



**Figure 2-1.**  
**Project Location**

- Relocate existing Pacific Gas and Electric (PG&E) gas and power lines.

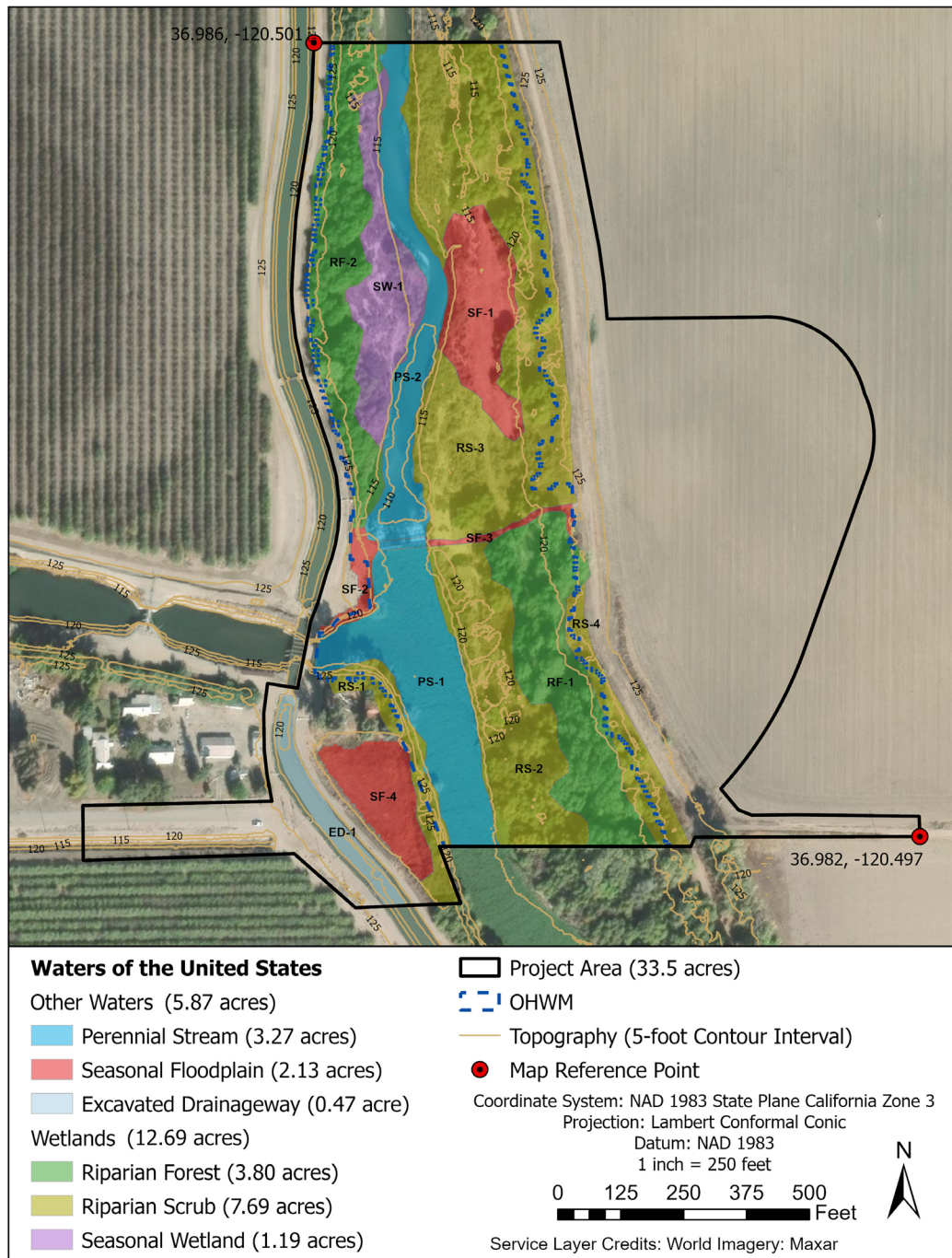




## Project Impacts

Wetlands and other waters of the U.S. were delineated in accordance with the routine on-site methodology described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008a). Photographs of representative waters of the U.S. are in Attachment D. Based on the June 2014 delineation report, the Project footprint contains approximately 12.69 acres of wetlands and 5.87 acres of other waters of the U.S., not all of which would be impacted by the Project (Figure 3-1). The areas identified in the delineation report were used to calculate the amount of fill and discharge into each jurisdictional feature. As further described below, the project would:

- temporarily impact approximately 3.76 acres of wetlands and 1.04 acres of other Waters of the U.S.
- permanently impact 3.75 acres of wetlands and 2.18 acres of other Waters of the U.S.
- permanent fill would consist of approximately:
  - 35,990 cubic yards of soil
  - 5,115 cubic yards of concrete
  - 4,700 cubic yards of riprap
  - 830 cubic yards of steel
  - 475 cubic yards of gravel



**Figure 3-1.**  
**Waters of the United States**



Table 3--1 shows the types and sources of fill material that would be used during construction. The fill would primarily be concrete structures, gravel, soils, rip rap, and steel.

