Appendix H1. Summary of Known Utility Crossings (Final Draft)

1. Introduction and Purpose

The proposed tunnel, along the Bethany Reservoir Alignment, for the Delta Conveyance Project (DCP or Project) would be expected to cross under various utilities across the length of the alignment. Additionally, Project facilities located near ground surface or aboveground may also cross over existing surface and subsurface utilities. Although these utility crossings do not inherently pose conflicts with the DCP, the purpose of this technical memorandum (TM) is to identify the crossings.

The locations of utilities identified within this TM are based on information that is available to DCA at this time. During the design phase, utilities that would be crossed by DCP facilities would be located and surveyed, or otherwise verified by the subject utility provider. Additionally, it is possible that the Project alignment could cross under existing utilities where the locations are confidential and/or not currently known by the DCA. During the design phase, more in-depth analysis of easement locations associated with acquired parcels and utilities surveys would be completed to understand and avoid conflicts with existing utilities.

A summary of the identified utility crossings and the organizations who operate them are summarized in Table 1, and the general locations of the crossings are presented in Figure 1. These crossings are described in more detail, by utility type and provider, in Sections 2 through 5 of this TM.

Table 1 Utility Crossings

Utility Operator	Description of Utility
Sacramento Area Sewer District	Dual 8-inch diameter Courtland sewer force main Dual 10-inch diameter Walnut Creek sewer force main
Sacramento Regional County Sanitation District	Proposed Harvest Water transmission pipeline[a]
Sacramento County Water Agency	Hood Water Treatment Plant and groundwater well
Woodbridge Irrigation District	Unlined irrigation canal
City of Stockton	Stockton Delta Water Supply raw water supply pipeline
Byron-Bethany Irrigation District	Mountain House raw water supply pipeline
East Bay Municipal Utility District	Mokelumne Aqueducts
Pacific Gas and Electric Company	Numerous natural gas pipelines
Lodi Gas Storage, LLC	20-inch natural gas pipeline
California Resources Company	12-inch and 4-inch natural gas pipelines
Miscellaneous Fuels	Numerous active and abandoned petroleum product pipelines

Notes:

[a] Currently under design. Nature of crossing, if any, not currently known.

Legend

- Utility Crossing
- 7,500 cfs Option Only
- Tunnel
- Temporary Construction

ID	Utility Operator
1	Sacramento County Water Agency (SCWA)
2	Sacramento Area Sewer District (SASD)
3	Sacramento Regional County Sanitation District (RegionalSan)
4	Pacific Gas and Electric (PG&E)
5	Lodi Gas Storage, LLC.
6	Woodbridge Irrigation District (WID)
7	City of Stockton Municipal Utilities Department
8	East Bay Municipal Utility District (EBMUD)
9	Byron-Bethany Irrigation District (BBID)
10	California Resources Corporation (CRC)
11	Miscellaneous Fuels

Solano County
Sacramento County
San Joaquin County
Contra Costa County
Alameda County
Freeport
Clarksburg
Hood
Courtland
Locke
Ryde
Walnut Grove
Thornton
Isleton
Rio Vista
Terminous
Lodi
Stockton
Antioch
Oakley
Bethel Island
Knightsen
Brentwood
Discovery Bay
Byron
Holt
Mountain House
Sacramento River
San Joaquin River
Old River
Middle River
Mokelumne River
Cosumnes River
Calaveras River
Tracy Blvd
Byron Hwy
Florin Rd
Elk Grove Blvd
Laguna Blvd
Sheldon Rd
Bond Rd
Gerber Rd
Mack Rd
Hood Franklin Rd
Bilby Rd
Walmort Rd
Arno Rd
Valensin Rd
CR Twin Cities Rd (CR E13)
Simmerhorn Rd
New Hope Rd
W Walnut Grove Rd
W Peltier Rd
E Peltier Rd
W Turner Rd
E Kettleman Ln
E Eight Mile Rd
Morada Ln
E Hammer Ln
W March Ln
W Elm St
W Bethany Rd
Howard Rd
Sunset Rd
Chestnut St
Balfour Rd
Marsh Creek Rd
Camino Diablo
Delta Rd
E 18th St
Lone Tree Way
Hillcrest Ave
Empire Ave
Ohara Ave
Neroly Rd
Sellers Ave
Deer Valley Rd
Concord Ave
Walnut Blvd
Montezuma Hills Rd
Terminous Rd
Byron Hwy
CR E19
CR E9
CR J8
CR J11
Stockton Blvd
Bruceville Rd
Center Pkwy
Power Inn Rd
S Watt Ave
Elk Grove Florin Rd
Bradshaw Rd
Excelsior Rd
CR E2
Elder Creek Rd
47th Ave
24th St
Gloria Dr
Pocket Rd
W Grant Line Rd
Clay Station Rd
Tavernor Rd
Dillard Rd
Wilton Rd
Waterman Rd
E Stockton Blvd
Colony Rd
Alta Mesa Rd
Liberty Rd
N Dustin Rd
N Lower Sacramento Rd
Davis Rd
Lower Sacramento Rd
N West Ln
S Ham Ln
S Hutchins St
N Thornton Rd
Thornton Rd
West Ln
Pacific Ave
N El Dorado St
N Wilson Way
E Fremont St
E Main St
A St
Kost Rd
SEE INSET
INSET
Contra Costa County
Alameda County
0 1 Miles
0 3.5 Miles
N

