Appendix E1. Logistics Strategy (Final Draft)

1. Introduction and Purpose

Logistics touch almost every element of the proposed Delta Conveyance Project (Project), including people, procurement, commercial, design, and construction. At the earliest stage, logistics can help to shape design and procurement, ensuring the best solutions are developed based on a consultative approach between all disciplines. By being part of the early-stage planning, the logistics strategy is well-placed to help influence the definition and development of the required Project features.

A construction logistics strategy involves more than simply identifying how materials are to be moved to and from the work sites. It is intended to identify how logistics management can be used to address key constraints and opportunities to ensure the Project is delivered in a safe, timely, and cost-effective manner while minimizing impacts to the environment and residents of the Delta. Because the construction of major infrastructure required for this Project is highly complex, the logistics strategy needs to show how the aims and aspirations at the planning stage of the Project can be delivered during construction, leaving a lasting and positive legacy.

Techniques of construction logistics management have developed rapidly over the last decade, leading to opportunities to both improve efficiency and reduce impacts. These developments include technological advances in the design of vehicles and equipment as well as advances in the way construction logistics can be managed, to allow for more centralized control of logistics flows, such as logistics hubs, which have the ability to optimize the supply chain by offering common products and services to numerous contractors. This approach will be developed as part of future submittals and as contracting strategies are developed. This TM will focus on the materials and manpower access opportunities needed for developing the environmental documents.

This technical memorandum (TM) focuses on the materials, equipment, and labor access opportunities needed to develop the environmental documents.

1.1 Background

The Project would use intake structures at two sites located on the Sacramento River, each capable of conveying 3,000 cubic feet per second (cfs) for a total design capacity of 6,000 cfs. A 36-foot-inside diameter tunnel, the Bethany Reservoir Alignment, would extend from the intakes along to a new Bethany Reservoir Pumping Plant (BRPP) to be located south of the Clifton Court Forebay. The new pumping plant and associated aqueduct would convey the water to a Bethany Reservoir Discharge Structure along the rim of the existing State Water Project (SWP) Bethany Reservoir. The BRPP, Surge Basin, Bethany Reservoir Aqueduct, and Bethany Reservoir Discharge Structure are referred to as the Bethany Complex. Construction of this single-tunnel conveyance Project would require the movement of labor, equipment, and material resources within the Delta, potentially using a combination of land-based and waterborne transportation systems.

1.2 Purpose

The purpose of this document is to summarize general access studies related to the overall Project area, to identify the logistics-related issues that could prevent or complicate serving each specific planned

work site, and to resolve these challenges at a strategic level. It therefore provides a framework for the development of more detailed logistics strategies for each site as design development evolves.

The logistics strategy is primarily intended to accommodate the forecasted movement of bulk materials, such as spoils, borrow material, concrete (either raw materials or ready-mix), tunnel lining segments, etc. and workers during construction. Additionally, one of the goals of this strategy is to determine the best possible transport solution for these materials, considering many factors, and looking at barge, rail, and road systems.

1.3 Organization

This TM includes the following sections:

- Introduction and Purpose
- General Access, Project Alignment and Road Access
- Material Requirements
- Construction Support Facilities
- Preliminary Logistics Strategy
- References
- Attachment 1 – General Access Figures
- Attachment 2 – Bethany Reservoir Alignment Traffic Impacts Analysis
- Figures
- Attachment 3 – Work Site Access Concepts

2. General Access, Project Alignment, and Road Access

The DCA engineering team has conducted numerous studies and evaluations associated with identifying acceptable work sites and general means of access to these sites by road, rail, and barge for the Bethany Reservoir Alignment. Drawing on these general access studies, the team has conducted siting studies to define potential work sites and a conveyance alignment. The results of these previous investigations are summarized here.

2.1 General Access

The general means of access to the various tracts and islands along the alignment under study were investigated by the DCA and include road, rail, and barge. Refer to the Concept Engineering Report (CER) Appendix E2 *Potential Road Access Routes,* CER Appendix E3 *Rail Potential Study,* and Barge Transportation Study (DCA, 2021b) for detailed information on further means of access. The results of these general access studies are shown on the figures in Attachment 1. These general access assessments were subsequently used to inform the more detailed work site location studies.

2.2 Project Alignment

To establish a proposed conveyance system alignment for the Project, the DCA engineering team performed a facility siting analysis (refer to the CER Appendix D1 *Facilities Siting Study*). The analysis

initially focused on locations for the launch shafts followed by a similar analysis to site the reception and maintenance shafts, the pumping plant, and the aqueduct. This involved the following process:

- Methodology was broken out into criteria and sub-criteria
- Sub-criteria were assigned an Importance Factor to reflect their weighting
- Criteria were based generally on design and construction considerations, including existing land uses and other criteria such access to existing roads, rail, and waterways
- Smaller overall footprint for maintenance/reception shafts, as compared to launch shafts, provided more flexibility in siting

The criteria/sub-criteria considered in the analysis included the following:

- Construction Considerations:
  - Access Suitability
  - Quality of Adjacent Road(s)
  - Access Constraints
  - Concrete Source
  - Condition of Existing Levees
- Geotechnical/Geological:
  - Geologic Unit
  - Peat Thickness
- Property and Land Use:
  - Conservation Land, Refuges, Preserves, and Vernal Pool Critical Habitat
  - Number of Land Owners
  - Public or Private Land Ownership
  - Future Development
  - Farmland Designation
- Existing Infrastructure:
  - Existing Houses, Schools, Hospitals
  - Existing Linear Infrastructure
  - Existing Water Supply Wells
  - Existing Structures
  - Gas Wells or Gas/Oil Production Fields

The result of this analysis is the alignment presented on Figure 1.

2.3 Road Access

Access by road would be required to all work sites. The following general guiding principles were followed in determining the best access to the various work sites:

- No construction traffic would be allowed in Yolo County except for Interstate 80, or for individuals or trucks traveling from homes or businesses in Yolo County.
- No construction traffic would be allowed within Solano County except for Interstate 80 and State Route 12 in Solano County (between Interstate 80 and Sacramento River) or for individuals or trucks traveling from homes or businesses in Solano County.

- No construction traffic would be allowed on State Route 160 between State Route 12 and Cosumnes River Boulevard except for re-alignment of this highway at the intake locations or for individuals or trucks traveling from homes or businesses along the affected routes.
- Maximize use of existing public roads and farm roads for haul roads to minimize changes to agricultural land.
- Prevent construction traffic on levee roads, including State Route 160, except when the highway is re-aligned during intake construction.
- No construction trucks with three or more axles would be allowed on State Route 4 across Victoria Island between the Old River and Middle River bridges.
- All truck routes on public roads would be at least two-lane roads with paved shoulders to park trucks in case of breakdowns, unless widened road located within sensitive habitat areas.
- Store construction vehicles on-site to minimize truck traffic.
- Pave access roads and intake haul road to minimize dust generation and noise.

As described in CER Appendix E2 design criteria for proposed new access roads would generally follow the applicable County design requirements. Conceptual drawings of the proposed roads are also presented in DCA Volume 2 – Drawings (2024a).

A Traffic Impact Analysis (TIA) was carried out to examine specific traffic impacts associated with Project features that are unique to the Bethany Reservoir Alignment. The outcome of the Bethany Reservoir Alignment TIA is described in Attachment 2, Bethany Reservoir Alignment Traffic Impacts.

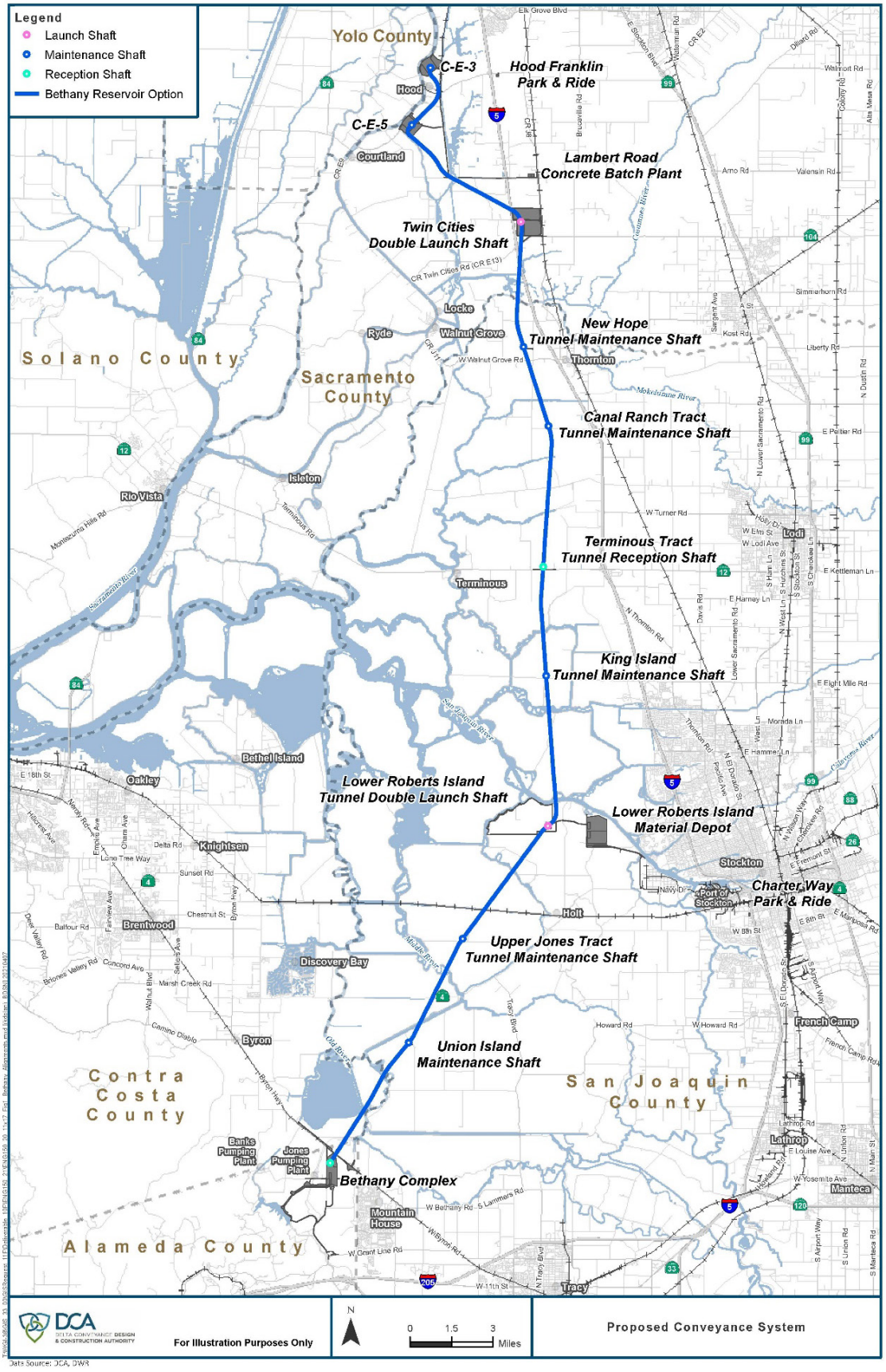

Figure 1. Proposed Bethany Reservoir Alignment Conveyance System

3. Material Requirements

The Project's construction would require moving large volumes of various materials. The higher volume materials would include:

- Tunnel liner segments
- Spoil material (unsuitable or excess excavated material)
- Borrow material (needed to raise land, construct levees and fill over aqueduct)
- Raw materials associated with concrete/grout (coarse aggregates, fine aggregates, and cement) and/or ready-mix concrete depending on the location of the batch plants, plus other associated materials such as reinforcing steel
- Potentially reusable tunnel material (RTM) if moved from or between worksites
- Large-diameter steel pipe and accessories for the aqueduct

The sources of raw materials would be selected by the contractors that ultimately build the Project features. The various materials could be sourced from the region around the Delta or come from much further away as maritime cargo shipments to one of the regional ports or by rail or road. Specialty and manufactured materials may be sourced from further afield and moved to the Delta by one or more of the potential transportation networks, including barge, rail and road.

Based on the conceptual designs for the planned Project features, estimates of the quantities of these bulk materials have been developed for the Bethany Reservoir Alignment, as well as to reflect facility sizing for the multiple diversion design capacity options under consideration. In addition, information on soil and reusable tunnel material (RTM) are presented in the CER Appendix C6 *Reusable Tunnel Material* and Appendix G4 *Soil Balance*.

4. Construction Support Facilities

To support Project construction, several ancillary construction support facilities would be developed along the alignment. The primary purpose of these construction support facilities is to reduce traffic going into the Delta on roadways that are not well-suited to handle the additional traffic volume. The planned construction support facilities include the following:

- Material depots
- Park & Ride facilities

These facilities are further described below.

4.1 Material Depots

Material Depots would allow materials and equipment to be transported to the construction work sites in bulk quantities and then distributed to the work sites by other means to reduce traffic within the Delta. They could also be used to consolidate smaller loads from several trucks to one larger clean fuel truck to transport items to construction sites and minimize truck trips beyond the influence of major State Routes (SRs) and freeways.

Material Depots could contain various construction support facilities including:

- Concrete batch plants
- Rail siding and loading and unloading facilities (if appropriate)
- Barge loading and unloading facilities (if appropriate)
- Other consolidation center facilities to combine small loads into larger ones for movement into the work sites

The Material Depots would be located on relatively flat sites near major highways, rail lines and/or waterways for rail/barge access. Four Material Depots have been identified as potential locations to support construction of the Project:

- Lambert Road Concrete Batch Plant
- Twin Cities Complex Material Depot
- Lower Roberts Island Material Depot

Each of these is further described below in Section 5 with their associated Project feature.

4.2 Park & Ride Facilities

In addition to parking facilities included within work sites, several separate potential Park & Ride facilities have been identified to consolidate worker vehicles and allow for conveying workers to some of the construction work sites on clean fuel buses or vans or in carpools. These facilities could include:

- Designated parking areas
- Shuttle vehicle loading/unloading zones and parking area
- Electric vehicle recharge stations (recharged by on-site solar panels, when possible)

Two Park & Ride facilities have been identified to support construction of the Project:

- Hood-Franklin Park & Ride
- Charter Way Park & Ride

The basis for these, along with the selection of locations for these Park & Ride facilities, is further discussed under Section 5 as related to their associated Project feature work sites.

In addition to the above dedicated construction support facilities, additional construction support facilities are co-located on several of the construction sites. These include two concrete batch plants and worker parking included in the Bethany Complex work areas. Additionally, the Project is considering several options for precast concrete plants to manufacture the pre-cast concrete segments of the interior liner of the tunnel system. Refer to the CER Appendix E5 *Preliminary Precast Yard Study* for details associated with these construction support facilities.

5. Preliminary Logistics Strategy

The following subsections describe the preliminary logistics strategy associated with serving each of the planned work locations. They are grouped into the following categories:

- Northern Facility Features
- Bethany Reservoir Alignment Project features

Where road improvements are noted, further details on the proposed improvements can be found in the Drawings (2024a).

5.1 Northern Facilities

The Northern Facilities includes:

- North Delta Intakes
- Twin Cities Complex

Multiple approaches to provide access and logistic support to these Project features was evaluated. These include (refer to Figure 2):

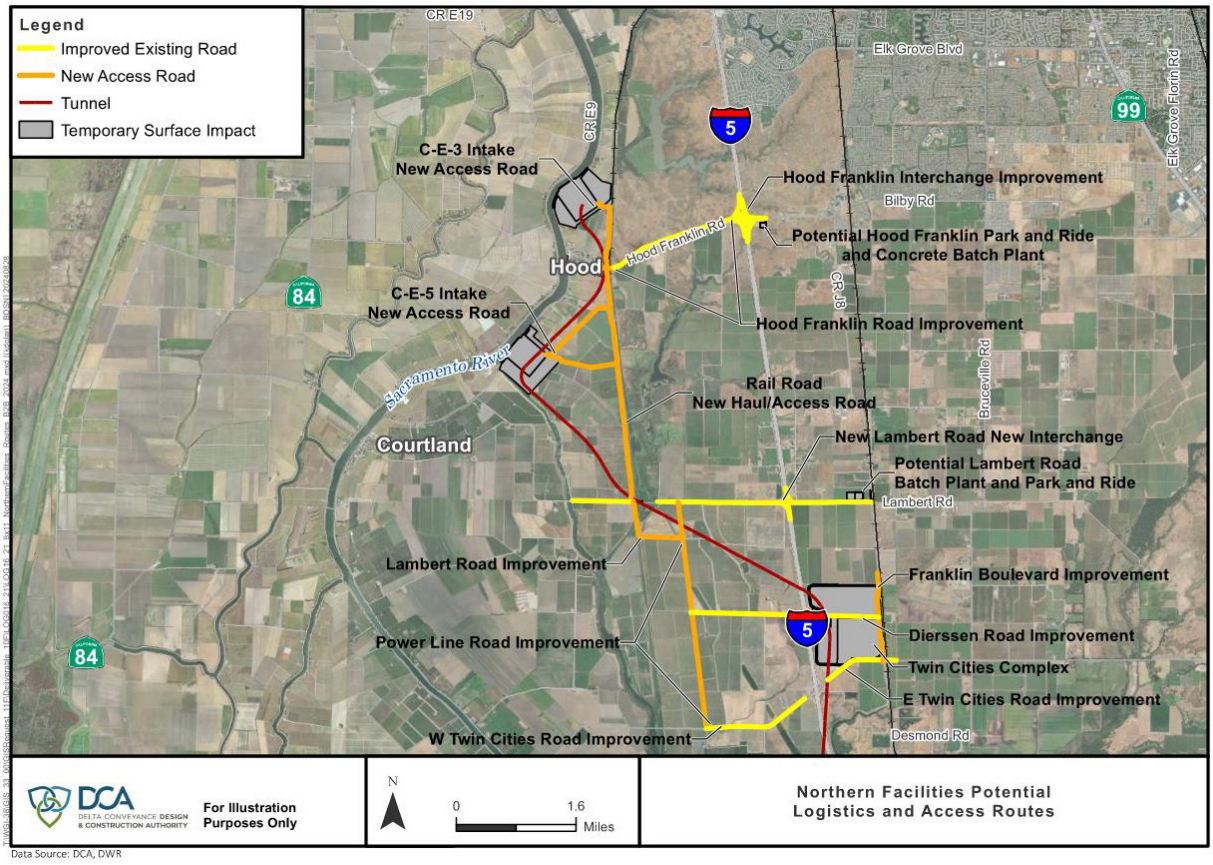

Figure 2. Northern Facilities Potential Logistics and Access Approaches

- Improving Interstate 5 Interstate 5and Hood-Franklin Road interchange and Hood-Franklin Road into Hood
- Constructing new interchange at Interstate 5 and Lambert Road
- Improving Lambert Road
- Constructing a new interchange and improving Dierssen Road
- Improving Twin Cities Road

- Improving/realigning Franklin Boulevard between Twin Cities Road and north of Dierssen Road
- Constructing new Intake Haul Road parallel to and west of powerline corridor from Twin Cities Road to Lambert Road
- Constructing Park & Ride facility at either Hood-Franklin Road and Interstate 5, the Lambert Road and Franklin Boulevard intersection or within the Twin Cities Complex
- Constructing a concrete batch plant at either Hood-Franklin Road and Interstate 5, lambert Road and Franklin Boulevard intersection or within the Twin Cities Complex

Following is a discussed related to the approach selected to serve each of these Northern Facilities features.

5.1.1 North Delta Intakes

As noted in Section 1.1, the Project includes intake structures, C-E-3 and C-E-5, located south of Freeport and north of Courtland on the Sacramento River, each with a capacity of 3,000 cfs, to divert water into the Bethany Reservoir Alignment. The Project would convey a total capacity of 6,000 cfs.

Multiple modes of transporting bulk materials to and from the intake sites were considered. Rail access to these locations using the old historic Union Pacific Railroad (UP) line running south from Sacramento along the west side of Stone Lake National Wildlife Refuge (NWR) was considered but dismissed early as being infeasible due to potential effects on nearby wildlife habitat and portions of this abandoned railroad within Sacramento city limits have been removed for a bike trail.

Barge access along the Sacramento River was evaluated related to intake construction. However, except for minor activities for geotechnical investigations during the design phase and at the end of the construction period for each intake to place riprap, this mode of access was eventually eliminated for the following reasons:

- Frequent raising of several of the bridges crossing the Sacramento River was deemed unacceptable due to the age of these bridges and disruption to surface traffic that would result.
- There could be significant restrictions on barge traffic timing in this area of the Sacramento River, which could result in disruptions to the delivery of materials and increase the construction footprint at the intakes sites to provide for additional short-term material storage on-site.
- All materials delivered or removed from the sites would need to need to be moved across SR 160, which could result in significant traffic delays and increased risk of vehicular accidents.

It should be noted that limited barging would be utilized to perform the geotechnical field investigation related to test pile activity and to install the final riprap bank protection towards the end of construction.

Therefore, all construction materials would be trucked to the intake work sites, with the exception of riprap that would be brought to the sites by barge as noted above. To minimize traffic on the local Delta roadways and specifically on SR 160, and to minimize the land requirements and footprint of materials storage areas at the individual intake sites, dedicated construction support facilities would be incorporated into the Project as discussed in Section 4.

As it was determined that ready-mix concrete truck could not be delivered from commercial batch plants and poured within an acceptable time after loading the ready-mix truck at the intakes, a

dedicated batch plant was recommended. Given the potential quantities of concrete to be placed for the Northern Facilities, two plants were recommended at a single location. The criteria used to site the concrete batch plants included:

- Ready access off Interstate 5 for transport of the raw materials to avoid excessive travel on the local roads within the Delta.
- Comply with DWR guidelines that require a maximum of 90 minutes from the time a concrete ready-mix truck is filled to the time the concrete is poured.

Several locations in the northern area of the Project met these requirements and were evaluated:

- Hood-Franklin Road just east of the Interstate 5 interchange.
- Intersection of Lambert Road and Franklin Boulevard.
- Within the Twin Cities Complex.

The Lambert Road location was selected for the following reasons (refer to Figure 3-1):

- The level of service (LOS) of Hood-Franklin Road would remain at acceptable levels even with ready-mix concrete truck traffic. However, avoidance of further traffic through the Stone Lakes NWR was a high priority. As a result, use of Hood-Franklin Road as a major construction route was eliminated to avoid ready-mix concrete truck traffic along Hood-Franklin Road.
- Lambert Road has a lighter traffic load as there is no existing interchange with Interstate 5. Therefore, this would be a preferred east-west route to the intakes. Siting the concrete batch plants at the Lambert Road and Franklin Boulevard intersection provides ready access for raw material delivery via either a Hood-Franklin Road-Franklin Boulevard route or a Twin Cities Road-Franklin Boulevard route.
- With the Hood-Franklin Road location eliminated as a major construction route, results in the shortest haul distance to the intakes.
- The Twin Cities Complex offers good access for raw material delivery via a Twin Cities Road-Franklin Boulevard route. However, a more extensive network of new dedicated haul/access roads would be required using either Twin Cities Road or Dierssen Road from the complex (refer to Figure 2). Additionally, there most likely will not be sufficient space at the Twin Cities Complex for the dual concrete batch plant. Therefore, the Twin Cities Complex location was deemed less desirable than a Lambert Road location for the concrete batch plant.

In addition to off-site concrete batch plants, an off-site park & ride facility was recommended for construction employees at the intake sites. An electric shuttle van would transport employees to the intake sites which would also reduce the need for parking areas at the intakes. The criteria used to select an acceptable location included:

- Easy on and off access to Interstate 5.
- Direct access to an east-west route to the intake sites, supplemented with new dedicated north-south haul/access roads.

Three locations met these requirements and were evaluated:

- Hood-Franklin Road just east of the Interstate 5 interchange
- Intersection of Lambert Road and Franklin Boulevard
- At the Twin Cities Complex

Of these options, the Hood-Franklin Road location was selected for the Park & Ride facility for the following reasons (refer to Figure 3-2):

- Results in the shortest shuttle distance from the Park & Ride facility to the intake work sites and least impacts associated with road improvements.
- Separates the traffic of the intake construction workers for the intakes from the workers and deliveries of materials and equipment at Twin Cities Complex, and thus further diluting the impact on traffic.
- Based on the TIA performed, a LOS C or better would be maintained on Hood-Franklin Road even with the additional shuttle traffic. This would result in a minimal increase in traffic through the Stone Lakes NWR.
- For a Park & Ride facility at the intersection of Lambert Road and Franklin Boulevard, a new interchange would be required at the intersection of Interstate 5 and Lambert Road, which would result in additional construction impacts and be challenging to permit given the existing nearby interchanges at Hood-Franklin Road and Twin Cities Road. Therefore, this location was deemed less desirable than the Hood-Franklin Road location.
- The Twin Cities Complex offers good access on and off Interstate 5 via a Twin Cities Road-Franklin Boulevard. However, a more extensive network of new dedicated haul/access roads would be required using either Twin Cities Road or Dierssen Road from the complex to the intake sites (refer to Figure 2). This would result in greater construction disruption and travel time to serve the intake works sites. Additionally, while there is sufficient space at the Twin Cities Complex for parking to build the facilities at the complex, there is not enough space for the Park & Ride facility to serve the intake construction worker parking. Therefore, the Twin Cities Complex location was deemed less desirable than the Hood-Franklin Road location.

