



Autorità di Bacino Distrettuale
dell'Appennino Settentrionale

PIANO DI BACINO STRALCIO SUL RISCHIO IDROGEOLOGICO

(ai sensi dell'art.1, comma 1, del D.L. 180/1998 convertito in L. 267/1998)

Caratteristiche idrauliche e geologiche del territorio
Valutazione del rischio idraulico e geomorfologico

VERIFICHE IDRAULICHE

Ambito di Bacino di rilievo regionale:

PORA

Bacino:

NIMBALTO

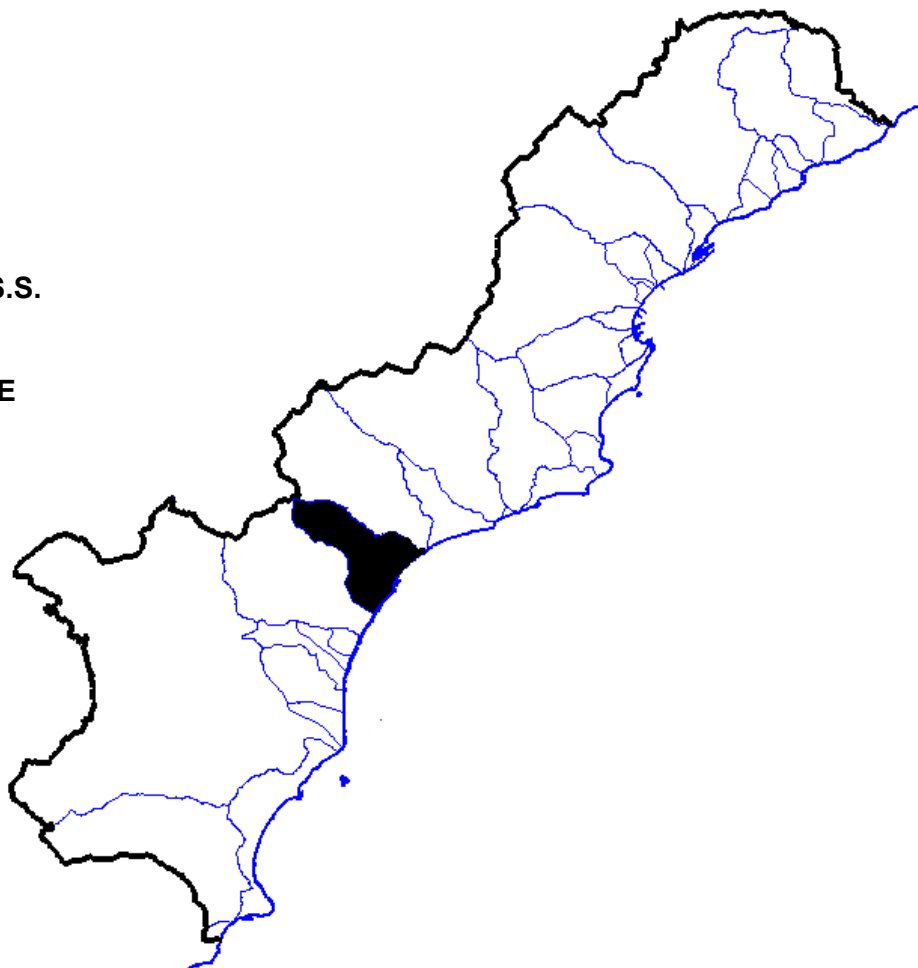
Comuni:

BOISSANO

BORGHETTO S.S.

LOANO

PIETRA LIGURE



APPROVAZIONE	Delibera del Consiglio Provinciale di Savona n. 47 del 25/11/2003
ULTIMA MODIFICA DELL'ELABORATO	Decreto del Direttore Generale n. 577 del 3/2/2021
ENTRATA IN VIGORE	Pubblicazione sul BURL n. 8 parte II del 24/2/2021

Rio Ranzi

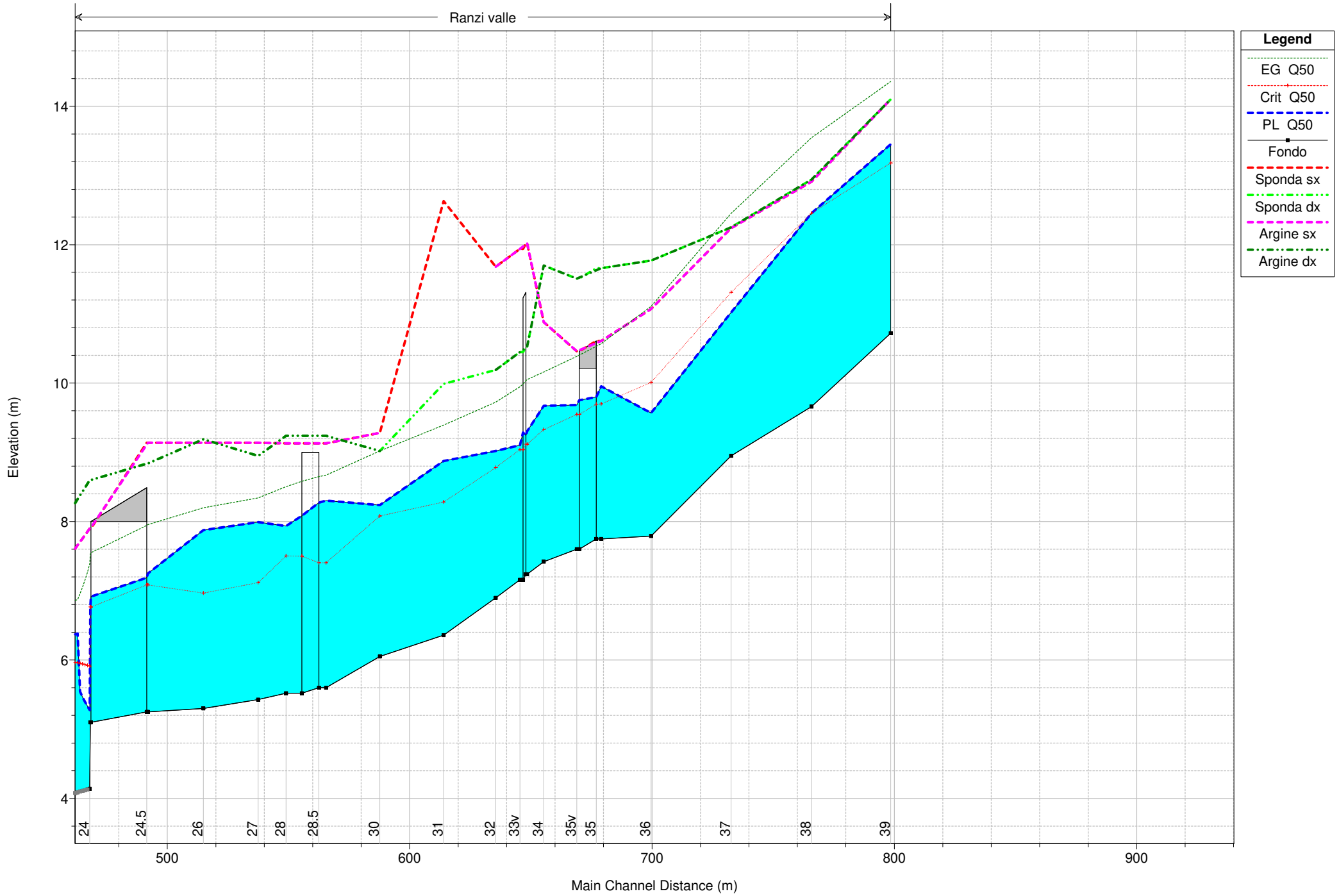
da località Vigne alla foce

Sezioni 39 – 1

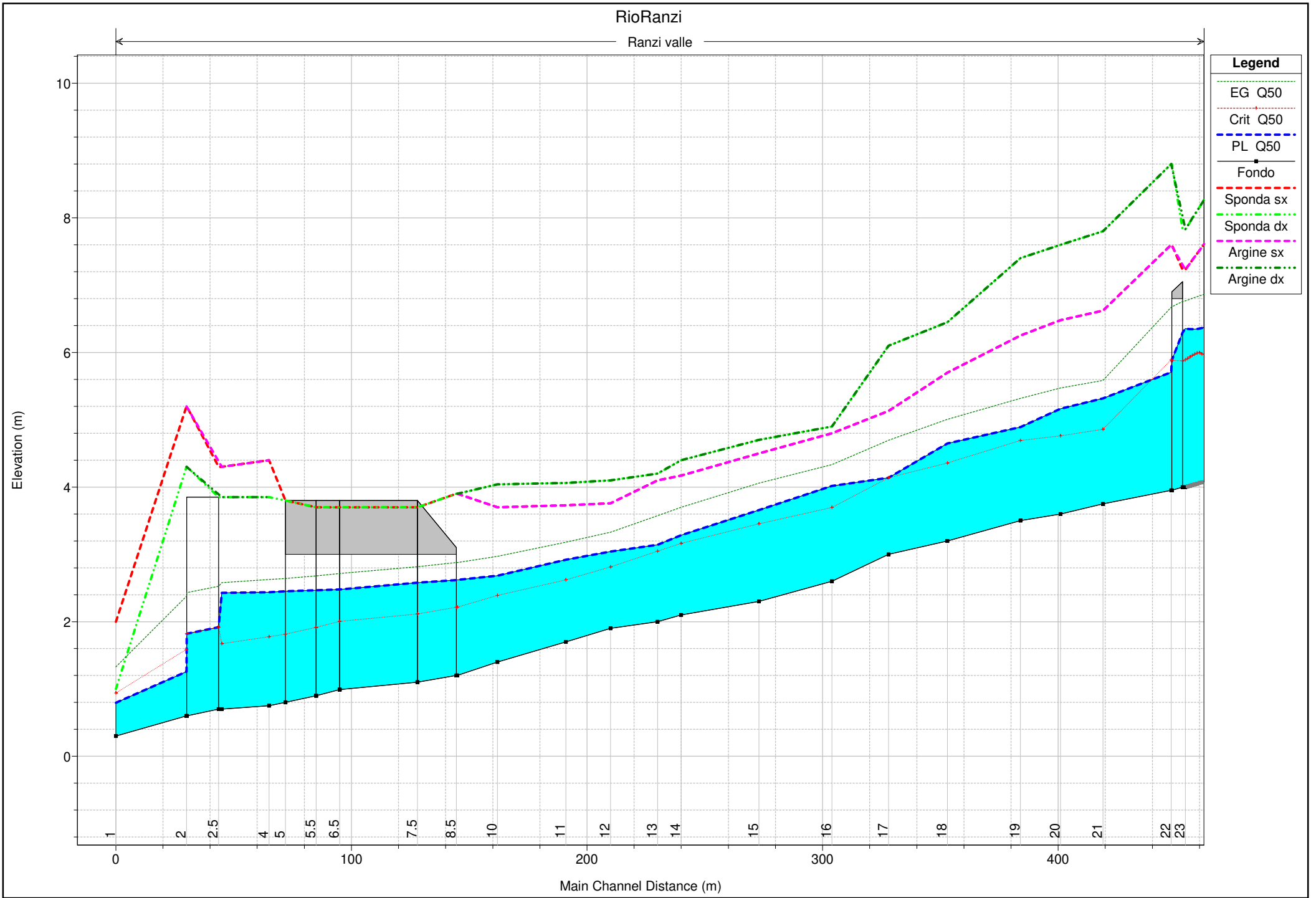
- profili di corrente
- sezioni idrauliche
- tabella dei risultati

RioRanzi

Ranzi valle



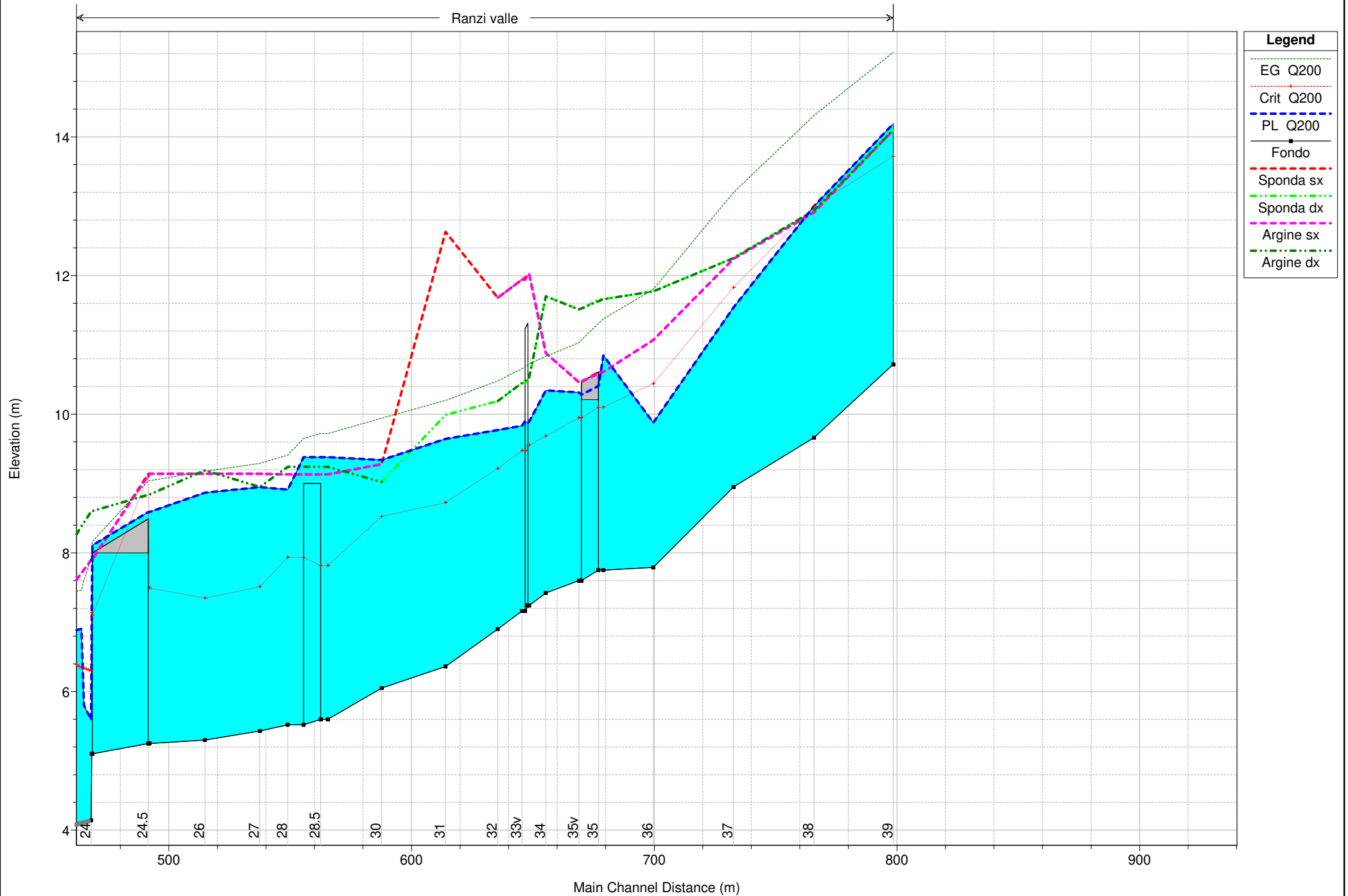
1 cm Horiz. = 20 m 1 cm Vert. = 0.7 m



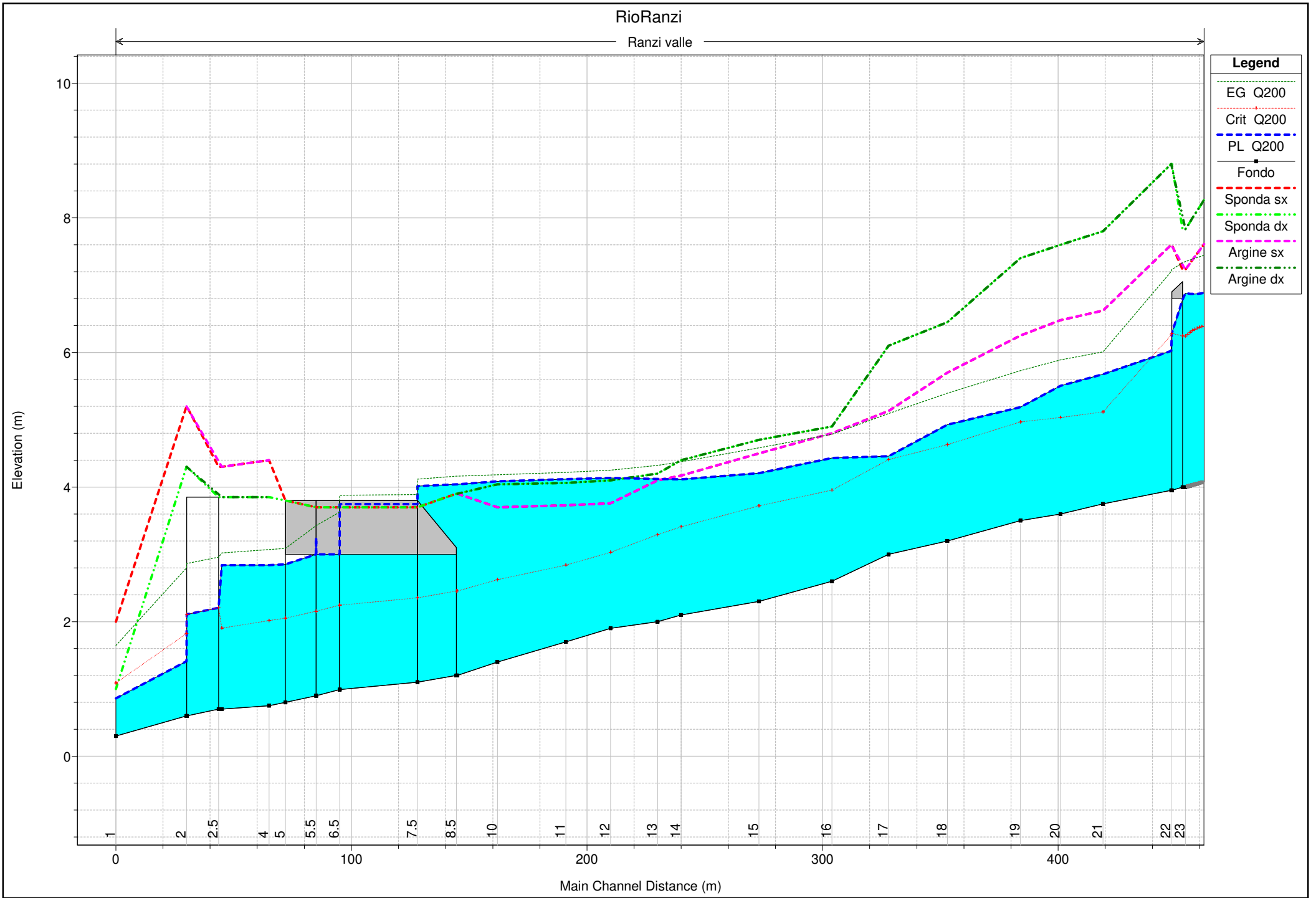
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RioRanzi

