DELTA PROTECTION COMMISSION
APPEAL NO. C20257-A1
REQUEST FOR COUNCIL TO TAKE OFFICIAL NOTICE

The Delta Protection Commission ("Commission") requests that the Delta Stewardship Council ("Council") take official notice pursuant to Council Regulations (Cal. Code Regs., tit. 23, § 5032) of the following additional documentation and information, and the individual facts contained therein:

- **Commission Maps 1-7***
  - Map 1, Delta Conveyance Project: A Look at Four Major Impact Areas
  - Map 2, Delta Conveyance Project Intakes: Impacts, Context, & Schedule
  - Map 3, Delta Conveyance Project – Twin Cities/Lambert Road: Impacts, Context, & Schedule
  - Map 4, Delta Conveyance Project – Lower Roberts: Impacts, Context, & Schedule
  - Map 5, Delta Conveyance Project – Bethany Complex: Impacts, Context, & Schedule
  - Map 6, North Delta Cultural, Recreational Resources within 1 Mile of Delta Conveyance Project Features During Construction
  - Map 7, Delta Conveyance Project: Central and South Delta Cultural, Recreational Resources within 1 Mile of Delta Conveyance Project Features During Construction

  **The Commission previously submitted Maps 1-5 with Appeal No. C20257 on 11/17/25, and is resubmitting them as individual files, consistent with Council Regulations, section 5032*.
- **DCP by Year: Few Breaks in Construction over 13 Years at Most Locations** ("Construction Timeline")
- **Attachment 2 – Technical Analysis – Consistency with Policy G P1(b)(3): Best Available Science Methods Used to Estimate Recreational Use**, Lookout Slough Tidal Habitat Restoration and Flood Improvement Project

BASIS FOR REQUEST:

Maps 1-7 and the Construction Timeline, including the below-specified individual facts contained therein, qualify for official notice under Council Regulations, section 5032 based on the following:

(1) The Commission's GIS expert created Maps 1-7 and the Construction Timeline using DWR's GIS dataset[1] from the Delta Conveyance Project ("DCP") Final EIR ("Final EIR"), to depict DCP features. DWR's GIS dataset is included in the administrative record ("Record") at Section

[1] DWR's GIS dataset was transmitted by email from Nadine Small, Department of Water Resources (DWR), to Rachel Vanderwerff, Delta Protection Commission, on 10/31/2025 and 11/12/2025: DC02gB_DCA.zip and DC02B_Hybrid_Constructability.zip (respectively); files containing - Impact Category: Opt B2B Constructability and Opt B2B Utility Constructability; Project Features: Opt B2B Linear Features, Opt B2B Polygon Features, Opt B2B RTM and Levees; Opt B2B Power; Opt B2B SCADA Lines; and Opt B2B Geotech Planning. California DWR. See Exhibit A to this Request. Rachel Vanderwerff is the Commission's GIS expert and has more than ten years of professional GIS analysis experience. For Maps 1-5, DWR's original symbology was used without modification. For Maps 6-7 and the Construction Timeline, Ms. Vanderwerff merged the DWR GIS dataset depictions of DCP features to one color: blue for Maps 6-7, lime green for the Construction Timeline.

D.5, GIS and Modeling. The factual depictions of the DCP in Maps 1-7 and the Construction Timeline are accurate and consistent with Final EIR, Volume 1, Chapter 3, Description of the Proposed Project and Alternatives, Figure 3-2 at p. 3-10, (c) Bethany Reservoir Alignment [DCP.D1.1.00010], and with Final EIR, Volume 1, Chapter 3, Mapbook 3-3 Figure Sheets 1-20 Bethany Reservoir Alignment [DCP.D1.1.00026] and are subject to official notice because the DCP project features as mapped are a generally accepted technical matter within the Council's jurisdiction. Further, these facts may be judicially noticed by a court pursuant to Evidence Code section 452(h) because they are not reasonably subject to dispute and are capable of immediate and accurate determination by resort to the following sources of reasonably indisputable accuracy; namely, the Record.

(2) Delta Primary and Secondary Zones in Maps 1-7 are based on California Department of Water Resources (DWR). n.d. *i03_Delta_PrimarySecondary_Zones geospatial dataset*. ArcGIS REST Services Directory, Boundaries folder. Polygon feature layer depicting the Delta Primary and Secondary Zones as defined under the Delta Protection Act. Accessed by Rachel Vanderwerff via DWR GIS Server (*MapServer*).

(3) Maps 2-5 include "Impact" text boxes and the "Construction Schedule" for each depicted geographic area, with facts derived directly from the Final EIR in the Record. These facts are subject to official notice because these facts may be judicially noticed by a court pursuant to Evidence Code section 452(h) as facts not reasonably subject to dispute and capable of immediate and accurate determination by resort to the Record:

- Impact Text Boxes: Final EIR, Appendix 18D, Permanent Impacts after Construction is Complete, Table 18D-3 Bethany Reservoir Alignment (Alternative 5), pages 18D-14 (Map 2), 18D-15 (Map 3), 18D-17 (Map 4), and 18D-19 (Map 5), in the Record at DCP.D1.1.00160.
- Construction Schedule: Final EIR, Chapter 3, Description of the Proposed Project and Alternatives, Alternative 5 - Bethany Reservoir Alignment, Figure 3-36 at pp. 3-132 and 3-133, in the record at DCP.D1.1.00010.

(4) Maps 2-5 include "Context" text boxes with facts that are subject to official notice because they may be judicially noticed by a court pursuant to Evidence Code section 452(g) and (h) as facts of common knowledge, not reasonably subject to dispute and capable of immediate and accurate determination by resort to the following sources of reasonably indisputable accuracy:

- Amazon fulfillment center size: about.amazon.com states that the average Amazon fulfillment center is around 800,000 square feet. There are 43,560 square feet in an acre[2] so an average Amazon fulfillment center is 18.37 acres.
- SMF Terminals A and B size: DreyfussBlackford.com states that Terminal A at Sacramento International Airport is 275,000 square feet. There are 43,560 square feet in an acre (see above), so Terminal A is 6.31 acres. Corgan.com states that Terminal B

[2] U.S. Department of Agriculture, Natural Resources Conservation Service. *Conversion Factors and Tables*. 1 acre = 43,560 square feet.

at Sacramento International Airport is 740,000 square feet, so Terminal B is 16.99 acres.

- Football Field lengths: Football fields (the length of the playing field) are 100 yards (300 feet) long[3] x 5 = 1,500 ft, compared with 1,500-foot intakes.
- Delta Cross Channel gates: USBOR Delta Cross Channel Fact sheet, caption on first page indicates gates are 245 feet wide; 245 x 6 = 1,470 feet, compared with 1,500-foot intakes.

(5) Maps 2-5 include "Popups" with facts about impact acreage for individual DCP component data estimated using the Calculate Geometry tool in ArcGIS PRO based on DWR's dataset in the Record, and characterizing the structures impacted by individual DCP components (what is underneath the mapped DCP feature) with reference to Google Maps and Google Streetview reviewed November, 2025. These facts are subject to official notice because they may be judicially noticed by a court pursuant to Evidence Code section 452(h) as facts not reasonably subject to dispute and capable of immediate and accurate determination by resort to a source of reasonably indisputable accuracy.

(6) Maps 1-2 include a "Green Outline", labeled in the legend as the "Town of Hood" highlighting the fact of the location of the concentration of structures in the census-designated place of Hood, California. This fact is subject to official notice because it may be judicially noticed by a court pursuant to Evidence Code section 452(h) as a fact not reasonably subject to dispute and capable of immediate and accurate determination by resort to Final EIR, Mapbook 3-3: Bethany Alignment, Map 3 of 20, in the record at DCP.D1.1.000026, a source of reasonably indisputable accuracy for this fact.

(7) Maps 2 and 4-7 include yellow "Stars" and purple "Circles" showing the geographic locations of cultural/historic and recreational/business resources in the Delta, and trails which are subject to official notice because they qualify as generally accepted technical or scientific information within the Council's jurisdiction. Further, these facts may be judicially noticed by a court pursuant to Evidence Code section 452(h) because they are not reasonably subject to dispute and are capable of immediate and accurate determination by resort to the following sources of reasonably indisputable accuracy:

- Delta Protection Commission. 2025. Dataset compiled for and displayed at the Commission-managed *Visit CA Delta* website, under maps at subpages "What to Do," which is a source of reasonably indisputable accuracy for these geographic facts. Commission staff verified the locations and names of all labeled resource features based on Google Maps (December 2025), a source of reasonably indisputable accuracy for these facts.
- Delta Protection Commission. 2025. Sacramento-San Joaquin Delta National Heritage Area Management Plan, Appendix F - Resource Inventory: Sacramento-San Joaquin Delta National Heritage Area Management Plan with Appendices and Support Letters.

[3] National Football League. *NFL Rulebook*, Rule 1, Section 1 (The Field). Defines a football field as 100 yards in length, or 120 yards including end zones. Available at: https://operations.nfl.com/the-rules/nfl-rulebook/

- Trail GIS data was obtained from both the *Visit CA Delta* website, and the Delta Stewardship Council. Trail GIS data was verified and labeling altered based on the National Park Service (NPS), *Juan Bautista de Anza National Historic Trail - Maps and Directions*. Available at: https://www.nps.gov/juba/planyourvisit/maps.htm.
- County/City Parks: Council GIS datasets, 2025.
- Scenic Hwy: Council GIS datasets, 2025.

(8) The Construction Timeline, and the facts it displays about the DCP construction schedule, may be judicially noticed by a court pursuant to Evidence Code section 452(h) because the facts are based on Record material and therefore not reasonably subject to dispute, and are capable of immediate and accurate determination by resort to these Record sources:

- DWR's GIS dataset, as explained in Footnote 1.
- Final EIR, Chapter 3, Description of the Proposed Project and Alternatives, Alternative 5 - Bethany Reservoir Alignment, Figure 3-36, Alternative 5 Construction Schedule, pp. 3-132 to 3-133, in the Record at DCP.D1.1.00010.
- Final EIR, Appendix 3D, Intakes, Roads, and Shafts Summary Tables, in the Record at DCP.D1.1.00014.
- Delta Conveyance Design and Construction Authority. 2024. Delta Conveyance Project Concept Engineering Report. September 2024. Sacramento, CA, in the Record at DCP.D4.3.00001, pp. 1-16.
- Delta Conveyance Design and Construction Authority. 2024. Appendix K: Preliminary Construction Schedules (Final Draft). September 2024. Sacramento, CA, in the Record at Attachment 1 pp. 1-14 [DCP.D4.3.00047].

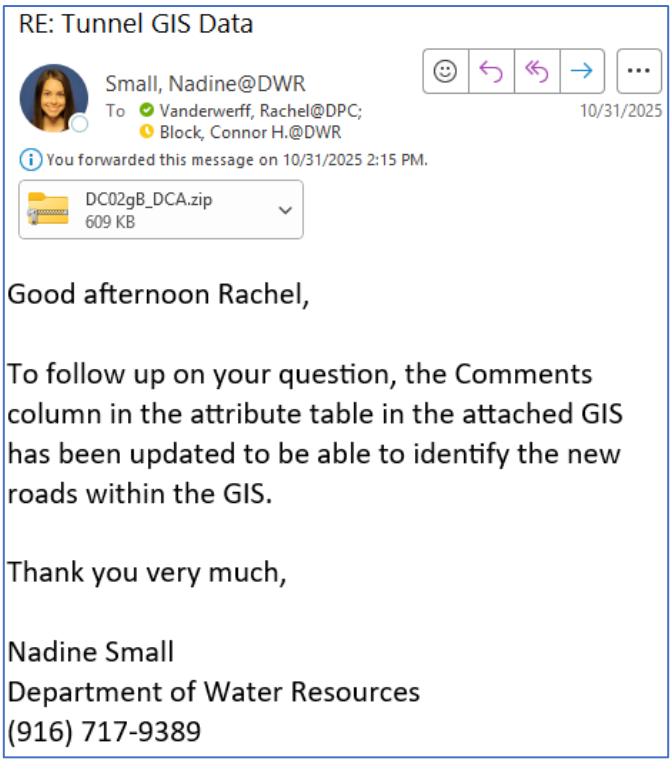
Geographical facts are subject to judicial notice. (*Hom v. Clark* (1963) 221 Cal.App.2d 622, 637 [judicial notice may be taken of existence and location of streets and thoroughfares, character of streets, and relation to each other]; *Times-Mirror Co. v. Superior Court in and for Los Angeles County* (1935) 3 Cal.2d 309, 333 [judicially noticing location of state building, city hall, important streets, and of public buildings generally]; *In re Nicole H.* (2016) 244 Cal.App.4th 1150, 1153 [judicially noticing that children's homes were in particular cities; that cities were in particular counties, and distances between parent's home and each children's home]; *People v. Edwards* (1993) 17 Cal.App.4th 1248, 1255 fn. 2 [judicially noticing facts of locations of two buildings and that "these buildings are essentially adjacent to each other"]; *Boone v. Kingsbury* (1928) 206 Cal. 148, 186 [judicially noticing coast lines of state]; *In re Gary F.* (2014) 226 Cal.App.4th 1076, 1078, fn.2 [judicially noticing maps]; *Planned Parenthood Shasta-Diablo, Inc. v. Williams* (1995) 10 Cal.4th 1009, 1021 [judicially noticing official maps maintained by city department].)

Moreover, the Commission is "an expert in matters that may affect the unique cultural, recreational, and agricultural values of the Delta" (Council Regulations, § 5028(b)), and the geographical facts based in the Commission's cited resources reflect that expertise.

- Attachment 2 – Technical Analysis – Consistency with Policy G P1(b)(3): Best Available Science Methods Used to Estimate Recreational Use, Lookout Slough Tidal Habitat Restoration and Flood Improvement Project qualifies for official notice under Council Regulations, section 5032 because: (1) the document, and the facts therein, may be judicially noticed by a court pursuant to

Evidence Code section 452(c) as a record of a state administrative agency (*Fowler v. Howell* (1996) 42 Cal.App.4th 1746, 1749-50), and pursuant to section 452(h) as facts not reasonably subject to dispute and capable of immediate and accurate determination by resort to a document prepared on behalf of DWR and within the Council's files for Appeal C202110 at: https://coveredactions.deltacouncil.ca.gov/services/download.ashx?u=d70bac30-216c-4f6a-9c1a-5d9eb36ff709

Exhibit A
Email Transmittal of GIS Data from DWR to Commission


RE: Tunnel GIS Data

Small, Nadine@DWR
To Vanderwerff, Rachel@DPC;
Block, Connor H.@DWR
10/31/2025

You forwarded this message on 10/31/2025 2:15 PM.

