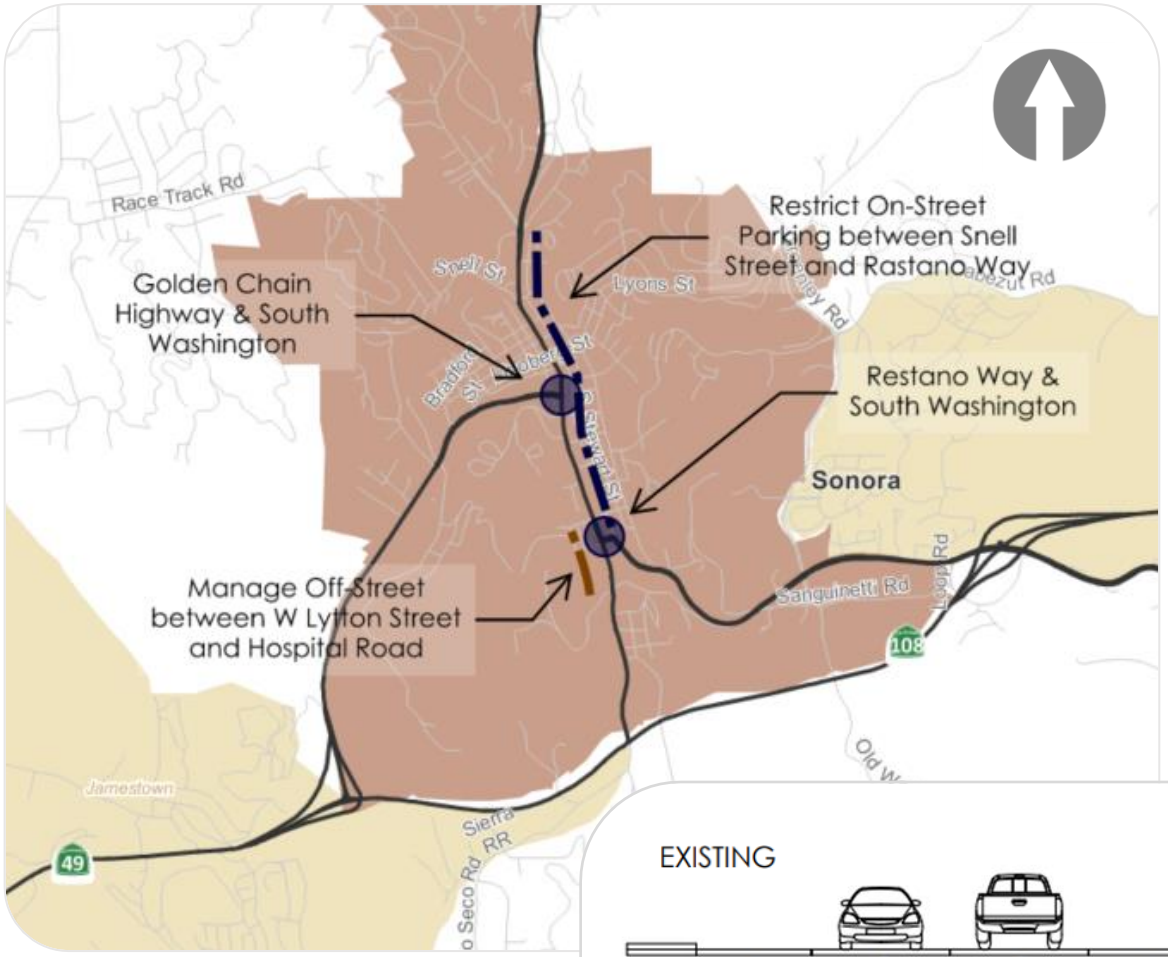
Washington Street, Sonora
Treatments: Prohibit Street Parking, Manage Access, and Coordinate Signal Improvements

