DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS MINDORO
OCCIDENTAL DISTRICT ENGINEERING OFFICE

PROVINCE OF OCCIDENTAL MINDORO

DETAILED ENGINEERING DESIGN REPORT

FOR THE PROPOSED

BACLARAN RIVER DREDGING PROJECT

STA. 0+350 to Sta. 9+800

July 2021

R.V. LABORTE BUILDERS

DESIGN REPORT

This design report is in accordance with the DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH)-Design Guidelines, Criteria and Standards and other accepted engineering practices. It presents the details of the approach and methodology employed in the hydrologic and hydraulic assessment of the river. It includes discussion on the fundamental hydrology considerations and peak run-off estimation and hydraulics of open channel flow.

STUDY AREA

The study area is the **Baclaran River** located at Barangay Claudio Salgado within the Municipality of Sablayan in the Province of Occidental Mindoro. The main channel of Baclaran River stretches almost 16 kilometers from the river mouth up to the foot of the mountain range on the eastern section of the municipality and flows generally westward towards Mindoro Strait – Apo East Pass.

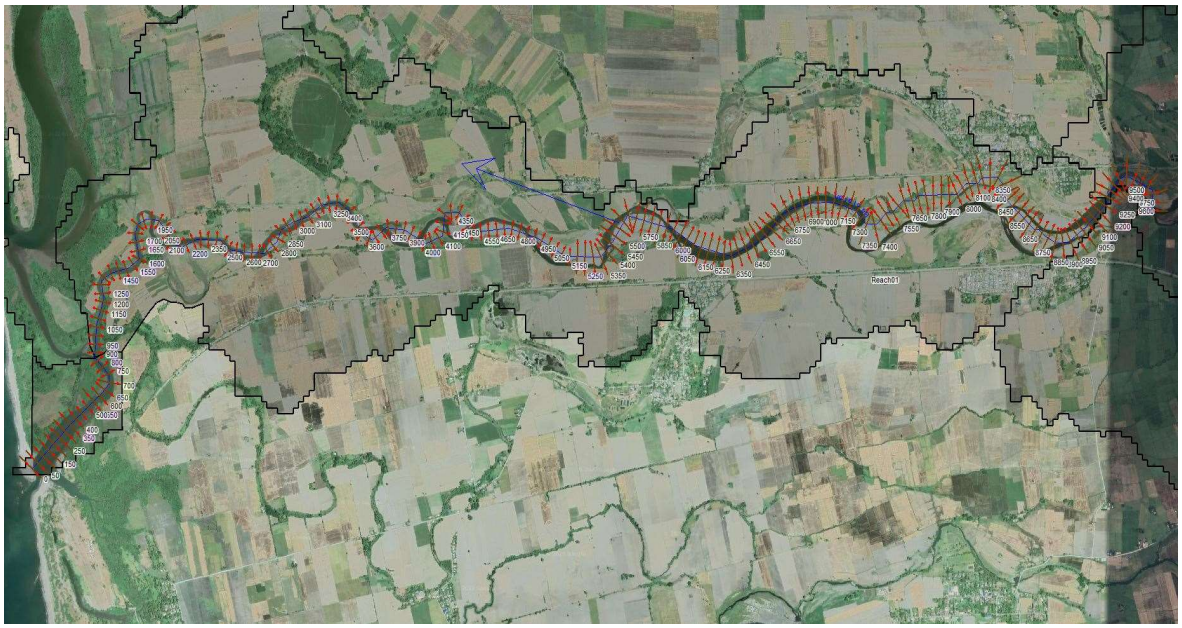
Sablayan is the central municipality of mainland Occidental Mindoro and the largest municipality in the country. It has a total land area of 229,559.1741 hectares. It has 22 duly constituted barangays namely Buenavista, Burgos, Claudio Salgado, General Emilio Aguinaldo, Ibud, Ligaya, Poblacion, Santa Lucia, San Nicolas and Santo Niño (coastal barangays) while Batong Buhay, Burgos, Ligaya, Malisbong, Pagasa, San Agustin, and Tuban (forest fringe) and the rest are interior barangays (Ilvita, Lagnas, Paetan, San Francisco, San Vicente, Tagumpay, and Victoria). It is bounded on the north by the municipality of Santa Cruz in the province of Occidental Mindoro, and the municipalities of Baco, Naujan, Victoria and Socorro in the province of Oriental Mindoro; on the east by the municipalities of Pinamalmayan, Gloria, Bansud, Bongabong and Mansalay in the province of Oriental Mindoro; on the west by Mindoro Strait; and on the south by the municipality of Calintaan in the province of Occidental Mindoro. It is about 87.80 kilometers south of Mamburao, the provincial capital, and 87.60 kilometers north of San Jose, the business and financial center of the province. Like many municipalities, cities and provinces in the country, Sablayan also faces boundary disputes with adjacent territories.

Occidental Mindoro covers a total area of 5,865.71 square kilometers occupying the western section of the Mindoro Island which includes outlying islands in the northwest. General land surface features that characterize Occidental Mindoro are mountains, rivers, hills, valleys, wide plains and some small fresh water lakes. The high mountains can be found in the along the provincial boundary with Oriental Mindoro. Mountain ranges converge on the two central peaks, Mount Halcon in the north and Mount Baco in the south. The northern part of the province has relatively fewer plains, while the southern parts have wider flatlands. Most of the plains are cultivated fields, with few remaining untouched forests. Significant hilly areas can be found rolling off in Santa Cruz in the north, and in San Jose and Magsaysay in the south. These are grassed-over rather than forested. There are several river systems flowing on a generally westerly course: Busuanga, Caguray, Biga, Lumintao, Mompong, Amnay, Pagbahan and **Baclaran** where the dredging project is proposed.

The dredging works along Baclaran River is bounded by the following coordinates:

Point Nos.	Latitude	Longitude
1	12°58'4.18"	120°46'3.71"
2	12°58'14.56"	120°46'13.23"
3	12°58'27.37"	120°46'16.54"
4	12°58'38.73"	120°46'18.44"
5	12°58'42.27"	120°46'25.08"
6	12°58'50.40"	120°46'28.09"
7	12°58'46.24"	120°46'30.82"

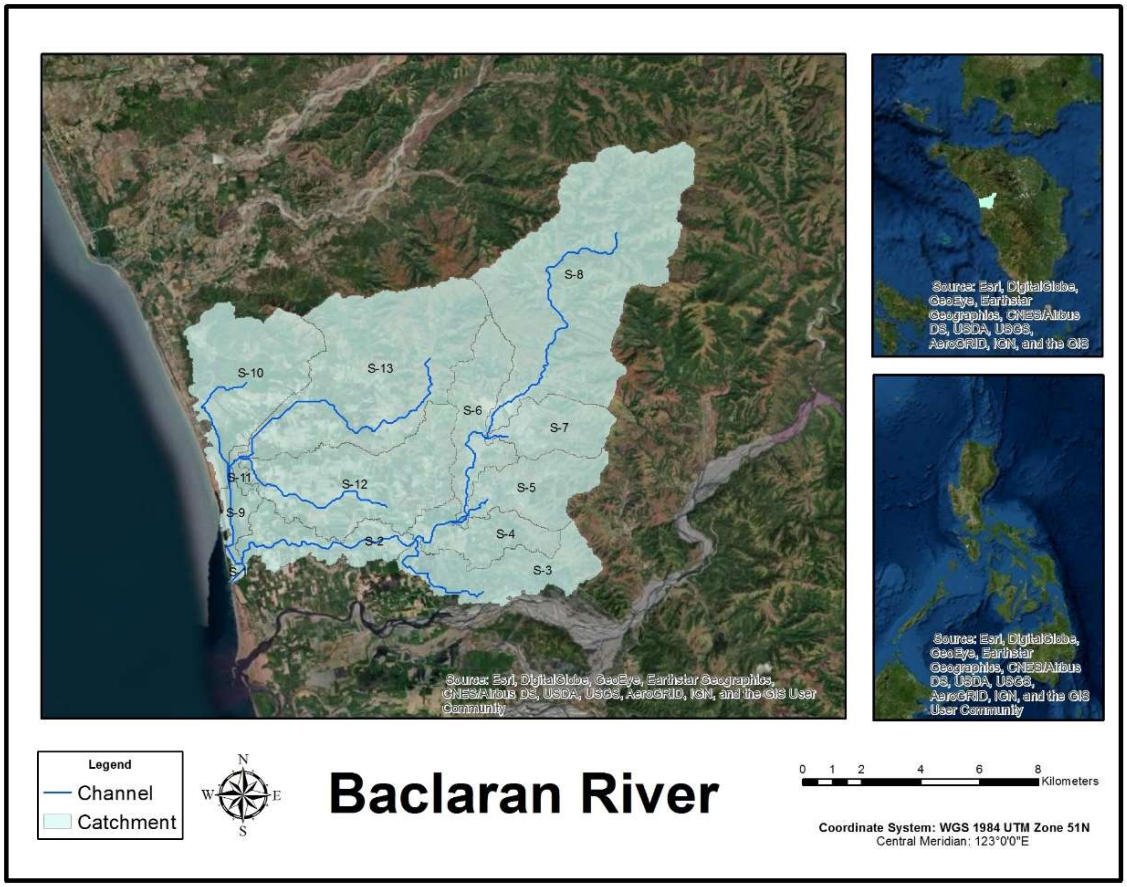
8	12°58'44.70"	120°46'45.83"
9	12°58'52.84"	120°47'2.88"
10	12°58'46.45"	120°47'18.65"
11	12°58'51.14"	120°47'24.67"
12	12°58'50.56"	120°47'37.70"
13	12°58'42.97"	120°47'51.89"
14	12°58'51.77"	120°48'1.72"
15	12°58'45.51"	120°48'18.21"
16	12°58'53.82"	120°48'34.56"
17	12°58'47.30"	120°48'48.96"
18	12°58'53.72"	120°49'8.60"
19	12°58'46.61"	120°49'20.23"
20	12°58'56.71"	120°49'34.40"
21	12°58'53.53"	120°49'44.62"
22	12°58'48.36"	120°49'40.27"
23	12°58'50.98"	120°49'36.53"
24	12°58'41.07"	120°49'22.30"
25	12°58'47.51"	120°49'8.99"
26	12°58'44.13"	120°48'56.06"
27	12°58'39.68"	120°48'43.66"
28	12°58'47.59"	120°48'40.50"
29	12°58'38.79"	120°48'17.16"
30	12°58'45.88"	120°48'3.44"
31	12°58'38.04"	120°47'56.57"
32	12°58'43.64"	120°47'38.40"
33	12°58'42.71"	120°47'23.23"
34	12°58'45.91"	120°47'5.11"
35	12°58'38.23"	120°46'43.86"
36	12°58'40.84"	120°46'28.99"
37	12°58'34.31"	120°46'21.80"
38	12°58'18.02"	120°46'22.58"
39	12°58'6.90"	120°46'14.02"
40	12°57'56.26"	120°46'5.01"



1. HYDROLOGICAL ANALYSIS

The hydrologic analysis based on 100-Yr Return Period is required in order to be able to determine the effect with and without as well as the design riverbed elevation of the dredging project.

The delineated basin of the **Baclaran River**, as presented in figure, has a total land area of **152.9** square kilometers and is located at the municipality of Santa Cruz, Occidental Mindoro.



Baclaran River Basin and Stream Network

The catchment area of the Baclaran River Basin was delineated using the Digital Surface Model (DSM) obtained from the JAXA Earth Observation Research Center (EORC). Using ArcMap, a geospatial processing program, the catchment boundary, subbasins, and river systems were delineated and generated.

Basin	Subbasin No.	Catchment Area (Km^2)	Length (Km)	Lca (Km)	ELEVATIONS		
					Highest Elev. (m)	Lowest Elev. (m)	Diff. (m)
Baclaran River	1.	0.27	0.80	0.3835	5	0	5
	2.	7.27	7.68	3.636	15	5	10
	3.	9.67	4.90	4.276	260	15	245
	4.	6.49	1.92	1.018	20	15	5

	5.	8.13	1.83	1.736	300	20	280
	6.	8.46	4.60	4.318	30	20	10
	7.	6.33	0.87	0.654	275	30	245
	8.	39.30	11.64	9.816	1125	30	1095

SUBBASIN PARAMETERS

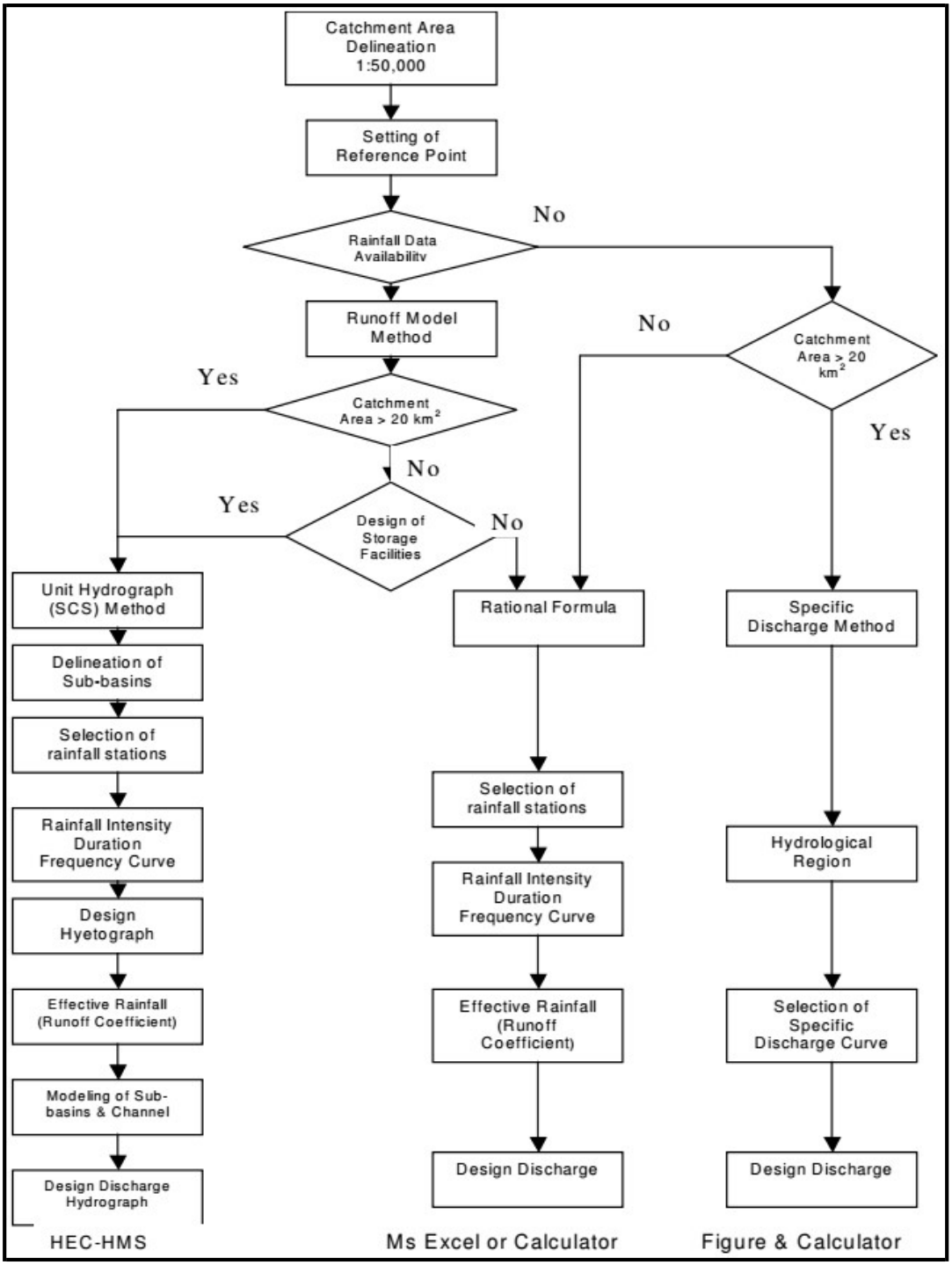
Basin	Subbasin No.	Catchment Area (Km^2)	Length (Km)	Lca (Km)	ELEVATIONS		
					Highest Elev. (m)	Lowest Elev. (m)	Diff. (m)
Baclaran River	9.	2.22	3.15	2.081	15	5	10
	10.	16.26	5.12	4.279	450	10	440
	11.	0.70	1.10	0.81	15	10	5
	12.	18.31	6.66	5.723	115	15	100
	13.	29.46	10.68	8.423	645	15	630

REACH PARAMETERS

Basin	Reach ID	Length (m)	ELEVATIONS		
			Highest Elev. (m)	Lowest Elev. (m)	Diff. (m)
Baclaran River	1	7676.00	15	5	10
	2	1918	20	15	5
	3	4597	30	20	10
	4	3152.00	15	5	10
	5	1096	15	10	5

Hydrological analysis is mainly conducted to determine the design discharge necessary to approximate the expected inundation within the project area. In order to determine the design discharge, extreme rainfall frequency analysis of observed rainfall data is commonly used. Annual maximum point rainfall data measured at specific durations is used in the frequency analysis to determine the point rainfall data at a given return period. These point rainfall data are used to generate rainfall intensity-duration- frequency (RIDF) curves necessary to generate rainfall hyetographs. The generated rainfall hyetographs are then used as input to the rainfall-runoff model which will be used to calculate for the design discharge.

In this project, both the 2015 *Design Guidelines, Criteria & Standards (DGCS) Volume 3*, and the 2010 *Manual on Flood Control Planning* by DPWH were used as references in conducting the rainfall and runoff analysis. Figure below shows the flow diagram for the design discharge determination.



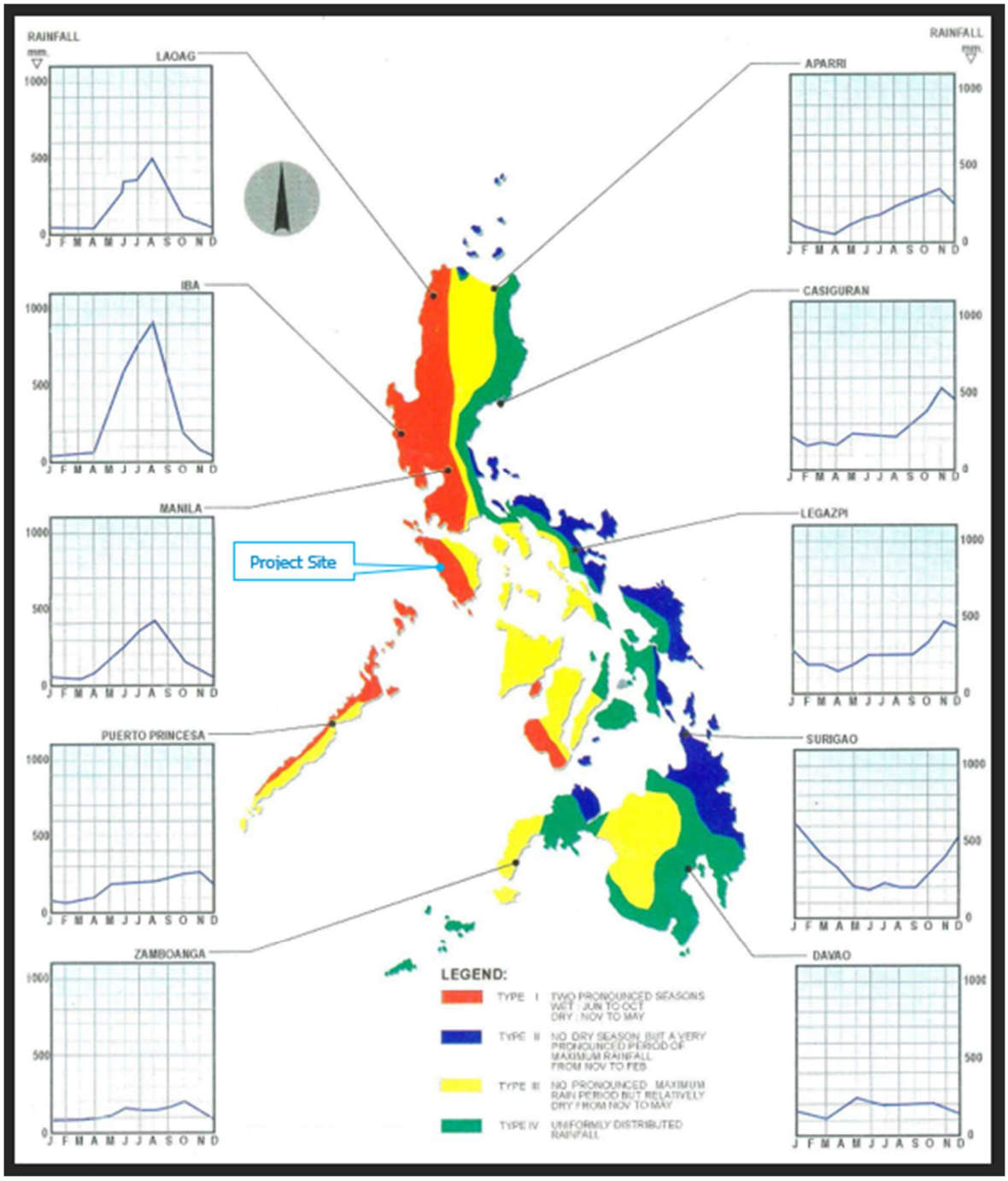
Source: *DWPH, Manual on Flood Control Planning*

Figure 1 – 2. Flow Diagram for Determining Design Discharge

1.1. Data Availability

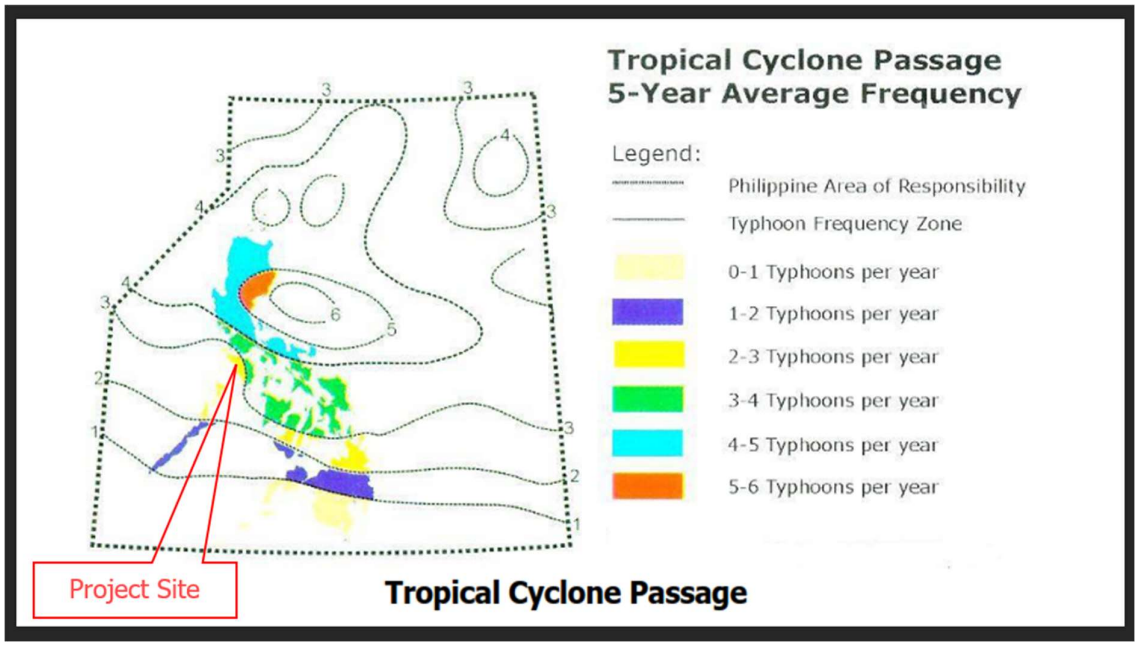
1) Rainfall

The climate of the region is classified as Type I as defined by the Coronas Classification system and shown in the **Climate Map of the Philippines.** Such areas exhibit two pronounced seasons, the dry season extending from November to April and the wet season from May to October. The latter is dominated by the South-West monsoon season with severe weather conditions associated with typhoons.



Climate Map of the Philippines

The project area is affected by tropical storms/typhoons with a statistical frequency of two (2) to three (3) cyclones per year as shown in the **Tropical Cyclone Passage** which also confirms the observed flooding occurrences in the area.

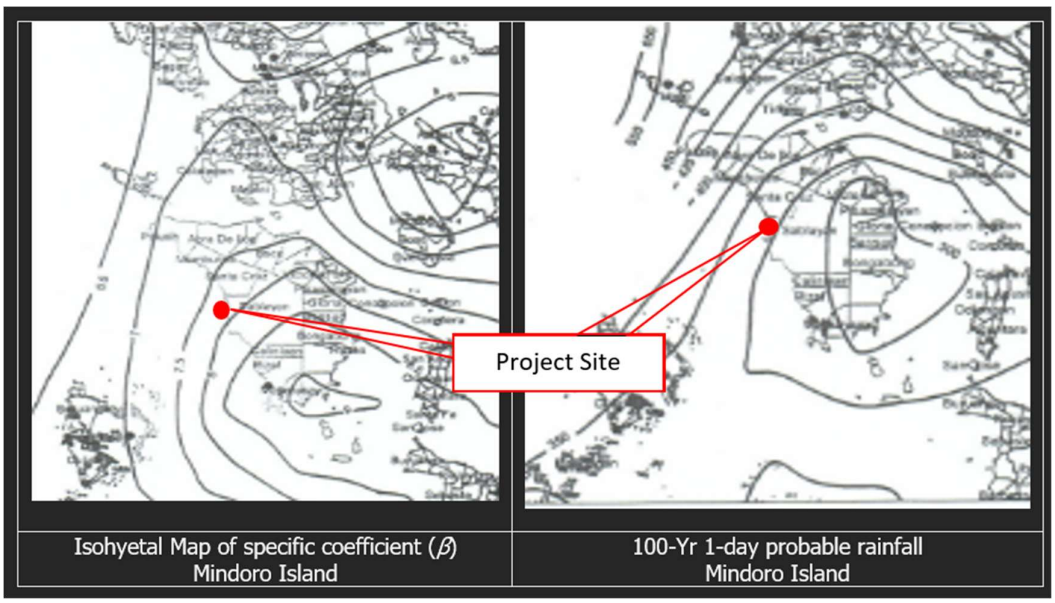


The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) operates/maintains 52 Synoptic stations equipped with automatic rainfall gauge. As per DPWH Flood Control and Sabo Engineering (FCSEC) Manual on Flood Control Planning dated March 2003, listed below are synoptic stations recommended to be used for runoff analysis. When one of the stations is located inside or near the target river basin, the RIDF of this station is used to obtain rainfall intensity.

No.	Sta. ID	Station	Region
1	222	Vigan	Ilocos Sur
2	223	Laoag	Ilocos Norte
3	232	Aparri	Cagayan
4	233	Tuguegarao	Cagayan
5	324	Iba	Zambales
6	325	Dagupan City	Pangasinan
7	328	Baguio City	Benguet
8	330	Cabanatuan	Nueva Ecija
9	333	Baler	Quezon
10	425	Port Area	Manila
11	427	Tayabas	Quezon
12	429	NAIA (MIA)	Pasay City
13	430	Science Garden	Quezon City
14	432	Ambulong	Batangas
15	434	Infanta	Quezon
16	435	Alabat	Quezon
17	440	Daet	Camarines Norte
18	444	Legaspi	City Albay

19	446	Virac	Rader Catanduanes
20	526	Coron	
21	531	San Jose	Occidental Mindoro
22	536	Romblon	Romblon
23	538	Roxas City	Aklan
24	543	Masbate	Masbate
25	546	Catarman	Northern Samar
26	548	Catbalogan	Western Samar
27	550	Tacloban City	Layte
28	558	Guiuan	Eastern Samar
29	618	Puerto Prinsesa	Palawan
30	630	Cuyo	Palawan
31	637	Iloilo City	Iloilo
32	642	Dumaguete City	Negros Oriental
33	644	Tagbilaran	Boholl
34	646	Mactan International Airport	Cebu
35	648	Maasin	Southern Layte
36	653	Surigao	Surigao del Norte
37	741	Dipolog	Zamboanga del Norte
38	748	Cagayan de Oro	Misamis Oriental
39	751	Malaybalay	Bukidnon
40	753	Davao City	Davao del Sur
41	755	Hinatuan	Surigao del Sur
42	826	Zamboanga City	Zamboanga del Sur
43	851	General Santos	

In the absence of a synoptic station within or near the target river basin, the RIDF can be computed from isohyetal maps of specific coefficient (β) and 1-day probable rainfall.



Isohyetal Map of specific coefficient (β) Mindoro Island

100-Yr 1-day probable rainfall Mindoro Island

The rainfall intensity was computed using the MS Excel (Runoff Analysis Input Data Processing Form) provided by the DPWH FCSEC Manual on Runoff Computation with HEC-HMS in developing hourly rainfall hyetograph by alternating method. The method selected as per Runoff Analysis Input Data Processing Form is method 3, Iso-specific Coefficient and Isohyet of Probable 1-day Rainfall. Representative point can be the centroid of the river basin. Shown below are adopted parameters.

Specific Coefficient (β)	100-Yr 1-day Probable Rainfall
8	350

Developing RDF Curves Using Iso-specific Coefficient and Isohyet of Probable 1-day Rainfall

Location Interested	Mindoro						
Specific Coefficient β (from Reference 2)		8	b (=log β/(log24-log1))				0.654
Probable 1-day Rainfall	Return Period (Year)	2	5	10	25	50	100
(from Reference 3)	R (mm)	140	200	240	280	320	350
1-day Rainfall Intensity	Return Period (Year)	2	5	10	25	50	100
I_{24} = R/24	I_{24} (mm/hr)	5.833	8.333	10.000	11.667	13.333	14.583

Rainfall Intensity for Duration t (hours) It (mm/hr) $I_t = \left(\frac{24}{t}\right)^b \times I_{24} = \left(\frac{24}{t}\right)^b \times \frac{R}{24}$

Return Period (Year)	Short Duration (10min - 1hr)**				Long Duration (1hr - 24 hr)				Formula
	Type	A	C	b	Type	A (=I_{24})	C (=24)	b	t (hr)
2					3	5.833	24	0.654	Type 3 :
5					3	8.333	24	0.654	$R = \left(\frac{C}{t}\right)^b A$
10					3	10.000	24	0.654	
25					3	11.667	24	0.654	
50					3	13.333	24	0.654	$A = I_{24}$
100					3	14.583	24	0.654	$C = 24$

Short duration curves are not applicable to this form.

The point rainfall is converted to basin rainfall using an area reduction factor as defined by Horton's formula shown below. Daily or hourly scale of basin rainfall with a particular probability becomes smaller than point rainfall, because intensive rainfall unlikely extends an entire river basin.

$$P = P_0 \times \exp\left(-0.1 \times (0.386 \times A)^{0.31}\right)$$

fa = P/P_o = Area Reduction Factor

where: P : Areal rainfall (mm)
P_o : Point rainfall (mm)
A : Catchment area (Km^2)

Effective rainfall (excess rainfall) should ideally be analysed based on volume of rainfall and runoff recorded during actual floods in or around the objective river basin. However, when

observed data are not available, effective rainfall needs to be estimated by different a method. In the Philippines, significant rainfall which triggers major floods normally occurs after certain amount of small to moderate rainfall. Lands are almost or completely saturated when a large flood emerges under such conditions, and therefore, minimal losses should be considered. For this practice, no loss is taken.

The hyetographs derived through the above procedures are summarized in succeeding tables.

Climate change

Climate change should be considered as a part of the design and scoping for the project. In consideration with the impact of climate change and in the absence of any other information on rainfall events, suggested approach for incorporating changes to extreme rainfall per DPWH DGCS 2015 Edition are as follows:

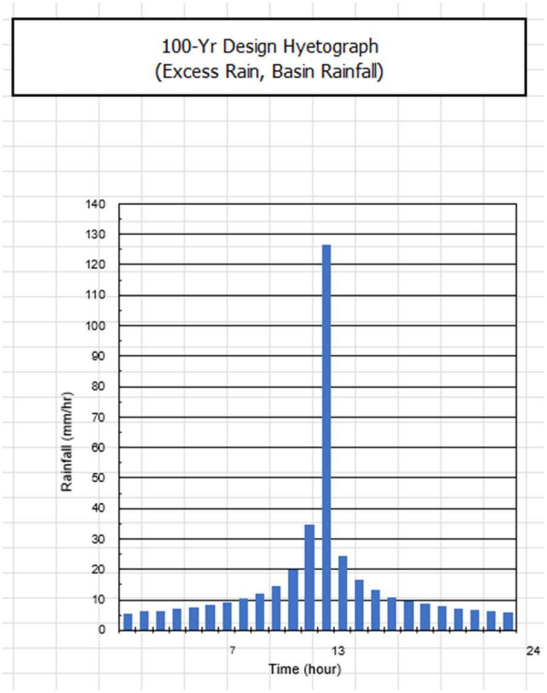
Approach	Recommendation
General Approach	Incorporate a 10% increase in rainfall intensity in the design
Alternative Approach	The sensitivity analysis should consider increases in rainfall intensities of 10% and determine the likely impact on the proposed hydraulic design. In some situations, there will be minimal impacts, while in others the differences in flood levels will be more significant.

Baseflow

Baseflow is a sustained run-off of prior rainfall that was stored temporarily in the river basin. The baseflow can be assumed to be constant during flood. When a streamflow gauging station is located near the target river basin, the mean daily discharge of one day before the flood is used as the baseflow. When there are no data available, $0.05 m^3/s/Km^2$ can be used for the baseflow.

River Basin	Catchment Area. (Km^2)	Baseflow (m^3/sec)
Baclaran	**152.9**	**7.645**

100-Yr	10%	Total Excess Rainfall, 100-Yr
5.15	0.515	**5.665**
5.56	0.556	**6.116**
5.77	0.577	**6.347**
6.36	0.636	**6.996**
6.83	0.683	**7.513**
7.44	0.744	**8.184**
8.25	0.825	**9.075**
9.38	0.938	**10.318**
10.88	1.088	**11.968**
13.3	1.33	**14.630**
17.93	1.793	**19.723**
31.59	3.159	**34.749**
115.05	11.505	**126.555**
22.35	2.235	**24.585**
15.18	1.518	**16.698**
11.96	1.196	**13.156**
9.98	0.998	**10.978**
8.71	0.871	**9.581**
7.8	0.78	**8.580**
7.05	0.705	**7.755**
6.4	0.64	**7.040**
5.99	0.599	**6.589**
5.7	0.57	**6.270**
5.31	0.531	**5.841**



PROBABLE FLOOD

The probable flood was analyzed through the development of a flood run-off model. Flood analysis using the HEC-HMS model. The HEC-HMS is software developed by the United States Army Corps of Engineers (USACE) and is available for free.

Description of Program

Model Components

Model components are used to simulate the hydrologic response in a watershed. The primary model components are the following:

- Basin models- represents the physical watershed
- Meteorologic models- calculates the precipitation input required by a subbasin element
- Control specification- Control specifications define the time period and time step of the simulation run

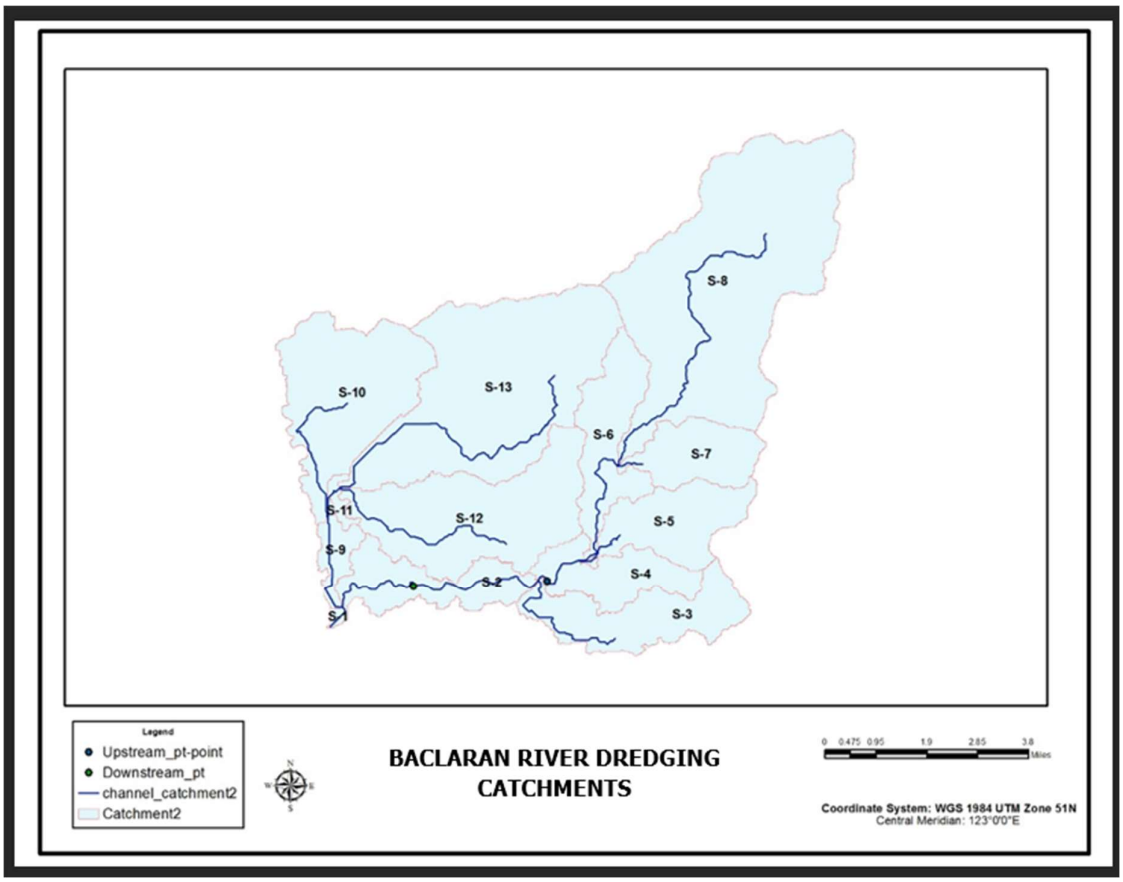
Hydrologic Element Description

Hydrologic Element	Description
Subbasin	Used to represent the physical watershed
Reach	Used to convey stream flow downstream in the basin model. Inflow from the reach element can come from one or many upstream hydrologic elements
Junction	Is used to combine stream flow from hydrologic elements located upstream of the junction element. Inflow into the junction element can come from one or many upstream elements.
Source	Is used to introduce flow into the basin model. Source element has no inflow.
Sink	Used to represent the outlet of the physical watershed. Inflow can come from one or many upstream hydrologic elements
Reservoir	Used to model the detention and attenuation of a hydrograph caused by a reservoir or detention pond
Diversion	Is used for modelling stream flow leaving the main channel. Inflow comes from one or many upstream hydrologic elements.

