Regione Piemonte – Provincia di Torino Comune di VIGONE



Indagini geologiche a supporto della variante di adeguamento del PRG a seguito delle "Verifiche di compatibilità idraulica ed idrogeologica" previste dalle N.d.A. del P.A.I.

(realizzate sulla base di indagini geologiche conformi alla Circolare P.G.R. 8 maggio 1996, n. 7/LAP e alla D.G.R. 15 luglio 2002, n. 45-6656)

ALLEGATO 4

Area Nord concentrico
Ridefinizione del limite della Fascia B del Lemina
sulla base dei criteri di cui all'art. 27 co mma 3 delle NdA del PAI

DOCUMENTAZIONE E VALUTAZIONI INTEGRATIVE

25 Maggio 2007

1 PREMESSA

Nell'ambito delle modifiche ed integrazioni apportate alla documentazione con aggiornamento 25 marzo 2007, trasmessa agli uffici istruttori per la nuova condivisione del quadro del dissesto, era inserita, sulla base di uno specifico rilievo topografico che ha consentito di evidenziare la presenza di un rilevato antropico e di dettagliarne le quote assolute, una proposta di ridefinizione del limite della Fascia B del Lemina sulla base dei criteri di cui all'art. 27 comma 3 delle NdA del PAI, per un tratto di circa 250 metri, nell' area a nord del concentrico (fig. 1).

Tale area risulta sopraelevata rispetto al piano campagna circostante di circa 80 cm e non è stata raggiunta dalle acque di esondazione del Lemina nel corso dell'evento alluvionale 2000.

Ad integrazione della documentazione inviata, viene prodotta la presente relazione di approfondimento che fornisce ulteriori elementi che evidenziano l'ammissibilità della suddetta modifica.

NB

Le quote del assolute del rilievo prodotto, sono state appoggiate al caposaldo PF01 della rete di raffittimento locale prodotta per la redazione della cartografia fotorestituita del comune di Vigone alla scala 1:2.000 (quota 258,33) e materializzato con chiodo topografico al bordo di un aiuola antistante il cimitero. Le quote assolute degli studi idraulici descritti più avanti sono state riferite ad altri punti di appoggio e differiscono pertanto di alcuni decimetri da quelle rilevate; al fine di ridefinire le quote nel sistema di riferimento del rilievo prodotto, è stato necessario applicare le seguenti correzioni di quota:

Per lo studio Autorità di Bacino: sottratti 0,48 m;

Per lo studio del comune di Cercenasco: sommati 0,27 m.

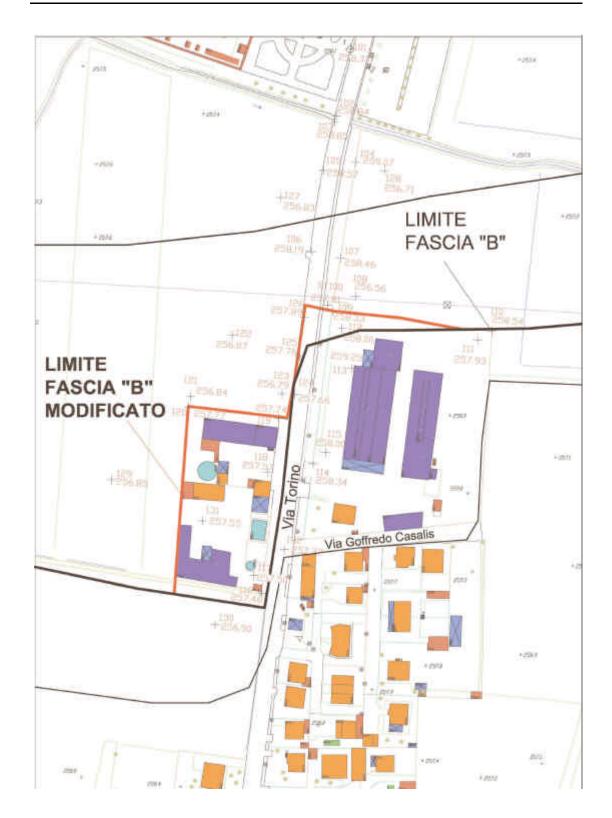


Figura 1 – Planimetria della proposta di modifica del limite della Fascia B del torrente Lemina (linea rossa), sulla base dei criteri di cui all' art. 27 comma 3 delle NdA del PAI – scala 1:2.000 ; in rosso le quote del rilievo topografico.

2 ANALISI DELLA DOCUMENTAZIONE ACQUISITA

2.1 Lo studio idraulico del "S.P.1.4 – Monografia del Lemina"

E' lo studio prodotto dall'ATI Lotti & Associati spa – Aquater spa – Hydrodata spa su incarico dell'Autorità di Bacino per la delimitazione delle Fasce fluviali del Lemina.

Le sezioni di interesse sono la **A21v**, coincidente con il ponte sul Lemina di via Torino (cimitero), e la **64,** a monte del rilevato.

Il modello prodotto evidenzia, per una portata relativa al TR200 di 137 mc/s, consistenti fenomeni di rigurgito a monte del rilevato, con una quota di piena di 258,54 mslm, che ridefinita nel sistema di riferimento del presente studio risulta essere di **258,06 mslm**.

2.2 Lo studio idraulico prodotto dal Dott. Geol. Almo Olmi a supporto delle verifiche PAI del comune di Cercenasco

Lo studio, messo a disposizione, per gentile concessione del comune e per la disponibilità del tecnico incaricato, in formato digitale completo dei files del modello idraulico, è stato sviluppato nel tratto di Lemina interno al territorio comunale di Cercenasco, sulla base di un rilievo topografico di dettaglio di n. 44 sezioni idrauliche, estese per alcune centinaia di metri nelle fasce golenali sia in sponda sinistra che in sponda destra (fig. 2)

I dati sono stati utilizzati per la creazione di un modello idraulico in moto permanente tramite il software Hec-Ras nella versione 3.1.3.

Il rilievo topografico dell'alveo e dei piani campagna ad esso adiacenti, evidenzia la particolarità dell'assetto morfologico del corso d'acqua, sicuramente oggetto di consistenti modifiche antropiche nel tempo, che ne hanno modificato percorso naturale e rapporto con le fasce golenali.

Nel tratto considerato il corso d'acqua risulta **costantemente sospeso sul piano campagna**, con sponde caratterizzate da funzioni arginali ed altezze variabili da tratto a tratto; da monte verso valle si susseguono alternativamente tratti in cui risulta sopralevata una sponda rispetto a quella opposta (fig. 2).

L'area golenale sinistra appare in generale sensibilmente più depressa di quella destra.

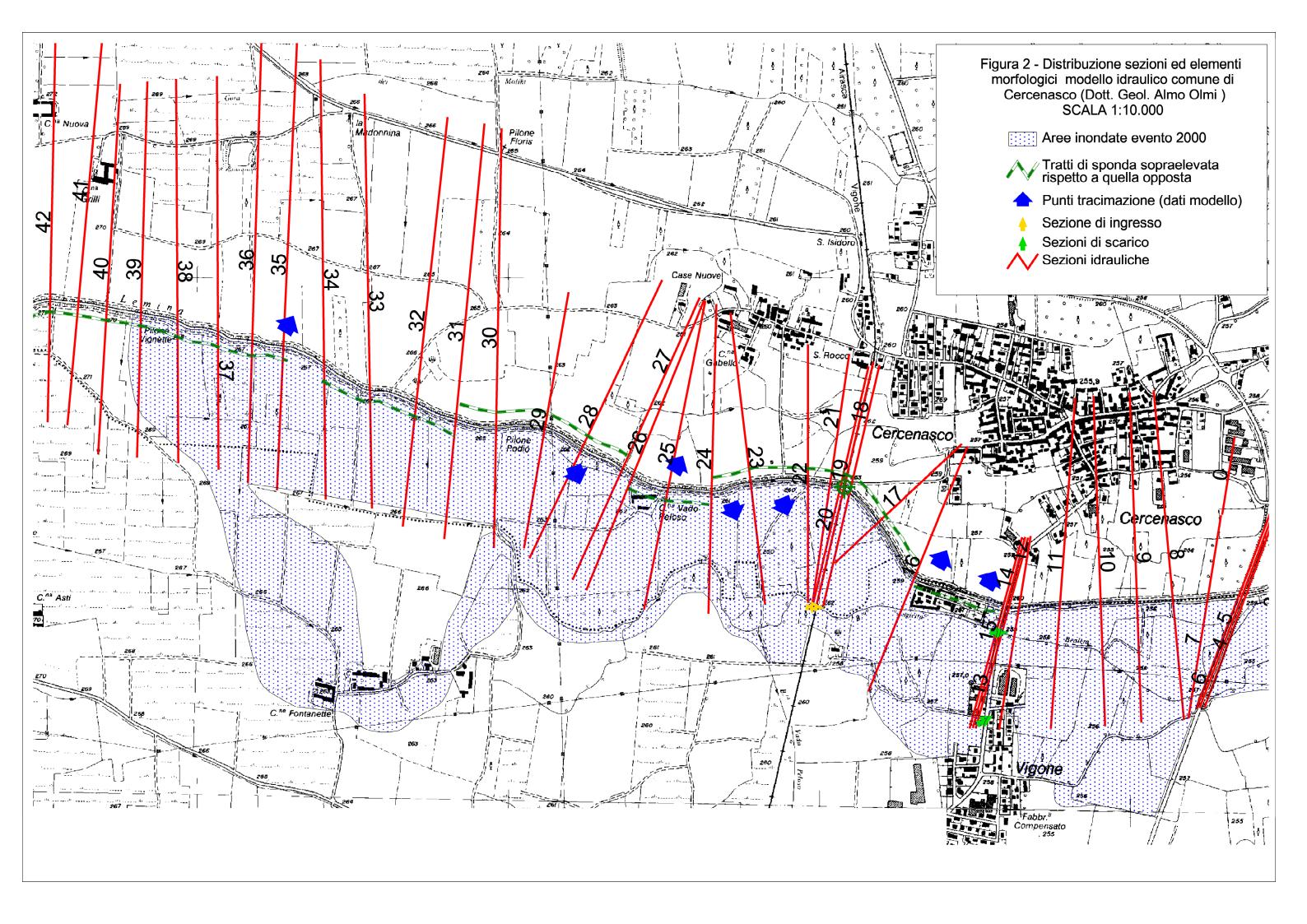
Il modello idraulico, sul quale sono stati inseriti i levees (argini) su entrambe le sponde, consente di evidenziare che l'alveo presenta punti di tracimazione già a partire da 40 mc/s.