With the location of the intakes established, along with the associated construction support facilities for these Project features, the following road access options were considered to get to the intake work sites:

- Option 1 – exit Interstate 5 at Hood-Franklin Road:
  - Hood-Franklin Road west to the new Intake Haul Road located at the western toe of the abandoned railroad embankment (not on the embankment)
  - North on new Intake Haul Road to Intake C-E-3
  - South on new Intake Haul Road to Intakes C-E-5
- Option 2 – exit Interstate 5 at new Lambert Road interchange:
  - Construct new interchange at Interstate 5 and Lambert Road
  - West on Lambert Road to new Intake Haul Road located at the western toe of the abandoned railroad embankment (not on the embankment)
  - North on new Intake Haul Road to intake sites
- Option 3 – exit Interstate 5 at Twin Cities Road:
  - Twin Cities Road east to Franklin Boulevard
  - North on Franklin Boulevard to Lambert Road

  - West on Lambert Road to new Intake Haul Road located at the western toe of the abandoned railroad embankment (not on the embankment)
  - North on new Intake Haul Road to intake sites
- Option 4 – exit Interstate 5 at Twin Cities Road:
  - Twin Cities Road west to new dedicated Power Line Corridor Road haul/access road (located along an existing power line corridor that crosses agricultural land)
  - North on new dedicated Power Line Corridor Road haul/access road to Lambert Road
  - West on Lambert Road to new dedicated Rail Road haul/access road located at the western toe of the abandoned railroad embankment (not on the embankment)
  - North on new Intake Haul Road to intake sites

Based on an evaluation of these options, the Option 3 access strategy was selected with a few minor adjustments to the strategy noted below. This access option made best use of the planned construction support facilities while minimizing construction of new dedicated haul/access roads. Following are the proposed road improvements associated with the selected strategy for inclusion in the Project. Further details on the proposed road improvements are presented in the engineering concept drawings.

General Option 3 road improvements to facilitate access to this site from the construction support facilities discussed above include the following:

- Widening (24-foot-wide pavement plus 4-foot-wide shoulders on both sides) approximately 3.2 miles of Lambert Road from Franklin Boulevard to the beginning of the new Intake Haul Road just west of the Stone Lakes NWR. Initial plans included widening bridge on Lambert Road over Snodgrass Slough but it was determined that the existing bridge would be adequate since:
  - Existing bridge is approximately 28 feet wide
  - Widening would require work in wetlands, which we wanted to avoid
  - Bridge includes a flood control structure that helps with the routing of flood flows in the area
  - Widening beyond the existing width would primarily be done to facilitate vehicles on the shoulder and ability to simultaneously route traffic through in both directions, which is not necessary for this small distance
- Construction of approximately 3.8 miles of the new Intake Haul Road (24-foot-wide pavement plus 4-foot-wide shoulders on both sides) northward along the west side of the abandoned railroad embankment and Snodgrass Slough to the selected intake site and past Hood-Franklin Road to a new 0.25 access road connecting to the Intake C-E-3 site.
- Construction of approximately 1.0-mile access road (24-foot-wide pavement plus 4-foot-wide shoulders on both sides) into Intake C-E-5 from new Intake Haul Road.
- Improved intersection at Hood-Franklin Road and new Intake Haul Road to facilitate this crossing.
- Widening the Hood-Franklin Road Bridge over Snodgrass Slough.
- Asphalt overlay of approximately 2.25 miles of Hood-Franklin Road between the new Hood-Franklin Park & Ride facility and the new Intake Haul Road.

Note that planned improvements to the Twin Cities Road and Franklin Boulevard components of this option are described below under the Twin Cities Complex subsection.

5.1.2 Twin Cities Complex

The Twin Cities Complex would be one of the Project's main work sites, as it would be used for two main tunnel reach drives. It would be located to the south of Dierssen Road and east of Interstate 5 (refer to Attachment 3, Figure 3-2) and would be used as a launch shaft site for the tunnel reach heading north to connect the new intakes. A second adjacent shaft would be used as a launch shaft for the Bethany Reservoir Alignment to the Terminous Tract Reception Shaft.

To support construction activities at this large construction site, the Twin Cities Complex would be developed to contain the following:

- Tunnel liner segment storage areas
- Covered conveyor system to transport bulk materials around site
- RTM processing areas:
  - Material testing areas
  - Wet material storage
  - RTM storage area
- Other ancillary facilities

Given the proximity of this complex to Interstate 5, the site would include parking for workers associated with the construction contracts serviced from the Twin Cities Complex.

The Twin Cities Complex site would have road access via Interstate 5 and a series of improved roads using Dierssen Road, Lambert Road, Franklin Boulevard and Twin Cities Road.

As noted above, construction materials would be trucked to this work site via Interstate 5 coupled with a series of improved roads. Road improvements to facilitate site access include the following:

- Widening (24-foot-wide pavement plus 4-foot-wide shoulders on both sides) approximately 1.4 miles of Twin Cities Road from Franklin Boulevard Interstate 5 to Interstate 5.
- Widening Dierssen Road (24-foot-wide pavement plus 4-foot-wide shoulders on both sides) approximately 1.0 miles from Franklin Boulevard to Interstate 5.
- Relocation and widening (24-foot-wide pavement plus 4-foot-wide shoulders on both sides) approximately 0.6 miles of Franklin Boulevard between Twin Cities Road and just north of Dierssen Road.

Further details on the proposed road improvements are presented in the engineering concept drawings.

The following subsections describe the preliminary logistics strategy associated with serving each of the planned work locations.

5.2 Bethany Reservoir Alignment Project Features

The Bethany Reservoir Alignment includes the following Project features located to the south of the Twin Cities Complex, as shown in Figure 3-8:

- New Hope Tract (Eastern) Maintenance Shaft
- Canal Ranch Tract Maintenance Shaft
- Terminous Tract Reception Shaft (and associated tunnel reaches)

- King Island Maintenance Shaft
- Lower Roberts Island Double Launch Shaft and Material Depot
- Upper Jones Tract Maintenance Shaft
- Union Island Maintenance Shaft
- Bethany Complex Facilities

The following subsections provide the proposed logistics strategy for each feature.

5.2.1 New Hope Tract Maintenance Shaft

The New Hope Tract Maintenance Shaft would be located in the central portion of New Hope Tract north of Walnut Grove Road (refer to Figure 3-4). All construction materials would be trucked to this work site from Interstate 5, west on Walnut Grove Road and then north to the site on Blossom Road and then to the site from a dedicated haul road off Blossom Road. This is the most direct and logical access to the work site. Workers would come directly to the site along this same.

Road improvements to facilitate site access would include the following:

- Overlay approximately 1.3 miles of Walnut Grove Road and Blossom Road.
- Construction of approximately 0.3 miles of a new haul road (24-foot-wide gravel roadway plus 4-foot-wide shoulders on both sides) between Blossom Road and work site.
- Construction of approximately 330-foot gravel access road into work site.

5.2.2 Canal Ranch Tract Maintenance Shaft

The Canal Ranch Tract Maintenance Shaft would be located on Canal Ranch Tract adjacent to West Peltier Road (refer to Figure 3-5). All construction materials would be trucked to this work site from Interstate 5, West Peltier Road and then to the site, which is the most direct route to the work site. Workers would come directly to the site along this same route. Road improvements to facilitate site access include the following:

- Overlays of approximately 1.8 miles of Peltier Road between Interstate 5 and the work site.
- Construction of approximately 300-foot gravel access road into work site.

5.2.3 Terminous Tract Reception Shaft

The Terminous Tract Reception Shaft would be located in the central portion of Terminous Tract just north of SR 12 (refer to Figure 3-6). The single shaft would serve as a reception shaft for two separate tunnel contractors. All major construction materials would be trucked to this work site from Interstate 5 and then west on SR 12 and then to the site off SR 12. Workers would come directly to the site along SR 12. Road improvements to facilitate site access include the following:

- Improving approximately 2.3 miles of SR 12 from Interstate 5 to work site, including turn pockets and acceleration lanes.
- Construction of approximately 470-foot gravel access road into work site.

5.2.4 King Island Maintenance Shaft

The King Island Maintenance Shaft would be located in the central portion of King Island just north of Eight Mile Road west of White Slough (refer to Figure 3-7). All construction materials would be trucked to this work site from Interstate 5 and then west on Eight Mile Road to the site, which is the most direct route to the work site. Workers would come directly to the site along this same route. Road improvements to facilitate site access include the following:

- Overlaying approximately 3.4 miles of Eight Mile Road from Interstate 5 west to new haul road.
- Construction of approximately 420-foot gravel access road into work site.

5.2.5 Lower Roberts Island Work Site

5.2.5.1 Double Launch Shaft

The Lower Roberts Island Double Launch Shaft would be located in the north central portion of Lower Roberts Island and would serve a dual purpose for the Bethany Reservoir Alignment. It would be used as a launch shaft for the tunnel reach heading north to the Terminous Tract Reception Shaft and as a launch shaft for the tunnel reach heading south to the Bethany Complex (to the Surge Basin Reception Shaft at the BRPP). As a result, the co-located material depot would be sized to manage materials for two tunneling operations and to process and store the additional RTM associated with the dual drives.

The site would potentially have multiple modes of access (refer to Figure 3):

- Road access via several optional routes:
  - Option 1 - a new haul road would be extended from West Fyffe Street in the Port of Stockton and use portions of House Road
  - Option 2 – upgrade N. Island Road from SR 4 to House Road
  - Option 3 – upgrade S. Whiskey Slough Road/Holt Road from SR 4 to new haul road west of House Road
- Rail access by would be extended from existing rail lines from the Port of Stockton to area just south of Vulcan Island.

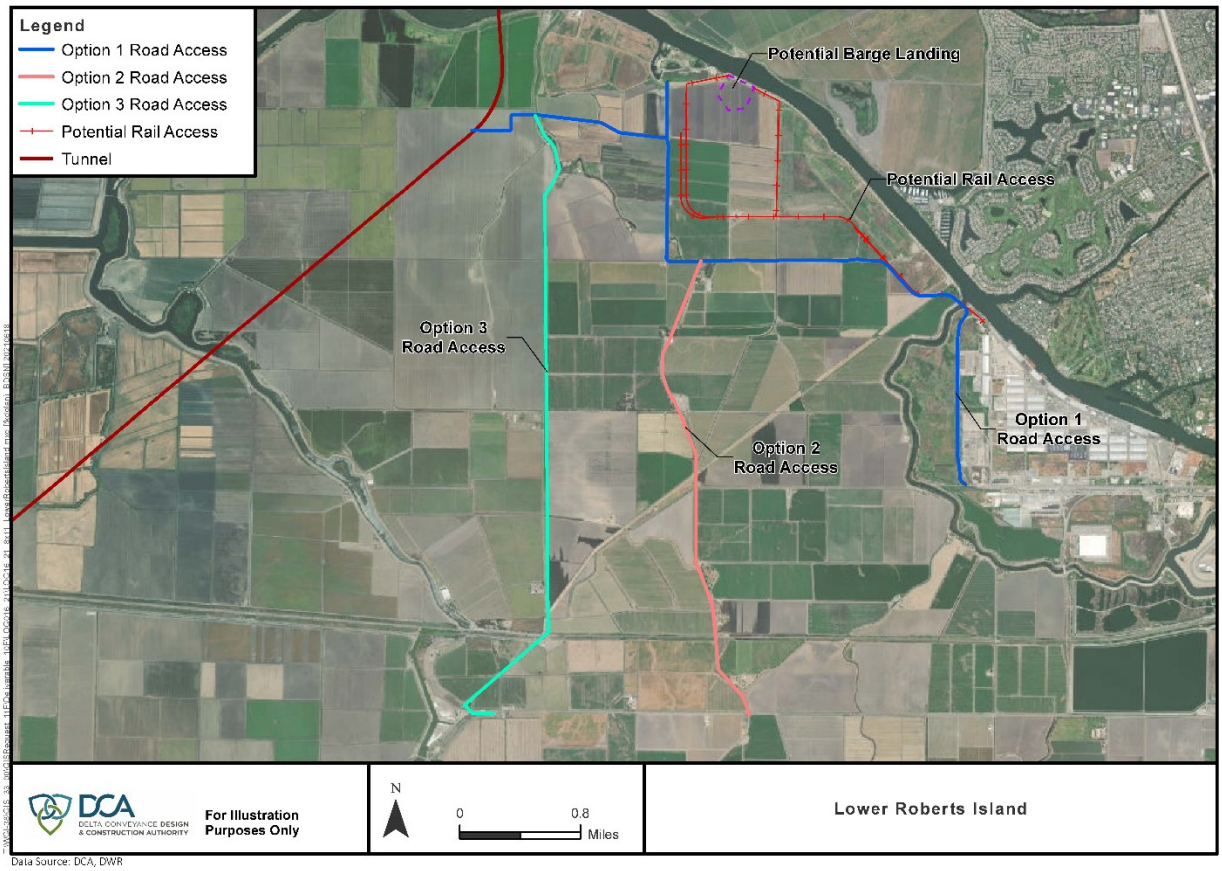

Figure 3. Potential Modes of Access to Lower Roberts Island

The planned mode of transportation used for the bulk materials would be as follows:

- Spoils – would be transported in a covered conveyor to on-site disposal area
- Borrow – would be transported in a covered conveyor from an on-site borrow area
- Ready-mix concrete – a concrete batch plant was not included because it was determined that ready-mix concrete truck could be delivered from a commercial plant and poured within 90 minutes of loading the truck
- Bulk powdered material (cement, flyash, bentonite) – would be transported by roads
- Tunnel liner segments – would be transported by rail and transferred to trucks on-site.
- RTM – would be transported on-site in covered conveyor to RTM storage location.
- Relative to road access and based on an evaluation of the three potential options, Option 1 was selected as the preferred road access route for the following reasons: Options 2 and 3 would require traveling substantially further distance on SR 4 than Option 1 with Option 3 being the longest. The TIA showed that SR 4 is currently at LOS D so adding further traffic to this route would increase traffic
- Option 1 is the shortest route and will therefore result in the least disruption
- Option 1 routes the construction traffic through an industrial area Instead of residential, recreational, or habitat areas

Road improvements to facilitate site access include the following (refer to Figure 3-9):

- Construction of approximately 1.2 miles of new access road (24- foot wide paved roadway plus 4-foot wide shoulders on both sides) from end of West Fyffe Street in Port of Stockton to new rail and road bridge at the northwestern corner of Rough and Ready Island.
- Construction of new road and rail bridge crossing Burns Cut (approximately 67.5-feet wide) connecting Rough and Ready and Lower Roberts islands.
- Construction of approximately 3.2 miles of new access road (24- foot wide paved roadway plus 4-foot wide shoulders on both sides) and rail lines along West House Road from new bridge to the Material Depot.
- Construction of approximately 1.6 miles of new access road (24- foot wide paved roadway plus 4-foot wide shoulders on both sides) from depot to shaft work site.

As noted above, construction materials would either be trucked to this work site via new haul roads extended west from the Port of Stockton or by rail from a new rail line constructed on the work site. Details on the Lower Roberts Island Material Depot are described below. On-site, bulk materials would be transferred to the extent possible with conveyors.

Based on the TIA, benefits would be achieved by bussing workers to the site from a Park & Ride facility located off Interstate 5 and SR 4 in Stockton (refer to description below). Workers would use the extended West Fyffe Street access road through the Port of Stockton or utilize South Holt Road or Inland Drive off of SR 4.

5.2.5.2 Lower Roberts Island Material Depot

To support construction activities at the Lower Roberts Island Double Launch Shaft site, a Lower Roberts Island Material Depot (refer to Figure 3-10) would be developed and utilized. The depot would be constructed west of the Port of Stockton and along the San Joaquin River Deep Water Ship Channel just east of Windmill Cove. The depot would contain:

- Rail siding and loading and unloading facilities:
  - Tunnel liner segment unloading system
- Tunnel liner segment storage areas
- Covered conveyor system to transport bulk materials around site and RTM from the shaft work site
- RTM processing areas:
  - Material testing areas
  - Wet material storage
  - Excess RTM storage area
- Other ancillary facilities

Bulk materials would be transferred between the shaft work site and the depot to the extent possible with covered conveyors or vehicles.

5.2.5.3 Charter Way Park & Ride

As recommended by the TIA, a Park & Ride lot would be located along Charter Way just west of the Interstate 5 interchange (refer to Figure 3-11). This facility would be used the projected workers coming

from the north and south on Interstate 5 and from the east on SR 4. This location would provide for transport the workers to the Lower Roberts Island work site westward along SR 4, then northward on the Port of Stockton Expressway, then west on West Fyffe Street to the new work site access road network since this route would bypass secure portions of the Port of Stockton.

5.2.6 Upper Jones Tract Maintenance Shaft

The Upper Jones Maintenance Shaft would be located in the central portion of Upper Jones Tract, just north of South Bacon Island Road (refer to Figures 3-8 and 3-12). All construction materials would be trucked to this work site on public roads and on a new dedicated haul road stub into the site from South Bacon Island Road, which is the only logical road access to this site. The preferred routing to the site would utilize Tracy Boulevard off Interstate 580/Interstate 205 to State Route 4 and then onto South Bacon Road. An alternate route would be State Route 4 westbound from Stockton off of Interstate 5. Workers would come directly to the site along this same route.

Based on the TIA conducted and summarized in Attachment B, Project traffic on State Route 4 would be minor in relation to the background traffic. The level of service (LOS) would be D or better even with the additional Project related traffic, which meets the criteria established for the Project. Utilizing Tracy Boulevard from Interstate 580/Interstate 205 to State Route 4 would increase traffic along this route but the LOS would remain at level C, which falls well within the criteria established for the Project.

Road improvements to facilitate site access include the following:

- Approximately 3.1 miles of asphalt overlay of South Bacon Island Road from State Route 4 to the site access road
- Construction of a new 400 foot gravel haul road on between South Bacon Island Road and work site

5.2.7 Union Island Maintenance Shaft

The Union Island Maintenance Shaft is in the northern portion of Union Island, just west of Bonetti Road (refer to Figures 3-8 and 3-13). All construction materials would be trucked to this work site on public roads and on a new dedicated haul road stub into the site from Bonetti Road, which is the only logical road access to this site. The preferred routing to the site would utilize Tracy Boulevard off Interstate 580/Interstate 205 to Clifton Court Road, then west to Bonetti Road. An alternate route would be State Route 4 westbound from Stockton off of Interstate 5 to Tracy Boulevard, then south to Clifton Court Road, then west to Bonetti Road. Workers would come directly to the site along this same route. Based on the TIA conducted and summarized in Attachment 2, Project traffic would be minor in relation to the background traffic. The LOS would be C or better even with the additional Project related traffic, which falls well within the criteria established for the Project.

Road improvements to facilitate site access include the following:

- Approximately 5.45 miles of asphalt overlay of Clifton Court Road and Bonetti Road to the site access road
- Construction of a new 400 foot gravel haul road on between Bonetti Road and work site (Figure 3-13)

5.2.8 Bethany Complex

The Bethany Complex would include large work areas for the following Project features (refer to Figure 3-14):

- Surge Basin Reception Shaft
- Surge Basin
- Bethany Reservoir Pumping Plant (BRPP)
- Bethany Reservoir Aqueduct
- Bethany Reservoir Discharge Structure
- Bethany Complex Batch Plants

The potential exists for five or six major contractors to be working on these sites at one time.

There is no waterway access to this location. Therefore, two modes of transporting bulk materials to and from the overall Bethany Complex were considered, rail and road. Rail access, using the inactive Union Pacific Railroad line along Byron Road, was initially investigated. As this existing rail line is located along the north side of Byron Road, a challenging and expensive elevated crossing would need to be constructed over Byron Road into the Bethany Complex site. This was deemed infeasible due to its configuration relative to Byron Road. Additionally, with the tunnel drive being from Lower Roberts Island to the Bethany Complex, there is no need to transport tunnel liner segments to the site or RTM away from the site so there is limited justification for constructing a dedicated rail siding for this location. Finally, the site has good road access from the south off Interstate 580/Interstate 205. Therefore, the decision was made to provide only road access to this work site.

Following is summary of each Project feature associated with the Bethany Complex and the required major materials requirement transport.

- Surge Basin Reception Shaft – the Surge Basin Reception Shaft would be located at the far northern end of the site adjacent to the BRPP and ultimately beneath the Surge Basin. The mode of transportation used for bulk materials would be as follows:
  - Spoils – conveyor or truck to onsite disposal area
  - Bentonite – truck Ready-mix concrete – truck from concrete batch plant (refer to batch plant description below)
- Bethany Surge Basin – the new Surge Basin would be constructed over the reception shaft and adjacent to the BRPP. The mode of transportation used for bulk materials as follows:
  - Spoils – conveyor or truck to on-site disposal area
  - Fills – onsite reuse or conveyor or truck from onsite disposal area
  - Ready-mix concrete – truck from batch plants (refer to batch plant description below)
- Bethany Reservoir Pumping Plant – the BRPP would be constructed adjacent to and on the southern side of the Surge Basin. The mode of transportation used for bulk materials would be as follows:
  - Spoils – conveyor or truck to on-site disposal area
  - Fills – onsite reuse or conveyor or truck from onsite disposal area
  - Ready-mix concrete – truck from batch plants (refer to batch plant description below)
- Bethany Reservoir Aqueduct – the Bethany Reservoir Aqueduct would include four parallel 15-foot-diameter buried steel pipelines, including two reaches with four parallel tunnels along the aqueduct (crossing the Delta Mendota Canal and conservation easement). The Aqueduct would

convey water from the BRPP to the Bethany Reservoir Discharge Structure. The mode of transportation used for bulk materials would be as follows:

  - Spoils – trucks to on-site batch plant for re-use as backfill or to on-site disposal
  - Pipe materials – truck (using specialized trucks and carriers)
  - Pipe bedding (controlled low strength material) – truck from on-site CLSM batch plant (refer to batch plant description below)
  - Ready-mix concrete – truck from concrete batch plant (refer to batch plant description below)

- Bethany Reservoir Discharge Structure – the Bethany Reservoir Discharge Structure is located at the termination of the Aqueduct along the shoreline of the Bethany Reservoir. Given terrain, wetland and conservation easement challenges, multiple route options were considered for the access road to this facility (refer to subsequent discussion on haul road route). The mode of transportation used for bulk materials would be as follows:

  - Spoils – trucks to on-site disposal
  - Fills – onsite reuse or truck from onsite disposal area
  - Ready-mix concrete – truck from concrete batch plant (refer to batch plant description below)

- Bethany Batch Plants – there are two planned batch plants to be included in the Bethany Complex. A concrete batch plant would be set up near the southeast corner of the overall work site. A second concrete plant for processing on-site excavated soils into controlled low strength material (CLSM) would be set up near the center of the Aqueduct alignment with access off Kelso Road. The mode of transportation used for bulk materials would be as follows:

  - Raw materials – truck to batch plant:

    - Sand
    - Aggregate
    - Cement/Flyash

As shown in Figure 3-14, there are several viable road access options to the Bethany Complex from Byron Road (aka Byron Highway) and from Interstate 205/Interstate 580. In addition to the Byron Road, I 205 and Interstate 580, the following local roads were investigated:

- Mountain House Parkway
- W. Grant Line Road
- Mountain House Road

Given the urban nature of the Mountain House Community adjacent to the Bethany Complex and the already heavy traffic on Byron Road, multiple access routes are needed to minimize overall traffic impacts in the area, especially during peak commute times and to facilitate the ability to deliver materials, equipment, and labor to the work sites on a dependable basis. Following is a discussion of the potential access routes developed for the Bethany Complex. Development of all these routes as part of the Project is considered necessary to facilitate construction and minimize local traffic impacts as noted above.

5.2.8.1 Access from Byron Road

Except for a small stretch between Central Parkway and Mountain House Parkway, Byron Road is a 2-lane roadway. Plans exist to further widen Byron Road westward from Central Parkway to Great Valley Parkway at some point in the future to accommodate the planned Mountain House development north

of Byron Road. As shown in Attachment 2, the LOS of Byron Road is already currently F at peak periods so utilizing this roadway without improvement, even with further widening to a Project interchange at Lindemann Road, is not a solution for providing access to the Bethany Complex.