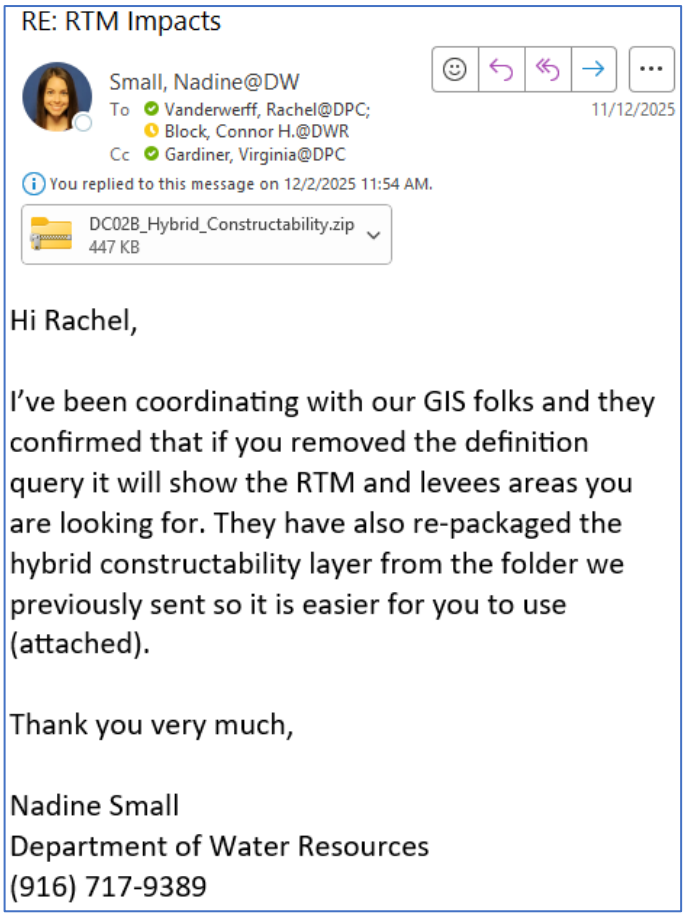
DC02gB_DCA.zip
609 KB

Good afternoon Rachel,

To follow up on your question, the Comments column in the attribute table in the attached GIS has been updated to be able to identify the new roads within the GIS.

Thank you very much,

Nadine Small
Department of Water Resources
(916) 717-9389


RE: RTM Impacts

Small, Nadine@DW
To Vanderwerff, Rachel@DPC;
Block, Connor H.@DWR
Cc Gardiner, Virginia@DPC
11/12/2025

You replied to this message on 12/2/2025 11:54 AM.

DC02B_Hybrid_Constructability.zip
447 KB

Hi Rachel,

I've been coordinating with our GIS folks and they confirmed that if you removed the definition query it will show the RTM and levees areas you are looking for. They have also re-packaged the hybrid constructability layer from the folder we previously sent so it is easier for you to use (attached).

Thank you very much,

Nadine Small
Department of Water Resources
(916) 717-9389

Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

Identification Number: C20257

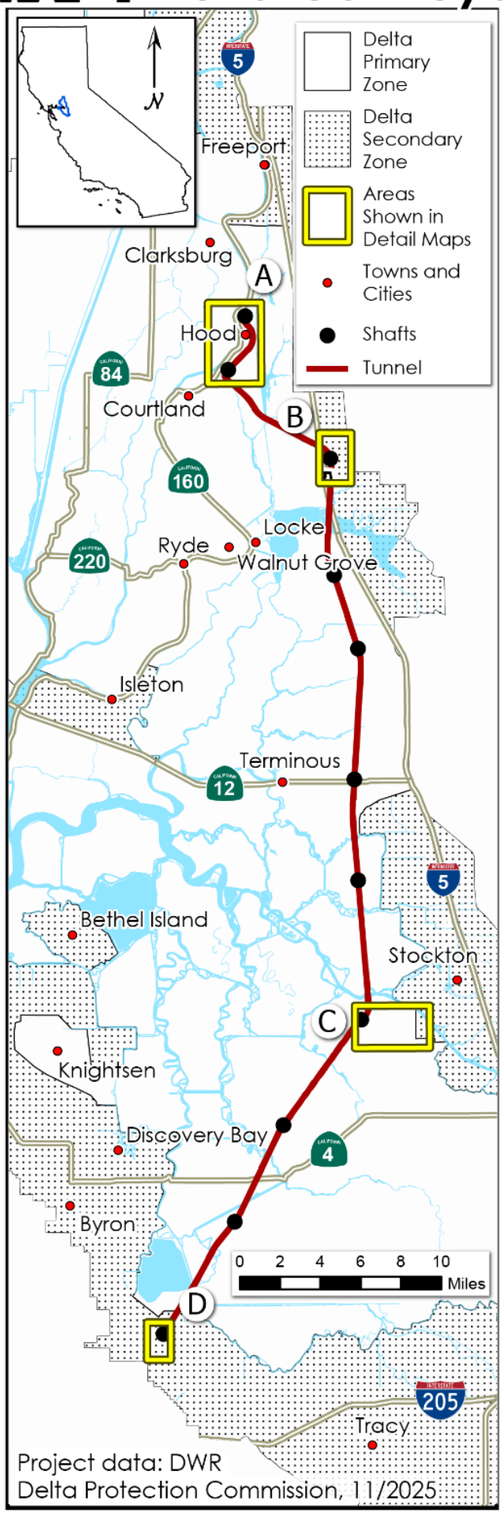
Party Submitting the Document: Appellant Delta Protection Commission

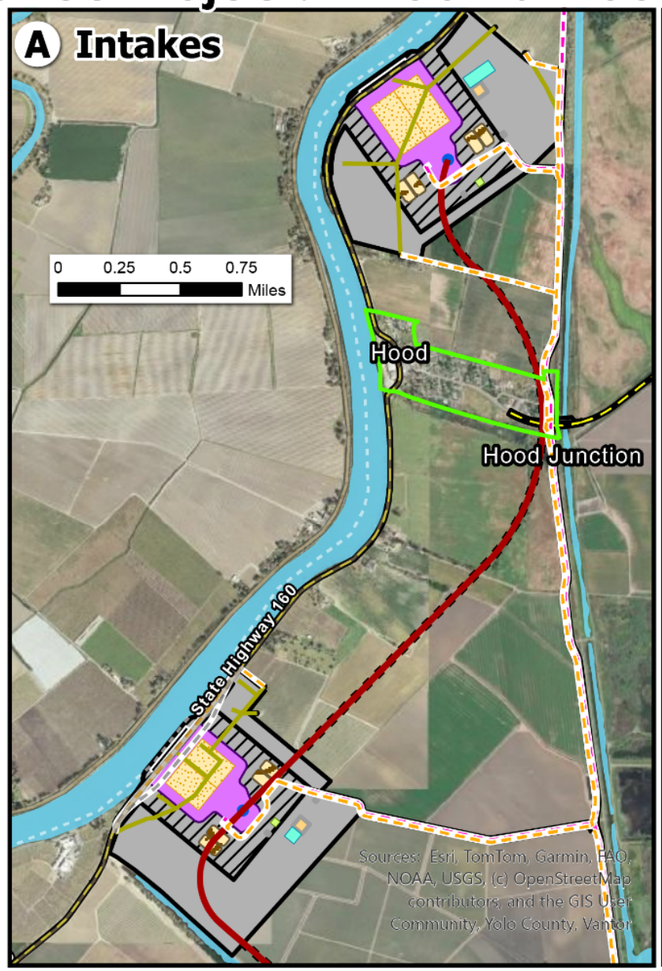
Date of Submittal: January 2, 2026

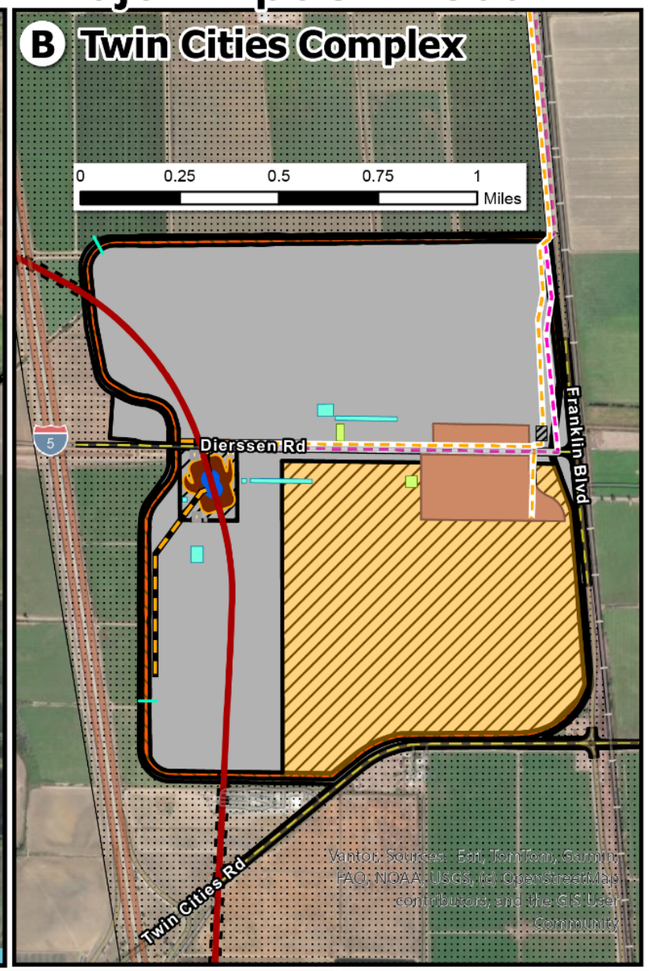
Document Title: Map 1, Delta Conveyance Project: A Look at Four Major Impact Areas

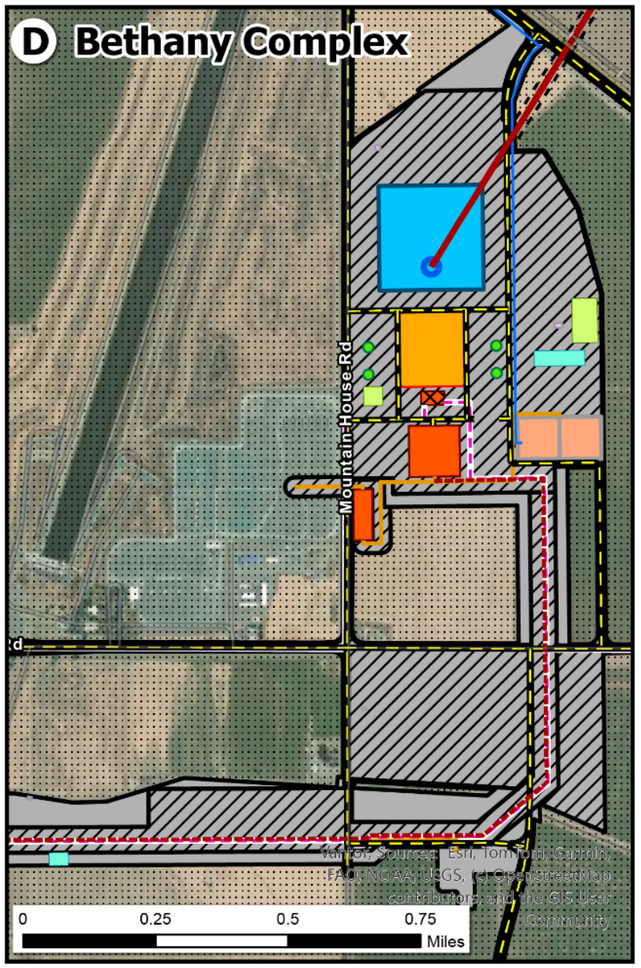
MAP 1 Delta Conveyance Project: A Look at Four Major Impact Areas

Some features may not be visible at this scale.









Town of Hood

Impact Category

- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Subsurface Impact
- Temporary Surface Impact

Power

- Abandoned
- Overhead - Permanent
- Overhead - Temporary
- Underground - Permanent
- Underground - Temporary

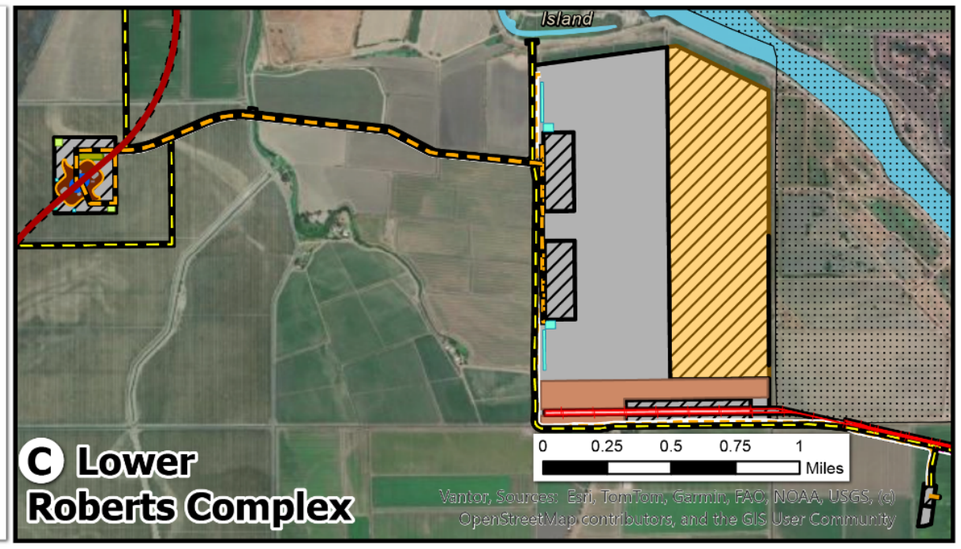
SCADA (supervisory control and data acquisition)

- Underground - Permanent

**RTM = Reusable Tunnel Material*

Project Feature

- Batch Plant
- Concrete Batch Plant
- Electrical Building
- Fuel Station
- Fuel Storage
- Intake Facility Grounds
- Intake Structure
- Peat Storage
- Pumping Plant
- Rail Depot
- Sediment Drying Lagoon
- Sedimentation Basin
- Septic System
- Shaft
- Shaft Pad
- Slurry/Grout Mixing Plant
- Substation
- Surge Basin
- Surge Tank
- Topsoil Storage
- Water Treatment & Storage Tanks
- RTM* and Ring Levee
- Ring Levee
- RTM* Area
- Road Improvement
- Aqueduct
- Construction Water Pipeline
- RTM* Conveyor
- Rail Spur
- Runoff Discharge Pipe
- Tunnel



Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

Identification Number: C20257

Party Submitting the Document: Appellant Delta Protection Commission

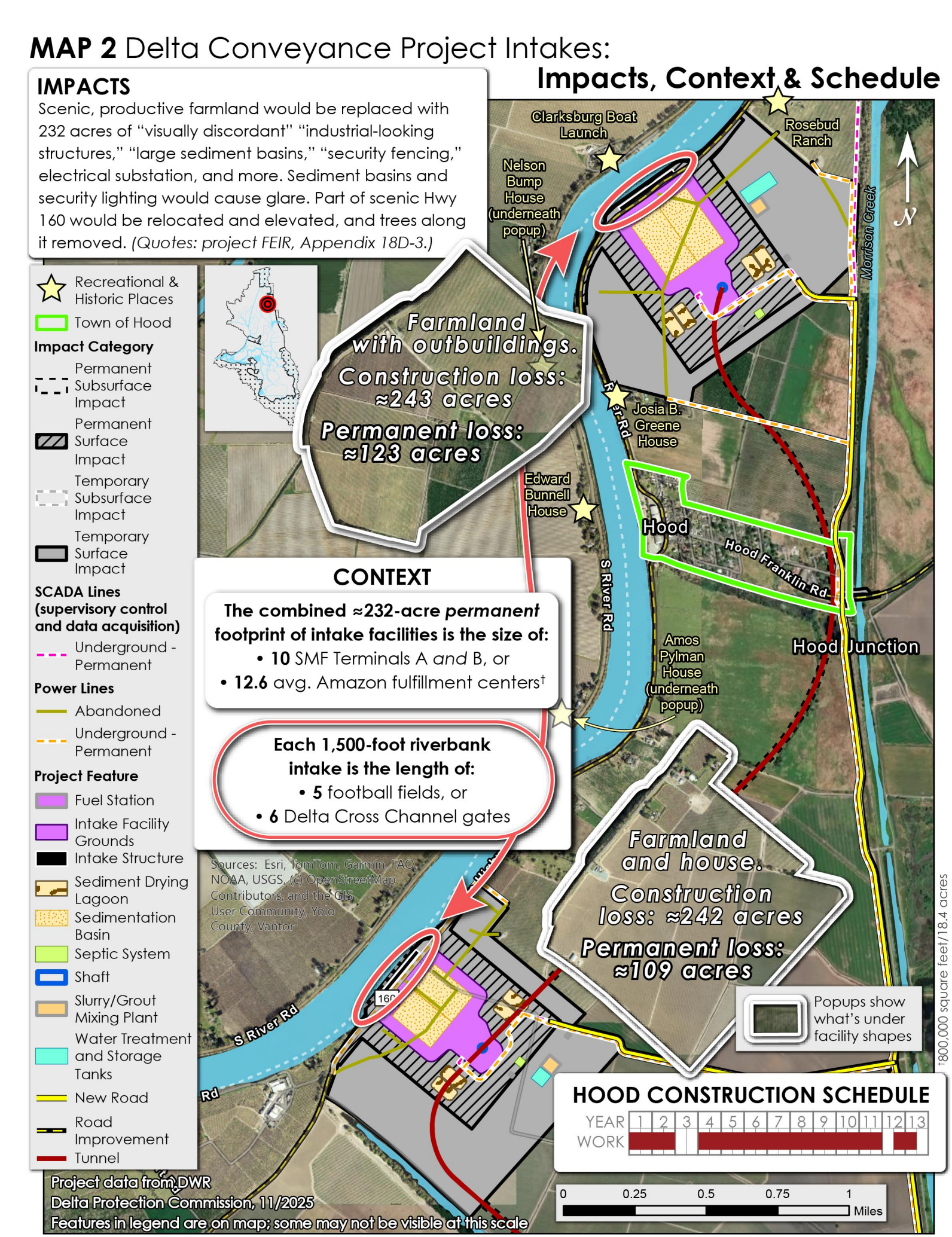
Date of Submittal: January 2, 2026

Document Title: Map 2, Delta Conveyance Project Intakes: Impacts, Context & Schedule

MAP 2 Delta Conveyance Project Intakes:
Impacts, Context & Schedule

IMPACTS

Scenic, productive farmland would be replaced with 232 acres of "visually discordant" "industrial-looking structures," "large sediment basins," "security fencing," electrical substation, and more. Sediment basins and security lighting would cause glare. Part of scenic Hwy 160 would be relocated and elevated, and trees along it removed. *(Quotes: project FEIR, Appendix 18D-3.)*



Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

Identification Number: C20257

Party Submitting the Document: Appellant Delta Protection Commission

Date of Submittal: January 2, 2026

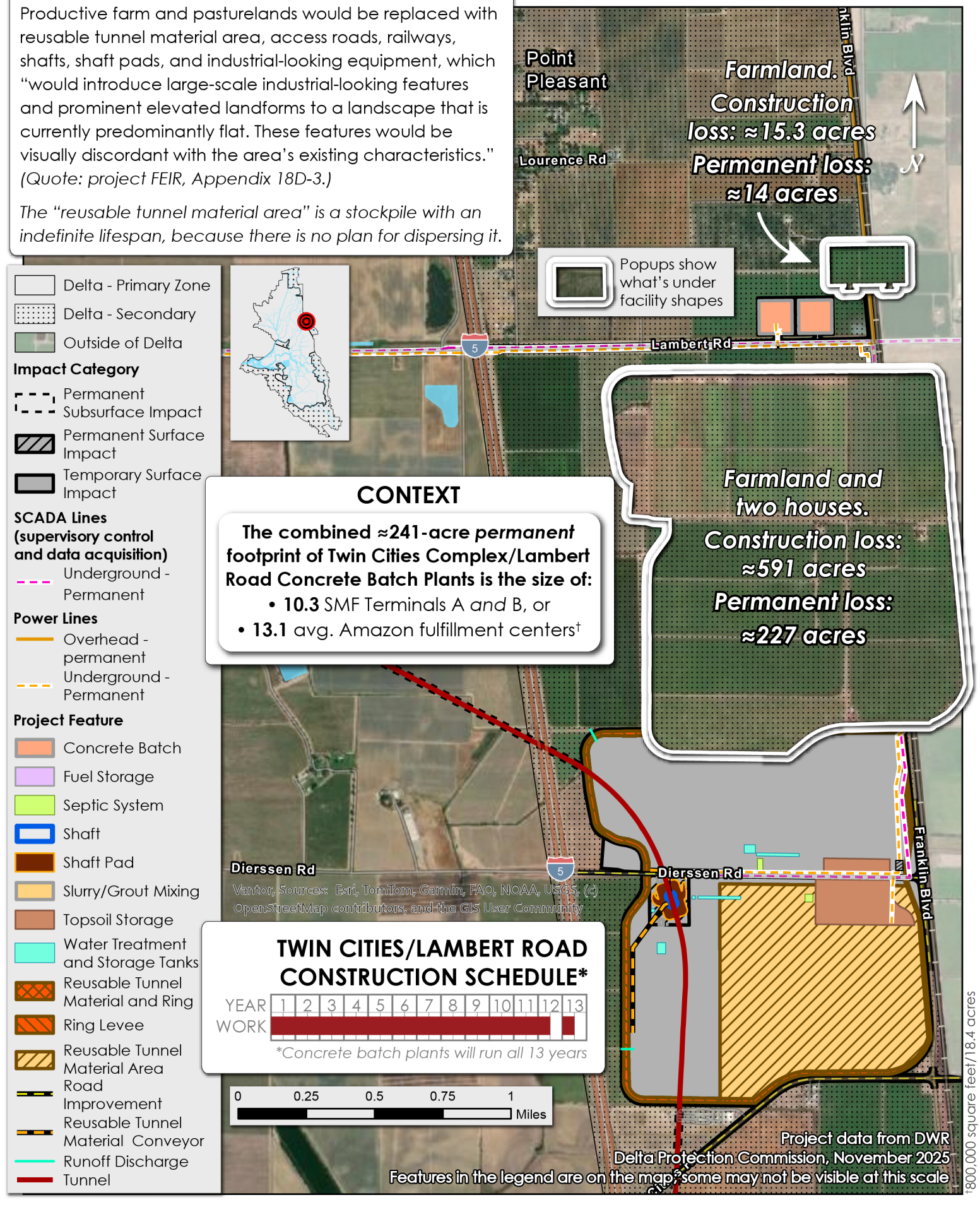
Document Title: Map 3 Delta Conveyance Project – Twin Cities/Lambert Road: Impacts, Context & Schedule

MAP 3 Delta Conveyance Project – Twin Cities/Lambert Road: **Impacts, Context & Schedule**

IMPACTS

Productive farm and pasturelands would be replaced with reusable tunnel material area, access roads, railways, shafts, shaft pads, and industrial-looking equipment, which "would introduce large-scale industrial-looking features and prominent elevated landforms to a landscape that is currently predominantly flat. These features would be visually discordant with the area's existing characteristics." *(Quote: project FEIR, Appendix 18D-3.)*

The "reusable tunnel material area" is a stockpile with an indefinite lifespan, because there is no plan for dispersing it.



- Delta - Primary Zone
- Delta - Secondary
- Outside of Delta

Impact Category

- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

SCADA Lines (supervisory control and data acquisition)

- Underground - Permanent

Power Lines

- Overhead - permanent
- Underground - Permanent

Project Feature

- Concrete Batch
- Fuel Storage
- Septic System
- Shaft
- Shaft Pad
- Slurry/Grout Mixing
- Topsoil Storage
- Water Treatment and Storage Tanks
- Reusable Tunnel Material and Ring
- Ring Levee
- Reusable Tunnel Material Area
- Road Improvement
- Reusable Tunnel Material Conveyor
- Runoff Discharge
- Tunnel

CONTEXT

The combined ≈241-acre *permanent* footprint of Twin Cities Complex/Lambert Road Concrete Batch Plants is the size of:

- **10.3** SMF Terminals A *and* B, or
- **13.1** avg. Amazon fulfillment centers†

TWIN CITIES/LAMBERT ROAD CONSTRUCTION SCHEDULE*

YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13
WORK													

**Concrete batch plants will run all 13 years*

Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

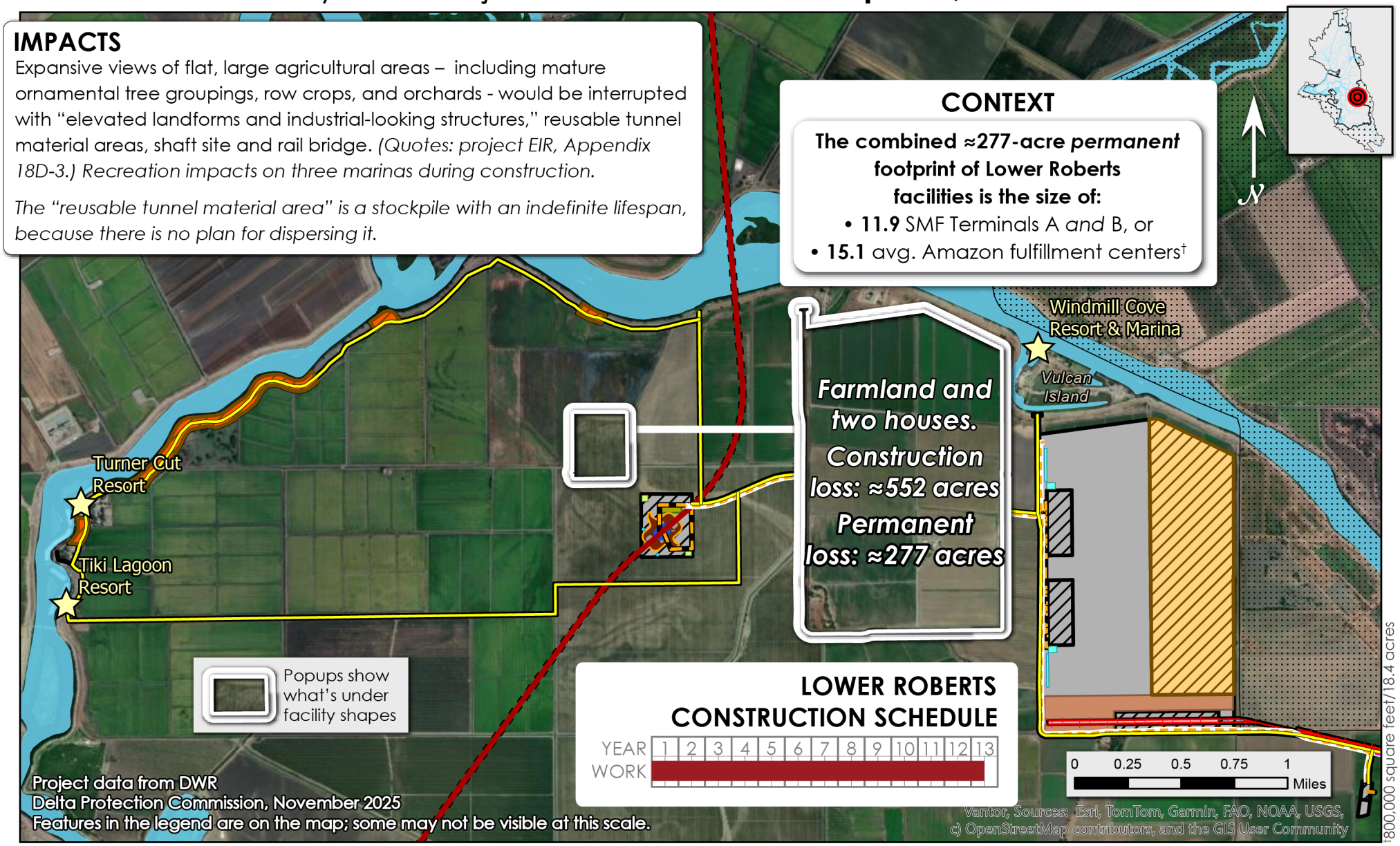
Identification Number: C20257

Party Submitting the Document: Appellant Delta Protection Commission

Date of Submittal: January 2, 2026

Document Title: Map 4 Delta Conveyance Project – Lower Roberts: Impacts, Context & Schedule

MAP 4 Delta Conveyance Project – Lower Roberts: **Impacts, Context & Schedule**



Delta - Primary Zone
Delta - Secondary Zone
Recreational Places

Impact Category
Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

SCADA Lines (supervisory control & data acquisition)
Underground - Permanent

Power Lines
Overhead - Permanent
Underground - Permanent

Project Feature
Batch Plant
Fuel Storage
Peat Storage
Rail Depot
Septic System
Shaft
Shaft Pad
Slurry/Grout Mixing Plant
Topsoil Storage
Water Treatment and Storage Tanks
Reusable Tunnel Material Area
Levee Improvement Area
New Road
Road Improvement
Reusable Tunnel Material Conveyor
Rail Spur
Runoff Discharge Pipe
Tunnel

Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

Identification Number: C20257

Party Submitting the Document: Appellant Delta Protection Commission

Date of Submittal: January 2, 2026

Document Title: Map 5 Delta Conveyance Project – Bethany Complex: Impacts, Context & Schedule

MAP 5 Delta Conveyance Project – Bethany Complex:

Impacts, Context & Schedule

IMPACTS

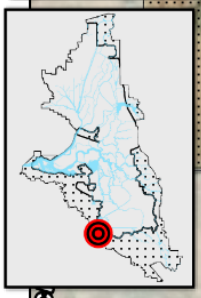
"Proposed surge basin, pumping plant, substation, surge tanks, canopy structures, water treatment and storage tanks, and mounded aqueduct pipeline south of Clifton Court Forebay would considerably alter character of area through introduction of a waterbody into view from Byron Highway and Mountain House Road. ... The substation would be highly visible, increasing the number of industrial-looking features and utilities in the landscape. The realigned Byron Highway and associated facility access roads would increase the amount of roadway infrastructure seen in views, including the addition of new bridges." *(Quote: project EIR, Appendix 18D-3.)*

Recreation impacts at Bethany Reservoir SRA and California Aqueduct Bikeway (including bikeway access) during construction (years 1, 4-10, and 13), and permanent impacts on viewshed.