**Table 3-1.**  
**Fill Material Types**

<b>Project Activity</b>	<b>Types of Fills</b>	<b>Amount in Cubic Yards (cy)*</b>
Fish Ramp	Soil, Rip Rap	Soil – 15,240 cy, Rip Rap – 2,300 cy
Fish Ladder	Concrete	Concrete – 260 cy
River Bypass	Concrete, Soil	Concrete – 3,900 cy, Soil – 1,500 cy
West Bank Berm	Soil, Rip Rap	Soil – 17,300 cy, Rip Rap – 2400 cy
East Bank Berm	Soil	Soil – 2,250 cy
Headworks Structure	Concrete, Steel	Concrete – 855 cy, Steel – 300 cy
Fish Screen	Concrete, Steel	Concrete – 100 cy, Steel – 530 cy
Control and Maintenance Building	Concrete, Soil, Gravel	Soil – 1,200 cy, Concrete – 80 cy, Gravel – 475 cy

\*Includes an estimate of temporary fill associated with cofferdams

A classification system of aquatic habitats was developed that includes both wetlands and other waters of the United States (Table 3-2). The aquatic habitat types generally were conceived as combinations of Cowardin et al (1979) classes and subclasses.

**Table 3-2.**  
**Aquatic Habitat Classification System**

<b>Waters of the United States Type</b>	<b>Associated Cowardin Category</b>
<b>Other Waters</b>	
Perennial Stream	Riverine, Perennial Streambed
Excavated Drainageway	Riverine, Perennial/Intermittent Streambed, Excavated
Seasonal Floodplain	Riverine, Intermittent Streambed
<b>Wetlands</b>	
Seasonal Wetland	Palustrine Emergent, Seasonal
Riparian Scrub	Palustrine, Scrub-Shrub
Riparian Forest	Palustrine, Forested

Table 3-3 provides a summary of the permanent and temporary impacts to waters of the U.S. from grading within the river, construction of structures (including installation and removal of cofferdams), utility relocations (including a worst case estimate of area that could be affected by temporary incidental fill or discharge from potential inadvertent release containment actions and removal of the old pipeline). Figure 3-2 and Figure 3-3 show the location of the permanent and temporary impacts to waters of the U.S.

**Table 3-3.**  
**Permanent and Temporary Impacts to Waters of the U.S.**

<b>Feature Type</b>	<b>Acres</b>	<b>Square Feet</b>	<b>Cubic Yards</b>
<b>Permanent Impacts</b>			
<b>Wetlands</b>			
Seasonal Wetland	0.13	5,205	193
Riparian Scrub	2.81	122,219	4,527
Riparian Forest	0.81	35,174	1,303
<b>Subtotal</b>	<b>3.75</b>	<b>162,598</b>	<b>6,023</b>
<b>Other Waters of the U.S.</b>			
Perennial Stream	1.02	44,313	4,924
Excavated Drainageway	--	--	--
Seasonal Floodplain	1.16	50,580	5,620
<b>Subtotal</b>	<b>2.18</b>	<b>94,893</b>	<b>10,544</b>
<b>Total</b>	<b>5.93</b>	<b>257,491</b>	<b>16,567</b>
<b>Temporary Impacts</b>			
<b>Wetlands</b>			
Seasonal Wetland	0.15	6,601	--
Riparian Scrub	2.28	99,305	--
Riparian Forest	1.33	57,908	--
<b>Subtotal</b>	<b>3.76</b>	<b>163,814</b>	<b>--</b>
<b>Other Waters of the U.S.</b>			
Perennial Stream	0.78	34,541	--
Excavated Drainageway	--	--	--
Seasonal Floodplain	0.26	11,493	--
<b>Subtotal</b>	<b>1.04</b>	<b>46,034</b>	<b>--</b>
<b>Total</b>	<b>4.80</b>	<b>209,848</b>	<b>--</b>





