APPENDIX C:

SEDIMENT LOCATION AND DENSITY

It is interesting to note that the reach where 850,000 cy was dredged by the Corps in 1973 (Mouth to BNSF RR) now contains over 810,000 cy of deposited sediment. Less detailed survey data from the early 1990s indicates that a majority of this sediment had been deposited before that time. This indicates that after a change in the channel condition (such as the initial channelization or subsequent dredge), the rate of sediment accumulation is high and decreases as the channel reaches a stable, steadier geometry. This lowest reach of the channel appears to have reached this relatively stable state. As such, a full dredge in this lowest reach is only expected to be effective for a very limited period of time before dredging is needed again. As part of the GRR project, the District desires to develop a more sustainable solution. This appendix contains:

- Table and graph showing the density of sediment by channel reach
- Overview map showing the volumes of accumulated sediment by reach

APPENDIX D:

EXISTING CONDITION HYDRAULIC ANALYSIS

- Summary table of existing condition hydraulics and freeboard by cross section
- Freeboard and Inundation Area Maps (4 sheets at 11x17)
- HEC-RAS map showing cross section locations (schematically)
- HEC-RAS map showing storage locations
- Summary table showing storage locations and storage volumes
- Calculations for 10, 20, 30, 40, 50, 60, 70, 80 and 90-year Walnut Creek design flowrates for Mouth to Grayson Creek, Grayson to Pine Creek and upstream of Pine Creek.
- Plan view maps for Walnut Creek, Grayson Creek, Pacheco Creek and Clayton Valley Drain showing stationing line and existing topography (11x17 strip maps)

Existing Hydraulic Conditions along the creek channel (Freeboard & WS Elev)

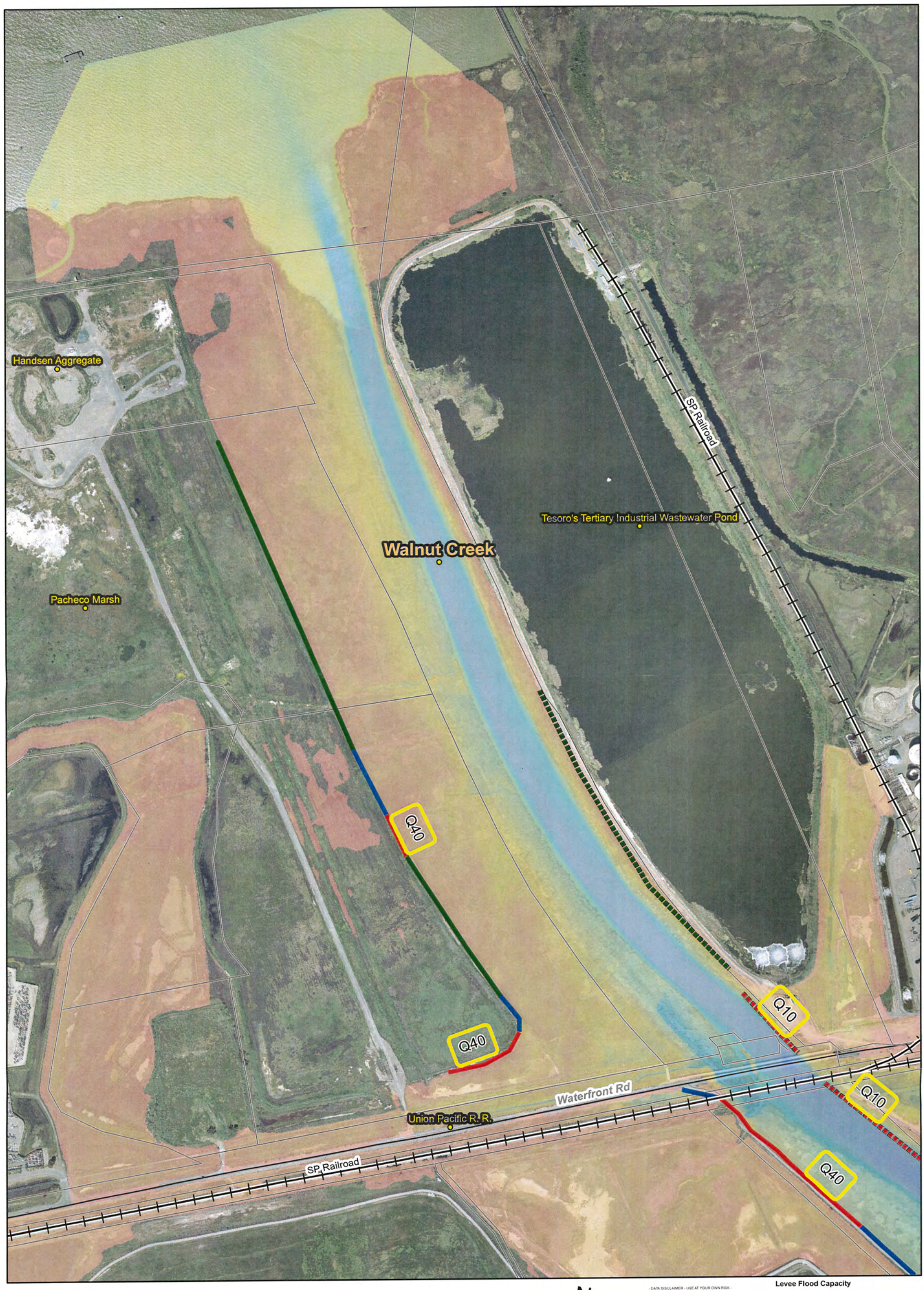
100 year storm event

HEC-RAS Plan: OrgDes0412A1 Profile: Max WS

Overtopping | 0'-1' Freeboard | 1'-3' Freeboard

			Exist Levee/Embankment Elevation Data						
Creek	Location	River Sta	Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)
Walnut		363+44	47.6	48.3	48	0.7	0.4		50.0
Walnut	SR 242 NB	362+98							
Walnut		362+44	47.36	48.4	48	1.04	0.64		50.0
Walnut		361+50	46.99	48.5	47.5	1.51	0.51		49.5
Walnut	SR 242 SB	360+97							
Walnut		358+85	44.24	48.7	48	4.46	3.76		
Walnut	Drop Structure #1	356+69							
Walnut		356+31	37.17	47.1	44	9.93	6.83		
Walnut		347+37	36.88	44.4	39.8	7.52	2.92		
Walnut		338+40	35.69	42	39	6.31	3.31		
Walnut	Willow Pass Road	334+90							
Walnut		330+61	33.64	38	36	4.36	2.36		
Walnut		327+86	33.05	36	36	2.95	2.95		
Walnut	Diamond Blvd	324+86							
Walnut		323+03	32.35	34	35	1.65	2.65		
Walnut		309+75	31.03	37	36.3	5.97	5.27		
Walnut	Pine Creek	299+56	29.73	33	34	3.27	4.27		
Walnut		294+00	28.47	30	31.1	1.53	2.63		
Walnut		284+29	27.83	30	30	2.17	2.17		
Walnut	Concord Ave	283+78							
Walnut		283+25	27.49	32	32	4.51	4.51	29.4	29.4
Walnut		282+97	27.43	32	30	4.57	2.57	29.4	29.4
Walnut	Concord Footbrid	282+88							
Walnut		281+31	27.38	30	29.5	2.62	2.12	29.3	29.3
Walnut		276+46	26.94	29.3	28.9	2.36	1.96	29.0	29.0
Walnut		264+21	26.14	28	28.3	1.86	2.16	28.2	28.2
Walnut		259+04	25.83	27.9	27.4	2.07	1.57	27.9	27.9
Walnut		249+73	25.27	27.7	27.9	2.43	2.63	27.3	27.3
Walnut		245+93	24.99	27.5	27.7	2.51	2.71	27.0	27.0
Walnut		239+17	24.13	26.9	26.6	2.77	2.47	26.2	26.2
Walnut		235+38	23.8	26.2	25.8	2.4	2	25.7	25.7
Walnut		228+59	23.3	24.2	25	0.9	1.7	24.9	24.9
Walnut		225+35	22.92	24.3	24.3	1.38	1.38	24.5	24.5
Walnut	Clayton Vly Drain	218+60	22.39	23.5	24.4	1.11	2.01		
Walnut		214+44	22.23	22.3	22.7	0.07	0.47	23.3	23.3
Walnut		213+21	22.17	23	24	0.83	1.83	23.0	23.0
Walnut		211+38	22.01	21.8	22	-0.21	-0.01	22.6	22.6
Walnut	Marsh Drive	211+11							
Walnut		210+07	19.34	22.3	22.4	2.96	3.06	22.5	
Walnut		208+06	19.3	24	22.4	4.7	3.1	22.2	
Walnut	SR 4 EB	207+79							
Walnut		206+99	18.99	26	22	7.01	3.01	22.1	
Walnut	SR 4 WB	206+76							
Walnut		206+08	18.85	19.3	21	0.45	2.15	22.0	
Walnut		203+81	18.54	20.8	22.4	2.26	3.86	21.8	
Walnut		201+33	18.36	20.7	23	2.34	4.64	21.5	
Walnut		200+17	18.47	20.7	22.2	2.23	3.73	21.4	
Walnut	Imhoff Drive	199+78							
Walnut		199+39	18.49	20.8	22.4	2.31	3.91	21.3	
Walnut		198+21	18.36	20.4	22.3	2.04	3.94	21.3	
Walnut		194+18	18.01	20.3	22.4	2.29	4.39	21.0	
Walnut		190+32	17.74	20	19.8	2.26	2.06	20.8	
Walnut	Grayson Creek	188+92	17.61						
Walnut		184+18	17.59	20.5	18.7	2.91	1.11	19.9	
Walnut		177+39	17.16	19.7	16.2	2.54	-0.96	19.4	
Walnut		172+56	16.96	18.4	16.7	1.44	-0.26	18.9	
Walnut		162+79	16.54	18	15.5	1.46	-1.04	18.1	
Walnut		153+62	15.91	16.2	15.3	0.29	-0.61	17.3	
Walnut		150+44	15.73	15.5	16	-0.23	0.27	17.0	
Walnut		147+60	15.52	16	22	0.48	6.48	16.8	
Walnut		142+34	15.2	16	20	0.8	4.8	16.3	
Walnut	BNSF RR	137+62							
Walnut		137+26	14.09	14.6	11	0.51	-3.09	16.0	
Walnut		134+21	13.99	14.5	16.5	0.51	2.51	15.8	
Walnut		127+03	13.84	13	20	-0.84	6.16	15.5	
Walnut		124+60	13.71	12.6	20	-1.11	6.29	15.4	
Walnut		118+77	13.49	13.4	20	-0.09	6.51	15.2	
Walnut	Pacheco Creek	111+24	13.11	13.6	20	0.49	6.89	14.8	
Walnut		104+28	13.05	12.1	24.5	-0.95	11.45	14.5	
Walnut		91+00	12.73	12.4	24	-0.33	11.27	13.9	
Walnut		83+52	12.46	13	30	0.54	17.54	13.6	
Walnut		80+77	12.37	12.6	30	0.23	17.63	13.5	
Walnut		77+89	12.27	11.5	12	-0.77	-0.27	13.3	

Creek	Location	River Sta	Exist WS Elev (ft)	Exist Levee/Embankment Elevation Data: Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)
Walnut		72+59	12.09	12	10	-0.09	-2.09	13.1	
Walnut		70+76	12.03	11.8	7.5	-0.23	-4.53	13.0	
Walnut		68+52	11.96	11	8	-0.96	-3.96	12.9	
Walnut	UP RR	68+37							
Walnut		68+23	10.77	10.9	6	0.13	-4.77		
Walnut		67+65	10.75	11	6	0.25	-4.75		
Walnut		67+16	10.74	11.4	8	0.66	-2.74		
Walnut	Waterfront Road	66+89							
Walnut		66+65	10.56	11.9	8	1.34	-2.56		
Walnut		66+54	10.57	11.9	8	1.33	-2.57		
Walnut	Tosco Utility Bridge	66+42							
Walnut		66+31	10.55	11.9	8	1.35	-2.55		
Walnut		63+92	10.57	8	7.6	-2.57	-2.97		
Walnut		61+72	10.52	7	13.8	-3.52	3.28		
Walnut		57+49	10.4	8.3	13.3	-2.1	2.9		
Walnut		49+10	10.02	10.4	12.5	0.38	2.48		
Walnut		41+45	9.64	10.8	12.3	1.16	2.66		
Walnut		33+84	9.28	11.3	13.8	2.02	4.52		
Walnut		26+85	8.78	11	13.6	2.22	4.82		
Walnut		19+18	7.75	11.5	14	3.75	6.25		
Walnut		13+14	6.73	14.3	4.7	7.57	-2.03		
Walnut	Mouth @ Suisun Bay	10+28	6.61	6	4.7	-0.61	-1.91		
Pacheco		60+04	13.09	14.4	13.5	1.31	0.41	14.8	14.8
Pacheco		55+74	13.09	14.5	13.6	1.41	0.51	14.8	14.8
Pacheco		49+29	13.08	14.5	13	1.42	-0.08	14.8	14.8
Pacheco		45+49	13.08	14.4	13.8	1.32	0.72	14.8	14.8
Pacheco	Henry's Wood Farm	42+03	13.08	14.1	13.9	1.02	0.82	14.8	14.8
Pacheco		39+84	13.08	13.7	13.5	0.62	0.42	14.8	14.8
Pacheco		38+23	13.08	12.8	13.1	-0.28	0.02	14.8	14.8
Pacheco		33+15	13.08	12.6	13.3	-0.48	0.22	14.8	14.8
Pacheco		29+99	13.08	12.6	14	-0.48	0.92	14.8	14.8
Pacheco	Martinez Gun Club	29+27	13.08	12.6	13.8	-0.48	0.72	14.8	14.8
Pacheco		27+37	13.08	14.5	13.8	1.42	0.72	14.8	14.8
Pacheco		19+50	13.08	15.3	13.2	2.22	0.12	14.8	14.8
Pacheco		10+47	13.09	14.4	12.8	1.31	-0.29	14.8	14.8
Pacheco	Confluence w/ WC	06+98	13.11	13.7	13	0.59	-0.11	14.8	14.8
Grayson	I680 SB Main Deck	59+10							
Grayson		57+34	18.73	18	19.3	-0.73	0.57	20.1	20.1
Grayson		54+71	18.63	17	19.5	-1.63	0.87	20.1	20.1
Grayson		51+50	18.56	17.5	19.4	-1.06	0.84	20.1	20.1
Grayson		47+85	18.44	16.5	19.4	-1.94	0.96	20.1	20.1
Grayson		44+68	18.4	17	18.7	-1.4	0.3	20.1	20.1
Grayson		42+53	18.3	18	18.8	-0.3	0.5	20.1	20.1
Grayson		40+77	18.26	20	18.8	1.74	0.54	20.1	20.1
Grayson	SR 4 EB	40+38							
Grayson		39+95	18.23	20	20	1.77	1.77	20.1	20.1
Grayson		39+77	18.23	20	20	1.77	1.77	20.1	20.1
Grayson	SR 4 WB	39+43							
Grayson		38+18	18.16	19.6	20	1.44	1.84	20.1	20.1
Grayson		35+27	18.08	19.5	19.5	1.42	1.42	20.1	20.1
Grayson		33+84	18.04	20.3	19.3	2.26	1.26	20.1	20.1
Grayson		29+39	17.95	20.4	19.9	2.45	1.95	20.1	20.1
Grayson		27+36	17.92	20.1	20.2	2.18	2.28	20.1	20.1
Grayson		24+20	17.86	20.6	19.5	2.74	1.64	20.1	20.1
Grayson		22+84	17.85	20.3	19.7	2.45	1.85	20.1	20.1
Grayson		19+77	17.8	20.2	19.7	2.4	1.9	20.1	20.1
Grayson		18+64	17.78	21	20	3.22	2.22	20.1	20.1
Grayson		17+91	17.76	21	22	3.24	4.24	20.1	20.1
Grayson	Imhoff Drive	17+60							
Grayson		17+21	17.72	20	22	2.28	4.28	20.1	20.1
Grayson		16+51	17.72	19.7	20	1.98	2.28	20.1	20.1
Grayson		15+35	17.69	19.6	19.3	1.91	1.61	20.1	20.1
Grayson		11+99	17.66	19.5	19	1.84	1.34	20.1	20.1
Grayson		11+26	17.65	19.5	19	1.85	1.35	20.1	20.1
Grayson		08+80	17.61	19.6	18.8	1.99	1.19	20.1	20.1
Clayton		26+61	22.6	28	23.3	5.4	0.7		
Clayton	Hillcrest Park	25+24	22.57	24.5	23.6	1.93	1.03		
Clayton		23+88	22.55	24.8	24.2	2.25	1.65	25.6	25.6
Clayton		20+83	22.54	23.9	24.8	1.36	2.26	25.6	25.6
Clayton		15+77	22.53	24.1	22.9	1.57	0.37	25.6	25.6
Clayton		12+24	22.53	23.4	23.3	0.87	0.77	25.6	25.6
Clayton		09+40	22.53	23.9	23.4	1.37	0.87	25.6	25.6
Clayton		08+42	22.53	23.6	23.2	1.07	0.67	25.6	25.6
Clayton	Solano Avenue	07+55							
Clayton		06+63	22.39	23.2	23	0.81	0.61	25.6	25.6
Clayton		05+70	22.39	23.2	22.4	0.81	0.01	25.6	25.6
Clayton	Confluence w/ WC	03+33	22.39	24.4	24.1	2.01	1.71	25.6	25.6



Contra Costa County
Flood Control
& Water Conservation District

Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

1 of 4

N

0 550 1,100 Feet

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Levee Flood Capacity

- <= 100 Year Protection (Overtop)
- <= 100 Year Protection (Overtop) Channel Embankment, not ACOE levee
- <= 1' Freeboard
- <= 1' Freeboard Channel Embankment, not ACOE levee
- 1-3' Freeboard
- 1-3' Freeboard Channel Embankment, not ACOE levee
- Q Storm Frequency Event Capacity

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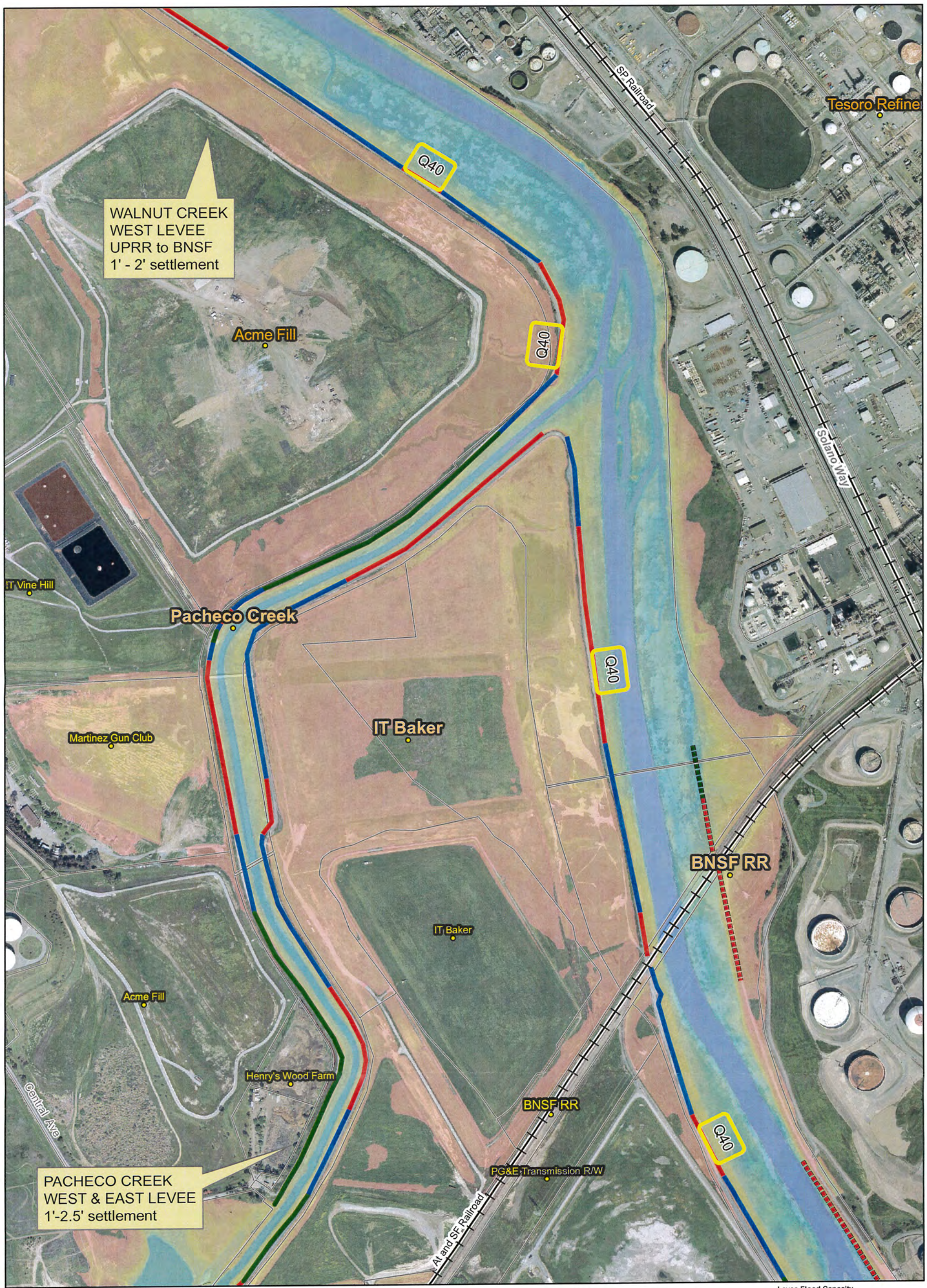

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Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

2 of 4

N

0 550 1,100 Feet

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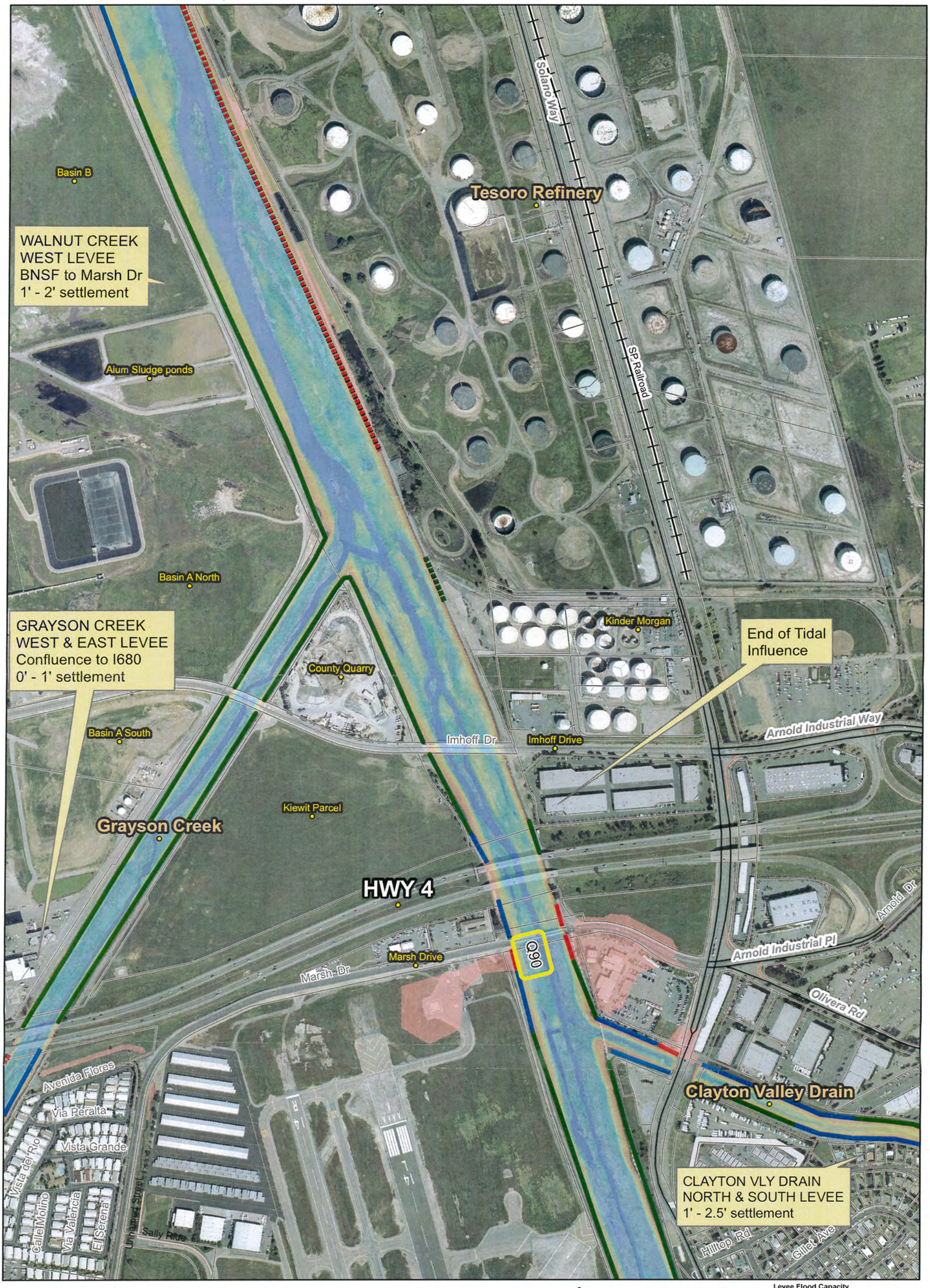

Contra Costa County
Flood Control
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Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

3 of 4

N

0 495 990 Feet

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Contra Costa County
Flood Control
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Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

4 of 4

N

0 550 1,100 Feet

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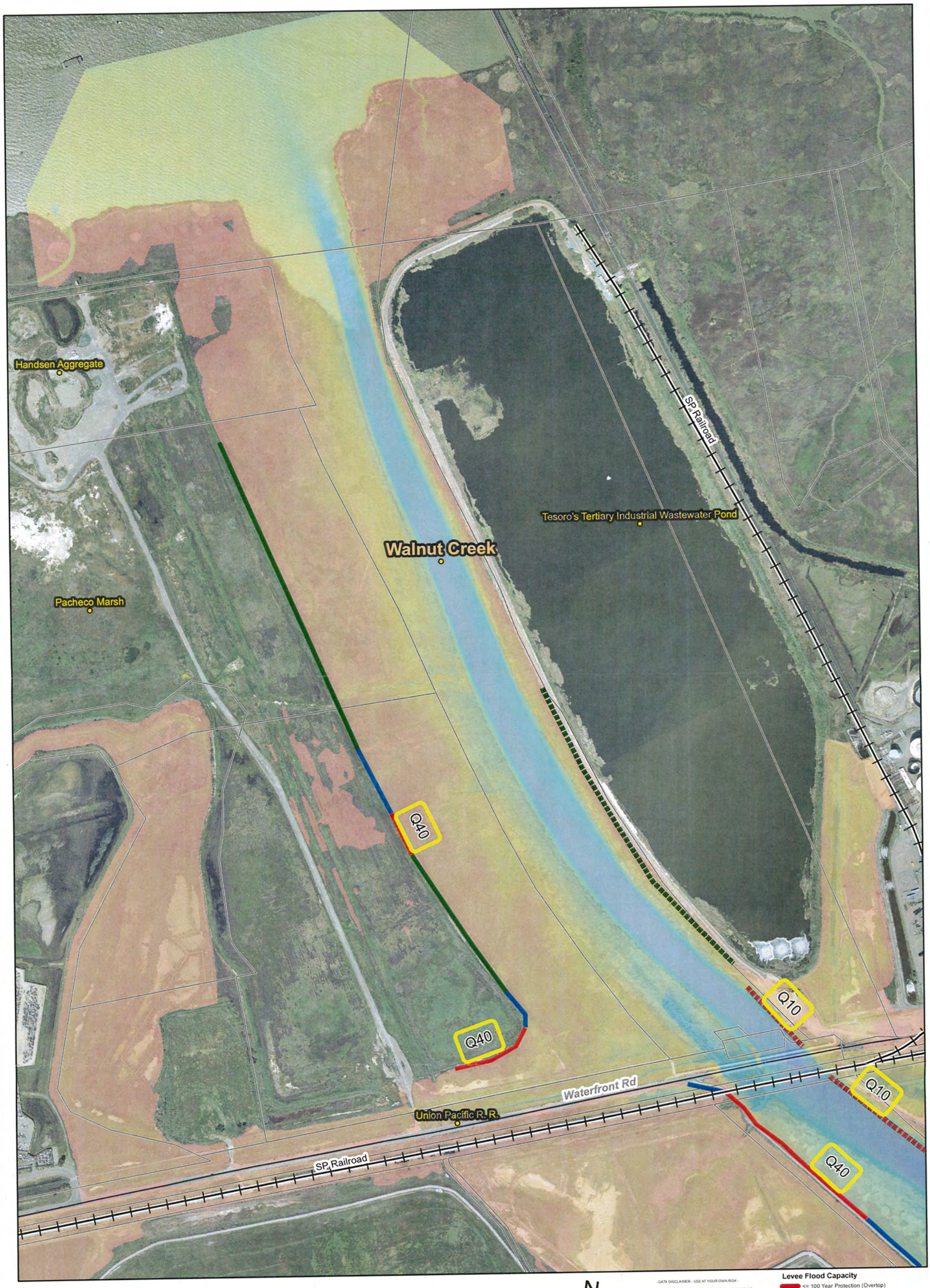

