

APPENDIX D RESULTS SIMULATIONS

The results of the investigated cases of the simulations SEEP/W and D-Geo Stability are listed in this Appendix as follows:

D-1 Results SEEP/W simulations

Dike 1, Case 1-3, page 2-21

Dike 2, Case 4-6, page 22-41

Dike 2, Case 7-9, page 42-61

D-2 Results SEEP/W simulation (application)

Dike 1, Case 1-3 page 62-68

D-3 Results D-Geo Stability simulations

Dike 1, Case 1-3 page 69-71

D-1 Results SEEP/W simulation

Times	Case No.	Sect.	Max (z)	Min (z)	μ (z)	σ (z)	Skewness	Kurtosis	Chi-square (χ^2) $\alpha' = 0.05$
			[m + NAP]						Decision
$t = 10$ days	1	1	6.94	6.56	6.75	0.07	0.59	0.11	Reject
		2	6.97	6.68	6.83	0.06	-0.10	-0.64	Accept
		3	7.02	6.74	6.88	0.05	0.01	-0.13	Accept
		4	7.23	6.84	7.01	0.08	0.43	-0.48	Reject
		5	7.76	6.93	7.35	0.13	0.08	0.79	Accept
		6	0.00	0.00	0.00	0.00	-	-	-
		7	0.00	0.00	0.00	0.00	-	-	-
		8	0.00	0.00	0.00	0.00	-	-	-
$t = 10$ days	2	1	6.93	6.59	6.73	0.06	0.73	0.60	Accept
		2	6.97	6.66	6.80	0.06	0.11	-0.25	Accept
		3	7.05	6.72	6.86	0.06	0.32	-0.10	Accept
		4	7.20	6.83	6.98	0.06	0.89	0.96	Reject
		5	7.67	6.98	7.27	0.13	-0.21	-0.46	Reject
		6	0.00	0.00	0.00	0.00	-	-	-
		7	0.00	0.00	0.00	0.00	-	-	-
		8	0.00	0.00	0.00	0.00	-	-	-
$t = 10$ days	3	1	6.85	6.59	6.67	0.04	0.77	1.07	Reject
		2	6.91	6.62	6.74	0.06	0.33	-0.20	Accept
		3	7.00	6.66	6.80	0.06	0.27	0.09	Accept
		4	7.07	6.79	6.91	0.05	0.55	0.50	Reject
		5	7.41	6.90	7.14	0.11	0.47	-0.43	Reject
		6	8.07	7.13	7.45	0.17	1.08	1.42	Reject
		7	0.00	0.00	0.00	0.00	-	-	-
		8	0.00	0.00	0.00	0.00	-	-	-
$t = 30$ days	1	1	6.32	5.87	6.04	0.14	-0.13	-0.84	Accept
		2	6.37	5.67	6.12	0.14	-0.82	0.34	Reject
		3	6.42	5.63	6.16	0.13	-1.06	1.99	Reject
		4	6.66	5.66	6.25	0.17	0.01	0.14	Accept
		5	6.99	5.63	6.43	0.19	-0.63	1.50	Reject
		6	7.26	5.74	6.48	0.25	-0.62	0.93	Reject
		7	7.10	5.89	6.44	0.26	-0.04	-1.04	Reject
		8	7.05	5.81	6.36	0.20	0.41	0.59	Accept
$t = 30$ days	2	1	6.70	6.52	6.62	0.03	-0.25	0.78	Accept
		2	6.78	6.53	6.66	0.04	-0.09	0.09	Accept
		3	6.81	6.56	6.70	0.04	-0.47	0.28	Accept
		4	7.17	6.79	6.95	0.06	0.32	0.37	Reject
		5	7.49	6.81	7.12	0.12	0.23	0.18	Accept
		6	7.80	6.97	7.32	0.17	0.53	0.17	Reject
		7	8.02	6.89	7.38	0.17	0.34	0.27	Accept
		8	7.63	6.85	7.25	0.15	0.01	-0.17	Accept
$t = 30$ days	3	1	7.05	6.82	6.98	0.04	-1.26	2.57	Reject
		2	7.13	6.87	6.98	0.04	0.11	0.65	Accept
		3	7.19	6.89	7.04	0.06	0.12	-0.31	Accept
		4	7.46	7.18	7.31	0.05	0.42	0.44	Accept
		5	8.28	7.37	7.71	0.18	0.52	-0.10	Reject
		6	8.93	7.53	8.24	0.20	0.37	1.60	Reject
		7	8.68	8.16	8.48	0.09	-0.66	0.02	Reject
		8	8.48	8.33	8.44	0.03	-1.19	1.48	Reject
$t = 55$ days	1	1	5.09	3.95	4.43	0.17	0.54	1.76	Accept
		2	5.08	3.99	4.45	0.18	0.68	1.26	Reject
		3	5.15	4.02	4.43	0.18	0.89	1.67	Reject
		4	5.08	3.94	4.42	0.21	0.82	0.83	Reject
		5	5.21	3.85	4.46	0.27	0.79	0.01	Reject
		6	5.18	3.67	4.45	0.23	0.76	1.47	Reject
		7	5.37	3.67	4.44	0.22	1.11	3.31	Reject
		8	5.12	3.74	4.42	0.21	0.43	1.21	Reject
$t = 55$ days	2	1	5.48	4.19	4.72	0.24	0.60	-0.05	Reject
		2	5.34	4.24	4.73	0.24	0.36	-0.89	Reject
		3	5.38	4.27	4.77	0.26	0.16	-0.98	Reject
		4	5.46	4.17	4.74	0.27	0.22	-0.95	Reject
		5	5.49	4.08	4.74	0.28	0.19	-0.80	Reject
		6	5.94	4.35	4.74	0.25	0.91	1.34	Reject
		7	5.63	4.28	4.71	0.27	0.88	0.33	Reject
		8	5.64	4.26	4.72	0.26	0.96	0.70	Reject
$t = 55$ days	3	1	6.26	4.82	5.67	0.19	-0.45	2.05	Reject
		2	6.18	4.73	5.70	0.21	-0.37	1.39	Reject
		3	6.32	5.24	5.70	0.24	0.33	-0.67	Reject
		4	6.33	5.11	5.70	0.27	0.15	-0.90	Reject
		5	6.59	5.02	5.79	0.31	0.22	-0.63	Reject
		6	6.84	4.74	5.82	0.32	0.13	0.73	Reject
		7	6.67	4.78	5.79	0.29	0.01	1.22	Reject
		8	6.88	4.87	5.76	0.32	-0.30	0.94	Reject

Table D-1 The descriptive statistics of the phreatic line for Dike 1, Case 1 to Case 3.

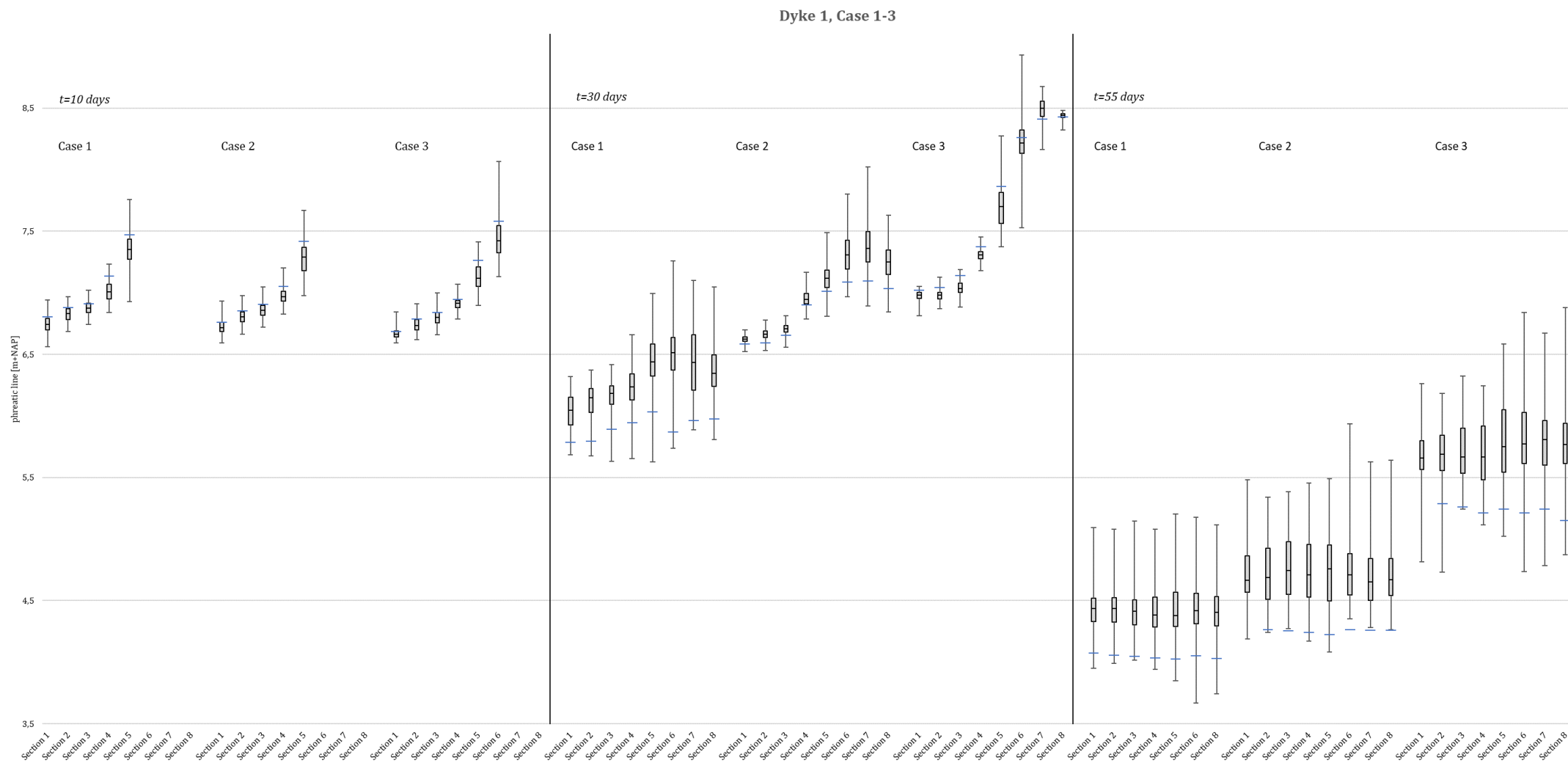


Figure D-1 The box-plots of the phreatic line for Case 1 to Case 3

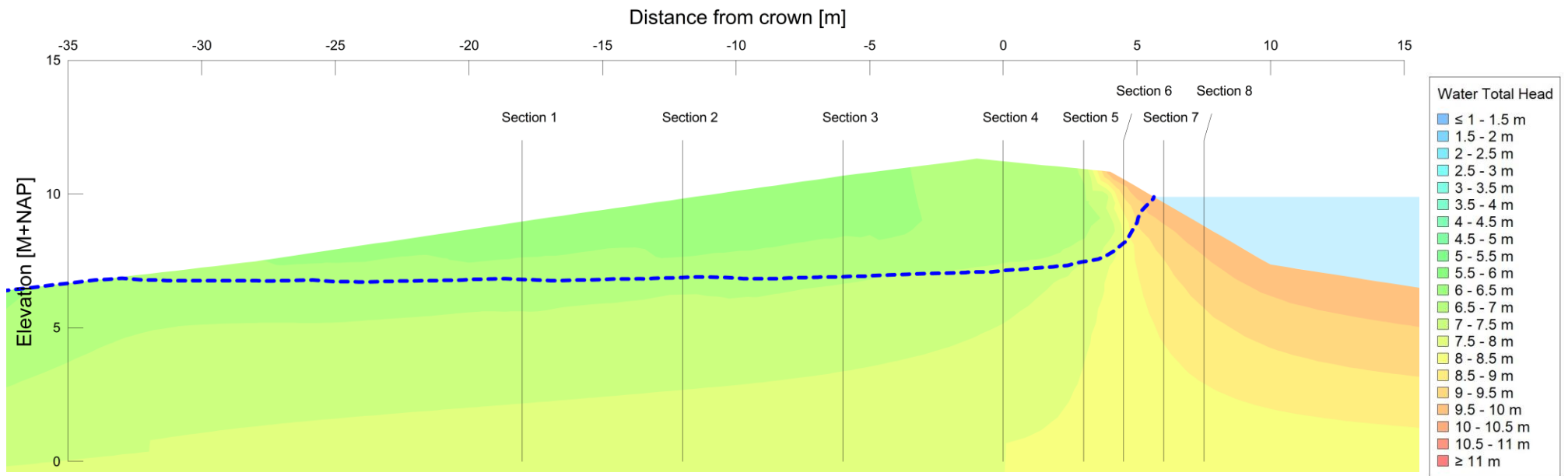


Figure D-2 Dike 1, case 1, $t = 10$ days, deterministic phreatic line and pressure head color shading

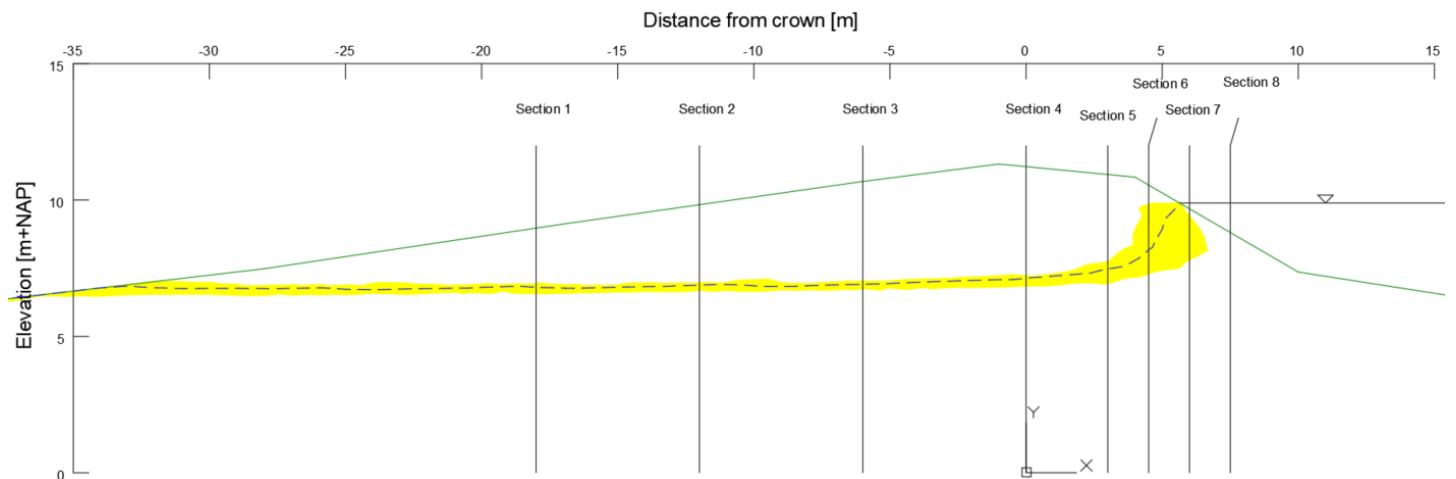
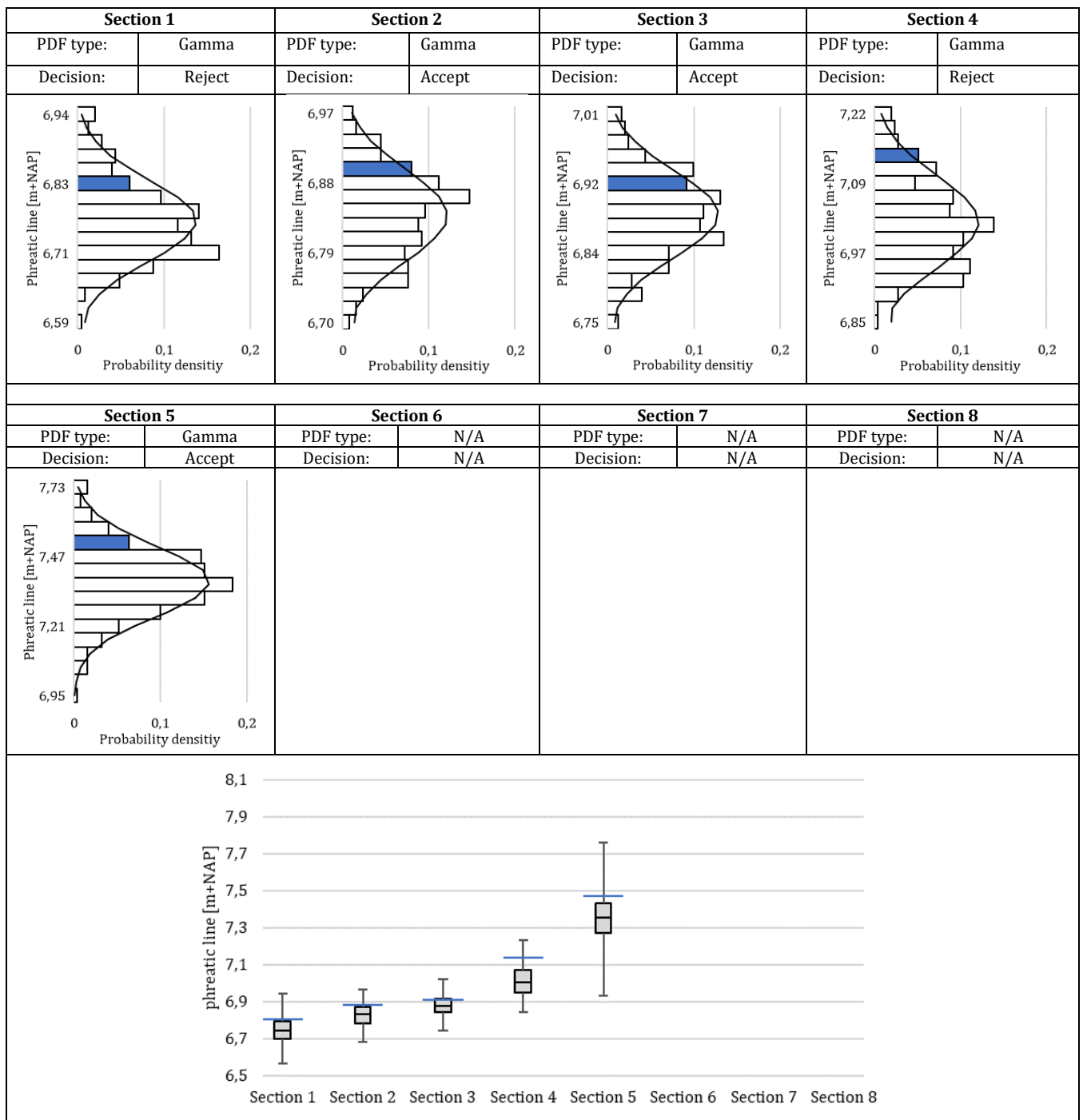


Figure D-3 Dike 1, case 1, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



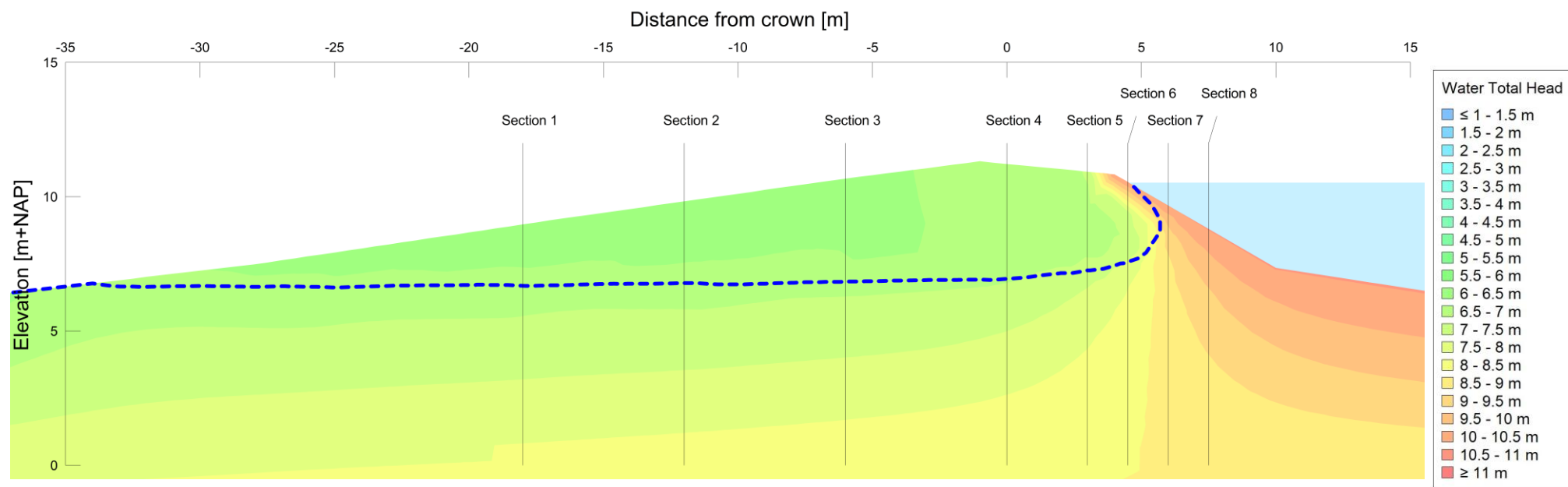


Figure D-4 Dike 1, case 2, $t = 10$ days, deterministic phreatic line and pressure head color shading

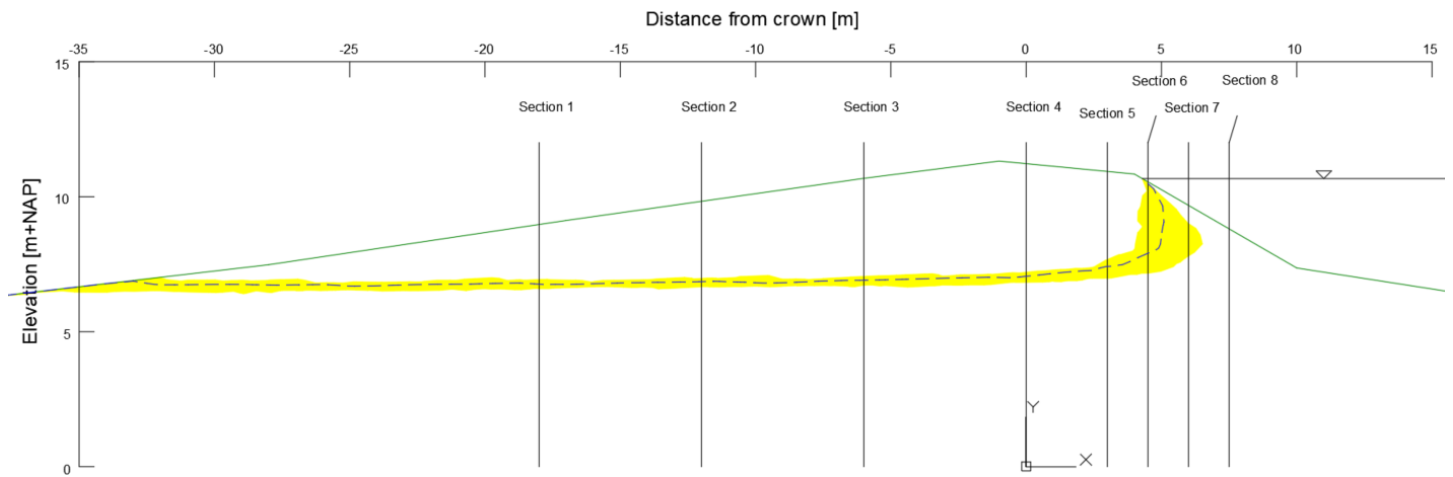
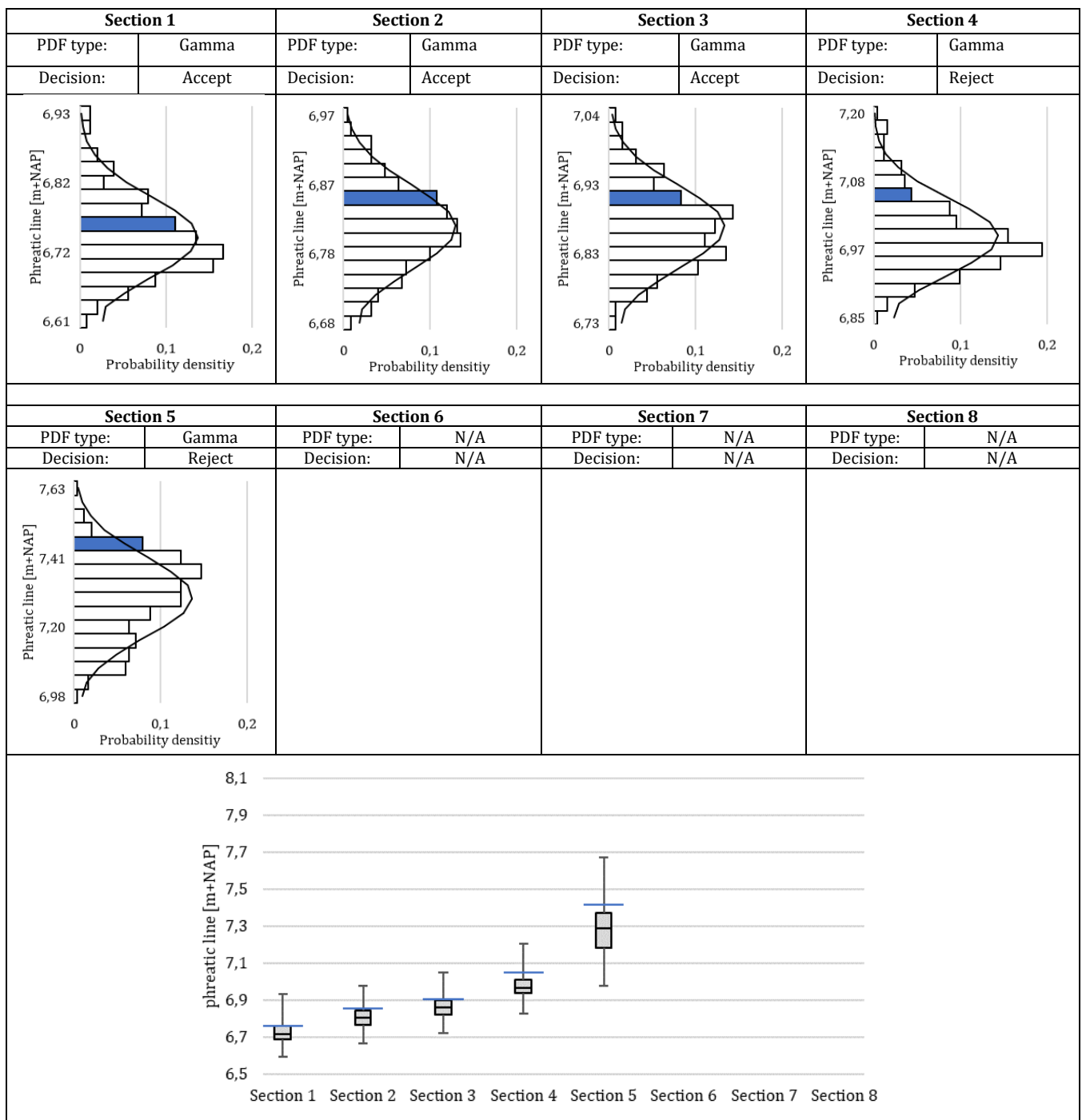


Figure D-5 Dike 1, case 2, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



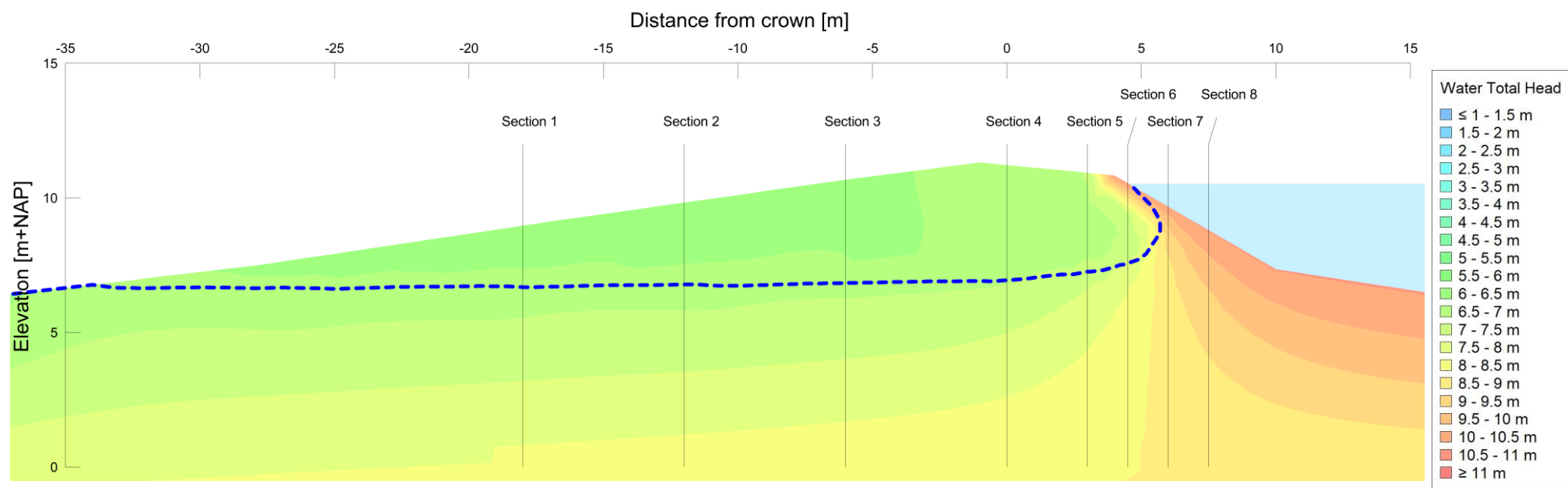


Figure D-6 Dike 1, case 3, $t = 10$ days, deterministic phreatic line and pressure head color shading

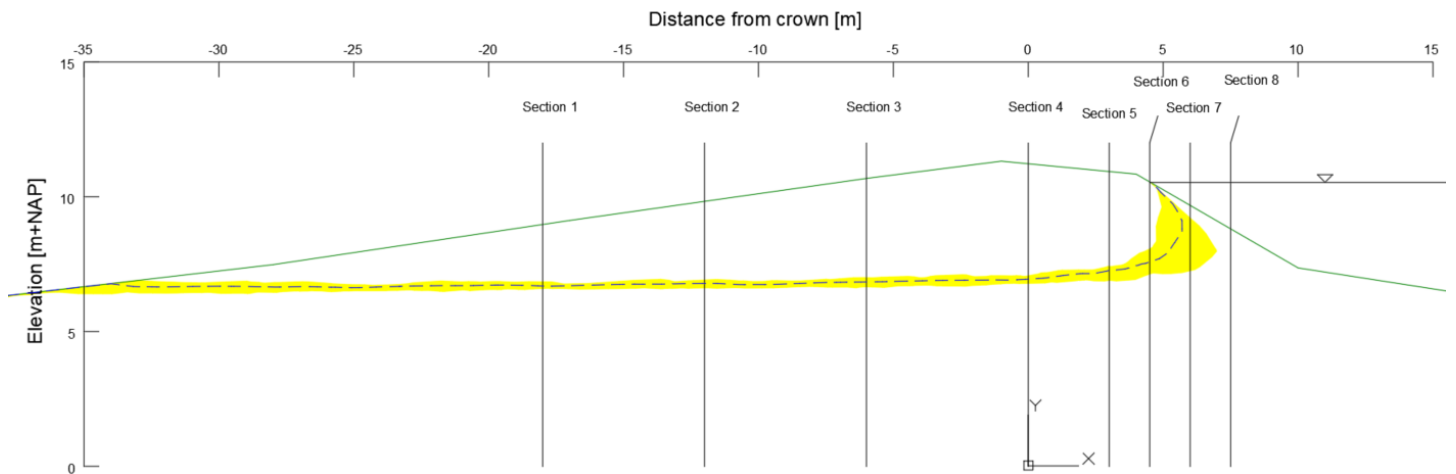
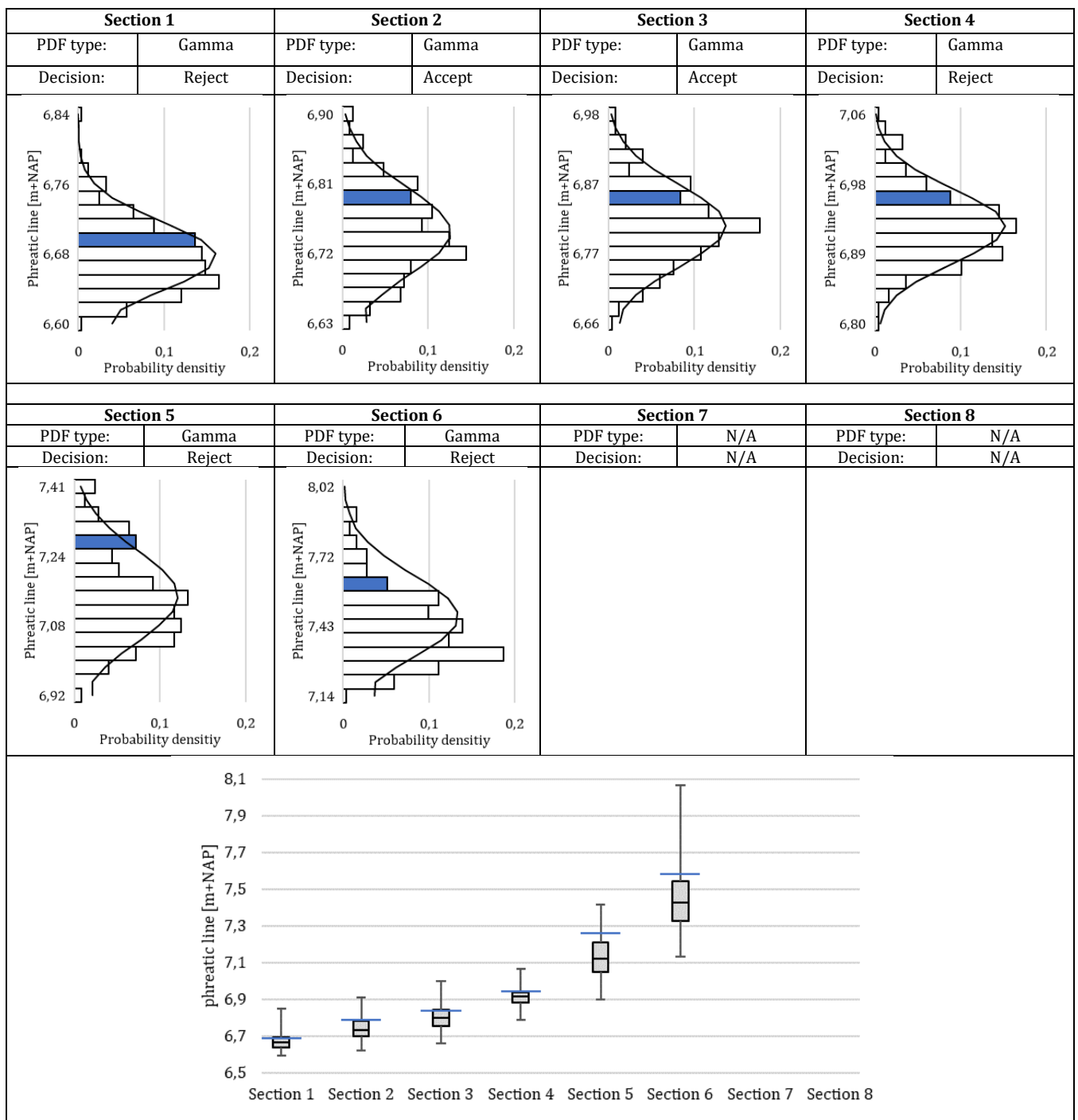


Figure D-7 Dike 1, case 3, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



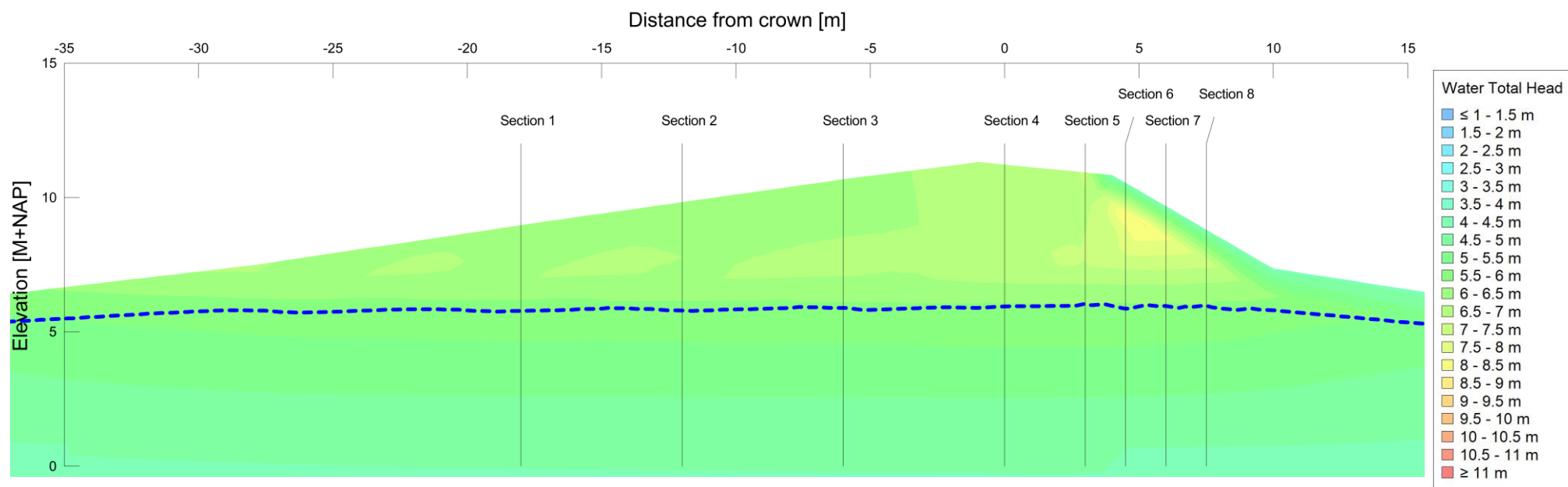


Figure D-8 Dike 1, case 1, $t = 30$ days, deterministic phreatic line and pressure head color shading