Below is the 100-Yr flood frequency probable peak discharge at the river mouth of Baclaran River.

River Basin	Catchment Area. (Km^2)	Computed, Q (m^3/sec)	Baseflow (m^3/sec)	Probable Flood (100-Yr) (m^3/sec)
Baclaran	**152.9**	**1285.6**	**7.645**	**1293.24**

DETAILED HYDROLOGIC ANALYSIS



Physical Characteristics of Subbasins and Drainage Lines

Basin	Subbasin No.	Catchment Area (Km^2)	Length (Km)	Lca (Km)	ELEVATIONS			Slope (m/m)
					Highest Elev. (m)	Lowest Elev. (m)	Diff. (m)	
Baclaran River	1.	0.27	0.80	0.3835	5	0	5	0.00622
	2.	7.27	7.68	3.636	15	5	10	0.00130
	3.	9.67	4.90	4.276	260	15	245	0.05004
	4.	6.49	1.92	1.018	20	15	5	0.00261
	5.	8.13	1.83	1.736	300	20	280	0.15317
	6.	8.46	4.60	4.318	30	20	10	0.00218

	7.	6.33	0.87	0.654	275	30	245	0.28129
	8.	39.30	11.64	9.816	1125	30	1095	0.09411
	9.	2.22	3.15	2.081	15	5	10	0.00317
	10.	16.26	5.12	4.279	450	10	440	0.08602
	11.	0.70	1.10	0.81	15	10	5	0.00456
	12.	18.31	6.66	5.723	115	15	100	0.01501
	13.	29.46	10.68	8.423	645	15	630	0.05898
	TOTAL	152.9						

Physical Characteristics of Main Drainage Lines

Basin	Reach ID	Length (m)	ELEVATIONS		
			Highest Elev. (m)	Lowest Elev. (m)	Diff. (m)
Baclaran River	1	7676.00	15	5	10
	2	1918	20	15	5
	3	4597	30	20	10
	4	3152.00	15	5	10
	5	1096	15	10	5

Lag Time

The modified Snyder's Lag Equation is used to determine the lag time and is commonly used for that purpose.

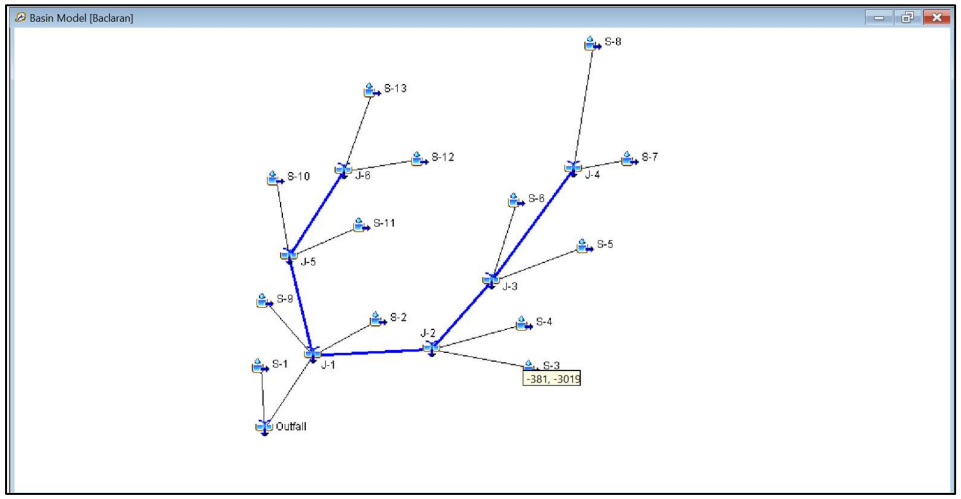
$$L_g = 0.6865 \times C_t \times \left[\frac{L \times L_{ca}}{\sqrt{S}}\right]^{0.38}$$

Where:	Lg:	Lag time in hrs		
	Ct:	Lag time coefficient		
		Mountainous areas	:	1.2
		Hilly areas	:	0.70
		Valley areas	:	0.35
	L:	Length of watercourse from the downstream end of the subbasin to the upstream subbasin boundary (km)		
	Lca:	length of water course from the downstream end of the subbasin to a intersection on the stream perpendicular from the centroid of the subbasin (km)		
	S:	average basin slope (overall slope along longest water course from the downstream to upstream ends of the subbasin)		

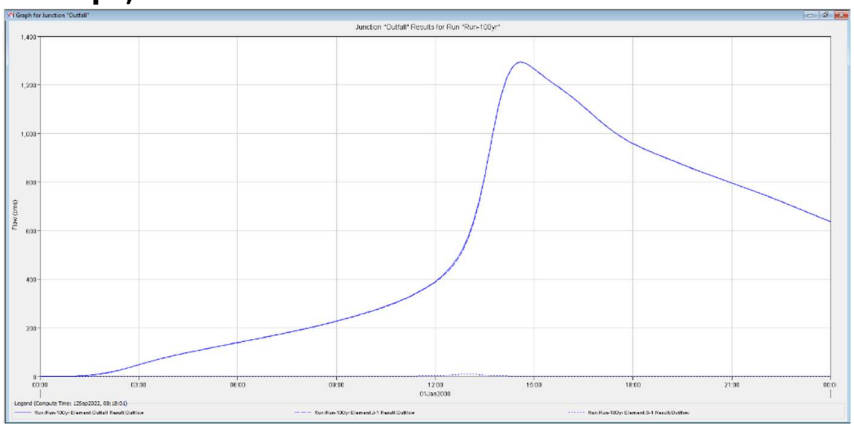
Computed Lag Time per Subbasin

Basin	Subbasin No.	Length (Km)	Lca (Km)	Ave. Elev. (m)	Slope (m/m)	Ct	Lag Time	
							hr	min
Baclaran River	1.	0.80	0.3835	5	0.00622	0.35	0.40	24.20
	2.	7.68	3.636	10	0.00130	0.35	3.01	180.48
	3.	4.90	4.276	245	0.05004	0.70	2.70	161.79
	4.	1.92	1.018	5	0.00261	0.35	0.96	57.57
	5.	1.83	1.736	280	0.15317	0.70	1.06	63.87
	6.	4.60	4.318	10	0.00218	0.35	2.40	143.84
	7.	0.87	0.654	245	0.28129	0.70	0.49	29.63
	8.	11.64	9.816	1095	0.09411	1.20	7.81	468.71
	9.	3.15	2.081	10	0.00317	0.35	1.47	87.90
	10.	5.12	4.279	440	0.08602	0.70	2.47	148.45
	11.	1.10	0.81	5	0.00456	0.35	0.64	38.37
	12.	6.66	5.723	100	0.01501	0.70	4.26	255.39
	13.	10.68	8.423	630	0.05898	1.20	7.80	467.83

Basin Model



River Mouth Graph, 100-Yr



Computed Discharge, 100-Yr

River Basin	Catchment Area, (km^2)	Computed Discharge, Q (m^3/sec)
Baclaran	152.9	1285.6

WATER SURFACE PROFILE

General

The water surface profile was calculated using the United States Army Corp of Engineers-Hydrologic Engineering Center (HEC)-River Analysis System (RAS) software.

The water surface profile was calculated using the United States Army Corp of Engineers- Hydrologic Engineering Center (HEC)-River Analysis System (RAS) software.

The software is capable of performing one-dimensional water surface profile calculations for steady gradually flow in natural and constructed channels. Subcritical, supercritical and mixed flow regime water surface profiles can be calculated.

Water surface profiles are computed from one cross section to the next by solving the Energy Equation with an iterative procedure called the standard step method.

Boundary Condition

The boundary condition considered in the analysis is the normal depth determination wherein the program will automatically calculate the water surface elevation for the profile given the downstream slope.

Design Storm

The proposed river dredging the 100-Yr storm frequency in accordance to the DPWH criteria.

Manning's Roughness Coefficient "n"

Selection of an appropriate value for Manning's "n" is very significant to the accuracy of the computed water surface profile. It is highly variable and depends on a number of factors including surface roughness, vegetation, channel irregularities, channel alignment, scour and deposition, obstructions, size and shape of the channel, etc.

Suggested Values of Manning's Coefficient n (Uniform Flow) Natural Channels

Description	Minimum	Maximum
Fairly regular Section		
1. Some grass & weeds, little or no brush	0.028	0.033
2. Dense growth of weeds, flow depth greater width height	0.033	0.040
3. Some weeds, light brush on banks	0.035	0.050
4. Some weeds, heavy brush on banks	0.050	0.070
5. Some weeds, dense trees	0.060	0.080
For trees within channel, with branches submerged at high flood increases all above values by	0.010	0.020
6. Winding, some pools & shoals, clean	0.035	0.045
7. Winding, some pools & shoals, clean lower stages, more ineffective section	0.045	0.055
8. Winding, some pools &n shoals, clean, some weeds and stones	0.040	0.050
9. Winding, some pools & shoals, clean, lower stages, more ineffective section, stony sections	0.050	0.060
10. Sluggish river reaches rather weedy or with deep pools	0.060	0.080

11. Very weedy reaches	0.100	0.150
Irregular Sections, with pools, slight meander, increase above values by	0.010	0.020

Description	Minimum	Maximum
Mountain streams, no vegetation in channel, banks steep, trees and brushes along banks submerged at high flood		
For trees within channel, with branches submerged at high flood increases all above values by	0.010	0.020
1. Bottom of gravel, cobbles & few boulders	0.040	0.050
2. Bottom cobbles with large boulders	0.050	0.00
Large Streams Channels (top width greater than 30m) Reduce smaller stream coefficient by 0.10		

Results

River Sta	Profile	Q Total (m3/s)	W/out Dredging		With Dredging	
			Min Ch El (m)	W.S. Elev (m)	Min Ch El (m)	W.S. Elev (m)
9800	Q100	1293.24	8.49	13.57	5.49	11.35
9750	Q100	1293.24	8.34	13.30	5.42	11.13
9700	Q100	1293.24	8.49	13.01	5.36	10.99
9650	Q100	1293.24	8.24	12.99	5.29	10.91
9600	Q100	1293.24	8.21	13.02	5.22	10.99
9550	Q100	1293.24	7.89	12.98	5.16	10.94
9500	Q100	1293.24	7.83	12.97	5.09	11.01
9450	Q100	1293.24	7.57	12.94	5.02	10.86
9400	Q100	1293.24	7.36	12.88	4.96	10.66
9350	Q100	1293.24	7.36	12.84	4.89	10.53
9300	Q100	1293.24	7.20	12.81	4.82	10.45
9250	Q100	1293.24	7.09	12.81	4.76	10.39
9200	Q100	1293.24	7.08	12.79	4.69	10.32
9150	Q100	1293.24	7.00	12.77	4.62	10.31
9100	Q100	1293.24	6.98	12.71	4.56	10.19
9050	Q100	1293.24	6.89	12.68	4.49	10.14
9000	Q100	1293.24	6.77	12.67	4.42	10.08
8950	Q100	1293.24	6.68	12.66	4.36	10.01
8900	Q100	1293.24	6.58	12.65	4.29	9.94
8850	Q100	1293.24	6.49	12.64	4.22	9.91
8800	Q100	1293.24	6.44	12.63	4.16	9.82
8750	Q100	1293.24	6.39	12.62	4.09	9.73
8700	Q100	1293.24	6.29	12.60	4.02	9.62
8650	Q100	1293.24	6.29	12.59	3.96	9.55
8600	Q100	1293.24	6.19	12.58	3.89	9.45
8550	Q100	1293.24	6.19	12.57	3.82	9.43
8500	Q100	1293.24	6.21	12.56	3.76	9.35
8450	Q100	1293.24	6.21	12.55	3.69	9.30
8400	Q100	1293.24	5.99	12.55	3.62	9.29
8350	Q100	1293.24	5.90	12.54	3.56	9.26
8300	Q100	1293.24	5.78	12.52	3.49	9.17
8250	Q100	1293.24	5.64	12.52	3.42	9.16
8200	Q100	1293.24	5.70	12.50	3.36	9.10
8150	Q100	1293.24	5.29	12.50	3.29	9.07

8100	Q100	1293.24	5.34	12.49	3.22	9.00

River Sta	Profile	Q Total (m3/s)	W/out Dredging		With Dredging	
			Min Ch El (m)	W.S. Elev (m)	Min Ch El (m)	W.S. Elev (m)
8050	Q100	1293.24	5.28	12.49	3.16	8.97
8000	Q100	1293.24	4.99	12.48	3.09	8.92
7950	Q100	1293.24	4.99	12.47	3.02	8.89
7900	Q100	1293.24	4.88	12.47	2.96	8.86
7850	Q100	1293.24	4.89	12.46	2.89	8.84
7800	Q100	1293.24	4.90	12.46	2.82	8.84
7750	Q100	1293.24	4.92	12.46	2.76	8.81
7700	Q100	1293.24	4.90	12.45	2.69	8.74
7650	Q100	1293.24	4.89	12.44	2.62	8.67
7600	Q100	1293.24	4.89	12.42	2.56	8.57
7550	Q100	1293.24	4.88	12.42	2.49	8.54
7500	Q100	1293.24	4.85	12.41	2.42	8.52
7450	Q100	1293.24	4.68	12.39	2.36	8.35
7400	Q100	1293.24	4.68	12.39	2.29	8.32
7350	Q100	1293.24	4.69	12.38	2.22	8.28
7300	Q100	1293.24	4.67	12.38	2.16	8.19
7250	Q100	1293.24	4.67	12.37	2.09	8.06
7200	Q100	1293.24	4.67	12.35	2.02	7.91
7150	Q100	1293.24	4.68	12.35	1.96	7.90
7100	Q100	1293.24	4.69	12.35	1.89	7.87
7050	Q100	1293.24	4.69	12.35	1.82	7.82
7000	Q100	1293.24	4.68	12.34	1.76	7.75
6950	Q100	1293.24	4.70	12.34	1.69	7.74
6900	Q100	1293.24	4.70	12.33	1.62	7.71
6850	Q100	1293.24	4.69	12.33	1.56	7.65
6800	Q100	1293.24	4.59	12.32	1.49	7.59
6750	Q100	1293.24	4.59	12.32	1.42	7.54
6700	Q100	1293.24	4.49	12.32	1.36	7.52
6650	Q100	1293.24	4.50	12.31	1.29	7.50
6600	Q100	1293.24	4.39	12.31	1.22	7.43
6550	Q100	1293.24	4.39	12.31	1.16	7.40
6500	Q100	1293.24	4.39	12.30	1.09	7.37
6450	Q100	1293.24	4.37	12.30	1.02	7.31
6400	Q100	1293.24	4.29	12.29	0.96	7.28
6350	Q100	1293.24	4.29	12.28	0.89	7.15
6300	Q100	1293.24	4.28	12.28	0.82	7.11
6250	Q100	1293.24	4.22	12.28	0.76	7.08
6200	Q100	1293.24	4.19	12.28	0.69	7.07
6150	Q100	1293.24	4.18	12.28	0.62	7.03
6100	Q100	1293.24	4.07	12.27	0.56	6.98
6050	Q100	1293.24	4.08	12.27	0.49	6.93
6000	Q100	1293.24	4.07	12.27	0.42	6.92
5950	Q100	1293.24	3.89	12.26	0.36	6.85
5900	Q100	1293.24	3.08	12.26	0.29	6.84
5850	Q100	1293.24	2.71	12.26	0.22	6.84
5800	Q100	1293.24	2.57	12.25	0.16	6.76

5750	Q100	1293.24	2.50	12.25	0.09	6.72

River Sta	Profile	Q Total (m3/s)	W/out Dredging		With Dredging	
			Min Ch El (m)	W.S. Elev (m)	Min Ch El (m)	W.S. Elev (m)
5700	Q100	1293.24	2.51	12.25	0.02	6.70
5650	Q100	1293.24	2.47	12.25	-0.04	6.65
5600	Q100	1293.24	2.50	12.25	-0.11	6.66
5550	Q100	1293.24	2.49	12.24	-0.18	6.63
5500	Q100	1293.24	2.54	12.24	-0.24	6.60
5450	Q100	1293.24	2.10	12.24	-0.31	6.61
5400	Q100	1293.24	2.08	12.24	-0.38	6.55
5350	Q100	1293.24	2.28	12.23	-0.44	6.53
5300	Q100	1293.24	2.28	12.23	-0.51	6.53
5250	Q100	1293.24	2.28	12.23	-0.58	6.50
5200	Q100	1293.24	2.28	12.23	-0.64	6.48
5150	Q100	1293.24	2.76	12.04	-0.71	6.11
5100	Q100	1293.24	2.75	12.03	-0.78	6.06
5050	Q100	1293.24	2.68	11.99	-0.84	6.01
5000	Q100	1293.24	2.61	11.97	-0.91	5.96
4950	Q100	1293.24	2.30	11.99	-0.98	5.93
4900	Q100	1293.24	2.23	11.98	-1.04	5.89
4850	Q100	1293.24	2.31	11.96	-1.11	5.85
4800	Q100	1293.24	2.34	11.94	-1.18	5.80
4750	Q100	1293.24	2.08	11.93	-1.24	5.75
4700	Q100	1293.24	1.32	11.93	-1.31	5.74
4650	Q100	1293.24	1.27	11.92	-1.38	5.70
4600	Q100	1293.24	1.30	11.91	-1.44	5.66
4550	Q100	1293.24	1.30	11.90	-1.51	5.62
4500	Q100	1293.24	1.25	11.89	-1.58	5.59
4450	Q100	1293.24	1.28	11.88	-1.64	5.55
4400	Q100	1293.24	1.24	11.87	-1.71	5.51
4350	Q100	1293.24	1.22	11.86	-1.71	5.47
4300	Q100	1293.24	2.18	11.80	-1.75	5.39
4250	Q100	1293.24	3.22	11.73	-1.80	5.33
4200	Q100	1293.24	4.22	11.62	-1.84	5.27
4150	Q100	1293.24	4.23	11.57	-1.88	5.22
4100	Q100	1293.24	4.16	11.53	-1.93	5.17
4050	Q100	1293.24	3.13	11.55	-1.97	5.12
4000	Q100	1293.24	2.06	11.56	-2.01	5.08
3950	Q100	1293.24	2.20	11.55	-2.05	5.04
3900	Q100	1293.24	2.19	11.52	-2.10	4.99
3850	Q100	1293.24	3.18	11.44	-2.14	4.93
3800	Q100	1293.24	3.17	11.41	-2.18	4.87
3750	Q100	1293.24	2.16	11.43	-2.23	4.83
3700	Q100	1293.24	1.15	11.44	-2.27	4.80
3650	Q100	1293.24	1.15	11.42	-2.31	4.75
3600	Q100	1293.24	0.00	11.42	-2.36	4.72
3550	Q100	1293.24	2.00	11.35	-2.40	4.64
3500	Q100	1293.24	2.13	11.34	-2.44	4.59
3450	Q100	1293.24	2.06	11.33	-2.49	4.55

3400	Q100	1293.24	2.10	11.31	-2.53	4.49

River Sta	Profile	Q Total (m3/s)	W/out Dredging		With Dredging	
			Min Ch El (m)	W.S. Elev (m)	Min Ch El (m)	W.S. Elev (m)
3350	Q100	1293.24	2.07	11.30	-2.57	4.45
3300	Q100	1293.24	1.09	11.31	-2.62	4.42
3250	Q100	1293.24	1.08	11.30	-2.66	4.38
3200	Q100	1293.24	1.80	11.25	-2.70	4.30
3150	Q100	1293.24	3.06	11.17	-2.74	4.23
3100	Q100	1293.24	2.06	11.18	-2.79	4.18
3050	Q100	1293.24	1.79	11.17	-2.83	4.13
3000	Q100	1293.24	0.86	11.18	-2.87	4.10
2950	Q100	1293.24	0.89	11.17	-2.92	4.05
2900	Q100	1293.24	1.02	11.16	-2.96	4.00
2850	Q100	1293.24	-0.16	11.17	-3.00	3.98
2800	Q100	1293.24	-0.15	11.16	-3.05	3.93
2750	Q100	1293.24	-0.27	11.15	-3.09	3.88
2700	Q100	1293.24	0.81	11.11	-3.13	3.80
2650	Q100	1293.24	-0.02	11.12	-3.18	3.77
2600	Q100	1293.24	-0.18	11.11	-3.22	3.73
2550	Q100	1293.24	0.96	11.07	-3.26	3.65
2500	Q100	1293.24	0.89	11.06	-3.30	3.60
2450	Q100	1293.24	1.95	11.01	-3.35	3.52
2400	Q100	1293.24	0.94	11.02	-3.39	3.47
2350	Q100	1293.24	0.93	11.01	-3.43	3.43
2300	Q100	1293.24	-0.08	11.01	-3.48	3.39
2250	Q100	1293.24	-0.23	11.01	-3.52	3.35
2200	Q100	1293.24	-0.09	11.00	-3.56	3.30
2150	Q100	1293.24	0.83	10.96	-3.61	3.21
2100	Q100	1293.24	2.56	10.76	-3.65	3.14
2050	Q100	1293.24	1.88	10.80	-3.69	3.07
2000	Q100	1293.24	0.85	10.80	-3.74	3.01
1950	Q100	1293.24	0.71	10.79	-3.78	2.95
1900	Q100	1293.24	0.86	10.77	-3.82	2.89
1850	Q100	1293.24	0.77	10.75	-3.87	2.82
1800	Q100	1293.24	1.63	10.69	-3.91	2.76
1750	Q100	1293.24	1.72	10.67	-3.95	2.69
1700	Q100	1293.24	0.63	10.68	-3.99	2.62
1650	Q100	1293.24	0.49	10.67	-4.04	2.55
1600	Q100	1293.24	0.48	10.66	-4.08	2.48
1550	Q100	1293.24	1.46	10.58	-4.12	2.41
1500	Q100	1293.24	2.54	10.46	-4.17	2.34
1450	Q100	1293.24	3.58	10.25	-4.21	2.26
1400	Q100	1293.24	2.54	10.29	-4.25	2.18
1350	Q100	1293.24	2.34	10.25	-4.30	2.11
1300	Q100	1293.24	3.45	9.98	-4.34	2.02
1250	Q100	1293.24	3.54	8.83	-4.38	1.94
1200	Q100	1293.24	2.55	8.06	-4.43	1.86
1150	Q100	1293.24	2.48	7.79	-4.47	1.77
1100	Q100	1293.24	2.46	6.95	-4.51	1.68

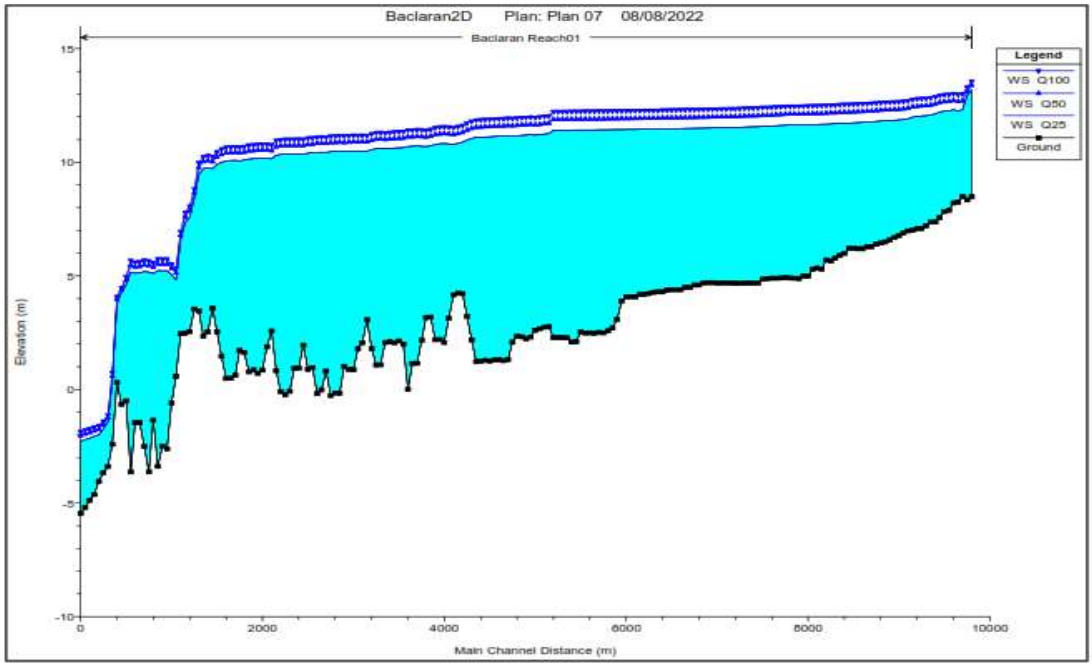
1050	Q100	1293.24	0.58	5.32	-4.55	1.58

River Sta	Profile	Q Total (m3/s)	W/out Dredging		With Dredging	
			Min Ch El (m)	W.S. Elev (m)	Min Ch El (m)	W.S. Elev (m)
1000	Q100	1293.24	-0.60	5.52	-4.60	1.48
950	Q100	1293.24	-2.61	5.73	-4.64	1.45
900	Q100	1293.24	-2.50	5.73	-4.68	1.39
850	Q100	1293.24	-3.38	5.74	-4.73	1.36
800	Q100	1293.24	-1.36	5.58	-4.77	1.10
750	Q100	1293.24	-3.63	5.66	-4.81	1.14
700	Q100	1293.24	-2.51	5.69	-4.86	1.15
650	Q100	1293.24	-1.46	5.62	-4.90	0.87
600	Q100	1293.24	-1.46	5.60	-4.94	0.72
550	Q100	1293.24	-3.63	5.67	-4.99	0.98
500	Q100	1293.24	-0.50	4.96	-5.03	0.12
450	Q100	1293.24	-0.65	4.47	-5.07	-0.17
400	Q100	1293.24	0.31	4.08	-5.12	-0.61
350	Q100	1293.24	-2.41	0.74	-5.16	-1.10
300	Q100	1293.24	-3.39	-1.13	-5.20	-1.42
250	Q100	1293.24	-3.66	-1.39	-5.24	-1.55
200	Q100	1293.24	-4.06	-1.59	-5.29	-1.66
150	Q100	1293.24	-4.63	-1.64	-5.33	-1.69
100	Q100	1293.24	-4.87	-1.72	-5.37	-1.75
50	Q100	1293.24	-5.19	-1.77	-5.42	-1.80
0	Q100	1293.24	-5.46	-1.86	-5.46	-1.89

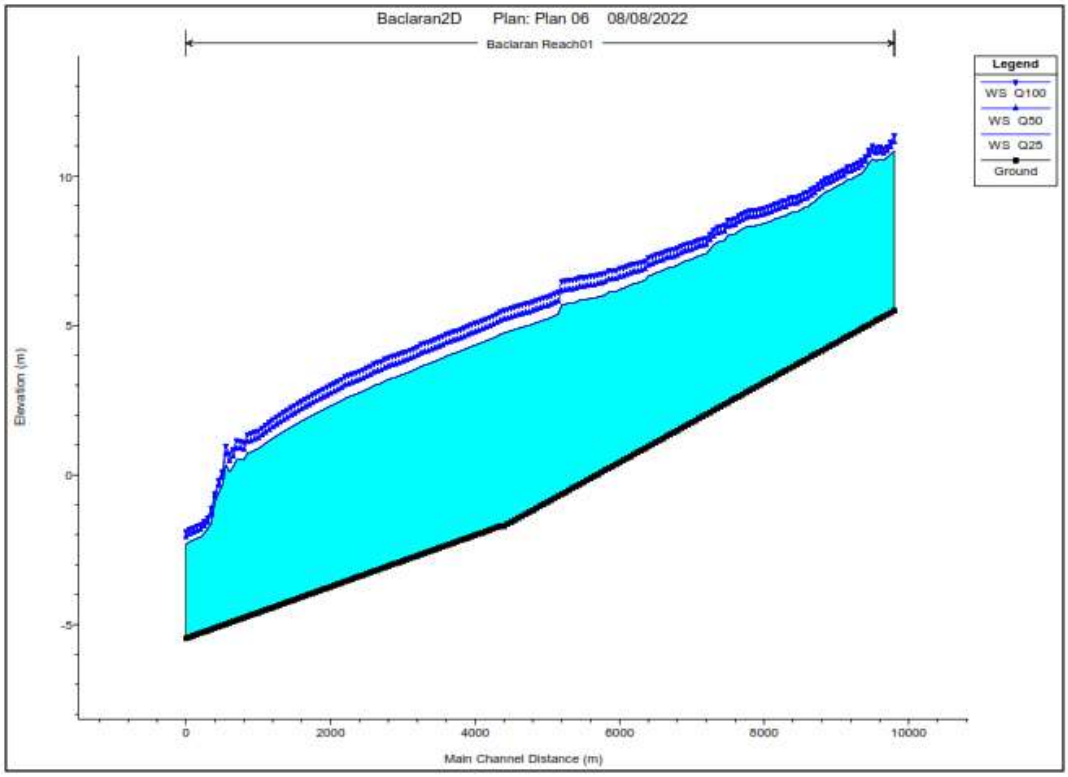
DETAILED HYDRAULIC ANALYSIS

Geometric Data

Profile Plot

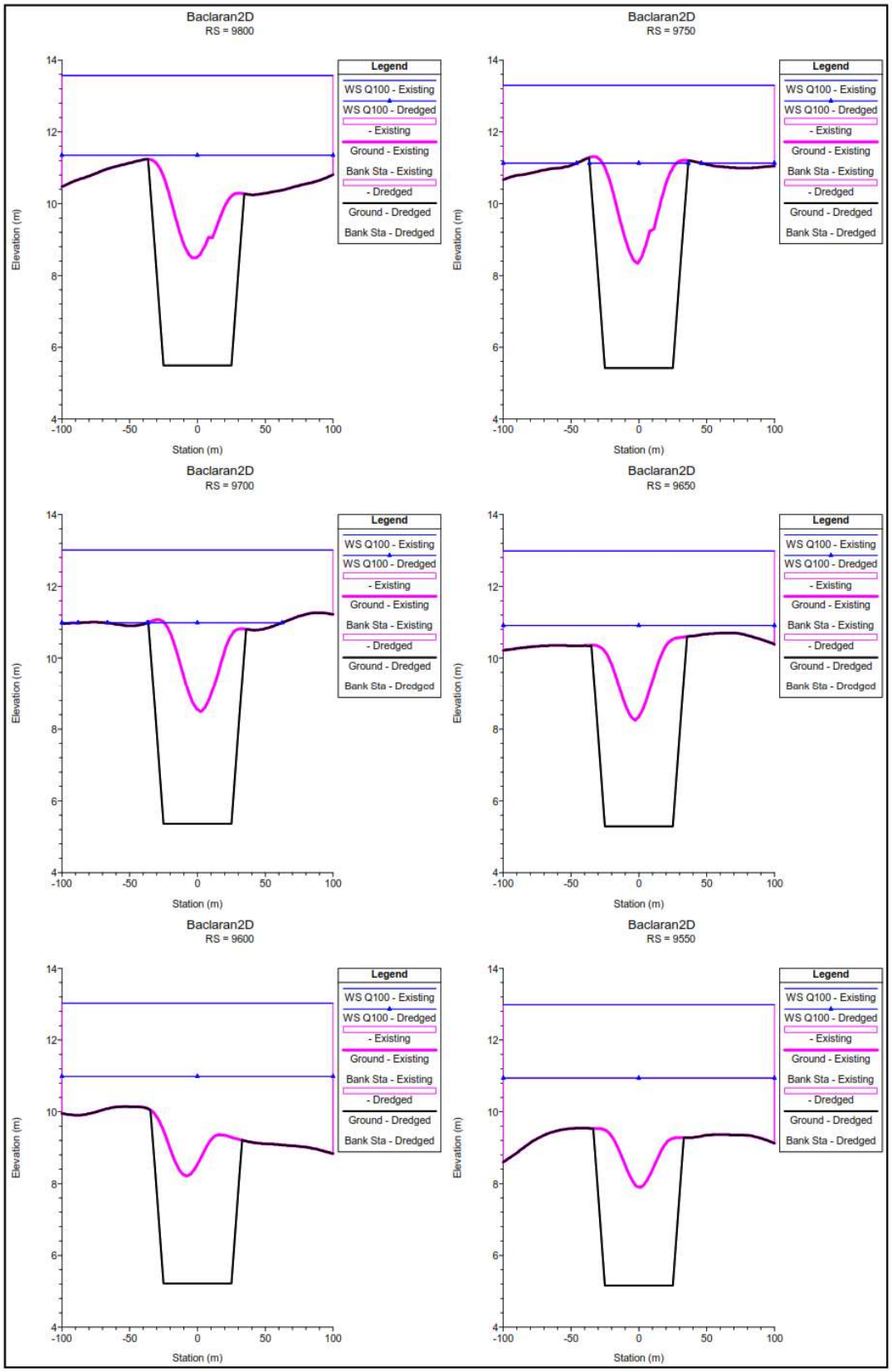


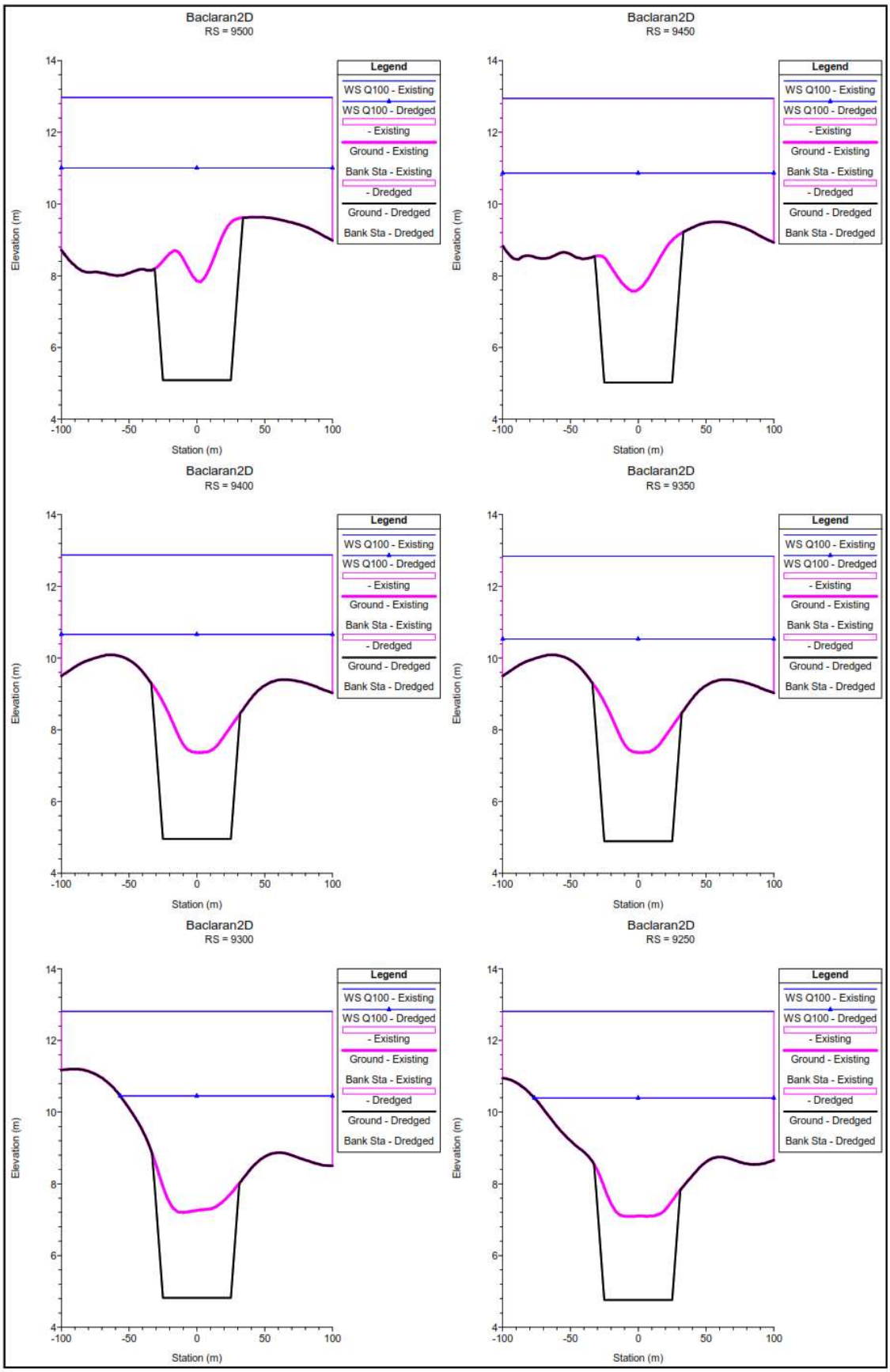
Existing



With Dredging

Cross-Sections (With and without Dredging)

