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# memorandum

date April 17, 2023

to Stephanie Freed, Ecosystem Investment Partners, Assistant Director of Operations, Project Manager

cc David Urban, Ecosystem Investment Partners, Managing Director

from Rachael Carnes, Environmental Science Associates, Managing Planner

subject Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project Site and within the Larger Delta Region

## Background

The Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (Proposed Project) consists of developing over 3,000 acres of freshwater tidal marsh in the Cache Slough Complex, located in the northern Sacramento-San Joaquin Delta (Delta). The Proposed Project involves breaching the Shag Slough Levee to restore freshwater tidal connectivity in conjunction with grading to create a mosaic of subtidal, intertidal/marsh, and floodplain habitat.

The Final Environmental Impact Report (Final EIR) for the Proposed Project was certified by the California Department of Water Resources (DWR) on November 2, 2020. Four petitions were filed challenging the certification of the Final EIR, which were consolidated. The Superior Court of the State of California for the County of Contra Costa (Court) heard oral arguments in the case on October 11, 2022, and the Court then took the matter under submission. On November 17, 2022, the Court issued a Peremptory Writ of Mandate ordering DWR to decertify that portion of the Final EIR for the Proposed Project regarding the Proposed Project's potential impact on recreational opportunities to fish from the shoreline (the Shoreline Fishing Opportunities Threshold). The Peremptory Writ also ordered that, prior to recertifying the Final EIR, DWR bring the Final EIR into compliance with the California Environmental Quality Act (CEQA) with respect to the Final EIR's discussion and analysis of the Shoreline Fishing Opportunities Threshold.

On November 18, 2022, Environmental Science Associates (ESA) was requested by Ecosystem Investment Partners (EIP) to assess shoreline fishing opportunities provided by the Proposed Project Site and the availability of shoreline fishing opportunities in the local vicinity and in the larger Delta region. There are multiple reasonably foreseeable interpretations of what constitutes an *opportunity* to fish from the shoreline; therefore, ESA evaluated shoreline fishing opportunities at the Proposed Project Site and in the region using two distinct methods: one method calculated "total shoreline" reachable by a combination of vehicle and foot, regardless of whether the degree of vegetation cover provides access to the waterway, while the other method assessed "available shoreline for fishing opportunities" (i.e., shoreline free of dense vegetation such that it provides a realistic opportunity to fish). Both methods are described in further detail below.

## Methods

### Total Shoreline

#### Total Shoreline on the Proposed Project Site and Liberty Island Ecological Reserve

The Proposed Project Site is currently used by pedestrians to access shoreline fishing opportunities on the west bank of Shag Slough (along Liberty Island Road atop Shag Slough Levee) as well as the east bank of Shag Slough (within the Liberty Island Ecological Reserve [Reserve] accessed via the Shag Slough Bridge). The total length of the Shag Slough Levee on the Proposed Project Site with the potential to offer shoreline fishing opportunities is approximately 1.5 miles, running from the northern property boundary to the Shag Slough Bridge (there is a vehicular gate at Shag Slough Bridge with signage posted marking “no trespassing” and “private property,” past which fishing is not allowed). The total length of remnant levee within the Reserve with the potential to offer shoreline fishing opportunities is approximately 3 miles. Therefore, the Proposed Project Site provides access to approximately 4.5 miles of “total shoreline” (i.e., shoreline reachable by a combination of vehicle and foot).

#### Total Shoreline in the Region of the Proposed Project Site

To provide accurate context for “total shoreline” on the Proposed Project Site and Reserve, the presence of shoreline must be assessed at a local and/or regional scale. For the purposes of this analysis, “regional scale” was defined as the area within the legal boundary of the Delta. In addition, a 2014 California Department of Parks and Recreation statewide recreation survey found that the majority of recreationists in California travel between 21 and 60 minutes to the places they visit most often for recreation.<sup>1</sup> Therefore, this analysis has defined “local scale” as the area within a 60-minute drive of the Proposed Project Site.

ESA established the following protocol using a geographic information system (GIS) to assess the amount of “total shoreline” that exists locally and regionally. As described above, “total shoreline” is defined as shoreline reachable by a combination of vehicle and foot; therefore, ESA used geospatial analysis to identify shoreline within a 200-foot buffer of easily reachable, drivable roadways. The methods used to focus the geospatial analysis are further explained below:

- The U.S. Census Bureau’s Topologically Integrated Geographic Encoding and Referencing system (TIGER) roads dataset was used and filtered to retain only “named roads.” Doing so excludes agricultural and other private roads that would not provide vehicular access. Interstates were also removed from the dataset due to the assumption that the majority of interstates do not provide safe and/or desirable shoreline fishing opportunities even if they are located near waterways. The resulting dataset can be described as “drivable roads.”
- A “waterways” dataset was derived from the Delta Plan waterways dataset (which includes all open water channels in the Delta), but ESA staff manually edited this layer to exclude shoreline along small islands, edges of marsh, and other waterways that would not be reachable by vehicle or accommodate fishing.
- The “waterways” data was then filtered to retain only those waterways within 200 feet of “drivable roads,” based on an assumption that shoreline reachable by a combination of vehicle and foot would exist within a 200-foot buffer between a drivable roadway and a waterway. The analysis was limited to 200 feet in order to