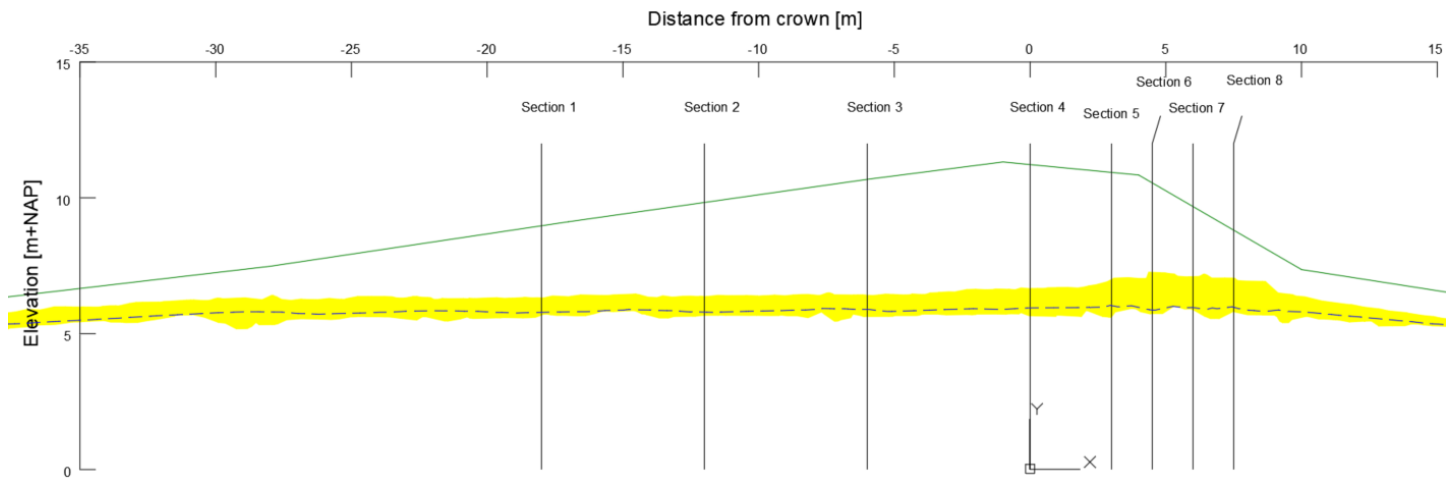
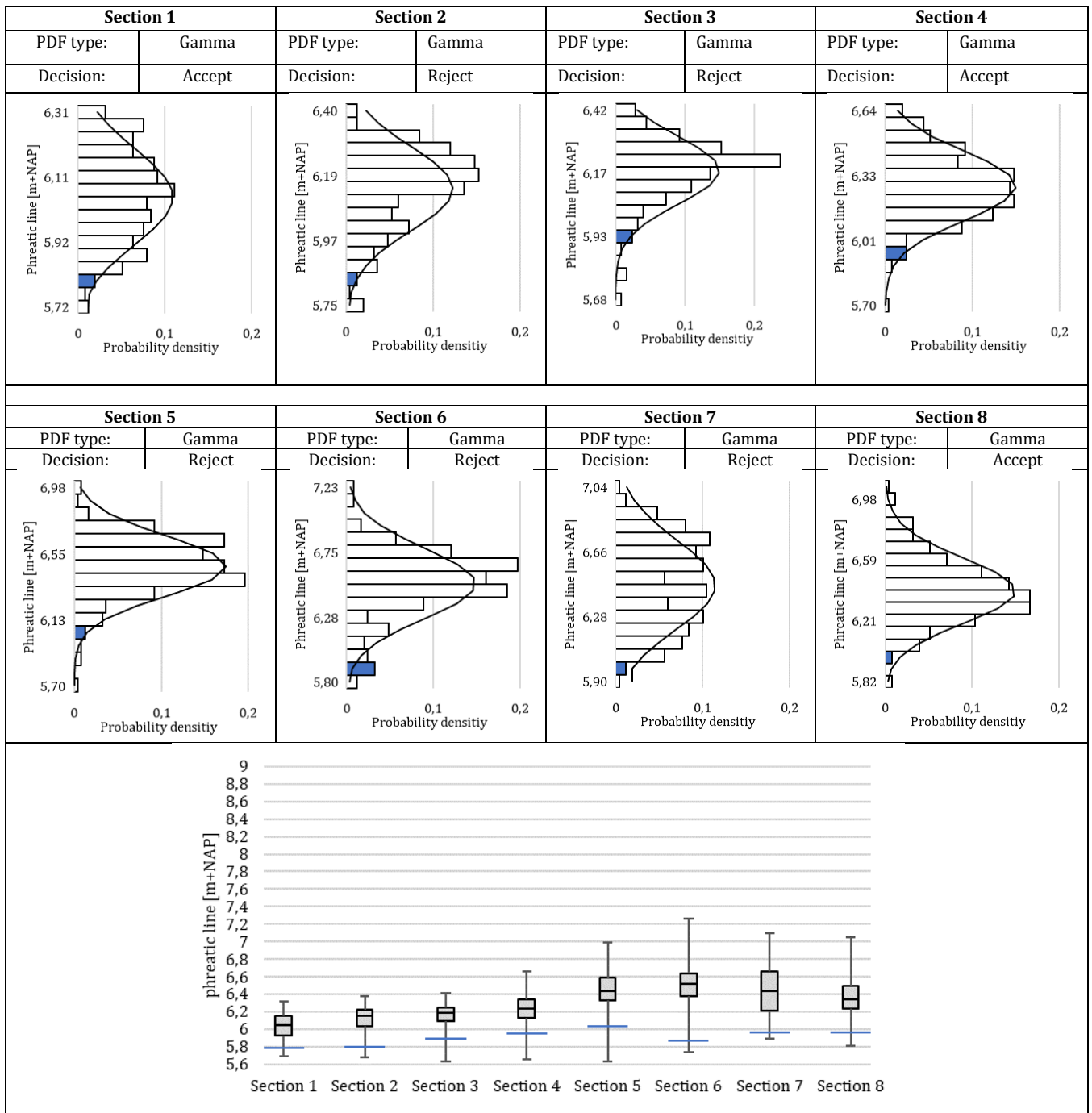


Figure D-9 Dike 1, case 1, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



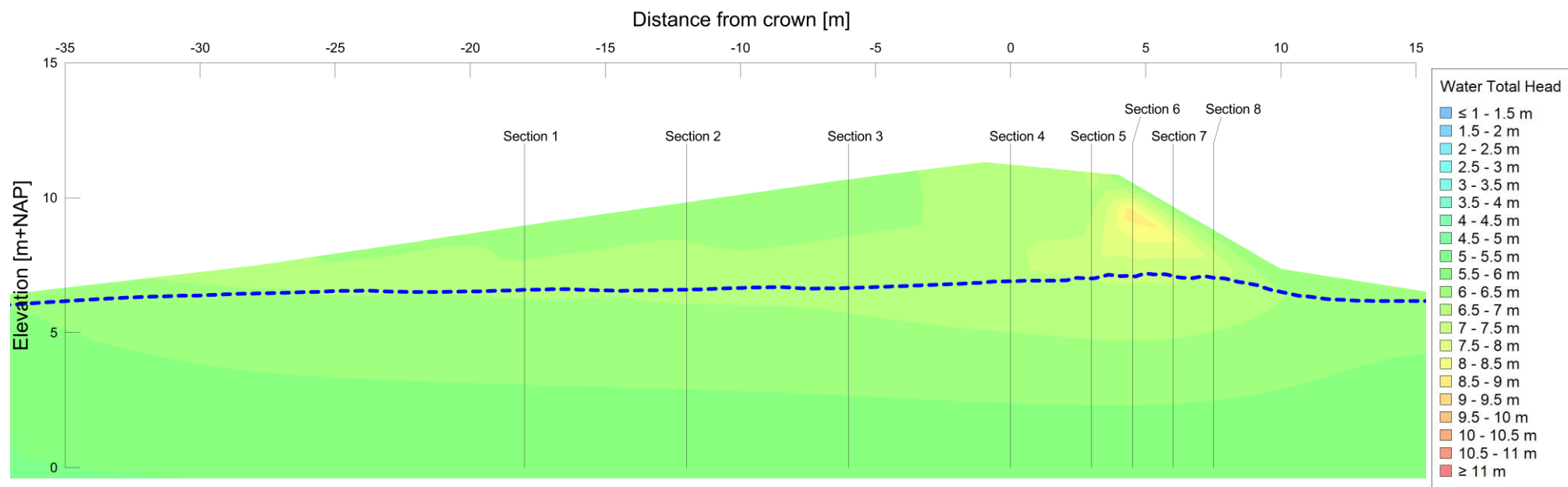


Figure D-10 Dike 1, case 2, $t = 30$ days, deterministic phreatic line and pressure head color shading

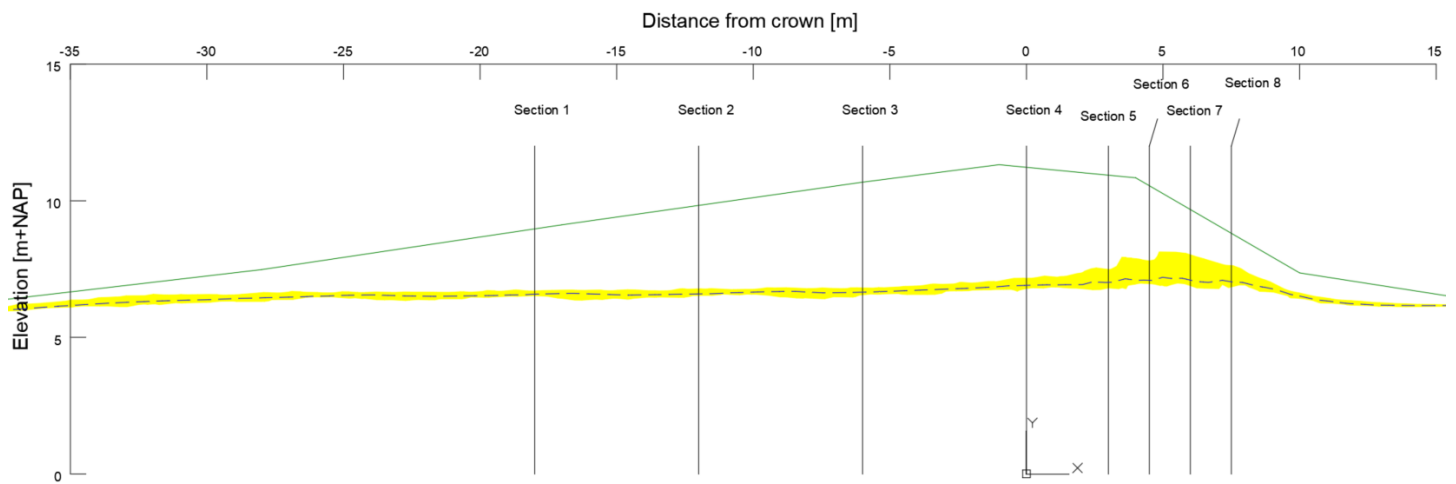
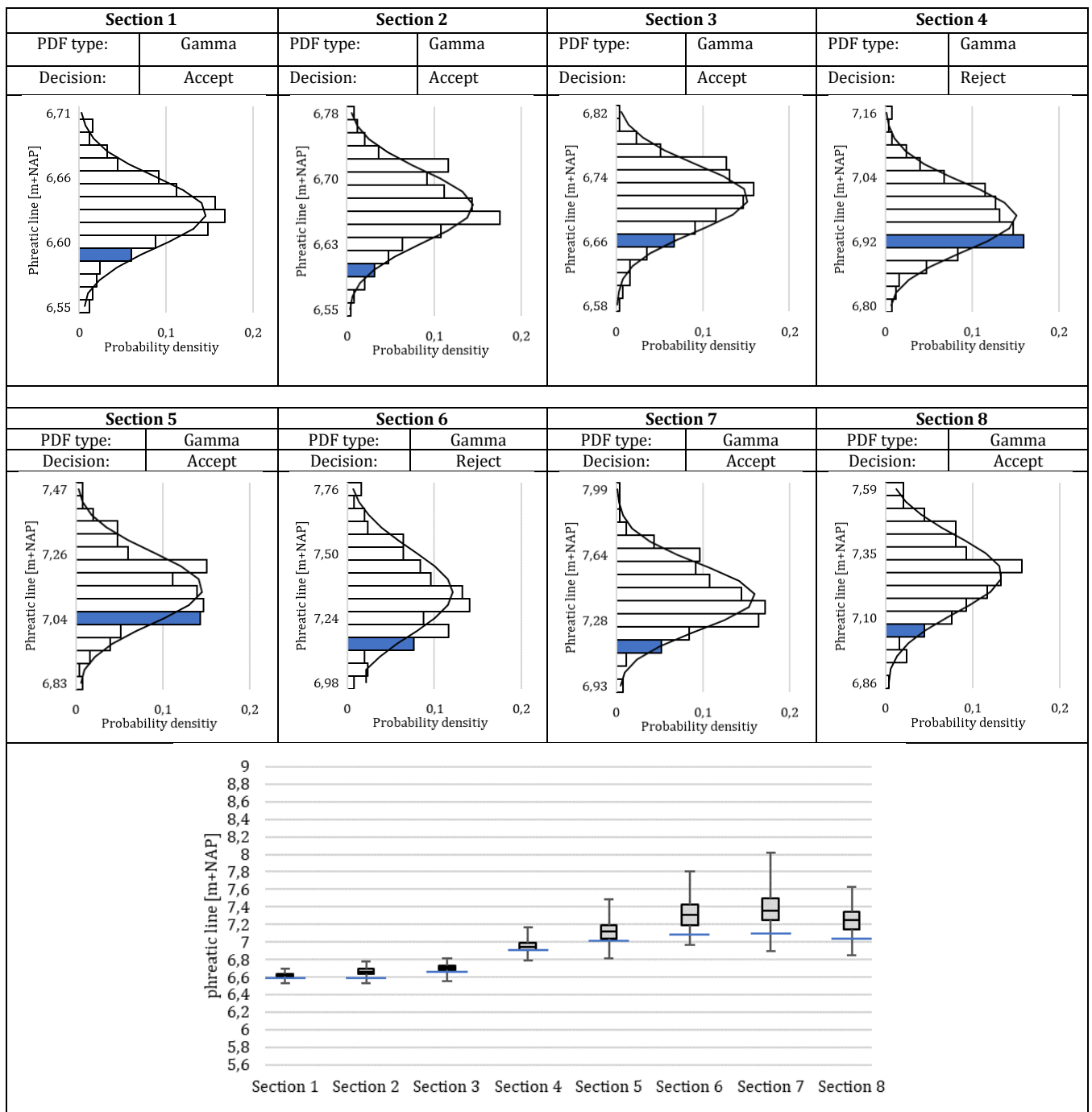


Figure D-11 Dike 1, case 2, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



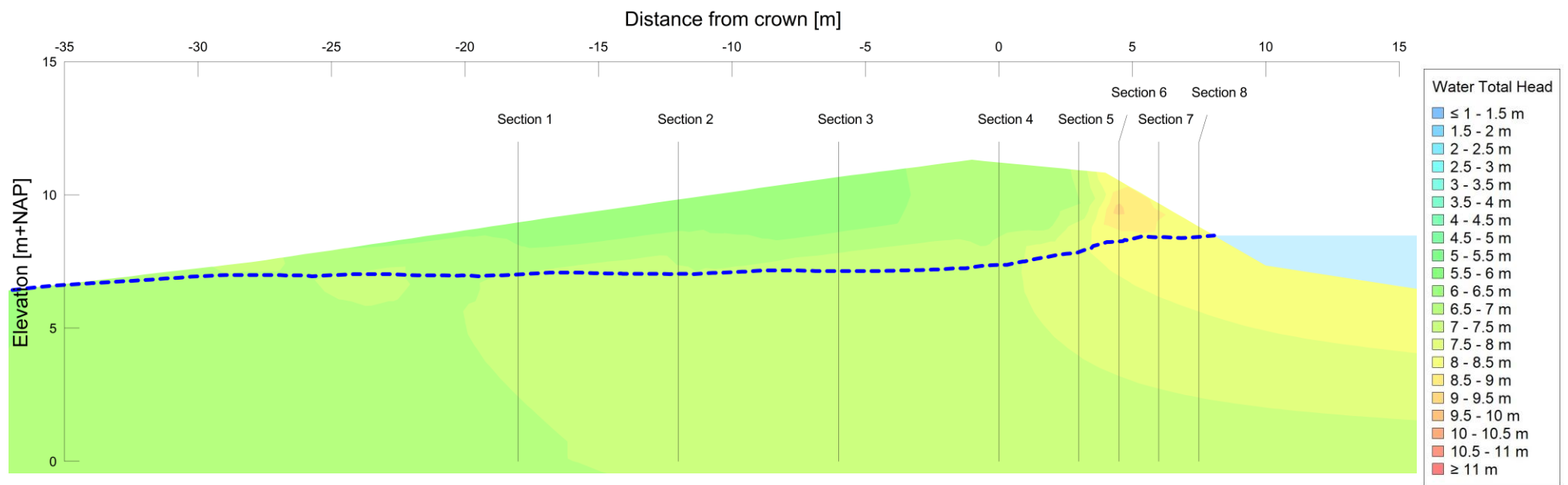


Figure D-12 Dike 1, case 3, $t = 30$ days, deterministic phreatic line and pressure head color shading

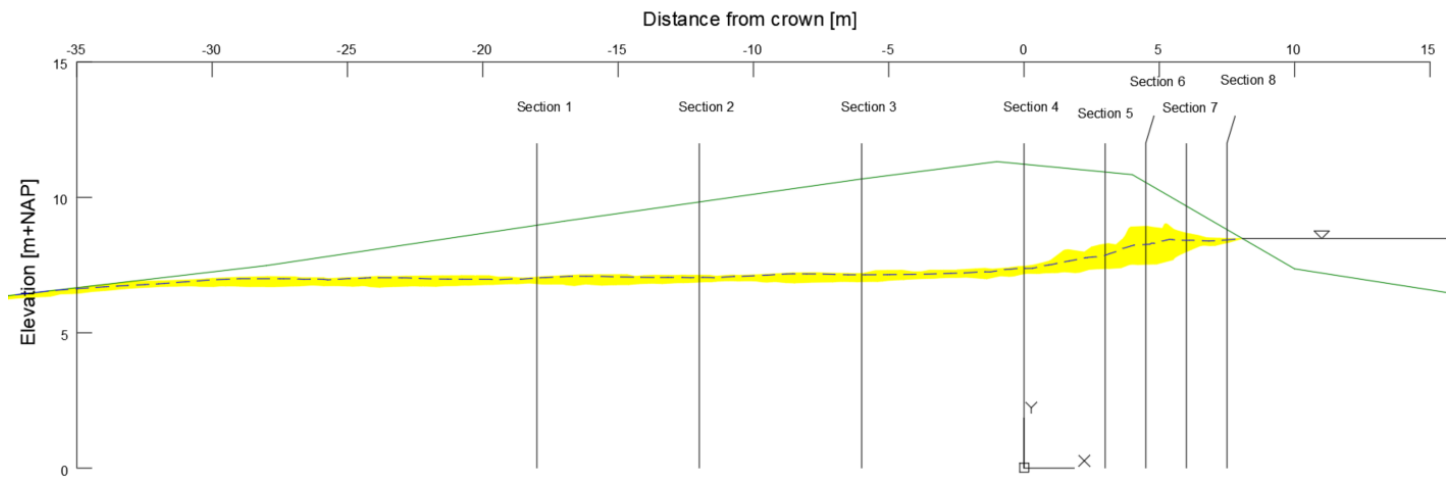
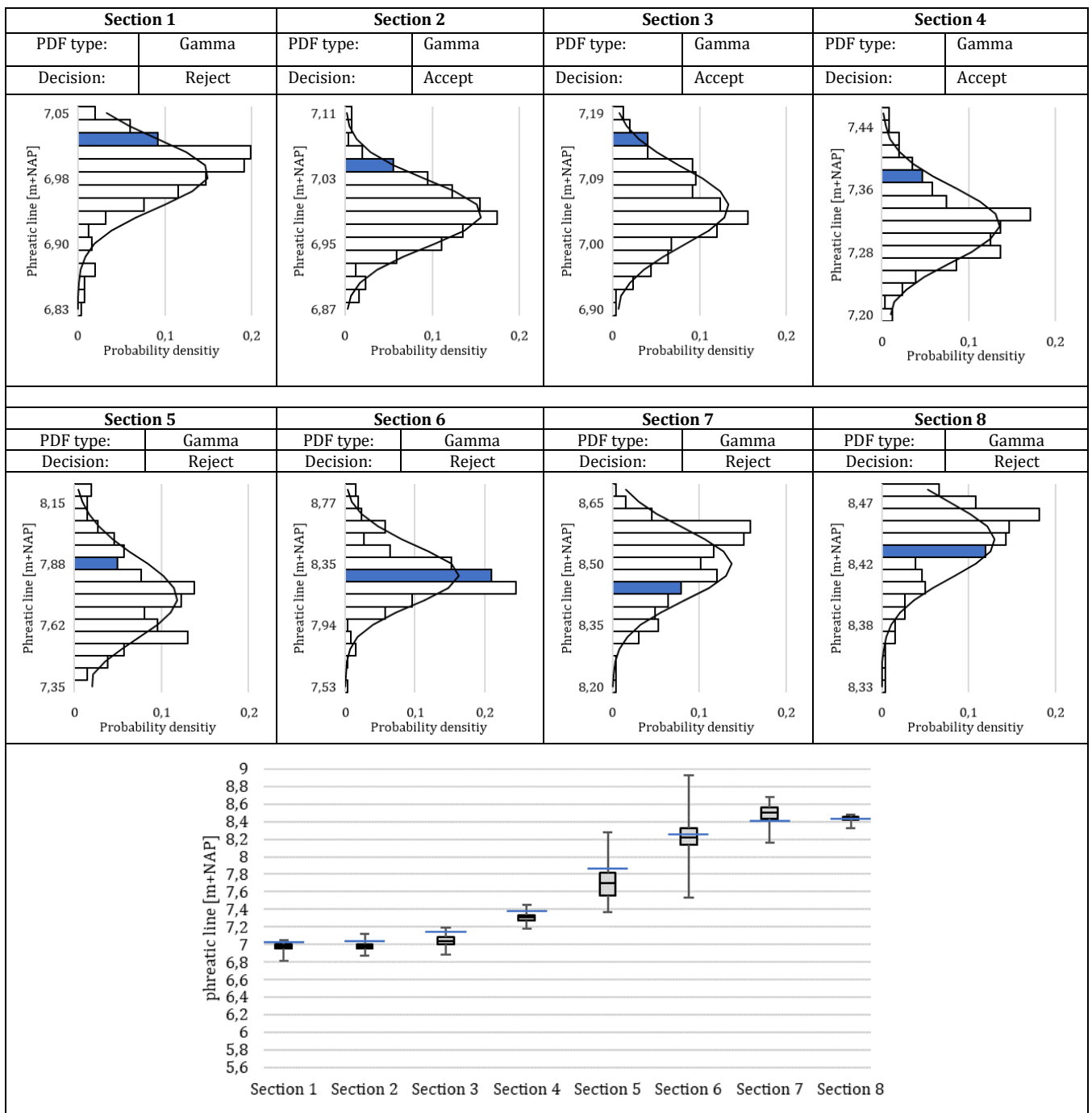


Figure D-13 Dike 1, case 3, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



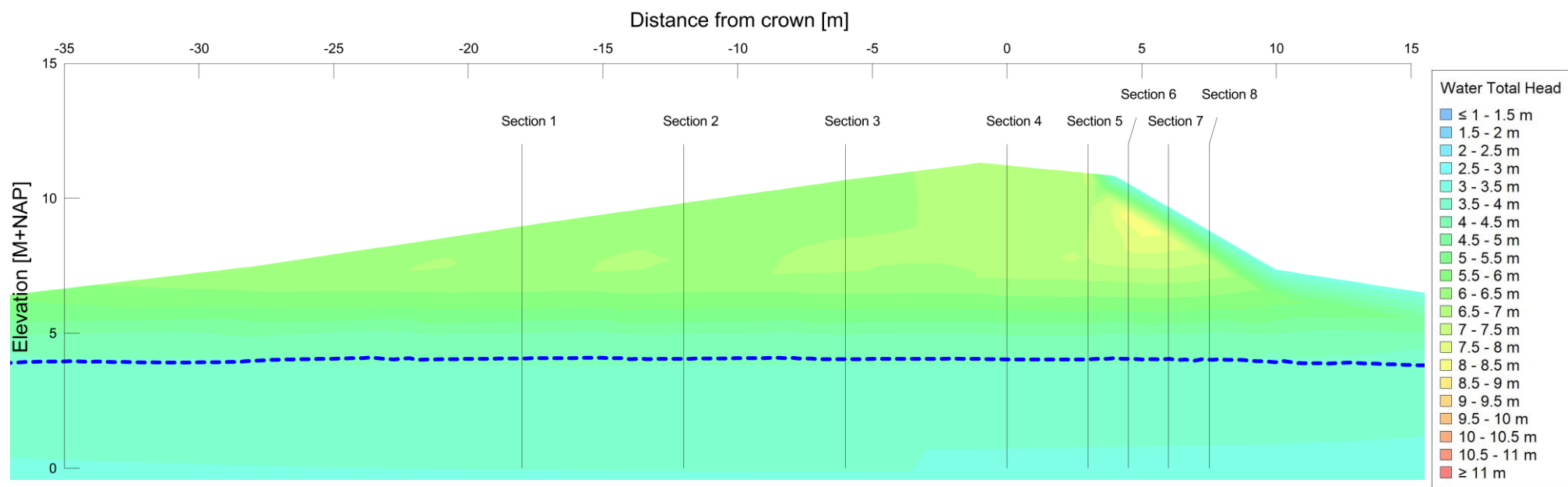


Figure D-14 Dike 1, case 1, $t = 55$ days, deterministic phreatic line and pressure head color shading

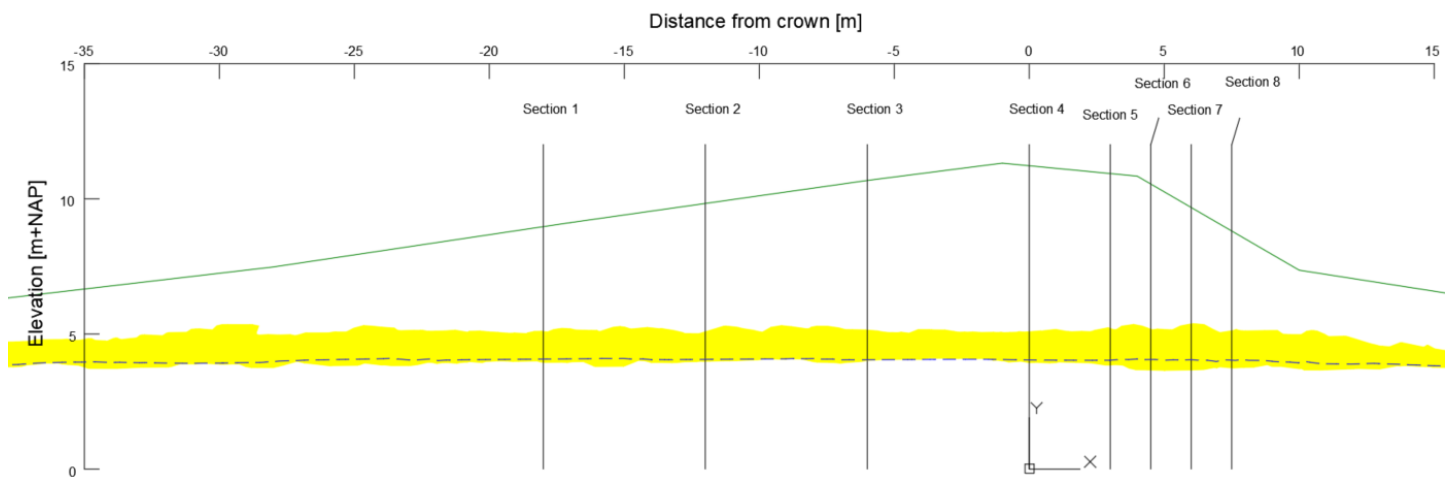
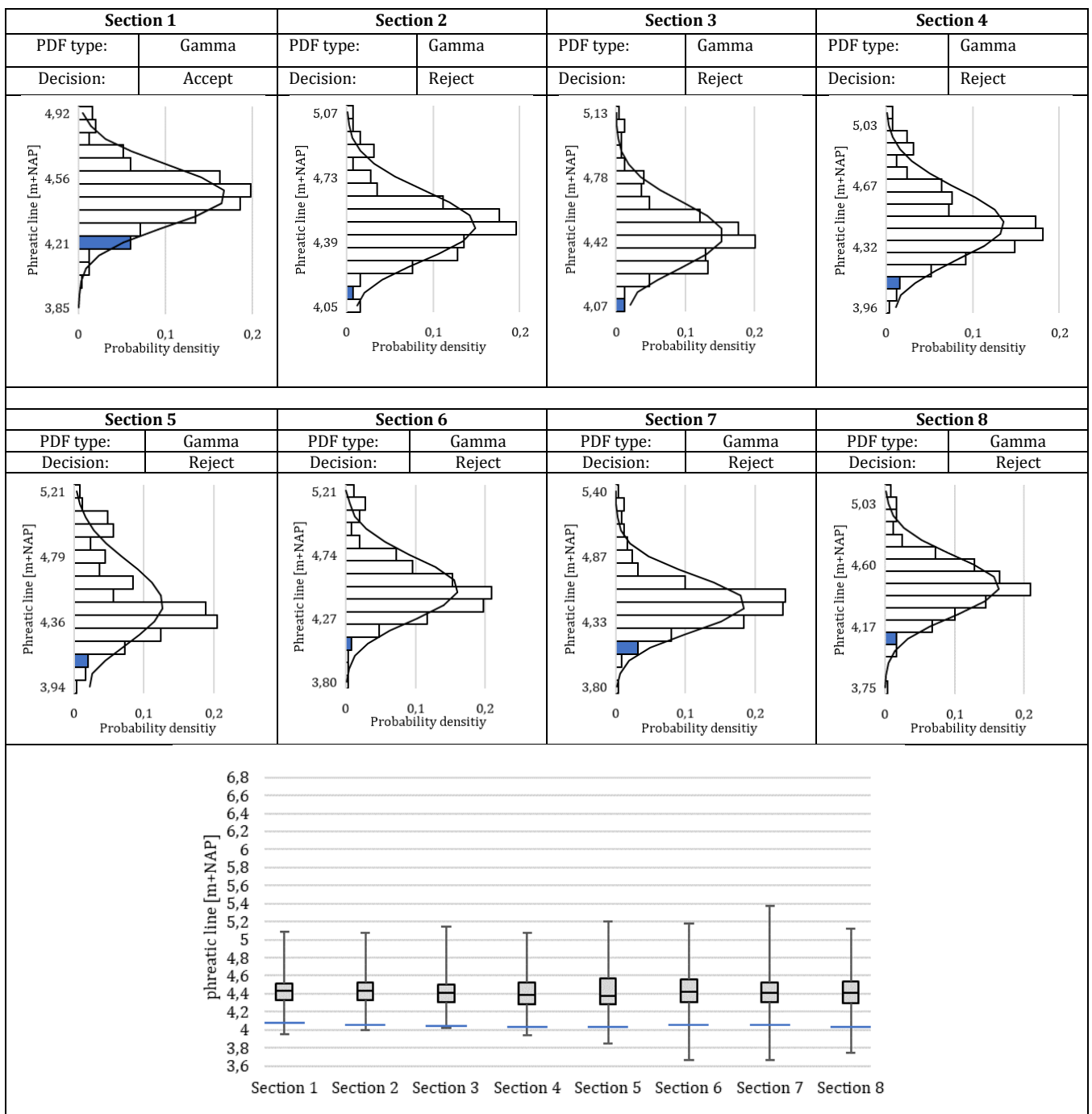


Figure D-15 Dike 1, case 1, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



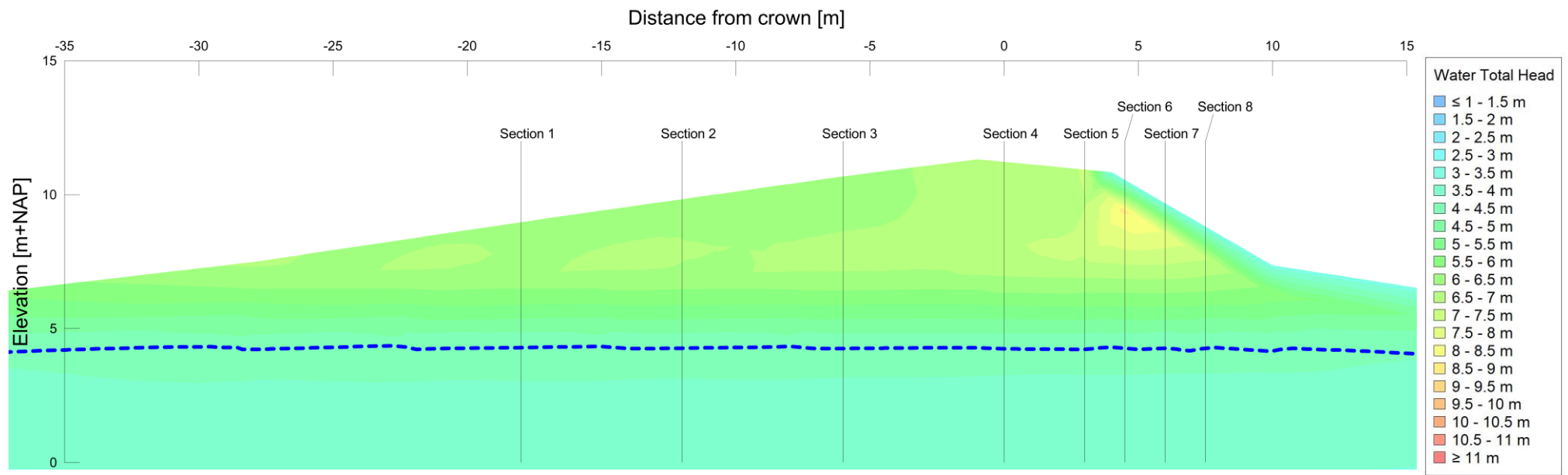


Figure D-16 Dike 1, case 2, $t = 55$ days, deterministic phreatic line and pressure head color shading