CONTEXT

The combined ≈241-acre *permanent* footprint of Bethany facilities in the Delta is the size of:

- **10.3** SMF Terminals A *and* B, or
- **13.1** avg. Amazon fulfillment centers†



Popups show what's under facility shapes

Farmland Construction loss in Delta: ≈319 acres

Permanent loss in Delta: ≈241 acres

Mountain House Rd

Mountain House Elementary School

California Aqueduct Bikeway

Bethany Reservoir State Recreation Area

BETHANY COMPLEX CONSTRUCTION SCHEDULE

YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13
WORK													

0 0.25 0.5 0.75 1 Miles

Project data from DWR; Delta Protection Commission, November 2025
Features in the legend are on the map; some may not be visible at this scale.

Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

†800,000 square feet/18.4 acres

- Delta - Primary Zone
- Delta - Secondary Zone
- Outside of Delta
- Recreational and Community Places
- California Aqueduct Bikeway

ImpactCategory
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

SCADA Lines (supervisory control & data acquisition)
- Underground - Permanent

Power Lines
- Overhead - Permanent
- Overhead - Temporary

Project Feature
- Concrete Batch Plant
- Discharge Structure
- Electrical Building
- Fuel Storage
- Pumping Plant
- Septic System
- Shaft
- Substation
- Surge Basin
- Surge Tank
- Water Treatment and Storage Tanks
- New Road
- Road Improvement
- Aqueduct
- Construction Water Pipeline
- Runoff Discharge Pipe
- Tunnel

Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

Identification Number: C20257

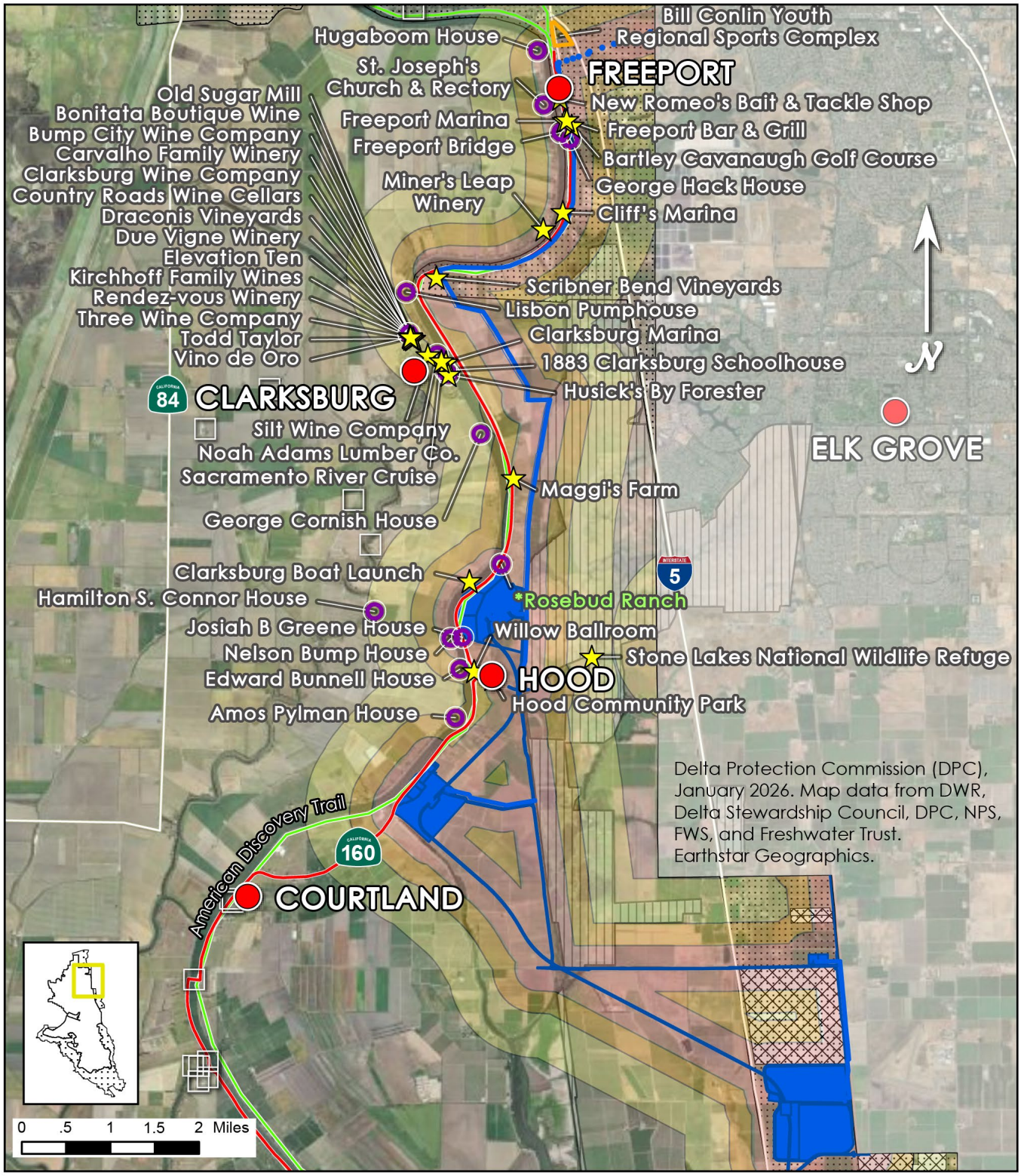
Party Submitting the Document: Appellant Delta Protection Commission

Date of Submittal: January 2, 2026

Document Title: Map 6, North Delta Cultural, Recreational Resources within 1 Mile of Delta Conveyance Project Features During Construction

MAP 6 North Delta Cultural, Recreational Resources Within 1 Mile of Delta Conveyance Project Features During Construction

Construction impacts include road/bridge work and associated detours and delays, power/communication line construction, facility construction, tunneling. **Permanent impacts** include industrial-looking structures, some with night lighting, and new roads and power lines. Distance of impacts will vary by type and may be felt over 1 mile away, or less than ¼ mile away.



DCP Project Features

Distance from Feature
- 0.25 mile
- 0.5 mile
- 1 mile

- Recreation, Business Resources
- Cultural, Historic Resources
- Nat'l Register of Historic Places
- Resources >1Mi. from Project Features

- Town
- Scenic Hwy
- Trails
- City Park

- Stone Lakes Nat'l Wildlife Refuge
- Cosumnes River Preserve

- Delta Primary Zone
- Delta Secondary Zone
- Out of Delta

Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

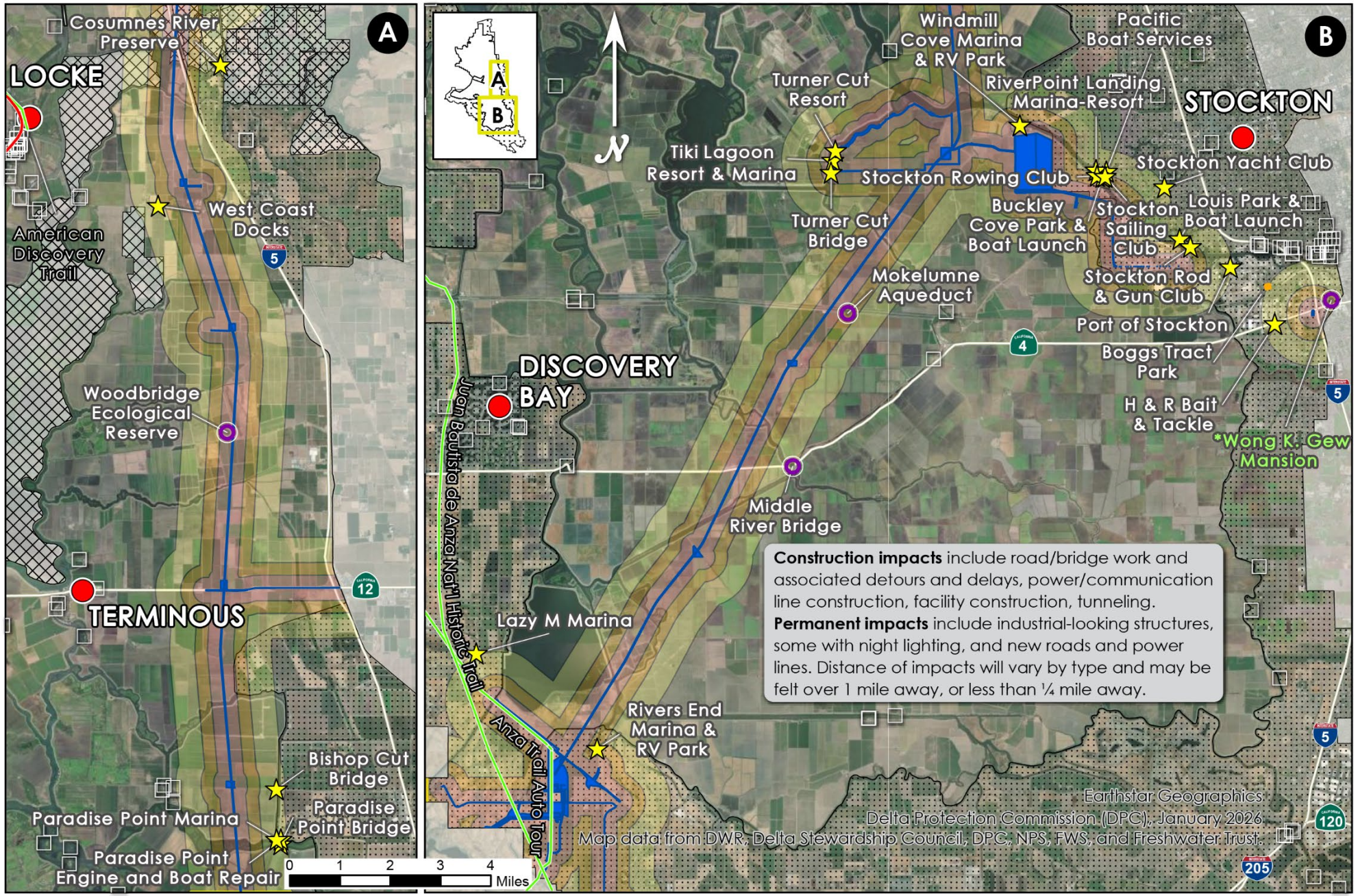
Identification Number: C20257

Party Submitting the Document: Appellant Delta Protection Commission

Date of Submittal: January 2, 2026

Document Title: Map 7, Delta Conveyance Project: Central and South Delta Cultural, Recreational Resources within 1 Mile of Delta Conveyance Project Features During Construction

MAP 7 Central and South Delta Cultural, Recreational Resources Within 1 Mile of Delta Conveyance Project Features During Construction



Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

Project Name of Covered Action: Delta Conveyance Project

Identification Number: C20257

Party Submitting the Document: Appellant Delta Protection Commission

Date of Submittal: January 2, 2026

Document Title: DCP by Year: Few Breaks in Construction over 13 Years at Most Locations

Delta Protection Commission

January, 2026

Appeal Map - DCP by Year: Few Breaks in Construction over 13 Years at Most Locations ("Construction Timeline")

The link to the Construction Timeline Map is here.

https://experience.arcgis.com/experience/d7c9402ae2de463292f40effb0a5ac48

Delta Protection Commission Additional Documentation/Information Submission, Council Regulations, § 5032 Cover Sheet

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ATTACHMENT 2 – TECHNICAL ANALYSIS – CONSISTENCY WITH POLICY G P1(b)(3): BEST AVAILABLE SCIENCE METHODS USED TO ESTIMATE RECREATIONAL USE

LOOKOUT SLOUGH TIDAL HABITAT RESTORATION AND FLOOD IMPROVEMENT PROJECT

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1. Introduction

1.1 Summary of DSC Finding on Consistency with Policy G P1(b)(3)

The California Department of Water Resources (DWR) filed a *Certification of Consistency for the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project* (Certification) to the Delta Stewardship Council (DSC) on February 22, 2021. The DSC released its *Determination Regarding Appeals of the Certification of Consistency by the California Department of Water Resources for the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project* (Determination) on July 16, 2021. In the Determination, DSC found that there was not sufficient evidence in the record to support DWR's finding that the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (Project) was consistent with Delta Plan Policy G P1(b)(3), Best Available Science (BAS), with regard to methods to estimate recreational use as it relates to the Best Available Science criterion of Inclusiveness.

Policy G P1(b)(3) requires that all covered actions, as relevant to the purpose and nature of a project, must document the use of BAS. BAS, as defined in the Delta Plan, is the best scientific information and data available for informing management and policy decisions [Cal. Code Regs, tit. 23, § 5001, subd. (f).]. BAS shall be consistent with the guidelines and criteria found in California Code of Regulations, Title 23, Appendix 1A (Appendix 1A, Best Available Science, Delta Plan), which lists six criteria for BAS:

1. Relevance
2. Inclusiveness
3. Objectivity
4. Transparency and Openness
5. Timeliness
6. Peer Review

In the Determination, DSC found that the Certification was supported by substantial evidence in the record, and the Project is consistent with G P1(b)(3) with respect to methods used to estimate recreational use based on five of the six criteria (Relevance, Objectivity, Transparency, Timeliness, and Peer Review). DSC found that the Certification was not supported by substantial evidence in the record based on BAS criterion 2, Inclusiveness, specifically related to the methods used to estimate recreation use.

1.2 Summary of Attachment

This document (Attachment 2 to the Re-Certification) is part of a package prepared by DWR to re-submit a Certification of Consistency (Re-Certification) to the DSC for the Project. This document examines the work done by DWR to date, considers whether the recommendation of the DSC to include additional census tract data meets the requirements of the Inclusiveness criterion, and describes additional recreation use analyses done since the Determination was released. These additional analyses include a review of DWR's BAS approach by Subject Matter Experts (SMEs), an additional literature study that examines environmental justice issues with respect to Delta lands, and listening sessions that DWR conducted with recreation stakeholders to better understand their specific concerns. The additional analyses also include a recent on-site study of recreational users of the Study Area, which includes Liberty Island Road where it sits atop the Shag Slough Levee, Shag Slough Bridge, and the Liberty Island Ecological Reserve (LIER). The on-site study included three components: vehicle counts via aerial photography analysis, vehicle counts via motion-activated cameras, and in-person visitor surveys. Finally, this document concludes that the augmented record supports DWR's previous estimates of recreation use in the vicinity of the Project site, as described in the original Certification.

1.3 Evaluation of BAS Criteria for Additional Recreation Use Analyses

This Re-Certification focuses on the BAS criterion of Inclusiveness (Section 2 below) because this was the only BAS criterion remanded by the DSC in the Determination, as summarized in Section 1.1. However, because new recreation use analyses were conducted since the Determination, the following section evaluates the recreation use data and collection methodology against the remaining five BAS criteria specified in the Delta Plan Appendix 1A. For each of these five BAS criteria, an evaluation is presented below that demonstrates how the additional recreation use data (collected in 2021 after the release of the Determination) meet the BAS criteria.

Relevance: "The quality and relevance of the data and information used shall be clearly addressed."