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Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

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N

0 550 1,100 Feet

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- <= 1' Freeboard
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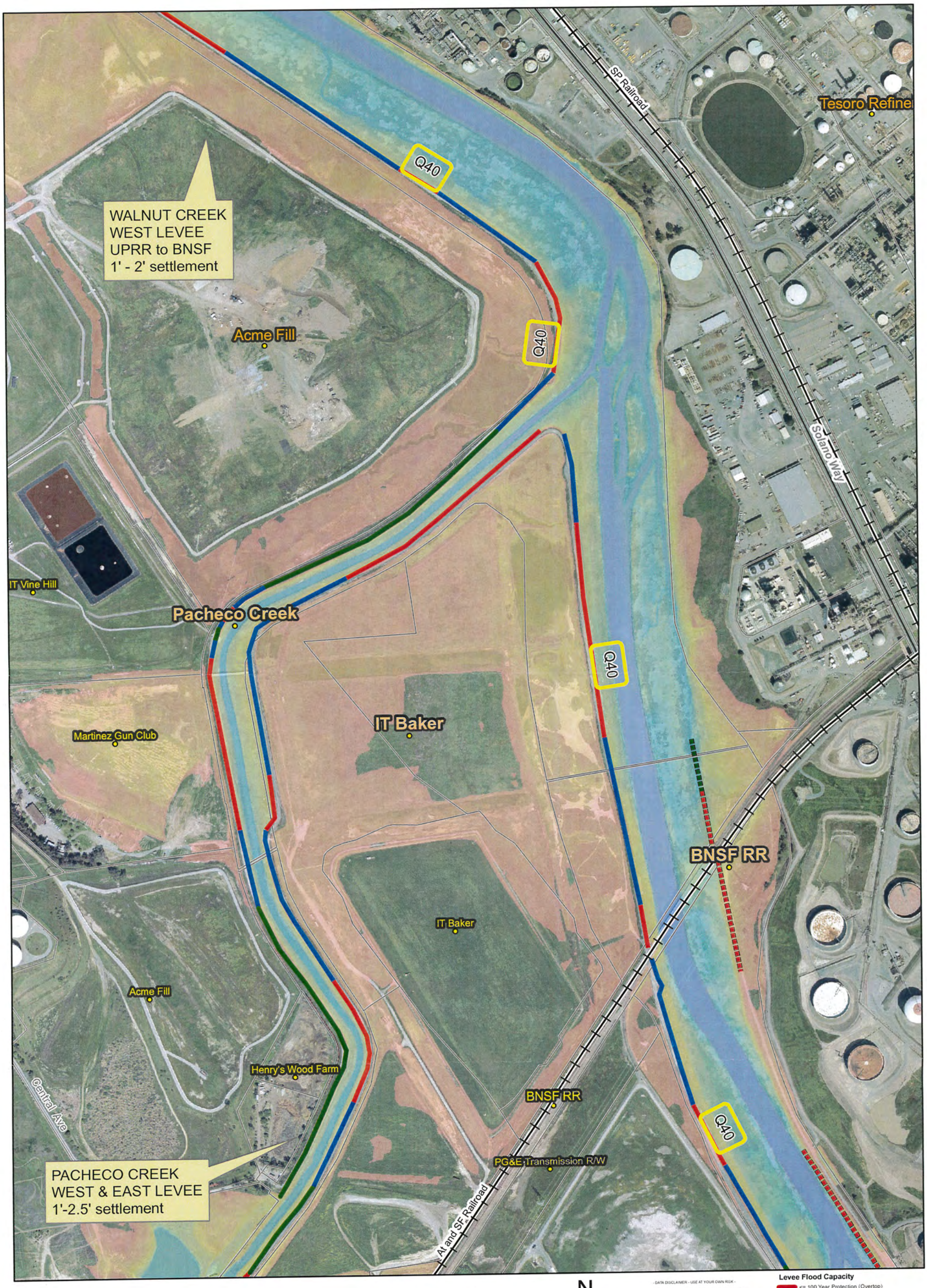
- Q **Storm Frequency Event Capacity**

Produced by Wiley Osborn/S. Yu, PWD 6/5/2007
Using Contra Costa County,CA Data &
U.S. Army Corp of Engineers Flood Elevation Data



Contra Costa County
Flood Control
& Water Conservation District

Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

2 of 4

N

0 550 1,100 Feet

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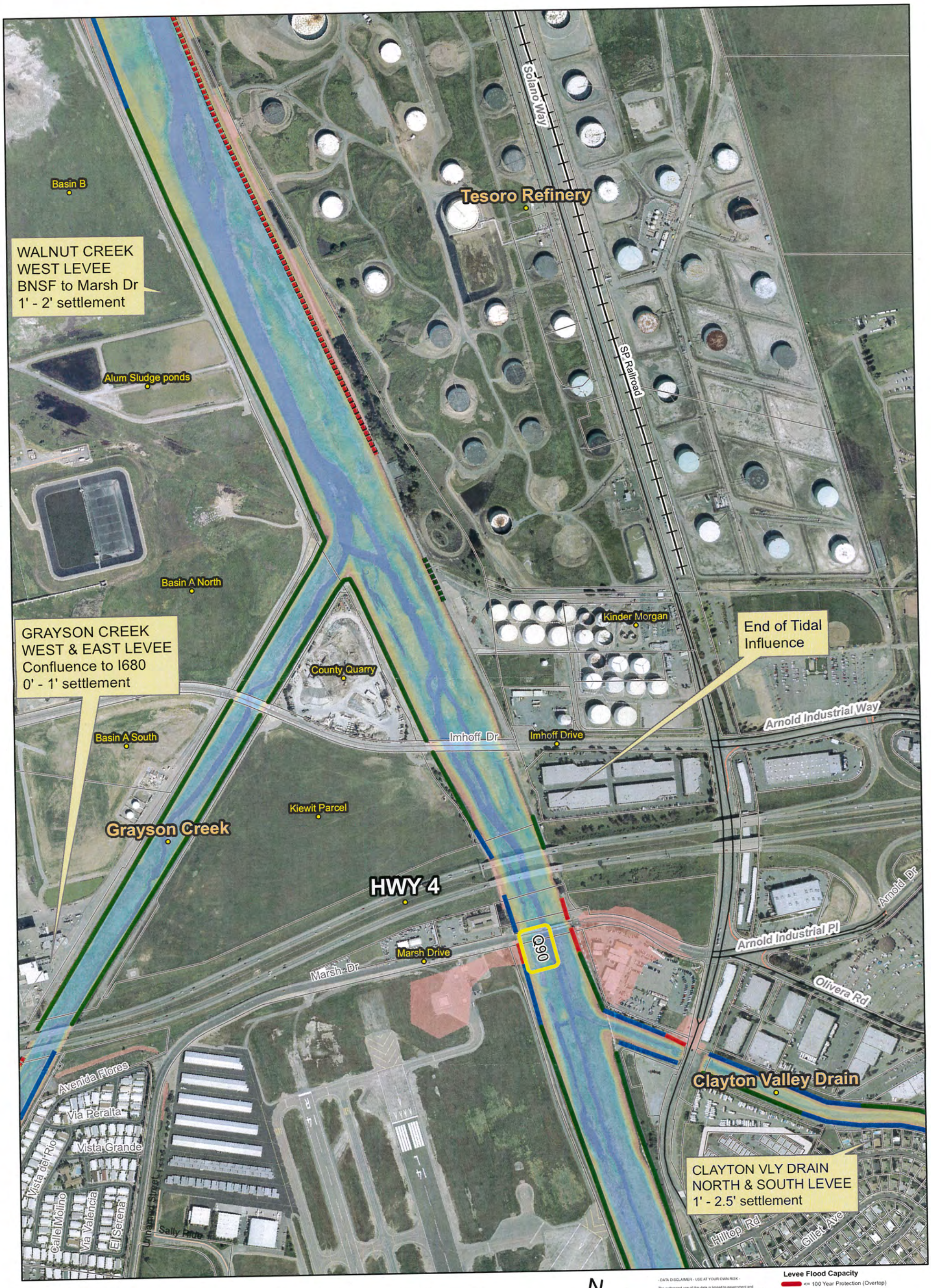

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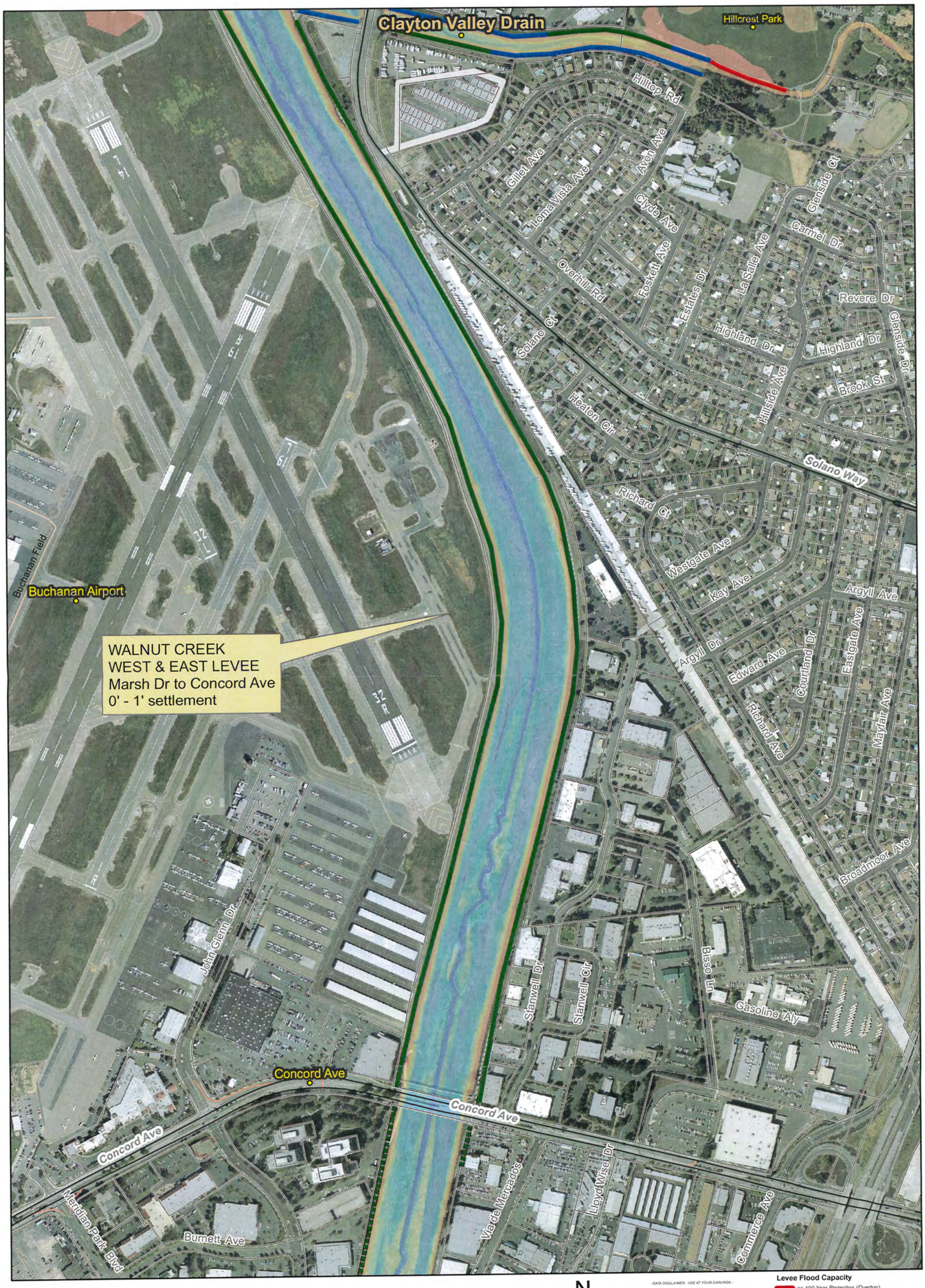
Contra Costa County
Flood Control
& Water Conservation District

Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek



Contra Costa County
Flood Control
& Water Conservation District

Freeboard and Inundation Areas, Lower Walnut Creek and Lower Grayson Creek

4 of 4

N

0 550 1,100 Feet

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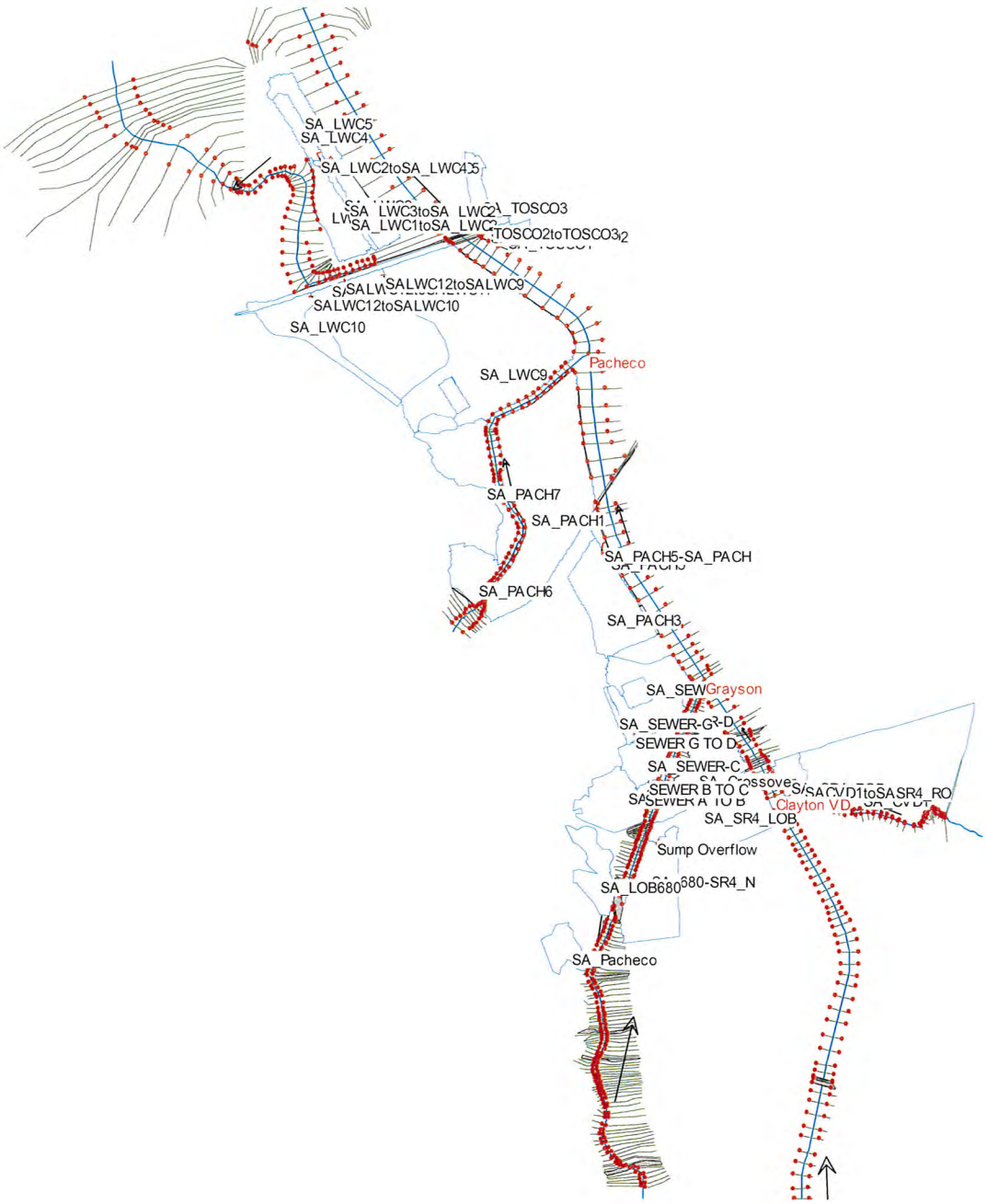
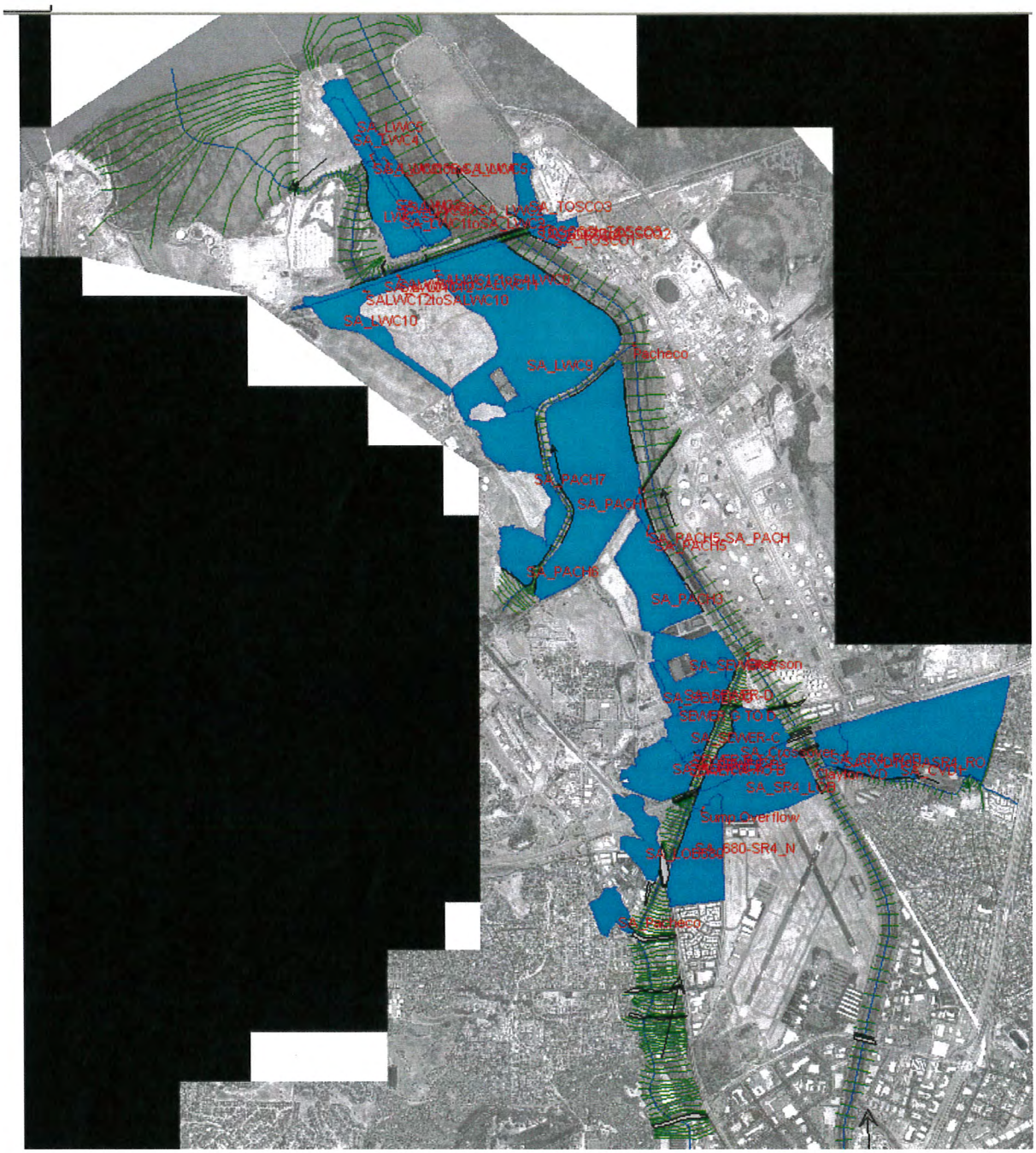


Lower Walnut Creek Corrective Action Plan – Appendix D
HEC-RAS Cross Section Schematic
May 2007
No scale



Lower Walnut Creek Corrective Action Plan – Appendix D
HEC-RAS Storage Location Schematic
May 2007
No scale

Storage Area Analysis for Walnut Creek

HEC-RAS Plan: OrgDes0412A1 Profile: Max WS

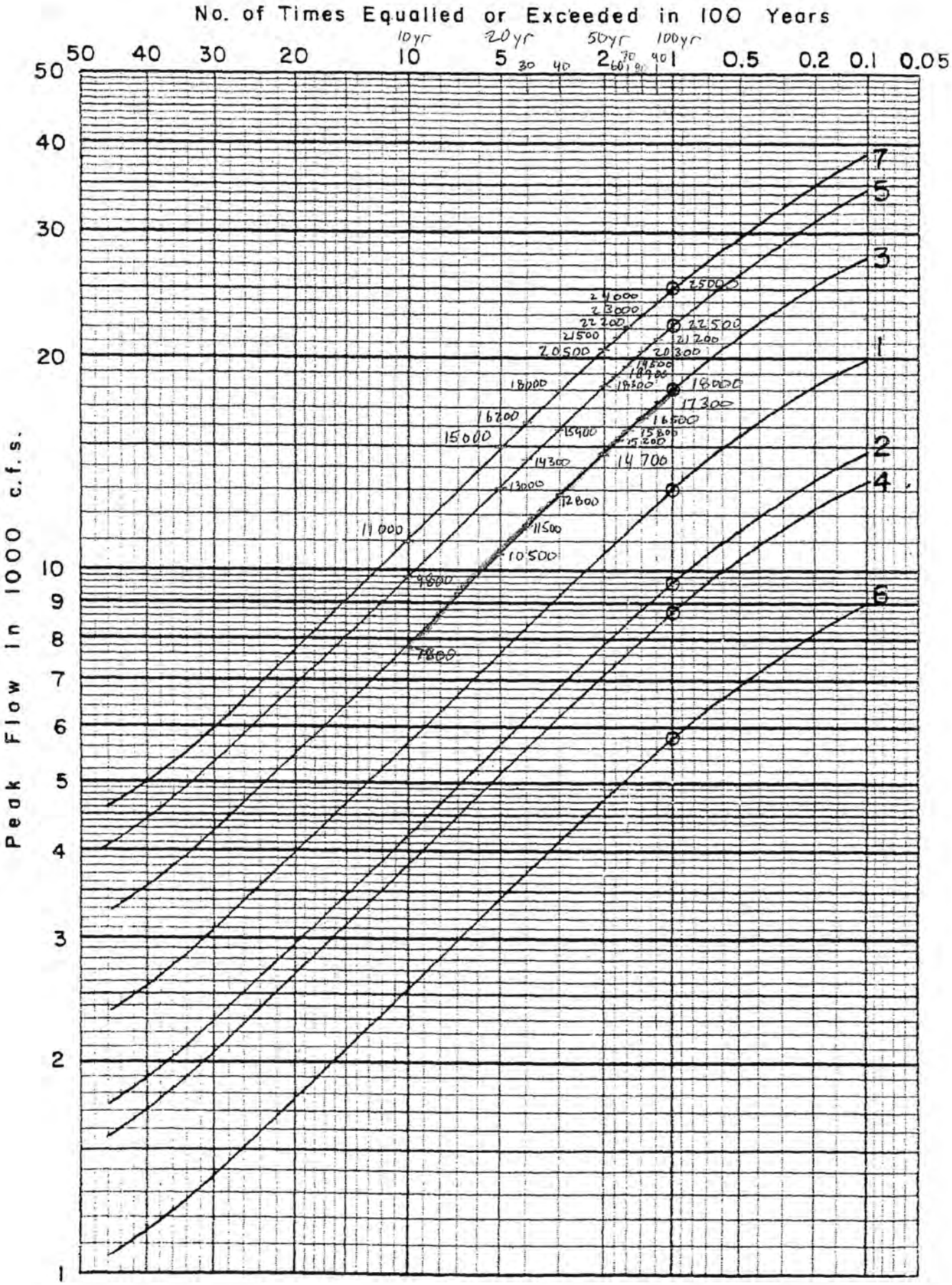
Area #	Description of Area	Storage Area	Profile	W.S. Elev (ft)	SA Min El (ft)	Max Depth (ft)	Net Flux (cfs)	SA Area (acres)	SA Volume (acre-ft)	Spill Point (Qx)
1	Lower Walnut Creek Marsh	LWC_SA1	Max WS	3	3	0	0	0	0	No
2	Lower Walnut Creek Marsh	SA_LWC3	Max WS	6.63	4	2.63	19.32	2.62	1.77	Q50%
3	Lower Walnut Creek Marsh	SA_LWC2	Max WS	6.56	6	0.56	4.45	0.84	0.47	No
4	Lower Walnut Creek Marsh	SA_LWC4	Max WS	5	5	0	0	0	0	No
5	Lower Walnut Creek Marsh	SA_LWC5	Max WS	5	5	0	0	0.02	0	No
6	ACME Landfill	SA_LWC9	Max WS	6.33	2	4.33	1058.78	72.55	163.81	Q50%
7	ACME Landfill (West)	SA_LWC10	Max WS	7.58	4	3.58	104.34	10.95	23.81	Q100%
8	IT Landfill / Conoco	SA_PACH1	Max WS	10.15	3	7.15	1975.74	108.1	236.38	Q50%
9	CCCSD Basin B	SA_PACH3	Max WS	8	8	0	0	0.74	0	No
10	CCCSD Railroad Spur-Levee	SA_PACH5	Max WS	14.35	8	6.35	60.2	4.17	3.47	Q50%
11	Adjacent to Waterfront Road	SA_LWC12	Max WS	7.91	4	3.91	-564.93	2.6	3.76	Q100%
12	Waterfront Road (West)	SA_LWC11	Max WS	7.92	0	7.92	682.55	8.1	17.66	Q100%
13	Buchanan Airport (North)	SA_SR4_LOB	Max WS	10.41	8	2.41	14.04	0.58	0.48	Q100%
14	TOSCO Facilities (South)	SA_TOSCO1	Max WS	12.01	4	8.01	207.05	8.3	17.74	Q10%
15	Waterfront Road (East)	SA_TOSCO2	Max WS	10.56	4	6.56	-3.16	1.15	2.2	Q100%
16	TOSCO Facilities (North)	SA_TOSCO3	Max WS	10.56	4	6.56	15.9	15.95	46.93	Q10%
17	Adjacent to 242 & Storage Facility	SA_SR242ROB	Max WS	47.57	42	5.57	133.75	4.2	9.18	N/A
18	Mobile Home Park (North)	SA_680-SR4_N	Max WS	12	12	0	0	0.04	0	N/A
19	Interchange 680/4	SA_LOB680	Max WS	16	16	0	0	0.09	0	N/A
20	Pacheco Blvd & United Rentals	SA_Pacheco	Max WS	17.7	17	0.7	0	0.14	0.1	N/A
21	CCCSD-Kewitt property	SA_Crossover	Max WS	14	14	0	0	0.02	0	N/A
22	CCCSD Basin A - North	SA_SEWER-E	Max WS	10	10	0	0	0.44	0	N/A
23	CCCSD Main Facilities - Buildings	SA_SEWER-A	Max WS	16	16	0	0	0.01	0	N/A
24	CCCSD Electric facility	SA_SEWER-B	Max WS	18	13	5	0	0.96	3.88	N/A
25	CCCSD Basin A - South	SA_SEWER-C	Max WS	18	9	9	0	14.34	66.09*	N/A
26	CCCSD Basin A - North	SA_SEWER-D	Max WS	15	10	5	0	10.26	32.92*	N/A
27	CCCSD Gunite channel to Basin A/B	SA_SEWER-G	Max WS	8	8	0	0	0.15	0	N/A
28	Solano Ave & Dodge dealership	SA_SR4_ROB	Max WS	19	19	0	0	0.05	0	N/A
29	North Concord - Residential, Hillcrest Park	SA_CVD1	Max WS	15	15	0	0	0	0	N/A
30	Martinez Gun Club-Henry's Wood Farm	SA_PACH7	Max WS	7.5	3	4.5	445.93	17.97	48.01	N/A
31	Pacheco Upstream Marsh	SA_PACH6	Max WS	13.09	3	10.09	147.63	12.8	65.82	N/A

* Not creek overflow, CCCSD basin assumed to partially filled from their sewer overflow

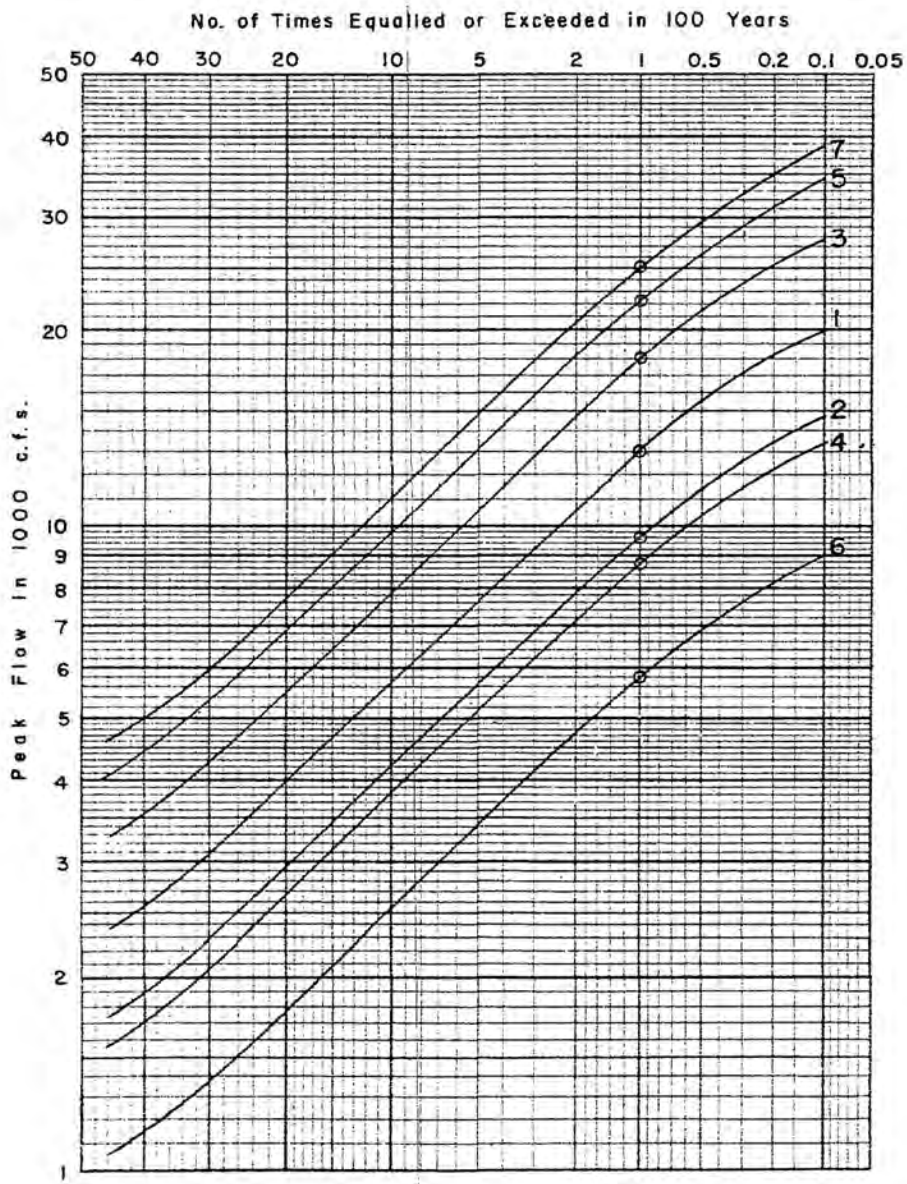
Interpolated Design Flowrates on Main Stem Walnut Creek Channel

Location	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90	Q100
Mouth to Grayson Creek	11,000	15,000	16,200	18,000	20,500	21,500	22,200	23,000	24,000	25,000
Grayson to Pine Creek	9,800	13,000	14,300	15,900	18,300	18,900	19,500	20,300	21,200	22,500
Pine Creek u/s to WC	7,800	10,500	11,500	12,800	14,700	15,200	15,800	16,500	17,300	18,000

Source: Chart #7, Design Memorandum #1, 1963
All values are in cfs



SOURCE: Dm #1, CHART #7



LEGEND:

1. San Ramon Creek above Las Trampas Creek.
2. Las Trampas Creek at Walnut Creek.
3. Walnut Creek at Walnut Creek.
4. Pine Creek at mouth.
5. Walnut Creek below Pine Creek.
6. Grayson Creek at mouth.
7. Walnut Creek below Grayson Creek.

