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## F.7 Hydrotechnické výpočty

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Hydrotechnické výpočty byly vypočítané v programu HEC-RAS 4.1.0 pro upravovaný úsek toku Řivnáč (Brodek). Posouzení povodňového ohrožení na toku proběhlo za použití standardní metody pomocí hydrodynamického 1D modelu HEC-RAS. V programu byla určena nově navržená kapacita koryta společně se stanovením rozlivů N-letých průtoků.

Model vychází z provedené studie odtokových poměrů v modelu HEC -RAS z ledna 2019, kterou provedla firma Envicons s.r.o.

Pro vlastní modelování proudění byla zvolena metoda rovnoměrného ustáleného proudění ve smíšeném režimu proudění pro celkem sedm návrhových průtoků ( $Q_1$ ,  $Q_2$ ,  $Q_5$ ,  $Q_{10}$ ,  $Q_{20}$ ,  $Q_{50}$ ,  $Q_{100}$ ). Základní výpočet je založen na řešení jednorozměrné energetické rovnice viz níže.

$$H = z + y + \frac{\alpha v^2}{2g},$$

kde  $H$  je energetická výška [m],  $z$  je výška dna koryta v příčném profilu [m],  $y$  je výška hladiny v příčném profilu [m],  $\alpha$  je koeficient kinetické energie (Coriolisovo číslo),  $v$  je rychlost [m/s] a  $g$  je gravitační zrychlení [m/s<sup>2</sup>].

Energetické ztráty jsou vyhodnoceny na základě tření (Manningova rovnice)

$$v = \frac{1}{n} \cdot R^{\frac{2}{3}} \cdot i^{\frac{1}{2}},$$

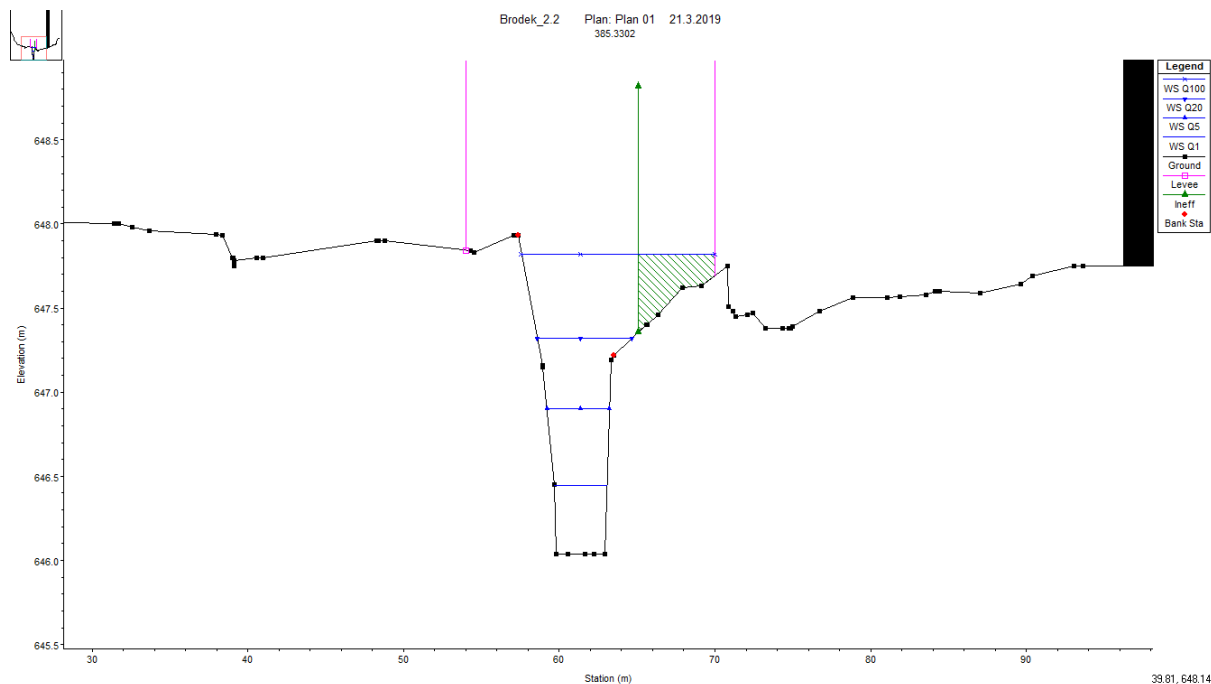
kde  $v$  je rychlost [m/s],  $n$  je Manningův součinitel drsnosti,  $R$  je hydraulický poloměr [m] a  $i$  je sklon dna.

Tab. N-leté průtoky pro profil vodního toku Řivnáč v ř. km. 1,95 (data převzata z PD ZTV – lokalita Paseky, Svratouch).

$Q_N$ (m <sup>3</sup> .s <sup>-1</sup> )						
1	2	5	10	20	50	100
1,1	2,01	3,81	5,66	8,0	11,9	15,6

Výpočty z vybraných úseků na toku Řivnáč(Brodek) programem HEC-RAS:

- ř.km 1,730



RIVER: Brodek  
REACH: Brodek

RS: 1.730

CROSS SECTION OUTPUT Profile #Q1

E.G. Elev (m)	646.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.	0.035		
W.S. Elev (m)	646.45	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	646.27	Flow Area (m2)		1.32	
E.G. Slope (m/m)	0.003698	Area (m2)		1.32	
Q Total (m3/s)	1.10	Flow (m3/s)	1.10		
Top Width (m)	3.38	Top Width (m)		3.38	
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.83	
Max Chl Dpth (m)	0.41	Hydr. Depth (m)		0.39	
Conv. Total (m3/s)	18.1	Conv. (m3/s)		18.1	
Length Wtd. (m)	12.88	Wetted Per. (m)		3.99	
Min Ch El (m)	646.04	Shear (N/m2)		12.02	
Alpha	1.00	Stream Power (N/m s)	6397.44	2585.40	3351.45
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		0.49	0.01
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.26	0.05

CROSS SECTION OUTPUT Profile #Q2

E.G. Elev (m)	646.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.	0.035		
W.S. Elev (m)	646.63	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	646.38	Flow Area (m2)		1.98	
E.G. Slope (m/m)	0.003703	Area (m2)		1.98	

Q Total (m3/s)	2.00	Flow (m3/s)	2.00		
Top Width (m)	3.64	Top Width (m)	3.64		
Vel Total (m/s)	1.01	Avg. Vel. (m/s)	1.01		
Max Chl Dpth (m)	0.59	Hydr. Depth (m)	0.54		
Conv. Total (m3/s)	32.9	Conv. (m3/s)	32.9		
Length Wtd. (m)	12.88	Wetted Per. (m)	4.46		
Min Ch El (m)	646.04	Shear (N/m2)	16.11		
Alpha	1.00	Stream Power (N/m s)	6397.44	2585.40	3351.45
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	0.00	0.77	0.08
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.06	1.48	0.94

## CROSS SECTION OUTPUT Profile #Q5

E.G. Elev (m)	646.98	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.	0.035		
W.S. Elev (m)	646.90	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	646.57	Flow Area (m2)	3.02		
E.G. Slope (m/m)	0.003973	Area (m2)	3.02		
Q Total (m3/s)	3.81	Flow (m3/s)	3.81		
Top Width (m)	4.03	Top Width (m)	4.03		
Vel Total (m/s)	1.26	Avg. Vel. (m/s)	1.26		
Max Chl Dpth (m)	0.86	Hydr. Depth (m)	0.75		
Conv. Total (m3/s)	60.4	Conv. (m3/s)	60.4		
Length Wtd. (m)	12.88	Wetted Per. (m)	5.14		
Min Ch El (m)	646.04	Shear (N/m2)	22.88		
Alpha	1.00	Stream Power (N/m s)	6397.44	2585.40	3351.45
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	0.04	1.18	0.42
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.39	1.81	2.16