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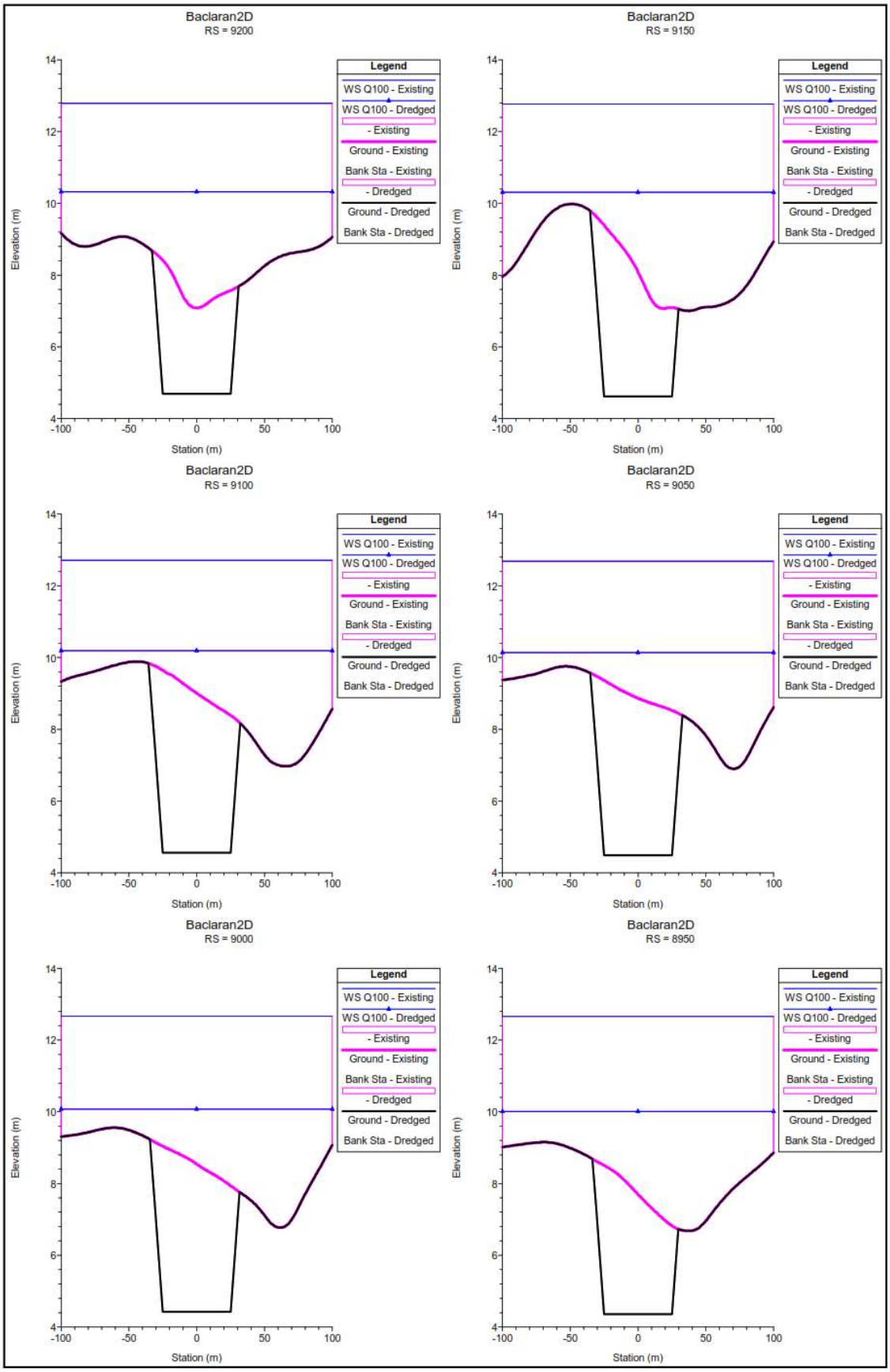
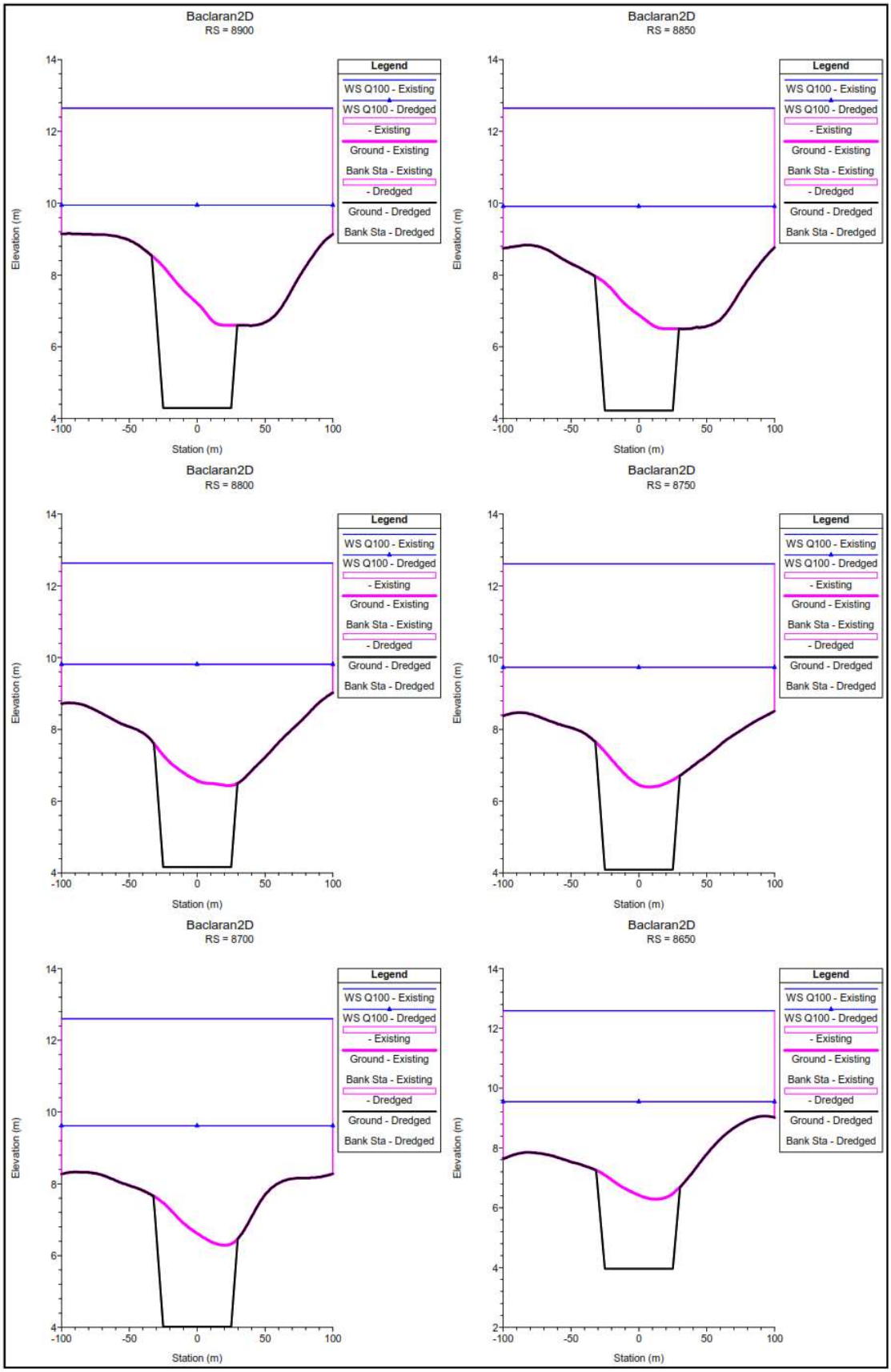
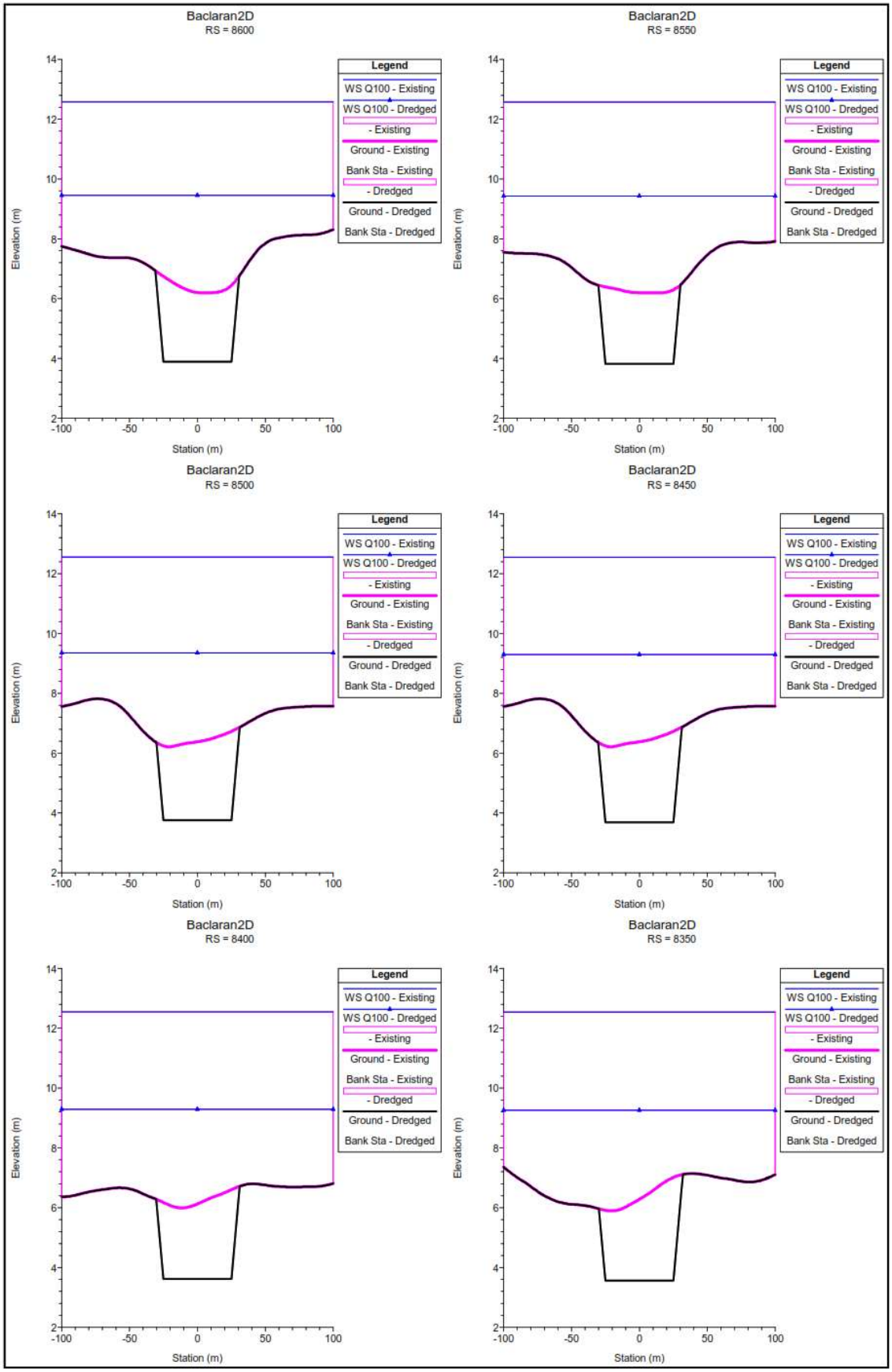
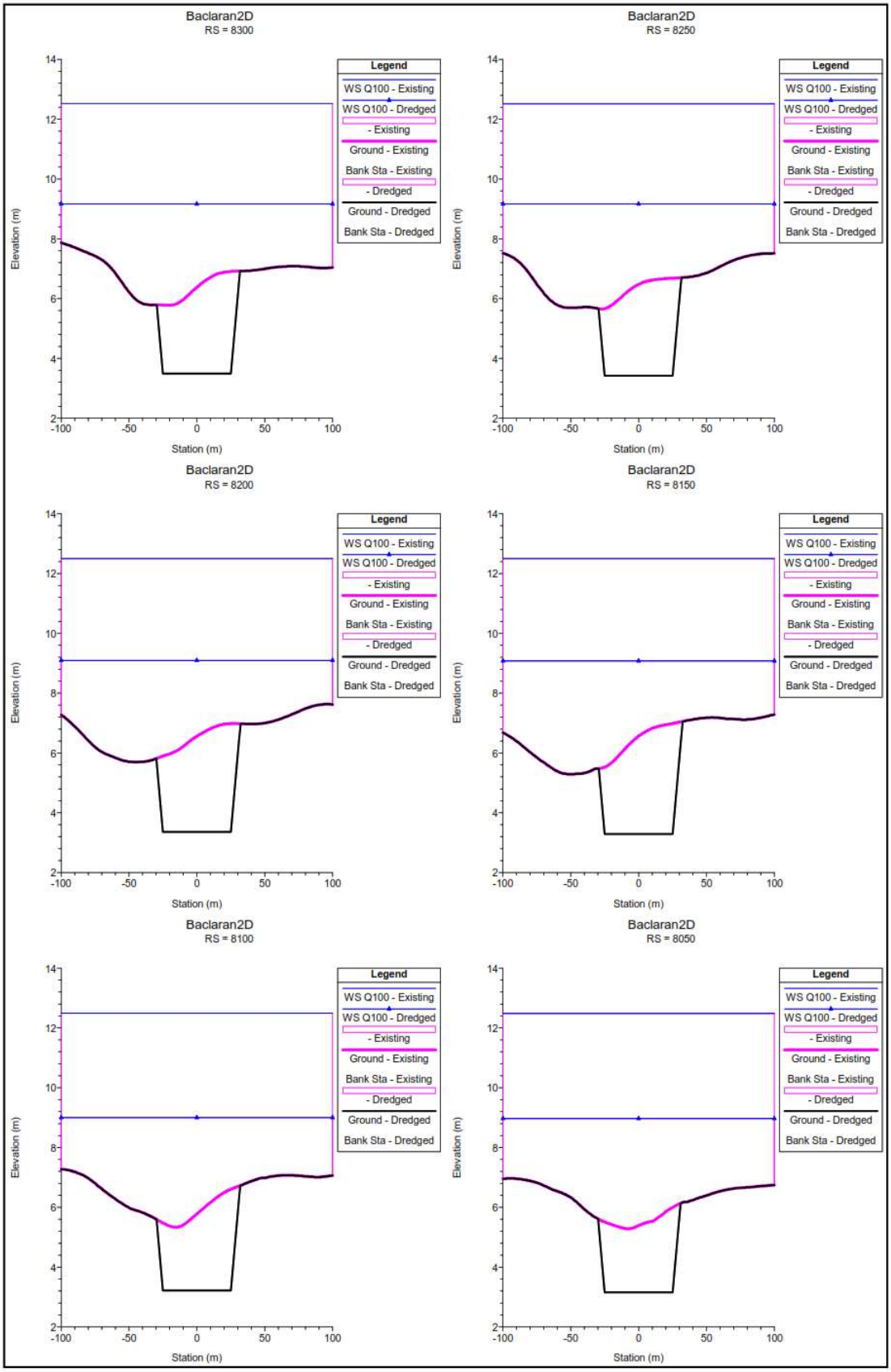
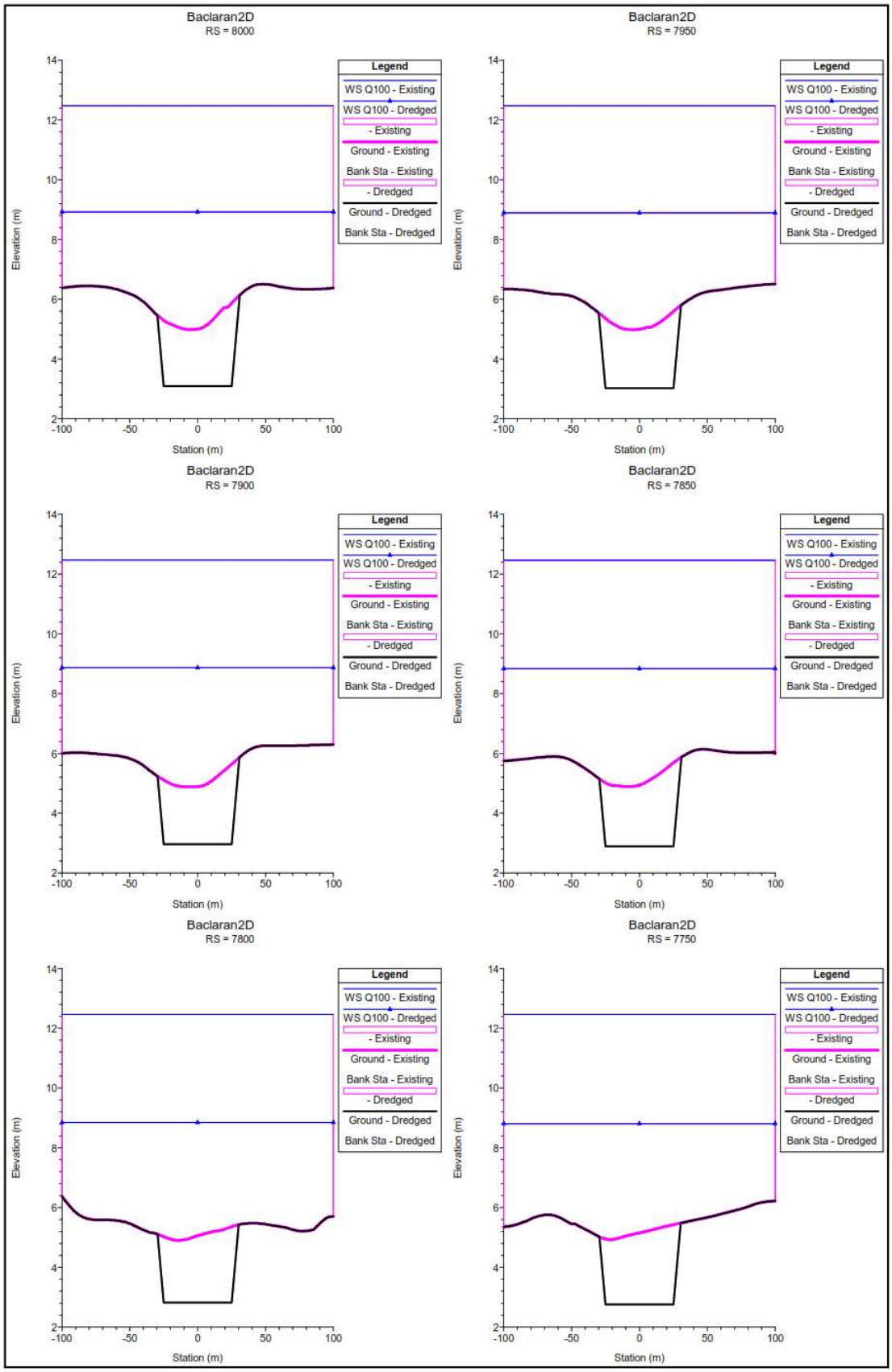
Baclaran2D
RS = 9450
Baclaran2D
RS = 9400
Baclaran2D
RS = 9350
Baclaran2D
RS = 9300
Baclaran2D
RS = 9250
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)
14
12
10
8
6
4
-100
-50
0
50
100

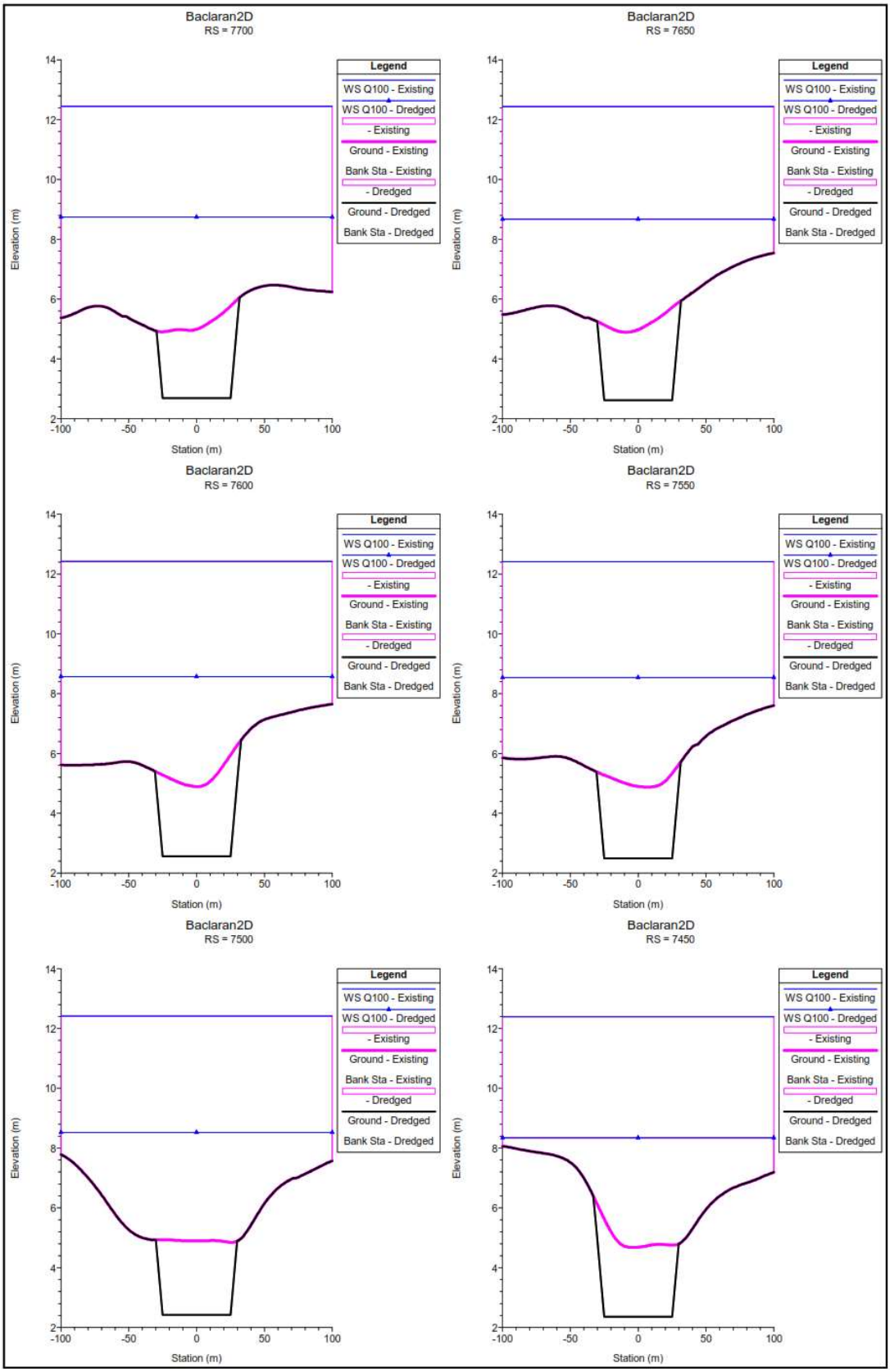

Baclaran2D
RS = 9200
Baclaran2D
RS = 9150
Baclaran2D
RS = 9100
Baclaran2D
RS = 9050
Baclaran2D
RS = 9000
Baclaran2D
RS = 8950
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)
14
12
10
8
6
4
-100
-50
0
50
100

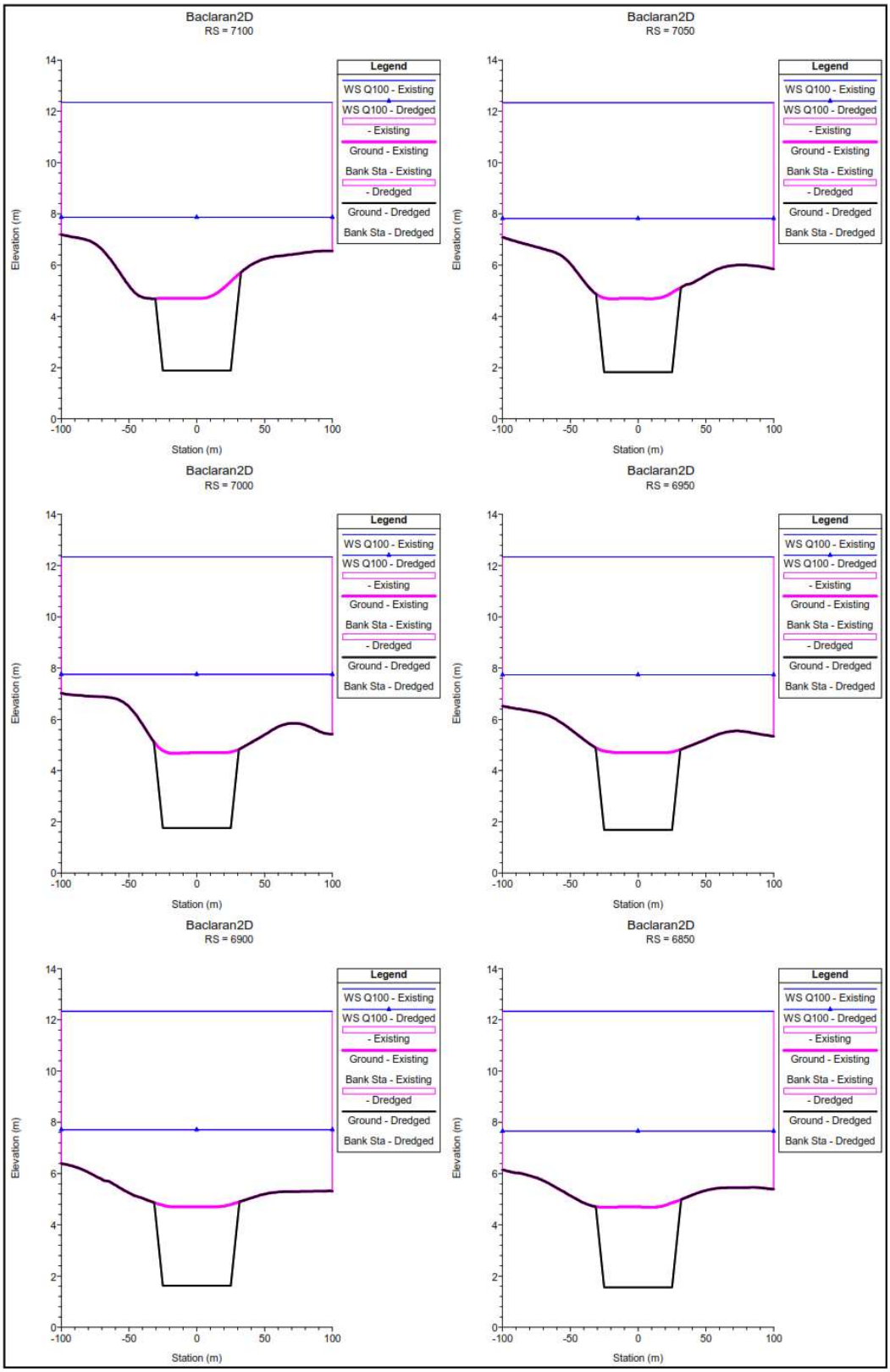

Baclaran2D
RS = 8900
Baclaran2D
RS = 8850
Baclaran2D
RS = 8800
Baclaran2D
RS = 8750
Baclaran2D
RS = 8700
Baclaran2D
RS = 8650
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

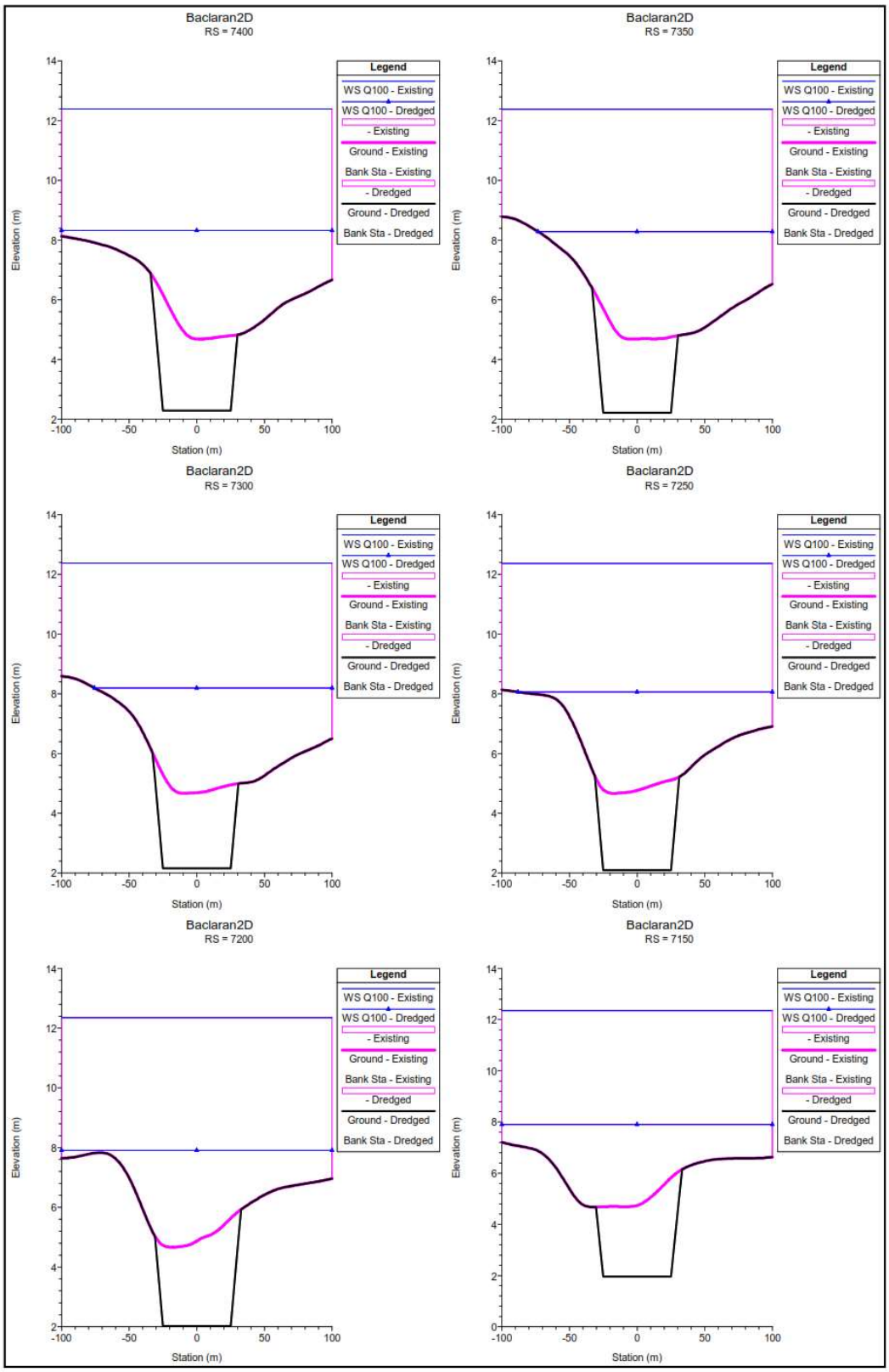

Baclaran2D
RS = 8600
Baclaran2D
RS = 8550
Baclaran2D
RS = 8500
Baclaran2D
RS = 8450
Baclaran2D
RS = 8400
Baclaran2D
RS = 8350
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

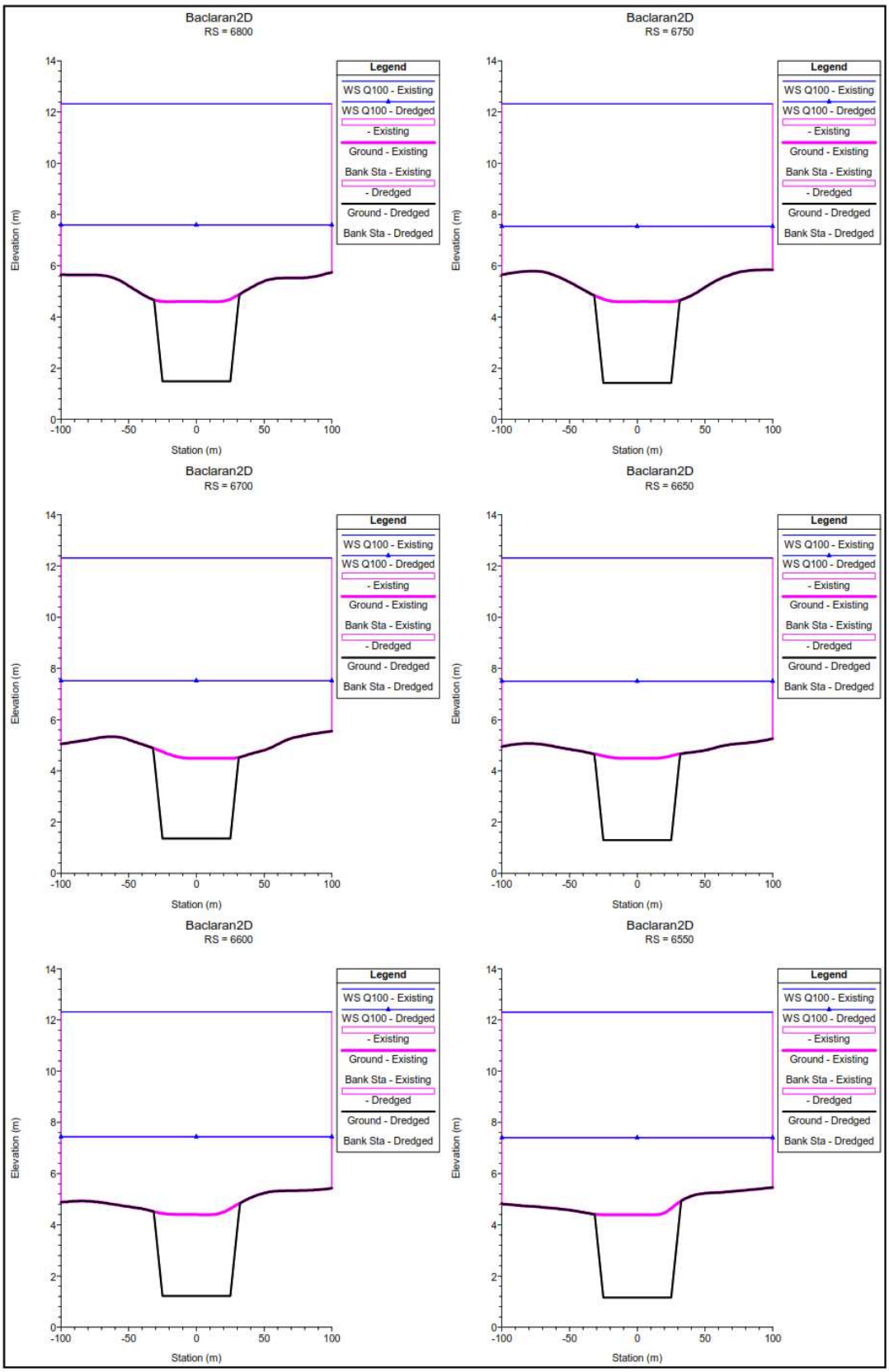

Baclaran2D
RS = 8300
Baclaran2D
RS = 8250
Baclaran2D
RS = 8200
Baclaran2D
RS = 8150
Baclaran2D
RS = 8100
Baclaran2D
RS = 8050
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

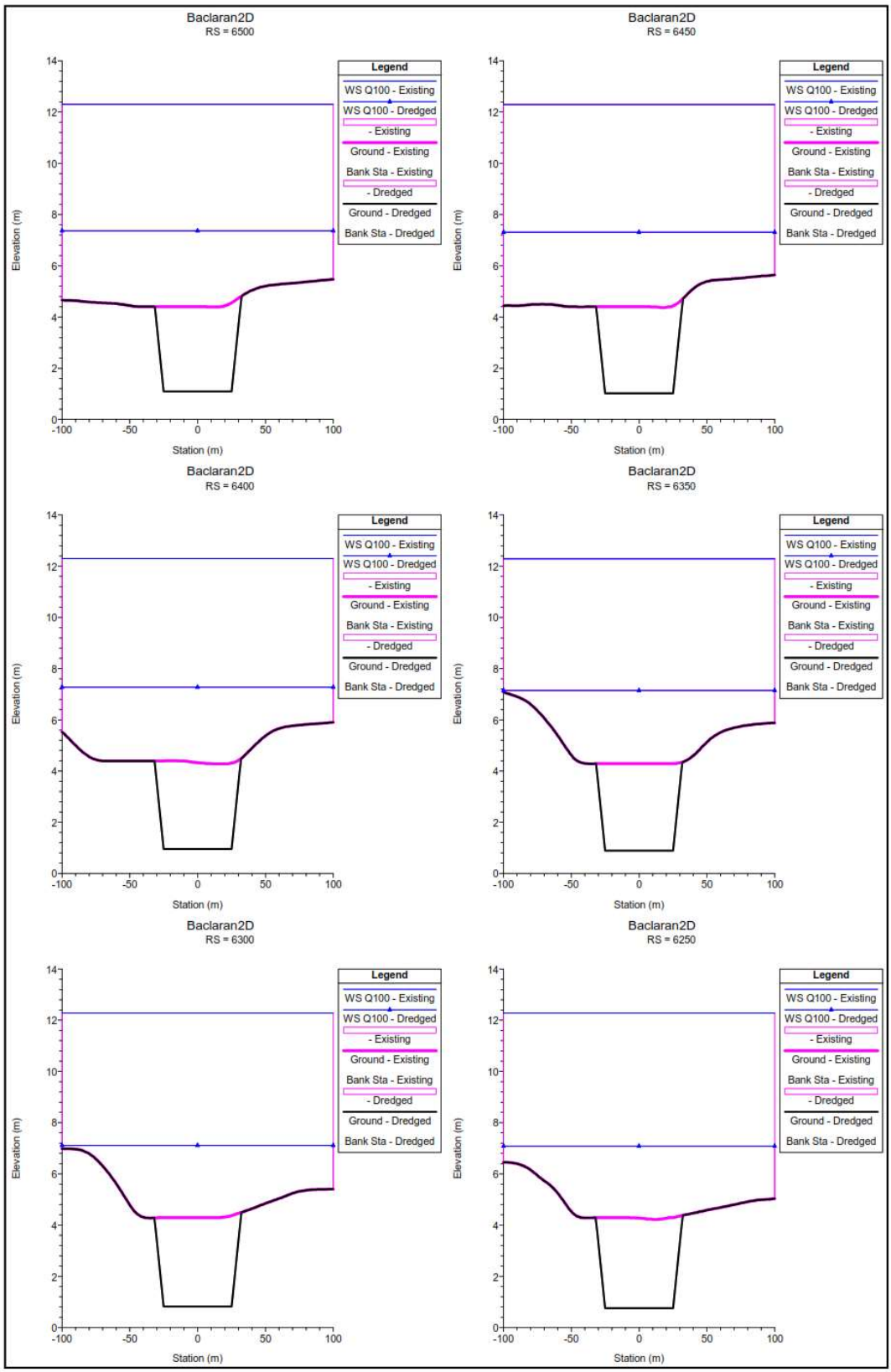

Baclaran2D
RS = 8000
Baclaran2D
RS = 7950
Baclaran2D
RS = 7900
Baclaran2D
RS = 7850
Baclaran2D
RS = 7800
Baclaran2D
RS = 7750
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

