

FINAL ENVIRONMENTAL IMPACT STATEMENT

**408 PERMISSION AND 404 PERMIT TO THREE RIVERS
LEVEE IMPROVEMENT AUTHORITY**

FOR THE

**FEATHER RIVER LEVEE REPAIR PROJECT, CALIFORNIA
SEGMENT 2**

APPENDIX D – GEOLOGY AND SOILS TECHNICAL DATA

October 2008

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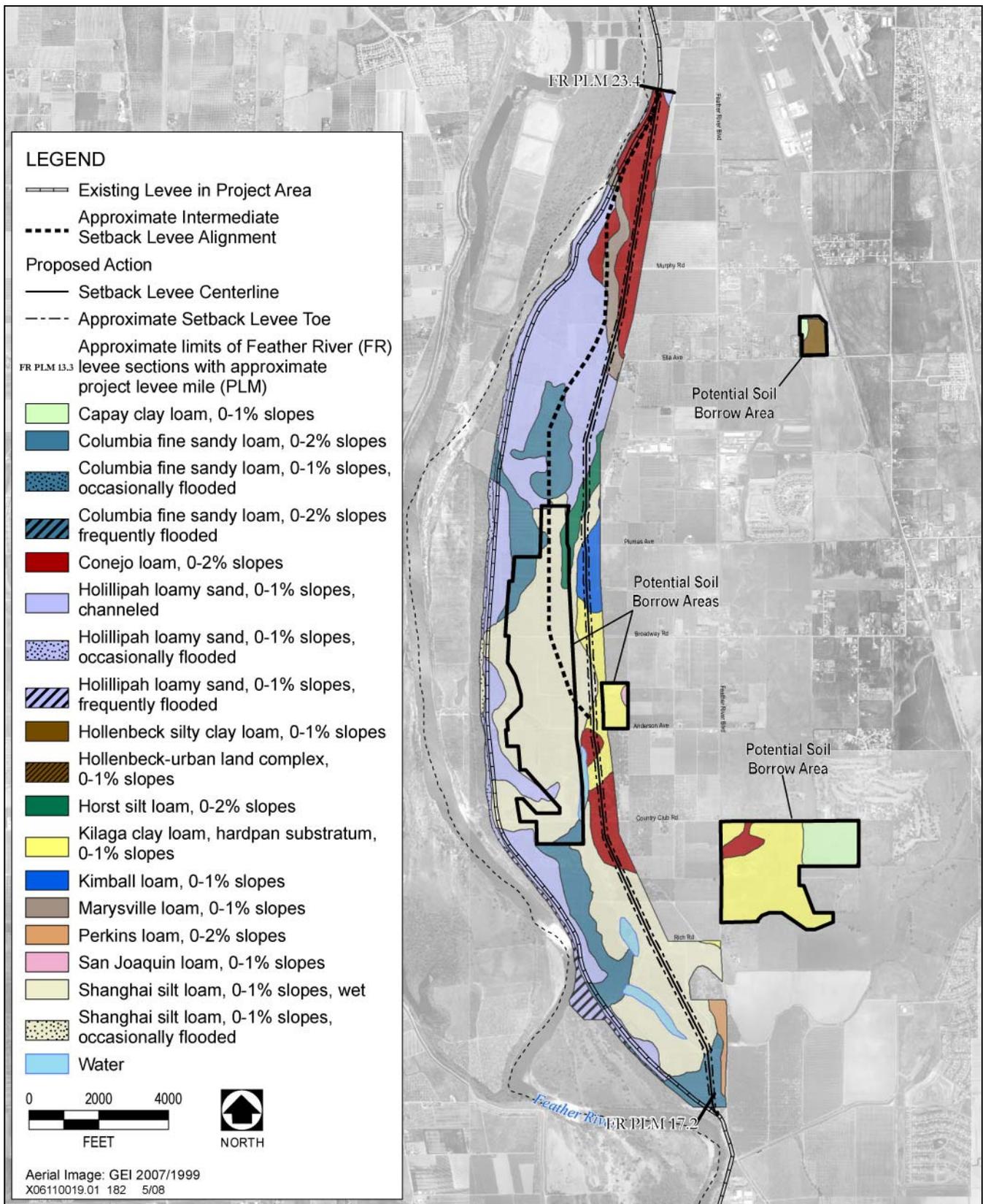
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Soil Types in the Project Area

Figure 1

**Table 1
Soil Mapping Units Identified by Project Segment**

Project Segment	Soil Mapping Unit
Segment 2 (Includes soils associated with existing levee, proposed and intermediate setback alignments, the levee setback area, and potential soil borrow areas)	Capay clay loam, 0-1% slopes
	Columbia fine sandy loam, 0-2% slopes
	Columbia fine sandy loam, 0-1% slopes, occasionally flooded
	Columbia fine sandy loam, 0-2% slopes, frequently flooded
	Conejo loam, 0-2% slopes
	Holillipah loamy sand, 0-1% slopes, channeled
	Holillipah loamy sand, 0-1% slopes, occasionally flooded
	Holillipah loamy sand, 0-1% slopes, frequently flooded
	Horst silt loam, 0-2% slopes
	Kilaga clay loam, hardpan substratum, 0-1% slopes
	Kimball loam, 0-1% slopes
	Marysville loam, 0-1% slopes
	Perkins loam, 0-2% slopes
	San Joaquin loam, 0-1% slopes
Shanghai silt loam, 0-1% slopes, wet	
Shanghai silt loam, 0-1% slopes, occasionally flooded	
Source: Natural Resources Conservation Service 1998	

