



PROVINCIA DI SAVONA
PIANO DI BACINO STRALCIO SUL RISCHIO IDROGEOLOGICO

ALLEGATO VERIFICHE IDRAULICHE

VERIFICA IDRAULICA BACINO SANDA: RIO S. BRIGIDA

- ✚ Profili di rigurgito in condizioni di moto permanente per le portate $T=50, 200, 500$ anni.
- ✚ Geometria delle sezioni ed altezza del pelo libero in condizioni di moto permanente per le portate $T=50, 200, 500$ anni.
- ✚ Tabelle delle grandezze idrauliche significative per le portate $T=50, 200, 500$ anni.



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PIANO DI BACINO STRALCIO SUL RISCHIO IDROGEOLOGICO

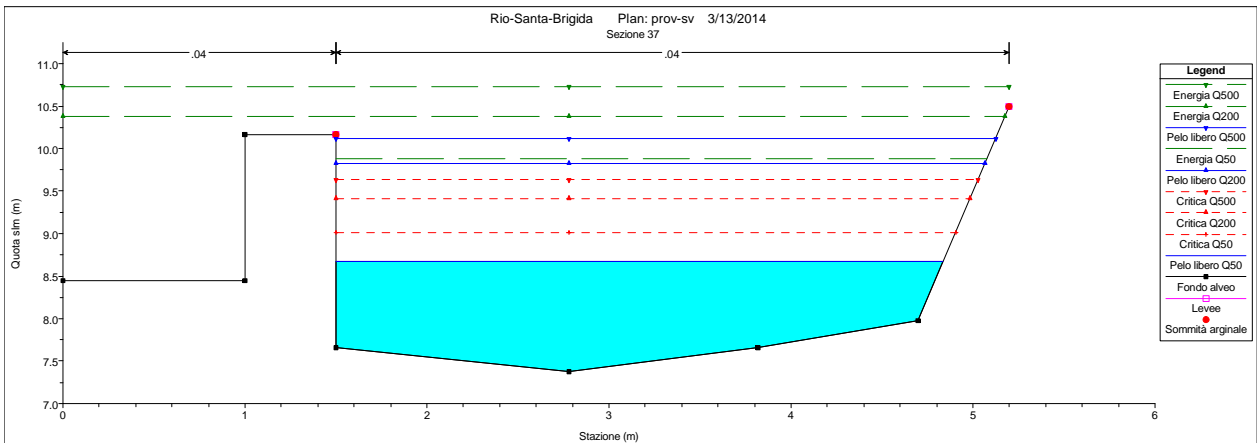
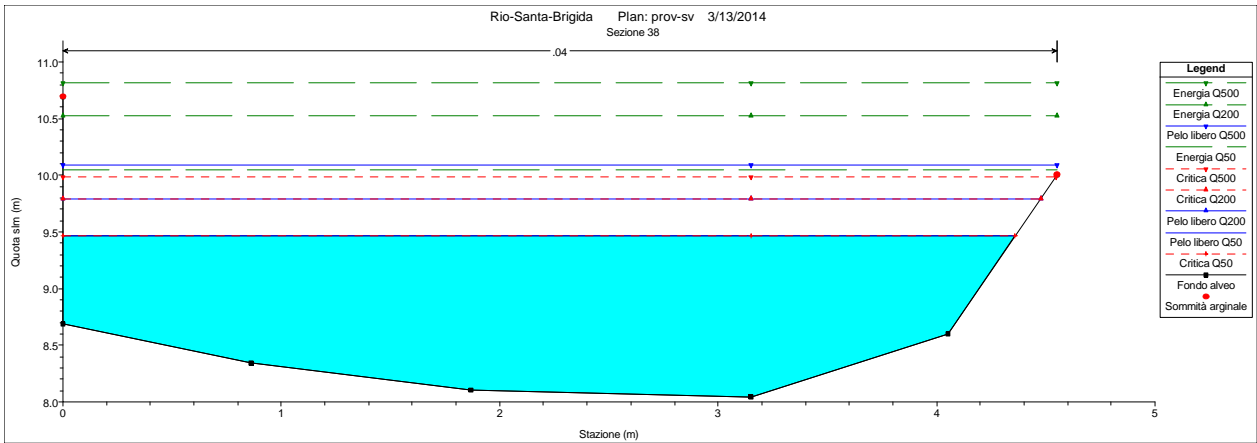
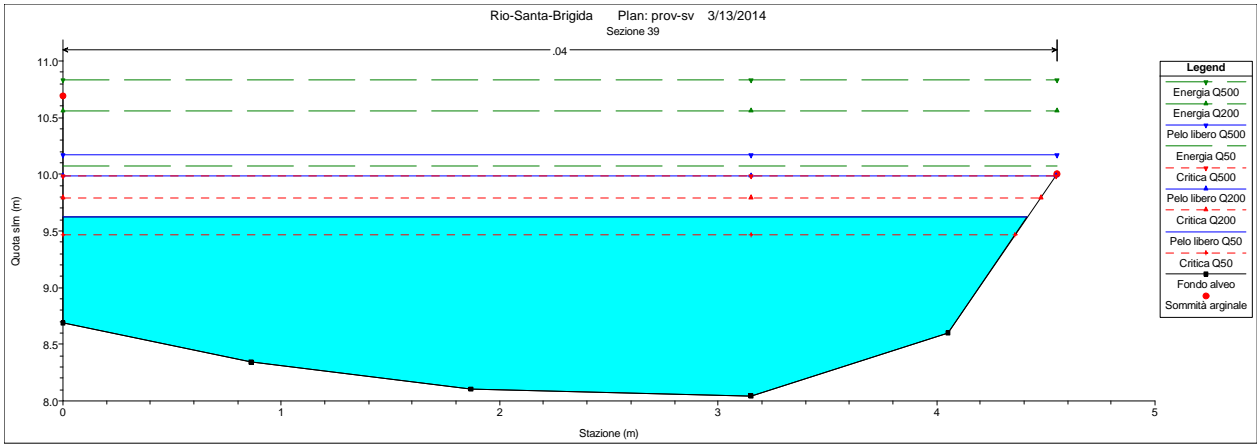
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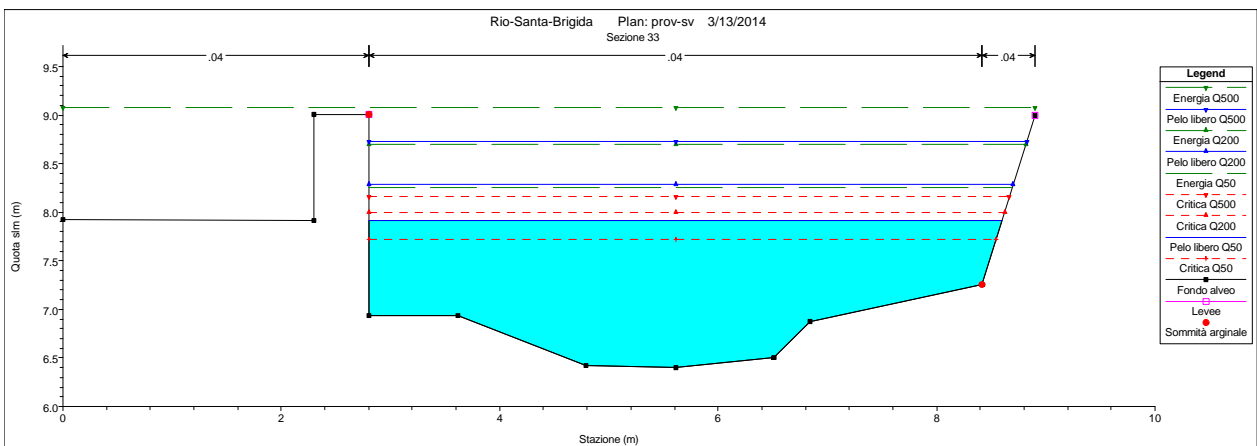
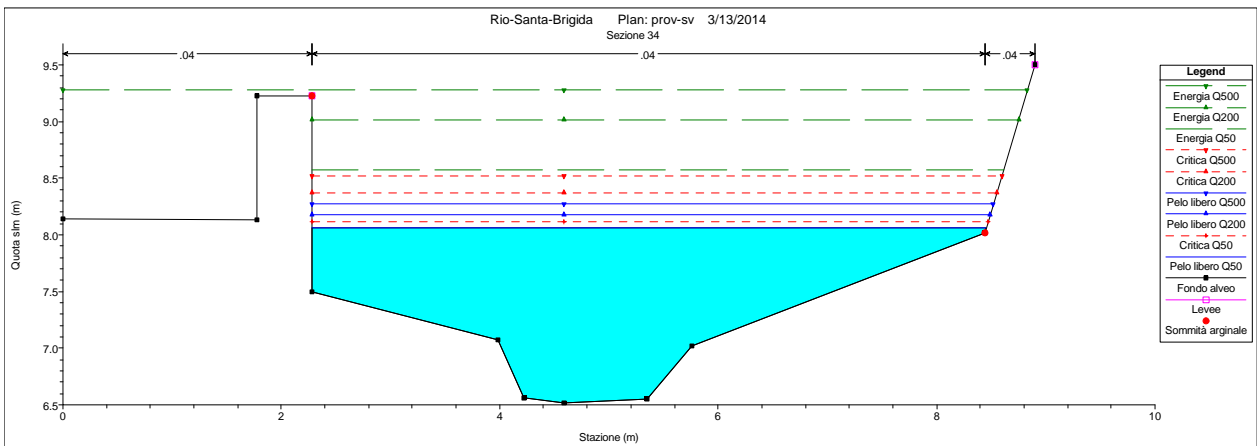
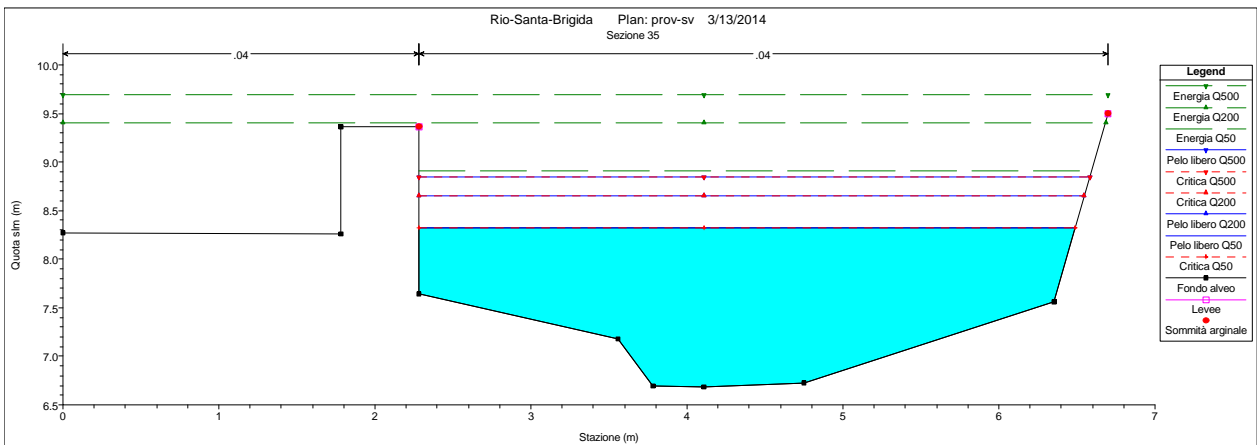
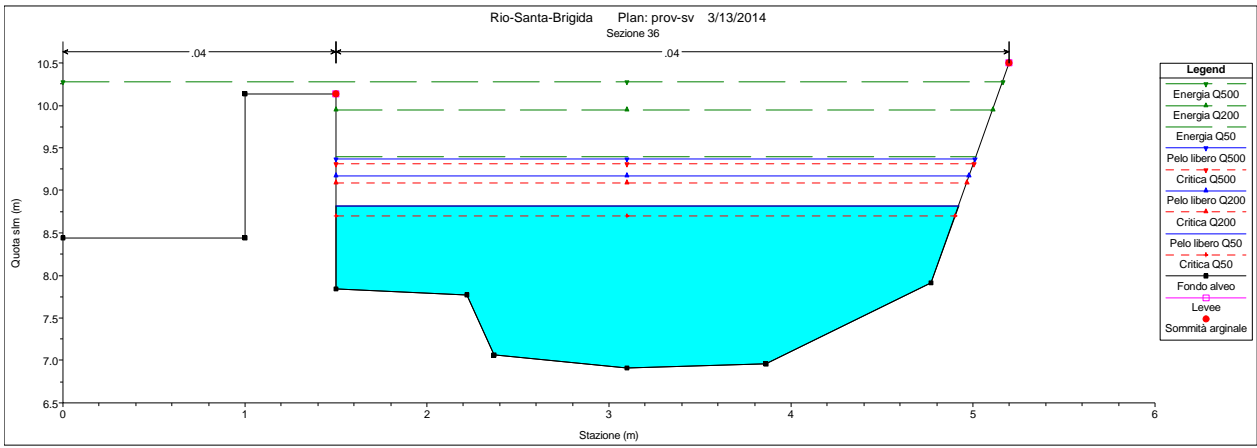
**GEOMETRIA DELLE SEZIONI ED ALTEZZA DEL PELO LIBERO
IN CONDIZIONI DI MOTO PERMANENTE PER LE PORTATE
T=50, 200, 500 ANNI.**