Le acque esondate, che non hanno più alcuna possibilità di rientrare in alveo, si diffondono sul piano campagna e vengono drenate dalla rete di scolo locale; sulla sponda destra svolge la funzione di collettore la Bealera Angietta.

Per tali motivi si ritiene che il modello unidimensionale in moto permanente sviluppato in modo classico presenti dei limiti a rappresentare complessivamente il comportamento reale, dal momento che il deflusso si sviluppa in modo differenziato e distinto in alveo e nelle due aree golenali. Le portate della piena incanalata vengono ripartite dai punti di tracimazione che funzionano da sfioratori laterali alimentanti vaste aree di laminazione, assimilabili a "bacini di laminazione naturali in derivazione".

Si ritiene pertanto che nel caso considerato non sia corretto inserire nella simulazione integralmente la portata derivante dalle possibilità di alimentazione del bacino, né utilizzare i livelli teorici in alveo ed estrapolarli ai settori di campagna circostante.

Al fine di tentare di simulare in modo più realistico il comportamento del corso d'acqua si sono inseriti nel modello valori crescenti di portata per valutare la capacità di smaltimento del tratto di monte dell'alveo, senza esondazioni; a partire da tale portata (valutata in 60 mc/s) si sono stimate delle aliquote di riduzione per ogni punto di tracimazione, che, producendo una ripartizione delle portate, rende la possibilità di deflusso in alveo, decrescente da monte verso valle (i punti di tracimazione sono evidenziati in figura 2); si è valutato inoltre che la portata massima smaltibile dalla sezione 19 (attraversamento FS), caratterizzato da un rilevato non tracimabile e pertanto nella condizione di limitare le portate a valle, sia di circa 48 mc/s. Sulla base di tali valutazioni è stato stimato che la portata massima affluente in corrispondenza dell'attraversamento di via Torino sia di 45 mc/s; tale portata genera da modello un livello di pelo libero di **258,05 mslm**, che differisce di un solo centimetro dal livello derivante dallo studio dell'Autorità di Bacino.



3 VALUTAZIONI CONCLUSIVE

Nella situazione evidenziata dal modello idraulico ri-tarato, a valle del rilevato della ferrovia si producono consistenti esondazioni in sponda sinistra, ma non sulla sponda destra, se si eccettua quella riscontrabile sulla sezione 15 (piazzale antistante il cimitero) con una quota di sfioro di soli 5 cm superiore alla sponda; tale esondazione è insufficiente a spiegare la vasta inondazione che si produce nella fascia destra (come ad esempio awenuto nel corso dell'evento 2000, quando in tale punto non si è registrata alcuna fuoriuscita di acque di esondazione), che infatti deriva dalle tracimazioni che si verificano più a monte in corrispondenza della cascina Vado Peloso e che vengono drenate dalla Bealera Angietta e scaricate a valle del rilevato ferroviario dalla sezione dell' attraversamento stesso.

L'area golenale in sponda destra tra il rilevato della ferrovia e il rilevato di via Torino è pertanto in una condizione di estremo favore, dal momento che il settore si comporta da serbatoio di laminazione ed il suo livello idrometrico è controllato dalle portate in ingresso principalmente dalla sezione precedentemente descritta e dalle portate in uscita dal rilevato di via Torino, scaricate dall'attraversamento della Bealera Angietta e dallo sfioro sul piano stradale in corrispondenza di via Goffredo Casalis (fig. 1 e 2).

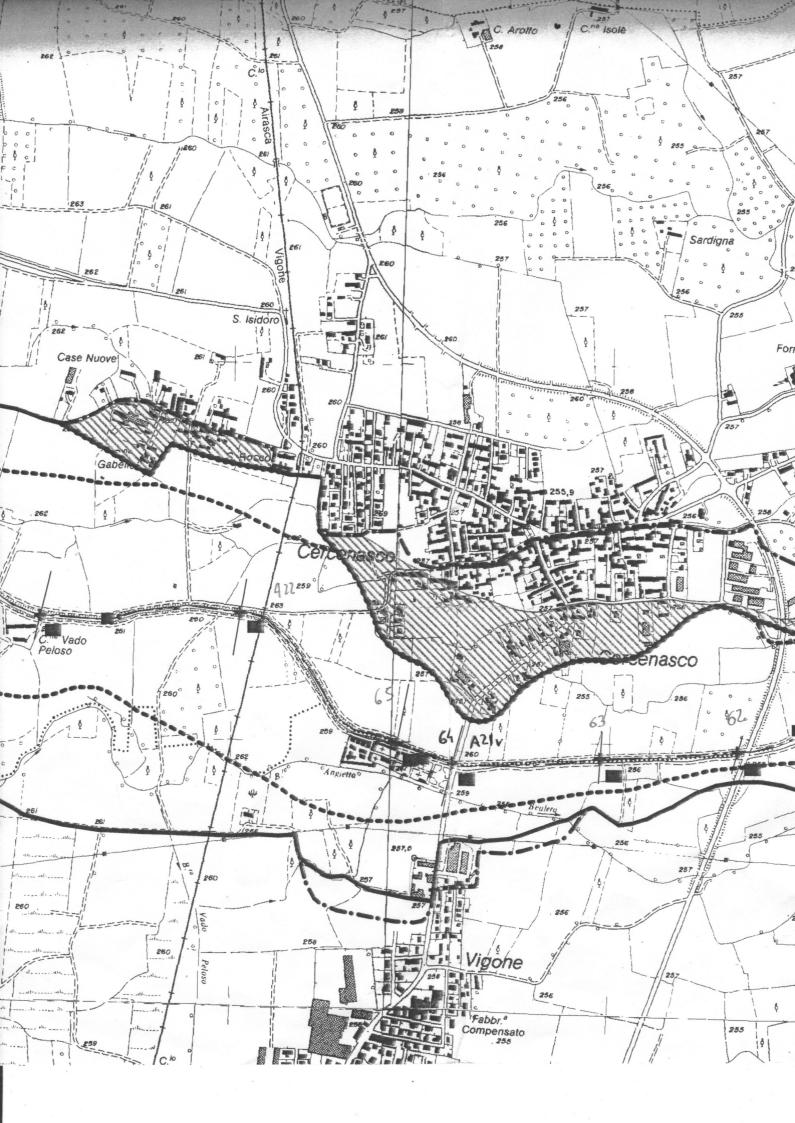
In tale situazione i livelli idrometrici registrati nel corso dell'evento 2000 sono realisticamente più significativi ad individuare le quote massime raggiungibili dalle acque in fascia destra, rispetto a quelle derivanti dal modello. Sulla base di quanto registrato e facendo riferimento alle quote di rilievo, la quota idrometrica relativa al TR200 si colloca a 257,45 mslm e risulta pertanto al di sotto della quota del piano cortile dell'area edificata a monte di via Torino.

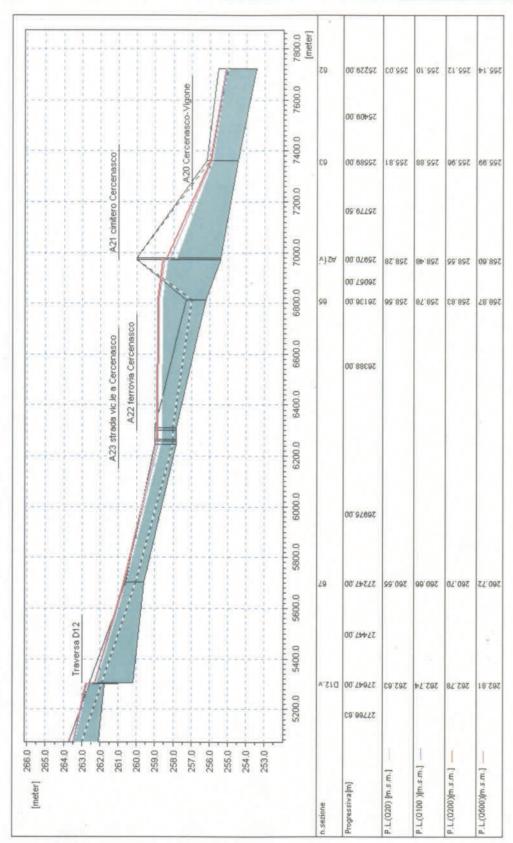
Sulla base di quanto descritto si ritiene che la proposta di ridefinizione del limite della Fascia B del Lemina sulla base dei criteri di cui all'art. 27 comma 3 delle NdA del PAI, per un tratto di circa 250 metri, sia congruente con l'assetto morfologico dei luoghi e compatibile con le condizioni di pericolosità dell'area.

In allegato vengono riportati figure e tabelle degli studi acquisiti.

Su una tavola fuori testo viene proposta la sezione 15 del rilievo eseguito dal comune di Cercenasco, con quote corrette e prolungata in sponda destra sulla base dei dati del rilievo effettuato.