> **Fall 2021 Recreation Study:** The data reported from the Fall 2021 study results are directly relevant since the focus was on counting and interviewing visitors recreating on the Shag Slough Levee, Shag Slough Bridge, and the LIER. The data quality from this study is high because WRA, Inc. (WRA) followed best practices for survey research, including vetting, peer review, and pretesting. For the visitor surveys, the team engaged in multiple review/revision cycles and had three Ph.D.-level scientists review and pretest the survey. The entire team that collected data viewed a project orientation video and participated in on-site training. The quality of the motion-activated camera data is high because several different people reviewed the same sources and reported the same use levels. Before transmitting vehicle data to WRA, an on-site person from Hanford Construction verified that the data had no duplicates, and removed vehicles clearly

associated with work-related activity (e.g., Pacific Gas & Electric Company [PG&E] vehicles, WRA vehicles).

Objectivity: "Data collection and analyses considered shall meet the standards of the scientific method and be void of nonscientific influences and considerations."

Fall 2021 Recreation Study: Data collected during Fall 2021 meet the standards of the scientific method as applicable to conducting outdoor recreation research. The American Association for Public Opinion Research has 12 principles that reflect best practices when conducting survey research.[1] Table 1 demonstrates how the Fall 2021 recreation survey addresses these principles.

TABLE 1
BEST PRACTICES FOR SURVEY RESEARCH

Best Practice/Principle	Response
Have specific goals	The Fall recreation study had the goal of characterizing existing recreation use at the LIER and surrounding areas.
Consider alternative data beyond a survey	In 2019, DWR evaluated six other sources of relevant information to characterize existing recreation use at the LIER and surrounding areas.
Select samples that well represent the population to be studied	Samples of anglers were surveyed during weekdays, weekend days, and a holiday. Samples of waterfowl hunters were surveyed on opening day of hunting season, and one week later.
Use designs that balance costs with errors	Survey teams were instructed to contact and attempt to survey everyone they encountered on sampling days.
Take great care in matching question format and wording to the concepts being measured and the population being studied	Questions were written to be easy to understand and were vetted with data collection staff and three Ph.D.-level staff with experience with survey research. Questions were pretested with several visitors to the Study Area prior to beginning data collection. Visitors contacted by data collection staff were given the option to complete the survey in English or Spanish.
Pretest questionnaires and procedures	See previous response.
Train interviewers carefully on interviewing techniques and the subject matter of the survey	All interviewers participated in a project orientation and practiced interviewing techniques with each other before beginning the survey pretesting with visitors.
Check quality at each stage	A data manager checked all survey responses for completeness and legibility before entering and analyzing survey data. No surveys were eliminated due to data quality issues.
Maximize cooperation or response rates within the limits of ethical treatment of human subjects	Data collection staff were instructed to contact every visitor they encountered during the sampling days. Visitors were not coerced into completing surveys. Survey completion required about five minutes per visitor.
Use appropriate statistical analytic and reporting techniques	Since the goal of the study was to describe, not evaluate, existing recreation use, statistical tests were not conducted. Responses to all questions are reported, along with the number of visitors who responded to each question.
Carefully develop and fulfill pledges of confidentiality given to respondents	No survey respondents' names or addresses were collected.
Disclose all methods of the survey to allow for evaluation and replication	A methods discussion is included in Section 3.4 of this document.

[1] American Association for Public Opinion Research. 2021. Best Practices for Survey Research. https://www.aapor.org/Standards-Ethics/Best-Practices.aspx.

Transparency and Openness: "The sources and methods used for analyzing the science (including scientific and engineering models) shall be clearly identified."

> **Fall 2021 Recreation Study**. Attachment 2 and its supporting documentation will be publicly posted on the DWR and DSC websites and available for review during a 30-day public comment period established by the DSC. As discussed in Section 3.3 below, DWR conducted listening sessions with California Department of Fish and Wildlife (CDFW), Delta Protection Commission (DPC), Solano County (County), and Liberty Island Access (LIA). As part of these listening sessions, LIA and DPC advised DWR to collect recreation data, although specific study methods were not offered.

Timeliness: "Timeliness has two main elements: (1) data collection shall occur in a manner sufficient for adequate analyses before a management decision is needed, and (2) scientific information used shall be applicable to current situations. Timeliness also means that results from scientific studies and monitoring may be brought forward before the study is complete to address management needs. In these instances, it is necessary that the uncertainties, limitations, and risks associated with preliminary results are clearly documented."

> **Fall 2021 Recreation Study:** Data collected during the Fall 2021 study were analyzed immediately upon completion of the September and October sampling periods (before the information was used for determining Delta Plan consistency for the remanded issues). Preliminary results were reported to DWR and DSC in a meeting on November 18, 2021.

Peer Review: "The quality of the science used will be measured by the extent and quality of the review process. Independent external scientific review of the science is most important because it ensures scientific objectivity and validity. The following criteria represent a desirable peer review process."
"Coordination of Peer Review. "Independent peer review shall be coordinated by entities and/or individuals that (1) are not a member of the independent external review team/panel and (2) have had no direct involvement in the particular actions under review."

> **Fall 2021 Recreation Study:** DWR has engaged Dr. William Spain, a recognized recreation SME, to peer review Attachment 2 with an emphasis on visitor count and survey methods. Dr. Spain has not worked on this study, and is not employed by DWR, its consultants, or any of the other agencies with permitting authority for this Project. In addition, Dr. Spain and two other SMEs were interviewed regarding the use of census tract data, as described further in Section 3.1.

Independent External Reviewers. "A qualified independent external reviewer embodies the following qualities: (1) has no conflict of interest with the outcome of the decision being made, (2) can perform the review free of persuasion by others, (3) has demonstrable competence in the subject as evidenced by formal training or experience, (4) is willing to utilize his or her scientific expertise to reach objective conclusions that may be incongruent with his or her personal biases, and (5) is willing to identify the costs and benefits of ecological and social alternative decisions."

Dr. Spain has no conflict of interest with the outcome of the decision to be made, and has the requisite qualifications to conduct a scientific, peer review of Attachment 2 (see Section 3.1 for affiliation and qualifications of Dr. Spain and the other two SMEs).

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2. Response to DSC's Findings Regarding Inclusiveness

2.1 Inclusiveness Definition

As stated in Appendix 1A of the Delta Plan, Inclusiveness means that, "[s]cientific information used shall incorporate a thorough review of relevant information and analyses across relevant disciplines." The following section summarizes the ways in which the previous methods used to estimate recreation use in the original Certification met this definition and describes how the use of additional census data (as suggested by the Determination) does not meet this definition.

2.2 Discussion of Inclusiveness of Census Data for Estimating Recreation Use

In the Determination, DSC noted that DWR used a single census tract to estimate anglers who fish from the bank in the LIER and stated that DWR did not explain the exclusion of additional census tracts covered by the Project site (or within a 21- to 60-minute travel distance of the site, which was used in another aspect of DWR's analysis to identify other recreational sites in the region), even though this information was readily available. Based on a review of recreation research literature and interviews with SMEs, using population data from multiple census tracts would have drastically overestimated land-based angling, as discussed more below.

Estimating total recreation use for a single recreation site or area using only population data (e.g., census tract data) is recognized as inappropriate by recreation resource SMEs (see Section 3.1 and Attachment 2B). It is well established in the recreation resource literature that population size and proximity to recreation areas are key drivers of recreation use.[2,3] However, simply estimating recreation use from nearby population size, without consideration of other highly relevant factors, tends to result in over-estimates of recreation use.[4] Population data are most useful for long-term, "big picture" estimates of recreation use; for example, simple population data can be used to provide estimates of recreation use during initial scoping for a project or program that involves multiple recreation sites representative of a state or region. However, a more complete model of

[2] Loomis JB, and Walsh RG. 1997. Recreation Economic Decisions: Comparing Benefits and Costs. 2nd Edition. Venture Publishing: State College, PA.

[3] Haas GE, and Wells M. 2007. Estimating Future Recreation Demand: A Decision Guide for the Practitioner. U.S. Department of Interior, Bureau of Reclamation, Office of Program and Policy Services, Denver Federal Center, Denver, Colorado. https://fdocuments.in/document/estimating-future-recreation-demand-a-decision-guide-for-the-2016-08-03-demand.html.

[4] Loomis JB and Walsh RG. 1997. Recreation Economic Decisions: Comparing Benefits and Costs. 2nd Edition. Venture Publishing: State College, PA.

use estimation for large recreation areas, or areas that include multiple recreation areas, can include the following variables that may influence the degree of use:[5]

a. Population size and proximity to the subject site.

b. Travel time to the subject site.

c. Age of the population in the area from which recreation users reside.

d. Income of the population in the area from which recreation users reside.

e. Availability and location of substitute recreation sites.

f. Congestion at the subject recreation site.

Based on the recreation resource literature and the model described above,[6] the following can be implied: Travel time to a site can be a proxy for cost; thus, most recreation use at an "ordinary" recreation site (i.e., a recreation site like the Project site, that is not nationally or regionally recognized or documented to attract visitors from distant locations) originates locally, as discussed more in the next paragraph. For "attraction" sites (e.g., a site like Yosemite National Park), this relationship is not true, as visitors are willing to invest more time and money to visit attraction sites. Age and recreation are inversely related, as younger people tend to show greater participation in outdoor recreation activities than older people. Income has the reverse effect—individuals with higher incomes show higher levels of participation in outdoor recreation activities when compared to other members of the population, all other factors being equal. The availability and location of substitute recreation sites tends to decrease visitation levels at a given site, as recreational use is dispersed. This means that, to the extent a recreation "consumer" has other choices for engaging in their desired activity, demand for a given subject recreation site is reduced. Congestion, such as the inability to find a parking spot or long wait times for boat launching, also has an offsetting effect that is independent of population, age, and income factors. When all of these factors are considered, the level of recreation use at "ordinary" recreations sites, such as the Project site, is reduced by the effects of age, income, and availability of similar recreation sites compared to a model that only uses census tract information; thus, population-based estimates would likely over-estimate use at "ordinary" sites.

The idea that most recreation use at "ordinary" recreation sites originates locally is supported in the recreation resource literature. For example, California Department of Parks and Recreation (CDPR) conducts a statewide survey of outdoor recreation participation throughout the state approximately every five years. The public opinions and attitudes toward outdoor recreation in the CDPR survey found that most respondents traveled locally, between 21 and 60 minutes, to reach the places they recreated most frequently. In their review of outdoor recreation research literature, Loomis and Walsh similarly found that 66 percent of recreation use at "ordinary" sites

[5] Loomis JB, and Walsh RG. 1997. Recreation Economic Decisions: Comparing Benefits and Costs. 2nd Edition. Venture Publishing: State College, PA.

[6] Loomis JB, and Walsh RG. 1997. Recreation Economic Decisions: Comparing Benefits and Costs. 2nd Edition. Venture Publishing: State College, PA.

originates within 25 miles.[7] Based on this recreation research literature,[8,9,10] DWR made an informed assumption in previous recreation analyses that most visitors who fish from the bank within the Project area would be considered local. This informed decision is supported by the 2021 on-site recreation use study, which included visitor surveys and vehicle counts (as discussed in Section 3.4).

When the Draft Environmental Impact Report (EIR) was being prepared in 2019, a combination of census tract data (to represent the local population), a survey of Central Valley anglers, and a site analysis of the LIER was used to estimate the number of shoreline anglers. The bank fishing estimation method used the population of Census Tract 2534.03, as the larger of the two census tracts on the Project site, and then applied recently surveyed Delta fishing rates from 2019[11] to estimate that there are approximately 200 local residents who partake in fishing. Based on recent survey results of Central Valley anglers (from 2018),[12] it was estimated that approximately 40 percent of those 200 anglers (80 individuals) fish from the bank. This methodology used population data in the form of a single local census tract to inform a multi-pronged approach to estimate bank fishing use on the site. To confirm estimates of shoreline angling in the LIER, DWR collected visitor data in September and October, the results of which are described further in Section 4.3.

Although the local population may represent a significant portion of total potential visitors to a particular site, the actual level of site visits is constrained by site-specific factors, such as parking and crowding. In the case of the LIER, the availability of areas to hunt and fish safely is another important spatial constraint that limits use of the area. Unlike estimating demand for the use of a trail for hiking, fishing and hunting have specific spatial constraints associated with determining projected use and demand. For instance, hunting near another recreationist can create obvious safety hazards, as limited space can affect an angler's ability to safely cast a line and/or avoid getting their line entangled with another angler's fishing line. Therefore, the amount of shoreline available for bank fishing on the LIER was evaluated as a potential site constraint to shoreline fishing use. In its appeal letter to DSC, the LIA Appellant lists the total length of trail along the western side of the LIER as 1.6 miles, along with 18 access points. WRA reviewed the LIA Appellant's information that depicts these areas and reviewed the conditions on the ground in Summer 2021. The informal angler trail that proceeds in a southerly direction from the Shag Slough Bridge is overgrown and becomes increasingly difficult to navigate after walking about 0.75 mile, and even this length of shoreline area is not free from vegetation and thus not

7 Loomis J., and Walsh RG. 1997. Recreation Economic Decisions: Comparing Benefits and Costs. 2nd Edition. Venture Publishing: State College, PA.

8 Loomis JB, and Walsh RG. 1997. Recreation Economic Decisions: Comparing Benefits and Costs. 2nd Edition. Venture Publishing: State College, PA.

9 English DBK, White EM, Bowker JM, and Winter SA. 2020. A review of the Forest Service's National Visitor Use Monitoring (NVUM) Program. Agricultural and Resource Economics Review. 49(1): 64-90. https://doi.org/10.1017/age.2019.27.

10 California State Parks. 2014. Survey on Public Opinions and Attitudes towards Outdoor Recreation in California. https://www.parks.ca.gov/pages/795/files/2012%20spoa.pdf.

11 Mickel A, Taylor S, and Shaw G. May 2019. Recreation & Tourism in the Delta, n.d., 81.

12 Thomson C, and Kosaka R. 2018. Results of the 2015 Economic Survey of Central Valley Anglers. NOAA Technical Memorandum NMFS.

completely available for fishing. Therefore, LIA's claim could not be reproduced or confirmed. Based on WRA's analysis, most representative fishing areas identified in the LIER could reasonably accommodate two anglers, and two locations were identified that could possibly accommodate two to five anglers (Attachment 2A).

In addition, a review of other possible substitute recreation sites (variable "e" in the model described above) for the LIER in the region included: Colusa-Sacramento River State Recreation Area (7,006 annual visits), Bethany Reservoir (2,263 annual visits), and Delta Meadows (6,547 annual visits).[13] These sites offer comparable facilities and the ability to participate in the same (or similar) activities and are therefore assumed to have similar levels of recreation use as the LIER. The relatively low visitation numbers at comparable sites in the region implies that the LIER is a similarly low recreation use area.

The interviews with recreation resource SMEs and literature review discussed in this section illustrate that estimating recreation use at the Project site by applying population data for all census tracts within a 60-minute driving radius would likely overestimate recreation use at the Project site and would therefore *not* constitute Best Available Science. Further, additional on-site visitor surveys conducted since the Determination support DWR's original evaluation of recreation use on the site. Results of the on-site visitor surveys are discussed in detail in Section 4.3.

[13] California State Parks Statistical Report, FY2016/2017, https://www.parks.ca.gov/?page_id=23308.

3. ADDITIONAL RECREATIONAL USE ANALYSES

The following sections of this document describe the additional recreation use analyses that DWR conducted following the release of the Determination. The sections also address DWR's ability to meet the Inclusiveness criterion in these subsequent data collection and analysis efforts.