Ranzi valle



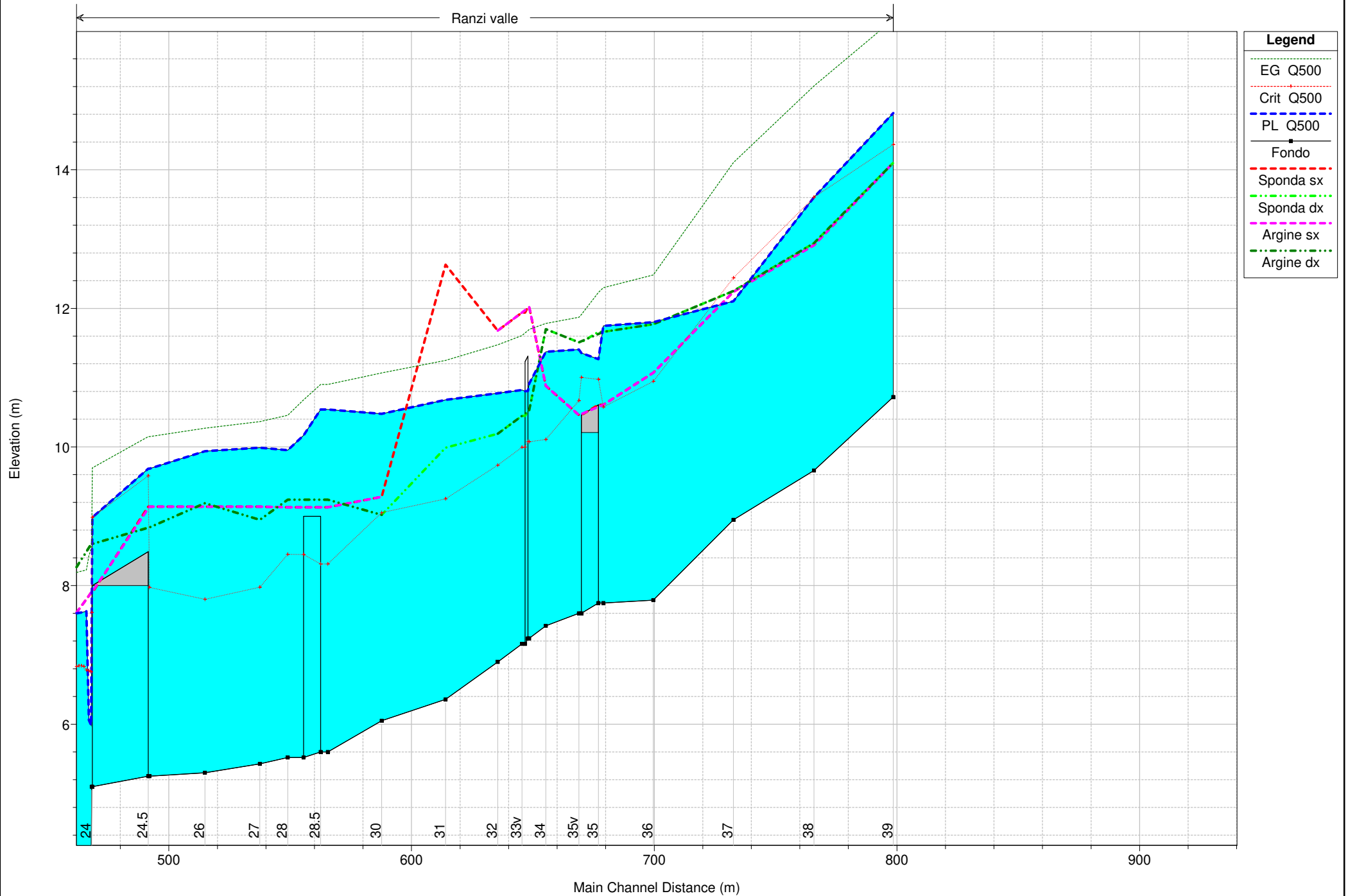
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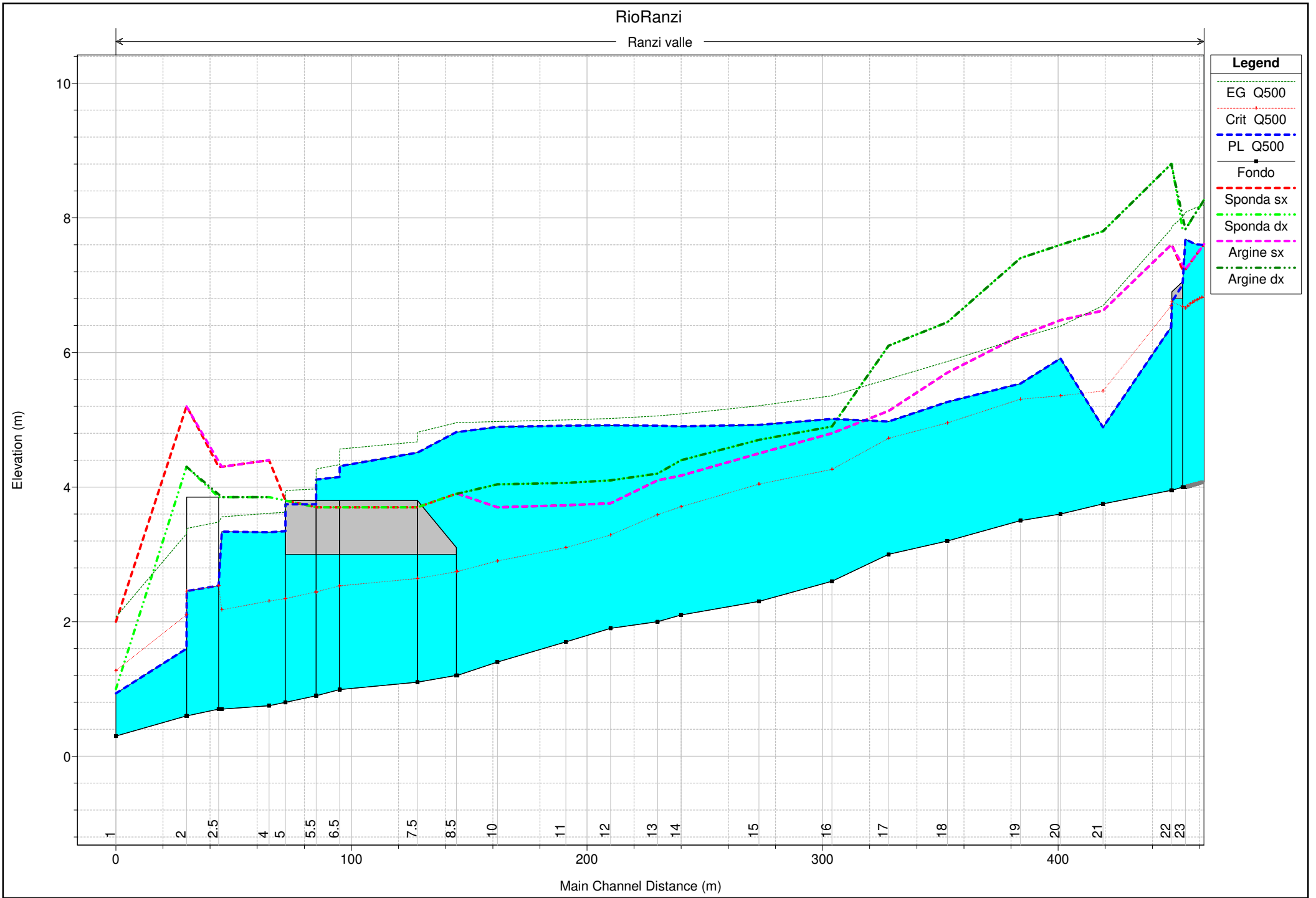
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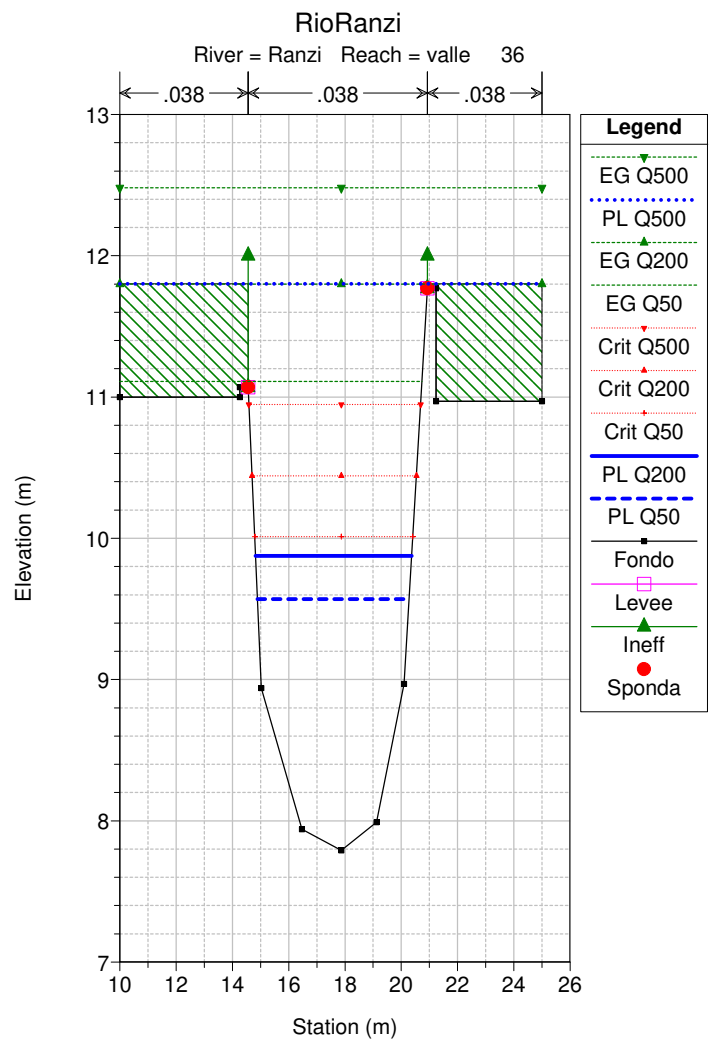
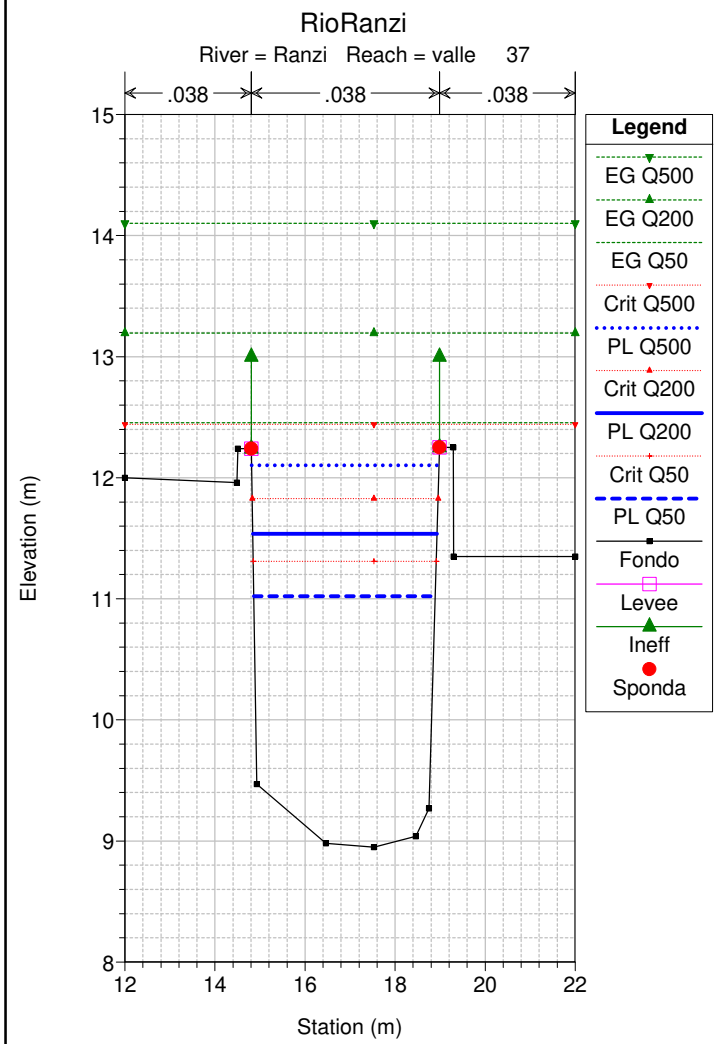
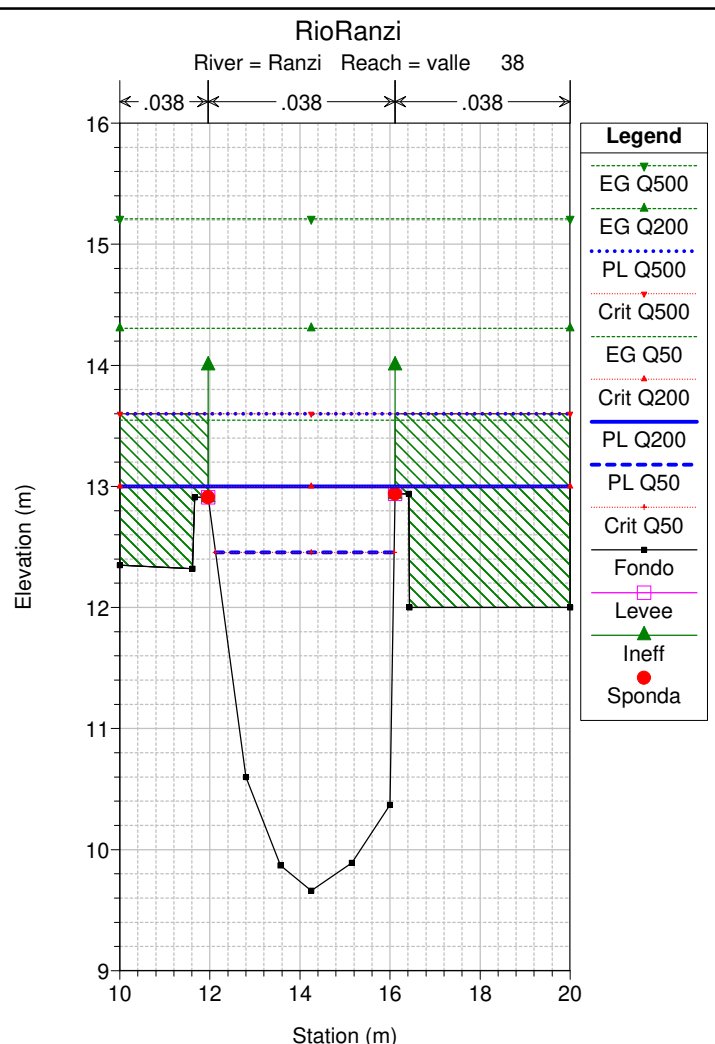
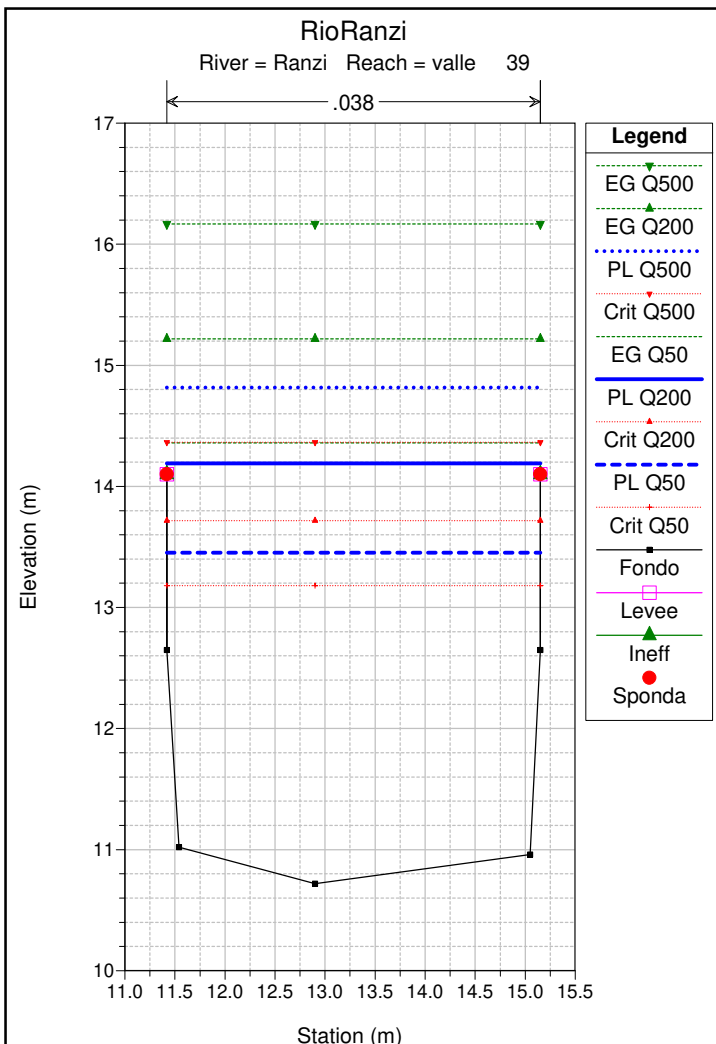
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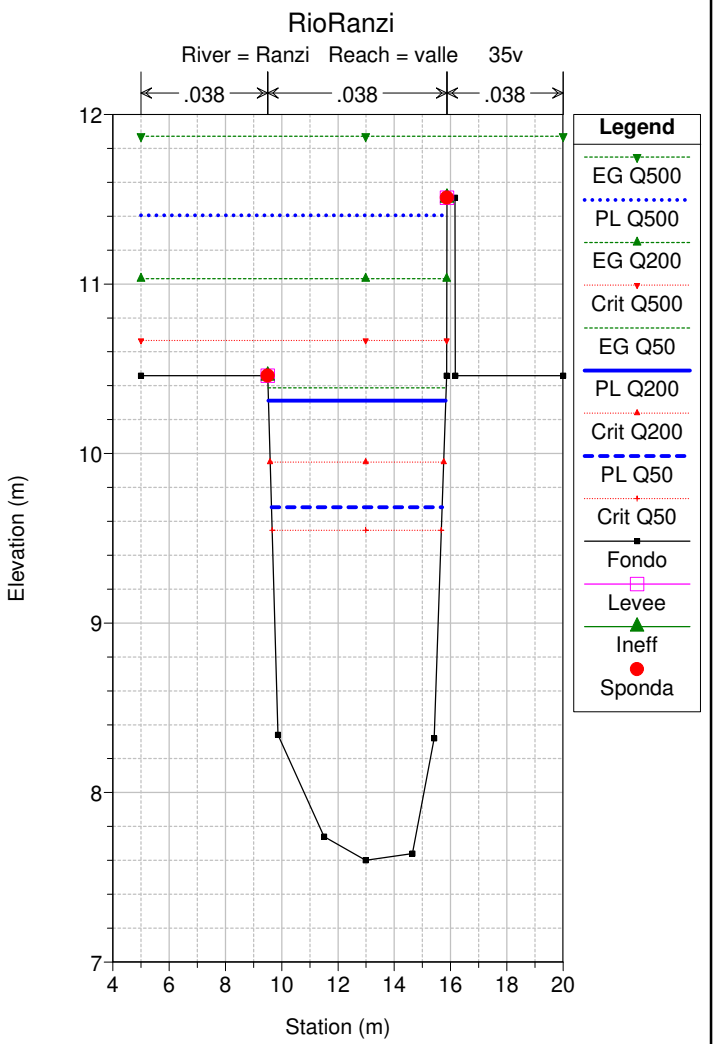
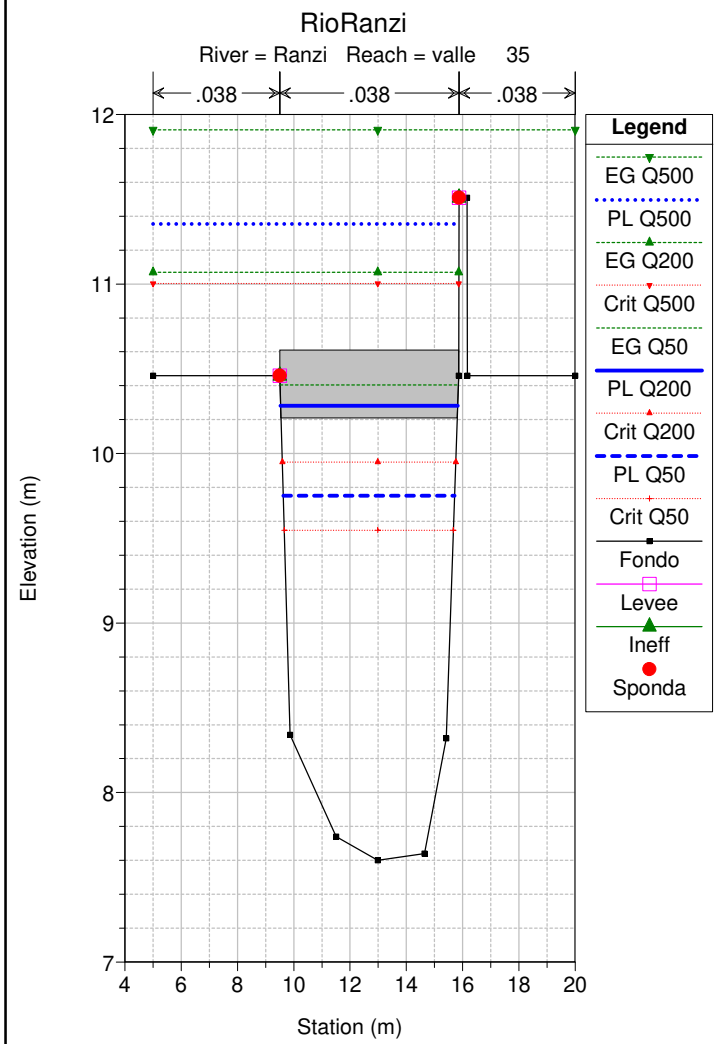
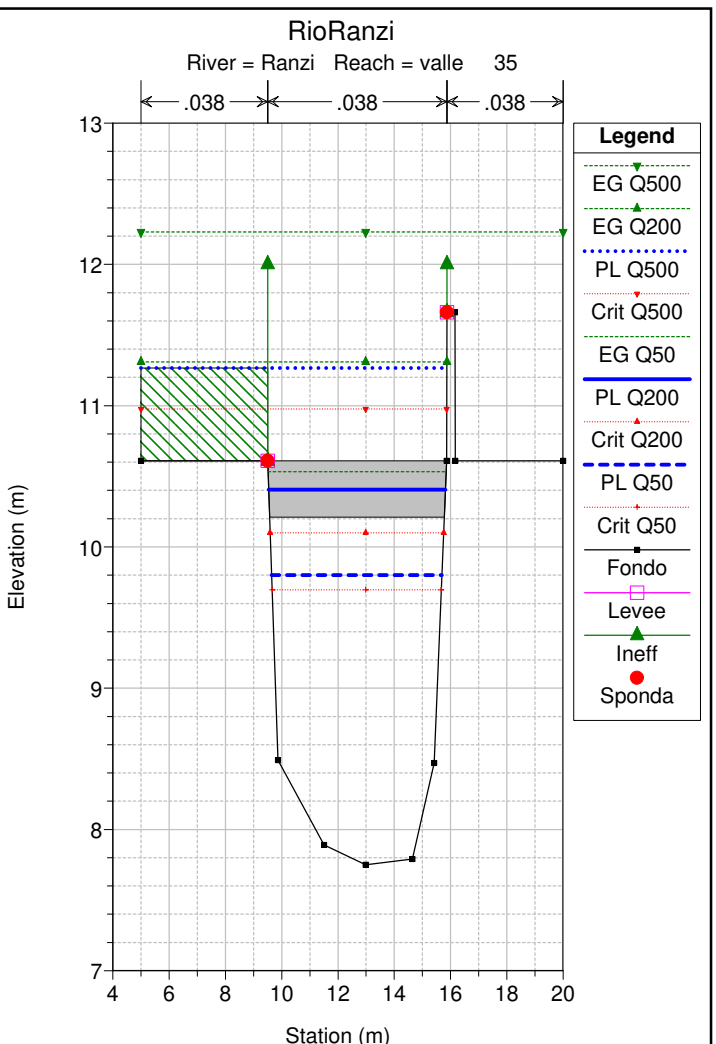
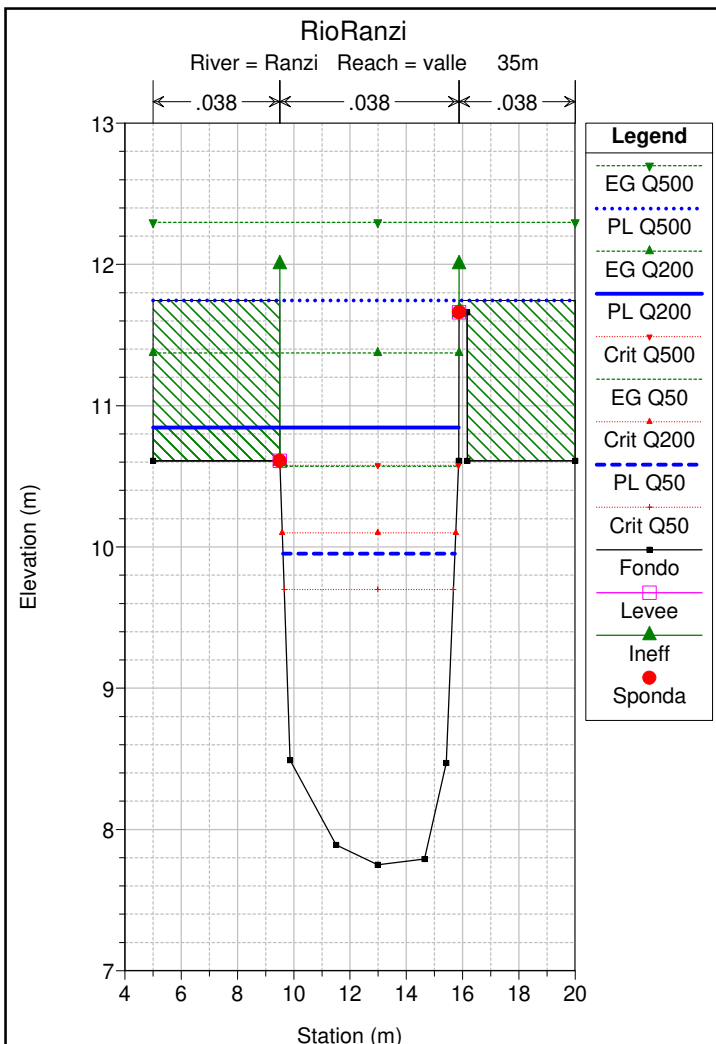
Ranzi valle

