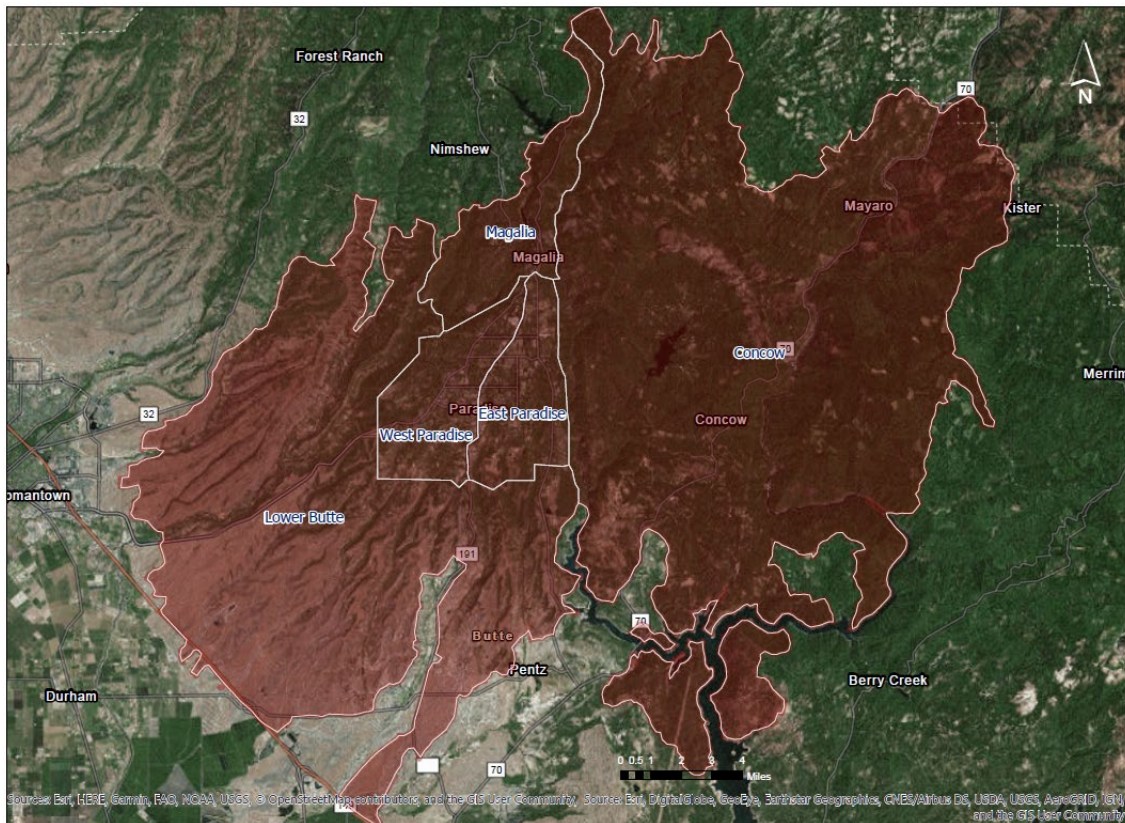


Camp Fire Tree Removal Operations
Butte County CA
Traffic Management Assessment/Plan



Prepared for

Cal OES

by

District 03 Caltrans - Highway Operation Branch

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Shakiba Shenyani

March 12, 2020

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1.0 NEED AND PURPOSE

Caltrans, D03 Highway Operations Branch (Highway Ops) has been tasked to develop a traffic assessment and management plan for hazard tree removal in Butte County and hauling of material to various end-use facilities.

The purpose of this assessment/plan is to evaluate potential truck routes from the burn scar areas to processing sites, then to end-use facilities. The truck routes include both local road as well as the state highway system.

This document has been circulated to affected local jurisdictions: Butte County, Lassen County, Sierra County, Town of Paradise, City of Chico, City of Oroville, Plumas County, Town of Quincy, City of Portola, Town of Chester, and City of Susanville. Their comments and concerns have been incorporated wherever they fall within the need and purpose of this plan. Pavement assessment of the local roads, and the roles and responsibilities for the implementation of this plan are not covered under this document. Cal OES will need to address these under separate mission tasks.

Cal OES provided a list of end-use facilities (Figure 1) and potential processing sites (Figure 2). Highway Ops has analyzed the potential impacts and mitigation measures to local and state routes that could be used to transport material from the burn scar area (Attachment 1) to processing sites, then to end-use facilities. Also, it has evaluated the operations of access points to state facilities, as well access points to processing sites. This memorandum describes the results of this assessment.

1.1 TRIP GENERATION/DISTRIBUTION

Based on preliminary information provided by Cal OES, it is expected that the Operation could generate approximately 400 trucks trips per day. Approximately 200 of the 400 truck trips per day would be distributed to any, or all end-use facilities. The other half of the approximate truck trips will be going from/to burn scar areas to processing sites. The distribution is not expected to have significant impacts to the overall operation of the highway system. However, localized impacts are expected on local roads from the burn scar areas to processing sites and at access points to state facilities.

1.2 ASSESSMENT

Figure 1 – End-Use Facilities

- Loyalton, CA – APR Loyalton*
- Anderson, CA – Wheelabrator*
- Wendel, CA – Honey Lake Power**
- Durham, CA – Old Durham Co.**
- Oroville, CA – Apex Lumber**
- Lincoln, CA – Sierra Pacific Industries**

(*IHI BioRAM Plants; **Forest Products/Firewood Operations)

Figure 2 – Processing Sites

- Lower Butte 1 – Skyway Road
- Lower Butte 4 – Skyway Road
- Magalia 1 – Skyway Road
- Magalia 2 – Skyway Road
- Concow 1 – Concow Road
- Oroville 1 – 7th Street

FIGURE 1 – End-Use Facilities

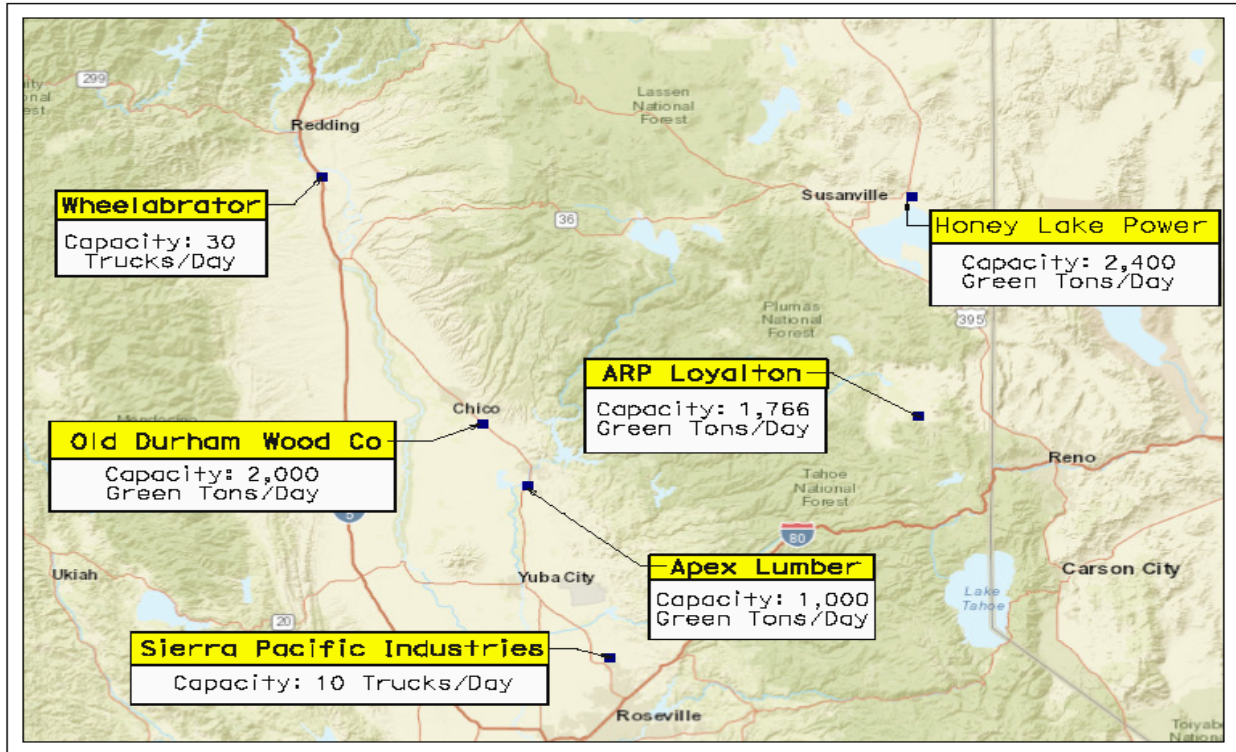
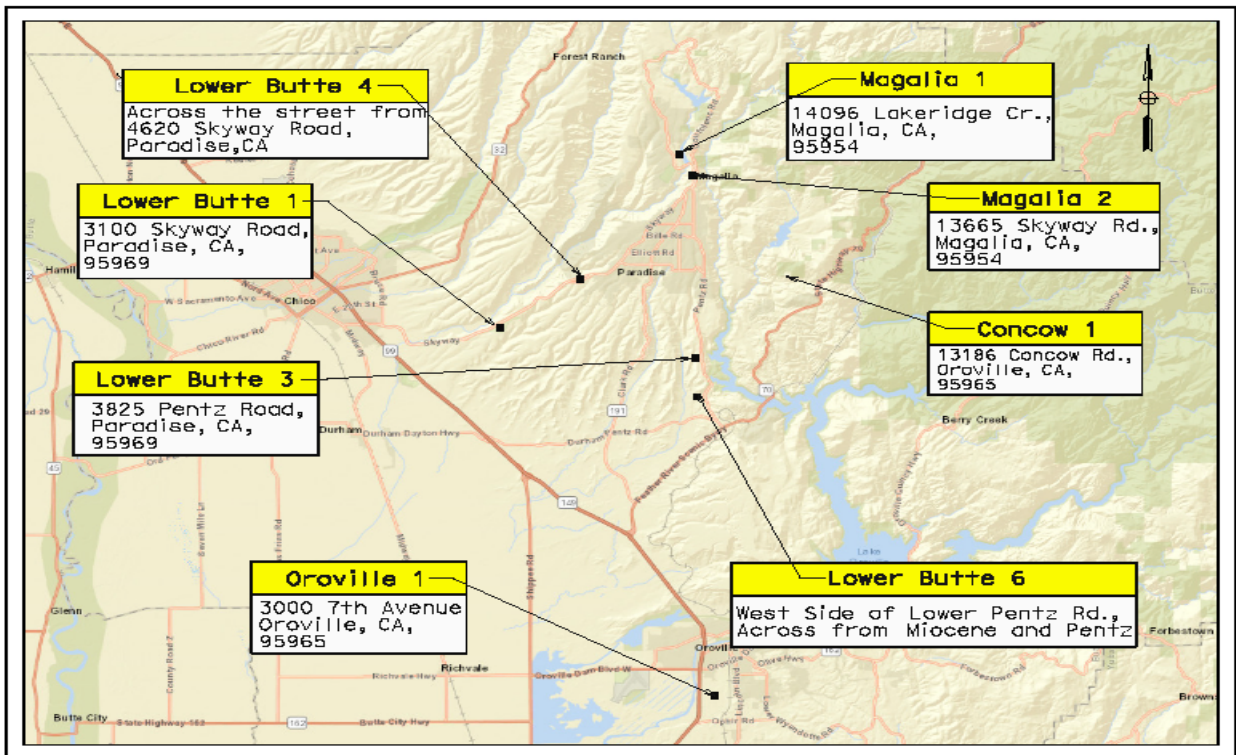