RIO S. BRIGIDA

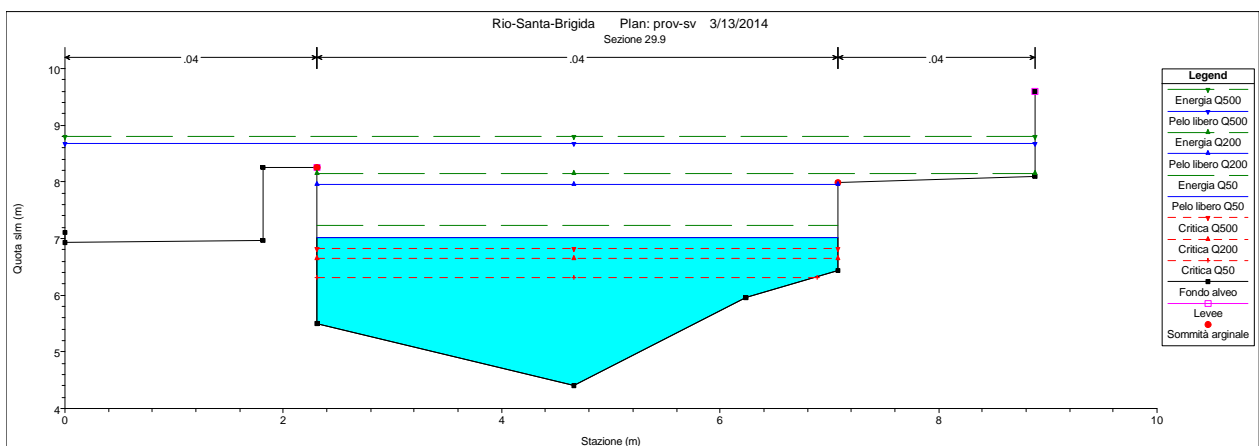
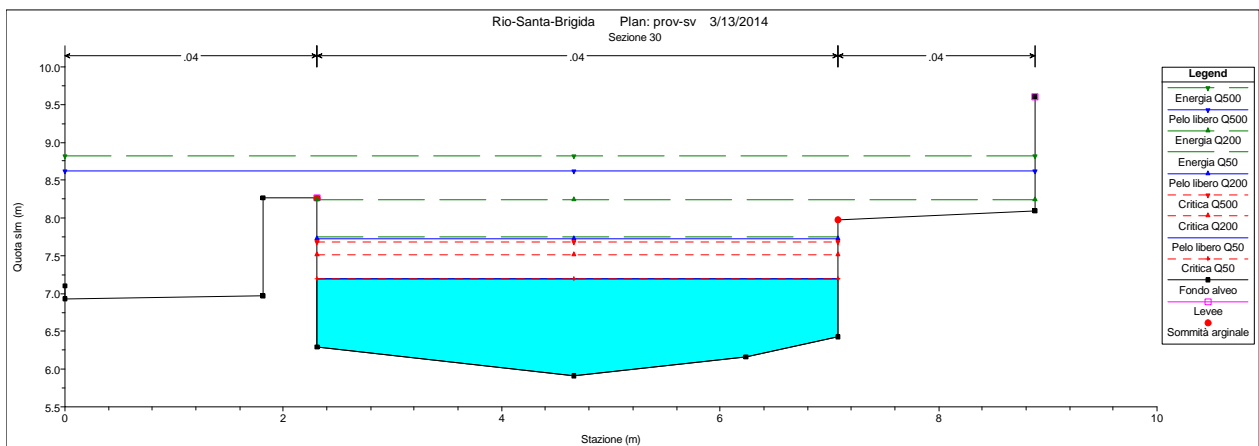
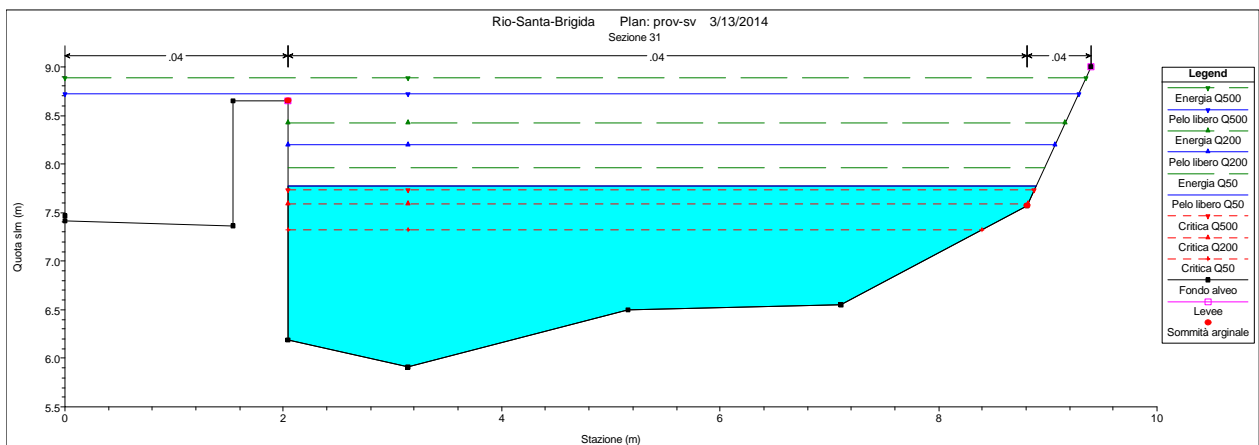
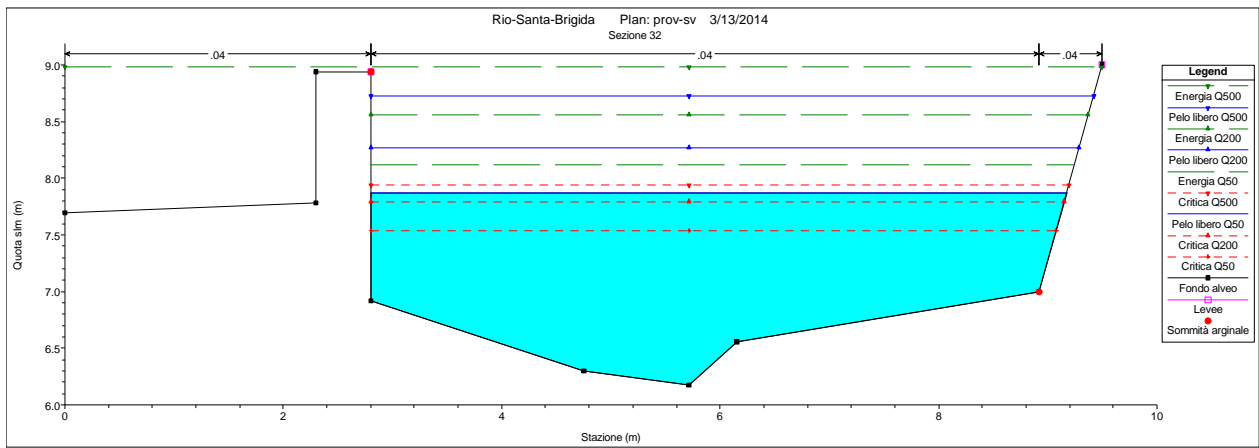
Sezioni trasversali



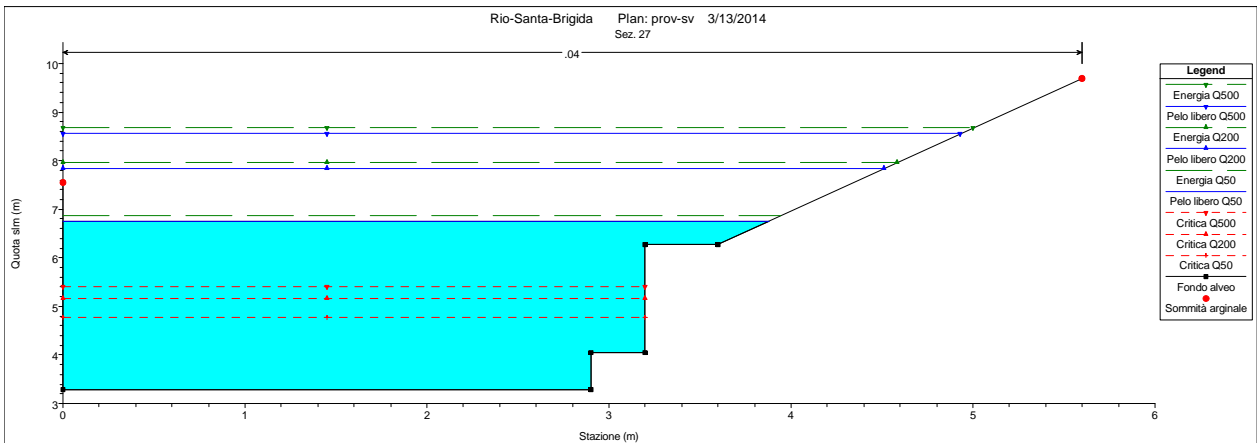
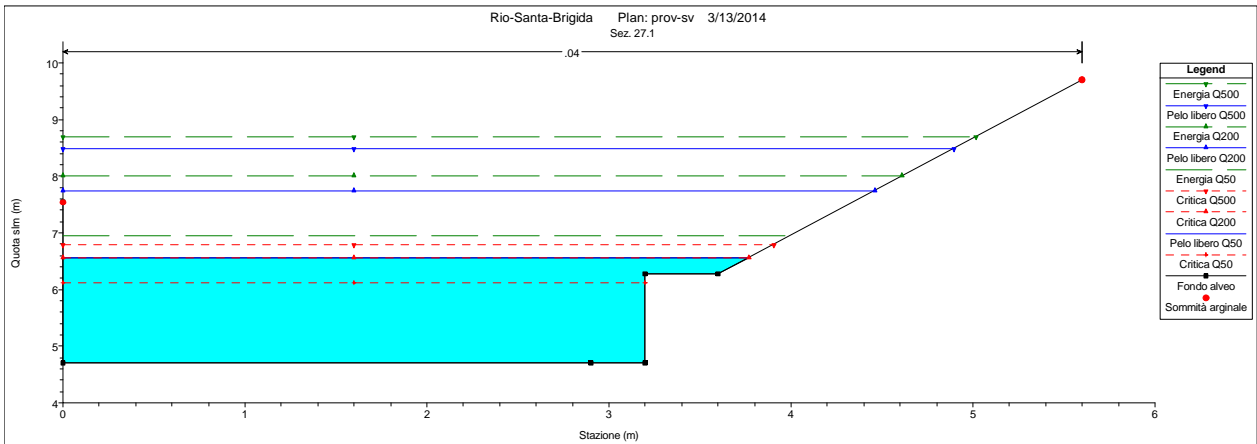
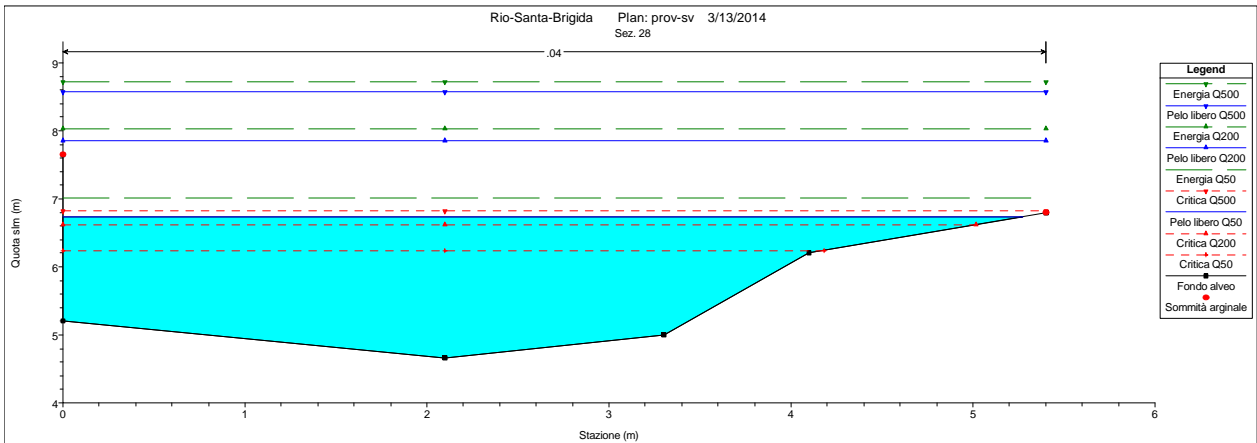
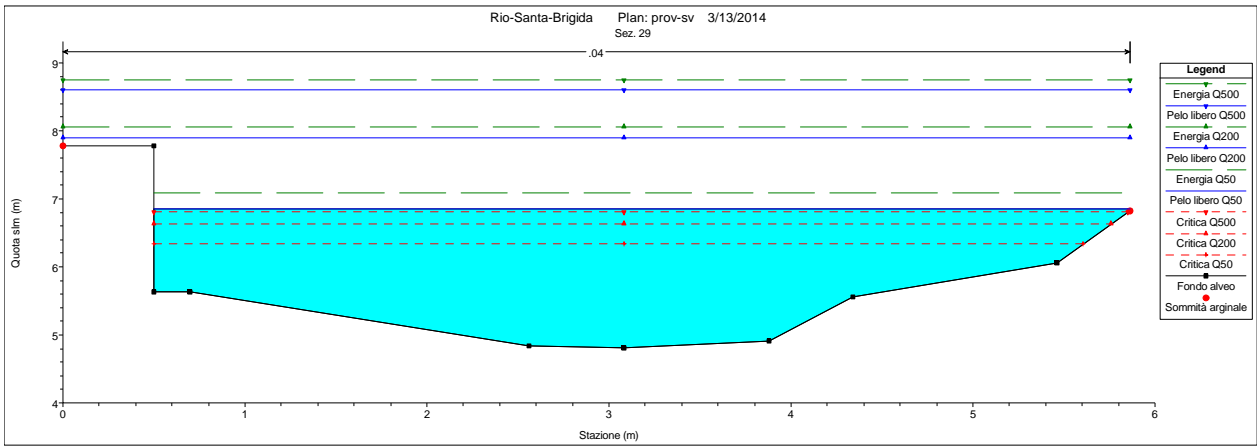
Rio S. Brigida – verifica idraulica – sezioni trasversali



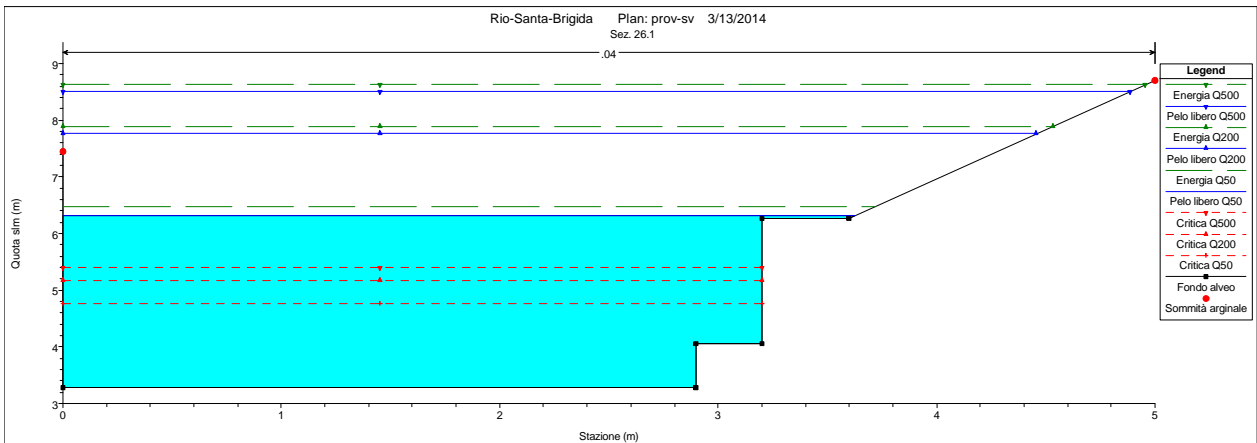
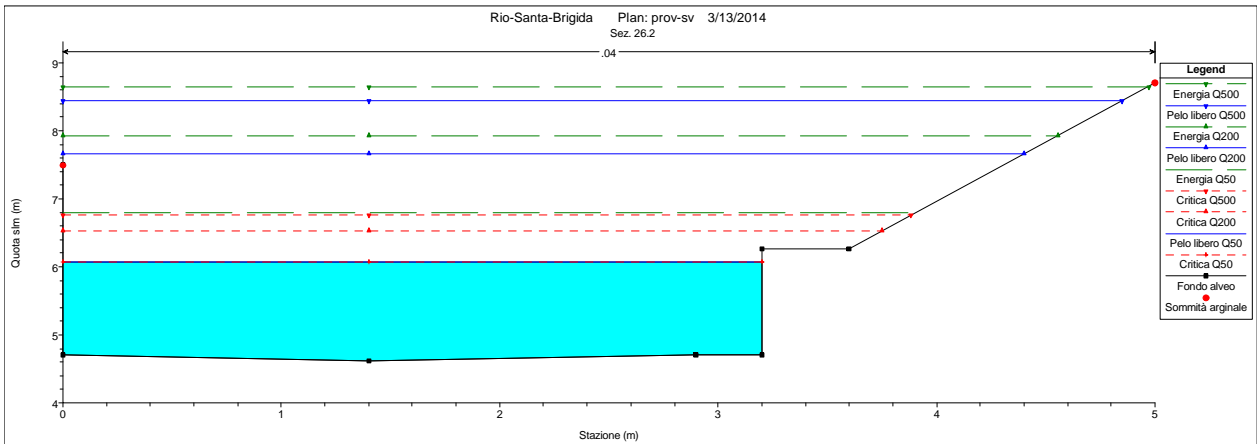
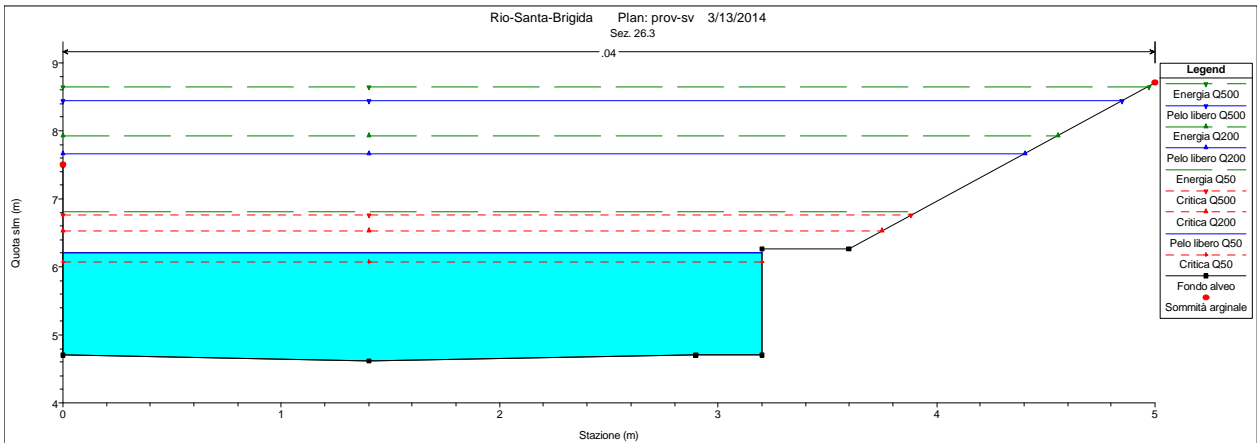
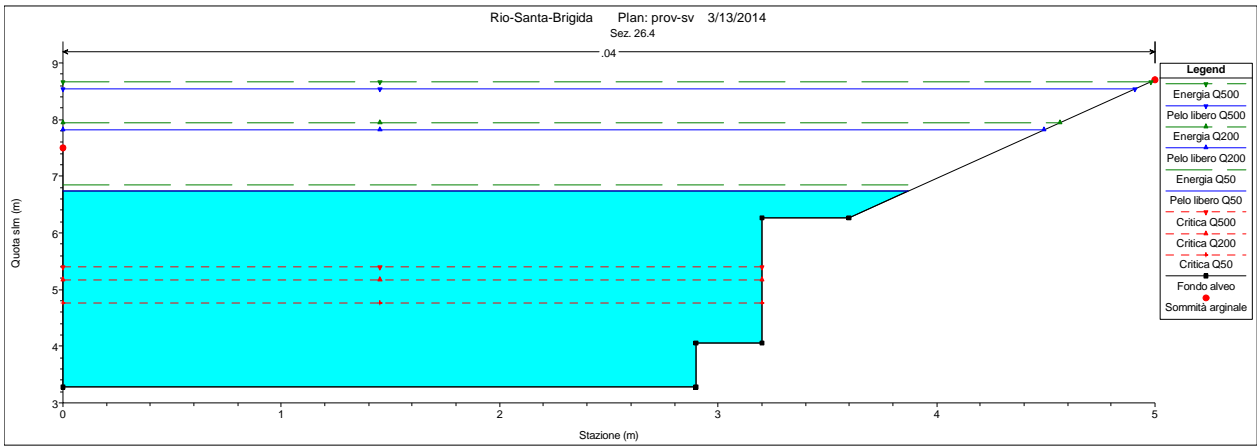
Rio S. Brigida – verifica idraulica – sezioni trasversali