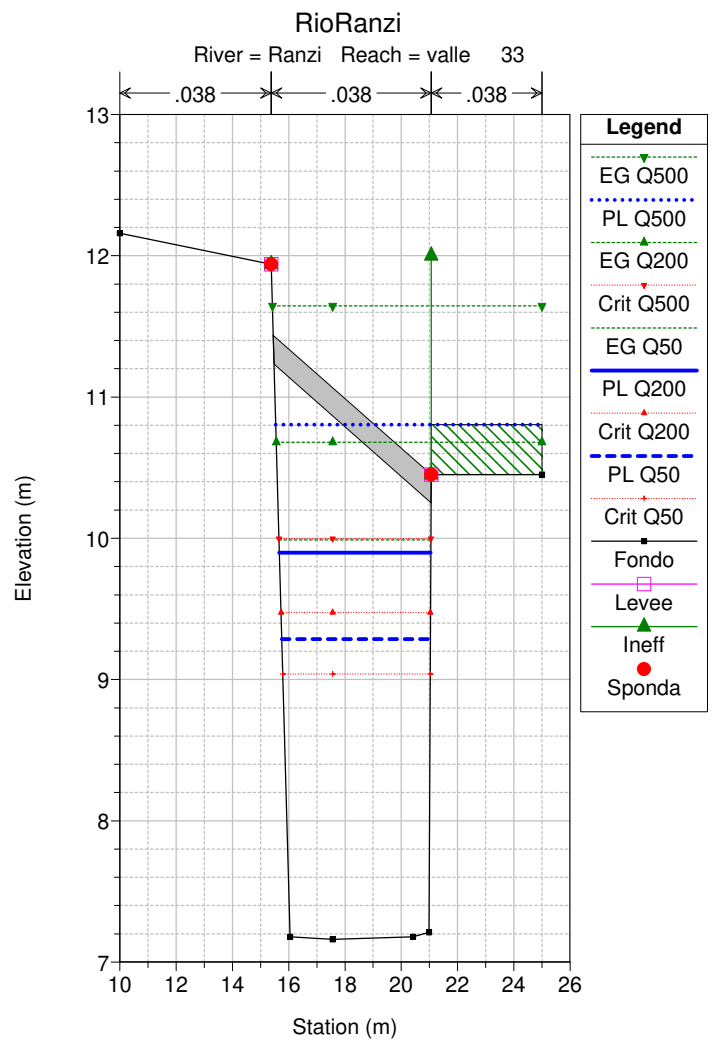
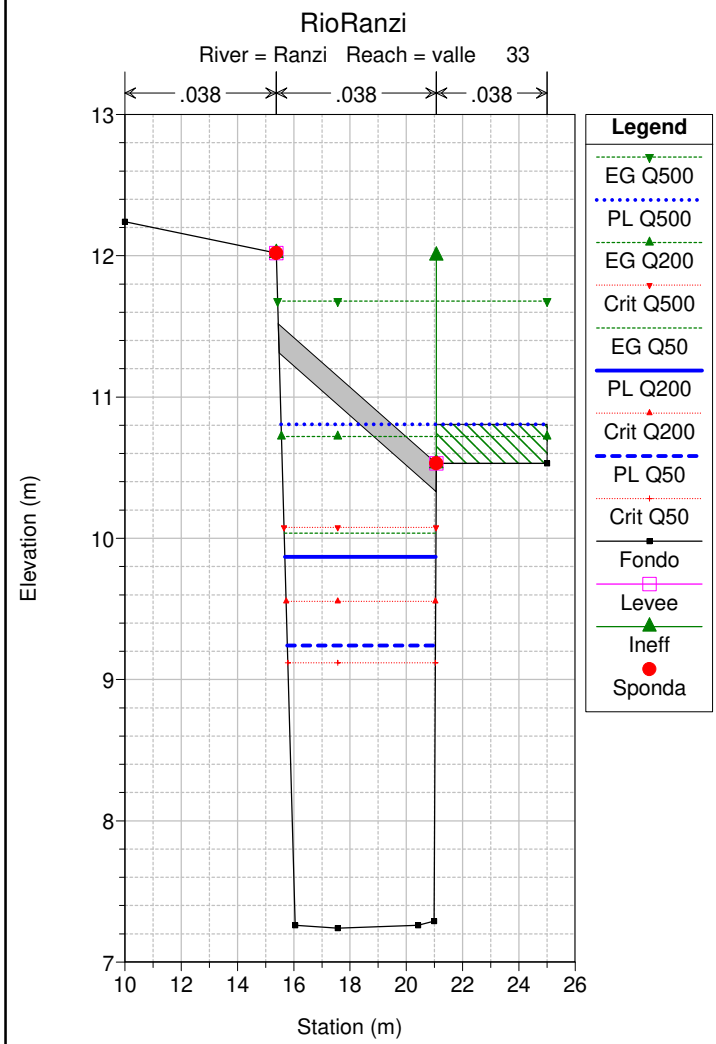
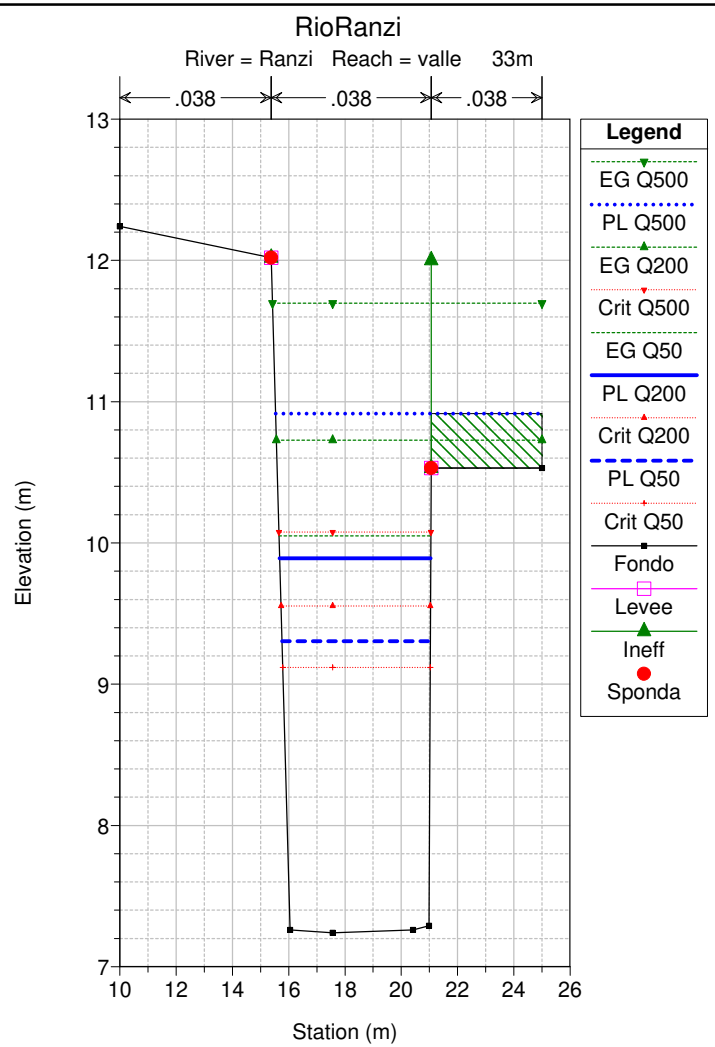
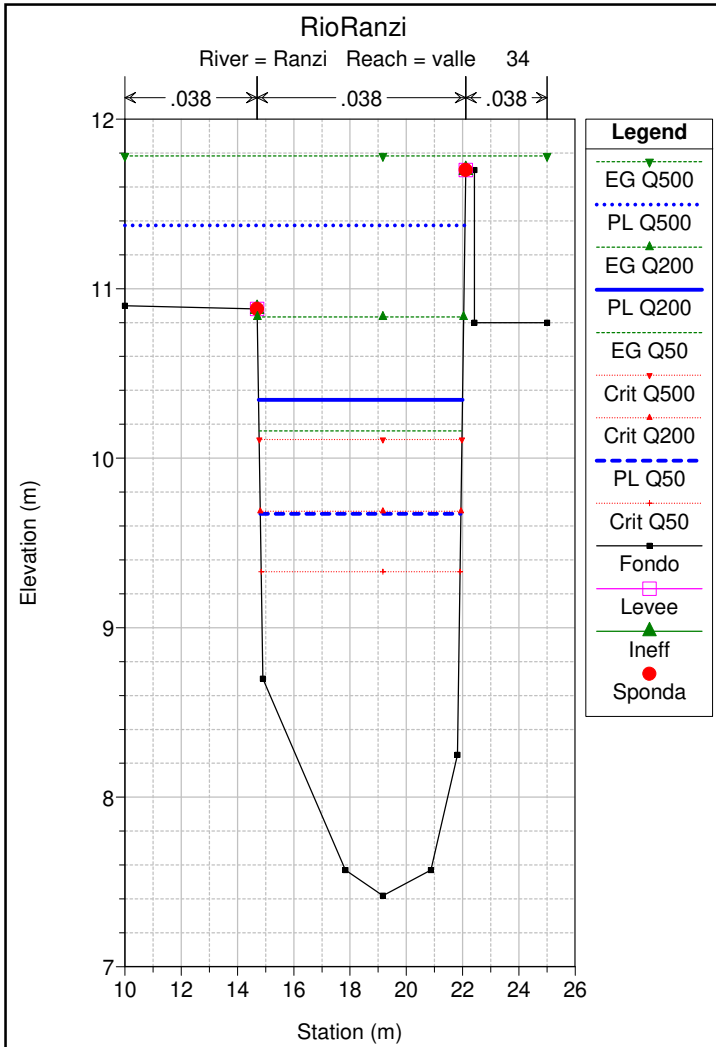


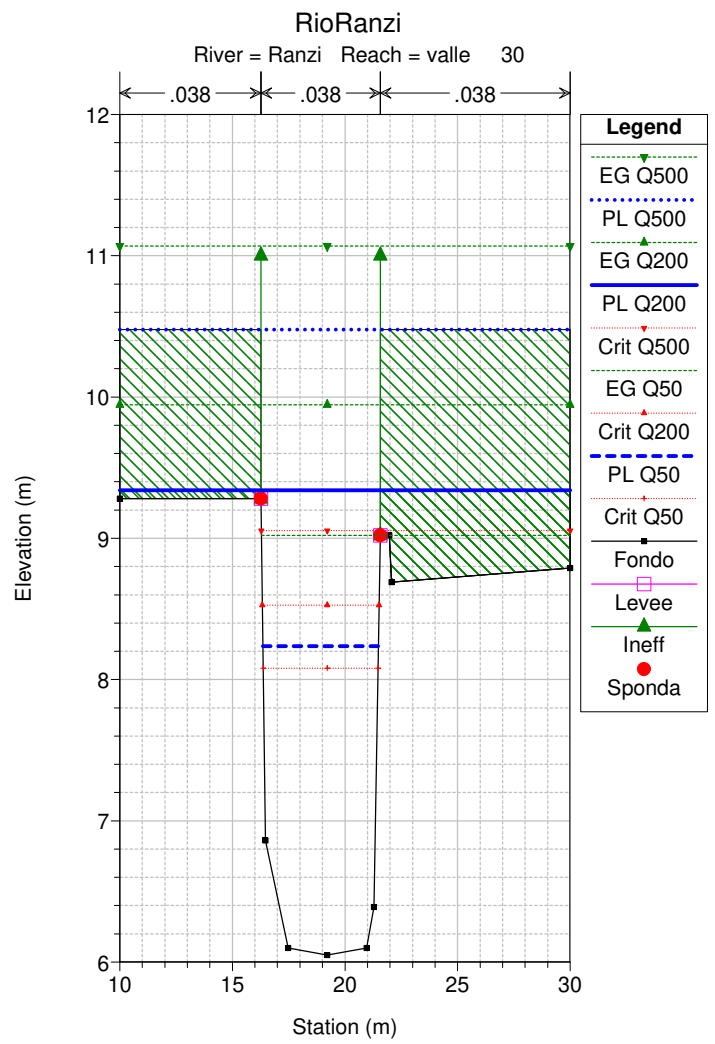
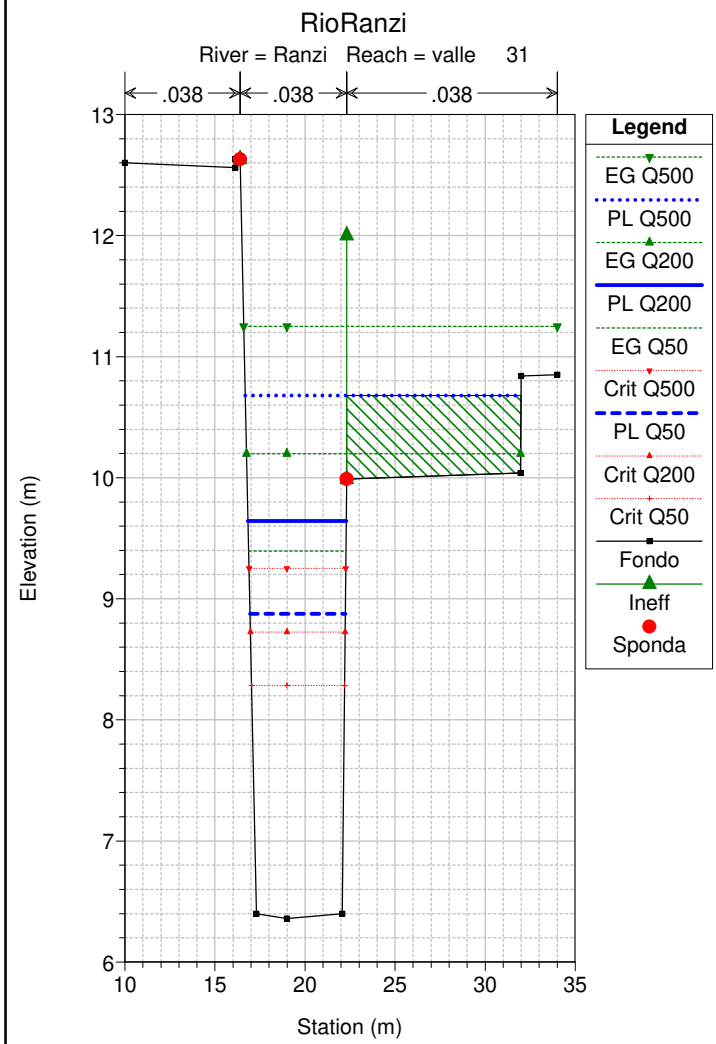
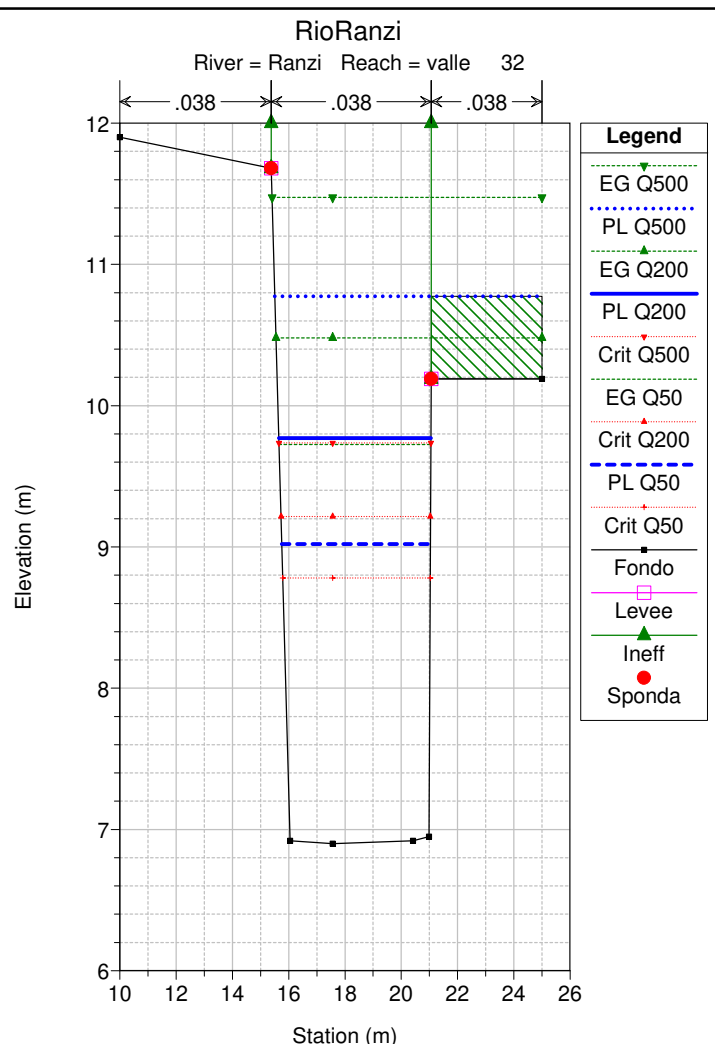
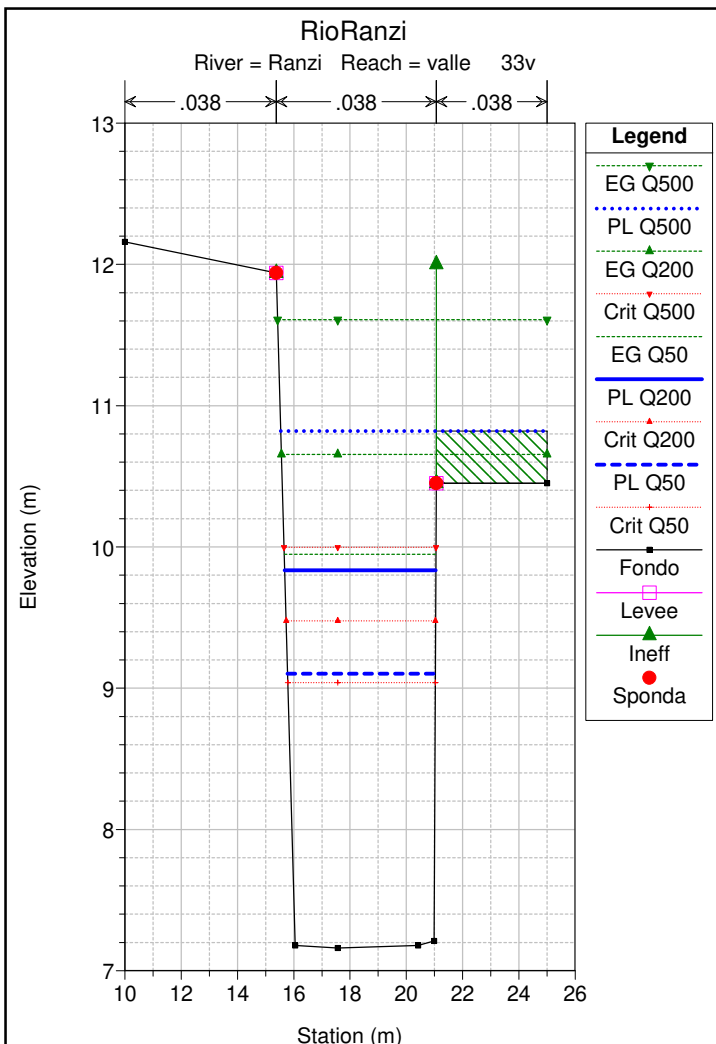
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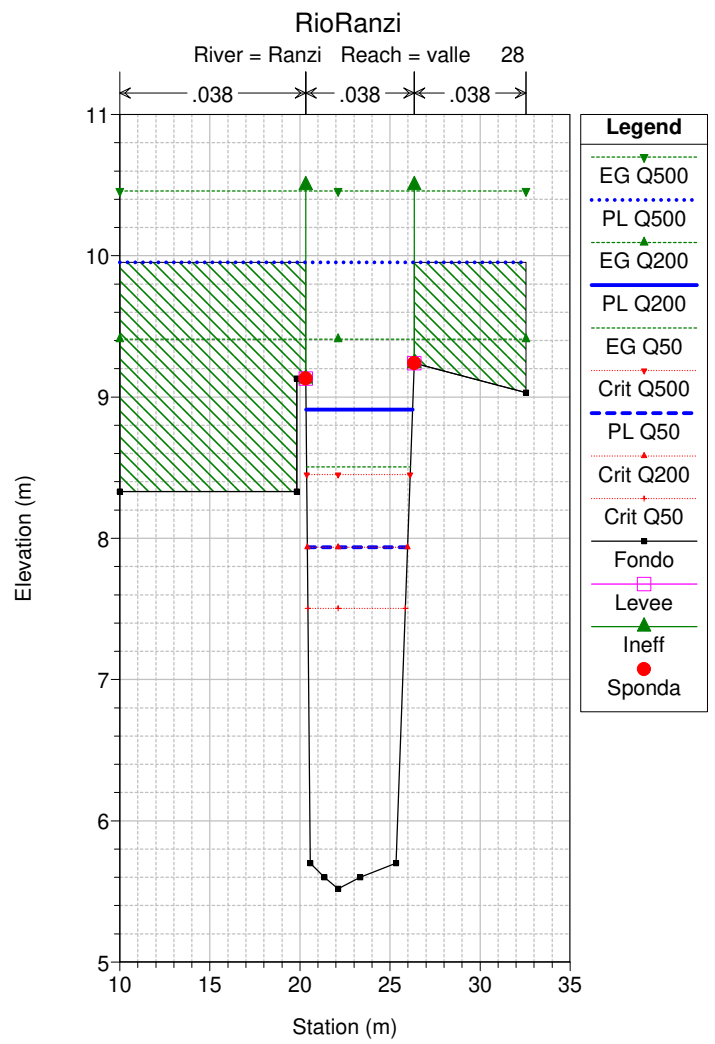
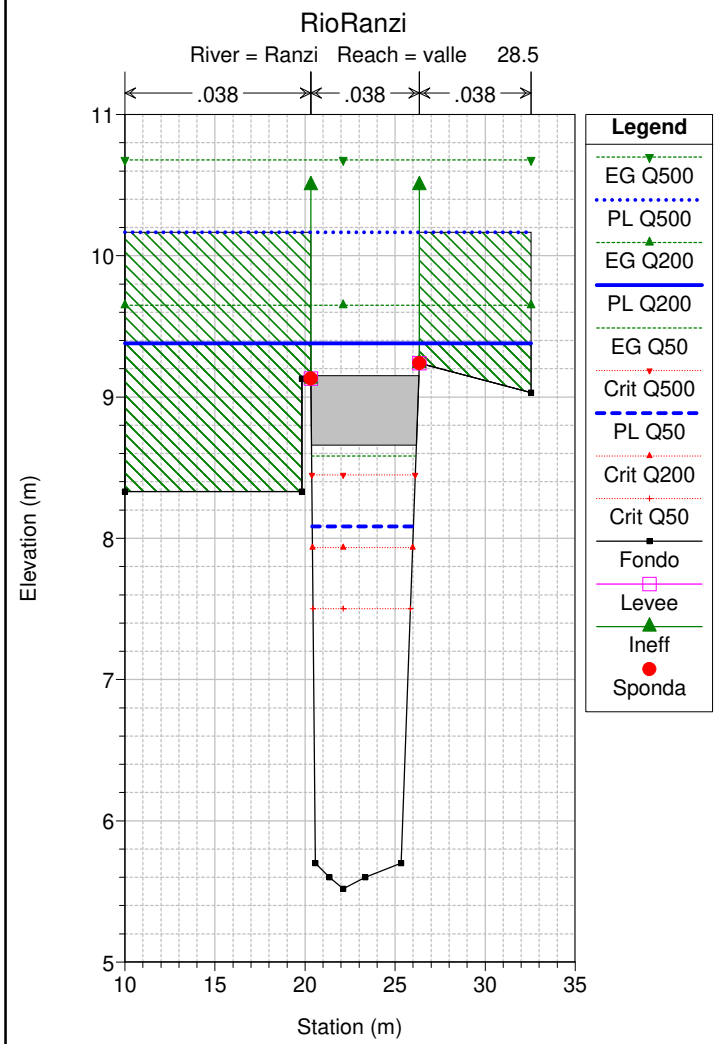
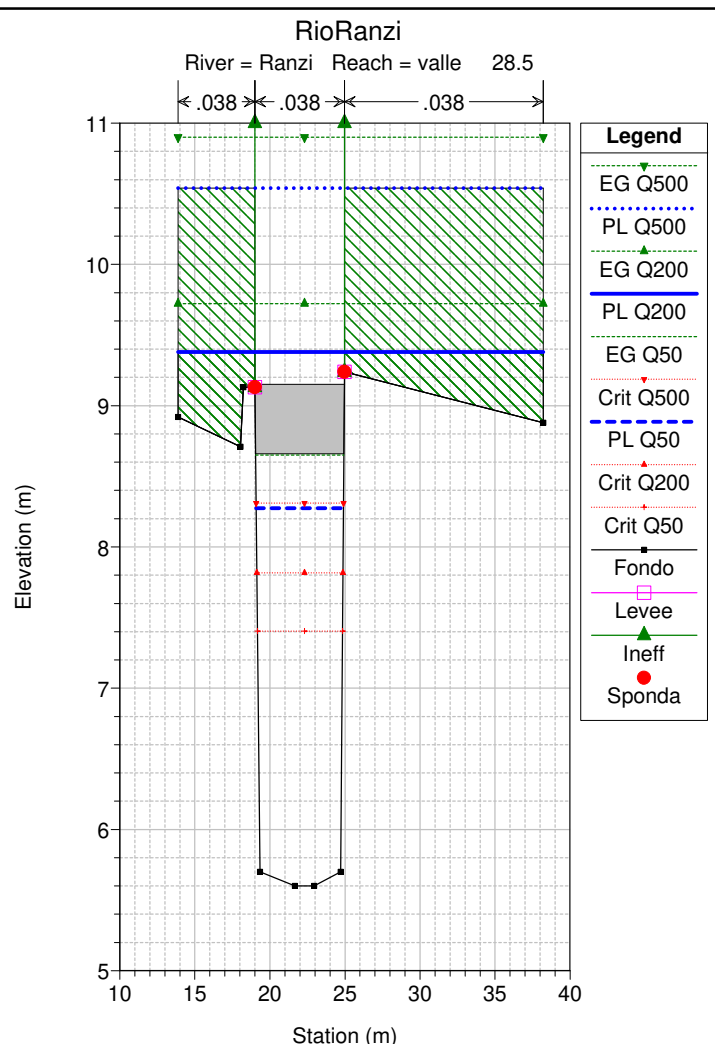
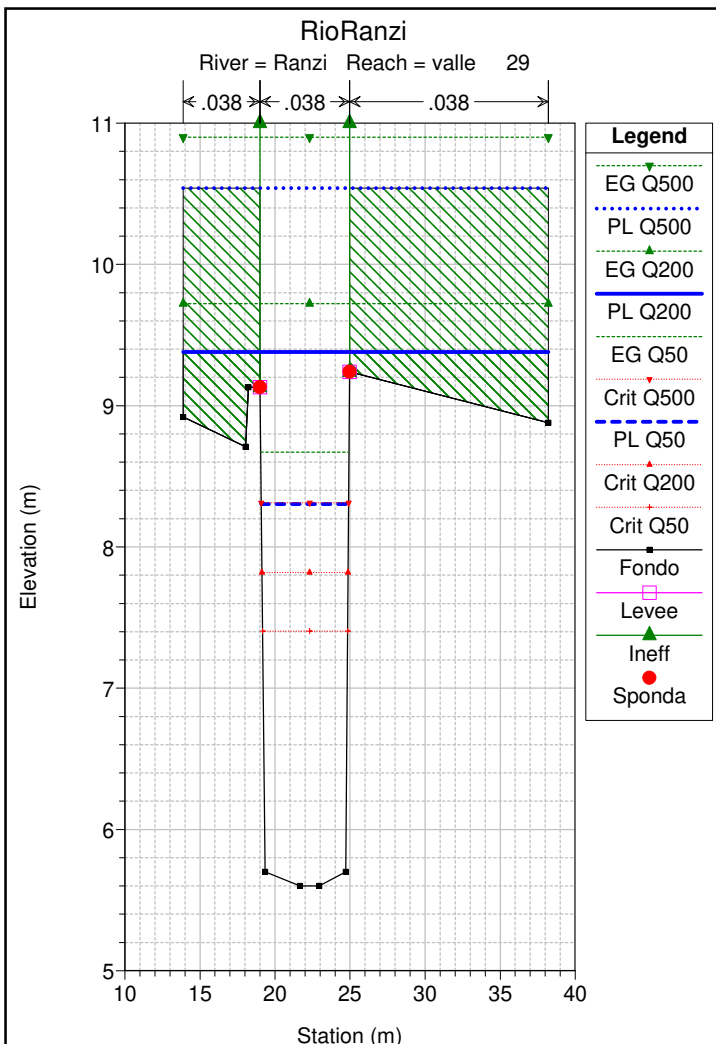