FIGURE 2 – Processing Sites



2.0 PROCESSING SITES

The following sections describe the location of the processing sites, anticipated traffic impacts and proposed mitigation measures. All the processing sites are outside the State's right of way. Local jurisdictions may require improvements at local sites not included in this document. A Traffic Control Plan (TCP) prepared by a licensed professional engineer may also be required by the local jurisdiction at each processing site.

Cal OES has established a Call Center available to the public. Truck traffic concerns should be reported at (530) 767-7013.

2.1 LOWER BUTTE 1 – TUSCAN RIDGE

Lower Butte 1 is located on Skyway Road, a four-lane facility, approximately 4.5 miles east of Chico. This is an existing private access approach. It is recommended to increase the length of the existing auxiliary lanes in both directions. The number of truck trips and the daily traffic volume of Skyway Road should be taken into considerations when determining the length of the auxiliary lanes. Portable Changeable Message Signs (PCMS) and advance warning signs are recommended at this location. If the projected trucks trips for Lower Butte 1 is significantly high, a temporary traffic signal may be needed.

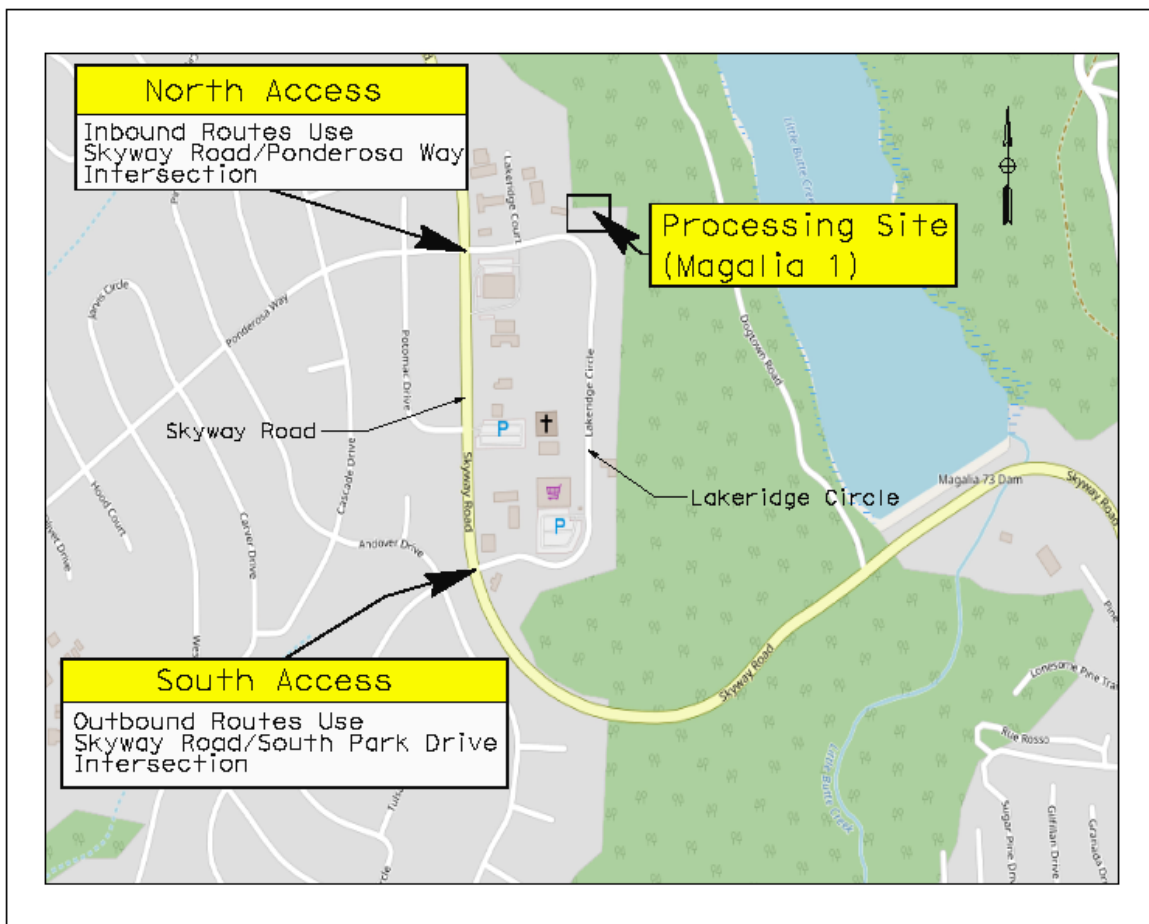
2.2 CONCOW 1 – CONCOW ROAD

Concow 1 is located along Concow Road between Ishi Trail Road and Wilfern Road. The processing site is approximately 6 miles from SR 70 and is the only access to the processing site. Butte County performed multiple dig outs on Concow Road and it is likely the roadway structure may not withstand the truck traffic from the operation. Concow Road may need additional improvements before and after the tree removal operations. It is recommended to use trailblazing signs to identify the truck route to/from the processing site and SR 70 due to the road's winding conditions and multiple minor streets connected to Concow Road. One of the key constraints of this location is the left-turn movement at the SR 70/Concow Road intersection for trucks traveling to the Loyalton end-use facility. SR 70 at this location is a high speed 4-lane facility on a sustained grade. Trucks making this left turn maneuver on an incline will have a hard time achieving normal speed. It is recommended to monitor truck operation at this intersection, and if needed provide manual traffic control at this intersection. Pinkston Canyon Road may also be used as an alternate one-way route to access left-turn movements onto SR 70. If Pinkston Canyon Road is used an alternate outbound route, all inbound trucks shall continue using Concow Road to access the processing site. PCMS and Advance warning signs shall be used on SR 70 for the access points to Concow Road.

2.3 MAGALIA 1 – LAKERIDGE ROAD

Magalia 1 is located on Lakeridge Circle, a two-lane facility, at the east side of the Town of Magalia. The processing site can be accessed at two locations – one at the Skyway Road/S Park Drive intersection (south access) and another at the Skyway Road/Ponderosa Way intersection (north access). The structural integrity of Lakeridge Road is not expected to withstand the potential loads. The site is currently under use and accelerated fatigue distress of the road has been observed. Lakeridge Road may need additional improvements before and after the tree removal operations. It is recommended for efficiency that trucks enter at the signalized intersection at the north access and exit from the signalized intersection at the south access. Exiting from the south access will also give trucks a better clearance for left turn movements. The grocery store (Sav-Mor Foods) on Lakeridge Circle can generate additional trips in the area. The additional trips could alter the truck routing in this area. See Figure 3 below.