3.1 Subject Matter Expert Review

As noted in Appendix 1A of the Delta Plan, scientific expert opinion is considered one of several sources of information that may be used in adhering to BAS. With this in mind, three outdoor recreation SMEs were consulted to offer their scientific and expert opinions to determine whether census tract data could and/or should be applied to estimate recreation use levels for the Study Area. Each SME was briefed about the Project and DSC's Final Consistency Determination with the Delta Plan, and then asked how to respond to the remand decision. SME interview notes are included in Attachment 2B, and summaries of the SMEs' responses are presented below.

Dr. Glenn Haas (former Department Head, Recreation Resources and Landscape Architecture Department, Colorado State University, and independent recreation planning consultant). In response to the question about how to respond to the remand decision, Dr. Haas suggested that without visitor use information, one must rely on expert opinion (professional judgment), reasonable assumptions, and a logical thought process. Dr. Haas recommended starting at the lowest recreation use level possible and then aggregating for the year, which involves assessing daily and weekend use levels. For example, Dr. Haas recommends determining the use levels at boat launch parking lot areas on weekends during hunting season. If possible, Dr. Haas also suggests consulting a local game warden for professional judgement on the number of daily cars. This should also be done for weekdays, outside of hunting and fishing season, etc. DWR should use whatever data they have to estimate use. However, population (census tract) data should not be used as they are only good for future projections. Dr. Haas also suggested to estimate use levels with a numeric range, not a specific number, as it is too hard to defend and argue a specific visitor use number. The goal is to be reasonable versus accurate because achieving the absolute true answer is not possible. Dr. Haas recommends estimating a range of use for in-season (fishing and hunting) and out-of-season periods, and for weekends and weekdays. He suggests this should be done for each key access point (launch, parking) affected by the proposed Project.

Dr. Doug Whittaker (Confluence Research and Consulting, providing visitor use and facility capacity estimates to federal land management and water resource agencies throughout the United States). Dr. Whittaker indicates that use of census tract data to estimate recreation use for the Lookout Slough Project is not recommended. He reports that there is a weak correlation between population size and recreation use levels at specific sites. Other factors that are much more

influential than population are large-scale societal trends in response to disruptive events, such as the pandemic. In the absence of good visitor uses data, one could estimate use using aerial photographs, and one should estimate a range of use, **not** a single number. Dr. Whittaker indicates that trying to determine a single number for the Study Area is not advisable, and that if DSC or DWR insists on estimating use, then a range of use should be established versus a single number.

Dr. Bill Spain (Instructor, Department of Recreation and Public Health, San Jose State University). Dr. Spain suggested that one would only use population/census tract data if one is going to construct a model for which information about visitor choices to other recreation areas in the travel time radius of the Study Area is needed. Dr. Spain strongly recommended obtaining some visitor counts on-site to characterize existing visitor use. When asked about mobile application data (location-based data stored in cell phones), Dr. Spain cautioned against using this type of information unless DWR can validate with other use estimation methods. Dr. Spain's comment regarding using mobile application data is consistent with a review of mobile devices to estimate visitor use prepared by Dr. Megan Lawson[14] of Headwater Economics. She concluded that other forms of validation of visitor use estimates, such as having traffic count data, are needed to effectively use mobile application data to estimate visitor use levels.

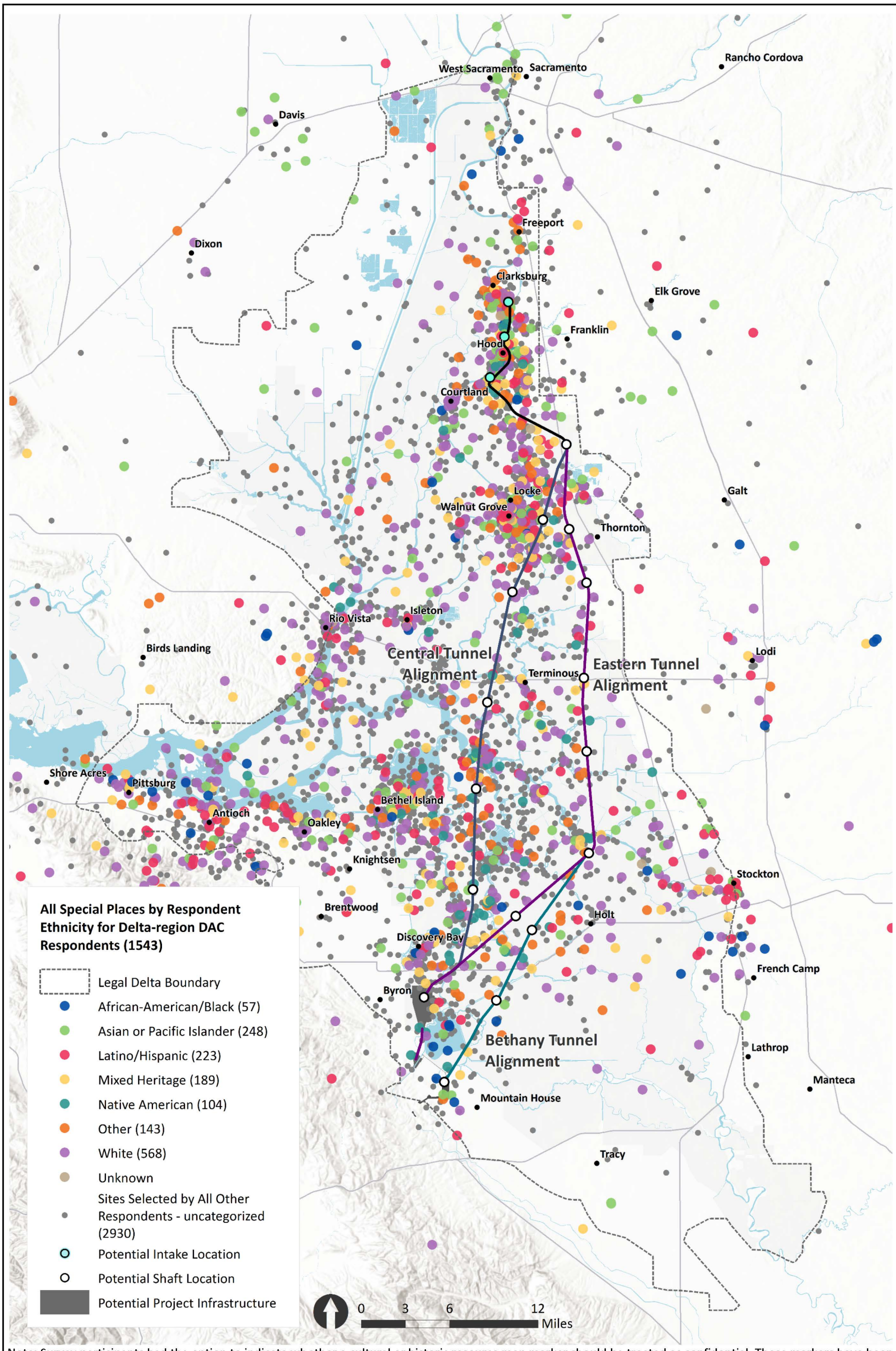
Based on the discussions with the SMEs, estimating total recreation use for a single recreation site or area using only population data (census tract or other sources of population data) is inappropriate.

3.2 Environmental Justice Study

During the July 2021 DSC hearing on the proposed Project's Consistency Determination, the Appellant for LIA indicated that the proposed Project would create environmental justice impacts for those individuals who do not have boats, and that the only reasonable access for these individuals to the LIER was via the Shag Slough Bridge. DSC member Madueno voiced a similar concern about economically disadvantaged individuals that do not have the ability to purchase motorized boats. To expand the reach of Inclusiveness, DWR herein incorporates information from a recent environmental justice study for the Delta region that was conducted for DWR's Delta Conveyance Project.[15] In May 2021, DWR completed a report based on a robust, in-depth community survey of Disadvantaged and Severely Disadvantaged communities (DAC and SDAC) who lived or work in the legal Delta as well as adjacent areas. This study confirms that fishing in the Delta is a way of life for these communities. About 90 percent of the fishing respondents surveyed indicated that they eat fish from the Delta four or more times per week. Survey results from the question "What places matter to you?" showed that only a very small number of digital markers (Figure 1) were placed in the vicinity of the Lookout Slough Project, indicating that DAC/SDAC interest in the Delta is diffused and not concentrated in the Project area. As described below, the additional on-site recreation use study also shows that the majority

[14] Lawson M. 2021. Counting Recreation using Novel Data Sources. Headwater Economics, Bozeman, Montana. https://headwaterseconomics.org/outdoor-recreation/counting-outdoor-recreation/.

[15] DWR. 2021. Survey Findings: Your Delta Your Voice Environmental Justice Community Survey. May 2021.



Note: Survey participants had the option to indicate whether a cultural or historic resource map marker should be treated as confidential. These markers have been removed from this map. This figure originally appeared as Map 3 in the report, "Your Delta Your Voice: Environmental Justice Community Survey," conducted for DWR's Delta Conveyance Project.

Figure 1. Special Places identified in the Delta Environmental Justice Survey

N W E S

Ecosystem Investment Partners

Prepared by:

Map Prepared Date: 9/23/2021
Map Prepared By: njander
Base Source: Wood Rogers
Base Date: 10/24/17
Data Source(s): WRA

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Lookout Slough Tidal Habitat Restoration and Flood Improvement Project

Path: L:\Acad 2000 Files\26000\26293\GIS\ArcMap\2021\Fig 2 Special Places Identified in the Delta Environmental Justice Survey20211022.mxd

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of fishing in the Study Area takes place along the western bank of Shag Slough, and not in the LIER (which speaks to the concern from LIA and DSC member Madueno that removing pedestrian access to the LIER via Shag Slough Bridge would have major impacts on anglers visiting the site for subsistence).

3.3 Listening Sessions

DWR and Ecosystem Investment Partners (EIP) conducted listening sessions and focused interviews in August and September 2021 with the Appellants of the Project's Certification and other relevant recreation stakeholders to better understand their concerns about the proposed Project and how it might affect recreation use of Liberty Island Road, the Shag Slough Bridge, and the LIER. Listening sessions were conducted with CDFW, LIA, DPC, and the County. A full summary of meeting notes may be found in Attachment 3A, and key points made during those meetings are summarized here.

- **CDFW** indicated that allowing public access (or in this case, not restricting public access) to the levee tops is a major issue for protected species, especially giant garter snake. CDFW did not support any public access on the Duck Slough Setback Levee or on the Cache/Hass training levee. They would prefer to see public use focused where it already exists (on the Shag Slough side of the Project site closer to the LIER). CDFW brainstormed some ideas related to public access, which were presented at the meeting and are included in Attachment 3A.
- **DPC** believes that there are not enough data for the region and that not enough surveys were done to truly know the level of recreation use in the Project vicinity. They suggested that DWR and EIP clarify that the public can use the boat ramp and that the proposed Project incorporates a parking area. To maintain or mitigate for loss of recreational use, DPC suggested opening the Duck Slough Setback Levee to pedestrian access (e.g., for birdwatching, fishing, etc.) and retaining the Shag Slough Levee all the way to the Shag Slough Bridge.
- **Solano County** expressed a desire to balance different needs, including avoiding and minimizing depreciative behavior. The County knows that neighboring agricultural landowners do not want to be affected by trespassing, dumping, and vehicular traffic on levees but also pointed out that there is existing recreational use (including illegal behavior) in the Project vicinity. The County made additional recommendations, which may be found in Attachment 3A. During the Solano County Board of Supervisors meeting on November 9, 2021, the issue of road vacation for Liberty Island Road to support Project implementation was discussed. Supervisor Vasquez indicated that there is no legal recreation use occurring along Liberty Island Road.
- **LIA** believes that the Project vicinity is important for recreation because of ease of access and how few other recreation sites are nearby. LIA stated that the proposed public access to the boat launch ramp would result in a longer boat trip to the locations within the LIER that visitors prefer. LIA believes that DWR needs to provide sufficient parking to accommodate recreation use and has suggested options for an alternate public access plan on the site, which are presented in Attachment 3A.

3.4 2021 On-Site Recreation Use Study

The Fall 2021 recreation study was conducted to respond to comments made by representatives of LIA and DPC that DWR did not have any on-site information about recreation use in the Project vicinity. A goal of the Fall 2021 recreation study was to characterize existing recreation use at the LIER and surrounding areas, collectively referred to as the Study Area, and to determine if the original estimation of recreation use was appropriate. The Study Area included Liberty Island Road where it sits atop the Shag Slough Levee, Shag Slough Bridge, and a remnant levee at the LIER. The study includes three components: vehicle counts from historic aerial photographs, vehicle counts from three motion-activated cameras, and in-person visitor surveys. Following the advice of recreation SME Dr. Glenn Haas, use estimates were evaluated and reported for weekdays and weekend days to determine if the level of use in each location differed, and if the proportion of activities (primarily fishing and hunting) at each location differed. To determine if there was seasonal variation in which locations were used, Dr. Haas also suggested estimating use levels during waterfowl hunting season. The component of the study pertaining to aerial photograph review covered weekdays and weekend days, and two days during previous waterfowl hunting seasons over a five-year period, from 2016 to 2021. The component of the study for motion-activated camera counts occurred daily, from August 2 to October 31, 2021. The period over which in-person visitor surveys were conducted covered six days in September (including a Saturday, Sunday, and Labor Day) and two weekend days during waterfowl hunting season (October 23 and 30).

3.4.1 Methods for Vehicle Counts via Aerial Photography Analysis

Review of aerial photography can be useful for estimating recreation use at a single point in time and was one of the recommendations made by Dr. Whittaker. WRA worked with an outside vendor, Upstream Technology, to count vehicles on historic aerial photographs within the Study Area. Upstream Technology reviewed more than 100 images from 2016 to 2021, but only 13 images were considered to have adequate resolution to accurately count vehicles. Vehicle counts were taken from the 13 images with sufficient resolution and were reported for both weekdays and weekend days. The images were also analyzed to determine whether vehicles were located within 0.25 mile or less from Shag Slough Bridge, or whether they were located along Liberty Island Road at a distance greater than 0.25 mile from the Bridge. These data are relevant because it can be assumed that users who parked greater than 0.25 mile from Shag Slough Bridge are not accessing the LIER but are accessing the western bank of Shag Slough and Shag Slough Levee. Image dates were also analyzed to determine which vehicle counts coincided with waterfowl hunting season.

