

Hultgren-Tillis Engineers

June 9, 2009
File No. 670.02

Contra Costa County Public Works
Flood Control & Water Conservation District
255 Glacier Drive
Martinez, California 94553

Attention: Mr. Paul Detjens

**Geotechnical Field and Laboratory Data Collection
Lower Walnut Creek Channel
Contra Costa County, California**

Dear Mr. Detjens:

This report presents the results of our geotechnical data collection for the United States Army Corps of Engineers (USACE) Lower Walnut Creek Channel evaluation. The evaluation included portions of Walnut Creek, Grayson Creek, Pacheco Creek, and the Clayton Drain flood control channels located east of Martinez, California and north Concord, California. Our scope of services included subsurface exploration and laboratory testing as outlined in our proposal dated January 23, 2009. This letter report presents a summary of the geotechnical exploration and laboratory testing.

The USACE required that an archeologist observe the drilling activities. Our scope of services included subcontracting with Tremaine Associates to provide the cultural resources observation during our subsurface exploration. A copy of their report is attached.

We explored subsurface conditions by drilling thirteen borings ranging from 31.5 to 83.5 feet below existing grade. A total of 706 lineal feet of drilling was performed between February 17 and February 27, 2009. The locations of the borings are shown on the Site Plan, Plate 1 and the coordinates, using a hand held GPS instrument, are tabulated on Table 1.

The borings were drilled by Taber Consultants with truck mounted drilling equipment; a D-120 drill rig was used for Borings 1 through 4 and a CME-75 drill rig for Borings 5 through 13. The upper 15 feet of the borings were drilled using a dry hole method with solid stem continuous flight augers. At 15 feet the drilling method was switched to rotary wash methods.

All the borings were drilled on the levee crest. The borings were backfilled with cement grout in general conformance with Contra Costa County drilling permit requirements. Soil cuttings from the borings were collected and spread in an open area on Contra Costa County property east of the Walnut Creek Channel, and south of the ATSF railroad tracks as specified by Contra Costa County. The upper 12-inches of the borings located in paved areas were filled with fast-setting concrete.

Samples of the subsurface materials were collected using split barrel and thin wall samplers. Two split barrel samplers were used, one with a 2.5-inch outside diameter (OD), 1.9-inch inside diameter (ID) with metal liners and the other a 2.0-inch OD, 1.4-inch ID Standard Penetration Test (SPT)

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barrel sampler without metal liners. The split barrel samplers were driven with a 140-pound automatic hammer dropping approximately 30-inches for a penetration depth of up to 18-inches. Thin wall samples were collected by pushing a Shelby tube 30- or 36-inches. An Osterberg sampler was also used to collect 30-inch thin walled samples.

Our engineer logged the borings, recorded blow counts to drive the split barrel samplers and recovered samples from the borings for further visual classification and selection of samples for laboratory testing. Our engineer used a pocket penetrometer to evaluate unconfined compressive strength or a torvane hand-held device to evaluate shear strength. The handwritten field logs are attached.

We reviewed the samples and met with representatives from the USACE to prepare a laboratory test request. Laboratory testing of selected samples from the borings was performed by Sierra Testing Labs to classify the soils and to evaluate the engineering properties of the subsurface materials. Laboratory testing included: moisture content, dry density, Atterberg limits, gradation, hydraulic conductivity, consolidated-undrained and unconsolidated-undrained triaxial shear strength. Laboratory test results were provided in a separate submittal.

We appreciate the opportunity to work with Contra Costa County on this project. If you have any questions, please call.