To facilitate road access to the Bethany Complex from the north, the following option was developed and modeled (refer to Figures 3-16 and 3-17):

- Construction traffic exits Interstate 205 onto Mountain House Parkway and travels north to Byron Road
- Bryon Road is widened to 4-lanes between Great Valley Parkway to Lindemann Road to accommodate construction traffic (assuming the planned Mountain House Community widening to Great Valley Parkway is complete)
- Construction traffic would exit Byron Road at a new interchange is constructed at Lindemann and Byron Roads (refer to Figure 3-16)
- A new dedicated 2-lane frontage road along the south side of Byron Road is constructed to allow construction traffic to travel from the Lindemann Road interchange to both the Project site and Mountain House Road
- To reduce traffic on Mountain House Road, a new dedicated access road would be constructed east of the Bethany Complex site between the new Byron Road frontage road and Kelso Road (refer to Figure 3-17)
- Construction of new access roads would also facilitate on-site traffic within the Bethany Complex; these onsite roads would apply to all access approaches described for the Complex

This option facilitates good access for construction of the Surge Basin, the BRPP and its associated concrete batch plant and avoids use of Mountain House Road. Under this option, traffic would increase on Mountain House Parkway and Byron Road, but with the improvements described above, a LOS of C or greater would be maintained on both roads, even with the Project traffic.

5.2.8.2 Access from Interstate 205

As described under Section 5.2.5.1, access from Interstate 205 would start at the Mountain House Parkway exit (refer to Figure 3-17). Construction traffic would proceed north on Mountain House Parkway to W. Grant Line Road. From there, construction traffic could either proceed north to Byron Road as described above or west on W. Grant Line Road to the intersection with Mountain House Road.

For the latter route, traffic would then proceed north along Mountain House Road to the new Bethany Complex access road south of the complex where it would proceed to the south and east of the complex to avoid going past Mountain House School, which is located along Mountain House Road. Improvements would be made to the intersection of W. Grant Line Road and Mountain House Road, which would be coordinated with improvement plans under consideration by Contra Costa County. For purposes of this TM, the intersection bypass option improvement is shown in Figure 3-17 as it has greater impacts than the option to just improve the existing interchange, which is under consideration by Contra Costa County. Mountain House Road would also be improved between W. Grant Line Road and the Bethany Complex access roads (widened to 24-foot pavement with 4-foot gravel shoulders on both sides). The new Bethany Complex access road would exit Mountain Road about ½ mile south of Mountain House School and extend to Kelso Road aligned with the east side of the Bethany Complex. At Kelso Road, it would join with the access road along the east side of the complex as described above.

This option facilitates access to all work sites within the Bethany Complex. Under this option, traffic would increase on the current roadways but with the improvements described above, a LOS of C or greater would be maintained even with the Project traffic. It would be important for construction traffic to avoid the area of W. Grant Line Road and Mountain House Road during the peak morning and evening commutes. While proposed changes should maintain a suitable level of service, avoidance of these peak commute hours would aid overall traffic flow in the area. Construction traffic could use the Byron Road access routes during those times.

5.2.8.3 Access from Interstate 580

Access from Interstate 580 would start at the W. Grant Line Road exit (refer to Figure 3-17). Construction traffic would proceed north on W. Grant Line Road to Mountain House Road. Traffic would then proceed north along Mountain House Road to the new Bethany Complex as described above under Section 5.2.5.2. The same improvements would apply at the W. Grant Line Road intersection and to Mountain House Road.

Under this option, traffic would increase on the current roadways but with the improvements described above, a LOS of C or greater would be maintained even with the Project traffic.

5.2.8.4 Access to Bethany Reservoir Aqueduct Construction Sites

Access to the construction sites for the Aqueduct would be along an improved Kelso Road from the main Bethany Complex as well as along the open trench construction right-of-way. Kelso Road would be widened to 24-foot pavement with 4-foot gravel shoulders on both sides. Under this option, traffic would increase on Kelso Road but with the improvements described above, a LOS of C or greater would be maintained even with the Project traffic.

5.2.8.5 Access to Bethany Reservoir Discharge Structure

The Bethany Reservoir Discharge Structure is located at the termination of the Aqueduct along the shoreline of the Bethany Reservoir. Access to the site would be from a dedicated access road off Mountain House Road (refer to Figures 3-14 and 3-18). The access road would have a 24-foot pavement with 4-foot gravel shoulders on both sides. Given the terrain, wetlands and conservation easement challenges, multiple route options were considered for the access road to this facility. Of the three alignment options investigate, Option 3 was selected based on the following reasons (refer to the CER Appendix):

- Avoids all wetland impacts
- Results in the least required cut and fill to maintain an acceptable roadway gradient
- Has the smallest disturbance footprint

Traffic would increase on Mountain House Road but with the improvements described earlier, a LOS of C or greater would be maintained even with the Project traffic.

6. References

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Delta Conveyance Design and Construction Authority (DCA). 2021b. Barge Transport Study Technical Memorandum. Final Draft.

Delta Conveyance Design and Construction Authority (DCA). 2024a. CER Volume 2 - Drawings. Draft.

California Department of Water Resources (DWR). 2023. *Delta Conveyance Project Final Environmental Impact Report*. SCH# 2020010227. December

Attachment 1
General Access Figures

Legend

- Potential Intake Site (Only Two of Three Sites Required)
- Shafts
- Major Bridge Improvement Location
- Bethany Reservoir Alignment

Road Access

- High
- Moderate
- Low

Yolo County

Solano County

Sacramento County

Contra Costa County

Alameda County

San Joaquin County

West Sacramento

Sacramento

Port of Sacramento

Freeport

Clarksburg

C-E-3

Hood

C-E-5

Courtland

Twin Cities Complex

Locke

Walnut Grove

Ryde

New Hope Tract

Thornton

Canal Ranch Tract

Isleton

Rio Vista

Birds Landing

Terminous Tract

Terminous

Collinsville

King Island

Lower Roberts Island

Upper Jones Tract

Union Island

Discovery Bay

Byron

Bethany Complex

Banks Pumping Plant

Jones Pumping Plant

Mountain House

Tracy

Lodi

Stockton

Port of Stockton

Manteca

Lathrop

French Camp

Knightsen

Brentwood

Oakley

Antioch

Bethel Island

Pittsburg

Bay Point

Courtland

Twin Cities Complex

Lower Roberts Island

Upper Jones Tract

Bethany Complex

Terminous Tract

Canal Ranch Tract

New Hope Tract

King Island

Sacramento River

San Joaquin River

Old River

Middle River

Mokelumne River

American River

Clifton Court Forebay

For Illustration Purposes Only

N

0 2.25 4.5 Miles

Figure 1-1.
Proposed Road Access Routes

Data Source: DCA, DWR

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Legend

- Potential Intake Site (Only Two of Three Sites Required)
- Shafts
- Bethany Reservoir Alignment

Railroad Access

- Low
- Moderate
- High

Yolo County

Solano County

Sacramento County

Contra Costa County

Alameda County

San Joaquin County

West Sacramento

Sacramento

Port of Sacramento

Freeport

Clarksburg

Hood

C-E-3

C-E-5

Courtland

Twin Cities Complex

New Hope Tract

Canal Ranch Tract

Terminous Tract

King Island

Lower Roberts Island

Upper Jones Tract

Union Island

Bethany Complex

Locke

Walnut Grove

Ryde

Thornton

Isleton

Rio Vista

Birds Landing

Collinsville

Terminous

Bay Point

Pittsburg

Antioch

Bethel Island

Oakley

Knightsen

Brentwood

Discovery Bay

Byron

Mountain House

Banks Pumping Plant

Jones Pumping Plant

Lodi

Stockton

Port of Stockton

Manteca

Lathrop

Tracy

French Camp

Sacramento River

San Joaquin River

Mokelumne River

Old River

Middle River

Clifton Court Forebay

American River

Cosumnes River

Data Source: DCA, DWR

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 2.25 4.5 Miles

Figure 1-2.
Proposed Rail Access Routes

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Legend

- Potential Intake Site (Only Two of Three Sites Required)
- Shafts
- Bethany Reservoir Alignment

Landing Potential

- No obstructions
- Potential Levee Enhancements
- Potential Levee Enhancements plus interference with paved state hwy or county rds
- Potential levee enhancements plus intereference with paved state hwy or county rds plus structures
- Major interference or shallow areas

Sacramento County
Solano County
Contra Costa County
Alameda County
San Joaquin County

West Sacramento
Sacramento
Port of Sacramento
Freeport
Clarksburg
C-E-3
Hood
C-E-5
Courtland
Twin Cities Complex
Locke
Walnut Grove
Ryde
New Hope Tract
Thornton
Canal Ranch Tract
Isleton
Rio Vista
Terminous Tract
Terminous
King Island
Lower Roberts Island
Upper Jones Tract
Union Island
Bethany Complex
Discovery Bay
Byron
Banks Pumping Plant
Jones Pumping Plant
Mountain House
Tracy
Lathrop
Manteca
Lodi
Stockton
Port of Stockton
Collinsville
Birds Landing
Bay Point
Pittsburg
Antioch
Bethel Island
Oakley
Knightsen
Brentwood
French Camp

Clifton Court Forebay

Sacramento River
San Joaquin River
Mokelumne River
Middle River
Old River
American River
Cosumnes River

For Illustration Purposes Only

N

0 2.25 4.5 Miles

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Figure 1-3.
Potential Barge Access Routes Considered

Data Source: DCA, DWR

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Attachment 2
Bethany Reservoir Alignment Traffic Impacts Analysis

Attachment 2. Bethany Reservoir Alignment Traffic Impact Analysis

2.1 Introduction

A Traffic Impact Analysis (TIA) was carried out to examine specific traffic impacts associated with project features that are unique to the Bethany Reservoir Alignment. Details of traffic studies by various regional authorities that were referred to during development of the traffic assessment are listed below under References. This attachment contains a series of figures illustrating the results of the traffic analysis.

2.2 Analysis and Findings

The key points raised in the analysis were:

- Two approaches would be used for the Lower Roberts Island and Upper Jones Tract sites (refer to Figure 2-2). The route following State Route 4 from Interstate 5 in Stockton would carry the majority of Project-related truck traffic. This route was selected over an alternative route via the Ort J. Lofthus Freeway because the latter route would require Project traffic to cut through secured parts of the Port of Stockton while the selected route bypasses those areas.
- The analysis found that State Route 4 is already operating at level of service (LOS) E at an existing bottleneck (a narrow bridge) and that the addition of Project traffic would result LOS F in the afternoon peak period (refer to left side of Figure 2-4). Since the majority of Project-related traffic in the peak period would be workers' commute trips, a decision was made to site a mandatory park-and-ride lot to capture worker trips east of the bottleneck on State Route 4 at Charter Way and bring workers to the site on shuttle buses. This reduced the Project's effects to an acceptable level (refer to right side of Figure 2-4).
- With incorporation of the planned access routes to the Lower Roberts Island, Upper Jones Tract and Union Island work sites, no other Project-related issues were found on State Route 4 or Tracy Boulevard (refer to Figures 2-5 through 2-9).
- Project-related traffic to the Bethany Complex, including the Bethany Reservoir Aqueduct, and Bethany Reservoir Discharge Structure, would take three routes to the work sites (refer to Figure 2-10):
  - From Interstate 205, north on Mountain House Parkway, then west on Byron Road, then exit to a new haul road at a new interchange at Lindemann Road.
  - From Interstate 205, north on Mountain House Parkway, then west on West Grant Line Road, then use a new roundabout and bypass to Mountain House Road
  - From Interstate 580, north on West Grant Line, then use a new roundabout and bypass to Mountain House Road
- Project trucks were assigned a route depending on the origin of the cargo and its destination among the Project sites.
- Existing traffic conditions on Byron Road are already very poor (refer to left side of Figure 2-15). If Project traffic were routed on Byron Road as it currently exists, it would exacerbate an already bad situation, especially since the Project's westbound traffic would have to turn left against heavy eastbound flows.

- These impacts necessitated two corrective measures:
  - Widening Byron Road from 2 to 4 lanes between Central Parkway and Lindemann Road (refer to Figure 2-10). This would be a westward extension of a current developer-funded Project to widen Byron Road from Mountain House Parkway to Central Parkway and possibly Grand Central Parkway (depending on growth patterns).
  - Building a new interchange at Lindemann Road to allow Project traffic to enter and leave the new dedicated access road without conflicting with east-west traffic on Byron Road (refer to Figure 2-12).

  These two measures would result in an improvement over Project conditions without the Project (refer to right side of Figure 2-15).
- The large volume of truck traffic associated with the Project would raise safety concerns at two locations with incompatible land uses, namely at the hamlet where West Grant Line Road meets Mountain House Road, and in front of Mountain House School. In both cases a new bypass road would be constructed to route around the incompatible uses (refer to Figures 2-13 and 2-14).
- The remainder of the routes were analyzed, and no other traffic problems were found that would necessitate remedial action (refer to Figures 2-16 through 2-20).

2.3 Conclusions

Based on the traffic impact analysis conducted, the following conclusions can be drawn:

- The additional traffic resulting from the Project would worsen traffic to unacceptable levels at two locations:
  - State Route 4 at Swing Bridge would move to LOS F. Capturing worker trips with the park and ride lot in Stockton would alleviate this problem.
  - Byron Road is already heavily congested and Project traffic to the Bethany Complex would exacerbate the problem unless improvements are incorporated into the Project. Extending the current widening work to the proposed Lindemann Interchange would enable Project traffic to use this section while maintaining an acceptable LOS.
- The Project LOS on other roads serving the Bethany Complex would meet the LOS targets with the minor improvements noted in the body of the TM.
- Although planned improvements at the intersection of West Grant Line Road and Mountain Road would provide a suitable LOS, peak commuter traffic is expected to be quite heavy and avoidance of this intersection during the peak commute hours is recommended to help avoid addition congestion in the area.

2.4 References

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Contra Costa Transportation Authority. East County Action Plan for Routes of Regional Significance, September 2017. https://ccta.net/wp-content/uploads/2018/10/59cd5bc624446.pdf.

San Joaquin County Community Development Department. Initial Study for Neighborhoods K and L at Mountain House, September 2011. http://www.sjgov.org/commdev/cgi-bin/cdyn.exe/handouts-planning/WholeInitialStudyMtHouseKandL.pdf.

Figures

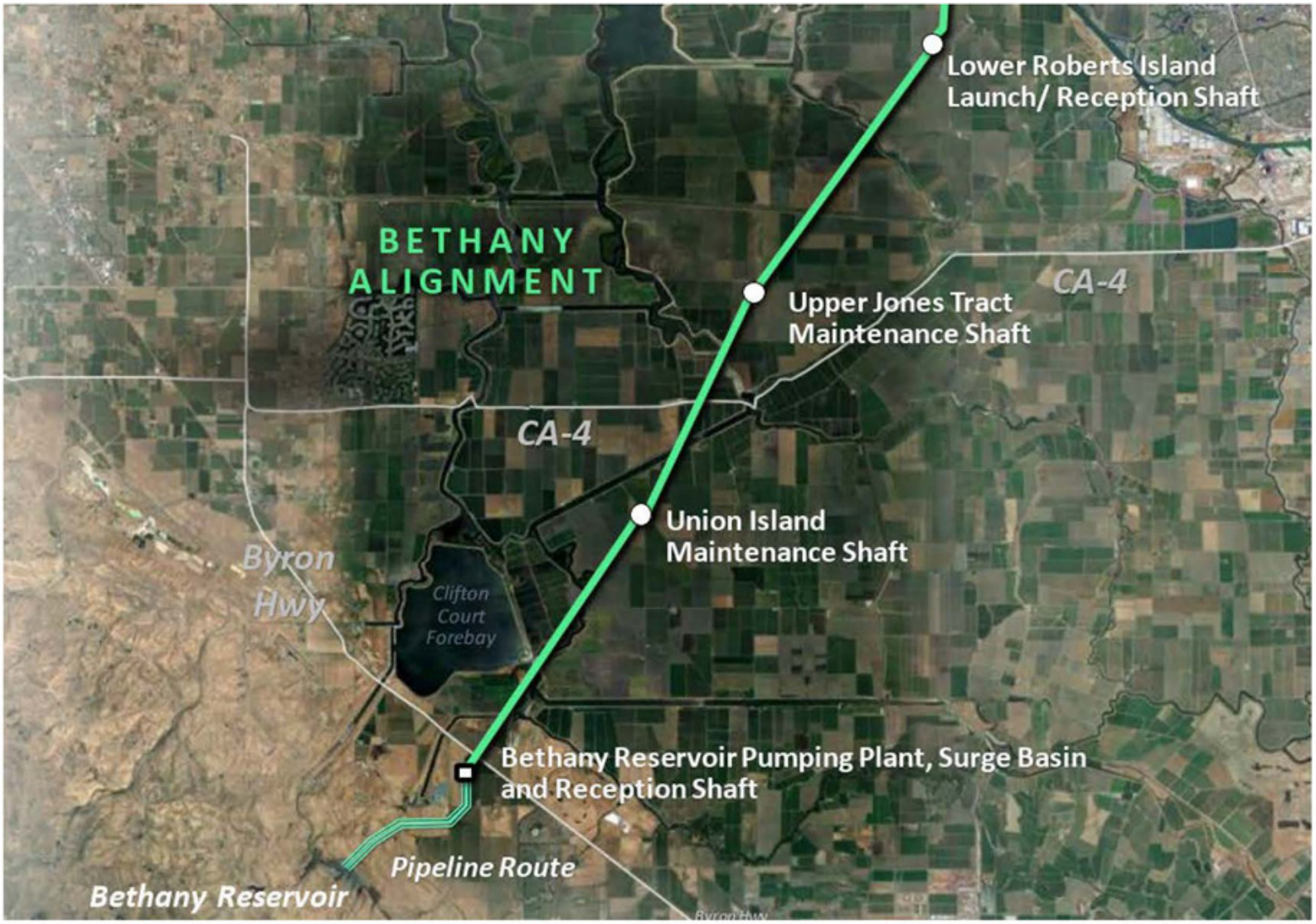


Figure 2-1. Sites Covered under Traffic Impact Analysis

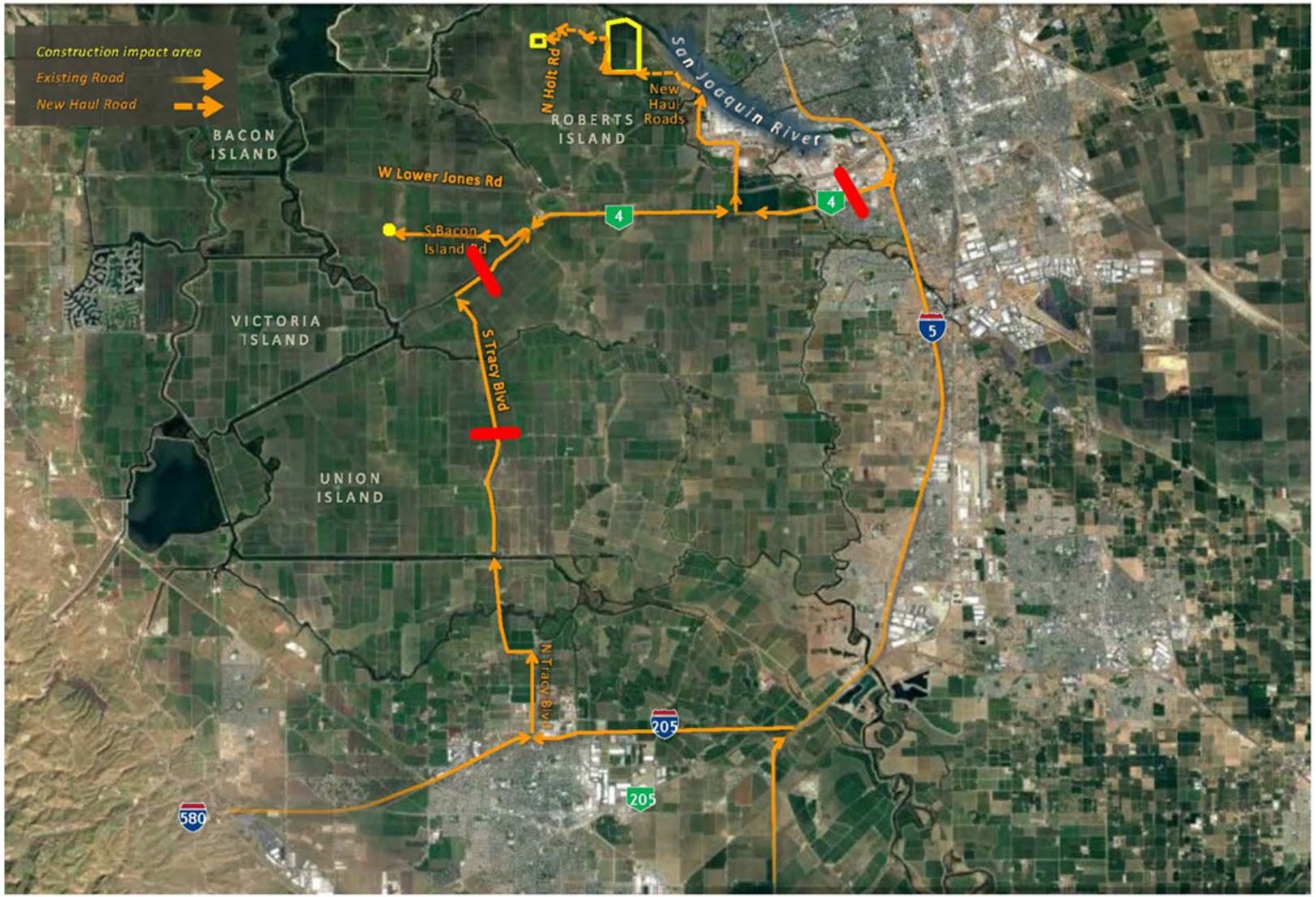


Figure 2-2. State Route 4 Impacts from Lower Roberts Island and Upper Jones Tract

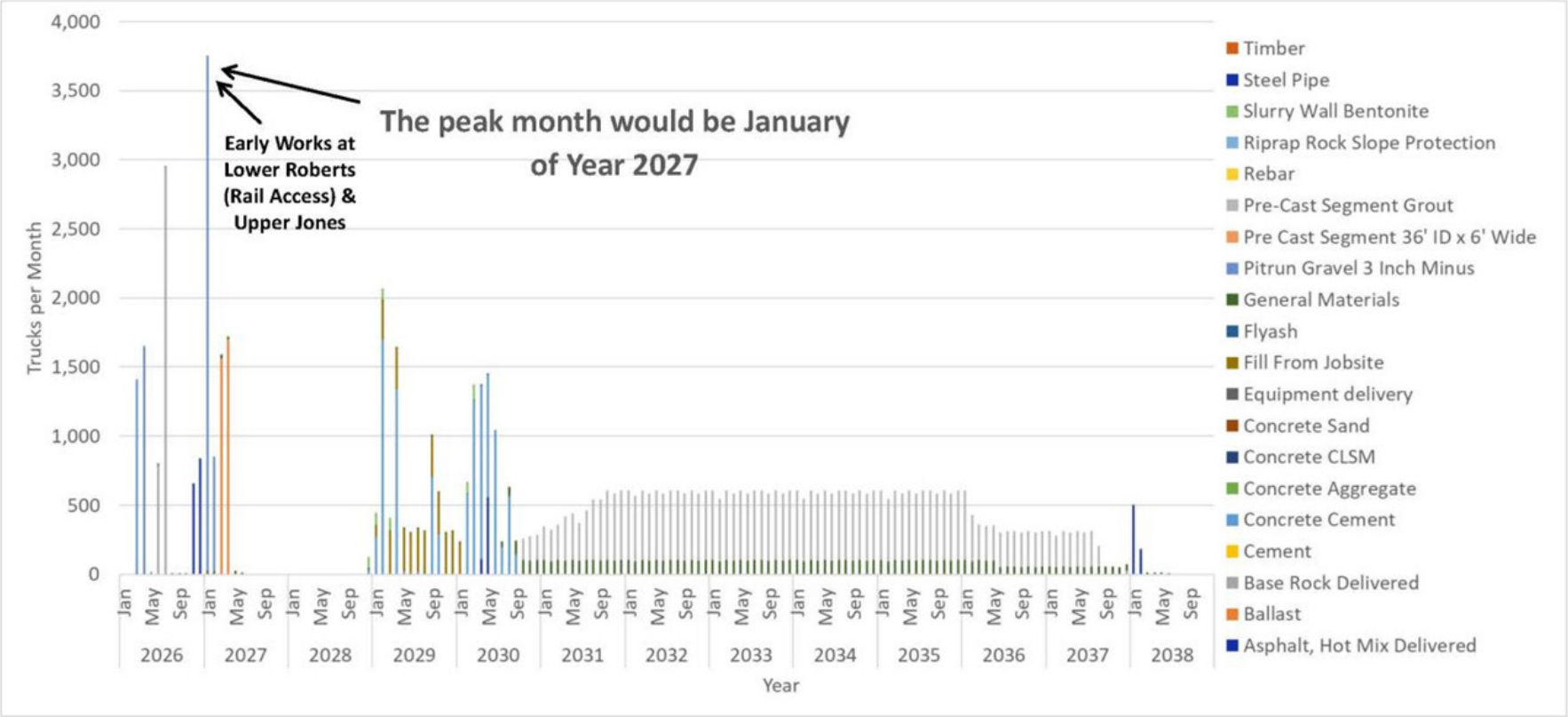
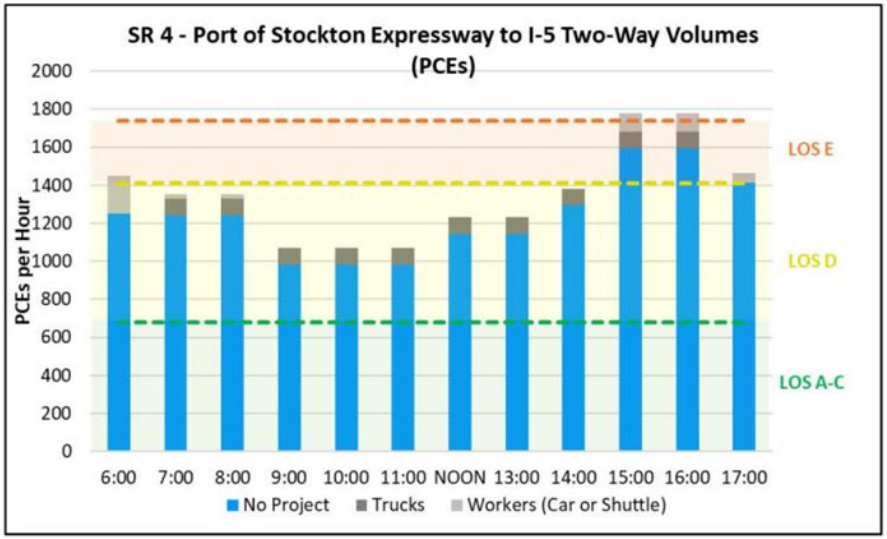


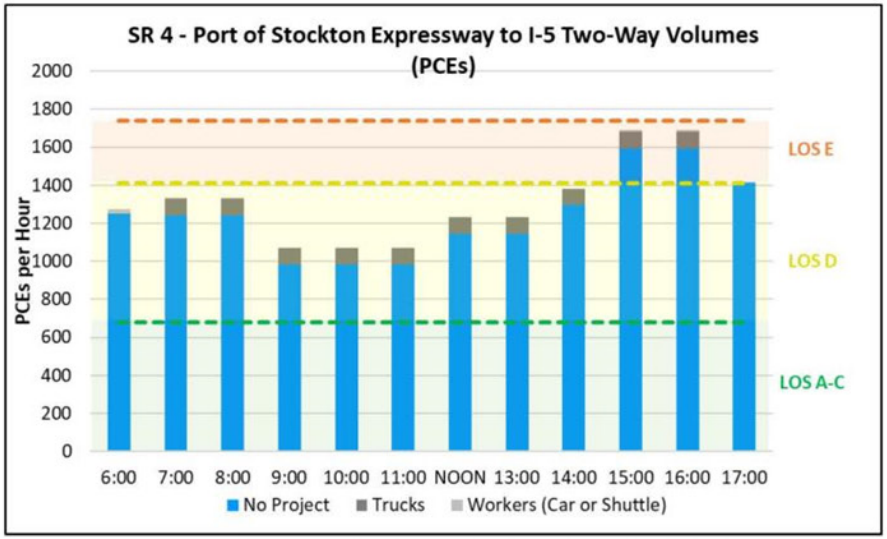
Figure 2-3. Peak Month Material Movement for Lower Roberts Island and Upper Jones Tract



Worker trips are all drive-alone.