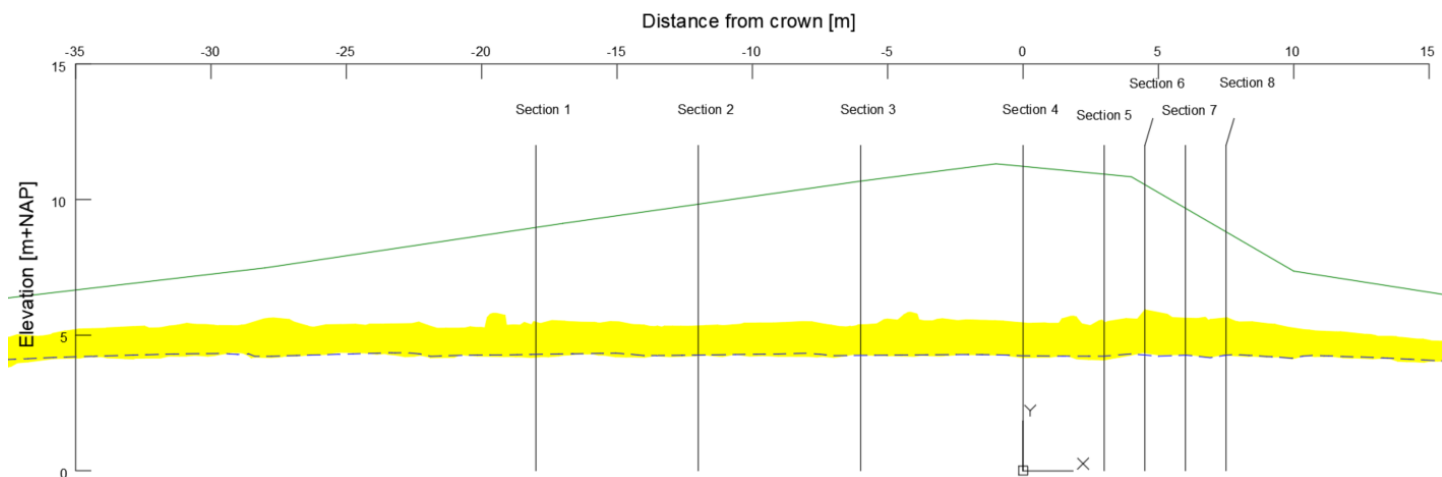
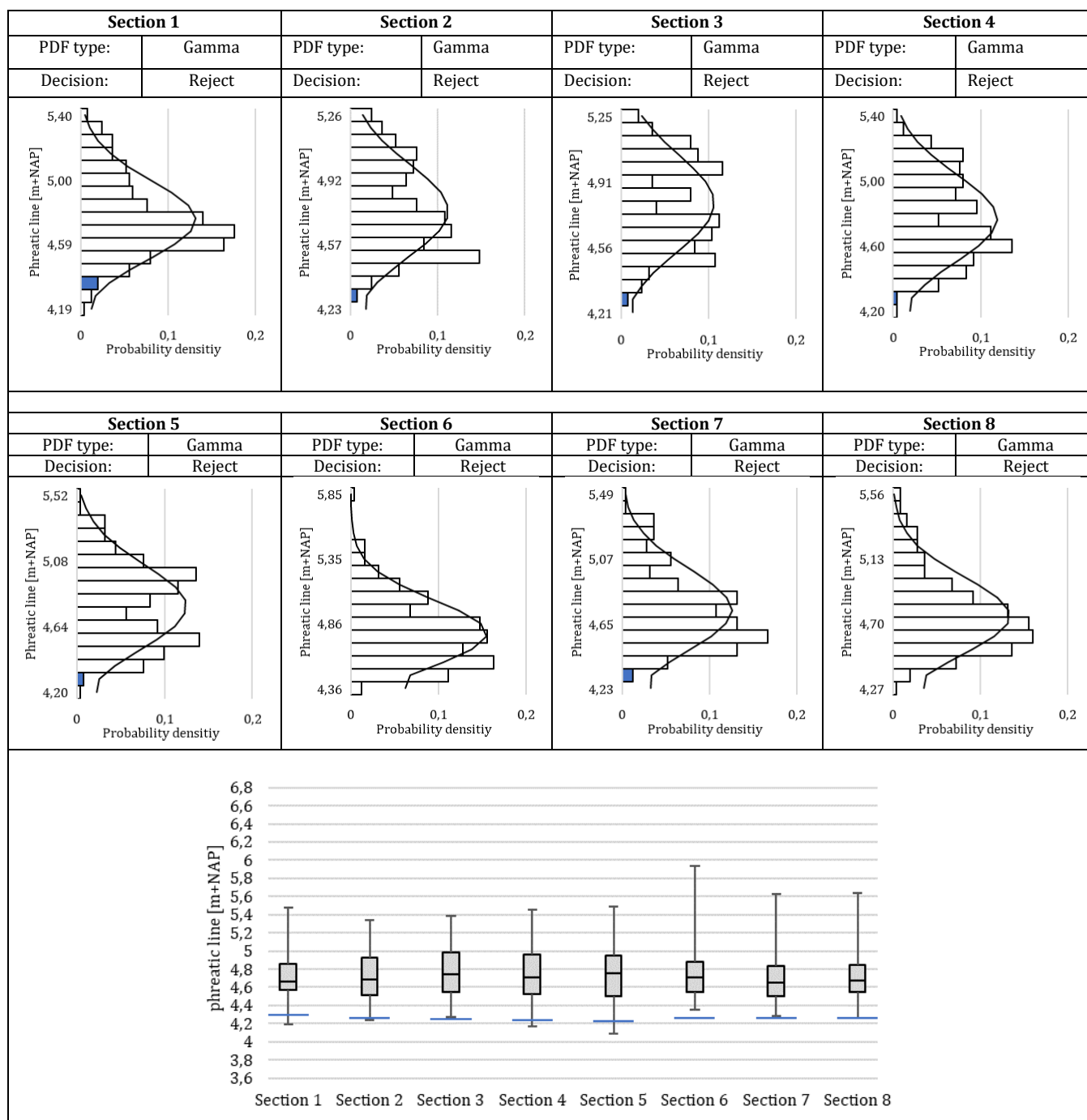


Figure D-17 Dike 1, case 2, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



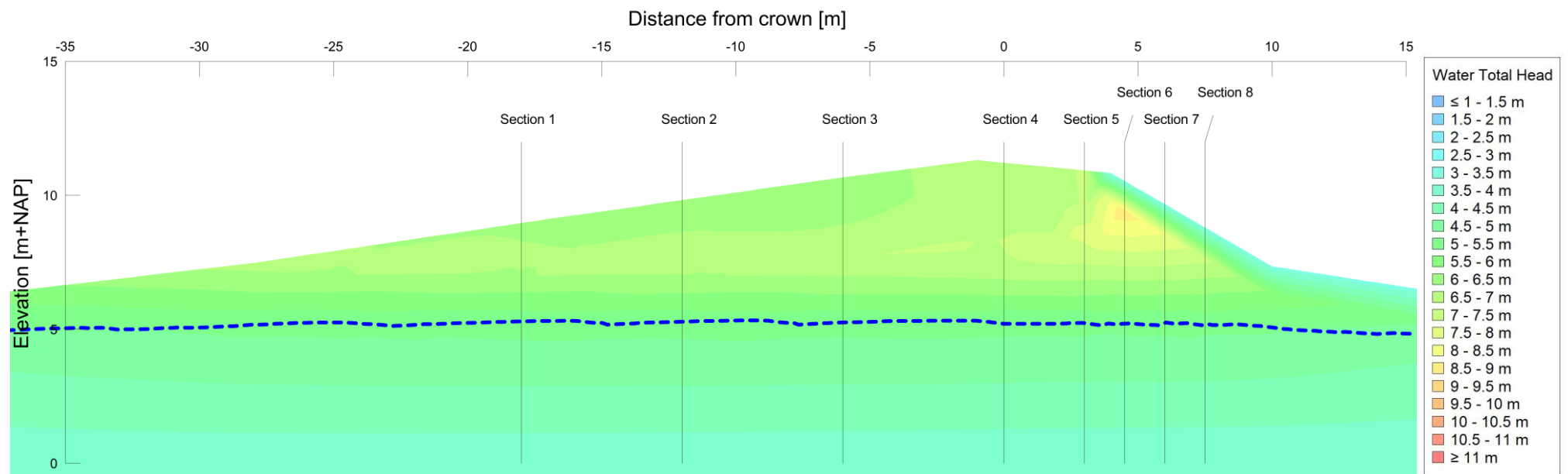


Figure D-18 Dike 1, case 3, $t = 55$ days, deterministic phreatic line and pressure head color shading

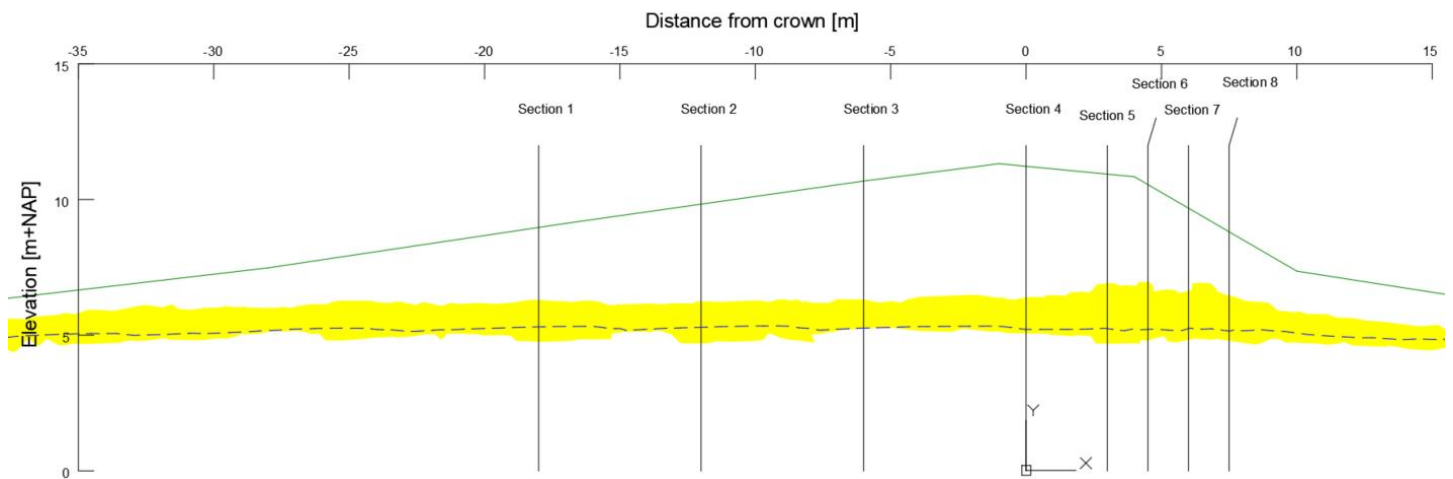
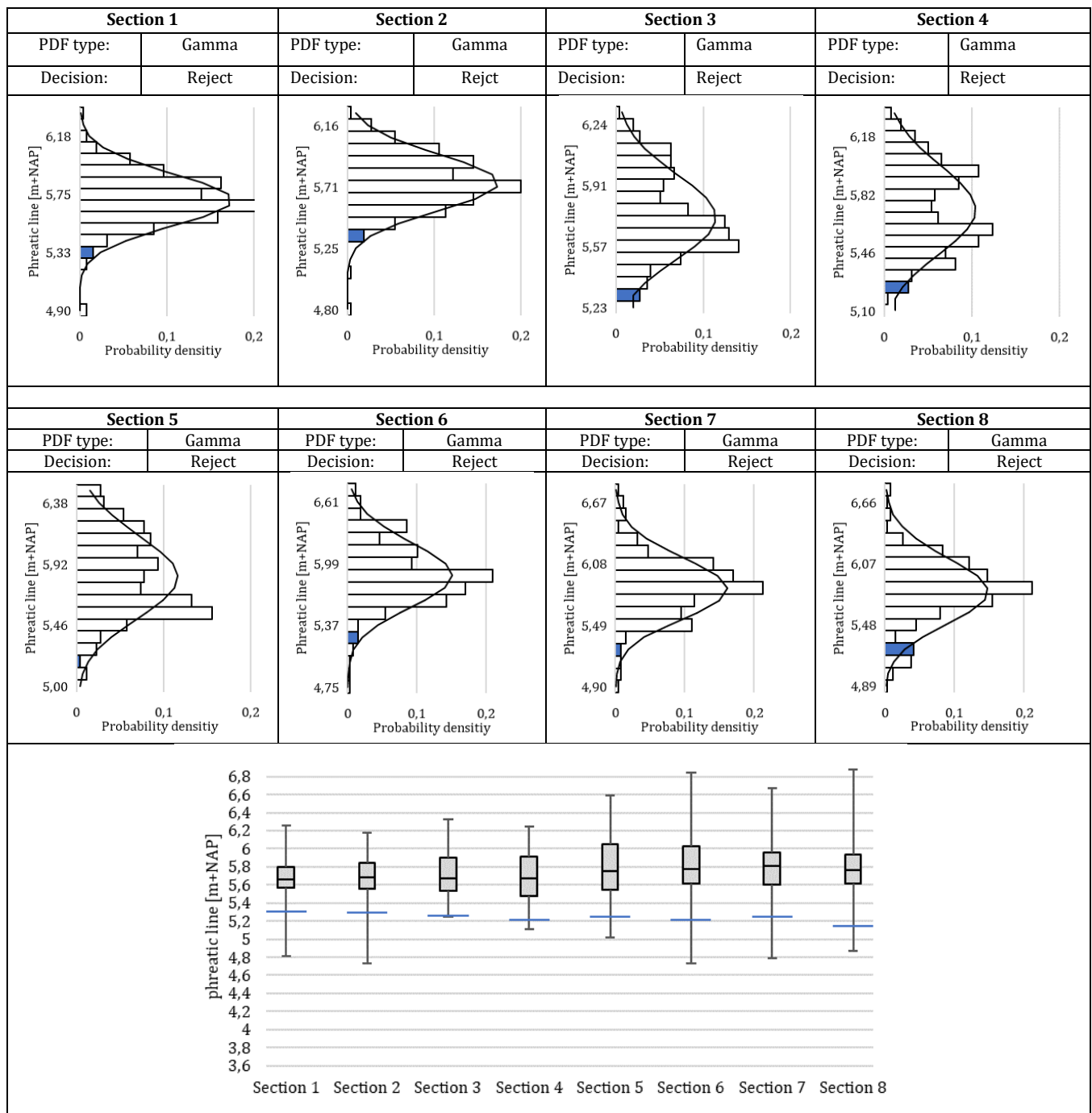


Figure D-19 Dike 1, case 3, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



Times	Case No.	Sect.	Max (z)	Min (z)	μ (z)	σ (z)	Skewness	Kurtosis	Chi-square (χ^2) $\alpha' = 0.05$
			[m + NAP]						Decision
$t = 10$ days	4	1	7.35	6.97	7.22	0.07	-0.67	0.07	Reject
		2	7.43	7.03	7.23	0.07	-0.20	-0.03	Accept
		3	7.48	7.12	7.30	0.07	-0.14	-0.27	Accept
		4	7.60	7.27	7.44	0.07	-0.18	-0.39	Accept
		5	7.69	7.35	7.52	0.07	-0.13	-0.35	Accept
		6	-	-	-	-	-	-	-
		7	-	-	-	-	-	-	-
		8	-	-	-	-	-	-	-
$t = 10$ days	5	1	7.34	6.92	7.18	0.08	-0.16	-0.24	Accept
		2	7.36	6.95	7.17	0.07	0.22	0.31	Accept
		3	7.43	7.04	7.24	0.06	0.35	0.26	Accept
		4	7.60	7.20	7.40	0.07	0.20	0.15	Accept
		5	7.71	7.28	7.50	0.07	0.18	0.25	Accept
		6	-	-	-	-	-	-	-
		7	-	-	-	-	-	-	-
		8	-	-	-	-	-	-	-
$t = 10$ days	6	1	7.24	6.82	7.02	0.07	0.35	0.21	Accept
		2	7.17	6.85	7.01	0.06	0.30	-0.02	Accept
		3	7.23	6.95	7.09	0.05	0.34	0.00	Reject
		4	7.42	7.09	7.23	0.06	0.53	0.32	Accept
		5	7.53	7.18	7.32	0.06	0.53	0.16	Accept
		6	7.60	7.24	7.38	0.07	0.46	0.20	Accept
		7	-	-	-	-	-	-	-
		8	-	-	-	-	-	-	-
$t = 30$ days	4	1	6.17	5.82	6.01	0.07	0.02	0.01	Accept
		2	6.26	5.86	6.08	0.07	-0.18	0.11	Accept
		3	6.27	5.83	6.09	0.08	-0.39	0.16	Accept
		4	6.22	5.77	6.04	0.08	-0.46	0.31	Reject
		5	6.19	5.73	5.99	0.08	-0.47	0.46	Accept
		6	6.17	5.68	5.96	0.09	-0.61	0.57	Accept
		7	6.12	5.65	5.91	0.08	-0.50	0.59	Reject
		8	6.08	5.60	5.87	0.09	-0.58	0.70	Reject
$t = 30$ days	5	1	6.76	6.54	6.66	0.04	-0.27	-0.05	Accept
		2	6.87	6.67	6.77	0.04	-0.12	-0.26	Accept
		3	6.93	6.69	6.80	0.04	-0.09	-0.08	Accept
		4	6.93	6.63	6.79	0.05	-0.32	0.23	Accept
		5	6.90	6.58	6.75	0.05	-0.34	0.16	Accept
		6	6.88	6.56	6.73	0.05	-0.44	0.31	Reject
		7	6.85	6.53	6.70	0.05	-0.43	0.32	Accept
		8	7.16	6.53	6.87	0.12	-0.11	0.04	Accept
$t = 30$ days	6	1	7.52	7.25	7.36	0.05	0.48	-0.06	Reject
		2	7.61	7.36	7.48	0.04	-0.11	-0.10	Accept
		3	7.70	7.44	7.56	0.04	0.01	-0.10	Accept
		4	7.76	7.49	7.60	0.04	0.20	0.01	Accept
		5	7.77	7.51	7.62	0.04	0.21	0.01	Accept
		6	7.77	7.51	7.62	0.04	0.23	0.08	Accept
		7	8.60	7.59	7.96	0.21	1.10	0.75	Reject
		8	8.85	7.78	8.24	0.13	-0.72	0.36	Reject
$t = 55$ days	4	1	4.85	4.19	4.52	0.12	0.16	-0.08	Accept
		2	4.88	4.18	4.53	0.13	0.09	0.00	Accept
		3	4.86	4.13	4.49	0.12	0.05	0.11	Accept
		4	4.80	4.06	4.43	0.12	0.03	0.08	Accept
		5	4.77	4.03	4.39	0.13	-0.04	-0.01	Accept
		6	4.76	4.01	4.37	0.12	-0.05	0.08	Accept
		7	4.73	4.00	4.35	0.12	-0.09	0.10	Accept
		8	4.71	3.97	4.33	0.13	-0.11	0.10	Accept
$t = 55$ days	5	1	5.15	4.44	4.81	0.12	-0.33	0.29	Accept
		2	5.52	4.46	4.82	0.13	-0.19	0.11	Accept
		3	5.14	4.42	4.78	0.14	-0.11	-0.08	Accept
		4	5.10	4.30	4.71	0.15	-0.21	-0.03	Reject
		5	5.06	4.24	4.67	0.15	-0.24	0.05	Accept
		6	5.04	4.22	4.65	0.15	-0.27	-0.03	Accept
		7	5.02	4.19	4.62	0.15	-0.26	0.01	Accept
		8	4.98	4.15	4.59	0.15	-0.32	0.06	Accept
$t = 55$ days	6	1	5.82	5.30	5.60	0.09	-0.42	0.09	Accept
		2	5.86	5.34	5.66	0.10	-0.58	0.19	Reject
		3	5.86	5.30	5.63	0.11	-0.69	0.53	Reject
		4	5.81	5.15	5.55	0.12	-0.68	0.49	Reject
		5	5.76	5.10	5.49	0.12	-0.55	0.31	Reject
		6	5.72	5.08	5.46	0.12	-0.57	0.35	Reject
		7	5.69	5.04	5.42	0.12	-0.54	0.19	Reject
		8	5.64	4.98	5.38	0.13	-0.51	0.05	Reject

Table D-2 The descriptive statistics of the phreatic line for dyke 2, Case 4 to Case 6.

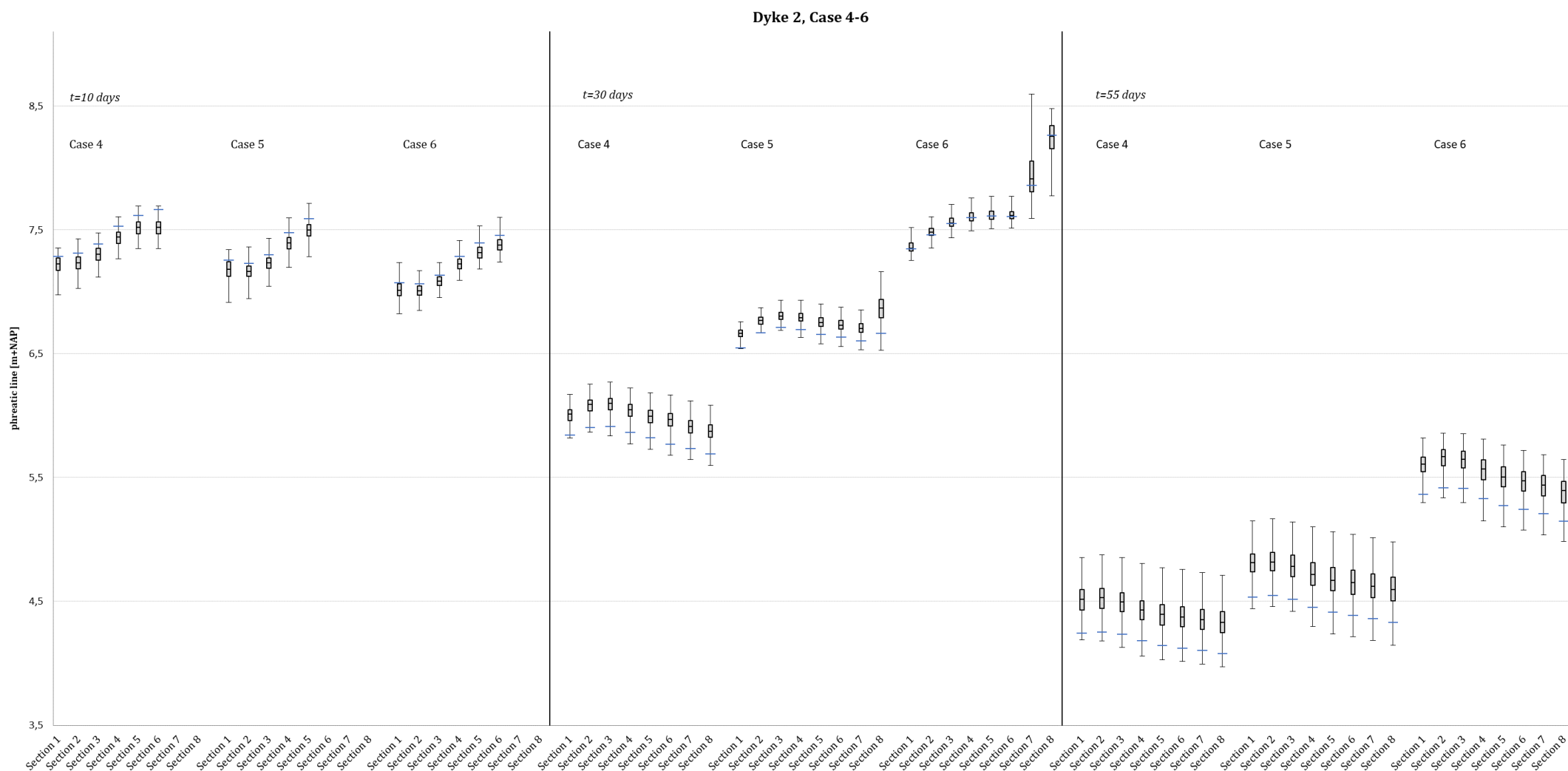


Figure D-20 The box-plots of the phreatic line for Case 4 to Case

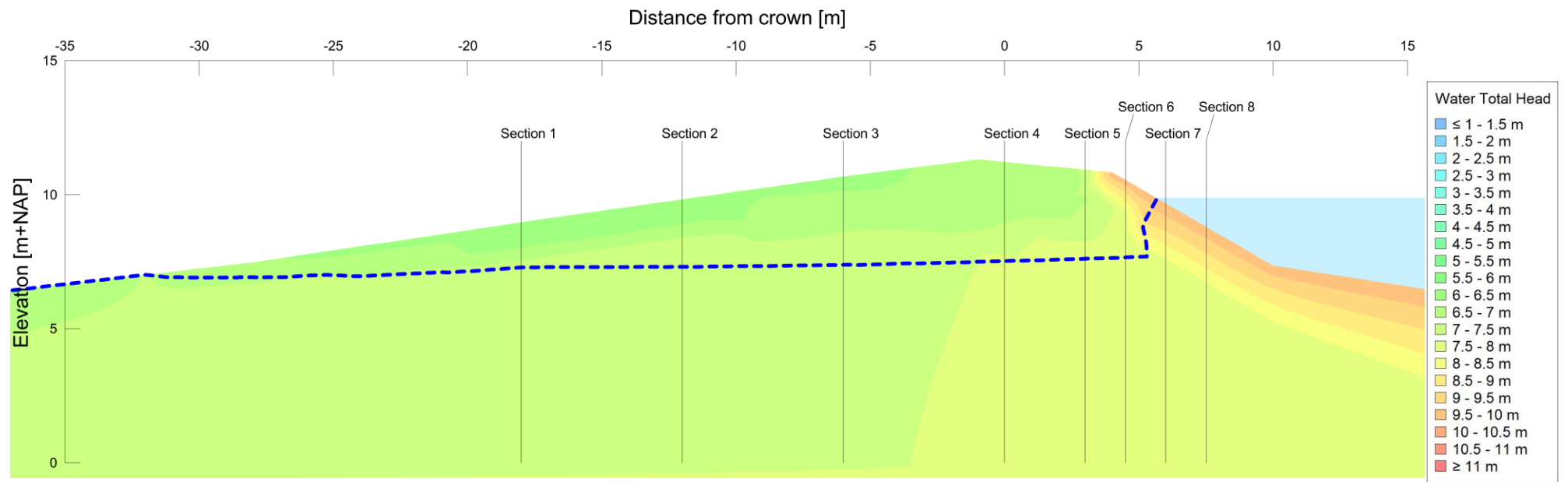


Figure D-21 Dike 2, case 4, $t = 10$ days, deterministic phreatic line and pressure head color shading

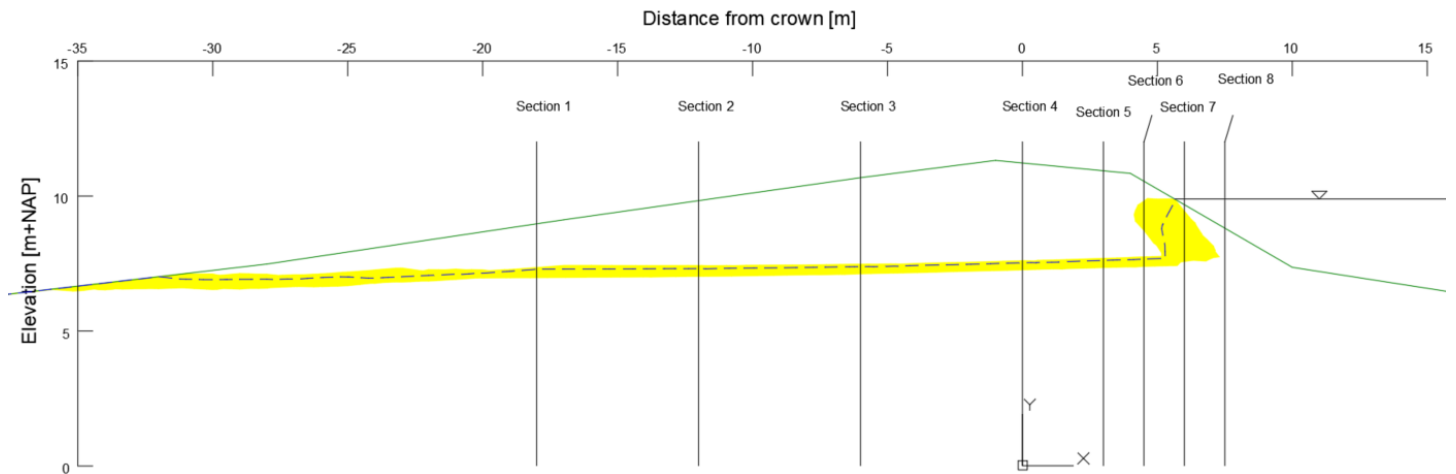
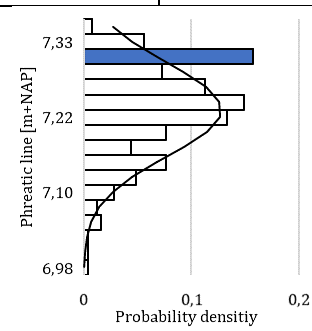
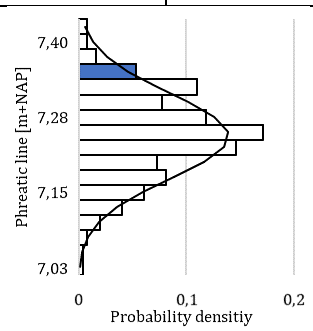
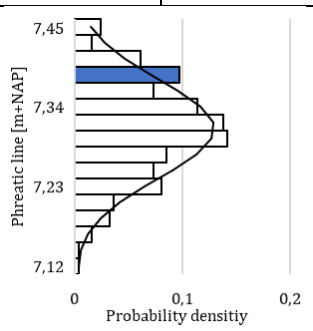
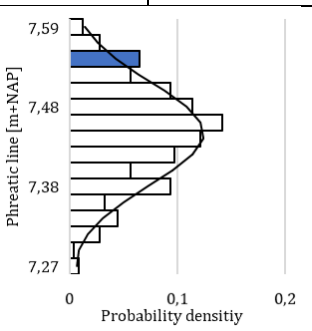
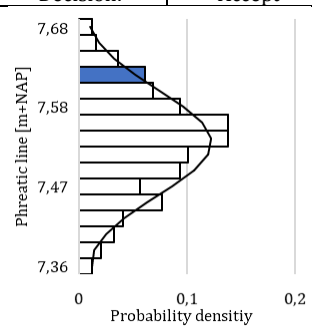
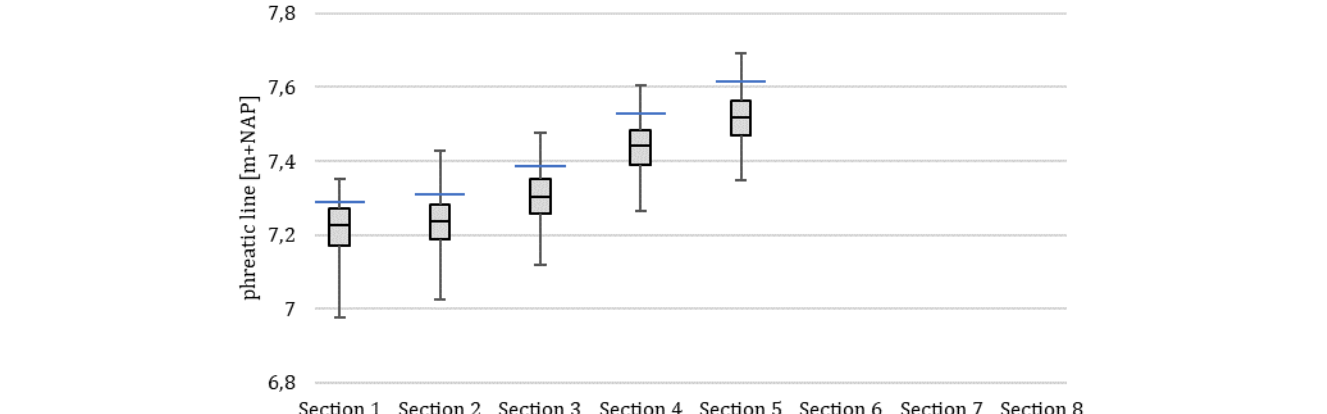


Figure D-22 Dike 2, case 4, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines

Section 1		Section 2		Section 3		Section 4	
PDF type:	Gamma	PDF type:	Gamma	PDF type:	Gamma	PDF type:	Gamma
Decision:	Reject	Decision:	Accept	Decision:	Accept	Decision:	Accept
							
Section 5		Section 6		Section 7		Section 8	
PDF type:	Gamma	PDF type:	N/A	PDF type:	N/A	PDF type:	N/A
Decision:	Accept	Decision:	N/A	Decision:	N/A	Decision:	N/A
							
							

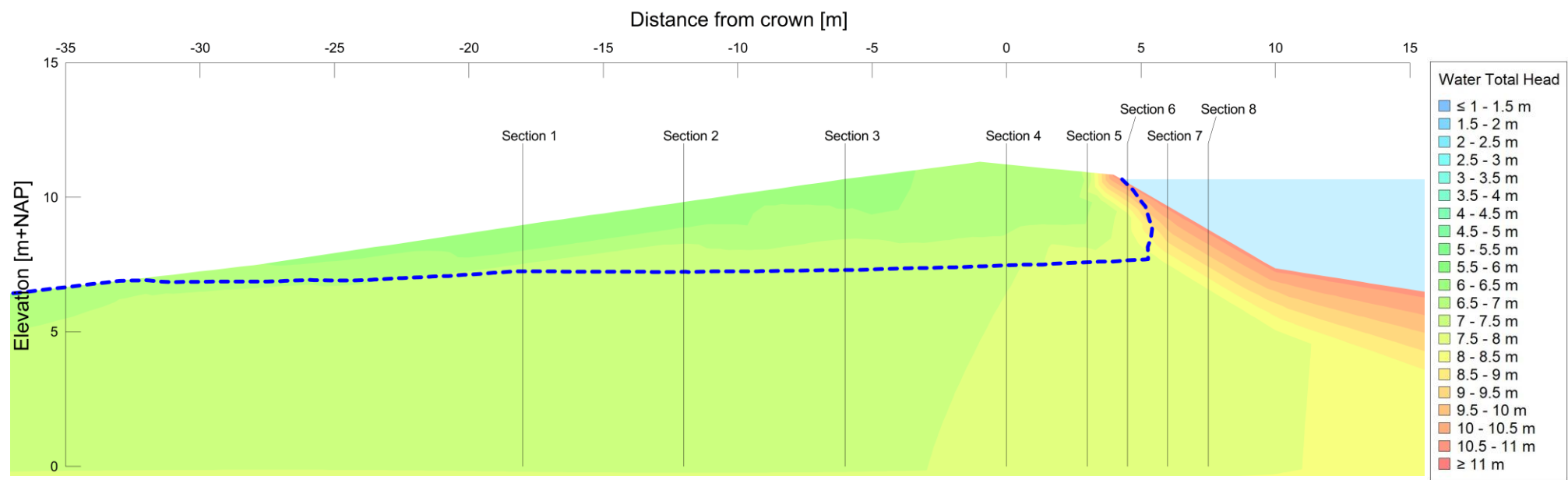


Figure D-23 Dike 2, case 5, $t = 10$ days, deterministic phreatic line and pressure head color shading

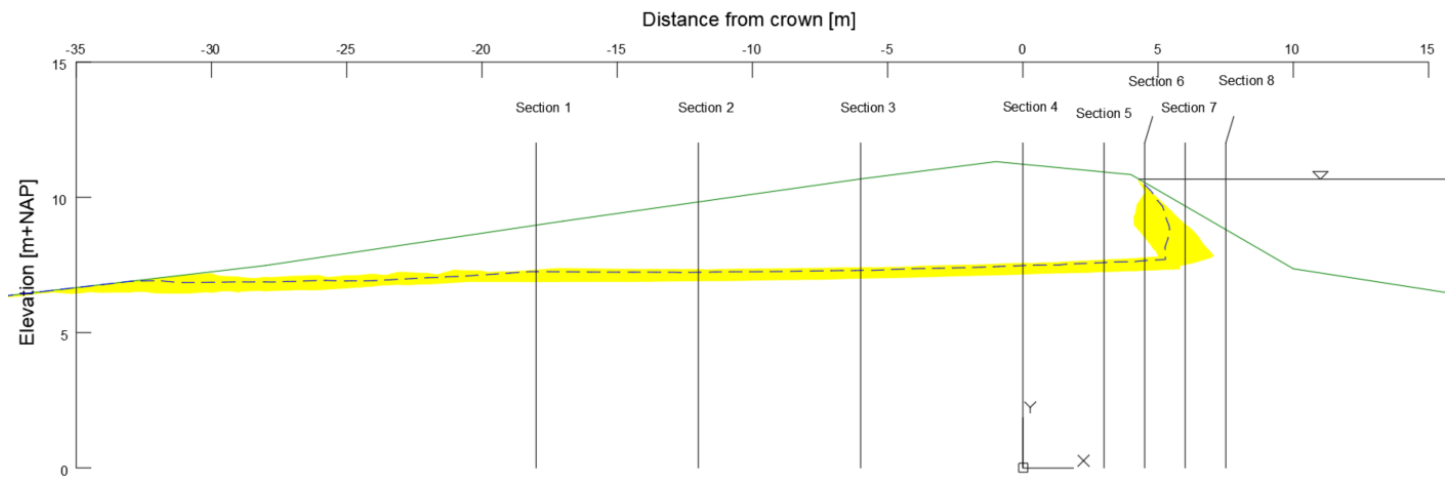
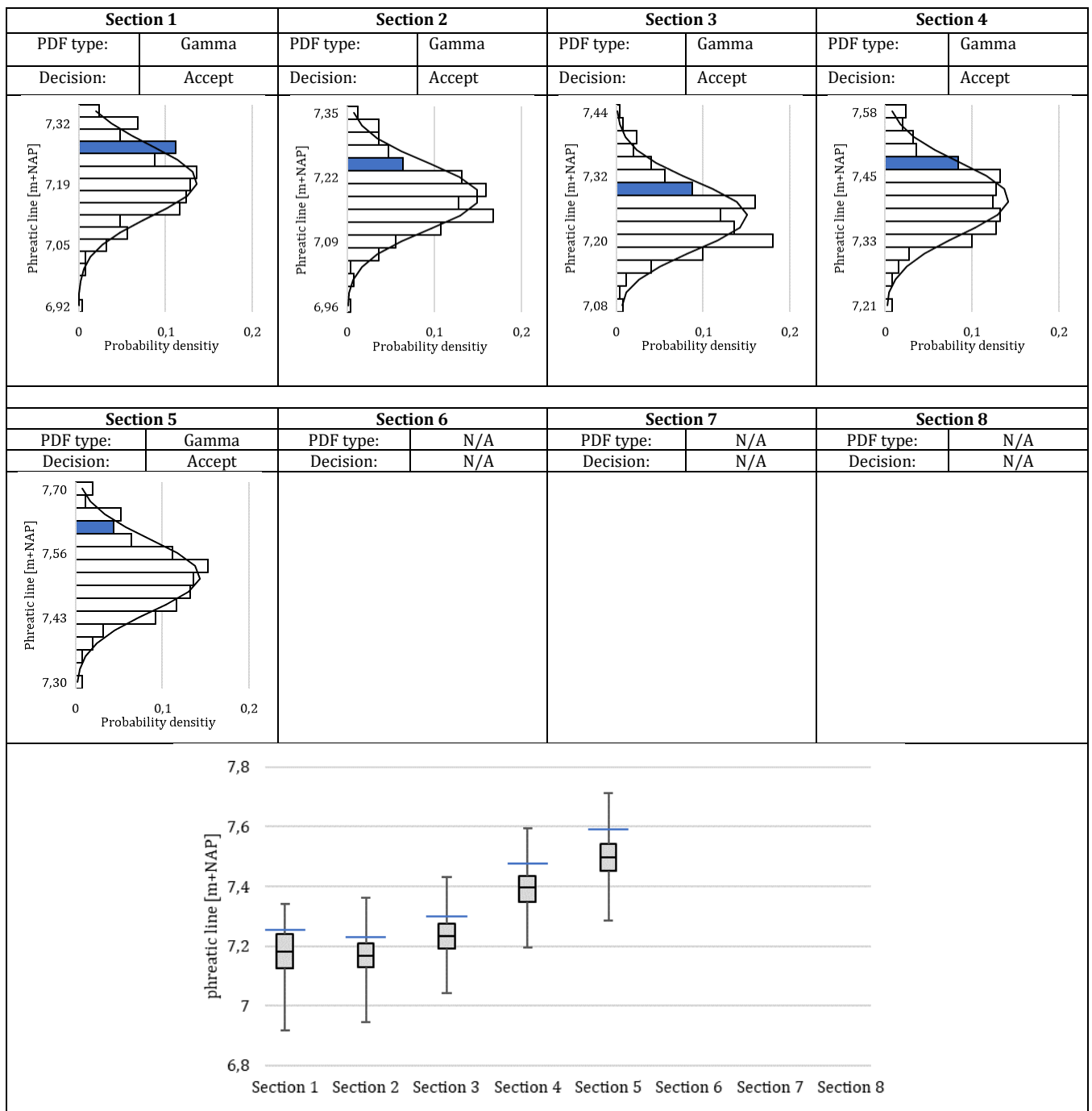