## CROSS SECTION OUTPUT Profile #Q10

E.G. Elev (m)	647.22	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.035		
W.S. Elev (m)	647.11	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	646.72	Flow Area (m2)	3.88		
E.G. Slope (m/m)	0.004325	Area (m2)	3.88		
Q Total (m3/s)	5.66	Flow (m3/s)	5.66		
Top Width (m)	4.32	Top Width (m)	4.32		
Vel Total (m/s)	1.46	Avg. Vel. (m/s)	1.46		
Max Chl Dpth (m)	1.07	Hydr. Depth (m)	0.90		
Conv. Total (m3/s)	86.1	Conv. (m3/s)	86.1		
Length Wtd. (m)	12.88	Wetted Per. (m)	5.66		
Min Ch El (m)	646.04	Shear (N/m2)	29.06		
Alpha	1.00	Stream Power (N/m s)	6397.44	2585.40	3351.45
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.13	1.53	0.89
C & E Loss (m)	0.01	Cum SA (1000 m2)	1.28	2.00	3.12

## CROSS SECTION OUTPUT Profile #Q20

E.G. Elev (m)	647.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.035	0.035	
W.S. Elev (m)	647.32	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	646.89	Flow Area (m2)	4.85	0.06	
E.G. Slope (m/m)	0.004762	Area (m2)	4.85	0.06	
Q Total (m3/s)	8.00	Flow (m3/s)	7.98	0.02	
Top Width (m)	6.07	Top Width (m)	4.91	1.16	
Vel Total (m/s)	1.63	Avg. Vel. (m/s)	1.65	0.27	
Max Chl Dpth (m)	1.28	Hydr. Depth (m)	0.99	0.05	
Conv. Total (m3/s)	115.9	Conv. (m3/s)	115.7	0.2	
Length Wtd. (m)	12.88	Wetted Per. (m)	6.37	1.16	

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Min Ch El (m)	646.04	Shear (N/m <sup>2</sup> )	35.59	2.34
Alpha	1.02	Stream Power (N/m s)	6397.44	2585.40 3351.45
Frctn Loss (m)	0.09	Cum Volume (1000 m <sup>3</sup> )	0.28	1.86 1.35
C & E Loss (m)	0.01	Cum SA (1000 m <sup>2</sup> )	1.77	2.11 4.01

#### CROSS SECTION OUTPUT Profile #Q50

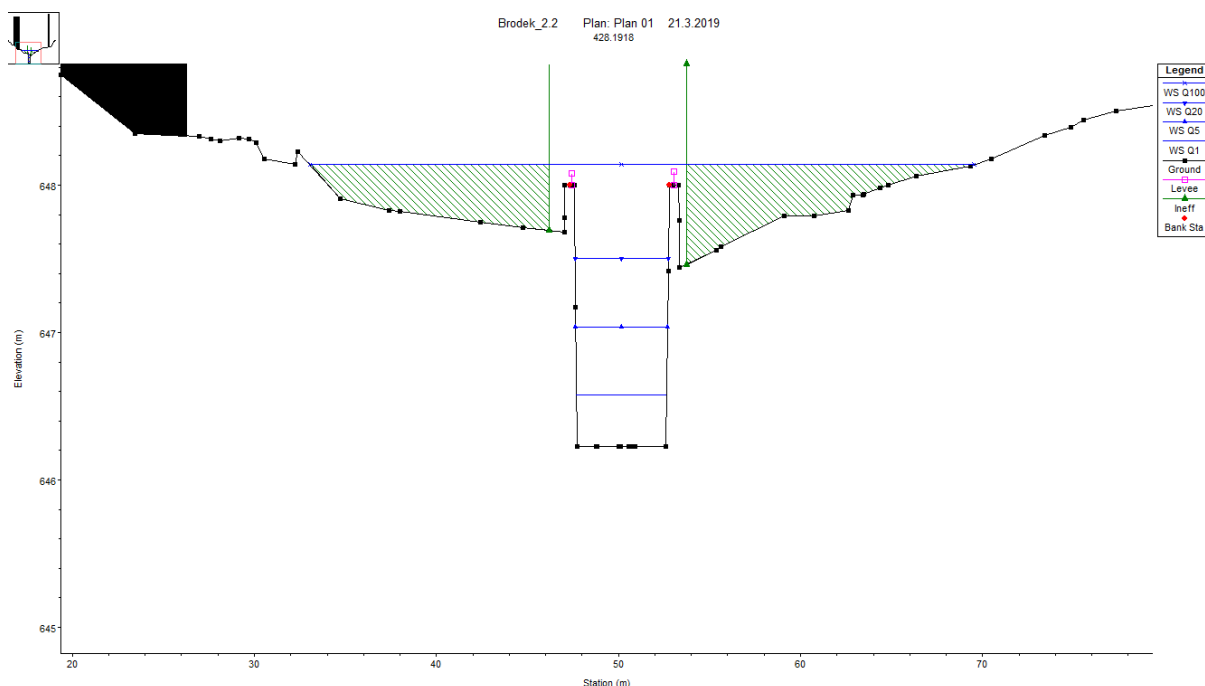
E.G. Elev (m)	647.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.16	Wt. n-Val.	0.035	0.035	
W.S. Elev (m)	647.60	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	647.13	Flow Area (m <sup>2</sup> )		6.30	0.50
E.G. Slope (m/m)	0.004651	Area (m <sup>2</sup> )		6.30	0.83
Q Total (m <sup>3</sup> /s)	11.90	Flow (m <sup>3</sup> /s)		11.46	0.44
Top Width (m)	9.69	Top Width (m)		5.48	4.21
Vel Total (m/s)	1.75	Avg. Vel. (m/s)		1.82	0.89
Max Chl Dpth (m)	1.56	Hydr. Depth (m)		1.15	0.31
Conv. Total (m <sup>3</sup> /s)	174.5	Conv. (m <sup>3</sup> /s)		168.0	6.5
Length Wtd. (m)	12.93	Wetted Per. (m)		7.00	1.61
Min Ch El (m)	646.04	Shear (N/m <sup>2</sup> )		41.09	14.10
Alpha	1.05	Stream Power (N/m s)	6397.44	2585.40	3351.45
Frctn Loss (m)	0.09	Cum Volume (1000 m <sup>3</sup> )	0.48	2.24	2.04
C & E Loss (m)	0.02	Cum SA (1000 m <sup>2</sup> )	2.36	2.28	6.71

#### CROSS SECTION OUTPUT Profile #Q100

E.G. Elev (m)	648.00	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.	0.035	0.035	
W.S. Elev (m)	647.82	Reach Len. (m)	6.69	12.88	15.51
Crit W.S. (m)	647.41	Flow Area (m <sup>2</sup> )		7.57	0.85
E.G. Slope (m/m)	0.004459	Area (m <sup>2</sup> )		7.57	2.19
Q Total (m <sup>3</sup> /s)	15.60	Flow (m <sup>3</sup> /s)		14.54	1.06
Top Width (m)	12.43	Top Width (m)		5.93	6.50
Vel Total (m/s)	1.85	Avg. Vel. (m/s)		1.92	1.25
Max Chl Dpth (m)	1.78	Hydr. Depth (m)		1.28	0.53
Conv. Total (m <sup>3</sup> /s)	233.6	Conv. (m <sup>3</sup> /s)		217.7	15.9
Length Wtd. (m)	12.98	Wetted Per. (m)		7.50	1.61
Min Ch El (m)	646.04	Shear (N/m <sup>2</sup> )		44.14	23.19
Alpha	1.03	Stream Power (N/m s)	6397.44	2585.40	3351.45
Frctn Loss (m)	0.10	Cum Volume (1000 m <sup>3</sup> )	0.74	2.50	2.90
C & E Loss (m)	0.03	Cum SA (1000 m <sup>2</sup> )	3.71	2.38	8.25