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Figure 1-1
Utility Crossings Delta Conveyance Project
September 2024

Data Source: DCA, DWR

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1.1 Organization

This TM is organized as follows:

- Introduction and Purpose
- Water and Wastewater
- Oil and Natural Gas
- Communications
- Electricity
- References

2. Water and Wastewater

2.1 Sacramento Area Sewer District

The Sacramento Area Sewer District (SASD) operates two wastewater pipelines in the Project area. One of the pipelines extends from the Courtland Pump Station, on Wilson Road southwest of Intake C-E-5, through approximately 10 miles of dual 8-inch diameter sewer force mains in the Project area, extending along Lambert Road and Bruceville Road to the Rio Cosumnes Correctional Center (RCCC) (SASD, 2010). The Project would cross under this pipeline at the intersection of Lambert Road, Sangiovese Road, and the Intake Haul Road.

The second pipeline extends from Walnut Grove through 10.2 miles of dual 10-inch diameter sewer force mains under Snodgrass Slough and Dead Horse Cut; along Lauffer Road, Vail Road, Barber Road, North Cameron Road, and North Thornton Road; under Mokelumne River, Lost Slough, and Cosumnes River Preserve; and along Desmond Road and Bruceville Road to the RCCC (SASD, 2006). The crossing with this pipeline would occur on Barber Road, as shown on Figures 1.

Based upon information obtained from SASD, the tunnel inverts would be below the force main crossings, as summarized below. As such, it is not anticipated that construction or operation of the Project would conflict with operation of the existing facility; however, coordination with SASD would occur during a future design phase.

- At the crossing of the tunnel alignment between Twin Cities Complex and the Intakes near the Intersection of Lambert Road, Sangiovese Road, and Intake Haul Road, the bottom of the Courtland force main HDD would be approximately 100 feet below the ground surface and the top of the tunnel would be approximately 120 feet below ground surface. Therefore, construction of the tunnel would not be expected to impact this pipeline. Further, the DCA may consider shifting the tunnel alignment slightly to avoid this crossing during a future design phase.
- At the crossing of the tunnel alignment between Twin Cities Complex and Terminous Tract tunnel shaft, the bottom of the open-cut Walnut Grove force main would be approximately 10 feet below the ground surface and the top of the tunnel would be approximately 110 feet below ground surface. Therefore, construction of the tunnel would not be expected to impact this pipeline.

2.2 Sacramento Regional County Sanitation District

Sacramento Regional County Sanitation District's (RegionalSan) Harvest Water Program (RegionalSan 2020) has proposed a transmission pipeline along a segment of Franklin Boulevard that would be affected by the DCP. Under the tunnel alignment, Franklin Boulevard would be re-routed to accommodate connections from the Union Pacific Railroad to Twin Cities Complex. Also, new

underground power would be located in the Franklin Boulevard shoulder, though the tunnel alignment would not cross Franklin Boulevard.

Although final design has not been completed, in the Initial Study (RegionalSan 2020), it is estimated that the pipeline would be located 6.5 to 40 feet below ground surface depending upon construction methods. The road re-alignment would occur at the ground surface. The new underground power alignment would be installed within 10 feet of the ground surface; however, the underground power facilities would not be located in the same alignment as the recycled water transmission pipeline. Therefore, construction of the DCP facilities would not be expected to impact this pipeline.