WALNUT CREEK BASIN
California

FREQUENCY OF PEAK FLOWS

Corps of Engineers Sacramento, Cal.

Prepared by : J.B.P. 3 Dec. 1956

Chart 7

and below the soft, weak material there is another firm layer. One shear test of the soft, weak material gave values of .06 to .26 tons per square foot. A preliminary foundation stress analysis for a nine foot high levee with 1 on 3 waterside and 1 on 2 landside slopes using Jurgenson's solution for a semi-infinite elastic foundation gives maximum shear stress values in excess of those measured by the above mentioned vane shear test. Accordingly, prior to establishing the final embankment configuration in the Avon Highway to Grayson Creek reach additional exploration holes will be drilled along the levee alignment to obtain samples for additional secondary testing and vane shear tests. Analysis of foundation stress conditions will be made by electronic computer for various configurations of levee loading to determine what shape of levee section can safely be constructed over the soft foundation. Loading time will also be studied. For design memorandum purposes, the embankment configuration would consist of a 5 ft. high dike for retention of dredge spoil with two foot lifts added in subsequent years to provide the adopted levee section. A minimum berm width of 40 feet would be provided in this reach for stability of the levee. In the reach upstream from Industrial Highway No. 4 there appears to be no problems in constructing a standard levee with 1 on 3 waterside slope and 1 on 2 landside slope. Although there is a soft, weak material at depth in the foundation immediately upstream from Grayson Creek, an existing levee over 10 feet in height was built by local interests in one construction season and no failures occured.

29. Project Design Flows and Levee Freeboard. Flows from the approved standard project flood in the reach under consideration range from 18,000 cfs to 25,000 cfs and have generally been adopted as project design flood flows. The pertinent design flows by reaches are as follows:

Suisun Bay to Grayson Creek	25,000 cfs
Grayson Creek to Pine Creek	22,500 cfs
Pine Creek to Existing Improvements in City of Walnut Creek	18,000 cfs

By agreement with local interests, the existing concrete conduits, within the limits of the project which were constructed by the State of California, the City of Walnut Creek and private interests on San Ramon, Las Trampas and Walnut Creek have been incorporated into the project without material change. The following tabulation indicates the size and length of these conduits which begin about 600 feet downstream from the junction of San Ramon and Las Trampas Creeks in the City of Walnut Creek and extend upstream in San Ramon Creek to Rudgear Road and on Las Trampas Creek to Main Street.

APPENDIX E:

COMPARISON BETWEEN CALCULATED AND FEMA FLOODPLAINS

APPENDIX F:

HYDRAULIC PERFORMANCE OF INTERIM PROTECTION MEASURES

- List of 2007 Lower Walnut Creek Interim Protection Measures
- Summary table of change in water surface elevation and freeboard for each measure
- Summary table of change in storage volume at each storage area for each measure

2007 Lower Walnut Creek Interim Protection Measures

Proposed Measures

1. Raise all existing levees to 1965 ACOE design elevations for Lower Walnut Creek, Lower Grayson Creek, Pacheco Creek, and Clayton Valley Drain.
2. Desilt Walnut Creek between Waterfront Road to BNSF RR (to elevation 2').
3. Levee raising along west bank of Walnut Creek along ACME and IT properties.
4. Desilt D/S of BNSF RR adjacent to Tesoro (east bank, access through Tesoro) (to elevation 2').
5. Desilt Walnut Creek between BNSF RR to Grayson Creek (original channel bottom minus 1').
6. Desilt Walnut Creek between Grayson Creek to Hwy 4 (original channel bottom minus 1').
7. Desilt Walnut Creek between Hwy 4 to Clayton Valley Drain (original channel bottom).
8. Levee raising along west bank of Walnut Creek between BNSF RR to Grayson Confluence.
9. Levee raising of Walnut Creek east & west bank at Marsh Drive Bridge.
10. Desilt Walnut Creek between Clayton Valley Drain to Concord Avenue (original channel bottom).
11. Levee raising along east bank near Hwy 242 northbound bridge.
12. Levee raising along Pacheco Creek.
13. Desilt Grayson Creek between confluence to I680 (original channel bottom).
14. Levee raising along west bank of Grayson Creek between confluence to Hwy 4.
15. Levee raising along east bank of Grayson Creek between Hwy 4 to I680.
16. Flood wall along west side of Grayson Creek along CCCSD frontage.
17. Complete desilt to 1965 grades for Walnut Creek between mouth to Hwy 4, Grayson Creek between confluence to I680, and all of Pacheco Creek.
18. Dredge Walnut Creek between mouth to Waterfront (original channel bottom).

Notes:

- All Levee raising to original design elevations.
- All elevations in NAVD88.
- Most beneficial measures to be combined into alternatives.

Hydraulic Effects of Interim Protection Measures along the creek channel (Freeboard & WS Elev)

100 year storm event

HEC-RAS Plan: OrgDes0412A1 Profile: Max WS

Overtopping | 0'-1' Freeboard | 1'-3' Freeboard | ***Bold & Italic*** Freeboard increase due to levee raising or Drop in WS Elev greater than 0.1'

Creek	Location	River Sta	Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)	Levee Diff Ex vs 1965 Lt (ft)	Levee Diff Ex. Vs 1965 Rt (ft)	Measure 1 WS Elev Diff (ft)	Measure 1 Freebrd Lt	Measure 1 Freebrd Rt	Measure 2 WS Elev Diff (ft)	Measure 2 Freebrd Lt	Measure 2 Freebrd Rt	Measure 3 WS Elev Diff (ft)	Measure 3 Freebrd Lt	Measure 3 Freebrd Rt	Measure 4 WS Elev Diff (ft)	Measure 4 Freebrd Lt	Measure 4 Freebrd Rt	Measure 5 WS Elev Diff (ft)	Measure 5 Freebrd Lt	Measure 5 Freebrd Rt	Measure 6 WS diff (ft)	Measure 6 Freebrd Lt	Measure 6 Freebrd Rt	Measure 7 WS Elev Diff (ft)	Measure 7 Freebrd Lt	Measure 7 Freebrd Rt	Measure 8 WS Elev Diff (ft)	Measure 8 Freebrd Lt	Measure 8 Freebrd Rt	Measure 9 WS Elev Diff (ft)	Measure 9 Freebrd Lt	Measure 9 Freebrd Rt	Measure 10 WS Elev Diff (ft)	Measure 10 Freebrd Lt	Measure 10 Freebrd Rt
Walnut		363+44	47.6	48.3	48	0.7	0.4		50.0			0	0.70	***2.40***	0	0.70	0.40	0	0.70	0.40	0	0.70	0.40	0.01	0.69	0.39	0.01	0.69	0.39	0.01	0.69	0.39	0	0.70	0.40	0	0.70	0.40	0	0.70	0.40
Walnut	SR 242 NB	362+98																																							
Walnut		362+44	47.36	48.4	48	1.04	0.64		50.0			0	1.04	***2.64***	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64
Walnut		361+50	46.99	48.5	47.5	1.51	0.51		49.5			0	1.51	***2.51***	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51
Walnut	SR 242 SB	360+97																																							
Walnut		358+85	44.24	48.7	48	4.46	3.76					0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76
Walnut	Drop Structure #1	356+69																																							
Walnut		356+31	37.17	47.1	44	9.93	6.83					0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83
Walnut		347+37	36.88	44.4	39.8	7.52	2.92					0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92
Walnut		338+40	35.69	42	39	6.31	3.31					0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	-0.01	6.32	3.32
Walnut	Willow Pass Road	334+90																																							
Walnut		330+61	33.64	38	36	4.36	2.36					0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	-0.02	4.38	2.38
Walnut		327+86	33.05	36	36	2.95	2.95					0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	-0.04	2.99	2.99
Walnut	Diamond Blvd	324+86																																							
Walnut		323+03	32.35	34	35	1.65	2.65					0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	-0.07	1.72	2.72
Walnut		309+75	31.03	37	36.3	5.97	5.27					0	5.97	5.27	0	5.97	5.27	0	5.97	5.27	0	5.97	5.27	0	5.97	5.27	0	5.97	5.27	-0.01	5.98	5.28	0	5.97	5.27	0	5.97	5.27	***-0.14***	6.11	5.41
Walnut	Pine Creek	299+56	29.73	33	34	3.27	4.27					0	3.27	4.27	0	3.27	4.27	0	3.27	4.27	0	3.27	4.27	0	3.27	4.27	0	3.27	4.27	-0.02	3.29	4.29	0	3.27	4.27	0	3.27	4.27	***-0.26***	3.53	4.53
Walnut		294+00	28.47	30	31.1	1.53	2.63					0	1.53	2.63	0	1.53	2.63	0	1.53	2.63	0	1.53	2.63	-0.01	1.54	2.64	-0.01	1.54	2.64	-0.05	1.58	2.68	0	1.53	2.63	0	1.53	2.63	***-0.63***	2.16	3.26
Walnut		284+29	27.83	30	30	2.17	2.17					0	2.17	2.17	0	2.17	2.17	0	2.17	2.17	0	2.17	2.17	-0.02	2.19	2.19	-0.02	2.19	2.19	-0.07	2.24	2.24	0	2.17	2.17	0	2.17	2.17	***-0.84***	3.01	3.01
Walnut	Concord Ave	283+78																																							
Walnut		283+25	27.49	32	32	4.51	4.51	29.4	29.4	2.6	2.6	0	4.51	4.51	0	4.51	4.51	0	4.51	4.51	0	4.51	4.51	-0.03	4.54	4.54	-0.03	4.54	4.54	-0.08	4.59	4.59	0	4.51	4.51	0	4.51	4.51	***-1.01***	5.52	5.52
Walnut		282+97	27.43	32	30	4.57	2.57	29.4	29.4	2.6	0.6	0	4.57	2.57	0	4.57	2.57	0	4.57	2.57	0	4.57	2.57	-0.03	4.60	2.60	-0.03	4.60	2.60	-0.08	4.65	2.65	0	4.57	2.57	0	4.57	2.57	***-1.05***	5.62	3.62
Walnut	Concord Footbrid	282+88																																							
Walnut		281+31	27.38	30	29.5	2.62	2.12	29.3	29.3	0.7	0.2	0	2.62	2.12	0	2.62	2.12	0	2.62	2.12	0	2.62	2.12	-0.04	2.66	2.16	-0.04	2.66	2.16	-0.09	2.71	2.21	0	2.62	2.12	0	2.62	2.12	***-1.1***	3.72	3.22
Walnut		276+46	26.94	29.3	28.9	2.36	1.96	29.0	29.0	0.3	-0.1	0	2.36	***2.08***	0	2.36	1.96	0	2.36	1.96	0	2.36	1.96	-0.05	2.41	2.01	-0.05	2.41	2.01	***-0.12***	2.48	2.08	0	2.36	1.96	0	2.36	1.96	***-0.95***	3.31	2.91
Walnut		264+21	26.14	28	28.3	1.86	2.16	28.2	28.2	-0.2	0.1	0	***2.11***	2.16	0	1.86	2.16	0	1.86	2.16	0	1.86	2.16	-0.08	1.94	2.24	-0.08	1.94	2.24	***-0.17***	2.03	2.33	0	1.86	2.16	0	1.86	2.16	***-0.78***	2.64	2.94
Walnut		259+04	25.83	27.9	27.4	2.07	1.57	27.9	27.9	0.0	-0.5	0	2.07	***2.09***	0	2.07	1.57	0	2.07	1.57	0	2.07	1.57	-0.1	2.17	1.67	-0.1	2.17	1.67	***-0.19***	2.26	1.76	0	2.07	1.57	0	2.07	1.57	***-0.69***	2.76	2.26
Walnut		249+73	25.27	27.7	27.9	2.43	2.63	27.3	27.3	0.4	0.6	0	2.43	2.63	0	2.43	2.63	0	2.43	2.63	0	2.43	2.63	***-0.13***	2.56	2.76	***-0.13***	2.56	2.76	***-0.25***	2.68	2.88	0	2.43	2.63	0	2.43	2.63	***-0.51***	2.94	3.14
Walnut		245+93	24.99	27.5	27.7	2.51	2.71	27.0	27.0	0.5	0.7	0.01	2.50	2.70	0.01	2.50	2.70	0.01	2.50	2.70	0	2.51	2.71	***-0.15***	2.66	2.86	***-0.15***	2.66	2.86	***-0.28***	2.79	2.99	0.01	2.50	2.70	0.01	2.50	2.70	***-0.47***	2.98	3.18
Walnut		239+17	24.13	26.9	26.6	2.77	2.47	26.2	26.2	0.7	0.4	0	2.77	2.47	0	2.77	2.47	0	2.77	2.47	0	2.77	2.47	***-0.22***	2.99	2.69	***-0.22***	2.99	2.69	***-0.4***	3.17	2.87	0	2.77	2.47	0	2.77	2.47	***-0.28***	3.05	2.75
Walnut		235+38	23.8	26.2	25.8	2.4	2	25.7	25.7	0.5	0.1	0.01	2.39	1.99	0	2.40	2.00	0	2.40	2.00	0	2.40	2.00	***-0.25***	2.65	2.25	***-0.25***	2.65	2.25	***-0.46***	2.86	2.46	0	2.40	2.00	0	2.40	2.00	***-0.29***	2.69	2.29
Walnut		228+59	23.3	24.2	25	0.9	1.7	24.9	24.9	-0.7	0.1	0	***1.57***	1.70	0	0.90	1.70	0	0.90	1.70	0	0.90	1.70	***-0.32***	1.22	2.02	***-0.32***	1.22	2.02	***-0.57***	1.47	2.27	0	0.90	1.70	0	0.90	1.70	***-0.24***	1.14	1.94
Walnut		225+35	22.92	24.3	24.3	1.38	1.38	24.5	24.5	-0.2	-0.2	0.01	***1.55***	***1.55***	0	1.38	1.38	0	1.38	1.38	0	1.38	1.38	***-0.36***	1.74	1.74	***-0.36***	1.74	1.74	***-0.66***	2.04	2.04	0	1.38	1.38	0.01	1.37	1.37	***-0.14***	1.52	1.52
Walnut	Clayton Vly Drain	218+60	22.39	23.5	24.4	1.11	2.01					0.01	1.10	2.00	0	1.11	2.01	0	1.11	2.01	0	1.11	2.01	***-0.48***	1.59	2.49	***-0.48***	1.59	2.49	***-0.89***	2.00	2.90	0	1.11	2.01	0	1.11	2.01	-0.02	1.13	2.03
Walnut		214+44	22.23	22.3	22.7	0.07	0.47	23.3	23.3	-1.0	-0.6	0.01	***1.03***	***1.03***	0	0.07	0.47	0	0.07	0.47	0	0.07	0.47	***-0.52***	0.59	0.99	***-0.52***	0.59	0.99	***-0.84***	0.91	1.31	0	0.07	0.47	0.01	***1.03***	***1.03***	-0.01	0.08	0.48
Walnut		213+21	22.17	23	24	0.83	1.83	23.0	23.0	0.0	1.0	0.01	***0.83***	1.82	0	0.83	1.83	0	0.83	1.83	0	0.83	1.83	***-0.54***	1.37	2.37	***-0.54***	1.37	2.37	***-0.84***	1.67	2.67	0	0.83	1.83	0.01	***0.83***	1.82	-0.01	0.84	1.84
Walnut		211+38	22.01	21.8	22	-0.21	-0.01	22.6	22.6	-0.8	-0.6	0.01	***0.60***	***0.60***	0	-0.21	-0.01	0.01	-0.22	-0.02	0	-0.21	-0.01	***-0.58***	0.37	0.57	***-0.58***	0.37	0.57	***-0.8***	0.59	0.79	0	-0.21	-0.01	0.01	***0.60***	***0.60***	-0.01	-0.20	0.00
Walnut	Marsh Drive	211+11																																							
Walnut		210+07	19.34	22.3	22.4	2.96	3.06	22.5		-0.2		0.01	***3.11***	3.05	-0.01	2.97	3.07	0.01	2.95	3.05	-0.01	2.97	3.07	***-0.36***	3.32	3.42	***-0.53***	3.49	3.59	0.07	2.89	2.99	0	2.96	3.06	0	***3.12***	3.06	-0.01	2.97	3.07
Walnut		208+06	19.3	24	22.4	4.7	3.1	22.2		1.8		0.01	4.69	3.09	-0.01	4.71	3.11	0.01	4.69	3.09	-0.01	4.71	3.11	***-0.37***	5.07	3.47	***-0.54***	5.24	3.64	0.06	4.64	3.04	0	4.70	3.10	0	4.70	3.10	-0.01	4.71	3.11
Walnut	SR 4 EB	207+79																																							
Walnut		206+99	18.99	26	22	7.01	3.01	22.1		3.9		0.01	7.00	3.00	-0.01	7.02	3.02	0.01	7.00	3.00	-0.01	7.02	3.02	***-0.5***	7.51	3.51	***-0.74***	7.75	3.75	0.17	6.84	2.84	0	7.01	3.01	0	7.01	3.01	-0.01	7.02	3.02
Walnut	SR 4 WB	206+76																																							
Walnut		206+08	18.85	19.3	21	0.45	2.15	22.0		-2.7		0.02	0.43	2.13	-0.01	0.46	2.16	0.01	0.44	2.14	-0.01	0.46	2.16	***-0.55***	1.00	2.70	***-0.83***	1.28	2.98	0.19	0.26	1.96	0.01	0.44	2.14	0.01	0.44	2.14	0	0.45	2.15
Walnut		203+81	18.54	20.8	22.4	2.26	3.86	21.8		-1.0		0.02	2.24	3.84	-0.01	2.27	3.87	0.01	2.25	3.85	-0.01	2.27	3.87	***-0.65***	2.91	4.51	***-0.55***	2.81	4.41	0.05	2.21	3.81	0	2.26	3.86	0	2.26	3.86	0	2.26	3.86
Walnut		201+33	18.36	20.7	23	2.34	4.64	21.5		-0.8		0.02	2.32	4.62	-0.02	2.36	4.66	0.01	2.33	4.63	-0.02	2.36	4.66	***-0.74***	3.08	5.38	***-0.44***	2.78	5.08	0.04	2.30	4.60	0	2.34	4.64	0	2.34	4.64	-0.01	2.35	4.65
Walnut		200+17	18.47	20.7	22.2	2.23	3.73	21.4		-0.7		0.02	2.21	3.71	-0.02	2.25	3.75	0.01	2.22	3.72	-0.02	2.25	3.75	***-0.74***	2.97	4.47	***-0.41***	2.64	4.14	0.04	2.19	3.69	0	2.23	3.73	0	2.23	3.73	-0.01	2.24	3.74
Walnut	Imhoff Drive	199+78																																							
Walnut		199+39	18.49	20.8	22.4	2.31	3.91	21.3		-0.5		0.02	2.29	3.89	-0.02	2.33	3.93	0.01	2.30	3.90	-0.02	2.33	3.93	***-0.74***	3.05	4.65	***-0.43***	2.74	4.34	0.04	2.27	3.87	0	2.31	3.91	0	2.31	3.91	-0.01	2.32	3.92
Walnut		198+21	18.36	20.4	22.3	2.04	3.94	21.3		-0.9		0.02	2.02	3.92	-0.02	2.06	3.96	0.01	2.03	3.93	-0.02	2.06	3.96	***-0.78***	2.82	4.72	***-0.38***	2.42	4.32	0.04	2.00	3.90	0	2.04	3.94	0	2.04	3.94	-0.01	2.05	3.95
Walnut		194+18	18.01	20.3	22.4	2.29	4.39	21.0		-0.7		0.02	2.27	4.37	-0.02	2.31	4.41	0.01	2.28	4.38	-0.02	2.31	4.41	***-0.94***	3.23	5.33	***-0.16***	2.45	4.55	0.04	2.25	4.35	0	2.29	4.39	0	2.29	4.39	-0.01	2.30	4.40
Walnut		190+32	17.74	20	19.8	2.26	2.06	20.8		-0.8		0.03	2.23	2.03	-0.03	2.29	2.09	0.01	2.25	2.05	-0.03	2.29	2.09	***-1.12***	3.38	3.18	-0.05	2.31	2.11	0.04	2.22	2.02	0	2.26	2.06	0	2.26	2.06	-0.01	2.27	2.07
Walnut	Grayson Creek	188+92	17.61									0.03			-0.02			0.02			-0.02			***-1.19***			0.05			0.05			0.01			0			0		
Walnut		184+18	17.59	20.5	18.7	2.91	1.11	19.9		0.6		0.03	2.88	1.08	-0.02	2.93	1.13	0.02	2.89	1.09	-0.02	2.93	1.13	***-1.12***	4.03	2.23	0.05	2.86	1.06	0.05	2.86	1.06	0.01	***2.35***	1.10	0	2.91	1.11	0	2.91	1.11
Walnut		177+39	17.16	19.7	16.2	2.54	-0.96	19.4		0.3		0.05	***2.15***	-1.01	-0.03	2.57	-0.93	0.03	2.51	-0.99	-0.03	2.57	-0.93	***-0.91***	3.45	-0.05	0.05	2.49	-1.01	0.05	2.49	-1.01	0.01	2.53	-0.97	0.01	2.53	-0.97	0	2.54	-0.96
Walnut		172+56	16.96	18.4	16.7	1.44	-0.26	18.9		-0.5		0.06	***1.92***	-0.32	-0.05	1.49	-0.21	0.03	1.41	-0.29	-0.05	1.49	-0.21	***-0.95***	2.39	0.69	0.05	1.39	-0.31	0.05	1.39	-0.31	0.01	***1.97***	-0.27	0	1.44	-0.26	0	1.44	-0.26
Walnut		162+79	16.54	18	15.5	1.46	-1.04	18.1		-0.1		0.07	***1.48***	-1.11	-0.06	1.52	-0.98	0.04	1.42	-1.08	-0.06	1.52	-0.98	***-0.89***	2.35	-0.15	0.04	1.42	-1.08	0.04	1.42	-1.08	0.01	***1.54***	-1.05	0	1.46	-1.04	-0.01	1.47	-1.03
Walnut		153+62	15.91	16.2	15.3	0.29	-0.61	17.3		-1.1		0.1	***1.28***	-0.71	-0.08	0.37	-0.53	0.05	0.24	-0.66	-0.08	0.37	-0.53	***-0.63***	0.92	0.02	0.04	0.25	-0.65	0.03	0.26	-0.64	0.01	***1.37***	-0.62	0	0.29	-0.61	0	0.29	-0.61
Walnut		150+44	15.73	15.5	16	-0.23	0.27	17.0		-1.5		0.11	***1.17***	0.16	-0.1	-0.13	0.37	0.06	-0.29	0.21	-0.1	-0.13	0.37	***-0.56***	0.33	0.83	0.04	-0.27	0.23	0.03	-0.26	0.24	0.01	***1.27***	0.26	0	-0.23	0.27	0	-0.23	0.27
Walnut		147+60	15.52	16	22	0.48	6.48	16.8		-0.8		0.12	***1.12***	6.36	***-0.11***	0.59	6.59	0.07	0.41	6.41	***-0.11***	0.59	6.59	***-0.36***	0.84	6.84	0.04	0.44	6.44	0.03	0.45	6.45	0.01	***1.23***	6.47	0	0.48	6.48	0	0.48	6.48
Walnut		142+34	15.2	16	20	0.8	4.8	16.3		-0.3		0.14	***0.96***	4.66	***-0.14***	0.94	4.94	0.08	0.72	4.72	***-0.14***	0.94	4.94	***-0.22***	1.02	5.02	0.03	0.77	4.77	0.03	0.77	4.77	0	***1.10***	4.80	0	0.80	4.80	-0.01	0.81	4.81
Walnut	BNSF RR	137+62																																							
Walnut		137+26	14.09	14.6	11	0.51	-3.09	16.0		-1.4		0.29	***1.60***	-3.38	***-0.52***	1.03	-2.57	0.18	***1.71***	-3.27	***-0.21***	0.72	-2.88	0.01	0.50	-3.10	0.02	0.49	-3.11	0.01	0.50	-3.10	0	0.51	-3.09	0	0.51	-3.09	-0.01	0.52	-3.08
Walnut		134+21	13.99	14.5	16.5	0.51	2.51	15.8		-1.3		0.31	***1.54***	2.20	***-0.38***	0.89	2.89	0.19	***1.66***	2.32	-0.06	0.57	2.57	0.02	0.49	2.49	0.02	0.49	2.49	0.02	0.49	2.49	0.01	0.50	2.50	0	0.51	2.51	0	0.51	2.51
Walnut		127+03	13.84	13	20	-0.84	6.16	15.5		-2.5		0.34	***1.34***	5.82	***-0.35***	-0.49	6.51	0.21	***1.47***	5.95	-0.01	-0.83	6.17	0.02	-0.86	6.14	0.02	-0.86	6.14	0.02	-0.86	6.14	0.01	-0.85	6.15	0	-0.84	6.16	0	-0.84	6.16
Walnut		124+60	13.71	12.6	20	-1.11	6.29	15.4		-2.8		0.34	***1.36***	5.95	***-0.33***	-0.78	6.62	0.19	***1.51***	6.10	0.04	-1.15	6.25	0.02	-1.13	6.27	0.02	-1.13	6.27	0.02	-1.13	6.27	0.01	-1.12	6.28	0	-1.11	6.29	0	-1.11	6.29
Walnut		118+77	13.49	13.4	20	-0.09	6.51	15.2		-1.8		0.34	***1.32***	6.17	***-0.25***	0.16	6.76	0.18	***1.48***	6.33	0.02	-0.11	6.49	0.01	-0.10	6.50	0.02	-0.11	6.49	0.02	-0.11	6.49	0	-0.09	6.51	0	-0.09	6.51	0	-0.09	6.51
Walnut	Pacheco Creek	111+24	13.11	13.6	20	0.49	6.89	14.8				0.39	***1.31***	6.50	-0.08	0.57	6.97	0.19	***1.51***	6.70	0.01	0.48	6.88	0.01	0.48	6.88	0.01	0.48	6.88	0.01	0.48	6.88	0	0.49	6.89	0	0.49	6.89	0	0.49	6.89
Walnut		104+28	13.05	12.1	24.5	-0.95	11.45	14.5		-2.4		0.39	***1.06***	11.06	-0.04	-0.91	11.49	0.19	***1.26***	11.26	0.01	-0.96	11.44	0.01	-0.96	11.44	0.01	-0.96	11.44	0.01	-0.96	11.44	0	-0.95	11.45	0	-0.95	11.45	-0.01	-0.94	11.46
Walnut		91+00	12.73	12.4	24	-0.33	11.27	13.9		-1.5		0.41	***0.77***	10.86	0	-0.33	11.27	0.21	***0.97***	11.06	0.01	-0.34	11.26	0.01	-0.34	11.26	0.01	-0.34	11.26	0.01	-0.34	11.26	0	-0.33	11.27	0	-0.33	11.27	0	-0.33	11.27
Walnut		83+52	12.46	13	30	0.54	17.54	13.6		-0.6		0.43	***0.69***	17.11	0.04	0.50	17.50	0.23	***0.89***	17.31	0.02	0.52	17.52	0.02	0.52	17.52	0.02	0.52	17.52	0.02	0.52	17.52	0.01	0.53	17.53	0.01	0.53	17.53	0	0.54	17.54
Walnut		80+77	12.37	12.6	30	0.23	17.63	13.5		-0.9		0.42	***0.66***	17.21	0.07	0.16	17.56	0.22	***0.86***	17.41	0.01	0.22	17.62	0.01	0.22	17.62	0.01	0.22	17.62	0.01	0.22	17.62	0	0.23	17.63	0	0.23	17.63	-0.01	0.24	17.64
Walnut		77+89	12.27	11.5	12	-0.77	-0.27	13.3		-1.8		0.43	***0.62***	-0.70	0.1	-0.87	-0.37	0.23	***0.82***	-0.50	0.01	-0.78	-0.28	0.01	-0.78	-0.28	0.01	-0.78	-0.28	0.01	-0.78	-0.28	0	-0.77	-0.27	0	-0.77	-0.27	0	-0.77	-0.27