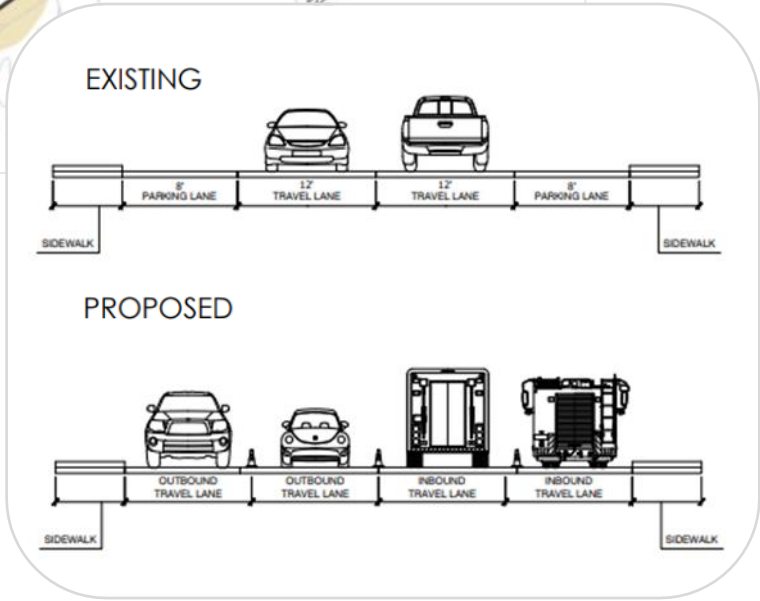
Context: Commercial corridor with on-street parking. County staff experience and modeling indicated likely congestion for evacuating traffic under multiple scenarios.

Treatments for consideration include:

- Restrict street parking between Snell Street and Restano Way to allow coning to create additional egress capacity.
- Manage parking access south of Restano Way to reduce potential delays along Washington Street.
- Coordinate signals to increase green time for evacuating traffic along Washington Street.

** Note that the Greenley Road Extension is a long-term project with the potential to increase evacuation capacity in and around Sonora by providing a bypass between CA-49 and CA-108. However, the project is currently not funded.*