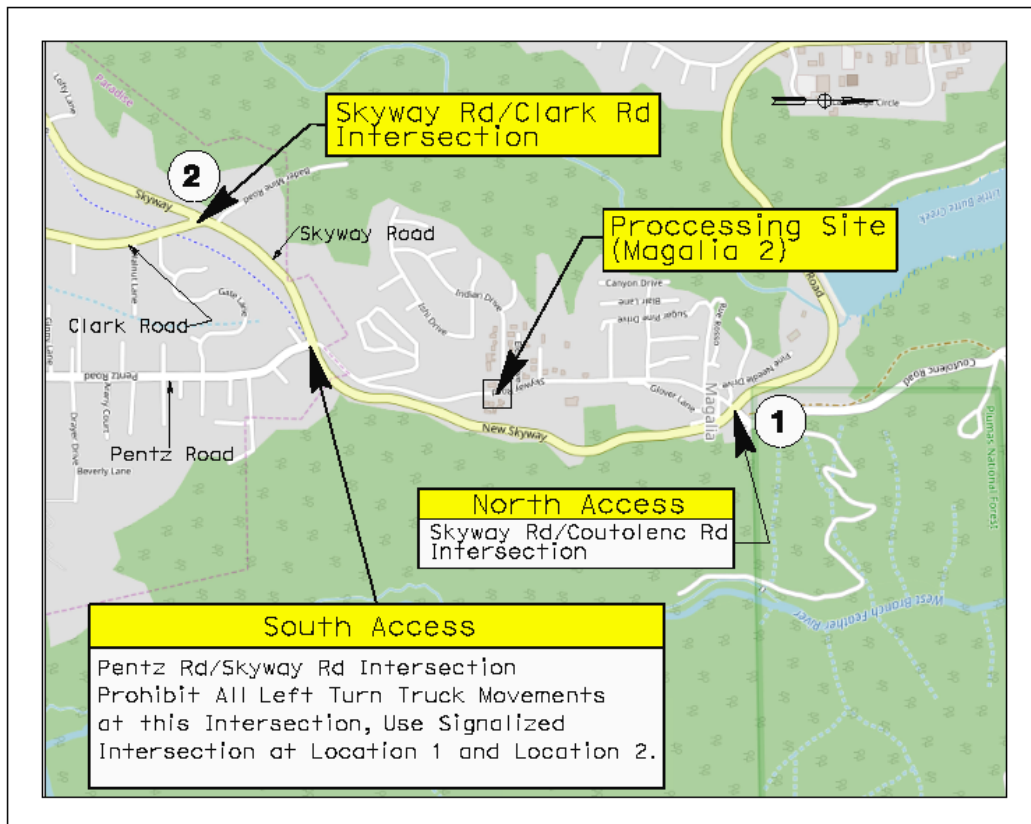
FIGURE 3 – Access to Magalia 1



2.4 MAGALIA 2 – RIDGEVIEW HIGH SCHOOL

Magalia 2 is located on Old Skyway Road, a two-lane facility, at the southeast side of the Town of Magalia. Old Skyway Road is an older local road and may not have the structural strength to hold up to heavy loads. Old Skyway Road may need additional improvements before and after the tree removal operations. Like Magalia 1, the processing site has two access points at the Skyway Road/Pentz Road intersection (south access) and at the Skyway Road/Coutolenc Road intersection (north access). It is recommended that all trucks use the signalized intersection at the north access to avoid conflict points at the uncontrolled south access due to poor sight distance and high speeds. The Town of Paradise also prefers no left-turn movements at the south access for trucks hauling to/from north of the south access to Pentz Road. It is preferred for trucks to use the signalized intersection at Skyway Road/Clark Road. For routes which originate along Pentz Road corridor, using Pentz Road will be acceptable. The four legs at the south access could be utilized for multiple processing sites. Manual traffic control should be considered at this intersection because it could see a high volume of truck trips. Advance warning signs are recommended at this location as well as a PCMS, especially in the southbound (SB) direction due to the horizontal curve north of the south access. During the debris removal operation, the Magalia Community Church housed many residents in the area and there could be an increase in pedestrian traffic on Old Skyway Road. Pedestrian warning signs should be considered if the area is still used as a temporary living area. See Figure 4 below.

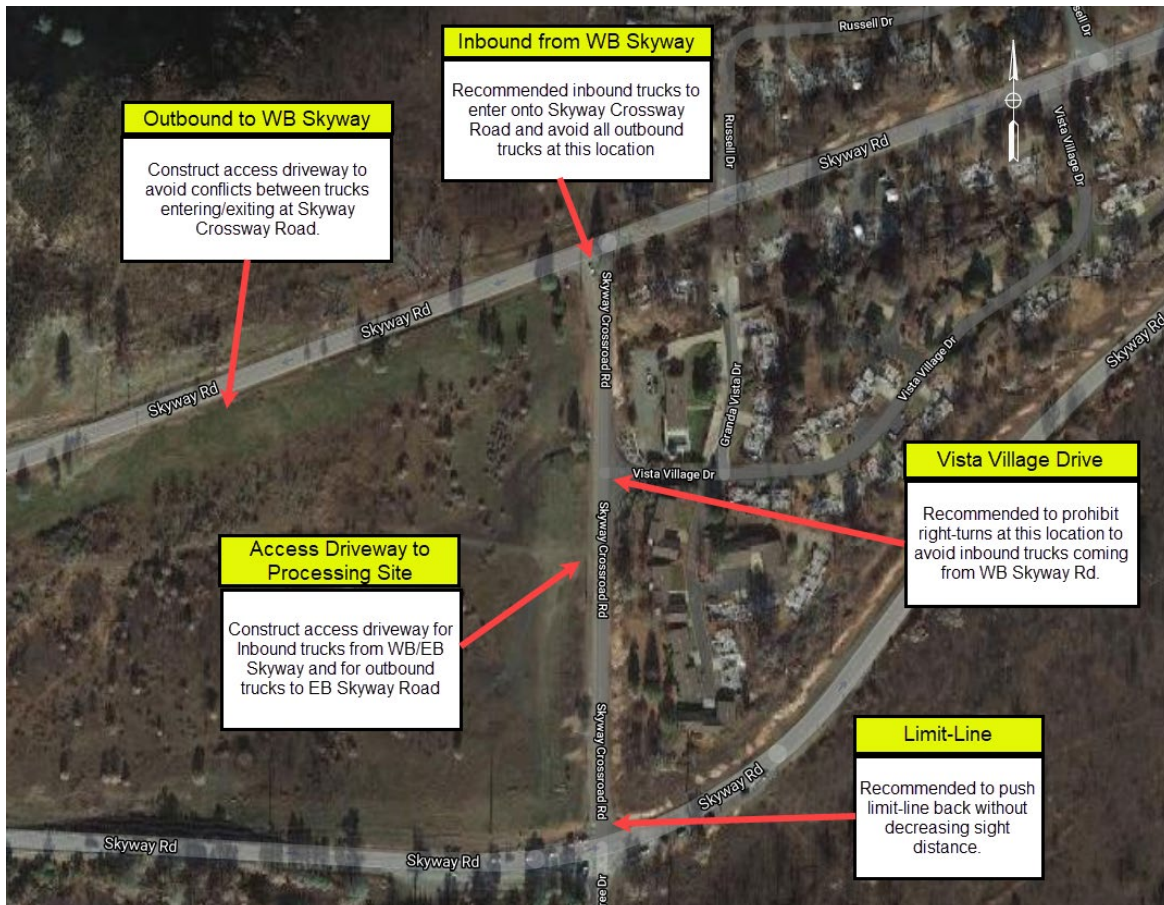
FIGURE 4 – Access to Magalia 2



2.5 LOWER BUTTE 4 – SKYWAY CROSSROAD

Lower Butte 4 is located at the west side of the Town of Paradise and the property sits between the westbound (WB) and eastbound (EB) direction of Skyway Road. It is recommended that the access driveway be placed on Skyway Crossroad to avoid delay from trucks entering the site. Improvements to Skyway Crossroads may be needed as the structural pavement was built with 2" asphalt concrete and 8" aggregate base. It is also recommended to construct another access driveway on the north end of the property for trucks to exit onto WB Skyway traffic to avoid conflicts between WB trucks entering/exiting from Skyway Crossroad. This will also improve sight distance for trucks exiting onto WB Skyway Road. It is also recommended that the neighborhood community across from the processing site avoid making right-turns onto Skyway Crossroad and instead use Vista Village Drive to enter/exit WB Skyway Road. The Local Agencies could also consider installing a temporary traffic signal at the north end of Skyway Crossroad instead of constructing a new access driveway at the north end of the property. At the south side of Skyway Crossroad Rd, it should be considered to move the limit line back to give more clearance for the left-turn truck movements from EB Skyway Road. There is an existing cut-slope which can limit the distance the limit line can be pushed back without decreasing the sight distance. Due to high speeds and constrained turning radiuses, lane closures with a full traffic control plan are recommended. PCMS and Advance warning signs are also recommended at this location. See Figure 5.

FIGURE 5 – Access to Lower Butte 4



2.6 OROVILLE 1 – ODIN RECYCLING FACILITY

Oroville 1 is located on 7th Avenue in Oroville which is east of SR 70. The processing site is approximately 30 miles south of the Paradise area. Trucks accessing the processing site shall enter/exit SR 70 at the signalized intersection on Georgia Pacific Way. Trucks should not take the SR 70/SR 162 interchange due to congestion. See Figure 6 below. No signal retiming is anticipated at this location.