Sincerely,

Hultgren - Tillis Engineers



Jerrold A. Hanson
Civil Engineer



R. Kevin Tillis
Geotechnical Engineer



CY:JAH:RKT:db:la

Enclosures: Plate 1 Site Plan
Table 1 Boring Location Coordinates
Logs of Borings
Tremaine Associates Report

4 copies submitted

Filename: 67002L02.doc



 Approximate Location of Boring



0 3000 feet
 SCALE: 1" = 3000'

Field and Laboratory Collection Data
 Lower Walnut Creek Channel
 Contra Costa County, California

Site Plan

Hultgren - Tillis Engineers

Project No. 670.02

Plate No. 1

Table 1. Boring Location Coordinates

Boring	Latitude	Longitude
1	N38.02969	W122.07900
2	N38.02692	W122.07359
3	N38.02368	W122.07287
4	N38.01839	W122.07818
5	N38.01411	W122.07532
6	N38.01951	W122.07093
7	N38.00984	W122.06664
8	N37.99848	W122.06481
9	N37.99448	W122.06578
10	N37.99723	W122.05041
11	N37.99205	W122.05208
12	N37.98806	W122.04895
13	N37.96877	W122.05499

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 9 SHEETS
1. PROJECT Lower Walnut Creek channel			10. SIZE AND TYPE OF BIT 4" Solid Flight Auger 3/8" I.D. Rotary	
2. LOCATION (Coordinates or Station) N36 02' 09" W 122 07' 89.6"			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY Taber			12. MANUFACTURER'S DESIGNATION OF DRILL Derich D-120	
4. HOLE NO. (As shown on drawing title and file number) 2F-09-01		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED
5. NAME OF DRILLER Rian Humphrey			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 2/17/09 COMPLETED 2/17/09	
8. DEPTH DRILLED INTO ROCK 0			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE 83.5			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR C. M. ...	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	BOX OR SAMPLE NO.	% RECOVERY	H ₂ O	Wx	REMARKS
11.0	0		4AB light brown lean clay w/ sand (cl) (fill)					start drilling 2/17/09 9:15am
	1		light brown lean clay w/ sand (cl) (fill)	1a				clean out to 1' SPT
	2		light brown lean clay w/ sand (cl) (fill)	1b	1.0			
	3				1.5			clean out to 2.5' shell bag
	4		blue gray gravelly lean clay (cl) (fill) stiff, moist	1-2	2.0			
	5		blue gray gravelly lean clay (cl) (fill)	1-3a	1.0			clean out to 5' SPT
	6		moist	1-3b	1.5			
	7		black fat clay (cl) w/ peat (bay mud) v. stiff saturated	1-4a	1.0			clean out to 6.5' 2"
	8		black fat clay (cl) (bay mud) v. stiff, saturated	1-4b	1.5			@7.5 PP=1.5 TV=0.6
	9		black fat clay (cl) (bay mud) v. stiff, saturated	1-5a	1.0			clean out to 8'
	10		black lean clay w/ peat (cl) saturated bay mud	1-5b	1.5			PP=1.5
	10		black lean clay w/ peat (cl) saturated bay mud	1-6a	1.25			clean out to 4.5'

DRILLING LOG		DIVISION	INSTALLATION	SHEET 2 OF 9 SHEETS
1. PROJECT LOWER WALNUT CREEK			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Station)			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY			12. MANUFACTURER'S DESIGNATION OF DRILL	
4. HOLE NO. (As shown on drawing title and file number)		2F-09-01	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED UNDISTURBED
5. NAME OF DRILLER			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED _____ COMPLETED _____	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS d	BOX OR SAMPLE NO. e	% RECOVERY f	H ₂ O g	Wx h	REMARKS i
	2			1-6B				2"
	2			1-6				clear out to 11
	11		black fat clay w/ part (CH) saturated (bay mud) soft	1-7A	0.5 1.5			2" @ 11.5 turns
	2							
	12							clear out to 12.5'
	2							shelby
	13		black fat clay w/ part (CH) saturated (bay mud)	1-8	2.0 3.0			
	2							
	14							
	2							
	15							switch to rotary wash
	2							
	16							
	2							
	17							
	2							
	18							
	2							
	19							
	2							
	20							