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- ř.km 1,773



RIVER: Brodek

REACH: Brodek

RS: 1.773

#### CROSS SECTION OUTPUT Profile #Q1

E.G. Elev (m)	646.60	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.	0.035		
W.S. Elev (m)	646.57	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	646.40	Flow Area (m2)		1.69	
E.G. Slope (m/m)	0.002529	Area (m2)		1.69	
Q Total (m3/s)	1.10	Flow (m3/s)		1.10	
Top Width (m)	4.96	Top Width (m)		4.96	
Vel Total (m/s)	0.65	Avg. Vel. (m/s)		0.65	
Max Chl Dpth (m)	0.34	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	21.9	Conv. (m3/s)		21.9	
Length Wtd. (m)	14.23	Wetted Per. (m)		5.58	
Min Ch El (m)	646.23	Shear (N/m2)		7.53	
Alpha	1.00	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		0.56	0.01
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.46	0.05

#### CROSS SECTION OUTPUT Profile #Q2

E.G. Elev (m)	646.78	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.	0.035		
W.S. Elev (m)	646.75	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	646.49	Flow Area (m2)		2.59	
E.G. Slope (m/m)	0.002224	Area (m2)		2.59	
Q Total (m3/s)	2.00	Flow (m3/s)		2.00	
Top Width (m)	4.99	Top Width (m)		4.99	

Vel Total (m/s)	0.77	Avg. Vel. (m/s)	0.77		
Max Chl Dpth (m)	0.52	Hydr. Depth (m)	0.52		
Conv. Total (m3/s)	42.4	Conv. (m3/s)	42.4		
Length Wtd. (m)	14.23	Wetted Per. (m)	5.94		
Min Ch El (m)	646.23	Shear (N/m2)	9.49		
Alpha	1.00	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.00	0.88	0.08
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.06	1.68	0.94

#### CROSS SECTION OUTPUT Profile #Q5

E.G. Elev (m)	647.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.	0.035		
W.S. Elev (m)	647.04	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	646.62	Flow Area (m2)	4.02		
E.G. Slope (m/m)	0.002091	Area (m2)	4.02		
Q Total (m3/s)	3.81	Flow (m3/s)	3.81		
Top Width (m)	5.05	Top Width (m)	5.05		
Vel Total (m/s)	0.95	Avg. Vel. (m/s)	0.95		
Max Chl Dpth (m)	0.81	Hydr. Depth (m)	0.80		
Conv. Total (m3/s)	83.3	Conv. (m3/s)	83.3		
Length Wtd. (m)	14.23	Wetted Per. (m)	6.52		
Min Ch El (m)	646.23	Shear (N/m2)	12.66		
Alpha	1.00	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.04	1.34	0.42
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.39	2.01	2.16

#### CROSS SECTION OUTPUT Profile #Q10

E.G. Elev (m)	647.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.	0.035		
W.S. Elev (m)	647.27	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	646.74	Flow Area (m2)	5.18		
E.G. Slope (m/m)	0.002173	Area (m2)	5.18		
Q Total (m3/s)	5.66	Flow (m3/s)	5.66		
Top Width (m)	5.09	Top Width (m)	5.09		
Vel Total (m/s)	1.09	Avg. Vel. (m/s)	1.09		
Max Chl Dpth (m)	1.04	Hydr. Depth (m)	1.02		
Conv. Total (m3/s)	121.4	Conv. (m3/s)	121.4		
Length Wtd. (m)	14.23	Wetted Per. (m)	6.98		
Min Ch El (m)	646.23	Shear (N/m2)	15.83		
Alpha	1.00	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.13	1.74	0.89
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.28	2.21	3.12

#### CROSS SECTION OUTPUT Profile #Q20

E.G. Elev (m)	647.59	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.	0.035		
W.S. Elev (m)	647.51	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	646.88	Flow Area (m2)	6.40		
E.G. Slope (m/m)	0.002349	Area (m2)	6.40		
Q Total (m3/s)	8.00	Flow (m3/s)	8.00		
Top Width (m)	5.14	Top Width (m)	5.14		
Vel Total (m/s)	1.25	Avg. Vel. (m/s)	1.25		
Max Chl Dpth (m)	1.28	Hydr. Depth (m)	1.24		
Conv. Total (m3/s)	165.1	Conv. (m3/s)	165.1		
Length Wtd. (m)	14.23	Wetted Per. (m)	7.45		

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Min Ch El (m)	646.23	Shear (N/m2)	19.77		
Alpha	1.00	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.28	2.11	1.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.77	2.32	4.02

## CROSS SECTION OUTPUT Profile #Q50

E.G. Elev (m)	647.93	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.035		
W.S. Elev (m)	647.82	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	647.07	Flow Area (m2)		8.02	
E.G. Slope (m/m)	0.002722	Area (m2)		8.02	
Q Total (m3/s)	11.90	Flow (m3/s)	11.90		
Top Width (m)	5.20	Top Width (m)	5.20		
Vel Total (m/s)	1.48	Avg. Vel. (m/s)	1.48		
Max Chl Dpth (m)	1.59	Hydr. Depth (m)	1.54		
Conv. Total (m3/s)	228.1	Conv. (m3/s)	228.1		
Length Wtd. (m)	14.23	Wetted Per. (m)	8.09		
Min Ch El (m)	646.23	Shear (N/m2)	26.49		
Alpha	1.00	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.48	2.55	2.04
C & E Loss (m)	0.01	Cum SA (1000 m2)	2.37	2.48	6.74