FIGURE 6 – Access to Oroville 1



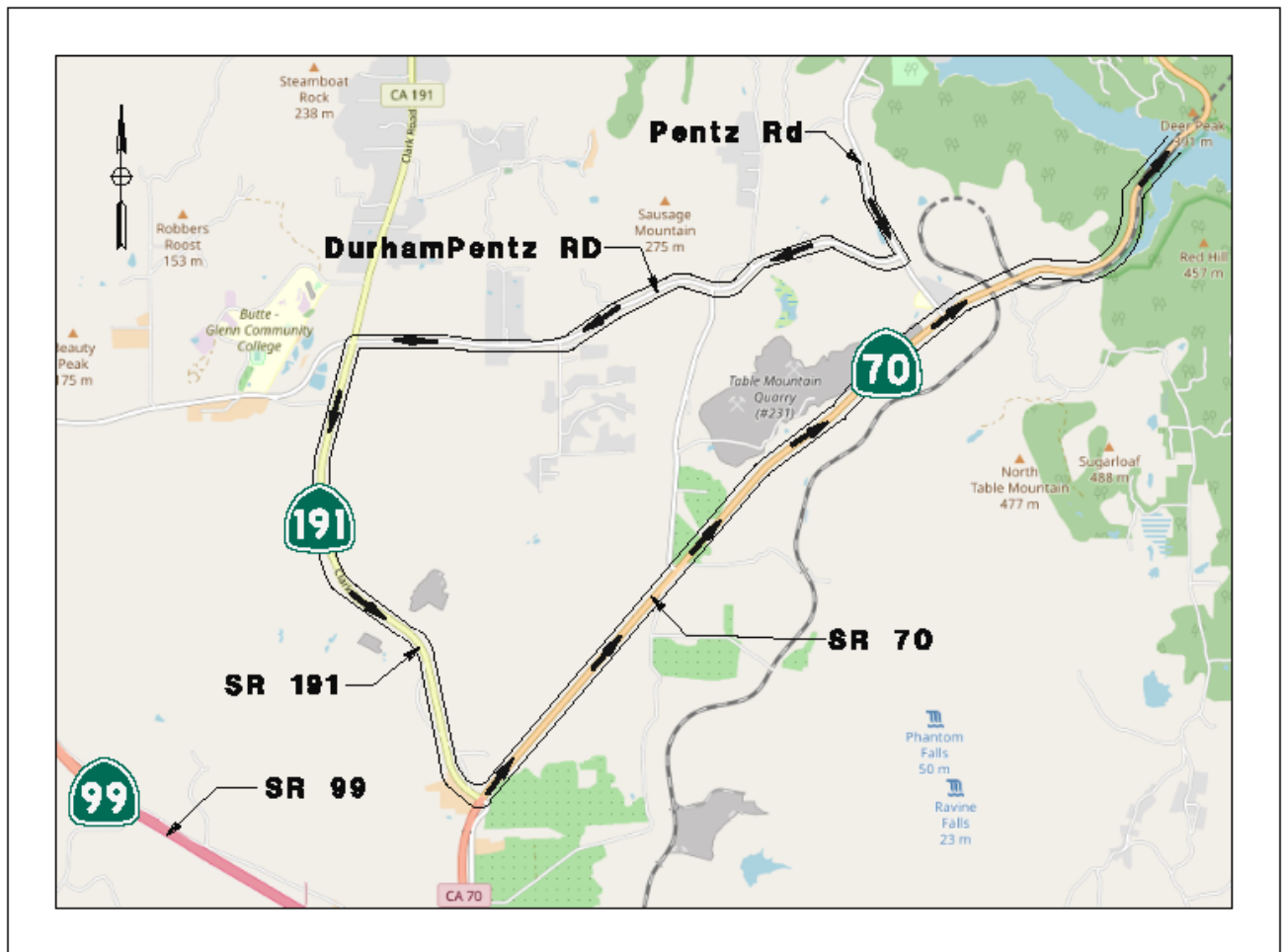
3.0 ACCESS TO STATE ROUTES

3.1 STATE ROUTE 70

Impact 1: Despite adequate corner sight distance at the SR 70/Pentz unsignalized intersection, it is recommended to discourage trucks to turn left at this intersection due to long vertical crest curve and steep profile grade on SR 70 that makes it hard for trucks to climb uphill without impacting the through traffic.

Mitigation 1: Prevent left-turn truck movements at the SR 70 and Pentz road intersection. For safe and efficient operation, the preferred access to eastbound SR 70 is to use Durham-Pentz Road to reach the SR 70/SR 191 signalized intersection. See Figure 7 below. This traffic signal may require retiming adjustments to accommodate the increase of left-turns.

FIGURE 7 – Access to Eastbound SR 70 from Pentz Road



Impact 2: The primary access to enter Apex Lumber in Oroville is the southbound turn lane on SR 70. The storage length to make a left-turn movement into Apex Lumber is insufficient.

Mitigation 2: Trucks leaving the processing sites to Apex Lumber shall be metered to help minimize the queuing on SR 70 due to the insufficient storage length.

Impact 3: Within the operation vicinity, SR 70, has a few bridge and tunnel restrictions. One of the locations is a tunnel located in Plumas County near Elephant Butte at PM 1.0, which has a clearance of 14'-3".

Mitigation 3: Per the California Vehicle Code (CVC), no loads shall exceed a height of 14 feet (CVC Height Section is 35250). This should be taken into considerations when trucks are being loaded to deliver to end-use facilities. The other locations have a clearance above 15 feet.

3.2 STATE ROUTE 99

Impact 1: SR 99 serves as major south-north corridor through Chico. Skyway Road is a 4-lane road that connects Chico to Paradise. At the SR 99/Skyway Road Interchange, the on-ramp traffic movement to NB SR 99 is limited to a 1-lane ramp entrance which could lead to congestion and queuing that could extend past the Notre Dame Boulevard/Skyway Road intersection during peak hours.

Mitigation 1: Truck traffic is recommended to be limited at the Skyway Interchange and should be avoided during the AM (0700 to 0900) and PM (1600 to 1800) peak hours. It is recommended to use Clark Road and Neal Road as alternate routes. Traffic signals may require retiming adjustments on Skyway Road at intersections near the interchange.

3.3 STATE ROUTE 191

Impact 1: The temporary roundabout at SR 191 and Durham-Pentz Road will require an improved central island and truck apron due to the fact that traffic is cutting across the painted truck apron at high speeds.

Mitigation 1: Construct a physical truck apron and improved central island to discourage drivers from cutting across the apron. Increase the number of drums around the perimeter of the roundabout island to enhance the visual barrier across the central island.

3.4 STATE ROUTE 32

Impact 1: SR 32 is a narrow and winding highway but is a 65' California Legal with a KPRA (Kingpin-to-rear axle) advisory.

Mitigation 1: It should be taken into consideration that the KPRA distance is no more than 30 feet for the trucks being used to travel on SR 32.

3.5 STATE ROUTE 147

Impact 3: SR 147 near Lake Almanor shall be restricted due to its recreational nature (cabins/vacation homes). If used, expect to receive complaints with the increase of trucks as Honey Lake Power is projected to have the highest daily capacity.

Mitigation 3: SR 32/SR 36 shall be used as the primary route to reach Honey Lake Power since it is a California Legal route with restrictions. See State Route 32 section for additional information on restrictions.

3.6 ALL STATE ROUTE FACILITIES

Impact 1: The hazard tree removal operations will add congestion to known hotspots such as Neal Road, Eaton Road, and Garner Road.

Mitigation 1: To continue the implementation of task #T1024 and #T1015 (queue warning system) from the Director's Order Contract Mission Task List throughout the extent of the tree removal operations.

Impact 2: The hazard tree removal operations will impact multiple communities including; Quincy and Portola on SR 70, Chester and Susanville on SR 32/SR36, Loyalton on SR 49.

Mitigation 2: It is advised to notify the communities of potential impacts to prepare for any traffic signal adjustments or implement any other mitigation measures. To help minimize the traffic impacts in the communities, it is recommended to meter the release of trucks over the routes to eliminate truck platooning so that they do not all impact communities at the same time.

Impact 3: The Town of Paradise will see significant impact to the town streets due to the central location and access to various burn scar areas.

Mitigation 3: The Town of Paradise provided an existing truck routes for the town and it is recommended to use the truck routes to access the processing sites and State facilities. See Exhibit A.

4.0 ACCESS TO END-USE FACILITIES

4.1 TO LOYALTON (APR LOYALTON): Since this facility will potentially receive a high number of truck trips, processing sites on Skyway Road should use SR 191 to reach SR 70 instead of using the Skyway Interchange to minimize the traffic impacts to an already congested area. Due to the high number of trucks anticipated in this small community, truck traffic thru Downtown Loyalton should be avoided. Truck traffic should use the north entrance using Railroad Ave, approaching Loyalton from the east via SR 49. See Figure 8.

4.2 TO WENDEL (HONEY LAKE POWER): Trucks shall be routed to use SR 32/SR 36 to reach Honey Lake Power. Using SR 32 over SR 70 will avoid trucks to route through SR 147 which is a popular highway with pedestrian traffic and its recreational nature (cabins/vacation homes). Bruce Road can be used as an alternate route during peak hours at Skyway Interchange. Bruce Road shall not be used as an alternate route for accessing SR 99. See Figure 9.

