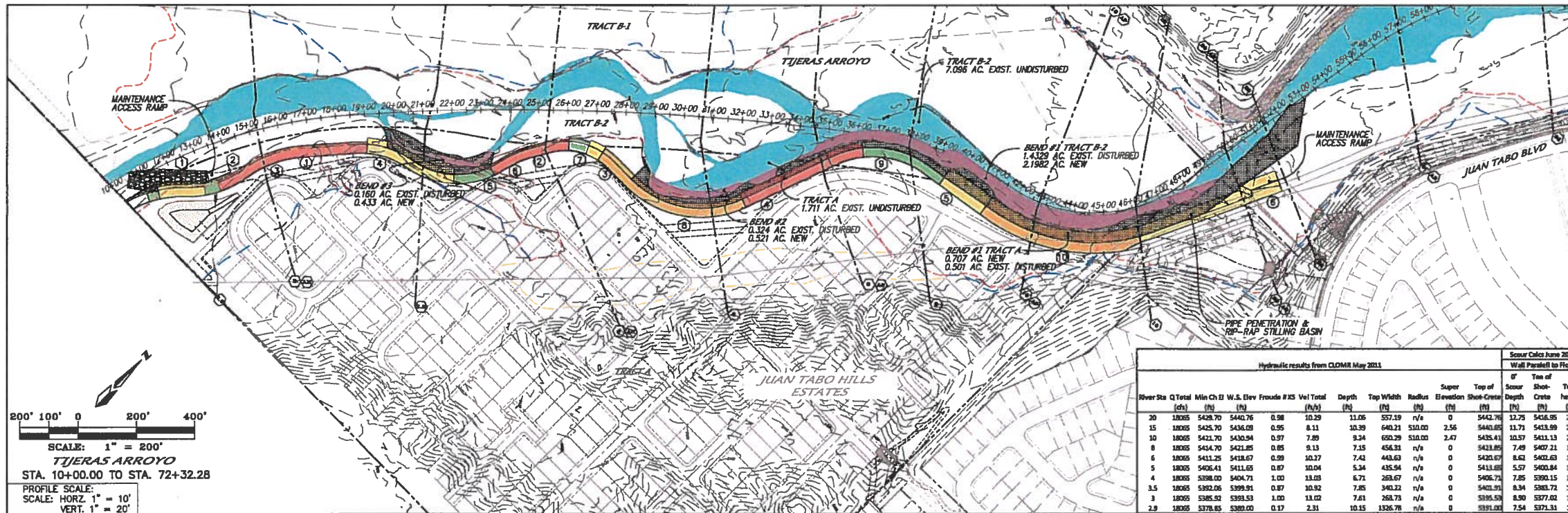
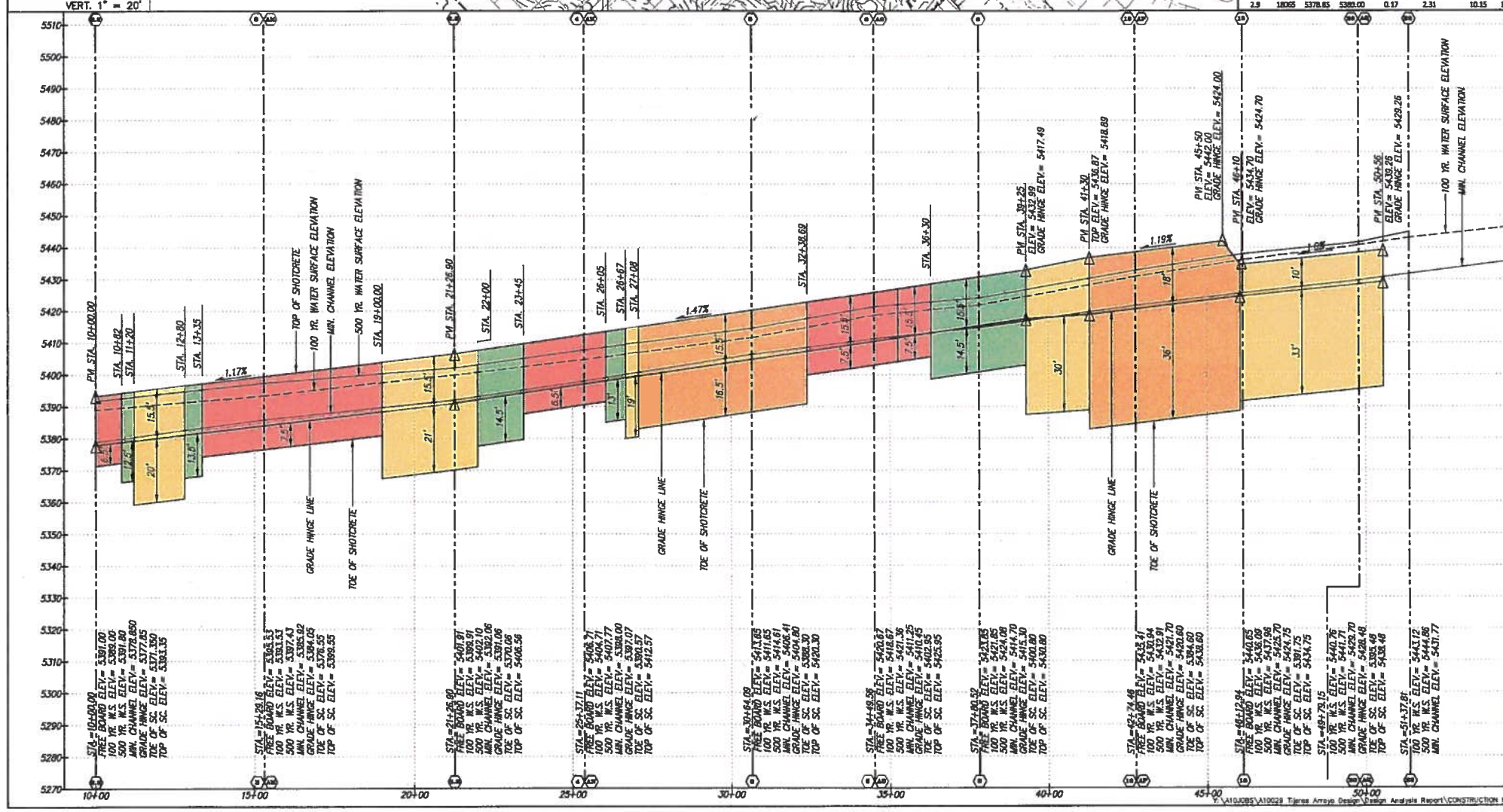