LOS "F" in the AM & PM peak.

Project would temporarily add 16%.



Worker trips are all taking shuttle (10 people/shuttle).

LOS "E" in the evening without project trips.

Project would temporarily add 6% (Truck & Worker), which is below the threshold triggering remedial action

Figure 2-4. Peak Traffic Conditions on State Route 4 West of Interstate 5

LOS would be “D” or better even with the addition of project traffic.

Project traffic would be minor in relation to background traffic

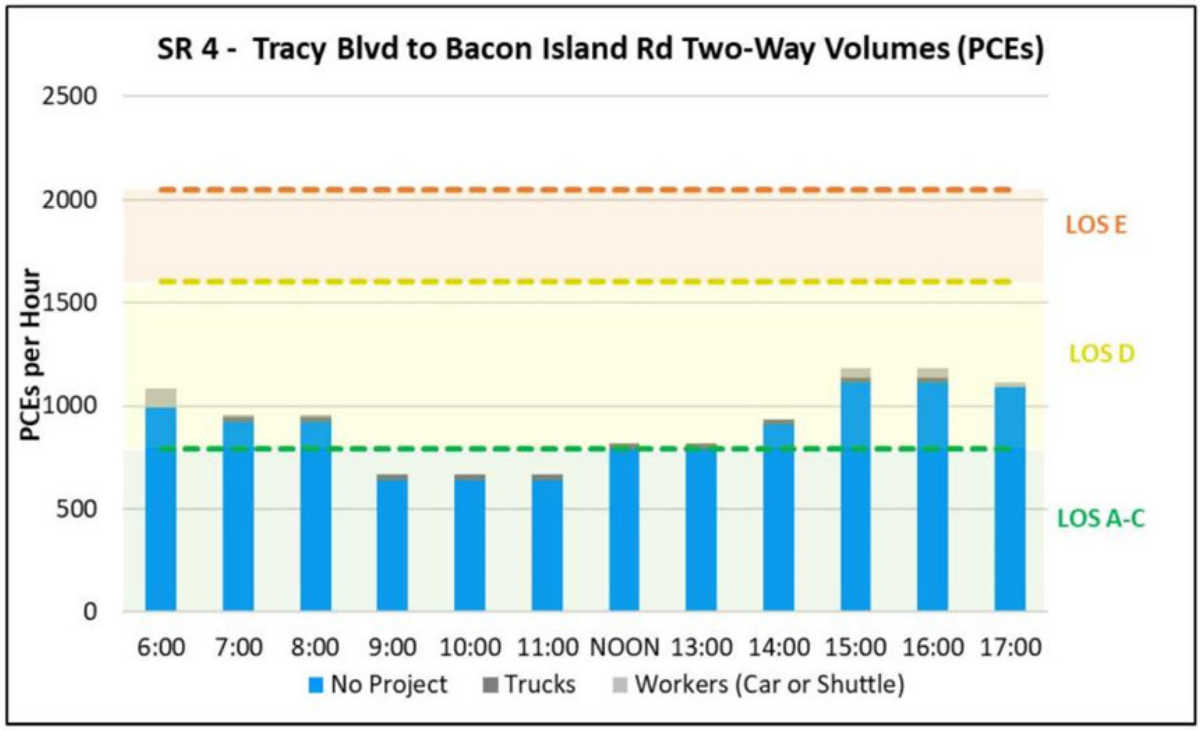


Figure 2-5. Peak Traffic Conditions on State Route 4 West of Bacon Island Road

LOS would be "C" or better even with the addition of project traffic.

Project traffic would be minor in relation to background traffic

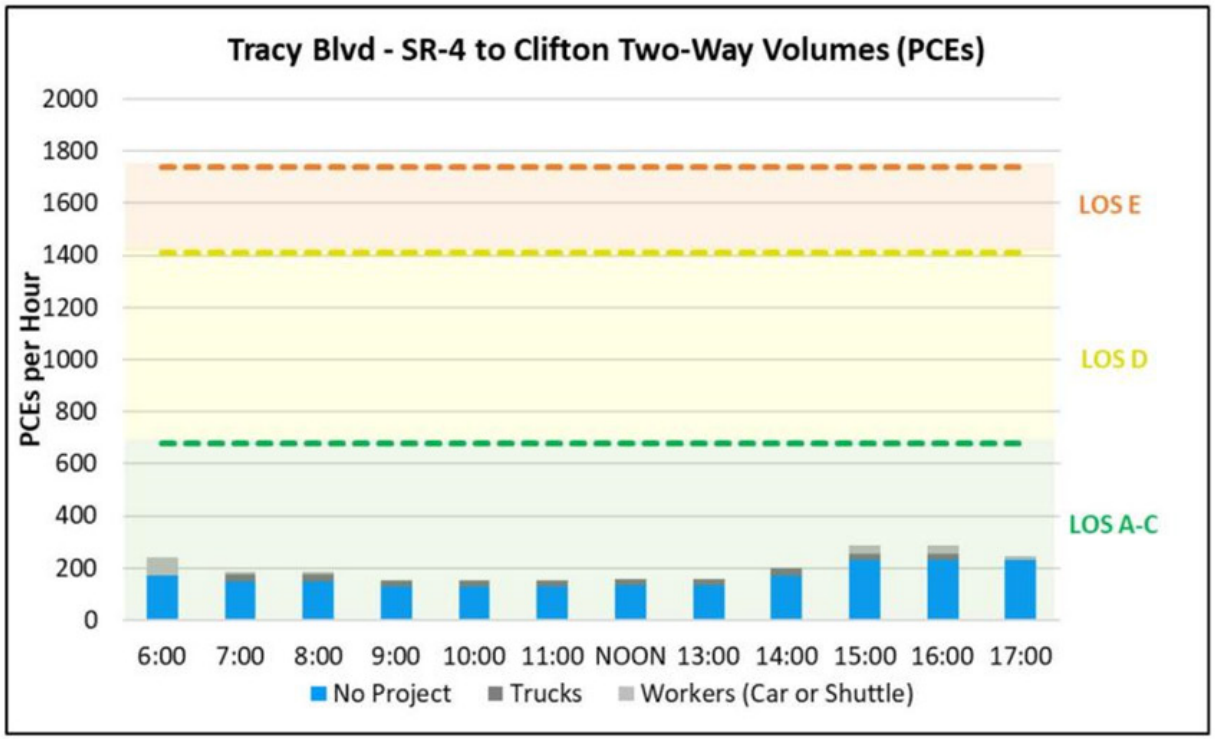


Figure 2-6. Peak Traffic Conditions on Tracy Boulevard Between State Route 4 and Clifton Court Road

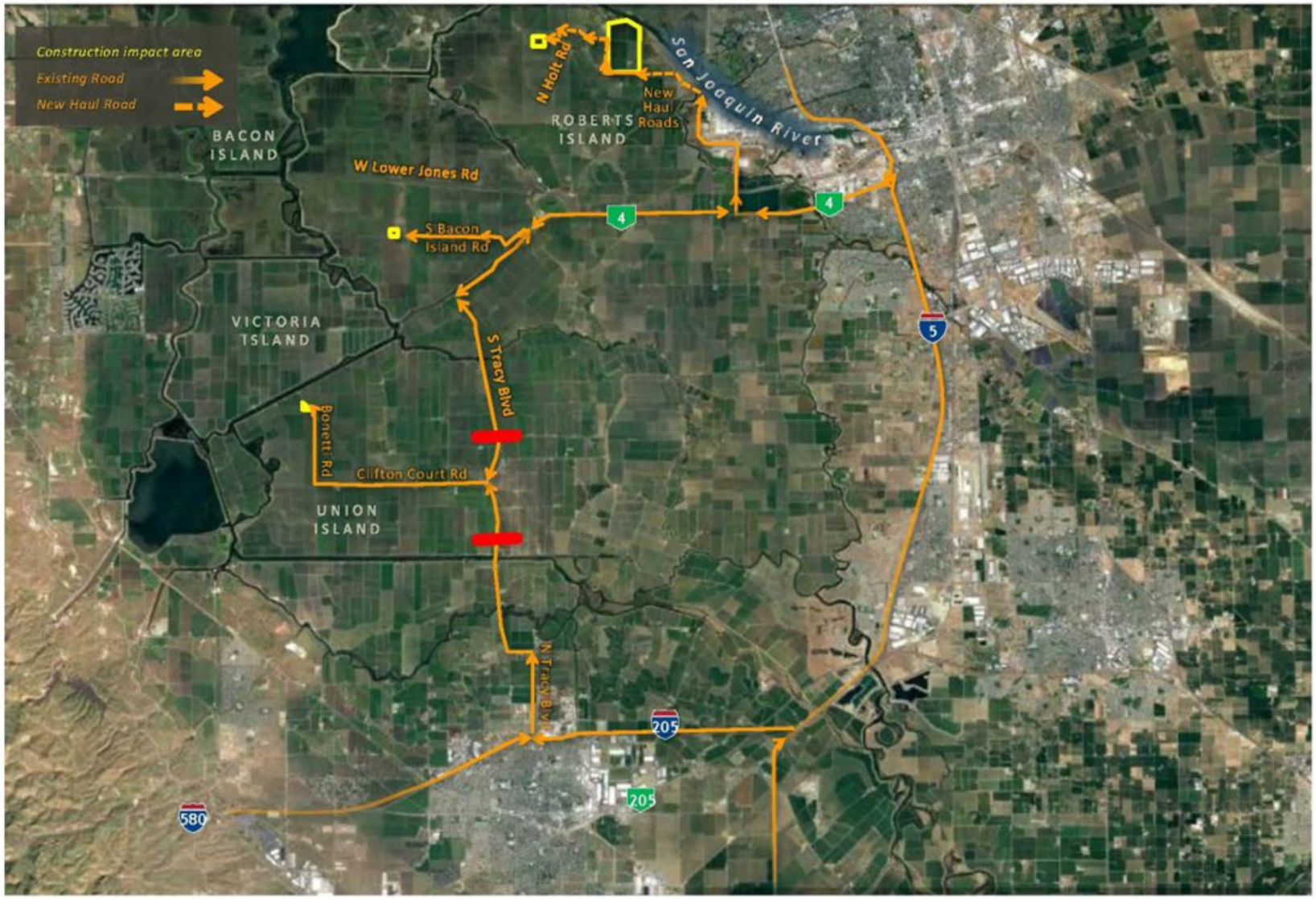


Figure 2-7. Tracy Boulevard Impacts from Lower Roberts Island, Upper Jones Tract and Union Island

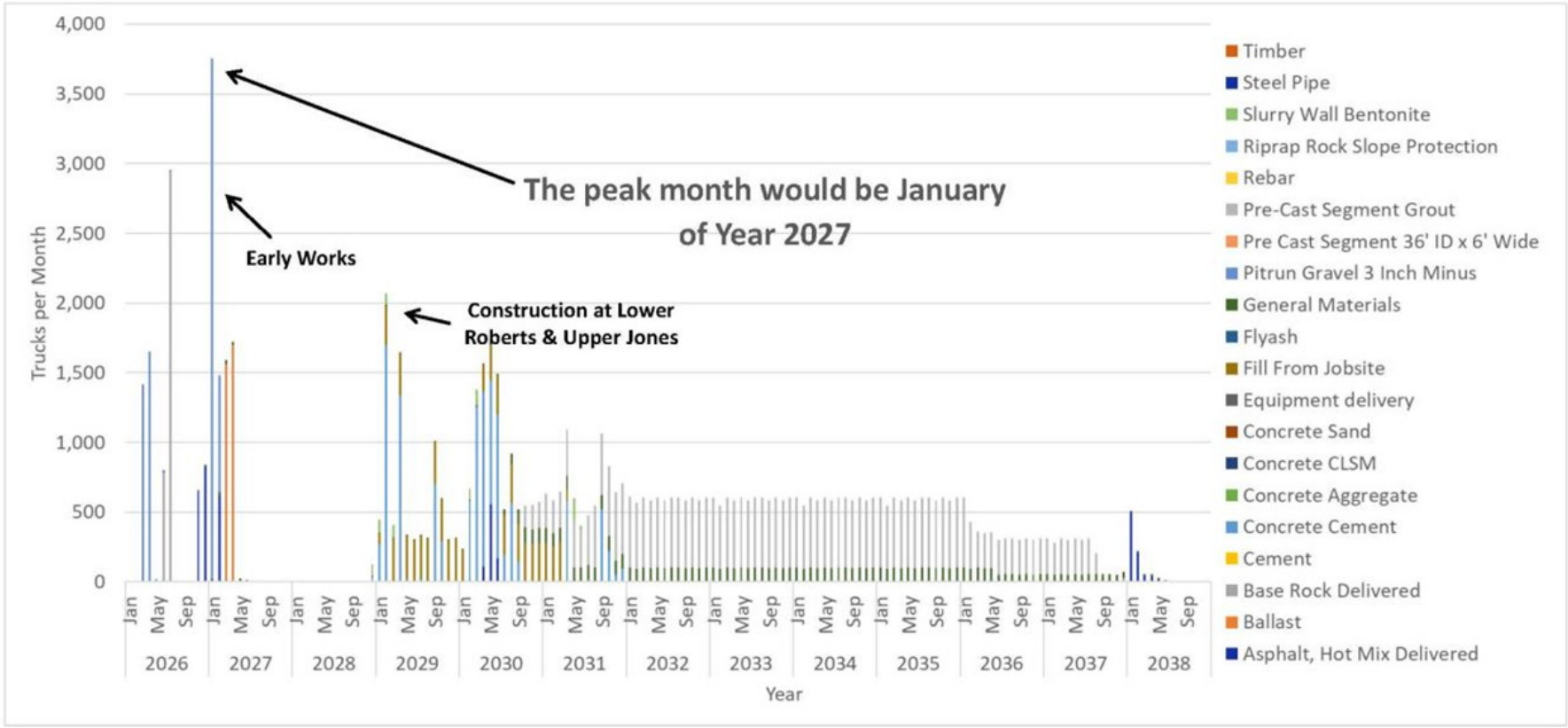


Figure 2-8. Peak Month Material Movement for Lower Roberts Island, Upper Jones Tract and Union Island

Project traffic would be significant in relation to background traffic, but LOS would be "C" or better even with the addition of project traffic.

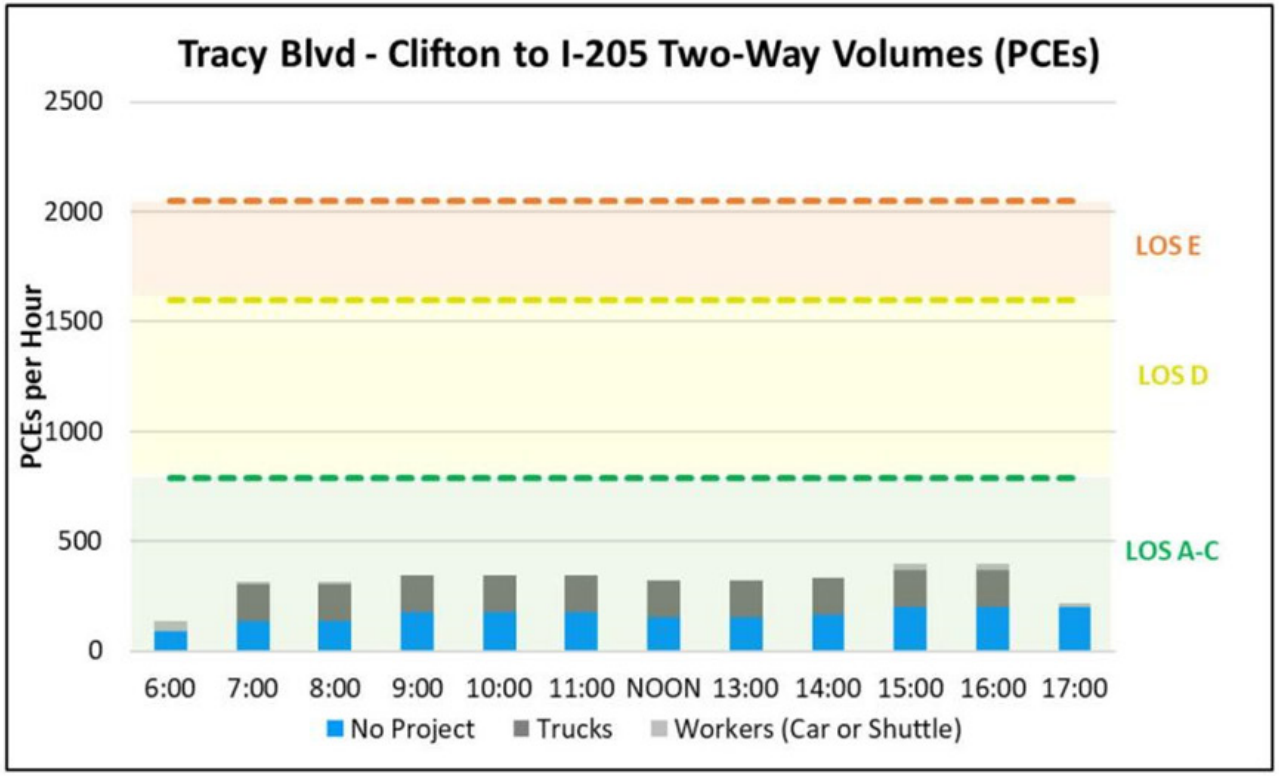


Figure 2-9. Peak Traffic Conditions on Tracy Boulevard Between Interstate 205 and Clifton Court Road