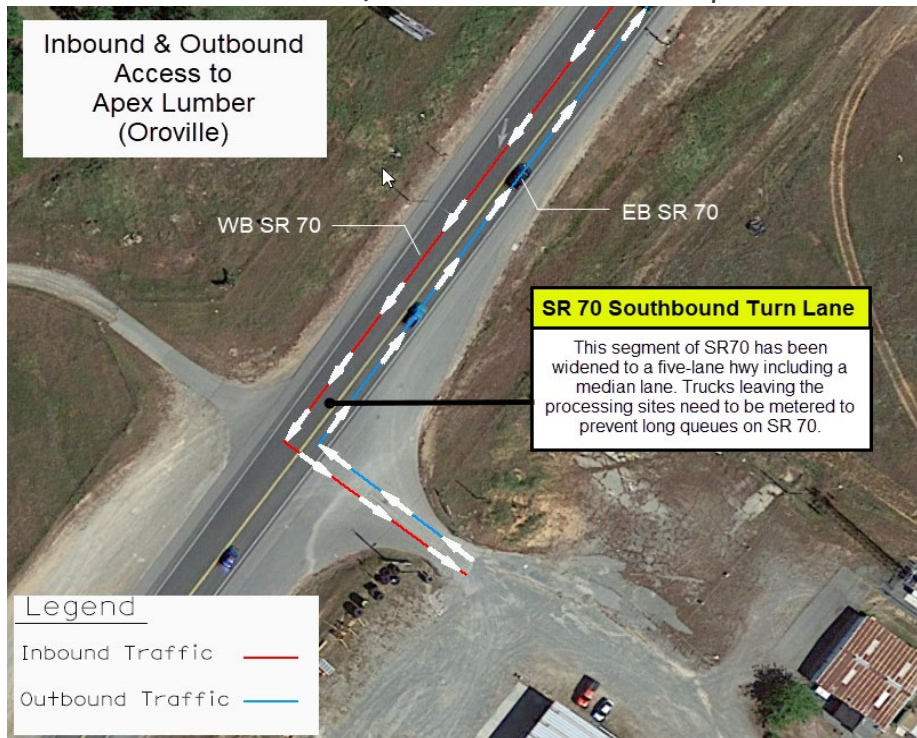
4.3 TO LINCOLN (SIERRA PACIFIC INDUSTRIES): Two major construction projects are occurring on SR 70 (south of Oroville) and SR 99 (Live Oak) but due to the low number of truck trips to Lincoln, there should not be a significant impact to either route. It is recommended to use SR 70 to SR65. Then use the Riosa Road signal from SR 65 to reach Sierra Pacific Industries. See Figure 10.

4.4 TO ANDERSON (WHEELABRATOR): It is recommended to use Skyway Interchange, Neal Road Durham-Pentz Interchange, or SR 149 Interchange, however limit truck trips at the Skyway Interchange during peak hours. See Figure 11.

4.5 TO DURHAM (OLD DURHAM WOOD): Oroville-Chico Highway is the primary road to access Old Durham Road. This roadway required extensive maintenance to the bridge deck and roadway due to the significant traffic impact from the Camp Fire. Old Durham Wood will potentially receive a high number of truck trips and its proximity to the burn scar area makes it an attractive site. However, the existing roadway structural section is not robust to sustain massive loading. The structural capacity of the roadway needs to be monitored as it may experience unforeseen damage. Segments of Oroville-Chico Highway from the south end to the entrance to Old Durham Wood is very narrow with approximately 10 foot travel lanes and narrow shoulders. Improvements may be needed to sustain operations at these narrow segments. Oroville-Chico Highway is a bicycle route and additional signage maybe needed to distinguish the road to drivers using it during the tree removal operations. It is recommended to use Skyway Interchange, Neal Road, Durham-Pentz Interchange, or SR 149 Interchange, however limit truck trips at the Skyway Interchange during peak hours. See Figure 12.

4.6 TO OROVILLE (APEX LUMBER): Use the Skyway Interchange, Neal Road, Durham-Pentz Interchange, or SR 149 Interchange, however limit truck trips at the Skyway Interchange during peak hours. The primary access to Apex Lumber is to enter and exit from SR 70. Trucks leaving the processing sites to Apex Lumber shall be metered to help minimize the queuing on SR 70. See Figure 13 and Figure 14 below.

FIGURE 14 – Inbound/Outbound Access to Apex Lumber



5.0 FUTURE CONSTRUCTION PROJECTS IN BUTTE COUNTY

There are several proposed construction projects that could impact truck travel times.

Butte 70

03-3H71U(PM 8.8/12.8) – Widening to 5 lanes

- Work should be completed by end of March 2020

03-3H72U(PM 5.6/8.8) – Widening to 5 lanes

- Work to start in July 2020 and continue through end of 2021

The above projects start at the Apex Lumber end use facility and extends south to Cox lane. The projects could potentially make an impact to trucks traveling to the end-use facilities located in Oroville and Lincoln and processing site #9.

02-0H650(PM 29.6/48.08) – Culvert Rehab

- Work to start in May 2020 through Sept 2020

The above project is located just north of the West Branch Feather River Bridge and continues just south of Merlin. The project could potentially make an impact to trucks traveling to the end-use facilities located in Loyalton and Wendel.

Butte 99

03-0H3304(PM VAR) – Bridge Rail Replace and Bridge Widening

- Work to start in May 2020 through June 2021

The above project has 6 different locations, 4 are located south of Chico between PM 12.0 to PM 20.0 and 2 are located north of Chico between PM 45.0 to PM 47.0. The 2 locations north of Chico could potentially make an impact to trucks traveling to the end-use facility located in Anderson.

Butte 32

03-4F800(PM 8.8/9.54) – Chico ADA Project

- Work to start in May 2020 through October 2020

This project located in Chico and should not make a significant impact due to location of the construction which is occurring approximately 2 miles to the west of SR 99 and any truck tree removal operations.