Creek	Location	River Sta	Exist Levee/Embankment Elevation Data: Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)	Levee Diff Ex vs 1965 Lt (ft)	Levee Diff Ex. Vs 1965 Rt (ft)
Walnut		72+59	12.09	12	10	-0.09	-2.09	13.1		-1.1	
Walnut		70+76	12.03	11.8	7.5	-0.23	-4.53	13.0		-1.2	
Walnut		68+52	11.96	11	8	-0.96	-3.96	12.9		-1.9	
Walnut	UP RR	68+37									
Walnut		68+23	10.77	10.9	6	0.13	-4.77				
Walnut		67+65	10.75	11	6	0.25	-4.75				
Walnut		67+16	10.74	11.4	8	0.66	-2.74				
Walnut	Waterfront Road	66+89									
Walnut		66+65	10.56	11.9	8	1.34	-2.56				
Walnut		66+54	10.57	11.9	8	1.33	-2.57				
Walnut	Tosco Utility Bridge	66+42									
Walnut		66+31	10.55	11.9	8	1.35	-2.55				
Walnut		63+92	10.57	8	7.6	-2.57	-2.97				
Walnut		61+72	10.52	7	13.8	-3.52	3.28				
Walnut		57+49	10.4	8.3	13.3	-2.1	2.9				
Walnut		49+10	10.02	10.4	12.5	0.38	2.48				
Walnut		41+45	9.64	10.8	12.3	1.16	2.66				
Walnut		33+84	9.28	11.3	13.8	2.02	4.52				
Walnut		26+85	8.78	11	13.6	2.22	4.82				
Walnut		19+18	7.75	11.5	14	3.75	6.25				
Walnut		13+14	6.73	14.3	4.7	7.57	-2.03				
Walnut	Mouth @ Suisun Bay	10+28	6.61	6	4.7	-0.61	-1.91				
Pacheco		60+04	13.09	14.4	13.5	1.31	0.41	14.8	14.8	-0.4	-1.3
Pacheco		55+74	13.09	14.5	13.6	1.41	0.51	14.8	14.8	-0.3	-1.2
Pacheco		49+29	13.08	14.5	13	1.42	-0.08	14.8	14.8	-0.3	-1.8
Pacheco		45+49	13.08	14.4	13.8	1.32	0.72	14.8	14.8	-0.4	-1.0
Pacheco	Henry's Wood Farm	42+03	13.08	14.1	13.9	1.02	0.82	14.8	14.8	-0.7	-0.9
Pacheco		39+84	13.08	13.7	13.5	0.62	0.42	14.8	14.8	-1.1	-1.3
Pacheco		38+23	13.08	12.8	13.1	-0.28	0.02	14.8	14.8	-2.0	-1.7
Pacheco		33+15	13.08	12.6	13.3	-0.48	0.22	14.8	14.8	-2.2	-1.5
Pacheco		29+99	13.08	12.6	14	-0.48	0.92	14.8	14.8	-2.2	-0.8
Pacheco	Martinez Gun Club	29+27	13.08	12.6	13.8	-0.48	0.72	14.8	14.8	-2.2	-1.0
Pacheco		27+37	13.08	14.5	13.8	1.42	0.72	14.8	14.8	-0.3	-1.0
Pacheco		19+50	13.08	15.3	13.2	2.22	0.12	14.8	14.8	0.5	-1.6
Pacheco		10+47	13.09	14.4	12.8	1.31	-0.29	14.8	14.8	-0.4	-2.0
Pacheco	Confluence w/ WC	06+98	13.11	13.7	13	0.59	-0.11	14.8	14.8	-1.1	-1.8
Grayson	I680 SB Main Deck	59+10									
Grayson		57+34	18.73	18	19.3	-0.73	0.57	20.1	20.1	-2.1	-0.8
Grayson		54+71	18.63	17	19.5	-1.63	0.87	20.1	20.1	-3.1	-0.6
Grayson		51+50	18.56	17.5	19.4	-1.06	0.84	20.1	20.1	-2.6	-0.7
Grayson		47+85	18.44	16.5	19.4	-1.94	0.96	20.1	20.1	-3.6	-0.7
Grayson		44+68	18.4	17	18.7	-1.4	0.3	20.1	20.1	-3.1	-1.4
Grayson		42+53	18.3	18	18.8	-0.3	0.5	20.1	20.1	-2.1	-1.3
Grayson		40+77	18.26	20	18.8	1.74	0.54	20.1	20.1	-0.1	-1.3
Grayson	SR 4 EB	40+38									
Grayson		39+95	18.23	20	20	1.77	1.77	20.1	20.1	-0.1	-0.1
Grayson		39+77	18.23	20	20	1.77	1.77	20.1	20.1	-0.1	-0.1
Grayson	SR 4 WB	39+43									
Grayson		38+18	18.16	19.6	20	1.44	1.84	20.1	20.1	-0.5	-0.1
Grayson		35+27	18.08	19.5	19.5	1.42	1.42	20.1	20.1	-0.6	-0.6
Grayson		33+84	18.04	20.3	19.3	2.26	1.26	20.1	20.1	0.2	-0.8
Grayson		29+39	17.95	20.4	19.9	2.45	1.95	20.1	20.1	0.3	-0.2
Grayson		27+36	17.92	20.1	20.2	2.18	2.28	20.1	20.1	0.0	0.1
Grayson		24+20	17.86	20.6	19.5	2.74	1.64	20.1	20.1	0.5	-0.6
Grayson		22+84	17.85	20.3	19.7	2.45	1.85	20.1	20.1	0.2	-0.4
Grayson		19+77	17.8	20.2	19.7	2.4	1.9	20.1	20.1	0.1	-0.4
Grayson		18+64	17.78	21	20	3.22	2.22	20.1	20.1	0.9	-0.1
Grayson		17+91	17.76	21	22	3.24	4.24	20.1	20.1	0.9	1.9
Grayson	Imhoff Drive	17+60									
Grayson		17+21	17.72	20	22	2.28	4.28	20.1	20.1	-0.1	1.9
Grayson		16+51	17.72	19.7	20	1.98	2.28	20.1	20.1	-0.4	-0.1
Grayson		15+35	17.69	19.6	19.3	1.91	1.61	20.1	20.1	-0.5	-0.8
Grayson		11+99	17.66	19.5	19	1.84	1.34	20.1	20.1	-0.6	-1.1
Grayson		11+26	17.65	19.5	19	1.85	1.35	20.1	20.1	-0.6	-1.1
Grayson		08+80	17.61	19.6	18.8	1.99	1.19	20.1	20.1	-0.5	-1.3
Clayton		26+61	22.6	28	23.3	5.4	0.7				
Clayton	Hillcrest Park	25+24	22.57	24.5	23.6	1.93	1.03				
Clayton		23+88	22.55	24.8	24.2	2.25	1.65	25.6	25.6	-0.8	-1.4
Clayton		20+83	22.54	23.9	24.8	1.36	2.26	25.6	25.6	-1.7	-0.8
Clayton		15+77	22.53	24.1	22.9	1.57	0.37	25.6	25.6	-1.5	-2.7
Clayton		12+24	22.53	23.4	23.3	0.87	0.77	25.6	25.6	-2.2	-2.3
Clayton		09+40	22.53	23.9	23.4	1.37	0.87	25.6	25.6	-1.7	-2.2
Clayton		08+42	22.53	23.6	23.2	1.07	0.67	25.6	25.6	-2.0	-2.4
Clayton	Solano Avenue	07+55									
Clayton		06+63	22.39	23.2	23	0.81	0.61	25.6	25.6	-2.4	-2.6
Clayton		05+70	22.39	23.2	22.4	0.81	0.01	25.6	25.6	-2.4	-3.2
Clayton	Confluence w/ WC	03+33	22.39	24.4	24.1	2.01	1.71	25.6	25.6	-1.2	-1.5

Creek	River Sta	Measure 1: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 2: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 3: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 4: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 5: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt
Walnut	72+59	0.42	**0.58**	-2.51	0.14	-0.23	-2.23	0.22	**0.78**	-2.31	0.02	-0.11	-2.11	0.01	-0.10	-2.10
Walnut	70+76	0.42	**0.55**	-4.95	0.15	-0.38	-4.68	0.22	**0.75**	-4.75	0.01	-0.24	-4.54	0.01	-0.24	-4.54
Walnut	68+52	0.42	**0.52**	-4.38	0.13	-1.09	-4.09	0.21	**0.73**	-4.17	0.01	-0.97	-3.97	0.01	-0.97	-3.97
Walnut	68+37															
Walnut	68+23	0.23	-0.10	-5.00	0.09	0.04	-4.86	0.12	0.01	-4.89	0.01	0.12	-4.78	0.01	0.12	-4.78
Walnut	67+65	0.23	0.02	-4.98	0.08	0.17	-4.83	0.11	0.14	-4.86	0	0.25	-4.75	0	0.25	-4.75
Walnut	67+16	0.23	0.43	-2.97	0.09	0.57	-2.83	0.12	0.54	-2.86	0.01	0.65	-2.75	0.01	0.65	-2.75
Walnut	66+89															
Walnut	66+65	0.2	1.14	-2.76	0.07	1.27	-2.63	0.1	1.24	-2.66	0	1.34	-2.56	0	1.34	-2.56
Walnut	66+54	0.21	1.12	-2.78	0.08	1.25	-2.65	0.1	1.23	-2.67	0	1.33	-2.57	0	1.33	-2.57
Walnut	66+42															
Walnut	66+31	0.2	1.15	-2.75	0.08	1.27	-2.63	0.1	1.25	-2.65	0	1.35	-2.55	0	1.35	-2.55
Walnut	63+92	0.21	-2.78	-3.18	0.08	-2.65	-3.05	0.11	-2.68	-3.08	0.01	-2.58	-2.98	0.01	-2.58	-2.98
Walnut	61+72	0.21	-3.73	3.07	0.08	-3.60	3.20	0.1	-3.62	3.18	0	-3.52	3.28	0	-3.52	3.28
Walnut	57+49	0.2	-2.30	2.70	0.07	-2.17	2.83	0.1	-2.20	2.80	0	-2.10	2.90	0	-2.10	2.90
Walnut	49+10	0.19	0.19	2.29	0.07	0.31	2.41	0.1	0.28	2.38	0	0.38	2.48	0	0.38	2.48
Walnut	41+45	0.19	0.97	2.47	0.07	1.09	2.59	0.1	1.06	2.56	0.01	1.15	2.65	0.01	1.15	2.65
Walnut	33+84	0.18	1.84	4.34	0.07	1.95	4.45	0.09	1.93	4.43	0	2.02	4.52	0	2.02	4.52
Walnut	26+85	0.16	2.06	4.66	0.06	2.16	4.76	0.08	2.14	4.74	0	2.22	4.82	0	2.22	4.82
Walnut	19+18	0.13	3.62	6.12	0.05	3.70	6.20	0.07	3.68	6.18	0.01	3.74	6.24	0.01	3.74	6.24
Walnut	13+14	0.02	7.55	-2.05	0	7.57	-2.03	0.01	7.56	-2.04	0	7.57	-2.03	0	7.57	-2.03
Walnut	10+28	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91
Pacheco	60+04	0.37	**1.34**	**1.34**	-0.06	1.37	0.47	0.13	1.18	0.28	0.01	1.30	0.40	0.01	1.30	0.40
Pacheco	55+74	0.37	**1.34**	**1.34**	-0.06	1.47	0.57	0.13	1.28	0.38	0.01	1.40	0.50	0.01	1.40	0.50
Pacheco	49+29	0.38	**1.34**	**1.34**	-0.05	1.47	-0.03	0.13	1.29	-0.21	0.02	1.40	-0.10	0.02	1.40	-0.10
Pacheco	45+49	0.38	**1.34**	**1.34**	-0.05	1.37	0.77	0.13	1.19	0.59	0.01	1.31	0.71	0.01	1.31	0.71
Pacheco	42+03	0.39	**1.33**	**1.33**	-0.06	1.08	0.88	0.13	0.89	0.69	0.01	1.01	0.81	0.01	1.01	0.81
Pacheco	39+84	0.39	**1.33**	**1.33**	-0.06	0.68	0.48	0.13	0.49	0.29	0.01	0.61	0.41	0.01	0.61	0.41
Pacheco	38+23	0.39	**1.33**	**1.33**	-0.06	-0.22	0.08	0.13	-0.41	-0.11	0.01	-0.29	0.01	0.01	-0.29	0.01
Pacheco	33+15	0.4	**1.32**	**1.32**	-0.06	-0.42	0.28	0.13	-0.61	0.09	0.01	-0.49	0.21	0.01	-0.49	0.21
Pacheco	29+99	0.4	**1.32**	**1.32**	-0.06	-0.42	0.98	0.13	-0.61	0.79	0.01	-0.49	0.91	0.01	-0.49	0.91
Pacheco	29+27	0.4	**1.32**	**1.32**	-0.06	-0.42	0.78	0.13	-0.61	0.59	0.01	-0.49	0.71	0.01	-0.49	0.71
Pacheco	27+37	0.4	**1.32**	**1.32**	-0.06	1.48	0.78	0.13	1.29	0.59	0.01	1.41	0.71	0.01	1.41	0.71
Pacheco	19+50	0.4	1.82	**1.32**	-0.06	2.28	0.18	0.15	2.07	-0.03	0.01	2.21	0.11	0.01	2.21	0.11
Pacheco	10+47	0.4	**1.31**	**1.31**	-0.07	1.38	-0.22	0.17	1.14	-0.46	0.01	1.30	-0.30	0.01	1.30	-0.30
Pacheco	06+98	0.39	**1.30**	**1.30**	-0.08	0.67	-0.03	0.18	0.41	-0.29	0.01	0.58	-0.12	0.01	0.58	-0.12
Grayson	59+10															
Grayson	57+34	0	-0.73	**1.37**	0	-0.73	0.57	0	-0.73	0.57	0	-0.73	0.57	**-0.74**	0.01	1.31
Grayson	54+71	0	-1.63	**1.47**	0	-1.63	0.87	0	-1.63	0.87	0	-1.63	0.87	**-0.78**	-0.85	1.65
Grayson	51+50	0	-1.06	**1.54**	0	-1.06	0.84	0	-1.06	0.84	0	-1.06	0.84	**-0.81**	-0.25	1.65
Grayson	47+85	0	-1.94	**1.66**	0	-1.94	0.96	0	-1.94	0.96	0	-1.94	0.96	**-0.86**	-1.08	1.82
Grayson	44+68	0	-1.40	**1.70**	0	-1.40	0.30	0	-1.40	0.30	0	-1.40	0.30	**-0.89**	-0.51	1.19
Grayson	42+53	0	-0.30	**1.80**	-0.01	-0.29	0.51	0	-0.30	0.50	0	-0.30	0.50	**-0.93**	0.63	1.43
Grayson	40+77	0	1.74	**1.84**	-0.01	1.75	0.55	0	1.74	0.54	-0.01	1.75	0.55	**-0.94**	2.68	1.48
Grayson	40+38															
Grayson	39+95	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77	**-0.95**	2.72	2.72
Grayson	39+77	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77	**-0.95**	2.72	2.72
Grayson	39+43															
Grayson	38+18	0	**1.94**	1.84	0	1.44	1.84	0	1.44	1.84	0	1.44	1.84	**-0.96**	2.40	2.80
Grayson	35+27	0.01	**2.01**	1.41	0	1.42	1.42	0	1.42	1.42	0	1.42	1.42	**-0.99**	2.41	2.41
Grayson	33+84	0.01	**2.05**	1.25	0	2.26	1.26	0.01	2.25	1.25	0	2.26	1.26	**-1**	3.26	2.26
Grayson	29+39	0.02	**2.13**	1.93	0	2.45	1.95	0.01	2.44	1.94	0	2.45	1.95	**-1.04**	3.49	2.99
Grayson	27+36	0.02	**2.16**	2.26	0	2.18	2.28	0.01	2.17	2.27	0	2.18	2.28	**-1.05**	3.23	3.33
Grayson	24+20	0.02	**2.22**	1.62	0	2.74	1.64	0.02	2.72	1.62	0	2.74	1.64	**-1.07**	3.81	2.71
Grayson	22+84	0.01	**2.24**	1.84	-0.01	2.46	1.86	0.01	2.44	1.84	-0.01	2.46	1.86	**-1.09**	3.54	2.94
Grayson	19+77	0.02	**2.28**	1.88	-0.01	2.41	1.91	0.01	2.39	1.89	-0.01	2.41	1.91	**-1.11**	3.51	3.01
Grayson	18+64	0.02	**2.30**	2.20	-0.01	3.23	2.23	0.01	3.21	2.21	-0.01	3.23	2.23	**-1.12**	4.34	3.34
Grayson	17+91	0.02	**2.32**	4.22	-0.01	3.25	4.25	0.02	3.22	4.22	-0.01	3.25	4.25	**-1.12**	4.36	5.36
Grayson	17+60															
Grayson	17+21	0.03	**2.35**	4.25	-0.01	2.29	4.29	0.02	2.26	4.26	-0.01	2.29	4.29	**-1.14**	3.42	5.42
Grayson	16+51	0.03	**2.35**	2.25	-0.01	1.99	2.29	0.02	1.96	2.26	-0.01	1.99	2.29	**-1.14**	3.12	3.42
Grayson	15+35	0.03	**2.38**	1.58	-0.01	1.92	1.62	0.02	1.89	1.59	-0.01	1.92	1.62	**-1.15**	3.06	2.76
Grayson	11+99	0.02	**2.42**	1.32	-0.02	1.86	1.36	0.01	1.83	1.33	-0.02	1.86	1.36	**-1.18**	3.02	2.52
Grayson	11+26	0.02	**2.43**	1.33	-0.02	1.87	1.37	0.01	1.84	1.34	-0.03	1.88	1.38	**-1.18**	3.03	2.53
Grayson	08+80	0.03	**2.46**	1.16	-0.02	2.01	1.21	0.02	1.97	1.17	-0.02	2.01	1.21	**-1.19**	3.18	2.38
Clayton	26+61	0.01	5.39	0.69	0	5.40	0.70	0.01	5.39	0.69	0	5.40	0.70	**-0.37**	5.77	1.07
Clayton	25+24	0.01	1.92	1.02	0	1.93	1.03	0	1.93	1.03	0	1.93	1.03	**-0.42**	2.35	1.45
Clayton	23+88	0	**3.05**	**3.05**	0	2.25	1.65	0	2.25	1.65	-0.01	2.26	1.66	**-0.45**	2.70	2.10
Clayton	20+83	0	**3.06**	**3.06**	0	1.36	2.26	0	1.36	2.26	-0.01	1.37	2.27	**-0.47**	1.83	2.73
Clayton	15+77	0.01	**3.06**	**3.06**	0	1.57	0.37	0	1.57	0.37	0	1.57	0.37	**-0.46**	2.03	0.83
Clayton	12+24	0.01	**3.06**	**3.06**	0	0.87	0.77	0	0.87	0.77	0	0.87	0.77	**-0.46**	1.33	1.23
Clayton	09+40	0.01	**3.06**	**3.06**	0	1.37	0.87	0	1.37	0.87	0	1.37	0.87	**-0.47**	1.84	1.34
Clayton	08+42	0.01	**3.06**	**3.06**	0	1.07	0.67	0	1.07	0.67	0	1.07	0.67	**-0.47**	1.54	1.14
Clayton	07+55															
Clayton	06+63	0.01	**3.20**	**3.20**	0	0.81	0.61	0	0.81	0.61	0	0.81	0.61	**-0.48**	1.29	1.09
Clayton	05+70	0.01	**3.20**	**3.20**	0	0.81	0.01	0	0.81	0.01	0	0.81	0.01	**-0.48**	1.29	0.49
Clayton	03+33	0.01	**3.20**	**3.20**	0	2.01	1.71	0	2.01	1.71	0	2.01	1.71	**-0.48**	2.49	2.19

Creek	River Sta	Measure 6: Measure 6 WS diff (ft)	Freebrd Lt	Freebrd Rt	Measure 7: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 8: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 9: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	Measure 10: WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt
Walnut	72+59	0.02	-0.11	-2.11	0.01	-0.10	-2.10	0.01	-0.10	-2.10	0	-0.09	-2.09	0	-0.09	-2.09
Walnut	70+76	0.01	-0.24	-4.54	0.01	-0.24	-4.54	0	-0.23	-4.53	0	-0.23	-4.53	-0.01	-0.22	-4.52
Walnut	68+52	0.02	-0.98	-3.98	0.01	-0.97	-3.97	0	-0.96	-3.96	0	-0.96	-3.96	0	-0.96	-3.96
Walnut	68+37															
Walnut	68+23	0.01	0.12	-4.78	0.01	0.12	-4.78	0.01	0.12	-4.78	0	0.13	-4.77	0	0.13	-4.77
Walnut	67+65	0	0.25	-4.75	0	0.25	-4.75	0	0.25	-4.75	0	0.25	-4.75	0	0.25	-4.75
Walnut	67+16	0.01	0.65	-2.75	0.01	0.65	-2.75	0	0.66	-2.74	0	0.66	-2.74	0	0.66	-2.74
Walnut	66+89															
Walnut	66+65	0	1.34	-2.56	0	1.34	-2.56	0	1.34	-2.56	0	1.34	-2.56	-0.01	1.35	-2.55
Walnut	66+54	0	1.33	-2.57	0	1.33	-2.57	0	1.33	-2.57	0	1.33	-2.57	0	1.33	-2.57
Walnut	66+42															
Walnut	66+31	0	1.35	-2.55	0	1.35	-2.55	0	1.35	-2.55	0	1.35	-2.55	-0.01	1.36	-2.54
Walnut	63+92	0.01	-2.58	-2.98	0.01	-2.58	-2.98	0	-2.57	-2.97	0	-2.57	-2.97	0	-2.57	-2.97
Walnut	61+72	0	-3.52	3.28	0	-3.52	3.28	0	-3.52	3.28	0	-3.52	3.28	-0.01	-3.51	3.29
Walnut	57+49	0	-2.10	2.90	0	-2.10	2.90	0	-2.10	2.90	0	-2.10	2.90	-0.01	-2.09	2.91
Walnut	49+10	0	0.38	2.48	0	0.38	2.48	0	0.38	2.48	0	0.38	2.48	-0.01	0.39	2.49
Walnut	41+45	0.01	1.15	2.65	0.01	1.15	2.65	0	1.16	2.66	0	1.16	2.66	0	1.16	2.66
Walnut	33+84	0	2.02	4.52	0	2.02	4.52	0	2.02	4.52	0	2.02	4.52	0	2.02	4.52
Walnut	26+85	0	2.22	4.82	0	2.22	4.82	0	2.22	4.82	0	2.22	4.82	0	2.22	4.82
Walnut	19+18	0.01	3.74	6.24	0.01	3.74	6.24	0.01	3.74	6.24	0	3.75	6.25	0	3.75	6.25
Walnut	13+14	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03
Walnut	10+28	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91
Pacheco	60+04	0.01	1.30	0.40	0.01	1.30	0.40	0	1.31	0.41	0	1.31	0.41	0	1.31	0.41
Pacheco	55+74	0.01	1.40	0.50	0.01	1.40	0.50	0	1.41	0.51	0	1.41	0.51	-0.01	1.42	0.52
Pacheco	49+29	0.02	1.40	-0.10	0.01	1.41	-0.09	0.01	1.41	-0.09	0	1.42	-0.08	0	1.42	-0.08
Pacheco	45+49	0.01	1.31	0.71	0.01	1.31	0.71	0.01	1.31	0.71	0	1.32	0.72	0	1.32	0.72
Pacheco	42+03	0.01	1.01	0.81	0.01	1.01	0.81	0	1.02	0.82	0	1.02	0.82	0	1.02	0.82
Pacheco	39+84	0.01	0.61	0.41	0.01	0.61	0.41	0	0.62	0.42	0	0.62	0.42	0	0.62	0.42
Pacheco	38+23	0.01	-0.29	0.01	0.01	-0.29	0.01	0	-0.28	0.02	0	-0.28	0.02	0	-0.28	0.02
Pacheco	33+15	0.01	-0.49	0.21	0.01	-0.49	0.21	0	-0.48	0.22	0	-0.48	0.22	0	-0.48	0.22
Pacheco	29+99	0.01	-0.49	0.91	0.01	-0.49	0.91	0	-0.48	0.92	0	-0.48	0.92	0	-0.48	0.92
Pacheco	29+27	0.01	-0.49	0.71	0.01	-0.49	0.71	0	-0.48	0.72	0	-0.48	0.72	0	-0.48	0.72
Pacheco	27+37	0.01	1.41	0.71	0.01	1.41	0.71	0	1.42	0.72	0	1.42	0.72	0	1.42	0.72
Pacheco	19+50	0.02	2.20	0.10	0.01	2.21	0.11	0.01	2.21	0.11	0	2.22	0.12	0	2.22	0.12
Pacheco	10+47	0.02	1.29	-0.31	0.01	1.30	-0.30	0.01	1.30	-0.30	0	1.31	-0.29	0	1.31	-0.29
Pacheco	06+98	0.01	0.58	-0.12	0.01	0.58	-0.12	0	0.59	-0.11	0	0.59	-0.11	-0.01	0.60	-0.10
Grayson	59+10															
Grayson	57+34	0.02	-0.75	0.55	0	-0.73	0.57	0	-0.73	0.57	0	-0.73	0.57	0	-0.73	0.57
Grayson	54+71	0.02	-1.65	0.85	0	-1.63	0.87	0	-1.63	0.87	0	-1.63	0.87	0	-1.63	0.87
Grayson	51+50	0.02	-1.08	0.82	0.01	-1.07	0.83	0	-1.06	0.84	0	-1.06	0.84	0	-1.06	0.84
Grayson	47+85	0.03	-1.97	0.93	0.01	-1.95	0.95	0	-1.94	0.96	0	-1.94	0.96	0	-1.94	0.96
Grayson	44+68	0.03	-1.43	0.27	0.02	-1.42	0.28	0	-1.40	0.30	0	-1.40	0.30	0	-1.40	0.30
Grayson	42+53	0.03	-0.33	0.47	0.02	-0.32	0.48	0	-0.30	0.50	0	-0.30	0.50	0	-0.30	0.50
Grayson	40+77	0.03	1.71	0.51	0.02	1.72	0.52	0	1.74	0.54	0	1.74	0.54	0	1.74	0.54
Grayson	40+38															
Grayson	39+95	0.04	1.73	1.73	0.03	1.74	1.74	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77
Grayson	39+77	0.04	1.73	1.73	0.03	1.74	1.74	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77
Grayson	39+43															
Grayson	38+18	0.04	1.40	1.80	0.03	1.41	1.81	0	1.44	1.84	0	1.44	1.84	0	1.44	1.84
Grayson	35+27	0.04	1.38	1.38	0.03	1.39	1.39	0	1.42	1.42	0	1.42	1.42	0	1.42	1.42
Grayson	33+84	0.04	2.22	1.22	0.04	2.22	1.22	0	2.26	1.26	0	2.26	1.26	0	2.26	1.26
Grayson	29+39	0.05	2.40	1.90	0.04	2.41	1.91	0	2.45	1.95	0	2.45	1.95	0	2.45	1.95
Grayson	27+36	0.05	2.13	2.23	0.04	2.14	2.24	0	2.18	2.28	0	2.18	2.28	0	2.18	2.28
Grayson	24+20	0.05	2.69	1.59	0.05	2.69	1.59	0.01	2.73	1.63	0.01	2.73	1.63	0	2.74	1.64
Grayson	22+84	0.04	2.41	1.81	0.04	2.41	1.81	0	2.45	1.85	0	2.45	1.85	-0.01	2.46	1.86
Grayson	19+77	0.05	2.35	1.85	0.04	2.36	1.86	0	2.40	1.90	0	2.40	1.90	-0.01	2.41	1.91
Grayson	18+64	0.05	3.17	2.17	0.05	3.17	2.17	0	3.22	2.22	0	3.22	2.22	0	3.22	2.22
Grayson	17+91	0.05	3.19	4.19	0.05	3.19	4.19	0	3.24	4.24	0	3.24	4.24	0	3.24	4.24
Grayson	17+60															
Grayson	17+21	0.05	2.23	4.23	0.05	2.23	4.23	0.01	2.27	4.27	0	2.28	4.28	0	2.28	4.28
Grayson	16+51	0.05	1.93	2.23	0.05	1.93	2.23	0.01	1.97	2.27	0	1.98	2.28	0	1.98	2.28
Grayson	15+35	0.05	1.86	1.56	0.05	1.86	1.56	0.01	1.90	1.60	0.01	1.90	1.60	0	1.91	1.61
Grayson	11+99	0.04	1.80	1.30	0.04	1.80	1.30	0	1.84	1.34	0	1.84	1.34	-0.01	1.85	1.35
Grayson	11+26	0.04	1.81	1.31	0.04	1.81	1.31	0	1.85	1.35	0	1.85	1.35	-0.01	1.86	1.36
Grayson	08+80	0.05	1.94	1.14	0.05	1.94	1.14	0.01	1.98	1.18	0	1.99	1.19	0	1.99	1.19
Clayton	26+61	**-0.37**	5.77	1.07	**-0.4**	5.80	1.10	0.01	5.39	0.69	0.01	5.39	0.69	-0.01	5.41	0.71
Clayton	25+24	**-0.42**	2.35	1.45	**-0.74**	2.67	1.77	0	1.93	1.03	0	1.93	1.03	-0.01	1.94	1.04
Clayton	23+88	**-0.45**	2.70	2.10	**-0.83**	3.08	2.48	0	2.25	1.65	0	2.25	1.65	-0.02	2.27	1.67
Clayton	20+83	**-0.47**	1.83	2.73	**-0.86**	2.22	3.12	0	1.36	2.26	0	1.36	2.26	-0.02	1.38	2.28
Clayton	15+77	**-0.46**	2.03	0.83	**-0.86**	2.43	1.23	0	1.57	0.37	0.01	1.56	0.36	-0.01	1.58	0.38
Clayton	12+24	**-0.46**	1.33	1.23	**-0.86**	1.73	1.63	0	0.87	0.77	0.01	0.86	0.76	-0.01	0.88	0.78
Clayton	09+40	**-0.47**	1.84	1.34	**-0.86**	2.23	1.73	0	1.37	0.87	0.01	1.36	0.86	-0.01	1.38	0.88
Clayton	08+42	**-0.47**	1.54	1.14	**-0.86**	1.93	1.53	0	1.07	0.67	0.01	1.06	0.66	-0.01	1.08	0.68
Clayton	07+55															
Clayton	06+63	**-0.48**	1.29	1.09	**-0.89**	1.70	1.50	0	0.81	0.61	0	0.81	0.61	-0.02	0.83	0.63
Clayton	05+70	**-0.48**	1.29	0.49	**-0.89**	1.70	0.90	0	0.81	0.01	0	0.81	0.01	-0.02	0.83	0.03
Clayton	03+33	**-0.48**	2.49	2.19	**-0.89**	2.90	2.60	0	2.01	1.71	0	2.01	1.71	-0.02	2.03	1.73