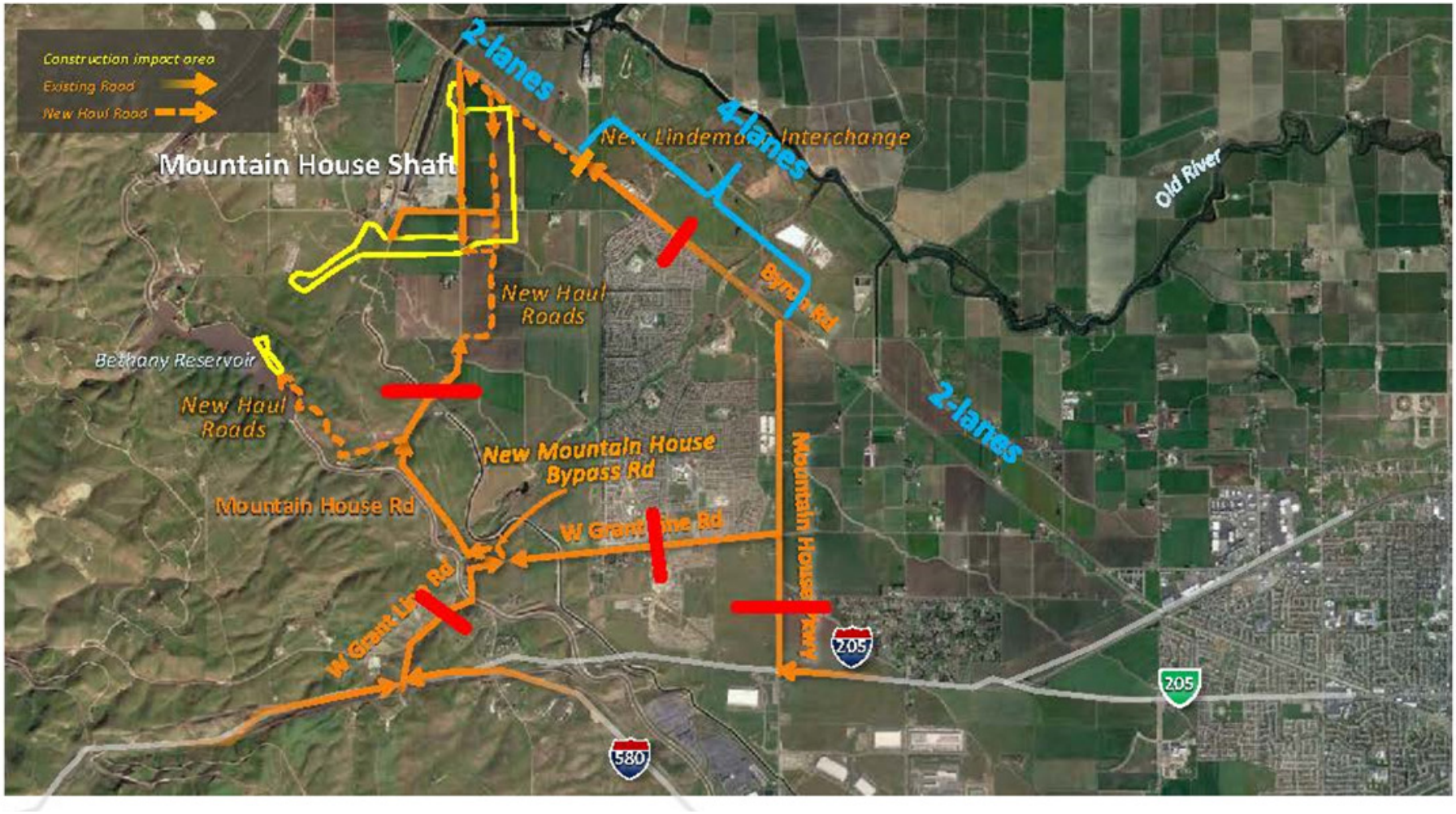


Figure 2-10. Impacts on Major Local Roads from Bethany Complex Work Sites

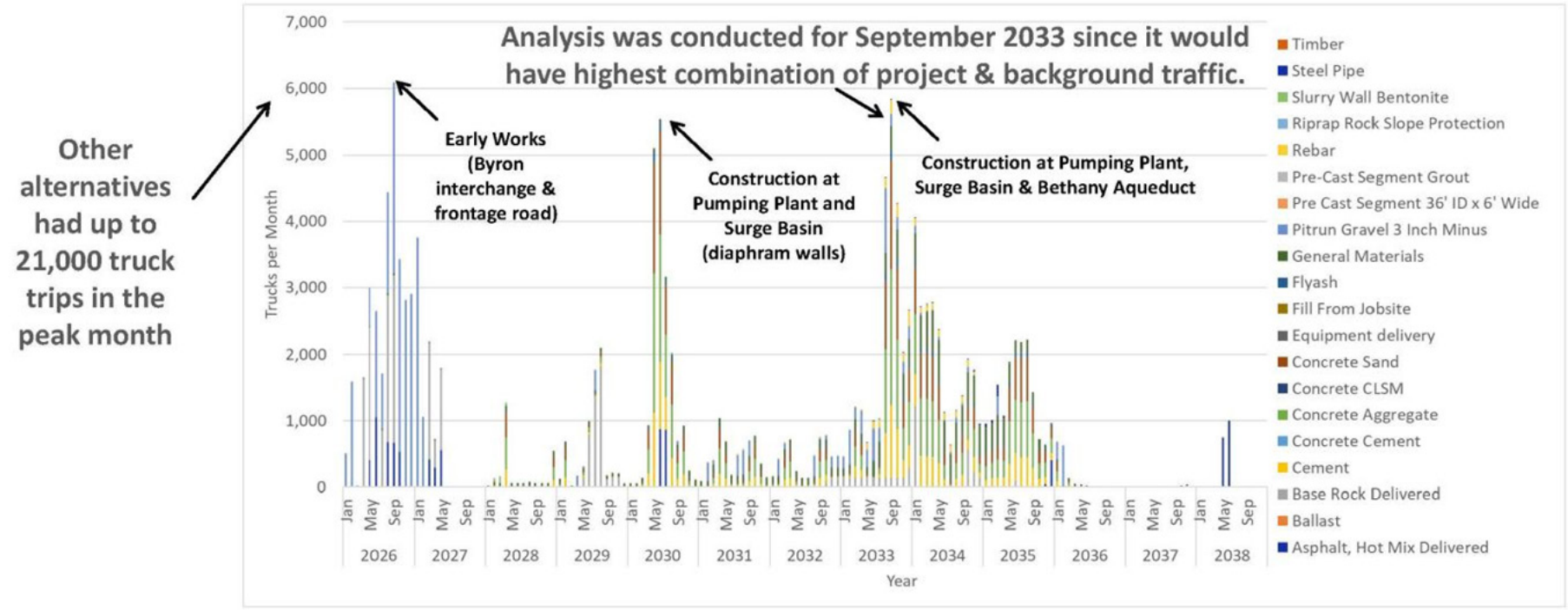


Figure 2-11. Peak Month Material Movement for Bethany Complex Sites

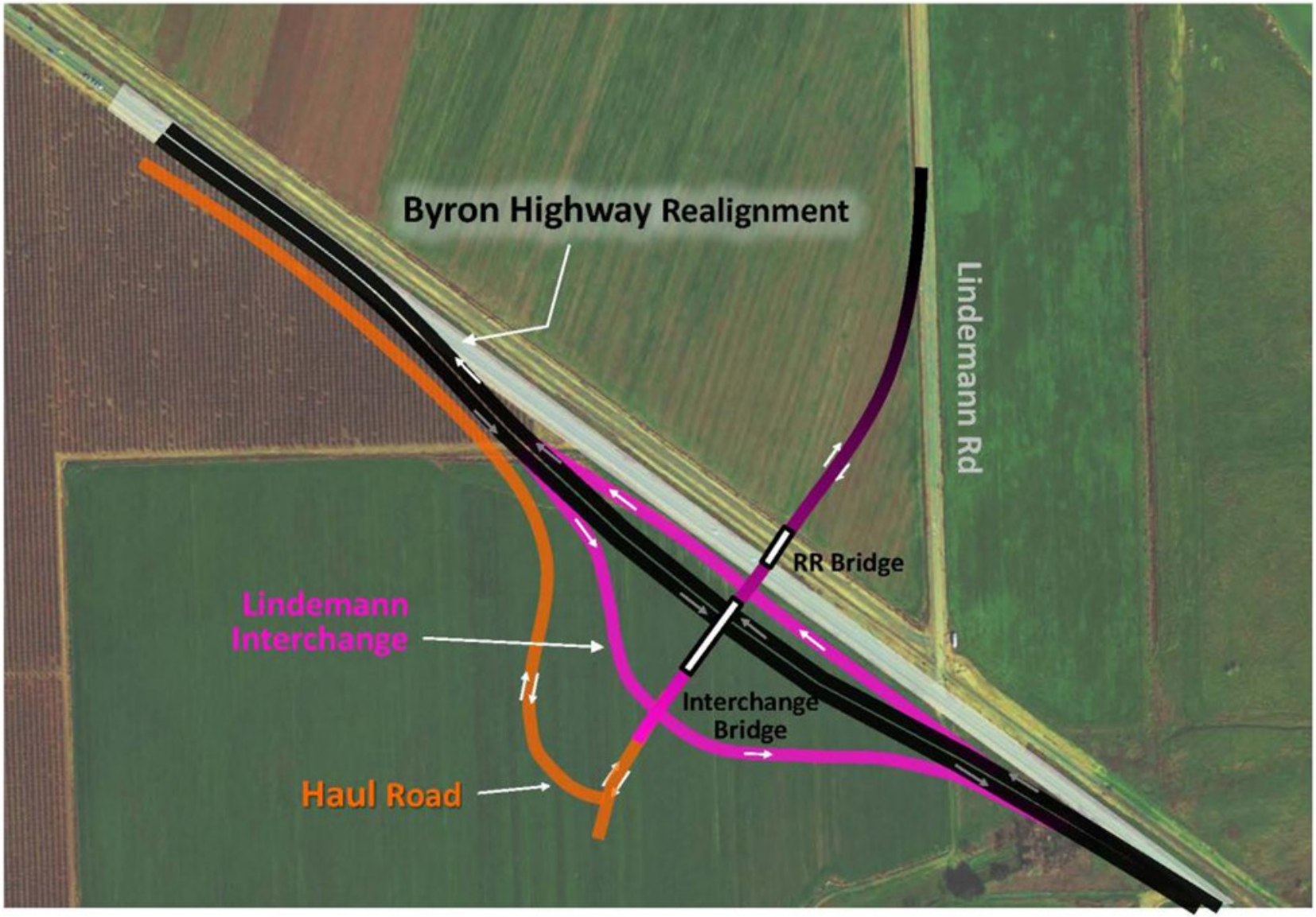


Figure 2-12. Proposed Lindemann Interchange off Byron Road

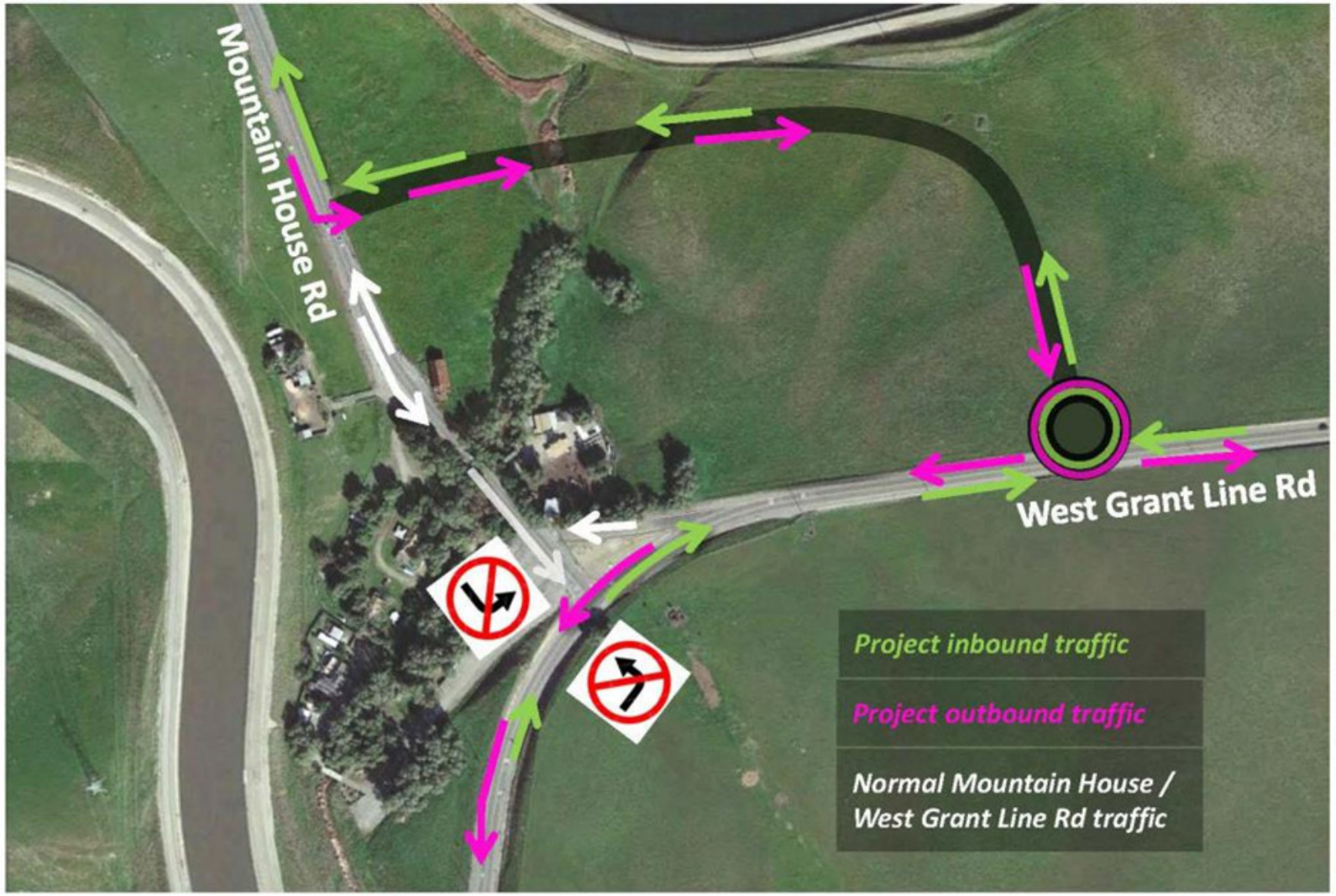


Figure 2-13. Proposed W. Grant Line Road Roundabout at Mountain House Road

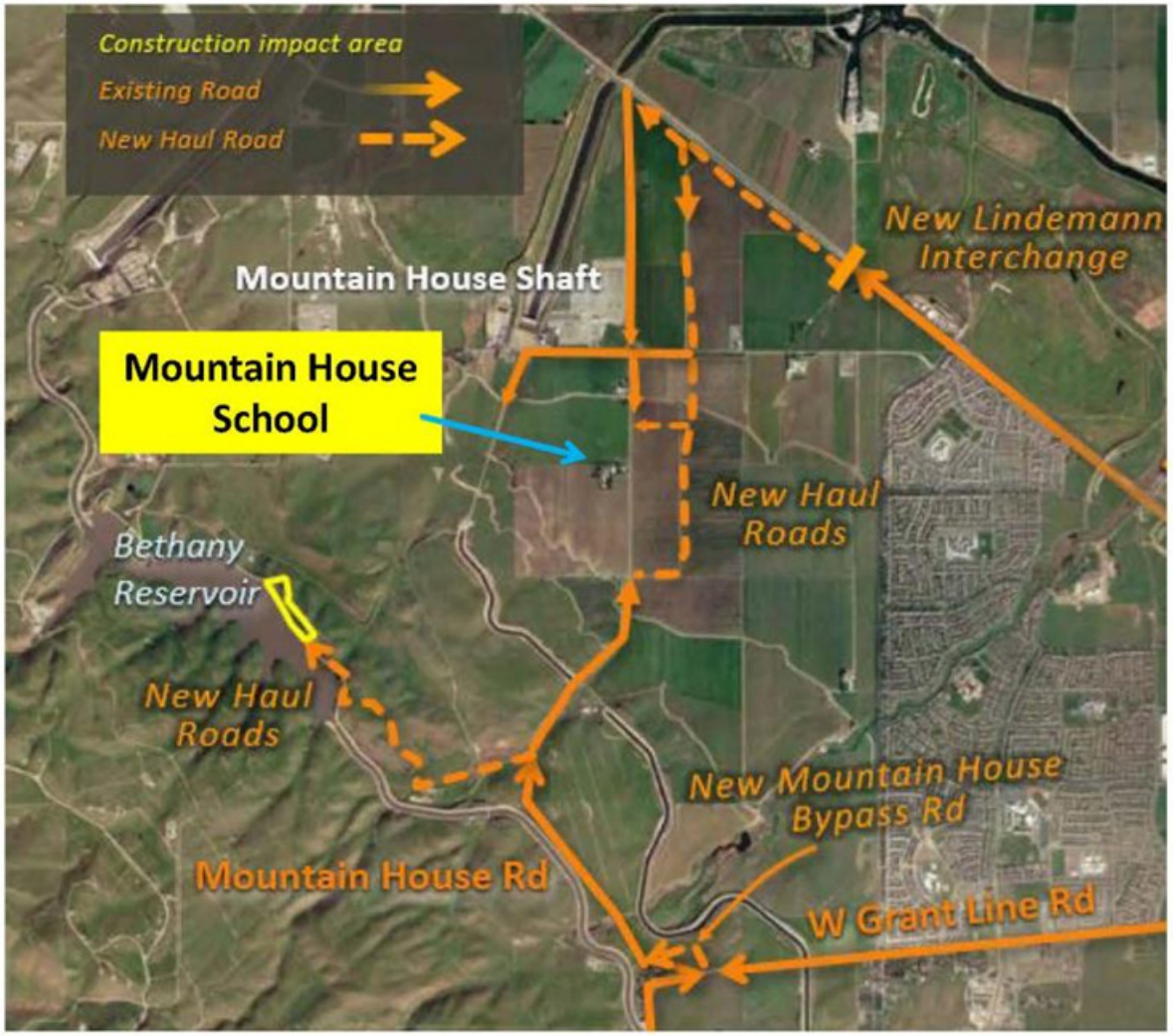
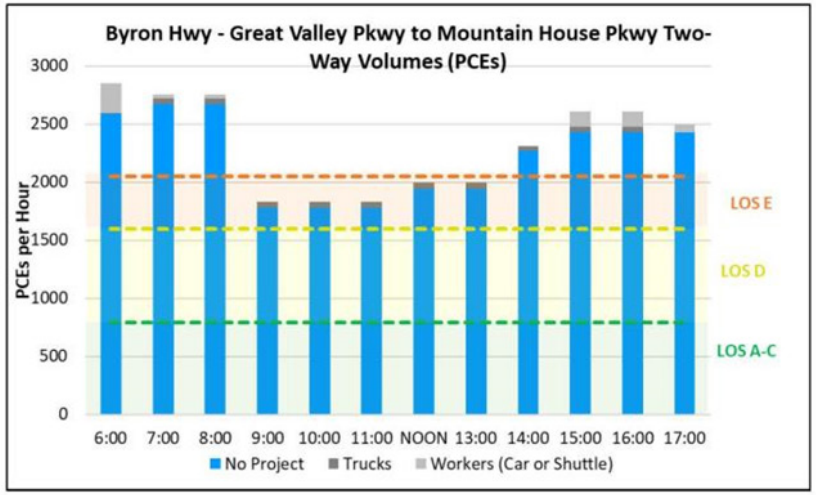
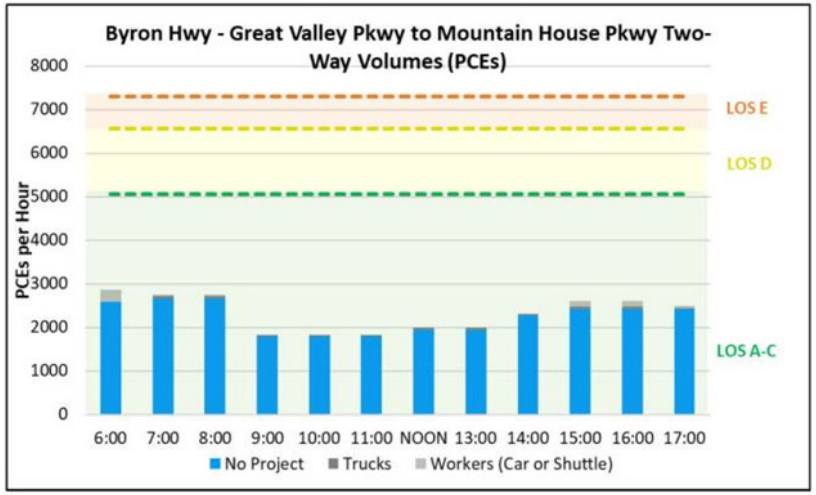


Figure 2-14. Approach to Bypass Mountain House School



Without Widening

LOS is "F" during peak periods and "E" midday



With Widening

LOS is "C" or better at all times of the day

Figure 2-15. Peak Traffic Conditions on Byron Road Between Lindemann Road and Mountain House Parkway

LOS would be "C" or better even with the addition of project traffic.

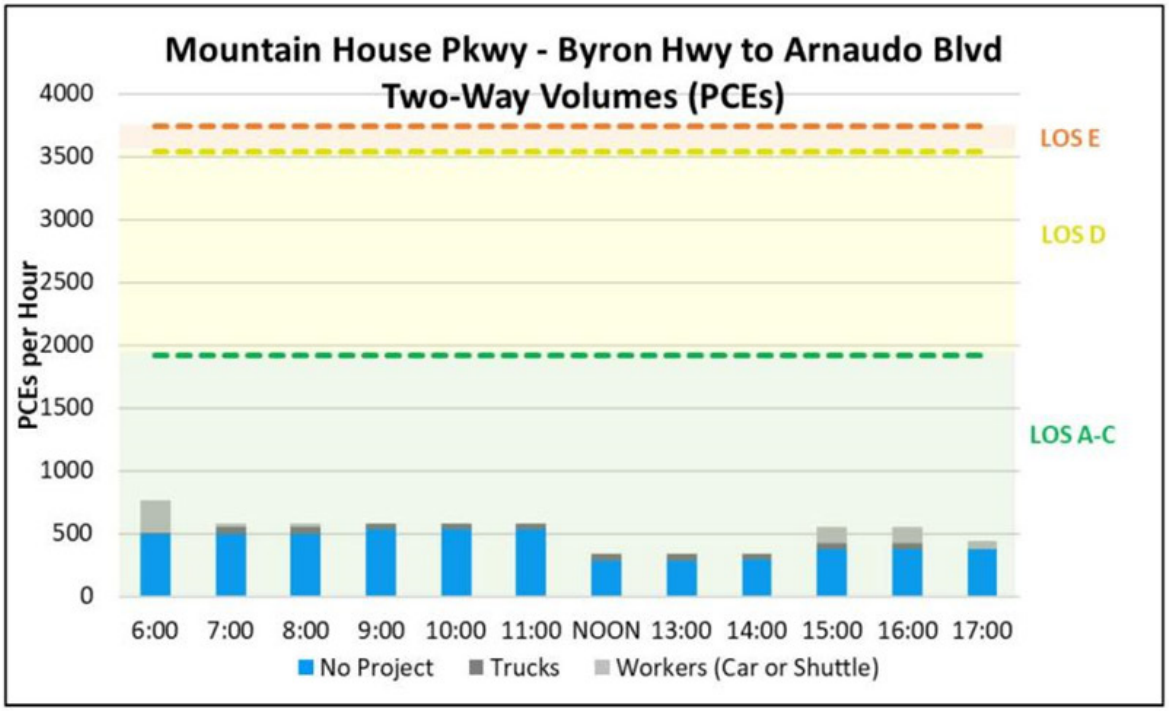


Figure 2-16. Peak Traffic Conditions on Mountain House Parkway Between Byron Road and Arnaudo Boulevard

LOS would be "C" or better even with the addition of project traffic.

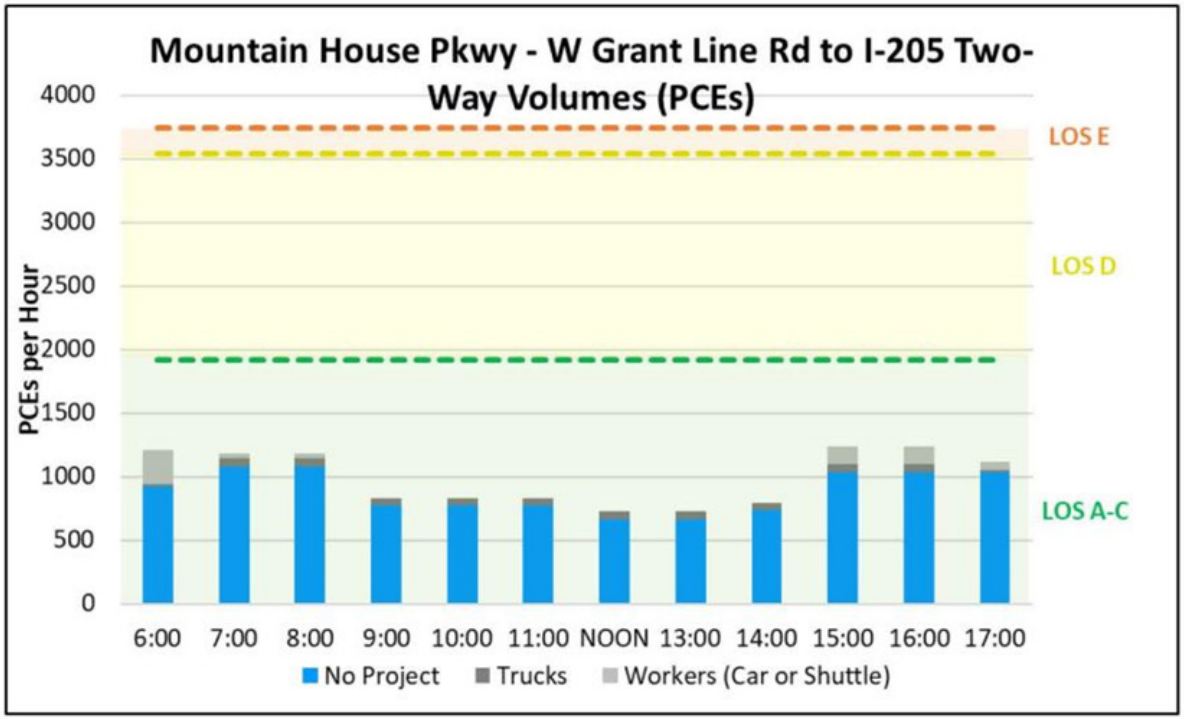


Figure 2-17. Peak Traffic Conditions on Mountain House Parkway Between Interstate 205 and West Grant Line Road

LOS would be "C" or better even with the addition of project traffic.

Project traffic would be minor in relation to background traffic

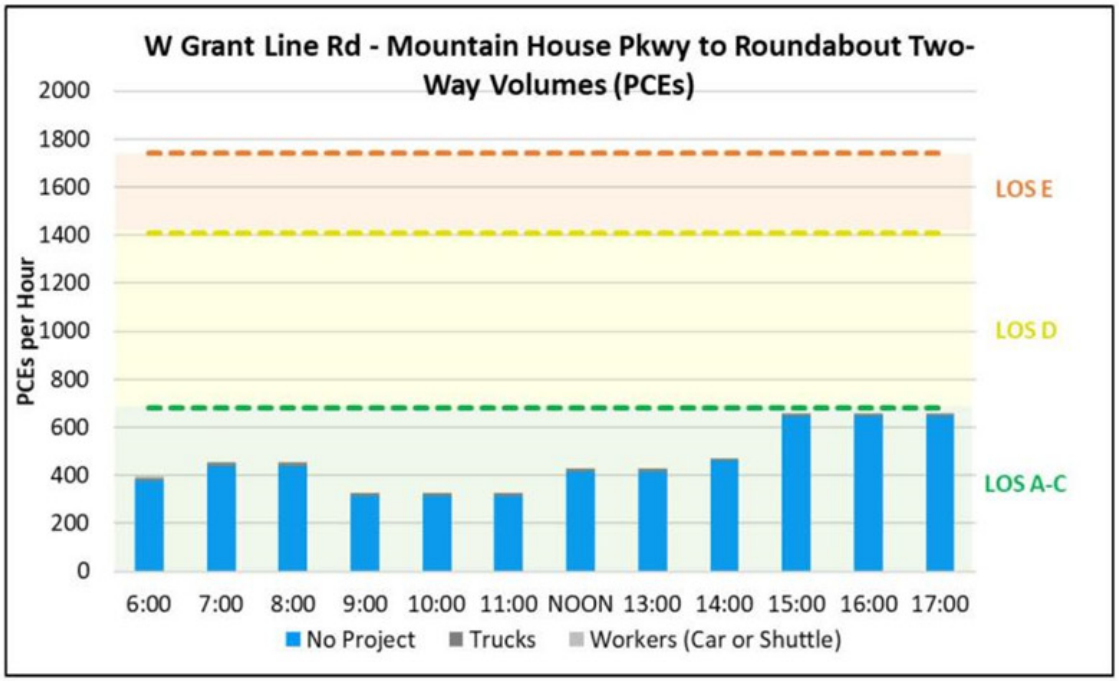


Figure 2-18. Peak Traffic Conditions on West Grant Line Road Between Mountain House Parkway and Mountain House Road

Project traffic would be significant in relation to background traffic, but LOS would be "C" or better even with the addition of project traffic.