2.3 Sacramento County Water Agency

The Sacramento County Water Agency (SCWA) operates the Hood Water Treatment Plant (WTP) and a groundwater well (W-25), adjacent to Hood-Franklin Road just west of Snodgrass Slough. The closest edge of WTP site is located approximately 175 feet west of the tunnel alignment for and for the Project design capacity (SCWA, 2017). W-25 is the closest identified water supply well; it reaches a depth of 160 feet and is screened from 125 to 140 feet in depth, while the top of the tunnel would be located approximately 115 feet below the ground surface at Hood-Franklin Road. However, this well is located over 300 feet from the centerline of the tunnel at this location.

2.4 Woodbridge Irrigation District

Woodbridge Irrigation District (WID) operates a number of irrigation canals which serve properties on Canal Ranch Tract. The tunnel alignment would pass under one of the WID unlined canals just north of Hog Slough. At this location, the tunnel alignment would be located approximately 115 feet below the ground surface at the canal crossing, and would not be expected to impact this unlined canal.

2.5 City of Stockton Municipal Utilities Department

The City of Stockton's Municipal Utilities Department operates the Stockton Delta Water Supply raw water pipeline that extends from an intake on Little Connection Slough to the Delta Water Treatment Plant on Lower Sacramento Road, which is located north of the City of Stockton. The pipeline is located along West 8 Mile Road in the vicinity of the King Island shaft site near Bishop Cut along the tunnel alignment (CDM Smith, 2013). At this crossing, the bottom of the Delta Water Supply pipeline would be located approximately 10 feet below the ground surface and the top of the tunnel would be located approximately 105 feet below the ground surface. Therefore, construction of the tunnel would not be expected to impact this pipeline.

2.6 Byron-Bethany Irrigation District

Byron-Bethany Irrigation District (BBID) operates a raw water supply pipeline from a pump station on 70 Canal along Bruns Road and the Byron Highway to the Mountain House Community Services District (MHCSD) WTP (MHCSD, 2016).

The raw water pipeline would continue parallel to Byron Highway to the WTP. The Byron Highway would be realigned in the vicinity of this raw water pipeline, but the roadway realignment would not affect the BBID pipeline. However, design of roadway realignment would be coordinated during the design phase with BBID and MHCSD to maintain access to the pipeline.

A new 230-kilovolt (kV) power alignment would cross over Byron Highway and the BBID pipeline; however, this alignment would be overhead and would not impact the pipeline.

The portion of the pipeline along Bruns Road would not be affected. The Project tunnel would also include an additional crossing with the raw water supply pipeline to Mountain House at the proposed Byron Highway interchange at Lindemann Road. For construction of this facility, coordination with BBID would occur during the design phase to avoid interference or interruption of service.

In addition, the Project would cross BBID's Main Canal (45) and Canal and 70 several times. The Bethany Reservoir Aqueduct would cross under BBID's Canal 45 between the Delta-Mendota Canal and Bethany Reservoir south of Kelso Road. For this crossing, coordination with BBID would occur during the design phase to avoid interference or interruption of service. The supervisory control and data acquisition (SCADA) alignment between the Delta Field Division Area Control Center (DACC) and the proposed Bethany Pumping Plant and the temporary access road and proposed underground power to the controlled low-strength material (CLSM) batch plant would also cross over Canal 45 at the Kelso Road canal bridge and south of Kelso Road, respectively. For the SCADA crossing, the new fiber line would be installed within the existing bridge and would not be expected to interrupt service, and for the access road and power crossing, a new bridge over the canal would be required to avoid interference or interruption of service. Roadway improvements to Mountain House Road at the Canal 70 and Canal 120 canal bridges, though these would not be expected to disrupt service. The proposed access road from the west side of the CLSM bath plant area south to Mountain House Road would also cross over Canal 70 again, and a new bridge would be required to avoid interference or interruption of service.

2.7 East Bay Municipal Utility District

East Bay Municipal Utility District (EBMUD) operates the Mokelumne Aqueducts which transport water from the Mokelumne River to the East Bay. Near the Central and Eastern Corridors, the Mokelumne Aqueducts alignment runs generally east-to-west between Holt and Bixler (EBMUD, 2020). The Central Corridor would cross under the Mokelumne Aqueducts on the north side of Woodward Island. The Eastern Corridor alignment would cross under the Mokelumne Aqueducts on Upper Jones Tract. Although the Mokelumne Aqueducts are generally elevated above the ground surface, portions of the aqueducts are buried. In addition, the foundational structures that support the aqueducts extend below the ground surface. EBMUD is evaluating replacement of the aqueducts in a tunnel system that would be constructed parallel to the existing aqueducts.