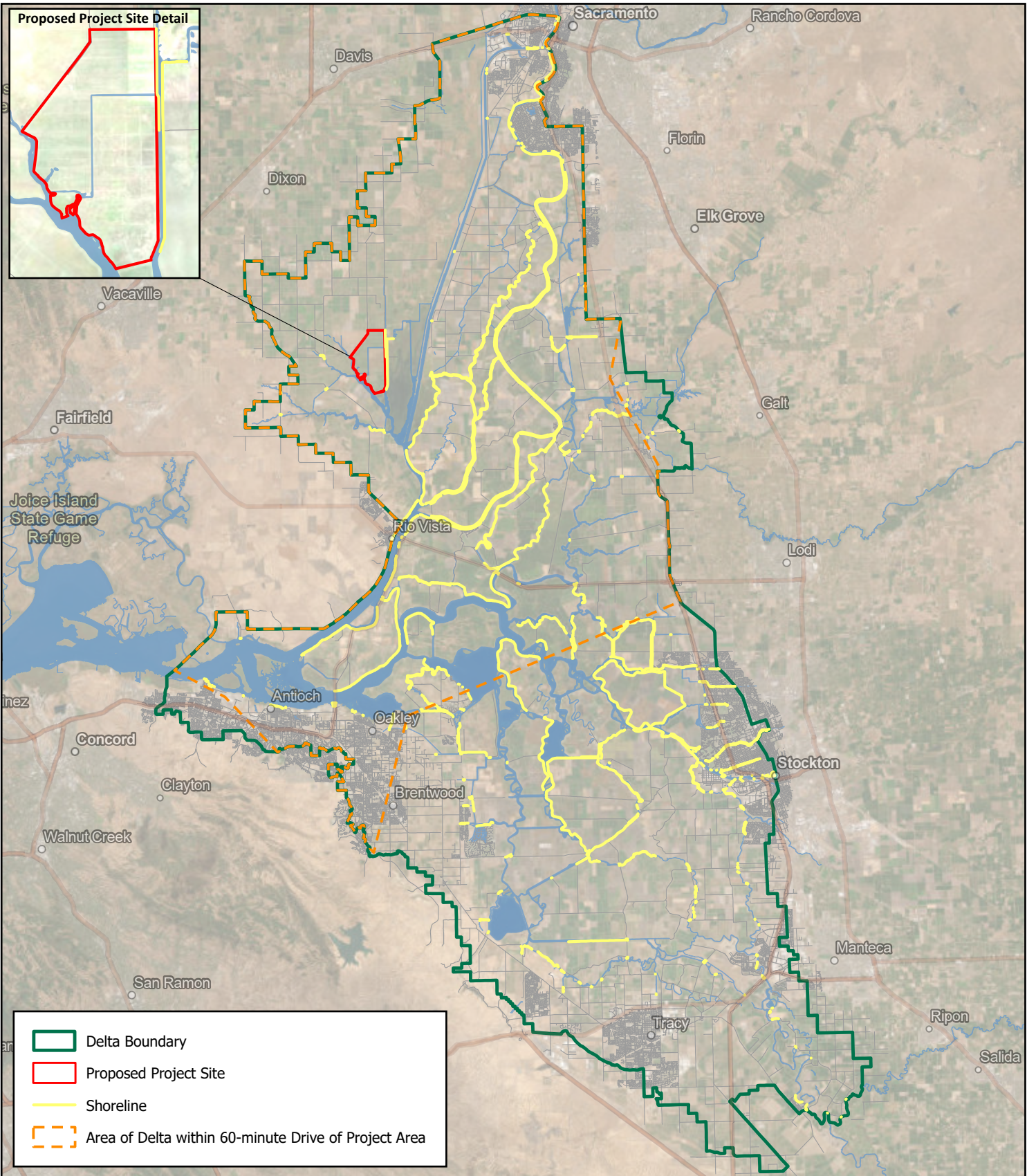
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<sup>1</sup> California State Parks, “Survey on Public Opinions and Attitudes on Outdoor Recreation in California,” January 2014

avoid the inclusion of shoreline on the opposite side of narrow waterways from the location of the identified “drivable roads.”

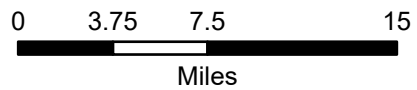
- To examine the amount of “total shoreline” present at a regional scale, the length of shoreline within 200 feet of drivable roads was calculated within the boundary of the legal Delta.
- To examine the amount of “total shoreline” present at a local scale, the length of shoreline within 200 feet of drivable roads was calculated within a 60-minute driving radius.
- The boundary for the “60-minute driving radius” was created by establishing 20 points radiating in all directions from the northeast corner of the Proposed Project site that were each a 60-minute drive according to Google Earth drive times under average traffic conditions. These points were then connected to establish a perimeter. That perimeter was then clipped to the legal Delta boundary, establishing an area around the Proposed Project site of Delta within a 60-minute drive.

Based on this protocol, the length of “total shoreline” within the legal Delta was found to be approximately 380 miles. In addition, the length of “total shoreline” within a 60-minute driving radius was found to be approximately 250 miles. **Figure 1** displays the “total shoreline” mapped within the legal Delta and within a 60-minute driving radius of the Proposed Project Site.



**Figure 1**  
 Total Shoreline in the Region  
 of the Proposed Project Site

**Lookout Slough Tidal Habitat Restoration  
 and Flood Improvement Project**



Map Prepared Date: 4/18/2023  
 Map Prepared By: EPimental  
 Base Source:  
 Base Date:  
 Data Source(s):  
 Delta Stewardship Council, 2013;  
 US Census, 2020

Prepared by:  
**ESA**

## Available Shoreline for Fishing Opportunities

### Available Shoreline for Fishing Opportunities on the Proposed Project Site and Liberty Island Ecological Reserve

ESA also examined “available shoreline for fishing opportunities” provided by the Proposed Project Site, which is defined as shoreline reachable by foot and free of dense vegetation such that it provides a realistic opportunity to fish from the bank. The absence of vegetation was used as the key indicator of “available shoreline for fishing opportunities” due to an angler’s need for space to cast a fishing line and for a clear walkway to approach the waterway for fish recovery.

Recent satellite imagery from Google Earth (taken June 2021) was used to identify potential shoreline fishing locations along Shag Slough Levee and along the remnant levee in the Reserve based on the absence of dense vegetation. On Shag Slough Levee, potential shoreline fishing locations were identified from the Proposed Project Site’s northern property boundary to Shag Slough Bridge, as there is a vehicular gate at this location past which fishing is not allowed. At the Reserve, potential shoreline fishing locations were identified from the northern “stairstep section,” west of a 100-foot breach in the remnant levee (which is assumed impassable) along the remnant levee to a point 0.75 mile south of the Shag Slough Bridge (at this point the informal angler trail becomes overgrown and very difficult to navigate<sup>2,3</sup>). The total length (in linear feet) of vegetation-free shoreline was then calculated for each potential shoreline fishing location identified, rounded to the nearest 10 feet.