DRILLING LOG		DIVISION	INSTALLATION	SHEET 3 OF 9 SHEETS
1. PROJECT LOWER WALNUT CREEK			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Station)			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY			12. MANUFACTURER'S DESIGNATION OF DRILL	
4. HOLE NO. (As shown on drawing title and file number)		2F-09-01	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED UNDISTURBED
5. NAME OF DRILLER			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED COMPLETED	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	BOX OR SAMPLE NO.	% RECOVERY	H ₂ O	Wx	REMARKS
a	b	c	d	e	f	g	h	i
		P	black fine clay w/ peat (4P)	1-9				clean out to 20'
	21		soft, saturated (hard)		1' 3'			shelby
	22							
	23							
	24	P					NR	clean out to 24'
	25						NR	shelby
	26							
	27	P	black peat (P)					clean out to 27'
	28		soft, saturated (hard)	1-10A 1-10B	1.5 15			2'
	29							@ 28.5 TR 20.2
	30							

DRILLING LOG		DIVISION	INSTALLATION	SHEET 4 OF 9 SHEETS
1. PROJECT			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Station) LOWER WALNUT CREEK			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY			12. MANUFACTURER'S DESIGNATION OF DRILL	
4. HOLE NO. (As shown on drawing title and file number) ZF-09-01			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED UNDISTURBED
5. NAME OF DRILLER			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE	STARTED COMPLETED
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS d	BOX OR SAMPLE NO. e	% RECOVERY f	H ₂ O g	Wx h	REMARKS i
30								
31								
32		P	black peat (Pt) saturated, v soft (very mud)	11A 11B	1.5 1.5			clean out to 31.5' shel by MR sample recovered w/ 2" @ 33 TV = 0.15
33								
34								
35								
36								
37		P	black fat clay w/ peat (CPD saturated soft very mud)	12A 12B	1.5 1.5			clean out to 37' 2" @ 38.5 TV = 0.12
38								
39								
40								

DRILLING LOG		DIVISION	INSTALLATION	SHEET 5 OF 9 SHEETS
1. PROJECT LOWER WALNUT CREEK		10. SIZE AND TYPE OF BIT		
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY		12. MANUFACTURER'S DESIGNATION OF DRILL		
4. HOLE NO. (As shown on drawing title and file number) 2F-09-01		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE	STARTED	COMPLETED
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE		18. TOTAL CORE RECOVERY FOR BORING %		
19. SIGNATURE OF INSPECTOR				

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	BOX OR SAMPLE NO.	% RECOVERY	H ₂ O	W _x	REMARKS
a	b	c	d	e	f	g	h	i
46								
41								
42		P	gray silt (ML)					cleanout to 42'
		P	soft, saturated (bay mud)	13A	1.5			2"
43				13B	1.5			@ 43 TV=0.15
44								
45								
46								
47		1	gray silt					cleanout to 47'
		2	soft, saturated (bay mud)	14A	1.5			2"
48				14B	1.5			@ 48.5 TV=0.2
49								
50								

DRILLING LOG		DIVISION	INSTALLATION	SHEET 6 OF 9 SHEETS
1. PROJECT LOWER WALNUT CREEK			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Station)			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY			12. MANUFACTURER'S DESIGNATION OF DRILL	
4. HOLE NO. (As shown on drawing title and file number) 2F-09-01		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED
5. NAME OF DRILLER			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED _____ COMPLETED _____	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE			18. TOTAL CORE RECOVERY FOR BORING _____ %	
			19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS d	BOX OR SAMPLE NO. e	% RECOVERY f	H ₂ O g	W _x h	REMARKS i
51								
52		P	gray silt (ML) soft, saturated (may wood)	1-15A	7.5			clean out to 52 2"
53		P		1-15B	1.5			@ 53 7/8 o.k.
54								
55								
56								
57		P			NR			clean out to 57 2"
58		P						
59		P						
60								

DRILLING LOG		DIVISION	INSTALLATION	SHEET OF 97 SHEETS
1. PROJECT		10. SIZE AND TYPE OF BIT		
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY		12. MANUFACTURER'S DESIGNATION OF DRILL		
4. HOLE NO. (As shown on drawing title and file number)		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	BOX OR SAMPLE NO.	% RECOVERY	H ₂ O	Wx	REMARKS
a	b	c	d	e	f	g	h	i
60								
61								
62	1	1	gray silt (AU)					clean out to 62'
	3	3	saturated, soft (gray mud)	16A	1.5			2"
63	3	3		16B	1.5			@ 63 TV=0.2
64								
65								
66								
67	5	5	blue gray lean clay (CC)					clean out to 67'
	6	6	saturated v. stiff	17A	1.5			2"
68	7	7		17B	1.5			@ 68.5 PP=1.25
								TV=0.65
69								
70								