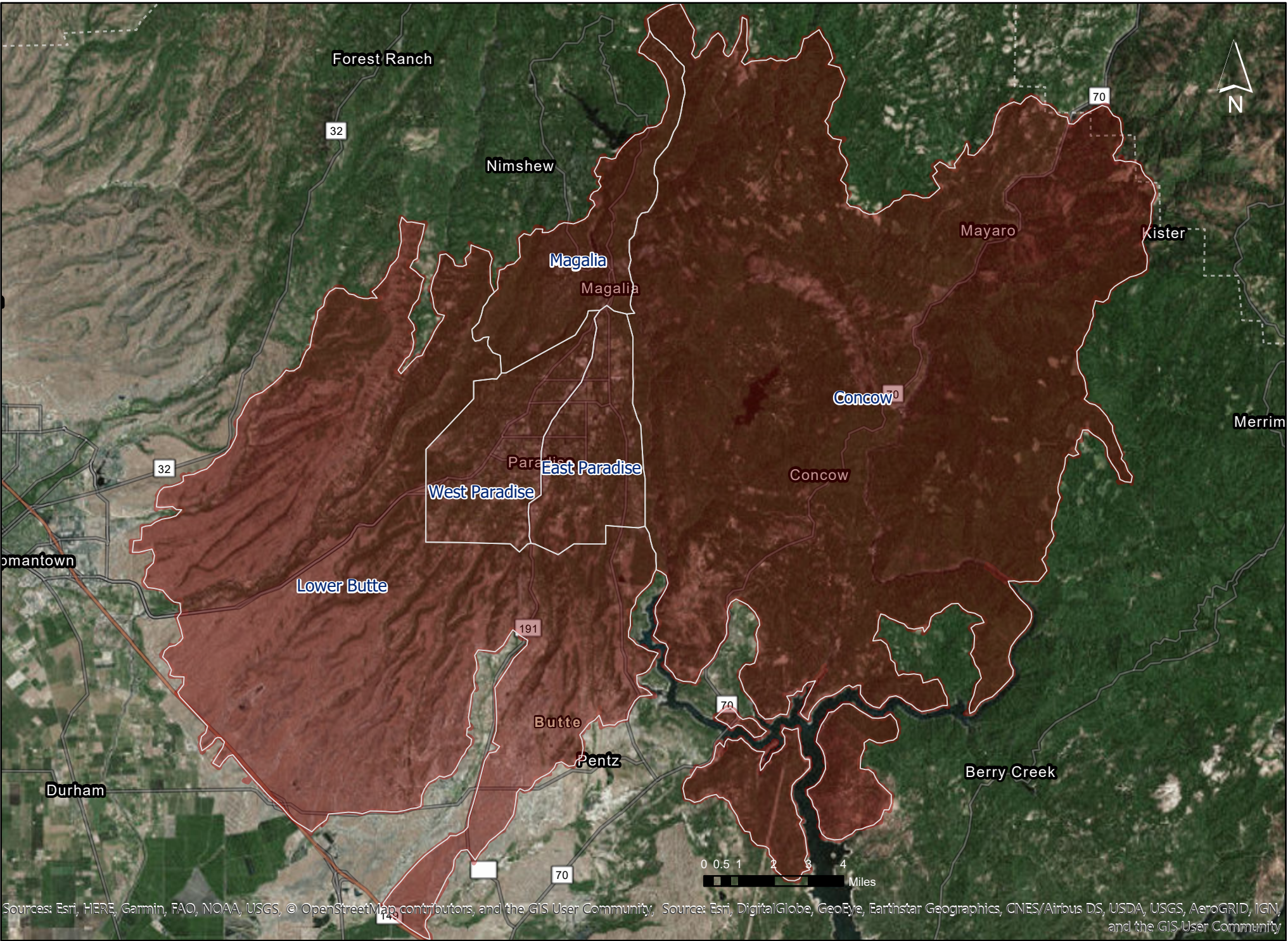
Sutter 99*

03-3F990(PM 39.2/41.4) – Live Oak Rehab

- Work to start in May 2020 through end of 2021

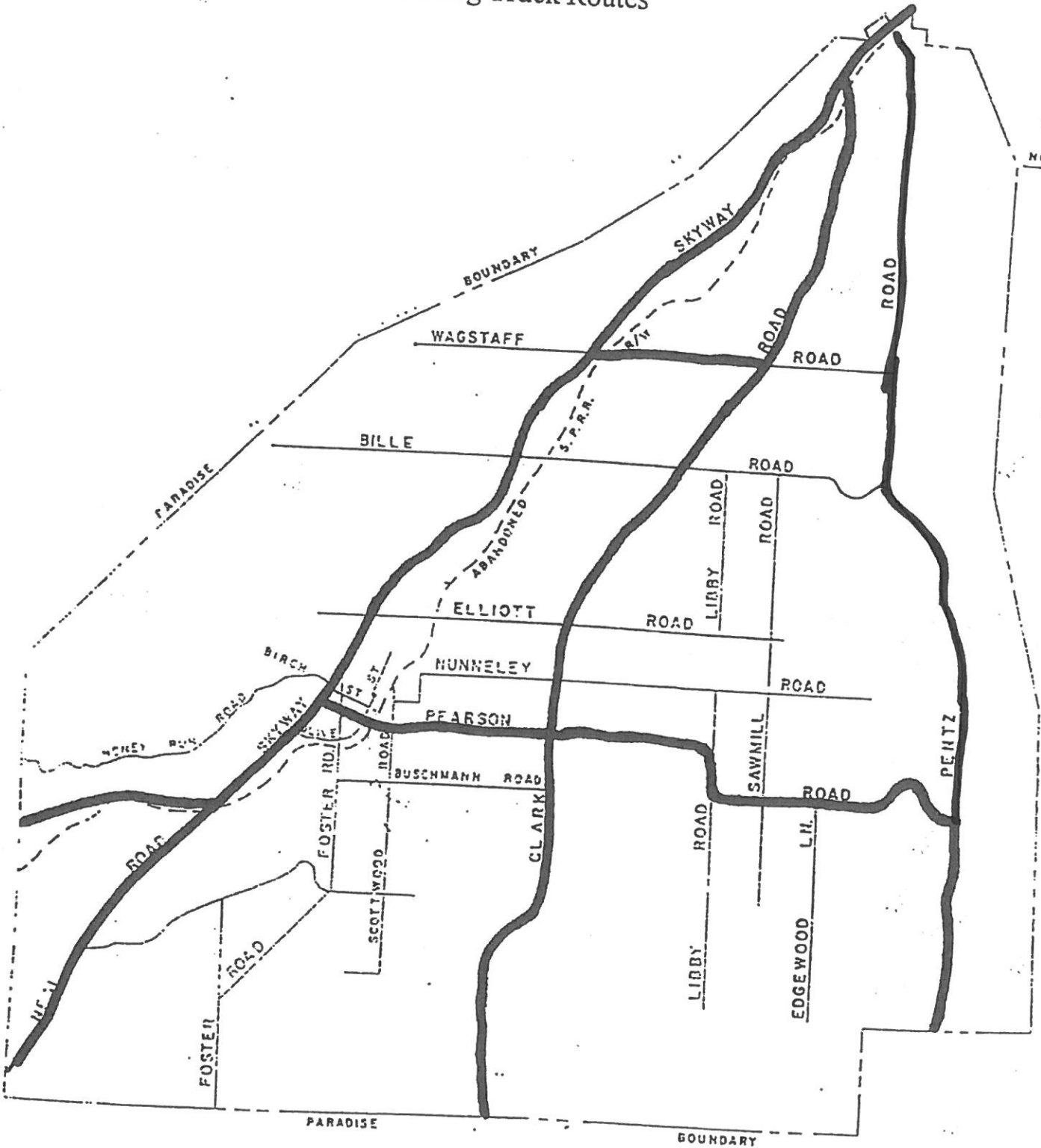
The above project is in Live Oak and should not make a significant impact as trucks will not be rerouted to travel through SR 99 due to the projected loads going to the end-use facility in Lincoln. If the truck loads are higher than what was projected, then additional analysis would be needed to see if it would be more efficient to reroute trucks onto SR 99 through Live Oak or continue through Oroville on SR 70.

ATTACHMENT



EXHIBIT

Exhibit "A"
Existing Truck Routes



TOWN OF PARADISE

TRUCK ROUTES

FIGURES

FIGURE 8

Final Truck Routes To/From APR Loyaltan

Legend

- △ APR Loyaltan
- Cities
- Paradise
- ⊕ Truck Routing

Lower Butte/Magalia Sites

Processing sites to use SR191/SR70 Intersection via Clark/SR191 to proceed to SR 70 to Loyaltan.

SR 70/SR 49 Junction

The recommended route - use SR 49 to Loyaltan

Concow Site

Processing site to access SR70 via Concow Road. Pinkston Caynon can be used as an alternate one-way route to access SR 70.

Oroville Site

Processing site to route through SR70/SR149 Interchange via SR70.

SR 191/SR 70 Intersection

Signalized location at SR 191/SR 70

Railroad Ave.

Use Railroad Ave to access the APR Loyaltan facility

Google Earth

Image Landsat / Copernicus
© 2019 Google



30 mi

FIGURE 9

Final Truck Routes
To/From
Honey Lake Power

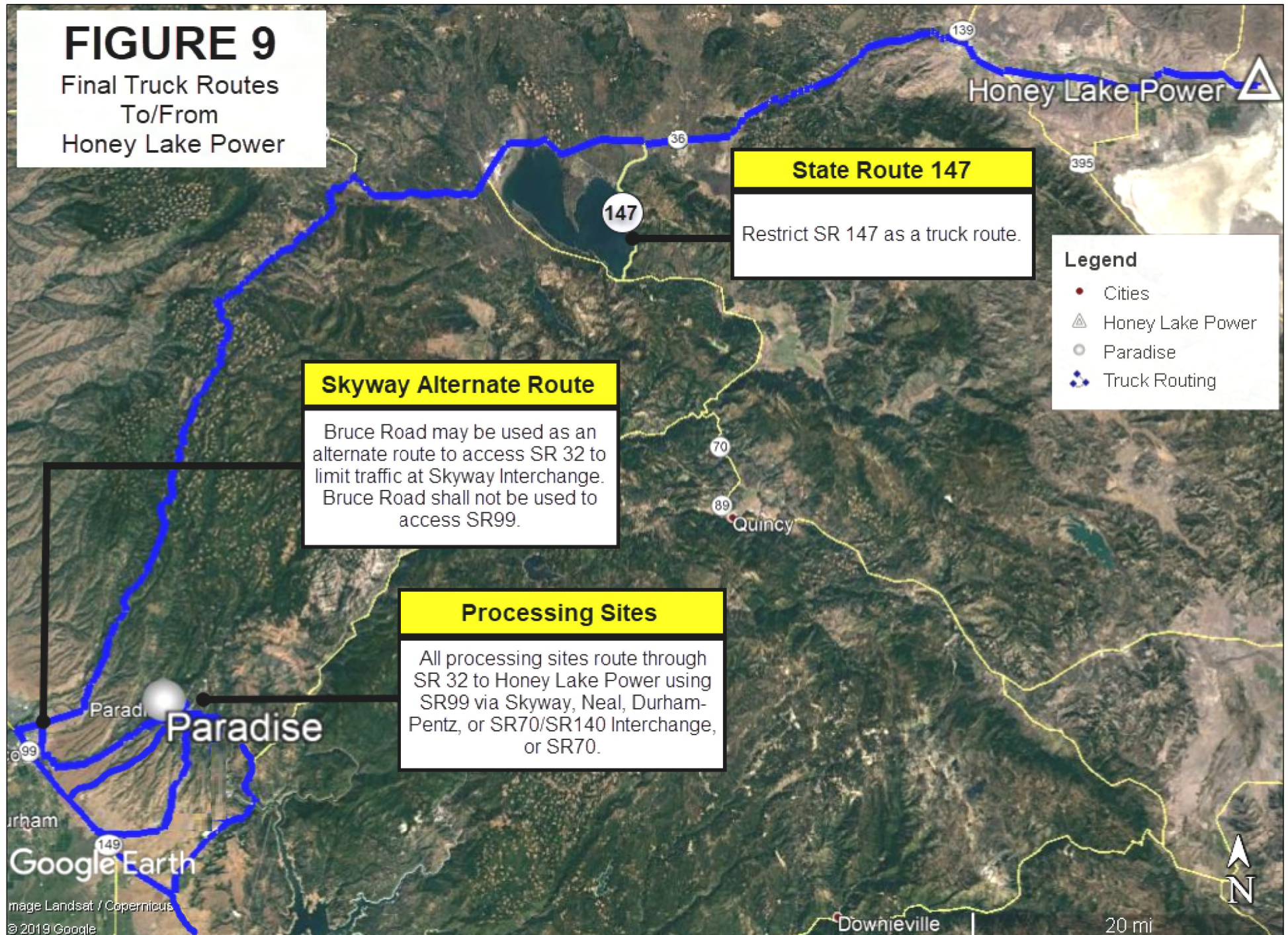


FIGURE 10

Final Truck Routes
To/From Sierra Pacific
Industries (Lincoln)

Lower Butte/Magalia Sites

Processing sites to use Skyway or Neal Rd. to proceed to SR99 or Clark/SR191 to proceed to SR70/SR149 Interchange.