Figure D-24 Dike 2, case 5, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



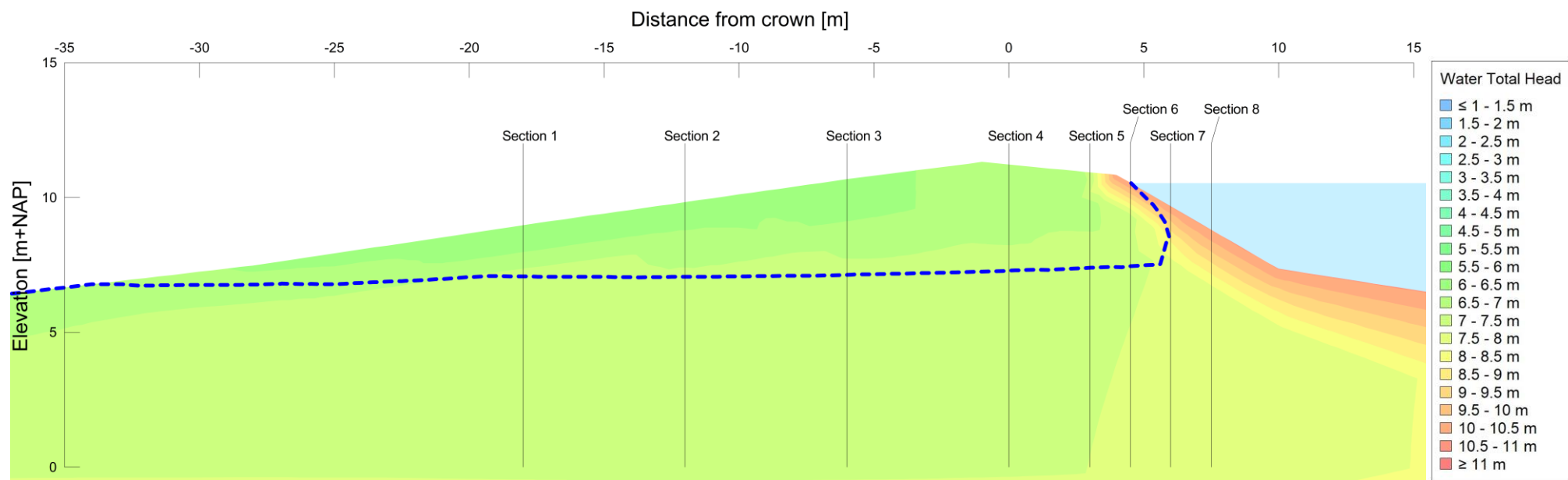


Figure D-25 Dike 2, case 6, $t = 10$ days, deterministic phreatic line and pressure head color shading

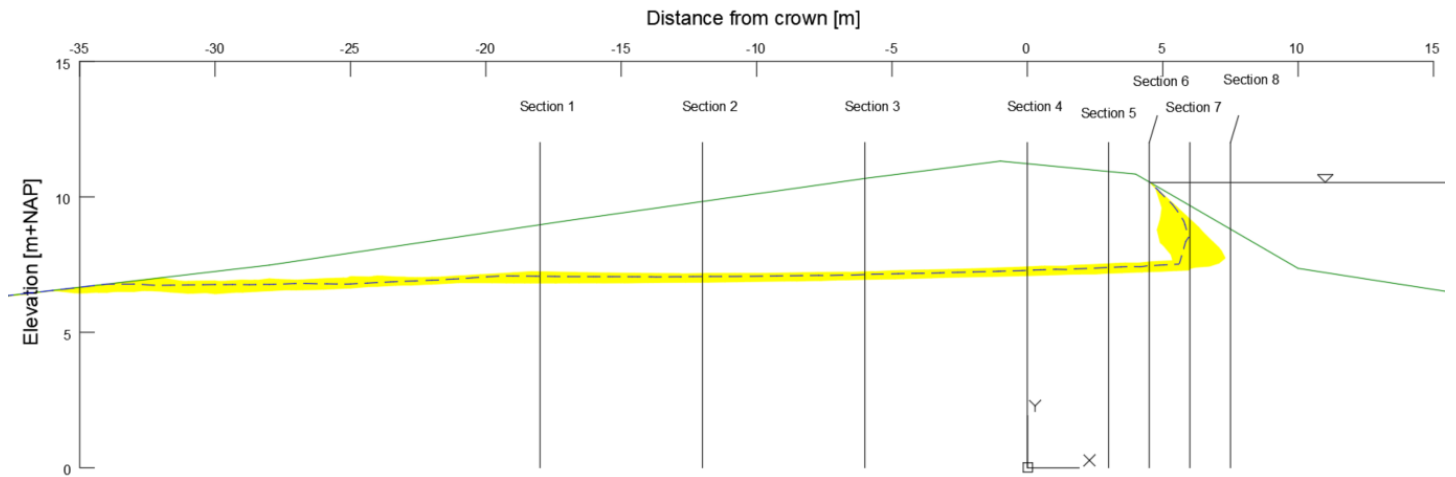
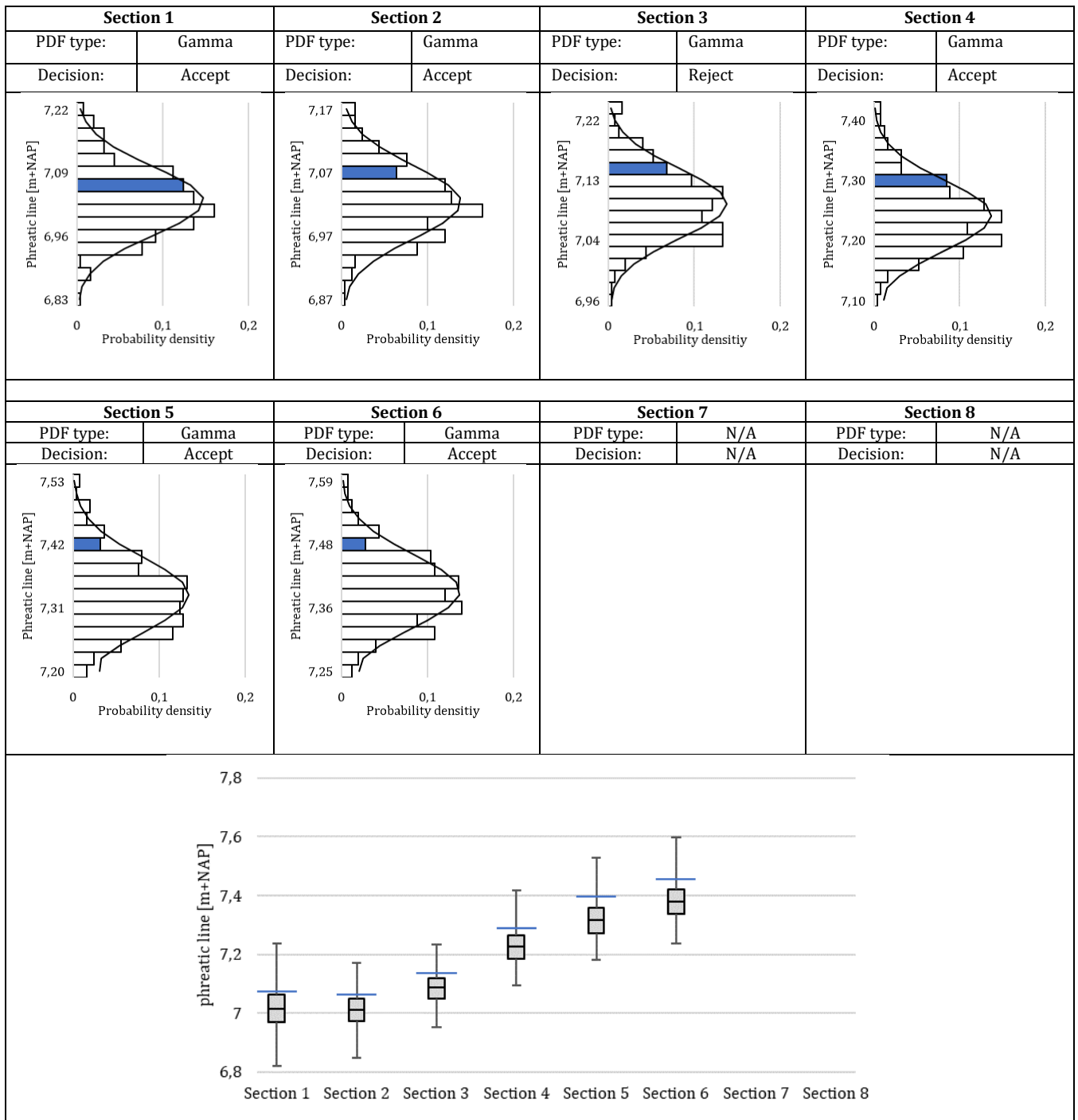


Figure D- 26 Dike 2, case 6, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



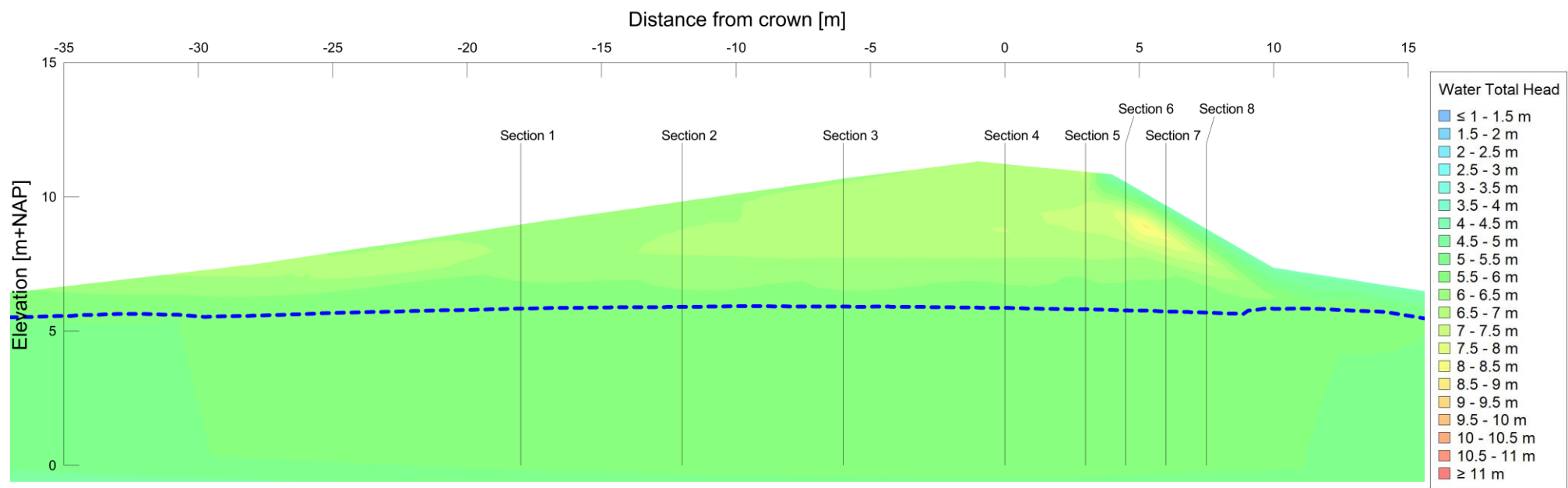


Figure D-27 Dike 2, case 4, $t = 30$ days, deterministic phreatic line and pressure head color shading

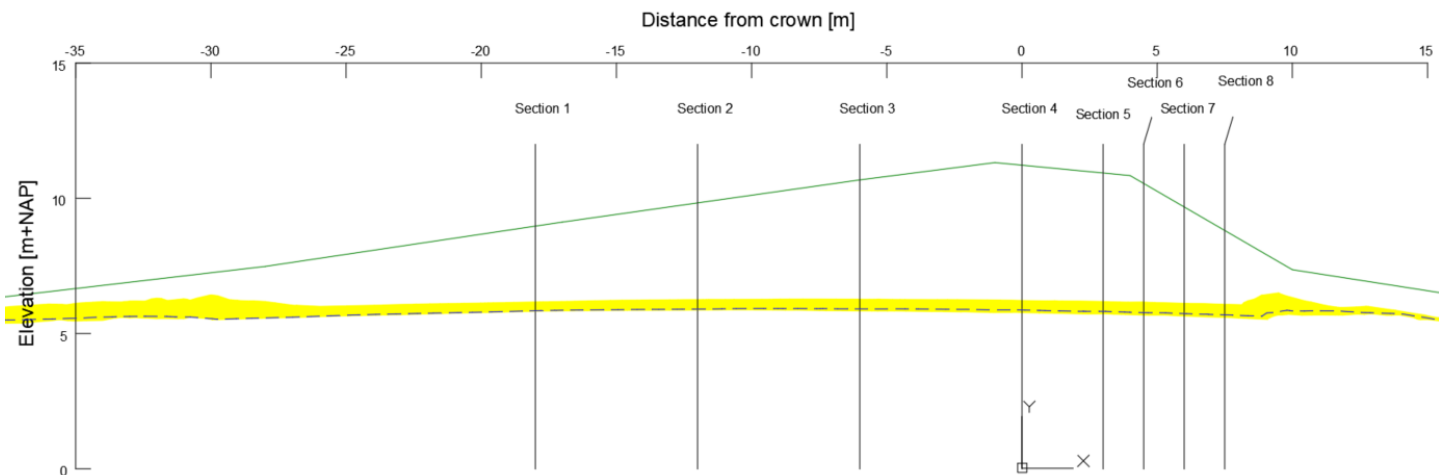
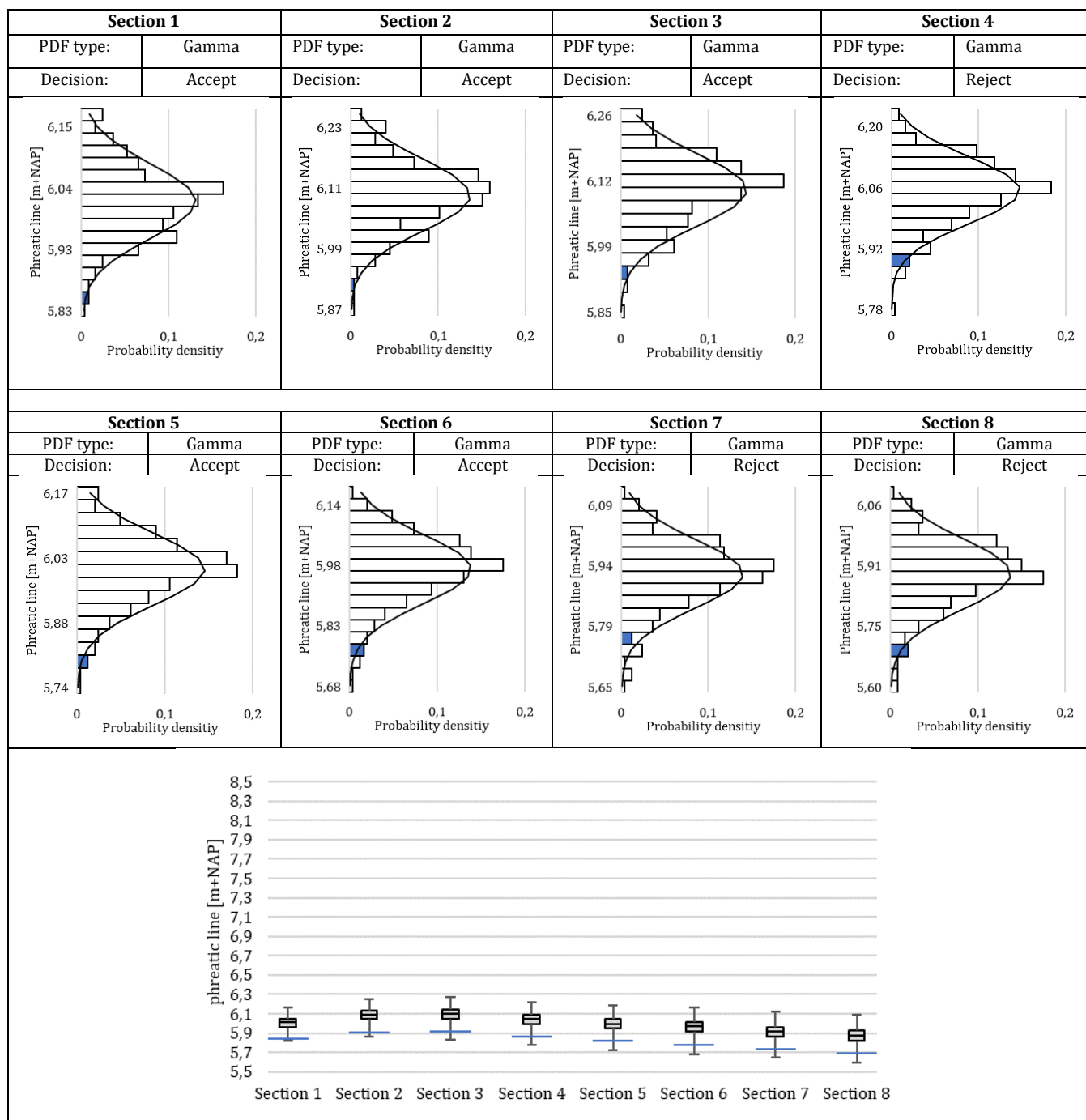


Figure D-28 Dike 2, case 4, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



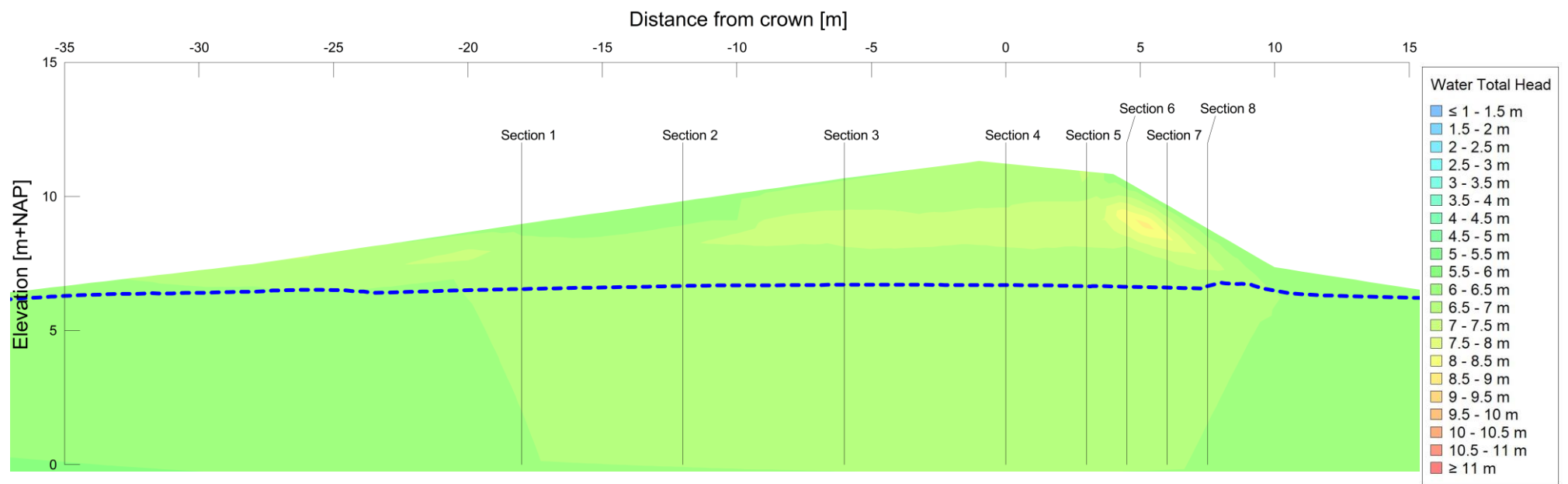


Figure D- 29 Dike 2, case 5, $t = 30$ days, deterministic phreatic line and pressure head color shading

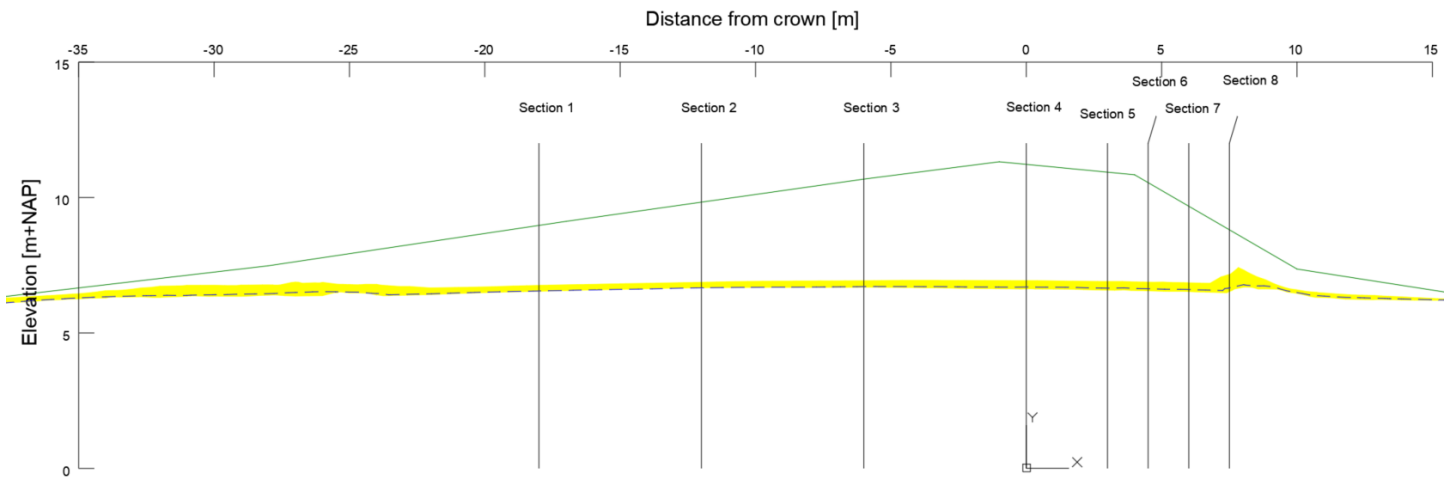
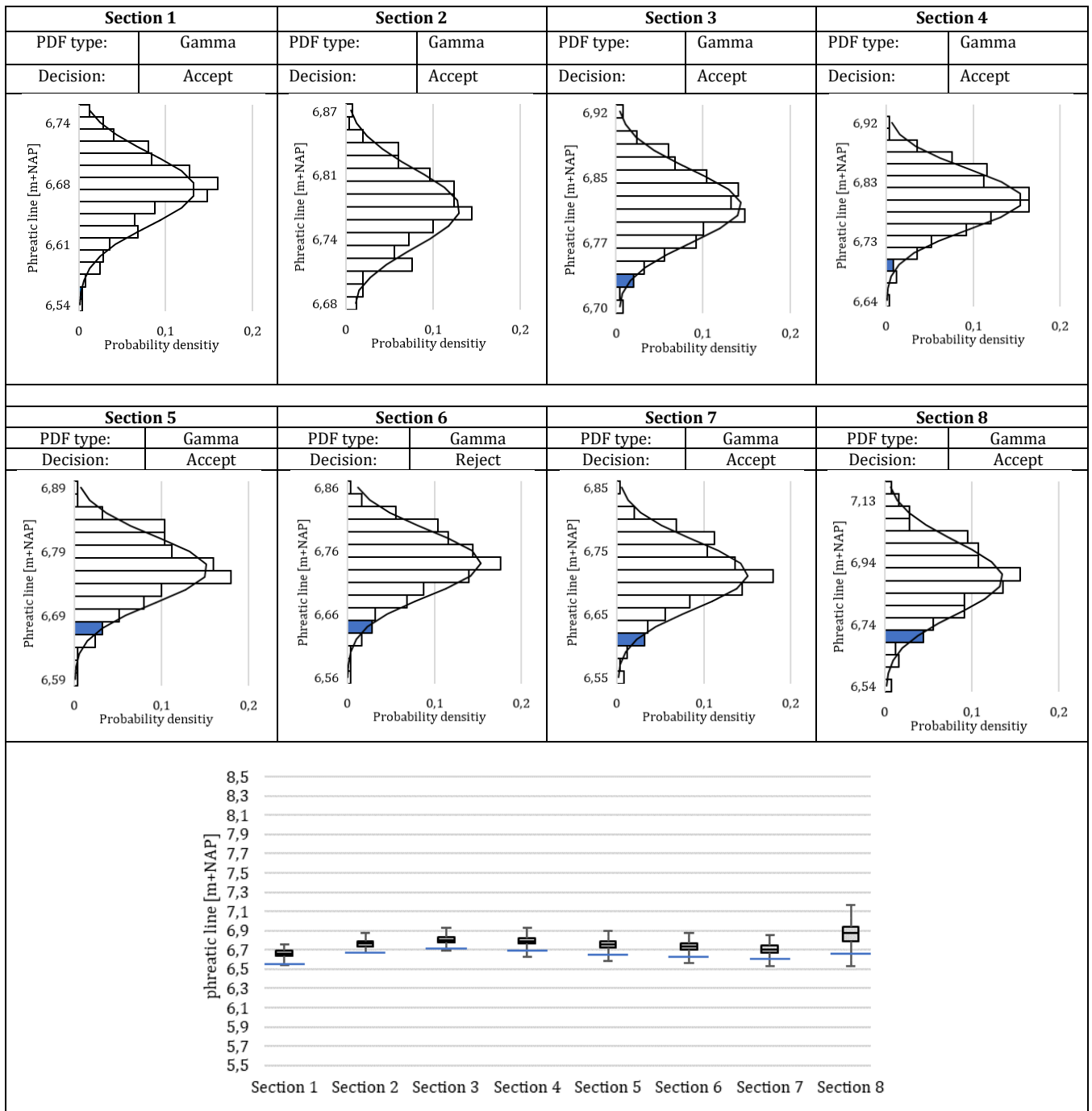


Figure D-30 Dike 2, case 5, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



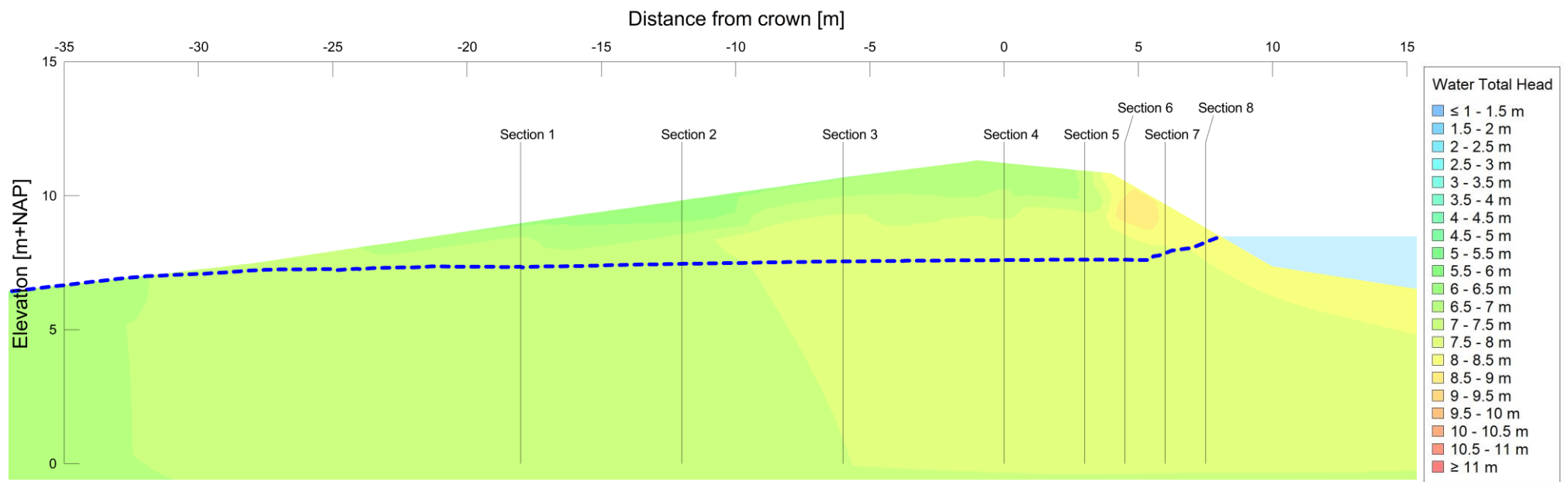


Figure D-31 Dike 2, case 6, $t = 30$ days, deterministic phreatic line and pressure head color shading

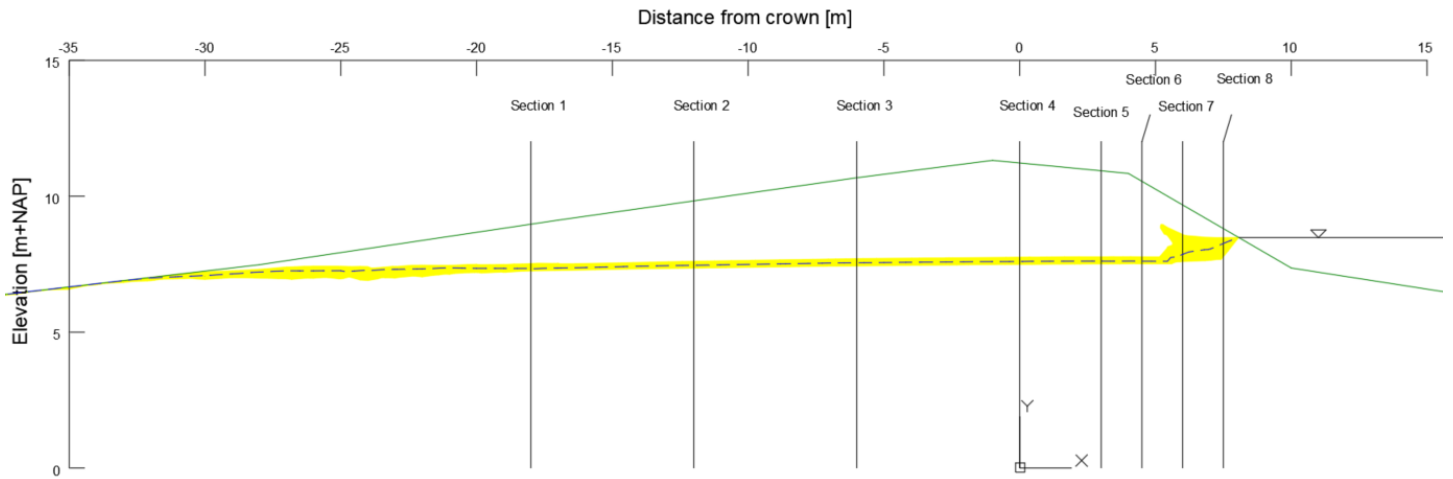
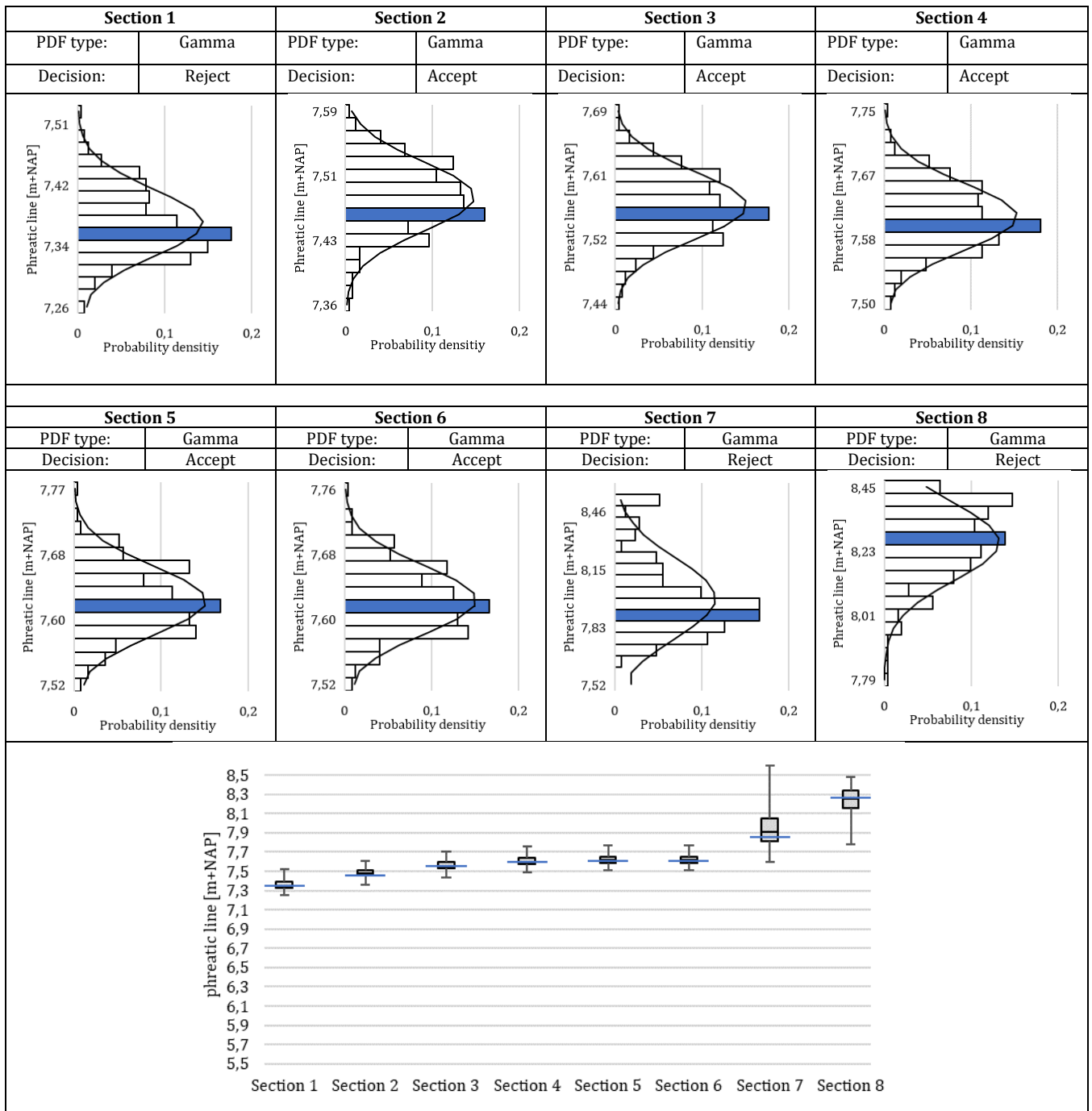


Figure D-32 Dike 2, case 6, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



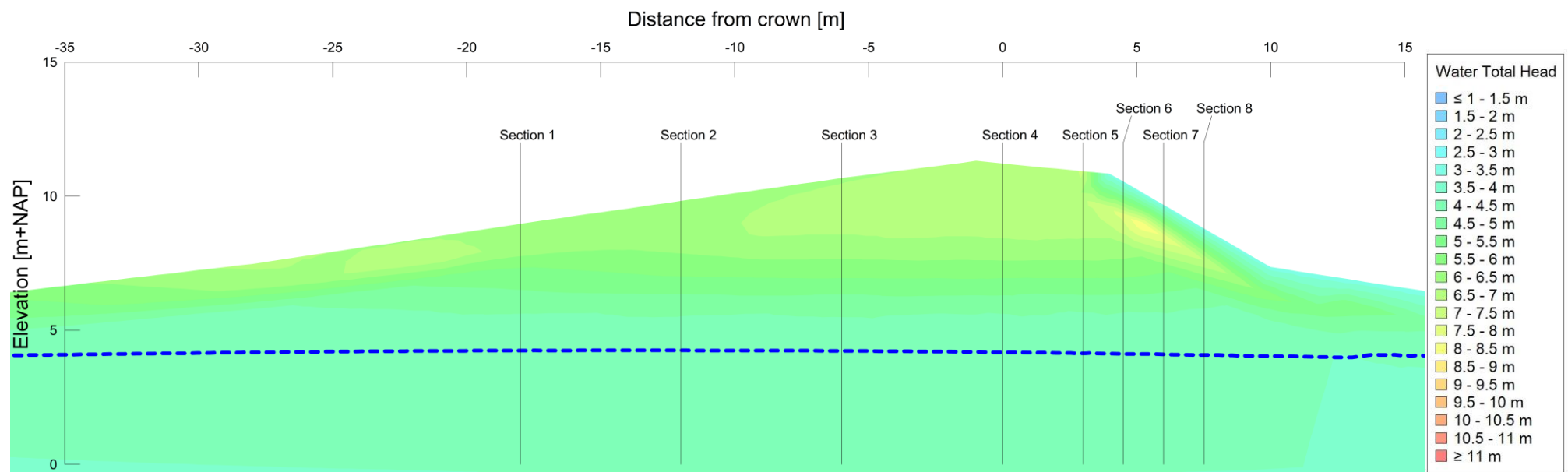


Figure D-33 Dike 2, case 4, $t = 55$ days, deterministic phreatic line and pressure head color shading