The Bethany Alignment would cross the Mokelumne Aqueducts on Upper Jones Tract where all three aqueducts are above the ground surface and rest on pipe saddles that are supported on piles. The piles at this location are located approximately 50 feet below the ground surface and the top of the tunnel would be located approximately 110 feet below the ground surface. As described in the Concept Engineering Report (CER) Appendix C3 *Tunneling Effects Assessment*, construction of the tunnel would not be expected to affect the existing Mokelumne Aqueducts. Design of the tunnel would be coordinated with the EBMUD during the design phase to avoid interferences or interruptions.

The Bethany Alignment would cross over the Mokelumne Aqueducts a second time southeast of the Lower Roberts Island Launch Shaft site. A new access road, which would include SCADA within the roadway shoulder, and rail spur would be constructed from Embarcadero on Rough and Ready Island over Burns Cutoff to the Lower Roberts Island reusable tunnel material (RTM) storage area. These surface improvements would intersect with the Mokelumne Aqueducts just north of Burns Cutoff and west of the Stockton Deep Water Ship Channel. Although the rail spur in particular would be expected to carry heavy loads, which could impact the Mokelumne Aqueducts, these crossing structures would be

designed to limit loads to mitigate the potential for impacts. Design of the crossing structure would be coordinated with the EBMUD and the railroad during the design phase to avoid interferences or interruptions.

2.8 Other Irrigation and Agricultural Drainage Facilities

Many construction sites are located on existing agricultural lands. Local irrigation and drainage facilities have been installed by existing and previous landowners at most of the construction sites, including groundwater wells. These facilities are owned by private landowners, or potentially by reclamation or irrigation districts. Many of these systems include facilities that either provide irrigation water or convey subsurface drainage between the parcels that would be acquired for the DCP and adjacent parcels. Most of these facilities are buried and cannot be identified from aerial photographs. During the design phase when access to specific parcels can be acquired, these buried facilities would be mapped on a site-specific basis. If the facilities located on a parcel to be used for a DCP feature extends to adjacent parcels, the irrigation or drainage conveyance would be installed in underground pipes or canals through, or around, the construction site parcels to maintain service to the adjacent properties.

During a future design phase, the depths and conditions of wells adjacent to the construction sites would also be evaluated.

The design would be coordinated with adjacent landowners to maintain wells and water supplies for the existing water uses on properties adjacent to the constructed facilities.

3. Oil and Natural Gas

3.1 Pacific Gas and Electric

Pacific Gas and Electric (PG&E) is one of the largest investor-owned utility providers of natural gas and electricity in the U.S. (Choose Energy, 2019) and operates an extensive power network across the Project area and northern and central California. This network includes power production facilities, electric transmission and distribution lines, natural gas storage, and natural gas pipelines. Please see Section 5 regarding electricity infrastructure. The tunnel alignments avoid PG&E's McDonald Island gas storage facility, which injects and recovers natural gas to meet customer demands. In total, above and belowground Project facilities would intersect with existing PG&E natural gas lines 19 times. The majority of the pipelines are relatively shallow, having been installed in open trenches. The current tunnel alignments avoid crossing gas lines at river crossing locations, where deep horizontal directional drilling (HDD) is generally employed to install the gas pipelines. Although it is not anticipated the tunnel and other Project facilities would impact these pipelines, during the design phase, coordination with PG&E would occur to avoid interference or interruption of service.

The Project would have several crossings with dual PG&E natural gas lines running generally southeast between Bethany Reservoir and the Byron Highway (CEC, 2015; EIA, 2019). These crossings would include along the Bethany Aqueduct, one along Mountain House Road where roadway improvements would occur, and two along the proposed SCADA alignment. Due to the expected depth of the PG&E pipelines, it is assumed that the roadway improvements and SCADA line would have no impact on the existing lines. However, at the Aqueduct crossing, the depth of the Aqueduct would need to be coordinated with PG&E during the design phase to avoid interference or interruption of service.

3.2 Lodi Gas Storage, LLC

Lodi Gas Storage, LLC (Lodi Gas) operates a natural gas storage facility in the Lodi gas field, approximately 5 miles northeast of the City of Lodi, and transports the natural gas via a 20-inch diameter pipeline which extends to Sherman Island within the Delta (CEC, 2015). The Bethany Alignment crosses the gas pipeline associated with this facility Brack Tract, parallel to two PG&E lines, as shown on Figure 1, respectively. At the crossing along the Alignment, the top of tunnel would be approximately 110 feet below ground surface while the Lodi Gas pipelines are anticipated to be buried within the upper 10 feet. As such, it is not anticipated the tunnel and other Project facilities would impact these pipelines; however, during the design phase, coordination with Lodi Gas would occur to avoid interference or interruption of service.