A variety of sources were searched to locate specific shoreline fishing locations along Shag Slough Levee and along the remnant levee in the Reserve to validate the shoreline fishing locations identified using satellite imagery, including: the Delta Protection Commission’s Inventory of Recreation Facilities in the Delta,<sup>4</sup> the Delta Stewardship Council’s Delta Plan,<sup>5</sup> CDFW<sup>6</sup> and City and County Parks Department webpages, Delta fishing maps,<sup>7</sup> and online angler’s forums and crowd-sourced lists of fishing spots.<sup>8,9,10,11,12</sup> The only source identified that provided specific shoreline fishing locations reachable from the Proposed Project Site was an exhibit from the group Liberty Island Access (LIA), which identified 18 potential shoreline fishing locations along the Reserve’s shoreline south of Shag Slough Bridge.<sup>13</sup> ESA calculated the length of vegetation-free shoreline

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<sup>2</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2 – Technical Analysis – Consistency with Policy G P1(b)(3) Best Available Science Methods Used to Estimate Recreational Use. December 2021.

<sup>3</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2A. Fishing Locations on Liberty Island Ecological Reserve. December 2021.

<sup>4</sup> Delta Protection Commission, “2015 Inventory of Recreation Facilities in the Sacramento-San Joaquin Delta,” 2015.

<sup>5</sup> Delta Stewardship Council, “The Delta Plan.”

<sup>6</sup> California Department of Fish and Wildlife, “Places to Visit,” accessed January 25, 2023, <https://wildlife.ca.gov/Lands/Places-to-Visit/>.

<sup>7</sup> Franko Maps, “California Delta Adventure Guide: Map and Guide to the San Joaquin and Sacramento River for Boaters, Fishermen & Delta Visitors,” 2021.

<sup>8</sup> California Delta Chambers & Visitor’s Bureau, “Delta Fishing Holes,” accessed October 17, 2019, <https://californiadelta.org/fishing/delta-fishing-holes/>.

<sup>9</sup> Sacramento-San Joaquin Delta National Heritage Area, “Delta Fishing,” accessed January 25, 2023, <https://visitcadelta.com/what-to-do/fishing/>.

<sup>10</sup> FISHBRAIN, “Find your best fishing spot” interactive map, accessed January 25, 2023, <https://fishbrain.com/explore/>.

<sup>11</sup> YouTube “Best Bank Fishing Spots on the CA Delta,” accessed January 24, 2023, [https://youtube.com/watch?v=bA\\_5hLaciJo/](https://youtube.com/watch?v=bA_5hLaciJo/).

<sup>12</sup> Fishing Booker Blog, “California Delta Fishing: The Complete Guide,” accessed January 23, 2023, <https://fishingbooker.com/blog/california-delta-fishing/>.

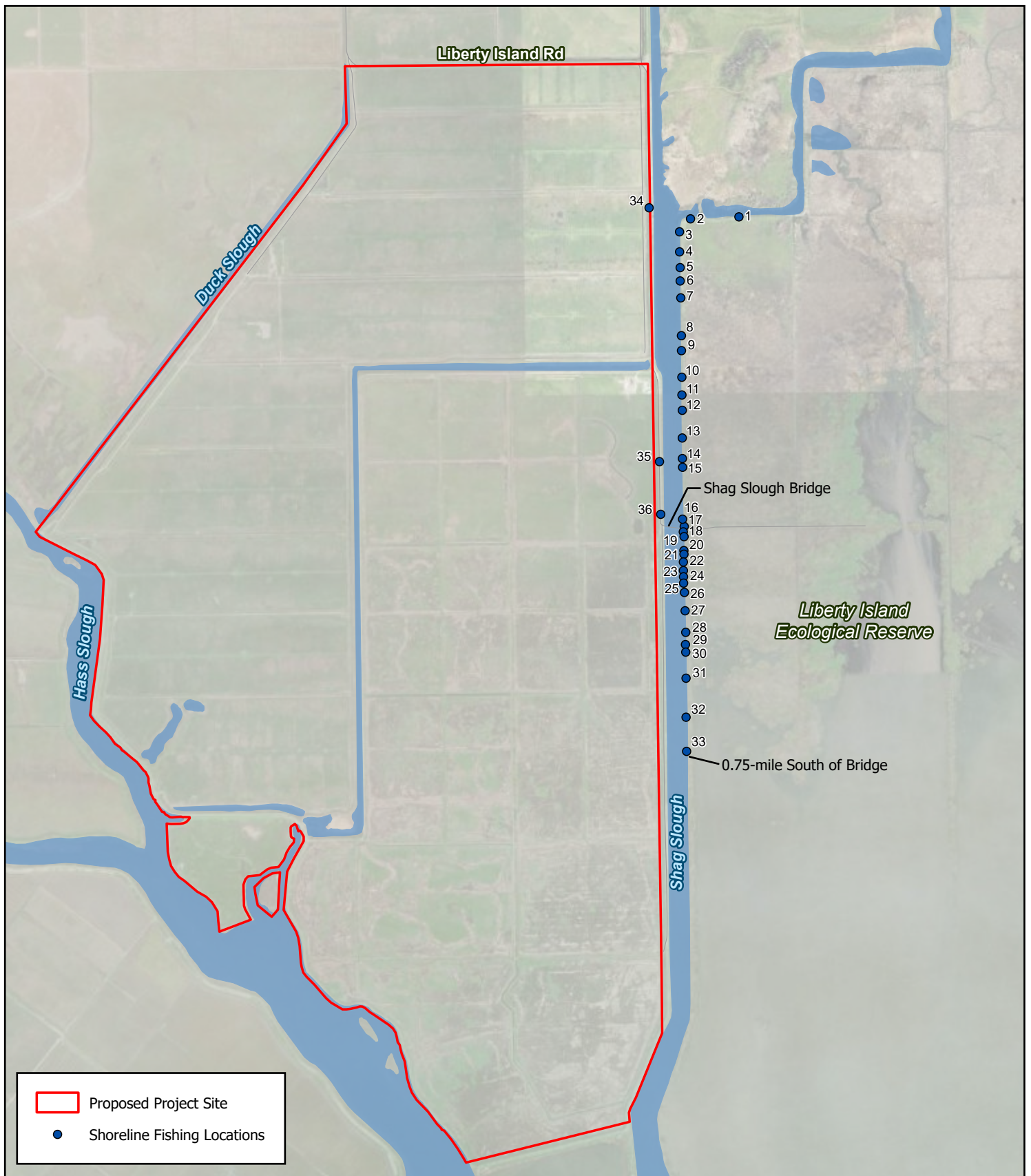
<sup>13</sup> Liberty Island Access, Appeal Letter to the Delta Stewardship Council of the California Department of Water Resources Delta Plan Consistency Certification of the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, Exhibit A, “Satellite imagery of recreational facilities at Liberty Island Ecological Reserve,” March, 2021.