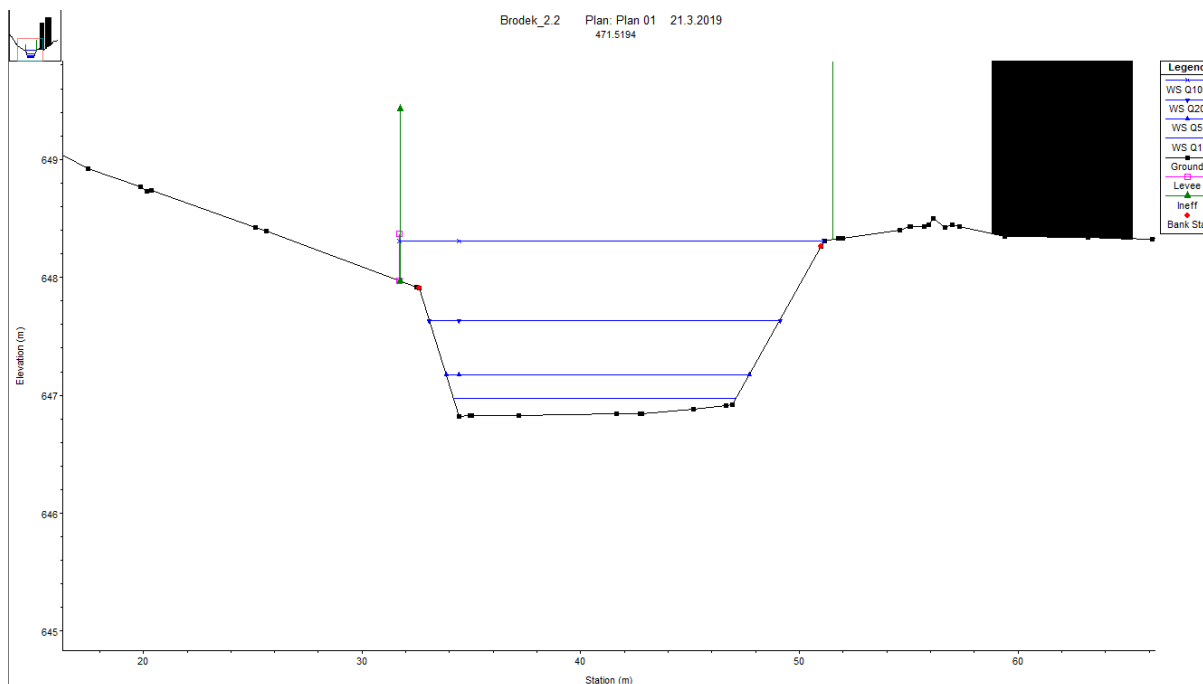
## CROSS SECTION OUTPUT Profile #Q100

E.G. Elev (m)	648.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.035	0.035	0.035
W.S. Elev (m)	648.14	Reach Len. (m)	12.03	14.23	14.68
Crit W.S. (m)	647.24	Flow Area (m2)	0.42	9.73	0.36
E.G. Slope (m/m)	0.002601	Area (m2)	4.68	9.73	5.01
Q Total (m3/s)	15.60	Flow (m3/s)	0.31	15.10	0.19
Top Width (m)	36.48	Top Width (m)	14.26	5.48	16.74
Vel Total (m/s)	1.49	Avg. Vel. (m/s)	0.75	1.55	0.53
Max Chl Dpth (m)	1.91	Hydr. Depth (m)	0.38	1.78	0.38
Conv. Total (m3/s)	305.9	Conv. (m3/s)	6.2	296.1	3.7
Length Wtd. (m)	14.21	Wetted Per. (m)	1.40	8.85	1.62
Min Ch El (m)	646.23	Shear (N/m2)	7.60	28.04	5.57
Alpha	1.06	Stream Power (N/m s)	5297.69	2271.33	2539.45
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.77	2.87	2.95
C & E Loss (m)	0.01	Cum SA (1000 m2)	3.80	2.57	8.42

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- ř.km 1,816



RIVER: Brodek

REACH: Brodek

RS: 1.816

#### CROSS SECTION OUTPUT Profile #Q1

E.G. Elev (m)	647.00	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.	0.035		
W.S. Elev (m)	646.97	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	646.94	Flow Area (m2)		1.60	
E.G. Slope (m/m)	0.009516	Area (m2)		1.60	
Q Total (m3/s)	1.10	Flow (m3/s)		1.10	
Top Width (m)	12.92	Top Width (m)		12.92	
Vel Total (m/s)	0.69	Avg. Vel. (m/s)		0.69	
Max Chl Dpth (m)	0.15	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	11.3	Conv. (m3/s)		11.3	
Length Wtd. (m)	10.56	Wetted Per. (m)		12.97	
Min Ch El (m)	646.82	Shear (N/m2)		11.48	
Alpha	1.00	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.15	Cum Volume (1000 m3)		0.63	0.01
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.81	0.05

#### CROSS SECTION OUTPUT Profile #Q2

E.G. Elev (m)	647.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.	0.035		
W.S. Elev (m)	647.04	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	646.99	Flow Area (m2)		2.46	
E.G. Slope (m/m)	0.007705	Area (m2)		2.46	
Q Total (m3/s)	2.00	Flow (m3/s)		2.00	
Top Width (m)	13.23	Top Width (m)		13.23	

Vel Total (m/s)	0.81	Avg. Vel. (m/s)	0.81		
Max Chl Dpth (m)	0.22	Hydr. Depth (m)	0.19		
Conv. Total (m3/s)	22.8	Conv. (m3/s)	22.8		
Length Wtd. (m)	10.56	Wetted Per. (m)	13.31		
Min Ch El (m)	646.82	Shear (N/m2)	13.96		
Alpha	1.00	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	0.00	0.99	0.08
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.06	2.04	0.94

#### CROSS SECTION OUTPUT Profile #Q5

E.G. Elev (m)	647.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.	0.035		
W.S. Elev (m)	647.17	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	647.06	Flow Area (m2)		4.25	
E.G. Slope (m/m)	0.004816	Area (m2)		4.25	
Q Total (m3/s)	3.81	Flow (m3/s)		3.81	
Top Width (m)	13.86	Top Width (m)		13.86	
Vel Total (m/s)	0.90	Avg. Vel. (m/s)		0.90	
Max Chl Dpth (m)	0.35	Hydr. Depth (m)		0.31	
Conv. Total (m3/s)	54.9	Conv. (m3/s)		54.9	
Length Wtd. (m)	10.56	Wetted Per. (m)		13.99	
Min Ch El (m)	646.82	Shear (N/m2)		14.35	
Alpha	1.00	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.04	1.54	0.42
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.39	2.38	2.16

#### CROSS SECTION OUTPUT Profile #Q10

E.G. Elev (m)	647.42	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.	0.035		
W.S. Elev (m)	647.39	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	647.12	Flow Area (m2)		7.32	
E.G. Slope (m/m)	0.001919	Area (m2)		7.32	
Q Total (m3/s)	5.66	Flow (m3/s)		5.66	
Top Width (m)	14.86	Top Width (m)		14.86	
Vel Total (m/s)	0.77	Avg. Vel. (m/s)		0.77	
Max Chl Dpth (m)	0.57	Hydr. Depth (m)		0.49	
Conv. Total (m3/s)	129.2	Conv. (m3/s)		129.2	
Length Wtd. (m)	10.56	Wetted Per. (m)		15.09	
Min Ch El (m)	646.82	Shear (N/m2)		9.13	
Alpha	1.00	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	0.13	2.03	0.89
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.28	2.58	3.12

#### CROSS SECTION OUTPUT Profile #Q20

E.G. Elev (m)	647.66	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.	0.035		
W.S. Elev (m)	647.64	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	647.19	Flow Area (m2)		11.19	
E.G. Slope (m/m)	0.001041	Area (m2)		11.19	
Q Total (m3/s)	8.00	Flow (m3/s)		8.00	
Top Width (m)	16.04	Top Width (m)		16.04	
Vel Total (m/s)	0.71	Avg. Vel. (m/s)		0.71	
Max Chl Dpth (m)	0.82	Hydr. Depth (m)		0.70	

Conv. Total (m3/s)	248.0	Conv. (m3/s)	248.0		
Length Wtd. (m)	10.56	Wetted Per. (m)	16.38		
Min Ch El (m)	646.82	Shear (N/m2)	6.97		
Alpha	1.00	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.28	2.49	1.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.77	2.70	4.02