Hydraulic Effects of Interim Protection Measures along the creek channel (Fre

100 year storm event

HEC-RAS Plan: OrgDes0412A1 Profile: Max WS

			Exist Levee/Embankment Elevation Data									Measure 11			Measure 12			Measure 13			Measure 14			Measure 15			Measure 18		
Creek	Location	River Sta	Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)	Levee Diff Ex vs 1965 Lt (ft)	Levee Diff Ex. Vs 1965 Rt (ft)	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt
Walnut		363+44	47.6	48.3	48	0.7	0.4		50.0			0.08	0.62	***2.32***	0	0.70	0.40	0	0.70	0.40	0	0.70	0.40	0	0.70	0.40	0	0.70	0.40
Walnut	SR 242 NB	362+98																											
Walnut		362+44	47.36	48.4	48	1.04	0.64		50.0			0.08	0.96	***2.56***	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64
Walnut		361+50	46.99	48.5	47.5	1.51	0.51		49.5			0.07	1.44	***2.44***	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51
Walnut	SR 242 SB	360+97																											
Walnut		358+85	44.24	48.7	48	4.46	3.76					0.07	4.39	3.69	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76
Walnut	Drop Structure #1	356+69																											
Walnut		356+31	37.17	47.1	44	9.93	6.83					0.06	9.87	6.77	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83
Walnut		347+37	36.88	44.4	39.8	7.52	2.92					0.07	7.45	2.85	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92
Walnut		338+40	35.69	42	39	6.31	3.31					0.07	6.24	3.24	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31
Walnut	Willow Pass Road	334+90																											
Walnut		330+61	33.64	38	36	4.36	2.36					0.05	4.31	2.31	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36
Walnut		327+86	33.05	36	36	2.95	2.95					0.05	2.90	2.90	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95
Walnut	Diamond Blvd	324+86																											
Walnut		323+03	32.35	34	35	1.65	2.65					0.05	1.60	2.60	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65	0	1.65	2.65
Walnut		309+75	31.03	37	36.3	5.97	5.27					0.04	5.93	5.23	0	5.97	5.27	0	5.97	5.27	0	5.97	5.27	0	5.97	5.27	0	5.97	5.27
Walnut	Pine Creek	299+56	29.73	33	34	3.27	4.27					0.04	3.23	4.23	0	3.27	4.27	0	3.27	4.27	0	3.27	4.27	0	3.27	4.27	0	3.27	4.27
Walnut		294+00	28.47	30	31.1	1.53	2.63					0.04	1.49	2.59	0	1.53	2.63	0	1.53	2.63	0	1.53	2.63	0	1.53	2.63	0	1.53	2.63
Walnut		284+29	27.83	30	30	2.17	2.17					0.04	2.13	2.13	0	2.17	2.17	0	2.17	2.17	0	2.17	2.17	0	2.17	2.17	0	2.17	2.17
Walnut	Concord Ave	283+78																											
Walnut		283+25	27.49	32	32	4.51	4.51	29.4	29.4	2.6	2.6	0.04	4.47	4.47	0	4.51	4.51	0	4.51	4.51	0	4.51	4.51	0	4.51	4.51	0	4.51	4.51
Walnut		282+97	27.43	32	30	4.57	2.57	29.4	29.4	2.6	0.6	0.04	4.53	2.53	0	4.57	2.57	0	4.57	2.57	0	4.57	2.57	0	4.57	2.57	0	4.57	2.57
Walnut	Concord Footbrid	282+88																											
Walnut		281+31	27.38	30	29.5	2.62	2.12	29.3	29.3	0.7	0.2	0.04	2.58	2.08	0	2.62	2.12	0	2.62	2.12	0	2.62	2.12	0	2.62	2.12	0	2.62	2.12
Walnut		276+46	26.94	29.3	28.9	2.36	1.96	29.0	29.0	0.3	*-0.1*	0.04	2.32	1.92	0	2.36	1.96	0	2.36	1.96	0	2.36	1.96	0	2.36	1.96	0	2.36	1.96
Walnut		264+21	26.14	28	28.3	1.86	2.16	28.2	28.2	*-0.2*	0.1	0.04	1.82	2.12	0	1.86	2.16	0	1.86	2.16	0	1.86	2.16	0	1.86	2.16	0	1.86	2.16
Walnut		259+04	25.83	27.9	27.4	2.07	1.57	27.9	27.9	*0.0*	*-0.5*	0.04	2.03	1.53	0	2.07	1.57	0	2.07	1.57	0	2.07	1.57	0	2.07	1.57	0	2.07	1.57
Walnut		249+73	25.27	27.7	27.9	2.43	2.63	27.3	27.3	0.4	0.6	0.04	2.39	2.59	0	2.43	2.63	0	2.43	2.63	0	2.43	2.63	0	2.43	2.63	0	2.43	2.63
Walnut		245+93	24.99	27.5	27.7	2.51	2.71	27.0	27.0	0.5	0.7	0.05	2.46	2.66	0	2.51	2.71	0.01	2.50	2.70	0	2.51	2.71	0	2.51	2.71	0	2.51	2.71
Walnut		239+17	24.13	26.9	26.6	2.77	2.47	26.2	26.2	0.7	0.4	0.04	2.73	2.43	0	2.77	2.47	0	2.77	2.47	0	2.77	2.47	0	2.77	2.47	0	2.77	2.47
Walnut		235+38	23.8	26.2	25.8	2.4	2	25.7	25.7	0.5	0.1	0.04	2.36	1.96	0	2.40	2.00	0	2.40	2.00	0	2.40	2.00	0	2.40	2.00	0	2.40	2.00
Walnut		228+59	23.3	24.2	25	0.9	1.7	24.9	24.9	*-0.7*	0.1	0.04	0.86	1.66	0	0.90	1.70	0	0.90	1.70	0	0.90	1.70	0	0.90	1.70	0	0.90	1.70
Walnut		225+35	22.92	24.3	24.3	1.38	1.38	24.5	24.5	*-0.2*	*-0.2*	0.05	1.33	1.33	0	1.38	1.38	0	1.38	1.38	0	1.38	1.38	0	1.38	1.38	0	1.38	1.38
Walnut	Clayton Vly Drain	218+60	22.39	23.5	24.4	1.11	2.01					0.04	1.07	1.97	0	1.11	2.01	0	1.11	2.01	0	1.11	2.01	0	1.11	2.01	0	1.11	2.01
Walnut		214+44	22.23	22.3	22.7	0.07	0.47	23.3	23.3	*-1.0*	*-0.6*	0.05	0.02	0.42	0	0.07	0.47	0	0.07	0.47	0	0.07	0.47	0	0.07	0.47	0	0.07	0.47
Walnut		213+21	22.17	23	24	0.83	1.83	23.0	23.0	*0.0*	1.0	0.05	0.78	1.78	0	0.83	1.83	0	0.83	1.83	0	0.83	1.83	0	0.83	1.83	0	0.83	1.83
Walnut		211+38	22.01	21.8	22	-0.21	-0.01	22.6	22.6	*-0.8*	*-0.6*	0.05	-0.26	-0.06	0	-0.21	-0.01	0	-0.21	-0.01	0	-0.21	-0.01	0	-0.21	-0.01	0	-0.21	-0.01
Walnut	Marsh Drive	211+11																											
Walnut		210+07	19.34	22.3	22.4	2.96	3.06	22.5		*-0.2*		0.02	2.94	3.04	0	2.96	3.06	0	2.96	3.06	0	2.96	3.06	0	2.96	3.06	-0.01	2.97	3.07
Walnut		208+06	19.3	24	22.4	4.7	3.1	22.2		1.8		0.03	4.67	3.07	0	4.70	3.10	0	4.70	3.10	0	4.70	3.10	0	4.70	3.10	-0.01	4.71	3.11
Walnut	SR 4 EB	207+79																											
Walnut		206+99	18.99	26	22	7.01	3.01	22.1		3.9		0.02	6.99	2.99	0	7.01	3.01	0	7.01	3.01	0	7.01	3.01	0	7.01	3.01	-0.01	7.02	3.02
Walnut	SR 4 WB	206+76																											
Walnut		206+08	18.85	19.3	21	0.45	2.15	22.0		*-2.7*		0.03	0.42	2.12	0.01	0.44	2.14	0	0.45	2.15	0	0.45	2.15	0	0.45	2.15	-0.01	0.46	2.16
Walnut		203+81	18.54	20.8	22.4	2.26	3.86	21.8		*-1.0*		0.02	2.24	3.84	0	2.26	3.86	0	2.26	3.86	0	2.26	3.86	0	2.26	3.86	-0.01	2.27	3.87
Walnut		201+33	18.36	20.7	23	2.34	4.64	21.5		*-0.8*		0.02	2.32	4.62	0	2.34	4.64	0	2.34	4.64	0	2.34	4.64	0	2.34	4.64	-0.02	2.36	4.66
Walnut		200+17	18.47	20.7	22.2	2.23	3.73	21.4		*-0.7*		0.02	2.21	3.71	0	2.23	3.73	0	2.23	3.73	0	2.23	3.73	0	2.23	3.73	-0.02	2.25	3.75
Walnut	Imhoff Drive	199+78																											
Walnut		199+39	18.49	20.8	22.4	2.31	3.91	21.3		*-0.5*		0.02	2.29	3.89	0	2.31	3.91	0	2.31	3.91	0	2.31	3.91	0	2.31	3.91	-0.02	2.33	3.93
Walnut		198+21	18.36	20.4	22.3	2.04	3.94	21.3		*-0.9*		0.02	2.02	3.92	0	2.04	3.94	0	2.04	3.94	0	2.04	3.94	0	2.04	3.94	-0.02	2.06	3.96
Walnut		194+18	18.01	20.3	22.4	2.29	4.39	21.0		*-0.7*		0.02	2.27	4.37	0	2.29	4.39	0	2.29	4.39	0	2.29	4.39	0	2.29	4.39	-0.02	2.31	4.41
Walnut		190+32	17.74	20	19.8	2.26	2.06	20.8		*-0.8*		0.02	2.24	2.04	0	2.26	2.06	-0.01	2.27	2.07	0	2.26	2.06	0	2.26	2.06	-0.03	2.29	2.09
Walnut	Grayson Creek	188+92	17.61									0.02			0.01			0			0			0			-0.02		
Walnut		184+18	17.59	20.5	18.7	2.91	1.11	19.9		0.6		0.02	2.89	1.09	0.01	2.90	1.10	0	2.91	1.11	0	2.91	1.11	0	2.91	1.11	-0.02	2.93	1.13
Walnut		177+39	17.16	19.7	16.2	2.54	-0.96	19.4		0.3		0.02	2.52	-0.98	0.01	2.53	-0.97	0	2.54	-0.96	0	2.54	-0.96	0	2.54	-0.96	-0.03	2.57	-0.93
Walnut		172+56	16.96	18.4	16.7	1.44	-0.26	18.9		*-0.5*		0.02	1.42	-0.28	0.01	1.43	-0.27	0	1.44	-0.26	0	1.44	-0.26	0	1.44	-0.26	-0.05	1.49	-0.21
Walnut		162+79	16.54	18	15.5	1.46	-1.04	18.1		*-0.1*		0.02	1.44	-1.06	0.01	1.45	-1.05	0	1.46	-1.04	0	1.46	-1.04	0	1.46	-1.04	-0.06	1.52	-0.98
Walnut		153+62	15.91	16.2	15.3	0.29	-0.61	17.3		*-1.1*		0.02	0.27	-0.63	0.01	0.28	-0.62	0	0.29	-0.61	0	0.29	-0.61	0	0.29	-0.61	-0.08	0.37	-0.53
Walnut		150+44	15.73	15.5	16	-0.23	0.27	17.0		*-1.5*		0.02	-0.25	0.25	0.01	-0.24	0.26	0	-0.23	0.27	0	-0.23	0.27	0	-0.23	0.27	-0.1	-0.13	0.37
Walnut		147+60	15.52	16	22	0.48	6.48	16.8		*-0.8*		0.02	0.46	6.46	0.02	0.46	6.46	0	0.48	6.48	0	0.48	6.48	0	0.48	6.48	***-0.11***	0.59	6.59
Walnut		142+34	15.2	16	20	0.8	4.8	16.3		*-0.3*		0.01	0.79	4.79	0.02	0.78	4.78	0	0.80	4.80	0	0.80	4.80	0	0.80	4.80	***-0.14***	0.94	4.94
Walnut	BNSF RR	137+62																											
Walnut		137+26	14.09	14.6	11	0.51	-3.09	16.0		*-1.4*		0.01	0.50	-3.10	0.04	0.47	-3.13	-0.01	0.52	-3.08	0	0.51	-3.09	0	0.51	-3.09	***-0.16***	0.67	-2.93
Walnut		134+21	13.99	14.5	16.5	0.51	2.51	15.8		*-1.3*		0.01	0.50	2.50	0.05	0.46	2.46	0	0.51	2.51	0	0.51	2.51	0	0.51	2.51	***-0.17***	0.68	2.68
Walnut		127+03	13.84	13	20	-0.84	6.16	15.5		*-2.5*		0.01	-0.85	6.15	0.06	-0.90	6.10	0	-0.84	6.16	0	-0.84	6.16	0	-0.84	6.16	***-0.19***	-0.65	6.35
Walnut		124+60	13.71	12.6	20	-1.11	6.29	15.4		*-2.8*		0.01	-1.12	6.28	0.07	-1.18	6.22	0	-1.11	6.29	0	-1.11	6.29	0	-1.11	6.29	***-0.2***	-0.91	6.49
Walnut		118+77	13.49	13.4	20	-0.09	6.51	15.2		*-1.8*		0.01	-0.10	6.50	0.08	-0.17	6.43	0	-0.09	6.51	0	-0.09	6.51	0	-0.09	6.51	***-0.24***	0.15	6.75
Walnut	Pacheco Creek	111+24	13.11	13.6	20	0.49	6.89	14.8				0.01	0.48	6.88	0.1	0.39	6.79	0	0.49	6.89	0	0.49	6.89	0	0.49	6.89	***-0.3***	0.79	7.19
Walnut		104+28	13.05	12.1	24.5	-0.95	11.45	14.5		*-2.4*		0	-0.95	11.45	0.1	-1.05	11.35	-0.01	-0.94	11.46	0	-0.95	11.45	0	-0.95	11.45	***-0.32***	-0.63	11.77
Walnut		91+00	12.73	12.4	24	-0.33	11.27	13.9		*-1.5*		0.01	-0.34	11.26	0.1	-0.43	11.17	0	-0.33	11.27	0	-0.33	11.27	0	-0.33	11.27	***-0.41***	0.08	11.68
Walnut		83+52	12.46	13	30	0.54	17.54	13.6		*-0.6*		0.01	0.53	17.53	0.1	0.44	17.44	0	0.54	17.54	0	0.54	17.54	0	0.54	17.54	***-0.48***	1.02	18.02
Walnut		80+77	12.37	12.6	30	0.23	17.63	13.5		*-0.9*		0	0.23	17.63	0.09	0.14	17.54	-0.01	0.24	17.64	0	0.23	17.63	0	0.23	17.63	***-0.53***	0.76	18.16
Walnut		77+89	12.27	11.5	12	-0.77	-0.27	13.3		*-1.8*		0	-0.77	-0.27	0.09	-0.86	-0.36	0	-0.77	-0.27	0	-0.77	-0.27	0	-0.77	-0.27	***-0.57***	-0.20	0.30

			Exist Levee/Embankment Elevation Data									Measure 11			Measure 12			Measure 13			Measure 14			Measure 15			Measure 18		
Creek	Location	River Sta	Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)	Levee Diff Ex vs 1965 Lt (ft)	Levee Diff Ex. Vs 1965 Rt (ft)	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt
Walnut		72+59	12.09	12	10	-0.09	-2.09	13.1		-1.1		0.01	-0.10	-2.10	0.1	-0.19	-2.19	0	-0.09	-2.09	0	-0.09	-2.09	0	-0.09	-2.09	-0.67	0.58	-1.42
Walnut		70+76	12.03	11.8	7.5	-0.23	-4.53	13.0		-1.2		0	-0.23	-4.53	0.1	-0.33	-4.63	-0.01	-0.22	-4.52	0	-0.23	-4.53	0	-0.23	-4.53	-0.73	0.50	-3.80
Walnut		68+52	11.96	11	8	-0.96	-3.96	12.9		-1.9		0.01	-0.97	-3.97	0.1	-1.06	-4.06	0	-0.96	-3.96	0	-0.96	-3.96	0	-0.96	-3.96	-0.75	-0.21	-3.21
Walnut	UP RR	68+37																											
Walnut		68+23	10.77	10.9	6	0.13	-4.77					0.01	0.12	-4.78	0.06	0.07	-4.83	0	0.13	-4.77	0	0.13	-4.77	0	0.13	-4.77	-0.95	1.08	-3.82
Walnut		67+65	10.75	11	6	0.25	-4.75					0	0.25	-4.75	0.05	0.20	-4.80	0	0.25	-4.75	0	0.25	-4.75	0	0.25	-4.75	-0.98	1.23	-3.77
Walnut		67+16	10.74	11.4	8	0.66	-2.74					0.01	0.65	-2.75	0.06	0.60	-2.80	0	0.66	-2.74	0	0.66	-2.74	0	0.66	-2.74	-0.99	1.65	-1.75
Walnut	Waterfront Road	66+89																											
Walnut		66+65	10.56	11.9	8	1.34	-2.56					0	1.34	-2.56	0.05	1.29	-2.61	-0.01	1.35	-2.55	0	1.34	-2.56	0	1.34	-2.56	-1.13	2.47	-1.43
Walnut		66+54	10.57	11.9	8	1.33	-2.57					0	1.33	-2.57	0.05	1.28	-2.62	0	1.33	-2.57	0	1.33	-2.57	0	1.33	-2.57	-1.14	2.47	-1.43
Walnut	Tosco Utility Bridge	66+42																											
Walnut		66+31	10.55	11.9	8	1.35	-2.55					0	1.35	-2.55	0.05	1.30	-2.60	0	1.35	-2.55	0	1.35	-2.55	0	1.35	-2.55	-1.19	2.54	-1.36
Walnut		63+92	10.57	8	7.6	-2.57	-2.97					0	-2.57	-2.97	0.05	-2.62	-3.02	0	-2.57	-2.97	0	-2.57	-2.97	0	-2.57	-2.97	-1.21	-1.36	-1.76
Walnut		61+72	10.52	7	13.8	-3.52	3.28					0	-3.52	3.28	0.05	-3.57	3.23	0	-3.52	3.28	0	-3.52	3.28	0	-3.52	3.28	-1.3	-2.22	4.58
Walnut		57+49	10.4	8.3	13.3	-2.1	2.9					0	-2.10	2.90	0.05	-2.15	2.85	-0.01	-2.09	2.91	0	-2.10	2.90	0	-2.10	2.90	-1.53	-0.57	4.43
Walnut		49+10	10.02	10.4	12.5	0.38	2.48					0	0.38	2.48	0.04	0.34	2.44	-0.01	0.39	2.49	0	0.38	2.48	0	0.38	2.48		-88.15	-86.05
Walnut		41+45	9.64	10.8	12.3	1.16	2.66					0	1.16	2.66	0.05	1.11	2.61	0	1.16	2.66	0	1.16	2.66	0	1.16	2.66	-2.03	3.19	4.69
Walnut		33+84	9.28	11.3	13.8	2.02	4.52					0	2.02	4.52	0.04	1.98	4.48	0	2.02	4.52	0	2.02	4.52	0	2.02	4.52	-1.94	3.96	6.46
Walnut		26+85	8.78	11	13.6	2.22	4.82					0	2.22	4.82	0.04	2.18	4.78	0	2.22	4.82	0	2.22	4.82	0	2.22	4.82	-1.71	3.93	6.53
Walnut		19+18	7.75	11.5	14	3.75	6.25					0.01	3.74	6.24	0.04	3.71	6.21	0	3.75	6.25	0	3.75	6.25	0	3.75	6.25	-0.94	4.69	7.19
Walnut		13+14	6.73	14.3	4.7	7.57	-2.03					0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	-0.07	7.64	-1.96
Walnut	Mouth @ Suisun Bay	10+28	6.61	6	4.7	-0.61	-1.91					0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0.04	-0.65	-1.95
Pacheco		60+04	13.09	14.4	13.5	1.31	0.41	14.8	14.8	-0.4	-1.3	0	1.31	0.41	0.14	1.57	1.57	0	1.31	0.41	0	1.31	0.41	0	1.31	0.41	-0.26	1.57	0.67
Pacheco		55+74	13.09	14.5	13.6	1.41	0.51	14.8	14.8	-0.3	-1.2	0	1.41	0.51	0.14	1.57	1.57	0	1.41	0.51	0	1.41	0.51	0	1.41	0.51	-0.26	1.67	0.77
Pacheco		49+29	13.08	14.5	13	1.42	-0.08	14.8	14.8	-0.3	-1.8	0.01	1.41	-0.09	0.14	1.58	1.58	0	1.42	-0.08	0	1.42	-0.08	0	1.42	-0.08	-0.26	1.68	0.18
Pacheco		45+49	13.08	14.4	13.8	1.32	0.72	14.8	14.8	-0.4	-1.0	0.01	1.31	0.71	0.14	1.58	1.58	0	1.32	0.72	0	1.32	0.72	0	1.32	0.72	-0.26	1.58	0.98
Pacheco	Henry's Wood Farm	42+03	13.08	14.1	13.9	1.02	0.82	14.8	14.8	-0.7	-0.9	0.01	1.01	0.81	0.14	1.58	1.58	0	1.02	0.82	0	1.02	0.82	0	1.02	0.82	-0.26	1.28	1.08
Pacheco		39+84	13.08	13.7	13.5	0.62	0.42	14.8	14.8	-1.1	-1.3	0.01	0.61	0.41	0.14	1.58	1.58	0	0.62	0.42	0	0.62	0.42	0	0.62	0.42	-0.26	0.88	0.68
Pacheco		38+23	13.08	12.8	13.1	-0.28	0.02	14.8	14.8	-2.0	-1.7	0.01	-0.29	0.01	0.14	1.58	1.58	0	-0.28	0.02	0	-0.28	0.02	0	-0.28	0.02	-0.26	-0.02	0.28
Pacheco		33+15	13.08	12.6	13.3	-0.48	0.22	14.8	14.8	-2.2	-1.5	0	-0.48	0.22	0.14	1.58	1.58	0	-0.48	0.22	0	-0.48	0.22	0	-0.48	0.22	-0.26	-0.22	0.48
Pacheco		29+99	13.08	12.6	14	-0.48	0.92	14.8	14.8	-2.2	-0.8	0	-0.48	0.92	0.14	1.58	1.58	0	-0.48	0.92	0	-0.48	0.92	0	-0.48	0.92	-0.26	-0.22	1.18
Pacheco	Martinez Gun Club	29+27	13.08	12.6	13.8	-0.48	0.72	14.8	14.8	-2.2	-1.0	0	-0.48	0.72	0.14	1.58	1.58	0	-0.48	0.72	0	-0.48	0.72	0	-0.48	0.72	-0.26	-0.22	0.98
Pacheco		27+37	13.08	14.5	13.8	1.42	0.72	14.8	14.8	-0.3	-1.0	0	1.42	0.72	0.14	1.58	1.58	0	1.42	0.72	0	1.42	0.72	0	1.42	0.72	-0.26	1.68	0.98
Pacheco		19+50	13.08	15.3	13.2	2.22	0.12	14.8	14.8	0.5	-1.6	0.01	2.21	0.11	0.13	2.09	1.59	0	2.22	0.12	0	2.22	0.12	0	2.22	0.12	-0.27	2.49	0.39
Pacheco		10+47	13.09	14.4	12.8	1.31	-0.29	14.8	14.8	-0.4	-2.0	0.01	1.30	-0.30	0.12	1.59	1.59	0	1.31	-0.29	0	1.31	-0.29	0	1.31	-0.29	-0.28	1.59	-0.01
Pacheco	Confluence w/ WC	06+98	13.11	13.7	13	0.59	-0.11	14.8	14.8	-1.1	-1.8	0	0.59	-0.11	0.1	1.59	1.59	-0.01	0.60	-0.10	0	0.59	-0.11	0	0.59	-0.11	-0.3	0.89	0.19
Grayson	I680 SB Main Deck	59+10																											
Grayson		57+34	18.73	18	19.3	-0.73	0.57	20.1	20.1	-2.1	-0.8	0.01	-0.74	0.56	0	-0.73	0.57	-0.13	-0.60	0.70	0	-0.73	0.57	0	-0.73	1.37	0	-0.73	0.57
Grayson		54+71	18.63	17	19.5	-1.63	0.87	20.1	20.1	-3.1	-0.6	0.01	-1.64	0.86	0	-1.63	0.87	-0.11	-1.52	0.98	0	-1.63	0.87	0	-1.63	1.47	0	-1.63	0.87
Grayson		51+50	18.56	17.5	19.4	-1.06	0.84	20.1	20.1	-2.6	-0.7	0.01	-1.07	0.83	0	-1.06	0.84	-0.11	-0.95	0.95	0	-1.06	0.84	0	-1.06	1.54	0	-1.06	0.84
Grayson		47+85	18.44	16.5	19.4	-1.94	0.96	20.1	20.1	-3.6	-0.7	0	-1.94	0.96	0	-1.94	0.96	-0.08	-1.86	1.04	0	-1.94	0.96	0	-1.94	1.66	0	-1.94	0.96
Grayson		44+68	18.4	17	18.7	-1.4	0.3	20.1	20.1	-3.1	-1.4	0	-1.40	0.30	0	-1.40	0.30	-0.07	-1.33	0.37	0	-1.40	0.30	0	-1.40	1.70	0	-1.40	0.30
Grayson		42+53	18.3	18	18.8	-0.3	0.5	20.1	20.1	-2.1	-1.3	0	-0.30	0.50	0	-0.30	0.50	-0.05	-0.25	0.55	0	-0.30	0.50	0	-0.30	1.80	0	-0.30	0.50
Grayson		40+77	18.26	20	18.8	1.74	0.54	20.1	20.1	-0.1	-1.3	0.01	1.73	0.53	0	1.74	0.54	-0.05	1.79	0.59	0	1.74	0.54	0	1.74	1.84	0	1.74	0.54
Grayson	SR 4 EB	40+38																									0		
Grayson		39+95	18.23	20	20	1.77	1.77	20.1	20.1	-0.1	-0.1	0.01	1.76	1.76	0	1.77	1.77	-0.06	1.83	1.83	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77
Grayson		39+77	18.23	20	20	1.77	1.77	20.1	20.1	-0.1	-0.1	0.01	1.76	1.76	0	1.77	1.77	-0.06	1.83	1.83	0	1.77	1.77	0	1.77	1.77	0	1.77	1.77
Grayson	SR 4 WB	39+43																									0		
Grayson		38+18	18.16	19.6	20	1.44	1.84	20.1	20.1	-0.5	-0.1	0.01	1.43	1.83	0	1.44	1.84	-0.05	1.49	1.89	0	1.94	1.84	0	1.44	1.84	0	1.44	1.84
Grayson		35+27	18.08	19.5	19.5	1.42	1.42	20.1	20.1	-0.6	-0.6	0.01	1.41	1.41	0	1.42	1.42	-0.04	1.46	1.46	0	2.02	1.42	0	1.42	1.42	0	1.42	1.42
Grayson		33+84	18.04	20.3	19.3	2.26	1.26	20.1	20.1	0.2	-0.8	0.02	2.24	1.24	0	2.26	1.26	-0.04	2.30	1.30	0	2.26	1.26	0	2.26	1.26	0	2.26	1.26
Grayson		29+39	17.95	20.4	19.9	2.45	1.95	20.1	20.1	0.3	-0.2	0.02	2.43	1.93	0	2.45	1.95	-0.02	2.47	1.97	0	2.45	1.95	0	2.45	1.95	0	2.45	1.95
Grayson		27+36	17.92	20.1	20.2	2.18	2.28	20.1	20.1	0.0	0.1	0.02	2.16	2.26	0	2.18	2.28	-0.03	2.21	2.31	0	2.18	2.28	0	2.18	2.28	0	2.18	2.28
Grayson		24+20	17.86	20.6	19.5	2.74	1.64	20.1	20.1	0.5	-0.6	0.02	2.72	1.62	0.01	2.73	1.63	-0.02	2.76	1.66	0	2.74	1.64	0	2.74	1.64	0	2.74	1.64
Grayson		22+84	17.85	20.3	19.7	2.45	1.85	20.1	20.1	0.2	-0.4	0.02	2.43	1.83	0	2.45	1.85	-0.03	2.48	1.88	0	2.45	1.85	0	2.45	1.85	-0.01	2.46	1.86
Grayson		19+77	17.8	20.2	19.7	2.4	1.9	20.1	20.1	0.1	-0.4	0.02	2.38	1.88	0	2.40	1.90	-0.02	2.42	1.92	0	2.40	1.90	0	2.40	1.90	-0.01	2.41	1.91
Grayson		18+64	17.78	21	20	3.22	2.22	20.1	20.1	0.9	-0.1	0.02	3.20	2.20	0	3.22	2.22	-0.02	3.24	2.24	0	3.22	2.22	0	3.22	2.22	-0.01	3.23	2.23
Grayson		17+91	17.76	21	22	3.24	4.24	20.1	20.1	0.9	1.9	0.02	3.22	4.22	0	3.24	4.24	-0.01	3.25	4.25	0	3.24	4.24	0	3.24	4.24	-0.01	3.25	4.25
Grayson	Imhoff Drive	17+60																											
Grayson		17+21	17.72	20	22	2.28	4.28	20.1	20.1	-0.1	1.9	0.02	2.26	4.26	0.01	2.27	4.27	0	2.28	4.28	0	2.38	4.28	0	2.28	4.28	-0.01	2.29	4.29
Grayson		16+51	17.72	19.7	20	1.98	2.28	20.1	20.1	-0.4	-0.1	0.02	1.96	2.26	0.01	1.97	2.27	-0.01	1.99	2.29	0	2.38	2.28	0	1.98	2.28	-0.01	1.99	2.29
Grayson		15+35	17.69	19.6	19.3	1.91	1.61	20.1	20.1	-0.5	-0.8	0.03	1.88	1.58	0.01	1.90	1.60	0	1.91	1.61	0	2.41	1.61	0	1.91	1.61	-0.01	1.92	1.62
Grayson		11+99	17.66	19.5	19	1.84	1.34	20.1	20.1	-0.6	-1.1	0.02	1.82	1.32	0	1.84	1.34	-0.01	1.85	1.35	0	2.44	1.34	0	1.84	1.34	-0.02	1.86	1.36
Grayson		11+26	17.65	19.5	19	1.85	1.35	20.1	20.1	-0.6	-1.1	0.02	1.83	1.33	0	1.85	1.35	-0.01	1.86	1.36	0	2.45	1.35	0	1.85	1.35	-0.02	1.87	1.37
Grayson		08+80	17.61	19.6	18.8	1.99	1.19	20.1	20.1	-0.5	-1.3	0.02	1.97	1.17	0.01	1.98	1.18	0	1.99	1.19	0	2.49	1.19	0	1.99	1.19	-0.02	2.01	1.21
Clayton		26+61	22.6	28	23.3	5.4	0.7					0.05	5.35	0.65	0	5.40	0.70	0.01	5.39	0.69	0	5.40	0.70	0	5.40	0.70	0	5.40	0.70
Clayton	Hillcrest Park	25+24	22.57	24.5	23.6	1.93	1.03					0.05	1.88	0.98	0	1.93	1.03	0	1.93	1.03	0	1.93	1.03	0	1.93	1.03	0	1.93	1.03
Clayton		23+88	22.55	24.8	24.2	2.25	1.65	25.6	25.6	-0.8	-1.4	0.04	2.21	1.61	0	2.25	1.65	0	2.25	1.65	0	2.25	1.65	0	2.25	1.65	-0.01	2.26	1.66
Clayton		20+83	22.54	23.9	24.8	1.36	2.26	25.6	25.6	-1.7	-0.8	0.04	1.32	2.22	0	1.36	2.26	0	1.36	2.26	0	1.36	2.26	0	1.36	2.26	-0.01	1.37	2.27
Clayton		15+77	22.53	24.1	22.9	1.57	0.37	25.6	25.6	-1.5	-2.7	0.05	1.52	0.32	0	1.57	0.37	0	1.57	0.37	0	1.57	0.37	0	1.57	0.37	0	1.57	0.37
Clayton		12+24	22.53	23.4	23.3	0.87	0.77	25.6	25.6	-2.2	-2.3	0.05	0.82	0.72	0	0.87	0.77	0	0.87	0.77	0	0.87	0.77	0	0.87	0.77	0	0.87	0.77
Clayton		09+40	22.53	23.9	23.4	1.37	0.87	25.6	25.6	-1.7	-2.2	0.05	1.32	0.82	0	1.37	0.87	0	1.37	0.87	0	1.37	0.87	0	1.37	0.87	0	1.37	0.87
Clayton		08+42	22.53	23.6	23.2	1.07	0.67	25.6	25.6	-2.0	-2.4	0.05	1.02	0.62	0	1.07	0.67	0	1.07	0.67	0	1.07	0.67	0	1.07	0.67	0	1.07	0.67
Clayton	Solano Avenue	07+55																											
Clayton		06+63	22.39	23.2	23	0.81	0.61	25.6	25.6	-2.4	-2.6	0.04	0.77	0.57	0	0.81	0.61	0	0.81	0.61	0	0.81	0.61	0	0.81	0.61	0	0.81	0.61
Clayton		05+70	22.39	23.2	22.4	0.81	0.01	25.6	25.6	-2.4	-3.2	0.04	0.77	-0.03	0	0.81	0.01	0	0.81	0.01	0	0.81	0.01	0	0.81	0.01	0	0.81	0.01
Clayton	Confluence w/ WC	03+33	22.39	24.4	24.1	2.01	1.71	25.6	25.6	-1.2	-1.5	0.04	1.97	1.67	0	2.01	1.71	0	2.01	1.71	0	2.01	1.71	0	2.01	1.71	0	2.01	1.71