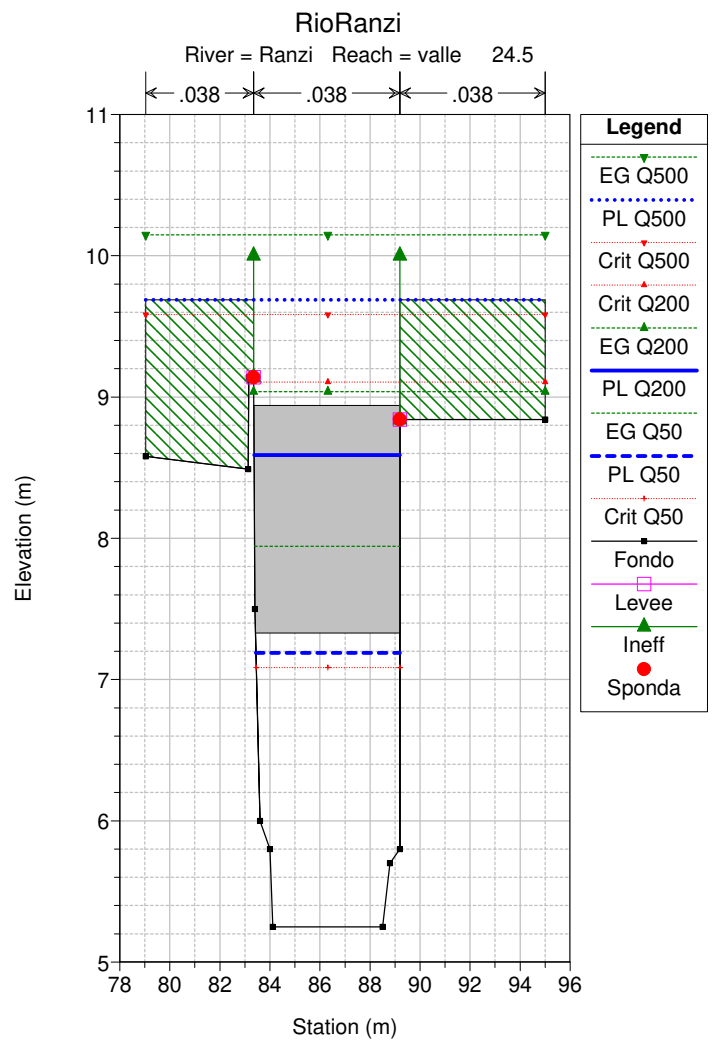
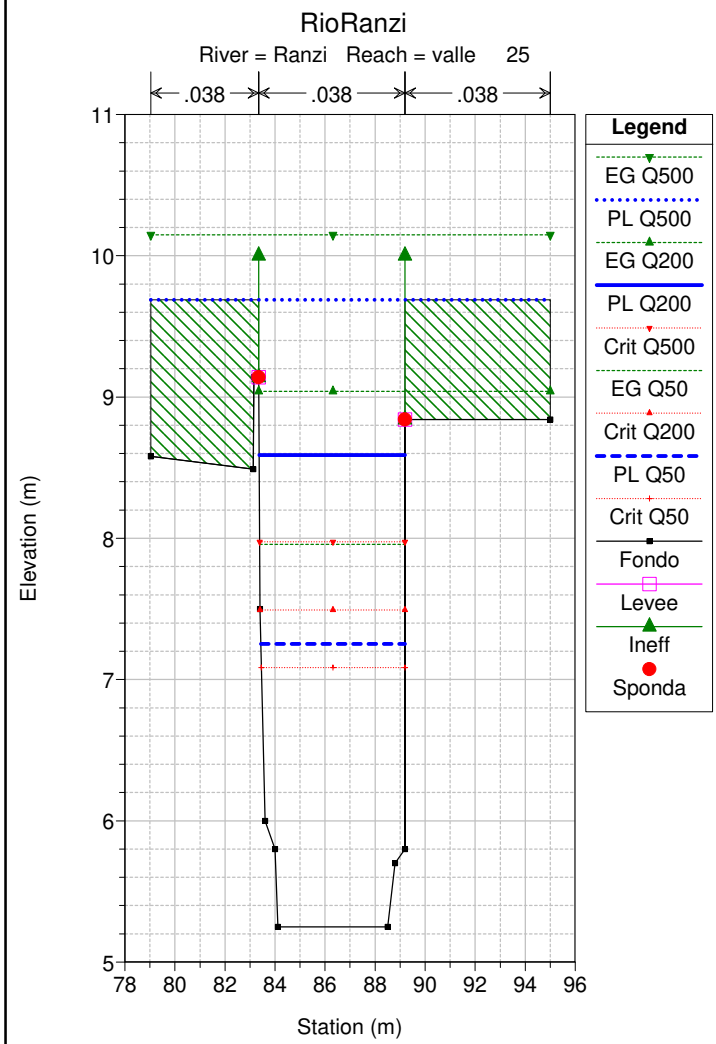
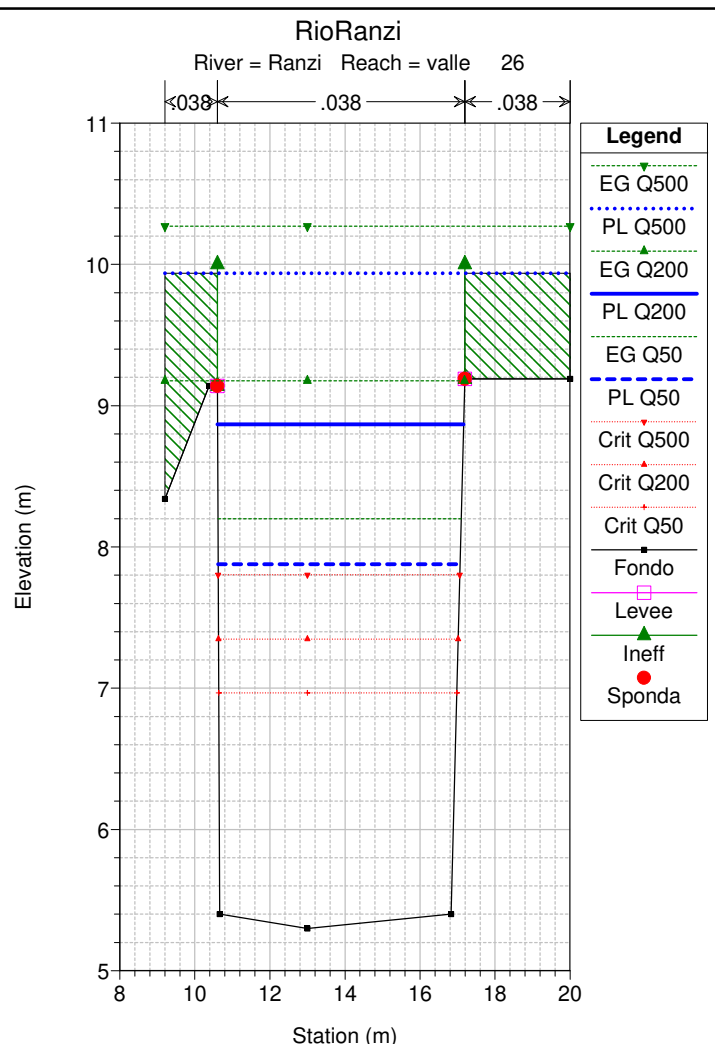
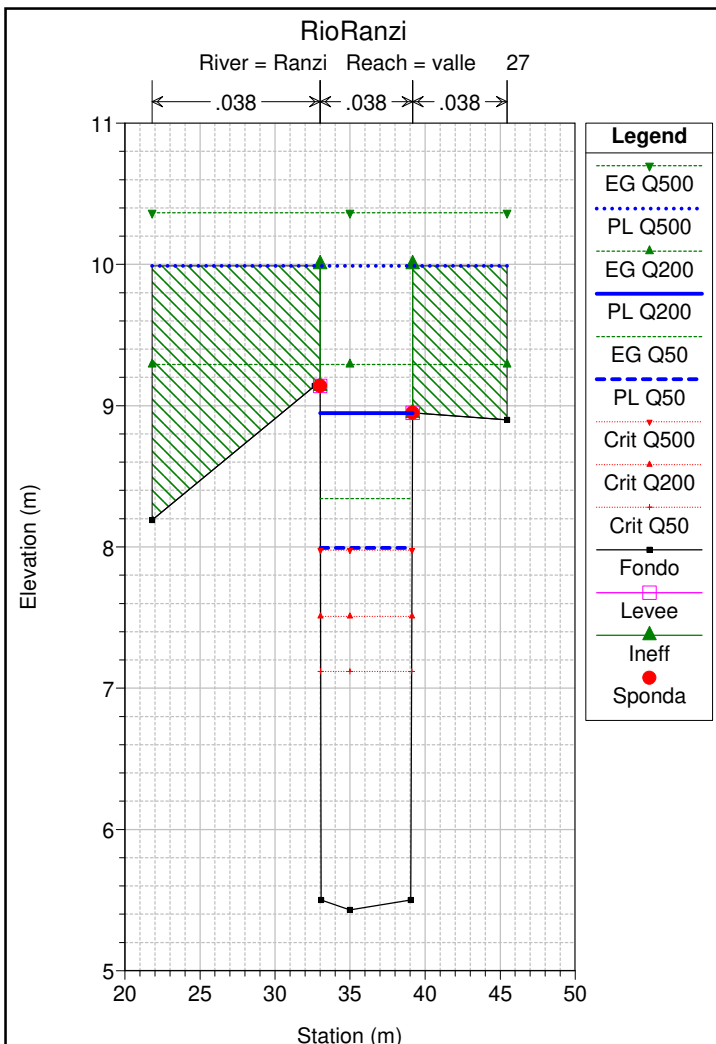