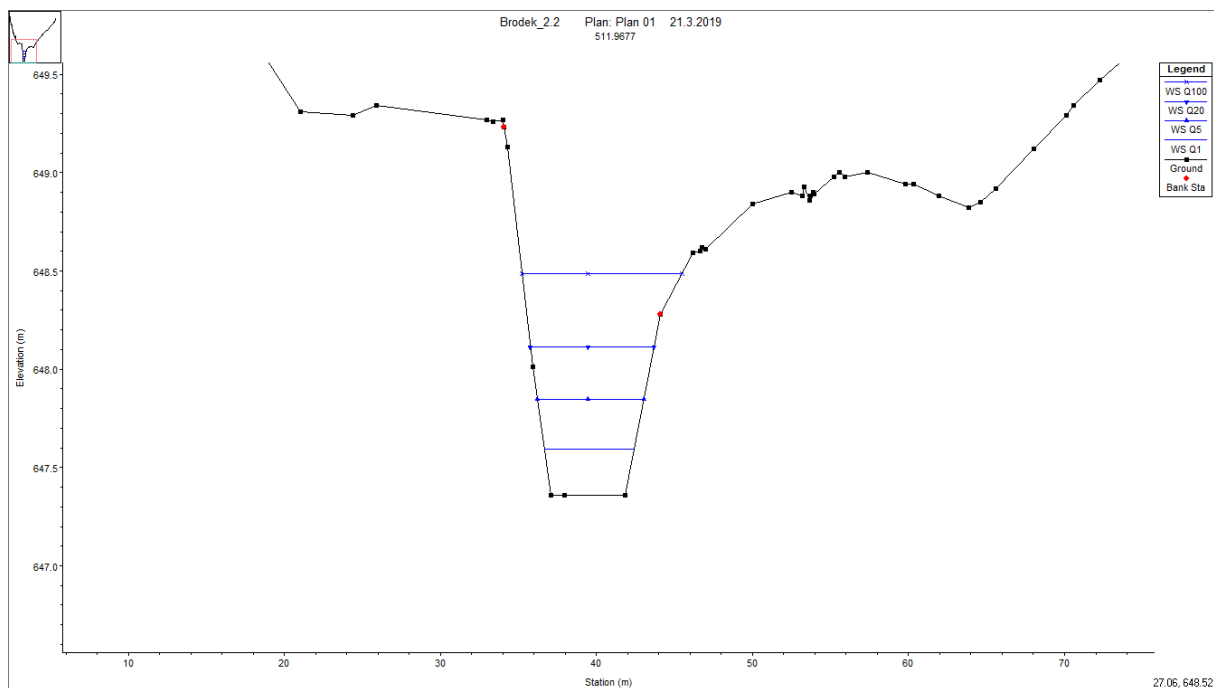
## CROSS SECTION OUTPUT Profile #Q50

E.G. Elev (m)	648.01	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.	0.035	0.035	
W.S. Elev (m)	647.99	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	647.29	Flow Area (m2)	0.04	17.07	
E.G. Slope (m/m)	0.000640	Area (m2)	0.04	17.07	
Q Total (m3/s)	11.90	Flow (m3/s)	0.00	11.90	
Top Width (m)	18.48	Top Width (m)	0.92	17.56	
Vel Total (m/s)	0.70	Avg. Vel. (m/s)	0.09	0.70	
Max Chl Dpth (m)	1.17	Hydr. Depth (m)	0.04	0.97	
Conv. Total (m3/s)	470.3	Conv. (m3/s)	0.1	470.2	
Length Wtd. (m)	10.56	Wetted Per. (m)	0.86	18.03	
Min Ch El (m)	646.82	Shear (N/m2)	0.28	5.94	
Alpha	1.00	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.48	3.07	2.04
C & E Loss (m)	0.01	Cum SA (1000 m2)	2.37	2.87	6.74

## CROSS SECTION OUTPUT Profile #Q100

E.G. Elev (m)	648.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.	0.035	0.035	0.035
W.S. Elev (m)	648.31	Reach Len. (m)	7.37	10.56	10.89
Crit W.S. (m)	647.37	Flow Area (m2)	0.31	22.88	0.00
E.G. Slope (m/m)	0.000436	Area (m2)	0.33	22.88	0.00
Q Total (m3/s)	15.60	Flow (m3/s)	0.10	15.50	0.00
Top Width (m)	19.43	Top Width (m)	0.92	18.39	0.12
Vel Total (m/s)	0.67	Avg. Vel. (m/s)	0.30	0.68	0.05
Max Chl Dpth (m)	1.49	Hydr. Depth (m)	0.37	1.24	0.02
Conv. Total (m3/s)	746.8	Conv. (m3/s)	4.6	742.2	0.0
Length Wtd. (m)	10.52	Wetted Per. (m)	0.86	18.91	0.13
Min Ch El (m)	646.82	Shear (N/m2)	1.56	5.18	0.09
Alpha	1.01	Stream Power (N/m s)	4485.68	1517.73	0.00
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.92	3.51	3.11
C & E Loss (m)	0.01	Cum SA (1000 m2)	4.16	2.98	9.02

- ř.km 1,856



RIVER: Brodek

REACH: Brodek

RS: 1.856

#### CROSS SECTION OUTPUT Profile #Q1

E.G. Elev (m)	647.63	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.	0.035		
W.S. Elev (m)	647.59	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)		Flow Area (m2)	1.22		
E.G. Slope (m/m)	0.008077	Area (m2)	1.22		
Q Total (m3/s)	1.10	Flow (m3/s)	1.10		
Top Width (m)	5.73	Top Width (m)	5.73		
Vel Total (m/s)	0.90	Avg. Vel. (m/s)	0.90		
Max Chl Dpth (m)	0.23	Hydr. Depth (m)	0.21		
Conv. Total (m3/s)	12.2	Conv. (m3/s)	12.2		
Length Wtd. (m)	12.78	Wetted Per. (m)	5.83		
Min Ch El (m)	647.36	Shear (N/m2)	16.53		
Alpha	1.00	Stream Power (N/m s)	5974.20	0.00	0.00
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.68	0.01	
C & E Loss (m)	0.00	Cum SA (1000 m2)	2.14	0.05	

#### CROSS SECTION OUTPUT Profile #Q2

E.G. Elev (m)	647.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.	0.035		
W.S. Elev (m)	647.70	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)		Flow Area (m2)	1.84		
E.G. Slope (m/m)	0.007461	Area (m2)	1.84		
Q Total (m3/s)	2.00	Flow (m3/s)	2.00		

.....					
Top Width (m)	6.18	Top Width (m)	6.18		
Vel Total (m/s)	1.08	Avg. Vel. (m/s)	1.08		
Max Chl Dpth (m)	0.34	Hydr. Depth (m)	0.30		
Conv. Total (m3/s)	23.2	Conv. (m3/s)	23.2		
Length Wtd. (m)	12.78	Wetted Per. (m)	6.33		
Min Ch El (m)	647.36	Shear (N/m2)	21.31		
Alpha	1.00	Stream Power (N/m s)	5974.20	0.00	0.00
Frctn Loss (m)	0.15	Cum Volume (1000 m3)	0.00	1.06	0.08
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.06	2.37	0.94

## CROSS SECTION OUTPUT Profile #Q5

E.G. Elev (m)	647.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.	0.035		
W.S. Elev (m)	647.85	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)		Flow Area (m2)	2.81		
E.G. Slope (m/m)	0.007646	Area (m2)	2.81		
Q Total (m3/s)	3.81	Flow (m3/s)	3.81		
Top Width (m)	6.82	Top Width (m)	6.82		
Vel Total (m/s)	1.36	Avg. Vel. (m/s)	1.36		
Max Chl Dpth (m)	0.49	Hydr. Depth (m)	0.41		
Conv. Total (m3/s)	43.6	Conv. (m3/s)	43.6		
Length Wtd. (m)	12.78	Wetted Per. (m)	7.04		
Min Ch El (m)	647.36	Shear (N/m2)	29.96		
Alpha	1.00	Stream Power (N/m s)	5974.20	0.00	0.00
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.04	1.65	0.42
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.39	2.73	2.16

## CROSS SECTION OUTPUT Profile #Q10

E.G. Elev (m)	648.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.035		
W.S. Elev (m)	647.98	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)		Flow Area (m2)	3.72		
E.G. Slope (m/m)	0.007386	Area (m2)	3.72		
Q Total (m3/s)	5.66	Flow (m3/s)	5.66		
Top Width (m)	7.37	Top Width (m)	7.37		
Vel Total (m/s)	1.52	Avg. Vel. (m/s)	1.52		
Max Chl Dpth (m)	0.62	Hydr. Depth (m)	0.51		
Conv. Total (m3/s)	65.9	Conv. (m3/s)	65.9		
Length Wtd. (m)	12.78	Wetted Per. (m)	7.65		
Min Ch El (m)	647.36	Shear (N/m2)	35.28		
Alpha	1.00	Stream Power (N/m s)	5974.20	0.00	0.00
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.13	2.18	0.89
C & E Loss (m)	0.01	Cum SA (1000 m2)	1.28	2.95	3.12