provided by the shoreline fishing locations identified by LIA and found that it was nearly equivalent to the length of vegetation-free shoreline calculated by ESA over the same distance. From the Shag Slough Bridge to a point 0.75 mile south of Shag Slough Bridge, ESA identified 0.14 mile of vegetation-free shoreline, while LIA identified 0.13 mile of vegetation-free shoreline. The LIA exhibit identified one shoreline fishing location north of Shag Slough Bridge, providing 0.02 mile of vegetation-free shoreline, while ESA identified 17 shoreline fishing locations north of Shag Slough Bridge, providing 0.14 mile of vegetation-free shoreline. See Appendix A, *Detailed Calculations of Available Shoreline for Fishing Opportunities*, for more information.

**Figure 2** displays shoreline fishing locations identified along the Shag Slough Levee and within the Reserve. **Table 1** displays the length of vegetation-free “available shoreline for fishing opportunities” calculated at each location.

**TABLE 1**  
**LENGTH OF “AVAILABLE SHORELINE FOR FISHING OPPORTUNITIES” AT IDENTIFIED SHORELINE FISHING LOCATIONS ON THE PROPOSED PROJECT SITE AND LIBERTY ISLAND ECOLOGICAL RESERVE**

Shoreline Fishing Location ID (See Figure 2)	Approximate Length of “Available Shoreline” (Linear Feet)	Shoreline Fishing Location ID (See Figure 2)	Approximate Length of “Available Shoreline” (Linear Feet)	Shoreline Fishing Location ID (See Figure 2)	Approximate Length of “Available Shoreline” (Linear Feet)
1	50	13	70	25	50
2	30	14	20	26	30
3	30	15	110	27	50
4	40	16	50	28	60
5	40	17	60	29	20
6	20	18	10	30	50
7	30	19	10	31	40
8	30	20	20	32	70
9	40	21	50	33	30
10	30	22	100	34	5,680
11	40	23	80	35	130
12	30	24	70	36	430
<b>Total Length of Available Shoreline at the Reserve (ID 1-33): 1,460 feet (0.28 mile)</b>					
<b>Total Length of Available Shoreline along Shag Slough Levee (ID 33-36): 6,240 feet (1.18 miles)</b>					
<b>Total Length of Available Shoreline Provided by the Proposed Project Site: 7,700 feet (1.46 miles)</b>					

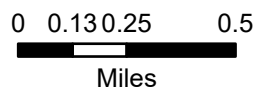


**Figure 2**  
 Potential Shoreline Fishing Locations on the  
 Proposed Project Site and Liberty Island Ecological  
 Reserve



**Ecosystem  
 Investment  
 Partners**

Lookout Slough Tidal Habitat Restoration  
 and Flood Improvement Project



Map Prepared Date: 4/18/2023  
 Map Prepared By: EPimentel  
 Base Source:  
 Base Date:  
 Data Source(s):  
 Delta Stewardship Council, 2013;  
 US Census, 2020

Prepared by:



## Available Shoreline for Fishing Opportunities in the Region of the Proposed Project Site

To provide accurate context for the amount of “available shoreline for fishing opportunities” on the Proposed Project Site and the Reserve, the extent of available shoreline must be assessed at a local and/or regional scale. To accomplish this, ESA identified potential shoreline fishing locations located within a 60-minute driving radius of the Proposed Project Site that were also within the legal Delta boundary (as the analysis was not focused on potential shoreline fishing opportunities *outside* of the Delta, regardless of whether they were within a 60-minute drive of the Proposed Project Site). For an explanation as to why a 60-minute-drive geographic boundary was utilized, please see the discussion under *Total Shoreline in the Region of the Proposed Project Site*.

ESA identified potential shoreline fishing locations from a variety of sources, including the Delta Protection Commission’s Inventory of Recreation Facilities in the Delta<sup>14</sup>, the Delta Stewardship Council’s Delta Plan<sup>15</sup>, and CDFW<sup>16</sup> and City and County Parks Department webpages, as well as unofficial sources such as online angler’s forums and crowd-sourced lists of fishing spots.<sup>17-18-19-20-21</sup> The latter was included due to the popular use of waterways, levees, and bridges throughout the Delta as informal recreational facilities. In addition, in-person visitor surveys were conducted at the Proposed Project Site in September/October 2021.<sup>22</sup> Question 8 of the 2021 in-person visitor survey asked respondents if they fish in other locations in the Delta; the responses to this question were used to identify additional commonly known potential shoreline fishing locations within a 60-minute drive of the Proposed Project Site.<sup>23</sup>

Recent satellite imagery from Google Earth (taken June 2021) was used to identify “available shoreline for fishing opportunities” at each potential shoreline fishing location examined. Based on the absence of dense vegetation, the total length (in linear feet) of vegetation-free shoreline was calculated at each potential shoreline fishing location identified (pier fishing opportunities were included in this total, accounting for 4.7% of the overall total length of available shoreline).