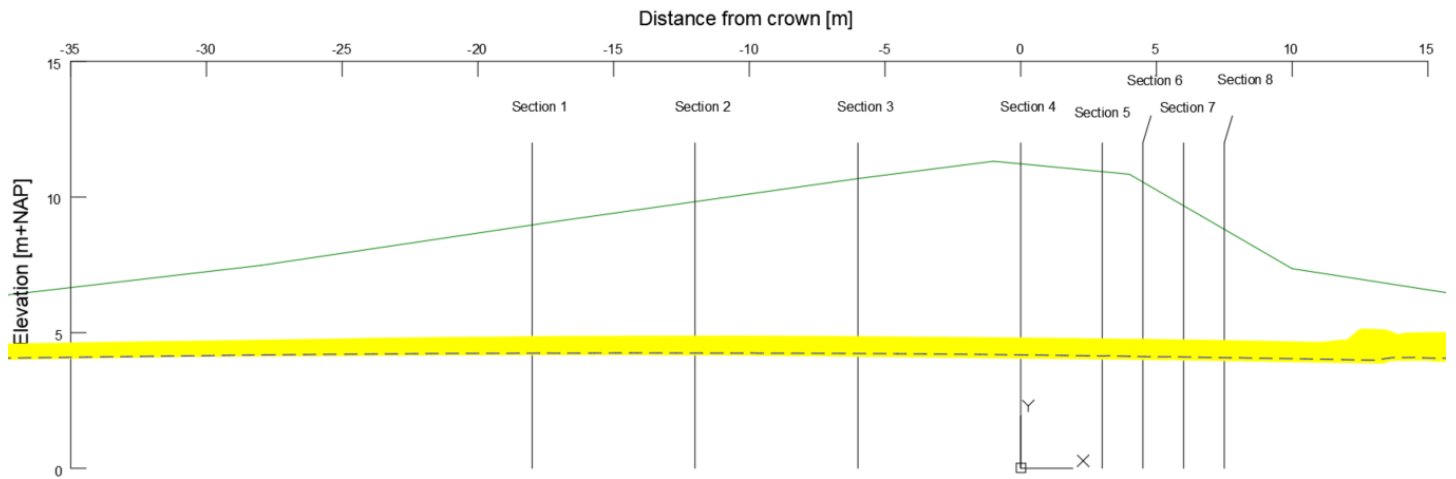
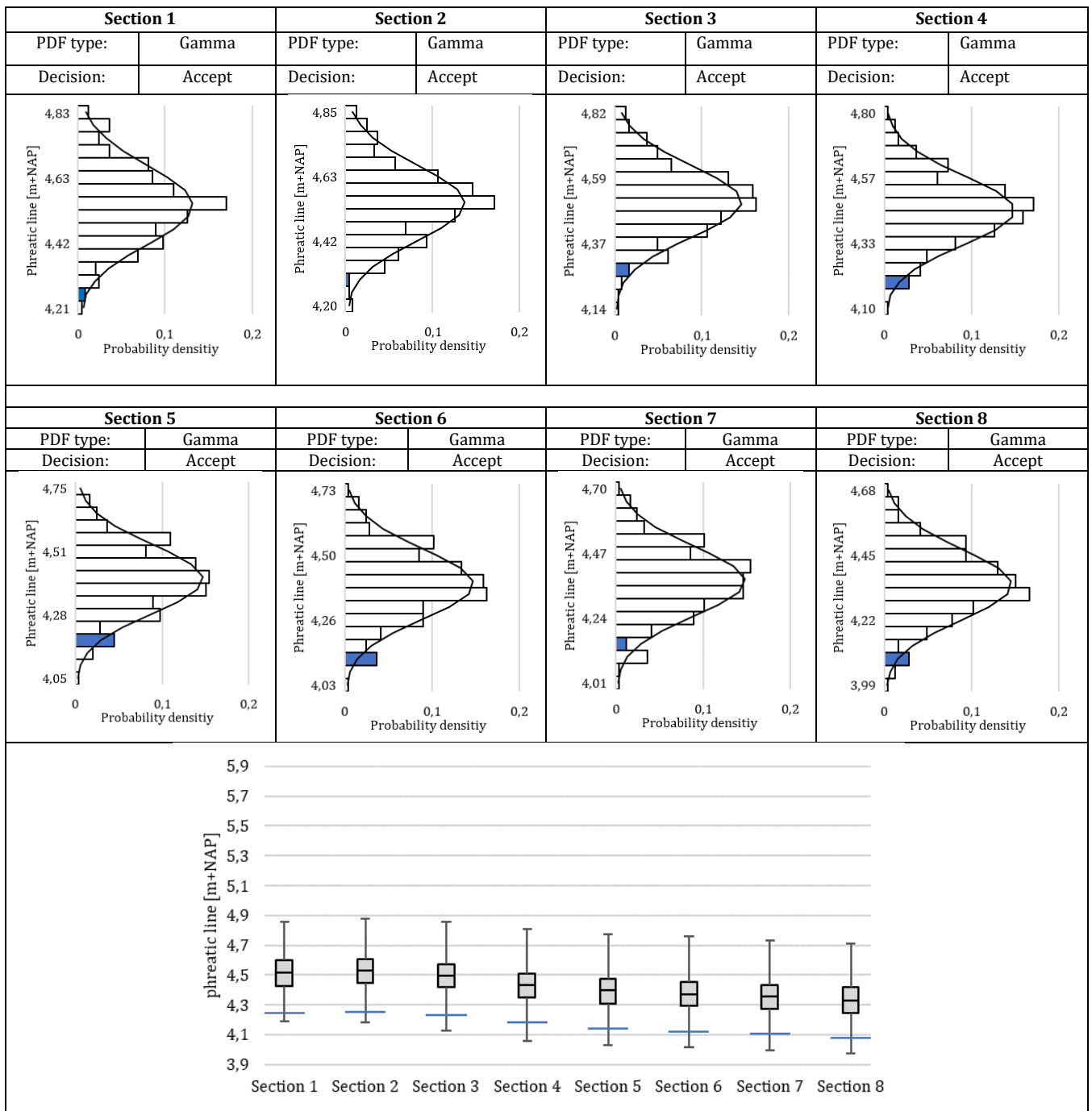


Figure D-34 Dike 2, case 4, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



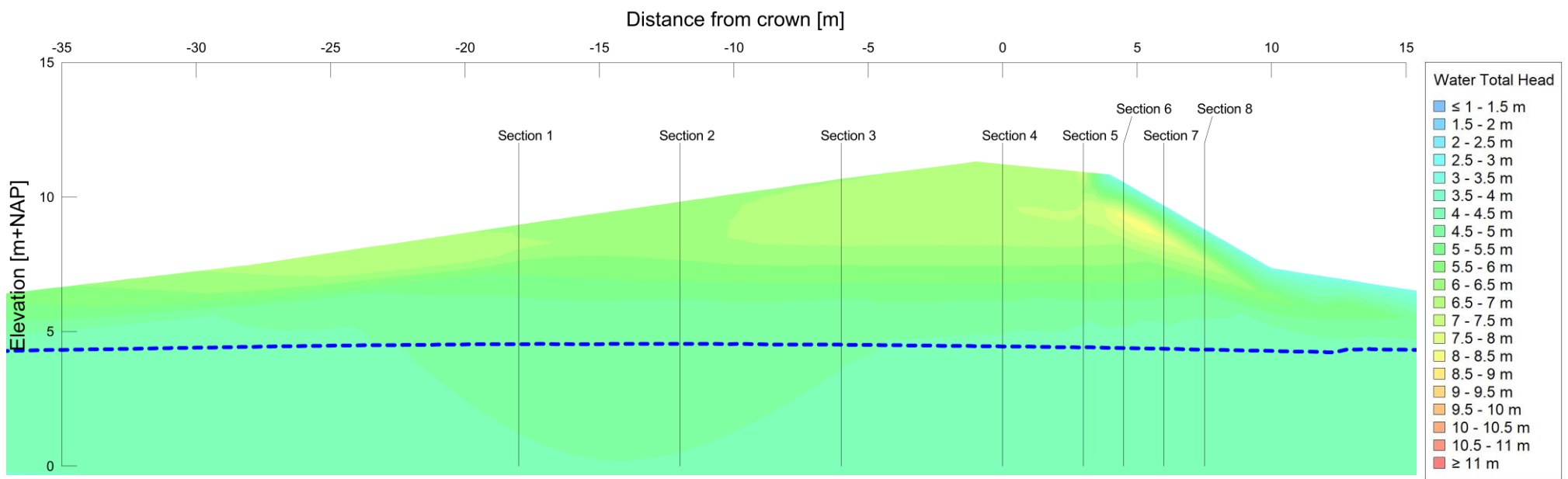


Figure D-35 Dike 2, case 5, $t = 55$ days, deterministic phreatic line and pressure head color shading

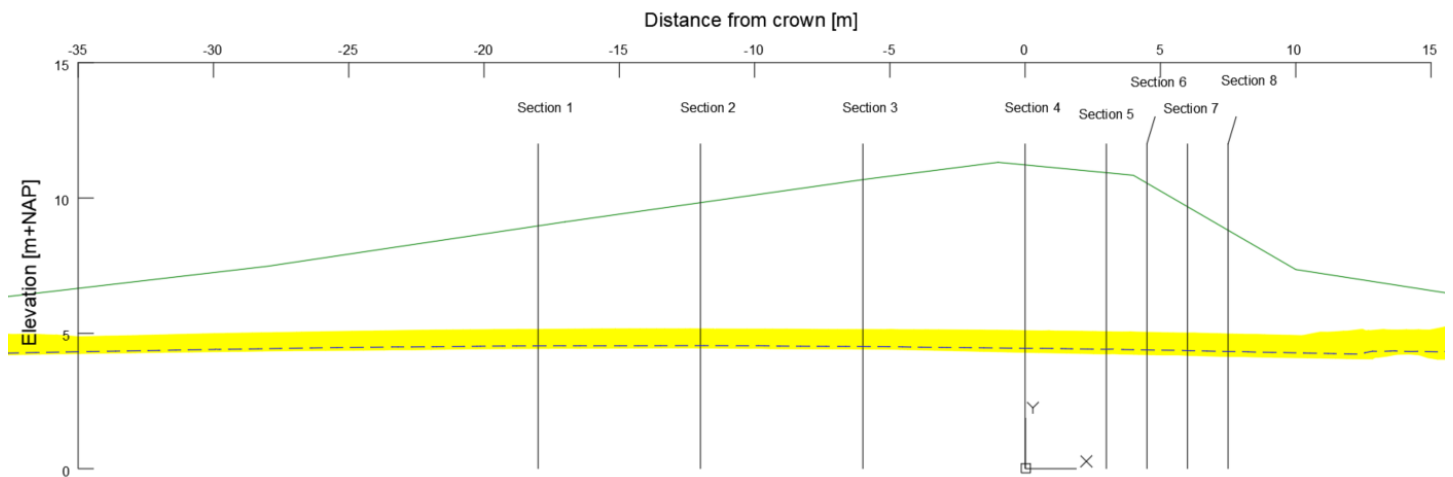
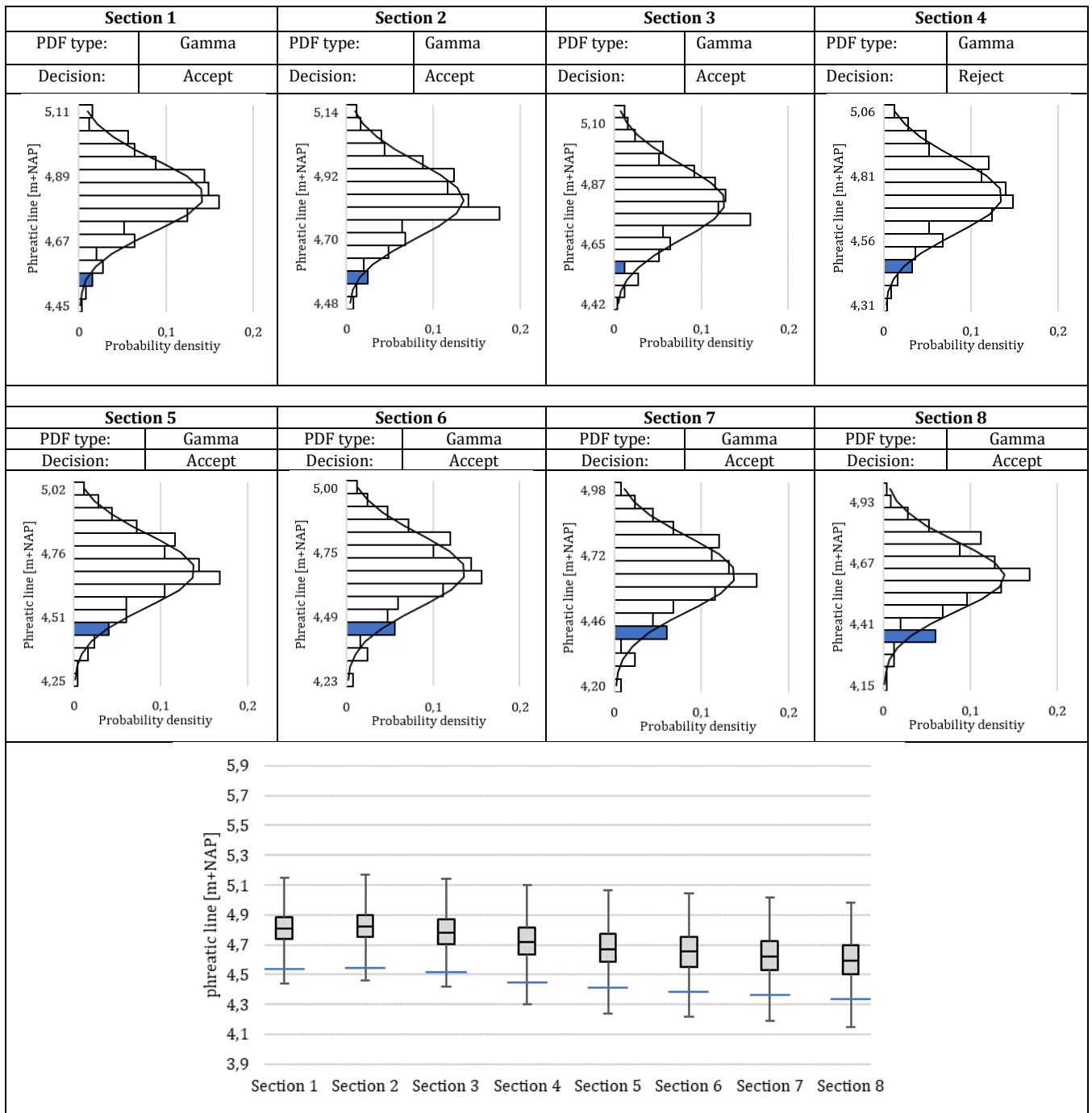


Figure D-36 Dike 2, case 5, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



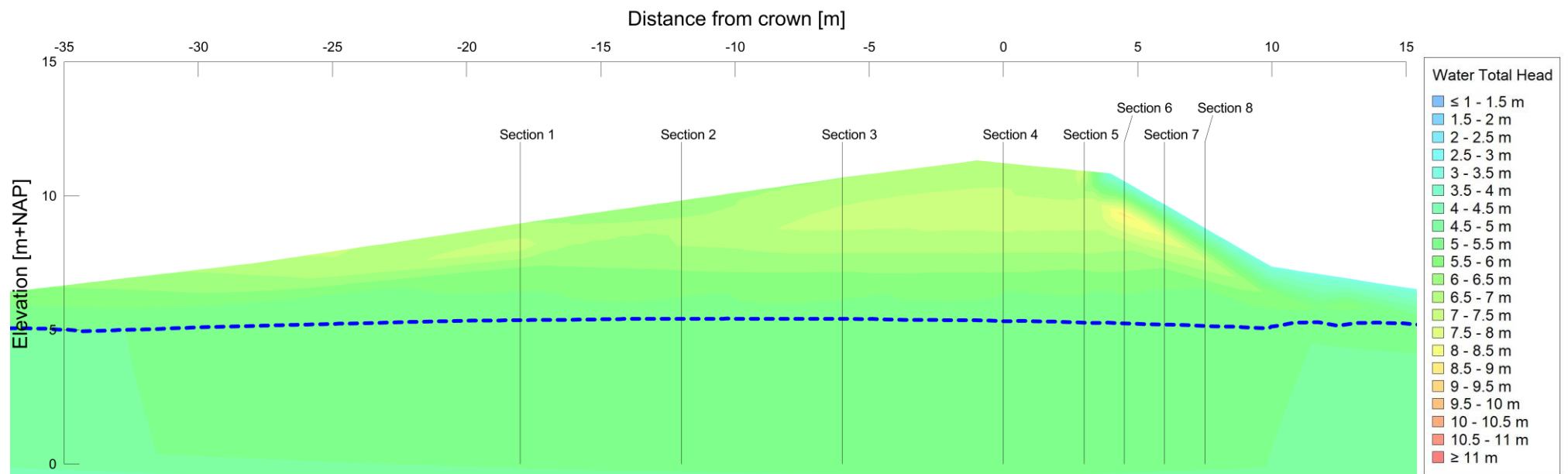


Figure D-37 Dike 2, case 6, $t = 55$ days, deterministic phreatic line and pressure head color shading

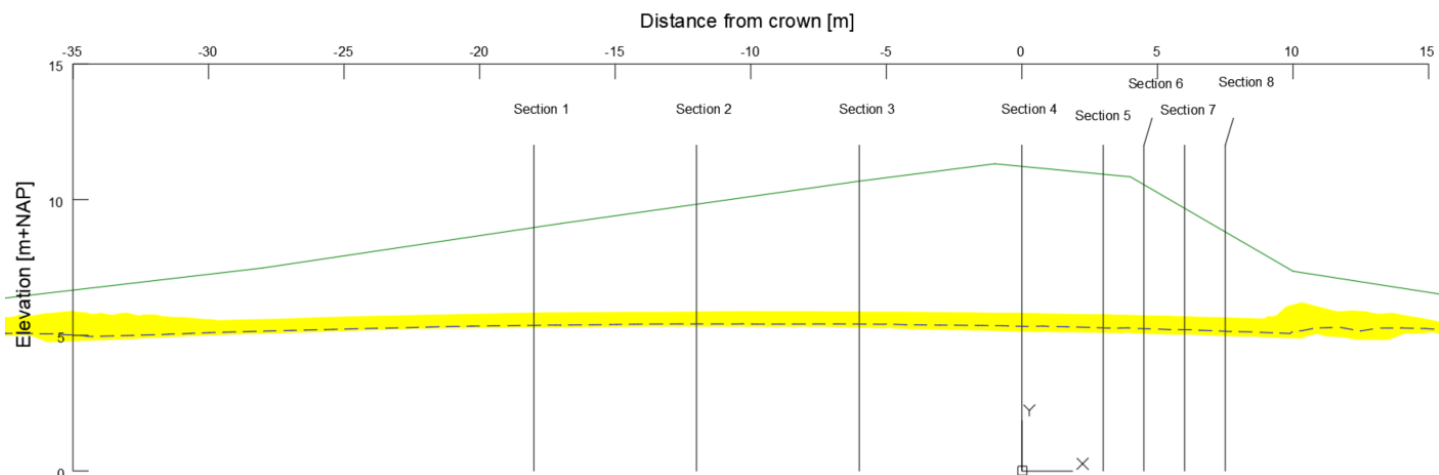
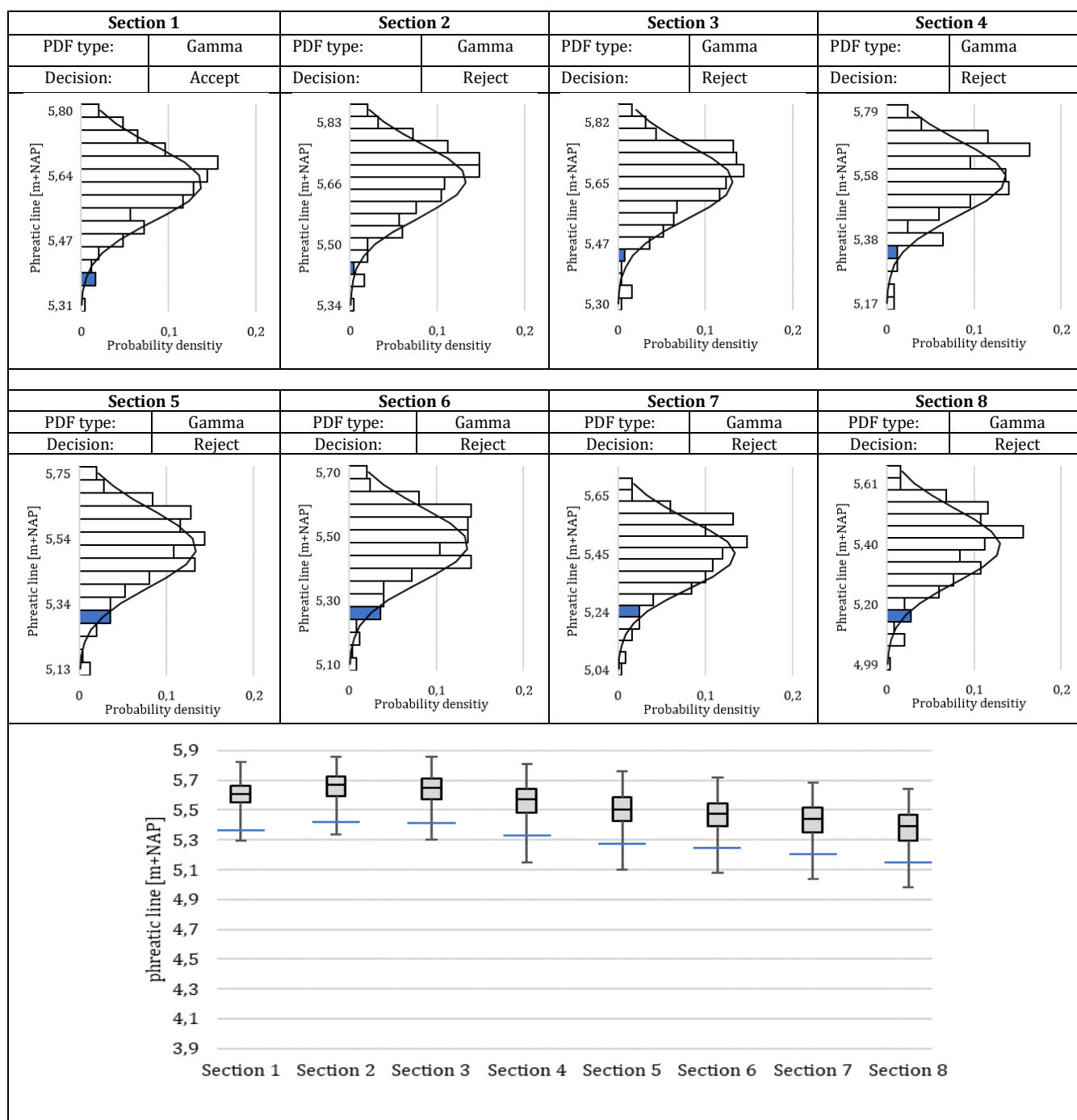


Figure D-38 Dike 2, case 6, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



Times	Case No.	Sect.	Max (z)	Min (z)	μ (z)	σ (z)	Skewness	Kurtosis	Chi-square (X^2) $\alpha' = 0.05$
			[m + NAP]						Decision
t = 10 days	7	1	7.29	7.29	7.29	0.00	0.31	-0.36	Accept
		2	7.31	7.31	7.31	0.00	0.19	0.11	Accept
		3	7.39	7.38	7.38	0.00	0.09	-0.36	Accept
		4	7.53	7.53	7.53	0.00	0.12	-0.27	Accept
		5	7.62	7.61	7.61	0.00	0.18	0.25	Reject
		6	7.67	7.66	7.67	0.00	0.03	0.32	Accept
		7	-	-	-	-	-	-	-
		8	-	-	-	-	-	-	-
t = 10 days	8	1	7.26	7.25	7.25	0.00	-0.04	-0.48	Accept
		2	7.23	7.23	7.23	0.00	-0.14	-0.61	Accept
		3	7.30	7.30	7.30	0.00	-0.14	0.21	Accept
		4	7.48	7.47	7.48	0.00	0.00	0.55	Accept
		5	7.59	7.59	7.59	0.00	-0.19	-0.28	Accept
		6	7.66	7.66	7.66	0.00	0.04	-0.10	Accept
		7	-	-	-	-	-	-	-
		8	-	-	-	-	-	-	-
t = 10 days	9	1	7.07	7.07	7.07	0.00	-0.07	-0.03	Accept
		2	7.06	7.06	7.06	0.00	0.09	-0.13	Accept
		3	7.14	7.13	7.13	0.00	-0.08	-0.12	Accept
		4	7.29	7.28	7.29	0.00	-0.10	-0.41	Accept
		5	7.40	7.39	7.40	0.00	0.10	0.36	Accept
		6	7.46	7.45	7.46	0.00	-0.29	0.23	Accept
		7	-	-	-	-	-	-	-
		8	-	-	-	-	-	-	-
t = 30 days	7	1	5.84	5.84	5.84	0.00	-0.02	-0.30	Accept
		2	5.91	5.90	5.90	0.00	-0.32	-0.14	Accept
		3	5.91	5.91	5.91	0.00	-0.17	-0.07	Accept
		4	5.87	5.87	5.87	0.00	-0.04	-0.13	Accept
		5	5.82	5.82	5.82	0.00	-0.39	0.02	Accept
		6	5.77	5.77	5.77	0.00	-0.30	0.37	Accept
		7	5.74	5.73	5.74	0.00	-0.50	0.49	Reject
		8	5.69	5.69	5.69	0.00	-0.01	-0.27	Accept
t = 30 days	8	1	6.55	6.55	6.55	0.00	-0.09	0.80	Reject
		2	6.67	6.66	6.67	0.00	0.22	0.50	Accept
		3	6.71	6.71	6.71	0.00	-0.28	-0.04	Accept
		4	6.70	6.70	6.70	0.00	0.11	-0.50	Reject
		5	6.66	6.65	6.65	0.00	0.01	-0.20	Accept
		6	6.63	6.63	6.63	0.00	-0.05	-0.19	Accept
		7	6.61	6.60	6.61	0.00	0.05	0.00	Accept
		8	6.67	6.66	6.66	0.00	0.20	-0.31	Reject
t = 30 days	9	1	7.35	7.34	7.35	0.00	-0.02	-0.53	Accept
		2	7.46	7.46	7.46	0.00	0.05	-0.40	Accept
		3	7.55	7.55	7.55	0.00	-0.21	-0.16	Accept
		4	7.60	7.60	7.60	0.00	-0.02	-0.29	Accept
		5	7.61	7.61	7.61	0.00	-0.09	-0.46	Accept
		6	7.61	7.61	7.61	0.00	0.04	-0.45	Reject
		7	7.86	7.86	7.86	0.00	-0.15	-0.19	Accept
		8	8.26	8.26	8.26	0.00	-0.01	-0.60	Accept
t = 55 days	7	1	4.25	4.24	4.25	0.00	-0.35	-0.30	Accept
		2	4.25	4.25	4.25	0.00	-0.17	-0.15	Accept
		3	4.23	4.23	4.23	0.00	-0.39	-0.03	Accept
		4	4.18	4.18	4.18	0.00	-0.16	0.28	Accept
		5	4.15	4.14	4.14	0.00	-0.11	-0.19	Accept
		6	4.12	4.12	4.12	0.00	-0.34	-0.01	Accept
		7	4.11	4.10	4.11	0.00	-0.25	0.08	Accept
		8	4.08	4.08	4.08	0.00	-0.02	0.16	Accept
t = 55 days	8	1	4.54	4.54	4.54	0.00	-0.05	-0.36	Accept
		2	4.55	4.55	4.55	0.00	-0.02	-0.17	Accept
		3	4.52	4.51	4.52	0.00	0.12	-0.02	Accept
		4	4.45	4.45	4.45	0.00	0.11	-0.08	Accept
		5	4.41	4.41	4.41	0.00	-0.32	-0.17	Accept
		6	4.39	4.38	4.39	0.00	-0.14	0.03	Accept
		7	4.36	4.36	4.36	0.00	-0.14	-0.30	Accept
		8	4.33	4.33	4.33	0.00	-0.27	-0.35	Accept
t = 55 days	9	1	5.37	5.36	5.37	0.00	0.04	0.11	Accept
		2	5.42	5.42	5.42	0.00	0.05	0.13	Accept
		3	5.42	5.41	5.41	0.00	-0.01	-0.27	Accept
		4	5.33	5.33	5.33	0.00	0.12	-0.44	Accept
		5	5.28	5.27	5.27	0.00	0.00	0.02	Accept
		6	5.25	5.24	5.24	0.00	0.05	-0.03	Accept
		7	5.21	5.20	5.21	0.00	0.27	0.09	Accept
		8	5.15	5.15	5.15	0.00	0.07	-0.30	Accept

Table D-3 The descriptive statistics of the phreatic line for dyke 2, Case 7 to Case 9.

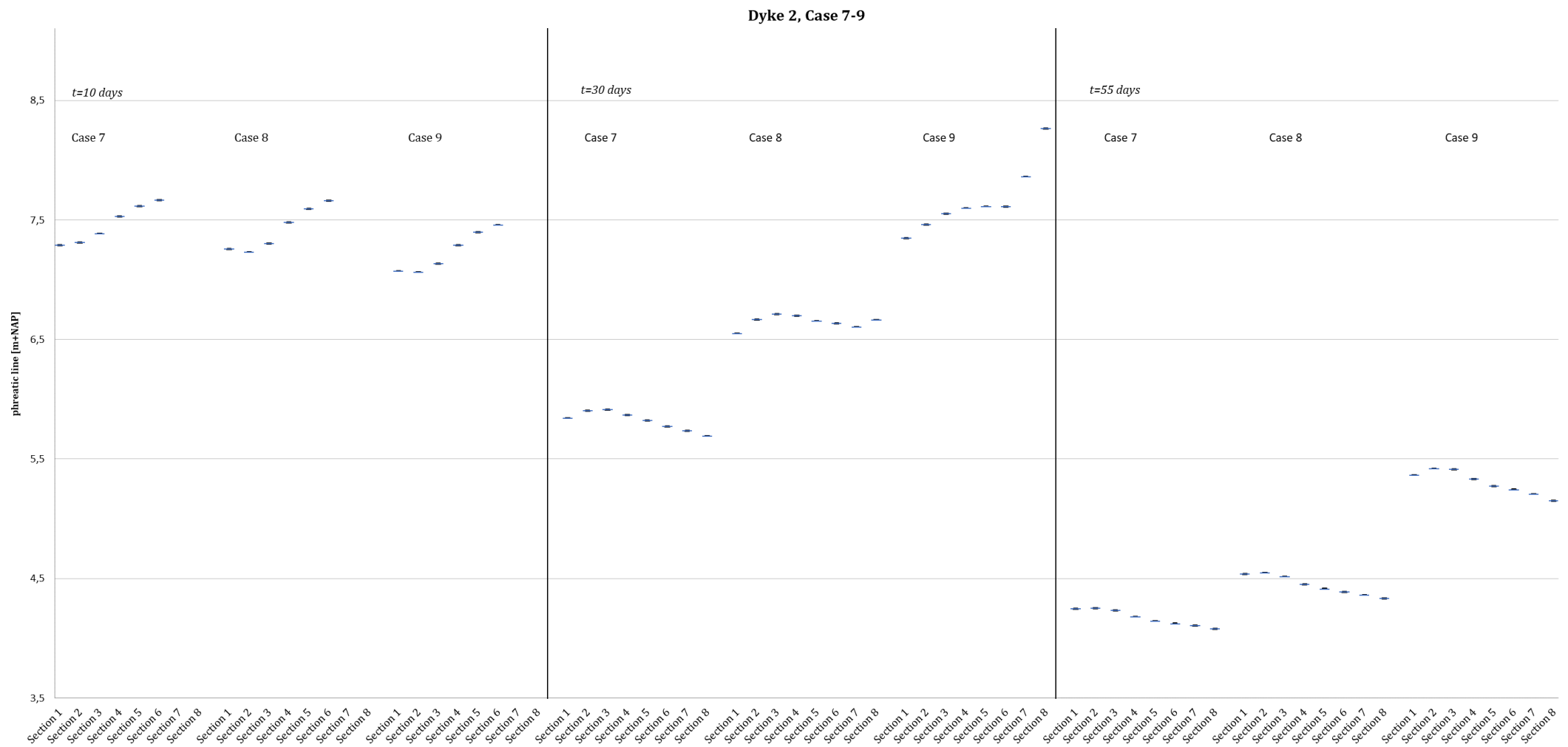


Figure D-39 The box-plots of the phreatic line for Case 7 to Case

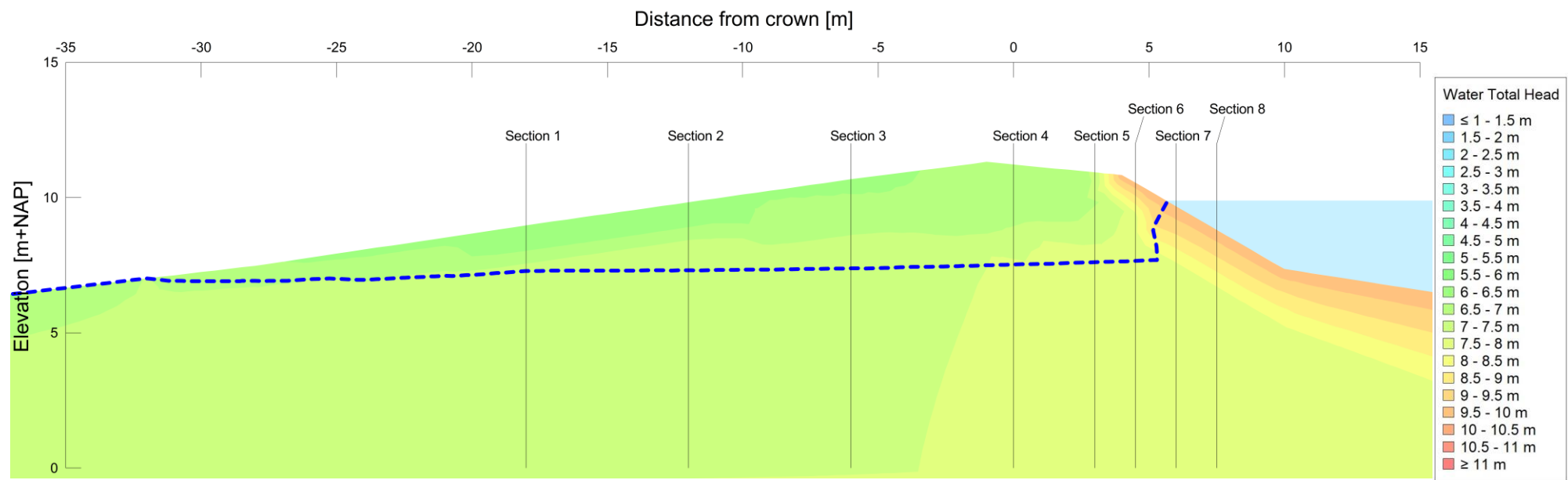


Figure D-40 Dike 2, case 7, $t = 10$ days, deterministic phreatic line and pressure head color shading