**Figure 3-2.**  
**Permanent Impacts to Waters of the United States**



**Figure 3-3.**  
**Temporary Impacts to Waters of the United States**



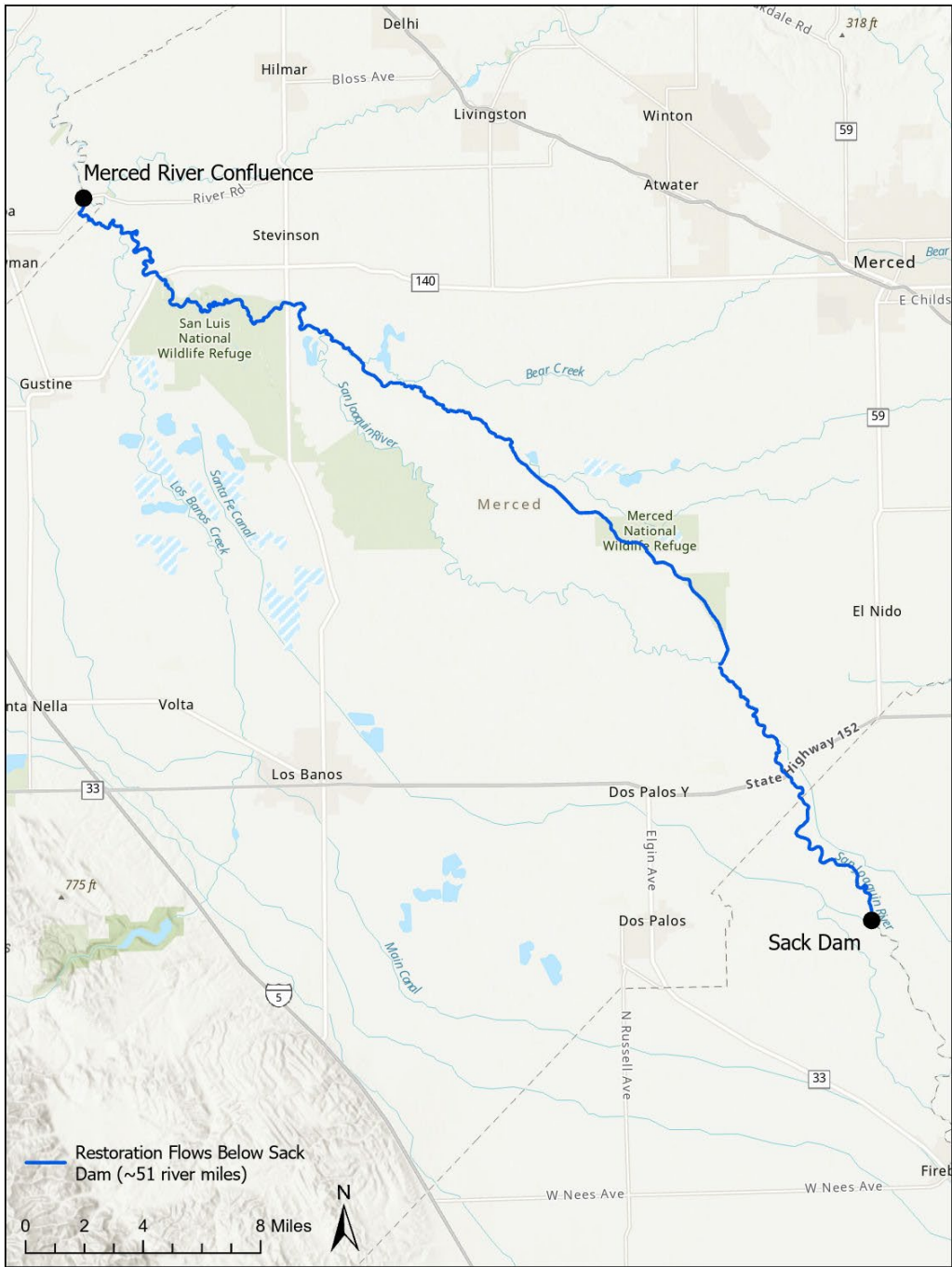
## **Surface Area in Acres of Wetland or Other Waters Filled**

### **Impacts to Waters of the U.S.**

Impacts to wetlands and other waters of the U.S. were calculated by intersecting the Project footprint with the delineated features. The resulting impacts are shown in Figure 3-2. For the purpose of this application, the area of permanent impacts consists of the following areas:

- The Project footprint for any structures or improvements; and
- Grading within the river and floodplain.

The permanent and temporary impacts are shown in Figures 3-2 and 3-3 and are summarized in Table 3-3.



**Figure 4-1. Area of San Joaquin River Channel Reconnected by Restoration Flows since 2016**