Concow Site

Processing site to route through SR70/SR149 Interchange via SR70 to proceed to SR70

Oroville Site

Processing site to access SR70 via Georgia Pacific Way.

Skyway Road

Staging sites on Skyway should limit truck trips through Skyway Interchange at peak hours and use SR70/SR149 Interchange or Neal Rd.

Riosa Road

Use Riosa Road to/from SR 65 to access the end-use facility

Legend

- Cities
- Paradise
- △ Sierra Pacific Industries
- 🚛 Truck Routing

Google Earth

Image Landsat / Copernicus
© 2019 Google

Sierra Pacific Industries

30 mi

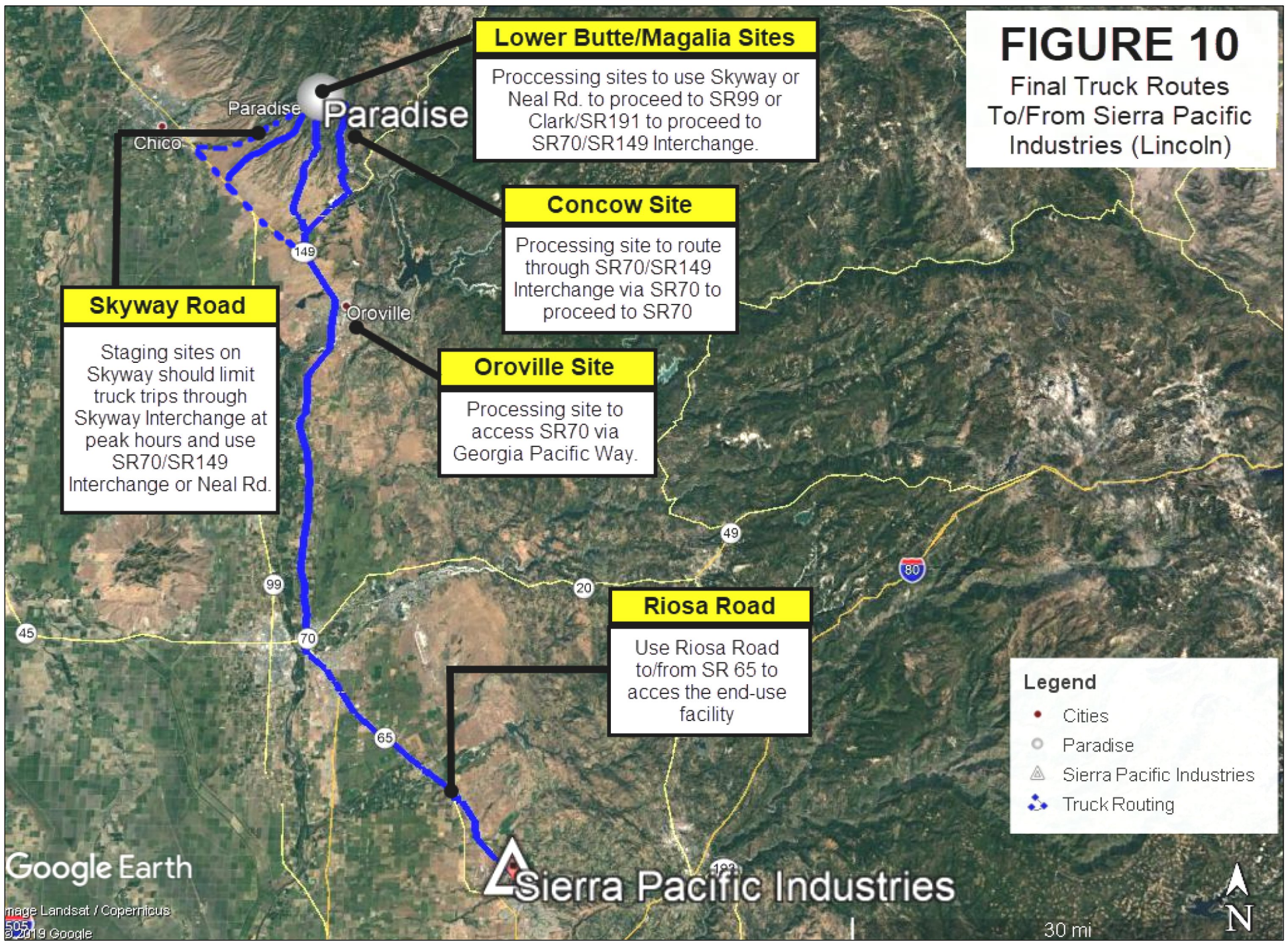


FIGURE 11

Final Truck Routes
To/From Wheelabrator
(Anderson)

Anderson (Wheelabrator)

Legend

- △ Anderson (Wheelabrator)
- Cities
- Paradise
- 🚛 Truck Routing

Processing Sites

All Processing sites use Skyway, Neal, Durham-Pentz, or SR 149 Interchange. Limit trucks at Skyway Interchange. Oroville site to proceed through SR70 via Georgia Pacific Way.

Google Earth

Image Landsat / Copernicus
© 2019 Google

40 mi

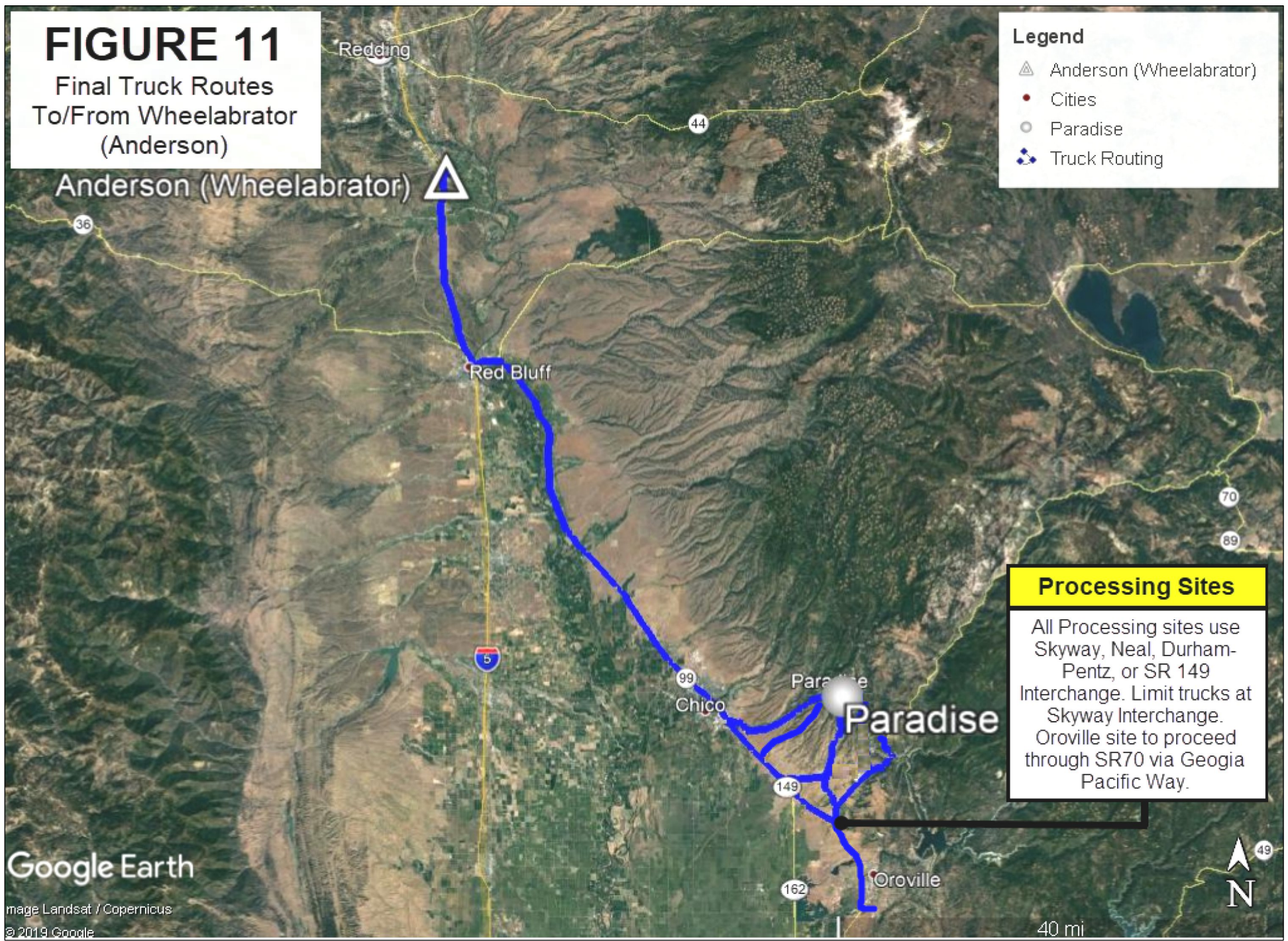


FIGURE 12

Final Truck Routes
To/From Old Durham
Wood Co. (Durham)

Processing Sites

All processing sites use Skyway, Neal, Durham-Pentz, or SR 149 Interchange. Limit trucks at Skyway Interchange. Oroville site to proceed through SR70 via Georgia Pacific Way.