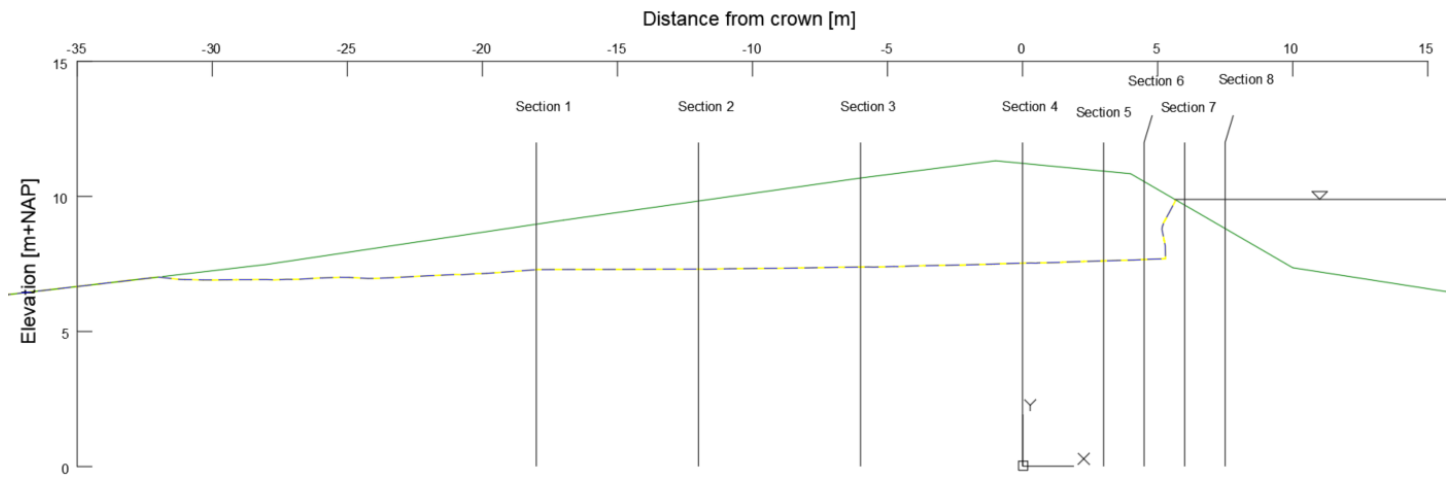
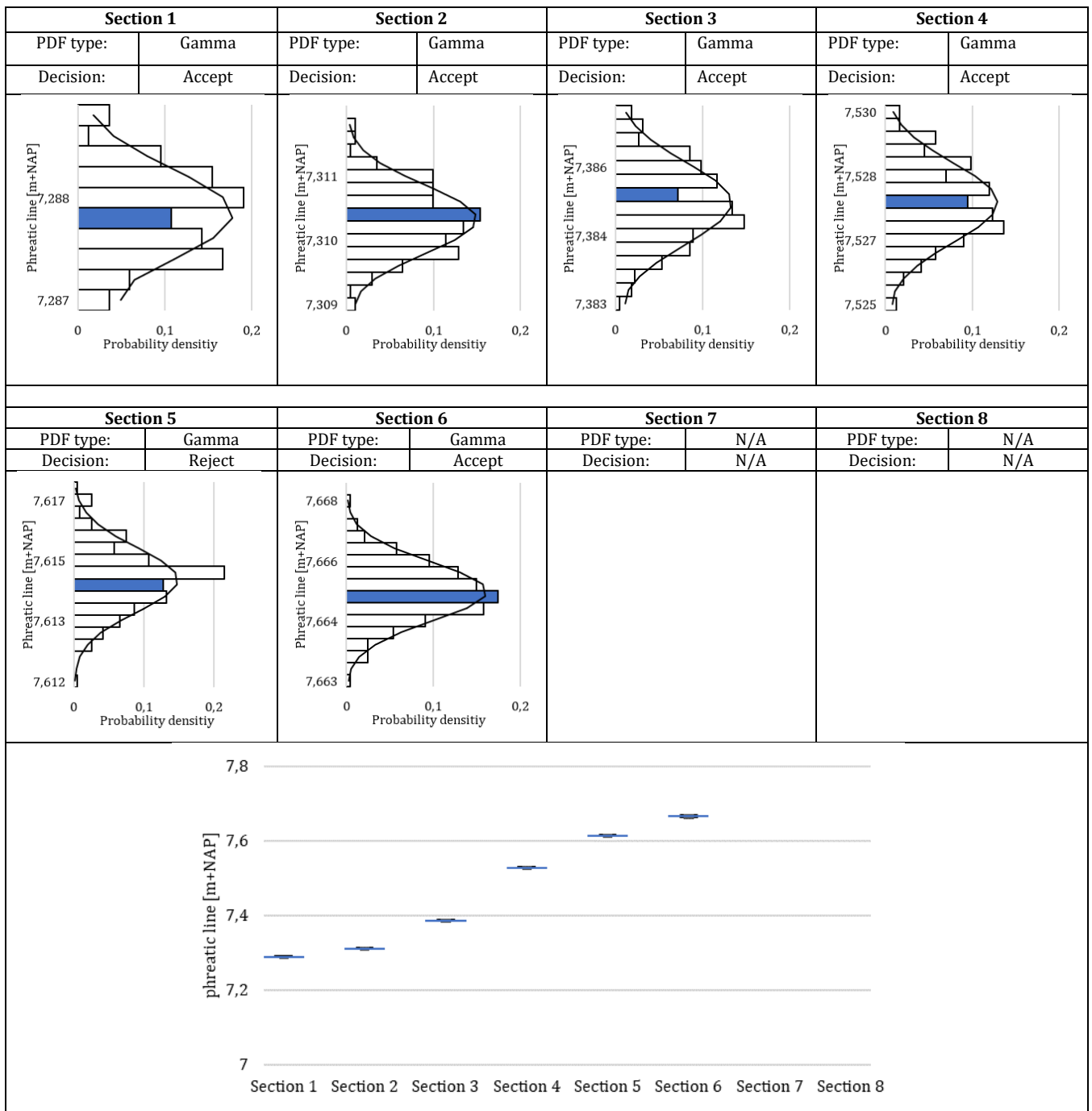


Figure D-41 Dike 2, case 6, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



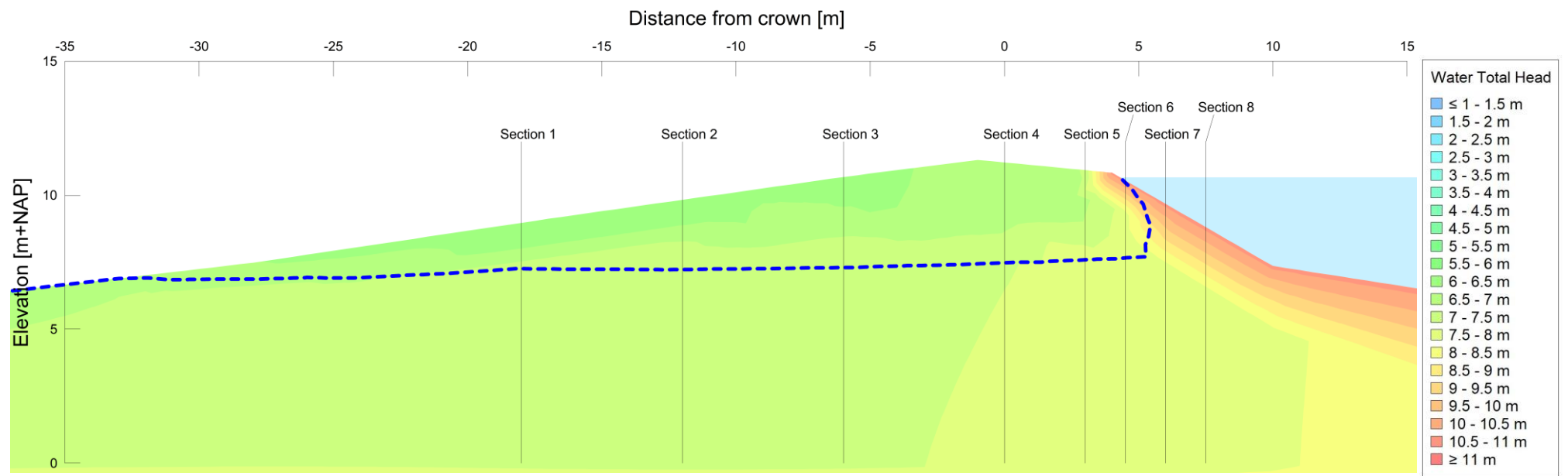


Figure D-42 Dike 2, case 8, $t = 10$ days, deterministic phreatic line and pressure head color shading

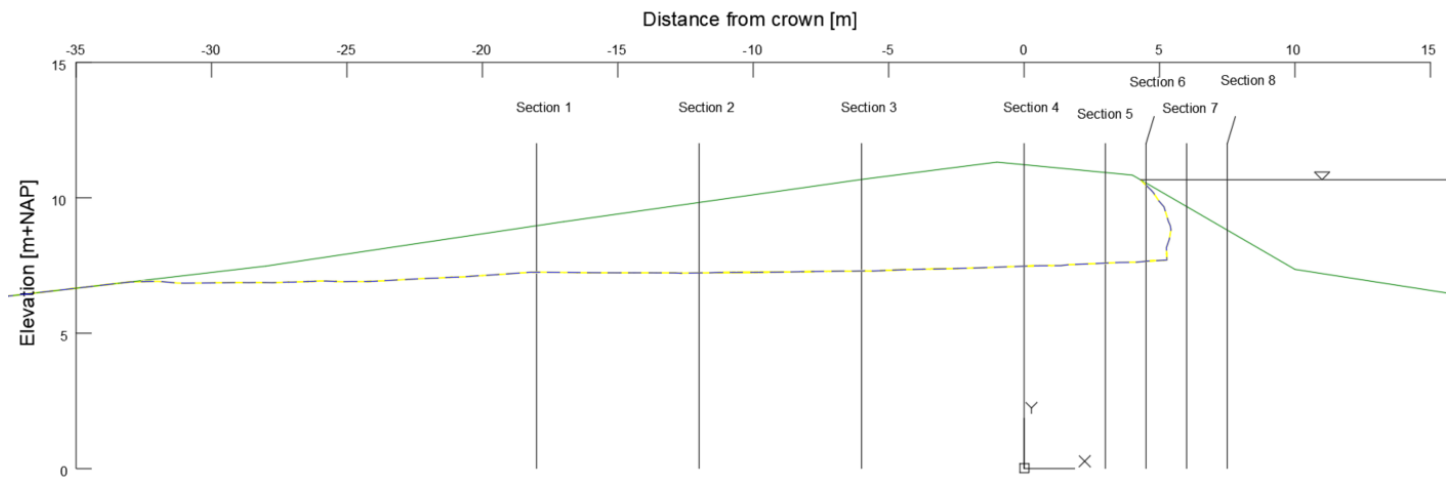
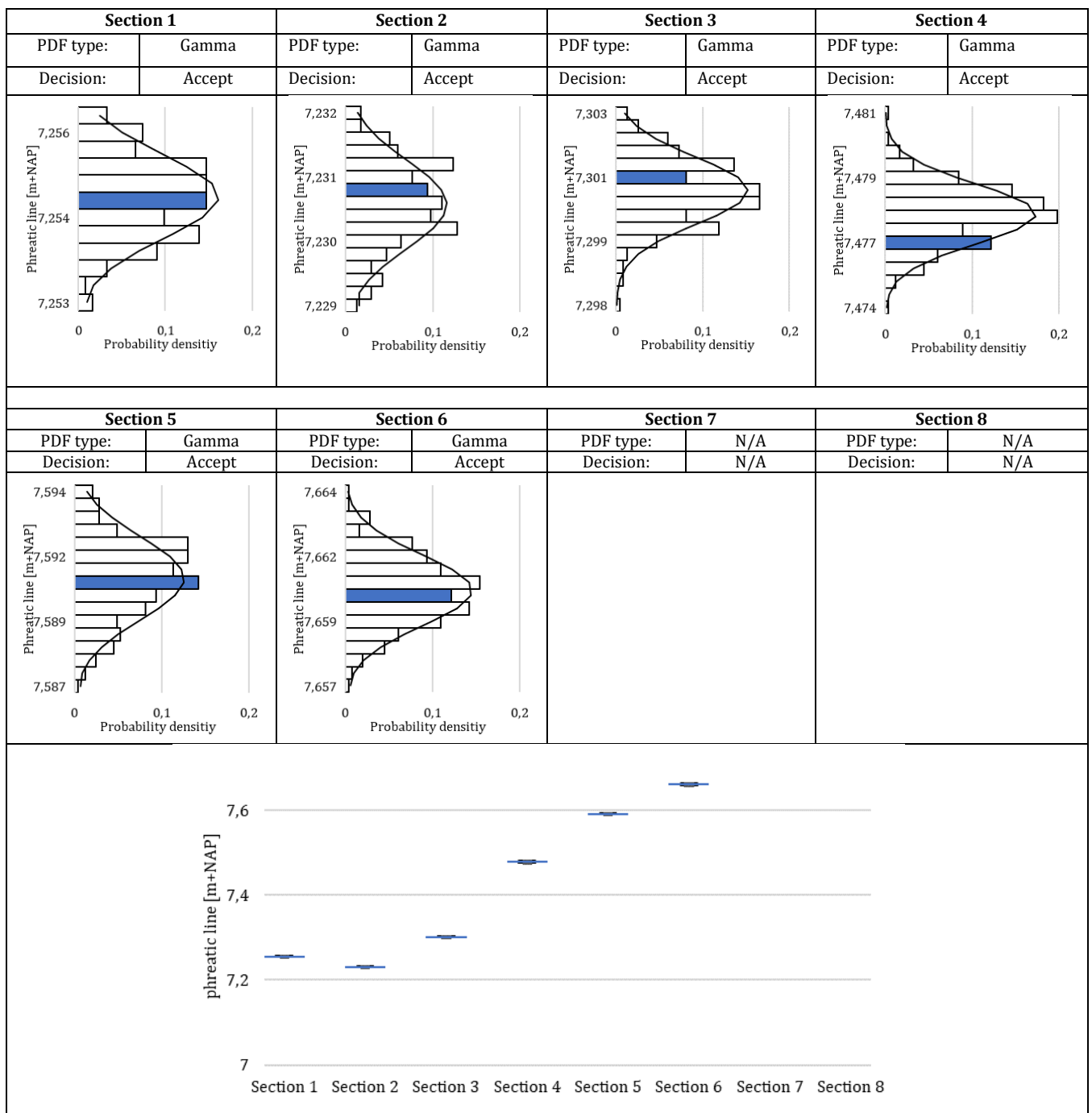


Figure D-43 Dike 2, case 8, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



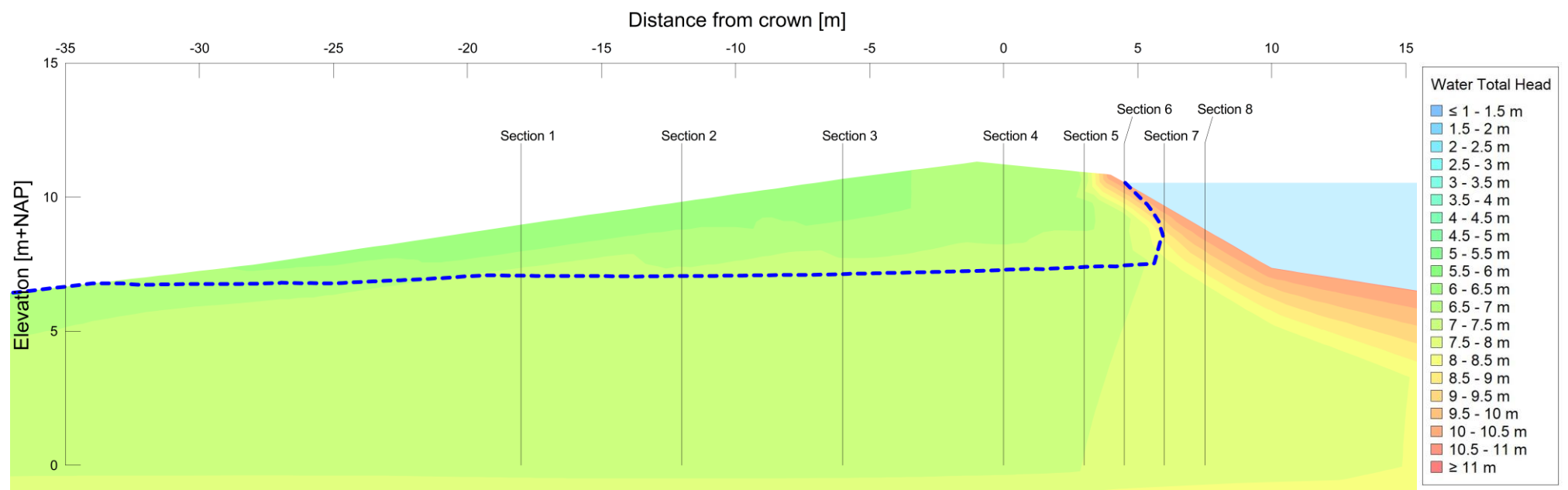


Figure D-44 Dike 2, case 9, $t = 10$ days, deterministic phreatic line and pressure head color shading

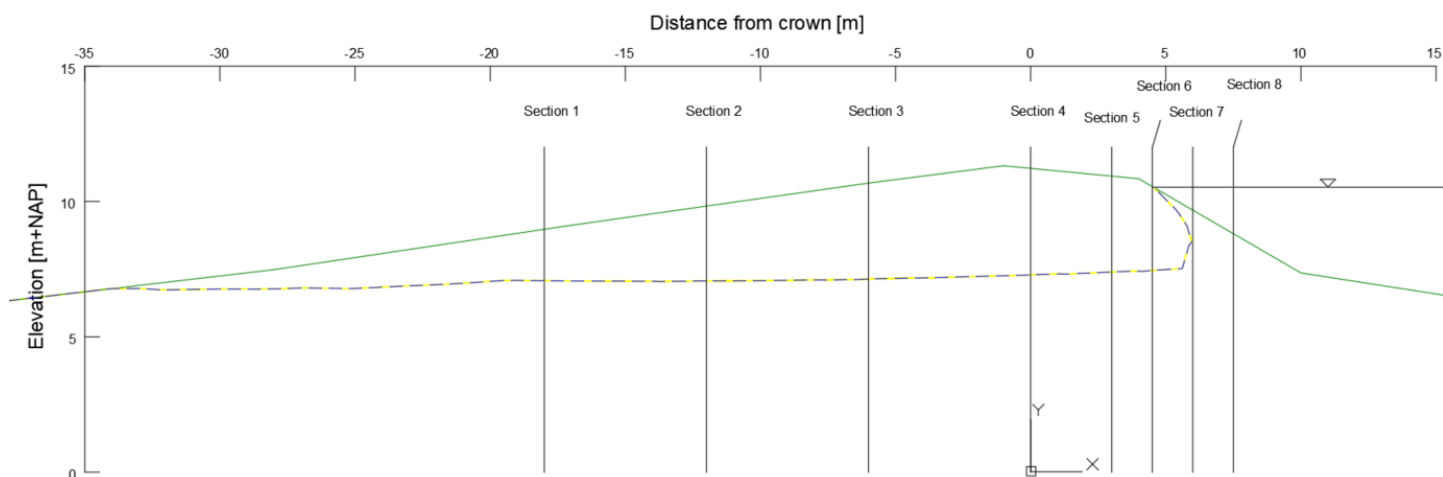
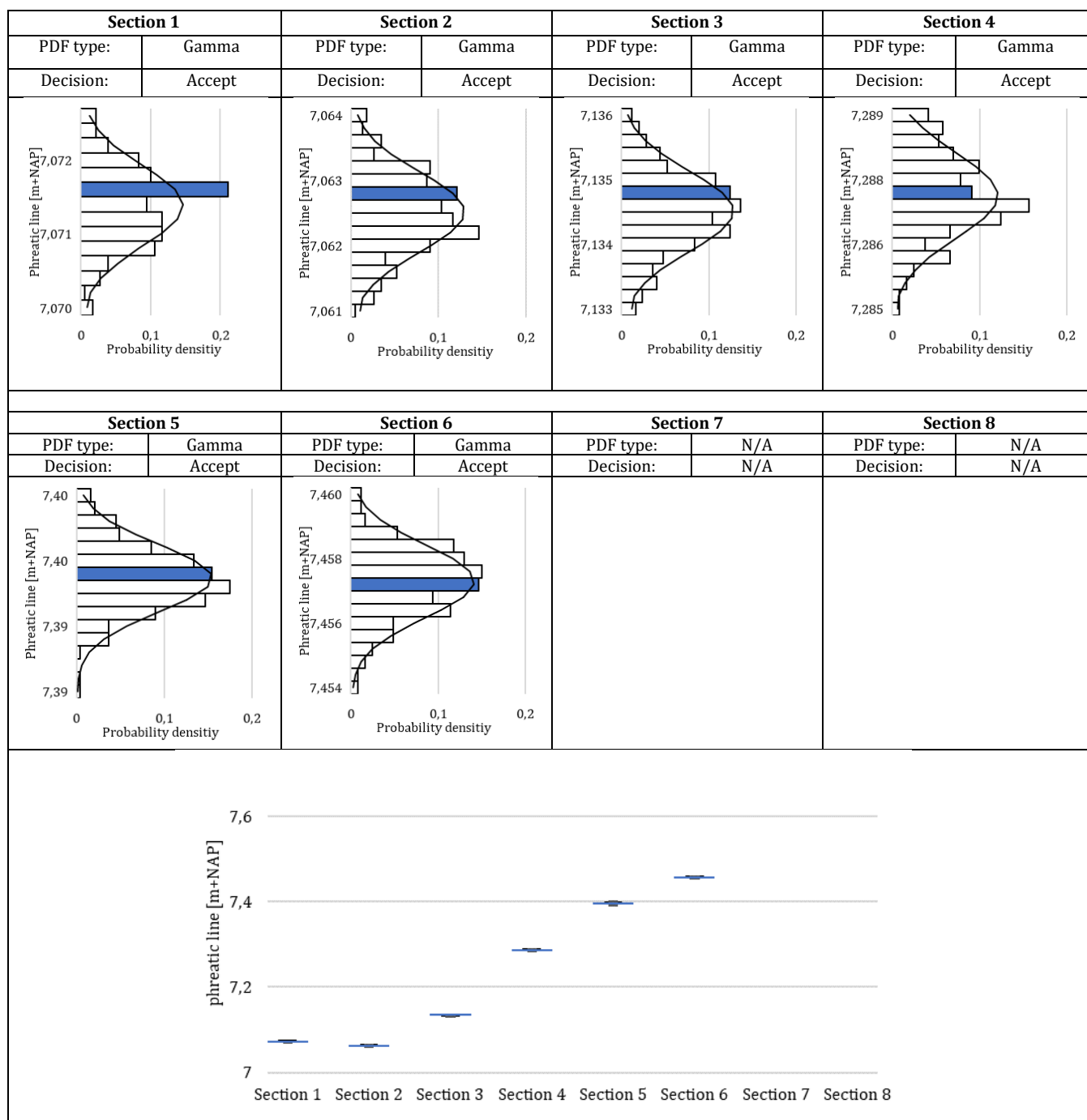


Figure D-45 Dike 2, case 9, $t = 10$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



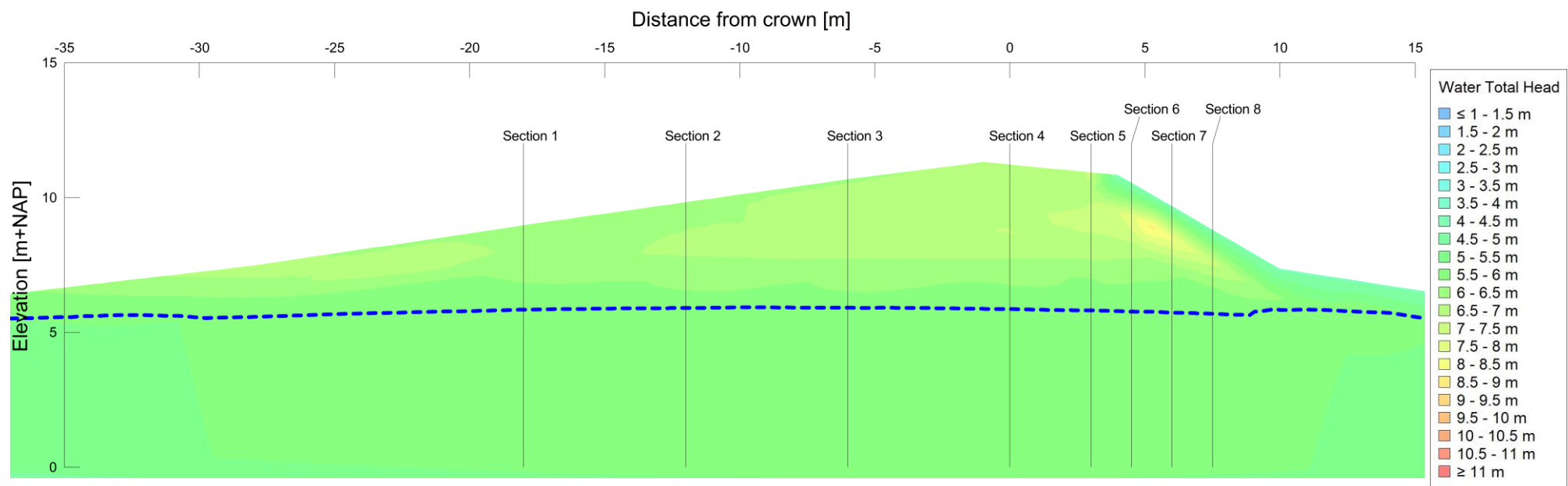


Figure D-46 Dike 2, case 7, $t = 30$ days, deterministic phreatic line and pressure head color shading

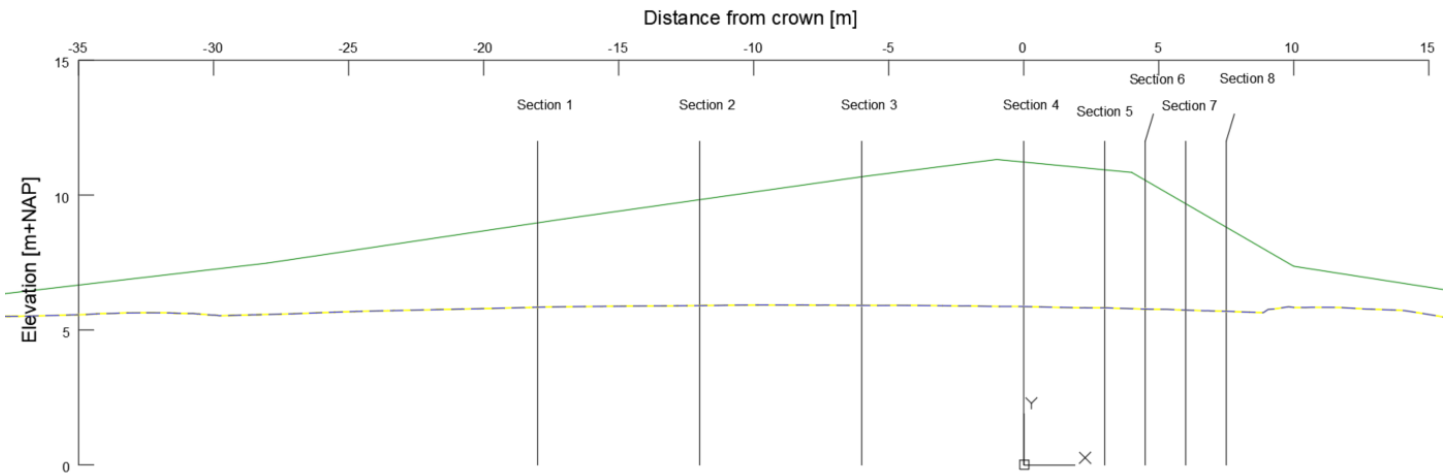
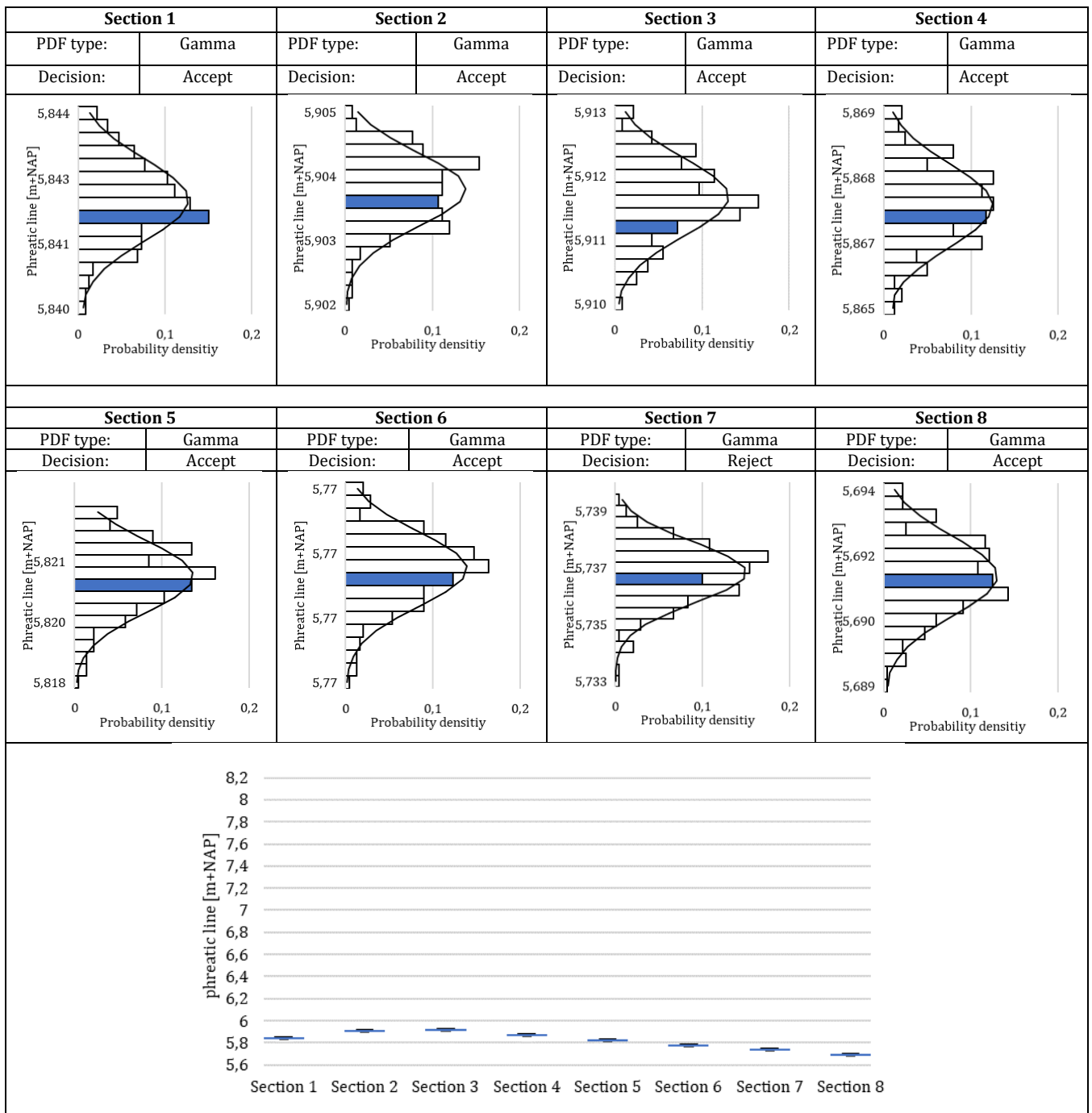


Figure D-47 Dike 2, case 7, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



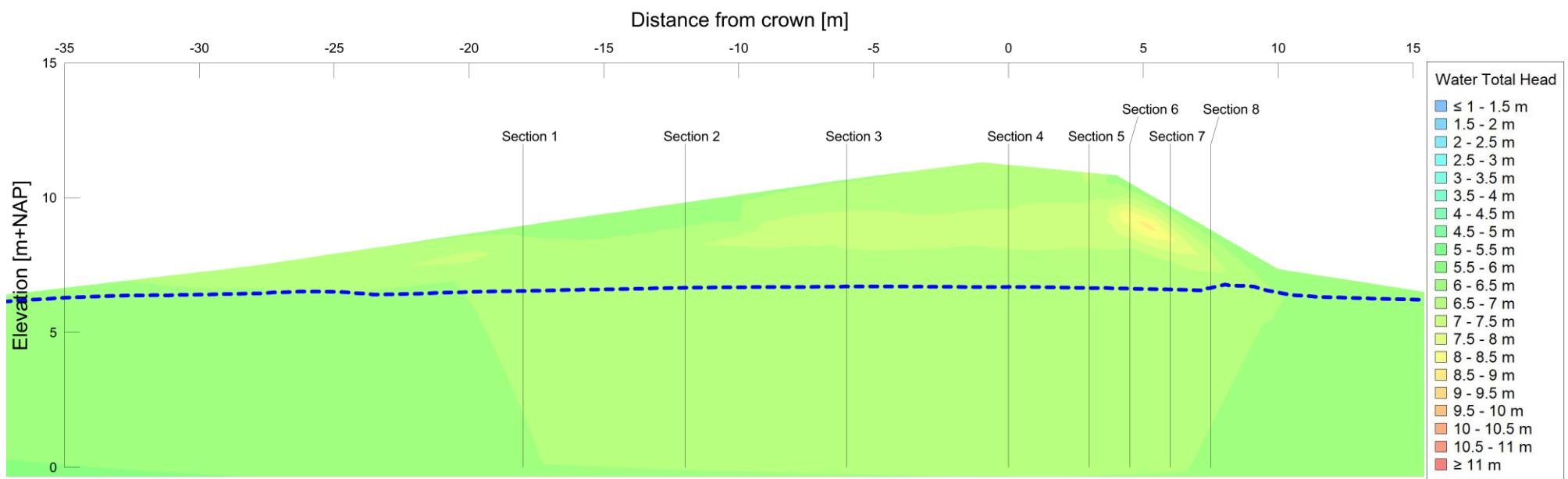


Figure D-48 Dike 2, case 8, $t = 30$ days, deterministic phreatic line and pressure head color shading

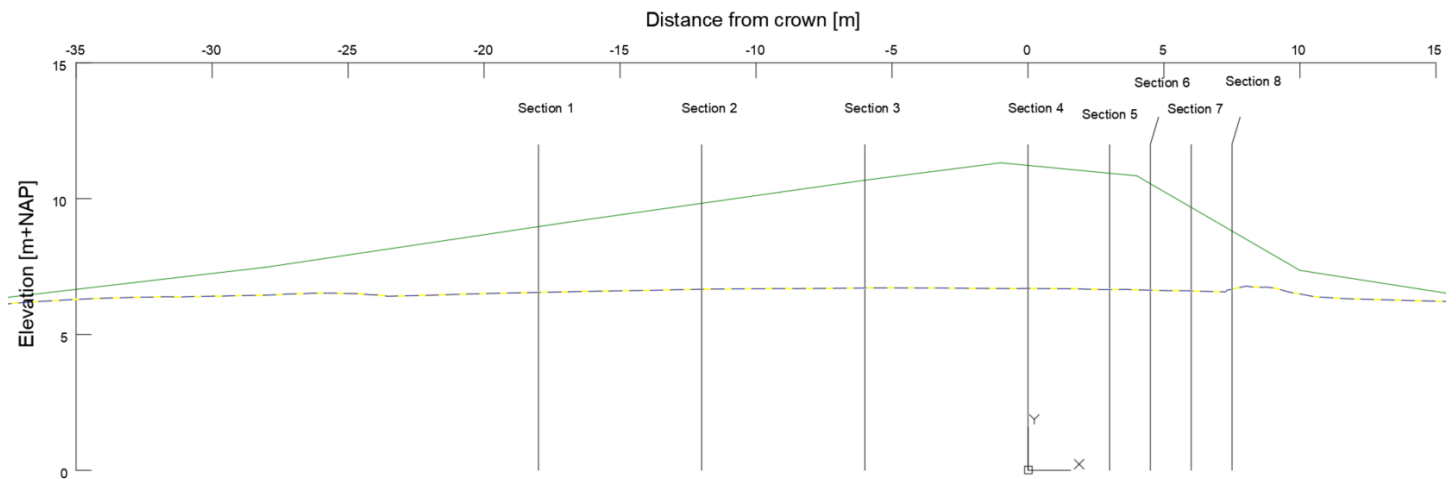
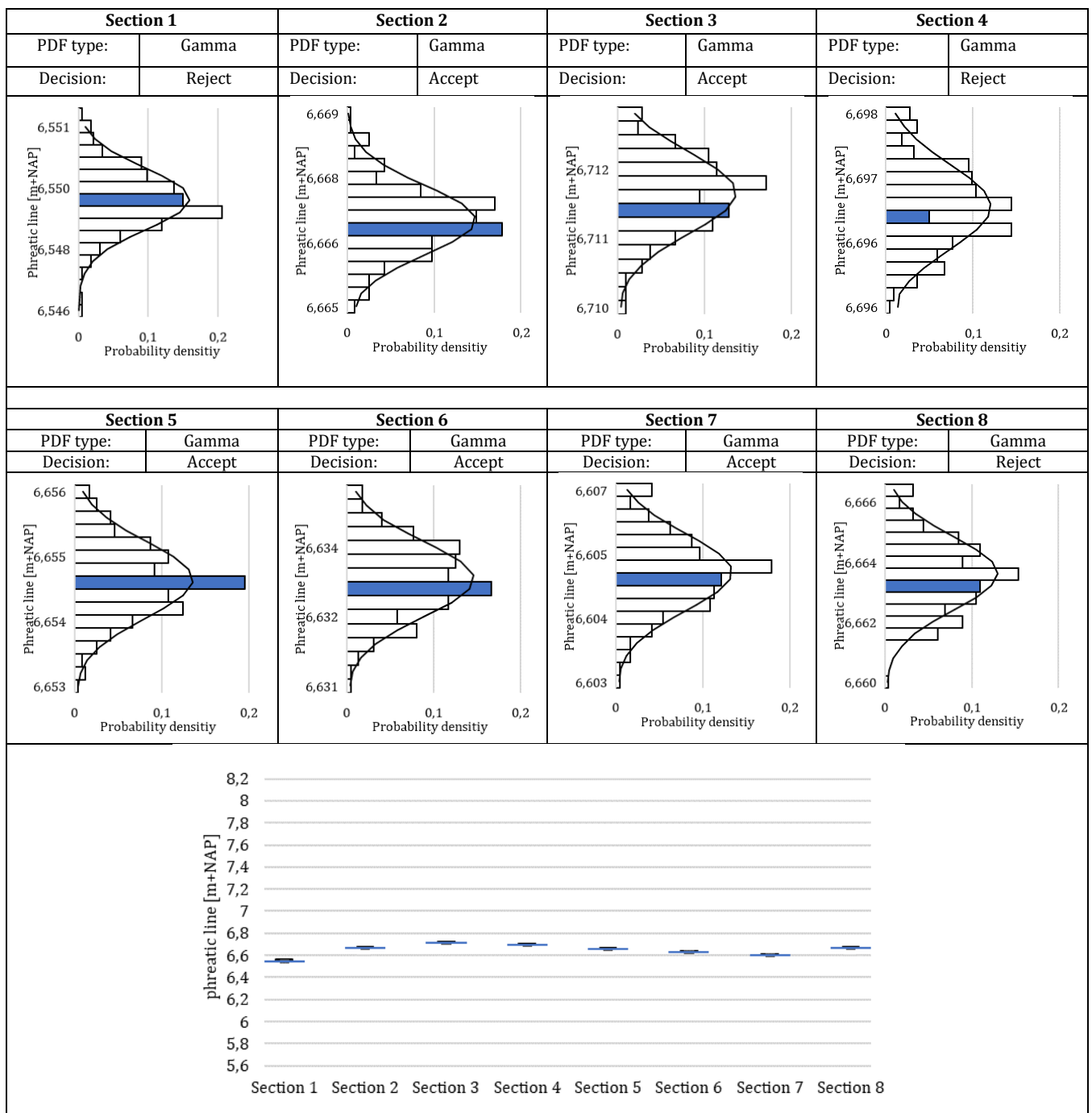