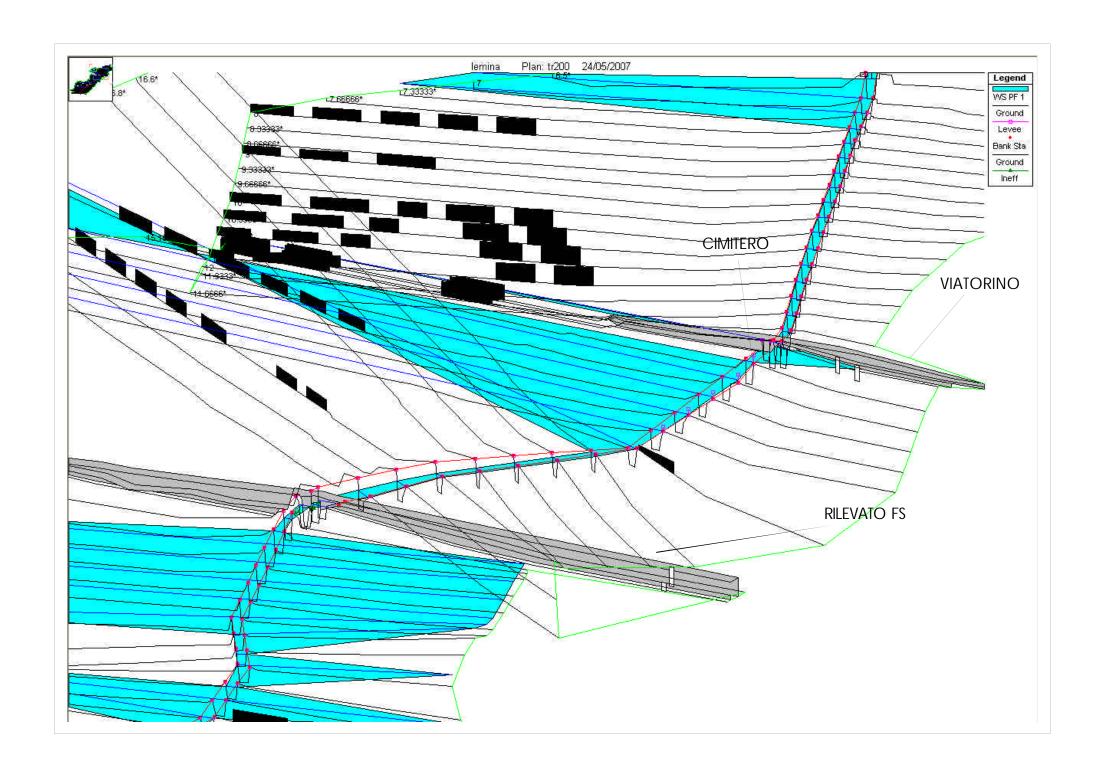
ALLEGATI

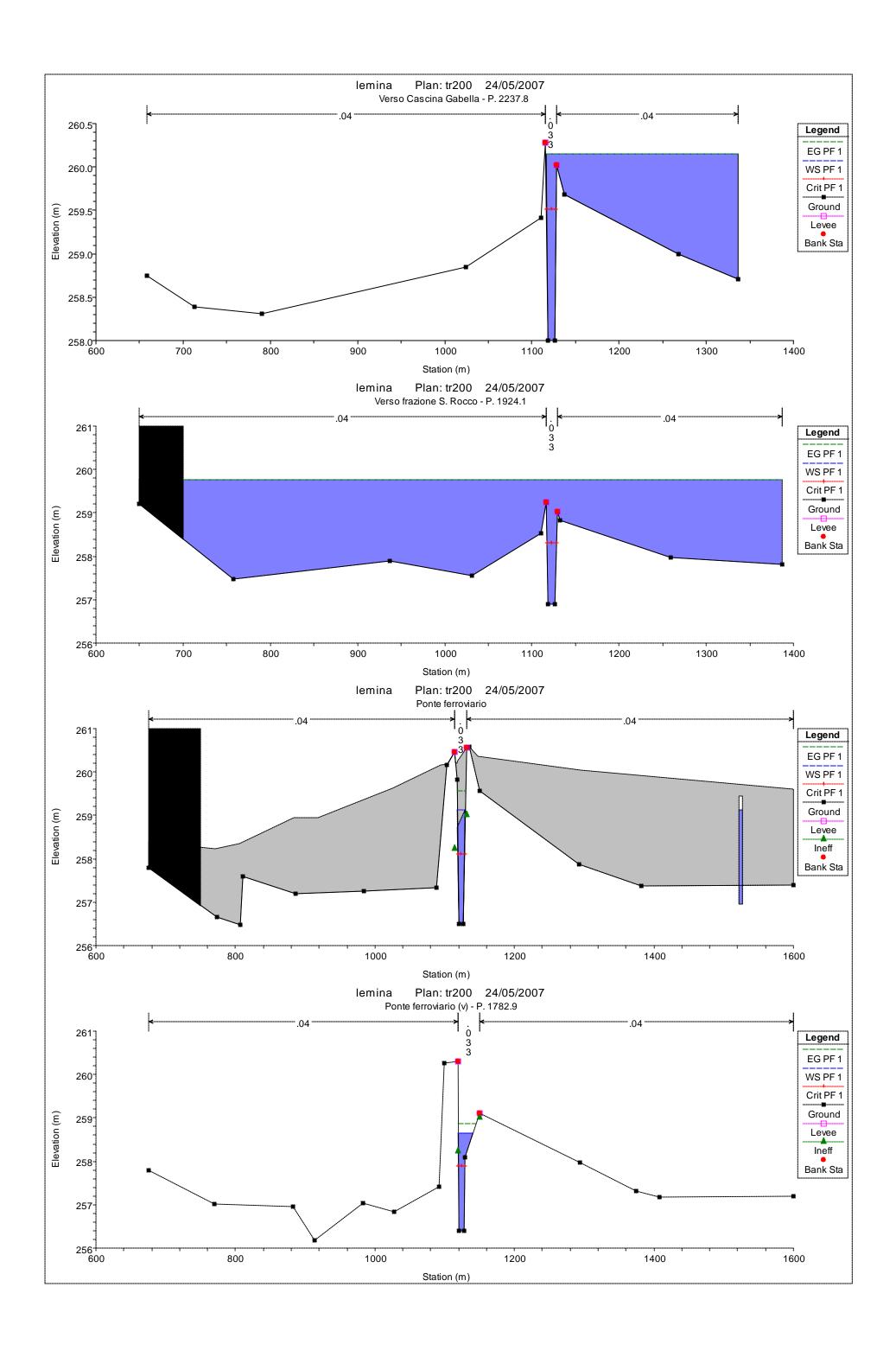


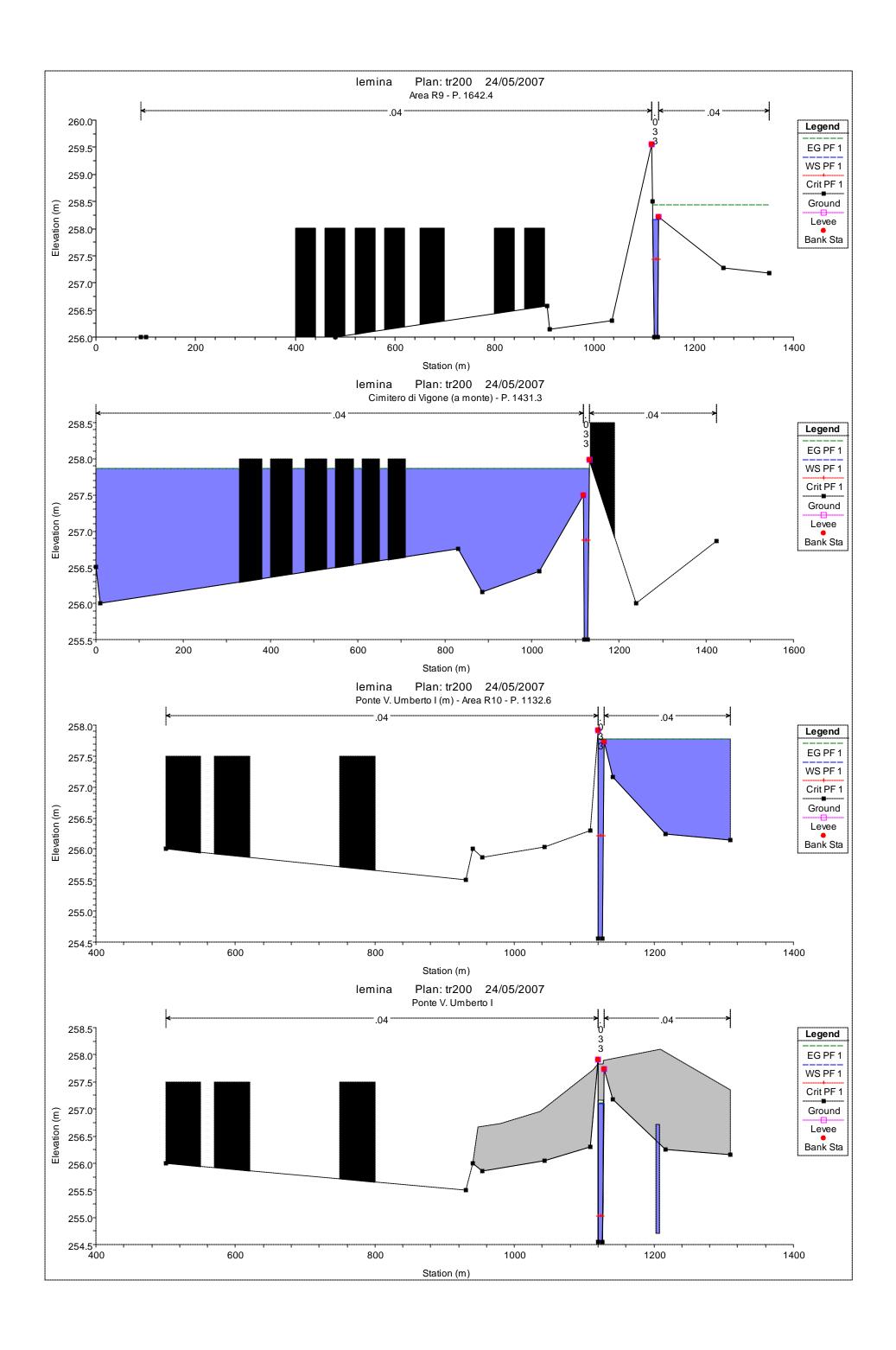


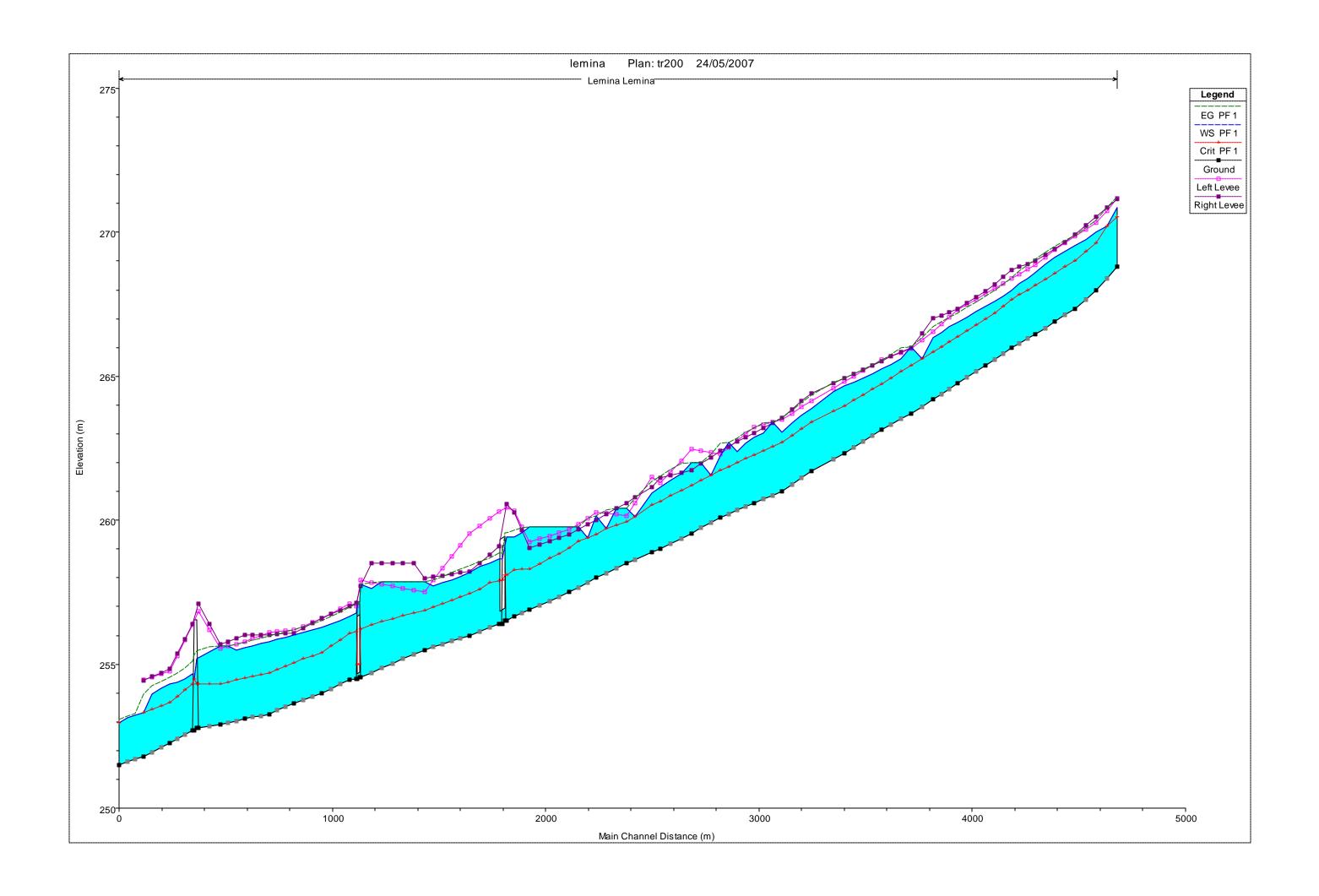
Livelli idrometrici al variare del tempo di ritorno nel tratto compreso fra le sezioni 62-68.

Profilo di calcalo del Tarrente Lemina - Stato attuale - T=200 anni									
n° s∉z.	prog	q fandb	piena	a campagno	Delta	Panti	Sdti d fandb		
D18m	33797	299.74	300.98	300.60	0.39		TraversaD18		
D18v	33791	296.36	299.81	300.60	-0.79		299.74-296.36		
82	33696	296.36	299.72	298.78	0.94				
81	33569	295.96	299.37	299.14	0.23	Attrav. 30 strada per loc. Castello			
A30v	33561	295.96	298.85	299.14	-0.29	Intradassa: 298.40 Estradassa: 299.25			
80	33398	294.56	297.95	297.32	0.63				
79	33325	294.37	297.91	297.07	0.84	Attrav. 29 S.P. 160 Burias co-Cercenas co			
A29v	33317	294.37	297.08	297.07	0.01	Intradassa: 297.60 Estradassa: 298.92			
78	32950	291.87	294.47	293.71	0.76				
D14m	32761	291.14	293.48	293.62	-0.14		TraversaD14		
D14v	32760	289.54	292.55	293.62	-1.07		291.14-289.54		
D13m	32612	288.96	292.26	293.48	-1.22		TraversaD13		
D13v	32611	286.96	290.92	293.48	-2.56		288.96-286.96		
77	32411	286.20	290.43	290.08	0.35	Attrav. 28 strada cna Beneficio			
A28v	32405	286.20	290.10	290.08	0.02	Intradassa: 289.90 Estradassa: 290.33			
76	31864	282.61	286.88	286.30	0.58	Attrav. 27 strada cna Galliani			
A27v	31858	282.61	286.67	286.30	0.37	Intradassa 286.15 Estradassa 286.53			
75	31399	279.95	283.35	283.17	0.18				
74	. 30929	277.29	280.68	280.09	0.59	Attrav. 26 strada cnaPantetto			
A26v	30923	277.29	280.28	280.09	0.19	Intradassa 280.44 Estradassa 281.00			
73	30432	274.77	277.28	276.76	0.52				
72	29741	270.58	274.03	273.27	0.76	Attrav. 25 strada cna Airde			
A25v	29735	270.58	273.67	273.27	0.40	Intradossa 273.27 Estradossa 274.08			
71	29397	268.55	271.32	270.88	0.44	Attrav. 24 strada cnaCandi			
A24v	29391	268.55	271.24	270.88	0.36	Intradossa 271.58 Estradossa 271.99			
70	28920	266.78	268.65	268.22	0.43				
69	28425	264.50	266.33	265.90	0.43				
68	27886	262.10	263.50	263.01	0.49	1	T D10		
D12m	27647.26	261.78	262.78	262.81	-0.03		TraversaD12		
D12v	27647	260.18	262.31	262.81	-0.50	1	261.78-260.18		
67	27247	259.61	260.70	260.06	0.64				
66	26703	257.85	258.91	258.01	0.90	Attra, 22 strong viola comman			
A23m	26692	257.82	258.91 258.90	258.01 258.01	0.90	Attrav. 23 strada vicle a Ceraenas aco Intradossa 259.28 Estradossa 259.90			
A23v A22m	26686 26648	257.82 257.69	258.89	258.01	0.89 0.88	Introdossa 259.28 Estradossa 259.90 Attrav. 22 ferrovia Cercenasco-Vigone			
		257.69	258.89	258.01	0.88	Intradossa 259.90 Estradossa 261.29			
A22v	26640					11 11 dates d. 209.90 EST dates d. 201.29			
65	26136	256.21	258.83	256.79	2.04	Attray 21 strong digitas Cramas			
64	25978	255.43	258.54	256.50	2.04	Attrav. 21 strada dimitero Cercenasco Intradossa 257.90 Estradossa 258.68			
A21v	25970	255.43	258.34	256.50	1.84	Intradassα 257.90 Estradassα 258.68			
63	25589	254.45 253.48	255.95 255.12	255.48 254.59	0.47 0.53	Attrav. A20 strada Cercenasco-Vigane			