Lower Walnut Creek Interim Protection Measures Project
Hydraulic Effects of Interim Measures at Storage Areas

100 year 6 hour storm event

				Existing Conditions		
Area #	Description of Area	Storage Area	Profile	W.S. Elev (ft)	Net Flux (cfs)	SA Volume (acre-ft)
1	Lower Walnut Creek Marsh	LWC_SA1	Max WS	3	0	0
2	Lower Walnut Creek Marsh	SA_LWC3	Max WS	6.63	19.32	1.77
3	Lower Walnut Creek Marsh	SA_LWC2	Max WS	6.56	4.45	0.47
6	ACME Landfill	SA_LWC9	Max WS	6.33	1058.78	163.81
7	ACME Landfill (West)	SA_LWC10	Max WS	7.58	104.34	23.81
8	IT Landfill / Conoco	SA_PACH1	Max WS	10.15	1975.74	236.38
10	CCCSD Railroad Spur-Levee	SA_PACH5	Max WS	14.35	60.2	3.47
11	Adjacent to Waterfront Road	SA_LWC12	Max WS	7.91	-564.93	3.76
12	Waterfront Road (West)	SA_LWC11	Max WS	7.92	682.55	17.66
13	Buchanan Airport (North)	SA_SR4_LOI	Max WS	10.41	14.04	0.48
14	TOSCO Facilities (South)	SA_TOSCO1	Max WS	12.01	207.05	17.74
15	Waterfront Road (East)	SA_TOSCO2	Max WS	10.56	-3.16	2.2
16	TOSCO Facilities (North)	SA_TOSCO3	Max WS	10.56	15.9	46.93
17	Adjacent to 242 & Storage Facilit	SA_SR242R	Max WS	47.57	133.75	9.18
30	Martinez Gun Club-Henry's Wooc	SA_PACH7	Max WS	7.5	445.93	48.01
31	Pacheco Upstream Marsh	SA_PACH6	Max WS	13.09	147.63	65.82

Area #	Measure 1 Raise all levees to 1965 grades			Measure 2 Desilt from Waterfront to BNSF			Measure 3 Raise levee WC at ACME & I.T.			Measure 4 Desilt d/s BNSF near Tesoro			Measure 5 Desilt WC from BNSF to Grayson			Measure 6 Desilt WC from Grayson to SR4			Measure 7 Desilt WC from SR4 to Clayton Vly			Measure 8 Raise WC levee BNSF to Grayson		
	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff
1	0	0	0.0%	0	0.00	0.0%	0	0	0.0%	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%	0	0	0.0%
2	6.02	4.25	240.1%	2.85	1.08	61.0%	3.35	1.58	89.3%	1.8	0.03	1.7%	1.79	0.02	1.1%	1.8	0.03	1.7%	1.75	-0.02	-1.1%	1.75	-0.02	-1.1%
3	1.97	1.5	319.1%	0.88	0.41	87.2%	1.05	0.58	123.4%	0.48	0.01	2.1%	0.48	0.01	2.1%	0.48	0.01	2.1%	0.47	0.00	0.0%	0.47	0	0.0%
6	91.94	-71.87	-43.9%	179.65	15.84	9.7%	86.31	-77.5	-47.3%	165.04	1.23	0.8%	164.79	0.98	0.6%	164.33	0.52	0.3%	163.94	0.13	0.1%	164.34	0.53	0.3%
7	26.05	2.24	9.4%	24.76	0.95	4.0%	24.93	1.12	4.7%	23.79	-0.02	-0.1%	23.73	-0.08	-0.3%	23.68	-0.13	-0.5%	23.73	-0.08	-0.3%	23.74	-0.07	-0.3%
8	149.4	-86.98	-36.8%	140.54	-95.84	-40.5%	194.65	-41.73	-17.7%	234.7	-1.68	-0.7%	238.88	2.50	1.1%	236.83	0.45	0.2%	235.89	-0.49	-0.2%	237.42	1.04	0.4%
10	**0**	**-3.47**	**-100.0%**	1.77	-1.70	-49.0%	5.38	1.91	55.0%	1.77	-1.70	-49.0%	0.01	-3.46	-99.7%	4.16	0.69	19.9%	3.92	0.45	13.0%	**0**	**-3.47**	**-100.0%**
11	4.1	0.34	9.0%	3.93	0.17	4.5%	3.93	0.17	4.5%	3.77	0.01	0.3%	3.76	0.00	0.0%	3.76	0.00	0.0%	3.77	0.01	0.3%	3.77	0.01	0.3%
12	18.76	1.1	6.2%	18.18	0.52	2.9%	18.19	0.53	3.0%	17.68	0.02	0.1%	17.64	-0.02	-0.1%	17.63	-0.03	-0.2%	17.69	0.03	0.2%	17.67	0.01	0.1%
13	**0**	**-0.48**	**-100.0%**	0.47	-0.01	-2.1%	0.49	0.01	2.1%	0.47	-0.01	-2.1%	**0**	**-0.48**	**-100.0%**	**0**	**-0.48**	**-100.0%**	**0**	**-0.48**	**-100.0%**	0.48	0	0.0%
14	21.37	3.63	20.5%	19	1.26	7.1%	19.62	1.88	10.6%	17.81	0.07	0.4%	17.8	0.06	0.3%	17.83	0.09	0.5%	17.79	0.05	0.3%	17.78	0.04	0.2%
15	2.46	0.26	11.8%	2.29	0.09	4.1%	2.33	0.13	5.9%	2.2	0.00	0.0%	2.2	0.00	0.0%	2.21	0.01	0.5%	2.2	0.00	0.0%	2.2	0	0.0%
16	50.2	3.27	7.0%	48.21	1.28	2.7%	48.65	1.72	3.7%	47.02	0.09	0.2%	47.01	0.08	0.2%	47.03	0.10	0.2%	47.01	0.08	0.2%	46.96	0.03	0.1%
17	9.18	0	0.0%	9.18	0.00	0.0%	9.18	0	0.0%	9.18	0.00	0.0%	9.18	0.00	0.0%	9.18	0.00	0.0%	9.18	0.00	0.0%	9.18	0	0.0%
30	**0**	**-48.01**	**-100.0%**	34.61	-13.40	-27.9%	69.97	21.96	45.7%	48.39	0.38	0.8%	48.64	0.63	1.3%	47.93	-0.08	-0.2%	47.69	-0.32	-0.7%	48.19	0.18	0.4%
31	70.52	4.7	7.1%	65.1	-0.72	-1.1%	67.47	1.65	2.5%	65.93	0.11	0.2%	65.92	0.10	0.2%	65.94	0.12	0.2%	65.92	0.10	0.2%	65.86	0.04	0.1%

				Existing Conditions		
Area #	Description of Area	Storage Area	Profile	W.S. Elev (ft)	Net Flux (cfs)	SA Volume (acre-ft)
1	Lower Walnut Creek Marsh	LWC_SA1	Max WS	3	0	0
2	Lower Walnut Creek Marsh	SA_LWC3	Max WS	6.63	19.32	1.77
3	Lower Walnut Creek Marsh	SA_LWC2	Max WS	6.56	4.45	0.47
6	ACME Landfill	SA_LWC9	Max WS	6.33	1058.78	163.81
7	ACME Landfill (West)	SA_LWC10	Max WS	7.58	104.34	23.81
8	IT Landfill / Conoco	SA_PACH1	Max WS	10.15	1975.74	236.38
10	CCCSD Railroad Spur-Levee	SA_PACH5	Max WS	14.35	60.2	3.47
11	Adjacent to Waterfront Road	SA_LWC12	Max WS	7.91	-564.93	3.76
12	Waterfront Road (West)	SA_LWC11	Max WS	7.92	682.55	17.66
13	Buchanan Airport (North)	SA_SR4_LOI	Max WS	10.41	14.04	0.48
14	TOSCO Facilities (South)	SA_TOSCO1	Max WS	12.01	207.05	17.74
15	Waterfront Road (East)	SA_TOSCO2	Max WS	10.56	-3.16	2.2
16	TOSCO Facilities (North)	SA_TOSCO3	Max WS	10.56	15.9	46.93
17	Adjacent to 242 & Storage Facilit	SA_SR242R	Max WS	47.57	133.75	9.18
29	North Concord - Residential, Hillc	SA_CVD1	Max WS	15	0	0
30	Martinez Gun Club-Henry's Wooc	SA_PACH7	Max WS	7.5	445.93	48.01
31	Pacheco Upstream Marsh	SA_PACH6	Max WS	13.09	147.63	65.82

Area #	Measure 9 Rasie WC levee at Marsh Drive			Measure 10 Desilt Clayton Vly Dr. to Concord			Measure 11 Raise Levee at SR 242			Measure 12 Raise Levee on Pacheco Creek			Measure 13 Desilt Grayson from WC to SR4			Measure 14 Raise Grayson Levee WC to SR4			Measure 15 Raise Grayson Levee SR4 to 680			Measure 18 Dredge WC from mouth to Waterfrnt		
	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	SA Volume % Diff
1	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
2	1.77	0	0.0%	1.74	-0.03	-1.7%	1.8	0.03	1.7%	2.43	0.66	37.3%	1.77	0	0.0%	1.76	-0.01	-0.6%	1.76	-0.01	-0.6%	**0**	**-1.77**	**-100.0%**
3	0.47	0	0.0%	0.46	-0.01	-2.1%	0.48	0.01	2.1%	0.71	0.24	51.1%	0.47	0	0.0%	0.47	0	0.0%	0.47	0	0.0%	**0**	**-0.47**	**-100.0%**
6	163.91	0.1	0.1%	163.41	-0.4	-0.2%	164.55	0.74	0.5%	188.44	24.63	15.0%	163.81	0	0.0%	163.8	-0.01	0.0%	163.8	-0.01	0.0%	10.84	-152.97	-93.4%
7	23.8	-0.01	0.0%	23.7	-0.11	-0.5%	23.7	-0.11	-0.5%	24.4	0.59	2.5%	23.81	0	0.0%	23.8	-0.01	0.0%	23.8	-0.01	0.0%	**0**	**-23.81**	**-100.0%**
8	236.59	0.21	0.1%	236.1	-0.28	-0.1%	238.99	2.61	1.1%	199.84	-36.54	-15.5%	236.38	0	0.0%	236.36	-0.02	0.0%	236.36	-0.02	0.0%	108.6	-127.78	-54.1%
10	3.49	0.02	0.6%	3.4	-0.07	-2.0%	3.79	0.32	9.2%	3.86	0.39	11.2%	3.47	0	0.0%	3.45	-0.02	-0.6%	3.45	-0.02	-0.6%	1.78	-1.69	-48.7%
11	3.76	0	0.0%	3.76	0	0.0%	3.76	0	0.0%	3.86	0.1	2.7%	3.76	0	0.0%	3.76	0	0.0%	3.76	0	0.0%	0.11	-3.65	-97.1%
12	17.66	0	0.0%	17.64	-0.02	-0.1%	17.66	0	0.0%	17.95	0.29	1.6%	17.66	0	0.0%	17.66	0	0.0%	17.66	0	0.0%	2.67	-14.99	-84.9%
13	**0**	**-0.48**	**-100.0%**	0.43	-0.05	-10.4%	0.67	0.19	39.6%	0.48	0	0.0%	0.48	0	0.0%	0.47	-0.01	-2.1%	0.47	-0.01	-2.1%	0.46	-0.02	-4.2%
14	17.75	0.01	0.1%	17.73	-0.01	-0.1%	17.79	0.05	0.3%	18.64	0.9	5.1%	17.74	0	0.0%	17.74	0	0.0%	17.74	0	0.0%	14.74	-3	-16.9%
15	2.2	0	0.0%	2.19	-0.01	-0.5%	2.2	0	0.0%	2.26	0.06	2.7%	2.2	0	0.0%	2.2	0	0.0%	2.2	0	0.0%	0.02	-2.18	-99.1%
16	46.93	0	0.0%	46.91	-0.02	0.0%	46.98	0.05	0.1%	47.75	0.82	1.7%	46.93	0	0.0%	46.93	0	0.0%	46.93	0	0.0%	29.74	-17.19	-36.6%
17	9.18	0	0.0%	9.18	0	0.0%	**0**	**-9.18**	**-100.0%**	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%
29	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
30	48.05	0.04	0.1%	47.79	-0.22	-0.5%	48.42	0.41	0.9%	**0**	**-48.01**	**-100.0%**	48.01	0	0.0%	48.01	0	0.0%	48.01	0	0.0%	13.83	-34.18	-71.2%
31	65.82	0	0.0%	65.8	-0.02	0.0%	65.89	0.07	0.1%	67.61	1.79	2.7%	65.82	0	0.0%	65.82	0	0.0%	65.82	0	0.0%	62.67	-3.15	-4.8%

Notes:
100 Year, 6 hour storm event

Interim Measure	Description of Measure	Hydraulic Effect Summary
Measure 1	Raise all levees to 1963 ACOE design elevation: Lower WC, Grayson, Pacheco, Clayton Valley Drain	Decrease volume at IT & ACME, but still being filled via Waterfront Rd & Pacheco Creek; increase volume in Marsh area & Tesoro, eliminate flooding at RR spur & Mrtnz Gun Club
Measure 2	Desilt Walnut Creek between Waterfront to BNSF RR (elevation 2')	Decrease volume at IT, Martinez Gun Club, RR Spur; slight increase in volume at marsh area, ACME, Waterfront & Tesoro
Measure 3	Levee raising along west bank of Walnut Creek along ACME and IT properties	Decrease volume at IT and ACME, but still being filled via Waterfront Road & Pacheco Creek; increase in volume at marsh area, Tesoro, RR spur & Martinez Gun Club
Measure 4	Desilt just D/S of BNSF RR adajecent to Tosco along east bank (elevation 2')	Mimimal effect in storage areas because of alternate flow paths
Measure 5	Desilt Walnut Creek between BNSF RR to Grayson Creek (original channel bottom -1')	Eliminate flooding at RR Spur and north end of Airport
Measure 6	Desilt Walnut Creek between Grayson Creek to Hwy 4 (original channel bottom -1')	Decrease at RR Spur and north end of Airport
Measure 7	Desilt Walnut Creek between Hwy 4 to Clayton Valley Drain (original channel bottom)	Decrease at RR Spur and north end of Airport
Measure 8	Levee raising along west bank of Walnut Creek between BNSF RR to Grayson confluence	Eliminate flooding at RR Spur
Measure 9	Levee raising along west & east bank at Marsh Drive bridge	Eliminate flooding at Marsh Drive and north end of Airport
Measure 10	Desilt Walnut Creek between Clayton Valley Drain to Concord Ave (original channel bottom)	Not much effect in the storage areas
Measure 11	Levee raising along east bank near Hwy 242 northbound bridge	Eliminate flooding at Hwy 242, increase in flooding at Marsh/airport
Measure 12	Levee raising along north & south banks along Pacheco Creek	Eliminate flooding at Martinez Gun Club, decrease at IT, increase at ACME, Marsh, TOSCO, RR Spur
Measure 13	Desilt Grayson Creek between confluence to I680 (original channel bottom)	No effects to flooding in over storage areas, increase freeboard (~1')
Measure 14	Levee raising along west bank of Grayson Creek between confluence to Hwy 4	No effects to flooding in over storage areas, increase freeboard (~1')
Measure 15	Levee raising along east bank of Grayson Creek between Hwy 4 to I680	No effects to flooding in over storage areas, increase freeboard (~1')
Measure 16	Flood wall along west side of Grayson Creek along CCCSD frontage	N/A
Measure 17	Complete dredge to 1965 grades for Walnut Creek between mouth to Hwy 4	N/A
Measure 18	Dredge Walnut Creek between mouth to Waterfront (original channel bottom)	Eliminate flooding in marsh, ACME west; decrease volume at IT and ACME, RR Spur, Waterfront Road, Tesoro; not much effect upstream of BNSF RR

APPENDIX G:

HABITAT ASSESSMENT

- Maps showing habitat areas in and near the Lower Walnut Creek Channel
- Habitat ratio analysis for Alternative 2 (and variants)

APPENDIX H:

ALTERNATIVES ANALYSIS: HYDRAULICS

- List of measures contained in each alternative
- Summary table of freeboard and change in water surface elevation by cross section for each alternative
- Summary table of change in storage volume at each storage area for each alternative

2007 Lower Walnut Creek Interim Protection Measures

Project Objectives

1. Interim project to meet a 10 year life span until the ultimate ACOE GRR project is constructed.
2. Interim project to provide a minimum of 1' of freeboard for a 100 year water surface elevation projected out 10 years assuming historic sediment accumulation rates.
3. Interim project to provide 100 year protection based on 1965 ACOE design criteria, excluding minimum freeboard requirement.
4. Interim project will not negatively affect the benefit/cost ratio of the ultimate ACOE GRR project.
5. Interim improvements will be compatible with ultimate project.
6. Interim project will maximize channel stretches to be eligible for ACOE PL 84-99 emergency funds.

Proposed Alternatives (as combinations of Measures on reverse side)

Alternative 1: *Restore entire leveed system to 1965 as-built condition.*
Complete desilt to 1965 grades for Walnut Creek between mouth to Concord Avenue, Grayson Creek between confluence and I-680, and all of Pacheco Creek. Raise all levees to 1965 design elevations for Lower Walnut Creek, Grayson Creek, Pacheco Creek, and improved portion of Clayton Valley Drain (2300 LF). (Measures 1 and 17).

Alternative 2: *Selective work to maximize hydraulic benefit*
Desilt Walnut Creek from BNSF RR to Highway 4 to 1-foot below 1965 design grades. Desilt WC from Highway 4 to Clayton Valley Drain to 1965 design grades. (Measures 5, 6 and 7).
Raise west levees on Walnut Creek from BNSF to Grayson Creek. (Measure 8).
Raise both Walnut Creek levees from Highway 4 to Clayton Valley Drain. (Measure 9).

Alternative 2a: Alternative 2 with the addition of Measure 11: Raise east levee on Walnut Creek by 2' for 1000' upstream of State Route 242.

Alternative 2b: Alternative 2 with the addition of Grayson Desilting and east levee raising between Station 40~ and 58~. This is behind the Diablo Vista mobile home park. (Measure 15 and part of Measure 13).

Alternative 2c: Alternative 2 with the addition of levee raising on Pacheco Creek at the Gun Club frontage only.

Alternative 2d: Same as Alternative 2 with modification of desilt elevation to constant elevation of 4' between BNSF RR (138+00) and southern end of CCCSD's Basin B (~170+00) due to tidal constraints.

Alternative 2e: *minimization of environmental impacts*: Alternative 2 with the desilting limited to mapped upland areas only. Almost all areas identified as wetlands in the main channel of Walnut Creek are avoided.

Alternative 2e mod*: minimization of environmental impacts with additional upland excavation at levee toe.*
Alternative 2 with the desilting limited to mapped upland areas only. Almost all areas identified as wetlands in the main channel of Walnut Creek are avoided. Additional excavation at west side of channel (15' offset from levee toe) of upland bench area.

Alternative 3: ***(Limit work to upstream of Highway 4 to use existing regulatory permits)***
Desilt Walnut Creek from Highway 4 to Concord Avenue to original 1965 design grades (Measures 7 and 10).
Desilt Clayton Valley Drain to original 1965 design grades.
Desilt Grayson Creek from Highway 4 to Highway 680 to original design grades.
Raise Walnut Creek Levees from Highway 4 to Concord Avenue (both sides).
Raise Clayton Valley Drain levees (both sides).
Raise east Grayson Creek levee from Highway 4 to Highway 680.

Alternative 4: ***(Selective work in tidally influenced areas downstream of BNSF RR)***
Desilt Walnut Creek from Waterfront Road to BNSF to elevation 2' (Measure 2).
Raise west levee on Walnut Creek from Waterfront Road to BNSF (Measure 3).
Raise both levees on Pacheco Creek (Measure 12).

Alternative 5: ***(Do no levee or channel work, but instead wait for ultimate Corps project)***
No levee raising. No channel desilting.

2007 Lower Walnut Creek Interim Protection Measures

Proposed Measures

1. Raise all existing levees to 1965 ACOE design elevations for Lower Walnut Creek, Lower Grayson Creek, Pacheco Creek, and Clayton Valley Drain.
2. Desilt Walnut Creek between Waterfront Road to BNSF RR (to elevation 2').
3. Levee raising along west bank of Walnut Creek along ACME and IT properties.
4. Desilt D/S of BNSF RR adjacent to Tesoro (east bank, access through Tesoro) (to elevation 2').
5. Desilt Walnut Creek between BNSF RR to Grayson Creek (original channel bottom minus 1').
6. Desilt Walnut Creek between Grayson Creek to Hwy 4 (original channel bottom minus 1').
7. Desilt Walnut Creek between Hwy 4 to Clayton Valley Drain (original channel bottom).
8. Levee raising along west bank of Walnut Creek between BNSF RR to Grayson Confluence.
9. Levee raising of Walnut Creek east & west bank at Marsh Drive Bridge.
10. Desilt Walnut Creek between Clayton Valley Drain to Concord Avenue (original channel bottom).
11. Levee raising along east bank near Hwy 242 northbound bridge.
12. Levee raising along Pacheco Creek.
13. Desilt Grayson Creek between confluence to I680 (original channel bottom).
14. Levee raising along west bank of Grayson Creek between confluence to Hwy 4.
15. Levee raising along east bank of Grayson Creek between Hwy 4 to I680.
16. Flood wall along west side of Grayson Creek along CCCSD frontage.
17. Complete desilt to 1965 grades for Walnut Creek between mouth to Hwy 4, Grayson Creek between confluence to I680, and all of Pacheco Creek.
18. Dredge Walnut Creek between mouth to Waterfront (original channel bottom).

Notes:

- All Levee raising to original design elevations.
- All elevations in NAVD88.
- Most beneficial measures to be combined into alternatives.