**Figure 3** displays identified potential shoreline fishing locations within the Delta and within a 60-minute driving radius of the Proposed Project Site. **Table 2** displays the length of “available shoreline for fishing opportunities” calculated at each location.

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<sup>14</sup> Delta Protection Commission, “2015 Inventory of Recreation Facilities in the Sacramento-San Joaquin Delta,” 2015.

<sup>15</sup> Delta Stewardship Council, “The Delta Plan.”

<sup>16</sup> California Department of Fish and Wildlife, “Places to Visit,” accessed January 25, 2023, <https://wildlife.ca.gov/Lands/Places-to-Visit/>.

<sup>17</sup> California Delta Chambers & Visitor’s Bureau, “Delta Fishing Holes,” accessed October 17, 2019, <https://californiadelta.org/fishing/delta-fishing-holes/>.

<sup>18</sup> Sacramento-San Joaquin Delta National Heritage Area, “Delta Fishing,” accessed January 25, 2023, <https://visitcadelta.com/what-to-do/fishing/>.

<sup>19</sup> FISHBRAIN, “Find your best fishing spot” interactive map, accessed January 25, 2023, <https://fishbrain.com/explore/>.

<sup>20</sup> YouTube “Best Bank Fishing Spots on the CA Delta,” accessed January 24, 2023, [https://youtube.com/watch?v=bA\\_5hLaciJo/](https://youtube.com/watch?v=bA_5hLaciJo/).

<sup>21</sup> Fishing Booker Blog, “California Delta Fishing: The Complete Guide,” accessed January 23, 2023, <https://fishingbooker.com/blog/california-delta-fishing/>.

<sup>22</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2 – Technical Analysis – Consistency with Policy G P1(b)(3) Best Available Science Methods Used to Estimate Recreational Use. December 2021.

<sup>23</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2E. Additional Detailed Results from On-Site Visitor Surveys. December 2021.

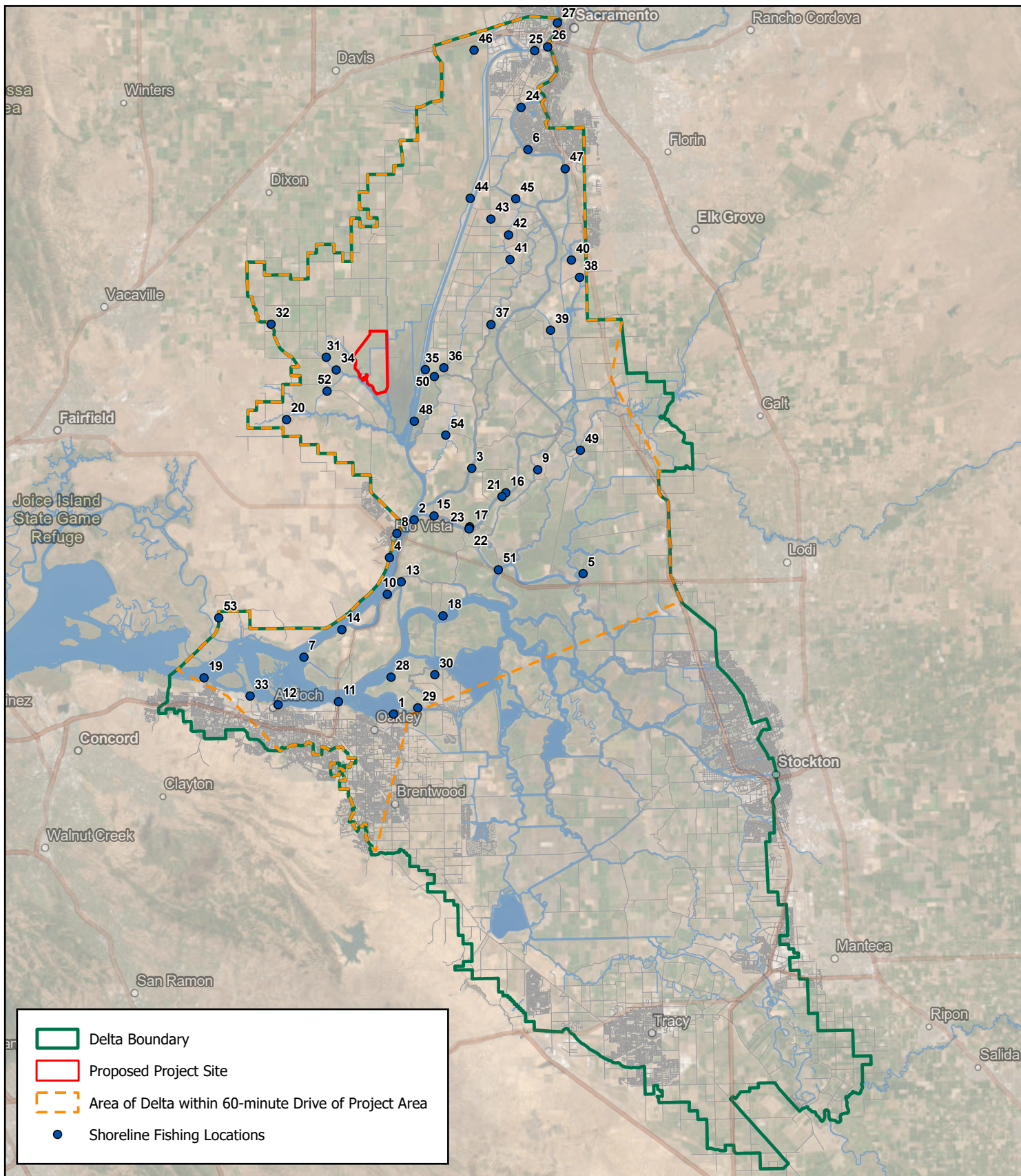


**TABLE 2**  
**LENGTH OF “AVAILABLE SHORELINE FOR FISHING OPPORTUNITIES” AT IDENTIFIED SHORELINE FISHING LOCATIONS IN THE DELTA WITHIN 60-MINUTE DRIVE OF PROPOSED PROJECT SITE**