3.3 California Resources Company

California Resources Company (CRC) operates a 12-inch natural gas pipeline along Byron Highway (Contra Costa, 2020) and around the southern end of Clifton Court Forebay (CEC, 2015; EIA, 2019). The existing pipeline is located on the existing Bryon Highway bridge.

Several of the Project crossings the CRC pipeline however, the alignment would not include any crossings north of the California Aqueduct, resulting in several fewer crossings. The crossings that would occur under the Project include two tunnel crossings, one under the southern bank of Old River just east of the Clifton Court Forebay inlet structure and one at Byron Highway south of Mountain House Road, and the proposed water supply pipeline between the California Aqueduct and the Bethany Complex would also cross the gas pipeline near the intersection of Byron Highway and Herdlyn Road. It is assumed that the CRC pipeline would be located within 10 feet of the ground surface in these locations and would not be affected by the tunnel construction, though the proposed water supply pipeline would be at a similar depth. During the design phase, coordination with CRC would occur to avoid interference or interruption of service.

3.4 Miscellaneous Fuel Pipelines

There are a number of operators which transport petroleum and petroleum products from the San Francisco Bay Area to storage and distribution points elsewhere in California and beyond. Due to the cyclical nature of the oil and gas industry, pipelines which transport these products changes ownership relatively frequently and may have several owners during its lifecycle. Further, the locations of these facilities are generally confidential to maintain safety and security of the infrastructure. With this in mind, the active fuel line crossings in the Southern Complex, whose current owners include Chevron, Kinder Morgan, Phillips 66, Crimson Pipeline, LLC, and abandoned pipelines formerly owned by the now-bankrupt Tidewater Oil Company and Venoco (EIA, 2018), on Figure 1. In total, there are 7 crossings.

The majority of the potential crossings with fuels pipelines identified would be located near Byron Highway.

Above- and belowground Project facilities would intersect with existing active and abandoned petroleum and petroleum product pipelines operated by Kinder Morgan, Phillips 66, Crimson Pipeline, and the now-bankrupt Tidewater Oil Company and Venoco a total 8 times.

In the case of the abandoned pipelines, at this time, it is not known if these pipelines will be removed or relocated with the upcoming Byron Highway bridge project to be completed by Contra Costa County.

Additional crossings with fuel pipelines on Woodward Island and Lower Jones Tract, for the Bethany Alignment, were also identified. Neither crossing location is situated immediately before or after a water crossing, so the pipelines would not have been installed via HDD and are thus expected to be buried within the upper 10 feet.

During the design phase, coordination with the appropriate owners and operators would occur to avoid interference or interruption of service.

Similar to the CRC crossings, the Project would not include any crossings with fuel pipelines north of the California Aqueduct. The Alignment, however, would include several additional crossings with fuel pipelines running generally southeast between Bethany Reservoir and the Byron Highway (EIA, 2018). These crossings would include the proposed SCADA alignment, as well as the Bethany Reservoir Aqueducts, and the proposed Byron Highway interchange at Lindemann Road. Similar to the conclusions under the BBID and PG&E crossings in this area, it is anticipated that the SCADA alignment would have no impact on the existing fuel lines but that the pipeline owner/operators would need to be coordinated with regarding other Project facilities during the design phase to avoid interference or interruption of service.

4. Communications

Telephone, internet, and television services is provided by several entities throughout the Delta. These providers use extensive networks of above- and below ground cable networks, including fiberoptic cables. During design, extensive surveys and would be completed to identify locations and potential crossings of these communication lines to avoid conflicts. The supervisory control and data acquisition (SCADA) system for the DCP would be connected to the existing facilities, as described in the CER Appendix H3 *SCADA/Communications Routing and Basic Design Approach TM*.

5. Electricity

Electrical power is available in the Project area from many utility providers, including Sacramento Municipal Utility District (SMUD) in Sacramento County and Western Area Power Administration (WAPA) and PG&E, as well as several additional providers whose services are not anticipated to be utilized. These providers use extensive networks of above- and below ground transmission (high-voltage) and distribution (low-voltage) lines. During design, extensive surveys and would be completed to identify locations and potential crossings of these power lines to avoid conflicts. Interfaces with existing overhead and underground electric transmission and distribution infrastructure is discussed in detail in the CER Appendix H2 *Electrical Power Load and Routing Study TM*.

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