Figure 2: Vehicle Count Camera Locations

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Lookout Slough Tidal Habitat Restoration and Flood Improvement Project

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Ecosystem Investment Partners

Prepared by:

Map Prepared Date: 12/6/2021
Map Prepared By: njander
Base Source: USDA NAIP
Base Date: 2020
Data Source(s): WRA

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3.4.2 Methods for Vehicle Counts via Motion-Activated Cameras

Vehicle counts were derived by reviewing images from three motion-activated cameras within the Study Area that collected data from August 2 to October 31, 2021. Camera 1 is located about 2 miles northwest of the Shag Slough Bridge on Liberty Island Road, Camera 2 is located at a graveled berm south of Lookout Slough approximately 0.5 mile north of the Bridge, and Camera 3 is located near Shag Slough Bridge. Figure 2 shows the locations of the three cameras. The northernmost camera location records all vehicles that come to the Study Area. The Lookout Slough camera records a subset of total vehicles that drive on Liberty Island Road immediately south of where Lookout Slough terminates at Shag Slough Levee, and the Shag Slough Bridge camera records a subset of vehicles that park near the Shag Slough Bridge. Subtracting each camera's vehicle counts from the previous camera's vehicle counts calculates the number of vehicles parked in the areas between the camera locations. Using these camera locations, data can be deduced regarding the number of vehicles that park north of Lookout Slough to the point where Liberty Island Road proceeds in an east/west direction, the number of vehicles parked between the Lookout Slough camera south to the area north of but not near the Shag Slough Bridge, and the number of vehicles parked near Shag Slough Bridge. The sum of the vehicles in these three locations represents the total number of vehicles counted at the northernmost camera location. **Error! Not a valid bookmark self-reference.** shows how vehicle use was calculated and reported for the three segments of Liberty Island Road.

TABLE 2
CAMERA LOCATIONS AND STUDY AREA LOCATIONS REPRESENTED

Camera Location	Location Represented
Camera 1 (east-west portion of Liberty Island Road, approximately 2 miles northwest of Bridge) vehicle counts	Total Vehicles on Liberty Island Road in the Study Area
Camera 2 (by Lookout Slough) vehicle counts subtracted from Camera 1 vehicle counts	Total vehicles on the Liberty Island Road segment, north of where Lookout Slough terminates at the Shag Slough Levee
Camera 3 (Bridge location) vehicle counts subtracted from Camera 2 vehicle counts	Total vehicles on Liberty Island Road segment, south of where Lookout Slough terminates at the Shag Slough Levee to the Bridge
Camera 3 vehicle counts	Total vehicles on Liberty Island Road near the Shag Slough Bridge

Cameras operated continuously during the study period, providing vehicle count data daily, 24 hours per day. Counts were generated via a two-step process. The first step was for a Hanford Construction employee to review all images recorded within a given time frame and delete vehicles that were obviously related to on-site work purposes (e.g., Project vehicles). The second step was for a WRA employee to count the remaining images for the time frame and eliminate vehicles that entered and exited the Study Area within 30 minutes. Since it was difficult to identify vehicles to determine if vehicles were on-site for recreational purposes during nighttime photographs, the nighttime images were not included in the counts. As part of data quality assurance/quality control (QA/QC), Dr. John Baas (Ph.D. Forest Resource Management, Senior Open Space Manager at WRA) reviewed all images to validate the counts. Total and average

counts were reported for all weekdays and weekend days for the three camera locations, as well as the number of vehicles observed with a visible watercraft.

3.4.3 Methods for In-Person Visitor Surveys

Surveys of visitors to the Study Area were conducted to provide site-specific information on current recreation use. Visitor surveys were conducted to describe the types of uses occurring in the Project vicinity, the perceived quality of visitor experiences on or near the Study Area, and reasons for visiting. Survey questions were written to be easy to understand and were vetted with data collection staff and three Ph.D.-level staff with experience with survey research. Questions were pretested with several visitors to the Study Area prior to beginning data collection. Because the goal of the study was to describe, not evaluate, existing recreation use, statistical tests were not conducted. Responses to all questions are reported, along with the number of visitors who responded to each question. Survey results should not be considered statistically valid, and their intent is to provide a "snapshot" of visitor use in the Study Area during September and October.

To maximize the number of completed surveys, teams of two and four interviewers visited the Study Area on weekdays and weekend days, respectively. All interviewers participated in a project orientation and practiced interviewing techniques with each other before beginning survey pretesting with visitors. Each survey represents one visitor. When interviewers engaged with a group of visitors, only one visitor in that group was surveyed. Surveys were conducted for six days in September and two Saturdays in October, to obtain information from waterfowl hunters and any other visitors present. The September surveys were intended to obtain information from a variety of visitors and were conducted on Labor Day, three other weekdays, and on a Saturday and Sunday. October 23 was chosen specifically because it was opening day of waterfowl hunting season, and October 30 was chosen to conduct surveys to represent a more typical weekend day during the waterfowl hunting season.

During the September data collection, crews started surveys at 7 a.m. to record early morning use or started at 1 p.m. and collected data until 7 p.m. to capture evening use. Crews counted all visitors they observed during their time on-site, whether visitors completed a survey or not. Crews were instructed to interview one person per group, to ensure that the completed survey represents an "independent observation" (e.g., the person completing the survey is not influenced by responses being offered by other group members being surveyed). During October data collection days, crews started surveys at 9 a.m. to be able to contact hunters as they were returning to their vehicles following hunting. It is typical for some waterfowl hunters to be ready to hunt at dawn to maximize their chances of harvest. Crews remained on-site in the Study Area until 4 p.m. to interview any hunters who came to hunt later in the day, and any other visitors present. Data collection teams were instructed to contact everyone they encountered and interview them if possible. For any individuals that refused to participate in an interview, staff recorded a reason for the refusal (e.g., language barrier). The visitor survey (Attachment 2D) included nine questions and required about five minutes to complete. To maintain confidentiality, visitors were not asked for their name, address, or any other personal information.

To respond to concerns that the Study Area may be used by a high proportion of ethnic minorities and/or disadvantaged communities, the visitor survey was also translated into Spanish, so visitors had the option of completing the survey in English or Spanish.

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4. Results of 2021 On-Site Recreation Use Study

4.1 Results of Vehicle Counts via Aerial Photography Analysis

Tables 3 through 5 present the historic imagery results on weekend days, weekdays, and on waterfowl hunting season days, respectively. Two aerial photos occurred during hunting season (on 11/28/20 and 2/22/21), and the 11 remaining photos occurred in off-hunting season (when it can be assumed that users were not hunting and were participating in other recreation activities such as fishing). Overall vehicle counts ranged from two to 24 vehicles per day. Over the five-year period (2016 to 2021) represented by the photos, most vehicles (approximately 76 percent) were parked greater than 0.25 mile from Shag Slough Bridge, even when parking was available within 0.25 mile of the Bridge. The images show a maximum of six cars parked within 0.25 mile of the Bridge, and a maximum of 22 cars parked greater than 0.25 mile away from the Bridge. The two aerial photos from hunting season showed similar results: there were 17 and five cars parked greater than 0.25 mile away from the Bridge during a weekend day and weekday, respectively; and six and two cars parked within 0.25 mile of the Bridge during a weekend day and weekday, respectively. Based on the advice of recreation SME Dr. Glenn Haas, these results were reported by weekend days, weekdays, and hunting season days, and demonstrated variation in vehicles across these three time periods. This work supplements the aerial photographs that the LIA Appellant presented during the May 2021 hearing. It is assumed that users who parked greater than 0.25 mile from Shag Slough Bridge are not accessing the LIER but are accessing the west bank of Shag Slough via the Shag Slough Levee. The vehicle counts from review of aerial photographs suggest that most visitors are using the northern section of Liberty Island Road and the Shag Slough Levee, and that fewer visitors are utilizing Shag Slough Bridge and the LIER.

TABLE 3
WEEKEND DAY VEHICLE COUNTS FROM HISTORIC AERIAL PHOTOGRAPHS

Date	Image Resolution	Weekend Day	Total Vehicles	Vehicles greater than 0.25 mile of Shag Slough Bridge	Vehicles 0.25 mile or less to the Shag Slough Bridge
6/19/16	1m	Sunday	10	4	6
7/14/18	1m	Saturday	11	6	5
7/19/20	50cm	Sunday	12	10	2
11/28/20	1.5m	Saturday	23	17	6
4/11/21	30cm	Sunday	24	22	2
4/18/21	50cm	Sunday	14	12	2
5/8/21	50cm	Saturday	6	5	1
		Vehicle Totals:	**100**	**76**	**24**

TABLE 4
WEEKDAY VEHICLE COUNTS FROM HISTORIC AERIAL PHOTOGRAPHS

Date	Image Resolution	Weekday	Total Vehicles	Vehicles greater than 0.25 mile of Shag Slough Bridge	Vehicles 0.25 mile or less to the Shag Slough Bridge
6/26/17	50cm	Monday	2	1	1
8/21/20	50cm	Friday	4	3	1
2/22/21	50cm	Monday	7	5	2
3/24/21	30cm	Wednesday	10	9	1
3/26/21	50cm	Friday	5	4	1
4/26/21	1.5m	Monday	2	1	1
		Vehicle Totals:	**30**	**23**	**7**

TABLE 5
VEHICLE COUNTS FOR HUNTING SEASON DAYS FROM HISTORIC AERIAL PHOTOGRAPHS

Date *	Image Resolution	Hunting Season Days	Total Vehicles	Vehicles greater than 0.25 mile of Shag Slough Bridge	Vehicles 0.25 mile or less to the Shag Slough Bridge
11/28/20	1.5m	Saturday	23	17	6
2/22/21	50cm	Monday	7	5	2
		Vehicle Totals:	**30**	**22**	**8**

*Duck hunting season was October 21 – January 31 from 2016–2021. During 2021, the late goose hunting season was February 19 to February 23.

4.2 Results of Vehicle Count via Motion-Activated Cameras

The following tables present the vehicle count results from the motion-activated camera images captured during the study period from August 2 to October 31, 2021.

Table 6 and Table 7 show the total and average vehicle counts during the study period. The vehicle count data for weekdays show that a slightly higher proportion of visitors are using the northern section of Shag Slough Levee than the Shag Slough Bridge and the LIER. The vehicle count data for weekend days show that a slightly higher proportion of visitors are using the Shag Slough Bridge and the LIER more often than the Shag Slough Levee. Overall, the vehicle count data suggest that slightly more visitors are using the northern section of the Shag Slough Levee.

TABLE 6
TOTAL RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS, AUGUST 2 TO OCTOBER 31, 2021

Time period	Total Vehicles on Liberty Island Road	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	1,534	863 (56%)	85 (6%)	586 (38%)
Weekend Days	927	374 (40%)	117 (13%)	436 (47%)
Entire Week	2,461	1,237 (50%)	202 (8%)	1,022 (42%)

TABLE 7
AVERAGE RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS BY LOCATION, AUGUST 2 TO OCTOBER 31

Time period	Average on Liberty Island Road	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	23.6	13.3	1.3	9.0
Weekend Days	35.6	14.4	4.5	16.8
Entire Week	27.0	13.6	2.2	11.2

Table 8 and Table 9 show the total recreation vehicle counts, and Table 10 and

Table 11 show the daily average recreation vehicle counts for non-hunting season (August 2 to October 22) and hunting season (October 23 to October 31), respectively. During the non-hunting season, the vehicle count data for weekdays show that a slightly higher proportion of visitors are using the northern section of Shag Slough Levee than the Shag Slough Bridge and the LIER. The vehicle count data for weekend days show that a slightly higher proportion of visitors are using the Shag Slough Bridge and the LIER than the Shag Slough Levee. Overall, during the non-hunting season, the vehicle count data suggest that slightly more visitors are using the northern section of the Shag Slough Levee. During the hunting season, vehicle count data follow a similar trend to the non-hunting season, with an overall suggestion that slightly more visitors use the northern section of Shag Slough Levee than the Shag Slough Bridge and the LIER. Thus, these

results demonstrate variation in weekday and weekend use and support recreation SME Dr. Glenn Haas' recommendation to estimate use levels by weekdays and weekends.

TABLE 8
TOTAL RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS BY LOCATION, NON-HUNTING SEASON (AUGUST 2 TO OCTOBER 22)

Time period	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	727 (55%)	83 (6%)	506 (38%)
Weekend days	321 (41%)	98 (12%)	367 (47%)
Entire Week	1,048 (50%)	181 (9%)	873 (41%)

TABLE 9
TOTAL RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS BY LOCATION, HUNTING SEASON (OCTOBER 23 TO OCTOBER 31)

Time period	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	136 (62%)	2 (1%)	80 (37%)
Weekend Days	53 (38%)	19 (13%)	69 (49%)
Entire Week	189 (53%)	21 (6%)	149 (42%)

TABLE 10
AVERAGE RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS BY LOCATION, NON-HUNTING SEASON (AUGUST 2 TO OCTOBER 22)

Time period	Average on Liberty Island Road	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	21.9	12.1	1.4	8.4
Weekend days	35.7	14.6	4.5	16.7
Entire Week	25.6	12.8	2.2	10.6

TABLE 11
AVERAGE RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS BY LOCATION, HUNTING SEASON (OCTOBER 23 TO OCTOBER 31)

Time period	Average on Liberty Island Road	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	43.6	27.2	0.4	16.0
Weekend days	35.4	13.3	4.8	17.3
Entire Week	39.9	21.0	2.3	16.6

Table 12 shows recreation use levels during opening day of waterfowl hunting season (October 23) and use levels on the following Saturday (October 30). The vehicle count data suggest an elevated amount of use on opening day (October 23) than the following weekend day (October 30). The vehicle count data also show that on both days, visitors used the Shag Slough Levee at a much higher rate than the Shag Slough Bridge and the LIER.

TABLE 12
TOTAL RECREATION VEHICLE COUNTS FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD, OCTOBER 23 AND 30

Time period	Total on Liberty Island Road	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
October 23	144	63	48	33
October 30	81	37	26	18

Table 13 shows those vehicles with some type of watercraft for August 2 through October 31. The average counts for vehicles with watercrafts on weekdays, weekends, and during the entire week show that a majority of the vehicles are using the Shag Slough Bridge and the LIER more frequently than the Shag Slough Levee.

TABLE 13
TOTAL RECREATION VEHICLE COUNTS WITH WATERCRAFT FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING WEEKDAYS AND WEEKEND DAYS, AUGUST 2 TO OCTOBER 31

Time period	Total on Liberty Island Road	Segment North of Lookout Slough	Segment South of Lookout Slough	Near Shag Slough Bridge
Weekdays	40	6 (15%)	2 (5%)	32 (80%)
Weekend Days	56	11 (20%)	9 (16%)	36 (64%)
Entire Week	96	17 (18%)	11 (11%)	68 (71%)

Table 14 and

Table 15 show the total recreation vehicle counts with versus without watercraft between non-hunting season (August 2 to October 22) and hunting season (October 23 to October 31), respectively. Vehicle count data suggest that the majority of recreational users did not have a watercraft. It should be noted that these numbers do not necessarily capture all use of inflatable or hard-shell kayaks, or flotation tubes that are used by waterfowl hunters since these watercraft are more difficult to visually detect in a camera image.