DRILLING LOG		DIVISION	INSTALLATION	SHEET 8 OF 9 SHEETS
1. PROJECT Lower Walnut Creek		10. SIZE AND TYPE OF BIT		
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY		12. MANUFACTURER'S DESIGNATION OF DRILL		
4. HOLE NO. (As shown on drawing title and file number) ZF-09-01		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	16. DATE HOLE	STARTED _____ COMPLETED _____
7. THICKNESS OF OVERBURDEN		17. ELEVATION TOP OF HOLE		
8. DEPTH DRILLED INTO ROCK		18. TOTAL CORE RECOVERY FOR BORING _____ %		
9. TOTAL DEPTH OF HOLE		19. SIGNATURE OF INSPECTOR		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS d	BOX OR SAMPLE NO. e	% RECOVERY f	H ₂ O g	Wx h	REMARKS i
70								
71								
72								
	6		gray blue lean clay (CL) saturated v. stiff	18A	1.5			clear out to 72' 2"
	7				1.5			
73				18B				@ 73.5 PP=1.5 TV=0.9
	8							
74								
75								
76								
77								
	5		gray blue lean clay (CL) saturated, med. stiff	19A	1.5			clear out to 77 2"
	6				1.5			
78				19B				@ 78 TV=0.3
	7							
79								
80								

DRILLING LOG		DIVISION	INSTALLATION	SHEET 9 OF 9 SHEETS
1. PROJECT LOWER WALNUT CREEK			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Station)			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY			12. MANUFACTURER'S DESIGNATION OF DRILL	
4. HOLE NO. (As shown on drawing title and file number) 2F-09-01			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED UNDISTURBED
5. NAME OF DRILLER			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE	STARTED COMPLETED
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	BOX OR SAMPLE NO.	% RECOVERY	H ₂ O	Wx	REMARKS
a	b	c	d	e	f	g	h	i
80.00								
81.00								
82.00			blue gray lean clay (CL) Saturated	20A	15			clean out to 82 SPT
83.00				20B	15			Bottom of Hole @ 83.5' 2:00 pm
84.00								
85.00								

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March 9, 2009

Kevin Tillus
Hultgren & Tillus
2221 Commerce Avenue, Ste. A-1
Concord, CA 94596

Re: Cultural Resources Subsurface Testing of Proposed Levee Improvements
along Walnut, Grayson, and Pacheco Creeks, Contra Costa County, California

Dear Mr. Tillus,

INTRODUCTION

This letter reports the findings of cultural resources subsurface testing conducted by TREMAINE & ASSOCIATES, INC. (TREMAINE) for a levee improvements project along Walnut, Grayson, and Pacheco creeks, in Contra Costa County, California. This work was required by the U.S. Army Corps of Engineers (USACE) to satisfy requirements of Section 106 of the National Historic Preservation Act (NHPA). Kim Kersey, M.A., RPA, was project manager for this project. Kurt Lambert, B.A., conducted monitoring of 13 boring locations on February 17-19 and February 23-27, 2009.

PROJECT DESCRIPTION

The USACE is proposing future levee improvement projects along Walnut, Grayson, and Pacheco creeks in the vicinity of Martinez and Concord (Figure 1). In preparation, they are conducting a Peer Review for their General Reevaluation Report considering the setback of levees, floodplain reconnection, restoration of wetland and riparian habitats, improved fish passage, and other structural and non-structural measures for flood damage reduction and ecosystem restoration on lower Walnut Creek.