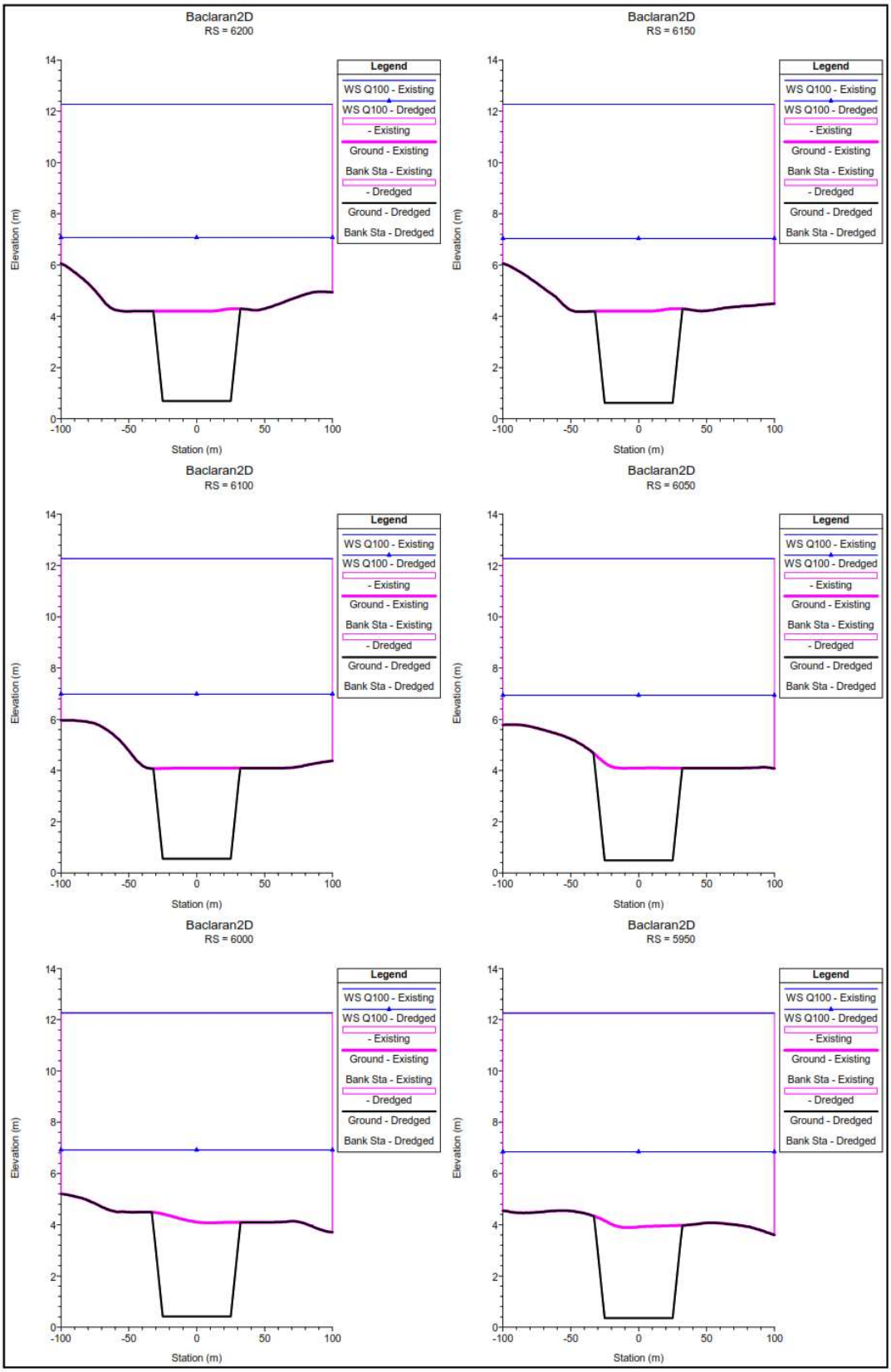

Baclaran2D
RS = 7700
Baclaran2D
RS = 7650
Baclaran2D
RS = 7600
Baclaran2D
RS = 7550
Baclaran2D
RS = 7500
Baclaran2D
RS = 7450
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

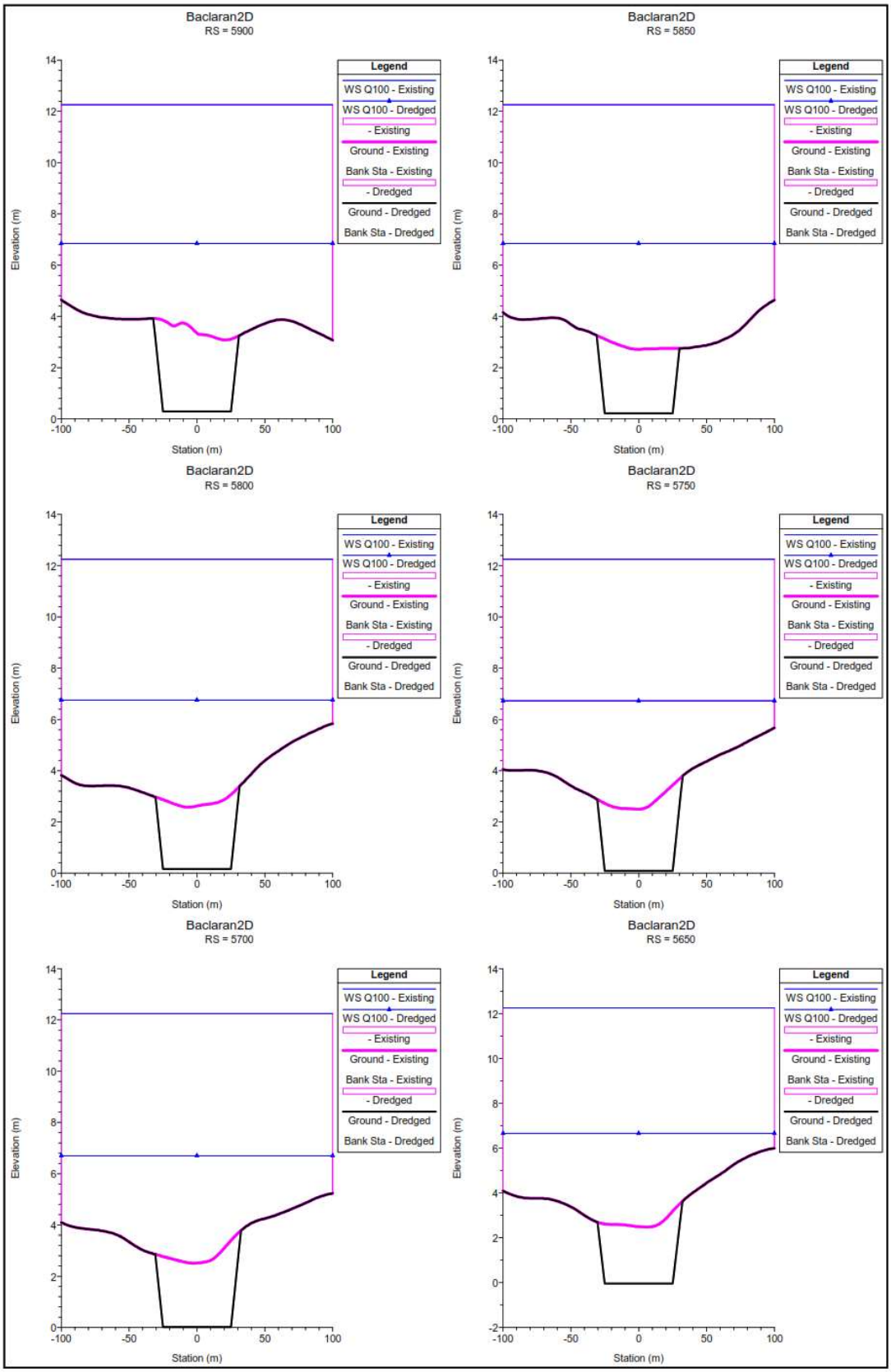

Baclaran2D
RS = 7100
Baclaran2D
RS = 7050
Baclaran2D
RS = 7000
Baclaran2D
RS = 6950
Baclaran2D
RS = 6900
Baclaran2D
RS = 6850
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

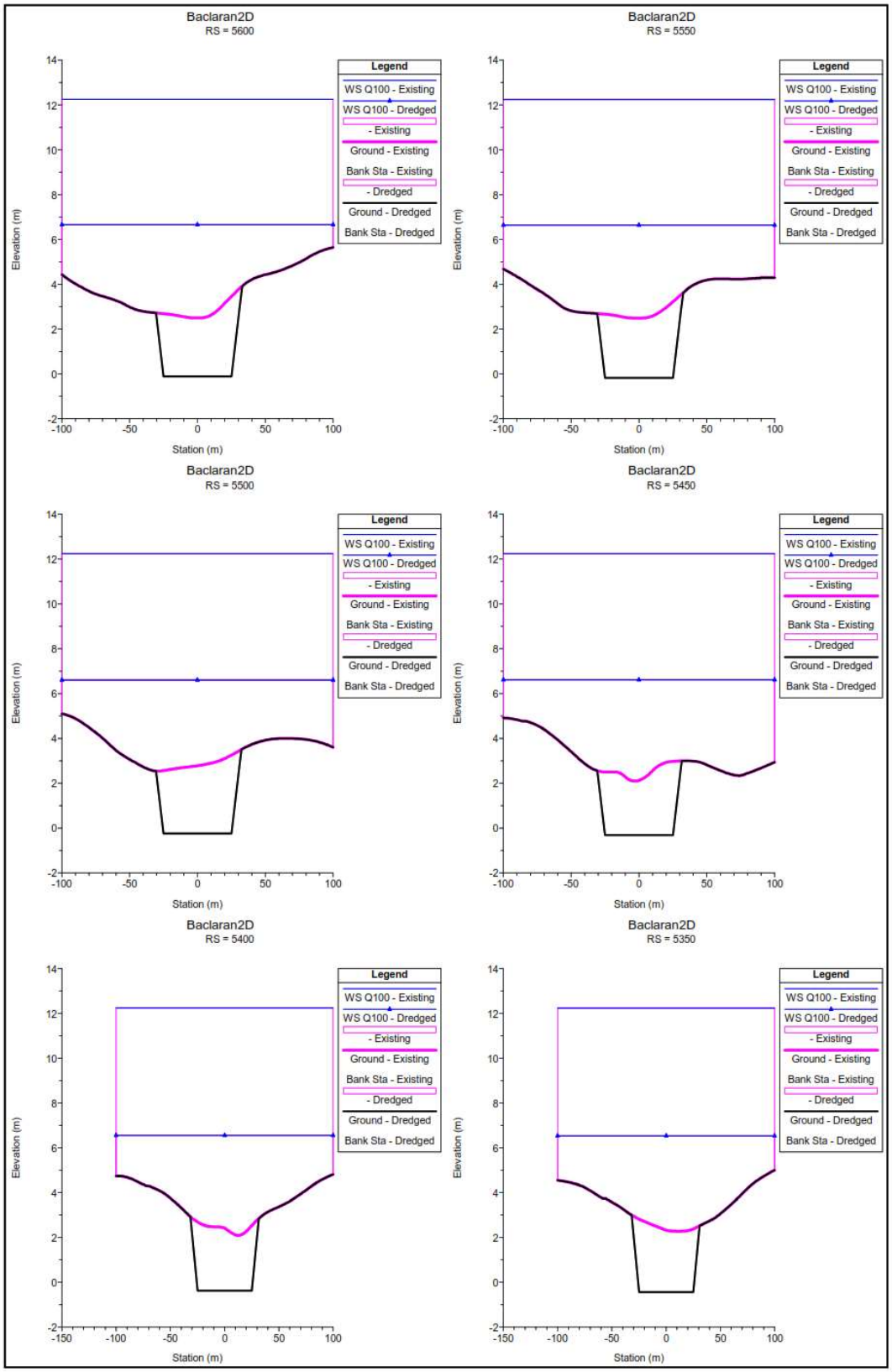

Baclaran2D
RS = 7400
Baclaran2D
RS = 7350
Baclaran2D
RS = 7300
Baclaran2D
RS = 7250
Baclaran2D
RS = 7200
Baclaran2D
RS = 7150
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

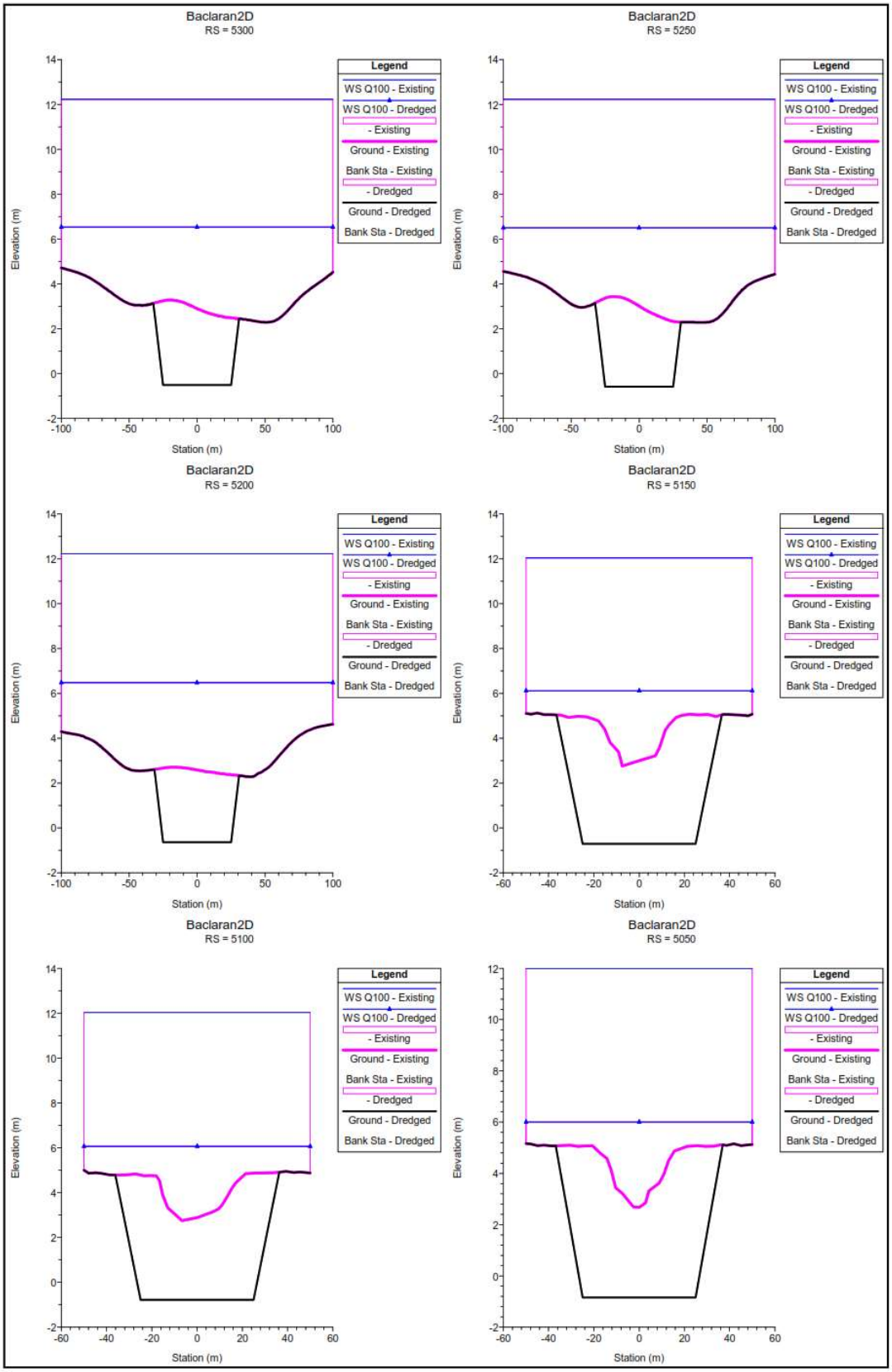

Baclaran2D
RS = 6800
Baclaran2D
RS = 6750
Baclaran2D
RS = 6700
Baclaran2D
RS = 6650
Baclaran2D
RS = 6600
Baclaran2D
RS = 6550
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

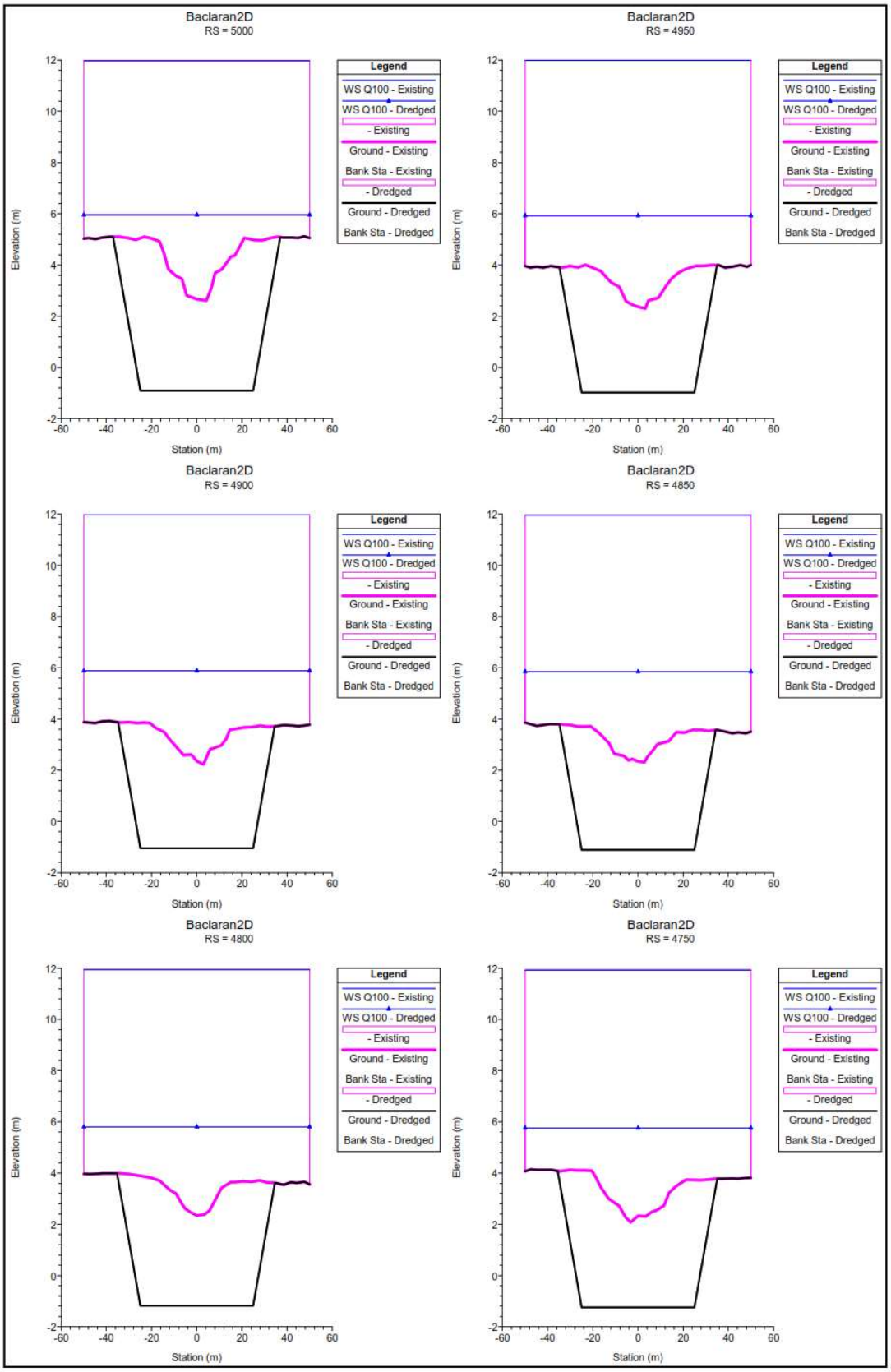

Baclaran2D
RS = 6500
Baclaran2D
RS = 6450
Baclaran2D
RS = 6400
Baclaran2D
RS = 6350
Baclaran2D
RS = 6300
Baclaran2D
RS = 6250
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

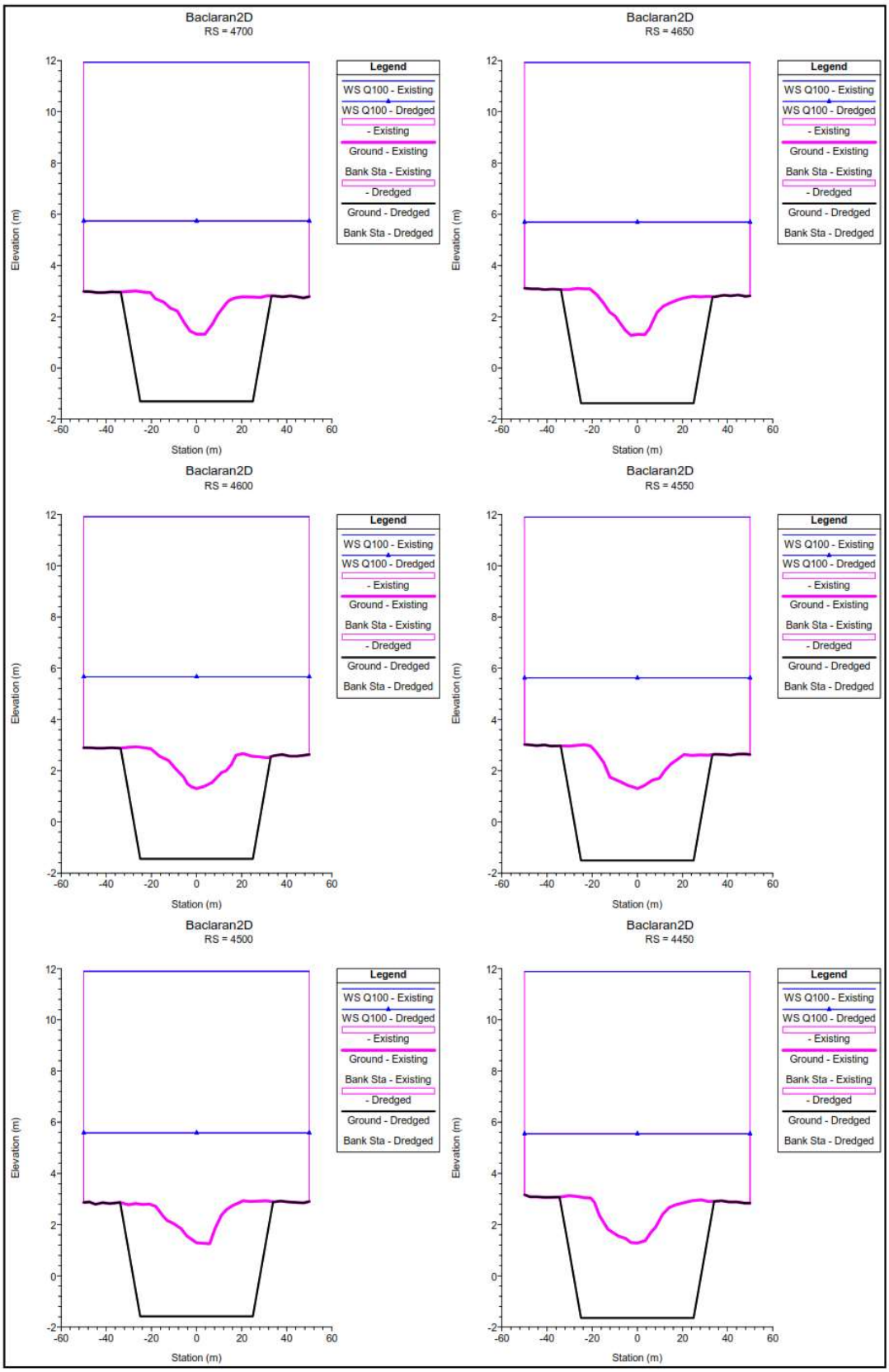

Baclaran2D
RS = 6200
Baclaran2D
RS = 6150
Baclaran2D
RS = 6100
Baclaran2D
RS = 6050
Baclaran2D
RS = 6000
Baclaran2D
RS = 5950
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

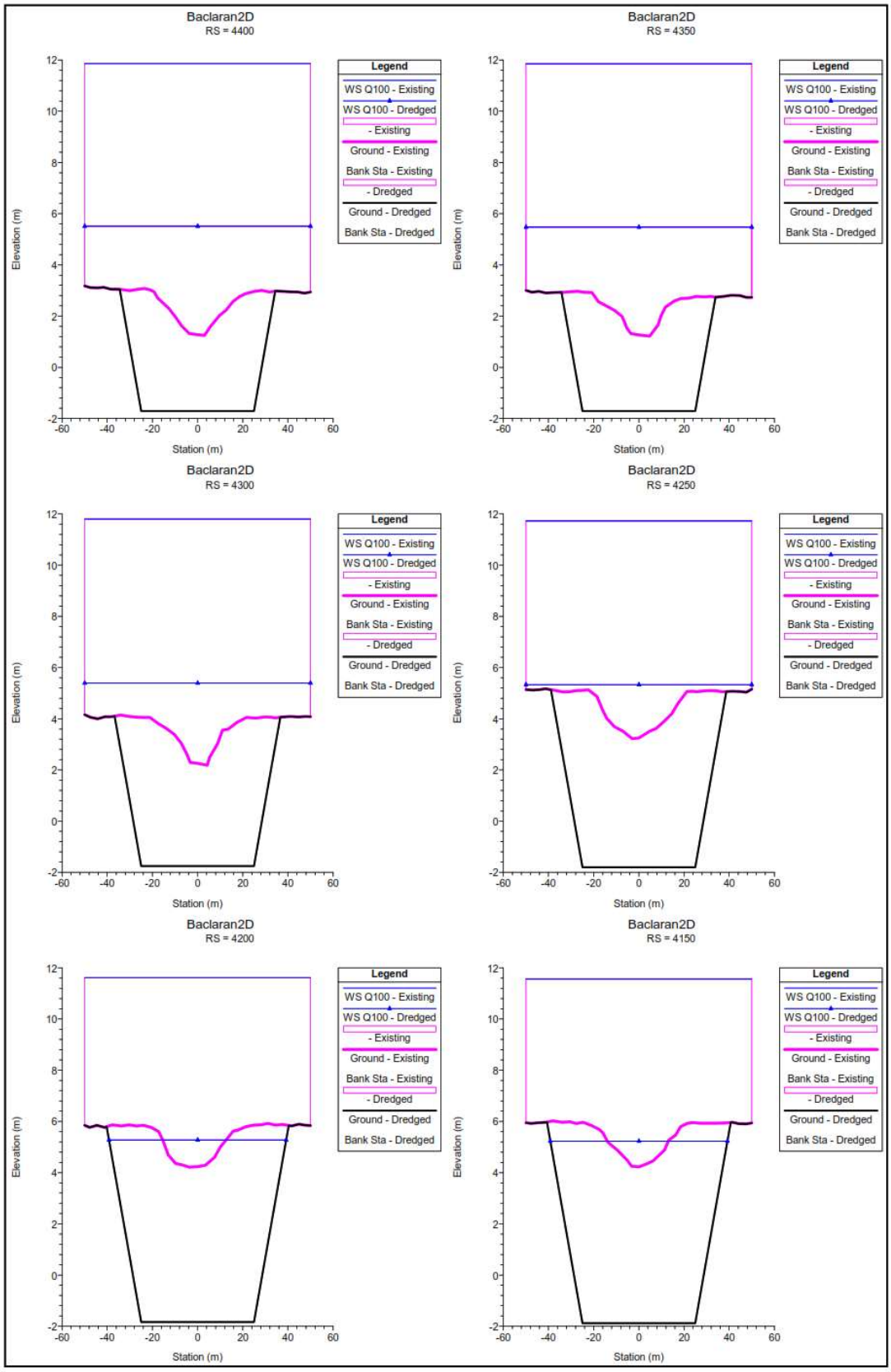

Baclaran2D
RS = 5900
Baclaran2D
RS = 5850
Baclaran2D
RS = 5800
Baclaran2D
RS = 5750
Baclaran2D
RS = 5700
Baclaran2D
RS = 5650
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

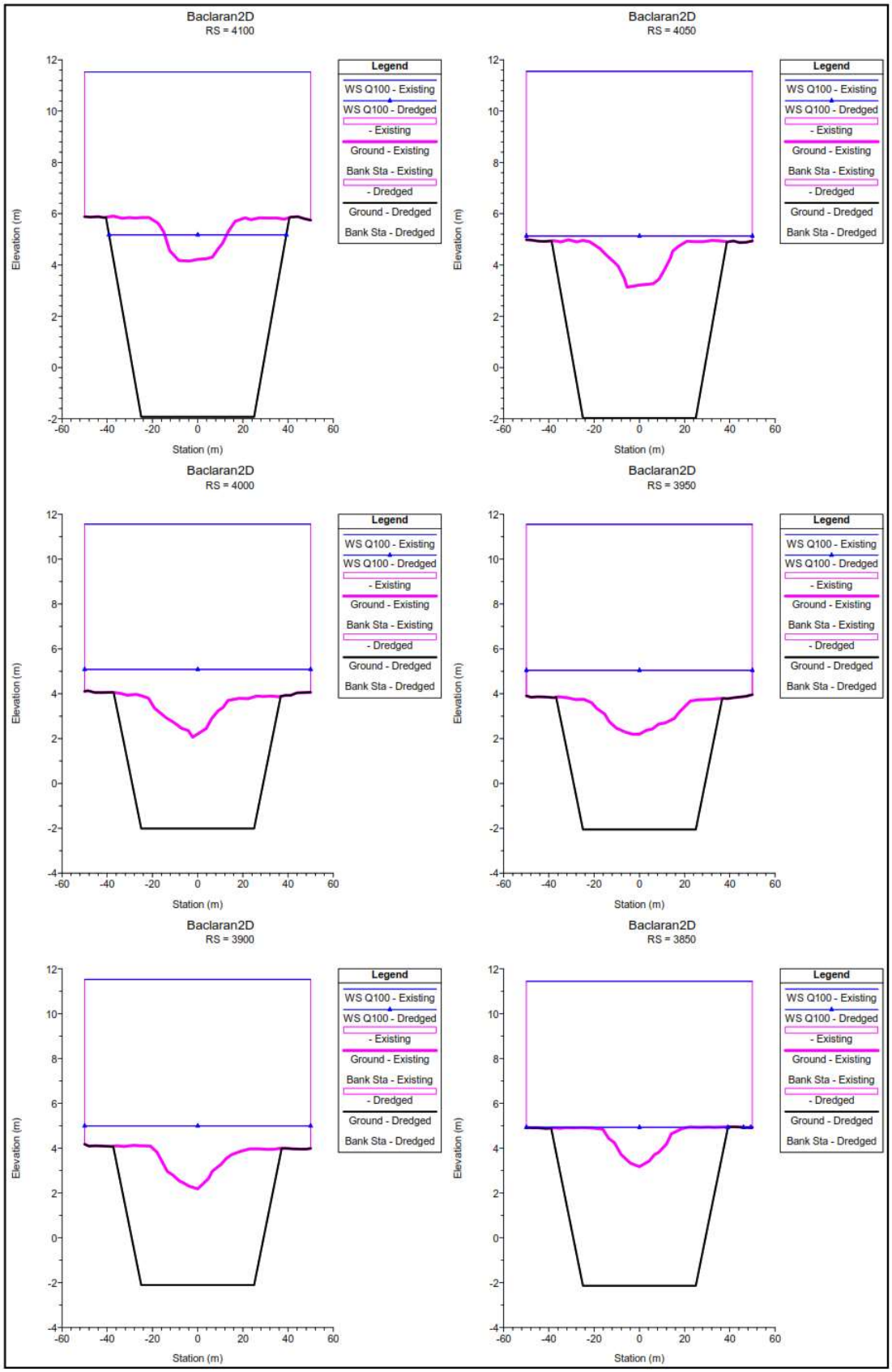

Baclaran2D
RS = 5600
Baclaran2D
RS = 5550
Baclaran2D
RS = 5500
Baclaran2D
RS = 5450
Baclaran2D
RS = 5400
Baclaran2D
RS = 5350
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

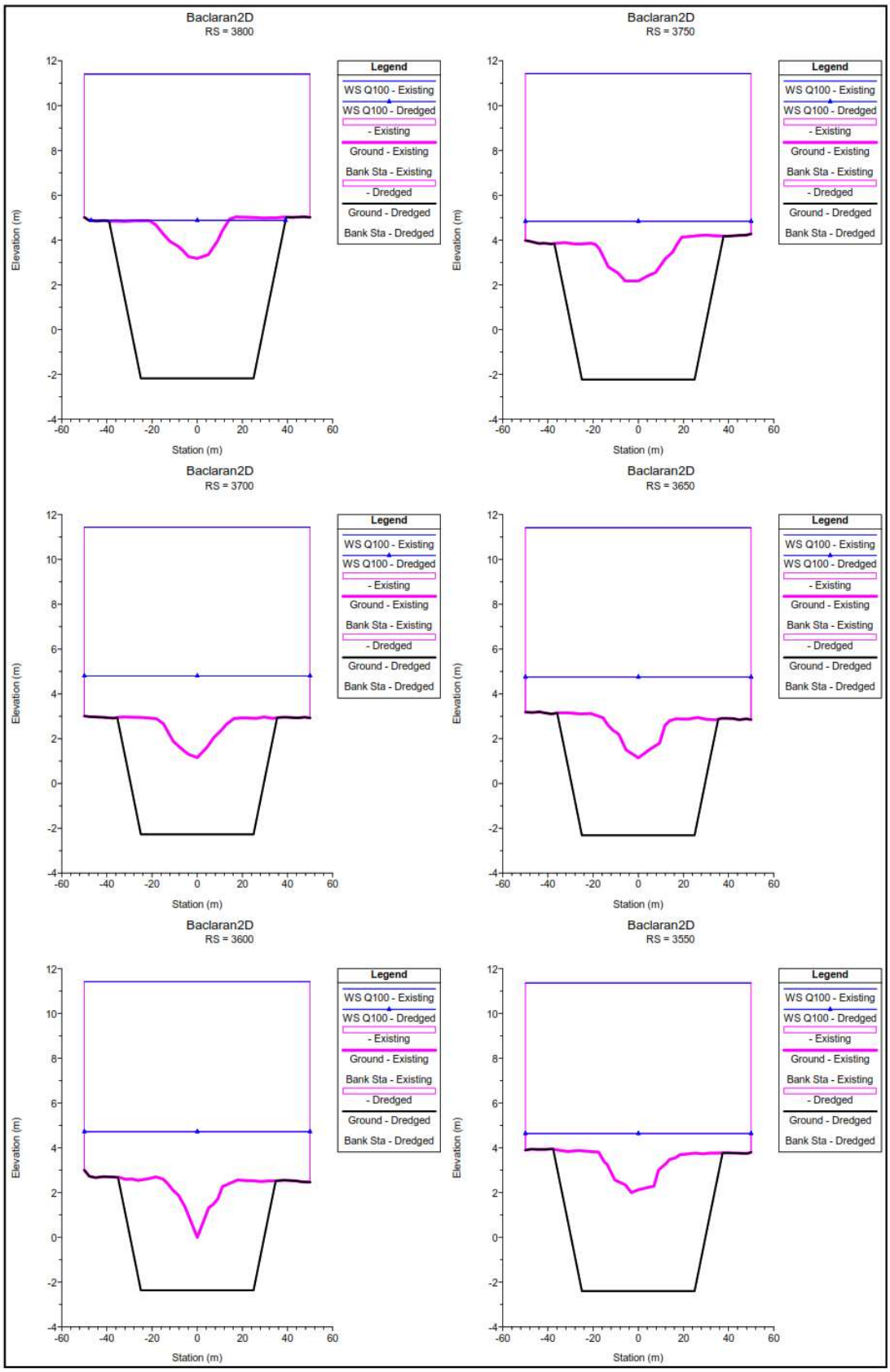

Baclaran2D
RS = 5300
Baclaran2D
RS = 5250
Baclaran2D
RS = 5200
Baclaran2D
RS = 5150
Baclaran2D
RS = 5100
Baclaran2D
RS = 5050
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