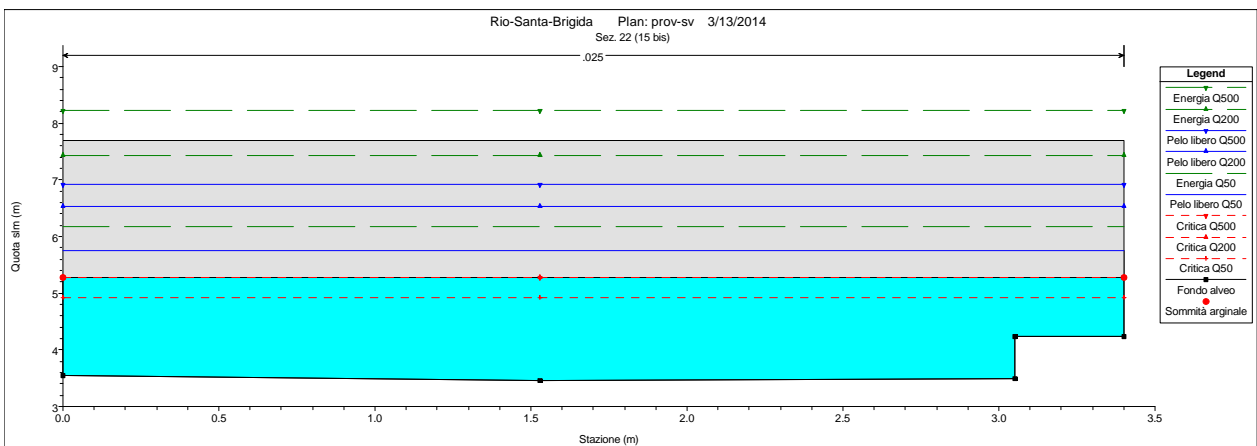
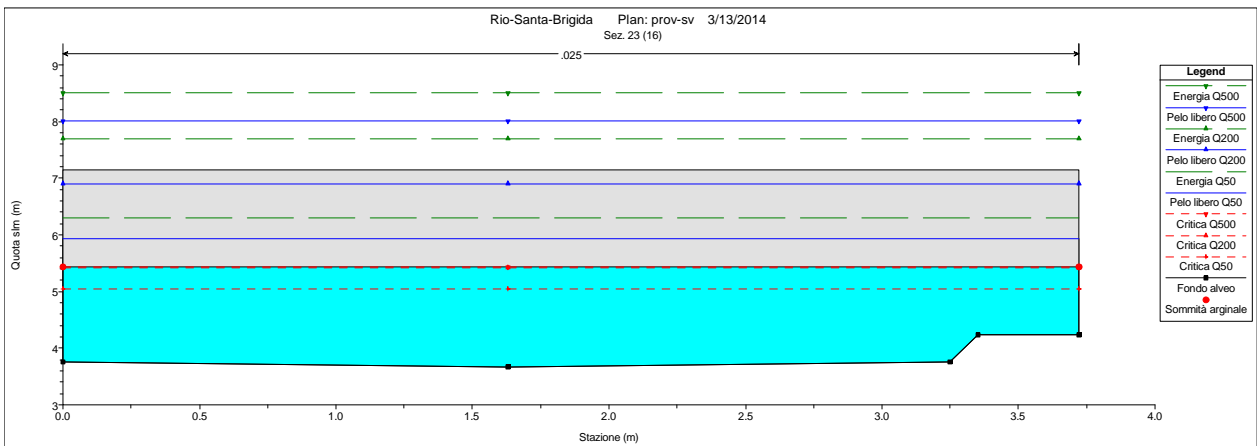
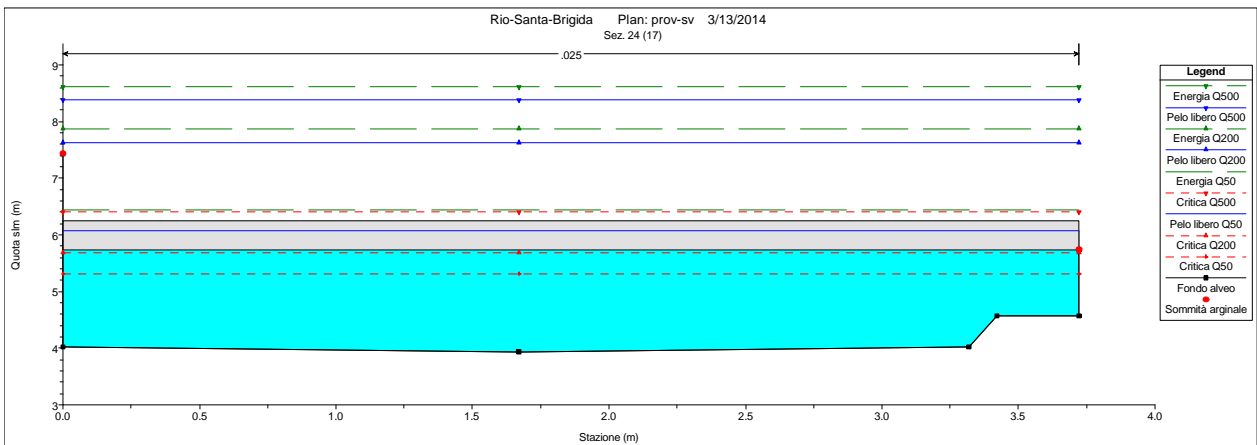
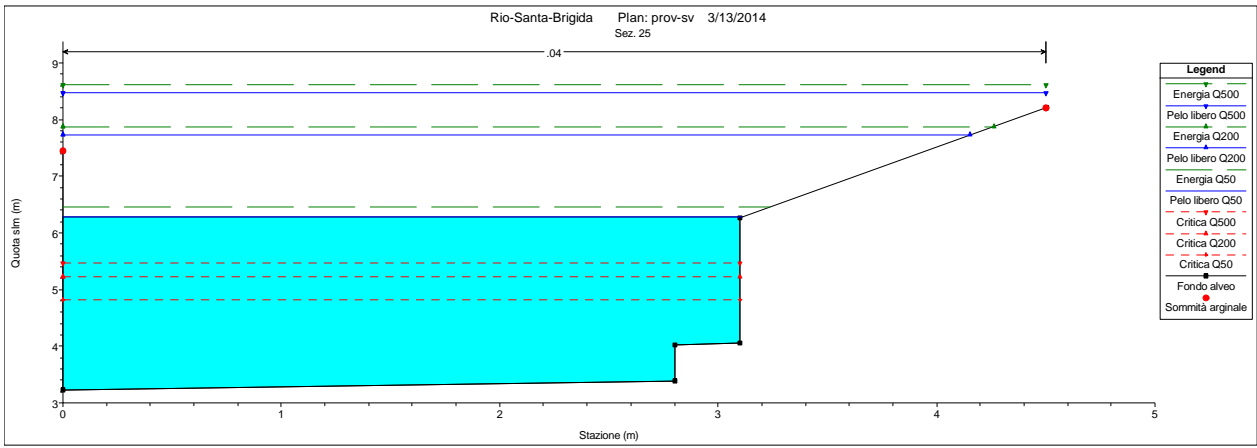
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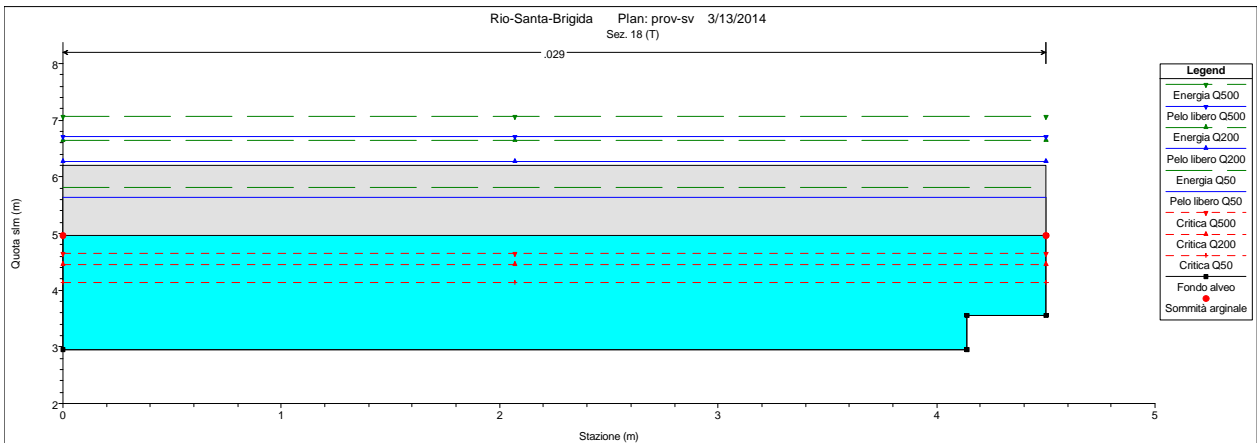
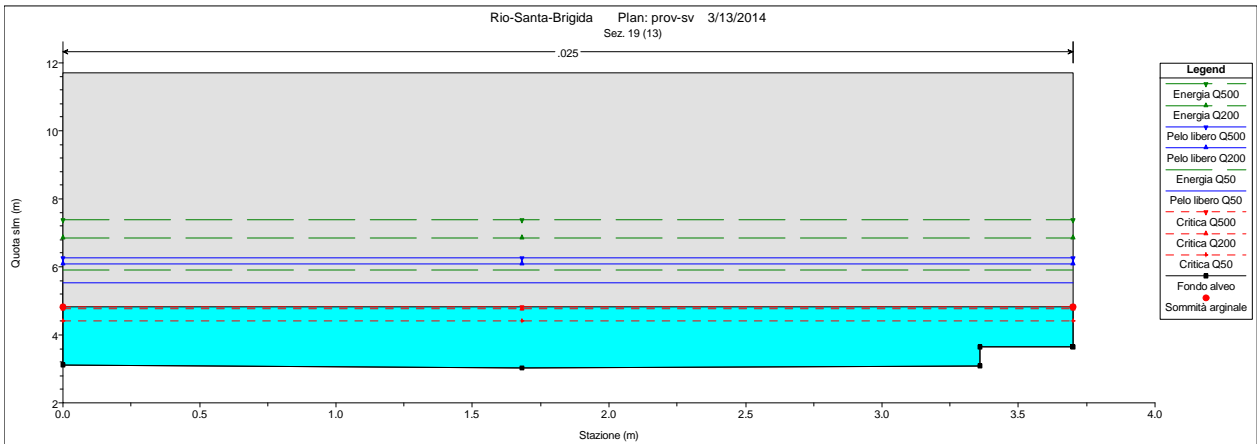
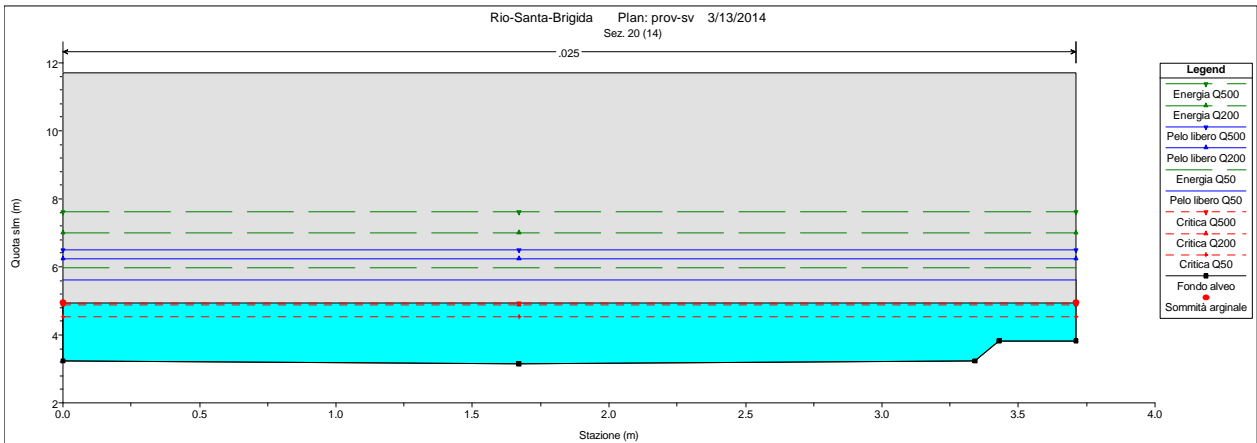
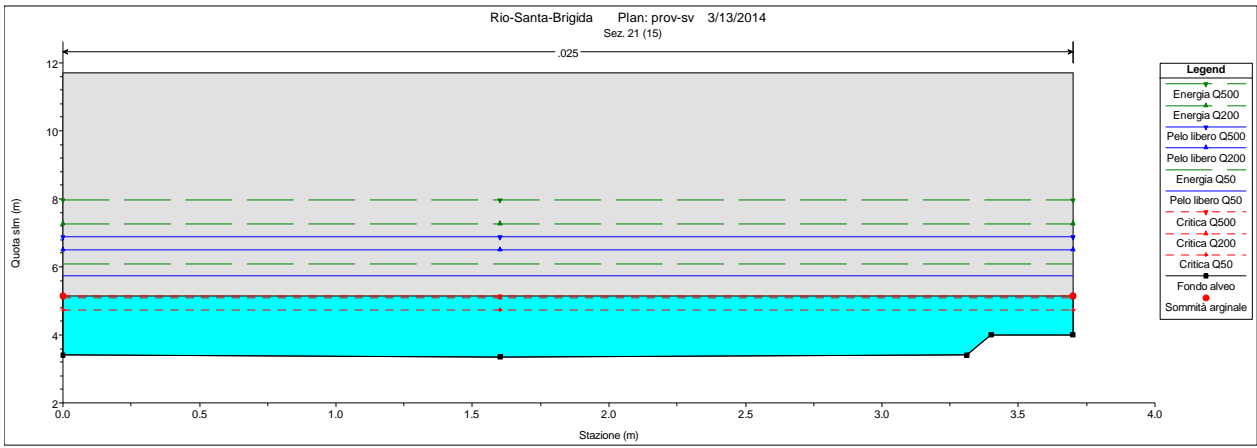
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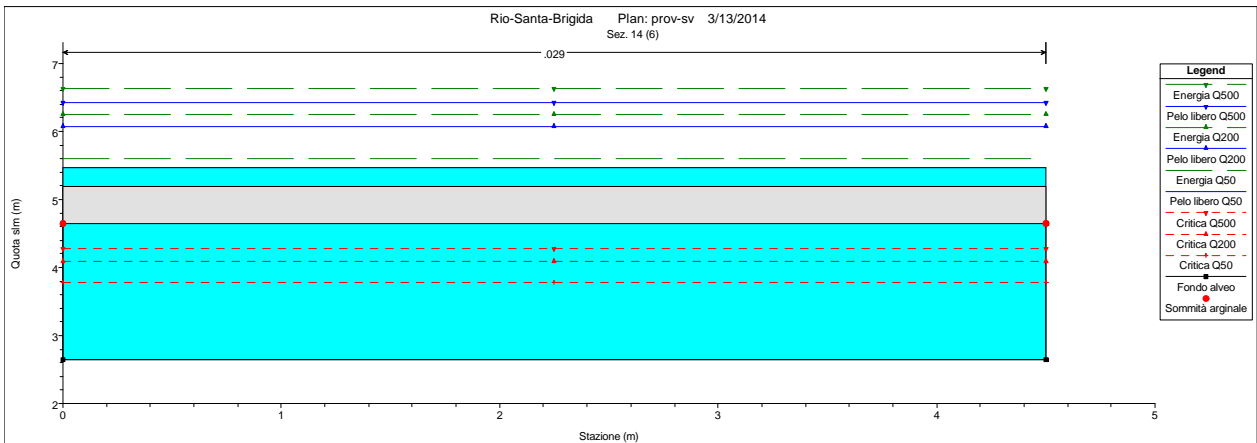
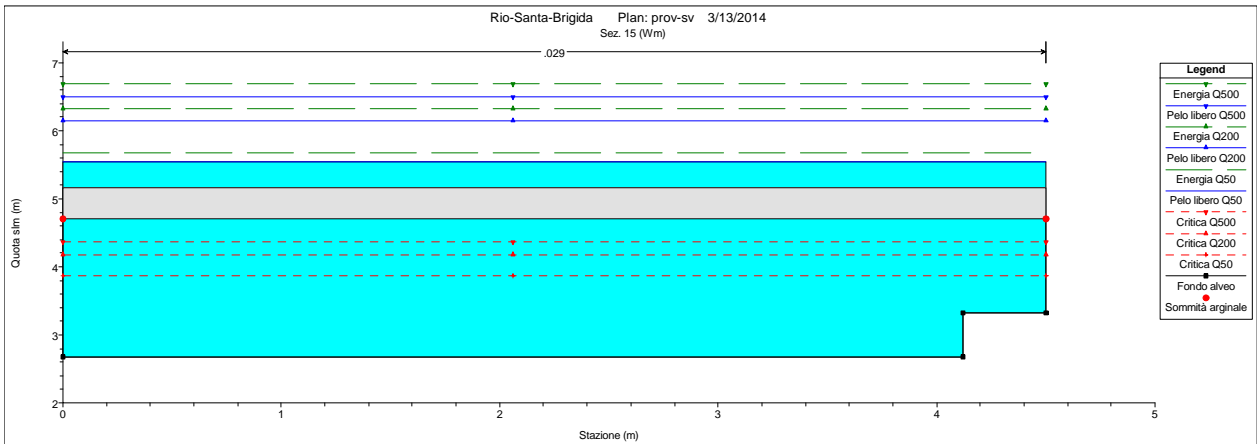
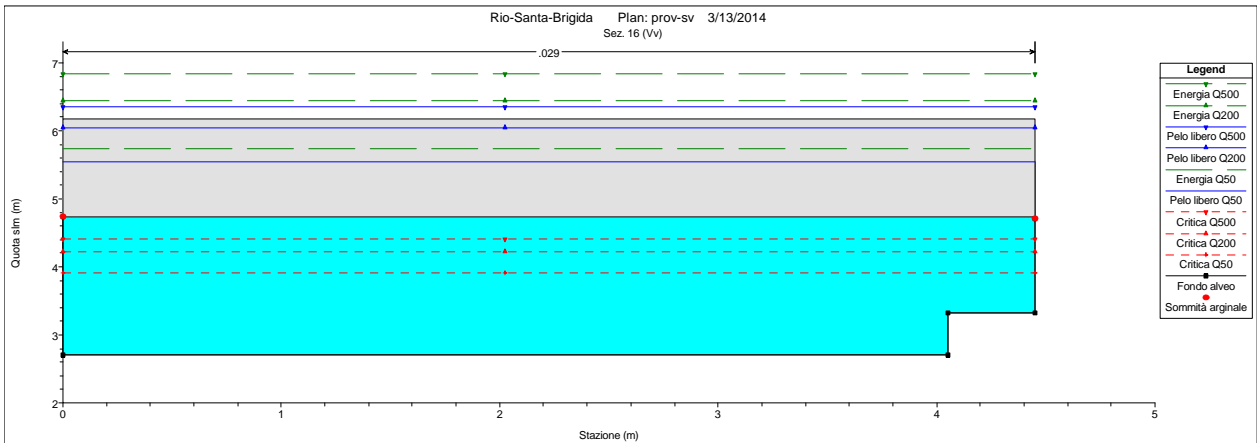
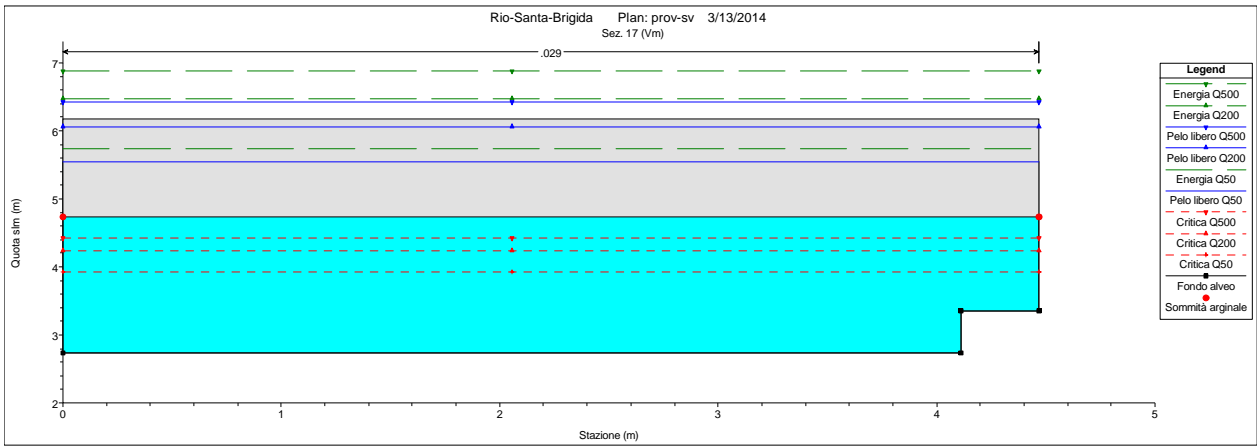
Rio S. Brigida – verifica idraulica – sezioni trasversali