Hydraulic Effects of Proposed Alternatives along the creek channel (Freeboard & WS Elev)

100 year storm event

HEC-RAS Plan: OrgDes0412A1 Profile: Max WS

Overtopping | 0'-1' Freeboard | 1'-3' Freeboard

Bold & Italic Freeboard increase due to levee raising or Drop in WS Elev greater than 0.1'

Creek	Location	River Sta	Exist Levee/Embankment Elevation Data							Alternative 1			Alternative 2			Alternative 2A			Alternative 2B			Alternative 2C			Alternative 2D			Alternative 2E			Alternative 2E Mod			Alternative 3			Alternative 4		
			Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt
Walnut		363+44	47.6	48.3	48	0.7	0.4		50.0				0.01	0.69	0.39	0.08	0.62	2.32	0.01	0.69	0.39	0.01	0.69	0.39	0.01	0.69	0.39	0.01	0.69	0.39	0.01	0.69	0.39	0.01	0.69	0.39	0	0.70	0.40
Walnut	SR 242 NB	362+98																								0.00	0.00												
Walnut		362+44	47.36	48.4	48	1.04	0.64		50.0				0	1.04	0.64	0.08	0.96	2.56	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64	0	1.04	0.64
Walnut		361+50	46.99	48.5	47.5	1.51	0.51		49.5				0	1.51	0.51	0.07	1.44	2.44	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51	0	1.51	0.51
Walnut	SR 242 SB	360+97																																					
Walnut		358+85	44.24	48.7	48	4.46	3.76						0	4.46	3.76	0.06	4.40	3.70	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76	0	4.46	3.76
Walnut	Drop Structure #1	356+69																																					
Walnut		356+31	37.17	47.1	44	9.93	6.83						0	9.93	6.83	0.06	9.87	6.77	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83	0	9.93	6.83
Walnut		347+37	36.88	44.4	39.8	7.52	2.92						0	7.52	2.92	0.07	7.45	2.85	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92	0	7.52	2.92
Walnut		338+40	35.69	42	39	6.31	3.31						0	6.31	3.31	0.07	6.24	3.24	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	0	6.31	3.31	-0.01	6.32	3.32	0	6.31	3.31
Walnut	Willow Pass Road	334+90																																					
Walnut		330+61	33.64	38	36	4.36	2.36						0	4.36	2.36	0.05	4.31	2.31	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	0	4.36	2.36	-0.02	4.38	2.38	0	4.36	2.36
Walnut		327+86	33.05	36	36	2.95	2.95						-0.01	2.96	2.96	0.04	2.91	2.91	-0.01	2.96	2.96	-0.01	2.96	2.96	0	2.95	2.95	0	2.95	2.95	0	2.95	2.95	-0.04	2.99	2.99	0	2.95	2.95
Walnut	Diamond Blvd	324+86																																					
Walnut		323+03	32.35	34	35	1.65	2.65						-0.01	1.66	2.66	0.04	1.61	2.61	-0.01	1.66	2.66	-0.01	1.66	2.66	-0.01	1.66	2.66	-0.01	1.66	2.66	-0.01	1.66	2.66	-0.07	1.72	2.72	0	1.65	2.65
Walnut		309+75	31.03	37	36.3	5.97	5.27						-0.02	5.99	5.29	0.03	5.94	5.24	-0.02	5.99	5.29	-0.02	5.99	5.29	-0.02	5.99	5.29	-0.02	5.99	5.29	-0.02	5.99	5.29	-0.15	6.12	5.42	0	5.97	5.27
Walnut	Pine Creek	299+56	29.73	33	34	3.27	4.27						-0.03	3.30	4.30	0.01	3.26	4.26	-0.03	3.30	4.30	-0.03	3.30	4.30	-0.03	3.30	4.30	-0.03	3.30	4.30	-0.03	3.30	4.30	-0.27	3.54	4.54	0	3.27	4.27
Walnut		294+00	28.47	30	31.1	1.53	2.63						-0.07	1.60	2.70	-0.02	1.55	2.65	-0.07	1.60	2.70	-0.07	1.60	2.70	-0.07	1.60	2.70	-0.06	1.59	2.69	-0.06	1.59	2.69	-0.7	2.23	3.33	0	1.53	2.63
Walnut		284+29	27.83	30	30	2.17	2.17						-0.1	2.27	2.27	-0.05	2.22	2.22	-0.1	2.27	2.27	-0.1	2.27	2.27	-0.1	2.27	2.27	-0.08	2.25	2.25	-0.09	2.26	2.26	-0.95	3.12	3.12	0	2.17	2.17
Walnut	Concord Ave	283+78																																					
Walnut		283+25	27.49	32	32	4.51	4.51	29.4	29.4	-1.1	3.0	3.0	-0.12	4.63	4.63	-0.07	4.58	4.58	-0.12	4.63	4.63	-0.12	4.63	4.63	-0.12	4.63	4.63	-0.09	4.60	4.60	-0.1	4.61	4.61	-1.17	5.68	5.68	0	4.51	4.51
Walnut		282+97	27.43	32	30	4.57	2.57	29.4	29.4	-1.1	3.0	3.0	-0.12	4.69	2.69	-0.08	4.65	2.65	-0.12	4.69	2.69	-0.12	4.69	2.69	-0.12	4.69	2.69	-0.1	4.67	2.67	-0.11	4.68	2.68	-1.22	5.79	3.79	0	4.57	2.57
Walnut	Concord Footbrid	282+88																																					
Walnut		281+31	27.38	30	29.5	2.62	2.12	29.3	29.3	-1.1	3.1	3.1	-0.13	2.75	2.25	-0.09	2.71	2.21	-0.13	2.75	2.25	-0.13	2.75	2.25	-0.13	2.75	2.25	-0.1	2.72	2.22	-0.11	2.73	2.23	-1.28	3.90	3.40	0	2.62	2.12
Walnut		276+46	26.94	29.3	28.9	2.36	1.96	29.0	29.0	-1.1	3.1	3.1	-0.16	2.52	2.12	-0.12	2.48	2.08	-0.16	2.52	2.12	-0.16	2.52	2.12	-0.16	2.52	2.12	-0.13	2.49	2.09	-0.14	2.50	2.10	-1.16	3.52	3.24	0	2.36	1.96
Walnut		264+21	26.14	28	28.3	1.86	2.16	28.2	28.2	-1.3	3.4	3.4	-0.23	2.09	2.39	-0.19	2.05	2.35	-0.23	2.09	2.39	-0.23	2.09	2.39	-0.23	2.09	2.39	-0.18	2.04	2.34	-0.2	2.06	2.36	-1.05	3.16	3.21	0	1.86	2.16
Walnut		259+04	25.83	27.9	27.4	2.07	1.57	27.9	27.9	-1.3	3.4	3.4	-0.26	2.33	1.83	-0.22	2.29	1.79	-0.26	2.33	1.83	-0.26	2.33	1.83	-0.26	2.33	1.83	-0.2	2.27	1.77	-0.22	2.29	1.79	-0.98	3.05	3.07	0	2.07	1.57
Walnut		249+73	25.27	27.7	27.9	2.43	2.63	27.3	27.3	-1.4	3.5	3.5	-0.34	2.77	2.97	-0.3	2.73	2.93	-0.34	2.77	2.97	-0.34	2.77	2.97	-0.34	2.77	2.97	-0.26	2.69	2.89	-0.28	2.71	2.91	-0.85	3.28	3.48	0	2.43	2.63
Walnut		245+93	24.99	27.5	27.7	2.51	2.71	27.0	27.0	-1.6	3.6	3.6	-0.38	2.89	3.09	-0.34	2.85	3.05	-0.38	2.89	3.09	-0.38	2.89	3.09	-0.38	2.89	3.09	-0.28	2.79	2.99	-0.31	2.82	3.02	-0.83	3.34	3.54	0	2.51	2.71
Walnut		239+17	24.13	26.9	26.6	2.77	2.47	26.2	26.2	-1.8	3.8	3.8	-0.54	3.31	3.01	-0.5	3.27	2.97	-0.54	3.31	3.01	-0.54	3.31	3.01	-0.54	3.31	3.01	-0.39	3.16	2.86	-0.42	3.19	2.89	-0.74	3.51	3.21	0	2.77	2.47
Walnut		235+38	23.8	26.2	25.8	2.4	2	25.7	25.7	-1.8	3.7	3.7	-0.62	3.02	2.62	-0.58	2.98	2.58	-0.62	3.02	2.62	-0.62	3.02	2.62	-0.62	3.02	2.62	-0.44	2.84	2.44	-0.47	2.87	2.47	-0.82	3.22	2.82	0	2.40	2.00
Walnut		228+59	23.3	24.2	25	0.9	1.7	24.9	24.9	-1.9	3.4	3.4	-0.78	1.68	2.48	-0.75	1.65	2.45	-0.78	1.68	2.48	-0.78	1.68	2.48	-0.78	1.68	2.48	-0.55	1.45	2.25	-0.58	1.48	2.28	-0.88	2.45	2.58	0	0.90	1.70
Walnut		225+35	22.92	24.3	24.3	1.38	1.38	24.5	24.5	-1.7	3.3	3.3	-0.9	2.28	2.28	-0.88	2.26	2.26	-0.9	2.28	2.28	-0.9	2.28	2.28	-0.9	2.28	2.28	-0.63	2.01	2.01	-0.66	2.04	2.04	-0.85	2.41	2.41	0	1.38	1.38
Walnut	Clayton Vly Drain	218+60	22.39	23.5	24.4	1.11	2.01						-1.23	2.34	3.24	-1.21	2.32	3.22	-1.23	2.34	3.24	-1.23	2.34	3.24	-1.23	2.34	3.24	-0.85	1.96	2.86	-0.88	1.99	2.89	-0.89	2.00	2.90	0	1.11	2.01
Walnut		214+44	22.23	22.3	22.7	0.07	0.47	23.3	23.3	-2.1	3.1	3.1	-1.2	2.24	2.24	-1.18	2.22	2.22	-1.2	2.24	2.24	-1.2	2.24	2.24	-1.2	2.24	2.24	-0.71	1.75	1.75	-0.74	1.78	1.78	-0.84	1.88	1.88	0	0.07	0.47
Walnut		213+21	22.17	23	24	0.83	1.83	23.0	23.0	-2.1	3.0	3.0	-1.21	2.05	3.04	-1.19	2.03	3.02	-1.21	2.05	3.04	-1.21	2.05	3.04	-1.21	2.05	3.04	-0.79	1.63	2.62	-0.82	1.66	2.65	-0.84	1.68	2.67	0	0.83	1.83
Walnut		211+38	22.01	21.8	22	-0.21	-0.01	22.6	22.6	-2.4	3.0	3.0	-1.18	1.79	1.79	-1.16	1.77	1.77	-1.18	1.79	1.79	-1.18	1.79	1.79	-1.18	1.79	1.79	-0.79	1.40	1.40	-0.82	1.43	1.43	-0.8	1.41	1.41	0	-0.21	-0.01
Walnut	Marsh Drive	211+11																																					
Walnut		210+07	19.34	22.3	22.4	2.96	3.06	22.5		0.1	3.0		-1.32	4.44	4.38	-1.29	4.41	4.35	-1.32	4.44	4.38	-1.32	4.44	4.38	-1.15	4.27	4.21	-0.6	3.72	3.66	-0.61	3.73	3.67	0.07	3.05	2.99	-0.01	2.97	3.07
Walnut		208+06	19.3	24	22.4	4.7	3.1	22.2		0.0	2.9		-1.4	6.10	4.50	-1.36	6.06	4.46	-1.4	6.10	4.50	-1.39	6.09	4.49	-1.21	5.91	4.31	-0.72	5.42	3.82	-0.78	5.48	3.88	0.06	4.64	3.04	-0.01	4.71	3.11
Walnut	SR 4 EB	207+79																																					
Walnut		206+99	18.99	26	22	7.01	3.01	22.1		0.2	2.9		-1.48	8.49	4.49	-1.45	8.46	4.46	-1.48	8.49	4.49	-1.47	8.48	4.48	-1.25	8.26	4.26	-0.79	7.80	3.80	-0.91	7.92	3.92	0.18	6.83	2.83	-0.01	7.02	3.02
Walnut	SR 4 WB	206+76																																					
Walnut		206+08	18.85	19.3	21	0.45	2.15	22.0		0.3	2.9		-1.6	2.05	3.75	-1.58	2.03	3.73	-1.6	2.05	3.75	-1.6	2.05	3.75	-1.34	1.79	3.49	-0.74	1.19	2.89	-0.88	1.33	3.03	0.19	0.26	1.96	-0.01	0.46	2.16
Walnut		203+81	18.54	20.8	22.4	2.26	3.86	21.8		0.5	2.7		-1.59	3.85	5.45	-1.57	3.83	5.43	-1.6	3.86	5.46	-1.59	3.85	5.45	-1.3	3.56	5.16	-0.77	3.03	4.63	-0.92	3.18	4.78	0.05	2.21	3.81	-0.01	2.27	3.87
Walnut		201+33	18.36	20.7	23	2.34	4.64	21.5		0.6	2.5		-1.52	3.86	6.16	-1.5	3.84	6.14	-1.52	3.86	6.16	-1.52	3.86	6.16	-1.21	3.55	5.85	-0.67	3.01	5.31	-0.82	3.16	5.46	0.04	2.30	4.60	-0.02	2.36	4.66
Walnut		200+17	18.47	20.7	22.2	2.23	3.73	21.4		0.5	2.4		-1.47	3.70	5.20	-1.44	3.67	5.17	-1.47	3.70	5.20	-1.47	3.70	5.20	-1.17	3.40	4.90	-0.64	2.87	4.37	-0.79	3.02	4.52	0.05	2.18	3.68	-0.02	2.25	3.75
Walnut	Imhoff Drive	199+78																																					
Walnut		199+39	18.49	20.8	22.4	2.31	3.91	21.3		0.4	2.4		-1.49	3.80	5.40	-1.47	3.78	5.38	-1.5	3.81	5.41	-1.49	3.80	5.40	-1.19	3.50	5.10	-0.74	3.05	4.65	-0.9	3.21	4.81	0.05	2.26	3.86	-0.02	2.33	3.93
Walnut		198+21	18.36	20.4	22.3	2.04	3.94	21.3		0.5	2.4		-1.47	3.51	5.41	-1.44	3.48	5.38	-1.47	3.51	5.41	-1.47	3.51	5.41	-1.16	3.20	5.10	-0.77	2.81	4.71	-0.93	2.97	4.87	0.05	1.99	3.89	-0.02	2.06	3.96
Walnut		194+18	18.01	20.3	22.4	2.29	4.39	21.0		0.5	2.5		-1.31	3.60	5.70	-1.28	3.57	5.67	-1.31	3.60	5.70	-1.3	3.59	5.69	-0.97	3.26	5.36	-0.61	2.90	5.00	-0.79	3.08	5.18	0.05	2.24	4.34	-0.02	2.31	4.41
Walnut		190+32	17.74	20	19.8	2.26	2.06	20.8		0.5	2.5		-1.27	3.53	3.33	-1.25	3.51	3.31	-1.28	3.54	3.34	-1.27	3.53	3.33	-0.92	3.18	2.98	-0.51	2.77	2.57	-0.7	2.96	2.76	0.04	2.22	2.02	-0.03	2.29	2.09
Walnut	Grayson Creek	188+92	17.61																																				
Walnut		184+18	17.59	20.5	18.7	2.91	1.11	19.9		-0.3	2.6		-1.12	4.03	2.23	-1.09	3.45	2.20	-1.12	3.48	2.23	-1.12	3.48	2.23	-0.76	3.12	1.87	-0.42	2.78	1.53	-0.66	3.02	1.77	0.05	2.86	1.06	-0.02	2.93	1.13
Walnut		177+39	17.16	19.7	16.2	2.54	-0.96	19.4		-0.5	2.7		-0.91	3.45	-0.05	-0.89	3.43	-0.07	-0.91	3.45	-0.05	-0.91	3.45	-0.05	-0.53	3.07	-0.43	-0.27	2.81	-0.69	-0.43	2.97	-0.53	0.05	2.49	-1.01	-0.03	2.57	-0.93
Walnut		172+56	16.96	18.4	16.7	1.44	-0.26	18.9		-0.7	2.7		-0.95	2.93	0.69	-0.92	2.90	0.66	-0.95	2.93	0.69	-0.94	2.92	0.68	-0.54	2.52	0.28	-0.28	2.26	0.02	-0.4	2.38	0.14	0.05	1.39	-0.31	-0.05	1.49	-0.21
Walnut		162+79	16.54	18	15.5	1.46	-1.04	18.1		-1.3	2.8		-0.89	2.44	-0.15	-0.87	2.42	-0.17	-0.89	2.44	-0.15	-0.88	2.43	-0.16	-0.53	2.08	-0.51	-0.21	1.76	-0.83	-0.27	1.82	-0.77	0.04	1.42	-1.08	-0.06	1.52	-0.98
Walnut		153+62	15.91	16.2	15.3	0.29	-0.61	17.3		-1.6	2.9		-0.63	2.01	0.02	-0.6	1.98	-0.01	-0.63	2.01	0.02	-0.62	2.00	0.01	-0.31	1.69	-0.30	0.07	1.31	-0.68	0.05	1.33	-0.66	0.03	0.26	-0.64	-0.08	0.37	-0.53
Walnut		150+44	15.73	15.5	16	-0.23	0.27	17.0		-1.6	2.9		-0.57	1.85	0.84	-0.54	1.82	0.81	-0.57	1.85	0.84	-0.55	1.83	0.82	-0.24	1.52	0.51	0.14	1.14	0.13	0.16	1.12	0.11	0.03	-0.26	0.24	-0.1	-0.13	0.37
Walnut		147+60	15.52	16	22	0.48	6.48	16.8		-1.6	2.9		-0.37	1.61	6.85	-0.34	1.58	6.82	-0.37	1.61	6.85	-0.35	1.59	6.83	-0.17	1.41	6.65	0.04	1.20	6.44	0.06	1.18	6.42	0.04	0.44	6.44	-0.11	0.59	6.59
Walnut		142+34	15.2	16	20	0.8	4.8	16.3		-1.8	2.9		-0.22	1.32	5.02	-0.2	1.30	5.00	-0.22	1.32	5.02	-0.21	1.31	5.01	-0.09	1.19	4.89	0.04	1.06	4.76	0.03	1.07	4.77	0.03	0.77	4.77	-0.14	0.94	4.94
Walnut	BNSF RR	137+62																																					
Walnut		137+26	14.09	14.6	11	0.51	-3.09	16.0		-1.8	3.7		0.01	0.50	-3.10	0.02	0.49	-3.11	0.01	0.50	-3.10	0.02	0.49	-3.11	0.01	0.50	-3.10	0.02	0.49	-3.11	0.02	0.49	-3.11	0.01	0.50	-3.10	-0.26	2.15	-2.83
Walnut		134+21	13.99	14.5	16.5	0.51	2.51	15.8		-1.8	3.6		0.02	0.49	2.49	0.03	0.48	2.48	0.01	0.50	2.50	0.03	0.48	2.48	0.02	0.49	2.49	0.03	0.48	2.48	0.02	0.49	2.49	0.02	0.49	2.49	-0.12	1.97	2.63
Walnut		127+03	13.84	13	20	-0.84	6.16	15.5		-2.6	4.3		0.02	-0.86	6.14	0.03	-0.87	6.13	0.02	-0.86	6.14	0.03	-0.87	6.13	0.02	-0.86	6.14	0.03	-0.87	6.13	0.03	-0.87	6.13	0.02	-0.86	6.14	-0.07	1.75	6.23
Walnut		124+60	13.71	12.6	20	-1.11	6.29	15.4		-1.8	3.5		0.02	-1.13	6.27	0.03	-1.14	6.26	0.02	-1.13	6.27	0.03	-1.14	6.26	0.02	-1.13	6.27	0.03	-1.14	6.26	0.03	-1.14	6.26	0.02	-1.13	6.27	-0.04	1.74	6.33
Walnut		118+77	13.49	13.4	20	-0.09	6.51	15.2		-1.8	3.5		0.01	-0.10	6.50	0.02	-0.11	6.49	0.01	-0.10	6.50	0.03	-0.12	6.48	0.02	-0.11	6.49	0.02	-0.11	6.49	0.02	-0.11	6.49	0.02	-0.11	6.49	0.05	1.61	6.46
Walnut	Pacheco Creek	111+24	13.11	13.6	20	0.49	6.89	14.8		-2.1	3.8		0.01	0.48	6.88	0.02	0.47	6.87	0.01	0.48	6.88	0.04	0.45	6.85	0.01	0.48	6.88	0.02	0.47	6.87	0.02	0.47	6.87	0.01	0.48	6.88	0.25	1.45	6.64
Walnut		104+28	13.05	12.1	24.5	-0.95	11.45	14.5		-2.4	3.9		0.01	-0.96	11.44	0.01	-0.96	11.44	0	-0.95	11.45	0.03	-0.98	11.42	0.01	-0.96	11.44	0.01	-0.96	11.44	0.01	-0.96	11.44	0.01	-0.96	11.44	0.29	1.16	11.16
Walnut		91+00	12.73	12.4	24	-0.33	11.27	13.9		-2.2	3.4		0.01	-0.34	11.26	0.02	-0.35	11.25	0.01	-0.34	11.26	0.04	-0.37	11.23	0.01	-0.34	11.26	0.02	-0.35	11.25	0.02	-0.35	11.25	0.01	-0.34	11.26	0.34	0.84	10.93
Walnut		83+52	12.46	13	30	0.54	17.54	13.6		-2.4	3.5		0.01	0.53	17.53	0.02	0.52	17.52	0.01	0.53	17.53	0.04	0.50	17.50	0.02	0.52	17.52	0.02	0.52	17.52	0.02	0.52	17.52	0.02	0.52	17.52	0.4	0.72	17.14
Walnut		80+77	12.37	12.6	30	0.23	17.63	13.5		-2.3	3.4		0.01	0.22	17.62	0.01	0.22	17.62	0	0.23	17.63	0.03	0.20	17.60	0.01	0.22	17.62	0.01	0.22	17.62	0.01	0.22	17.62	0.01	0.22	17.62	0.43	0.65	17.20
Walnut		77+89	12.27	11.5	12	-0.77	-0.27	13.3		-2.2	3.3		0.01	-0.78	-0.28	0.01	-0.78	-0.28	0.01	-0.78	-0.28	0.03	-0.80	-0.30	0.01	-0.78	-0.28	0.02	-0.79	-0.29	0.01	-0.78	-0.28	0.01	-0.78	-0.28	0.46	0.59	-0.73