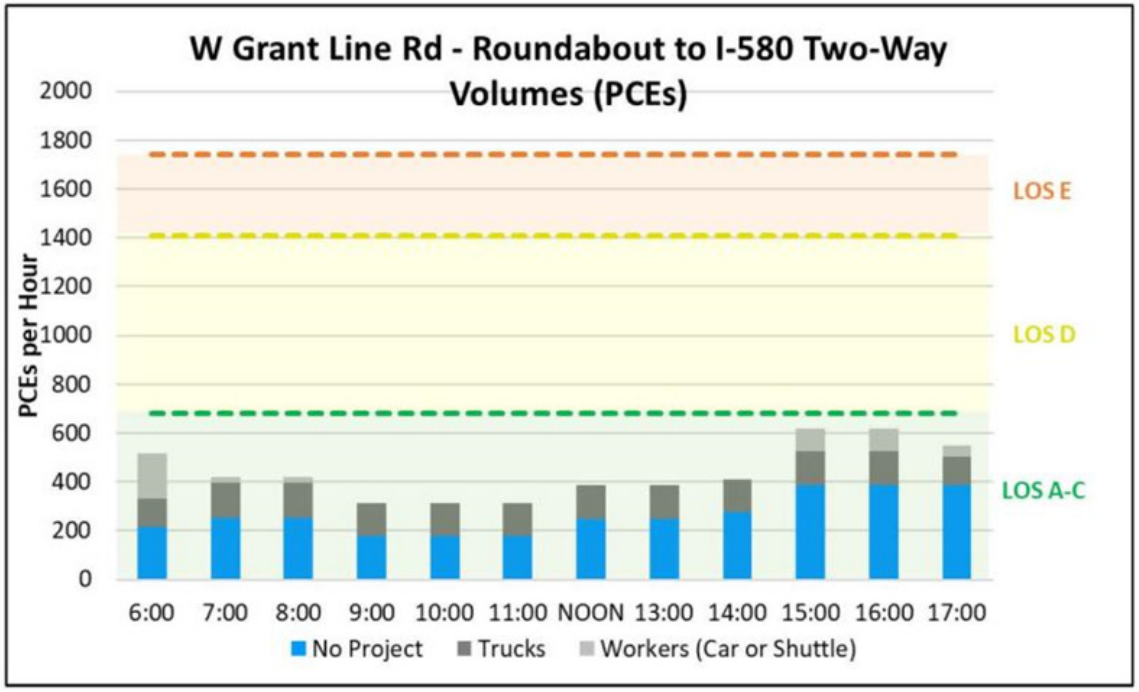


Figure 2-19. Peak Traffic Conditions on West Grant Line Road Between Interstate 580 and Mountain House Road

Project traffic would be significant in relation to background traffic, but LOS would be "C" or better even with the addition of project traffic.

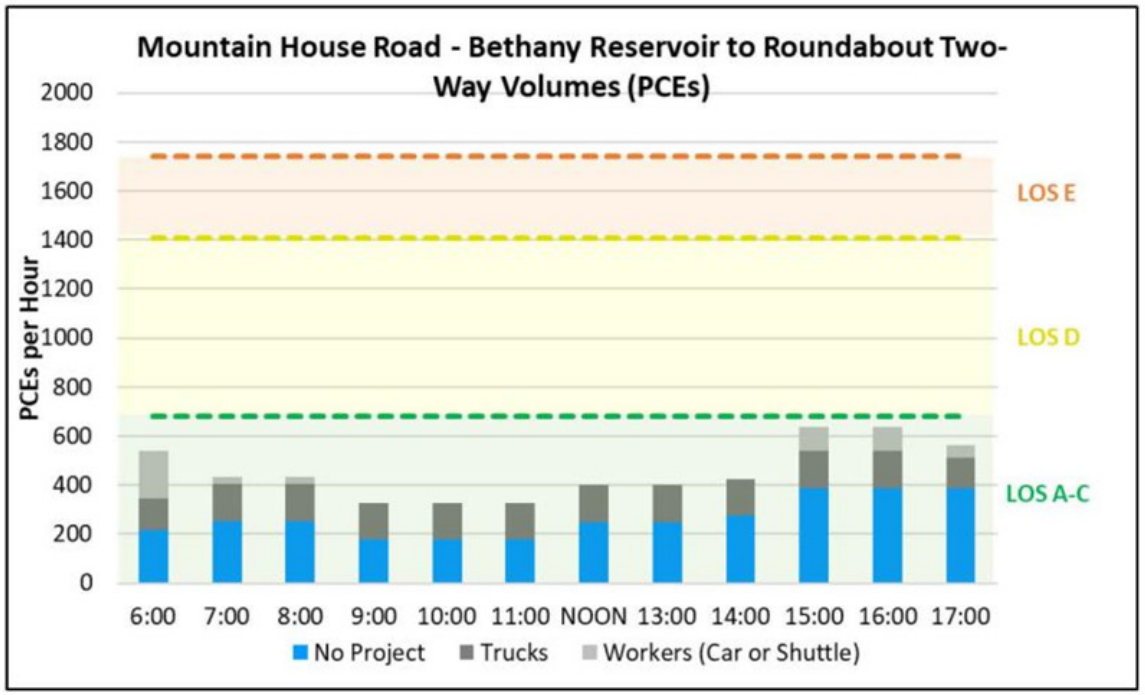


Figure 2-20. Peak Traffic Conditions on Mountain House Road Between Bethany Reservoir and West Grant Line Road