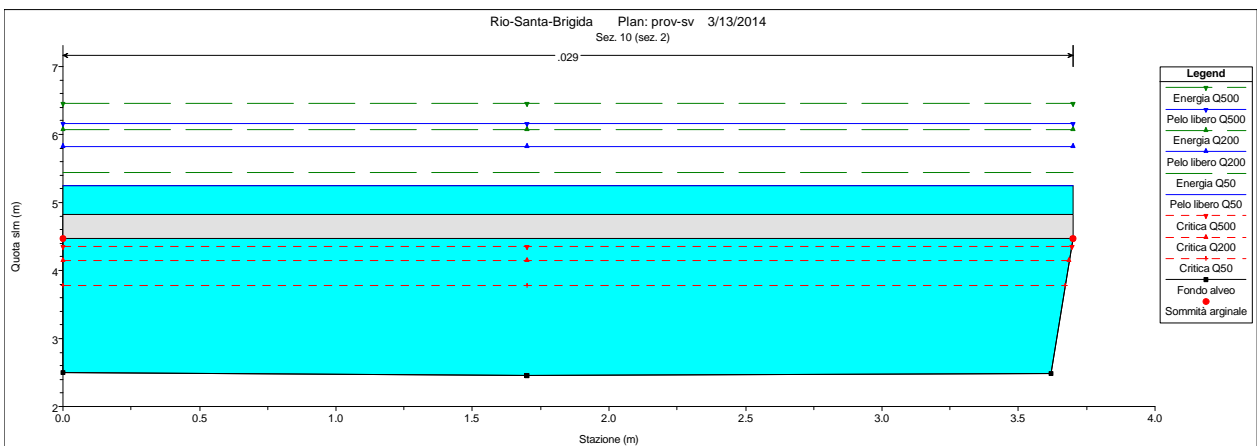
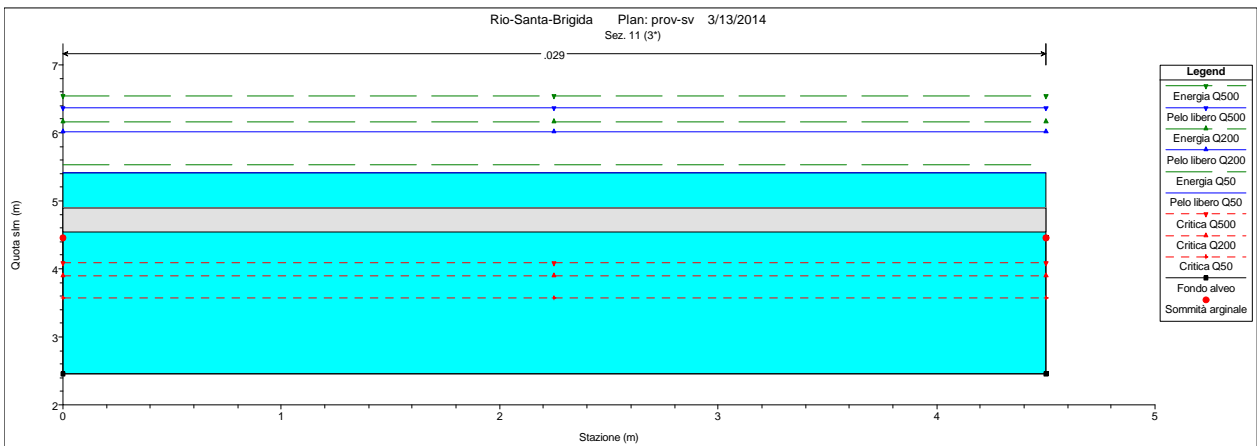
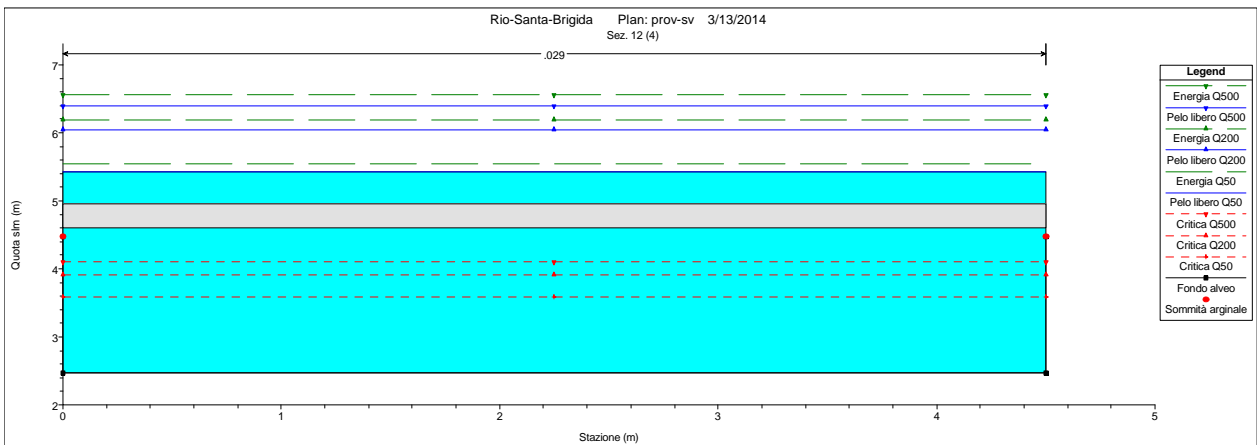
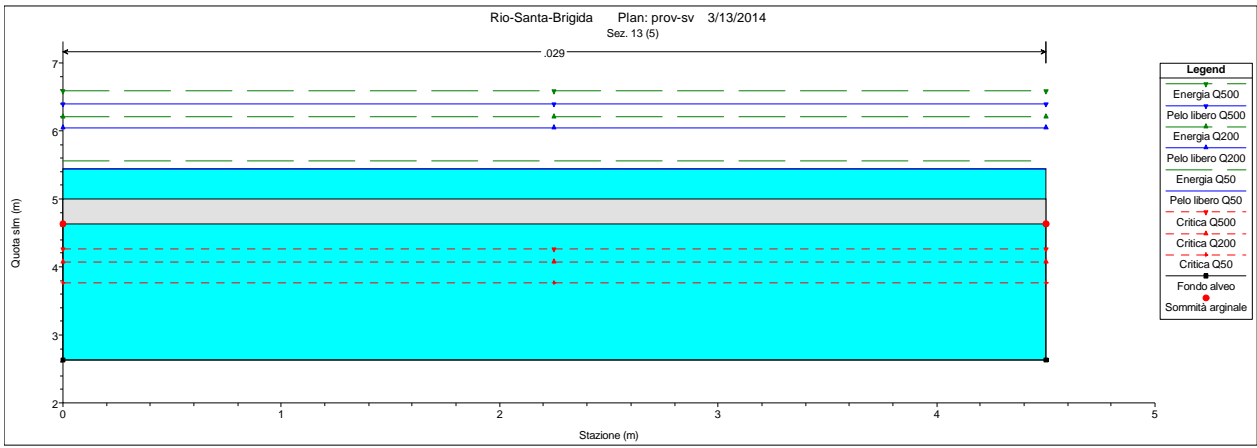
Rio S. Brigida – verifica idraulica – sezioni trasversali