TABLE 14.
TOTAL RECREATION VEHICLE COUNTS WITH AND WITHOUT WATERCRAFT FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING NON-HUNTING SEASON (AUGUST 2 TO OCTOBER 22)

Time period	Segment North of Lookout Slough		Segment South of Lookout Slough		Near Shag Slough Bridge	
Watercraft	*With*	*Without*	*With*	*Without*	*With*	*Without*
Weekdays	3 (0.4%)	724 (99.6%)	5 (6%)	78 (94%)	27 (5.3%)	479 (94.7%)
Weekend Days	3 (1%)	318 (99%)	15 (15.3%)	83 (84.7%)	29 (7.9%)	338 (92.1%)
Entire Week	6 (0.6%)	1,042 (99.4%)	20 (11%)	161 (89%)	56 (6.4%)	817 (93.6%)

TABLE 15
TOTAL RECREATION VEHICLE COUNTS WITH AND WITHOUT WATERCRAFT FROM MOTION-ACTIVATED CAMERAS ON LIBERTY ISLAND ROAD DURING HUNTING SEASON (OCTOBER 23 TO OCTOBER 31)

Time period	Segment North of Lookout Slough		Segment South of Lookout Slough		Near Shag Slough Bridge	
Watercraft	*With*	*Without*	*With*	*Without*	*With*	*Without*
Weekdays	4 (2.9%)	132 (97.1%)	2 (2.5%)	78 (97.5%)	5 (2.3%)	213 (97.7%)
Weekend Days	9 (17%)	44 (83%)	1 (1.4%)	68 (98.6%)	7 (5%)	134 (95%)
Entire Week	13 (6.9%)	176 (93.1%)	3 (2%)	146 (98%)	12 (3.3%)	347 (96.7%)

4.3 Results of In-Person Visitor Surveys

4.3.1 Overview of Visitor Survey Results

Observational data support the conclusion that most anglers use the western bank of Shag Slough Levee instead of the eastern bank located in the LIER. For the September sampling period, which occurred for six days, a total of 189 visitors were counted (67 of which were surveyed) and 145 were observed recreating on Shag Slough Levee. Surveys taken in September found that the majority (86 percent, or 51 out of 59 anglers surveyed) of visitors who were recreating in the Project Area to fish used the western bank of Shag Slough Levee. During the October sampling period, a total of 171 visitors were counted (68 of which were surveyed), and 91 were observed recreating on Shag Slough Levee. This sampling period, which included two days during waterfowl hunting season, displayed a similar pattern as that seen in September, with the majority (78 percent, or 35 out of 45 anglers surveyed) of visitors who were recreating in the Study Area to fish using the western bank of the Shag Slough Levee. However, most of the hunters surveyed during October (approximately 86 percent) were observed within the LIER and Shag Slough Bridge area.

Among the 67 completed surveys in September, three were completed in Spanish. One group of three users observed on a boat in Shag Slough spoke neither English nor Spanish, and their activities were captured visually rather than verbally in the survey. All respondents were recorded in a log form, and a review of that form revealed several individuals who spoke only Spanish.

Watercraft use was observed more often during the hunting season. In September, approximately 17 percent of recreational users were observed using watercraft, while the majority (approximately 68 percent) of visitors recreating for hunting purposes were seen using a type of watercraft, with the most common type being hard kayak.

The nine questions included in the visitor survey, along with summaries of the responses for September and October survey respondents are discussed below. Figures 5 through 7 and Tables 16 through 26 in Attachment 2E detail the results summarized below from the September and October on-site visitor surveys.

Question 1: What activities do you plan to do here today?
Table 16 shows that fishing primarily for leisure and for food were the most and second most reported responses, respectively, in both September and October. Most of the recreationists (approximately 80 percent) surveyed over six days in September indicated that they were primarily within the Study Area to fish for leisure, while approximately 22 respondents (33 percent) stated that they were visiting to fish for food, compared to 46 percent and 41 percent respectively for October surveys. Of the September surveys, only two respondents (3 percent) indicated that they were present for activities related to hunting, while 24 responses (34 percent) identified activities related to hunting in October. Paddle sports, wildlife viewing, and hiking were other activities reported at less than 10 percent each.

Question 2: How long have you been coming here?
The data in Table 17 indicated that most of the visitors surveyed are repeat visitors (89 percent among September visitors, 85 percent for October visitors, and 91 percent for hunters only). Most of the visitors (approximately 66 percent of those surveyed in September and 69 percent in October) have been coming to the Study Area for 5 years or less (Figure 5 and Figure 6). This finding also applies to hunters (Figure 7). Approximately one-quarter of all visitors surveyed in September and approximately one-fifth of all visitors surveyed in October have been coming to the Study Area for more than 10 years. When looking at hunters specifically, 20 percent reported visiting the Study Area for more than 10 years.

Question 3: How often do you come to this area to recreate?
The most common answer among those surveyed stated that they visit the Study Area a few times per year (26 percent in September and 29 percent in October). This response was even more common among the hunting-only respondents, with 45 percent of hunters stating that they came to the Study Area a few times a year (Table 18). One possible reason for this change in visiting patterns could be that hunting season is temporally limited when compared to other recreational activities, such as fishing or hiking, which can be accomplished year-round.

Question 4: How much time do you typically spend when you are recreating here?
Most of the visitors surveyed (approximately 84 percent in September and 76 percent in October) indicated that they recreate for about a half a day or less (Table 19). Only 14 percent of recreational users surveyed in September and about 24 percent of recreational users surveyed in October, said that they spent about a full day recreating in the area. This number was highest amongst hunters, as seven respondents who hunt (approximately 29 percent) answered that they

spent about a full day recreating in the area (Table 19). The results show that the hunters spend more hours at the Study Area during a single visit than other visitors recreating in the area.

Question 5: What activities have you done here previously?

As shown in Table 20, most of the visitors surveyed who had previously visited the Study Area to fish, fished along Liberty Island Road on the Shag Slough Levee. The second most common fishing location recorded was the LIER for visitors surveyed in September and in Shag Slough (presumably via watercraft) for visitors surveyed in October. All of the visitors who participated in hunting activities previously had done so at the LIER. The results show that Liberty Island Road is popular for fishing while the LIER is popular for hiking. Visitors who had participated in hiking and wildlife viewing commonly answered that they visited both Liberty Island Road and the LIER, with hikers slightly favoring the LIER while wildlife viewing was slightly more common along Liberty Island Road. Paddle sports predominantly occurred in Shag Slough. Those who visited for this purpose also indicated that they accessed Shag Slough after parking on the northern section of Liberty Island Road or near the LIER in similar numbers.

Question 6: How would you generally rate the quality of whatever activities you have done here before relative to other spots in the Delta?

According to the data (Table 21), the most common response of the visitors from both September and October, who selected fishing, rated the quality of fishing as being either "the same" or "better" relative to other spots in the delta. Only a few visitors who selected fishing, reported "I do not do this activity in other places." Approximately 96 percent and 93 percent of September and October visitors surveyed, respectively, also fish in other places in the Delta. The most common response of visitors who indicated they hunted in other locations rated the quality of hunting as "better" relative to other spots in the delta and 50 percent reported "I do not do this activity in other places." One response for hunting rated the quality of hunting "worse" relative to other spots in the delta. For most of the activities listed in Table 21, the most common response is that the Study Area provides "the same" or "better" quality relative to other spots in the Delta.

Question 7: Why did you choose to come here over other places in the Delta?

Table 22 shows the responses for respondents in September and October for why they chose to come to the Study Area versus other places in the Delta. Approximately 61 percent of those surveyed in September and 59 percent of those surveyed in October responded with "it is close to my home/easy access" when asked why they chose to come to the Study Area over other places in the Delta; this was also the most recorded response amongst the hunters. As shown in Table 22, most of the hunters surveyed (approximately 65 percent) responded with "it is close to my home/easy access" when asked why they chose to come here over other places in the Delta. However, over half of the hunters (approximately 52 percent) also indicated that they hunted on the LIER because there are "No fees/free parking."

Question 8: Do you go to any other areas in the Delta to participate in the following activities?

All responses from September and October, as well as the hunter responses, that were recorded for Question 8, are summarized in Table 23. Approximately 81 percent of those surveyed in September and 70 percent of those surveyed in October answered "yes" when asked if they go to any other areas in the Delta to participate in the following activities: fishing, paddle sports, hiking, wildlife viewing, hunting, and other, in comparison to the 68 percent of hunters who

answered "yes" to the same question. In terms of fishing activities, in September, 48 percent of the respondents replied that they go to Grizzly Island and Rio Vista (16 responses for each), 12 visitors (18 percent) responded that they go to Suisun Marsh, and five visitors (7 percent) responded that they go to Lake Berryessa. In October, there were 12 (18 percent) responses recorded for Rio Vista and six responses (9 percent) each for both Grizzly Island and Suisun in terms of areas visitors also went for fishing activities. Among the hunters surveyed, 46 percent hunt in other locations, with Grizzly Island being the most reported response.

Question 9: Is there anything else you want to tell me about this visit, or any previous visits here?
Comment categories and total number of comments received under each category are summarized in Table 24 and Table 25 for September and October, respectively. In September, 67 individuals provided a total of 90 comments in response to Question 9. In October, 68 individuals provided a total of 99 comments. Among September respondents, the most recorded comment to Question 9 was regarding the amount of trash in the area and was mentioned by 22 respondents. Several respondents commented on the need for trash receptacles to be placed in the area to cut down on littering, while two suggested increased law enforcement patrols to reduce dumping in the area. About 12 percent of the total comments pertained to "enjoy visiting the Study Area" or mentioned specific aspects the respondents enjoyed, such as the easy access, quietness, wildlife, safety, or the lack of crowds. The third most recorded comment was regarding public access to Liberty Island Road and the Shag Slough Bridge, with 10 percent of the comments voicing concern over losing access to the road and Bridge. Three other respondents expressed comments indicating a strong preference for a public boat launch.

As shown in Table 25 and Table 26, among October respondents the most reported comment categories were "too much trash/wants trash cans/dumpsters" (9 percent and 5 percent of the comments from all October surveys and waterfowl hunters only surveys, respectively), and "enjoy location" (12 percent and 12 percent of comments from all October and waterfowl hunters only surveys, respectively).

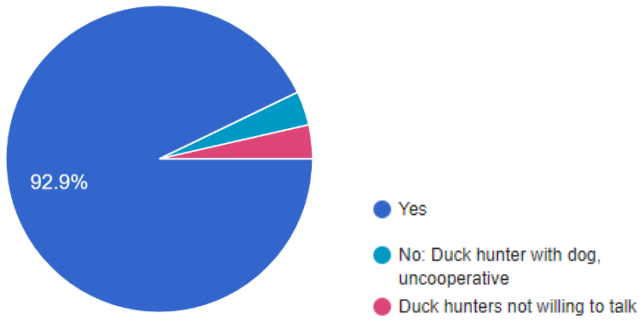
Survey results were reported by September and October to see if there were differences in responses, per a recommendation by recreation SME Dr. Glenn Haas. Differences were found in the amount of time spent on-site, with October respondents spending a greater amount of time. October respondents also stated they visited other places in the Delta to recreate.

4.3.2 Additional Waterfowl Hunting Results

There were a total of 26 reported hunters contacted in October, among which 24 were willing to be surveyed. There were two recreationists visiting the Study Area for hunting-related purposes in September; these respondents were scouting for hunting areas. Therefore, these individuals and their responses were included in the September survey results since they were not actually hunting. There were 20 hunter-related surveys submitted on Saturday, October 23, 2021, which was opening day for waterfowl hunting season, and four surveys on October 30. Most of the hunters (68 percent) were seen using some type of watercraft, with the most common type being hard kayak. Most of the hunters have been coming to the area for one to five years to hunt and reported that they tend to stay for half a day.

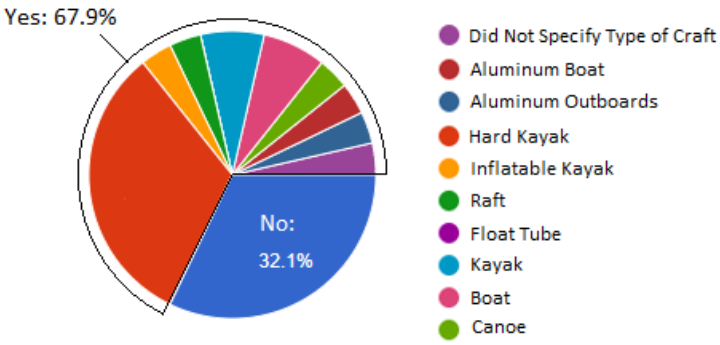
The following data reported in Figure 3 and Figure 4 were collected from recreationists who identified as hunters in September and October. As depicted by Figure 3 below, most of the hunters were willing to be surveyed.

Figure 3. Hunter Willingness to be Surveyed



Most of the hunters (approximately 68 percent) were seen using a type of watercraft, with the most common type being hard kayak (Figure 4).

Figure 4. Observations on Whether or not the Hunter was using Watercraft



5. Conclusions

DSC remanded DWR's Certification for the Project under Delta Plan Policy G P1(b)(3) in part because it did not find substantial evidence in the record that the Certification met the BAS criterion of Inclusiveness with regard to recreation use estimation methods. The DSC's Determination asserted that DWR failed to include information from multiple census tracts when estimating shoreline fishing on the LIER, even though this type of information was readily available. In 2019, DWR used comprehensive sources of relevant information to estimate shoreline fishing use for the LIER. Part of that information included population data from a census tract in close proximity to the Project site. Based on the evaluation of information obtained in 2019, DWR concluded the LIER is a relatively low use area for shoreline fishing, and that anglers had multiple other locations where they could fish in the Delta.

In response to the DSC's remand decision, DWR expanded its sources of information by conducting interviews with SMEs, incorporating the results of a 2021 Delta-wide environmental justice survey, conducting listening sessions with stakeholders, and undertaking an on-site study of recreational users.

DWR sought advice from three SMEs in outdoor recreation research. The SMEs agreed that using information from multiple census tracts to estimate recreation for the Study Area is not appropriate.

The environmental justice survey confirms that fishing in the Delta is a way of life for Disadvantaged and Severely Disadvantaged (DAC/SDAC) communities and showed that DAC/SDAC interest in the Delta is diffuse and not concentrated in the Project area.

DWR and EIP conducted listening sessions and focused interviews in August and September 2021 with the Appellants of the Project's Certification and other stakeholders to better understand their concerns about the proposed Project and how it might affect recreation use of Liberty Island Road, the Shag Slough Bridge, and the LIER. One important take-away from the listening sessions (in regards to BAS) is that current on-site information about recreation use in the Project vicinity could be expanded. In response to comments from LIA and DPC representatives, DWR conducted an on-site recreation use study, which evaluated recreation use based on historic aerial photography, motion-activated cameras, and on-site visitor surveys within a Study Area that included Liberty Island Road atop Shag Slough Levee, Shag Slough Bridge, and the LIER.

Results of the additional recreation resource literature review and 2021 on-site recreation use study support DWR's original conclusions characterizing recreation use of the Project vicinity. Important conclusions that can be drawn from the additional analyses include:

- Fishing is the most popular recreational use in the Project vicinity.
- The LIER is a popular fishing location with some local residents, but the Project site is a relatively low recreation use area.
- Most recreational use is by locals.
- Most visitors are using the northern section of Liberty Island Road and the Shag Slough Levee, and that fewer visitors are utilizing Shag Slough Bridge and the LIER.
- Most shoreline fishing use in the vicinity occurs along Liberty Island Road, not on the LIER.
- A majority of vehicles with associated watercraft use the Shag Slough Bridge and the LIER more frequently than the Shag Slough Levee.
- Most survey respondents go to other recreation areas in the Delta in addition to the Project site.
- In regard to those respondents (surveyed in both September and October) who stated they fish at other locations, 16 alternate recreation locations were mentioned.
- A high proportion of waterfowl hunters use watercraft, but very few anglers use a boat or some other form of watercraft.