Figure D-49 Dike 2, case 8, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



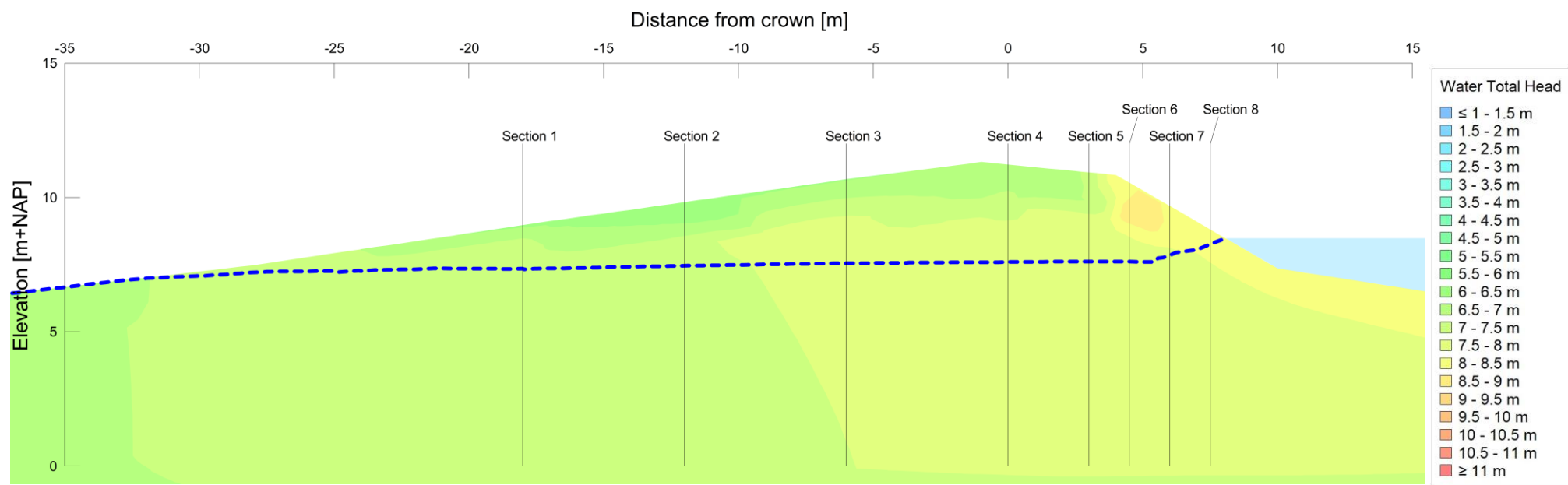


Figure D-50 Dike 2, case 9, $t = 30$ days, deterministic phreatic line and pressure head color shading

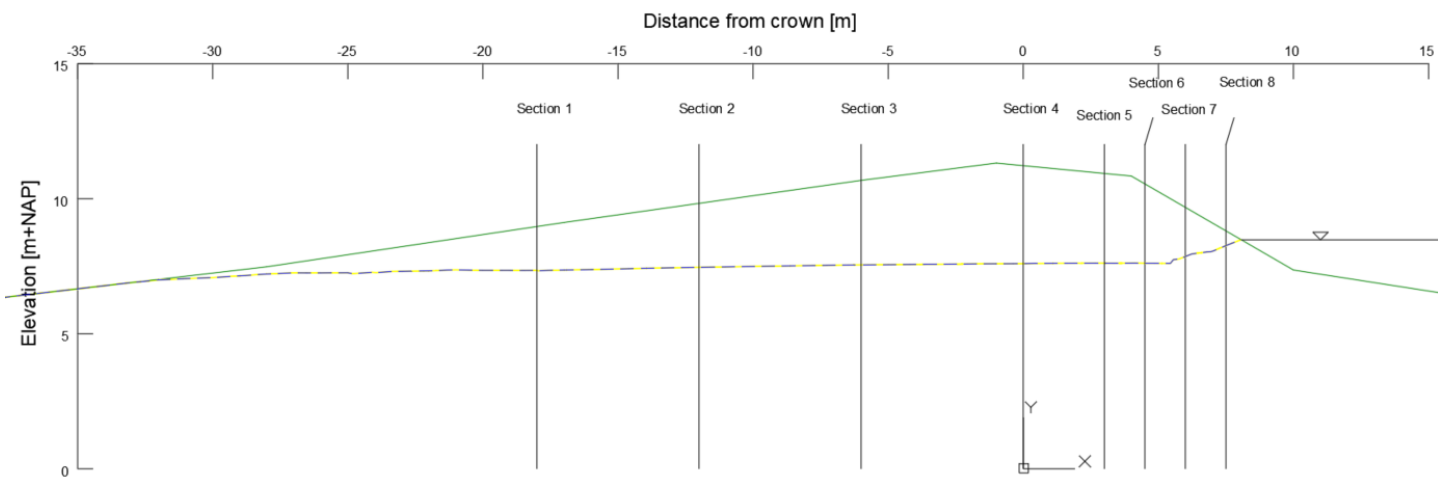
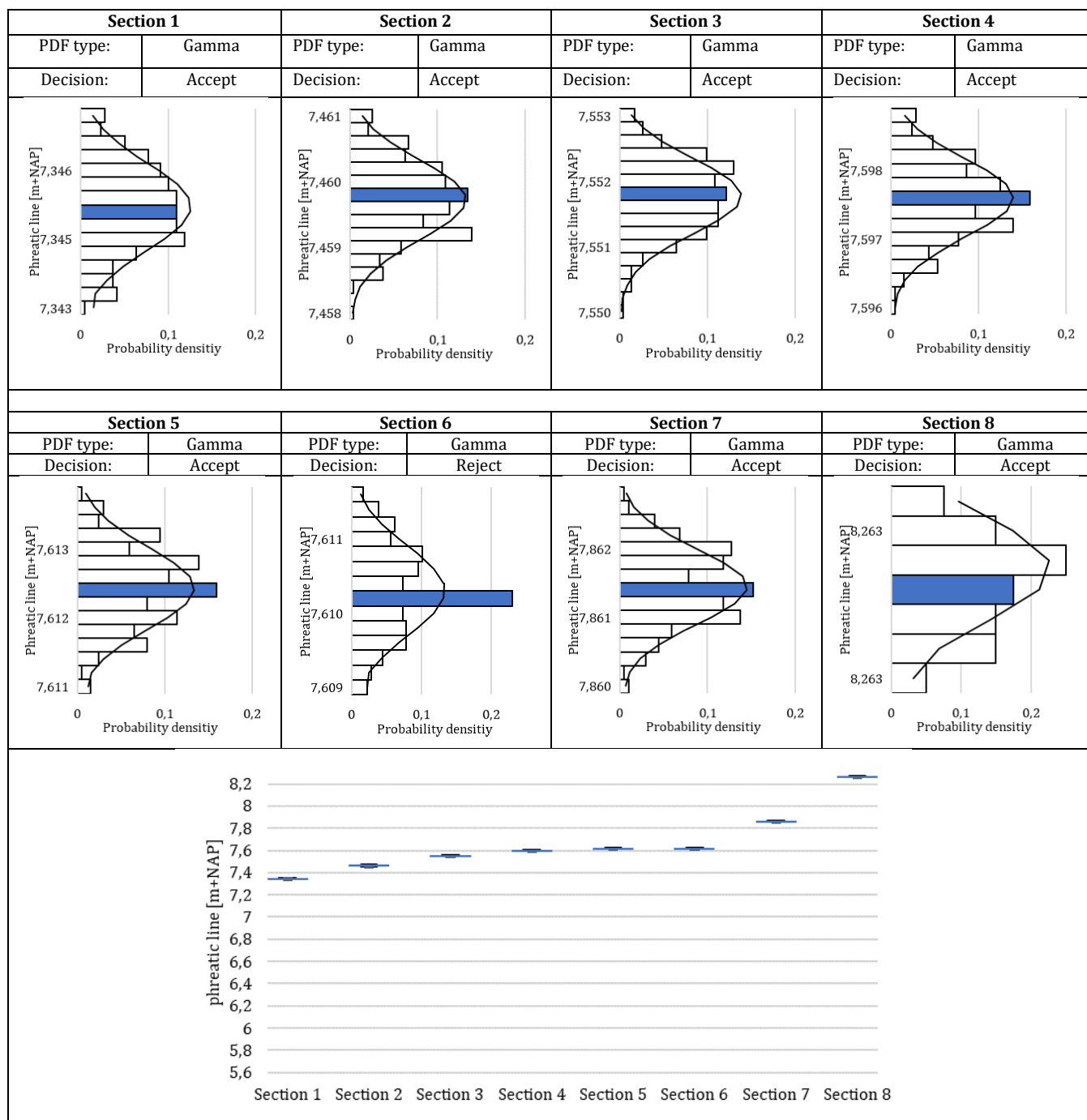


Figure D-51 Dike 2, case 9, $t = 30$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



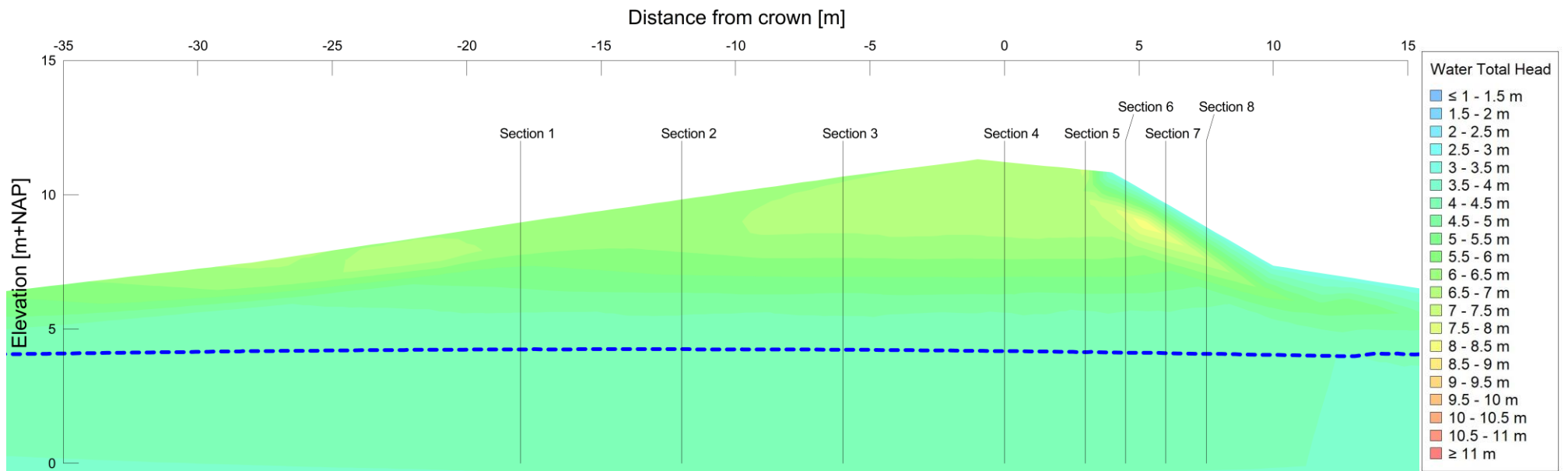


Figure D-52 Dike 2, case 7, $t = 55$ days, deterministic phreatic line and pressure head color shading

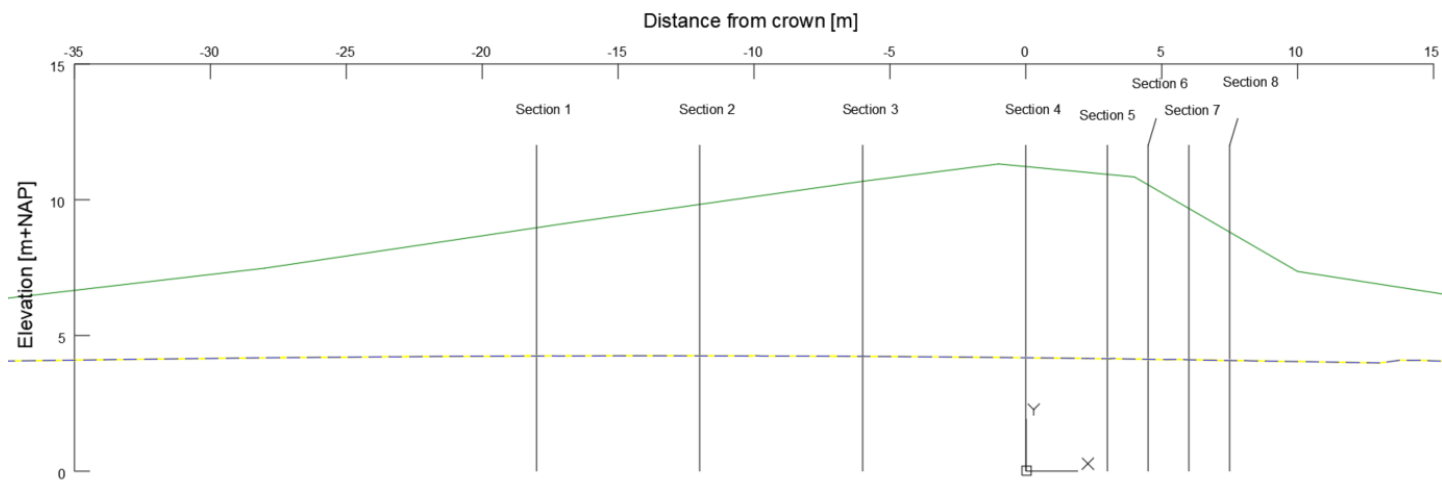
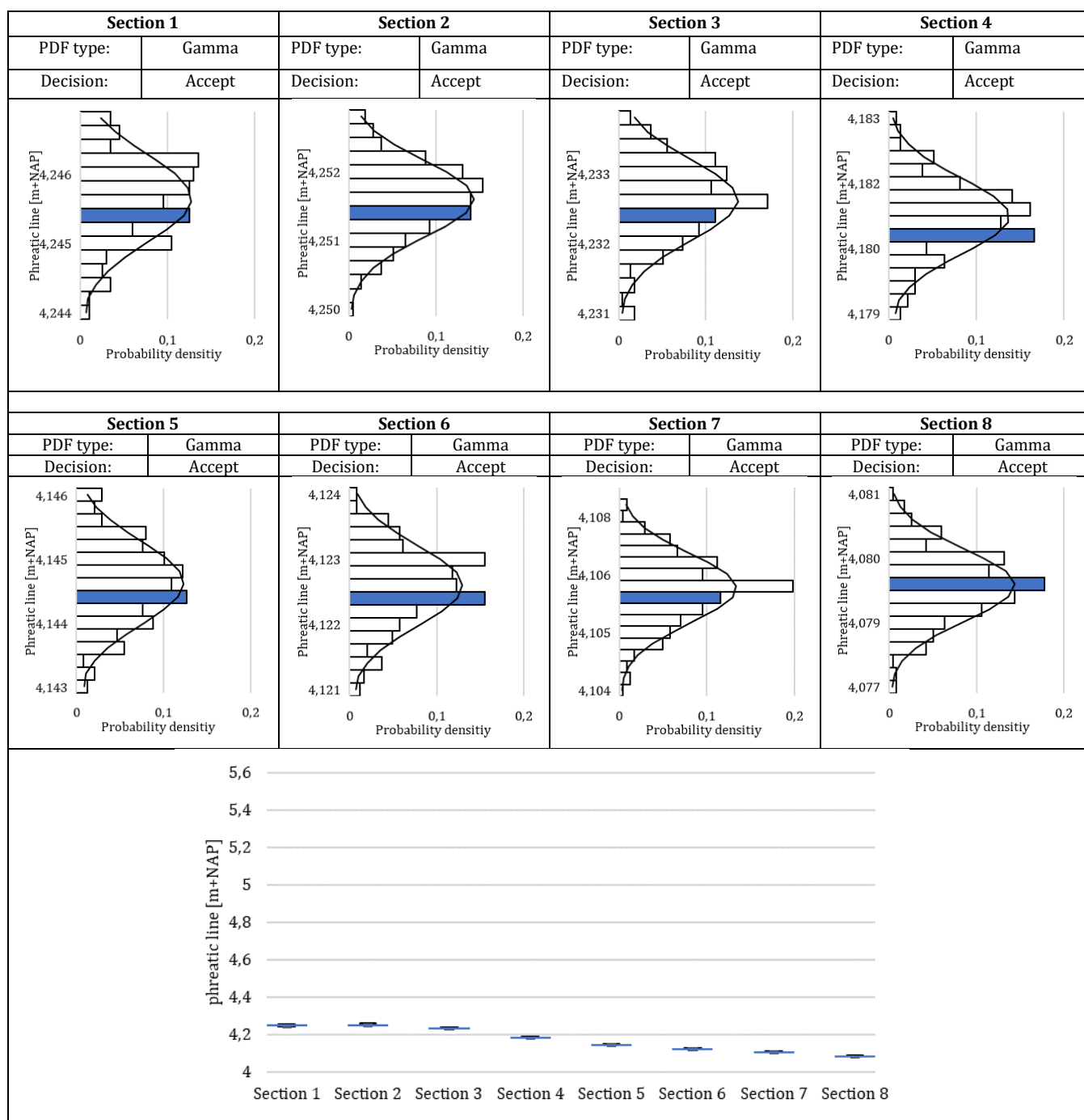


Figure D-53 Dike 2, case 7, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



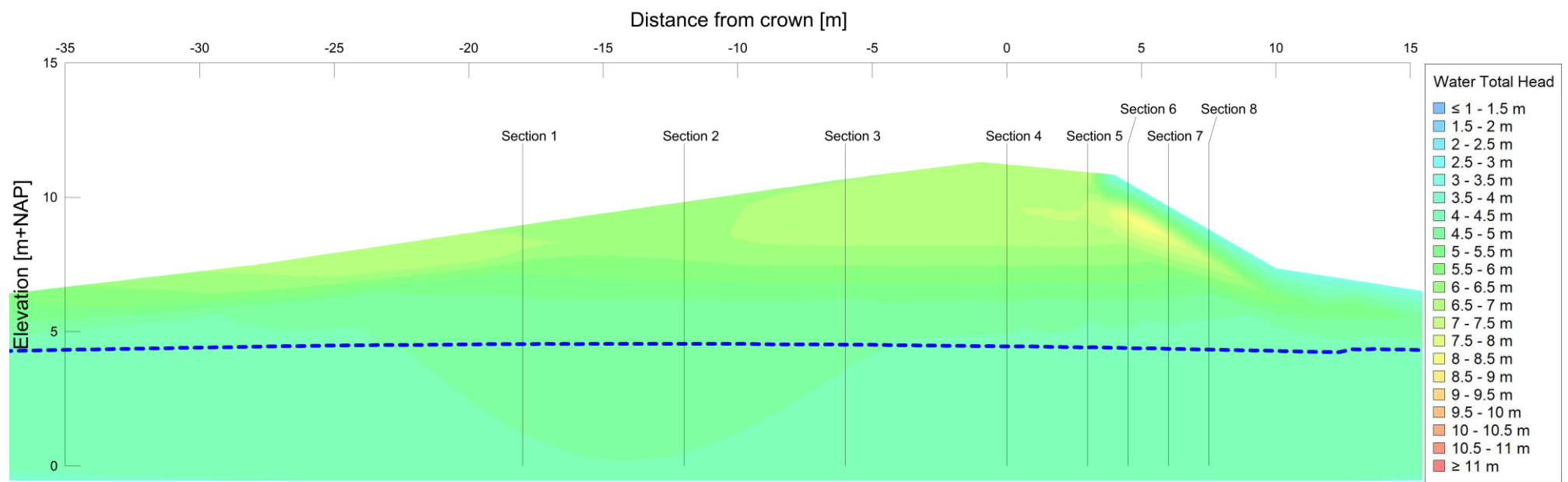


Figure D- 54 Dike 2, case 8, $t = 55$ days, deterministic phreatic line and pressure head color shading

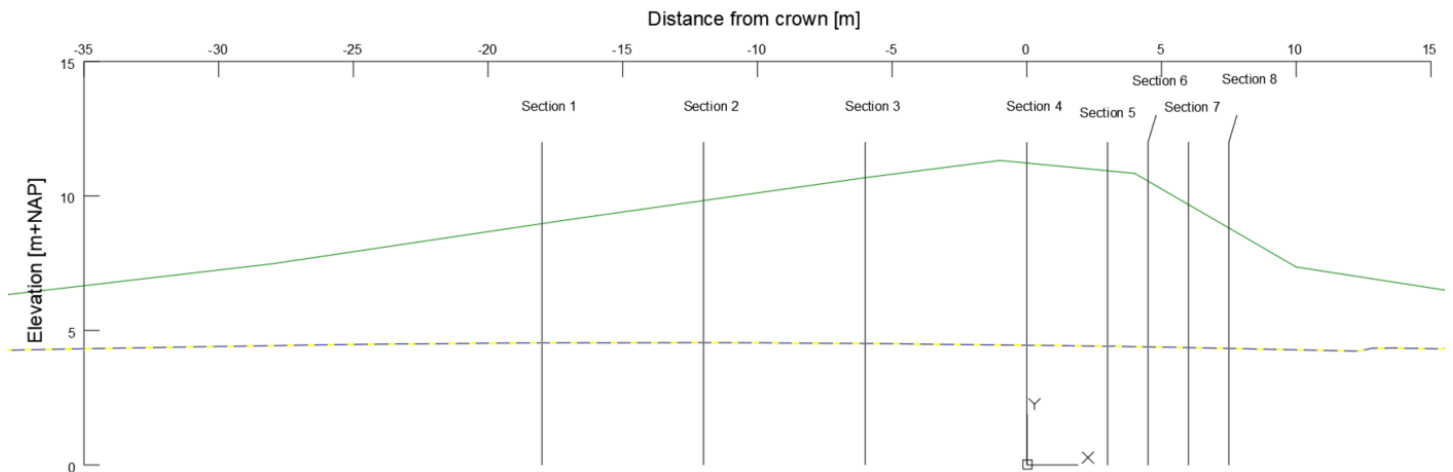
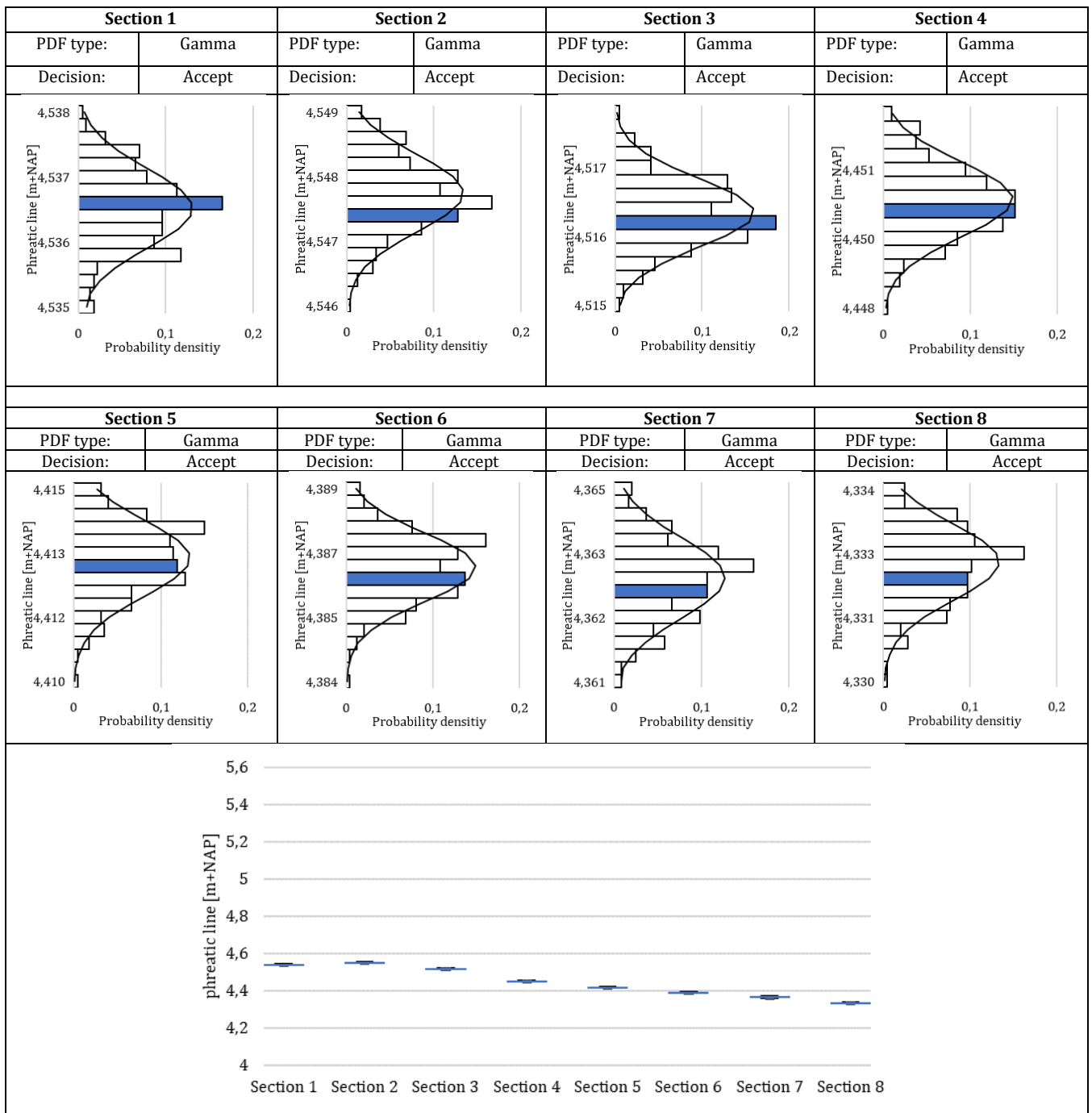


Figure D-55 Dike 2, case 8, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



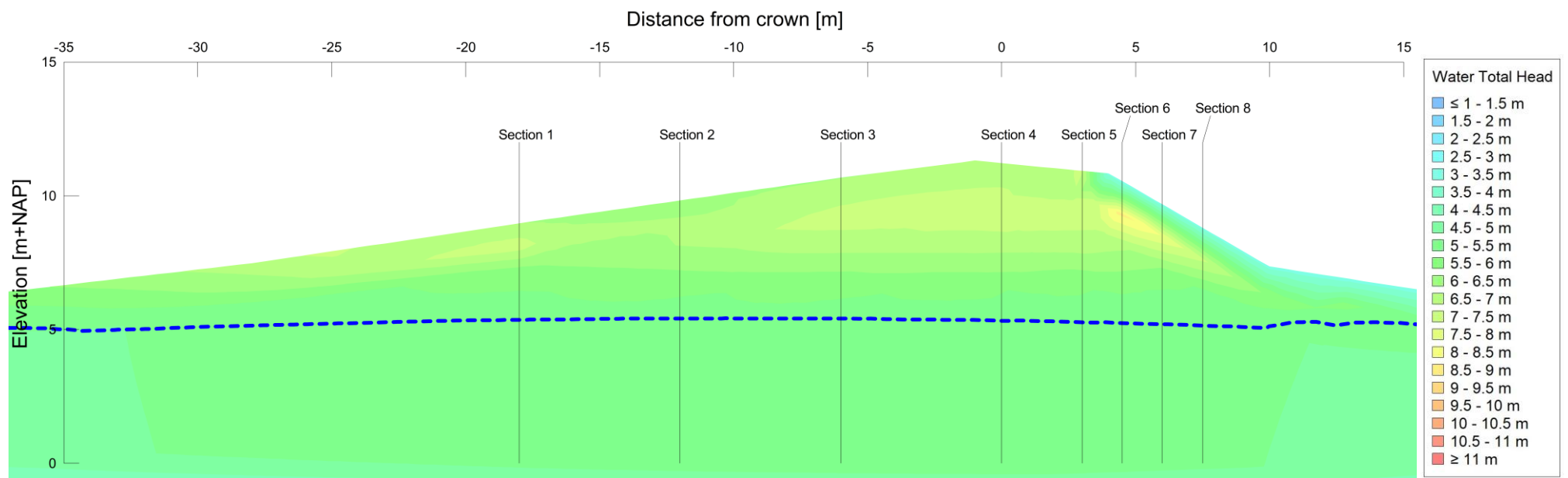


Figure D-56 Dike 2, case 9, $t = 55$ days, deterministic phreatic line and pressure head color shading

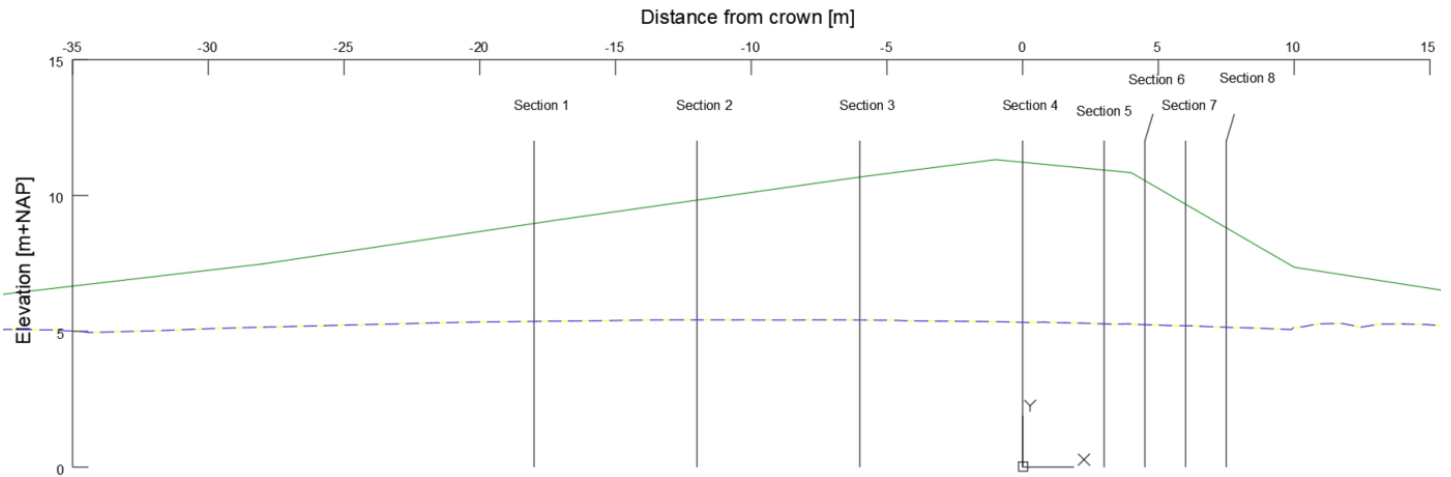
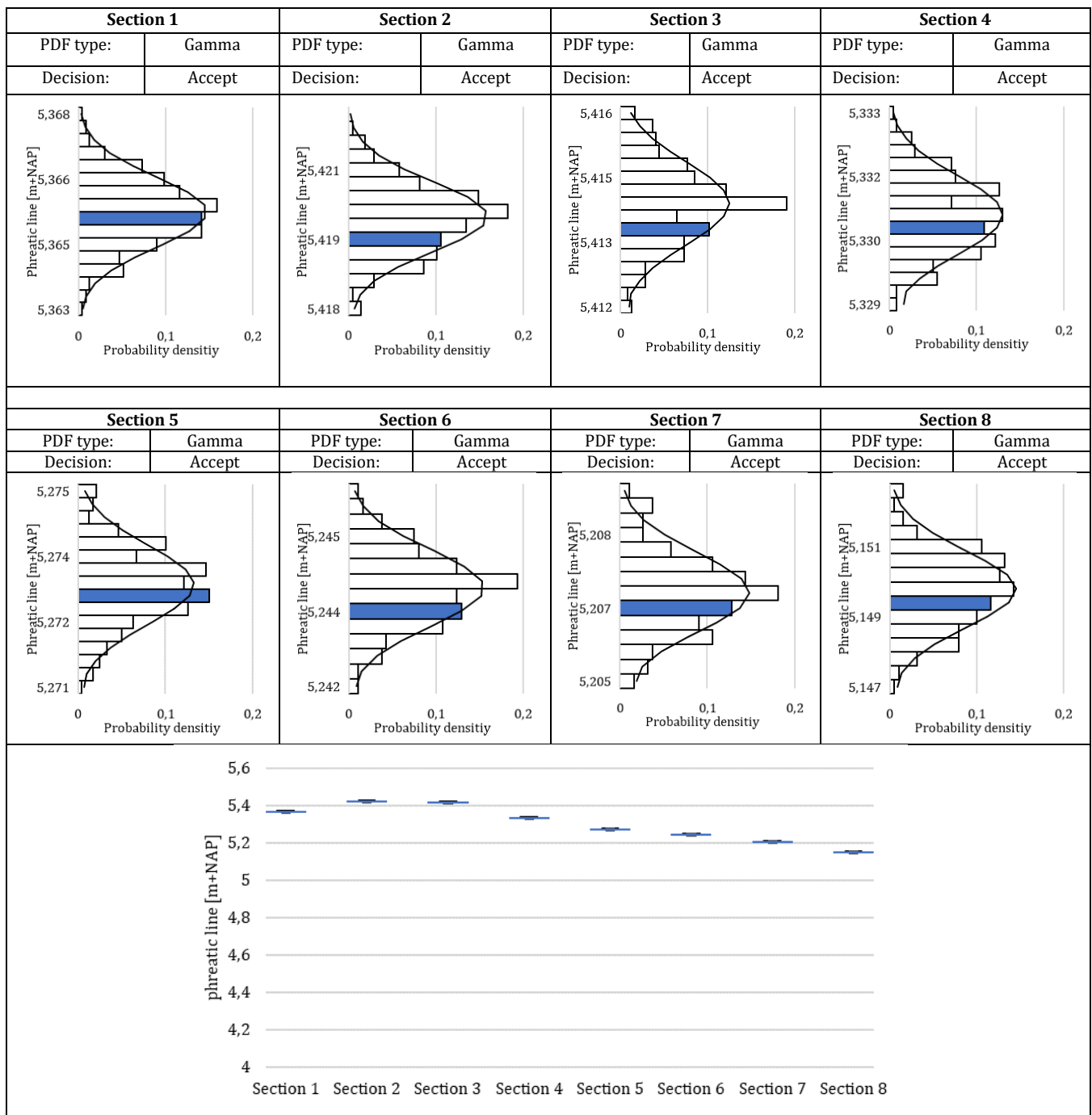


Figure D-57 Dike 2, case 9, $t = 55$ days, deterministic phreatic line and stochastic spectrum of phreatic lines



Times	Case No.	Sect.	Max (z)	Min (z)	μ (z)	σ (z)	Skewness	Kurtosis	α' $X \sim \Gamma(\alpha', \beta)$	β $X \sim \Gamma(\alpha', \beta)$	Chi-square (X^2) $\alpha' = 0.05$
			[m + NAP]								Decision
t = 22 days	1	1	6.66	6.48	6.59	0.03	-0.70	0.44	36910.4	0.00018	Reject
		2	6.74	6.55	6.64	0.03	0.20	0.93	58079.3	0.00011	Accept
		3	6.77	6.56	6.68	0.03	-0.95	1.42	40802.8	0.00016	Reject
		4	7.11	6.57	6.90	0.08	-0.90	2.44	8429.87	0.00082	Reject
		5	7.41	6.86	7.11	0.10	0.55	0.57	5477.47	0.00130	Accept
		6	7.79	6.89	7.30	0.17	0.44	0.03	1948.62	0.00375	Accept
		7	7.96	6.98	7.42	0.17	0.19	-0.14	1979.22	0.00375	Accept
		8	7.67	6.93	7.33	0.14	0.17	-0.17	2653.06	0.00276	Accept
t = 30 days	2	1	6.70	6.52	6.62	0.03	-0.25	0.78	50663.6	0.00013	Accept
		2	6.78	6.53	6.66	0.04	-0.09	0.09	25349.3	0.00026	Accept
		3	6.81	6.56	6.70	0.04	-0.47	0.28	26142.6	0.00026	Accept
		4	7.17	6.79	6.95	0.06	0.32	0.37	12388.7	0.00056	Reject
		5	7.49	6.81	7.12	0.12	0.23	0.18	3744.82	0.00189	Accept
		6	7.80	6.97	7.32	0.17	0.53	0.17	1811.24	0.00404	Reject
		7	8.02	6.89	7.38	0.17	0.34	0.27	1787.14	0.00413	Accept
		8	7.63	6.85	7.25	0.15	0.01	-0.17	2480.31	0.00292	Accept
t = 43 days	3	1	6.75	6.53	6.65	0.03	-0.44	0.78	37233.3	0.00018	Reject
		2	6.80	5.52	6.68	0.05	-0.46	0.40	17336.5	0.00039	Accept
		3	6.87	6.55	6.74	0.05	-0.48	0.48	17683.5	0.00038	Accept
		4	7.26	6.80	6.97	0.08	0.49	0.57	7410.77	0.00094	Reject
		5	7.58	6.83	7.14	0.13	0.47	0.17	3022.67	0.00236	Accept
		6	7.77	6.89	7.28	0.18	0.53	-0.07	1655.06	0.00440	Accept
		7	7.82	6.96	7.28	0.15	0.61	0.49	2234.16	0.00323	Reject
		8	7.65	6.72	7.14	0.13	0.27	0.55	2810.41	0.00254	Accept

Table D-4 Statistical results of SEEP/W (including the shape parameter α' and rate parameter β of the gamma distribution $X \sim \Gamma(\alpha', \beta)$) considered cases for the assessment of outward macro stability in D-Geo Stability.