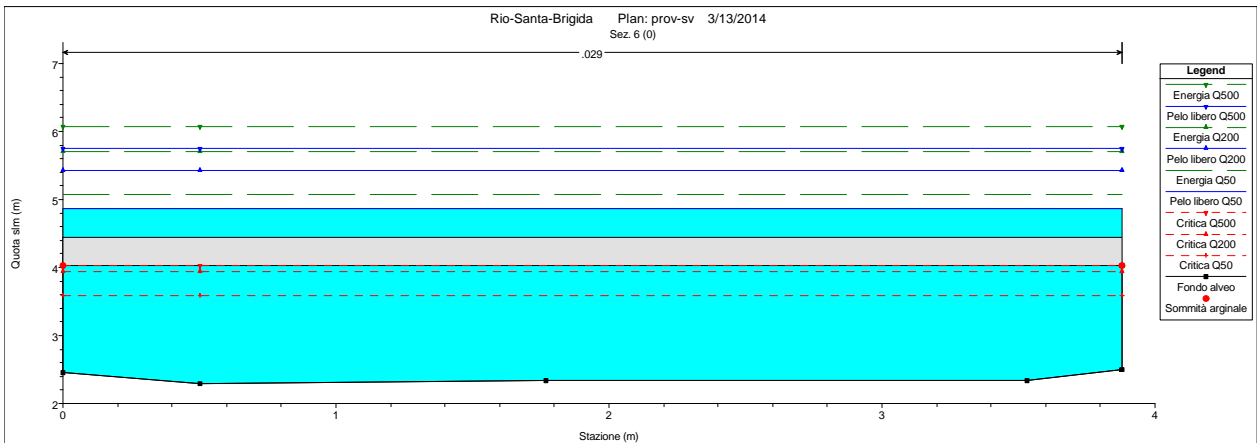
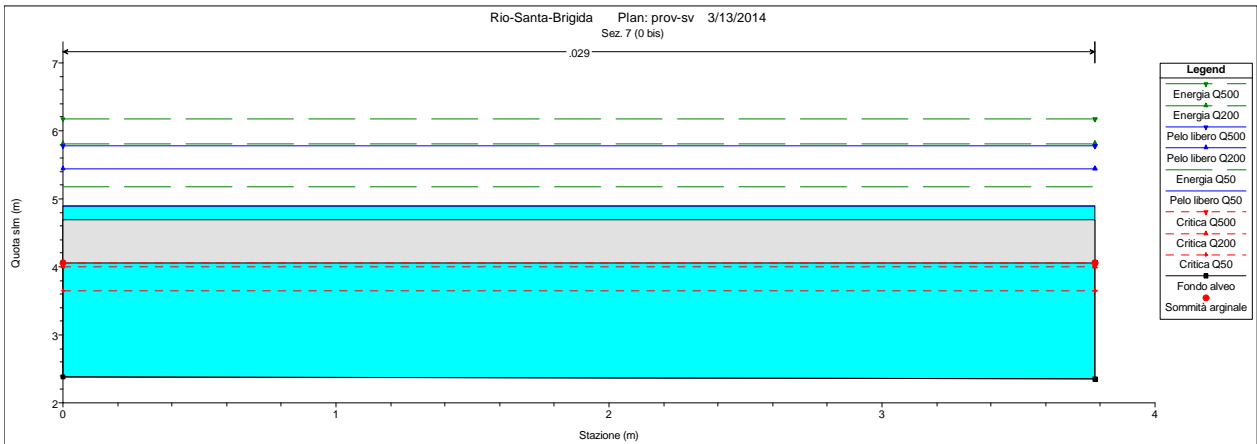
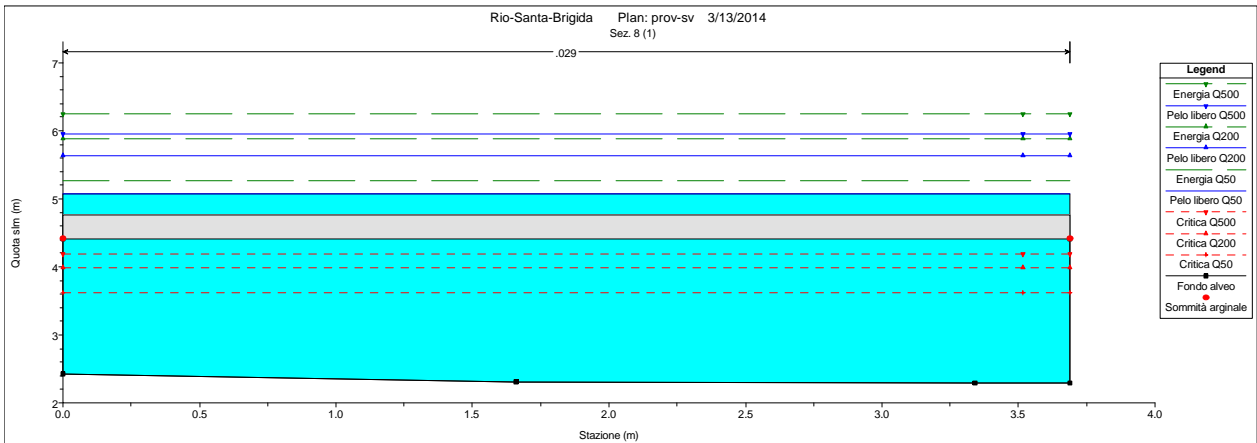
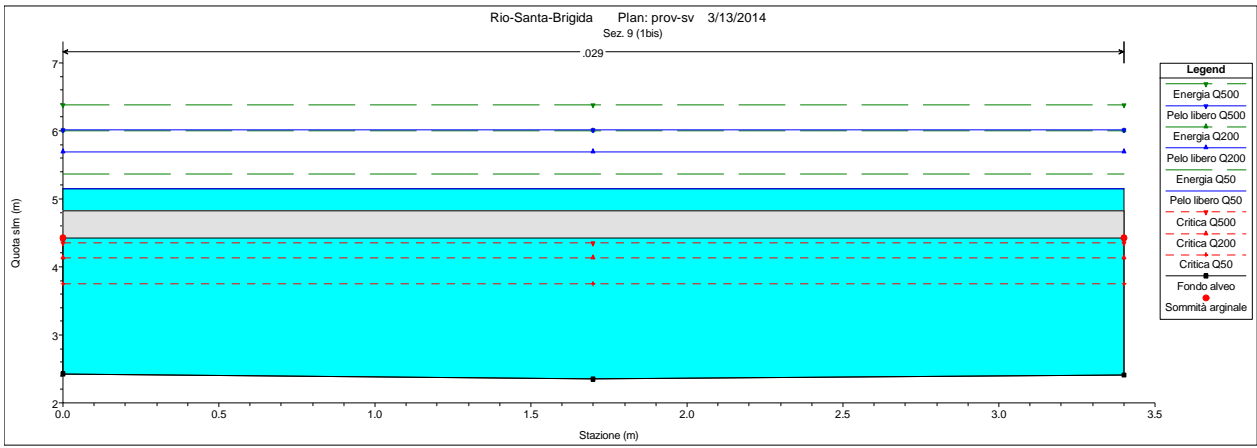
Rio S. Brigida – verifica idraulica – sezioni trasversali