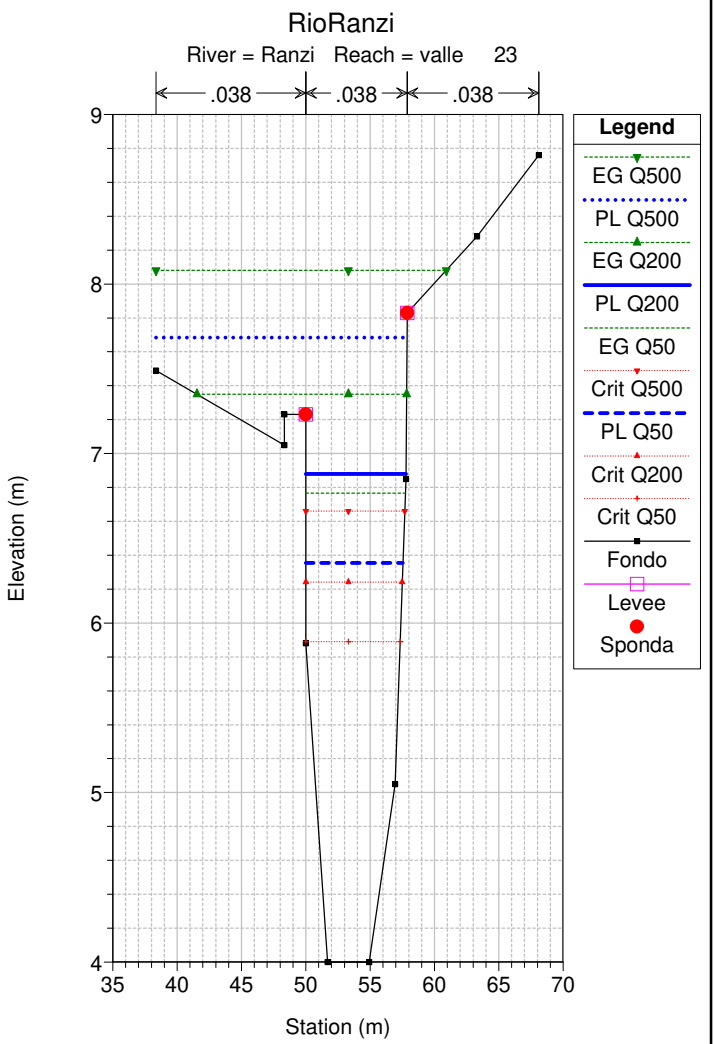
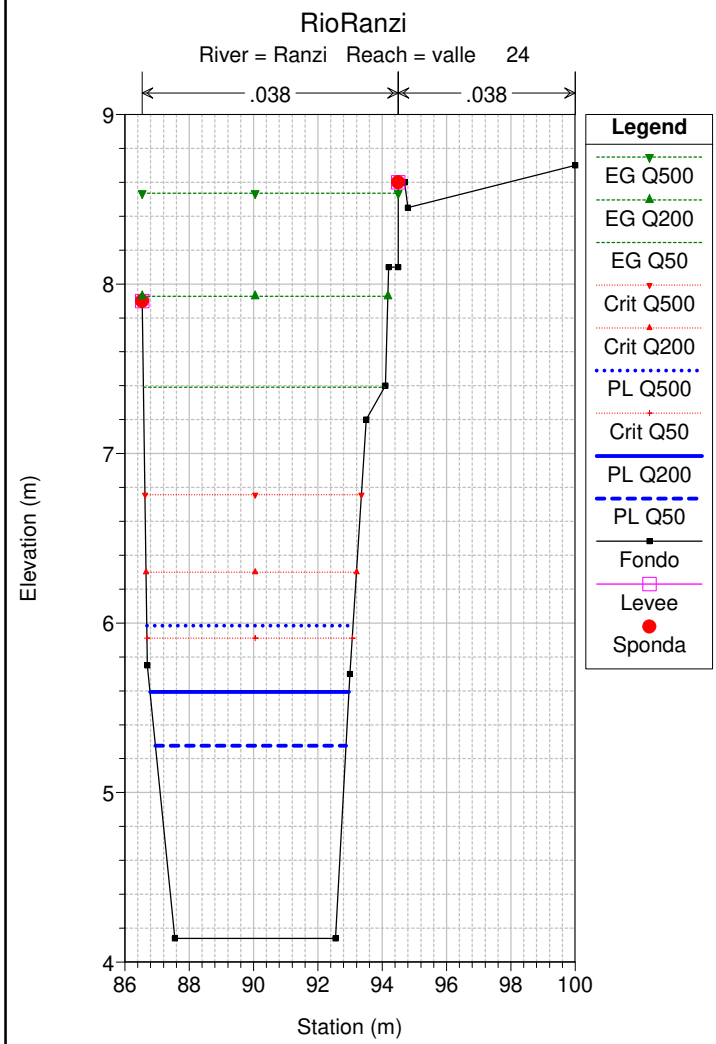
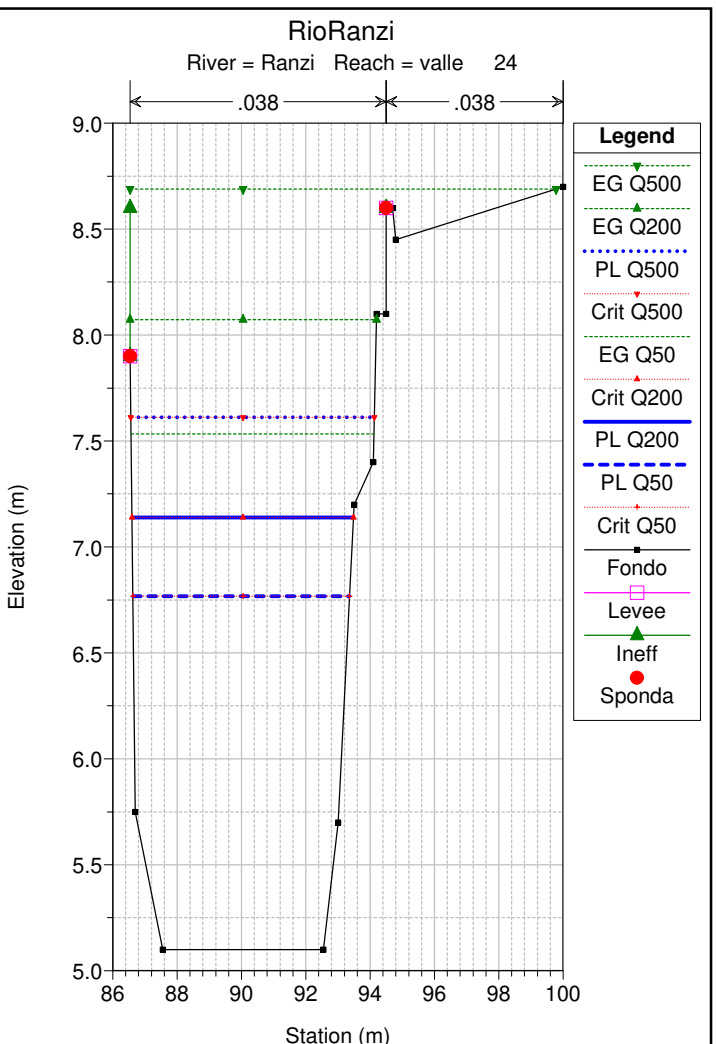
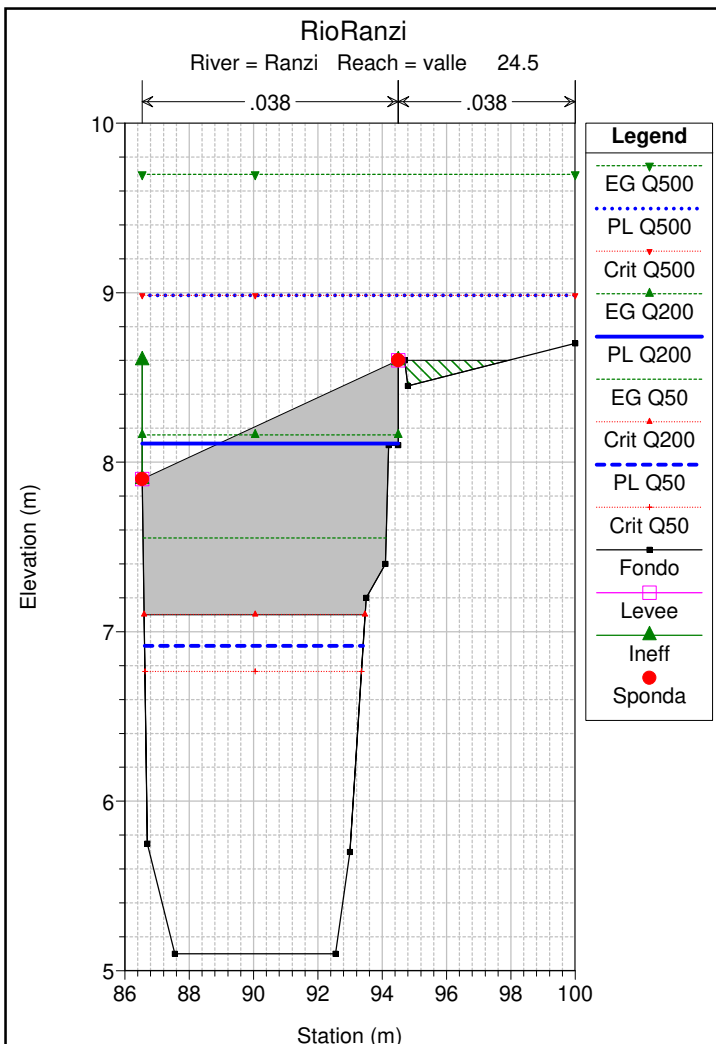


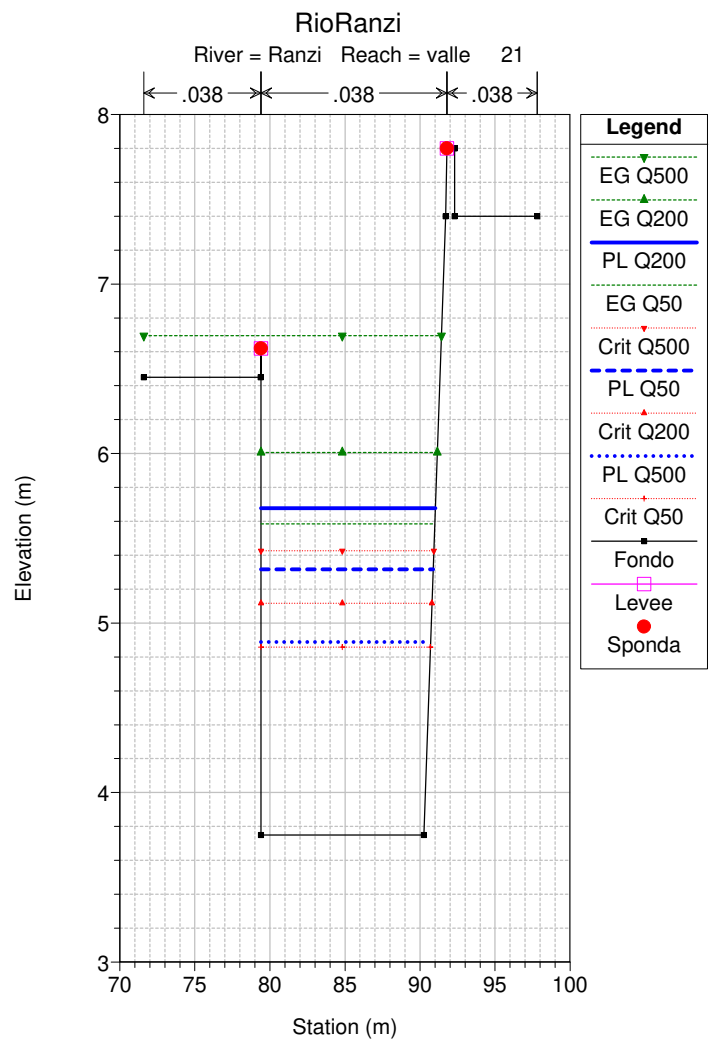
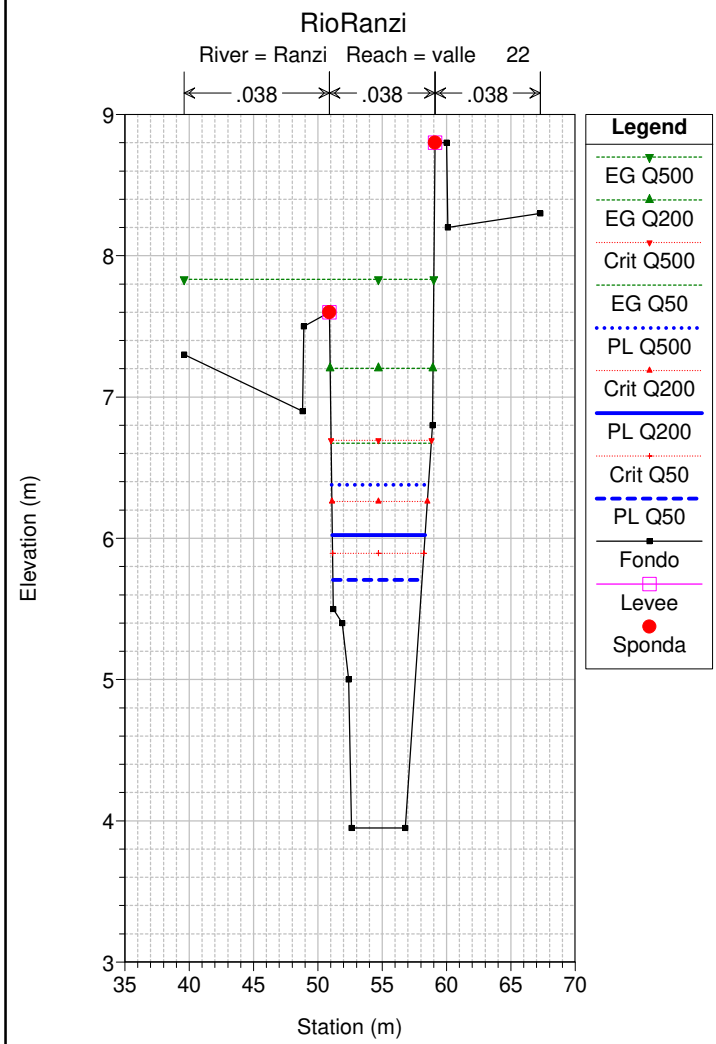
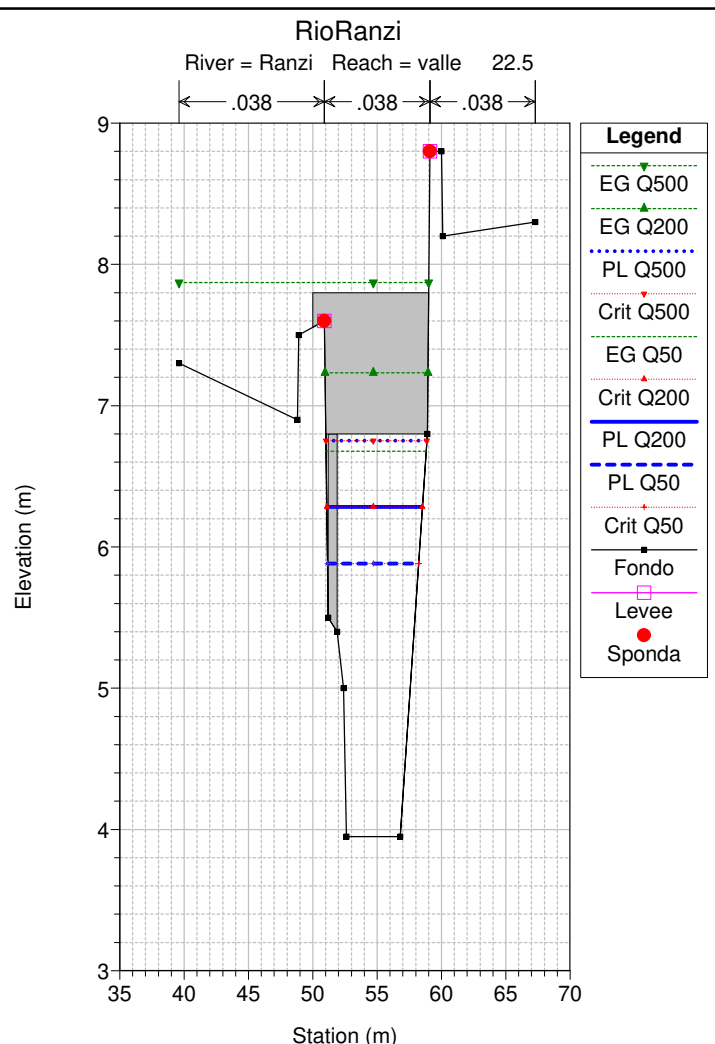
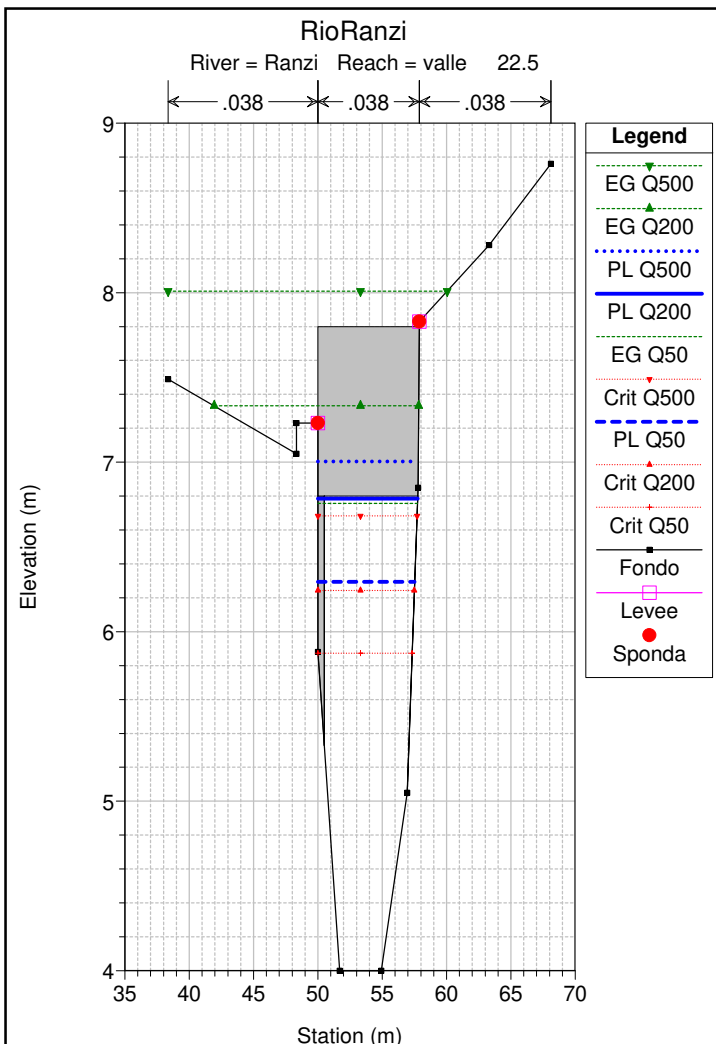


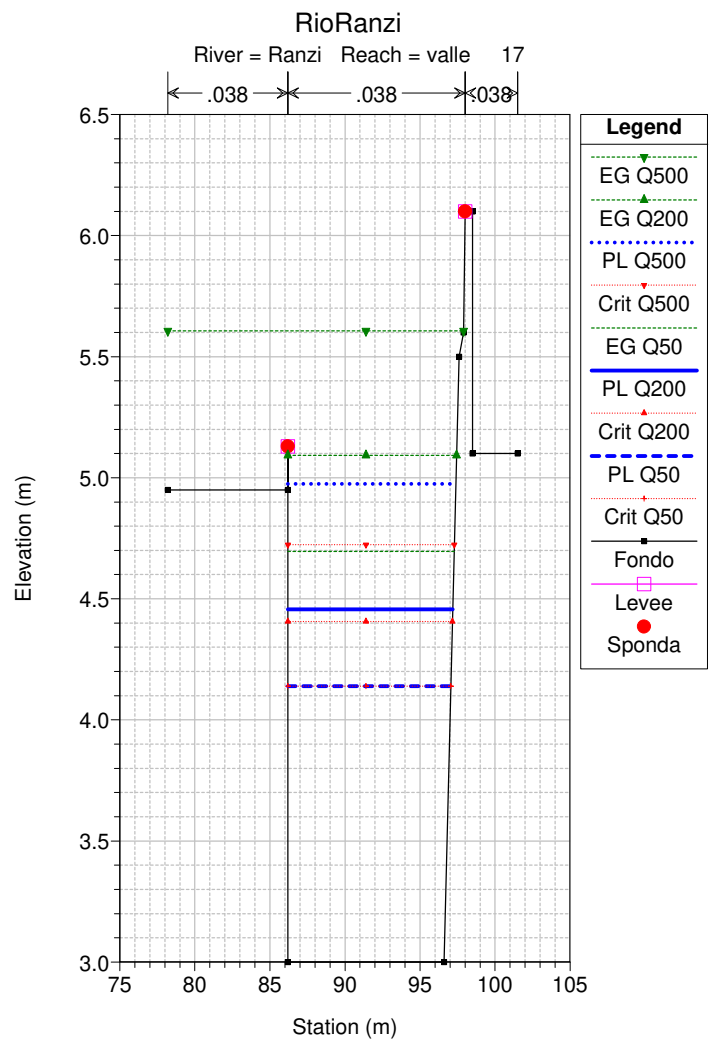
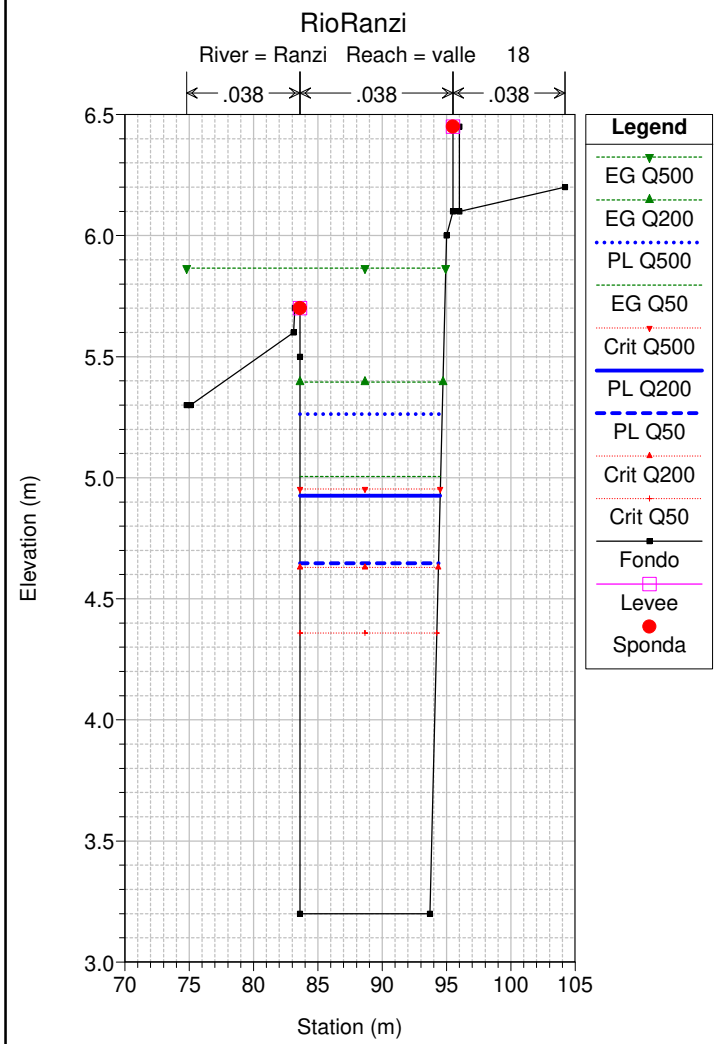
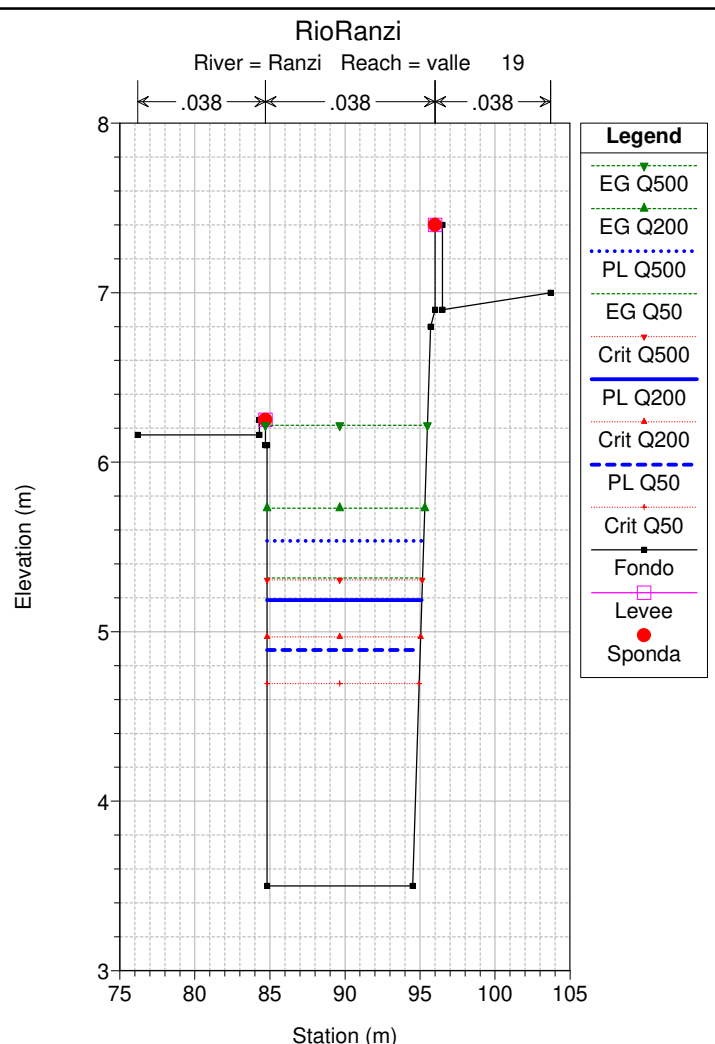
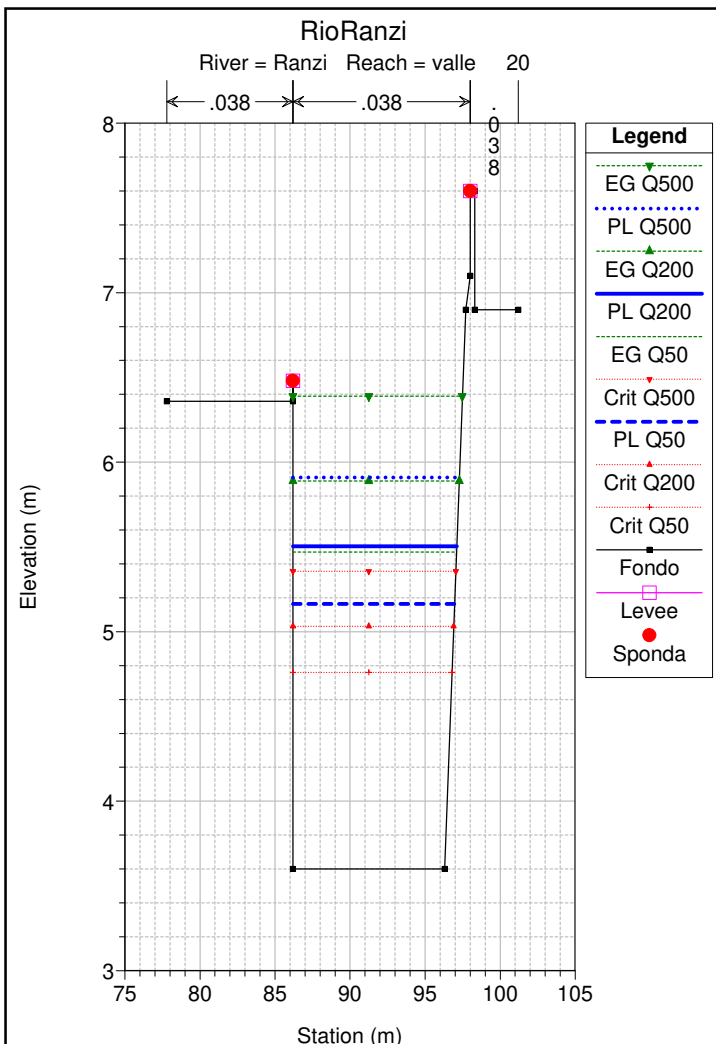