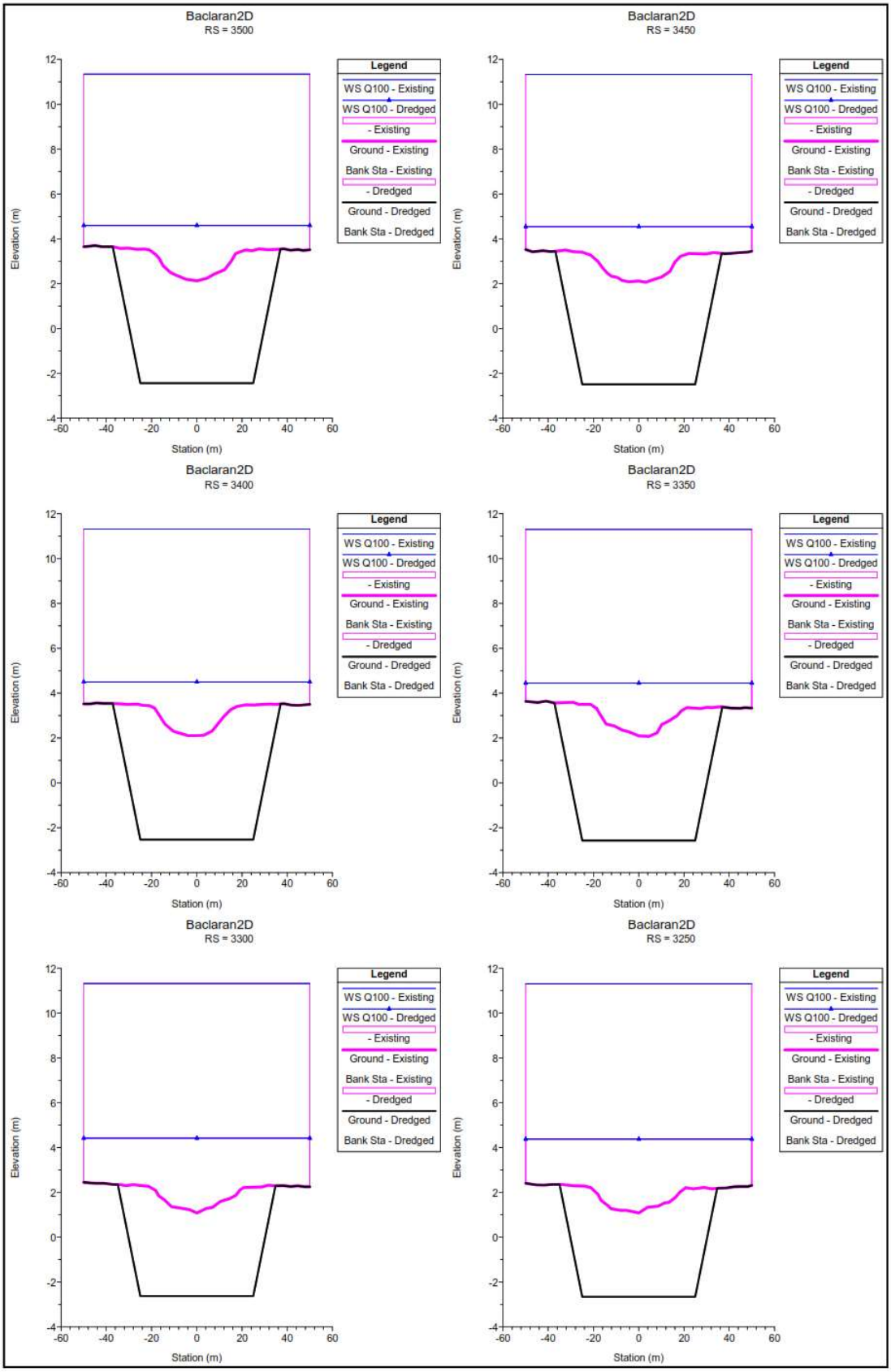

Baclaran2D
RS = 5000
Baclaran2D
RS = 4950
Baclaran2D
RS = 4900
Baclaran2D
RS = 4850
Baclaran2D
RS = 4800
Baclaran2D
RS = 4750
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

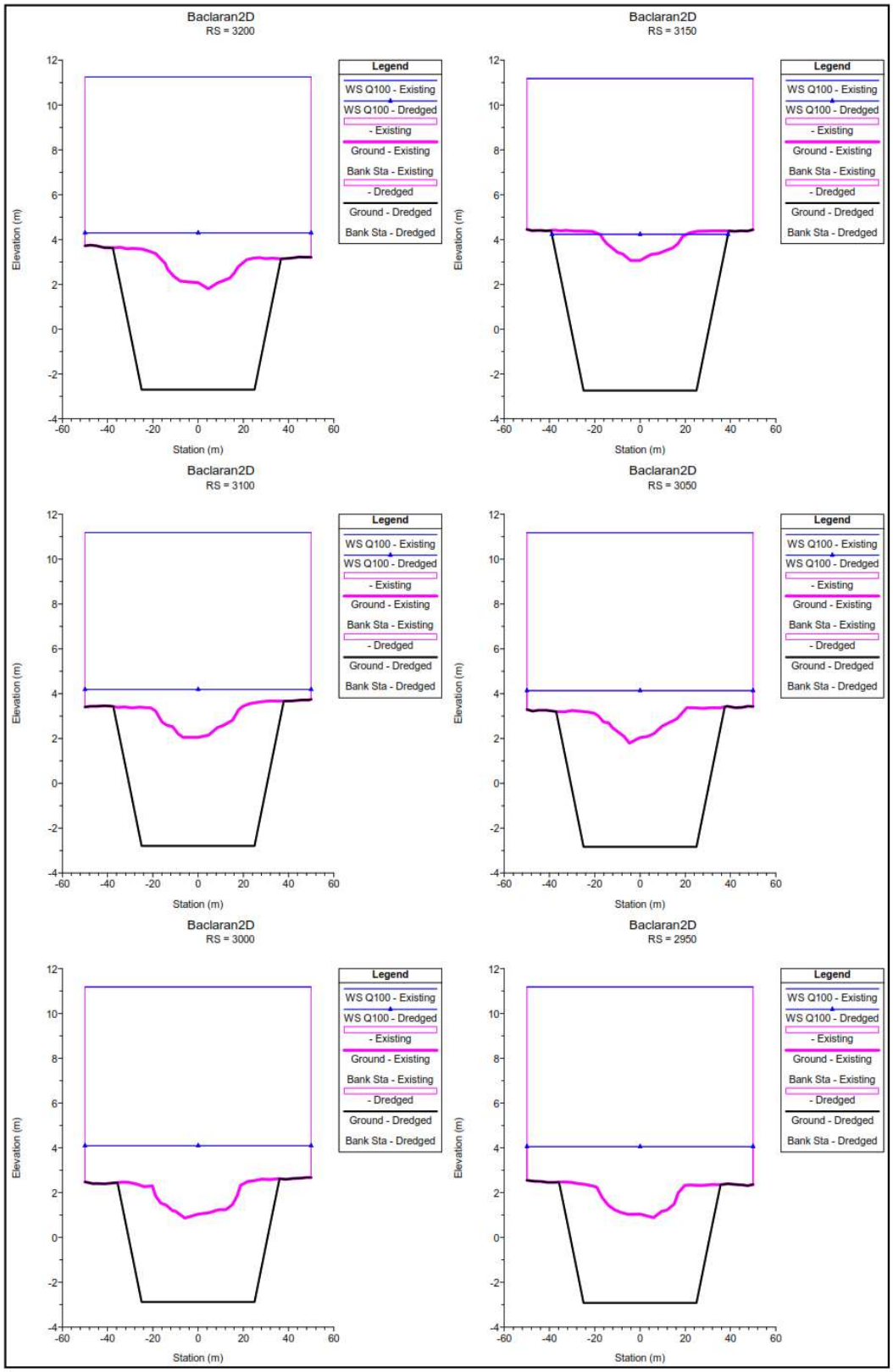

Baclaran2D
RS = 4700
Baclaran2D
RS = 4650
Baclaran2D
RS = 4600
Baclaran2D
RS = 4550
Baclaran2D
RS = 4500
Baclaran2D
RS = 4450
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

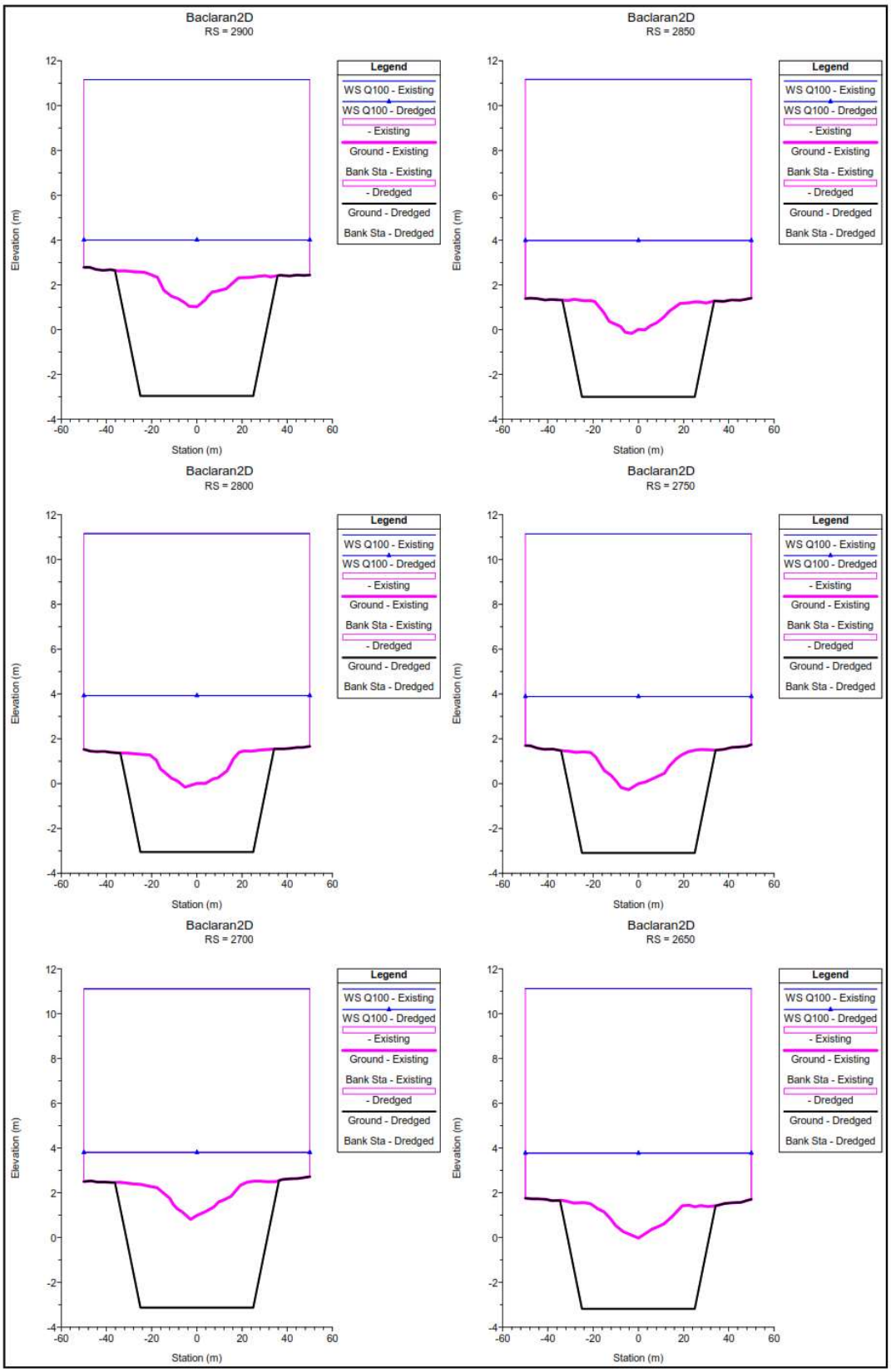

Baclaran2D
RS = 4400
Baclaran2D
RS = 4350
Baclaran2D
RS = 4300
Baclaran2D
RS = 4250
Baclaran2D
RS = 4200
Baclaran2D
RS = 4150
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

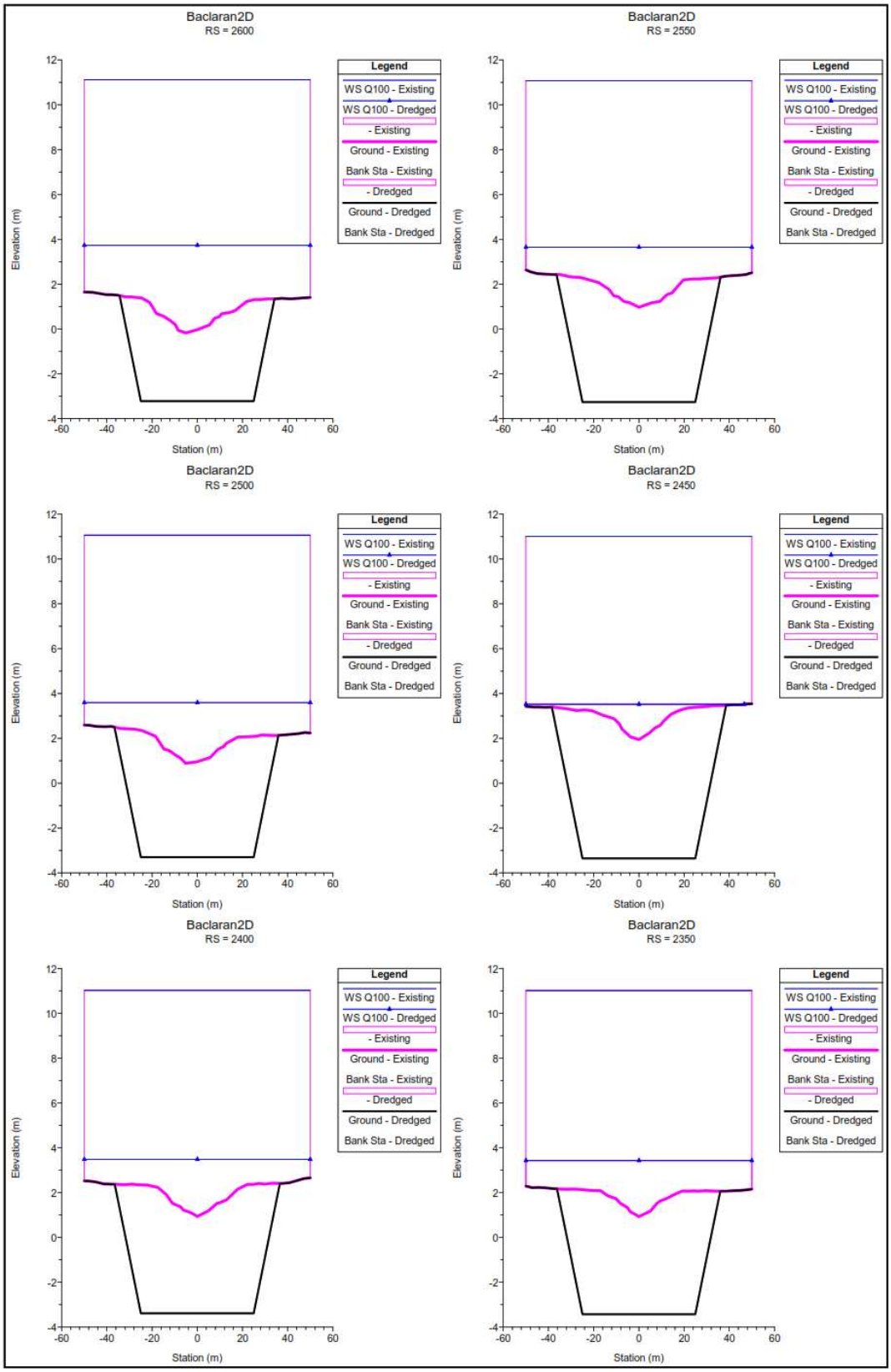

Baclaran2D
RS = 4100
Baclaran2D
RS = 4050
Baclaran2D
RS = 4000
Baclaran2D
RS = 3950
Baclaran2D
RS = 3900
Baclaran2D
RS = 3850
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

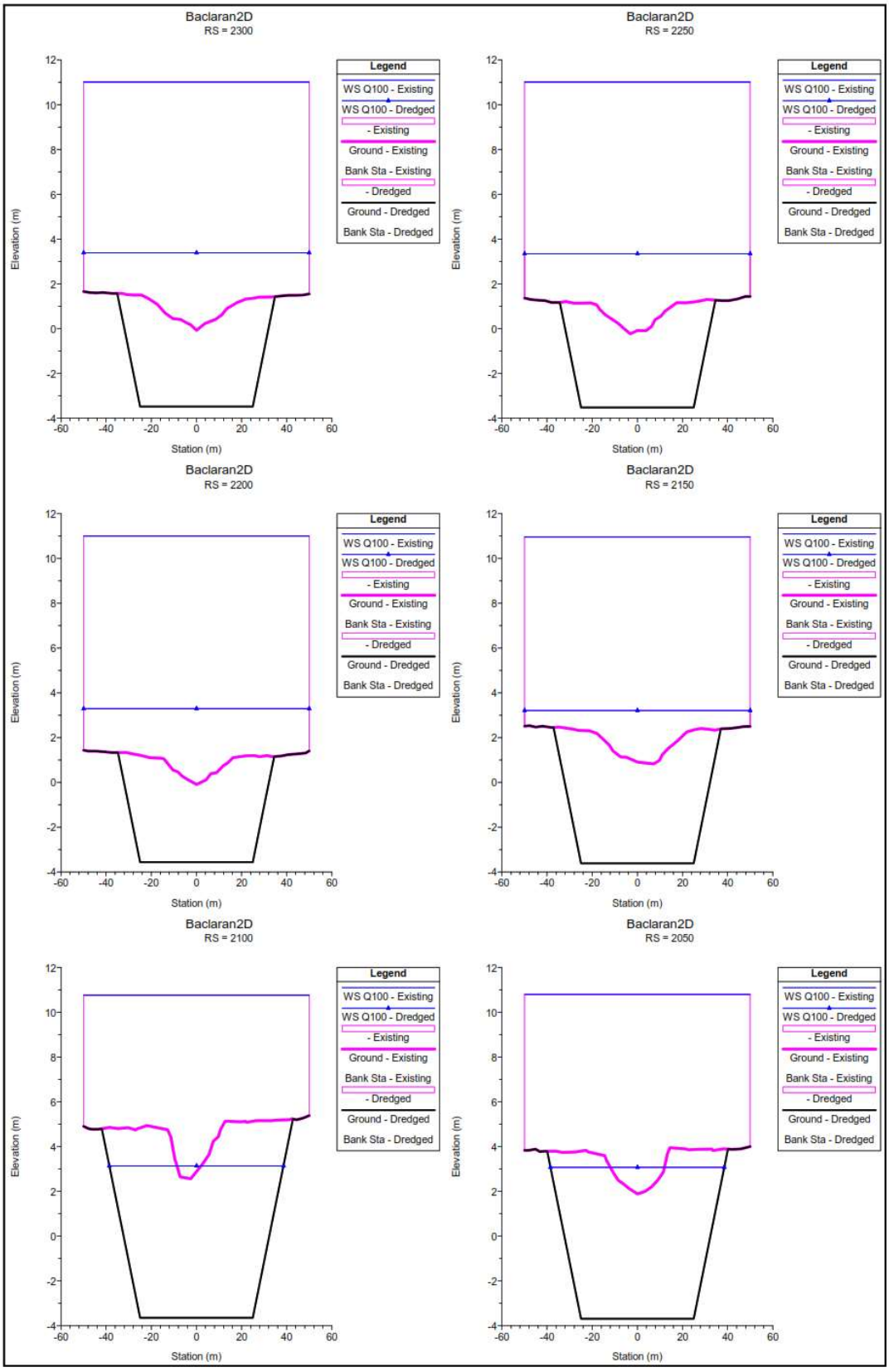

Baclaran2D
RS = 3800
Baclaran2D
RS = 3750
Baclaran2D
RS = 3700
Baclaran2D
RS = 3650
Baclaran2D
RS = 3600
Baclaran2D
RS = 3550
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

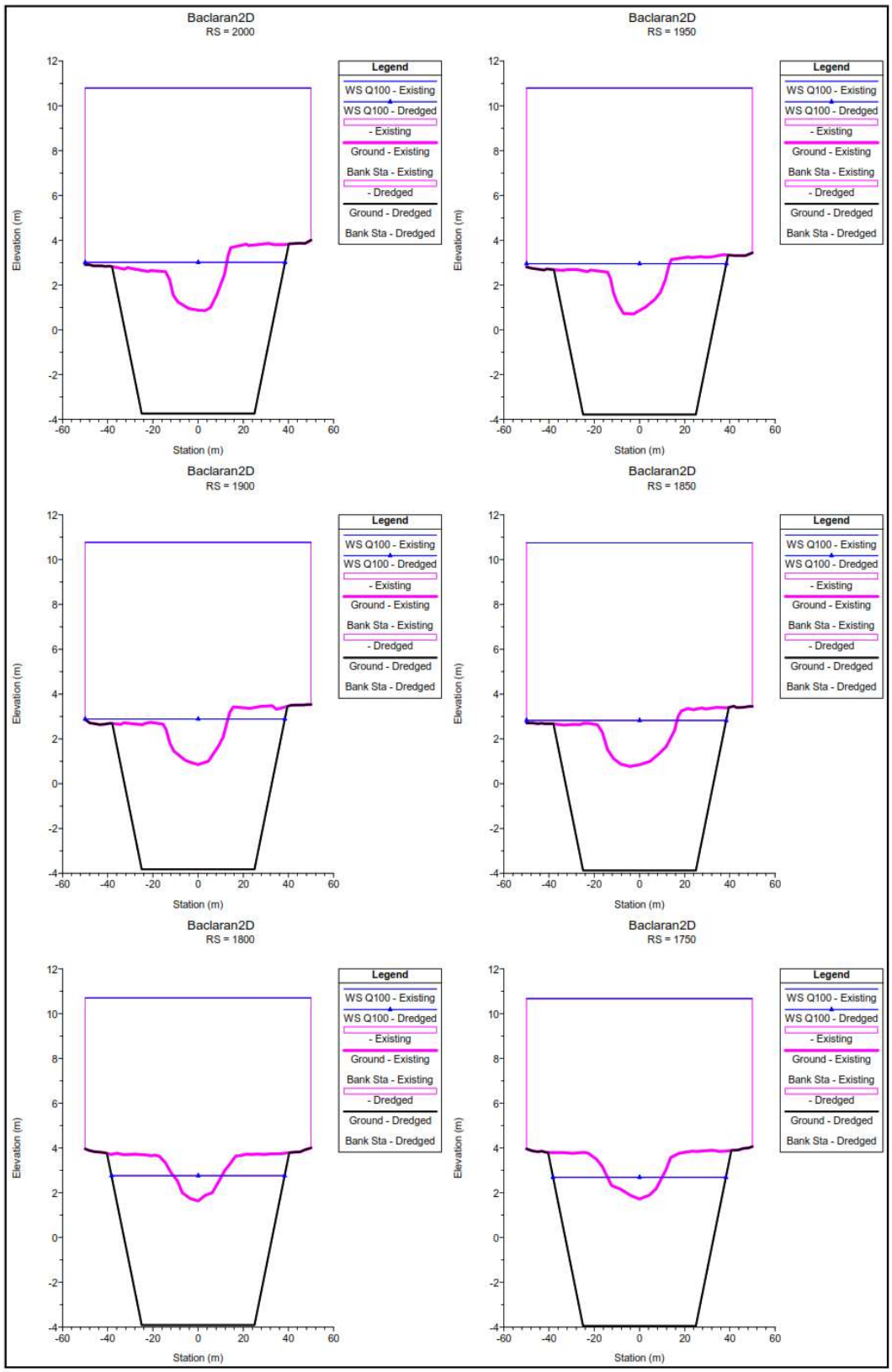

Baclaran2D
RS = 3500
Baclaran2D
RS = 3450
Baclaran2D
RS = 3400
Baclaran2D
RS = 3350
Baclaran2D
RS = 3300
Baclaran2D
RS = 3250
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

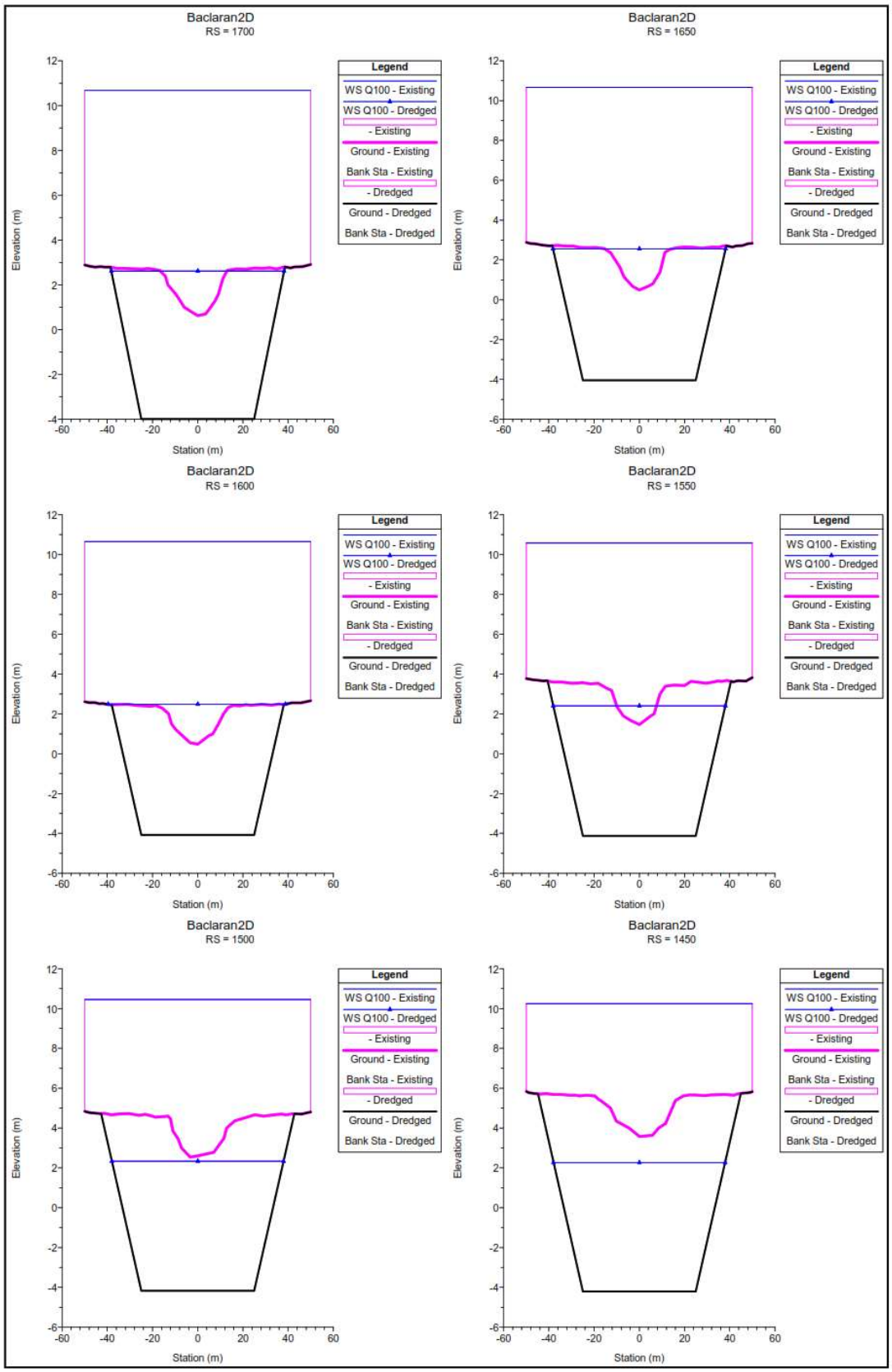

Baclaran2D
RS = 3200
Baclaran2D
RS = 3150
Baclaran2D
RS = 3100
Baclaran2D
RS = 3050
Baclaran2D
RS = 3000
Baclaran2D
RS = 2950
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

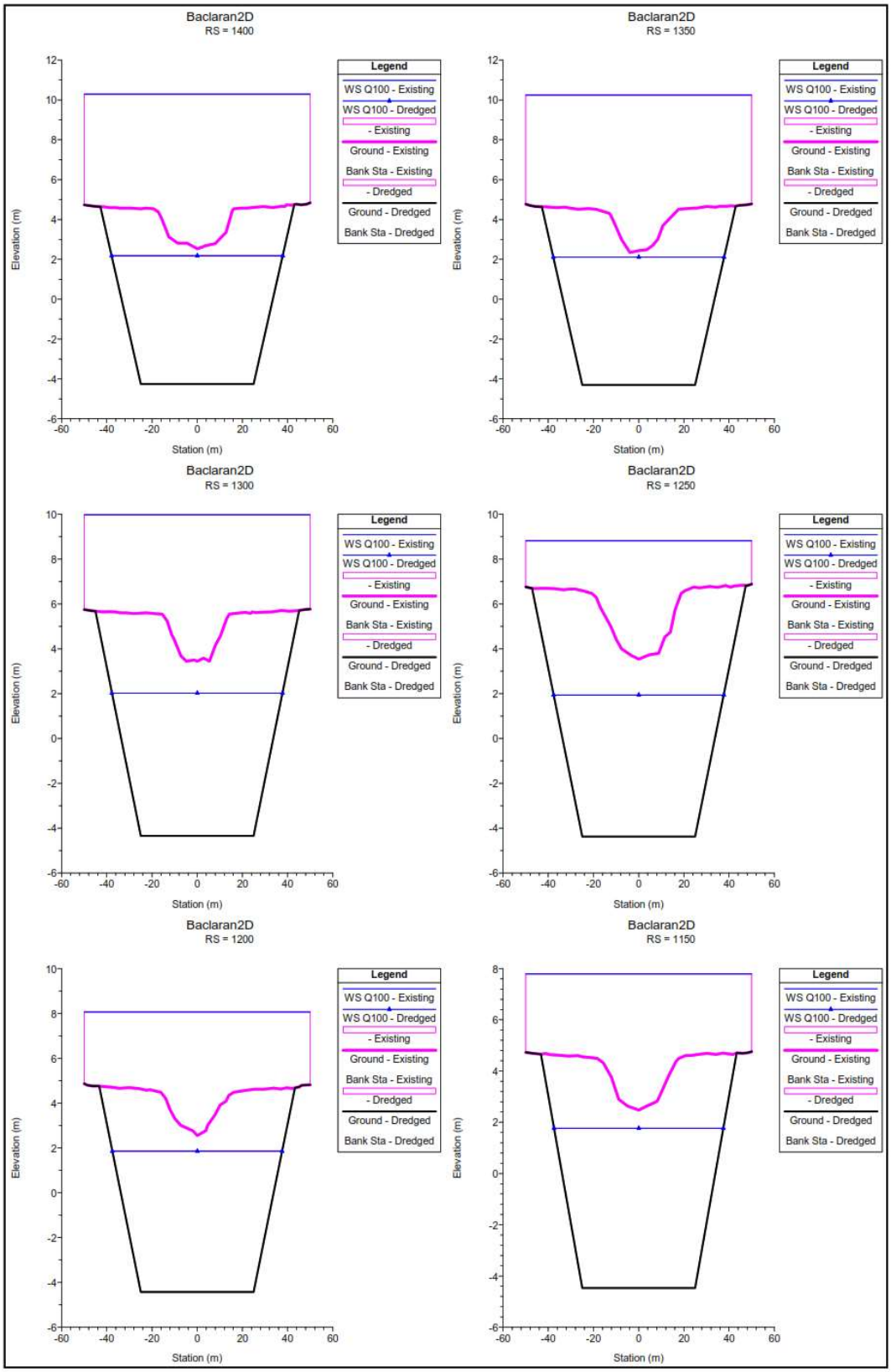

Baclaran2D
RS = 2900
Baclaran2D
RS = 2850
Baclaran2D
RS = 2800
Baclaran2D
RS = 2750
Baclaran2D
RS = 2700
Baclaran2D
RS = 2650
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

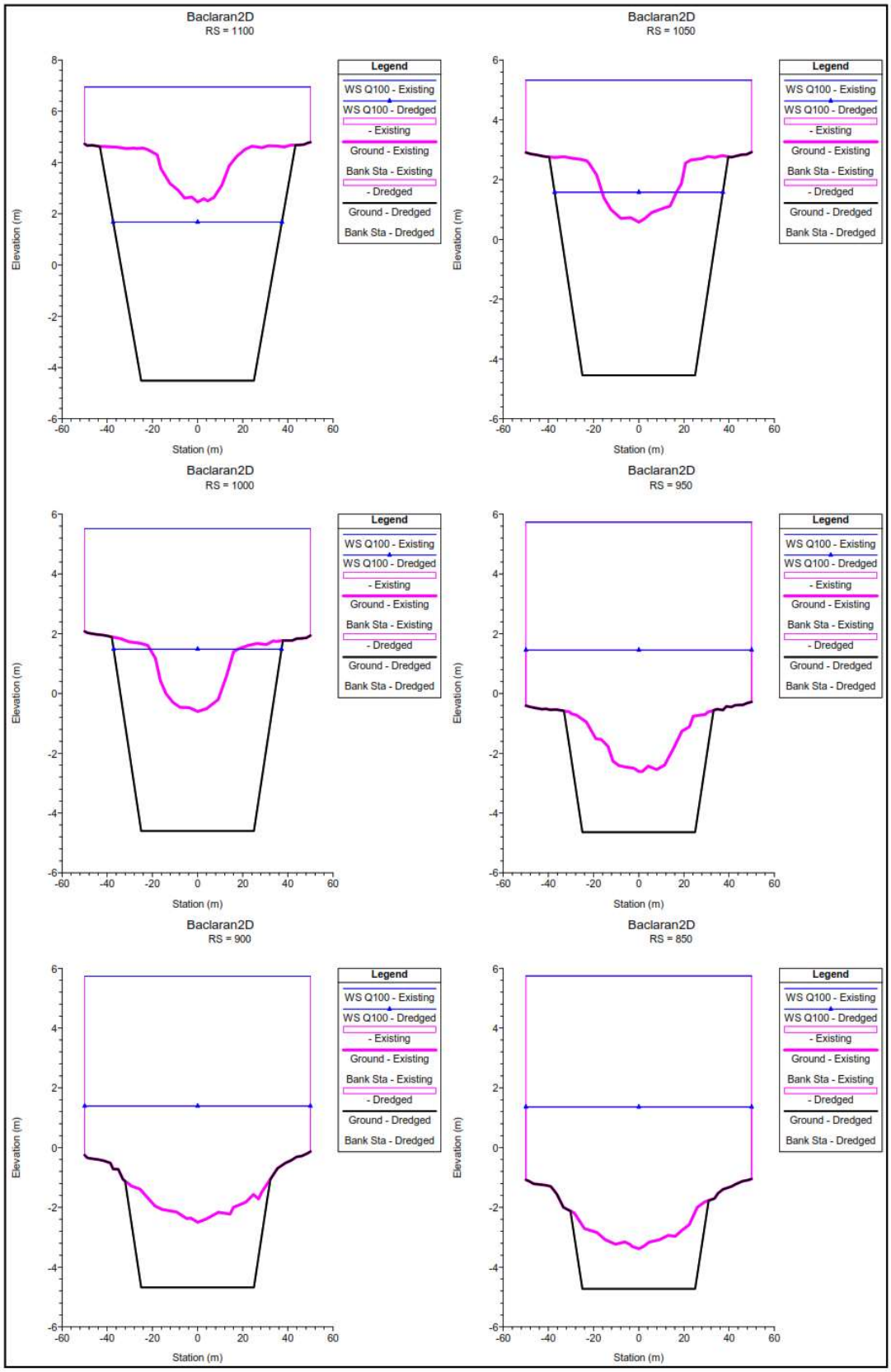

Baclaran2D
RS = 2600
Baclaran2D
RS = 2550
Baclaran2D
RS = 2500
Baclaran2D
RS = 2450
Baclaran2D
RS = 2400
Baclaran2D
RS = 2350
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