62 A20v	25229 25221	253.48	254.17	254.59	-0.42	Intradossa 257.00 Estradossa 257.80			
61	24786	252.51	253.37	253.61	-0.42	207.00 ESTIGLESCE 207.00			
60	24766	251.42	253.35	253.61	-0.25				
Al9m	243/5	251.42	253.26	252.83	0.43	Attrav. A19 strada campestre			
Al9/III	24358	251.42	251.66	252.83	-1.17	Intradossa 254.00 Estradossa 254.47			
59	23674	249.94	250.53	250.95	-0.42	204,00 Estruction 204,47			
58	23163	248.46	249.95	249.93	0.02				









Plan: tr200 Lemina Lemina RS: 24 Profile: PF 1

E.G. Elev (m)	260.15	Element	Left OB	Channe	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.033	0.040
W.S. Elev (m)	260.15	Reach Len. (m)	42.80	42.80	42.80
Crit W.S. (m)	259.51	Flow Area (m2)		22.36	197.06
E.G. Slope (m/m)	0.000091	Area (m2)		22.36	197.06
Q Total (m3/s)	54.00	Flow (m3/s)		8.82	45.18
Top Width (m)	220.32	Top Width (m)		12.09	208.23
Vel Total (m/s)	0.25	Avg. Vel. (m/s)		0.39	0.23
Max Chl Dpth (m)	2.15	Hydr. Depth (m)		1.85	0.95
Conv. Total (m3/s)	5649.8	Conv. (m3/s)		923.1	4726.6
Length Wtd. (m)	42.80	Wetted Per. (m)		14.05	209.68
Min Ch El (m)	258.00	Shear (N/m2)		1.43	0.84
Alpha	1.15	Stream Power (N/m s)		0.56	0.19
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	616.40	50.95	98.55
C & E Loss (m)	0.07	Cum SA (1000 m2)	381.99	27.09	90.74

Plan: tr200 Lemina Lemina RS: 23 Profile: PF 1

E.G. Elev (m)	259.76	Element	Left OB	Channe	Right OB
Vel Head (m)	0.00	Wt. n-Val.	0.040	0.033	0.040
W.S. Elev (m)	259.76	Reach Len. (m)	46.30	46.30	46.30
Crit W.S. (m)	259.03	Flow Area (m2)	597.75	20.56	275.00
E.G. Slope (m/m)	0.000003	Area (m2)	597.75	20.56	275.00
Q Total (m3/s)	48.00	Flow (m3/s)	33.60	1.52	12.88
Top Width (m)	676.42	Top Width (m)	415.21	10.45	250.76
Vel Total (m/s)	0.05	Avg. Vel. (m/s)	0.06	0.07	0.05
Max Chl Dpth (m)	2.26	Hydr. Depth (m)	1.44	1.97	1.10
Conv. Total (m3/s)	27144.2	Conv. (m3/s)	18999.4	860.4	7284.4
Length Wtd. (m)	46.30	Wetted Per. (m)	416.97	12.67	252.16
Min Ch El (m)	257.50	Shear (N/m2)	0.04	0.05	0.03
Alpha	1.03	Stream Power (N/m s)	0.00	0.00	0.00
Frctn Loss (m)	0.00	Cum Volume (1000 m3)	603.61	48.56	79.19
C & E Loss (m)	0.00	Cum SA (1000 m2)	373.10	25.68	70.80

Plan: tr200 Lemina Lemina RS: 22 Profile: PF 1

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E.G. Elev (m)	259.76	Element	Left OB	Channe	Right OB
Vel Head (m)	0.00	Wt. n-Val.	0.040	0.033	0.040
W.S. Elev (m)	259.76	Reach Len. (m)	52.00	36.25	27.00
Crit W.S. (m)	258.31	Flow Area (m2)	809.93	30.87	414.60
E.G. Slope (m/m)	0.000001	Area (m2)	809.93	30.87	414.60
Q Total (m3/s)	48.00	Flow (m3/s)	32.02	1.58	14.40
Top Width (m)	686.85	Top Width (m)	416.60	12.29	257.96
Vel Total (m/s)	0.04	Avg. Vel. (m/s)	0.04	0.05	0.03
Max Chl Dpth (m)	2.86	Hydr. Depth (m)	1.94	2.51	1.61
Conv. Total (m3/s)	47174.1	Conv. (m3/s)	31469.2	1554.7	14150.2
Length Wtd. (m)	40.12	Wetted Per. (m)	418.02	14.41	259.92
Min Ch El (m)	256.90	Shear (N/m2)	0.02	0.02	0.02
Alpha	1.02	Stream Power (N/m s)	0.00	0.00	0.00
Frctn Loss (m)	0.00	Cum Volume (1000 m3)	470.51	43.83	15.44
C & E Loss (m)	0.02	Cum SA (1000 m2)	292.60	23.57	23.69