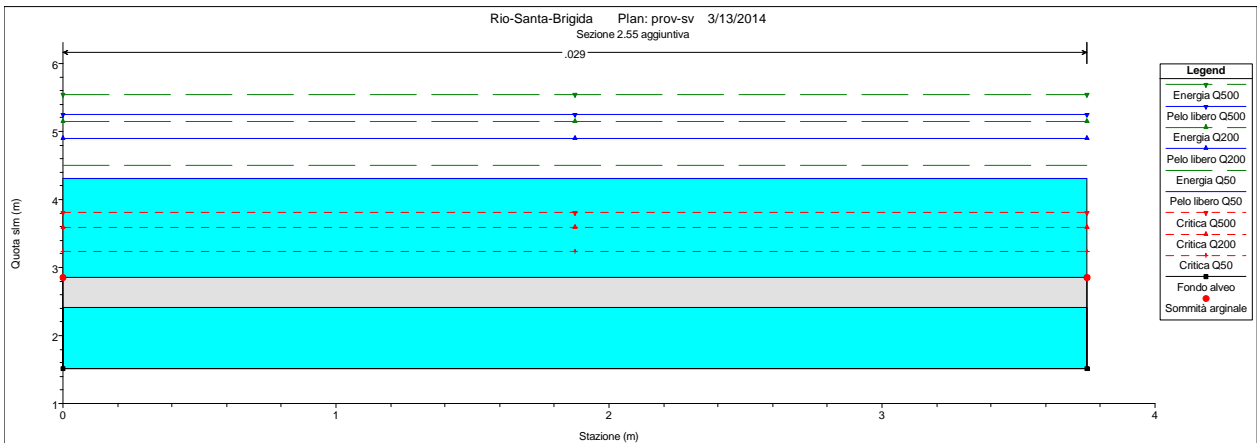
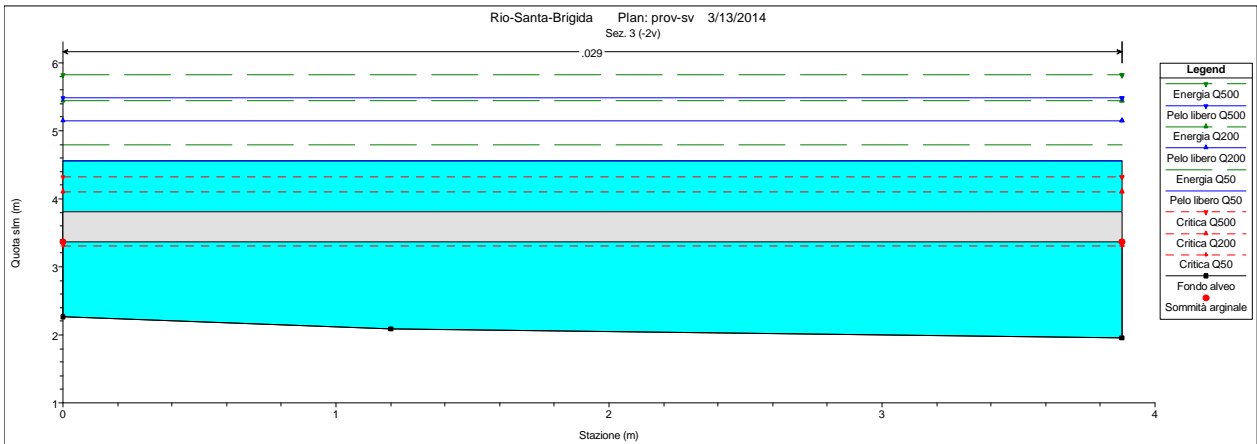
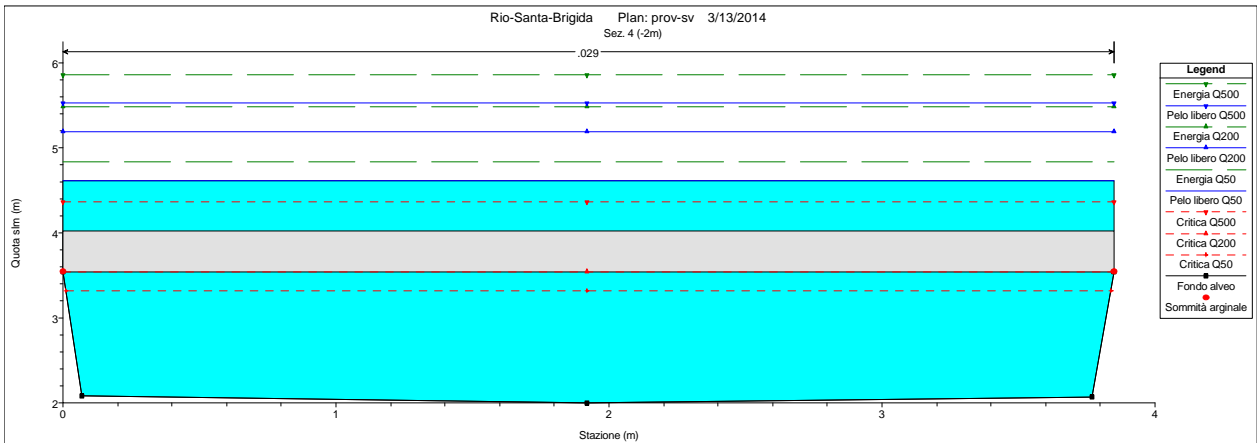
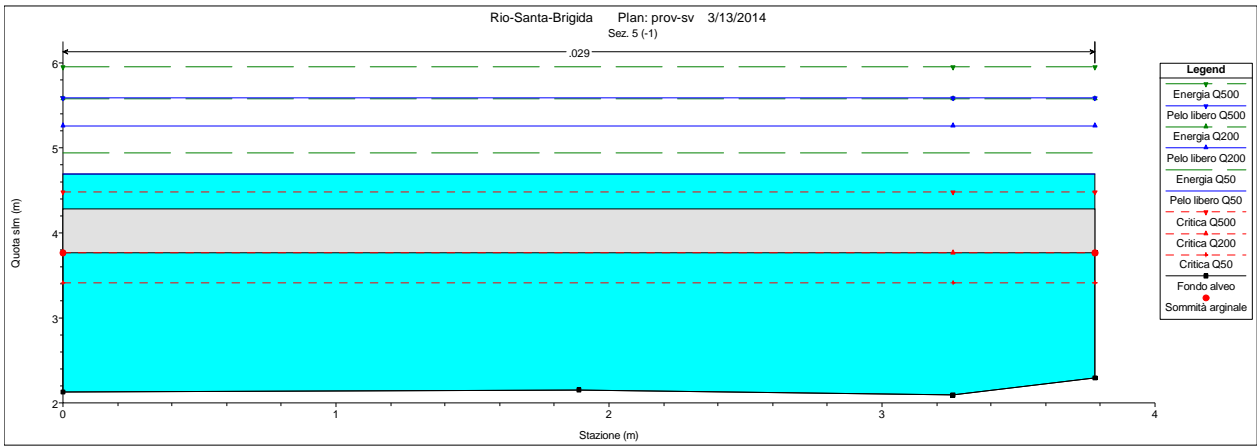
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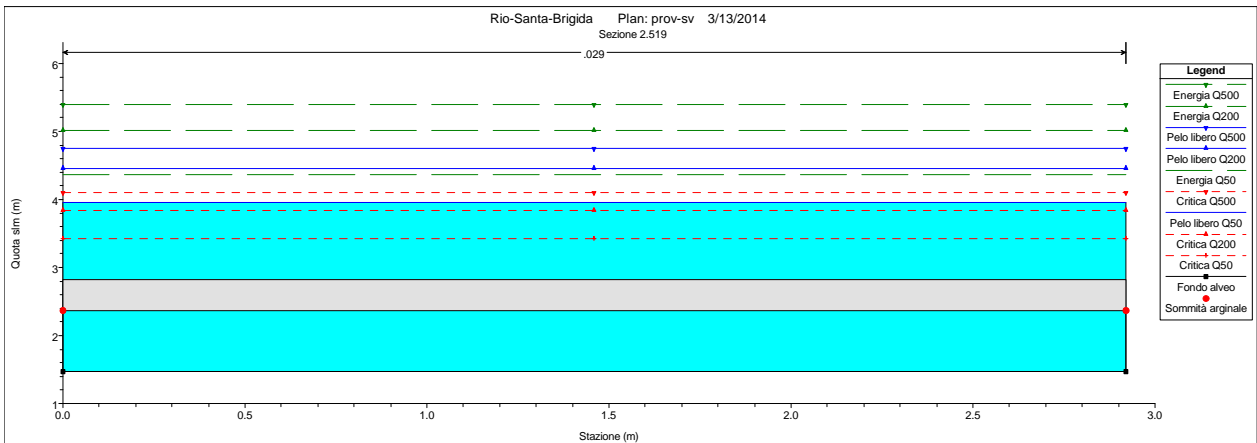
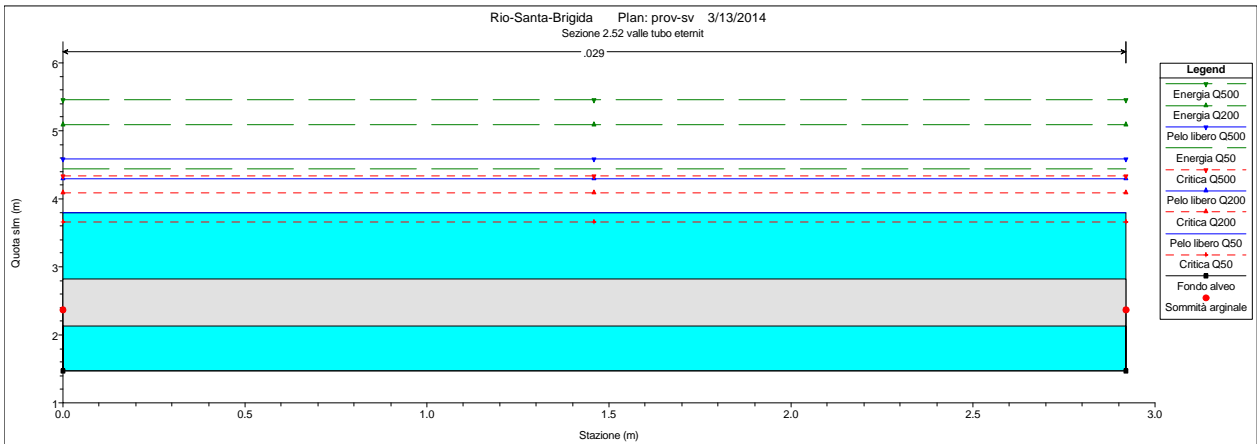
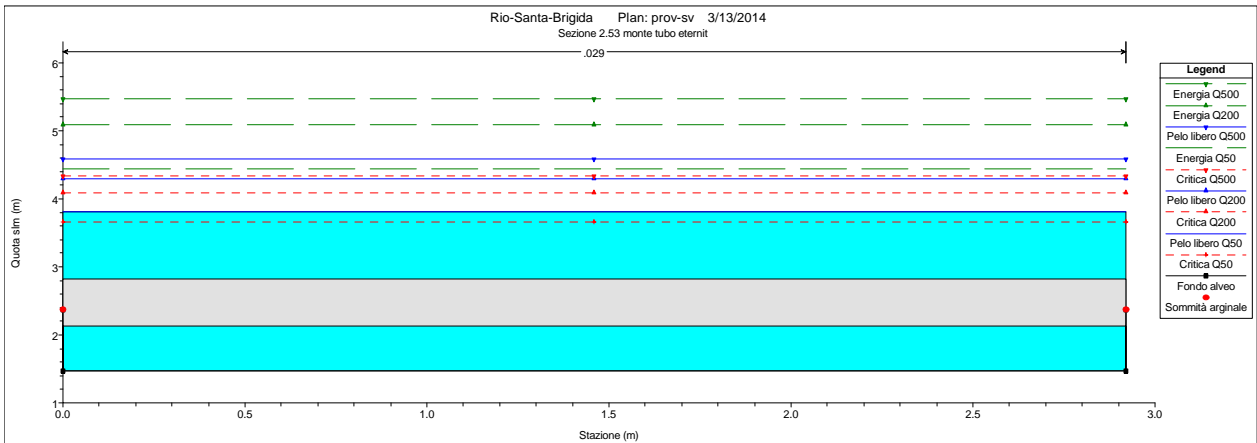
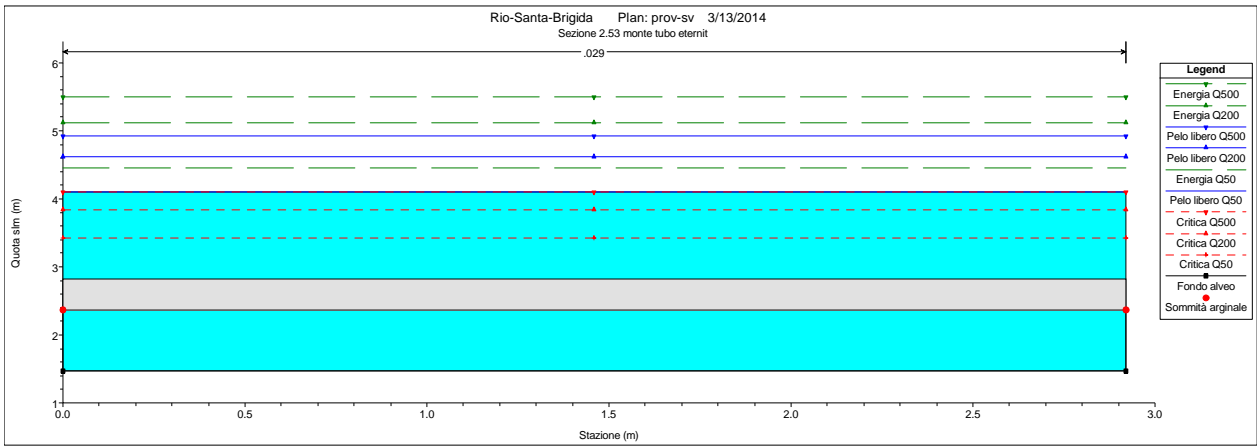
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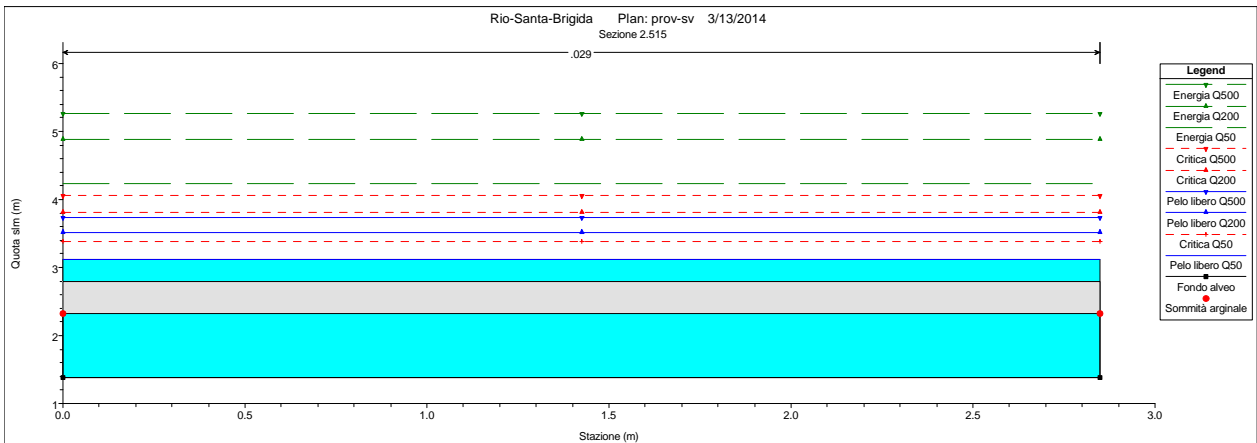
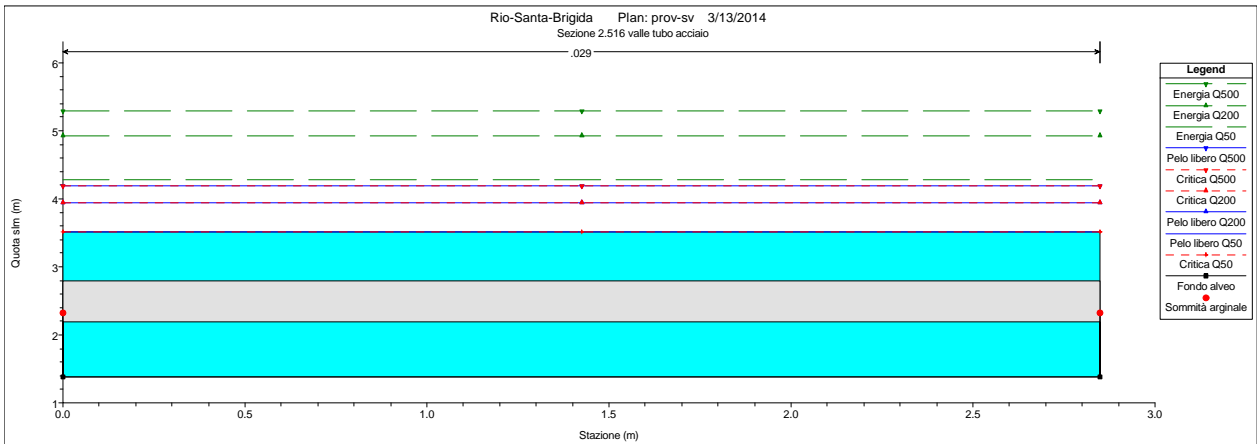
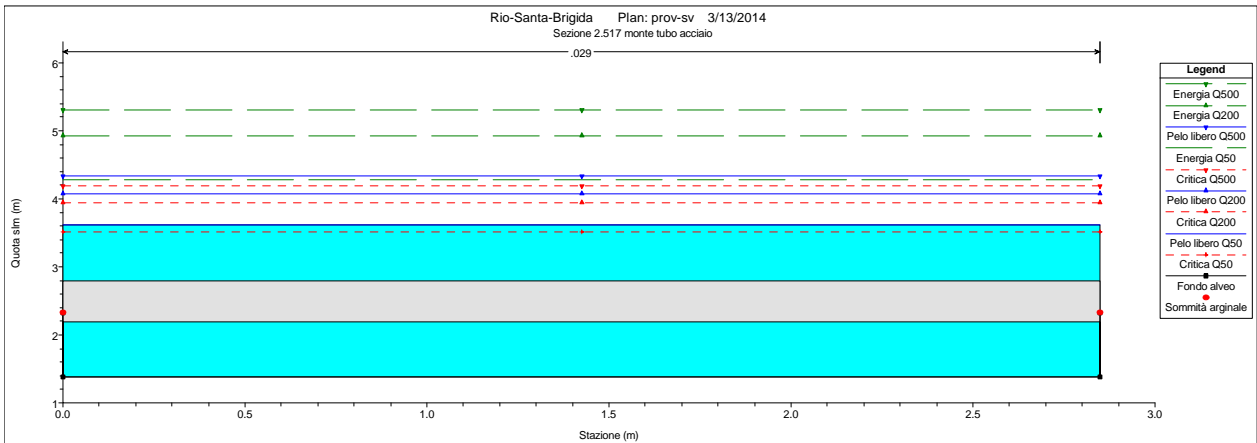
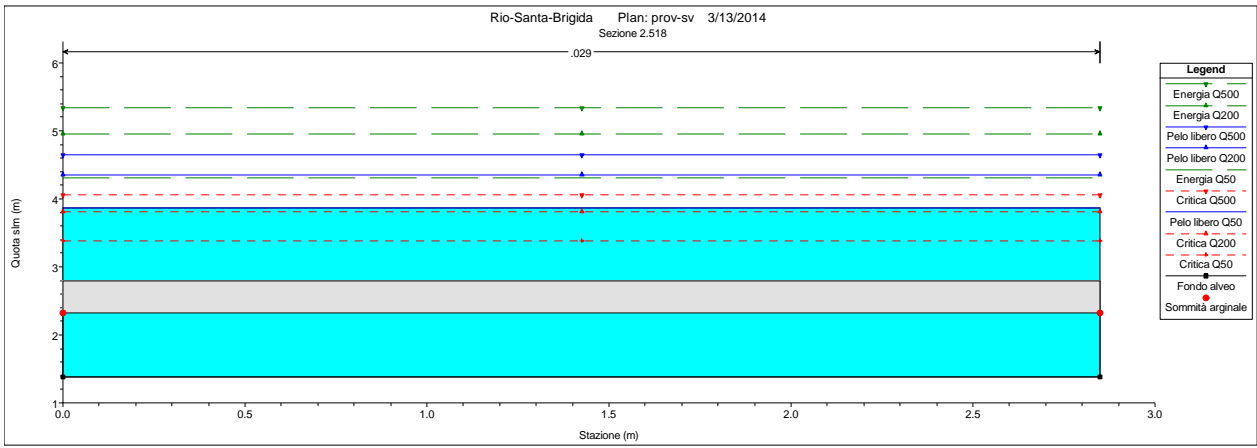
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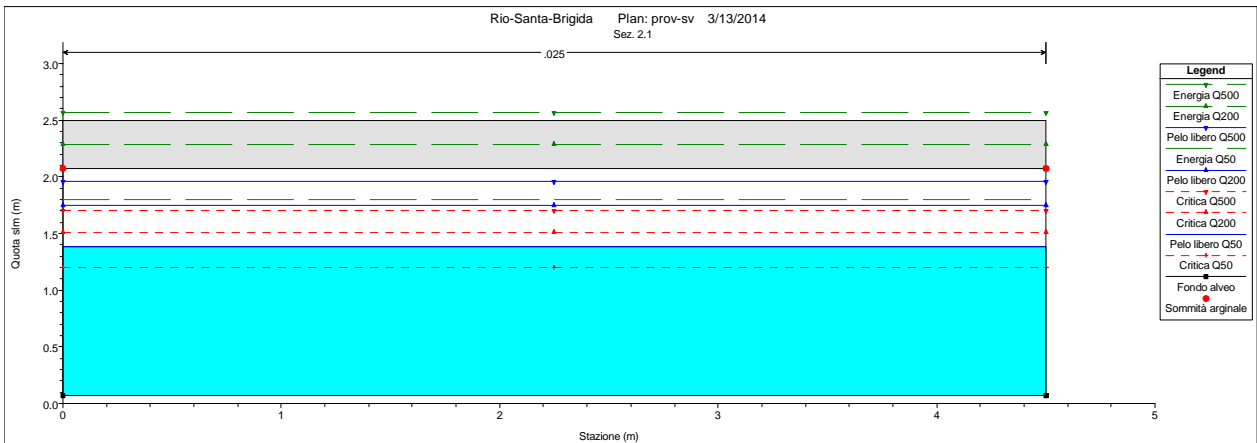
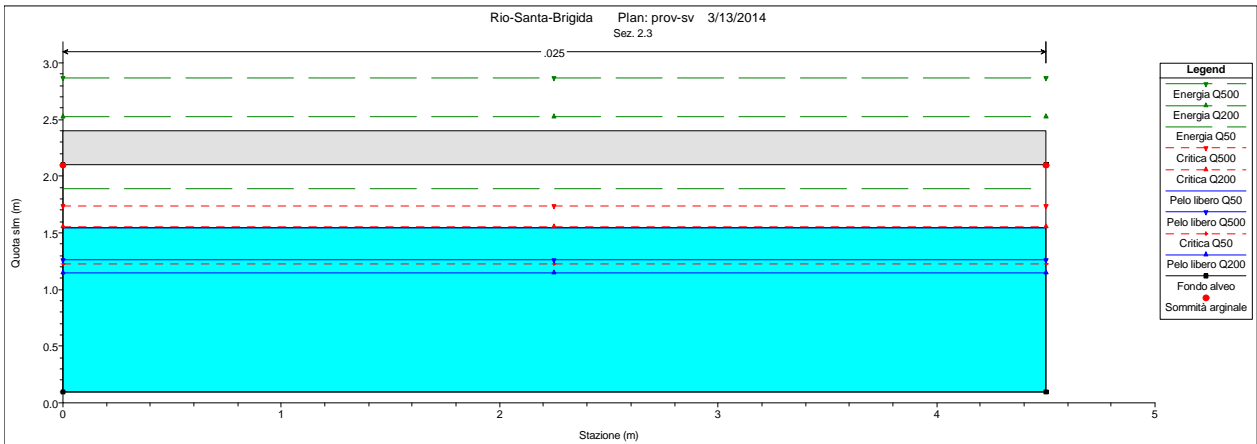
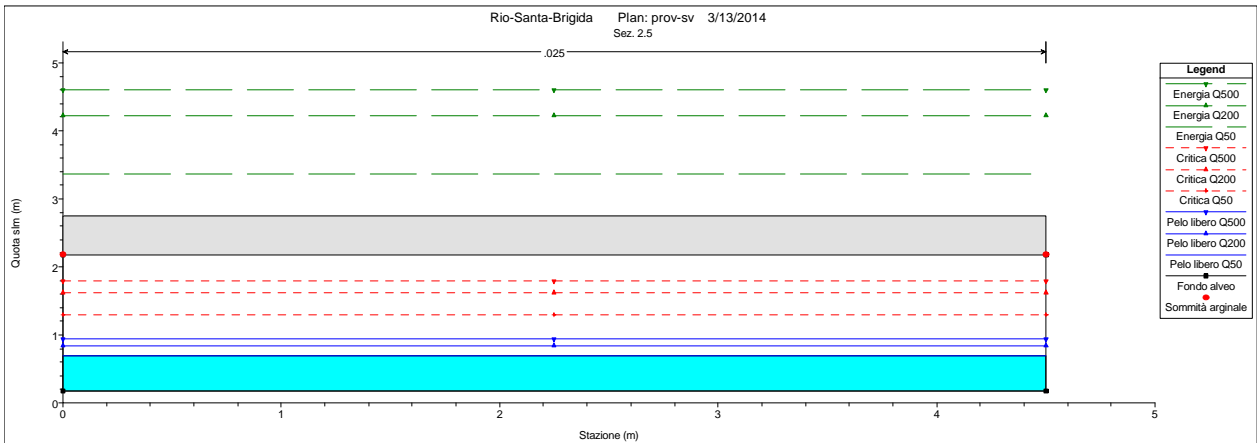
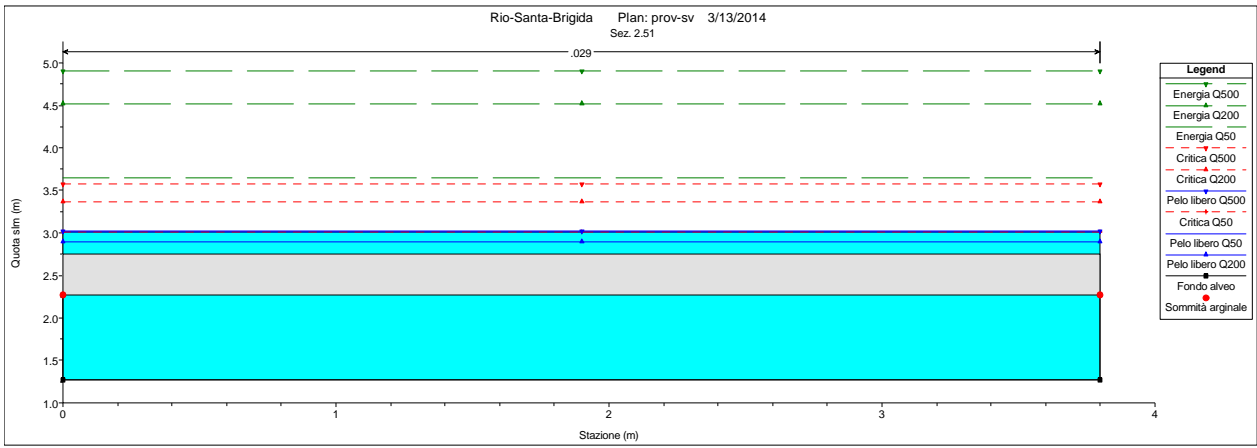
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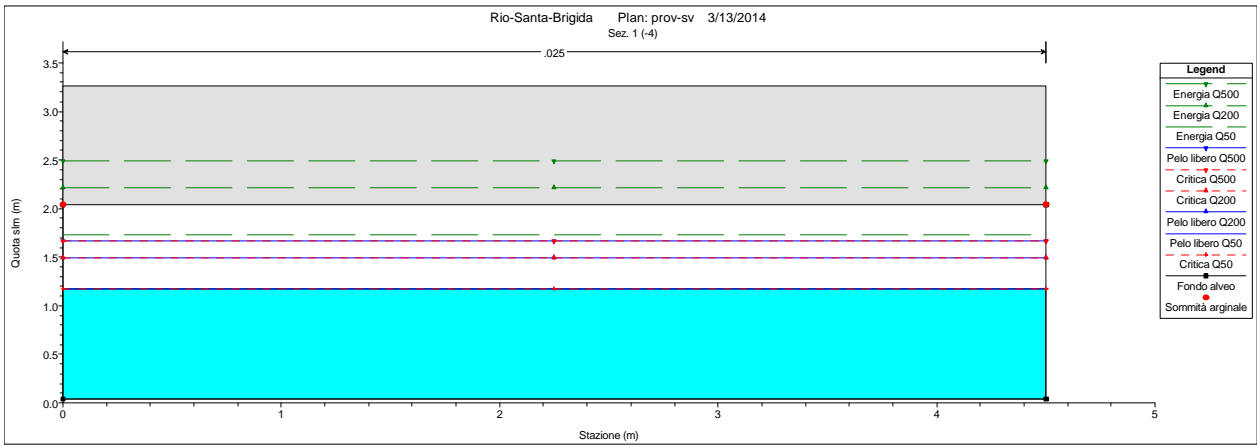
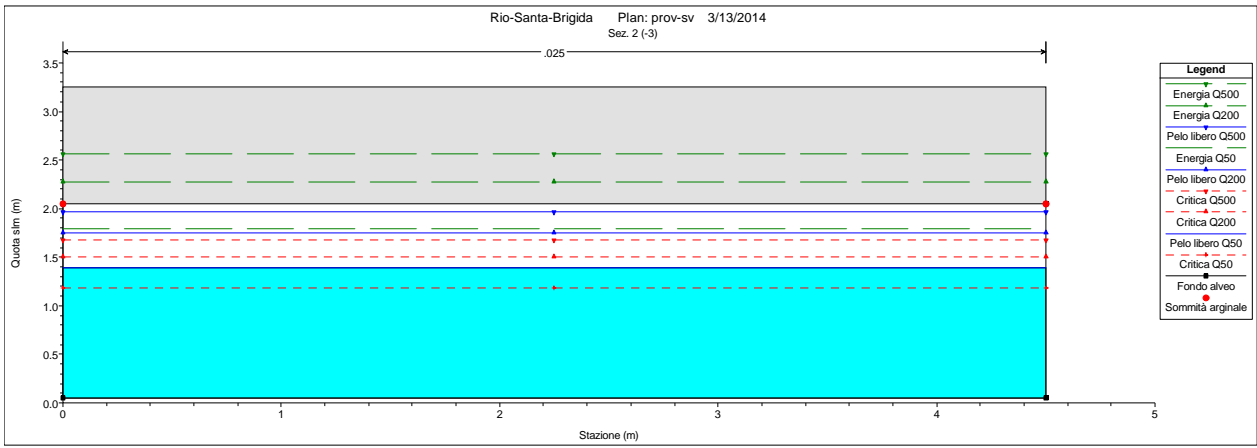
Rio S. Brigida – verifica idraulica – sezioni trasversali