## CROSS SECTION OUTPUT Profile #Q20

E.G. Elev (m)	648.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.035		
W.S. Elev (m)	648.11	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)	647.96	Flow Area (m2)	4.78		
E.G. Slope (m/m)	0.007106	Area (m2)	4.78		
Q Total (m3/s)	8.00	Flow (m3/s)	8.00		
Top Width (m)	7.92	Top Width (m)	7.92		
Vel Total (m/s)	1.67	Avg. Vel. (m/s)	1.67		
Max Chl Dpth (m)	0.75	Hydr. Depth (m)	0.60		

Conv. Total (m3/s)	94.9	Conv. (m3/s)	94.9
Length Wtd. (m)	12.78	Wetted Per. (m)	8.27
Min Ch El (m)	647.36	Shear (N/m2)	40.31
Alpha	1.00	Stream Power (N/m s)	5974.20 0.00 0.00
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	0.28 2.72 1.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	1.77 3.10 4.02

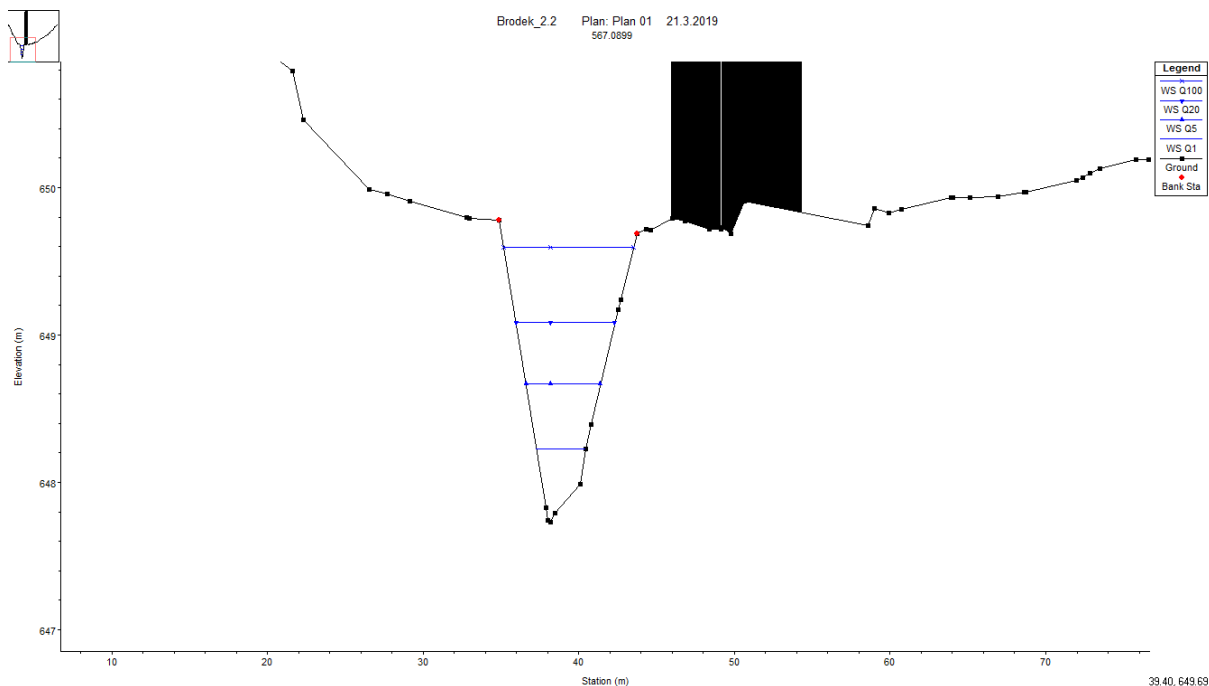
## CROSS SECTION OUTPUT Profile #Q50

E.G. Elev (m)	648.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.	0.035	0.035	
W.S. Elev (m)	648.32	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)	648.12	Flow Area (m2)	6.48	0.00	
E.G. Slope (m/m)	0.006462	Area (m2)	6.48	0.00	
Q Total (m3/s)	11.90	Flow (m3/s)	11.90	0.00	
Top Width (m)	8.88	Top Width (m)	8.63	0.26	
Vel Total (m/s)	1.83	Avg. Vel. (m/s)	1.84	0.16	
Max Chl Dpth (m)	0.96	Hydr. Depth (m)	0.75	0.02	
Conv. Total (m3/s)	148.0	Conv. (m3/s)	148.0	0.0	
Length Wtd. (m)	12.78	Wetted Per. (m)	9.07	0.26	
Min Ch El (m)	647.36	Shear (N/m2)	45.29	1.21	
Alpha	1.00	Stream Power (N/m s)	5974.20	0.00	0.00
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	0.48	3.42	2.04
C & E Loss (m)	0.02	Cum SA (1000 m2)	2.37	3.32	6.74

## CROSS SECTION OUTPUT Profile #Q100

E.G. Elev (m)	648.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.19	Wt. n-Val.	0.035	0.035	
W.S. Elev (m)	648.48	Reach Len. (m)	13.25	12.78	12.45
Crit W.S. (m)	648.25	Flow Area (m2)	7.94	0.14	
E.G. Slope (m/m)	0.005851	Area (m2)	7.94	0.14	
Q Total (m3/s)	15.60	Flow (m3/s)	15.53	0.07	
Top Width (m)	10.23	Top Width (m)	8.87	1.36	
Vel Total (m/s)	1.93	Avg. Vel. (m/s)	1.96	0.47	
Max Chl Dpth (m)	1.12	Hydr. Depth (m)	0.89	0.10	
Conv. Total (m3/s)	203.9	Conv. (m3/s)	203.1	0.9	
Length Wtd. (m)	12.78	Wetted Per. (m)	9.36	1.38	
Min Ch El (m)	647.36	Shear (N/m2)	48.64	5.81	
Alpha	1.02	Stream Power (N/m s)	5974.20	0.00	0.00
Frctn Loss (m)	0.11	Cum Volume (1000 m3)	0.92	3.99	3.11
C & E Loss (m)	0.02	Cum SA (1000 m2)	4.16	3.46	9.03

- ř.km 1,912



RIVER: Brodek

REACH: Brodek

RS: 1.912

#### CROSS SECTION OUTPUT Profile #Q1

E.G. Elev (m)	648.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.	0.050		
W.S. Elev (m)	648.22	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	0.98		
E.G. Slope (m/m)	0.016529	Area (m2)	0.98		
Q Total (m3/s)	1.10	Flow (m3/s)	1.10		
Top Width (m)	3.16	Top Width (m)	3.16		
Vel Total (m/s)	1.12	Avg. Vel. (m/s)	1.12		
Max Chl Dpth (m)	0.49	Hydr. Depth (m)	0.31		
Conv. Total (m3/s)	8.6	Conv. (m3/s)	8.6		
Length Wtd. (m)	15.65	Wetted Per. (m)	3.40		
Min Ch El (m)	647.73	Shear (N/m2)	46.74		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.74	0.01	
C & E Loss (m)	0.01	Cum SA (1000 m2)	2.34	0.05	

#### CROSS SECTION OUTPUT Profile #Q2

E.G. Elev (m)	648.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.	0.050		
W.S. Elev (m)	648.39	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	1.55		
E.G. Slope (m/m)	0.015090	Area (m2)	1.55		
Q Total (m3/s)	2.00	Flow (m3/s)	2.00		
Top Width (m)	3.76	Top Width (m)	3.76		
Vel Total (m/s)	1.29	Avg. Vel. (m/s)	1.29		

Max Chl Dpth (m)	0.66	Hydr. Depth (m)	0.41		
Conv. Total (m3/s)	16.3	Conv. (m3/s)	16.3		
Length Wtd. (m)	15.65	Wetted Per. (m)	4.09		
Min Ch El (m)	647.73	Shear (N/m2)	56.21		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.00	1.15	0.08
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.06	2.60	0.94