Table 2 Soil Mapping Unit Descriptions for Soil Types in the Project Area												
Unit No. ¹	Soil Series Name	Depth (inches)	USDA texture	Shrink-Swell Potential	Permeability (in/hr)	Drainage	Water Erosion Hazard	Erosion Factors ²		Land Capability ³		pH
								K	T	N	I	
130	Capay	0-9	Clay loam	High	0.06-0.2	Moderately well drained	Slight	0.28		III _s	II _s	5.6-8.4
		9-35	Clay, silty clay					0.24	5			6.6-8.4
		35-60	Silty clay loam, clay loam					0.28	6.6-8.4			
137 138 139	Columbia	0-9	Fine sandy loam	Low	2.0-6.0	Poorly drained	Slight	0.32	5	III _s IV _w	II _s IV _w	6.1-7.8
9-18		Fine sandy loam, sandy loam										
18-68		Stratified sand to silt loam										
141	Conejo	0-6	Loam	Low	0.6-2.0	Well drained	Slight	0.32	5	III _c	I	6.1-7.8
		6-65	Loam, clay loam	Moderate	0.2-0.6							6.1-8.4
161 162 163	Holillipah	0-6	Loamy sand	Low	6.0-20	Excessively drained	Slight	0.17	5	IV _s	III _s	6.1-7.3
6-66		Stratified silt loam to sand	Low	2.0-6.0								
170	Horst	0-26	Silt loam	Low	0.6-2.0	Well drained	Slight	0.43		III _c	Is	5.6-7.8
		26-60	Silt loam	Moderate				0.43	5			6.6-7.8
		60-70	Loam	Low				0.37	6.6-7.8			
183	Kilaga	0-21	Clay loam	Moderate	0.2-0.6	Well drained	Slight	0.37		III _s	II _s	6.6-7.3
		21-55	Silty clay loam, silty clay, clay loam	High	0.06-0.2			0.20	3			7.4-7.8
		55-60	Indurated material	—	—			—	—			—
		60-64	Weathered bedrock	—	—			—	—			—
185	Kimball	0-16	Loam	Low	0.6-2.0	Well drained	Slight	0.37		III _s	III _s	5.6-7.3
		16-42	Clay, clay loam, sandy clay loam, clay loam, loam	High	0.01-0.06			0.28	5			5.6-7.3
		42-60	Clay	Moderate	0.06-0.2			0.28	6.1-7.8			
192	Marysville	0-6	Loam	Low	0.6-2.0	Well drained	Slight	0.32		III _s	III _s	6.6-7.8
		6-36	Clay loam, silty clay loam	Moderate	0.2-0.6			0.28	7.4-8.4			

**Table 2
Soil Mapping Unit Descriptions for Soil Types in the Project Area**

Unit No. ¹	Soil Series Name	Depth (inches)	USDA texture	Shrink-Swell Potential	Permeability (in/hr)	Drainage	Water Erosion Hazard	Erosion Factors ²		Land Capability ³		pH
								K	T	N	I	
		36-40	Weathered bedrock	—	—			—				—
203	Perkins	0-5	Loam	Low	0.6-2.0	Well drained	Slight	0.32	5	IIIc	I	5.6-7.3
		5-58	Loam, clay loam	Moderate	0.2-0.6			0.32				5.6-7.3
		58-66	Stratified sandy loam to clay loam	Moderate	0.2-0.6			0.24				6.1-7.3
		66-72	Stratified very gravelly sandy loam to very cobbly clay loam	Low	0.6-2.0			0.15				6.1-7.3
214	San Joaquin	0-16	Loam	Low	0.6-2.0	Moderately well drained	Slight	0.37	2	IVs	IVs	5.6-6.5
		16-25	Clay loam, clay	High	0.01-0.06			0.24				6.1-7.8
		25-29	Indurated material	—	—			—				—
218	Shanghai	0-20	Silt loam	Low	0.6-2.0	Poorly drained	Slight	0.43	5	IIIc	I	6.6-7.3
		20-69	Stratified silty clay loam to fine sandy loam	Moderate	0.6-2.0			0.43				6.6-7.8
219	Shanghai	0-20	Silt loam	Low	0.6-2.0	Poorly drained	Slight	0.49	5	IIIw	IIIw	6.6-8.4
		20-69	Stratified silty clay loam to fine sandy loam	Moderate	0.6-2.0			0.43				

Notes: in/hr = inches per hour; USDA = U.S. Department of Agriculture

¹ Soil unit number refers to numbers shown on soil maps in the *Yuba County Soil Survey* (National Resources Conservation Service 1998).

² K is a measurement of relative susceptibility to sheet and rill erosion by water. It ranges from 0.10 to 0.64, with lower values representing a lower susceptibility to erosion. T represents soil loss tolerance, which is defined as the maximum rate of soil erosion (wind and water) without reducing crop production or environmental quality. Values ranges from 1 to 5 tons of soil loss per acre per year, with 5 representing soils less sensitive to erosion.

³ An indication of the suitability of soils for most kinds of field crops. Land capability classes are I through VIII, with VIII being unsuitable for most crop production. Subclasses denoting limiting factors are designated by letters e (erosion), w (water), s (shallow or stony), or c (climate). I=irrigated; N=nonirrigated.

— Either not measured or not applicable.

Source: Natural Resources Conservation Service 1998