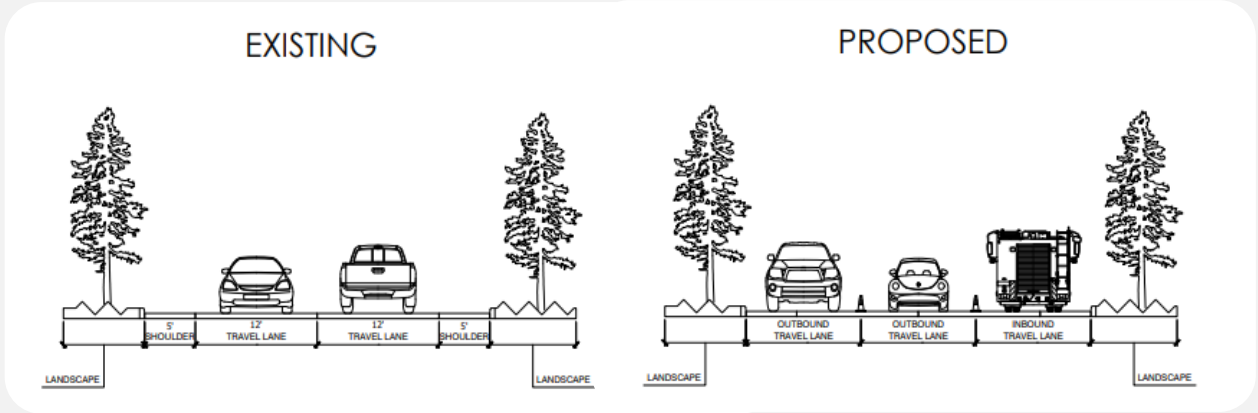


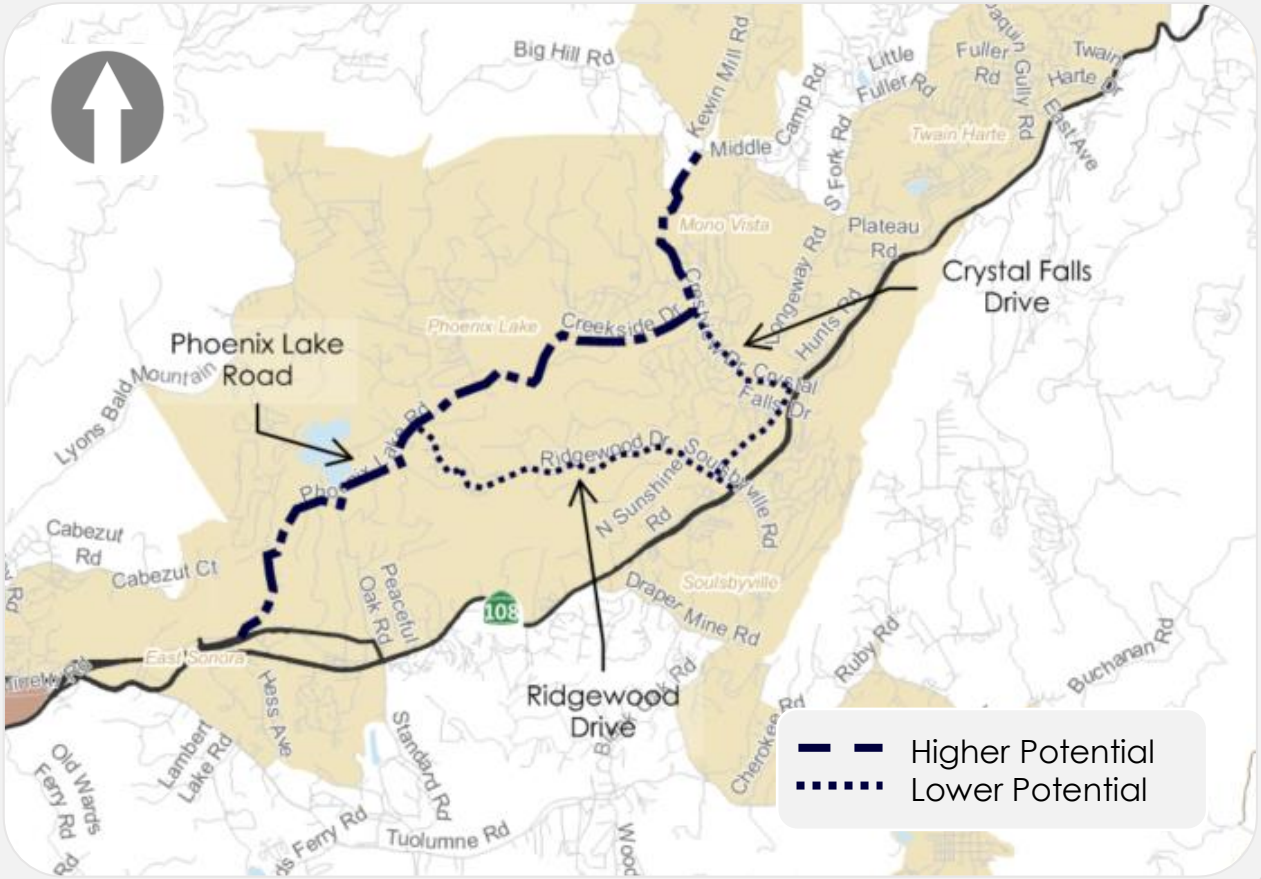


Phoenix Lake Road
Treatments: Shoulder Widening

Context: Two-lane residential corridor traveling through multiple communities north of CA-108. Provides connection to secondary roads with access to CA-108.

Treatment: Where possible, propose widening road with traversable shoulders that could be used in an evacuation to increase roadway capacity and/or emergency vehicle access. With widened shoulders, consider coning an additional lane, using two lanes for evacuation and maintaining one lane for emergency vehicles or other critical traffic.