			Exist Levee/Embankment Elevation Data							Alternative 1			Alternative 2			Alternative 2A			Alternative 2B			Alternative 2C			Alternative 2D			Alternative 2E			Alternative 2E Mod			Alternative 3			Alternative 4		
Creek	Location	River Sta	Exist WS Elev (ft)	Ex.Lt Levee Elev (ft)	Ex. Rt Levee Elev (ft)	Lt Freebrd (ft) exist	Rt Freebrd (ft) exist	1965 Levee Elev Lt (ft)	1965 Levee Elev Rt (ft)	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt	WS Elev Diff (ft)	Freebrd Lt	Freebrd Rt
Walnut		72+59	12.09	12	10	-0.09	-2.09	13.1		-2.1	3.1		0.01	-0.10	-2.10	0.02	-0.11	-2.11	0.01	-0.10	-2.10	0.04	-0.13	-2.13	0.02	-0.11	-2.11	0.02	-0.11	-2.11	0.02	-0.11	-2.11	0.01	-0.10	-2.10	0.49	0.51	-2.58
Walnut		70+76	12.03	11.8	7.5	-0.23	-4.53	13.0		-2.0	3.0		0.01	-0.24	-4.54	0.01	-0.24	-4.54	0	-0.23	-4.53	0.04	-0.27	-4.57	0.01	-0.24	-4.54	0.02	-0.25	-4.55	0.01	-0.24	-4.54	0.01	-0.24	-4.54	0.51	0.46	-5.04
Walnut		68+52	11.96	11	8	-0.96	-3.96	12.9					0.01	-0.97	-3.97	0.02	-0.98	-3.98	0.01	-0.97	-3.97	0.04	-1.00	-4.00	0.01	-0.97	-3.97	0.02	-0.98	-3.98	0.02	-0.98	-3.98	0.01	-0.97	-3.97	0.48	0.46	-4.44
Walnut	UP RR	68+37																																					
Walnut		68+23	10.77	10.9	6	0.13	-4.77						0.01	0.12	-4.78	0.01	0.12	-4.78	0.01	0.12	-4.78	0.02	0.11	-4.79	0.01	0.12	-4.78	0.01	0.12	-4.78	0.01	0.12	-4.78	0.01	0.12	-4.78	0.28	-0.15	-5.05
Walnut		67+65	10.75	11	6	0.25	-4.75						0	0.25	-4.75	0.01	0.24	-4.76	0	0.25	-4.75	0.02	0.23	-4.77	0	0.25	-4.75	0.01	0.24	-4.76	0.01	0.24	-4.76	0	0.25	-4.75	0.27	-0.02	-5.02
Walnut		67+16	10.74	11.4	8	0.66	-2.74						0.01	0.65	-2.75	0.01	0.65	-2.75	0.01	0.65	-2.75	0.02	0.64	-2.76	0.01	0.65	-2.75	0.01	0.65	-2.75	0.01	0.65	-2.75	0.01	0.65	-2.75	0.28	0.38	-3.02
Walnut	Waterfront Road	66+89																																					
Walnut		66+65	10.56	11.9	8	1.34	-2.56						0	1.34	-2.56	0	1.34	-2.56	0	1.34	-2.56	0.02	1.32	-2.58	0	1.34	-2.56	0	1.34	-2.56	0	1.34	-2.56	0	1.34	-2.56	0.25	1.09	-2.81
Walnut		66+54	10.57	11.9	8	1.33	-2.57						0	1.33	-2.57	0.01	1.32	-2.58	0	1.33	-2.57	0.02	1.31	-2.59	0	1.33	-2.57	0.01	1.32	-2.58	0.01	1.32	-2.58	0	1.33	-2.57	0.25	1.08	-2.82
Walnut	Tosco Utility Bridge	66+42																																					
Walnut		66+31	10.55	11.9	8	1.35	-2.55						0	1.35	-2.55	0	1.35	-2.55	0	1.35	-2.55	0.02	1.33	-2.57	0	1.35	-2.55	0	1.35	-2.55	0.01	1.34	-2.56	0	1.35	-2.55	0.25	1.10	-2.80
Walnut		63+92	10.57	8	7.6	-2.57	-2.97						0.01	-2.58	-2.98	0.01	-2.58	-2.98	0.01	-2.58	-2.98	0.02	-2.59	-2.99	0.01	-2.58	-2.98	0.01	-2.58	-2.98	0.01	-2.58	-2.98	0.01	-2.58	-2.98	0.26	-2.83	-3.23
Walnut		61+72	10.52	7	13.8	-3.52	3.28						0	-3.52	3.28	0	-3.52	3.28	0	-3.52	3.28	0.02	-3.54	3.26	0	-3.52	3.28	0	-3.52	3.28	0.01	-3.53	3.27	0	-3.52	3.28	0.25	-3.77	3.03
Walnut		57+49	10.4	8.3	13.3	-2.1	2.9						0	-2.10	2.90	0	-2.10	2.90	0	-2.10	2.90	0.02	-2.12	2.88	0	-2.10	2.90	0	-2.10	2.90	0	-2.10	2.90	0	-2.10	2.90	0.25	-2.35	2.65
Walnut		49+10	10.02	10.4	12.5	0.38	2.48						0	0.38	2.48	0	0.38	2.48	0	0.38	2.48	0.01	0.37	2.47	0	0.38	2.48	0	0.38	2.48	0	0.38	2.48	0	0.38	2.48	0.23	0.15	2.25
Walnut		41+45	9.64	10.8	12.3	1.16	2.66						0	1.16	2.66	0.01	1.15	2.65	0	1.16	2.66	0.02	1.14	2.64	0.01	1.15	2.65	0.01	1.15	2.65	0.01	1.15	2.65	0	1.16	2.66	0.23	0.93	2.43
Walnut		33+84	9.28	11.3	13.8	2.02	4.52						0	2.02	4.52	0.01	2.01	4.51	0	2.02	4.52	0.01	2.01	4.51	0	2.02	4.52	0.01	2.01	4.51	0.01	2.01	4.51	0	2.02	4.52	0.21	1.81	4.31
Walnut		26+85	8.78	11	13.6	2.22	4.82						0	2.22	4.82	0	2.22	4.82	0	2.22	4.82	0.01	2.21	4.81	0	2.22	4.82	0	2.22	4.82	0	2.22	4.82	0	2.22	4.82	0.2	2.02	4.62
Walnut		19+18	7.75	11.5	14	3.75	6.25						0.01	3.74	6.24	0.01	3.74	6.24	0.01	3.74	6.24	0.02	3.73	6.23	0.01	3.74	6.24	0.01	3.74	6.24	0.01	3.74	6.24	0.01	3.74	6.24	0.16	3.59	6.09
Walnut		13+14	6.73	14.3	4.7	7.57	-2.03						0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0	7.57	-2.03	0.02	7.55	-2.05
Walnut	Mouth @ Suisun Bay	10+28	6.61	6	4.7	-0.61	-1.91						0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91	0	-0.61	-1.91
Pacheco		60+04	13.09	14.4	13.5	1.31	0.41	14.8	14.8				0.01	1.30	0.40	0.02	1.29	0.39	0.01	1.30	0.40	0.07	1.24	0.34	0.01	1.30	0.40	0.01	1.30	0.40	0.01	1.30	0.40	0.01	1.30	0.40	0.3	1.41	1.41
Pacheco		55+74	13.09	14.5	13.6	1.41	0.51	14.8	14.8				0.01	1.40	0.50	0.01	1.40	0.50	0.01	1.40	0.50	0.07	1.34	0.44	0.01	1.40	0.50	0.01	1.40	0.50	0.01	1.40	0.50	0.01	1.40	0.50	0.29	1.42	1.42
Pacheco		49+29	13.08	14.5	13	1.42	-0.08	14.8	14.8				0.01	1.41	-0.09	0.02	1.40	-0.10	0.01	1.41	-0.09	0.07	1.35	-0.15	0.02	1.40	-0.10	0.02	1.40	-0.10	0.02	1.40	-0.10	0.01	1.41	-0.09	0.3	1.42	1.42
Pacheco		45+49	13.08	14.4	13.8	1.32	0.72	14.8	14.8				0.01	1.31	0.71	0.02	1.30	0.70	0.01	1.31	0.71	0.07	1.25	0.65	0.01	1.31	0.71	0.02	1.30	0.70	0.02	1.30	0.70	0.01	1.31	0.71	0.3	1.42	1.42
Pacheco	Henry's Wood Farm	42+03	13.08	14.1	13.9	1.02	0.82	14.8	14.8				0.01	1.01	0.81	0.02	1.00	0.80	0.01	1.01	0.81	0.07	0.95	0.75	0.01	1.01	0.81	0.02	1.00	0.80	0.02	1.00	0.80	0.01	1.01	0.81	0.3	1.42	1.42
Pacheco		39+84	13.08	13.7	13.5	0.62	0.42	14.8	14.8				0.01	0.61	0.41	0.02	0.60	0.40	0.01	0.61	0.41	0.07	1.65	0.35	0.01	0.61	0.41	0.01	0.61	0.41	0.01	0.61	0.41	0.01	0.61	0.41	0.3	1.42	1.42
Pacheco		38+23	13.08	12.8	13.1	-0.28	0.02	14.8	14.8				0.01	-0.29	0.01	0.02	-0.30	0.00	0.01	-0.29	0.01	0.07	1.65	-0.05	0.01	-0.29	0.01	0.01	-0.29	0.01	0.01	-0.29	0.01	0.01	-0.29	0.01	0.3	1.42	1.42
Pacheco		33+15	13.08	12.6	13.3	-0.48	0.22	14.8	14.8				0.01	-0.49	0.21	0.01	-0.49	0.21	0.01	-0.49	0.21	0.07	1.65	0.15	0.01	-0.49	0.21	0.01	-0.49	0.21	0.01	-0.49	0.21	0.01	-0.49	0.21	0.29	1.43	1.43
Pacheco		29+99	13.08	12.6	14	-0.48	0.92	14.8	14.8				0.01	-0.49	0.91	0.01	-0.49	0.91	0.01	-0.49	0.91	0.07	1.65	0.85	0.01	-0.49	0.91	0.01	-0.49	0.91	0.01	-0.49	0.91	0.01	-0.49	0.91	0.29	1.43	1.43
Pacheco	Martinez Gun Club	29+27	13.08	12.6	13.8	-0.48	0.72	14.8	14.8				0.01	-0.49	0.71	0.01	-0.49	0.71	0.01	-0.49	0.71	0.07	1.65	0.65	0.01	-0.49	0.71	0.01	-0.49	0.71	0.01	-0.49	0.71	0.01	-0.49	0.71	0.29	1.43	1.43
Pacheco		27+37	13.08	14.5	13.8	1.42	0.72	14.8	14.8				0.01	1.41	0.71	0.01	1.41	0.71	0.01	1.41	0.71	0.07	1.35	0.65	0.01	1.41	0.71	0.01	1.41	0.71	0.01	1.41	0.71	0.01	1.41	0.71	0.29	1.43	1.43
Pacheco		19+50	13.08	15.3	13.2	2.22	0.12	14.8	14.8				0.01	2.21	0.11	0.02	2.20	0.10	0.01	2.21	0.11	0.07	2.15	0.05	0.01	2.21	0.11	0.02	2.20	0.10	0.02	2.20	0.10	0.01	2.21	0.11	0.29	1.93	1.43
Pacheco		10+47	13.09	14.4	12.8	1.31	-0.29	14.8	14.8				0.01	1.30	-0.30	0.02	1.29	-0.31	0.01	1.30	-0.30	0.05	1.26	-0.34	0.01	1.30	-0.30	0.02	1.29	-0.31	0.02	1.29	-0.31	0.01	1.30	-0.30	0.27	1.44	1.44
Pacheco	Confluence w/ WC	06+98	13.11	13.7	13	0.59	-0.11	14.8	14.8				0	0.59	-0.11	0.01	0.58	-0.12	0	0.59	-0.11	0.04	0.55	-0.15	0.01	0.58	-0.12	0.01	0.58	-0.12	0.01	0.58	-0.12	0.01	0.58	-0.12	0.25	1.44	1.44
Grayson	I680 SB Main Deck	59+10																																					
Grayson		57+34	18.73	18	19.3	-0.73	0.57	20.1	20.1				-0.75	0.02	1.32	-0.74	0.01	1.31	-0.91	0.18	2.28	-0.75	0.02	1.32	-0.55	-0.18	1.12	-0.31	-0.42	0.88	-0.4	-0.33	0.97	-0.09	-0.64	1.46	0	-0.73	0.57
Grayson		54+71	18.63	17	19.5	-1.63	0.87	20.1	20.1				-0.79	-0.84	1.66	-0.78	-0.85	1.65	-0.9	-0.73	2.37	-0.79	-0.84	1.66	-0.58	-1.05	1.45	-0.33	-1.30	1.20	-0.43	-1.20	1.30	-0.06	-1.57	1.53	0	-1.63	0.87
Grayson		51+50	18.56	17.5	19.4	-1.06	0.84	20.1	20.1				-0.82	-0.24	1.66	-0.81	-0.25	1.65	-0.92	-0.14	2.46	-0.82	-0.24	1.66	-0.6	-0.46	1.44	-0.34	-0.72	1.18	-0.44	-0.62	1.28	-0.05	-1.01	1.59	0	-1.06	0.84
Grayson		47+85	18.44	16.5	19.4	-1.94	0.96	20.1	20.1				-0.87	-1.07	1.83	-0.86	-1.08	1.82	-0.92	-1.02	2.58	-0.87	-1.07	1.83	-0.64	-1.30	1.60	-0.36	-1.58	1.32	-0.47	-1.47	1.43	-0.01	-1.93	1.67	0	-1.94	0.96
Grayson		44+68	18.4	17	18.7	-1.4	0.3	20.1	20.1				-0.9	-0.50	1.20	-0.89	-0.51	1.19	-0.92	-0.48	2.62	-0.9	-0.50	1.20	-0.66	-0.74	0.96	-0.37	-1.03	0.67	-0.49	-0.91	0.79	0.01	-1.41	1.69	0	-1.40	0.30
Grayson		42+53	18.3	18	18.8	-0.3	0.5	20.1	20.1				-0.93	0.63	1.43	-0.92	0.62	1.42	-0.92	0.62	2.72	-0.93	0.63	1.43	-0.68	0.38	1.18	-0.39	0.09	0.89	-0.51	0.21	1.01	0.03	-0.33	1.77	-0.01	-0.29	0.51
Grayson		40+77	18.26	20	18.8	1.74	0.54	20.1	20.1				-0.95	2.69	1.49	-0.93	2.67	1.47	-0.95	2.69	2.79	-0.95	2.69	1.49	-0.69	2.43	1.23	-0.39	2.13	0.93	-0.52	2.26	1.06	0.03	1.71	1.81	-0.01	1.75	0.55
Grayson	SR 4 EB	40+38																																					
Grayson		39+95	18.23	20	20	1.77	1.77	20.1	20.1				-0.95	2.72	2.72	-0.94	2.71	2.71	-0.95	2.72	2.72	-0.95	2.72	2.72	-0.69	2.46	2.46	-0.39	2.16	2.16	-0.52	2.29	2.29	0.03	1.74	1.74	0	1.77	1.77
Grayson		39+77	18.23	20	20	1.77	1.77	20.1	20.1				-0.96	2.73	2.73	-0.94	2.71	2.71	-0.96	2.73	2.73	-0.96	2.73	2.73	-0.7	2.47	2.47	-0.4	2.17	2.17	-0.53	2.30	2.30	0.03	1.74	1.74	0	1.77	1.77
Grayson	SR 4 WB	39+43																																					
Grayson		38+18	18.16	19.6	20	1.44	1.84	20.1	20.1				-0.96	2.40	2.80	-0.95	2.39	2.79	-0.96	2.40	2.80	-0.96	2.40	2.80	-0.7	2.14	2.54	-0.4	1.84	2.24	-0.53	1.97	2.37	0.03	1.41	1.81	0	1.44	1.84
Grayson		35+27	18.08	19.5	19.5	1.42	1.42	20.1	20.1				-0.99	2.41	2.41	-0.98	2.40	2.40	-1	2.42	2.42	-0.99	2.41	2.41	-0.72	2.14	2.14	-0.41	1.83	1.83	-0.55	1.97	1.97	0.04	1.38	1.38	0	1.42	1.42
Grayson		33+84	18.04	20.3	19.3	2.26	1.26	20.1	20.1				-1.01	3.27	2.27	-0.99	3.25	2.25	-1.01	3.27	2.27	-1.01	3.27	2.27	-0.72	2.98	1.98	-0.42	2.68	1.68	-0.56	2.82	1.82	0.04	2.22	1.22	0	2.26	1.26
Grayson		29+39	17.95	20.4	19.9	2.45	1.95	20.1	20.1				-1.04	3.49	2.99	-1.02	3.47	2.97	-1.04	3.49	2.99	-1.04	3.49	2.99	-0.74	3.19	2.69	-0.43	2.88	2.38	-0.58	3.03	2.53	0.04	2.41	1.91	0	2.45	1.95
Grayson		27+36	17.92	20.1	20.2	2.18	2.28	20.1	20.1				-1.06	3.24	3.34	-1.03	3.21	3.31	-1.06	3.24	3.34	-1.05	3.23	3.33	-0.74	2.92	3.02	-0.43	2.61	2.71	-0.58	2.76	2.86	0.04	2.14	2.24	0	2.18	2.28
Grayson		24+20	17.86	20.6	19.5	2.74	1.64	20.1	20.1				-1.08	3.82	2.72	-1.05	3.79	2.69	-1.08	3.82	2.72	-1.07	3.81	2.71	-0.76	3.50	2.40	-0.44	3.18	2.08	-0.6	3.34	2.24	0.05	2.69	1.59	0	2.74	1.64
Grayson		22+84	17.85	20.3	19.7	2.45	1.85	20.1	20.1				-1.09	3.54	2.94	-1.07	3.52	2.92	-1.1	3.55	2.95	-1.09	3.54	2.94	-0.77	3.22	2.62	-0.45	2.90	2.30	-0.61	3.06	2.46	0.04	2.41	1.81	-0.01	2.46	1.86
Grayson		19+77	17.8	20.2	19.7	2.4	1.9	20.1	20.1				-1.11	3.51	3.01	-1.09	3.49	2.99	-1.12	3.52	3.02	-1.11	3.51	3.01	-0.78	3.18	2.68	-0.46	2.86	2.36	-0.63	3.03	2.53	0.04	2.36	1.86	-0.01	2.41	1.91
Grayson		18+64	17.78	21	20	3.22	2.22	20.1	20.1				-1.12	4.34	3.34	-1.09	4.31	3.31	-1.12	4.34	3.34	-1.12	4.34	3.34	-0.78	4.00	3.00	-0.46	3.68	2.68	-0.63	3.85	2.85	0.05	3.17	2.17	-0.01	3.23	2.23
Grayson		17+91	17.76	21	22	3.24	4.24	20.1	20.1				-1.13	4.37	5.37	-1.1	4.34	5.34	-1.13	4.37	5.37	-1.12	4.36	5.36	-0.79	4.03	5.03	-0.46	3.70	4.70	-0.64	3.88	4.88	0.05	3.19	4.19	-0.01	3.25	4.25
Grayson	Imhoff Drive	17+60																																					
Grayson		17+21	17.72	20	22	2.28	4.28	20.1	20.1				-1.14	3.42	5.42	-1.11	3.39	5.39	-1.14	3.42	5.42	-1.14	3.42	5.42	-0.79	3.07	5.07	-0.47	2.75	4.75	-0.65	2.93	4.93	0.05	2.23	4.23	-0.01	2.29	4.29
Grayson		16+51	17.72	19.7	20	1.98	2.28	20.1	20.1				-1.14	3.12	3.42	-1.11	3.09	3.39	-1.14	3.12	3.42	-1.14	3.12	3.42	-0.8	2.78	3.08	-0.47	2.45	2.75	-0.65	2.63	2.93	0.05	1.93	2.23	-0.01	1.99	2.29
Grayson		15+35	17.69	19.6	19.3	1.91	1.61	20.1	20.1				-1.15	3.06	2.76	-1.13	3.04	2.74	-1.16	3.07	2.77	-1.15	3.06	2.76	-0.8	2.71	2.41	-0.47	2.38	2.08	-0.66	2.57	2.27	0.05	1.86	1.56	-0.01	1.92	1.62
Grayson		11+99	17.66	19.5	19	1.84	1.34	20.1	20.1				-1.18	3.02	2.52	-1.15	2.99	2.49	-1.18	3.02	2.52	-1.17	3.01	2.51	-0.82	2.66	2.16	-0.49	2.33	1.83	-0.68	2.52	2.02	0.04	1.80	1.30	-0.02	1.86	1.36
Grayson		11+26	17.65	19.5	19	1.85	1.35	20.1	20.1				-1.18	3.03	2.53	-1.16	3.01	2.51	-1.19	3.04	2.54	-1.18	3.03	2.53	-0.83	2.68	2.18	-0.49	2.34	1.84	-0.69	2.54	2.04	0.04	1.81	1.31	-0.03	1.88	1.38
Grayson		08+80	17.61	19.6	18.8	1.99	1.19	20.1	20.1				-1.19	3.18	2.38	-1.17	3.16	2.36	-1.19	3.18	2.38	-1.19	3.18	2.38	-0.83	2.82	2.02	-0.49	2.48	1.68	-0.69	2.68	1.88	0.05	1.94	1.14	-0.02	2.01	1.21
Clayton		26+61	22.6	28	23.3	5.4	0.7						-0.4	5.80	1.10	-0.4	5.80	1.10	-0.4	5.80	1.10	-0.4	5.80	1.10	-0.4	5.80	1.10	-0.41	5.81	1.11	-0.41	5.81	1.11	-0.4	5.80	1.10	0	5.40	0.70
Clayton	Hillcrest Park	25+24	22.57	24.5	23.6	1.93	1.03						-0.92	2.85	1.95	-0.92	2.85	1.95	-0.92	2.85	1.95	-0.92	2.85	1.95	-0.92	2.85	1.95	-0.73	2.66	1.76	-0.77	2.70	1.80	-0.74	2.67	1.77	0	1.93	1.03
Clayton		23+88	22.55	24.8	24.2	2.25	1.65	25.6	25.6				-1.17	3.42	2.82	-1.14	3.39	2.79	-1.17	3.42	2.82	-1.17	3.42	2.82	-1.17	3.42	2.82	-0.8	3.05	2.45	-0.84	3.09	2.49	-0.82	3.87	3.87	-0.01	2.26	1.66
Clayton		20+83	22.54	23.9	24.8	1.36	2.26	25.6	25.6				-1.21	2.57	3.47	-1.18	2.54	3.44	-1.21	2.57	3.47	-1.21	2.57	3.47	-1.2	2.56	3.46	-0.83	2.19	3.09	-0.87	2.23	3.13	-0.86	3.92	3.92	-0.01	1.37	2.27
Clayton		15+77	22.53	24.1	22.9	1.57	0.37	25.6	25.6				-1.21	2.78	1.58	-1.18	2.75	1.55	-1.21	2.78	1.58	-1.21	2.78	1.58	-1.21	2.78	1.58	-0.83	2.40	1.20	-0.87	2.44	1.24	-0.86	3.93	3.93	0	1.57	0.37
Clayton		12+24	22.53	23.4	23.3	0.87	0.77	25.6	25.6				-1.21	2.08	1.98	-1.19	2.06	1.96	-1.21	2.08	1.98	-1.21	2.08	1.98	-1.21	2.08	1.98	-0.83	1.70	1.60	-0.87	1.74	1.64	-0.86	3.93	3.93	0	0.87	0.77
Clayton		09+40	22.53	23.9	23.4	1.37	0.87	25.6	25.6				-1.21	2.58	2.08	-1.19	2.56	2.06	-1.21	2.58	2.08	-1.21	2.58	2.08	-1.21	2.58	2.08	-0.83	2.20	1.70	-0.87	2.24	1.74	-0.86	3.93	3.93	0	1.37	0.87
Clayton		08+42	22.53	23.6	23.2	1.07	0.67	25.6	25.6				-1.21	2.28	1.88	-1.19	2.26	1.86	-1.21	2.28	1.88	-1.21	2.28	1.88	-1.21	2.28	1.88	-0.83	1.90	1.50	-0.87	1.94	1.54	-0.86	3.93	3.93	0	1.07	0.67
Clayton	Solano Avenue	07+55																																					
Clayton		06+63	22.39	23.2	23	0.81	0.61	25.6	25.6				-1.23	2.04	1.84	-1.21	2.02	1.82	-1.23	2.04	1.84	-1.23	2.04	1.84	-1.23	2.04	1.84	-0.85	1.66	1.46	-0.87	1.68	1.48	-0.89	4.10	4.10	0	0.81	0.61
Clayton		05+70	22.39	23.2	22.4	0.81	0.01	25.6	25.6				-1.23	2.04	1.24	-1.21	2.02	1.22	-1.23	2.04	1.24	-1.23	2.04	1.24	-1.23	2.04	1.24	-0.85	1.66	0.86	-0.88	1.69	0.89	-0.89	4.10	4.10	0	0.81	0.01
Clayton	Confluence w/ WC	03+33	22.39	24.4	24.1	2.01	1.71	25.6	25.6				-1.23	3.24	2.94	-1.21	3.22	2.92	-1.23	3.24	2.94	-1.23	3.24	2.94	-1.23	3.24	2.94	-0.85	2.86	2.56	-0.88	2.89	2.59	-0.89	4.10	4.10	0	2.01	1.71

Lower Walnut Creek Interim Protection Measures Project

Hydraulic Effects of Interim Measures at Storage Areas

100 Year 6 hour Storm Event

			Existing Cond. 100 Year Event	Alternative 2			Alternative 2A			Alternative 2B			Alternative 2C			Alternative 2D			Alternative 2E & 2E Mod (same)			Alternative 3			Alternative 4		
				Combo 5,6,7,8,9			Combo 5,6,7,8,9,11			Combo 5,6,7,8,9,13 (part), 15			Combo 5,6,7,8,9,12 (part)			Combo 5,6,7,8,9 w/ min 4' desilt elev			Avoid wetland impact Combo 5,6,7,8,9,15 w/ remove plateau			Upstream w/in existing permits Combo 7,9,10,13 (part),15			Combo 2,3,12		
Area #	Description of Area	Storage Area	SA Volume (acre-ft)	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff	SA Volume (acre-ft)	Diff Volume (acre-ft)	% Diff
1	Lower Walnut Creek Marsh	LWC_SA1	0	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	#DIV/0!	0	0	0.0%	0	0	0.0%	0.44	0.44	0.0%
2	Lower Walnut Creek Marsh	SA_LWC3	1.77	1.77	0	0.0%	1.82	0.05	2.8%	1.77	0	0.0%	1.98	0.21	11.9%	1.8	0.03	1.7%	1.81	0.04	2.3%	1.73	-0.04	-2.3%	7.14	5.37	303.4%
3	Lower Walnut Creek Marsh	SA_LWC2	0.47	0.47	0	0.0%	0.49	0.02	4.3%	0.48	0.01	2.1%	0.55	0.08	17.0%	0.49	0.02	4.3%	0.48	0.01	2.1%	0.46	-0.01	-2.1%	2.35	1.88	400.0%
6	ACME Landfill	SA_LWC9	163.81	164.55	0.74	0.5%	165.81	2	1.2%	164.39	0.58	0.4%	172.19	8.38	5.1%	165.62	1.81	1.1%	165.07	1.26	0.8%	163.22	-0.59	-0.4%	94.5	-69.31	-42.3%
7	ACME Landfill (West)	SA_LWC10	23.81	23.72	-0.09	-0.4%	23.8	-0.01	0.0%	23.78	-0.03	-0.1%	23.93	0.12	0.5%	23.76	-0.05	-0.2%	23.71	-0.1	-0.4%	23.68	-0.13	-0.5%	26.54	2.73	11.5%
8	IT Landfill / Conoco	SA_PACH1	236.38	237.43	1.05	0.4%	239.61	3.23	1.4%	236.87	0.49	0.2%	257.49	21.11	8.9%	239.96	3.58	1.5%	238.77	2.39	1.0%	234.79	-1.59	-0.7%	101.88	-134.5	-56.9%
10	CCCSD Railroad Spur-Levee	SA_PACH5	3.47	**0**	**-3.47**	**-100.0%**	**0**	**-3.47**	**-100.0%**	**0**	**-3.47**	**-100.0%**	**0**	**-3.47**	**-100.0%**	0	-3.47	**-100.0%**	0	**-3.47**	**-100.0%**	3.91	0.44	12.7%	1.79	-1.68	-48.4%
11	Adjacent to Waterfront Road	SA_LWC12	3.76	3.78	0.02	0.5%	3.78	0.02	0.5%	3.78	0.02	0.5%	3.81	0.05	1.3%	3.78	0.02	0.5%	3.76	0	0.0%	3.77	0.01	0.3%	4.19	0.43	11.4%
12	Waterfront Road (West)	SA_LWC11	17.66	17.71	0.05	0.3%	17.71	0.05	0.3%	17.7	0.04	0.2%	17.81	0.15	0.8%	17.72	0.06	0.3%	17.63	-0.03	-0.2%	17.67	0.01	0.1%	18.99	1.33	7.5%
13	Buchanan Airport (North)	SA_SR4_LOB	0.48	**0**	**-0.48**	**-100.0%**	**0**	**-0.48**	**-100.0%**	**0**	**-0.48**	**-100.0%**	**0**	**-0.48**	**-100.0%**	0	-0.48	**-100.0%**	0	**-0.48**	**-100.0%**	0	**-0.48**	**-100.0%**	0.46	-0.02	-4.2%
14	TOSCO Facilities (South)	SA_TOSCO1	17.74	17.77	0.03	0.2%	17.84	0.1	0.6%	17.75	0.01	0.1%	18.06	0.32	1.8%	17.77	0.03	0.2%	17.86	0.12	0.7%	17.77	0.03	0.2%	22.05	4.31	24.3%
15	Waterfront Road (East)	SA_TOSCO2	2.2	2.2	0	0.0%	2.21	0.01	0.5%	2.2	0	0.0%	2.22	0.02	0.9%	2.2	0	0.0%	2.21	0.01	0.5%	2.2	0	0.0%	2.51	0.31	14.1%
16	TOSCO Facilities (North)	SA_TOSCO3	46.93	46.99	0.06	0.1%	47.04	0.11	0.2%	46.98	0.05	0.1%	47.25	0.32	0.7%	47	0.07	0.1%	47.07	0.14	0.3%	46.99	0.06	0.1%	50.91	3.98	8.5%
17	Adjacent to 242 & Storage Facility	SA_SR242ROB	9.18	9.18	0	0.0%	**0**	**-9.18**	**-100.0%**	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%	9.18	0	0.0%
28	Solano Ave & Dodge dealership	SA_SR4_ROB	0	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
29	North Concord - Residential, Hillcrest P	SA_CVD1	0	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
30	Martinez Gun Club-Henry's Wood Farm	SA_PACH7	48.01	48.17	0.16	0.3%	48.79	0.78	1.6%	47.99	-0.02	0.0%	**0**	**-48.01**	**-100.0%**	48.87	0.86	1.8%	48.31	0.3	0.6%	47.23	-0.78	-1.6%	0	**-48.01**	**-100.0%**
31	Pacheco Upstream Marsh	SA_PACH6	65.82	65.9	0.08	0.1%	65.96	0.14	0.2%	65.88	0.06	0.1%	66.63	0.81	1.2%	65.91	0.09	0.1%	65.95	0.13	0.2%	65.9	0.08	0.1%	69.56	3.74	5.7%

APPENDIX I:

ALTERNATIVES ANALYSIS: GEOTECHNICAL AND HAZARDOUS MATERIALS

- Letter report on Soil Sampling (Hultgren – Tillis Engineers, May 24, 2007)
- Letter report on Geotechnical Recommendation for Levee Raising (Hultgren-Tillis Engineers, May 30, 2007)
- Hazardous assessment of accumulated sediment (Ninyo and Moore, May 11, 2007)
- Letter report on Fill Borrow Site Test Results, Lower Walnut Creek Channel Interim Protection Project (Hultgren-Tillis Engineers, June 7, 2007)

APPENDIX J:

ALTERNATIVES ANALYSIS: COST ESTIMATES

- May 15 cost estimate by RBF Consulting for the Considered Alternatives

APPENDIX K:

MEETING NOTES AND AGENDAS FROM OUTREACH EFFORTS

- February 12, Transportation, Water and Infrastructure Committee, Contra Costa County Board of Supervisors
- February 20, 2007 meeting with Congresswoman Tauscher's staff
- March 13, 2007 Board of Supervisors Meeting
- May 9, 2007 Interagency Meeting (Regulatory Agencies)
- May 10, 2007 Walnut Creek Watershed Council
- May 14, 2007 Transportation, Water and Infrastructure Committee, Contra Costa County Board of Supervisors
- June 19, 2007 Public Meeting Notification (by email and on the District's webpage)
- June 25, 2007 Transportation, Water and Infrastructure Committee, Contra Costa County Board of Supervisors

APPENDIX L:

ALTERNATIVES ANALYSIS:

COMPARING TIDE ELEVATIONS WITH DESILT GRADES

- To better understand the effects of the tide on Alternative 2 (and variants), District staff placed witness stakes within the work area adjacent to the low flow channel immediately before known higher high tide events. The higher high tide marks left on the stakes were then surveyed for the exact elevation of the higher high tide at these locations. Comparing these elevations to reported data from known tide gauges showed that the project tides were 0.9 feet above the closest reported tide gauge elevation in the tables. Using this adjustment factor with the tide tables for July through October 2007, the exact tides anticipated at the project site were generated and plotted. The plots of tidal elevations and typical cross sections are included in this Appendix.

- These anticipated tide elevations were then compared to the elevations of the desilting operations. Desilting to design grade in the lowest reaches covered by Alternative 2 (just upstream of the BNSF Railroad) were shown to be problematic because the design grade would be frequently inundated by the daily tides, and it would not be possible to complete the work as a dry desilting operation. the District explored ways to retain the "dry land" construction techniques in this area while maximizing the sediment to be removed and thus the hydraulic benefit. The compromise solution became our Preferred Alternative 2d, which limited the bottom elevation to 4.0 (NAVD 88 datum). This slightly shallower depth extends from the BNSF Railroad upstream until the 1965 invert exceeds that elevation, a distance of approximately 1800 linear feet

APPENDIX M:

ALTERNATIVES ANALYSIS:

ALTERNATIVE 2B, GRAYSON CREEK LEVEE ENCROACHMENTS AT RANCHO DIABLO MOBILE HOME PARK

- The map and photos in this appendix show the approximate extent and character of the encroachments that have been placed on the Grayson Creek Levee between Highway 4 and Interstate 680. Encroachments are typically landscaping-style vegetation and a 3-foot +/- high concrete retaining wall on the landside of the levee. Photos are taken looking upstream (looking to the southwest).

APPENDIX N:

PREFERRED ALTERNATIVE #2D

- Map of Proposed Phase I improvements (11x17 copy of Figure 5)
- Typical Cross Sections showing location and extent of desilting and levee raising (2 sheets)
- Hydraulic Summary Table (2 sheets)
- Location Map showing locations for possible borrow and disposal sites (11x17 copy of Figure 6)

APPENDIX O:

PROJECT SCHEDULE

APPENDIX P:

CEQA: MITIGATED NEGATIVE DECLARATION

APPENDIX Q:

EMERGENCY EVACUATION PLAN

- This "Lower Walnut Creek Channel Flood Evacuation Plan" was developed by County OES staff and is based on the existing FEMA floodplains. As shown in Appendix E, the FEMA floodplains greatly overestimate the amount of flooding from a 1%-chance storm event.

APPENDIX R:

ANALYSIS OF INUNDATION ON THE CLOSED IT BAKER HAZARDOUS WASTE LANDFILL

- The IT Baker site is a closed and capped hazardous waste landfill located in the floodplain between Pacheco Creek and Walnut Creek. As part of the alternatives analysis, and the consideration of residual risk of implementing Alternative 2D, the District requested an analysis of the effects of periodic flooding on the site. The letter report contained in this appendix provides this analysis.

- In summary, the approved and implemented closure plan for the landfill accounts for this site's location in the FEMA 1%-chance floodplain. The protective measures implemented with the closure plan provide protection from the effects of periodic inundation. The protective cap was designed to protect the site from a 24-hour Probable Maximum Precipitation event, which far exceeds the design capacity of the District's adjacent facilities.

APPENDIX S:

CONSEQUENCE OF OVERTOPPING DOWNSTREAM OF THE BNSF RAILROAD: PHOTOS AND LOCATION MAP

- This appendix contains photos of the Pacheco Marsh, the ACME Fill Marsh, the ACME Fill buffer area, the Martinez Gun Club, the IT-Baker site and the buffer lands between the IT-Baker site and the left levee of the Walnut Creek channel. It also contains a key map showing the expected 1%-chance floodplain and the locations where the photos were taken.