## CROSS SECTION OUTPUT Profile #Q5

E.G. Elev (m)	648.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.	0.066		
W.S. Elev (m)	648.67	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	2.73		
E.G. Slope (m/m)	0.020530	Area (m2)	2.73		
Q Total (m3/s)	3.81	Flow (m3/s)	3.81		
Top Width (m)	4.80	Top Width (m)	4.80		
Vel Total (m/s)	1.39	Avg. Vel. (m/s)	1.39		
Max Chl Dpth (m)	0.94	Hydr. Depth (m)	0.57		
Conv. Total (m3/s)	26.6	Conv. (m3/s)	26.6		
Length Wtd. (m)	15.65	Wetted Per. (m)	5.26		
Min Ch El (m)	647.73	Shear (N/m2)	104.67		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	0.04	1.80	0.42
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.39	2.99	2.16

## CROSS SECTION OUTPUT Profile #Q10

E.G. Elev (m)	648.99	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.074		
W.S. Elev (m)	648.87	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	3.81		
E.G. Slope (m/m)	0.022864	Area (m2)	3.81		
Q Total (m3/s)	5.66	Flow (m3/s)	5.66		
Top Width (m)	5.57	Top Width (m)	5.57		
Vel Total (m/s)	1.49	Avg. Vel. (m/s)	1.49		
Max Chl Dpth (m)	1.14	Hydr. Depth (m)	0.68		
Conv. Total (m3/s)	37.4	Conv. (m3/s)	37.4		
Length Wtd. (m)	15.65	Wetted Per. (m)	6.14		
Min Ch El (m)	647.73	Shear (N/m2)	139.07		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.18	Cum Volume (1000 m3)	0.13	2.37	0.89
C & E Loss (m)	0.01	Cum SA (1000 m2)	1.28	3.24	3.12

## CROSS SECTION OUTPUT Profile #Q20

E.G. Elev (m)	649.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.	0.079		
W.S. Elev (m)	649.08	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	5.06		
E.G. Slope (m/m)	0.024434	Area (m2)	5.06		
Q Total (m3/s)	8.00	Flow (m3/s)	8.00		
Top Width (m)	6.35	Top Width (m)	6.35		
Vel Total (m/s)	1.58	Avg. Vel. (m/s)	1.58		
Max Chl Dpth (m)	1.35	Hydr. Depth (m)	0.80		
Conv. Total (m3/s)	51.2	Conv. (m3/s)	51.2		
Length Wtd. (m)	15.65	Wetted Per. (m)	7.03		
Min Ch El (m)	647.73	Shear (N/m2)	172.46		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.20	Cum Volume (1000 m3)	0.28	2.97	1.35



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C & E Loss (m)	0.00	Cum SA (1000 m2)	1.77	3.42	4.02
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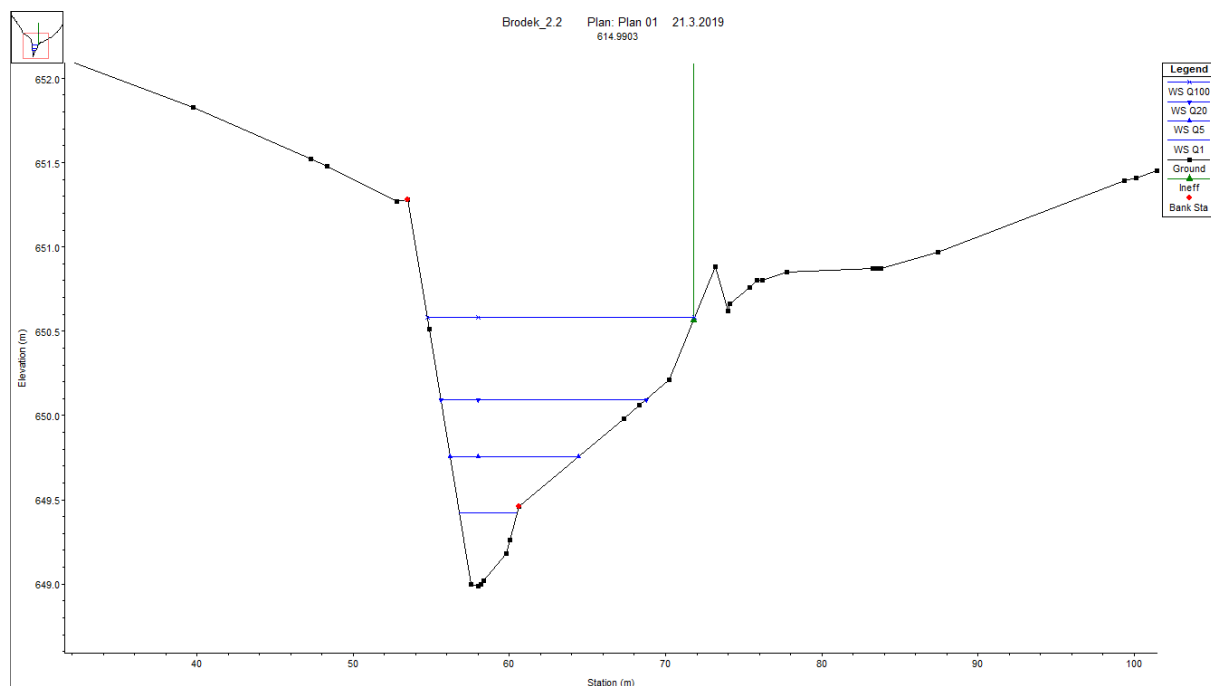
CROSS SECTION OUTPUT Profile #Q50

E.G. Elev (m)	649.52	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.	0.085		
W.S. Elev (m)	649.37	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	7.05		
E.G. Slope (m/m)	0.025757	Area (m2)		7.05	
Q Total (m3/s)	11.90	Flow (m3/s)	11.90		
Top Width (m)	7.49	Top Width (m)	7.49		
Vel Total (m/s)	1.69	Avg. Vel. (m/s)	1.69		
Max Chl Dpth (m)	1.64	Hydr. Depth (m)	0.94		
Conv. Total (m3/s)	74.1	Conv. (m3/s)	74.1		
Length Wtd. (m)	15.65	Wetted Per. (m)	8.31		
Min Ch El (m)	647.73	Shear (N/m2)	214.41		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.22	Cum Volume (1000 m3)	0.48	3.75	2.04
C & E Loss (m)	0.00	Cum SA (1000 m2)	2.37	3.68	6.74

CROSS SECTION OUTPUT Profile #Q100

E.G. Elev (m)	649.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.16	Wt. n-Val.	0.089		
W.S. Elev (m)	649.60	Reach Len. (m)	19.27	15.65	13.31
Crit W.S. (m)		Flow Area (m2)	8.83		
E.G. Slope (m/m)	0.026229	Area (m2)		8.83	
Q Total (m3/s)	15.60	Flow (m3/s)	15.60		
Top Width (m)	8.36	Top Width (m)	8.36		
Vel Total (m/s)	1.77	Avg. Vel. (m/s)	1.77		
Max Chl Dpth (m)	1.87	Hydr. Depth (m)	1.06		
Conv. Total (m3/s)	96.3	Conv. (m3/s)	96.3		
Length Wtd. (m)	15.65	Wetted Per. (m)	9.30		
Min Ch El (m)	647.73	Shear (N/m2)	244.31		
Alpha	1.00	Stream Power (N/m s)	6491.28	0.00	0.00
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	0.92	4.38	3.12
C & E Loss (m)	0.00	Cum SA (1000 m2)	4.16	3.85	9.10