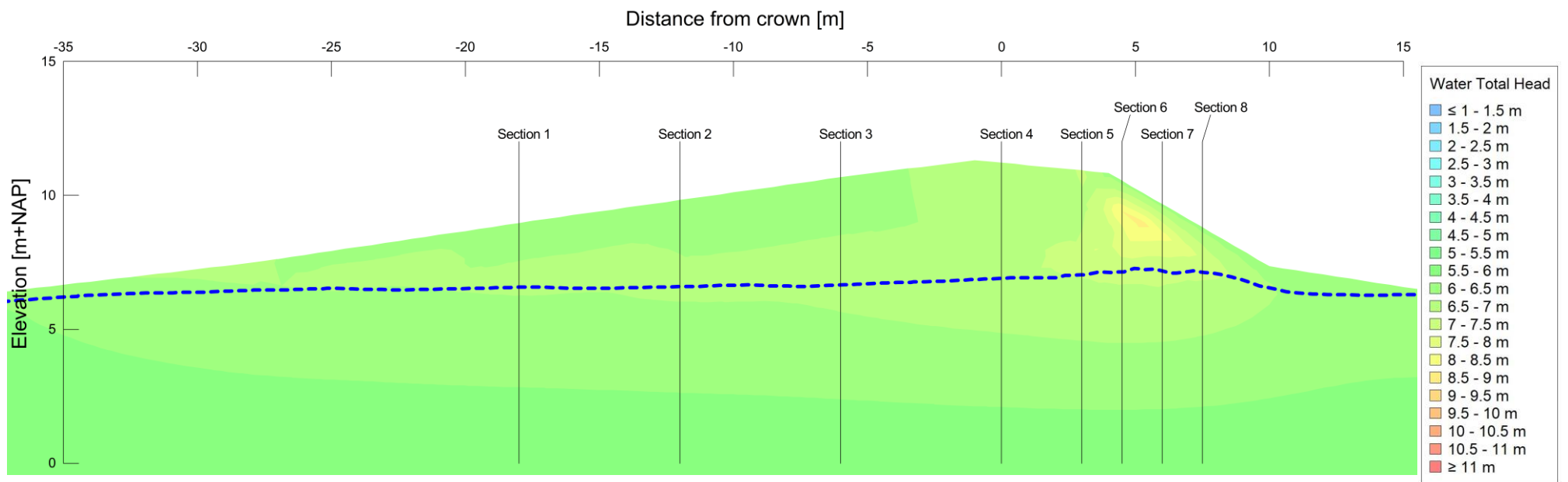


Figure D-58 Dike 1, case 1, $t = 22$ days, deterministic phreatic line and pressure head color shading

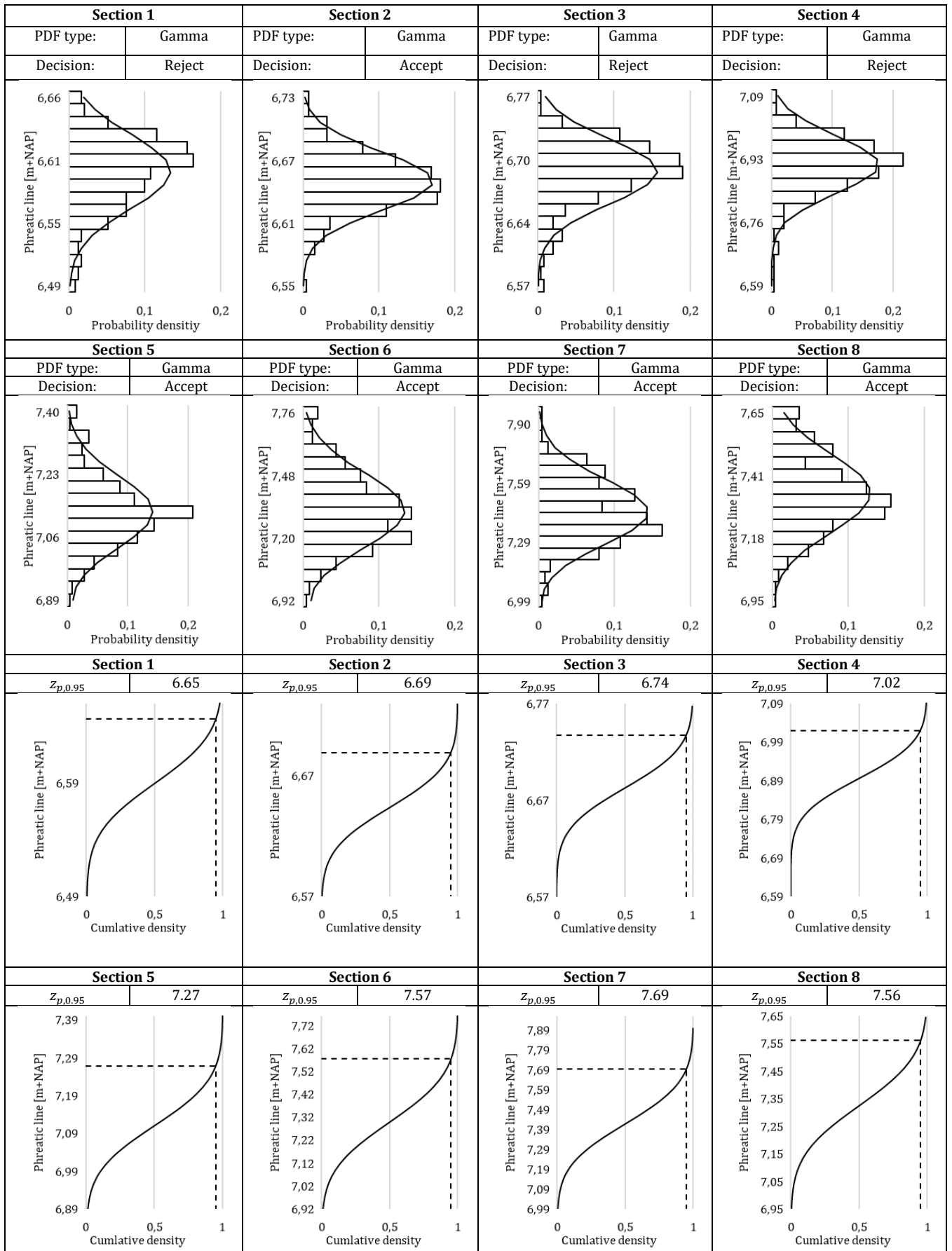


Table D-5 Probability density function (Gamma) for the location of the phreatic line and cumulative density function of the phreatic line with the 95% boundary lines $z_{p,0.95}$ for Dike 1, case 1, $t = 22$ days

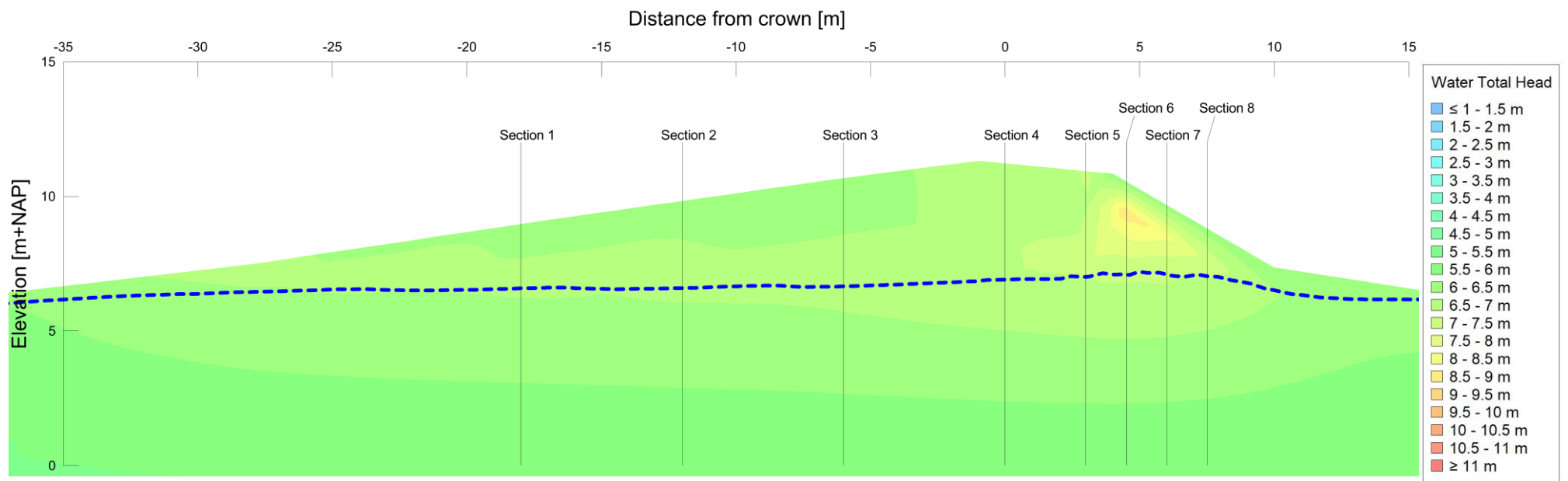


Figure D-59 Dike 1, case 2, $t = 30$ days, deterministic phreatic line and pressure head color shading

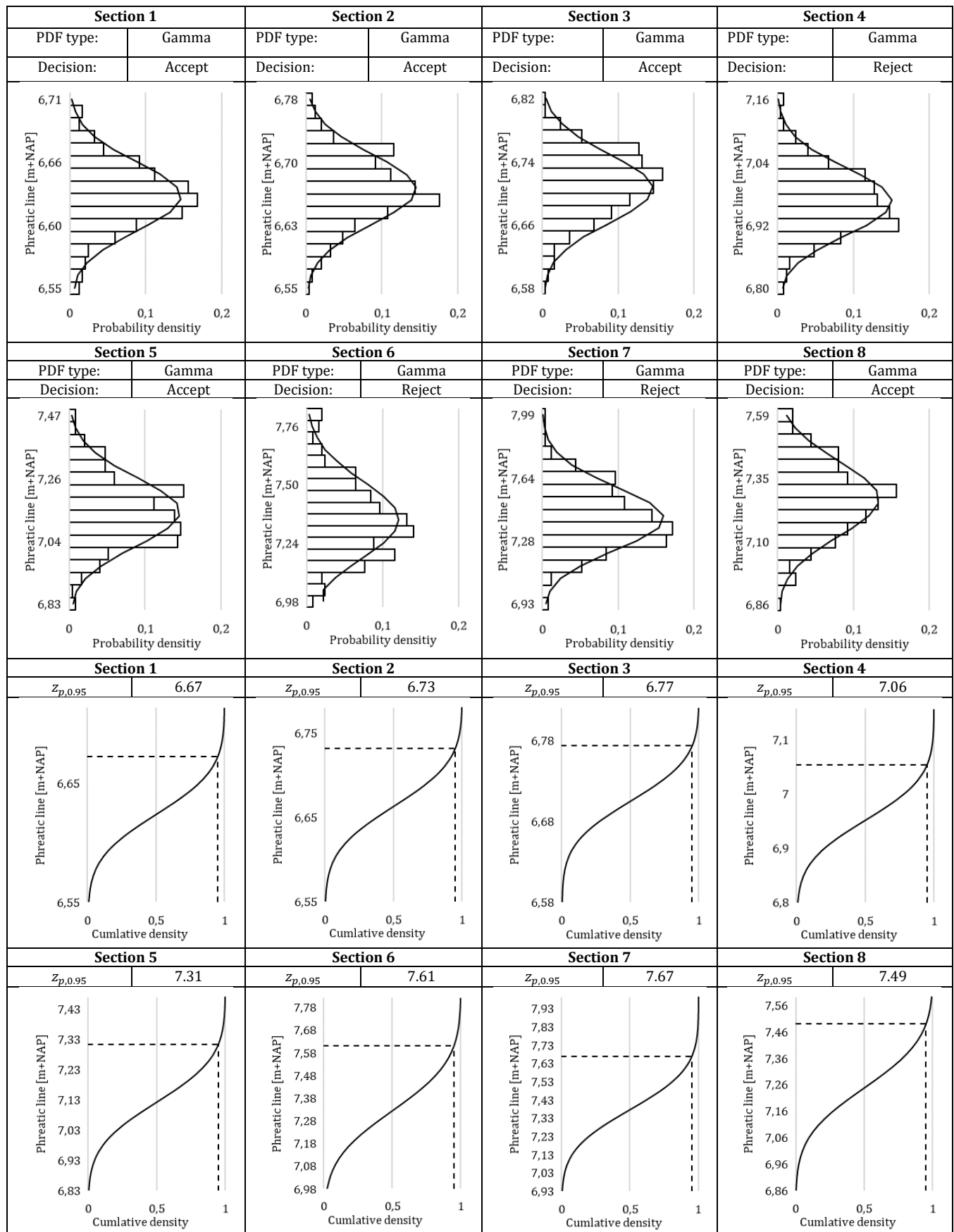


Table D-6 Probability density function (Gamma) for the location of the phreatic line and cumulative density function of the phreatic line with the 95% boundary lines $z_{p,0.95}$ for Dike 1, case 2, $t = 30$ days

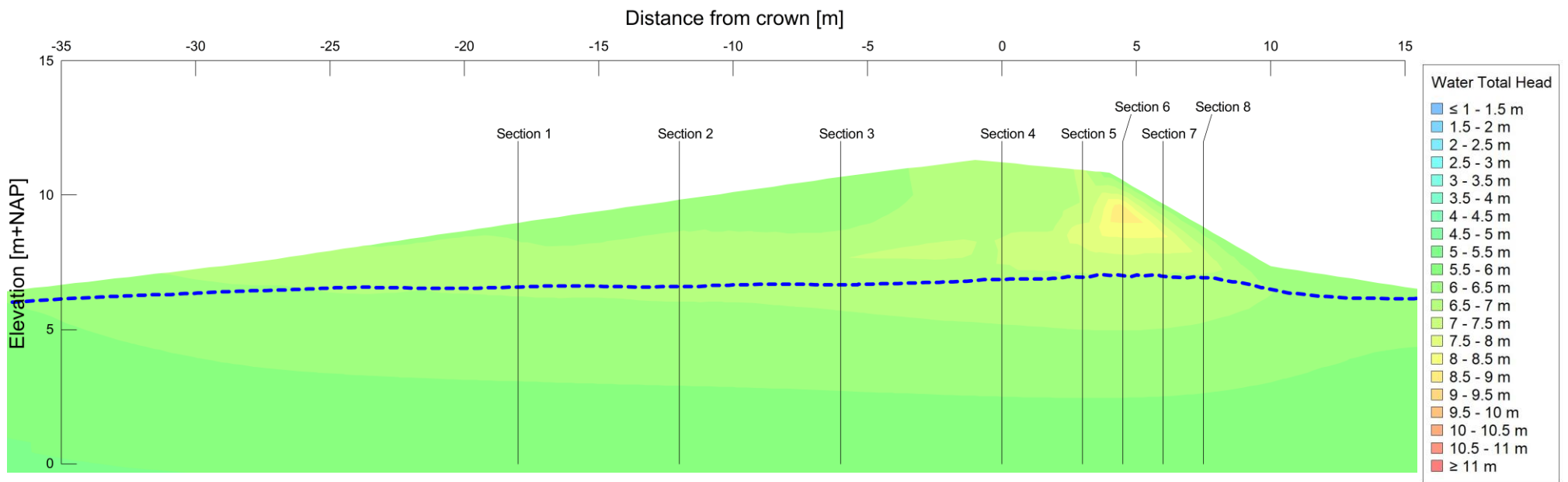


Figure D-60 Dike 1, case 3, $t = 43$ days, deterministic phreatic line and pressure head color shading

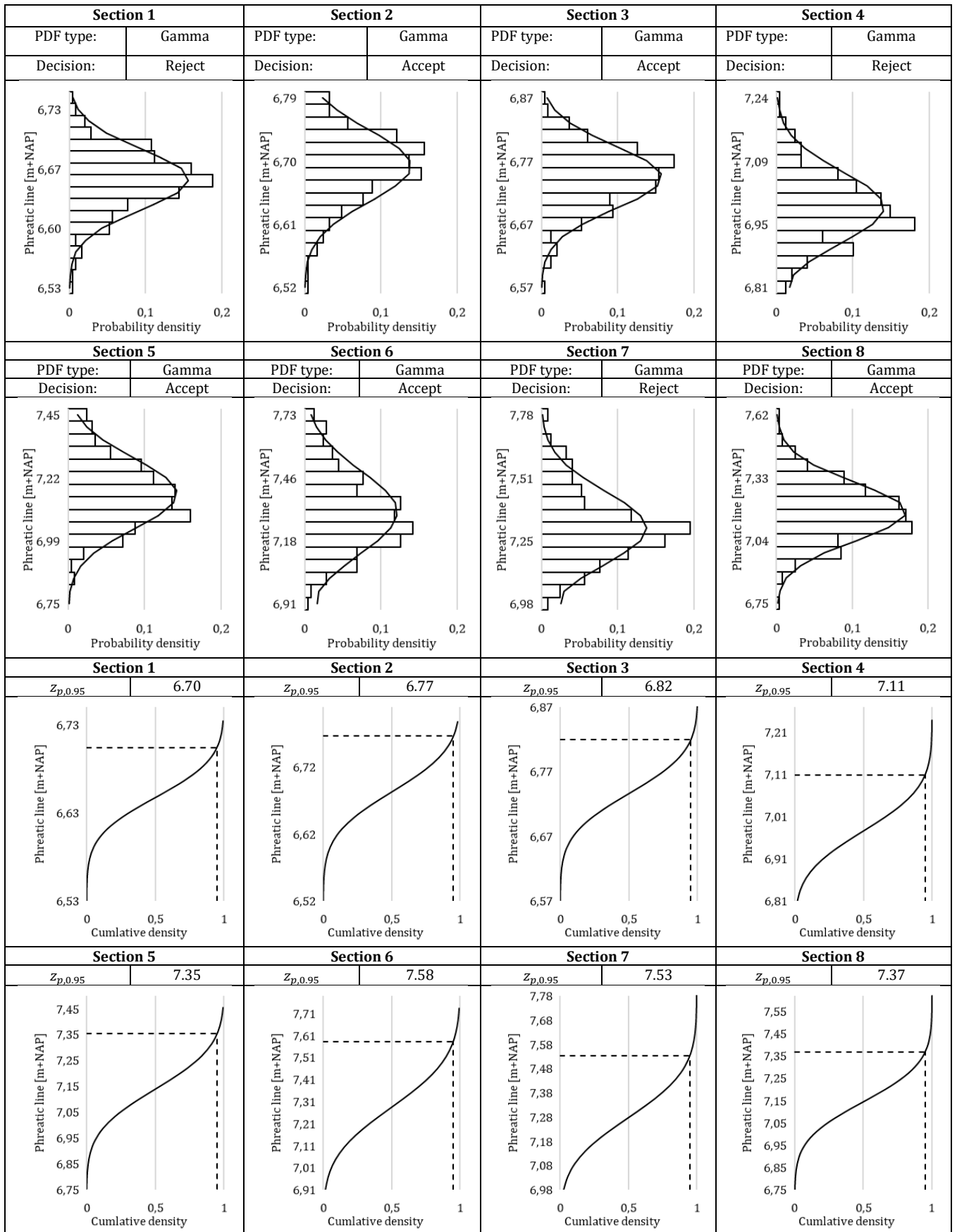


Table D-7 Probability density function (Gamma) for the location of the phreatic line and cumulative density function of the phreatic line with the 95% boundary lines $z_{p,0.95}$ for Dike 1, case 3, $t = 43$ days

D-2 D-Geo Stability Results

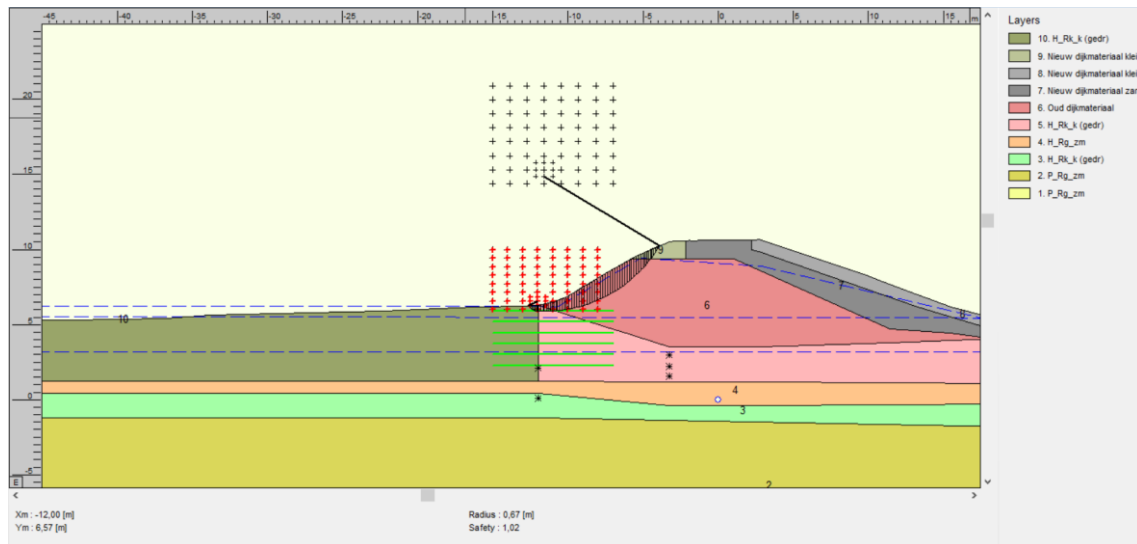


Figure D-61 Dike 1, Case 1, Sub No. 1, $t = 22$ days, $FoS = 1.02$

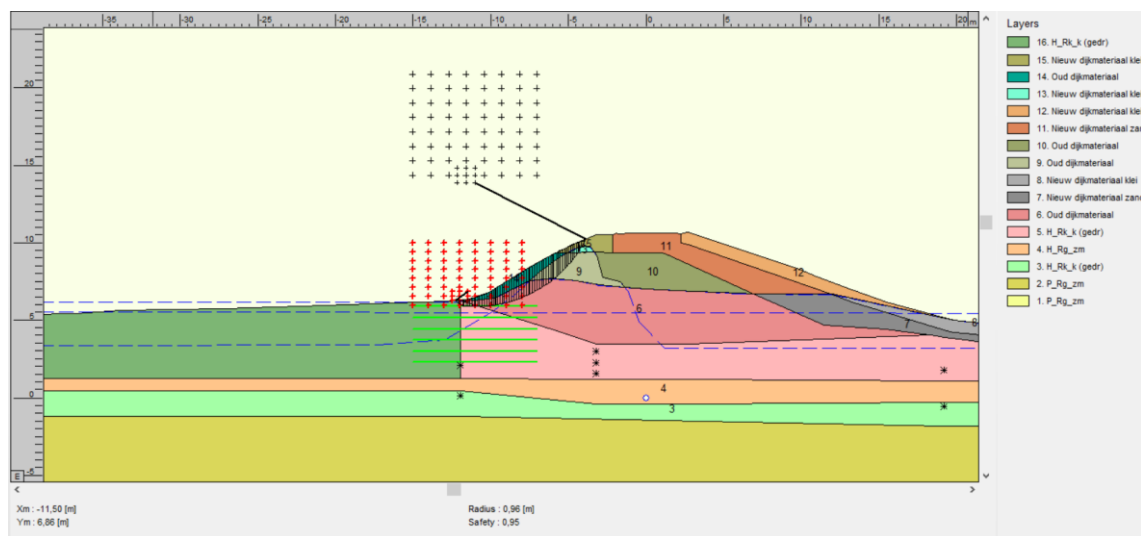


Figure D-62 Dike 1, Case 1, Sub No. 2, $t = 22$ days, $FoS = 0.95$

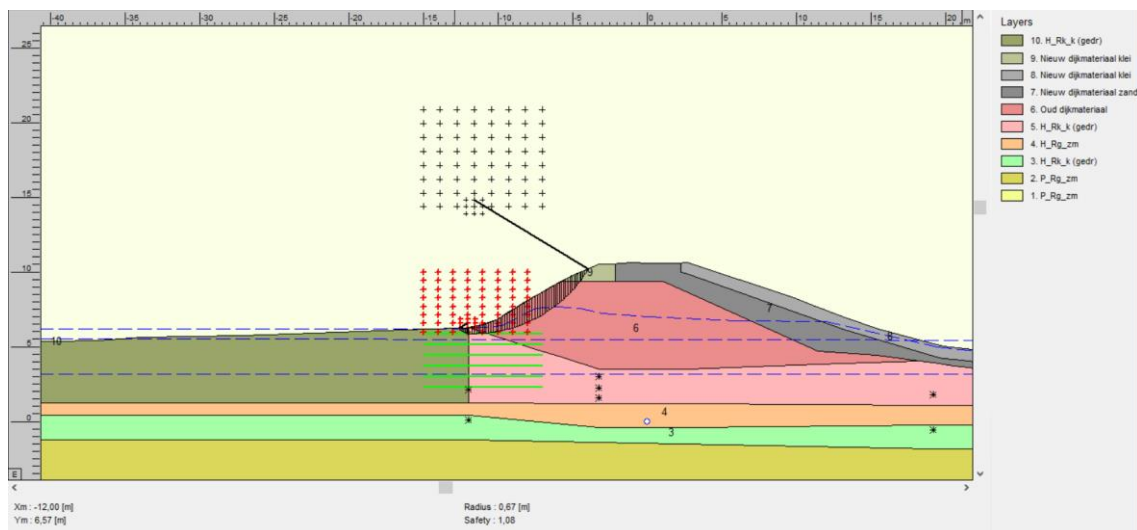


Figure D-63 Dike 1, Case 1, Sub No. 3, $t = 22$ days, $FoS = 1.08$

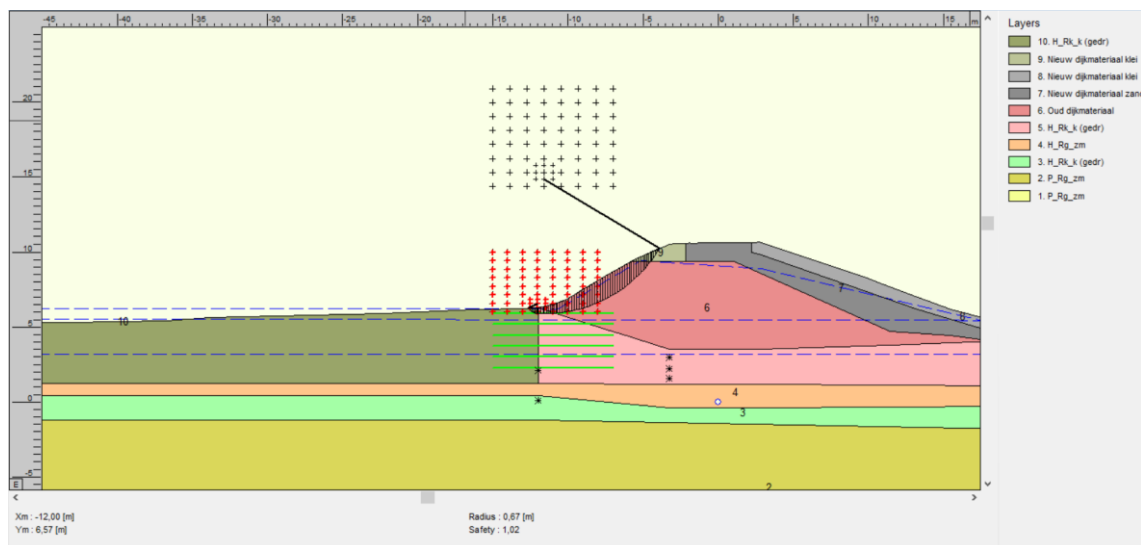


Figure D-64 Dike 1, Case 2, Sub No. 1, $t = 30$ days, $FoS = 1.02$

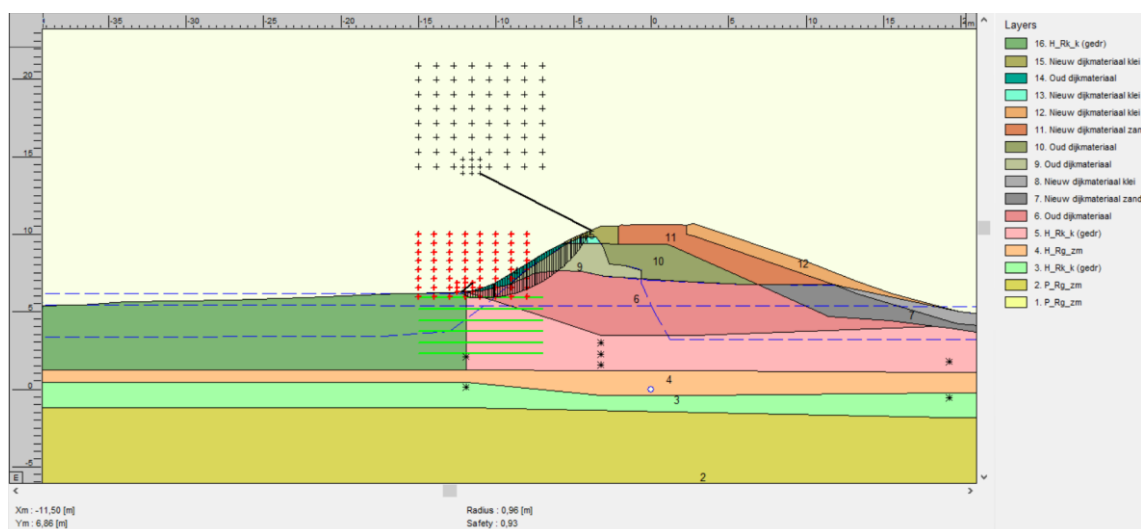


Figure D-65 Dike 1, Case 2, Sub No. 2, $t = 30$ days, $FoS = 0.93$

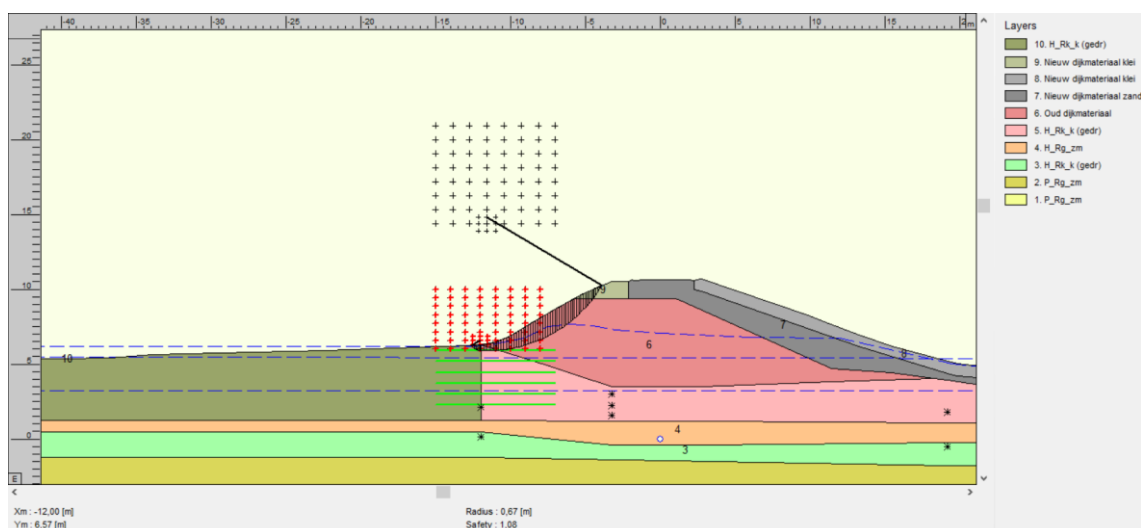


Figure D-66 Dike 1, Case 2, Sub No. 3, $t = 30$ days, $FoS = 1.08$

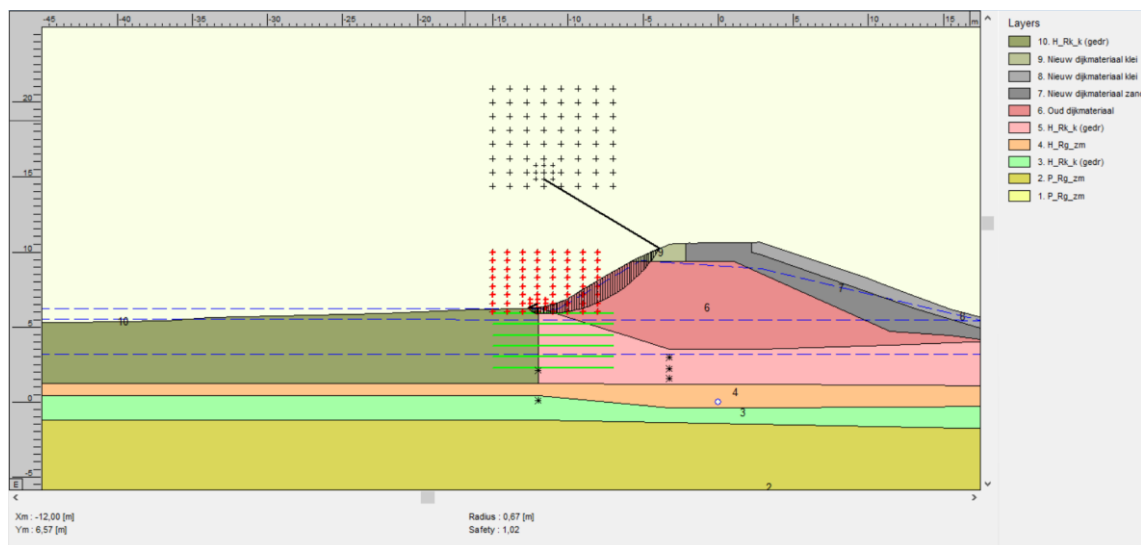


Figure D-67 Dike 1, Case 3, Sub No. 1, $t = 43$ days, $FoS = 1.02$

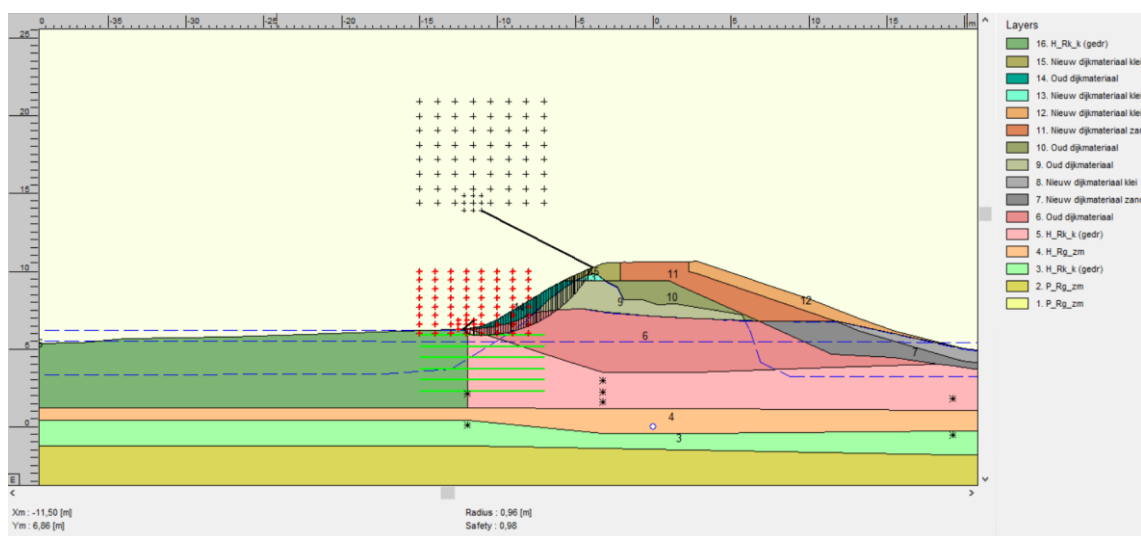


Figure D-68 Dike 1, Case 3, Sub No. 2, $t = 43$ days, $FoS = 0.98$

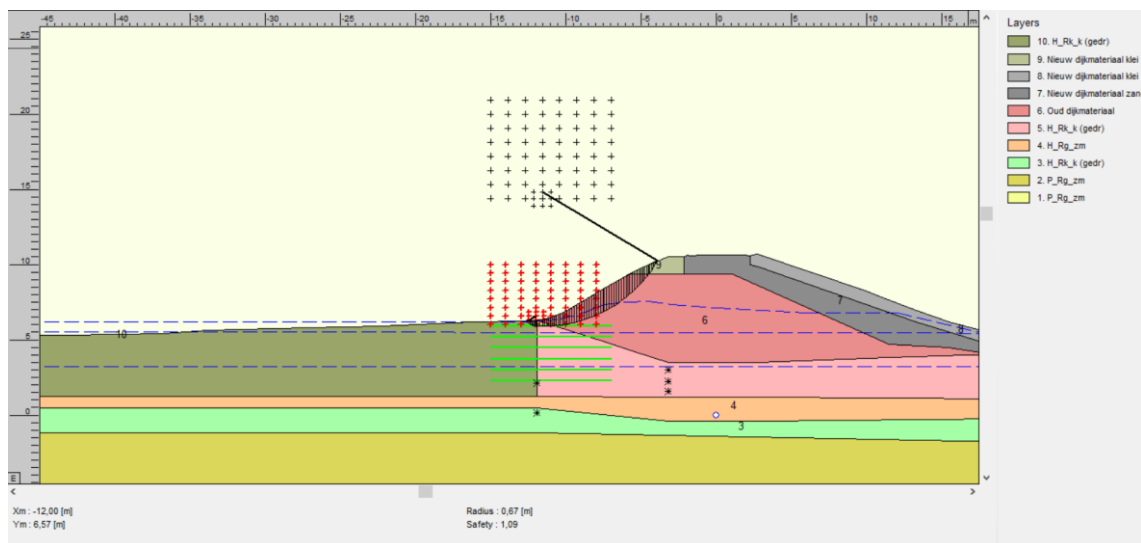


Figure D-69 Dike 1, Case 3, Sub No. 3, $t = 43$ days, $FoS = 1.09$