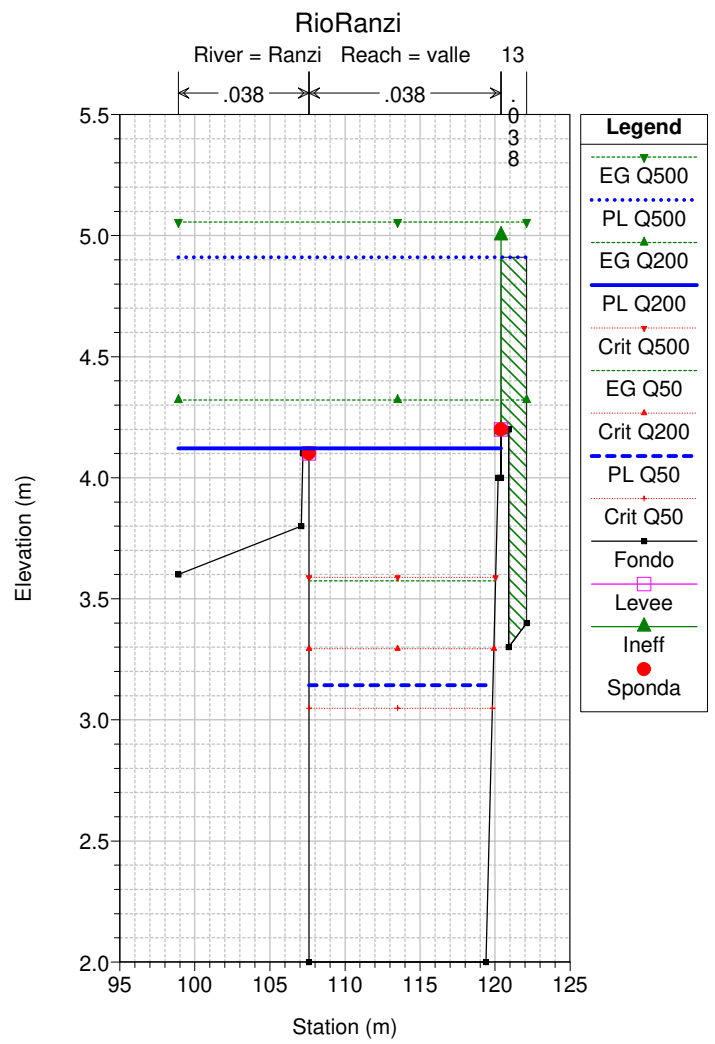
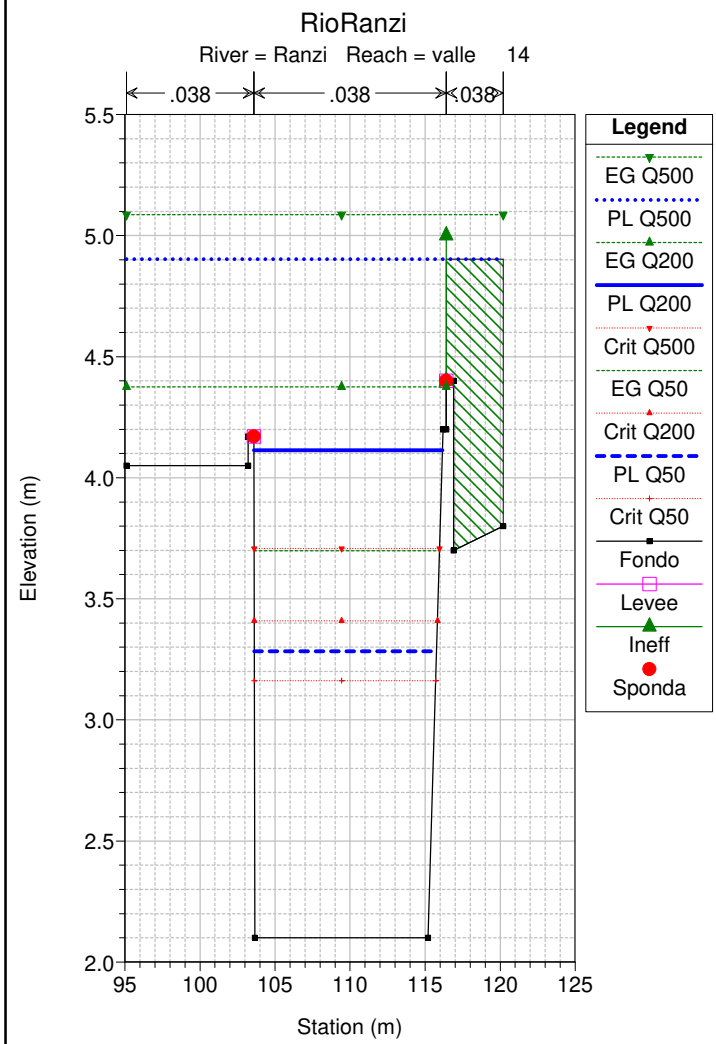
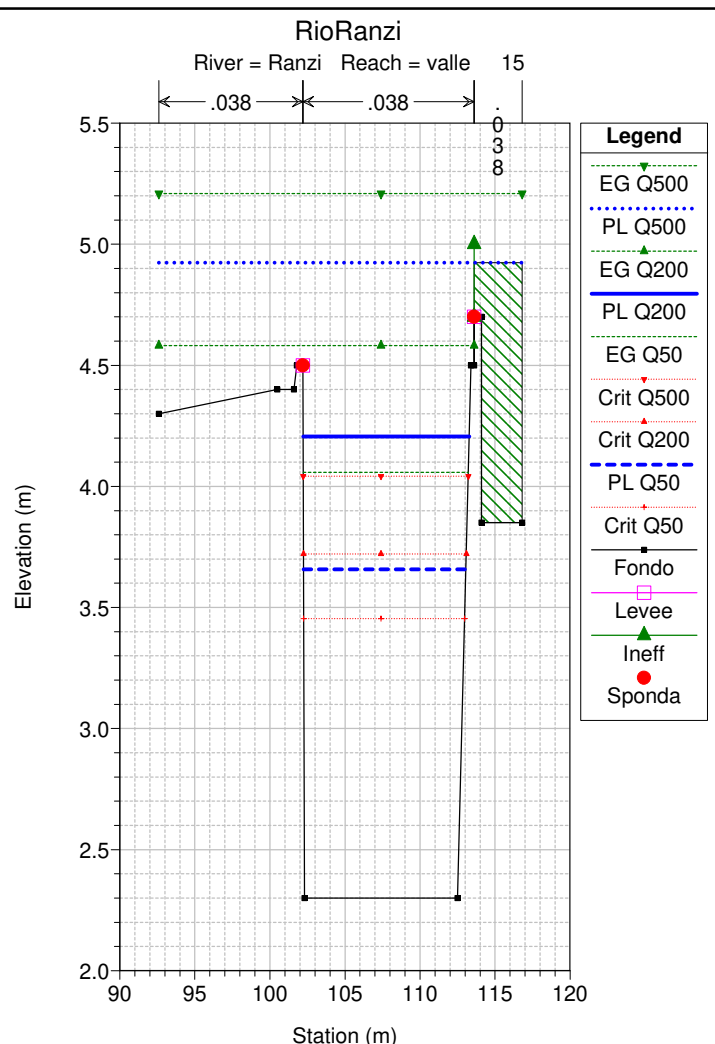
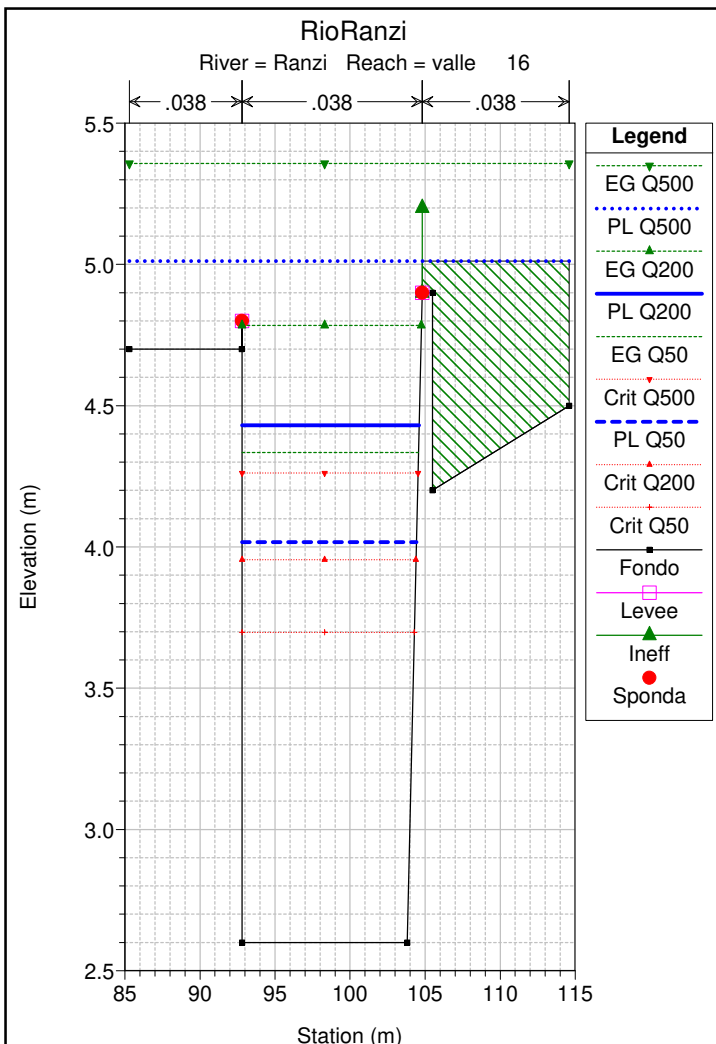


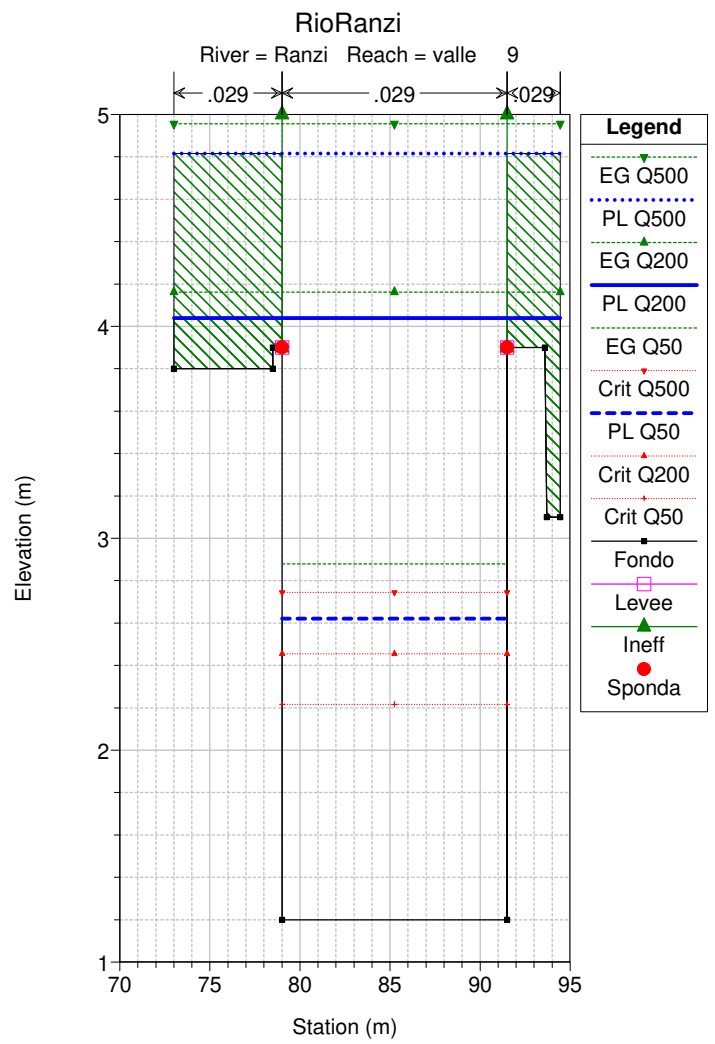
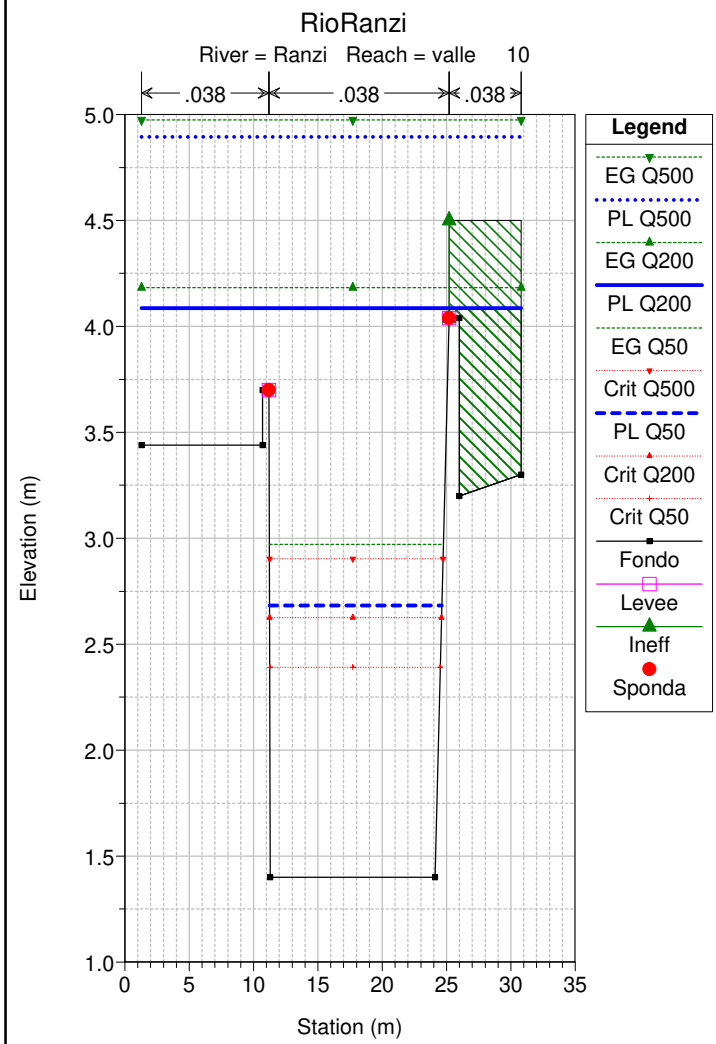
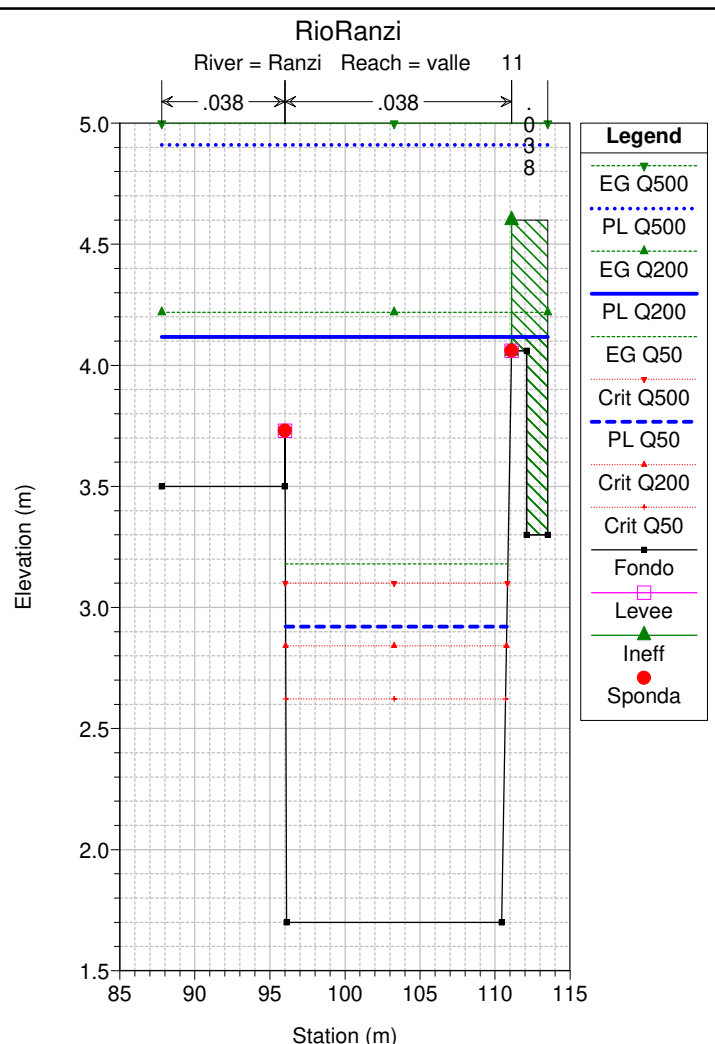
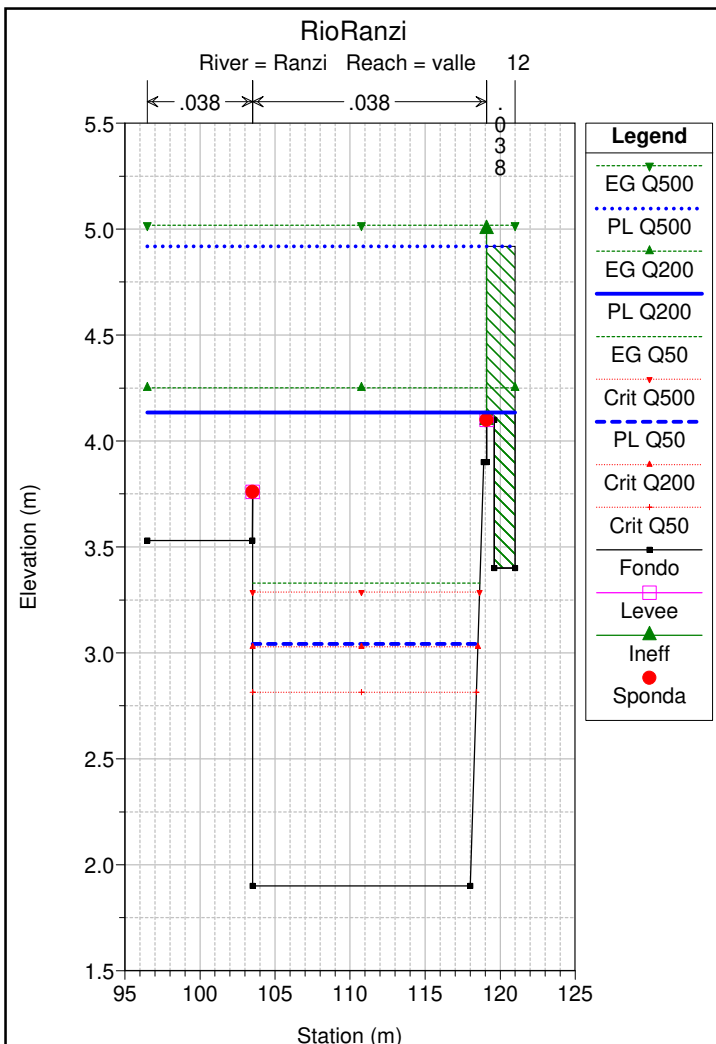