Plan: tr200 Lemina Lemina RS: 21 Profile: PF 1

E.G. Elev (m)	259.66	Element	Left OB	Channe	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.033	
W.S. Elev (m)	259.42	Reach Len. (m)	55.00	36.10	25.00
Crit W.S. (m)	258.28	Flow Area (m2)		21.97	
E.G. Slope (m/m)	0.002565	Area (m2)		21.97	
Q Total (m3/s)	48.00	Flow (m3/s)		48.00	

Plan: tr200 Lemina Lemina RS: 21 Profile: PF 1 (Continued)

Top Width (m)	8.72	Top Width (m)		8.72	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	2.77	Hydr. Depth (m)		2.52	
Conv. Total (m3/s)	947.8	Conv. (m3/s)		947.8	
Length Wtd. (m)	36.10	Wetted Per. (m)		12.93	
Min Ch El (m)	256.65	Shear (N/m2)		42.74	
Alpha	1.00	Stream Power (N/m s)		93.39	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	449.46	41.94	9.84
C & E Loss (m)	0.03	Cum SA (1000 m2)	281.77	22.81	20.21

Plan: tr200 Lemina Lemina RS: 20 Profile: PF 1

E.G. Elev (m)	259.57	Element	Left OB	Channe	Right OB
Vel Head (m)	0.15	Wt. n-Val.		0.033	
W.S. Elev (m)	259.41	Reach Len. (m)	32.80	32.80	32.80
Crit W.S. (m)	258.11	Flow Area (m2)		27.61	
E.G. Slope (m/m)	0.001436	Area (m2)		27.61	
Q Total (m3/s)	48.00	Flow (m3/s)		48.00	
Top Width (m)	12.34	Top Width (m)		12.34	
Vel Total (m/s)	1.74	Avg. Vel. (m/s)		1.74	
Max Chl Dpth (m)	2.93	Hydr. Depth (m)		2.24	
Conv. Total (m3/s)	1266.7	Conv. (m3/s)		1266.7	
Length Wtd. (m)	32.80	Wetted Per. (m)		14.82	
Min Ch El (m)	256.50	Shear (N/m2)		26.23	
Alpha	1.00	Stream Power (N/m s)		45.61	
Frctn Loss (m)		Cum Volume (1000 m3)	449.46	41.04	9.84
C & E Loss (m)		Cum SA (1000 m2)	281.77	22.43	20.21

Plan: tr200 Lemina Lemina RS: 18 Profile: PF 1

E.G. Elev (m)	258.87	Element	Left OB	Channe	Right OB
Vel Head (m)	0.22	Wt. n-Val.		0.033	
W.S. Elev (m)	258.65	Reach Len. (m)	73.33	46.80	30.00
Crit W.S. (m)	257.90	Flow Area (m2)		23.30	
E.G. Slope (m/m)	0.004725	Area (m2)		23.30	
Q Total (m3/s)	48.00	Flow (m3/s)		48.00	
Top Width (m)	21.05	Top Width (m)		21.05	
Vel Total (m/s)	2.06	Avg. Vel. (m/s)		2.06	
Max Chl Dpth (m)	2.48	Hydr. Depth (m)		1.11	
Conv. Total (m3/s)	698.3	Conv. (m3/s)		698.3	
Length Wtd. (m)	46.80	Wetted Per. (m)		23.69	
Min Ch El (m)	256.40	Shear (N/m2)		45.58	
Alpha	1.00	Stream Power (N/m s)		93.89	
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	449.46	40.21	9.84
C & E Loss (m)	0.02	Cum SA (1000 m2)	281.77	21.88	20.21

Plan: tr200 Lemina Lemina RS: 17 Profile: PF 1

E.G. Elev (m)	258.43	Element	Left OB	Channe	Right OB
Vel Head (m)	0.26	Wt. n-Val.		0.033	
W.S. Elev (m)	258.17	Reach Len. (m)	28.00	42.24	52.00
Crit W.S. (m)	257.44	Flow Area (m2)		21.20	
E.G. Slope (m/m)	0.003112	Area (m2)		21.20	
Q Total (m3/s)	48.00	Flow (m3/s)		48.00	
Top Width (m)	11.19	Top Width (m)		11.19	
Vel Total (m/s)	2.26	Avg. Vel. (m/s)		2.26	
Max Chl Dpth (m)	2.17	Hydr. Depth (m)		1.90	
Conv. Total (m3/s)	860.4	Conv. (m3/s)		860.4	
Length Wtd. (m)	42.24	Wetted Per. (m)		13.68	
Min Ch El (m)	256.00	Shear (N/m2)		47.30	

Plan: tr200 Lemina Lemina RS: 17 Profile: PF 1 (Continued)

Alpha	1.00	Stream Power (N/m s)		107.08	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	449.46	36.65	9.84
C & E Loss (m)	0.00	Cum SA (1000 m2)	281.77	19.32	20.21

Plan: tr200 Lemina Lemina RS: 16 Profile: PF 1

E.G. Elev (m)	257.87	Element	Left OB	Channe	Right OB
Vel Head (m)	0.00	Wt. n-Val.	0.040	0.033	
W.S. Elev (m)	257.87	Reach Len. (m)	49.80	49.80	49.80
Crit W.S. (m)	256.87	Flow Area (m2)	1234.85	26.85	
E.G. Slope (m/m)	0.000001	Area (m2)	1234.85	26.85	
Q Total (m3/s)	48.00	Flow (m3/s)	46.61	1.39	
Top Width (m)	861.80	Top Width (m)	848.08	13.72	
Vel Total (m/s)	0.04	Avg. Vel. (m/s)	0.04	0.05	
Max Chl Dpth (m)	2.37	Hydr. Depth (m)	1.46	1.96	
Conv. Total (m3/s)	40800.9	Conv. (m3/s)	39620.4	1180.6	
Length Wtd. (m)	49.80	Wetted Per. (m)	866.17	15.37	
Min Ch El (m)	255.50	Shear (N/m2)	0.02	0.02	
Alpha	1.01	Stream Power (N/m s)	0.00	0.00	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)	432.17	31.87	9.84
C & E Loss (m)	0.00	Cum SA (1000 m2)	269.90	16.68	20.21

Plan: tr200 Lemina Lemina RS: 15 Profile: PF 1

E.G. Elev (m)	257.78	Element	Left OB	Channe	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.033	0.040
W.S. Elev (m)	257.78	Reach Len. (m)	19.20	19.20	19.20
Crit W.S. (m)	256.22	Flow Area (m2)		24.80	231.87
E.G. Slope (m/m)	0.000032	Area (m2)		24.80	231.87
Q Total (m3/s)	45.00	Flow (m3/s)		6.39	38.61
Top Width (m)	190.27	Top Width (m)		9.05	181.22
Vel Total (m/s)	0.18	Avg. Vel. (m/s)		0.26	0.17
Max Chl Dpth (m)	3.23	Hydr. Depth (m)		2.74	1.28
Conv. Total (m3/s)	7914.6	Conv. (m3/s)		1123.7	6790.9
Length Wtd. (m)	19.20	Wetted Per. (m)		13.57	182.86
Min Ch El (m)	254.55	Shear (N/m2)		0.58	0.40
Alpha	1.08	Stream Power (N/m s)		0.15	0.07
Frctn Loss (m)		Cum Volume (1000 m3)	98.42	23.40	4.07
C & E Loss (m)		Cum SA (1000 m2)	67.42	12.27	15.69

Plan: tr200 Lemina Lemina RS: 13 Profile: PF 1

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E.G. Elev (m)	257.11	Element	Left OB	Channe	Right OB
Vel Head (m)	0.32	Wt. n-Val.		0.033	
W.S. Elev (m)	Elev (m) 256.79 Reac		20.00	31.10	40.00
Crit W.S. (m)	it W.S. (m) 256.14 Flow Area (18.05	
E.G. Slope (m/m)	0.003879	Area (m2)		18.05	
Q Total (m3/s)	45.00	Flow (m3/s)		45.00	
Top Width (m)	9.59	Top Width (m)		9.59	
Vel Total (m/s)	2.49	Avg. Vel. (m/s)		2.49	
Max Chl Dpth (m)	2.29	Hydr. Depth (m)		1.88	
Conv. Total (m3/s)	722.5	Conv. (m3/s)		722.5	
Length Wtd. (m)	31.10	Wetted Per. (m)		11.89	
Min Ch El (m)	254.50	Shear (N/m2)		57.74	
Alpha	1.00	Stream Power (N/m s)		143.94	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	98.42	22.99	1.84
C & E Loss (m)	0.00	Cum SA (1000 m2)	67.42	12.10	13.95