Attachment 3
Work Site Access Concepts

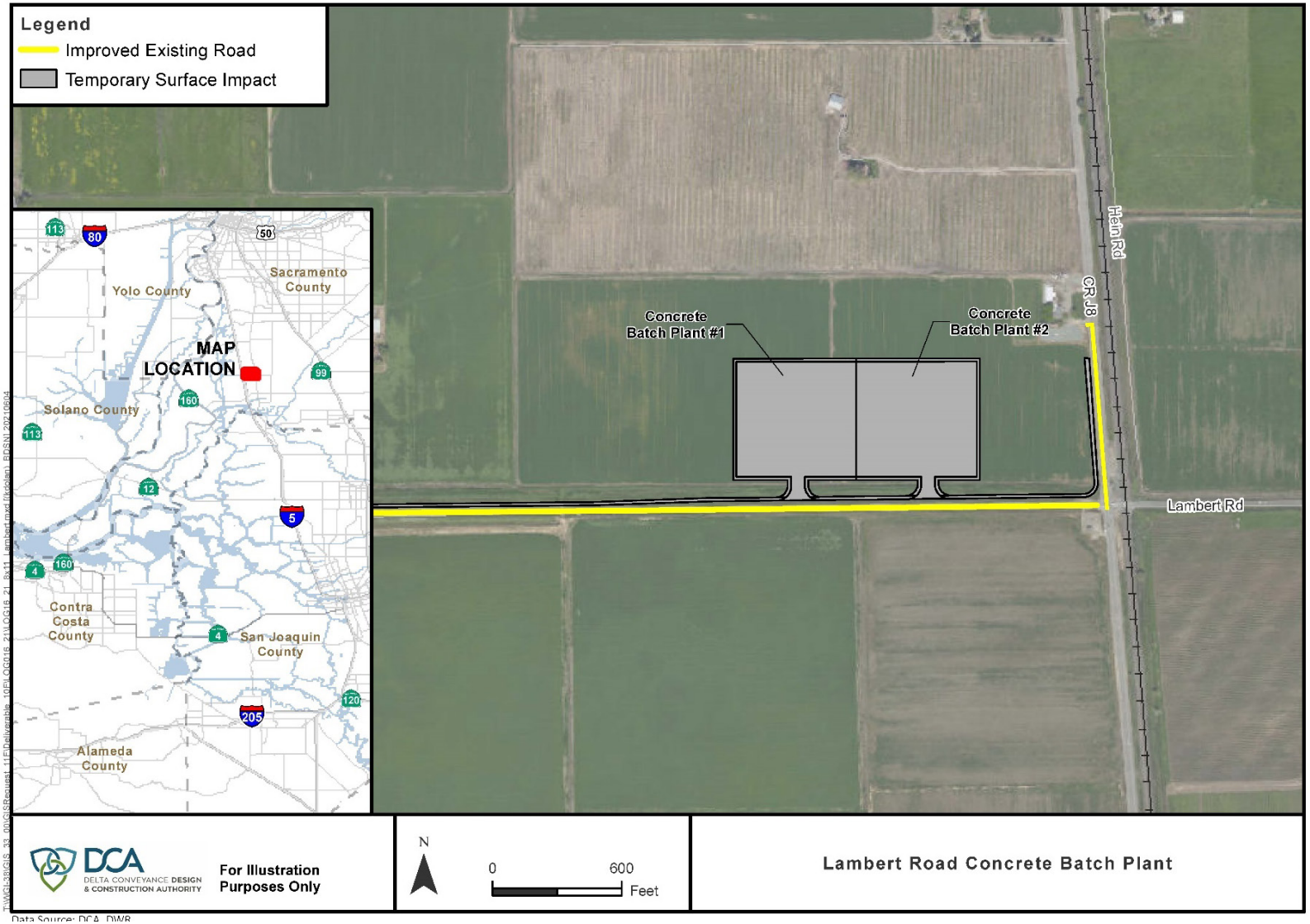


Figure 3-1. Lambert Road Concrete Batch Plant

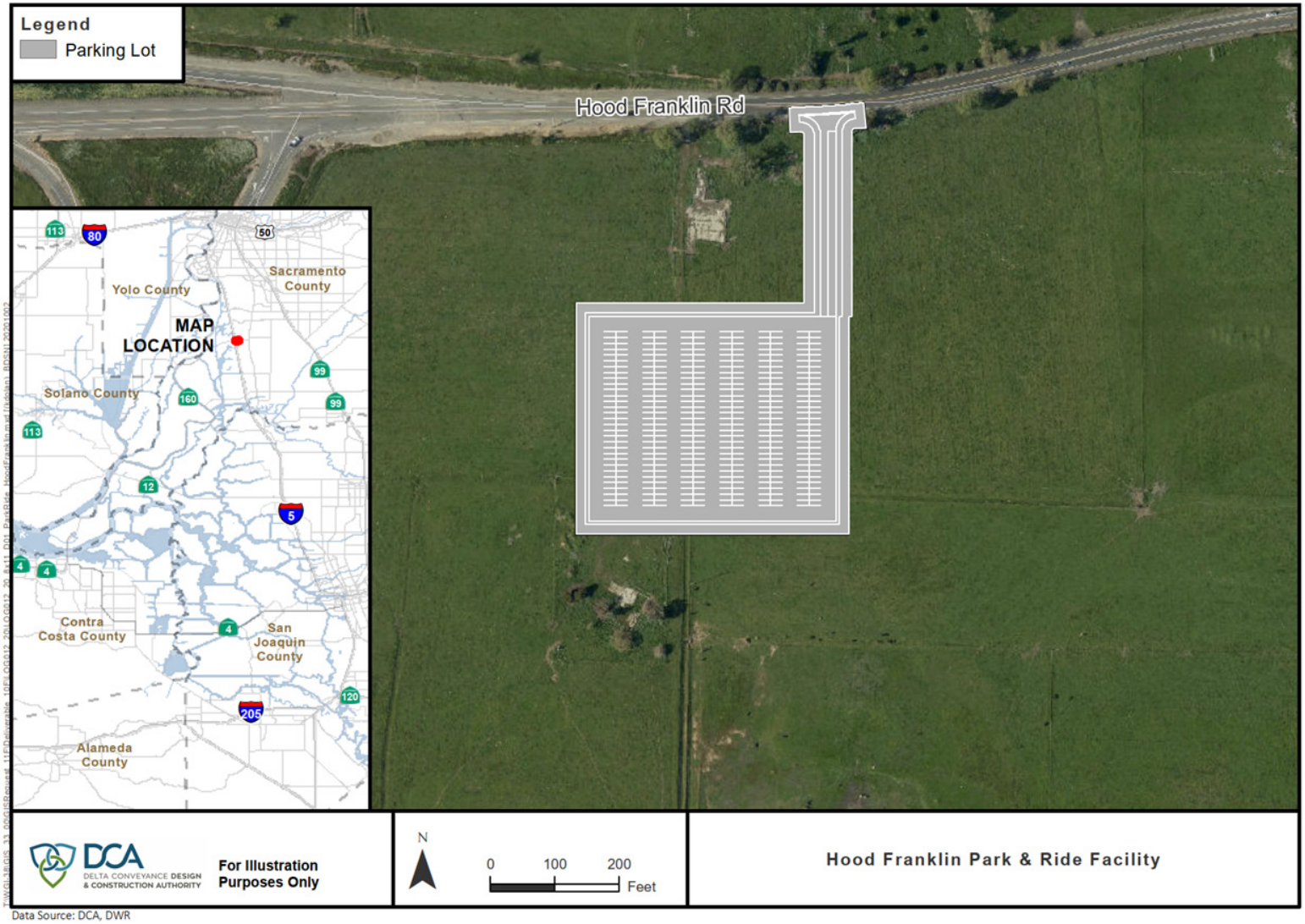


Figure 3-2. Hood Franklin Park & Ride Facility

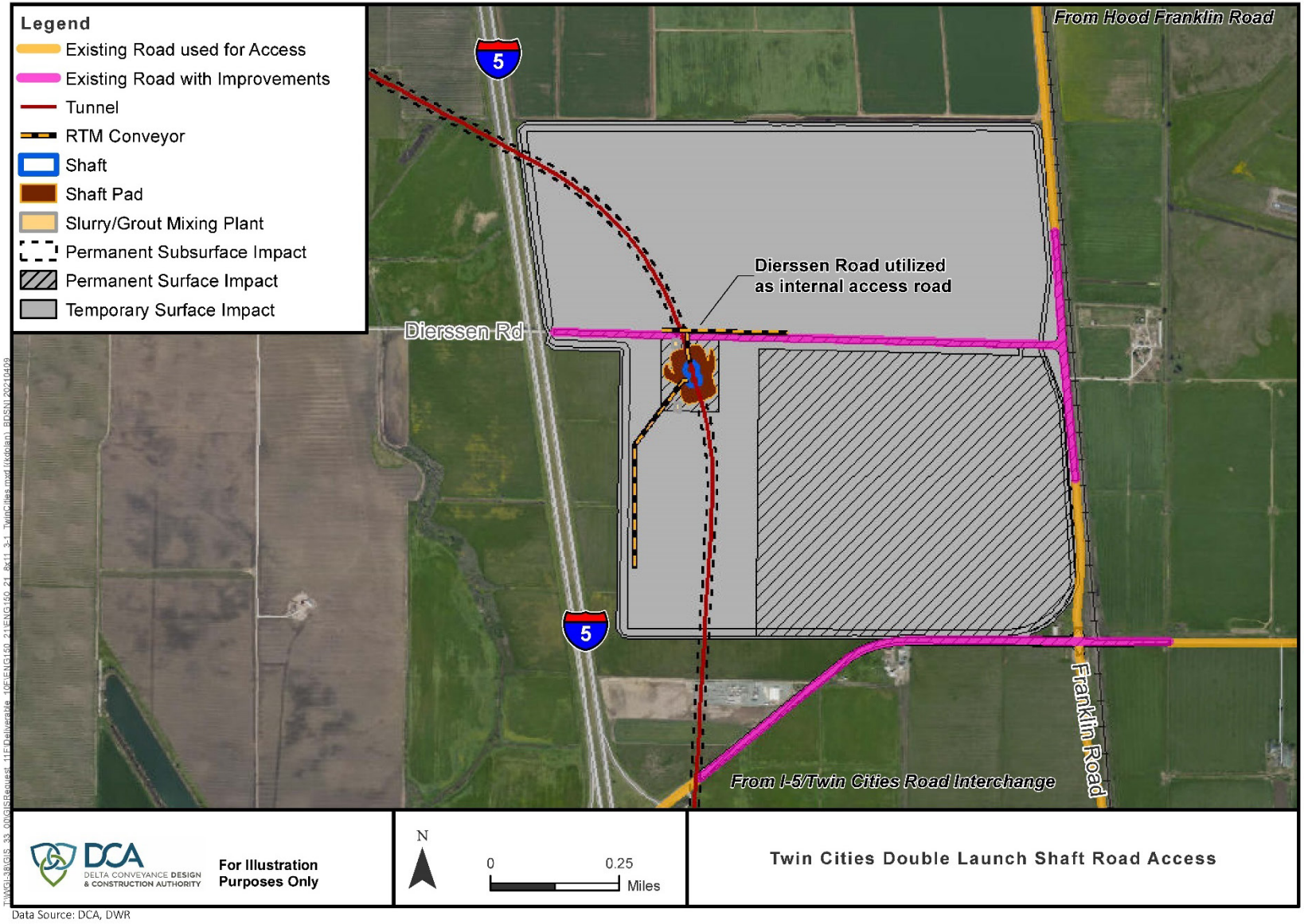


Figure 3-3. Twin Cities Double Launch Shaft Road Access

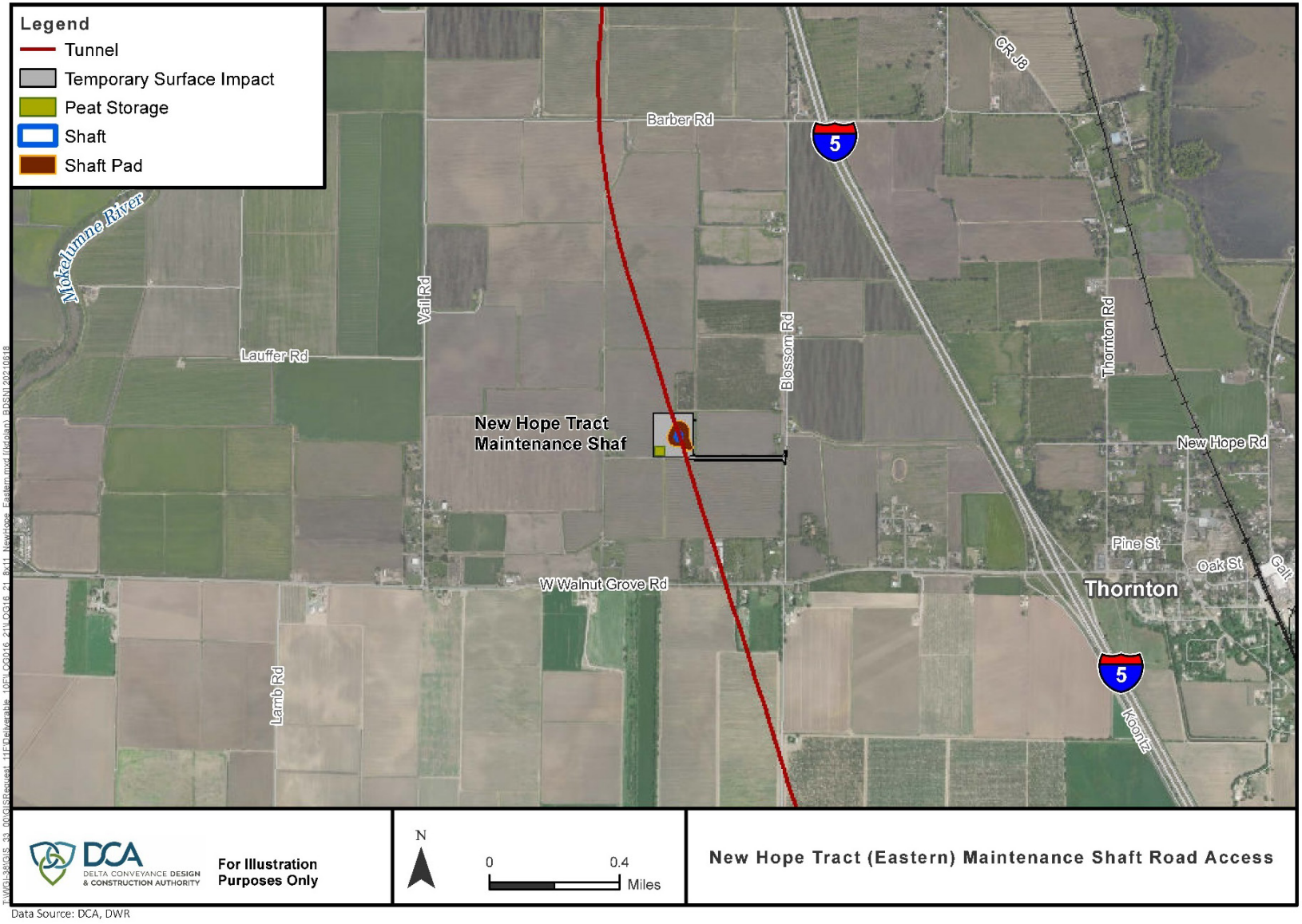


Figure 3-4. New Hope Tract (Eastern) Maintenance Shaft Road Access

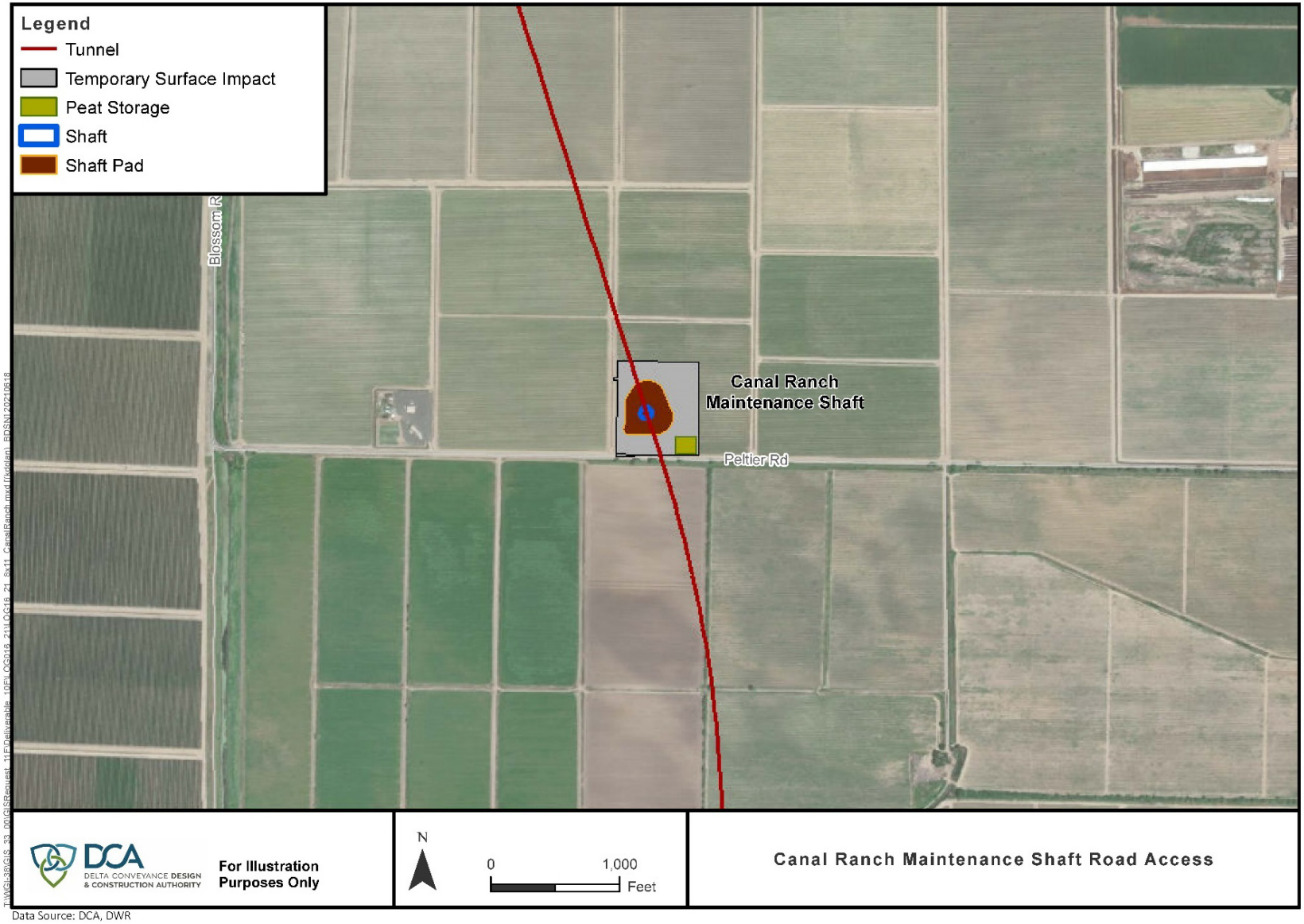


Figure 3-5. Canal Ranch Tract Maintenance Shaft Road Access

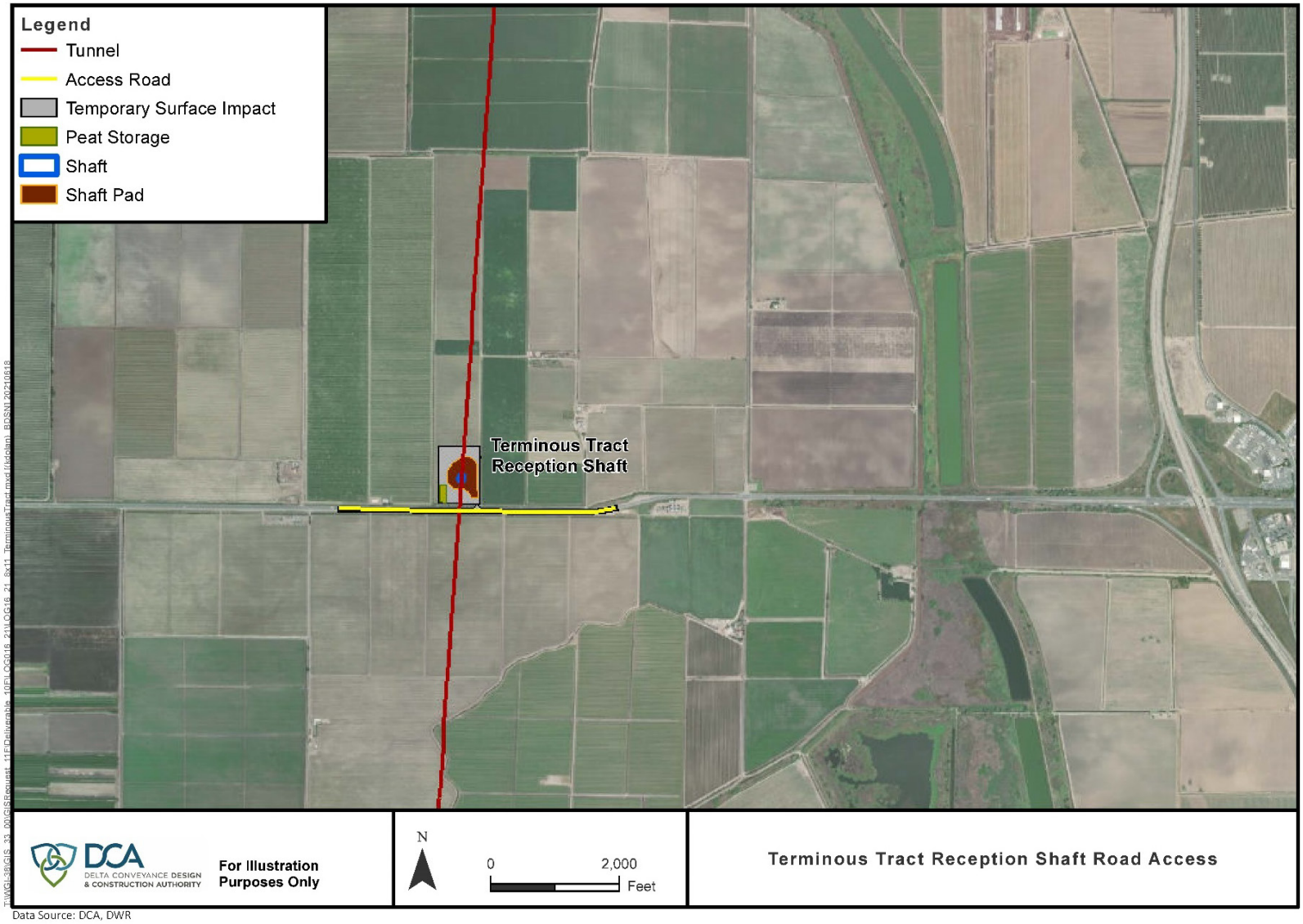


Figure 3-6. Terminous Tract Reception Shaft Road Access

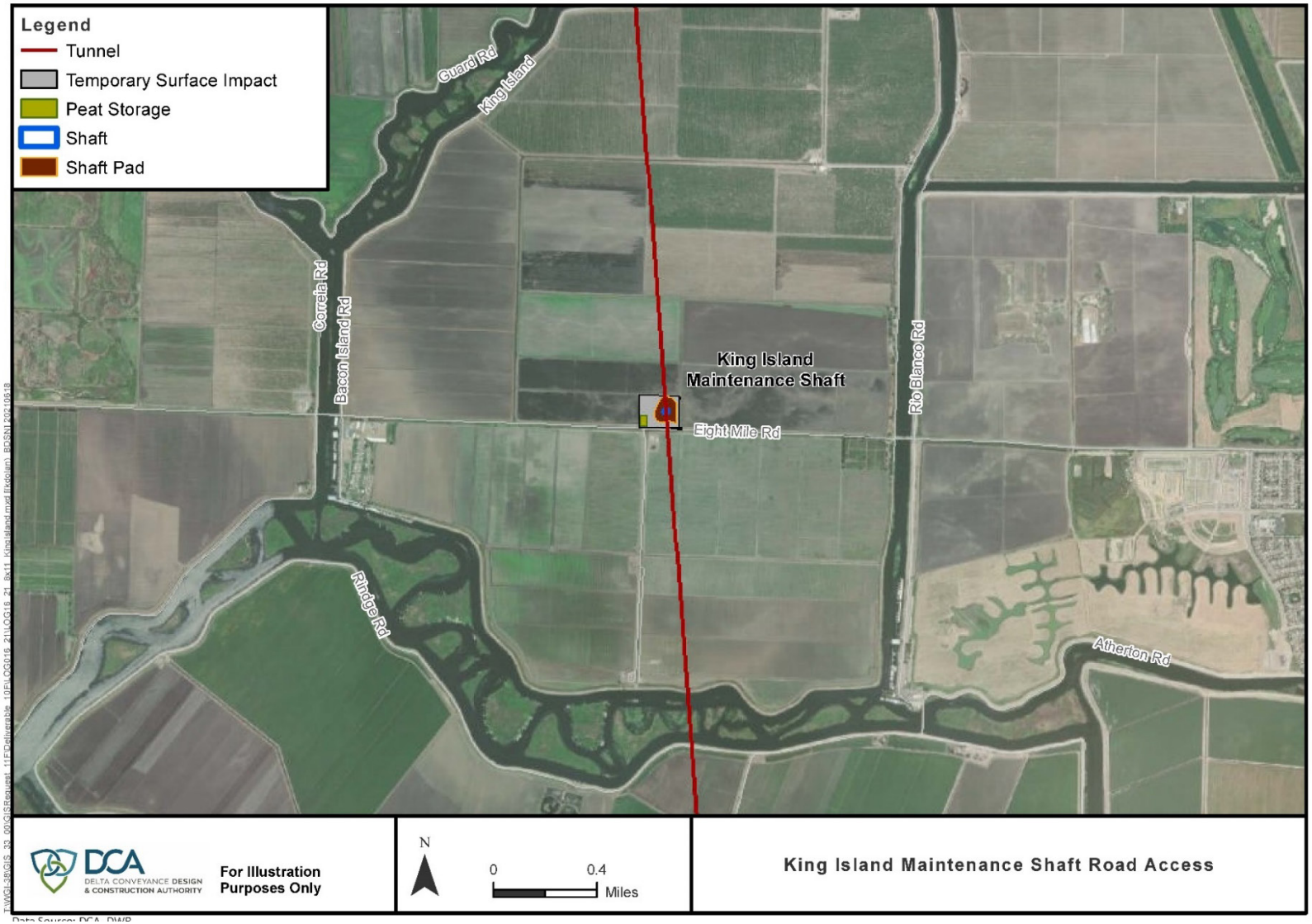


Figure 3-7. King Island Maintenance Shaft Road Access

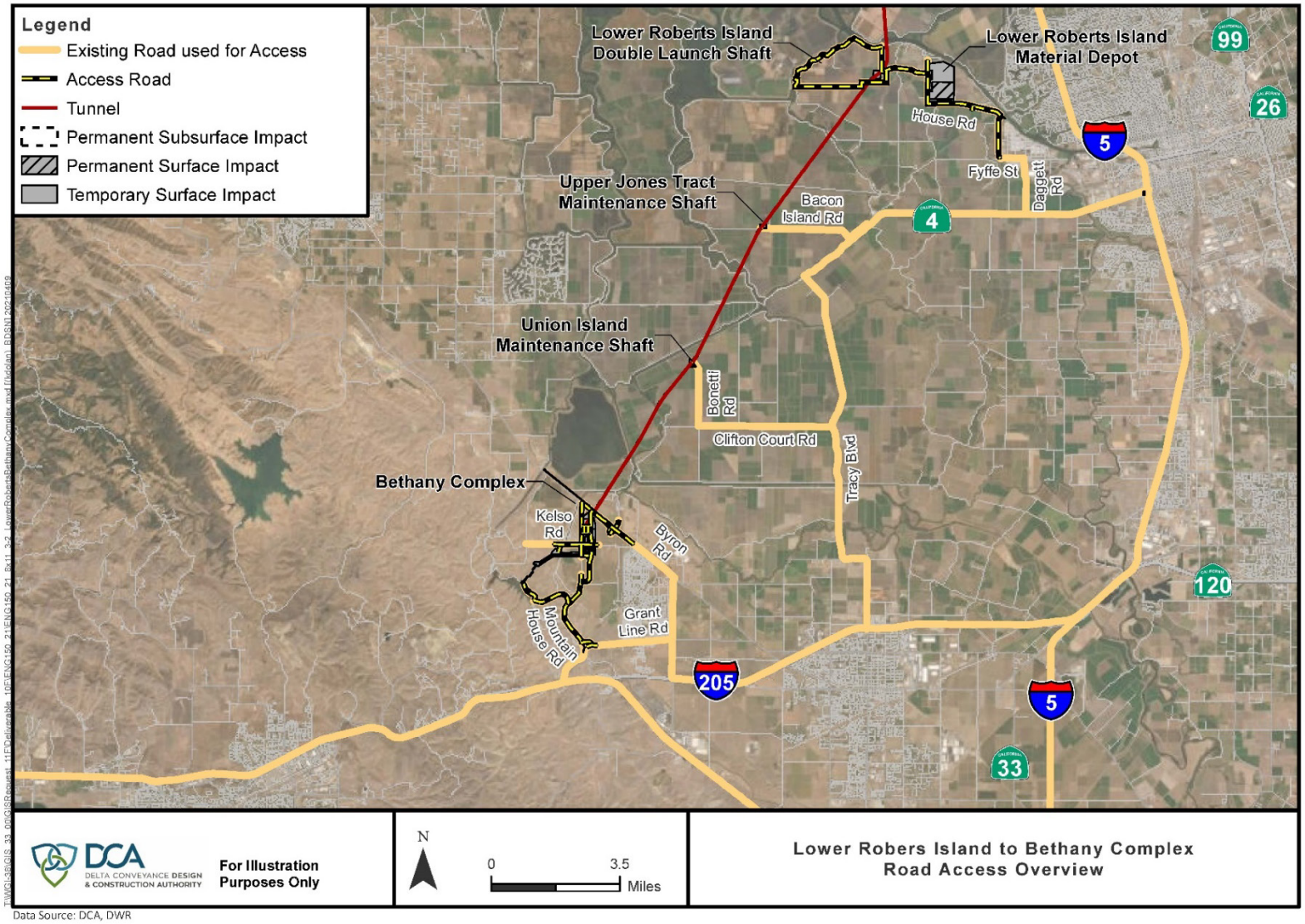


Figure 3-8. Lower Roberts Island to Bethany Complex Road Access

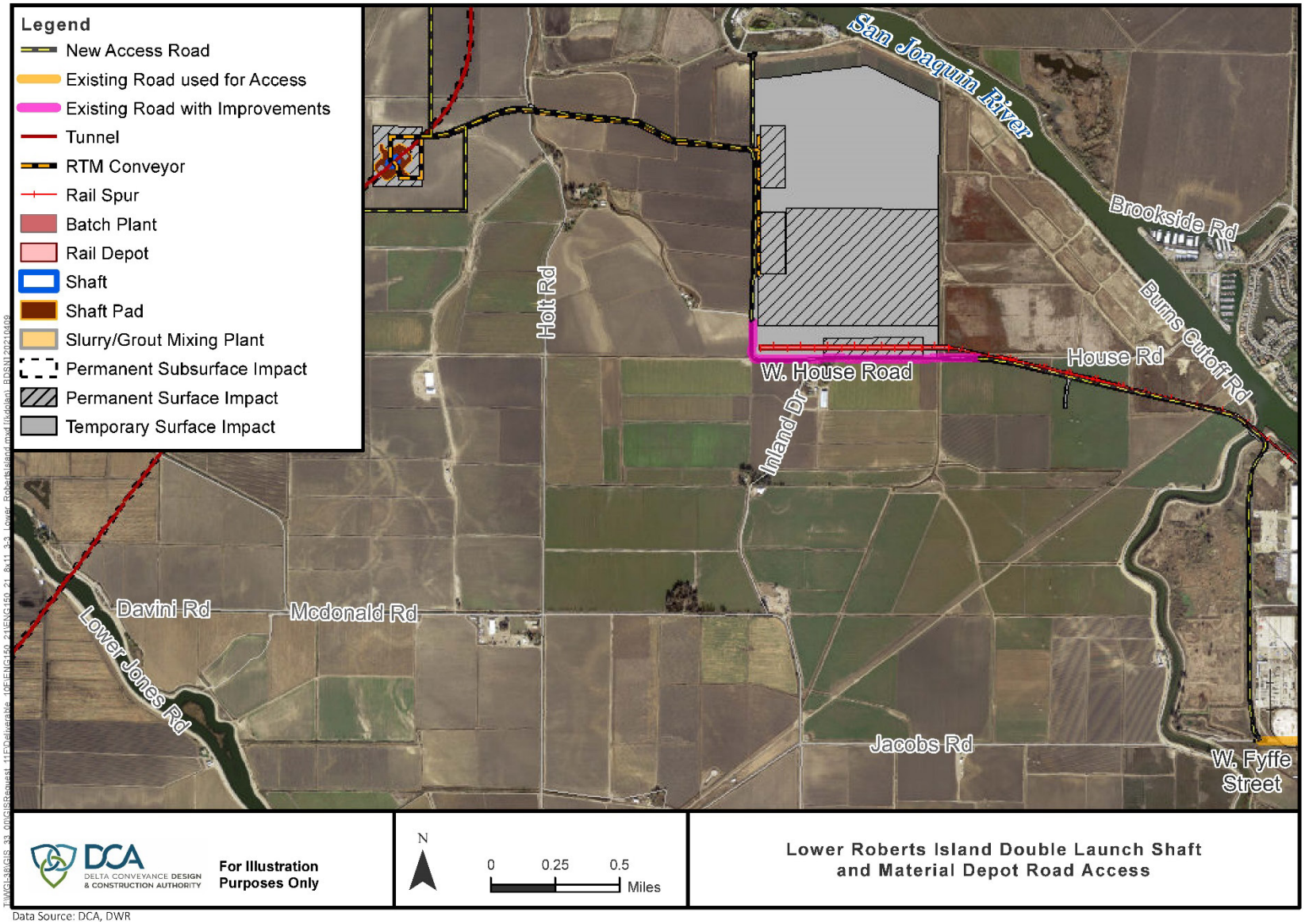


Figure 3-9. Lower Roberts Island Double Launch Shaft and Material Depot Road Access