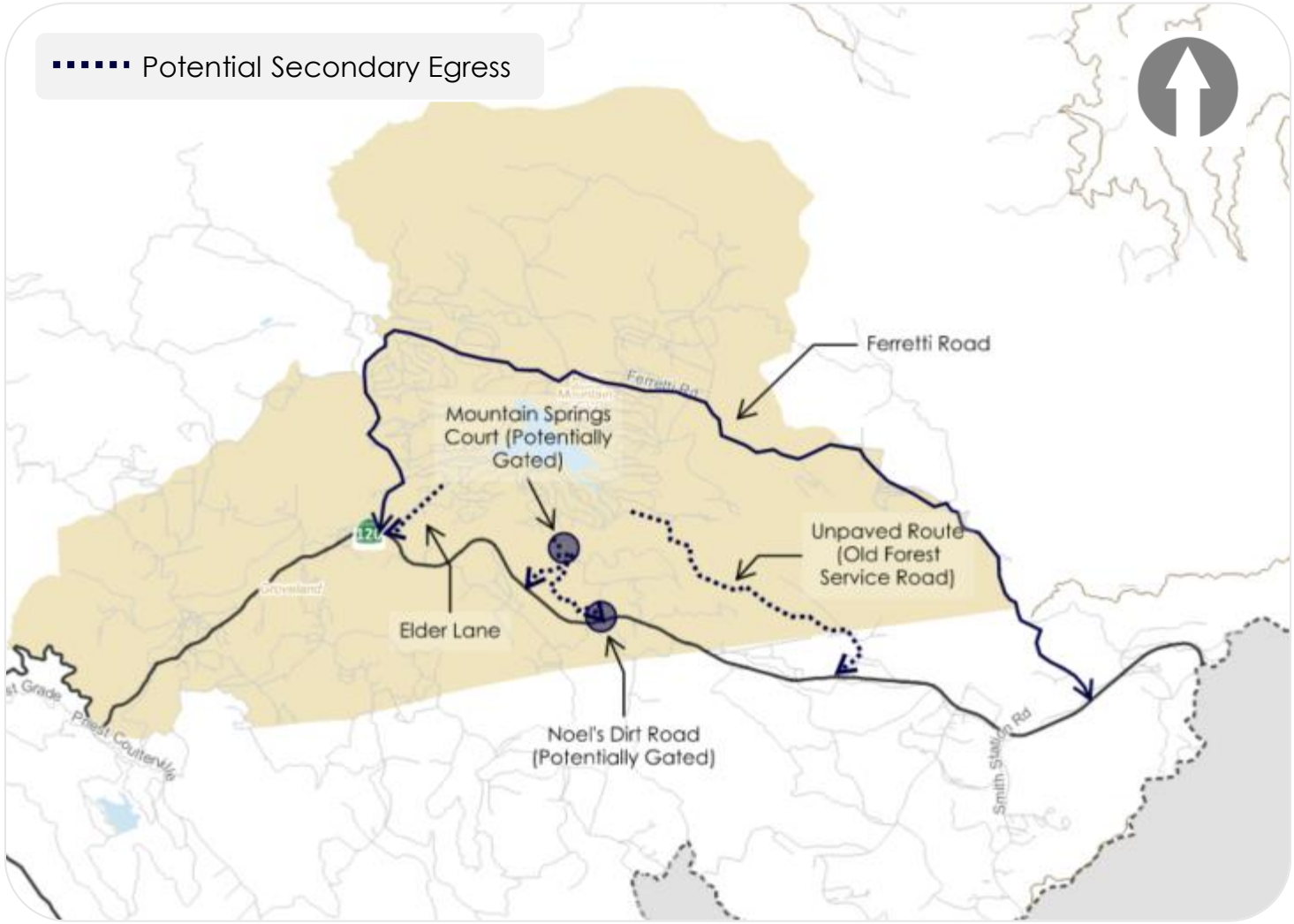




Pine Mountain Lake
Treatment: Access Management for Community

Context: Pine Mountain Lake has two primary access points where Ferretti Road connects to CA-120. Increasing potential egress routes would help to distribute traffic during an evacuation and reduce potential for bottlenecks.