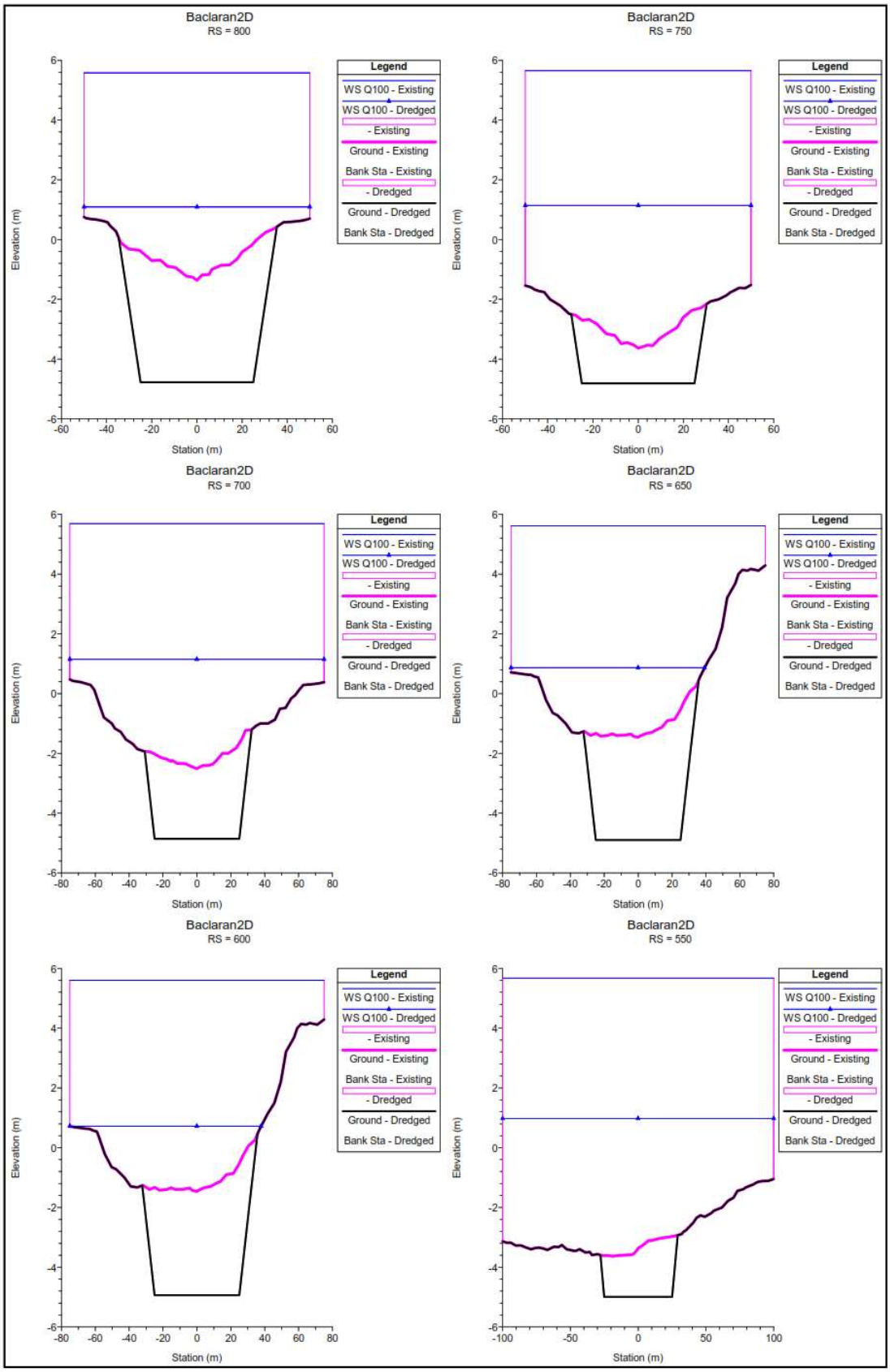

Baclaran2D
RS = 2300
Baclaran2D
RS = 2250
Baclaran2D
RS = 2200
Baclaran2D
RS = 2150
Baclaran2D
RS = 2100
Baclaran2D
RS = 2050
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

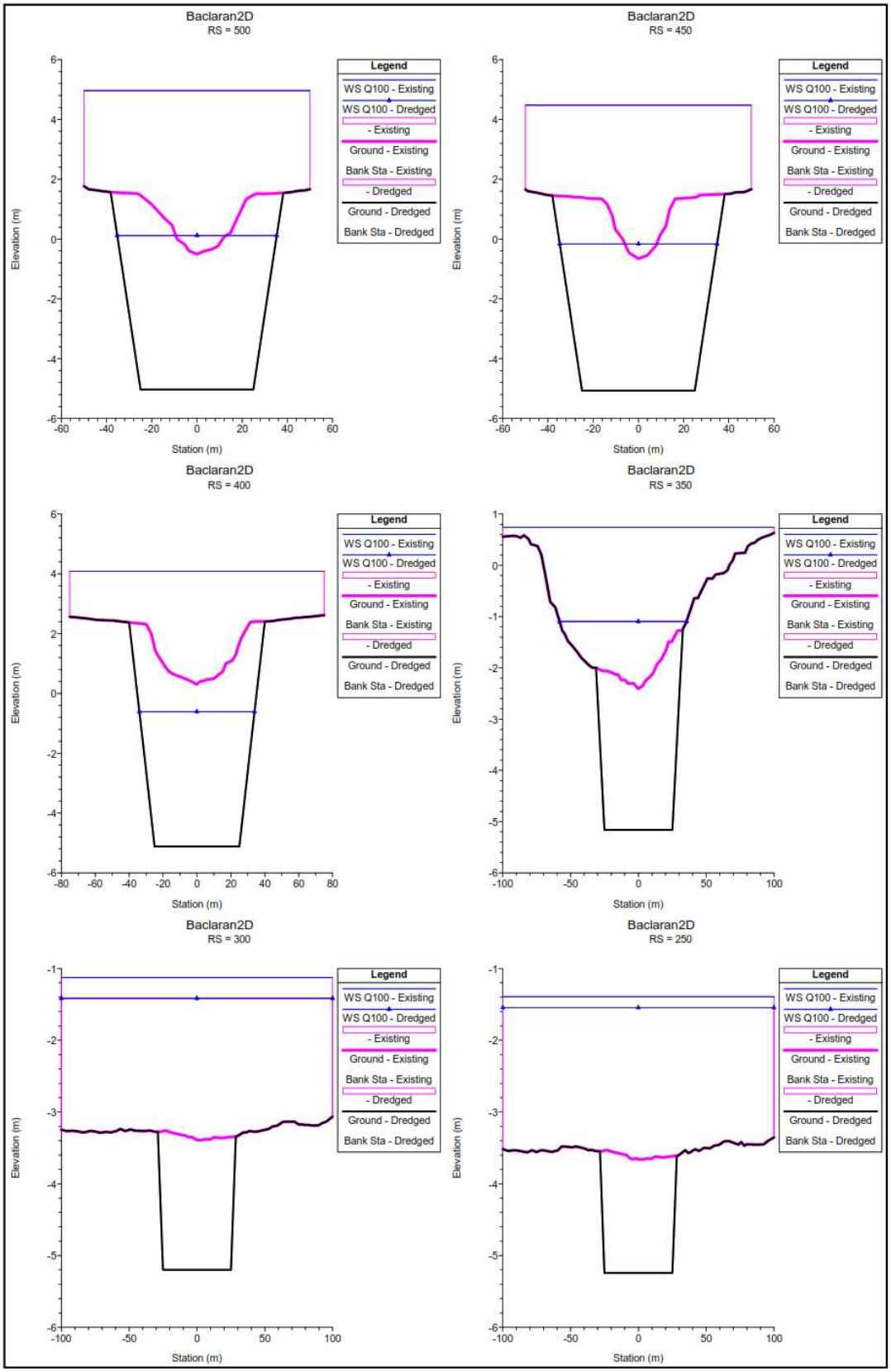

Baclaran2D
RS = 2000
Baclaran2D
RS = 1950
Baclaran2D
RS = 1900
Baclaran2D
RS = 1850
Baclaran2D
RS = 1800
Baclaran2D
RS = 1750
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

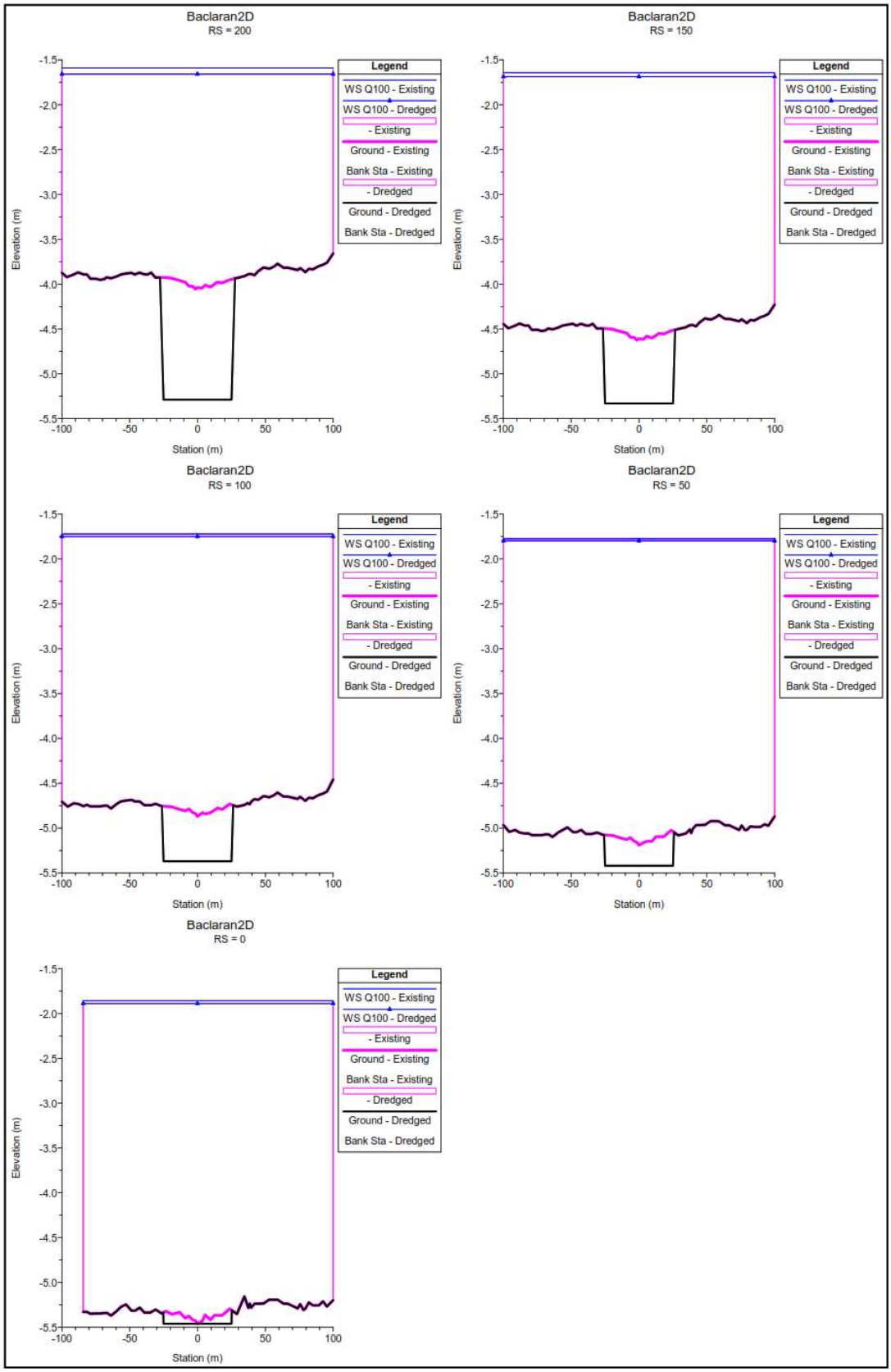

Baclaran2D
RS = 1700
Baclaran2D
RS = 1650
Baclaran2D
RS = 1600
Baclaran2D
RS = 1550
Baclaran2D
RS = 1500
Baclaran2D
RS = 1450
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)


Baclaran2D
RS = 1400
Baclaran2D
RS = 1350
Baclaran2D
RS = 1300
Baclaran2D
RS = 1250
Baclaran2D
RS = 1200
Baclaran2D
RS = 1150
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)


Baclaran2D
RS = 1100
Baclaran2D
RS = 1050
Baclaran2D
RS = 1000
Baclaran2D
RS = 950
Baclaran2D
RS = 900
Baclaran2D
RS = 850
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)


Baclaran2D
RS = 800
Baclaran2D
RS = 750
Baclaran2D
RS = 700
Baclaran2D
RS = 650
Baclaran2D
RS = 600
Baclaran2D
RS = 550
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)


Baclaran2D
RS = 500
Baclaran2D
RS = 450
Baclaran2D
RS = 400
Baclaran2D
RS = 350
Baclaran2D
RS = 300
Baclaran2D
RS = 250
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)


Baclaran2D
RS = 200
Baclaran2D
RS = 150
Baclaran2D
RS = 100
Baclaran2D
RS = 50
Baclaran2D
RS = 0
Legend
WS Q100 - Existing
WS Q100 - Dredged
- Existing
Ground - Existing
Bank Sta - Existing
- Dredged
Ground - Dredged
Bank Sta - Dredged
Elevation (m)
Station (m)

Output Table (Existing)

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01

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)	
Reach01	9800	Q25	1040.00	8.49	13.20		13.43	0.001413	2.56	572.35	200.00	0.43
Reach01	9800	Q50	1184.64	8.49	13.39		13.64	0.001508	2.73	609.32	200.00	0.44
Reach01	9800	Q100	1293.24	8.49	13.57		13.84	0.001499	2.80	645.73	200.00	0.44
Reach01	9750	Q25	1040.00	8.34	12.94		13.31	0.002859	3.32	454.94	200.00	0.59
Reach01	9750	Q50	1184.64	8.34	13.10		13.52	0.002994	3.51	488.15	200.00	0.61
Reach01	9750	Q100	1293.24	8.34	13.30		13.72	0.002810	3.54	527.72	200.00	0.60
Reach01	9700	Q25	1040.00	8.49	12.32	12.32	13.06	0.007070	4.58	335.84	200.00	0.90
Reach01	9700	Q50	1184.64	8.49	12.70		13.31	0.004965	4.21	413.68	200.00	0.77
Reach01	9700	Q100	1293.24	8.49	13.01		13.54	0.003891	3.97	475.27	200.00	0.69
Reach01	9650	Q25	1040.00	8.24	12.25		12.69	0.004002	3.63	414.18	200.00	0.69
Reach01	9650	Q50	1184.64	8.24	12.67		13.06	0.002913	3.39	499.48	200.00	0.60
Reach01	9650	Q100	1293.24	8.24	12.99		13.34	0.002405	3.28	561.72	200.00	0.55
Reach01	9600	Q25	1040.00	8.21	12.31		12.50	0.001451	2.45	587.93	200.00	0.43
Reach01	9600	Q50	1184.64	8.21	12.72		12.91	0.001243	2.45	669.29	200.00	0.40
Reach01	9600	Q100	1293.24	8.21	13.02		13.21	0.001121	2.45	729.92	200.00	0.39
Reach01	9550	Q25	1040.00	7.89	12.26		12.43	0.001226	2.36	623.90	200.00	0.40
Reach01	9550	Q50	1184.64	7.89	12.67		12.85	0.001063	2.36	706.86	200.00	0.38
Reach01	9550	Q100	1293.24	7.89	12.98		13.16	0.000967	2.37	768.42	200.00	0.36
Reach01	9500	Q25	1040.00	7.83	12.25		12.38	0.000584	1.72	703.31	200.00	0.28
Reach01	9500	Q50	1184.64	7.83	12.66		12.80	0.000530	1.75	786.58	200.00	0.27
Reach01	9500	Q100	1293.24	7.83	12.97		13.11	0.000495	1.77	848.33	200.00	0.26
Reach01	9450	Q25	1040.00	7.57	12.21		12.35	0.000653	1.79	699.80	200.00	0.29
Reach01	9450	Q50	1184.64	7.57	12.63		12.77	0.000589	1.82	783.70	200.00	0.28
Reach01	9450	Q100	1293.24	7.57	12.94		13.08	0.000549	1.85	845.84	200.00	0.28
Reach01	9400	Q25	1040.00	7.36	12.13		12.31	0.000897	2.06	625.31	200.00	0.34
Reach01	9400	Q50	1184.64	7.36	12.56		12.73	0.000779	2.07	711.21	200.00	0.32
Reach01	9400	Q100	1293.24	7.36	12.88		13.05	0.000710	2.07	774.52	200.00	0.31
Reach01	9350	Q25	1040.00	7.36	12.08		12.26	0.000942	2.06	615.78	200.00	0.35
Reach01	9350	Q50	1184.64	7.36	12.52		12.69	0.000805	2.05	703.23	200.00	0.33
Reach01	9350	Q100	1293.24	7.36	12.84		13.01	0.000728	2.05	767.35	200.00	0.31
Reach01	9300	Q25	1040.00	7.20	12.05		12.21	0.000791	1.94	623.09	200.00	0.32
Reach01	9300	Q50	1184.64	7.20	12.49		12.65	0.000690	1.95	711.39	200.00	0.30
Reach01	9300	Q100	1293.24	7.20	12.81		12.98	0.000631	1.96	776.03	200.00	0.29
Reach01	9250	Q25	1040.00	7.09	12.04		12.17	0.000615	1.68	682.82	200.00	0.28
Reach01	9250	Q50	1184.64	7.09	12.48		12.61	0.000540	1.70	771.67	200.00	0.27
Reach01	9250	Q100	1293.24	7.09	12.81		12.94	0.000496	1.72	836.61	200.00	0.26
Reach01	9200	Q25	1040.00	7.08	12.01		12.14	0.000547	1.71	732.42	200.00	0.27
Reach01	9200	Q50	1184.64	7.08	12.46		12.59	0.000491	1.74	821.81	200.00	0.26
Reach01	9200	Q100	1293.24	7.08	12.79		12.91	0.000458	1.76	887.05	200.00	0.25
Reach01	9150	Q25	1040.00	7.00	11.99		12.11	0.000486	1.62	732.49	200.00	0.25
Reach01	9150	Q50	1184.64	7.00	12.44		12.56	0.000436	1.64	822.42	200.00	0.25
Reach01	9150	Q100	1293.24	7.00	12.77		12.89	0.000407	1.66	887.97	200.00	0.24
Reach01	9100	Q25	1040.00	6.98	11.92		12.08	0.000755	1.86	637.67	200.00	0.31
Reach01	9100	Q50	1184.64	6.98	12.38		12.53	0.000642	1.86	729.48	200.00	0.29
Reach01	9100	Q100	1293.24	6.98	12.71		12.87	0.000580	1.86	796.08	200.00	0.28
Reach01	9050	Q25	1040.00	6.89	11.88		12.04	0.000774	1.83	632.81	200.00	0.31
Reach01	9050	Q50	1184.64	6.89	12.35		12.50	0.000648	1.82	725.90	200.00	0.29
Reach01	9050	Q100	1293.24	6.89	12.68		12.83	0.000581	1.82	793.18	200.00	0.28
Reach01	9000	Q25	1040.00	6.77	11.86		12.00	0.000624	1.71	672.84	200.00	0.28
Reach01	9000	Q50	1184.64	6.77	12.33		12.46	0.000533	1.71	766.67	200.00	0.27
Reach01	9000	Q100	1293.24	6.77	12.67		12.80	0.000484	1.72	834.35	200.00	0.26
Reach01	8950	Q25	1040.00	6.68	11.85		11.96	0.000454	1.55	743.99	200.00	0.25
Reach01	8950	Q50	1184.64	6.68	12.32		12.44	0.000402	1.57	838.12	200.00	0.24
Reach01	8950	Q100	1293.24	6.68	12.66		12.78	0.000373	1.59	905.96	200.00	0.23
Reach01	8900	Q25	1040.00	6.58	11.83		11.94	0.000389	1.48	773.41	200.00	0.23
Reach01	8900	Q50	1184.64	6.58	12.31		12.41	0.000350	1.51	867.90	200.00	0.22

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	8900	Q100	1293.24	6.58	12.65		12.76	0.000328	1.53	935.94	200.00	0.22
Reach01	8850	Q25	1040.00	6.49	11.83		11.92	0.000295	1.33	840.70	200.00	0.20
Reach01	8850	Q50	1184.64	6.49	12.30		12.39	0.000272	1.37	935.34	200.00	0.20
Reach01	8850	Q100	1293.24	6.49	12.64		12.74	0.000258	1.39	1003.46	200.00	0.19
Reach01	8800	Q25	1040.00	6.44	11.81		11.90	0.000306	1.34	832.14	200.00	0.20
Reach01	8800	Q50	1184.64	6.44	12.29		12.38	0.000280	1.38	927.06	200.00	0.20
Reach01	8800	Q100	1293.24	6.44	12.63		12.72	0.000265	1.40	995.35	200.00	0.20
Reach01	8750	Q25	1040.00	6.39	11.80		11.89	0.000310	1.38	846.61	200.00	0.21
Reach01	8750	Q50	1184.64	6.39	12.27		12.37	0.000286	1.42	941.75	200.00	0.20
Reach01	8750	Q100	1293.24	6.39	12.62		12.71	0.000271	1.44	1010.15	200.00	0.20
Reach01	8700	Q25	1040.00	6.29	11.78		11.87	0.000338	1.44	836.98	200.00	0.22
Reach01	8700	Q50	1184.64	6.29	12.25		12.35	0.000310	1.48	932.41	200.00	0.21
Reach01	8700	Q100	1293.24	6.29	12.60		12.70	0.000294	1.50	1000.98	200.00	0.21
Reach01	8650	Q25	1040.00	6.29	11.76		11.85	0.000304	1.36	844.18	200.00	0.20
Reach01	8650	Q50	1184.64	6.29	12.24		12.33	0.000279	1.40	939.86	200.00	0.20
Reach01	8650	Q100	1293.24	6.29	12.59		12.68	0.000265	1.42	1008.58	200.00	0.20
Reach01	8600	Q25	1040.00	6.19	11.75		11.84	0.000288	1.41	897.68	200.00	0.20
Reach01	8600	Q50	1184.64	6.19	12.23		12.32	0.000270	1.45	993.50	200.00	0.20
Reach01	8600	Q100	1293.24	6.19	12.58		12.67	0.000260	1.48	1062.29	200.00	0.20
Reach01	8550	Q25	1040.00	6.19	11.75		11.82	0.000233	1.28	937.81	200.00	0.18
Reach01	8550	Q50	1184.64	6.19	12.23		12.30	0.000221	1.33	1033.74	200.00	0.18
Reach01	8550	Q100	1293.24	6.19	12.57		12.65	0.000214	1.36	1102.60	200.00	0.18
Reach01	8500	Q25	1040.00	6.21	11.73		11.81	0.000252	1.31	924.18	200.00	0.19
Reach01	8500	Q50	1184.64	6.21	12.21		12.29	0.000237	1.36	1020.26	200.00	0.19
Reach01	8500	Q100	1293.24	6.21	12.56		12.64	0.000229	1.39	1089.21	200.00	0.18
Reach01	8450	Q25	1040.00	6.21	11.72		11.79	0.000250	1.30	921.72	200.00	0.19
Reach01	8450	Q50	1184.64	6.21	12.20		12.28	0.000235	1.34	1017.96	200.00	0.18
Reach01	8450	Q100	1293.24	6.21	12.55		12.63	0.000226	1.37	1086.99	200.00	0.18
Reach01	8400	Q25	1040.00	5.99	11.72		11.78	0.000202	1.25	1041.70	200.00	0.17
Reach01	8400	Q50	1184.64	5.99	12.20		12.27	0.000196	1.30	1137.96	200.00	0.17
Reach01	8400	Q100	1293.24	5.99	12.55		12.61	0.000193	1.34	1207.02	200.00	0.17
Reach01	8350	Q25	1040.00	5.90	11.71		11.77	0.000181	1.17	1018.46	200.00	0.16
Reach01	8350	Q50	1184.64	5.90	12.19		12.26	0.000175	1.22	1114.84	200.00	0.16
Reach01	8350	Q100	1293.24	5.90	12.54		12.61	0.000171	1.25	1183.96	200.00	0.16
Reach01	8300	Q25	1040.00	5.78	11.69		11.76	0.000219	1.27	983.96	200.00	0.18
Reach01	8300	Q50	1184.64	5.78	12.17		12.25	0.000210	1.32	1080.40	200.00	0.18
Reach01	8300	Q100	1293.24	5.78	12.52		12.60	0.000204	1.36	1149.55	200.00	0.18
Reach01	8250	Q25	1040.00	5.64	11.69		11.75	0.000161	1.10	1018.79	200.00	0.15
Reach01	8250	Q50	1184.64	5.64	12.17		12.23	0.000156	1.15	1115.32	200.00	0.15
Reach01	8250	Q100	1293.24	5.64	12.52		12.58	0.000152	1.18	1184.54	200.00	0.15
Reach01	8200	Q25	1040.00	5.70	11.67		11.74	0.000190	1.22	1006.94	200.00	0.17
Reach01	8200	Q50	1184.64	5.70	12.16		12.23	0.000183	1.27	1103.51	200.00	0.17
Reach01	8200	Q100	1293.24	5.70	12.50		12.58	0.000179	1.30	1172.75	200.00	0.17
Reach01	8150	Q25	1040.00	5.29	11.67		11.73	0.000172	1.22	1047.32	200.00	0.16
Reach01	8150	Q50	1184.64	5.29	12.15		12.22	0.000169	1.27	1143.93	200.00	0.16
Reach01	8150	Q100	1293.24	5.29	12.50		12.57	0.000166	1.31	1213.18	200.00	0.16
Reach01	8100	Q25	1040.00	5.34	11.66		11.72	0.000168	1.15	1036.34	200.00	0.16
Reach01	8100	Q50	1184.64	5.34	12.14		12.21	0.000163	1.20	1133.00	200.00	0.16
Reach01	8100	Q100	1293.24	5.34	12.49		12.56	0.000161	1.24	1202.28	200.00	0.16
Reach01	8050	Q25	1040.00	5.28	11.66		11.71	0.000146	1.10	1084.84	200.00	0.15
Reach01	8050	Q50	1184.64	5.28	12.14		12.20	0.000144	1.15	1181.53	200.00	0.15
Reach01	8050	Q100	1293.24	5.28	12.49		12.55	0.000142	1.19	1250.83	200.00	0.15
Reach01	8000	Q25	1040.00	4.99	11.65		11.70	0.000143	1.13	1127.62	200.00	0.15
Reach01	8000	Q50	1184.64	4.99	12.13		12.19	0.000143	1.19	1224.31	200.00	0.15
Reach01	8000	Q100	1293.24	4.99	12.48		12.54	0.000142	1.23	1293.62	200.00	0.15

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	7950	Q25	1040.00	4.99	11.64		11.69	0.000137	1.12	1144.98	200.00	0.14
Reach01	7950	Q50	1184.64	4.99	12.13		12.18	0.000137	1.18	1241.68	200.00	0.15
Reach01	7950	Q100	1293.24	4.99	12.47		12.53	0.000137	1.22	1310.98	200.00	0.15
Reach01	7900	Q25	1040.00	4.88	11.64		11.69	0.000125	1.08	1174.39	200.00	0.14
Reach01	7900	Q50	1184.64	4.88	12.12		12.17	0.000125	1.14	1271.09	200.00	0.14
Reach01	7900	Q100	1293.24	4.88	12.47		12.53	0.000126	1.18	1340.40	200.00	0.14
Reach01	7850	Q25	1040.00	4.89	11.63		11.68	0.000122	1.07	1193.32	200.00	0.14
Reach01	7850	Q50	1184.64	4.89	12.12		12.17	0.000123	1.13	1290.02	200.00	0.14
Reach01	7850	Q100	1293.24	4.89	12.46		12.52	0.000124	1.17	1359.33	200.00	0.14
Reach01	7800	Q25	1040.00	4.90	11.63		11.67	0.000085	0.90	1252.45	200.00	0.11
Reach01	7800	Q50	1184.64	4.90	12.12		12.16	0.000086	0.96	1349.20	200.00	0.12
Reach01	7800	Q100	1293.24	4.90	12.46		12.51	0.000087	0.99	1418.54	200.00	0.12
Reach01	7750	Q25	1040.00	4.92	11.63		11.67	0.000095	0.94	1221.14	200.00	0.12
Reach01	7750	Q50	1184.64	4.92	12.11		12.16	0.000096	0.99	1317.85	200.00	0.12
Reach01	7750	Q100	1293.24	4.92	12.46		12.51	0.000097	1.03	1387.16	200.00	0.12
Reach01	7700	Q25	1040.00	4.90	11.62		11.66	0.000114	1.03	1186.78	200.00	0.13
Reach01	7700	Q50	1184.64	4.90	12.10		12.15	0.000115	1.08	1283.42	200.00	0.13
Reach01	7700	Q100	1293.24	4.90	12.45		12.50	0.000115	1.12	1352.68	200.00	0.14
Reach01	7650	Q25	1040.00	4.89	11.61		11.66	0.000129	1.07	1136.74	200.00	0.14
Reach01	7650	Q50	1184.64	4.89	12.09		12.14	0.000128	1.13	1233.36	200.00	0.14
Reach01	7650	Q100	1293.24	4.89	12.44		12.49	0.000128	1.17	1302.60	200.00	0.14
Reach01	7600	Q25	1040.00	4.89	11.59		11.65	0.000154	1.18	1102.92	200.00	0.15
Reach01	7600	Q50	1184.64	4.89	12.08		12.14	0.000153	1.24	1199.51	200.00	0.15
Reach01	7600	Q100	1293.24	4.89	12.42		12.49	0.000152	1.28	1268.74	200.00	0.16
Reach01	7550	Q25	1040.00	4.88	11.59		11.64	0.000138	1.13	1126.72	200.00	0.15
Reach01	7550	Q50	1184.64	4.88	12.07		12.13	0.000138	1.18	1223.32	200.00	0.15
Reach01	7550	Q100	1293.24	4.88	12.42		12.48	0.000138	1.22	1292.56	200.00	0.15
Reach01	7500	Q25	1040.00	4.85	11.58		11.63	0.000113	1.01	1130.88	200.00	0.13
Reach01	7500	Q50	1184.64	4.85	12.07		12.12	0.000112	1.06	1227.53	200.00	0.13
Reach01	7500	Q100	1293.24	4.85	12.41		12.47	0.000112	1.10	1296.79	200.00	0.13
Reach01	7450	Q25	1040.00	4.68	11.56		11.62	0.000156	1.18	1045.33	200.00	0.15
Reach01	7450	Q50	1184.64	4.68	12.05		12.11	0.000154	1.24	1141.93	200.00	0.15
Reach01	7450	Q100	1293.24	4.68	12.39		12.46	0.000152	1.27	1211.15	200.00	0.16
Reach01	7400	Q25	1040.00	4.68	11.56		11.62	0.000138	1.12	1066.02	200.00	0.14
Reach01	7400	Q50	1184.64	4.68	12.04		12.10	0.000137	1.17	1162.65	200.00	0.15
Reach01	7400	Q100	1293.24	4.68	12.39		12.45	0.000136	1.20	1231.90	200.00	0.15
Reach01	7350	Q25	1040.00	4.69	11.55		11.61	0.000126	1.08	1075.71	200.00	0.14
Reach01	7350	Q50	1184.64	4.69	12.04		12.10	0.000125	1.13	1172.36	200.00	0.14
Reach01	7350	Q100	1293.24	4.69	12.38		12.45	0.000125	1.16	1241.62	200.00	0.14
Reach01	7300	Q25	1040.00	4.67	11.55		11.60	0.000138	1.12	1078.57	200.00	0.14
Reach01	7300	Q50	1184.64	4.67	12.03		12.09	0.000137	1.18	1175.19	200.00	0.15
Reach01	7300	Q100	1293.24	4.67	12.38		12.44	0.000136	1.21	1244.43	200.00	0.15
Reach01	7250	Q25	1040.00	4.67	11.54		11.59	0.000149	1.16	1057.26	200.00	0.15
Reach01	7250	Q50	1184.64	4.67	12.02		12.08	0.000147	1.21	1153.90	200.00	0.15
Reach01	7250	Q100	1293.24	4.67	12.37		12.43	0.000146	1.25	1223.16	200.00	0.15
Reach01	7200	Q25	1040.00	4.67	11.53		11.59	0.000167	1.21	1043.07	200.00	0.16
Reach01	7200	Q50	1184.64	4.67	12.01		12.08	0.000164	1.27	1139.74	200.00	0.16
Reach01	7200	Q100	1293.24	4.67	12.35		12.43	0.000162	1.30	1209.00	200.00	0.16
Reach01	7150	Q25	1040.00	4.68	11.52		11.58	0.000136	1.13	1118.48	200.00	0.14
Reach01	7150	Q50	1184.64	4.68	12.01		12.07	0.000136	1.19	1215.17	200.00	0.15
Reach01	7150	Q100	1293.24	4.68	12.35		12.42	0.000135	1.23	1284.44	200.00	0.15
Reach01	7100	Q25	1040.00	4.69	11.52		11.57	0.000121	1.07	1146.59	200.00	0.14
Reach01	7100	Q50	1184.64	4.69	12.00		12.06	0.000122	1.13	1243.28	200.00	0.14
Reach01	7100	Q100	1293.24	4.69	12.35		12.41	0.000122	1.17	1312.57	200.00	0.14
Reach01	7050	Q25	1040.00	4.69	11.52		11.56	0.000115	1.06	1174.18	200.00	0.13
Reach01	7050	Q50	1184.64	4.69	12.00		12.05	0.000116	1.11	1270.88	200.00	0.14

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	7050	Q100	1293.24	4.69	12.35		12.40	0.000116	1.15	1340.16	200.00	0.14
Reach01	7000	Q25	1040.00	4.68	11.51		11.56	0.000116	1.06	1175.01	200.00	0.13
Reach01	7000	Q50	1184.64	4.68	11.99		12.05	0.000117	1.12	1271.69	200.00	0.14
Reach01	7000	Q100	1293.24	4.68	12.34		12.40	0.000117	1.16	1340.95	200.00	0.14
Reach01	6950	Q25	1040.00	4.70	11.51		11.55	0.000097	0.98	1231.68	200.00	0.12
Reach01	6950	Q50	1184.64	4.70	11.99		12.04	0.000099	1.03	1328.38	200.00	0.13
Reach01	6950	Q100	1293.24	4.70	12.34		12.39	0.000100	1.07	1397.66	200.00	0.13
Reach01	6900	Q25	1040.00	4.70	11.50		11.54	0.000092	0.95	1256.50	200.00	0.12
Reach01	6900	Q50	1184.64	4.70	11.99		12.03	0.000094	1.01	1353.19	200.00	0.12
Reach01	6900	Q100	1293.24	4.70	12.33		12.38	0.000095	1.05	1422.47	200.00	0.12
Reach01	6850	Q25	1040.00	4.69	11.50		11.54	0.000092	0.96	1256.52	200.00	0.12
Reach01	6850	Q50	1184.64	4.69	11.98		12.03	0.000094	1.01	1353.19	200.00	0.12
Reach01	6850	Q100	1293.24	4.69	12.33		12.38	0.000095	1.05	1422.45	200.00	0.12
Reach01	6800	Q25	1040.00	4.59	11.49		11.54	0.000094	0.98	1265.10	200.00	0.12
Reach01	6800	Q50	1184.64	4.59	11.98		12.02	0.000096	1.04	1361.75	200.00	0.12
Reach01	6800	Q100	1293.24	4.59	12.32		12.37	0.000098	1.08	1430.98	200.00	0.13
Reach01	6750	Q25	1040.00	4.59	11.49		11.53	0.000090	0.95	1255.46	200.00	0.12
Reach01	6750	Q50	1184.64	4.59	11.97		12.02	0.000092	1.01	1352.09	200.00	0.12
Reach01	6750	Q100	1293.24	4.59	12.32		12.37	0.000093	1.05	1421.32	200.00	0.12
Reach01	6700	Q25	1040.00	4.49	11.49		11.53	0.000082	0.92	1305.83	200.00	0.11
Reach01	6700	Q50	1184.64	4.49	11.97		12.01	0.000085	0.98	1402.46	200.00	0.12
Reach01	6700	Q100	1293.24	4.49	12.32		12.36	0.000086	1.02	1471.68	200.00	0.12
Reach01	6650	Q25	1040.00	4.50	11.49		11.52	0.000075	0.89	1333.61	200.00	0.11
Reach01	6650	Q50	1184.64	4.50	11.97		12.01	0.000077	0.94	1430.23	200.00	0.11
Reach01	6650	Q100	1293.24	4.50	12.31		12.36	0.000079	0.98	1499.45	200.00	0.11
Reach01	6600	Q25	1040.00	4.39	11.48		11.52	0.000080	0.92	1325.81	200.00	0.11
Reach01	6600	Q50	1184.64	4.39	11.96		12.00	0.000083	0.98	1422.38	200.00	0.12
Reach01	6600	Q100	1293.24	4.39	12.31		12.35	0.000084	1.02	1491.56	200.00	0.12
Reach01	6550	Q25	1040.00	4.39	11.48		11.51	0.000074	0.89	1335.96	200.00	0.11
Reach01	6550	Q50	1184.64	4.39	11.96		12.00	0.000076	0.95	1432.52	200.00	0.11
Reach01	6550	Q100	1293.24	4.39	12.31		12.35	0.000078	0.99	1501.70	200.00	0.11
Reach01	6500	Q25	1040.00	4.39	11.47		11.51	0.000071	0.88	1344.92	200.00	0.11
Reach01	6500	Q50	1184.64	4.39	11.96		12.00	0.000074	0.93	1441.46	200.00	0.11
Reach01	6500	Q100	1293.24	4.39	12.30		12.35	0.000076	0.97	1510.63	200.00	0.11
Reach01	6450	Q25	1040.00	4.37	11.47		11.50	0.000079	0.92	1341.09	200.00	0.11
Reach01	6450	Q50	1184.64	4.37	11.95		11.99	0.000081	0.98	1437.58	200.00	0.11
Reach01	6450	Q100	1293.24	4.37	12.30		12.34	0.000083	1.02	1506.70	200.00	0.12
Reach01	6400	Q25	1040.00	4.29	11.47		11.50	0.000068	0.86	1326.50	200.00	0.10
Reach01	6400	Q50	1184.64	4.29	11.95		11.99	0.000071	0.91	1422.99	200.00	0.11
Reach01	6400	Q100	1293.24	4.29	12.29		12.34	0.000072	0.95	1492.12	200.00	0.11
Reach01	6350	Q25	1040.00	4.29	11.46		11.50	0.000085	0.95	1261.27	200.00	0.12
Reach01	6350	Q50	1184.64	4.29	11.94		11.98	0.000087	1.01	1357.65	200.00	0.12
Reach01	6350	Q100	1293.24	4.29	12.28		12.33	0.000089	1.05	1426.70	200.00	0.12
Reach01	6300	Q25	1040.00	4.28	11.45		11.49	0.000081	0.92	1273.37	200.00	0.11
Reach01	6300	Q50	1184.64	4.28	11.93		11.98	0.000083	0.98	1369.74	200.00	0.12
Reach01	6300	Q100	1293.24	4.28	12.28		12.33	0.000085	1.02	1438.79	200.00	0.12
Reach01	6250	Q25	1040.00	4.22	11.45		11.49	0.000070	0.87	1325.17	200.00	0.11
Reach01	6250	Q50	1184.64	4.22	11.93		11.97	0.000072	0.92	1421.55	200.00	0.11
Reach01	6250	Q100	1293.24	4.22	12.28		12.32	0.000074	0.96	1490.61	200.00	0.11
Reach01	6200	Q25	1040.00	4.19	11.45		11.48	0.000059	0.80	1381.57	200.00	0.10
Reach01	6200	Q50	1184.64	4.19	11.93		11.97	0.000061	0.86	1477.96	200.00	0.10
Reach01	6200	Q100	1293.24	4.19	12.28		12.32	0.000063	0.89	1547.03	200.00	0.10
Reach01	6150	Q25	1040.00	4.18	11.45		11.48	0.000057	0.80	1386.77	200.00	0.10
Reach01	6150	Q50	1184.64	4.18	11.93		11.97	0.000060	0.85	1483.15	200.00	0.10
Reach01	6150	Q100	1293.24	4.18	12.28		12.31	0.000061	0.89	1552.21	200.00	0.10