Shoreline Fishing Location ID (See Figure 3)	Location Name	Approximate Length of “Available Shoreline” (Linear Feet)
1	Big Break Regional Shoreline	3,280
2	Cliffhouse Fishing Access	250
3	Hogback Island Recreation Facility	2,540
4	Sandy Beach County Park	1,050
5	Westgate Landing Regional Park	360
6	Garcia Bend Park	870
7	Sherman Island Public Access	2090
8	Rio Vista Fishing Pier	560
9	Georgiana Slough Fishing Access	420
10	Brannan Island State Recreation Area	2,880
11	Antioch Fishing Pier	860
12	Antioch Downtown Fishing Pier	2,150
13	"The Dairy"	2,000
14	"The Power Lines"	2,000
15	"The Dump Gate"	650
16	"The Windmill"	50
17	"Tennessee's Spot"	820
18	"The Patio"	600
19	Pittsburg Pier	1,940
20	Calhoun Cut Ecological Reserve	7,790
21	Isleton River Fishing Spot	410
22	Isleton Public Dock	250
23	760 River Road Shoreline Fishing	390
24	North Point Way River Access	3,760
25	Barge Canal Recreation Access	120
26	Miller Regional Park	2,120
27	River Walk Pier	1,250
28	The Barges	7,750
29	Dutch Slough	8,550
30	Little Franks Tract	5,870
31	Maine Prairie Slough	520
32	Alamo Creek	4,590
33	Kirker Creek	1,300
34	Ulatis Creek	3,520
35	Sacramento Deep Water Ship Channel	2,560
36	Egbert Cut	1,890

Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project Site and within the Larger Delta Region

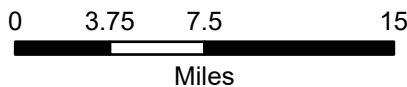
Shoreline Fishing Location ID (See Figure 3)	Location Name	Approximate Length of "Available Shoreline" (Linear Feet)
37	Elk Slough	700
38	Sacramento Drainage Canal	990
39	Reclamation District 551 Borrow Canal	2,430
40	North Stone Lake	2,740
41	Big Lake	3,550
42	Main Canal	1,090
43	Tule Canal	2,630
44	Toe Drain	4,760
45	Winchester Lake	4,370
46	Greens Lake	110
47	Freeport	930
48	Prospect Island-Miner Slough	4,390
49	Wimpys Marina	300
50	Arrowhead Launch	490
51	BW Marina	470
52	Hastings Island	2,600
53	Montezuma	2,460
54	Ryer Island	4,890
<b>Total Length of Available Shoreline in the Region of the Proposed Project Site: 117,910 feet (22.33 miles)</b>		



- Delta Boundary
- Proposed Project Site
- Area of Delta within 60-minute Drive of Project Area
- Shoreline Fishing Locations

**Figure 3**  
 Limited Sample of Potential Shoreline Fishing Locations within 60-minute Drive of Proposed Project Site

**Lookout Slough Tidal Habitat Restoration and Flood Improvement Project**



**Ecosystem Investment Partners**

Map Prepared Date: 4/18/2023  
 Map Prepared By: EPimental  
 Base Source:  
 Base Date:  
 Data Source(s):  
 Delta Stewardship Council, 2013;  
 US Census, 2020

Prepared by:



## Conclusions

### Total Shoreline

ESA evaluated “total shoreline” provided by the Proposed Project Site, the Reserve, and in the local and regional area of the Proposed Project Site. This method of examining “shoreline fishing opportunities” considers the total length of shoreline reachable by a combination of vehicle and foot, regardless of whether the degree of vegetation cover provides clear access to the waterway.

Using this method of calculation, The Proposed Project Site provides access to approximately 4.5 miles of “total shoreline” on Shag Slough Levee and the Reserve. To place this amount in a regional context, the Delta region provides approximately 380 miles of “total shoreline”, approximately 250 miles of which are within a 60-minute drive of the Proposed Project Site. Based on these numbers, the Proposed Project would reduce vehicular or pedestrian access to approximately 1.2% of “total shoreline” within the Delta  $((4.5/380)*100 = 1.2)$  and approximately 1.8% of “total shoreline” within a 60-minute driving radius  $((4.5/250)*100 = 1.8)$ . Additionally, this method likely underestimates the amount of “total shoreline” present in the region by an order of magnitude by eliminating from the analysis any roadway farther than 200 feet from a waterway; therefore, the estimated reduction in vehicular or pedestrian access to “total shoreline” due to the Proposed Project is likely an overestimate.

### Available Shoreline for Fishing Opportunities

ESA evaluated “available shoreline for fishing opportunities” provided by the Proposed Project Site, the Reserve, and in the local and regional area of the Proposed Project Site. This method of examining “shoreline fishing opportunities” considers shoreline free of dense vegetation such that it provides a realistic opportunity to fish.

This method of calculation relied upon an assessment of available datasets identifying potential shoreline fishing locations and current Google Earth imagery examined for the absence of dense vegetation. Based on this, the Proposed Project Site offers approximately 1.46 miles of “available shoreline for fishing opportunities” (1.18 miles of shoreline on the west bank of Shag Slough and 0.28 mile on the Reserve), as shown in Table 1. To place this amount in a regional context, there are approximately 22.33 miles of “available shoreline for fishing opportunities” at other known potential shoreline fishing locations within a 60-minute drive of the Proposed Project Site (Table 2). Because the Proposed Project design will maintain 0.16 mile of the western bank of Shag Slough for shoreline fishing use (between the Proposed Project’s northern property line and the northernmost levee breach),<sup>24</sup> the Proposed Project would reduce access to approximately 6% of “available shoreline for fishing opportunities” within a 60-minute driving radius  $((1.46-0.16)/22.33)*100 = 5.8)$ . Additionally, this method likely underestimates the amount of “available shoreline for fishing opportunities” located in the area by an order of magnitude, as Table 2 provides a limited sample of known potential shoreline fishing locations in the area, but there are over 100 more recorded shoreline fishing locations as well.<sup>25</sup> Therefore, the estimated reduction in vehicular or pedestrian access to “available shoreline for fishing opportunities” due to the Proposed Project is likely an overestimate.