TIJERAS ARROYO
STA. 10+00.00 TO STA. 72+32.28

PROFILE SCALE:
SCALE: HORZ. 1" = 10'
VERT. 1" = 20'



CURVE DATA – TOP OF SHOTCRETE

① Δ=30°08'26" L=184.12 R=350.00 Tan=94.24	② Δ=37°55'34" L=231.68 R=350.00 Tan=120.26	③ Δ=32°21'15" L=197.64 R=350.00 Tan=101.53
④ Δ=38°49'36" L=186.36 R=275.00 Tan=96.92	⑤ Δ=68°09'28" L=356.87 R=300.00 Tan=202.95	⑥ Δ=17°51'44" L=93.53 R=300.00 Tan=47.15
⑦ Δ=60°38'42" L=222.15 R=210.00 Tan=122.74	⑧ Δ=70°27'14" L=448.82 R=365.00 Tan=257.74	⑨ Δ=61°03'59" L=322.21 R=302.32 Tan=178.31
⑩ Δ=33°54'37" L=383.52 R=648.00 Tan=197.56	⑪ Δ=17°56'44" L=191.37 R=611.00 Tan=96.47	

LINE DATA – TOP OF SHOTCRETE

① N41°08'27"E 185.211'	② N29°40'19"E 69.74'	③ S89°42'59"E 79.46'
④ N19°49'46"E 338.81'	⑤ N81°09'26"E 251.48'	⑥ N25°04'21"E 468.37'

													Scour Calcs June 2013 Wall Parallel to Flow			Scour Calcs Dec. 2013 Wall 0°-15° to Flow		Scour Calcs Dec. 2013 Wall 15°-30° to Flow			Scour Calcs Oct. 2013 Wall Perpendicular to Flow			Scour Calcs Oct. 2013 Wall 30°-45° to Flow		
	Hydraulic results from CLOMR May 2011												0' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	15' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	30' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	90' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	45' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)
River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Froude # Χ5	Vel Total (ft/s)	Depth (ft)	Top Width (ft)	Radius (ft)	Super Elevation (ft)	Top of Shot-Crete (ft)																
20	18065	5428.70	5440.76	0.98	10.29	11.06	557.19	n/a	0	5442.76	12.75	5416.95	25.81	23.70	5406.00	36.76	33.01	5396.69	46.07	40.09	5389.63	53.15	37.17	5388.53	52.13
15	18065	5425.70	5436.09	0.95	8.11	10.39	640.21	510.00	2.56	5440.65	11.71	5413.99	26.66	21.90	5403.80	36.85	30.57	5395.13	45.53	40.86	5384.84	55.82	37.17	5388.53	52.13
10	18065	5421.70	5430.94	0.97	7.89	9.24	630.29	510.00	2.47	5435.41	10.57	5411.13	24.28	19.69	5402.01	33.39	27.45	5394.25	41.15	34.59	5385.11	50.30	33.35	5388.35	47.05
8	18065	5414.70	5421.85	0.85	9.13	7.15	456.31	n/a	0	5423.85	7.49	5407.21	16.64	14.26	5400.44	23.41	20.04	5394.66	29.19	27.11	5387.59	36.26	24.46	5390.24	33.61
6	18065	5411.25	5418.67	0.99	10.27	7.42	443.63	n/a	0	5420.67	8.62	5402.63	18.04	15.99	5395.26	25.41	22.25	5389.00	31.67	29.58	5381.67	39.00	27.01	5384.24	36.43
5	18065	5406.41	5411.65	0.87	10.04	5.34	435.94	n/a	0	5413.65	5.57	5400.84	12.83	10.57	5395.84	17.81	14.83	5391.58	22.07	20.02	5386.39	27.26	18.09	5388.32	25.33
4	18065	5398.00	5404.71	1.00	13.03	6.71	263.67	n/a	0	5406.71	7.85	5390.15	16.56	14.54	5383.46	23.25	20.22	5377.78	28.93	26.84	5371.16	35.55	24.53	5373.47	33.24
3.5	18065	5392.06	5399.91	0.87	10.92	7.85	340.22	n/a	0	5403.91	8.34	5383.72	18.19	15.83	5376.23	25.68	22.22	5368.84	32.07	29.99	5362.07	39.84	27.11	5364.95	36.96
3	18065	5385.52	5393.53	1.00	13.02	7.61	263.73	n/a	0	5395.53	8.90	5377.02	18.51	16.48	5368.44	26.09	22.83	5362.99	32.54	30.44	5355.48	40.05	27.82	5358.10	37.43
2.9	18065	5378.85	5389.00	0.17	2.31	10.15	1326.78	n/a	0	5391.00	7.54	5371.31	19.69	13.34	5365.71	25.29	17.84	5361.03	29.99	22.62	5356.23	34.77	21.33	5357.52	33.48