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Rio S. Brigida – verifica idraulica – sezioni trasversali





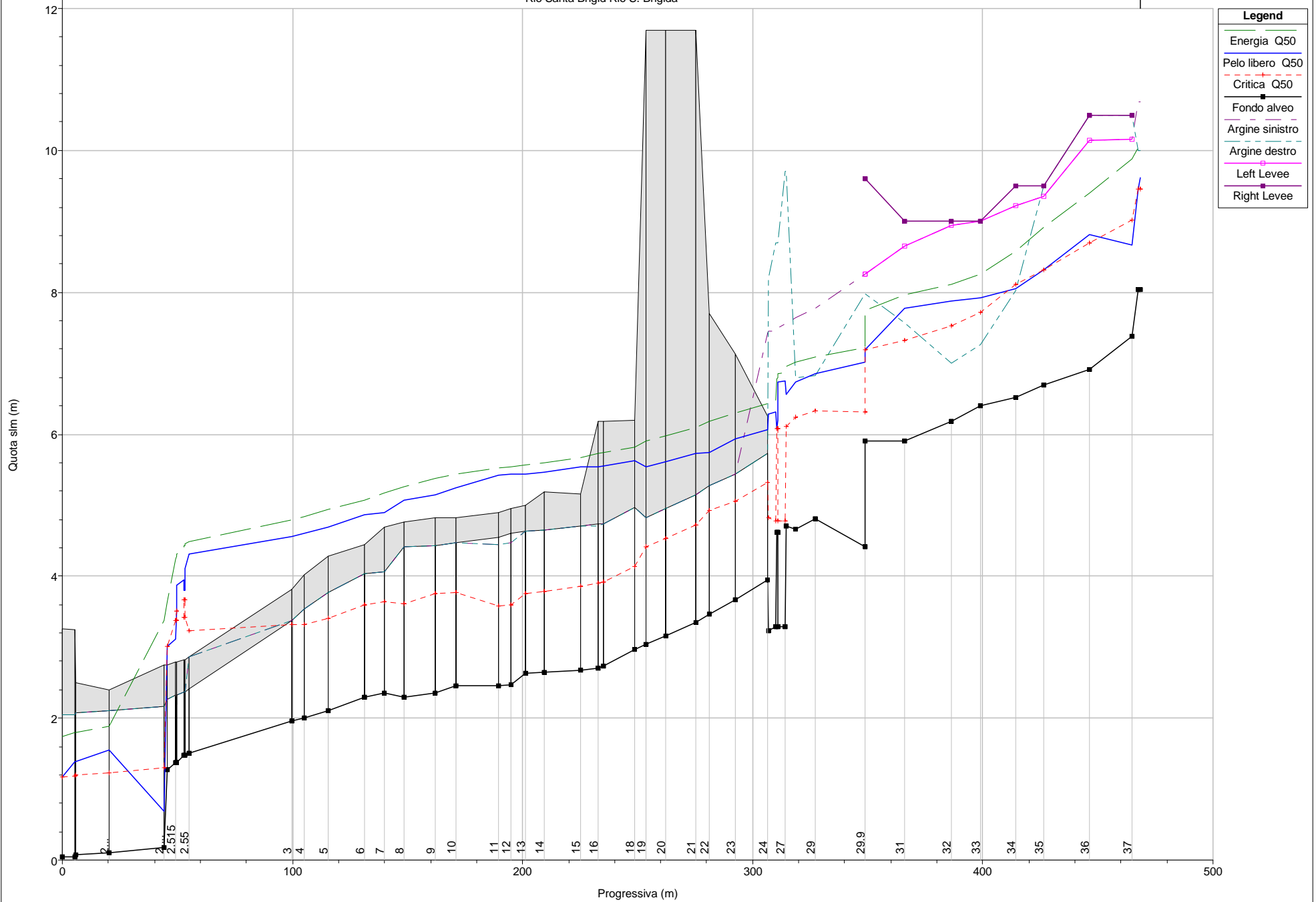
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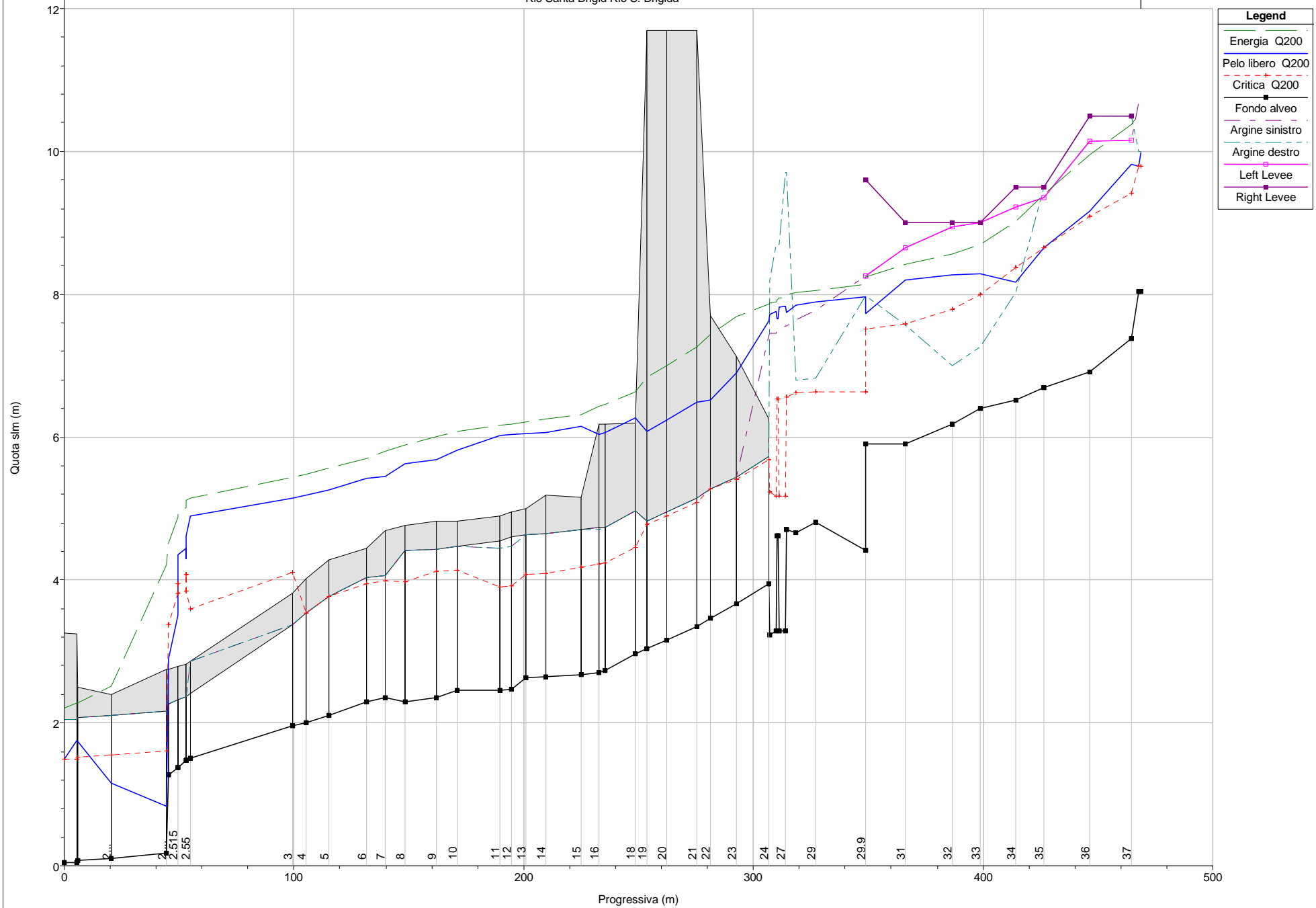
RIO S. BRIGIDA

**PROFILI DI RIGURGITO IN CONDIZIONI DI MOTO
PERMANENTE PER LE PORTATE T=50, 200, 500 ANNI**

Profilo di moto permanente - T= 50 anni
 Rio Santa Brigid Rio S. Brigida

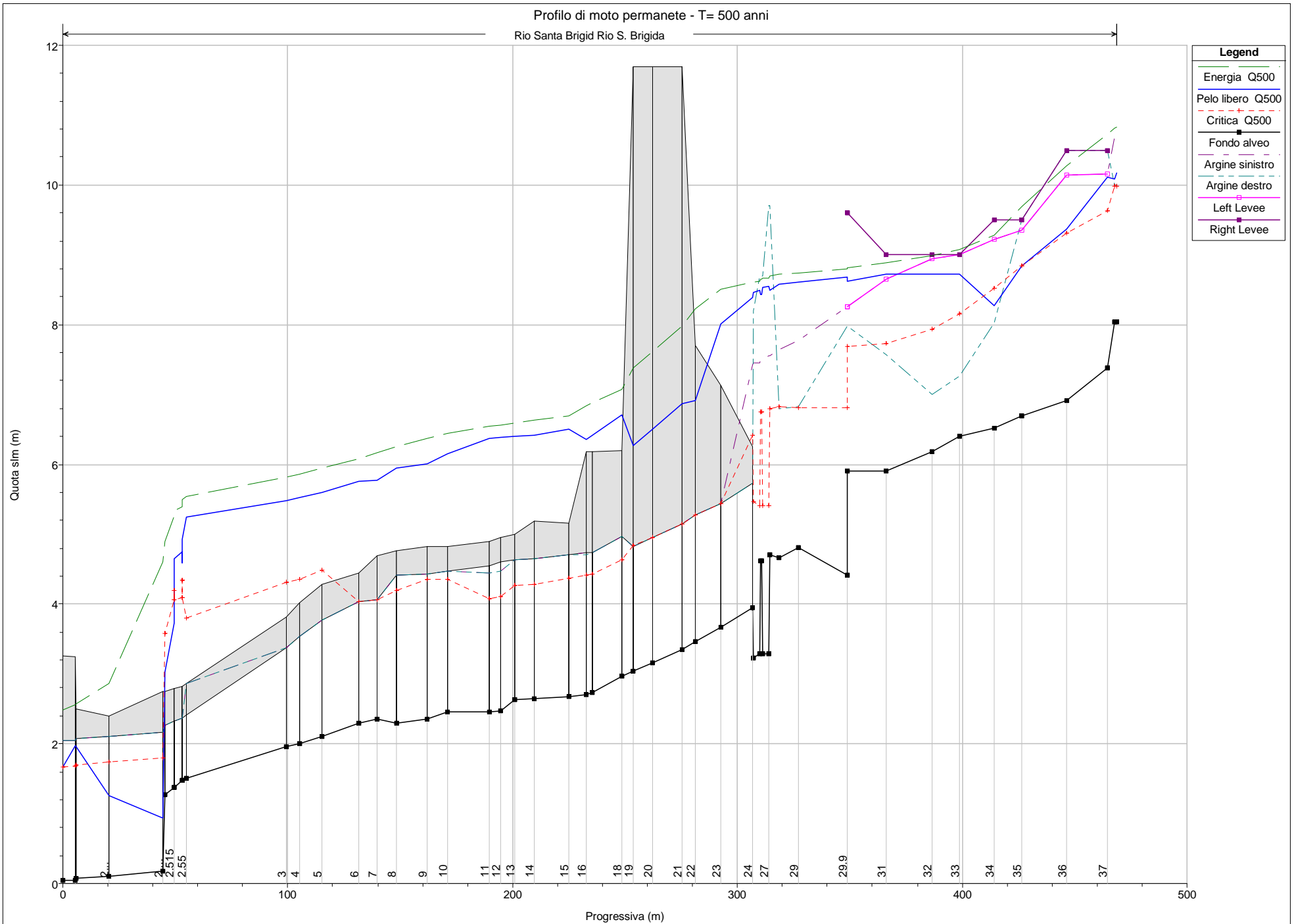


Profilo di moto permanente - T= 200 anni
 Rio Santa Brigid Rio S. Brigida



Profilo di moto permanente - T= 500 anni

Rio Santa Brigid Rio S. Brigida



Legend	
Energia Q500	Green dashed line
Pelo libero Q500	Blue solid line
Critica Q500	Red dashed line with '+' markers
Fondo alveo	Black solid line with square markers
Argine sinistro	Cyan dashed line with triangle markers
Argine destro	Magenta dashed line with square markers
Left Levee	Purple solid line with square markers
Right Levee	Brown solid line with square markers