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	6100	Q25	1040.00	4.07	11.45		11.48	0.000058	0.81	1383.67	200.00	0.10
Reach01	6100	Q50	1184.64	4.07	11.93		11.96	0.000060	0.87	1480.01	200.00	0.10
Reach01	6100	Q100	1293.24	4.07	12.27		12.31	0.000062	0.91	1549.05	200.00	0.10
Reach01	6050	Q25	1040.00	4.08	11.44		11.47	0.000061	0.83	1374.48	200.00	0.10
Reach01	6050	Q50	1184.64	4.08	11.92		11.96	0.000063	0.89	1470.79	200.00	0.10
Reach01	6050	Q100	1293.24	4.08	12.27		12.31	0.000065	0.92	1539.80	200.00	0.10
Reach01	6000	Q25	1040.00	4.07	11.44		11.47	0.000058	0.81	1423.90	200.00	0.10
Reach01	6000	Q50	1184.64	4.07	11.92		11.96	0.000061	0.87	1520.19	200.00	0.10
Reach01	6000	Q100	1293.24	4.07	12.27		12.30	0.000063	0.90	1589.19	200.00	0.10
Reach01	5950	Q25	1040.00	3.89	11.44		11.47	0.000067	0.89	1458.49	200.00	0.10
Reach01	5950	Q50	1184.64	3.89	11.92		11.95	0.000071	0.96	1554.73	200.00	0.11
Reach01	5950	Q100	1293.24	3.89	12.26		12.30	0.000073	1.00	1623.68	200.00	0.11
Reach01	5900	Q25	1040.00	3.08	11.44		11.46	0.000060	0.88	1547.76	200.00	0.10
Reach01	5900	Q50	1184.64	3.08	11.92		11.95	0.000064	0.95	1644.00	200.00	0.10
Reach01	5900	Q100	1293.24	3.08	12.26		12.30	0.000066	1.00	1712.95	200.00	0.11
Reach01	5850	Q25	1040.00	2.71	11.44		11.46	0.000037	0.72	1615.66	200.00	0.08
Reach01	5850	Q50	1184.64	2.71	11.92		11.94	0.000040	0.77	1711.91	200.00	0.08
Reach01	5850	Q100	1293.24	2.71	12.26		12.29	0.000042	0.81	1780.88	200.00	0.09
Reach01	5800	Q25	1040.00	2.57	11.43		11.46	0.000049	0.82	1545.88	200.00	0.09
Reach01	5800	Q50	1184.64	2.57	11.91		11.94	0.000053	0.88	1642.01	200.00	0.10
Reach01	5800	Q100	1293.24	2.57	12.25		12.29	0.000055	0.93	1710.89	200.00	0.10
Reach01	5750	Q25	1040.00	2.50	11.43		11.45	0.000049	0.81	1528.83	200.00	0.09
Reach01	5750	Q50	1184.64	2.50	11.91		11.94	0.000052	0.87	1624.92	200.00	0.09
Reach01	5750	Q100	1293.24	2.50	12.25		12.29	0.000054	0.91	1693.77	200.00	0.10
Reach01	5700	Q25	1040.00	2.51	11.42		11.45	0.000047	0.80	1550.36	200.00	0.09
Reach01	5700	Q50	1184.64	2.51	11.91		11.94	0.000051	0.86	1646.42	200.00	0.09
Reach01	5700	Q100	1293.24	2.51	12.25		12.28	0.000053	0.91	1715.26	200.00	0.10
Reach01	5650	Q25	1040.00	2.47	11.42		11.45	0.000049	0.82	1528.48	200.00	0.09
Reach01	5650	Q50	1184.64	2.47	11.90		11.93	0.000052	0.88	1624.49	200.00	0.09
Reach01	5650	Q100	1293.24	2.47	12.25		12.28	0.000055	0.92	1693.29	200.00	0.10
Reach01	5600	Q25	1040.00	2.50	11.42		11.45	0.000040	0.73	1546.46	200.00	0.08
Reach01	5600	Q50	1184.64	2.50	11.90		11.93	0.000043	0.78	1642.49	200.00	0.09
Reach01	5600	Q100	1293.24	2.50	12.25		12.28	0.000045	0.82	1711.30	200.00	0.09
Reach01	5550	Q25	1040.00	2.49	11.42		11.44	0.000041	0.75	1588.69	200.00	0.08
Reach01	5550	Q50	1184.64	2.49	11.90		11.93	0.000044	0.81	1684.68	200.00	0.09
Reach01	5550	Q100	1293.24	2.49	12.24		12.27	0.000046	0.85	1753.47	200.00	0.09
Reach01	5500	Q25	1040.00	2.54	11.42		11.44	0.000043	0.77	1578.41	200.00	0.09
Reach01	5500	Q50	1184.64	2.54	11.90		11.93	0.000046	0.82	1674.36	200.00	0.09
Reach01	5500	Q100	1293.24	2.54	12.24		12.27	0.000048	0.87	1743.12	200.00	0.09
Reach01	5450	Q25	1040.00	2.10	11.42		11.44	0.000031	0.67	1664.83	200.00	0.07
Reach01	5450	Q50	1184.64	2.10	11.90		11.92	0.000034	0.72	1760.81	200.00	0.08
Reach01	5450	Q100	1293.24	2.10	12.24		12.27	0.000036	0.76	1829.60	200.00	0.08
Reach01	5400	Q25	1040.00	2.08	11.41		11.44	0.000038	0.72	1584.95	200.02	0.08
Reach01	5400	Q50	1184.64	2.08	11.89		11.92	0.000041	0.77	1680.86	200.02	0.08
Reach01	5400	Q100	1293.24	2.08	12.24		12.27	0.000043	0.81	1749.59	200.02	0.09
Reach01	5350	Q25	1040.00	2.28	11.41		11.44	0.000038	0.72	1600.39	200.02	0.08
Reach01	5350	Q50	1184.64	2.28	11.89		11.92	0.000040	0.78	1696.26	200.02	0.08
Reach01	5350	Q100	1293.24	2.28	12.23		12.26	0.000042	0.82	1764.98	200.02	0.09
Reach01	5300	Q25	1040.00	2.28	11.41		11.43	0.000033	0.68	1633.26	200.00	0.07
Reach01	5300	Q50	1184.64	2.28	11.89		11.92	0.000036	0.73	1729.14	200.00	0.08
Reach01	5300	Q100	1293.24	2.28	12.23		12.26	0.000037	0.77	1797.84	200.00	0.08
Reach01	5250	Q25	1040.00	2.28	11.41		11.43	0.000035	0.70	1624.42	200.00	0.08
Reach01	5250	Q50	1184.64	2.28	11.89		11.91	0.000038	0.75	1720.24	200.00	0.08
Reach01	5250	Q100	1293.24	2.28	12.23		12.26	0.000040	0.79	1788.91	200.00	0.08
Reach01	5200	Q25	1040.00	2.28	11.41		11.43	0.000034	0.70	1652.09	200.00	0.08
Reach01	5200	Q50	1184.64	2.28	11.89		11.91	0.000037	0.75	1747.88	200.00	0.08

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	5200	Q100	1293.24	2.28	12.23		12.26	0.000039	0.79	1816.54	200.00	0.08
Reach01	5150	Q25	1040.00	2.76	11.25		11.41	0.000376	2.13	672.49	100.00	0.25
Reach01	5150	Q50	1184.64	2.76	11.71		11.89	0.000396	2.28	718.39	100.00	0.26
Reach01	5150	Q100	1293.24	2.76	12.04		12.24	0.000411	2.38	751.23	100.00	0.26
Reach01	5100	Q25	1040.00	2.75	11.24		11.39	0.000325	2.01	693.83	100.00	0.23
Reach01	5100	Q50	1184.64	2.75	11.70		11.87	0.000345	2.15	739.67	100.00	0.24
Reach01	5100	Q100	1293.24	2.75	12.03		12.21	0.000359	2.25	772.47	100.00	0.25
Reach01	5050	Q25	1040.00	2.68	11.21		11.37	0.000397	2.19	662.51	100.00	0.25
Reach01	5050	Q50	1184.64	2.68	11.67		11.85	0.000419	2.34	708.14	100.00	0.26
Reach01	5050	Q100	1293.24	2.68	11.99		12.19	0.000434	2.44	740.78	100.00	0.27
Reach01	5000	Q25	1040.00	2.61	11.19		11.35	0.000373	2.11	668.00	100.00	0.24
Reach01	5000	Q50	1184.64	2.61	11.65		11.83	0.000393	2.25	713.52	100.00	0.25
Reach01	5000	Q100	1293.24	2.61	11.97		12.17	0.000408	2.35	746.10	100.00	0.26
Reach01	4950	Q25	1040.00	2.30	11.20		11.32	0.000254	1.85	761.56	100.00	0.21
Reach01	4950	Q50	1184.64	2.30	11.66		11.80	0.000275	1.99	807.18	100.00	0.22
Reach01	4950	Q100	1293.24	2.30	11.99		12.14	0.000289	2.09	839.83	100.00	0.22
Reach01	4900	Q25	1040.00	2.23	11.19		11.31	0.000256	1.87	770.34	100.00	0.21
Reach01	4900	Q50	1184.64	2.23	11.65		11.78	0.000278	2.02	815.88	100.00	0.22
Reach01	4900	Q100	1293.24	2.23	11.98		12.12	0.000293	2.12	848.47	100.00	0.22
Reach01	4850	Q25	1040.00	2.31	11.18		11.30	0.000240	1.82	783.92	100.00	0.20
Reach01	4850	Q50	1184.64	2.31	11.64		11.77	0.000261	1.97	829.38	100.00	0.21
Reach01	4850	Q100	1293.24	2.31	11.96		12.11	0.000275	2.07	861.91	100.00	0.22
Reach01	4800	Q25	1040.00	2.34	11.17		11.28	0.000266	1.89	764.61	100.00	0.21
Reach01	4800	Q50	1184.64	2.34	11.62		11.76	0.000288	2.04	809.91	100.00	0.22
Reach01	4800	Q100	1293.24	2.34	11.94		12.09	0.000304	2.14	842.33	100.00	0.23
Reach01	4750	Q25	1040.00	2.08	11.15		11.27	0.000242	1.82	765.26	100.00	0.20
Reach01	4750	Q50	1184.64	2.08	11.60		11.74	0.000263	1.96	810.42	100.00	0.21
Reach01	4750	Q100	1293.24	2.08	11.93		12.08	0.000277	2.06	842.74	100.00	0.22
Reach01	4700	Q25	1040.00	1.32	11.16		11.25	0.000179	1.66	858.95	100.00	0.18
Reach01	4700	Q50	1184.64	1.32	11.61		11.72	0.000198	1.81	904.20	100.00	0.19
Reach01	4700	Q100	1293.24	1.32	11.93		12.06	0.000211	1.91	936.58	100.00	0.19
Reach01	4650	Q25	1040.00	1.27	11.15		11.24	0.000183	1.70	856.36	100.00	0.18
Reach01	4650	Q50	1184.64	1.27	11.60		11.71	0.000203	1.84	901.50	100.00	0.19
Reach01	4650	Q100	1293.24	1.27	11.92		12.05	0.000216	1.95	933.81	100.00	0.20
Reach01	4600	Q25	1040.00	1.30	11.14		11.23	0.000173	1.65	870.93	100.00	0.17
Reach01	4600	Q50	1184.64	1.30	11.59		11.70	0.000191	1.80	916.00	100.00	0.18
Reach01	4600	Q100	1293.24	1.30	11.91		12.04	0.000204	1.90	948.26	100.00	0.19
Reach01	4550	Q25	1040.00	1.30	11.13		11.23	0.000164	1.61	870.47	100.00	0.17
Reach01	4550	Q50	1184.64	1.30	11.58		11.69	0.000182	1.75	915.44	100.00	0.18
Reach01	4550	Q100	1293.24	1.30	11.90		12.03	0.000194	1.85	947.62	100.00	0.19
Reach01	4500	Q25	1040.00	1.25	11.12		11.22	0.000179	1.67	858.88	100.00	0.18
Reach01	4500	Q50	1184.64	1.25	11.57		11.68	0.000198	1.82	903.73	100.00	0.19
Reach01	4500	Q100	1293.24	1.25	11.89		12.02	0.000212	1.92	935.82	100.00	0.19
Reach01	4450	Q25	1040.00	1.28	11.11		11.21	0.000179	1.68	852.81	100.00	0.18
Reach01	4450	Q50	1184.64	1.28	11.56		11.67	0.000197	1.82	897.54	100.00	0.19
Reach01	4450	Q100	1293.24	1.28	11.88		12.00	0.000211	1.92	929.54	100.00	0.19
Reach01	4400	Q25	1040.00	1.24	11.10		11.20	0.000180	1.68	849.69	100.00	0.18
Reach01	4400	Q50	1184.64	1.24	11.55		11.66	0.000199	1.82	894.31	100.00	0.19
Reach01	4400	Q100	1293.24	1.24	11.87		11.99	0.000212	1.92	926.24	100.00	0.19
Reach01	4350	Q25	1040.00	1.22	11.09		11.19	0.000180	1.68	858.75	100.00	0.18
Reach01	4350	Q50	1184.64	1.22	11.54		11.65	0.000199	1.82	903.29	100.00	0.19
Reach01	4350	Q100	1293.24	1.22	11.86		11.98	0.000213	1.93	935.17	100.00	0.19
Reach01	4300	Q25	1040.00	2.18	11.04		11.17	0.000292	1.94	734.46	100.00	0.22
Reach01	4300	Q50	1184.64	2.18	11.49		11.63	0.000315	2.09	778.51	100.00	0.23
Reach01	4300	Q100	1293.24	2.18	11.80		11.97	0.000331	2.20	810.03	100.00	0.24

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	4250	Q25	1040.00	3.22	10.98		11.15	0.000425	2.17	638.17	100.00	0.26
Reach01	4250	Q50	1184.64	3.22	11.42		11.61	0.000448	2.32	681.71	100.00	0.27
Reach01	4250	Q100	1293.24	3.22	11.73		11.94	0.000464	2.43	712.88	100.00	0.28
Reach01	4200	Q25	1040.00	4.22	10.88		11.12	0.000750	2.64	544.36	100.00	0.34
Reach01	4200	Q50	1184.64	4.22	11.31		11.58	0.000766	2.79	587.48	100.00	0.34
Reach01	4200	Q100	1293.24	4.22	11.62		11.90	0.000777	2.89	618.34	100.00	0.35
Reach01	4150	Q25	1040.00	4.23	10.83		11.08	0.000799	2.66	529.66	100.00	0.35
Reach01	4150	Q50	1184.64	4.23	11.26		11.53	0.000811	2.80	572.65	100.00	0.35
Reach01	4150	Q100	1293.24	4.23	11.57		11.86	0.000819	2.91	603.43	100.00	0.36
Reach01	4100	Q25	1040.00	4.16	10.79		11.04	0.000767	2.65	538.08	100.00	0.34
Reach01	4100	Q50	1184.64	4.16	11.22		11.49	0.000782	2.80	581.01	100.00	0.35
Reach01	4100	Q100	1293.24	4.16	11.53		11.82	0.000793	2.91	611.74	100.00	0.35
Reach01	4050	Q25	1040.00	3.13	10.81		10.99	0.000465	2.26	630.57	100.00	0.27
Reach01	4050	Q50	1184.64	3.13	11.24		11.44	0.000490	2.41	673.59	100.00	0.28
Reach01	4050	Q100	1293.24	3.13	11.55		11.77	0.000507	2.52	704.38	100.00	0.29
Reach01	4000	Q25	1040.00	2.06	10.82		10.96	0.000295	1.96	727.60	100.00	0.22
Reach01	4000	Q50	1184.64	2.06	11.25		11.41	0.000320	2.11	770.72	100.00	0.23
Reach01	4000	Q100	1293.24	2.06	11.56		11.73	0.000337	2.22	801.59	100.00	0.24
Reach01	3950	Q25	1040.00	2.20	10.82		10.94	0.000252	1.82	748.03	100.00	0.20
Reach01	3950	Q50	1184.64	2.20	11.25		11.39	0.000274	1.97	791.08	100.00	0.22
Reach01	3950	Q100	1293.24	2.20	11.55		11.71	0.000289	2.07	821.90	100.00	0.22
Reach01	3900	Q25	1040.00	2.19	10.79		10.92	0.000309	1.98	716.20	100.00	0.23
Reach01	3900	Q50	1184.64	2.19	11.22		11.37	0.000334	2.13	759.00	100.00	0.24
Reach01	3900	Q100	1293.24	2.19	11.52		11.70	0.000352	2.24	789.65	100.00	0.24
Reach01	3850	Q25	1040.00	3.18	10.72		10.90	0.000528	2.37	614.54	100.00	0.29
Reach01	3850	Q50	1184.64	3.18	11.14		11.35	0.000555	2.53	656.81	100.00	0.30
Reach01	3850	Q100	1293.24	3.18	11.44		11.67	0.000574	2.64	687.08	100.00	0.31
Reach01	3800	Q25	1040.00	3.17	10.69		10.87	0.000520	2.35	612.69	100.00	0.29
Reach01	3800	Q50	1184.64	3.17	11.11		11.32	0.000547	2.51	654.80	100.00	0.30
Reach01	3800	Q100	1293.24	3.17	11.41		11.64	0.000566	2.62	684.95	100.00	0.30
Reach01	3750	Q25	1040.00	2.16	10.70		10.84	0.000311	2.01	714.47	100.00	0.23
Reach01	3750	Q50	1184.64	2.16	11.12		11.28	0.000337	2.17	756.68	100.00	0.24
Reach01	3750	Q100	1293.24	2.16	11.43		11.60	0.000356	2.28	786.91	100.00	0.25
Reach01	3700	Q25	1040.00	1.15	10.71		10.82	0.000221	1.80	810.15	100.00	0.19
Reach01	3700	Q50	1184.64	1.15	11.13		11.26	0.000244	1.96	852.46	100.00	0.21
Reach01	3700	Q100	1293.24	1.15	11.44		11.58	0.000260	2.07	882.77	100.00	0.21
Reach01	3650	Q25	1040.00	1.15	10.70		10.81	0.000233	1.86	802.77	100.00	0.20
Reach01	3650	Q50	1184.64	1.15	11.12		11.25	0.000258	2.02	844.94	100.00	0.21
Reach01	3650	Q100	1293.24	1.15	11.42		11.56	0.000275	2.13	875.15	100.00	0.22
Reach01	3600	Q25	1040.00	0.00	10.69		10.79	0.000204	1.78	842.23	100.00	0.19
Reach01	3600	Q50	1184.64	0.00	11.11		11.23	0.000227	1.93	884.37	100.00	0.20
Reach01	3600	Q100	1293.24	0.00	11.42		11.55	0.000244	2.04	914.56	100.00	0.21
Reach01	3550	Q25	1040.00	2.00	10.64		10.78	0.000310	1.99	720.34	100.00	0.23
Reach01	3550	Q50	1184.64	2.00	11.06		11.21	0.000337	2.15	761.89	100.00	0.24
Reach01	3550	Q100	1293.24	2.00	11.35		11.53	0.000356	2.26	791.65	100.00	0.25
Reach01	3500	Q25	1040.00	2.13	10.63		10.76	0.000275	1.91	745.63	100.00	0.21
Reach01	3500	Q50	1184.64	2.13	11.05		11.19	0.000301	2.07	787.11	100.00	0.23
Reach01	3500	Q100	1293.24	2.13	11.34		11.51	0.000319	2.18	816.81	100.00	0.23
Reach01	3450	Q25	1040.00	2.06	10.62		10.74	0.000248	1.83	761.70	100.00	0.20
Reach01	3450	Q50	1184.64	2.06	11.04		11.18	0.000272	1.98	803.09	100.00	0.22
Reach01	3450	Q100	1293.24	2.06	11.33		11.49	0.000289	2.08	832.73	100.00	0.22
Reach01	3400	Q25	1040.00	2.10	10.60		10.73	0.000279	1.93	745.87	100.00	0.22
Reach01	3400	Q50	1184.64	2.10	11.02		11.16	0.000306	2.08	787.06	100.00	0.23
Reach01	3400	Q100	1293.24	2.10	11.31		11.47	0.000325	2.20	816.56	100.00	0.24
Reach01	3350	Q25	1040.00	2.07	10.59		10.72	0.000261	1.85	749.70	100.00	0.21
Reach01	3350	Q50	1184.64	2.07	11.00		11.15	0.000286	2.00	790.77	100.00	0.22

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	3350	Q100	1293.24	2.07	11.30		11.46	0.000304	2.11	820.19	100.00	0.23
Reach01	3300	Q25	1040.00	1.09	10.60		10.70	0.000169	1.61	860.98	100.00	0.17
Reach01	3300	Q50	1184.64	1.09	11.01		11.13	0.000189	1.76	902.18	100.00	0.18
Reach01	3300	Q100	1293.24	1.09	11.31		11.43	0.000204	1.86	931.70	100.00	0.19
Reach01	3250	Q25	1040.00	1.08	10.59		10.69	0.000167	1.61	865.76	100.00	0.17
Reach01	3250	Q50	1184.64	1.08	11.01		11.12	0.000187	1.76	906.86	100.00	0.18
Reach01	3250	Q100	1293.24	1.08	11.30		11.42	0.000202	1.86	936.31	100.00	0.19
Reach01	3200	Q25	1040.00	1.80	10.55		10.67	0.000250	1.83	757.14	100.00	0.20
Reach01	3200	Q50	1184.64	1.80	10.96		11.10	0.000276	1.99	797.74	100.00	0.22
Reach01	3200	Q100	1293.24	1.80	11.25		11.41	0.000293	2.10	826.82	100.00	0.22
Reach01	3150	Q25	1040.00	3.06	10.49		10.65	0.000433	2.18	645.01	100.00	0.26
Reach01	3150	Q50	1184.64	3.06	10.89		11.08	0.000464	2.34	684.99	100.00	0.27
Reach01	3150	Q100	1293.24	3.06	11.17		11.38	0.000486	2.45	713.62	100.00	0.28
Reach01	3100	Q25	1040.00	2.06	10.50		10.63	0.000276	1.90	737.76	100.00	0.21
Reach01	3100	Q50	1184.64	2.06	10.90		11.05	0.000303	2.05	777.84	100.00	0.23
Reach01	3100	Q100	1293.24	2.06	11.18		11.35	0.000322	2.17	806.54	100.00	0.23
Reach01	3050	Q25	1040.00	1.79	10.49		10.61	0.000257	1.83	752.91	100.00	0.21
Reach01	3050	Q50	1184.64	1.79	10.89		11.03	0.000283	1.98	792.89	100.00	0.22
Reach01	3050	Q100	1293.24	1.79	11.17		11.33	0.000301	2.09	821.54	100.00	0.23
Reach01	3000	Q25	1040.00	0.86	10.49		10.59	0.000176	1.66	847.07	100.00	0.17
Reach01	3000	Q50	1184.64	0.86	10.89		11.01	0.000198	1.81	887.14	100.00	0.19
Reach01	3000	Q100	1293.24	0.86	11.18		11.31	0.000213	1.92	915.84	100.00	0.19
Reach01	2950	Q25	1040.00	0.89	10.49		10.58	0.000175	1.65	851.28	100.00	0.17
Reach01	2950	Q50	1184.64	0.89	10.89		11.00	0.000196	1.80	891.25	100.00	0.19
Reach01	2950	Q100	1293.24	0.89	11.17		11.30	0.000212	1.91	919.88	100.00	0.19
Reach01	2900	Q25	1040.00	1.02	10.47		10.57	0.000196	1.71	830.62	100.00	0.18
Reach01	2900	Q50	1184.64	1.02	10.87		10.99	0.000219	1.87	870.42	100.00	0.20
Reach01	2900	Q100	1293.24	1.02	11.16		11.29	0.000236	1.98	898.92	100.00	0.20
Reach01	2850	Q25	1040.00	-0.16	10.48		10.56	0.000125	1.49	952.59	100.00	0.15
Reach01	2850	Q50	1184.64	-0.16	10.88		10.97	0.000143	1.63	992.51	100.00	0.16
Reach01	2850	Q100	1293.24	-0.16	11.17		11.27	0.000155	1.73	1021.11	100.00	0.17
Reach01	2800	Q25	1040.00	-0.15	10.47		10.55	0.000128	1.51	943.58	100.00	0.15
Reach01	2800	Q50	1184.64	-0.15	10.87		10.97	0.000146	1.66	983.38	100.00	0.16
Reach01	2800	Q100	1293.24	-0.15	11.16		11.26	0.000159	1.76	1011.89	100.00	0.17
Reach01	2750	Q25	1040.00	-0.27	10.47		10.55	0.000126	1.49	939.33	100.00	0.15
Reach01	2750	Q50	1184.64	-0.27	10.86		10.96	0.000144	1.63	979.03	100.00	0.16
Reach01	2750	Q100	1293.24	-0.27	11.15		11.26	0.000156	1.73	1007.47	100.00	0.17
Reach01	2700	Q25	1040.00	0.81	10.43		10.54	0.000192	1.70	831.58	100.00	0.18
Reach01	2700	Q50	1184.64	0.81	10.83		10.95	0.000216	1.86	870.84	100.00	0.19
Reach01	2700	Q100	1293.24	0.81	11.11		11.24	0.000233	1.97	898.96	100.00	0.20
Reach01	2650	Q25	1040.00	-0.02	10.44		10.52	0.000134	1.51	924.95	100.00	0.15
Reach01	2650	Q50	1184.64	-0.02	10.83		10.93	0.000152	1.65	964.30	100.00	0.17
Reach01	2650	Q100	1293.24	-0.02	11.12		11.23	0.000166	1.76	992.48	100.00	0.17
Reach01	2600	Q25	1040.00	-0.18	10.44		10.52	0.000119	1.44	944.44	100.00	0.15
Reach01	2600	Q50	1184.64	-0.18	10.83		10.92	0.000136	1.58	983.74	100.00	0.16
Reach01	2600	Q100	1293.24	-0.18	11.11		11.22	0.000148	1.68	1011.88	100.00	0.16
Reach01	2550	Q25	1040.00	0.96	10.41		10.51	0.000181	1.65	840.85	100.00	0.18
Reach01	2550	Q50	1184.64	0.96	10.80		10.91	0.000203	1.80	879.73	100.00	0.19
Reach01	2550	Q100	1293.24	0.96	11.07		11.21	0.000220	1.91	907.57	100.00	0.20
Reach01	2500	Q25	1040.00	0.89	10.40		10.50	0.000185	1.68	844.36	100.00	0.18
Reach01	2500	Q50	1184.64	0.89	10.79		10.90	0.000208	1.83	883.13	100.00	0.19
Reach01	2500	Q100	1293.24	0.89	11.06		11.19	0.000225	1.94	910.89	100.00	0.20
Reach01	2450	Q25	1040.00	1.95	10.35		10.48	0.000306	1.96	725.46	100.00	0.22
Reach01	2450	Q50	1184.64	1.95	10.73		10.89	0.000338	2.12	763.64	100.00	0.24
Reach01	2450	Q100	1293.24	1.95	11.01		11.18	0.000360	2.24	790.96	100.00	0.25

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	2400	Q25	1040.00	0.94	10.36		10.46	0.000198	1.72	828.00	100.00	0.18
Reach01	2400	Q50	1184.64	0.94	10.74		10.86	0.000223	1.88	866.29	100.00	0.20
Reach01	2400	Q100	1293.24	0.94	11.02		11.15	0.000241	1.99	893.69	100.00	0.21
Reach01	2350	Q25	1040.00	0.93	10.35		10.45	0.000195	1.71	844.26	100.00	0.18
Reach01	2350	Q50	1184.64	0.93	10.73		10.85	0.000220	1.86	882.46	100.00	0.20
Reach01	2350	Q100	1293.24	0.93	11.01		11.14	0.000238	1.98	909.82	100.00	0.20
Reach01	2300	Q25	1040.00	-0.08	10.35		10.44	0.000133	1.50	923.33	100.00	0.15
Reach01	2300	Q50	1184.64	-0.08	10.74		10.84	0.000151	1.64	961.57	100.00	0.16
Reach01	2300	Q100	1293.24	-0.08	11.01		11.12	0.000165	1.74	988.94	100.00	0.17
Reach01	2250	Q25	1040.00	-0.23	10.35		10.43	0.000132	1.52	943.05	100.00	0.15
Reach01	2250	Q50	1184.64	-0.23	10.73		10.83	0.000151	1.67	981.23	100.00	0.17
Reach01	2250	Q100	1293.24	-0.23	11.01		11.11	0.000165	1.77	1008.56	100.00	0.17
Reach01	2200	Q25	1040.00	-0.09	10.34		10.42	0.000142	1.57	935.39	100.00	0.16
Reach01	2200	Q50	1184.64	-0.09	10.72		10.82	0.000163	1.72	973.46	100.00	0.17
Reach01	2200	Q100	1293.24	-0.09	11.00		11.10	0.000178	1.83	1000.71	100.00	0.18
Reach01	2150	Q25	1040.00	0.83	10.31		10.41	0.000187	1.68	831.98	100.00	0.18
Reach01	2150	Q50	1184.64	0.83	10.69		10.81	0.000211	1.83	869.57	100.00	0.19
Reach01	2150	Q100	1293.24	0.83	10.96		11.09	0.000228	1.94	896.47	100.00	0.20
Reach01	2100	Q25	1040.00	2.56	10.15		10.38	0.000766	2.77	552.74	100.00	0.34
Reach01	2100	Q50	1184.64	2.56	10.51		10.77	0.000817	2.96	588.70	100.00	0.36
Reach01	2100	Q100	1293.24	2.56	10.76		11.06	0.000852	3.10	614.43	100.00	0.36
Reach01	2050	Q25	1040.00	1.88	10.17		10.33	0.000403	2.23	672.82	100.00	0.26
Reach01	2050	Q50	1184.64	1.88	10.54		10.72	0.000444	2.41	708.98	100.00	0.27
Reach01	2050	Q100	1293.24	1.88	10.80		11.00	0.000472	2.54	734.86	100.00	0.28
Reach01	2000	Q25	1040.00	0.85	10.17		10.31	0.000292	2.06	740.90	100.00	0.22
Reach01	2000	Q50	1184.64	0.85	10.54		10.69	0.000327	2.24	777.07	100.00	0.24
Reach01	2000	Q100	1293.24	0.85	10.80		10.97	0.000353	2.36	802.95	100.00	0.25
Reach01	1950	Q25	1040.00	0.71	10.17		10.29	0.000266	1.97	764.60	100.00	0.21
Reach01	1950	Q50	1184.64	0.71	10.53		10.67	0.000299	2.15	800.68	100.00	0.23
Reach01	1950	Q100	1293.24	0.71	10.79		10.95	0.000323	2.27	826.49	100.00	0.24
Reach01	1900	Q25	1040.00	0.86	10.15		10.28	0.000270	1.96	755.67	100.00	0.21
Reach01	1900	Q50	1184.64	0.86	10.51		10.66	0.000303	2.13	791.53	100.00	0.23
Reach01	1900	Q100	1293.24	0.86	10.77		10.93	0.000327	2.26	817.18	100.00	0.24
Reach01	1850	Q25	1040.00	0.77	10.14		10.26	0.000237	1.86	771.15	100.00	0.20
Reach01	1850	Q50	1184.64	0.77	10.50		10.64	0.000268	2.03	806.88	100.00	0.21
Reach01	1850	Q100	1293.24	0.77	10.75		10.92	0.000289	2.15	832.44	100.00	0.22
Reach01	1800	Q25	1040.00	1.63	10.09		10.24	0.000371	2.12	677.10	100.00	0.25
Reach01	1800	Q50	1184.64	1.63	10.44		10.62	0.000411	2.30	712.20	100.00	0.26
Reach01	1800	Q100	1293.24	1.63	10.69		10.89	0.000439	2.42	737.30	100.00	0.27
Reach01	1750	Q25	1040.00	1.72	10.07		10.23	0.000376	2.15	672.87	100.00	0.25
Reach01	1750	Q50	1184.64	1.72	10.42		10.60	0.000417	2.33	707.71	100.00	0.26
Reach01	1750	Q100	1293.24	1.72	10.67		10.87	0.000446	2.46	732.62	100.00	0.27
Reach01	1700	Q25	1040.00	0.63	10.08		10.20	0.000259	1.94	773.24	100.00	0.21
Reach01	1700	Q50	1184.64	0.63	10.43		10.57	0.000292	2.12	808.23	100.00	0.22
Reach01	1700	Q100	1293.24	0.63	10.68		10.84	0.000317	2.24	833.26	100.00	0.23
Reach01	1650	Q25	1040.00	0.49	10.07		10.19	0.000257	1.93	777.15	100.00	0.21
Reach01	1650	Q50	1184.64	0.49	10.42		10.56	0.000291	2.11	812.00	100.00	0.22
Reach01	1650	Q100	1293.24	0.49	10.67		10.82	0.000316	2.24	836.92	100.00	0.23
Reach01	1600	Q25	1040.00	0.48	10.06		10.17	0.000234	1.86	796.17	100.00	0.20
Reach01	1600	Q50	1184.64	0.48	10.41		10.54	0.000265	2.03	830.90	100.00	0.21
Reach01	1600	Q100	1293.24	0.48	10.66		10.80	0.000289	2.16	855.73	100.00	0.22
Reach01	1550	Q25	1040.00	1.46	10.00		10.15	0.000404	2.25	678.04	100.00	0.26
Reach01	1550	Q50	1184.64	1.46	10.34		10.52	0.000450	2.44	711.97	100.00	0.27
Reach01	1550	Q100	1293.24	1.46	10.58		10.78	0.000483	2.58	736.22	100.00	0.28
Reach01	1500	Q25	1040.00	2.54	9.90		10.12	0.000674	2.62	566.79	100.00	0.32
Reach01	1500	Q50	1184.64	2.54	10.22		10.48	0.000733	2.82	599.58	100.00	0.34