HEC-RAS Plan: tr200 River: Lemina Reach: Lemina Profile: PF 1

Reach	Plan: tr200 R											
	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Lemina	44	PF 1	60.00	268.81	270.86	270.54	271.25	0.005426	2.74	21.89	15.20	0.73
Lemina	43.5*	PF 1	60.00	268.41	270.21	270.21	270.85	0.010585	3.54	16.95	13.20	1.00
Lemina	43	PF 1	60.00	268.00	270.00	269.63	270.41	0.005291	2.83	21.20	13.16	0.7
Lemina	42.5*	PF 1	60.00	267.68	269.75	269.32	270.15	0.005003	2.79	21.49	12.92	0.69
Lemina	42	PF 1	60.00	267.35	269.55	269.01	269.91	0.004134	2.64	22.75	12.66	0.63
Lemina	41.5*	PF 1	60.00	267.12	269.35	268.79	269.71	0.004252	2.67	22.48	12.45	0.63
Lemina	41	PF 1	60.00	266.90	269.13	268.59	269.51	0.004425	2.75	21.85	11.63	0.64
Lemina	40.5*	PF 1	60.00	266.68	268.89	268.38	269.30	0.004712	2.82	21.28	11.23	0.65
Lemina	40	PF 1	60.00	266.46	268.61	268.17	269.06	0.005431	2.97	20.17	10.78	0.69
	39.6666*	PF 1	60.00	266.31	268.41	268.00	268.86	0.005409	2.95	20.17	11.33	0.70
Lemina												
Lemina	39.3333*	PF 1	60.00	266.15	268.21	267.83	268.65	0.005477	2.94	20.43	11.84	0.71
Lemina	39	PF 1	60.00	266.00	267.99	267.66	268.44	0.005875	2.98	20.12	12.26	0.74
Lemina	38.6666*	PF 1	60.00	265.79	267.78	267.43	268.20	0.005519	2.88	20.83	12.99	0.73
Lemina	38.3333*	PF 1	60.00	265.59	267.59	267.20	267.98	0.005054	2.75	21.80	13.76	0.70
Lemina	38	PF 1	60.00	265.38	267.43	266.98	267.77	0.004420	2.59	23.20	14.60	0.66
Lemina	37.6666*	PF 1	60.00	265.17	267.24	266.77	267.58	0.004318	2.58	23.22	14.45	0.65
Lemina	37.3333*	PF 1	60.00	264.96	267.05	266.57	267.39	0.004182	2.57	23.37	14.33	0.64
Lemina	37	PF 1	60.00	264.75	266.88	266.36	267.20	0.004014	2.54	23.66	14.25	0.63
Lemina	36.6666*	PF 1	60.00	264.57	266.71	266.20	267.05	0.004105	2.58	23.22	13.66	0.63
Lemina	36.3333*	PF 1	60.00	264.38	266.53	266.03	266.89	0.004281	2.65	22.64	13.06	0.64
Lemina	36	PF 1	60.00	264.20	266.33	265.86	266.72	0.004201	2.75	21.80	12.43	0.66
	35.5*	PF 1								-		
Lemina			60.00	263.95	265.62	265.62	266.33	0.011222	3.76	15.96	11.17	1.00
Lemina	35	PF 1	60.00	263.70	266.03	265.38	266.03	0.000010	0.13	906.26	1169.34	0.03
Lemina	34.6666*	PF 1	60.00	263.52	265.60	265.16	265.99	0.004785	2.76	21.74	12.85	0.68
Lemina	34.3333*	PF 1	60.00	263.33	265.42	264.95	265.76	0.004327	2.61	23.01	14.08	0.65
Lemina	34	PF 1	60.00	263.15	265.26	264.74	265.56	0.003804	2.44	24.59	15.36	0.62
Lemina	33.75*	PF 1	60.00	262.94	265.09	264.54	265.40	0.003680	2.44	24.62	14.89	0.61
Lemina	33.5*	PF 1	60.00	262.73	264.94	264.35	265.24	0.003520	2.42	24.75	14.44	0.59
Lemina	33.25*	PF 1	60.00	262.53	264.80	264.16	265.09	0.003337	2.40	24.97	14.01	0.57
Lemina	33	PF 1	60.00	262.32	264.66	263.96	264.95	0.003142	2.37	25.27	13.58	0.56
Lemina	32.6666*	PF 1	60.00	262.11	264.47	263.78	264.78	0.003369	2.47	24.29	12.62	0.57
Lemina	32	PF 1	60.00	261.70	263.89	263.41	264.34	0.005365	2.97	20.20	10.47	0.68
Lemina	31.6666*	PF 1	60.00	261.47	263.63	263.41	264.09	0.005303	2.98	20.20	10.47	0.69
Lemina	31.3333*	PF 1	60.00	261.23	263.37	262.95	263.83	0.005632	3.02	19.88	10.60	0.70
	31.3333							0.005032				
Lemina		PF 1	60.00	261.00	263.07	262.71	263.56		3.12	19.23	10.62	0.74
Lemina	30.6666*	PF 1	60.00	260.87	263.41	262.56	263.41	0.000003	0.08	1224.09	1196.96	0.02
Lemina	30.3333*	PF 1	60.00	260.73	263.03	262.42	263.38	0.003831	2.59	23.15	12.20	0.60
Lemina	30	PF 1	60.00	260.60	262.87	262.27	263.21	0.003795	2.56	23.46	12.76	0.60
Lemina	29.75*	PF 1	60.00	260.48	262.68	262.13	263.04	0.004308	2.69	22.29	12.11	0.63
Lemina	29.5*	PF 1	60.00	260.35	262.40	262.00	262.84	0.005604	2.97	20.23	11.35	0.71
Lemina	29.25*	PF 1	60.00	260.23	262.71	261.86	262.71	0.000006	0.11	880.67	816.52	0.02
Lemina	29	PF 1	60.00	260.10	262.23	261.72	262.66	0.005324	2.92	20.52	10.29	0.66
Lemina	28.6666*	PF 1	60.00	259.92	261.55	261.55	262.29	0.011638	3.81	15.76	10.64	1.00
Lemina	28.3333*	PF 1	60.00	259.73	262.01	261.38	262.01	0.000215	0.62	194.12	286.71	0.14
Lemina	28	PF 1	60.00	259.55	262.00	261.20	262.01	0.000101	0.44	241.72	267.00	0.10
Lemina	27.6666*	PF 1	60.00	259.37	261.62	261.03	261.96	0.003839	2.57	23.33	12.70	0.61
	27.3333*	PF 1	60.00	259.18	261.38	260.86	261.76	0.003838	2.71	22.18	12.76	0.64
Lemina												
Lemina	27	PF 1	58.00	259.00	261.15	260.65	261.54	0.004618	2.76	21.05	11.57	0.65
Lemina	26	PF 1	58.00	258.90	260.95	260.52	261.35	0.004888	2.77	20.94	12.38	0.68
Lemina	25.3333*	PF 1	58.00	258.63	260.14	260.14	260.76	0.010873	3.50	16.56	13.21	1.00
Lemina	25	PF 1	58.00	258.50	260.43	259.94	260.43	0.000009	0.12	639.14	481.88	0.03
Lemina	24.6666*	PF 1	58.00	258.33	260.43	259.82	260.43	0.000004	0.08	958.77	742.24	0.02
Lemina	24.3333*	PF 1	58.00	258.17	259.72	259.70	260.36	0.010544	3.54	16.36	12.22	0.98
Lemina	24	PF 1	54.00	258.00	260.15	259.51	260.15	0.000091	0.39	219.41	220.32	0.09
Lemina	23.6666*	PF 1	54.00	257.83	259.38	259.38	260.07	0.011472	3.67	14.70	10.71	1.00
Lemina	23.3333*	PF 1	54.00	257.67	259.76	259.27	259.76	0.000085	0.37	236.21	247.55	0.09
Lemina	23	PF 1	48.00	257.50	259.76	259.03						
Lemina	22.75*	PF 1	48.00	257.35			259.76	0.000003	0.07	893.32	676.421	0.02
Lemina	22.75	PF 1			250 78		259.76 259.76	0.000003	0.07	893.32 991.15	676.42 691.53	0.02
		print 1	/ 0 0 0		259.76 259.76	258.84	259.76	0.000002	0.07	991.15	691.53	0.01
Lemina	22.25*	DE 1	48.00	257.20	259.76	258.84 258.67	259.76 259.76	0.000002 0.000002	0.07 0.06	991.15 1092.05	691.53 706.64	0.01 0.01
Lemina	22	PF 1	48.00	257.20 257.05	259.76 259.76	258.84 258.67 258.49	259.76 259.76 259.76	0.000002 0.000002 0.000001	0.07 0.06 0.06	991.15 1092.05 1196.07	691.53 706.64 721.74	0.01 0.01 0.01
1	22	PF 1	48.00 48.00	257.20 257.05 256.90	259.76 259.76 259.76	258.84 258.67 258.49 258.31	259.76 259.76 259.76 259.76	0.000002 0.000002 0.000001 0.000001	0.07 0.06 0.06 0.05	991.15 1092.05 1196.07 1255.39	691.53 706.64 721.74 686.85	0.01 0.01 0.01 0.01
Lemina	21.5*	PF 1	48.00 48.00 48.00	257.20 257.05 256.90 256.78	259.76 259.76 259.76 259.56	258.84 258.67 258.49 258.31 258.29	259.76 259.76 259.76 259.76 259.74	0.000002 0.000002 0.000001 0.000001 0.001709	0.07 0.06 0.06 0.05 1.87	991.15 1092.05 1196.07 1255.39 25.65	691.53 706.64 721.74 686.85 10.61	0.01 0.01 0.01 0.01 0.38
Lemina	21.5* 21	PF 1 PF 1 PF 1	48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65	259.76 259.76 259.76 259.56 259.42	258.84 258.67 258.49 258.31 258.29 258.28	259.76 259.76 259.76 259.76 259.74 259.66	0.000002 0.000001 0.000001 0.001709 0.002565	0.07 0.06 0.06 0.05 1.87 2.19	991.15 1092.05 1196.07 1255.39 25.65 21.97	691.53 706.64 721.74 686.85 10.61 8.72	0.01 0.01 0.01 0.01 0.38 0.44
	21.5* 21 20	PF 1	48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78	259.76 259.76 259.76 259.56	258.84 258.67 258.49 258.31 258.29	259.76 259.76 259.76 259.76 259.74	0.000002 0.000002 0.000001 0.000001 0.001709	0.07 0.06 0.06 0.05 1.87	991.15 1092.05 1196.07 1255.39 25.65	691.53 706.64 721.74 686.85 10.61	0.01 0.01 0.01 0.01 0.38
Lemina	21.5* 21	PF 1 PF 1 PF 1 PF 1	48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65	259.76 259.76 259.76 259.56 259.42	258.84 258.67 258.49 258.31 258.29 258.28	259.76 259.76 259.76 259.76 259.74 259.66 259.57	0.000002 0.000001 0.000001 0.001709 0.002565	0.07 0.06 0.06 0.05 1.87 2.19	991.15 1092.05 1196.07 1255.39 25.65 21.97	691.53 706.64 721.74 686.85 10.61 8.72	0.01 0.01 0.01 0.01 0.38 0.44 0.37
Lemina Lemina	21.5* 21 20	PF 1 PF 1 PF 1	48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65	259.76 259.76 259.76 259.56 259.42	258.84 258.67 258.49 258.31 258.29 258.28	259.76 259.76 259.76 259.76 259.74 259.66	0.000002 0.000001 0.000001 0.001709 0.002565	0.07 0.06 0.06 0.05 1.87 2.19	991.15 1092.05 1196.07 1255.39 25.65 21.97	691.53 706.64 721.74 686.85 10.61 8.72	0.01 0.01 0.01 0.01 0.38 0.44
Lemina Lemina Lemina	21.5* 21 20 19	PF 1 PF 1 PF 1 PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open	257.20 257.05 256.90 256.78 256.65 256.50	259.76 259.76 259.76 259.56 259.42 259.41	258.84 258.67 258.49 258.31 258.29 258.28 258.11	259.76 259.76 259.76 259.76 259.74 259.66 259.57	0.000002 0.000001 0.000001 0.000001 0.001709 0.002565 0.001436	0.07 0.06 0.06 0.05 1.87 2.19	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61	691.53 706.64 721.74 686.85 10.61 8.72 12.34	0.01 0.01 0.01 0.01 0.38 0.44 0.37
Lemina Lemina Lemina Lemina	21.5* 21 20 19 18	PF 1 PF 1 PF 1 PF 1	48.00 48.00 48.00 48.00 48.00 Mult Oper 48.00	257.20 257.05 256.90 256.78 256.65 256.50	259.76 259.76 259.76 259.56 259.42 259.41 258.65	258.84 258.67 258.49 258.31 258.29 258.28 258.11	259.76 259.76 259.76 259.76 259.74 259.66 259.57	0.000002 0.000001 0.000001 0.000001 0.001709 0.002565 0.001436	0.07 0.06 0.06 0.05 1.87 2.19 1.74	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61	691.53 706.64 721.74 686.85 10.61 8.72 12.34	0.01 0.01 0.01 0.01 0.38 0.44 0.37
Lemina Lemina Lemina Lemina Lemina	21.5* 21 20 19 18 17.6666*	PF 1 PF 1 PF 1 PF 1 PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.40 256.27	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68	0.000002 0.000001 0.000001 0.001709 0.002565 0.001436	0.07 0.06 0.06 0.05 1.87 2.19 1.74	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05	0.01 0.01 0.01 0.01 0.38 0.44 0.37
Lemina Lemina Lemina Lemina Lemina Lemina Lemina Lemina	21.5* 21 20 19 18 17.6666* 17.3333*	PF 1	48.00 48.00 48.00 48.00 48.00 Mult Oper 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.40 256.27 256.13	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.44	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.56	0.000002 0.000001 0.000001 0.000001 0.001709 0.002565 0.001436 0.004725 0.002872 0.002133	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30	0.01 0.01 0.01 0.01 0.38 0.44 0.37 0.63 0.51
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8*	PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.75 256.65 256.50 256.40 256.27 256.32 256.00 255.90	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44	259.76 259.76 259.76 259.74 259.74 259.66 259.57 258.87 258.86 258.56 258.43	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.004725 0.002872 0.002133 0.003112 0.002977	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19	0.01 0.01 0.01 0.01 0.38 0.44 0.37 0.63 0.51 0.52 0.52
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6*	PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.27 256.40 256.27 256.10 256.90 255.90	259.76 259.76 259.76 259.42 259.41 258.65 258.52 258.47 258.17 258.05 257.93	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.56 258.30 258.30	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.004725 0.002872 0.002133 0.003112 0.002977 0.002997	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69	0.01 0.01 0.01 0.01 0.38 0.44 0.37 0.63 0.51 0.54 0.52 0.52
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4*	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.80	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.93	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.44 257.32 257.21	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.43 258.43 258.30 258.18	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002873 0.002973 0.002973 0.002979 0.002989	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85	0.01 0.01 0.01 0.01 0.38 0.44 0.37 0.63 0.51 0.44 0.52 0.52 0.52 0.52 0.52
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4*	PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.65 256.65 256.50 256.27 256.40 256.27 256.13 256.00 255.90 255.80 255.70	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.93 257.82	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 257.10	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.56 258.43 258.30 258.10 258.10 258.70	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002872 0.002873 0.002897 0.002898 0.002788 0.002788	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24	0.01 0.01 0.01 0.01 0.38 0.44 0.37 0.63 0.55 0.45 0.52 0.52 0.55 0.55
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2*	PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.40 256.27 256.10 256.90 255.80 255.70 255.60 255.60 255.60	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.47 258.05 257.93 257.82	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 256.99	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.68 258.43 258.30 258.18 258.79 257.93	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002725 0.002133 0.003112 0.002977 0.002890 0.002788 0.002786	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80	0.01 0.01 0.01 0.01 0.38 0.44 0.37 0.63 0.55 0.55 0.52 0.52
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 16.6* 16.4* 16.2* 16 15.8333*	PF 1	48.00 48.00 48.00 48.00 48.00 Mult Open 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.90 255.80 255.70 255.60	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.75 257.93 257.82 257.87	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.10 256.99 256.87	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.56 258.30 258.18 258.05 257.93 257.93	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.004725 0.002872 0.002133 0.003112 0.002977 0.002890 0.002788 0.002676 0.002676 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80	0.01 0.01 0.01 0.01 0.01 0.02 0.38 0.44 0.37 0.62 0.51 0.45 0.52 0.52 0.52 0.51 0.61 0.61
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.6* 16.4* 16.2* 16 15.8333* 15.6666*	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.70 255.60 255.50	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.93 257.82 257.71 257.87	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.59 257.40 256.99 256.87	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.30 258.30 258.30 258.79 257.87 257.87	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002873 0.002873 0.002890 0.002788 0.002676 0.000001 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.22 2.22 2.18 2.13 2.09 0.05 0.04	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.22 968.28	0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.05 0.05 0.05 0.05 0.05 0.05 0.05