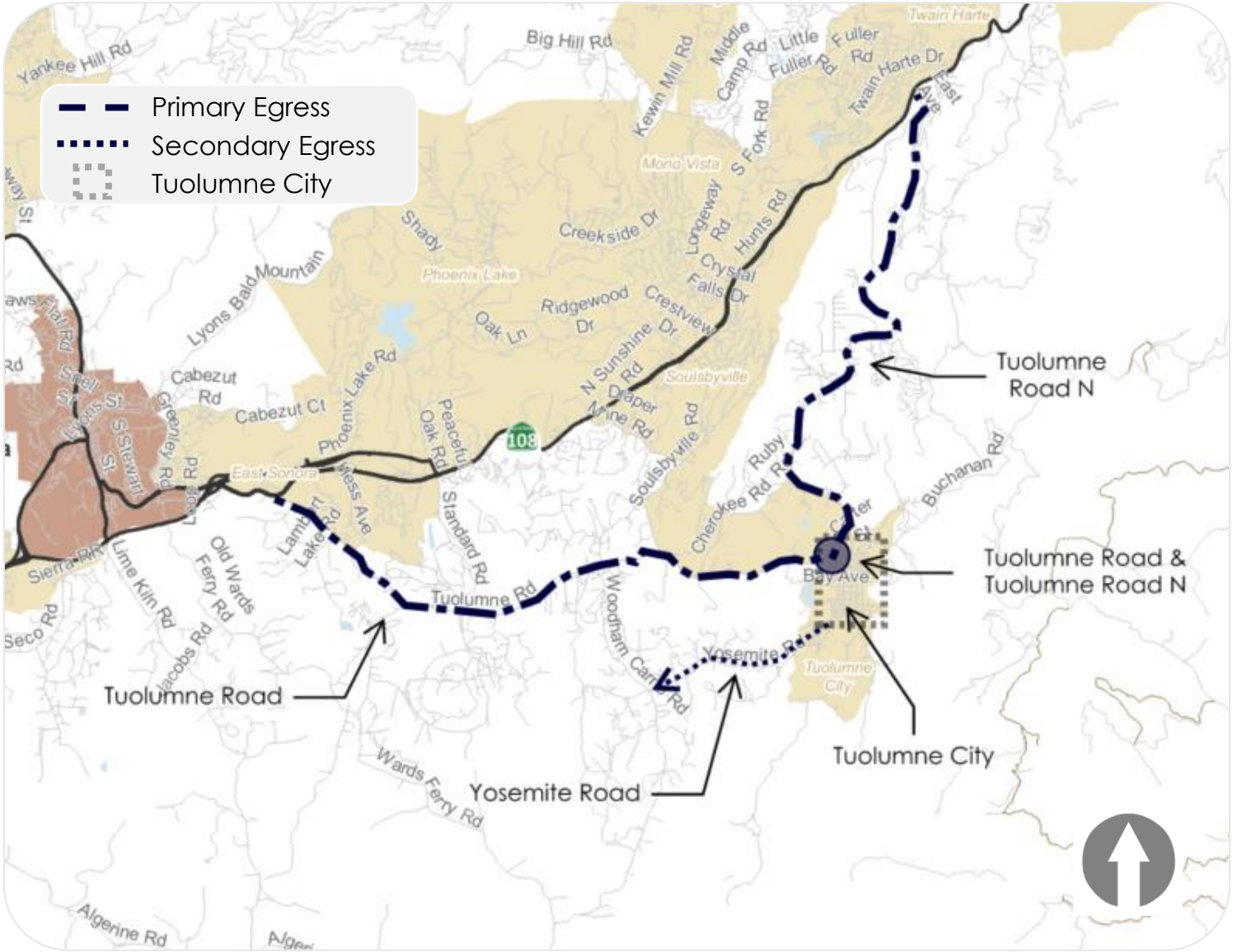
Treatment: Improve secondary egress routes where possible. Consider Mountain Springs Court, Noel's Dirt Road and the unpaved route traveling east as potential egress routes that could be improved and/or opened during evacuation. Improvements could be combined with communication strategies to encourage evacuees to disperse across the possible egress routes.