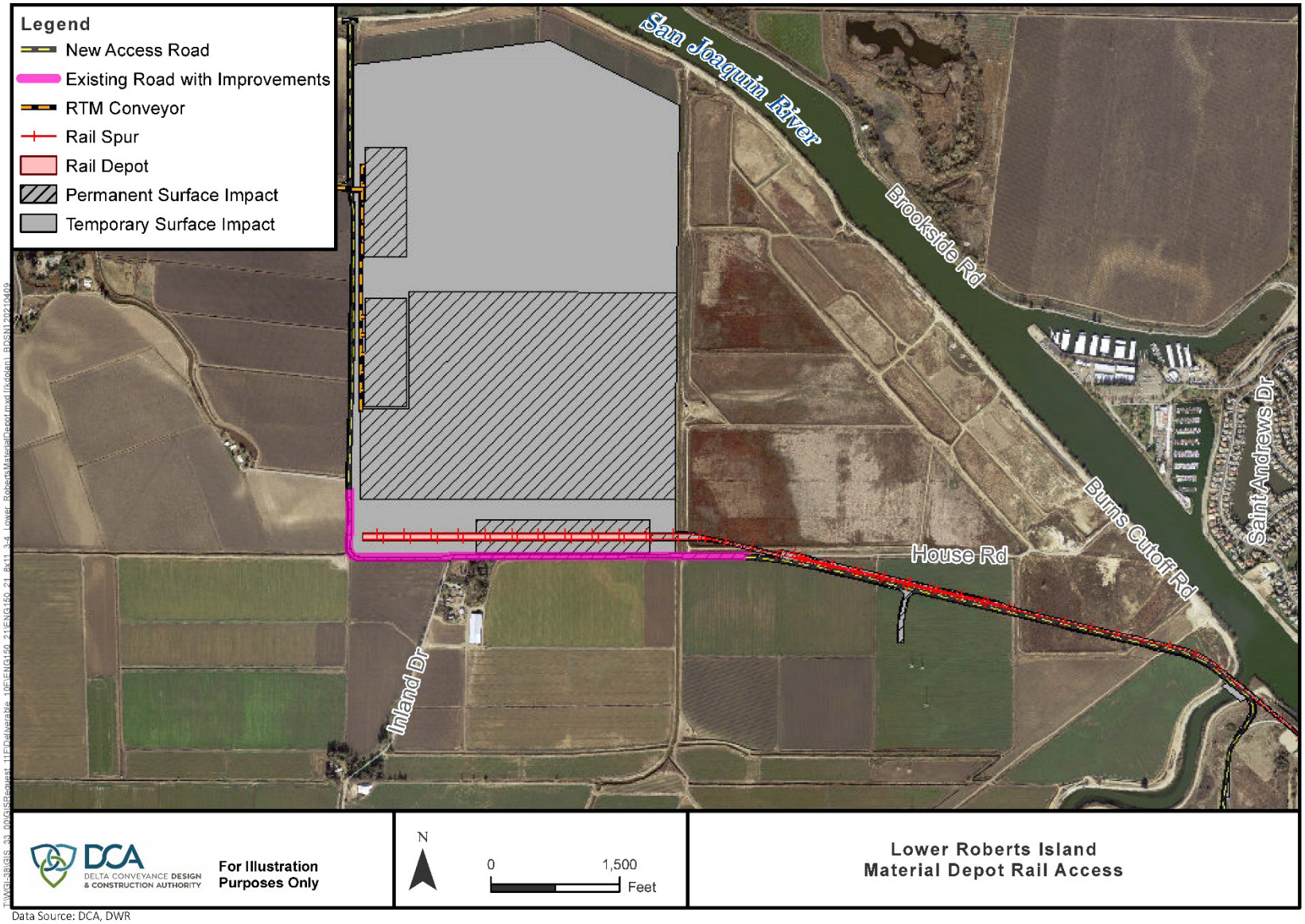


Figure 3-10. Lower Roberts Island Material Depot Rail Access

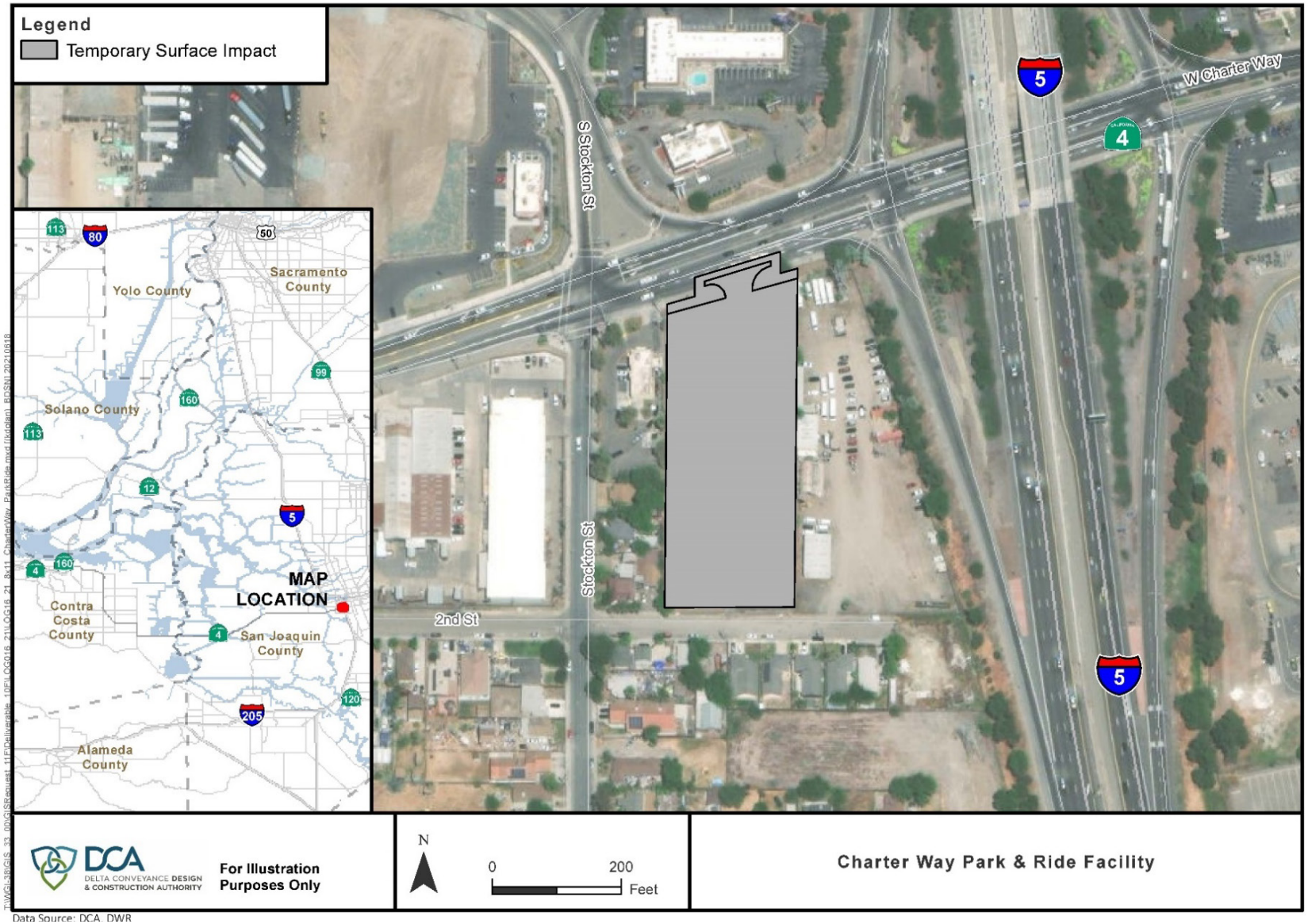


Figure 3-11. Charter Way Park & Ride Facility

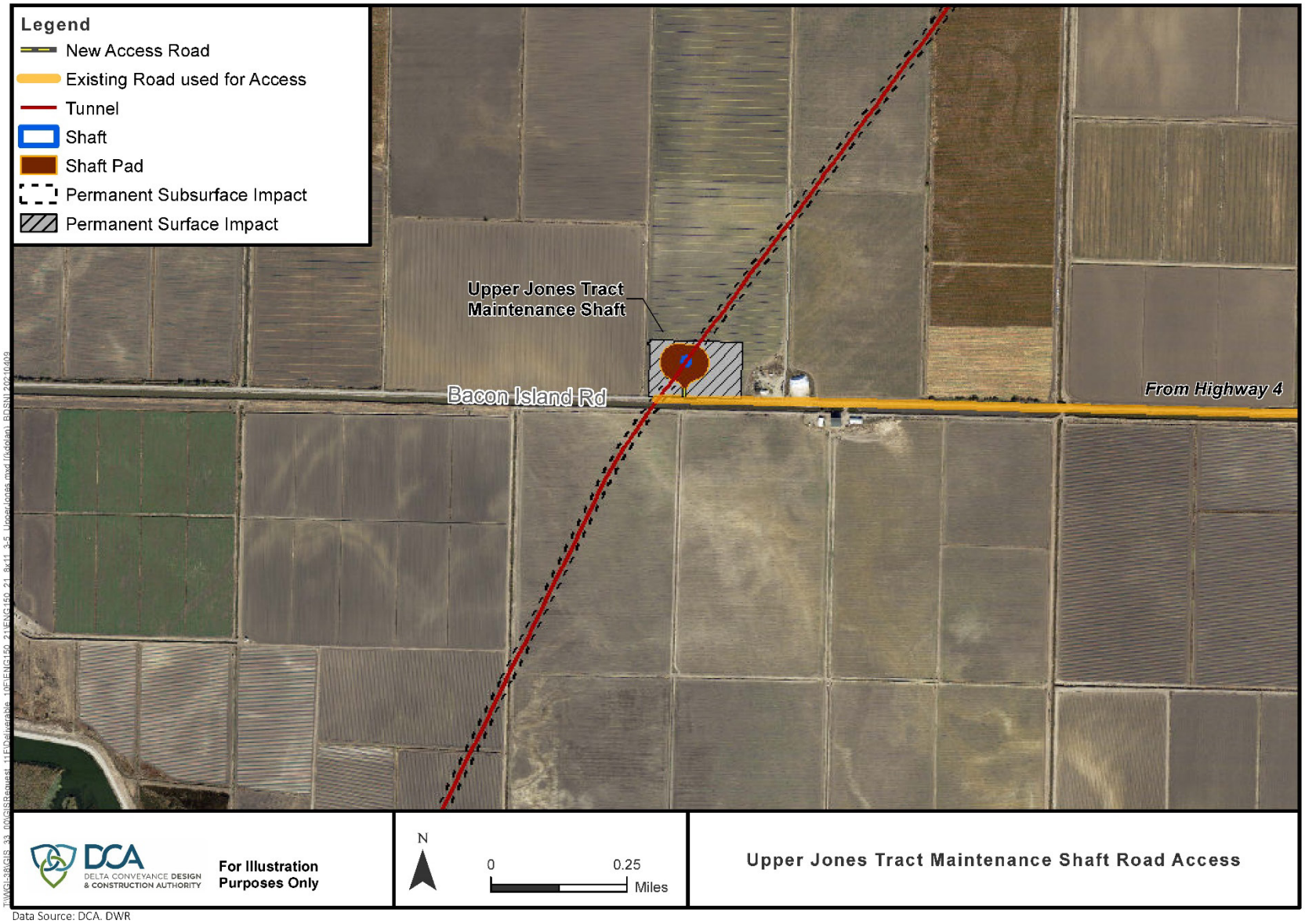


Figure 3-12. Upper Jones Tract Maintenance Shaft Road Access

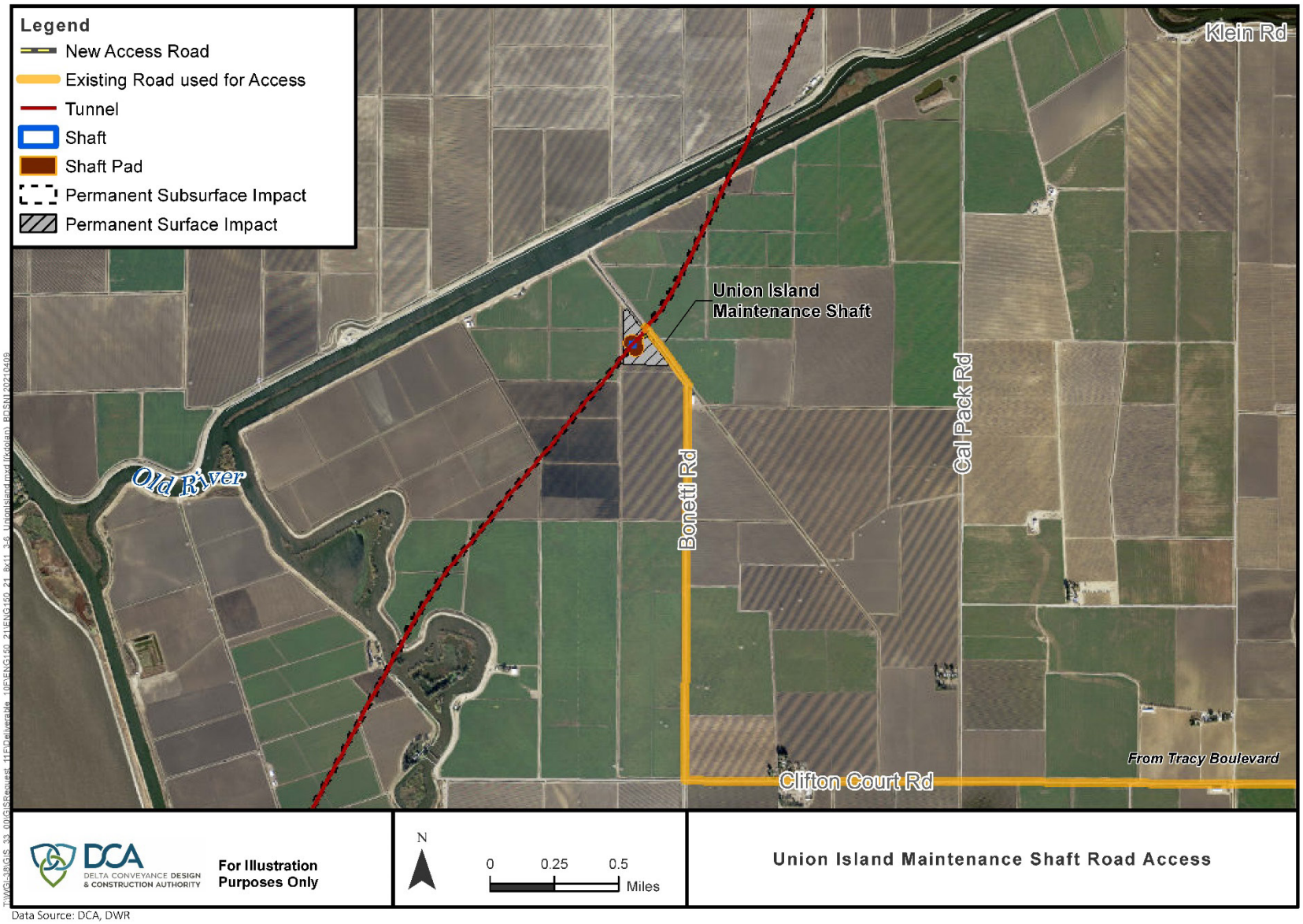


Figure 3-13. Union Island Maintenance Shaft Road Access

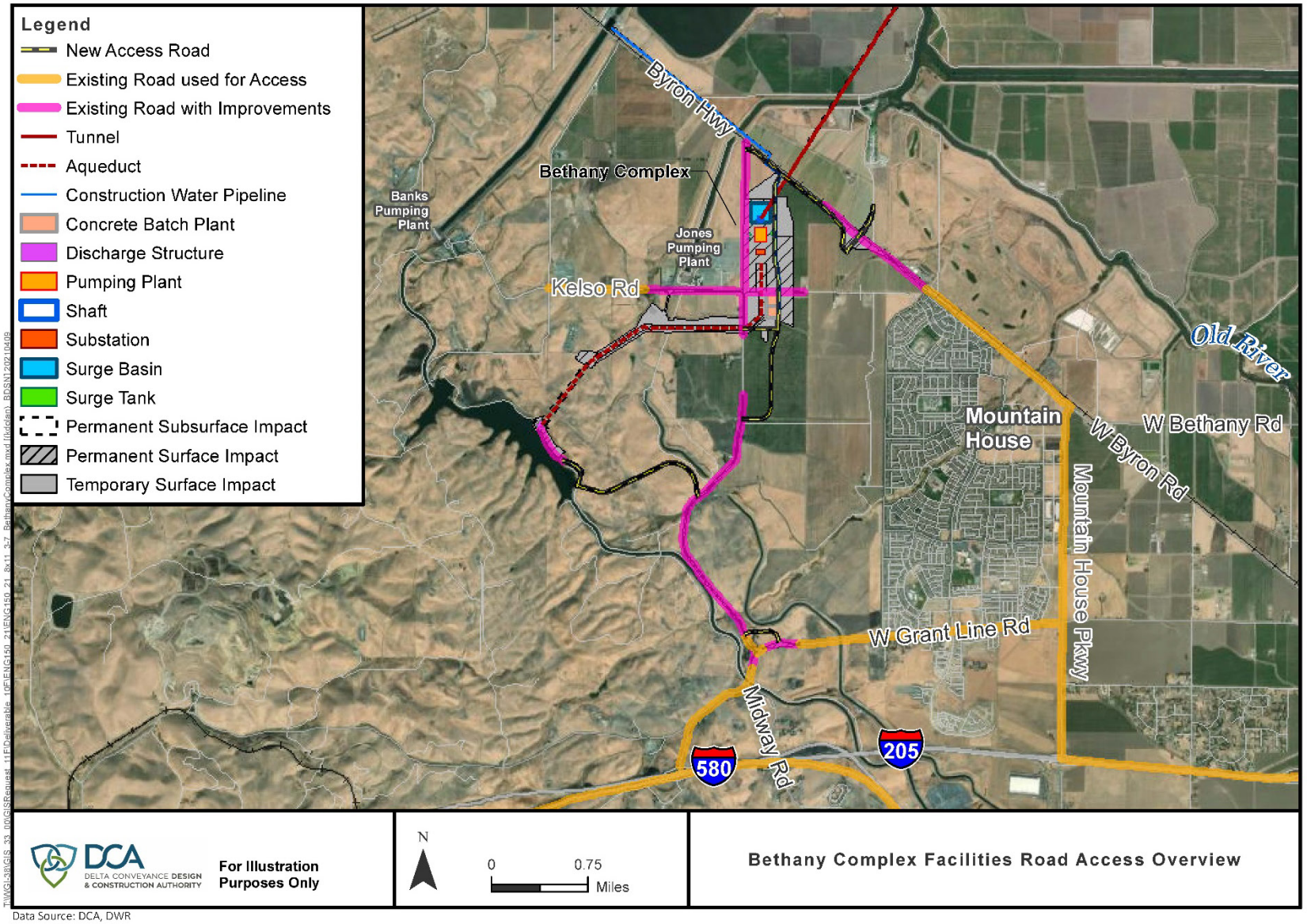


Figure 3-14. Bethany Complex Road Access Overview

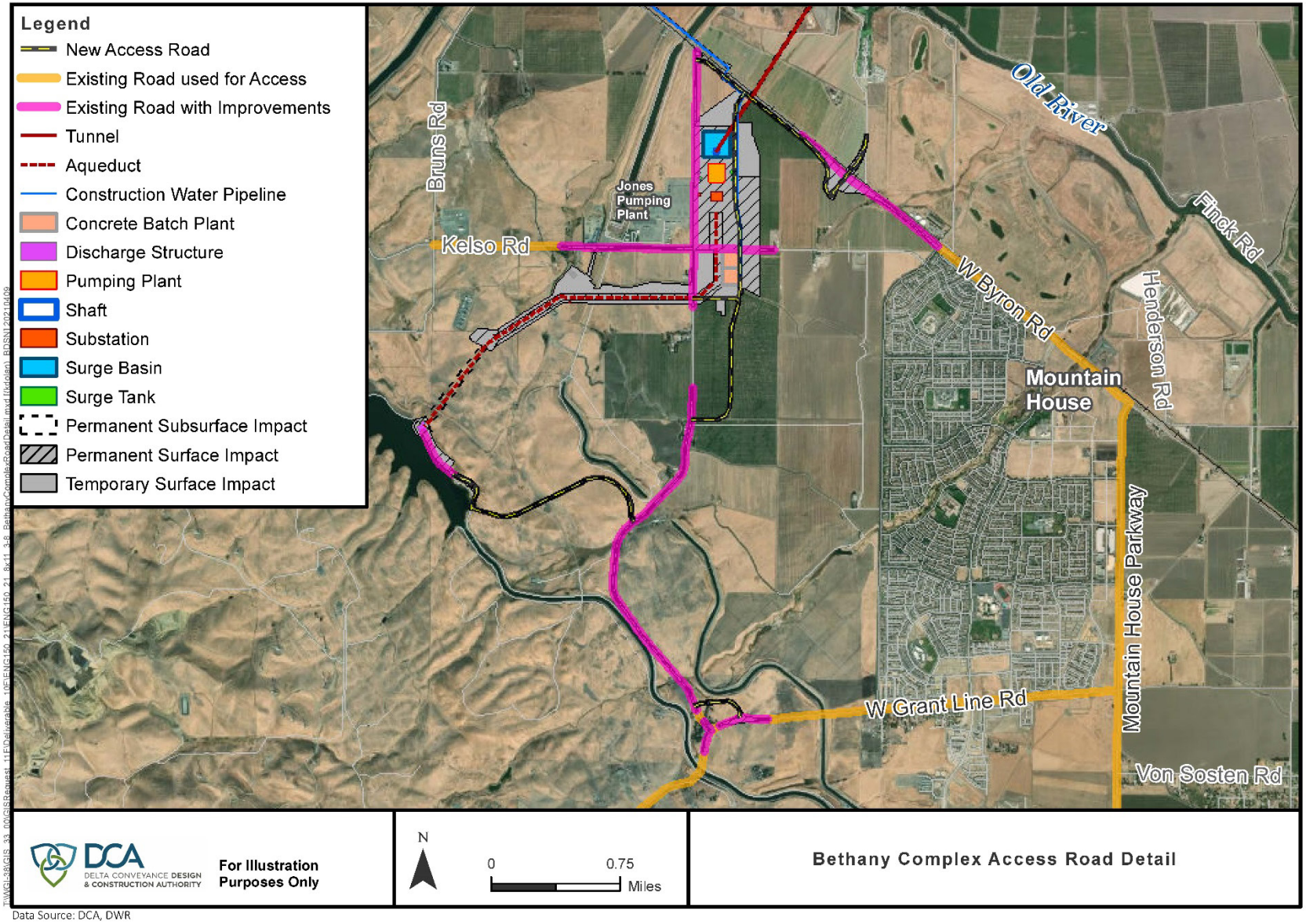


Figure 3-15. Bethany Complex Access Detail

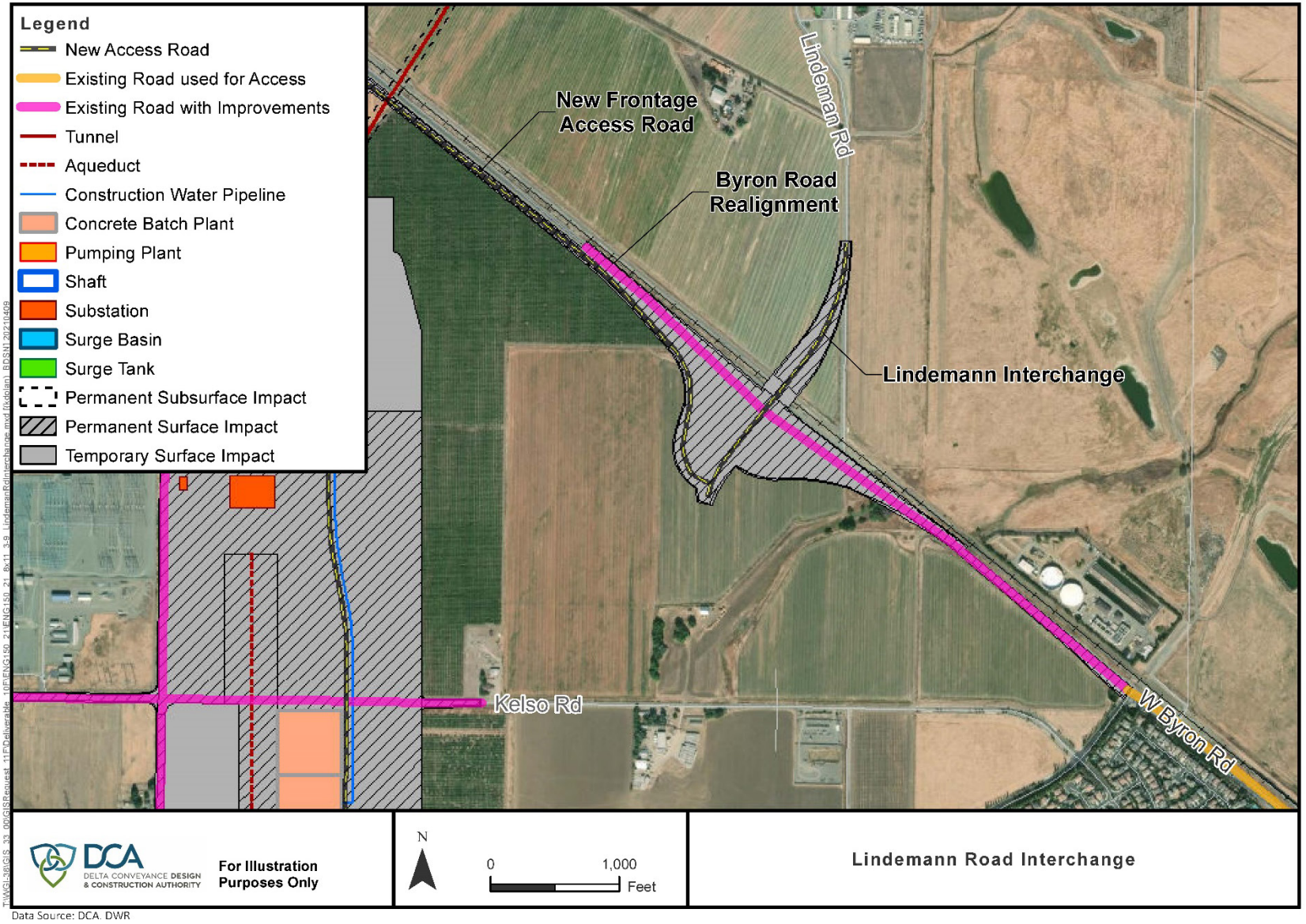


Figure 3-16. Lindemann Road Interchange

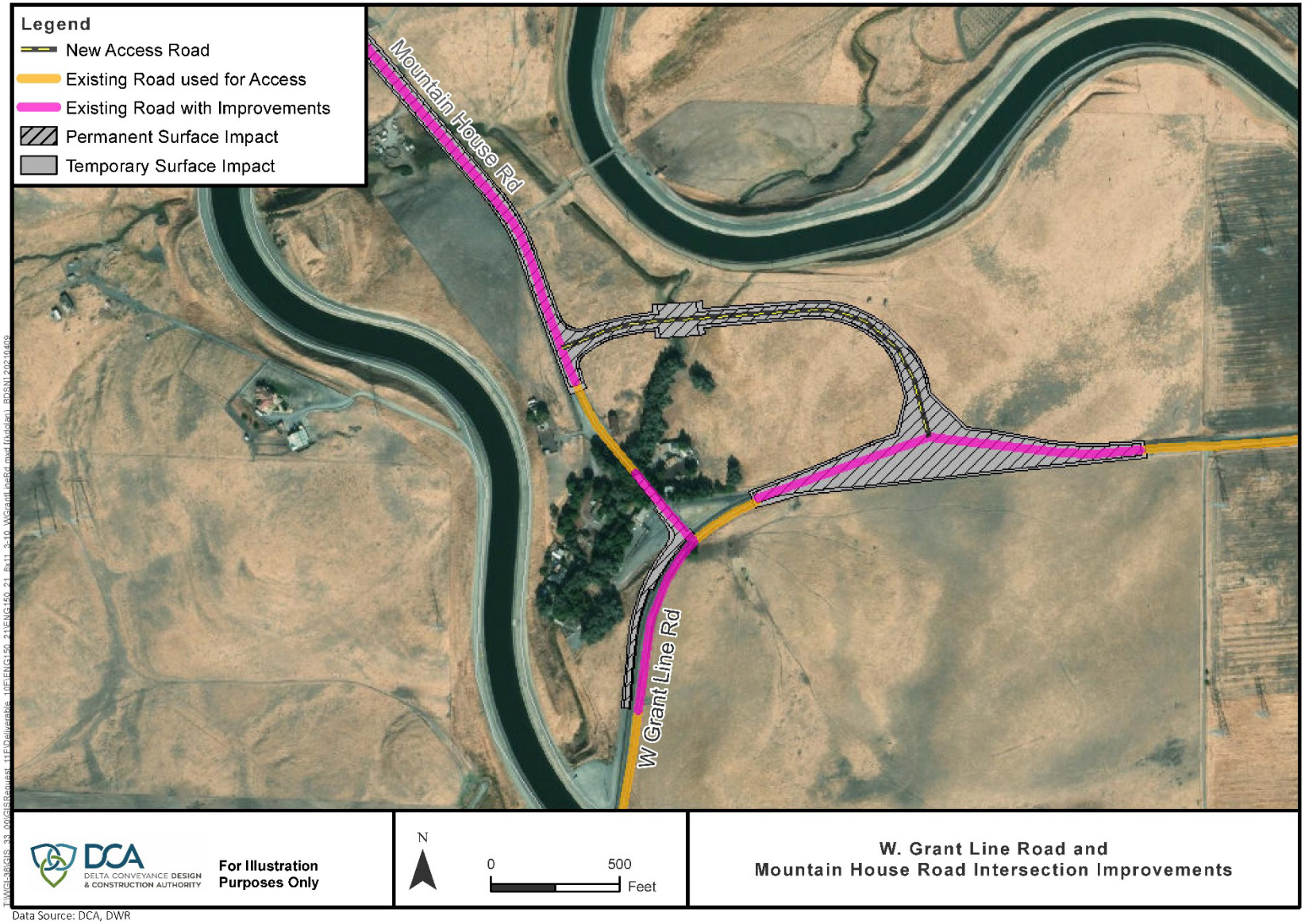


Figure 3-17. W. Grant Line Road and Mountain House Road Intersection Improvements

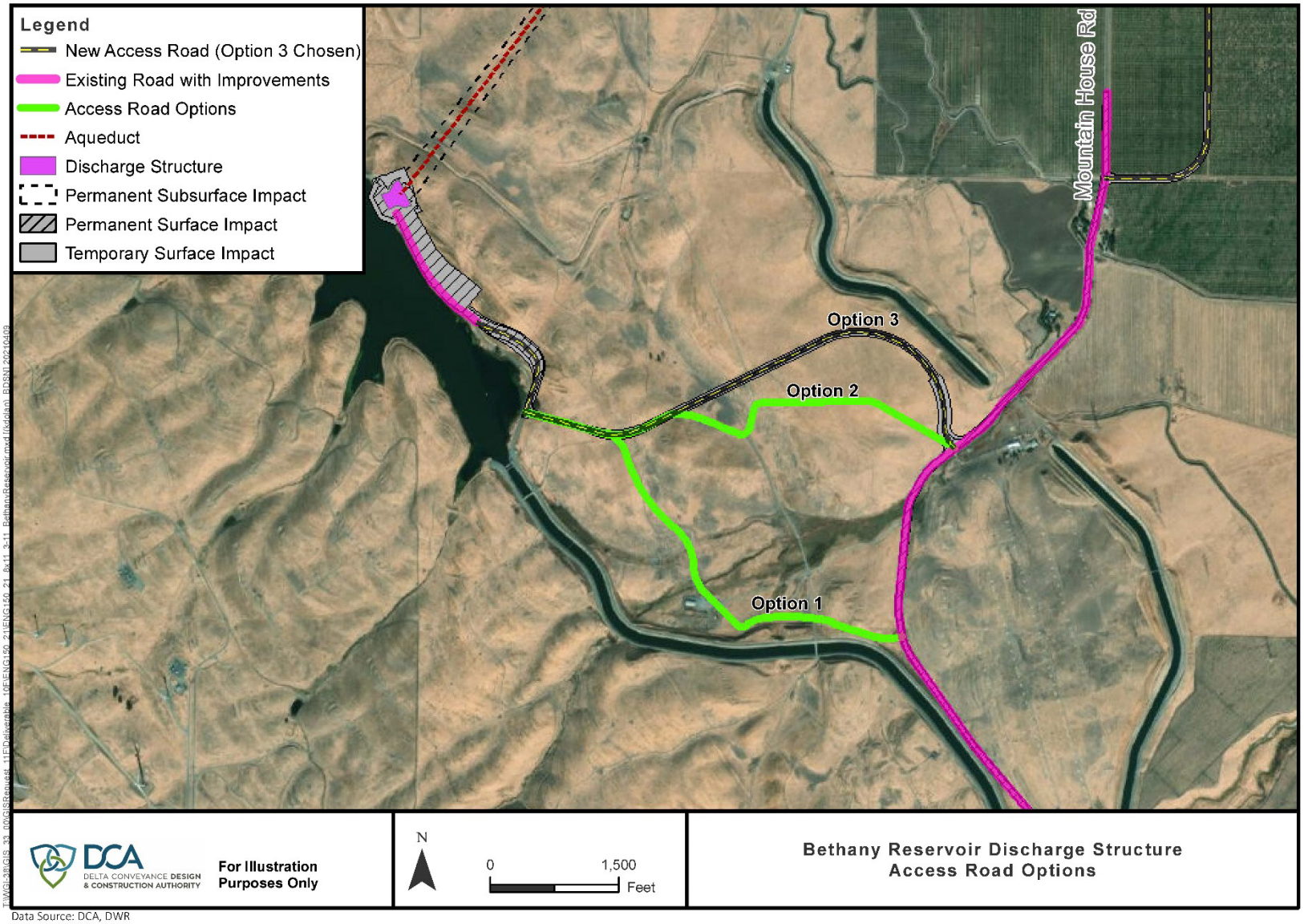


Figure 3-18. Bethany Reservoir Discharge Structure Access Road Options