Hultgren & Tillus were contracted to conduct geotechnical investigations as part of this reevaluation. Specifications called for retrieving core samples to a depth of 30 feet (9.1m) below the surface of the levee. In the event that bay mud was encountered, 10 feet (3m) of additional sampling was required. Callan Yu, Hultgren & Tillus geologist, was accompanied by a Taber Consultants drilling

team. Drilling included both piston and rotary methods using a 4-inch drill bit. Samples, varying from 1.8-inches to 3-inches in diameter, were taken at the discretion of the geologist. Samples were taken every foot (0.46m) to a depth of 15 feet (4.6m). Below the 15 feet (4.6m), sample intervals were extended to 5 feet (1.5 m).

PREFIELD RESEARCH

Environmental Setting

The project is located in the lower Walnut Creek watershed, along the drainages of Walnut Creek, Pacheco Creek, and Grayson Creek, ranging from sea level to about 20 feet above sea level. The setting has been highly modified in the past century with stream channeling, levee construction, railroad construction, and modern development, such as the Buchanan Airport. A more pristine landscape hosting native vegetation and wildlife is posited based on historic maps and records. The native setting is relevant in assessing the likelihood of encountering historic and prehistoric cultural resources.

The project, prior to modern development, was set in a floodplain at the mouth of Walnut Creek where freshwater met brackish tidal marshland bordering the south side of Suisun Bay. Vegetation along the levees would probably once been composed of a dense riparian zone of fresh water grasses, shrubs, and various species of small deciduous trees. In contrast, the adjacent marshland would have hosted stands of cattail (*Typha latifolia*) and hardstem bulrush (*Scirpus acutus*) (Barbour and Major 1977). These plant communities offered resources essential to Native American subsistence activities as evinced by numerous shell mounds in the region.

Prehistoric Context

Summary statements regarding the prehistory and culture history of interior Contra Costa County are contained in papers in Hughes (1994), Milliken et al. (2007), and Moratto (1984: Chapter 6). Chronologically, the Holocene archaeological record has been divided into various economic periods, patterns, and aspects. The Lower Archaic/Early Holocene Period lasted between c. 11,000+ and 5,500 years B.P. The subsequent Middle Archaic/Early Period (Lower Berkeley Pattern) existed between c. 5,500 and 2,500 B.P. After c. 2,500 B.P., the Upper Archaic/Middle Period (Upper Berkeley Pattern) lasted until about 1,000 P.B. From around 1,000 B.P. until 1769, was the Emergent/Late Period (Augustine Pattern).

In interior Contra Costa County and adjacent portions of the San Francisco Bay Area, the latter part of the Middle Holocene and the Late Holocene witnessed increasing economic, social, and cultural elaboration and development, characterized by intensification upon critical resources, elaboration of trade and exchange networks, increasing population and sedentism, expansion of settlements with respect to size and numbers, and development of extensive social, political, and religious networks on a local and regional level. This culminated with a great

degree of linguistic, political, social, and cultural diversity among Native peoples in the Bay Area and other parts of California.

Ethnographic Context

The current project area appears to straddle the boundary between Ohlone and Bay Miwok speaking peoples. Cook (1957:147) assigns much of the project area to the Karkin Ohlone. Bennyhoff (1977:139-143, 164, Map 2) places the northern portion of the project within the territory of the Karkin Ohlone and the southern portion within that of the Saclan Bay Miwok. Milliken (1995:228-229, Maps 4 and 5) notes the project area was within the territory of the Chupcan Bay Miwok.

Historic Context

Beginning in the late 1830s, permanent European settlement of the area began. During the mission period (1770-1835) the overall Ohlone population was greatly reduced due to introduced diseases, declining birth rates, and major social and cultural changes. In 1770, the population was estimated at 10,000 persons. By 1832, the Ohlone numbered less than 2,000 (Cook 1943a, 1943b, 1957). As the Mexican government began establishing settlements within their territory, many left missions to become laborers on the ranchos. Others, fleeing the missions, tried to return to native cultural and subsistence practices.

The project is set on the boundary between two ranchos granted after the secularization of the missions. The western rancho, Las Juntas, was granted to William Welch in 1844. The eastern rancho, Monte Del Diablo, was granted to Salvio Pacheco. A band of Native peoples, working for Mr. Pacheco, lived within the project area (archaeological site CA-CCo-241- refer to results of Record Search below).