Tuolumne City & Tuolumne Road
Treatment: Intersection Management and Roadway Treatments.

Context: Tuolumne City is a relatively compact community located about eight miles from CA-108. The two primary routes for evacuees use Tuolumne Road. Tuolumne Road was modeled as having potential for congestion during an evacuation.

Treatment: If staffing permits, active management at the intersection of Tuolumne Road and Tuolumne Road North could improve flow of evacuees and allow for rerouting of traffic if necessary. Consider regular vegetation clearance along Tuolumne Road to reduce fire risk. Similarly, vegetation clearance along Yosemite Road could reduce pressure on the primary evacuation routes by providing a secondary egress route.

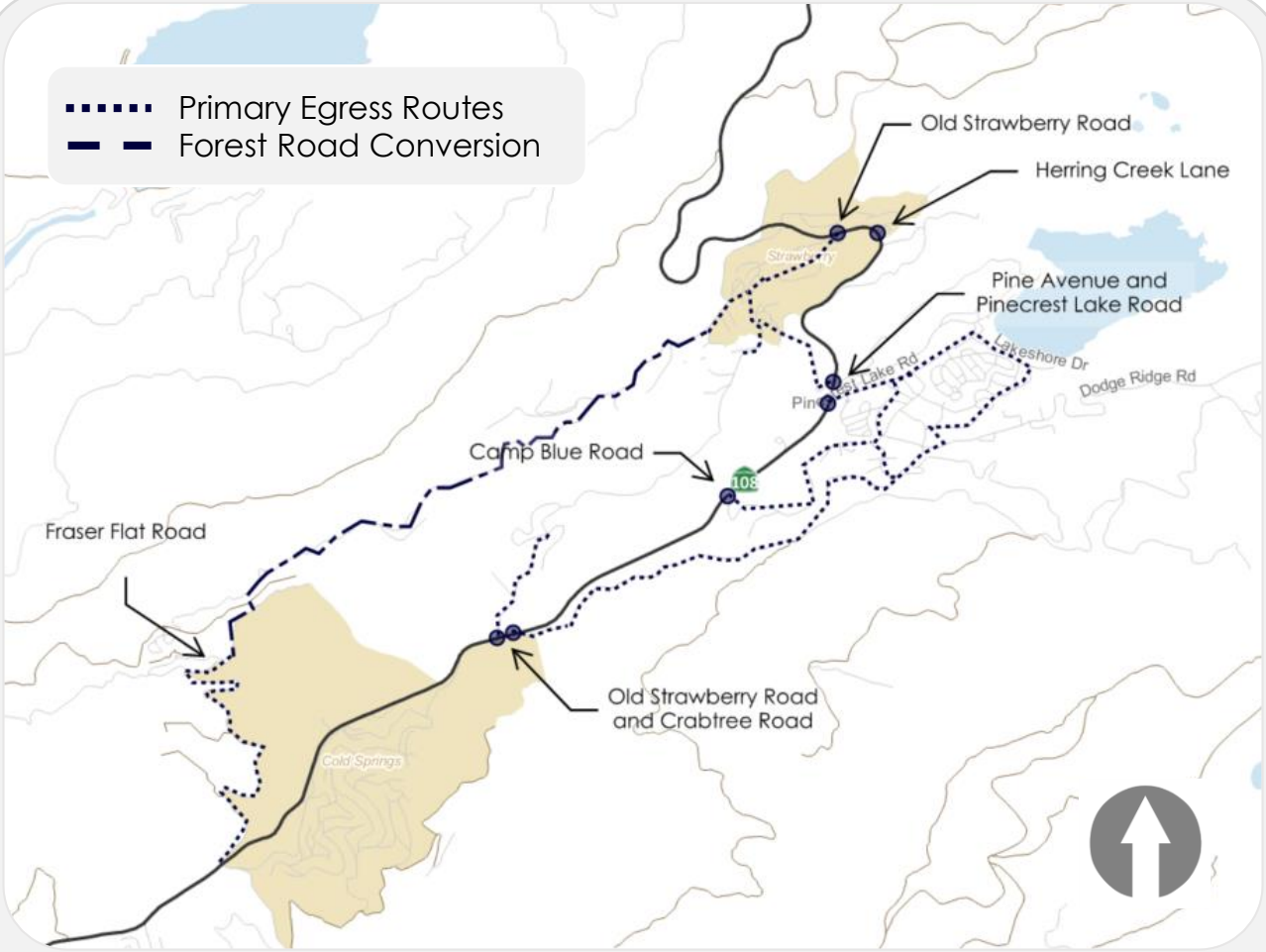


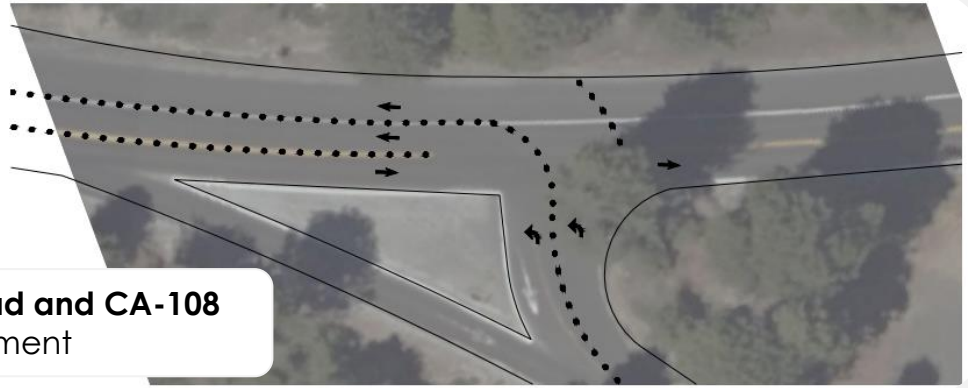
Pinecrest and Strawberry
Treatment: Access Management for Community

Context: Mountain community oriented along CA-108, with limited egress and highly impacted if travel along CA-108 becomes restricted.

Treatment 1: Consider vegetation clearance and traversable shoulder treatments on egress routes, such as Old Strawberry Road including widened shoulders at intersections with CA-108 to allow for the option to provide two lanes of outbound traffic using coning as shown in graphic.

Treatment 2: Consider potential improvement of Forest Route 4N13 between Fraser Flat Road and Old Strawberry Road. This route could be used either for evacuation egress or for emergency vehicles access.