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5*	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.60 255.50 255.50	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.47 258.05 257.82 257.82 257.82 257.87 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 256.99 256.87 256.69 256.69	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.43 258.30 258.43 258.79 257.87 257.87	0.000002 0.000001 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002872 0.002897 0.002898 0.002676 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.05	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44	0.0° 0.0° 0.0° 0.0° 0.0° 0.3° 0.44 0.3° 0.6° 0.5° 0.44 0.5° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0°
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.6* 16.4* 16.2* 16 15.8333* 15.6666*	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.70 255.60 255.50	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.93 257.82 257.71 257.87	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.59 257.40 256.99 256.87	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.30 258.30 258.30 258.79 257.87 257.87	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002873 0.002873 0.002890 0.002788 0.002676 0.000001 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.22 2.22 2.18 2.13 2.09 0.05 0.04	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.22 968.28	0.01 0.01 0.01 0.01 0.01 0.02 0.03 0.04 0.44 0.37 0.63 0.55 0.55 0.52 0.55 0.51 0.01 0.01 0.01
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5*	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.60 255.50 255.50	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.47 258.05 257.82 257.82 257.82 257.87 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 256.99 256.87 256.69 256.69	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.43 258.30 258.43 258.79 257.87 257.87	0.000002 0.000001 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002872 0.002897 0.002898 0.002676 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.05	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44	0.0° 0.0° 0.0° 0.0° 0.0° 0.3° 0.44 0.3° 0.6° 0.5° 0.44 0.5° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0°
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333*	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.90 255.60 255.34 255.18	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.77 258.05 257.93 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 256.99 256.87 256.69 256.67	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.43 258.30 258.18 258.79 257.87 257.87	0.000002 0.000002 0.000001 0.000001 0.001708 0.002565 0.001436 0.002872 0.002133 0.003112 0.002977 0.002890 0.002676 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.04 0.04	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 1261.70 1620.99 1585.33 1465.13	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44	0.0° 0.0° 0.0° 0.0° 0.0° 0.36 0.44 0.33 0.66 0.5° 0.44 0.55 0.55 0.55 0.55 0.65 0.0° 0.0° 0.0° 0.0° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 15.1666*	PF 1	48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.90 255.50 255.50 255.54 255.18 255.18	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.77 258.05 257.87 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.31 258.29 258.28 257.82 257.82 257.59 257.44 257.32 257.21 256.99 256.69 256.79 256.69	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.86 258.43 258.30 258.18 257.93 257.87 257.87 257.87	0.000002 0.000002 0.000001 0.001709 0.001436 0.001436 0.002872 0.002873 0.002873 0.002873 0.002876 0.002676 0.000001 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.04 0.03 0.03 0.03 0.03	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1553.37 1466.13 23.75	691.53 706.64 721.74 686.85 10.61 8.72 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37	0.0° 0.0° 0.0° 0.0° 0.3° 0.3° 0.6° 0.5° 0.4° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 15.1666* 15	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 Mult Open	257.20 257.20 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.60 255.50 255.50 255.50 255.44 255.45 255.75	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.47 258.05 257.93 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.44 257.32 257.21 257.10 256.99 256.87 256.69 256.69 256.69 256.57	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.58 258.43 258.10 257.87 257.87 257.87 257.87 257.87	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002133 0.003112 0.002977 0.002893 0.002676 0.000001 0.000001 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.03 0.03 2.02 0.26	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.76	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 866.44 804.61 9.37	0.0° 0.0° 0.0° 0.0° 0.0° 0.3° 0.4° 0.5° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 15.1666* 15	PF 1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 Mult Open 45.00 Mult Open	257.20 257.20 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.90 255.80 255.70 255.34 255.12 254.87 254.71	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.93 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 257.10 256.99 256.87 256.69 256.57 256.47 256.37 256.22	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.68 258.43 258.30 258.18 258.79 257.87 257.87 257.87 257.87 257.87	0.000002 0.000002 0.000001 0.000001 0.001708 0.002565 0.001436 0.00272 0.002133 0.003112 0.002977 0.002890 0.002676 0.000001 0.000001 0.000001 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.03 0.03 2.02 0.26	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 1261.70 1620.99 1585.39 1593.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0° 0.0° 0.0° 0.0° 0.0° 0.3° 0.4° 0.5° 0.5° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0
Lemina	21.5° 21 20 19 18 17.6666° 17.3333° 17 16.8° 16.6° 16.4° 16.2° 16 15.8333° 15.6666° 15.5° 15.1666° 15.1666° 15.1666° 15.1666° 15.1666°	PF1	48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 48.00 Mult Open	257.20 257.20 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.90 255.50 255.50 255.34 255.18 255.25 254.87 254.71	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.7 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.31 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 257.10 256.99 256.87 256.79 256.79 256.79 256.79 256.79 256.79 256.79 256.79	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.68 258.30 258.30 257.87 257.87 257.87 257.87 257.87 257.87 257.87	0.000002 0.000002 0.000001 0.001709 0.001436 0.001436 0.001436 0.002872 0.002872 0.002872 0.002890 0.002890 0.002676 0.000001 0.000001 0.000001 0.000001 0.000001 0.0000032	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.04 0.03 0.03 2.02 0.26	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0° 0.0° 0.0° 0.0° 0.3° 0.3° 0.4° 0.5° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 15.1666* 15 14 13 12 11.6666*	PF 1	48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.80 255.80 255.50 255.50 255.18 255.12 254.71 254.71 254.71	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.82 257.82 257.82 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.10 256.99 256.87 256.69 256.69 256.69 256.57	259.76 259.76 259.76 259.76 259.76 259.66 259.57 258.87 258.68 258.56 258.79 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87	0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002872 0.002873 0.002878 0.002676 0.000001 0.000001 0.000001 0.000001 0.000001 0.000001 0.000001 0.000001 0.000001 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.03 0.03 2.02 0.26 2.49 2.49 2.53	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0° 0.0° 0.0° 0.0° 0.0° 0.3° 0.3° 0.6° 0.5° 0.4° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.6* 15.8333* 15.6666* 15.5* 15.3333* 15.1666* 15.14 13 12 11.6666* 11.3333*	PF 1	48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.80 255.70 255.60 255.44 255.45 254.71 254.55	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.47 258.05 257.93 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.31 258.29 258.28 257.80 257.82 257.44 257.32 257.10 256.99 256.87 256.69 256.57 256.44 256.37 256.22	259.76 259.76 259.76 259.76 259.76 259.76 259.66 259.57 258.68 258.68 258.56 258.79 257.87 257.87 257.87 257.87 257.87 257.87 257.85 257.78	0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002872 0.002133 0.003112 0.002977 0.002893 0.002676 0.000001 0.000001 0.000001 0.000001 0.000001 0.0000032	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.04 0.03 2.02 2.26 2.49 2.53	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0° 0.0° 0.0° 0.0° 0.0° 0.3° 0.4° 0.5° 0.5° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 15.666* 15.8333* 15.1666* 15.5* 15.3333* 15.1666* 14 13 12 11.6666* 11.3333* 11	PF 1	48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.90 255.50 255.44 255.14 255.12 254.71 254.55	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.79 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 256.99 256.79 256.79 256.47 256.37 256.47 256.37 256.22	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.83 258.30 258.43 258.30 257.93 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.85 258.66 258.66 258.66 258.66 258.66 258.66 258.66 258.66 258.66 258.66	0.000002 0.000002 0.000001 0.001709 0.001436 0.001436 0.002872 0.002872 0.002873 0.002873 0.002876 0.0020676 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.04 0.03 2.02 0.26 2.49 2.53 2.40 2.25 2.20	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0° 0.0° 0.0° 0.0° 0.3° 0.3° 0.6° 0.5° 0.4° 0.5° 0.5° 0.0° 0.0° 0.0° 0.0° 0.0° 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 15.1666* 15.11 11 10.6666*	PF 1	48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.70 255.34 255.18 255.22 254.71 254.55	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.82 257.82 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.10 256.99 256.87 256.79 256.69 256.57 256.79 256.87 256.37 256.37	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.83 258.30 258.30 257.87 257.87 257.87 257.87 257.87 257.86 258.78 258.86 258.43 258.95	0.000002 0.000002 0.000001 0.001709 0.002565 0.001436 0.002872 0.002872 0.002873 0.002890 0.002890 0.002676 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.03 0.03 2.02 0.26 2.49 2.53 2.40 2.25 2.09 2.05	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0 0.0 0.0 0.0 0.3 0.3 0.4 0.6 0.5 0.5 0.5 0.5 0.0 0.0 0.0 0.0 0.0 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 15.666* 15.8333* 15.1666* 15.5* 15.3333* 15.1666* 14 13 12 11.6666* 11.3333* 11	PF 1	48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.40 256.27 256.13 256.00 255.90 255.90 255.50 255.44 255.14 255.12 254.71 254.55	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.79 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.21 256.99 256.79 256.79 256.47 256.37 256.47 256.37 256.22	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.83 258.30 258.43 258.30 257.93 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.85 258.66 258.66 258.66 258.66 258.66 258.66 258.66 258.66 258.66 258.66	0.000002 0.000002 0.000001 0.001709 0.001436 0.001436 0.002872 0.002872 0.002873 0.002873 0.002876 0.0020676 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.04 0.03 2.02 0.26 2.49 2.53 2.40 2.25 2.20	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0 0.0 0.0 0.0 0.3 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.4* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 15.1666* 15.11 11 10.6666*	PF 1	48.00 48.00	257.20 257.05 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.80 255.70 255.34 255.18 255.22 254.71 254.55	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.40 258.17 258.05 257.82 257.82 257.87	258.84 258.67 258.49 258.29 258.28 258.11 257.90 257.82 257.59 257.44 257.32 257.10 256.99 256.87 256.79 256.69 256.57 256.79 256.87 256.37 256.37	259.76 259.76 259.76 259.76 259.74 259.66 259.57 258.87 258.83 258.30 258.30 257.87 257.87 257.87 257.87 257.87 257.86 258.78 258.86 258.43 258.95	0.000002 0.000002 0.000001 0.001709 0.002565 0.001436 0.002872 0.002872 0.002873 0.002890 0.002890 0.002676 0.000001	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.03 0.03 2.02 0.26 2.49 2.53 2.40 2.25 2.09 2.05	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27	0.0' 0.0' 0.0' 0.0' 0.0' 0.0' 0.3' 0.4' 0.3' 0.6' 0.5' 0.5' 0.5' 0.0' 0.0' 0.0' 0.0' 0.0
Lemina	21.5* 21 20 19 18 17.6666* 17.3333* 17 16.8* 16.6* 16.2* 16 15.8333* 15.6666* 15.5* 15.3333* 11 12 11.6666* 11.3333* 11 10.6666* 10.3333*	PF 1	48.00 48.00	257.20 257.20 256.90 256.78 256.65 256.50 256.27 256.13 256.00 255.90 255.60 255.60 255.50 255.34 255.34 255.34 255.35 254.30 254.30 254.35	259.76 259.76 259.76 259.56 259.42 259.41 258.65 258.52 258.47 258.05 257.93 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.87	258.84 258.67 258.49 258.29 258.28 257.90 257.82 257.59 257.44 257.32 257.21 257.10 256.99 256.87 256.69 256.57 256.69 256.57 256.69 256.57 256.69 256.57	259.76 259.76 259.76 259.76 259.76 259.76 259.66 259.57 258.87 258.68 258.43 258.30 258.30 258.79 257.87 257.87 257.87 257.87 257.87 257.87 257.87 257.86 256.68	0.000002 0.000002 0.000001 0.000001 0.001709 0.002565 0.001436 0.002472 0.002877 0.002877 0.002878 0.002676 0.000001 0.000001 0.000001 0.000001 0.000001 0.000003 0.003879 0.003881	0.07 0.06 0.06 0.06 0.05 1.87 2.19 1.74 2.06 1.79 1.77 2.26 2.22 2.18 2.13 2.09 0.05 0.04 0.03 0.03 2.02 2.26 2.29 2.49 2.53 2.40 2.25 2.09 2.05 2.00	991.15 1092.05 1196.07 1255.39 25.65 21.97 27.61 23.30 26.80 27.04 21.20 21.61 22.03 22.49 22.95 1261.70 1620.99 1585.39 1533.37 1465.13 23.75 256.67 18.05 17.77 18.77 20.03 21.54	691.53 706.64 721.74 686.85 10.61 8.72 12.34 21.05 21.14 17.30 11.19 11.69 12.31 12.85 13.24 861.80 1050.12 968.28 886.44 804.61 9.37 190.27 9.59 9.83 10.06 10.32 10.06	0.0° 0.0° 0.0° 0.0° 0.0° 0.38 0.44 0.33 0.63 0.55 0.55 0.55 0.56 0.50 0.0° 0.0° 0.0° 0.0° 0.0° 0.0° 0.0°