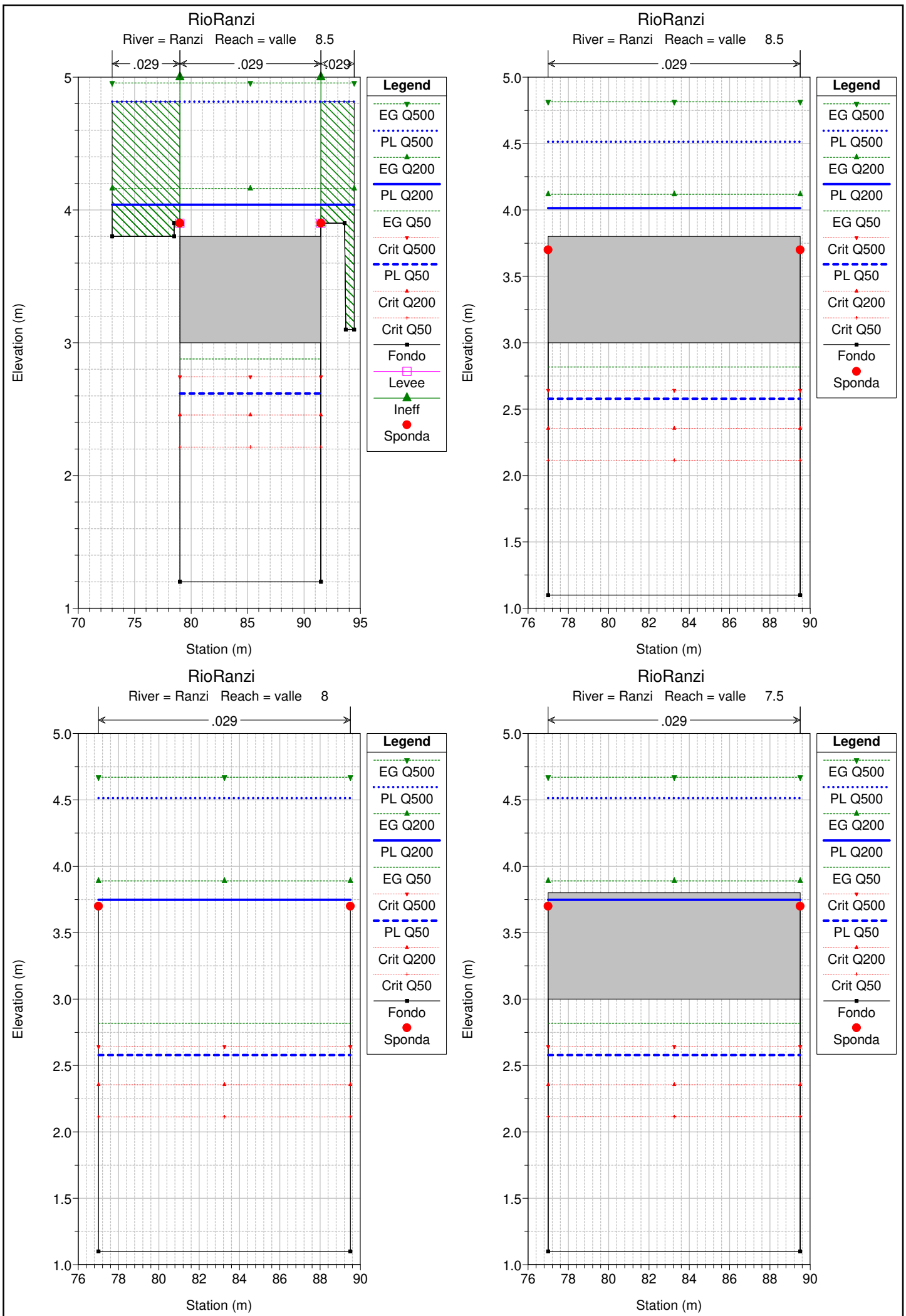


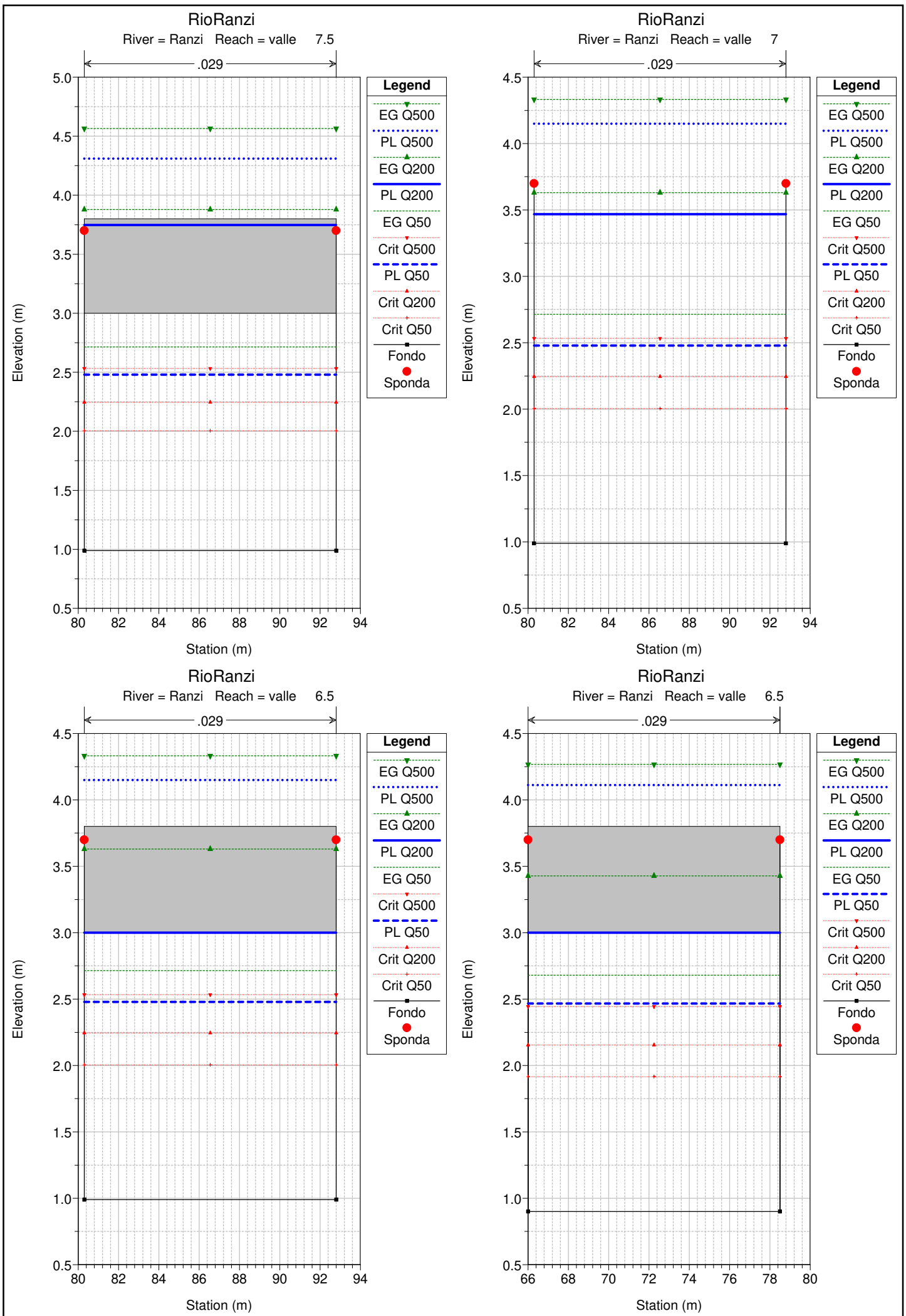


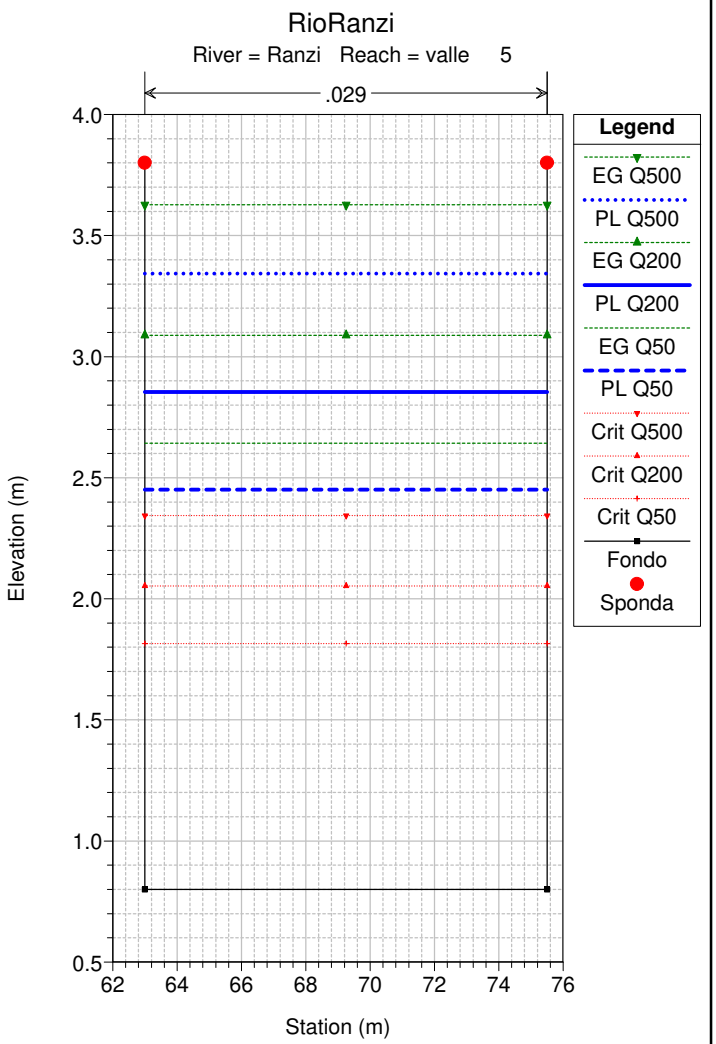
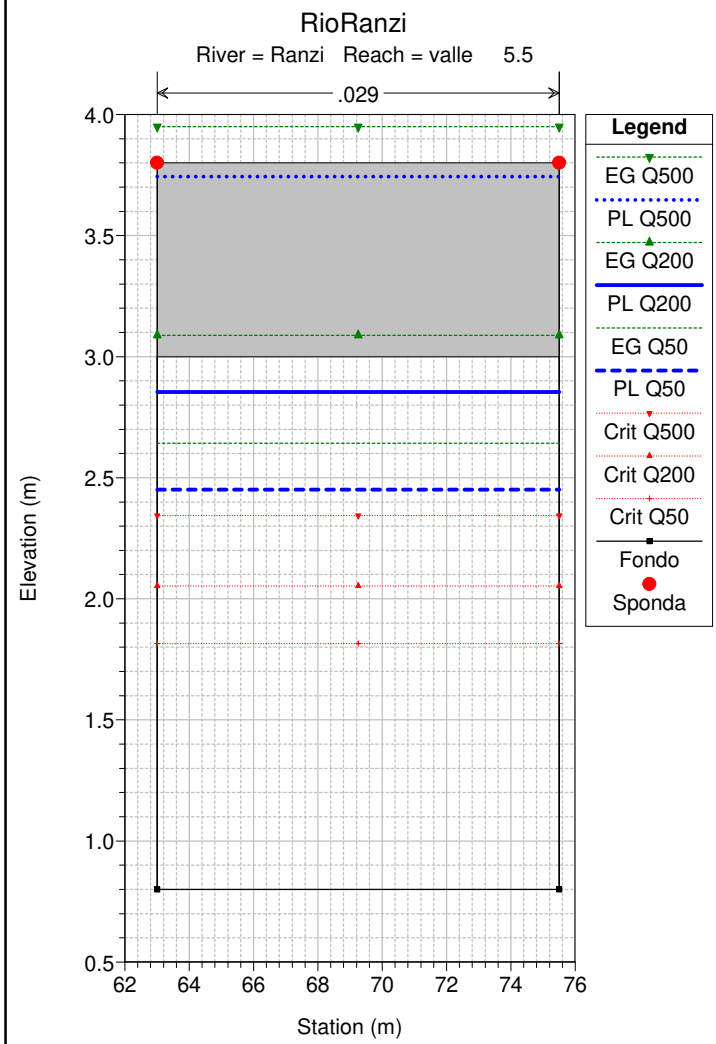
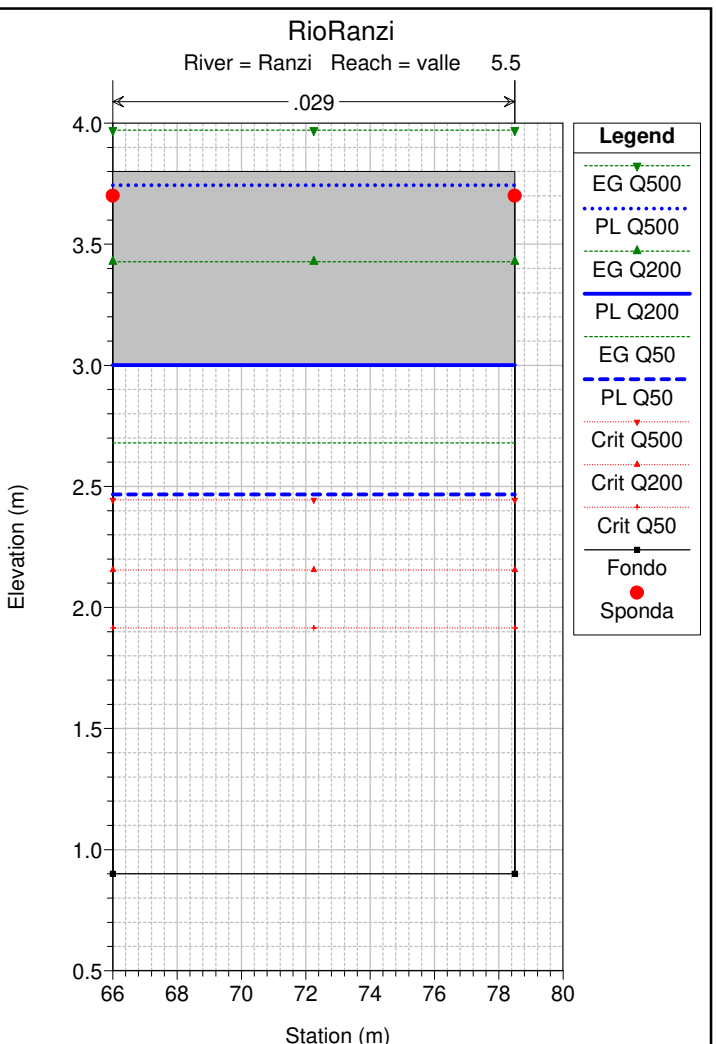
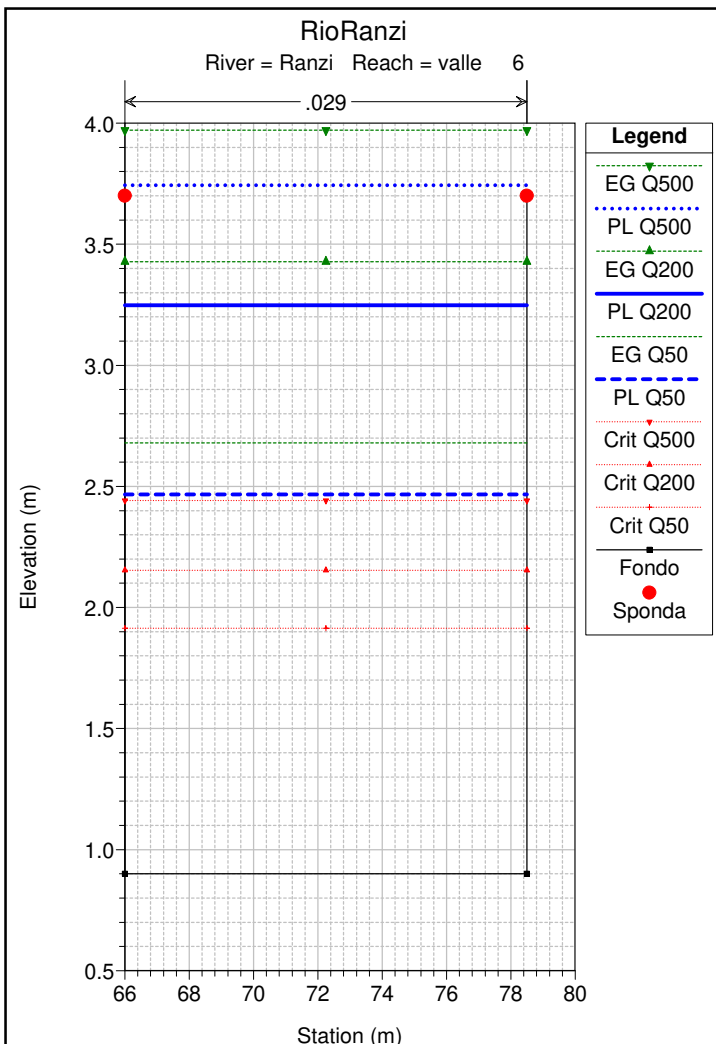