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RIO S. BRIGIDA

**TABELLE DELLE GRANDEZZE IDRAULICHE
SIGNIFICATIVE PER LE PORTATE T=50, 200, 500 ANNI.**

Rio S. Brigida T=50 anni										
Sezioni	Portata totale (m ³ /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m ²)	Velocità (m/s)	Area bagnata (m ²)	N° Froude
39	16.9	8.04	10.69	10.00	9.62	9.46	10.07	2.96	5.70	0.83
38	16.9	8.04	10.69	10.00	9.46	9.46	10.04	3.38	5.00	1.01
37	16.9	7.38	10.16	10.50	8.67	9.02	9.88	4.86	3.48	1.52
36	16.9	6.91	10.14	10.50	8.82	8.69	9.39	3.36	5.04	0.88
35	16.9	6.69	9.36	9.50	8.32	8.32	8.91	3.41	4.96	1.00
34	16.9	6.52	9.23	8.02	8.06	8.11	8.58	3.19	5.29	1.10
33	16.9	6.40	9.01	7.26	7.92	7.72	8.25	2.58	6.61	0.76
32	16.9	6.18	8.94	7.00	7.87	7.53	8.11	2.18	7.82	0.62
31	16.9	5.91	8.65	7.57	7.77	7.32	7.96	1.94	8.71	0.55
30	16.9	5.91	8.26	7.98	7.20	7.20	7.74	3.27	5.17	1.00
29.9	16.9	4.41	8.26	7.98	7.02	6.32	7.22	2.00	8.44	0.48
29	16.9	4.81	7.78	6.83	6.85	6.33	7.08	2.12	7.99	0.55
28	16.9	4.66	7.65	6.80	6.74	6.24	7.01	2.31	7.33	0.62
27.1	16.9	4.70	7.55	9.70	6.56	6.11	6.95	2.78	6.08	0.70
27	16.9	3.29	7.55	9.70	6.75	4.77	6.86	1.52	11.09	0.29
26.4	16.9	3.29	7.50	8.70	6.73	4.77	6.85	1.53	11.04	0.29
26.3	16.9	4.62	7.50	8.70	6.20	6.07	6.80	3.43	4.92	0.88
26.2	16.9	4.62	7.50	8.70	6.08	6.08	6.79	3.74	4.52	1.00
26.1	16.9	3.29	7.45	8.70	6.32	4.77	6.48	1.78	9.48	0.35
25	16.9	3.23	7.45	8.20	6.28	4.82	6.46	1.88	8.99	0.35
24	16.9	3.94	5.73	5.73	6.07	5.32	6.44	2.69	6.29	0.59
23	16.9	3.67	5.44	5.44	5.93	5.05	6.30	2.72	6.21	0.58
22	16.9	3.46	5.27	5.27	5.75	4.93	6.18	2.92	5.79	0.62
21	16.9	3.34	5.14	5.14	5.73	4.72	6.10	2.68	6.30	0.55
20	16.9	3.16	4.95	4.95	5.61	4.54	5.98	2.68	6.30	0.55
19	16.9	3.04	4.83	4.83	5.53	4.42	5.90	2.68	6.30	0.54
18	16.9	2.96	4.97	4.97	5.63	4.14	5.81	1.91	8.83	0.37
17	16.9	2.74	4.74	4.74	5.55	3.92	5.74	1.94	8.72	0.37
16	16.9	2.71	4.74	4.74	5.54	3.90	5.73	1.92	8.79	0.36
15	16.9	2.68	4.71	4.71	5.55	3.86	5.68	1.59	10.63	0.30
14	16.9	2.65	4.65	4.65	5.47	3.78	5.60	1.65	10.24	0.31
13	16.9	2.63	4.63	4.63	5.44	3.76	5.56	1.54	11.00	0.29
12	16.9	2.47	4.60	4.60	5.43	3.59	5.54	1.44	11.71	0.27
11	16.9	2.45	4.54	4.54	5.42	3.58	5.52	1.44	11.73	0.27
10	16.9	2.45	4.47	4.47	5.25	3.78	5.44	1.90	8.88	0.36
9	16.9	2.36	4.43	4.43	5.15	3.75	5.37	2.11	8.01	0.40
8	16.9	2.29	4.41	4.41	5.08	3.62	5.26	1.91	8.85	0.36
7	16.9	2.36	4.06	4.06	4.90	3.64	5.18	2.36	7.17	0.47
6	16.9	2.29	4.03	4.03	4.86	3.59	5.08	2.07	8.18	0.41
5	16.9	2.10	3.77	3.77	4.69	3.41	4.94	2.19	7.71	0.43
4	16.9	2.00	3.54	3.54	4.61	3.31	4.84	2.13	7.94	0.42
3	16.9	1.96	3.37	3.37	4.56	3.32	4.79	2.12	7.96	0.42
2.55	16.9	1.51	2.41	2.41	4.31	3.24	4.49	1.92	8.80	0.37
2.531	16.9	1.47	2.37	2.37	4.10	3.43	4.46	2.65	6.38	0.52
2.53	16.9	1.47	2.13	2.13	3.80	3.67	4.44	3.52	4.80	0.74
2.52	16.9	1.47	2.13	2.13	3.80	3.67	4.43	3.53	4.78	0.74
2.519	16.9	1.47	2.37	2.37	3.95	3.43	4.36	2.85	5.93	0.58
2.518	16.9	1.38	2.32	2.32	3.87	3.38	4.31	2.94	5.75	0.60
2.517	16.9	1.38	2.19	2.19	3.62	3.51	4.29	3.61	4.68	0.77
2.516	16.9	1.38	2.19	2.19	3.51	3.51	4.28	3.87	4.36	0.85
2.515	16.9	1.38	2.32	2.32	3.12	3.38	4.23	4.68	3.61	1.13
2.51	16.9	1.27	2.27	2.27	3.01	3.01	3.64	3.52	4.81	0.85
2.5	16.9	0.17	2.17	2.17	0.69	1.30	3.37	7.26	2.33	3.22
2.3	16.9	0.10	2.10	2.10	1.55	1.23	1.89	2.59	6.51	0.69
2.1	16.9	0.07	2.07	2.07	1.38	1.20	1.80	2.86	5.90	0.80
2	16.9	0.05	2.05	2.05	1.39	1.18	1.79	2.80	6.03	0.77
1	16.9	0.04	2.04	2.04	1.17	1.17	1.73	3.32	5.09	1.00

Rio S. Brigida T=200 anni										
Sezioni	Portata totale (m ³ /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m ²)	Velocità (m/s)	Area bagnata (m ²)	N° Froude
39	24.5	8.04	10.69	10.00	9.98	9.79	10.55	3.34	7.33	0.84
38	24.5	8.04	10.69	10.00	9.79	9.79	10.53	3.79	6.46	1.01
37	24.5	7.38	10.16	10.50	9.82	9.41	10.37	3.30	7.43	0.73
36	24.5	6.91	10.14	10.50	9.16	9.09	9.95	3.93	6.23	0.94
35	24.5	6.69	9.36	9.50	8.66	8.66	9.40	3.84	6.39	1.00
34	24.5	6.52	9.23	8.02	8.18	8.37	9.02	4.07	6.03	1.31
33	24.5	6.40	9.01	7.26	8.29	8.00	8.69	2.82	8.79	0.73
32	24.5	6.18	8.94	7.00	8.27	7.79	8.56	2.40	10.37	0.60
31	24.5	5.91	8.65	7.57	8.19	7.59	8.42	2.12	11.64	0.52
30	24.5	5.91	8.26	7.98	7.73	7.51	8.25	3.18	7.70	0.80
29.9	24.5	4.41	8.26	7.98	7.96	6.64	8.14	1.89	12.94	0.37
29	24.5	4.81	7.78	6.83	7.89	6.64	8.06	1.80	13.60	0.38
28	24.5	4.66	7.65	6.80	7.85	6.62	8.03	1.84	13.33	0.37
27.1	24.5	4.70	7.55	9.70	7.74	6.56	8.00	2.24	10.96	0.46
27	24.5	3.29	7.55	9.70	7.83	5.17	7.96	1.57	15.64	0.27
26.4	24.5	3.29	7.50	8.70	7.82	5.17	7.95	1.57	15.59	0.27
26.3	24.5	4.62	7.50	8.70	7.67	6.53	7.93	2.28	10.73	0.47
26.2	24.5	4.62	7.50	8.70	7.66	6.53	7.93	2.29	10.71	0.47
26.1	24.5	3.29	7.45	8.70	7.76	5.17	7.89	1.60	15.29	0.28
25	24.5	3.23	7.45	8.20	7.72	5.23	7.87	1.72	14.23	0.30
24	24.5	3.94	5.73	5.73	7.63	5.68	7.86	2.15	11.42	0.36
23	24.5	3.67	5.44	5.44	6.90	5.41	7.69	3.95	6.21	0.70
22	24.5	3.46	5.27	5.27	6.52	5.27	7.43	4.23	5.79	0.77
21	24.5	3.34	5.14	5.14	6.49	5.08	7.26	3.89	6.30	0.70
20	24.5	3.16	4.95	4.95	6.24	4.89	7.01	3.89	6.30	0.71
19	24.5	3.04	4.83	4.83	6.07	4.77	6.84	3.89	6.30	0.71
18	24.5	2.96	4.97	4.97	6.28	4.45	6.64	2.67	9.17	0.47
17	24.5	2.74	4.74	4.74	6.06	4.24	6.46	2.81	8.72	0.49
16	24.5	2.71	4.74	4.74	6.04	4.22	6.44	2.79	8.79	0.49
15	24.5	2.68	4.71	4.71	6.15	4.18	6.32	1.84	13.34	0.31
14	24.5	2.65	4.65	4.65	6.07	4.09	6.25	1.89	12.96	0.33
13	24.5	2.63	4.63	4.63	6.05	4.07	6.21	1.79	13.72	0.31
12	24.5	2.47	4.60	4.60	6.04	3.92	6.19	1.70	14.44	0.29
11	24.5	2.45	4.54	4.54	6.02	3.90	6.17	1.70	14.45	0.29
10	24.5	2.45	4.47	4.47	5.82	4.14	6.08	2.23	10.99	0.39
9	24.5	2.36	4.43	4.43	5.69	4.13	6.01	2.48	9.87	0.43
8	24.5	2.29	4.41	4.41	5.63	3.98	5.89	2.25	10.89	0.39
7	24.5	2.36	4.06	4.06	5.45	3.99	5.81	2.65	9.25	0.48
6	24.5	2.29	4.03	4.03	5.42	3.94	5.71	2.37	10.36	0.43
5	24.5	2.10	3.77	3.77	5.26	3.77	5.57	2.49	9.85	0.45
4	24.5	2.00	3.54	3.54	5.19	3.54	5.48	2.41	10.16	0.43
3	24.5	1.96	3.37	3.37	5.15	4.11	5.44	2.40	10.21	0.43
2.55	24.5	1.51	2.41	2.41	4.90	3.59	5.15	2.22	11.02	0.39
2.531	24.5	1.47	2.37	2.37	4.62	3.84	5.11	3.11	7.88	0.56
2.53	24.5	1.47	2.13	2.13	4.30	4.08	5.08	3.93	6.24	0.75
2.52	24.5	1.47	2.13	2.13	4.29	4.08	5.08	3.93	6.23	0.75
2.519	24.5	1.47	2.37	2.37	4.45	3.84	5.01	3.32	7.39	0.61
2.518	24.5	1.38	2.32	2.32	4.36	3.81	4.96	3.43	7.14	0.63
2.517	24.5	1.38	2.19	2.19	4.08	3.94	4.93	4.10	5.97	0.80
2.516	24.5	1.38	2.19	2.19	3.94	3.94	4.92	4.38	5.60	0.87
2.515	24.5	1.38	2.32	2.32	3.51	3.81	4.88	5.19	4.72	1.13
2.51	24.5	1.27	2.27	2.27	2.89	3.37	4.51	5.64	4.34	1.41
2.5	24.5	0.17	2.17	2.17	0.84	1.61	4.22	8.14	3.01	3.18
2.3	24.5	0.10	2.10	2.10	1.15	1.55	2.52	5.19	4.72	1.62
2.1	24.5	0.07	2.07	2.07	1.74	1.51	2.28	3.25	7.54	0.80
2	24.5	0.05	2.05	2.05	1.75	1.50	2.27	3.19	7.67	0.78
1	24.5	0.04	2.04	2.04	1.49	1.49	2.21	3.76	6.52	1.00

Rio S. Brigida T=500 anni										
Sezioni	Portata totale (m ³ /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m ²)	Velocità (m/s)	Area bagnata (m ²)	N° Froude
39	29.4	8.04	10.69	10.00	10.17	9.99	10.83	3.60	8.17	0.86
38	29.4	8.04	10.69	10.00	10.09	9.99	10.81	3.76	7.81	0.92
37	29.4	7.38	10.16	10.50	10.12	9.63	10.73	3.46	8.50	0.72
36	29.4	6.91	10.14	10.50	9.37	9.32	10.28	4.23	6.95	0.96
35	29.4	6.69	9.36	9.50	8.85	8.85	9.69	4.07	7.22	1.00
34	29.4	6.52	9.23	8.02	8.27	8.52	9.28	4.46	6.61	1.37
33	29.4	6.40	9.01	7.26	8.73	8.16	9.08	2.62	11.42	0.60
32	29.4	6.18	8.94	7.00	8.73	7.94	8.98	2.25	13.38	0.49
31	29.4	5.91	8.65	7.57	8.72	7.73	8.88	1.82	17.50	0.39
30	29.4	5.91	8.26	7.98	8.63	7.69	8.82	2.06	16.27	0.41
29.9	29.4	4.41	8.26	7.98	8.68	6.82	8.80	1.58	20.86	0.27
29	29.4	4.81	7.78	6.83	8.61	6.81	8.74	1.65	17.78	0.30
28	29.4	4.66	7.65	6.80	8.57	6.82	8.72	1.71	17.22	0.31
27.1	29.4	4.70	7.55	9.70	8.49	6.79	8.70	2.03	14.46	0.38
27	29.4	3.29	7.55	9.70	8.55	5.40	8.67	1.54	19.04	0.25
26.4	29.4	3.29	7.50	8.70	8.54	5.41	8.66	1.55	18.98	0.25
26.3	29.4	4.62	7.50	8.70	8.44	6.76	8.65	2.06	14.30	0.38
26.2	29.4	4.62	7.50	8.70	8.44	6.76	8.65	2.06	14.29	0.38
26.1	29.4	3.29	7.45	8.70	8.50	5.40	8.62	1.57	18.76	0.26
25	29.4	3.23	7.45	8.20	8.47	5.46	8.61	1.68	17.50	0.27
24	29.4	3.94	5.73	5.73	8.39	6.41	8.60	2.06	14.24	0.31
23	29.4	3.67	5.44	5.44	8.01	5.44	8.50	3.11	9.44	0.48
22	29.4	3.46	5.27	5.27	6.91	5.27	8.22	5.08	5.79	0.87
21	29.4	3.34	5.14	5.14	6.87	5.14	7.98	4.66	6.30	0.79
20	29.4	3.16	4.95	4.95	6.50	4.95	7.61	4.67	6.30	0.82
19	29.4	3.04	4.83	4.83	6.27	4.83	7.38	4.67	6.30	0.83
18	29.4	2.96	4.97	4.97	6.71	4.64	7.07	2.64	11.14	0.43
17	29.4	2.74	4.74	4.74	6.42	4.43	6.88	3.00	9.80	0.50
16	29.4	2.71	4.74	4.74	6.36	4.41	6.84	3.07	9.59	0.51
15	29.4	2.68	4.71	4.71	6.50	4.37	6.70	1.97	14.92	0.32
14	29.4	2.65	4.65	4.65	6.42	4.28	6.63	2.02	14.54	0.33
13	29.4	2.63	4.63	4.63	6.40	4.26	6.59	1.92	15.31	0.32
12	29.4	2.47	4.60	4.60	6.39	4.10	6.56	1.83	16.03	0.30
11	29.4	2.45	4.54	4.54	6.37	4.08	6.55	1.83	16.04	0.30
10	29.4	2.45	4.47	4.47	6.16	4.36	6.45	2.41	12.22	0.40
9	29.4	2.36	4.43	4.43	6.01	4.36	6.38	2.68	10.95	0.45
8	29.4	2.29	4.41	4.41	5.95	4.19	6.26	2.43	12.09	0.41
7	29.4	2.36	4.06	4.06	5.77	4.06	6.17	2.80	10.48	0.48
6	29.4	2.29	4.03	4.03	5.75	4.03	6.08	2.53	11.64	0.43
5	29.4	2.10	3.77	3.77	5.59	4.49	5.95	2.65	11.11	0.45
4	29.4	2.00	3.54	3.54	5.53	4.36	5.86	2.56	11.47	0.44
3	29.4	1.96	3.37	3.37	5.49	4.32	5.82	2.55	11.54	0.43
2.55	29.4	1.51	2.41	2.41	5.25	3.81	5.54	2.38	12.33	0.39
2.531	29.4	1.47	2.37	2.37	4.92	4.10	5.49	3.36	8.76	0.58
2.53	29.4	1.47	2.13	2.13	4.59	4.34	5.46	4.15	7.09	0.75
2.52	29.4	1.47	2.13	2.13	4.58	4.34	5.46	4.15	7.08	0.75
2.519	29.4	1.47	2.37	2.37	4.74	4.10	5.39	3.57	8.25	0.63
2.518	29.4	1.38	2.32	2.32	4.64	4.06	5.34	3.70	7.95	0.65
2.517	29.4	1.38	2.19	2.19	4.34	4.20	5.31	4.37	6.72	0.81
2.516	29.4	1.38	2.19	2.19	4.20	4.20	5.30	4.66	6.31	0.89
2.515	29.4	1.38	2.32	2.32	3.73	4.06	5.26	5.49	5.35	1.14
2.51	29.4	1.27	2.27	2.27	3.02	3.58	4.90	6.07	4.84	1.46
2.5	29.4	0.17	2.17	2.17	0.94	1.80	4.61	8.48	3.47	3.09
2.3	29.4	0.10	2.10	2.10	1.26	1.74	2.87	5.61	5.24	1.66
2.1	29.4	0.07	2.07	2.07	1.96	1.70	2.57	3.46	8.49	0.80
2	29.4	0.05	2.05	2.05	1.97	1.68	2.56	3.41	8.63	0.79
1	29.4	0.04	2.04	2.04	1.67	1.67	2.49	4.00	7.34	1.00