HEC-RAS Plan: tr200 River: Lemina Reach: Lemina Profile: PF 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Lemina	9	PF 1	45.00	253.27	255.79	254.70	255.97	0.001828	1.87	24.10	11.10	0.40
Lemina	8.66666*	PF 1	45.00	253.21	255.72	254.63	255.90	0.001869	1.88	23.91	11.08	0.41
Lemina	8.33333*	PF 1	45.00	253.16	255.64	254.58	255.83	0.001918	1.90	23.70	11.06	0.41
Lemina	8	PF 1	45.00	253.10	255.57	254.52	255.75	0.001973	1.92	23.46	11.03	0.42
Lemina	7.66666*	PF 1	45.00	253.03	255.50	254.45	255.68	0.001874	1.88	23.99	11.46	0.41
Lemina	7.33333*	PF 1	45.00	252.97	255.62	254.37	255.62	0.000003	0.08	773.97	482.92	0.02
Lemina	7	PF 1	45.00	252.90	255.62	254.30	255.62	0.000002	0.07	802.42	412.99	0.01
Lemina	6.5*	PF 1	45.00	252.85	255.42	254.31	255.60	0.001906	1.91	23.60	10.71	0.41
Lemina	6	PF 1	45.00	252.80	255.22	254.32	255.48	0.002909	2.24	20.11	9.28	0.49
Lemina	5		Mult Open									
Lemina	4	PF 1	45.00	252.70	254.66	254.31	255.10	0.006457	2.95	15.27	9.21	0.73
Lemina	3.66666*	PF 1	45.00	252.55	254.49	254.09	254.87	0.005326	2.73	16.51	10.25	0.69
Lemina	3.33333*	PF 1	45.00	252.40	254.38	253.87	254.68	0.004067	2.43	18.49	11.56	0.61
Lemina	3	PF 1	45.00	252.25	254.31	253.66	254.54	0.002891	2.10	21.40	13.28	0.53
Lemina	2.66666*	PF 1	45.00	252.10	254.16	253.54	254.41	0.003243	2.22	20.23	12.34	0.55
Lemina	2.33333*	PF 1	45.00	251.95	253.96	253.43	254.26	0.003944	2.42	18.59	11.33	0.60
Lemina	2	PF 1	45.00	251.80	253.31	253.31	253.97	0.011721	3.58	12.56	9.60	1.00
Lemina	1.66666*	PF 1	45.00	251.70	253.22		253.30	0.002623	1.70	68.15	309.24	0.47
Lemina	1.33333*	PF 1	45.00	251.60	253.13		253.20	0.002316	1.60	70.25	306.63	0.44
Lemina	1	PF 1	45.00	251.50	252.96	252.96	253.08	0.003860	2.02	50.74	223.12	0.56