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<sup>24</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 4 – Public Access Summary. December 2021.

<sup>25</sup> FISHBRAIN, “Find your best fishing spot” interactive map, accessed January 25, 2023, <https://fishbrain.com/explore/>.

Appendix A. Detailed Calculations of  
Available Shoreline for Fishing  
Opportunities

**Environmental Science Associates (ESA) Measurements**

Map ID	KMZ TITLE	Where Found	Shoreline Ft	Pier Ft	Total Ft	Miles	Notes
<b>Accessible from Project Site (Shag Slough Levee and LIER)</b>							
LIER Available Shoreline							
17	LIER_NorthBank0	GoogleEarth	60				
16	LIER_NorthBank1	GoogleEarth	50				
15	LIER_NorthBank2	GoogleEarth	110				
14	LIER_NorthBank3	GoogleEarth	20				
13	LIER_NorthBank4	GoogleEarth	70				
12	LIER_NorthBank5	GoogleEarth	30				
11	LIER_NorthBank6	GoogleEarth	40				
10	LIER_NorthBank7	GoogleEarth	30				
9	LIER_NorthBank8	GoogleEarth	40				
8	LIER_NorthBank9	GoogleEarth	30				
7	LIER_NorthBank10	GoogleEarth	30				
6	LIER_NorthBank11	GoogleEarth	20				
5	LIER_NorthBank12	GoogleEarth	40				
4	LIER_NorthBank13	GoogleEarth	40				
3	LIER_NorthBank14	GoogleEarth	30				
2	LIER_NorthBank15	GoogleEarth	30				
1	LIER_NorthBank16	GoogleEarth	50				<i>Path blocked by 100 ft gap after this point.</i>
<b>TOTAL LIER North Bank</b>			<b>720</b>			<b>0.136364</b>	
<i>WRA surveyors found the informal angler trail to be overgrown after 0.75 mile south of bridge. All points listed are north of this marker.</i>							
18	LIER_SouthBank0	GoogleEarth	10				
19	LIER_SouthBank1	GoogleEarth	10				
20	LIER_SouthBank2	GoogleEarth	20				
21	LIER_SouthBank3	GoogleEarth	50				
22	LIER_SouthBank4	GoogleEarth	100				
23	LIER_SouthBank5	GoogleEarth	80				
24	LIER_SouthBank6	GoogleEarth	70				
25	LIER_SouthBank7	GoogleEarth	50				
26	LIER_SouthBank8	GoogleEarth	30				
27	LIER_SouthBank9	GoogleEarth	50				
28	LIER_SouthBank10	GoogleEarth	60				
29	LIER_SouthBank11	GoogleEarth	20				
30	LIER_SouthBank12	GoogleEarth	50				
31	LIER_SouthBank13	GoogleEarth	40				
32	LIER_SouthBank14	GoogleEarth	70				
33	LIER_SouthBank15	GoogleEarth	30				
<b>TOTAL LIER South Bank</b>			<b>740</b>			<b>0.140152</b>	
<b>LIER Total Shoreline Available</b>			<b>1460</b>			<b>0.276515</b>	
West Shag Slough Available Shoreline							
34	WestShag1	GoogleEarth	5680				
35	WestShag2	GoogleEarth	130				
36	WestShag3	GoogleEarth	430				
<b>TOTAL West Shag Slough</b>			<b>6240</b>			<b>1.181818</b>	
<b>Total Available from Project Site</b>			<b>7700</b>			<b>1.458333</b>	
<b>Within 60-minute Drive of Project Site</b>							
Fishing Locations from EIR (within 60 minute driving radius)							
1	BigBreakRegionalShoreline	EIR	3100	180	3280		
2	CliffhouseFishingAccess	EIR	250		250		
3	HogbackIslandRecreationFacility	EIR	2400	140	2540		
4	SandyBeachCountyPark	EIR	950	100	1050		
5	WestgateLandingRegionalPark	EIR	200	160	360		
6	GarciaBendPark	EIR	800	70	870		
7	ShermanIslandPublicAccess	EIR	2000	90	2090		
8	RioVistaFishingPier	EIR	390	170	560		
9	GeorgianaSloughFishingAccess	EIR	420		420		
10	BrannanIslandStateRecreationArea	EIR	2,800	80	2880		
11	AntiochFishingPier	EIR	340	520	860		
12	AntiochDowntownFishingPier	EIR	1670	480	2150		
13	"The Dairy"	EIR	2000		2000		
14	"The Power Lines"	EIR	2000		2000		
15	"The Dump Gate"	EIR	650		650		
16	"The Windmill"	EIR		50	50		
17	"Tennessee's Spot"	EIR	820		820		
18	"The Patio"	EIR	600		600		
<b>TOTAL</b>			<b>21390</b>	<b>2040</b>	<b>23430</b>	<b>4.4375</b>	
Fishing Locations Found Online (within 60 minute driving radius)							
19	PittsburgPier	<a href="https://apps.wildlife.ca.gov/fishing/">https://apps.wildlife.ca.gov/fishing/</a>		1940		1,940	
20	CalhounCutEcologicalReserve	<a href="https://wildlife.ca.gov">https://wildlife.ca.gov</a>	7790			7,790	
21	IsletonRiverFishingSpot	<a href="#">Delta Fishing - Visit t</a>	410			410	
22	IsletonPublicDock	Delta Fishing - Visit the California De		250		250	
23	760RiverRoadShorelineFishing	Delta Fishing - Visit t	390			390	
24	NorthPointWayRiverAccess	Delta Fishing - Visit t	3760			3,760	