NOTES

1. CONCEPTUAL DESIGN IS BASED ON HEC-RES MODEL OF REVISED FEMA FLOOD PLAINS FOR THIS PROJECT WITH FLOW RATES: FEMA Q = 18,065 cfs, FEMA Q = 30,500 cfs AND FUTURE Q = 35,853 cfs.
2. CURRENT EFFECTIVE FEMA FLOOD PLAINS ARE BASED ON A INFORMATION CONTAINED IN A LETTER OF MAP REVISION, LOMR, DATED FEB. 1, 2013 THAT BECAME EFFECTIVE JUNE 17, 2013.
3. CONCEPTUAL SCOUR DEPTHS ARE CALCULATED IN ACCORDANCE WITH AMAFCA'S EROSION DESIGN GUIDE BY RESOURCE CONSULTANTS & ENGINEERS, INC. MARCH 1994, EQUATION (3.90) $Y_s/Y = (0.73 + 0.14 \cdot Fr^2)\cos\theta + 4\,Fr\,0.33 \sin\theta$
4. THE BANK PROTECTION IS LOCATED AS CLOSE TO THE ARROYO AS POSSIBLE WITHOUT PLACING ANY FILL IN FEMA'S REGULATORY FLOODWAY AND WITHOUT ANY OF THE BANK PROTECTION INSIDE THE TIJERAS ARROYO JURISDICTIONAL WATERS OF THE UNITED STATES.
5. THE LOCATION OF THE WATERS OF THE UNITED STATES ARE FROM A DELINEATION REPORT BY ECOSYSTEM MANAGEMENT INC. FEB. 2014 AS SUBMITTED TO THE CORPS OF ENGINEERS FOR APPROVED JURISDICTIONAL DETERMINATION MARCH 7, 2014.

LEGEND

- LIMITS 100 YEAR FLOOD PLAIN
- LIMITS 500 YEAR FLOOD PLAIN
- LIMITS OF FLOODWAY
- LIMITS AO ZONE
- BANK PROTECTION WITH IMPINGING FLOW ANGLE OF = 30° TO 45°
- BANK PROTECTION WITH IMPINGING FLOW ANGLE OF = 30° TO 15°
- BANK PROTECTION WITH IMPINGING FLOW ANGLE OF = 15° TO 0°
- BANK PROTECTION WITH PARALLEL FLOW
- PERMANENT WATERS OF THE U.S. ADDED THIS PROJECT
- EXISTING TIJERAS ARROYO WATERS OF U.S. TEMPORARILY IMPACTED THIS PROJECT
- EXISTING TIJERAS ARROYO WATERS OF U.S. NOT IMPACTED THIS PROJECT
- EXISTING TRIBUTARY ARROYO WATERS OF U.S. TO BE FILLED THIS PROJECT
- EXISTING SOIL CEMENT BANK PROTECTION
- MITIGATION 0.5 ac SWQ POND

JAMES D. HUGHES NEW MEXICO REGISTERED PROFESSIONAL ENGINEER 10994
11-11-2015

JUAN TABO HILLS ESTATES - OCTOBER 2015

PRELIMINARY
TIJERAS ARROYO BANK PROTECTION

dmg
MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

Designed: JDH	Drawn: ACH	Checked: DMG	Sheet 1 of 1
Scale: 1" = 100'	Date: 07/30/14	Job: A10029	