• ř.km 1,959



RIVER: Brodek

REACH: Brodek

RS: 1.959

#### CROSS SECTION OUTPUT Profile #Q1

E.G. Elev (m)	649.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.	0.067		
W.S. Elev (m)	649.42	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	649.34	Flow Area (m2)		1.04	
E.G. Slope (m/m)	0.029050	Area (m2)		1.04	
Q Total (m3/s)	1.10	Flow (m3/s)	1.10		
Top Width (m)	3.68	Top Width (m)	3.68		
Vel Total (m/s)	1.06	Avg. Vel. (m/s)	1.06		
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.28	
Conv. Total (m3/s)	6.5	Conv. (m3/s)	6.5		
Length Wtd. (m)	11.21	Wetted Per. (m)	3.84		
Min Ch El (m)	648.99	Shear (N/m2)	76.77		
Alpha	1.00	Stream Power (N/m s)	6542.03	0.00	0.00
Frctn Loss (m)	0.23	Cum Volume (1000 m3)		0.78	0.01
C & E Loss (m)	0.00	Cum SA (1000 m2)		2.49	0.05

#### CROSS SECTION OUTPUT Profile #Q2

E.G. Elev (m)	649.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.	0.069	0.150	
W.S. Elev (m)	649.56	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	649.45	Flow Area (m2)		1.57	0.06
E.G. Slope (m/m)	0.028603	Area (m2)		1.57	0.06
Q Total (m3/s)	2.00	Flow (m3/s)	1.99	0.01	
Top Width (m)	5.32	Top Width (m)	4.04	1.28	
Vel Total (m/s)	1.22	Avg. Vel. (m/s)	1.27	0.15	
Max Chl Dpth (m)	0.57	Hydr. Depth (m)		0.39	0.05
Conv. Total (m3/s)	11.8	Conv. (m3/s)	11.8	0.1	

Length Wtd. (m)	11.21	Wetted Per. (m)	4.25	1.28
Min Ch El (m)	648.99	Shear (N/m2)	103.84	13.85
Alpha	1.07	Stream Power (N/m s)	6542.03	0.00 0.00
Frctn Loss (m)	0.21	Cum Volume (1000 m3)	0.00	1.22 0.08
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.06	2.78 0.94

## CROSS SECTION OUTPUT Profile #Q5

E.G. Elev (m)	649.87	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.067	0.150	
W.S. Elev (m)	649.76	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	649.63	Flow Area (m2)		2.41	0.57
E.G. Slope (m/m)	0.025027	Area (m2)		2.41	0.57
Q Total (m3/s)	3.81	Flow (m3/s)	3.64	0.17	
Top Width (m)	8.23	Top Width (m)	4.40	3.83	
Vel Total (m/s)	1.28	Avg. Vel. (m/s)	1.51	0.29	
Max Chl Dpth (m)	0.77	Hydr. Depth (m)		0.55	0.15
Conv. Total (m3/s)	24.1	Conv. (m3/s)	23.0	1.1	
Length Wtd. (m)	11.22	Wetted Per. (m)	4.65	3.84	
Min Ch El (m)	648.99	Shear (N/m2)	126.93	36.29	
Alpha	1.34	Stream Power (N/m s)	6542.03	0.00	0.00
Frctn Loss (m)	0.20	Cum Volume (1000 m3)	0.04	1.91	0.43
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.39	3.20	2.23

## CROSS SECTION OUTPUT Profile #Q10

E.G. Elev (m)	650.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.	0.066	0.150	
W.S. Elev (m)	649.92	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	649.77	Flow Area (m2)		3.13	1.34
E.G. Slope (m/m)	0.022242	Area (m2)		3.13	1.34
Q Total (m3/s)	5.66	Flow (m3/s)	5.16	0.50	
Top Width (m)	10.57	Top Width (m)	4.68	5.89	
Vel Total (m/s)	1.27	Avg. Vel. (m/s)	1.65	0.37	
Max Chl Dpth (m)	0.93	Hydr. Depth (m)		0.67	0.23
Conv. Total (m3/s)	38.0	Conv. (m3/s)	34.6	3.3	
Length Wtd. (m)	11.22	Wetted Per. (m)	4.98	5.90	
Min Ch El (m)	648.99	Shear (N/m2)	137.03	49.54	
Alpha	1.56	Stream Power (N/m s)	6542.03	0.00	0.00
Frctn Loss (m)	0.20	Cum Volume (1000 m3)	0.13	2.53	0.92
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.28	3.48	3.26

## CROSS SECTION OUTPUT Profile #Q20

E.G. Elev (m)	650.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.	0.065	0.150	
W.S. Elev (m)	650.10	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	649.92	Flow Area (m2)		4.00	2.60
E.G. Slope (m/m)	0.018457	Area (m2)		4.00	2.60
Q Total (m3/s)	8.00	Flow (m3/s)	6.86	1.14	
Top Width (m)	13.18	Top Width (m)	5.01	8.17	
Vel Total (m/s)	1.21	Avg. Vel. (m/s)	1.72	0.44	
Max Chl Dpth (m)	1.11	Hydr. Depth (m)		0.80	0.32
Conv. Total (m3/s)	58.9	Conv. (m3/s)	50.5	8.4	
Length Wtd. (m)	11.23	Wetted Per. (m)	5.35	8.19	
Min Ch El (m)	648.99	Shear (N/m2)	135.33	57.54	
Alpha	1.74	Stream Power (N/m s)	6542.03	0.00	0.00
Frctn Loss (m)	0.19	Cum Volume (1000 m3)	0.28	3.17	1.40
C & E Loss (m)	0.01	Cum SA (1000 m2)	1.77	3.69	4.19

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CROSS SECTION OUTPUT Profile #Q50

E.G. Elev (m)	650.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.064	0.130	
W.S. Elev (m)	650.36	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	650.12	Flow Area (m2)		5.40	5.14
E.G. Slope (m/m)	0.012533	Area (m2)		5.40	5.14
Q Total (m3/s)	11.90	Flow (m3/s)		8.92	2.98
Top Width (m)	15.79	Top Width (m)		5.48	10.31
Vel Total (m/s)	1.13	Avg. Vel. (m/s)		1.65	0.58
Max Chl Dpth (m)	1.37	Hydr. Depth (m)		0.98	0.50
Conv. Total (m3/s)	106.3	Conv. (m3/s)		79.7	26.6
Length Wtd. (m)	11.24	Wetted Per. (m)		5.89	10.35
Min Ch El (m)	648.99	Shear (N/m2)		112.51	61.04
Alpha	1.67	Stream Power (N/m s)	6542.03	0.00	0.00
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	0.48	4.02	2.14
C & E Loss (m)	0.02	Cum SA (1000 m2)	2.37	3.97	7.00

## CROSS SECTION OUTPUT Profile #Q100

E.G. Elev (m)	650.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.	0.063	0.116	
W.S. Elev (m)	650.58	Reach Len. (m)	11.60	11.21	11.44
Crit W.S. (m)	650.26	Flow Area (m2)		6.64	7.49
E.G. Slope (m/m)	0.009361	Area (m2)		6.64	7.49
Q Total (m3/s)	15.60	Flow (m3/s)		10.51	5.09
Top Width (m)	17.14	Top Width (m)		5.88	11.26
Vel Total (m/s)	1.10	Avg. Vel. (m/s)		1.58	0.68
Max Chl Dpth (m)	1.59	Hydr. Depth (m)		1.13	0.67
Conv. Total (m3/s)	161.2	Conv. (m3/s)		108.6	52.6
Length Wtd. (m)	11.25	Wetted Per. (m)		6.34	11.28
Min Ch El (m)	648.99	Shear (N/m2)		96.01	60.98
Alpha	1.51	Stream Power (N/m s)	6542.03	0.00	0.00
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.92	4.72	3.28
C & E Loss (m)	0.02	Cum SA (1000 m2)	4.16	4.16	9.46