Legend

- Cities
- △ Old Durham Wood Co
- Paradise
- ⊞ Truck Routing

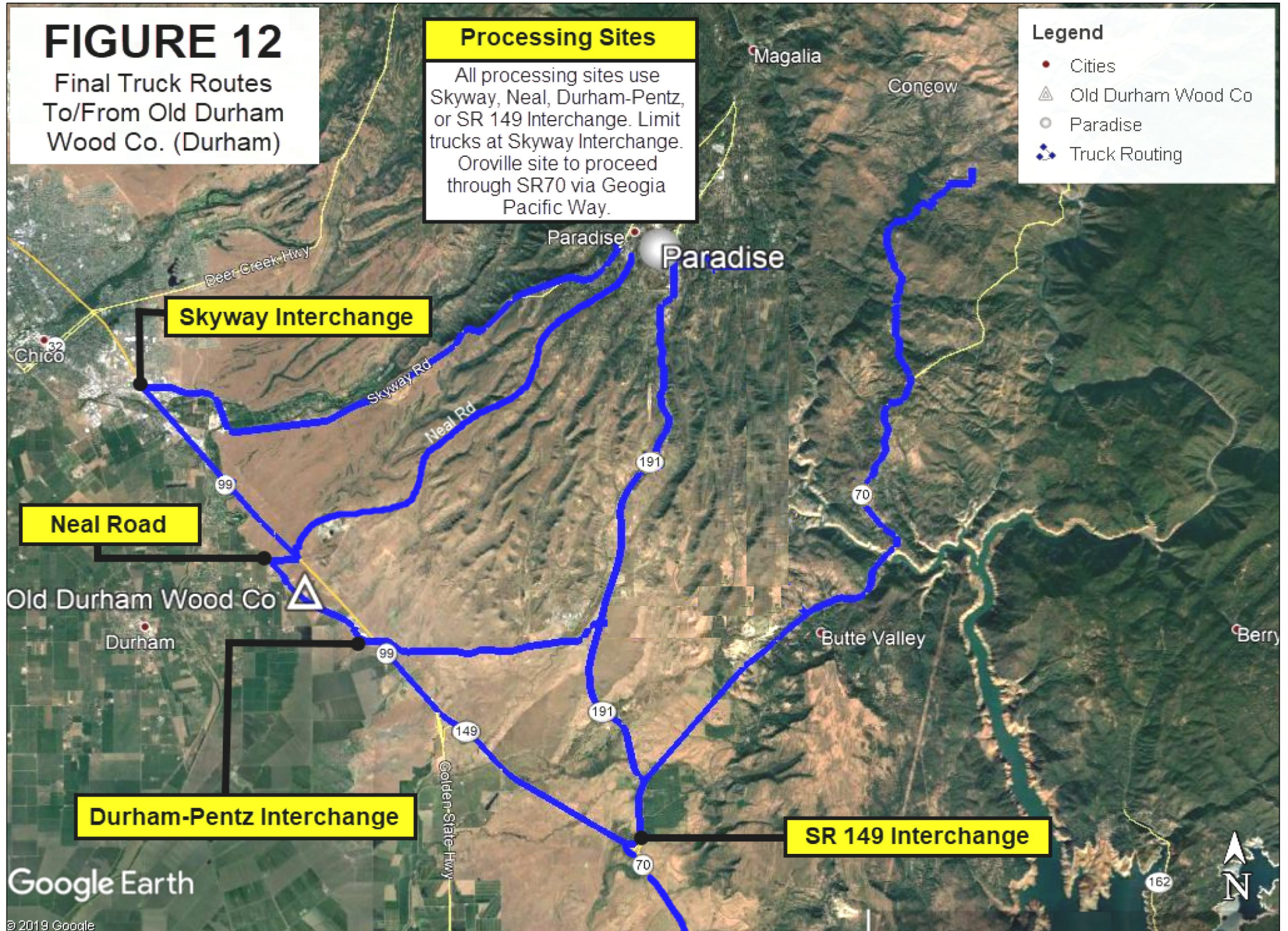
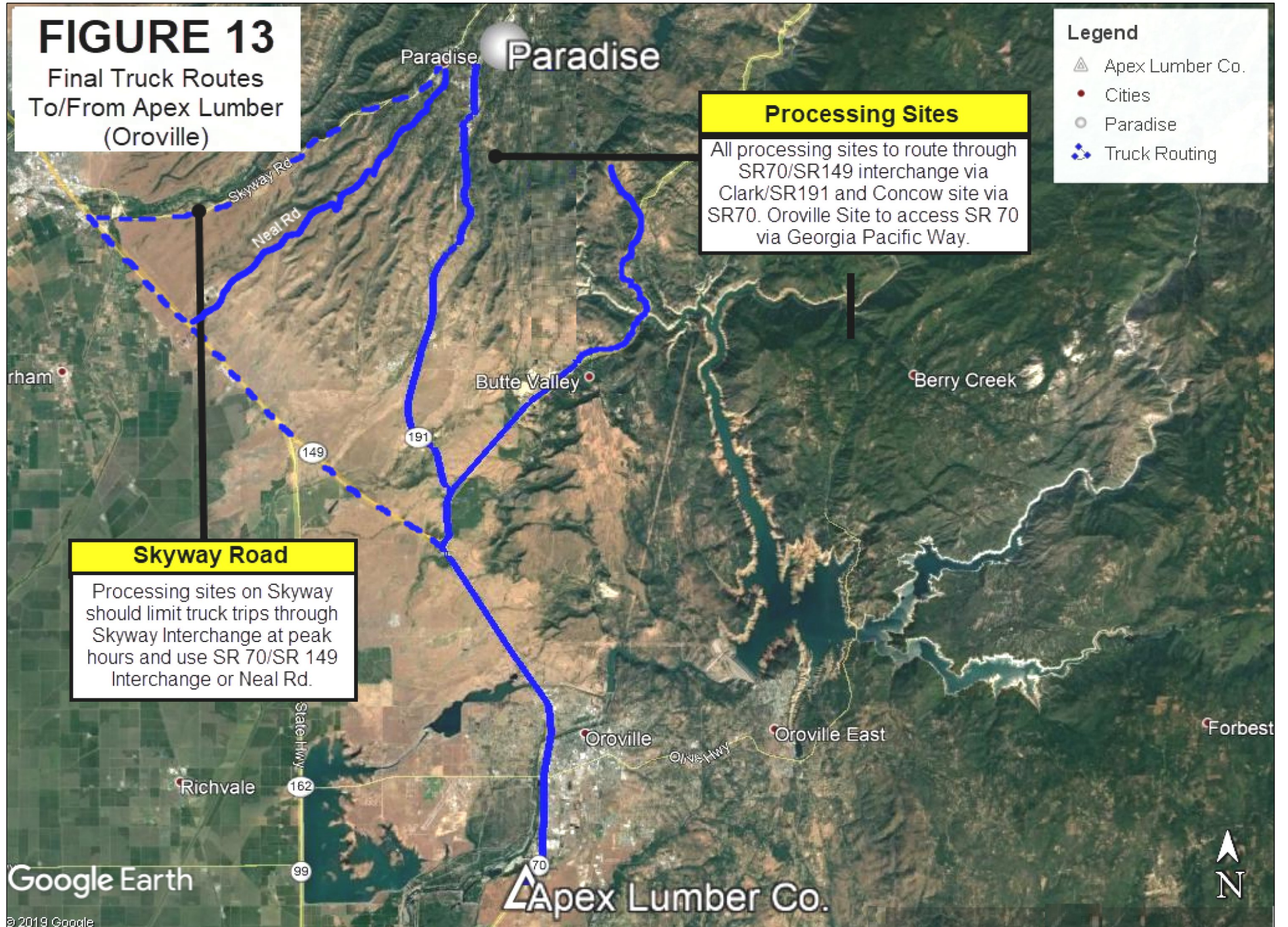


FIGURE 13

Final Truck Routes To/From Apex Lumber (Oroville)



Legend

- △ Apex Lumber Co.
- Cities
- Paradise
- Truck Routing

Processing Sites

All processing sites to route through SR70/SR149 interchange via Clark/SR191 and Concow site via SR70. Oroville Site to access SR 70 via Georgia Pacific Way.

Skyway Road

Processing sites on Skyway should limit truck trips through Skyway Interchange at peak hours and use SR 70/SR 149 Interchange or Neal Rd.