25	BargeCanalRecreationAccess	Delta Fishing - Visit t	120		120
26	MillerRegionalPark	Delta Fishing - Visit t	2120		2,120
27	RiverWalkPier	Delta Fishing - Visit t	650	600	1,250
28	TheBarges	https://www.youtub	7750		7,750
29	DutchSlough	https://www.youtub	8550		8,550
30	LittleFranksTract	https://www.youtub	5870		5,870
31	MainePrairieSlough	https://fishbrain.co	520		520
32	AlamoCreek	https://fishbrain.co	4590		4,590
33	KirkerCreek	https://fishbrain.co	1300		1,300
34	UlatisCreek	https://fishbrain.co	3520		3,520
35	SacramentoDeepWaterShipChannel	https://fishbrain.co	2560		2,560
36	EgbertCut	https://fishbrain.co	1890		1,890
37	ElkSlough	https://fishbrain.co	700		700
38	SacramentoDrainageCanal	https://fishbrain.co	990		990
39	ReclamationDistrict551BorrowCanal	https://fishbrain.co	2430		2,430
40	NorthStoneLake	https://fishbrain.co	2740		2,740
41	BigLake	https://fishbrain.co	3550		3,550
42	MainCanal	https://fishbrain.co	1090		1,090
43	TuleCanal	https://fishbrain.co	2630		2,630
44	ToeDrain	https://fishbrain.co	4760		4,760
45	WinchesterLake	https://fishbrain.co	4370		4,370
46	GreensLake	https://fishbrain.co	110		110
<b>Total</b>			<b>75,160</b>	<b>2790</b>	<b>77950 14.76326</b>
<b>Alternate Fishing Locations Noted by Survey Respondents in DSC Process (within 60 minute driving radius)</b>					
47	2E_Freepoint	Attachment 2E	930		930
48	2E_ProspectIsland-MinerSlough	Attachment 2E	4390		4,390
49	2E_WimpysMarina	Attachment 2E		300	300
50	2E_ArrowheadLaunch	Attachment 2E	100	390	490
51	2E_BW_Marina	Attachment 2E	470		470
52	2E_HastingsIsland	Attachment 2E	2600		2,600
53	2E_Montezuma	Attachment 2E	2460		2,460
54	2E_RyerIsland	Attachment 2E	4890		4,890
<b>Total</b>			<b>15840</b>	<b>690</b>	<b>16530 3.130682</b>
<b>Total for all fishing locations within 60 minute driving radius</b>			<b>112390</b>	<b>5520</b>	<b>117910 22.33144</b>
Percent shoreline fishing being removed by Project					<b>5.813926</b>

#### Citations

<https://californiadelta.org/fishing/delta-fishing-holes/>  
[Delta Fishing - Visit the California Delta \(visitcadelta.com\)](https://fishbrain.com/explore?fib-ex-dv=fishing-water&fib-ex-dv-id=QaAi8FZW&fib-ex-lat=38.03490716372565&fib-ex-lng=-121.71510352305256&fib-ex-z=12.532294422542437)  
<https://fishbrain.com/explore?fib-ex-dv=fishing-water&fib-ex-dv-id=QaAi8FZW&fib-ex-lat=38.03490716372565&fib-ex-lng=-121.71510352305256&fib-ex-z=12.532294422542437>  
[https://www.youtube.com/watch?v=bA\\_5hLaciJo](https://www.youtube.com/watch?v=bA_5hLaciJo)  
<https://www.youtube.com/watch?v=El5E42euSLk>  
<https://fishingbooker.com/blog/california-delta-fishing/>

## Liberty Island Access (LIA) Measurements

KMZ Title	Where Found	Shoreline Ft	Miles	Notes
LIA_1	LIA Appeal Letter to DSC, Exhibit A	130		This point is directly north of Shag Slough Bridge. All other points are south of the Bridge.
<b>Total LIER North Bank</b>		130	0.024621	
LIA_2	LIA Appeal Letter to DSC, Exhibit A	80		0.75-mile marker directly south of this point. All locations south of this point are inaccessible according to ground-truthed evidence.
LIA_3	LIA Appeal Letter to DSC, Exhibit A	190		
LIA_4	LIA Appeal Letter to DSC, Exhibit A	90		
LIA_5	LIA Appeal Letter to DSC, Exhibit A	80		
LIA_6	LIA Appeal Letter to DSC, Exhibit A	90		
LIA_7	LIA Appeal Letter to DSC, Exhibit A	50		
LIA_8	LIA Appeal Letter to DSC, Exhibit A	110		
<b>Total LIER South Bank</b>		690	0.130682	
LIA_9	LIA Appeal Letter to DSC, Exhibit A	110		
LIA_10	LIA Appeal Letter to DSC, Exhibit A	110		
LIA_11	LIA Appeal Letter to DSC, Exhibit A	130		
LIA_12	LIA Appeal Letter to DSC, Exhibit A	170		
LIA_13	LIA Appeal Letter to DSC, Exhibit A	210		
LIA_14	LIA Appeal Letter to DSC, Exhibit A	130		
LIA_15	LIA Appeal Letter to DSC, Exhibit A	360		
LIA_16	LIA Appeal Letter to DSC, Exhibit A	360		
LIA_17	LIA Appeal Letter to DSC, Exhibit A	380		
LIA_18	LIA Appeal Letter to DSC, Exhibit A	410		
<b>Total LIER South of 0.75-mile Marker (Inaccessible)</b>		2370	0.448864	

### Citations

Liberty Island Access, Appeal Letter to the Delta Stewardship Council of the California Department of Water Resources Delta Plan Consistency Certification of the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, Exhibit A, "Satellite imagery of recreational facilities at Liberty Island Ecological Reserve," March, 2021.