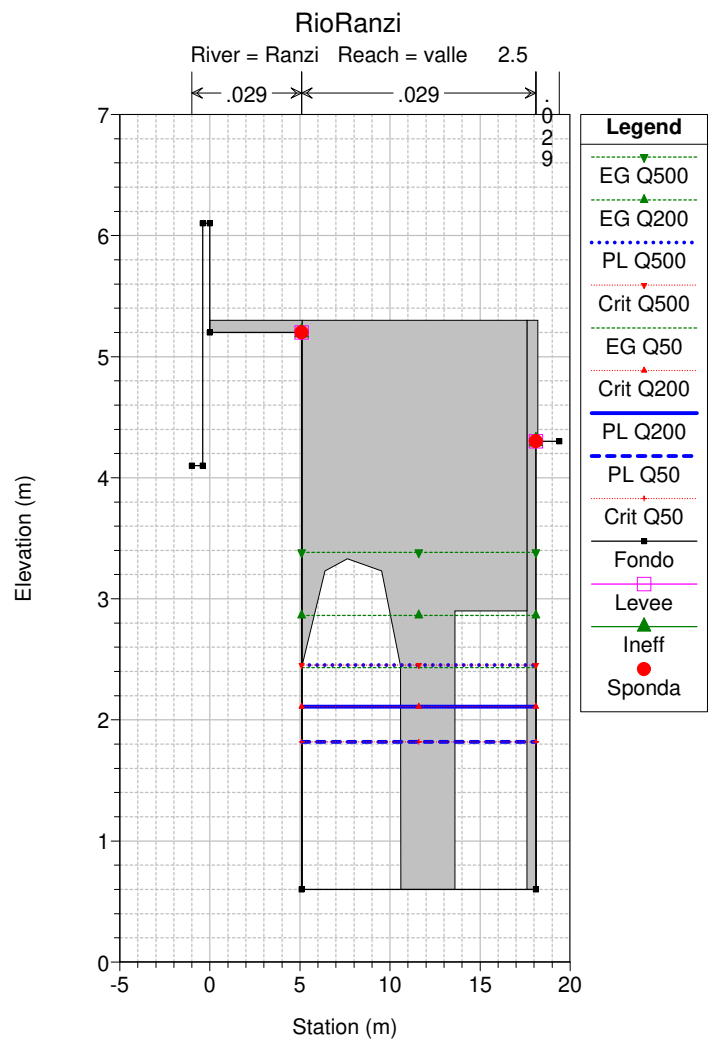
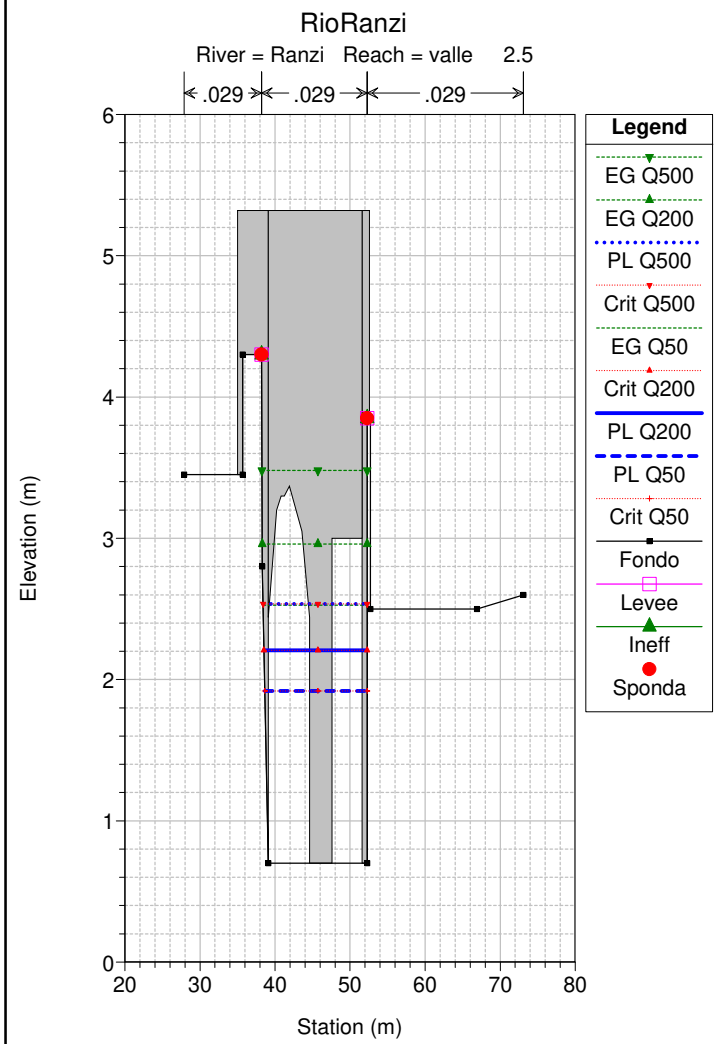
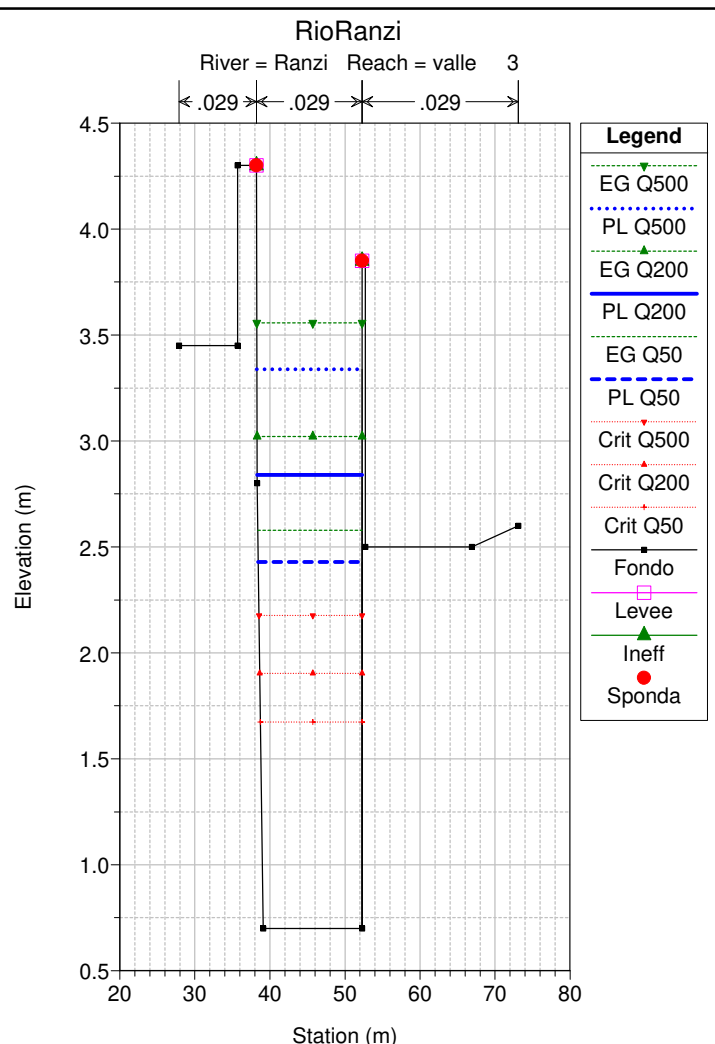
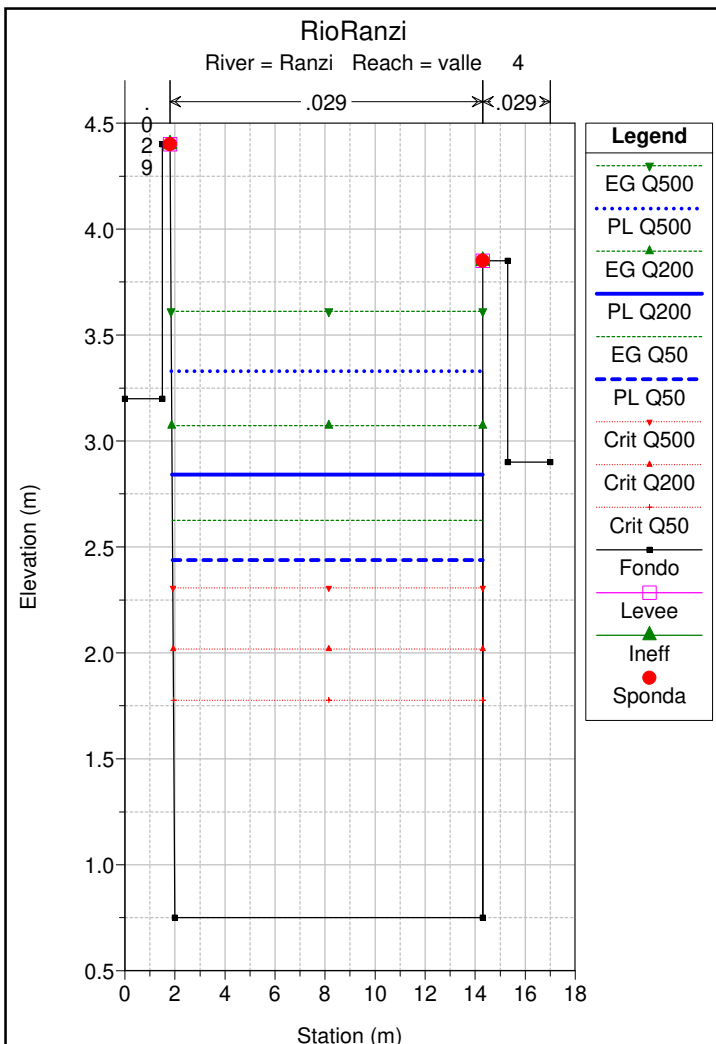












Reach	River Sta		Profile	Q Total	Min Ch El	W.S. Elev	LOB Elev	L. Freeboard	ROB Elev	R. Freeboard	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
valle	1800	39	Q50	40.00	10.72	13.45	14.10	0.65	14.10	0.65	13.18	14.36	0.022155	4.22	9.48	3.73	0.84
valle	1800	39	Q200	55.00	10.72	14.19	14.10	-0.09	14.10	-0.09	13.72	15.22	0.026576	4.49	12.24	3.73	0.79
valle	1800	39	Q500	75.00	10.72	14.82	14.10	-0.72	14.10	-0.72	14.36	16.17	0.031729	5.15	14.57	3.73	0.83
valle	1100	38	Q50	40.00	9.66	12.46	12.91	0.45	12.94	0.48	12.46	13.55	0.026665	4.63	8.65	3.96	1.00
valle	1100	38	Q200	55.00	9.66	13.00	12.91	-0.09	12.94	-0.06	13.00	14.31	0.027569	5.06	10.86	10.00	1.00
valle	1100	38	Q500	75.00	9.66	13.60	12.91	-0.69	12.94	-0.66	13.60	15.21	0.025749	5.62	13.36	10.00	1.00
valle	1000	37	Q50	40.00	8.95	11.02	12.24	1.22	12.25	1.23	11.31	12.45	0.038752	5.30	7.55	4.03	1.24
valle	1000	37	Q200	55.00	8.95	11.54	12.24	0.70	12.25	0.71	11.83	13.20	0.038637	5.71	9.64	4.09	1.19
valle	1000	37	Q500	75.00	8.95	12.10	12.24	0.14	12.25	0.15	12.44	14.10	0.041314	6.26	11.98	4.16	1.18
valle	900	36	Q50	40.00	7.79	9.57	11.07	1.50	11.77	2.20	10.01	11.11	0.042093	5.50	7.28	5.39	1.51
valle	900	36	Q200	55.00	7.79	9.88	11.07	1.19	11.77	1.89	10.44	11.80	0.044690	6.14	8.95	5.55	1.54
valle	900	36	Q500	75.00	7.79	11.80	11.07	-0.73	11.77	-0.03	10.95	12.48	0.008302	3.65	20.53	15.00	0.65
valle	800	35m	Q50	40.00	7.75	9.95	10.61	0.66	11.66	1.71	9.70	10.57	0.012496	3.48	11.49	6.11	0.81
valle	800	35m	Q200	55.00	7.75	10.85	10.61	-0.24	11.66	0.81	10.10	11.37	0.007810	3.22	17.09	10.86	0.63
valle	800	35m	Q500	75.00	7.75	11.75	10.61	-1.14	11.66	-0.09	10.58	12.30	0.006119	3.29	22.81	15.00	0.55
valle	750	35		Bridge													
valle	740	35v	Q50	40.00	7.60	9.68	10.46	0.78	11.51	1.83	9.55	10.39	0.014976	3.72	10.76	6.06	0.89
valle	740	35v	Q200	55.00	7.60	10.31	10.46	0.15	11.51	1.20	9.95	11.03	0.012161	3.75	14.65	6.30	0.79
valle	740	35v	Q500	75.00	7.60	11.41	10.46	-0.95	11.51	0.10	10.67	11.87	0.005909	3.13	25.86	10.87	0.54
valle	700	34	Q50	40.00	7.42	9.67	10.88	1.21	11.70	2.03	9.33	10.16	0.009554	3.10	12.91	7.12	0.74
valle	700	34	Q200	55.00	7.42	10.34	10.88	0.54	11.70	1.36	9.69	10.83	0.007448	3.10	17.73	7.24	0.63
valle	700	34	Q500	75.00	7.42	11.37	10.88	-0.49	11.70	0.33	10.11	11.78	0.004756	2.87	27.54	12.08	0.50
valle	660	33m	Q50	40.00	7.24	9.31	12.02	2.71	10.53	1.22	9.12	10.05	0.017297	3.82	10.46	5.27	0.87
valle	660	33m	Q200	55.00	7.24	9.89	12.02	2.13	10.53	0.64	9.55	10.73	0.016143	4.05	13.58	5.36	0.81
valle	660	33m	Q500	75.00	7.24	10.92	12.02	1.10	10.53	-0.39	10.08	11.70	0.011682	3.91	19.16	9.46	0.67
valle	650	33		Bridge													
valle	640	33v	Q50	40.00	7.16	9.10	11.94	2.84	10.45	1.35	9.04	9.95	0.020570	4.07	9.82	5.25	0.95
valle	640	33v	Q200	55.00	7.16	9.83	11.94	2.11	10.45	0.62	9.48	10.66	0.015780	4.01	13.70	5.37	0.80
valle	640	33v	Q500	75.00	7.16	10.82	11.94	1.12	10.45	-0.37	10.00	11.61	0.011828	3.93	19.08	9.46	0.68
valle	600	32	Q50	40.00	6.90	9.02	11.68	2.66	10.19	1.17	8.78	9.73	0.016044	3.72	10.75	5.28	0.83
valle	600	32	Q200	55.00	6.90	9.77	11.68	1.91	10.19	0.42	9.22	10.48	0.012944	3.73	14.76	5.40	0.72
valle	600	32	Q500	75.00	6.90	10.77	11.68	0.91	10.19	-0.58	9.74	11.47	0.009912	3.70	20.26	9.49	0.62
valle	500	31	Q50	40.00	6.36	8.88	12.63	3.75	9.99	1.11	8.28	9.39	0.010491	3.19	12.54	5.30	0.66
valle	500	31	Q200	55.00	6.36	9.64	12.63	2.99	9.99	0.35	8.73	10.20	0.009350	3.30	16.67	5.46	0.60
valle	500	31	Q500	75.00	6.36	10.68	12.63	1.95	9.99	-0.69	9.25	11.25	0.007546	3.34	22.43	15.31	0.54
valle	400	30	Q50	40.00	6.05	8.24	9.28	1.04	9.02	0.78	8.08	9.02	0.017167	3.92	10.20	5.13	0.89
valle	400	30	Q200	55.00	6.05	9.34	9.28	-0.06	9.02	-0.32	8.53	9.94	0.009488	3.44	15.97	20.00	0.63
valle	400	30	Q500	75.00	6.05	10.48	9.28	-1.20	9.02	-1.46	9.05	11.07	0.006064	3.41	22.00	20.00	0.53
valle	300	29	Q50	40.00	5.60	8.30	9.13	0.83	9.24	0.94	7.40	8.67	0.006598	2.68	14.91	5.83	0.54

HEC-RAS Plan: 3_ineff River: Ranzi Reach: valle (Continued)

Reach	River Sta		Profile	Q Total	Min Ch El	W.S. Elev	LOB Elev	L. Freeboard	ROB Elev	R. Freeboard	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
valle	300	29	Q200	55.00	5.60	9.38	9.13	-0.25	9.24	-0.14	7.82	9.72	0.004679	2.58	21.28	24.32	0.44
valle	300	29	Q500	75.00	5.60	10.54	9.13	-1.41	9.24	-1.30	8.31	10.90	0.003396	2.66	28.22	24.32	0.39
valle	250	28.5		Bridge													
valle	200	28	Q50	40.00	5.52	7.94	9.13	1.19	9.24	1.30	7.50	8.50	0.011567	3.34	11.98	5.57	0.73
valle	200	28	Q200	55.00	5.52	8.91	9.13	0.22	9.24	0.33	7.94	9.41	0.007886	3.13	17.58	5.92	0.58
valle	200	28	Q500	75.00	5.52	9.95	9.13	-0.82	9.24	-0.71	8.45	10.46	0.005654	3.14	23.85	22.54	0.50
valle	150	27	Q50	40.00	5.43	7.99	9.14	1.15	8.95	0.96	7.12	8.34	0.006354	2.62	15.28	6.11	0.53
valle	150	27	Q200	55.00	5.43	8.95	9.14	0.19	8.95	0.00	7.51	9.29	0.005047	2.60	21.14	6.17	0.45
valle	150	27	Q500	75.00	5.43	9.99	9.14	-0.85	8.95	-1.04	7.98	10.37	0.003952	2.72	27.57	23.64	0.41
valle	140	26	Q50	40.00	5.30	7.88	9.14	1.26	9.19	1.31	6.97	8.20	0.005647	2.51	15.93	6.45	0.51
valle	140	26	Q200	55.00	5.30	8.87	9.14	0.27	9.19	0.32	7.35	9.18	0.004287	2.46	22.37	6.56	0.43
valle	140	26	Q500	75.00	5.30	9.94	9.14	-0.80	9.19	-0.75	7.80	10.27	0.003393	2.55	29.42	10.80	0.39
valle	130	25	Q50	40.00	5.25	7.25	9.14	1.89	8.84	1.59	7.08	7.96	0.015892	3.72	10.75	5.77	0.87
valle	130	25	Q200	55.00	5.25	8.59	9.14	0.55	8.84	0.25	7.49	9.04	0.006927	2.97	18.52	5.83	0.53
valle	130	25	Q500	75.00	5.25	9.69	9.14	-0.55	8.84	-0.85	7.98	10.15	0.006963	3.01	24.95	15.96	0.46
valle	125	24.5		Bridge													
valle	120	24	Q50	40.00	5.10	6.77	7.90	1.13	8.60	1.83	6.77	7.53	0.017976	3.88	10.32	6.73	1.00
valle	120	24	Q200	55.00	5.10	7.14	7.90	0.76	8.60	1.46	7.14	8.07	0.018266	4.28	12.85	6.88	1.00
valle	120	24	Q500	75.00	5.10	7.61	7.90	0.29	8.60	0.99	7.61	8.69	0.018289	4.60	16.32	7.57	1.00
valle	119	24	Q50	40.00	4.14	5.28	7.90	2.62	8.60	3.32	5.91	7.39	0.076500	6.44	6.21	5.93	2.01
valle	119	24	Q200	55.00	4.14	5.59	7.90	2.31	8.60	3.01	6.30	7.93	0.066368	6.76	8.13	6.19	1.88
valle	119	24	Q500	75.00	4.14	5.98	7.90	1.92	8.60	2.62	6.76	8.54	0.057910	7.07	10.60	6.41	1.76
valle	110	23	Q50	40.00	4.00	6.35	7.23	0.88	7.83	1.48	5.89	6.77	0.007337	2.84	14.08	7.55	0.66
valle	110	23	Q200	55.00	4.00	6.88	7.23	0.35	7.83	0.95	6.24	7.35	0.006898	3.04	18.10	7.78	0.64
valle	110	23	Q500	75.00	4.00	7.68	7.23	-0.45	7.83	0.15	6.66	8.08	0.004734	2.87	29.30	19.51	0.52
valle	105	22.5		Bridge													
valle	100	22	Q50	40.00	3.95	5.70	7.60	1.90	8.80	3.10	5.89	6.67	0.026690	4.36	9.18	6.92	1.21
valle	100	22	Q200	55.00	3.95	6.02	7.60	1.58	8.80	2.78	6.26	7.20	0.026964	4.81	11.43	7.20	1.22
valle	100	22	Q500	75.00	3.95	6.38	7.60	1.22	8.80	2.42	6.69	7.83	0.028036	5.34	14.04	7.51	1.25
valle	99	21	Q50	40.00	3.75	5.32	6.62	1.30	7.80	2.48	4.86	5.58	0.005660	2.29	17.50	11.47	0.59
valle	99	21	Q200	55.00	3.75	5.68	6.62	0.94	7.80	2.12	5.12	6.01	0.005637	2.54	21.65	11.62	0.59
valle	99	21	Q500	75.00	3.75	4.89	6.62	1.73	7.80	2.91	5.43	6.69	0.054535	5.95	12.60	11.30	1.80
valle	98	20	Q50	40.00	3.60	5.16	6.48	1.32	7.60	2.44	4.76	5.47	0.006654	2.45	16.31	10.76	0.64
valle	98	20	Q200	55.00	3.60	5.50	6.48	0.98	7.60	2.10	5.03	5.89	0.006840	2.75	19.99	10.91	0.65
valle	98	20	Q500	75.00	3.60	5.91	6.48	0.57	7.60	1.69	5.36	6.39	0.007024	3.07	24.46	11.08	0.66
valle	97	19	Q50	40.00	3.50	4.89	6.25	1.36	7.40	2.51	4.69	5.32	0.010581	2.89	13.85	10.21	0.79
valle	97	19	Q200	55.00	3.50	5.19	6.25	1.06	7.40	2.21	4.97	5.73	0.011014	3.26	16.89	10.31	0.81
valle	97	19	Q500	75.00	3.50	5.54	6.25	0.71	7.40	1.86	5.30	6.22	0.011507	3.66	20.50	10.44	0.83

HEC-RAS Plan: 3_ineff River: Ranzi Reach: valle (Continued)

Reach	River Sta		Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
valle	84	6	Q50	40.00	0.90	2.47	3.70	1.23	3.70	1.23	1.91	2.68	0.002597	2.04	19.59	12.50	0.52
valle	84	6	Q200	55.00	0.90	3.25	3.70	0.45	3.70	0.45	2.15	3.43	0.001448	1.87	29.35	12.50	0.39
valle	84	6	Q500	75.00	0.90	3.74	3.70	-0.04	3.70	-0.04	2.44	3.97	0.001532	2.11	35.55	12.50	0.40
valle	83.5	5.5		Bridge													
valle	83	5	Q50	40.00	0.80	2.45	3.80	1.35	3.80	1.35	1.82	2.64	0.002216	1.94	20.63	12.50	0.48
valle	83	5	Q200	55.00	0.80	2.85	3.80	0.95	3.80	0.95	2.05	3.09	0.002161	2.14	25.67	12.50	0.48
valle	83	5	Q500	75.00	0.80	3.34	3.80	0.46	3.80	0.46	2.34	3.63	0.002127	2.36	31.78	12.50	0.47
valle	82	4	Q50	40.00	0.75	2.44	4.40	1.96	3.85	1.41	1.78	2.63	0.002119	1.92	20.84	12.39	0.47
valle	82	4	Q200	55.00	0.75	2.84	4.40	1.56	3.85	1.01	2.02	3.07	0.002094	2.13	25.84	12.41	0.47
valle	82	4	Q500	75.00	0.75	3.33	4.40	1.07	3.85	0.52	2.31	3.61	0.002079	2.35	31.91	12.44	0.47
valle	81	3	Q50	40.00	0.70	2.43	4.30	1.87	3.85	1.42	1.67	2.58	0.001578	1.71	23.39	13.86	0.42
valle	81	3	Q200	55.00	0.70	2.84	4.30	1.46	3.85	1.01	1.90	3.02	0.001537	1.89	29.11	14.00	0.42
valle	81	3	Q500	75.00	0.70	3.34	4.30	0.96	3.85	0.51	2.18	3.56	0.001502	2.08	36.10	14.04	0.41
valle	80.5	2.5		Bridge													
valle	80	2	Q50	40.00	0.60	1.26	5.20	3.94	4.30	3.04	1.59	2.38	0.036878	4.69	8.53	13.00	1.85
valle	80	2	Q200	55.00	0.60	1.41	5.20	3.79	4.30	2.89	1.82	2.80	0.035392	5.22	10.54	13.00	1.85
valle	80	2	Q500	75.00	0.60	1.60	5.20	3.60	4.30	2.70	2.10	3.30	0.034200	5.79	12.96	13.00	1.85
valle	79	1	Q50	40.00	0.30	0.80	2.00	1.21	1.00	0.20	0.94	1.33	0.023611	3.23	12.38	25.00	1.47
valle	79	1	Q200	55.00	0.30	0.86	2.00	1.14	1.00	0.14	1.09	1.65	0.029751	3.93	14.01	25.00	1.67
valle	79	1	Q500	75.00	0.30	0.94	2.00	1.06	1.00	0.06	1.27	2.07	0.036538	4.72	15.90	25.00	1.89