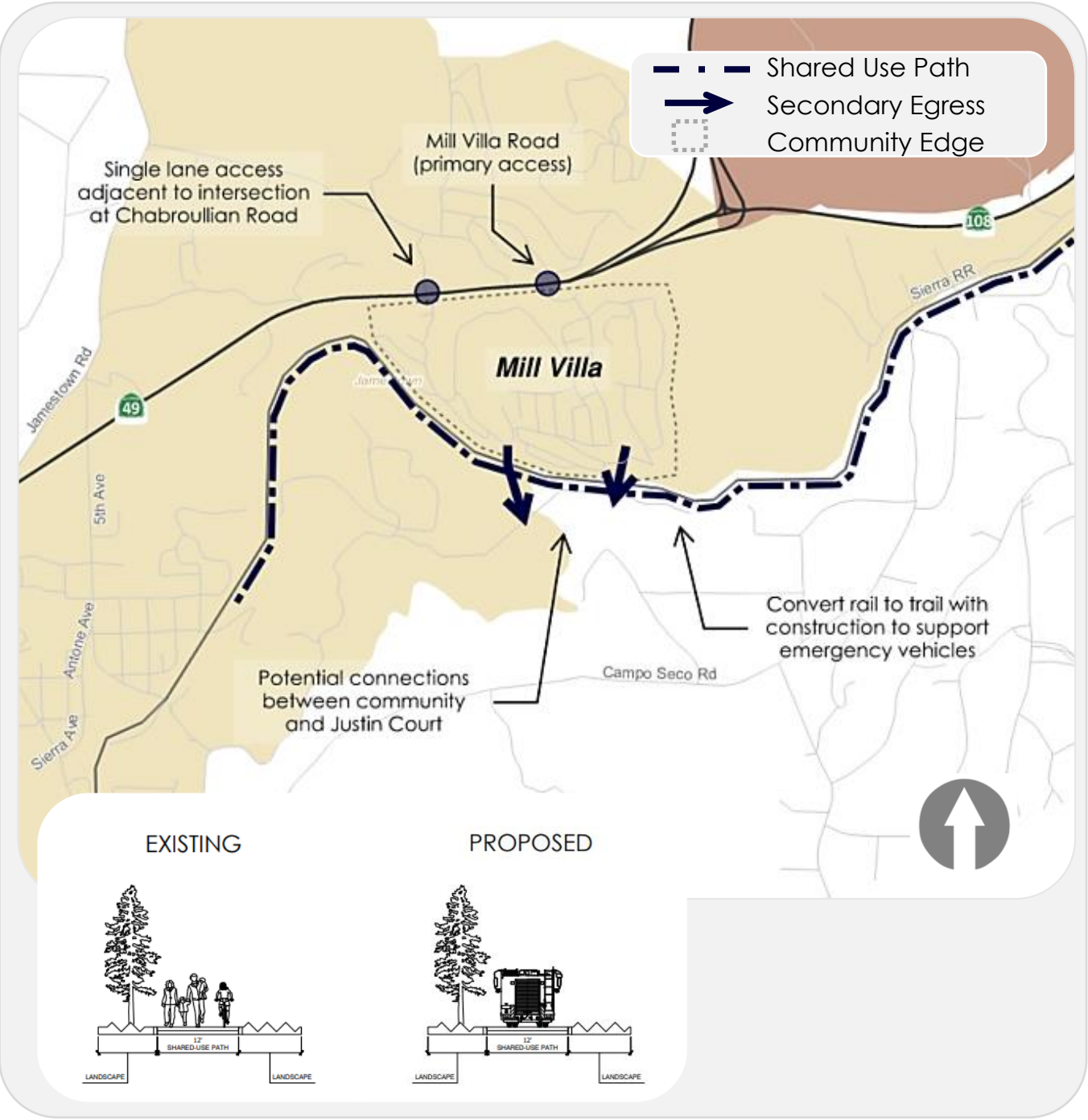
Pinecrest Road and CA-108
Coning treatment

Mill Villa
Treatment: Access Management for Community

Context: Mill Villa is a community located west of Sonora with a primary access at Mill Villa Road. Evacuation modeling identified this section of CA-108 as potentially congested during evacuations. During an evacuation turning left may be difficult and has the potential to disrupt westbound evacuation egress.

Treatment: Consider treatments to create secondary egress route(s) from the south of the community, such as a roadway connection between the community and Justin Court. In addition, the existing rail right-of-way behind the community could be improved as a shared-use path which could support evacuation egress or emergency vehicle access.

** See Vulnerable Populations and Communities Memo for communities where similar treatments may be applicable.*



Southwest Tuolumne County
Treatment: Resilient Network with Cross-County Roadways through

Context: Modeling indicates that evacuation traffic would primarily use CA-108 or CA-120. There are relatively few roads that could serve as secondary egress routes if the state highways become congested.

Treatment: Consider potential improvements on secondary roads shown, such as constructing traversable shoulders to support use of coning to create three lanes during an evacuation. Treatment could be applied for full route or along segments of roads where there is greater potential for congestion.

** Additional detailed engineering analysis would be necessary to determine the feasibility for applying treatments to individual roadways.*