The advent of the Mexican War during the summer of 1846, and the subsequent discovery of gold on the American River at Coloma in January 1848, immediately transformed California economically, socially, and politically (Davis et al. 1997, Milliken 1997). At the end of the Mexican War in 1848, California became part of the United States, and in September 1850 assumed statehood.

Record Search

The USACE supplied TREMAINE with a records search prior to fieldwork. It identified the presence of four historic sites and two prehistoric sites. These were kept in mind relative to the boreholes.

Among the historic sites are:

- P-07-002731: Walnut Creek and Grayson Creek Levees (JRP 2002)
These levees were constructed between 1937 and 1959. It was found ineligible for inclusion in the National Register of Historic Places;
- P-07-002575: Marsh Drive Bridge (Bridge 28C-442) at Walnut Creek (JRP 2001). This bridge, built in 1938, is a 325-foot (99.1m) long, two-lane

structure. It was evaluated and determined ineligible for inclusion in the National Register of Historic Places;

- P-07-002675: Pacheco Slough Historic Dump (WSA 2005)
This dump consists of mid-20th century domestic refuse, including glass bottles and jars, ceramic shards, and personal objects. This site has not been evaluated for significance; and
- P-07-002676: the Grayson & Walnut Creeks Historic Scatter (WSA 2005)
This scatter consists of glass bottles and ceramic sherds ranging in dates from 1889 to the 1940s. This site has not been evaluated for significance.

Among the prehistoric sites are:

- CA-CCo-241: This is a prehistoric shellmound was first mapped by Nelson in 1907, at that time designated Site 250. Its location was subsequently noted upon regional maps provided by Bennyhoff (1977:164, Map 2), Cook (1957: Map1), and Elsasser (1978:37, Figure 1). Loud (n.d.) notes that CA-CCo-241 may have been the "Monte Diable" site. He also states that in 1850, approximately 40-50 Native Americans lived at the site, many of whom died during an epidemic in 1853. Milliken (1995:241) comments that the main village of the Chupcan Bay Miwok was on lower Pachco Creek in Concord, and was named Monte del Diablo.

CA-CCO-241 is described as midden containing trace amounts of mussel shell, along with show mortars, shell beads and pendants, an obsidian blade, and at least seven burials (based on site records of Meighan 1951, Pilling 1952, and Baker 1990, as well as notes from a 1951 field excavation by the Contra Costa Junior College). Extensive burial records in "Site Report CCo-141" are archived at the University of California Archaeological Research Facility at Berkeley, possibly from an excavation by Barker in 1932 (Pilling 1951).

- CA-CCo-249: No site record was received.

FIELD METHODS

Subsurface testing was conducted concurrent with geotechnical boring on February 17-19 and February 23-27, 2009 by Kurt Lambert, B.A. Each bore location was recording using a GeoXT Trimble unit (Attachment 1- GPS Coordinates). Each bore location was also photo-documented (Attachment 2- Photographs). The surface of each bore location, including a 20-foot (6.1m) buffer, was then inspected. Cuttings were visually inspected, with observations noted by depth on Drilling Logs (Attachment 3). Observations included soil texture, munsell color, and any evidence of possible cultural constituents (e.g., shell, bone, flaked stone, charcoal, etc.). Periodically, samples of cuttings were passed through 1/4-inch mesh screen to capture any items that might be encased in sediments and not visible on the exterior of the core itself.

FINDINGS

Ground visibility around the bore locations, in most cases, was poor, with low-lying grasses and riparian vegetation covering the majority of the surface on either side of the levees. Nevertheless, no cultural materials were noted on the surface in

the vicinity of the bores. Further, no cultural resources were observed in the cuttings, although two modern ceramic fragments were retrieved from the fill of Bore 2F-09-13 (2' - 3' depth (0.6m - 1.07m) from the surface of the levee).

Should you have any questions or comments, please feel to call or email.

Sincerely,

Kim Tremaine, Ph.C., RPA

Attachments:

- 1- GPS Coordinates of Boreholes
- 2- Photographs (CD)
- 3- Drilling Logs
- 4- Daily Notes

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ATTACHMENT 1:

GPS COORDINATES OF BOREHOLES