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	1500	Q100	1293.24	2.54	10.46		10.74	0.000776	2.96	622.99	100.00	0.35
Reach01	1450	Q25	1040.00	3.58	9.71		10.06	0.001293	3.14	451.62	100.00	0.43
Reach01	1450	Q50	1184.64	3.58	10.02		10.42	0.001361	3.34	482.86	100.00	0.45
Reach01	1450	Q100	1293.24	3.58	10.25		10.68	0.001408	3.49	505.16	100.00	0.46
Reach01	1400	Q25	1040.00	2.54	9.75		9.98	0.000647	2.56	564.81	100.00	0.32
Reach01	1400	Q50	1184.64	2.54	10.07		10.33	0.000709	2.76	596.38	100.00	0.33
Reach01	1400	Q100	1293.24	2.54	10.29		10.58	0.000753	2.91	618.91	100.00	0.35
Reach01	1350	Q25	1040.00	2.34	9.71		9.94	0.000706	2.63	555.07	100.00	0.33
Reach01	1350	Q50	1184.64	2.34	10.02		10.29	0.000772	2.84	586.22	100.00	0.35
Reach01	1350	Q100	1293.24	2.34	10.25		10.54	0.000819	2.99	608.46	100.00	0.36
Reach01	1300	Q25	1040.00	3.45	9.48		9.88	0.001591	3.44	428.52	100.00	0.48
Reach01	1300	Q50	1184.64	3.45	9.77		10.22	0.001684	3.67	457.63	100.00	0.49
Reach01	1300	Q100	1293.24	3.45	9.98		10.47	0.001748	3.83	478.40	100.00	0.51
Reach01	1250	Q25	1040.00	3.54	8.43	8.43	9.66	0.005959	5.45	256.53	100.00	0.87
Reach01	1250	Q50	1184.64	3.54	8.66	8.66	9.99	0.006086	5.71	279.52	100.00	0.89
Reach01	1250	Q100	1293.24	3.54	8.83	8.83	10.23	0.006161	5.90	296.11	100.00	0.90
Reach01	1200	Q25	1040.00	2.55	7.60		8.25	0.003432	4.33	334.55	100.00	0.67
Reach01	1200	Q50	1184.64	2.55	7.87		8.59	0.003509	4.56	361.23	100.00	0.69
Reach01	1200	Q100	1293.24	2.55	8.06		8.83	0.003557	4.72	380.48	100.00	0.70
Reach01	1150	Q25	1040.00	2.48	7.35		8.07	0.003694	4.41	320.96	100.00	0.70
Reach01	1150	Q50	1184.64	2.48	7.61		8.40	0.003782	4.65	346.64	100.00	0.71
Reach01	1150	Q100	1293.24	2.48	7.79		8.64	0.003837	4.82	365.21	100.00	0.72
Reach01	1100	Q25	1040.00	2.46	6.58	6.58	7.77	0.007392	5.52	252.24	100.00	0.96
Reach01	1100	Q50	1184.64	2.46	6.80	6.80	8.09	0.007481	5.79	274.03	100.00	0.97
Reach01	1100	Q100	1293.24	2.46	6.95	6.95	8.32	0.007565	5.98	289.34	100.00	0.98
Reach01	1050	Q25	1040.00	0.58	4.84		5.82	0.005308	4.91	275.61	100.00	0.82
Reach01	1050	Q50	1184.64	0.58	5.12		6.16	0.005138	5.08	303.95	100.00	0.82
Reach01	1050	Q100	1293.24	0.58	5.32		6.40	0.005036	5.20	324.30	100.00	0.82
Reach01	1000	Q25	1040.00	-0.60	5.04		5.52	0.001845	3.57	393.27	100.00	0.51
Reach01	1000	Q50	1184.64	-0.60	5.32		5.86	0.001944	3.80	421.04	100.00	0.53
Reach01	1000	Q100	1293.24	-0.60	5.52		6.10	0.002010	3.96	441.07	100.00	0.54
Reach01	950	Q25	1040.00	-2.61	5.23		5.39	0.000360	1.99	646.60	100.00	0.24
Reach01	950	Q50	1184.64	-2.61	5.52		5.72	0.000405	2.17	676.06	100.00	0.26
Reach01	950	Q100	1293.24	-2.61	5.73		5.95	0.000438	2.30	697.28	100.00	0.27
Reach01	900	Q25	1040.00	-2.50	5.23		5.37	0.000285	1.77	665.18	100.00	0.21
Reach01	900	Q50	1184.64	-2.50	5.52		5.69	0.000322	1.93	694.64	100.00	0.23
Reach01	900	Q100	1293.24	-2.50	5.73		5.93	0.000349	2.04	715.88	100.00	0.24
Reach01	850	Q25	1040.00	-3.38	5.23		5.35	0.000200	1.61	751.44	100.00	0.18
Reach01	850	Q50	1184.64	-3.38	5.53		5.67	0.000230	1.77	781.03	100.00	0.20
Reach01	850	Q100	1293.24	-3.38	5.74		5.90	0.000251	1.88	802.36	100.00	0.21
Reach01	800	Q25	1040.00	-1.36	5.10		5.32	0.000580	2.18	535.51	100.00	0.29
Reach01	800	Q50	1184.64	-1.36	5.38		5.64	0.000641	2.37	563.24	100.00	0.31
Reach01	800	Q100	1293.24	-1.36	5.58		5.87	0.000683	2.50	583.20	100.00	0.32
Reach01	750	Q25	1040.00	-3.63	5.17		5.27	0.000183	1.55	772.15	100.00	0.17
Reach01	750	Q50	1184.64	-3.63	5.45		5.58	0.000211	1.71	800.78	100.00	0.19
Reach01	750	Q100	1293.24	-3.63	5.66		5.81	0.000232	1.82	821.41	100.00	0.20
Reach01	700	Q25	1040.00	-2.51	5.19		5.25	0.000135	1.18	955.71	150.00	0.15
Reach01	700	Q50	1184.64	-2.51	5.48		5.56	0.000151	1.29	999.58	150.00	0.16
Reach01	700	Q100	1293.24	-2.51	5.69		5.78	0.000163	1.36	1031.26	150.00	0.16
Reach01	650	Q25	1040.00	-1.46	5.13		5.24	0.000281	1.53	736.46	150.00	0.20
Reach01	650	Q50	1184.64	-1.46	5.41		5.54	0.000308	1.66	779.14	150.00	0.22
Reach01	650	Q100	1293.24	-1.46	5.62		5.76	0.000327	1.74	809.96	150.00	0.22
Reach01	600	Q25	1040.00	-1.46	5.11		5.23	0.000284	1.54	734.23	150.00	0.21
Reach01	600	Q50	1184.64	-1.46	5.39		5.53	0.000311	1.66	776.68	150.00	0.22
Reach01	600	Q100	1293.24	-1.46	5.60		5.75	0.000330	1.75	807.35	150.00	0.22

HEC-RAS Plan: Plan 07 River: Baclaran Reach: Reach01 (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)	
Reach01	550	Q25	1040.00	-3.63	5.17		5.19	0.000046	0.80	1598.05	200.00	0.09
Reach01	550	Q50	1184.64	-3.63	5.46		5.49	0.000053	0.88	1656.42	200.00	0.10
Reach01	550	Q100	1293.24	-3.63	5.67		5.71	0.000058	0.94	1698.63	200.00	0.10
Reach01	500	Q25	1040.00	-0.50	4.61		5.14	0.002312	3.62	364.27	100.00	0.56
Reach01	500	Q50	1184.64	-0.50	4.81		5.43	0.002532	3.91	384.61	100.00	0.59
Reach01	500	Q100	1293.24	-0.50	4.96		5.63	0.002692	4.12	398.96	100.00	0.61
Reach01	450	Q25	1040.00	-0.65	4.27		4.97	0.003725	4.46	324.30	100.00	0.70
Reach01	450	Q50	1184.64	-0.65	4.40		5.24	0.004288	4.89	337.14	100.00	0.76
Reach01	450	Q100	1293.24	-0.65	4.47		5.43	0.004783	5.22	344.45	100.00	0.80
Reach01	400	Q25	1040.00	0.31	3.79	3.79	4.71	0.006801	4.70	290.16	150.00	0.89
Reach01	400	Q50	1184.64	0.31	3.96	3.96	4.96	0.006913	4.92	315.94	150.00	0.91
Reach01	400	Q100	1293.24	0.31	4.08	4.08	5.14	0.006977	5.08	334.55	150.00	0.92
Reach01	350	Q25	1040.00	-2.41	0.39	0.39	1.26	0.009950	4.13	253.42	158.59	1.00
Reach01	350	Q50	1184.64	-2.41	0.58	0.58	1.49	0.009145	4.24	285.31	195.04	0.97
Reach01	350	Q100	1293.24	-2.41	0.74	0.74	1.65	0.008287	4.25	316.81	200.00	0.94
Reach01	300	Q25	1040.00	-3.39	-1.42		-0.97	0.005562	3.24	369.46	200.00	0.76
Reach01	300	Q50	1184.64	-3.39	-1.25		-0.76	0.005457	3.40	402.11	200.00	0.76
Reach01	300	Q100	1293.24	-3.39	-1.13		-0.61	0.005328	3.49	427.12	200.00	0.76
Reach01	250	Q25	1040.00	-3.66	-1.74		-1.26	0.006124	3.34	359.02	200.00	0.79
Reach01	250	Q50	1184.64	-3.66	-1.54		-1.04	0.005648	3.43	398.09	200.00	0.77
Reach01	250	Q100	1293.24	-3.66	-1.39		-0.88	0.005311	3.49	427.70	200.00	0.76
Reach01	200	Q25	1040.00	-4.06	-1.99		-1.57	0.005502	3.30	381.29	200.00	0.76
Reach01	200	Q50	1184.64	-4.06	-1.76		-1.32	0.004880	3.35	427.88	200.00	0.73
Reach01	200	Q100	1293.24	-4.06	-1.59		-1.14	0.004518	3.39	461.89	200.00	0.71
Reach01	150	Q25	1040.00	-4.63	-2.06		-1.80	0.002551	2.62	481.32	200.00	0.53
Reach01	150	Q50	1184.64	-4.63	-1.82		-1.53	0.002409	2.71	529.94	200.00	0.53
Reach01	150	Q100	1293.24	-4.63	-1.64		-1.34	0.002323	2.78	565.16	200.00	0.52
Reach01	100	Q25	1040.00	-4.87	-2.15		-1.92	0.001946	2.38	514.60	200.00	0.47
Reach01	100	Q50	1184.64	-4.87	-1.90		-1.65	0.001862	2.48	564.37	200.00	0.47
Reach01	100	Q100	1293.24	-4.87	-1.72		-1.46	0.001811	2.54	600.29	200.00	0.47
Reach01	50	Q25	1040.00	-5.19	-2.21		-2.01	0.001444	2.19	567.12	200.00	0.41
Reach01	50	Q50	1184.64	-5.19	-1.95		-1.74	0.001415	2.30	617.42	200.00	0.41
Reach01	50	Q100	1293.24	-5.19	-1.77		-1.55	0.001398	2.37	653.67	200.00	0.42
Reach01	0	Q25	1040.00	-5.46	-2.29	-3.77	-2.09	0.001424	2.27	555.85	184.24	0.41
Reach01	0	Q50	1184.64	-5.46	-2.04	-3.62	-1.82	0.001424	2.39	601.60	184.24	0.42
Reach01	0	Q100	1293.24	-5.46	-1.86	-3.53	-1.62	0.001424	2.48	634.55	184.24	0.42

Output Table (With Dredging)

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01

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)	
Reach01	9800	Q25	1040.00	5.49	10.83		11.34	0.001689	3.18	352.16	159.73	0.47
Reach01	9800	Q50	1184.64	5.49	11.13		11.68	0.001736	3.34	403.16	185.17	0.48
Reach01	9800	Q100	1293.24	5.49	11.35		11.92	0.001728	3.43	446.87	200.00	0.49
Reach01	9750	Q25	1040.00	5.42	10.71		11.25	0.001816	3.25	320.53	73.82	0.49
Reach01	9750	Q50	1184.64	5.42	10.95		11.58	0.002011	3.50	342.11	104.57	0.52
Reach01	9750	Q100	1293.24	5.42	11.13		11.81	0.002134	3.67	368.42	180.85	0.53
Reach01	9700	Q25	1040.00	5.36	10.61		11.15	0.001870	3.28	317.35	70.98	0.49
Reach01	9700	Q50	1184.64	5.36	10.83		11.47	0.002094	3.55	333.89	86.55	0.53
Reach01	9700	Q100	1293.24	5.36	10.99		11.70	0.002246	3.75	350.12	140.11	0.55
Reach01	9650	Q25	1040.00	5.29	10.51		11.06	0.001875	3.28	328.78	144.64	0.50
Reach01	9650	Q50	1184.64	5.29	10.74		11.37	0.002027	3.52	366.90	200.00	0.52
Reach01	9650	Q100	1293.24	5.29	10.91		11.58	0.002099	3.67	400.42	200.00	0.53
Reach01	9600	Q25	1040.00	5.22	10.55		10.93	0.001342	2.90	454.48	200.00	0.42
Reach01	9600	Q50	1184.64	5.22	10.80		11.22	0.001378	3.04	506.13	200.00	0.43
Reach01	9600	Q100	1293.24	5.22	10.99		11.42	0.001398	3.14	542.83	200.00	0.44
Reach01	9550	Q25	1040.00	5.16	10.50		10.86	0.001270	2.84	481.66	200.00	0.41
Reach01	9550	Q50	1184.64	5.16	10.76		11.15	0.001297	2.97	533.65	200.00	0.42
Reach01	9550	Q100	1293.24	5.16	10.94		11.35	0.001314	3.06	570.51	200.00	0.43
Reach01	9500	Q25	1040.00	5.09	10.56		10.76	0.000901	2.03	565.13	200.00	0.34
Reach01	9500	Q50	1184.64	5.09	10.82		11.04	0.000908	2.14	617.75	200.00	0.34
Reach01	9500	Q100	1293.24	5.09	11.01		11.24	0.000914	2.21	654.98	200.00	0.35
Reach01	9450	Q25	1040.00	5.02	10.42		10.70	0.001013	2.59	522.67	200.00	0.37
Reach01	9450	Q50	1184.64	5.02	10.68		10.98	0.001033	2.71	574.99	200.00	0.38
Reach01	9450	Q100	1293.24	5.02	10.86		11.18	0.001046	2.79	612.05	200.00	0.38
Reach01	9400	Q25	1040.00	4.96	10.22		10.62	0.001924	2.86	409.96	200.00	0.49
Reach01	9400	Q50	1184.64	4.96	10.48		10.90	0.001899	2.97	460.83	200.00	0.49
Reach01	9400	Q100	1293.24	4.96	10.66		11.10	0.001877	3.05	497.25	200.00	0.49
Reach01	9350	Q25	1040.00	4.89	10.08		10.51	0.002334	2.97	385.95	192.38	0.53
Reach01	9350	Q50	1184.64	4.89	10.34		10.80	0.002250	3.07	437.97	200.00	0.53
Reach01	9350	Q100	1293.24	4.89	10.53		11.00	0.002185	3.13	475.58	200.00	0.52
Reach01	9300	Q25	1040.00	4.82	10.02		10.39	0.001887	2.79	411.40	148.44	0.48
Reach01	9300	Q50	1184.64	4.82	10.27		10.68	0.001983	2.92	449.62	153.06	0.50
Reach01	9300	Q100	1293.24	4.82	10.45		10.88	0.002041	3.00	477.97	156.62	0.50
Reach01	9250	Q25	1040.00	4.76	9.95		10.28	0.001999	2.62	429.47	167.14	0.49
Reach01	9250	Q50	1184.64	4.76	10.21		10.56	0.002020	2.71	473.13	172.33	0.49
Reach01	9250	Q100	1293.24	4.76	10.39		10.76	0.002035	2.77	505.51	176.62	0.50
Reach01	9200	Q25	1040.00	4.69	9.87		10.19	0.001573	2.57	467.97	200.00	0.44
Reach01	9200	Q50	1184.64	4.69	10.13		10.47	0.001540	2.66	519.88	200.00	0.44
Reach01	9200	Q100	1293.24	4.69	10.32		10.67	0.001518	2.73	557.13	200.00	0.44
Reach01	9150	Q25	1040.00	4.62	9.87		10.10	0.001087	2.15	513.23	179.07	0.37
Reach01	9150	Q50	1184.64	4.62	10.12		10.38	0.001107	2.27	562.48	200.00	0.38
Reach01	9150	Q100	1293.24	4.62	10.31		10.58	0.001107	2.35	599.62	200.00	0.38
Reach01	9100	Q25	1040.00	4.56	9.76		10.04	0.001076	2.54	472.06	171.99	0.38
Reach01	9100	Q50	1184.64	4.56	10.01		10.32	0.001116	2.68	519.53	200.00	0.39
Reach01	9100	Q100	1293.24	4.56	10.19		10.52	0.001132	2.76	555.91	200.00	0.39
Reach01	9050	Q25	1040.00	4.49	9.70		9.97	0.001434	2.30	459.14	181.49	0.41
Reach01	9050	Q50	1184.64	4.49	9.96		10.25	0.001429	2.42	508.78	200.00	0.42
Reach01	9050	Q100	1293.24	4.49	10.14		10.45	0.001415	2.49	545.34	200.00	0.42
Reach01	9000	Q25	1040.00	4.42	9.64		9.90	0.001410	2.27	468.08	200.00	0.41
Reach01	9000	Q50	1184.64	4.42	9.89		10.18	0.001392	2.37	518.80	200.00	0.41
Reach01	9000	Q100	1293.24	4.42	10.08		10.38	0.001374	2.44	555.75	200.00	0.41
Reach01	8950	Q25	1040.00	4.36	9.57		9.83	0.001438	2.28	477.93	200.00	0.41
Reach01	8950	Q50	1184.64	4.36	9.82		10.11	0.001404	2.37	529.32	200.00	0.41
Reach01	8950	Q100	1293.24	4.36	10.01		10.31	0.001377	2.44	566.76	200.00	0.41
Reach01	8900	Q25	1040.00	4.29	9.50		9.76	0.001435	2.27	475.17	200.00	0.41
Reach01	8900	Q50	1184.64	4.29	9.75		10.04	0.001399	2.36	526.86	200.00	0.41

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	8900	Q100	1293.24	4.29	9.94		10.24	0.001370	2.43	564.55	200.00	0.41
Reach01	8850	Q25	1040.00	4.22	9.46		9.68	0.001185	2.07	522.49	200.00	0.38
Reach01	8850	Q50	1184.64	4.22	9.72		9.96	0.001157	2.16	574.89	200.00	0.38
Reach01	8850	Q100	1293.24	4.22	9.91		10.16	0.001136	2.22	613.01	200.00	0.38
Reach01	8800	Q25	1040.00	4.16	9.35		9.61	0.001548	2.24	482.30	200.00	0.42
Reach01	8800	Q50	1184.64	4.16	9.62		9.89	0.001468	2.31	535.61	200.00	0.42
Reach01	8800	Q100	1293.24	4.16	9.82		10.09	0.001416	2.37	574.36	200.00	0.42
Reach01	8750	Q25	1040.00	4.09	9.26		9.53	0.001500	2.32	486.31	200.00	0.42
Reach01	8750	Q50	1184.64	4.09	9.53		9.82	0.001433	2.40	540.41	200.00	0.42
Reach01	8750	Q100	1293.24	4.09	9.73		10.02	0.001389	2.46	579.68	200.00	0.42
Reach01	8700	Q25	1040.00	4.02	9.14		9.45	0.001708	2.51	461.46	200.00	0.45
Reach01	8700	Q50	1184.64	4.02	9.42		9.74	0.001616	2.58	516.73	200.00	0.45
Reach01	8700	Q100	1293.24	4.02	9.62		9.95	0.001557	2.63	556.80	200.00	0.44
Reach01	8650	Q25	1040.00	3.96	9.06		9.35	0.001848	2.43	448.84	195.26	0.46
Reach01	8650	Q50	1184.64	3.96	9.34		9.65	0.001714	2.49	505.22	200.00	0.45
Reach01	8650	Q100	1293.24	3.96	9.55		9.86	0.001628	2.53	546.07	200.00	0.45
Reach01	8600	Q25	1040.00	3.89	8.96		9.27	0.001584	2.57	476.14	200.00	0.44
Reach01	8600	Q50	1184.64	3.89	9.25		9.57	0.001500	2.64	534.14	200.00	0.44
Reach01	8600	Q100	1293.24	3.89	9.45		9.78	0.001448	2.69	575.85	200.00	0.43
Reach01	8550	Q25	1040.00	3.82	8.93		9.18	0.001106	2.32	507.88	200.00	0.41
Reach01	8550	Q50	1184.64	3.82	9.22		9.49	0.001082	2.39	566.21	200.00	0.40
Reach01	8550	Q100	1293.24	3.82	9.43		9.71	0.001065	2.44	608.13	200.00	0.40
Reach01	8500	Q25	1040.00	3.76	8.85		9.13	0.001188	2.41	495.26	200.00	0.43
Reach01	8500	Q50	1184.64	3.76	9.14		9.43	0.001155	2.47	554.22	200.00	0.42
Reach01	8500	Q100	1293.24	3.76	9.35		9.65	0.001132	2.52	596.55	200.00	0.41
Reach01	8450	Q25	1040.00	3.69	8.78		9.06	0.001218	2.42	486.58	200.00	0.44
Reach01	8450	Q50	1184.64	3.69	9.08		9.37	0.001178	2.47	546.29	200.00	0.43
Reach01	8450	Q100	1293.24	3.69	9.30		9.59	0.001151	2.51	589.04	200.00	0.42
Reach01	8400	Q25	1040.00	3.62	8.78		8.99	0.000880	2.25	599.29	200.00	0.35
Reach01	8400	Q50	1184.64	3.62	9.08		9.30	0.000873	2.33	658.69	200.00	0.36
Reach01	8400	Q100	1293.24	3.62	9.29		9.52	0.000868	2.39	701.25	200.00	0.36
Reach01	8350	Q25	1040.00	3.56	8.75		8.94	0.000835	2.04	583.33	200.00	0.35
Reach01	8350	Q50	1184.64	3.56	9.05		9.25	0.000822	2.11	642.86	200.00	0.34
Reach01	8350	Q100	1293.24	3.56	9.26		9.48	0.000814	2.17	685.52	200.00	0.34
Reach01	8300	Q25	1040.00	3.49	8.65		8.89	0.001015	2.28	535.69	200.00	0.39
Reach01	8300	Q50	1184.64	3.49	8.95		9.21	0.000992	2.35	595.63	200.00	0.38
Reach01	8300	Q100	1293.24	3.49	9.17		9.43	0.000977	2.40	638.56	200.00	0.38
Reach01	8250	Q25	1040.00	3.42	8.65		8.83	0.000796	1.92	572.24	200.00	0.34
Reach01	8250	Q50	1184.64	3.42	8.95		9.14	0.000780	1.99	632.29	200.00	0.34
Reach01	8250	Q100	1293.24	3.42	9.16		9.37	0.000770	2.04	675.30	200.00	0.34
Reach01	8200	Q25	1040.00	3.36	8.58		8.79	0.000847	2.07	565.04	200.00	0.35
Reach01	8200	Q50	1184.64	3.36	8.88		9.10	0.000834	2.15	625.02	200.00	0.34
Reach01	8200	Q100	1293.24	3.36	9.10		9.33	0.000825	2.20	668.00	200.00	0.34
Reach01	8150	Q25	1040.00	3.29	8.56		8.74	0.000719	1.95	601.54	200.00	0.32
Reach01	8150	Q50	1184.64	3.29	8.86		9.06	0.000715	2.03	661.49	200.00	0.32
Reach01	8150	Q100	1293.24	3.29	9.07		9.28	0.000713	2.09	704.46	200.00	0.32
Reach01	8100	Q25	1040.00	3.22	8.48		8.70	0.000917	2.14	548.55	200.00	0.37
Reach01	8100	Q50	1184.64	3.22	8.78		9.01	0.000897	2.21	609.17	200.00	0.36
Reach01	8100	Q100	1293.24	3.22	9.00		9.24	0.000883	2.26	652.48	200.00	0.36
Reach01	8050	Q25	1040.00	3.16	8.45		8.65	0.000840	2.07	574.57	200.00	0.35
Reach01	8050	Q50	1184.64	3.16	8.75		8.96	0.000825	2.13	635.35	200.00	0.35
Reach01	8050	Q100	1293.24	3.16	8.97		9.19	0.000815	2.19	678.76	200.00	0.35
Reach01	8000	Q25	1040.00	3.09	8.40		8.61	0.000815	2.15	599.39	200.00	0.35
Reach01	8000	Q50	1184.64	3.09	8.71		8.92	0.000807	2.23	660.17	200.00	0.34
Reach01	8000	Q100	1293.24	3.09	8.92		9.15	0.000802	2.29	703.57	200.00	0.34

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	7950	Q25	1040.00	3.02	8.37		8.57	0.000784	2.14	608.92	200.00	0.34
Reach01	7950	Q50	1184.64	3.02	8.67		8.88	0.000779	2.22	669.73	200.00	0.34
Reach01	7950	Q100	1293.24	3.02	8.89		9.11	0.000775	2.28	713.15	200.00	0.34
Reach01	7900	Q25	1040.00	2.96	8.34		8.52	0.000709	2.03	632.79	200.00	0.32
Reach01	7900	Q50	1184.64	2.96	8.65		8.84	0.000708	2.11	693.60	200.00	0.32
Reach01	7900	Q100	1293.24	2.96	8.86		9.07	0.000707	2.17	737.02	200.00	0.32
Reach01	7850	Q25	1040.00	2.89	8.32		8.49	0.000669	2.00	652.78	200.00	0.31
Reach01	7850	Q50	1184.64	2.89	8.62		8.80	0.000671	2.08	713.57	200.00	0.31
Reach01	7850	Q100	1293.24	2.89	8.84		9.03	0.000672	2.14	756.97	200.00	0.32
Reach01	7800	Q25	1040.00	2.82	8.32		8.44	0.000469	1.58	714.87	200.00	0.26
Reach01	7800	Q50	1184.64	2.82	8.63		8.76	0.000473	1.66	775.76	200.00	0.26
Reach01	7800	Q100	1293.24	2.82	8.84		8.98	0.000476	1.71	819.24	200.00	0.26
Reach01	7750	Q25	1040.00	2.76	8.28		8.42	0.000532	1.66	684.54	200.00	0.28
Reach01	7750	Q50	1184.64	2.76	8.59		8.73	0.000534	1.74	745.36	200.00	0.28
Reach01	7750	Q100	1293.24	2.76	8.81		8.96	0.000535	1.80	788.79	200.00	0.28
Reach01	7700	Q25	1040.00	2.69	8.22		8.38	0.000632	1.89	645.43	200.00	0.31
Reach01	7700	Q50	1184.64	2.69	8.52		8.70	0.000634	1.97	706.06	200.00	0.31
Reach01	7700	Q100	1293.24	2.69	8.74		8.93	0.000636	2.03	749.35	200.00	0.31
Reach01	7650	Q25	1040.00	2.62	8.15		8.35	0.000744	2.04	588.71	200.00	0.34
Reach01	7650	Q50	1184.64	2.62	8.46		8.66	0.000744	2.12	649.19	200.00	0.34
Reach01	7650	Q100	1293.24	2.62	8.67		8.89	0.000743	2.18	692.40	200.00	0.34
Reach01	7600	Q25	1040.00	2.56	8.06		8.30	0.000885	2.32	546.22	200.00	0.36
Reach01	7600	Q50	1184.64	2.56	8.36		8.62	0.000888	2.42	606.22	200.00	0.37
Reach01	7600	Q100	1293.24	2.56	8.57		8.84	0.000888	2.48	649.21	200.00	0.37
Reach01	7550	Q25	1040.00	2.49	8.02		8.25	0.000842	2.23	557.52	200.00	0.36
Reach01	7550	Q50	1184.64	2.49	8.33		8.57	0.000842	2.32	617.71	200.00	0.36
Reach01	7550	Q100	1293.24	2.49	8.54		8.79	0.000841	2.38	660.81	200.00	0.36
Reach01	7500	Q25	1040.00	2.42	8.01		8.20	0.000763	1.98	551.68	200.00	0.34
Reach01	7500	Q50	1184.64	2.42	8.31		8.52	0.000758	2.05	611.99	200.00	0.34
Reach01	7500	Q100	1293.24	2.42	8.52		8.74	0.000754	2.10	655.19	200.00	0.34
Reach01	7450	Q25	1040.00	2.36	7.84		8.14	0.001394	2.46	446.19	171.07	0.42
Reach01	7450	Q50	1184.64	2.36	8.13		8.46	0.001359	2.56	501.67	200.00	0.42
Reach01	7450	Q100	1293.24	2.36	8.35		8.68	0.001324	2.62	544.45	200.00	0.42
Reach01	7400	Q25	1040.00	2.29	7.81		8.06	0.001152	2.21	481.44	167.31	0.38
Reach01	7400	Q50	1184.64	2.29	8.11		8.38	0.001131	2.32	534.65	197.64	0.38
Reach01	7400	Q100	1293.24	2.29	8.32		8.61	0.001107	2.38	577.63	200.00	0.38
Reach01	7350	Q25	1040.00	2.22	7.77		8.00	0.001080	2.11	497.07	158.09	0.37
Reach01	7350	Q50	1184.64	2.22	8.07		8.32	0.001059	2.21	545.07	166.22	0.37
Reach01	7350	Q100	1293.24	2.22	8.28		8.55	0.001042	2.28	581.48	173.21	0.37
Reach01	7300	Q25	1040.00	2.16	7.68		7.94	0.001248	2.30	480.78	156.74	0.39
Reach01	7300	Q50	1184.64	2.16	7.98		8.26	0.001214	2.39	528.81	166.53	0.39
Reach01	7300	Q100	1293.24	2.16	8.19		8.49	0.001190	2.46	565.78	175.68	0.39
Reach01	7250	Q25	1040.00	2.09	7.55		7.86	0.001571	2.52	433.11	154.02	0.44
Reach01	7250	Q50	1184.64	2.09	7.84		8.18	0.001521	2.62	480.05	160.78	0.44
Reach01	7250	Q100	1293.24	2.09	8.06		8.42	0.001476	2.68	517.29	188.12	0.44
Reach01	7200	Q25	1040.00	2.02	7.38		7.77	0.001845	2.79	398.29	155.33	0.48
Reach01	7200	Q50	1184.64	2.02	7.68		8.09	0.001803	2.88	446.13	171.68	0.48
Reach01	7200	Q100	1293.24	2.02	7.91		8.33	0.001730	2.93	488.32	200.00	0.47
Reach01	7150	Q25	1040.00	1.96	7.36		7.68	0.001149	2.53	459.56	200.00	0.42
Reach01	7150	Q50	1184.64	1.96	7.67		8.00	0.001130	2.60	521.06	200.00	0.42
Reach01	7150	Q100	1293.24	1.96	7.90		8.24	0.001107	2.65	566.80	200.00	0.41
Reach01	7100	Q25	1040.00	1.89	7.33		7.61	0.001077	2.41	474.70	200.00	0.41
Reach01	7100	Q50	1184.64	1.89	7.64		7.94	0.001057	2.49	536.59	200.00	0.41
Reach01	7100	Q100	1293.24	1.89	7.87		8.17	0.001034	2.53	582.63	200.00	0.40
Reach01	7050	Q25	1040.00	1.82	7.28		7.55	0.001284	2.37	490.50	200.00	0.40
Reach01	7050	Q50	1184.64	1.82	7.59		7.88	0.001213	2.44	553.11	200.00	0.39

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	7050	Q100	1293.24	1.82	7.82		8.11	0.001159	2.48	599.64	200.00	0.39
Reach01	7000	Q25	1040.00	1.76	7.20		7.49	0.001319	2.42	479.65	200.00	0.41
Reach01	7000	Q50	1184.64	1.76	7.52		7.81	0.001247	2.48	542.77	200.00	0.40
Reach01	7000	Q100	1293.24	1.76	7.75		8.05	0.001191	2.52	589.85	200.00	0.40
Reach01	6950	Q25	1040.00	1.69	7.18		7.41	0.001115	2.17	536.61	200.00	0.37
Reach01	6950	Q50	1184.64	1.69	7.50		7.74	0.001043	2.22	600.79	200.00	0.37
Reach01	6950	Q100	1293.24	1.69	7.74		7.98	0.000994	2.26	648.45	200.00	0.36
Reach01	6900	Q25	1040.00	1.62	7.14		7.35	0.001043	2.09	558.97	200.00	0.36
Reach01	6900	Q50	1184.64	1.62	7.47		7.68	0.000975	2.15	623.91	200.00	0.35
Reach01	6900	Q100	1293.24	1.62	7.71		7.93	0.000928	2.18	672.06	200.00	0.35
Reach01	6850	Q25	1040.00	1.56	7.08		7.29	0.001068	2.12	551.13	200.00	0.36
Reach01	6850	Q50	1184.64	1.56	7.41		7.63	0.000993	2.18	616.87	200.00	0.36
Reach01	6850	Q100	1293.24	1.56	7.65		7.88	0.000942	2.21	665.66	200.00	0.35
Reach01	6800	Q25	1040.00	1.49	7.01		7.24	0.001083	2.22	544.26	200.00	0.37
Reach01	6800	Q50	1184.64	1.49	7.34		7.58	0.001010	2.27	610.82	200.00	0.36
Reach01	6800	Q100	1293.24	1.49	7.59		7.83	0.000959	2.30	660.31	200.00	0.36
Reach01	6750	Q25	1040.00	1.42	6.96		7.19	0.000909	2.19	529.03	200.00	0.38
Reach01	6750	Q50	1184.64	1.42	7.29		7.53	0.000871	2.24	596.33	200.00	0.37
Reach01	6750	Q100	1293.24	1.42	7.54		7.79	0.000839	2.26	646.38	200.00	0.36
Reach01	6700	Q25	1040.00	1.36	6.93		7.13	0.000962	2.06	575.21	200.00	0.35
Reach01	6700	Q50	1184.64	1.36	7.27		7.48	0.000895	2.11	642.86	200.00	0.34
Reach01	6700	Q100	1293.24	1.36	7.52		7.73	0.000849	2.14	693.13	200.00	0.33
Reach01	6650	Q25	1040.00	1.29	6.90		7.08	0.000868	1.94	600.50	200.00	0.33
Reach01	6650	Q50	1184.64	1.29	7.24		7.43	0.000808	1.99	668.72	200.00	0.32
Reach01	6650	Q100	1293.24	1.29	7.50		7.69	0.000767	2.02	719.37	200.00	0.32
Reach01	6600	Q25	1040.00	1.22	6.83		7.03	0.000930	2.07	579.53	200.00	0.34
Reach01	6600	Q50	1184.64	1.22	7.18		7.38	0.000865	2.12	648.55	200.00	0.34
Reach01	6600	Q100	1293.24	1.22	7.43		7.65	0.000821	2.15	699.77	200.00	0.33
Reach01	6550	Q25	1040.00	1.16	6.80		6.98	0.000885	1.99	585.84	200.00	0.33
Reach01	6550	Q50	1184.64	1.16	7.14		7.34	0.000821	2.03	655.51	200.00	0.33
Reach01	6550	Q100	1293.24	1.16	7.40		7.60	0.000778	2.06	707.15	200.00	0.32
Reach01	6500	Q25	1040.00	1.09	6.76		6.94	0.000858	1.95	591.15	200.00	0.33
Reach01	6500	Q50	1184.64	1.09	7.11		7.30	0.000794	1.99	661.46	200.00	0.32
Reach01	6500	Q100	1293.24	1.09	7.37		7.56	0.000752	2.03	713.53	200.00	0.32
Reach01	6450	Q25	1040.00	1.02	6.69		6.89	0.000904	2.09	577.93	200.00	0.34
Reach01	6450	Q50	1184.64	1.02	7.04		7.25	0.000841	2.14	648.98	200.00	0.33
Reach01	6450	Q100	1293.24	1.02	7.31		7.52	0.000797	2.17	701.65	200.00	0.33
Reach01	6400	Q25	1040.00	0.96	6.65		6.84	0.000976	1.97	555.51	200.00	0.35
Reach01	6400	Q50	1184.64	0.96	7.01		7.21	0.000880	2.00	627.52	200.00	0.33
Reach01	6400	Q100	1293.24	0.96	7.28		7.48	0.000820	2.02	680.83	200.00	0.33
Reach01	6350	Q25	1040.00	0.89	6.51		6.78	0.001304	2.30	473.65	177.97	0.40
Reach01	6350	Q50	1184.64	0.89	6.88		7.15	0.001177	2.34	540.16	188.72	0.39
Reach01	6350	Q100	1293.24	0.89	7.15		7.42	0.001091	2.36	593.14	200.00	0.38
Reach01	6300	Q25	1040.00	0.82	6.46		6.71	0.001306	2.24	484.56	172.58	0.40
Reach01	6300	Q50	1184.64	0.82	6.83		7.09	0.001159	2.27	550.24	181.37	0.38
Reach01	6300	Q100	1293.24	0.82	7.11		7.36	0.001068	2.29	603.07	200.00	0.37
Reach01	6250	Q25	1040.00	0.76	6.42		6.64	0.001135	2.08	520.11	192.79	0.37
Reach01	6250	Q50	1184.64	0.76	6.80		7.02	0.000996	2.10	596.14	200.00	0.35
Reach01	6250	Q100	1293.24	0.76	7.08		7.30	0.000911	2.11	652.30	200.00	0.34
Reach01	6200	Q25	1040.00	0.69	6.40		6.57	0.000950	1.88	572.09	200.00	0.34
Reach01	6200	Q50	1184.64	0.69	6.78		6.96	0.000828	1.90	649.63	200.00	0.32
Reach01	6200	Q100	1293.24	0.69	7.07		7.25	0.000757	1.91	706.45	200.00	0.31
Reach01	6150	Q25	1040.00	0.62	6.35		6.53	0.000905	1.87	573.29	200.00	0.33
Reach01	6150	Q50	1184.64	0.62	6.74		6.92	0.000791	1.89	652.00	200.00	0.32
Reach01	6150	Q100	1293.24	0.62	7.03		7.21	0.000726	1.90	709.51	200.00	0.31

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	6100	Q25	1040.00	0.56	6.29		6.48	0.000930	1.93	554.52	200.00	0.34
Reach01	6100	Q50	1184.64	0.56	6.69		6.88	0.000814	1.95	634.41	200.00	0.32
Reach01	6100	Q100	1293.24	0.56	6.98		7.18	0.000746	1.96	692.73	200.00	0.31
Reach01	6050	Q25	1040.00	0.49	6.23		6.43	0.000986	2.01	541.97	200.00	0.35
Reach01	6050	Q50	1184.64	0.49	6.64		6.84	0.000855	2.01	623.64	200.00	0.33
Reach01	6050	Q100	1293.24	0.49	6.93		7.14	0.000779	2.02	682.94	200.00	0.32
Reach01	6000	Q25	1040.00	0.42	6.20		6.38	0.000899	1.90	593.55	200.00	0.33
Reach01	6000	Q50	1184.64	0.42	6.62		6.79	0.000775	1.91	676.43	200.00	0.31
Reach01	6000	Q100	1293.24	0.42	6.92		7.09	0.000707	1.92	736.33	200.00	0.30
Reach01	5950	Q25	1040.00	0.36	6.12		6.33	0.000816	2.17	603.35	200.00	0.33
Reach01	5950	Q50	1184.64	0.36	6.54		6.75	0.000733	2.19	687.67	200.00	0.32
Reach01	5950	Q100	1293.24	0.36	6.85		7.05	0.000684	2.20	748.44	200.00	0.31
Reach01	5900	Q25	1040.00	0.29	6.11		6.28	0.000656	1.98	661.35	200.00	0.30
Reach01	5900	Q50	1184.64	0.29	6.54		6.71	0.000599	2.01	745.88	200.00	0.29
Reach01	5900	Q100	1293.24	0.29	6.84		7.01	0.000565	2.03	806.77	200.00	0.28
Reach01	5850	Q25	1040.00	0.22	6.11		6.24	0.000530	1.63	695.33	200.00	0.26
Reach01	5850	Q50	1184.64	0.22	6.54		6.67	0.000480	1.66	780.09	200.00	0.25
Reach01	5850	Q100	1293.24	0.22	6.84		6.98	0.000451	1.69	841.11	200.00	0.25
Reach01	5800	Q25	1040.00	0.16	6.02		6.21	0.000642	2.03	608.16	200.00	0.31
Reach01	5800	Q50	1184.64	0.16	6.45		6.64	0.000592	2.05	694.06	200.00	0.30
Reach01	5800	Q100	1293.24	0.16	6.76		6.95	0.000561	2.07	755.84	200.00	0.29
Reach01	5750	Q25	1040.00	0.09	5.98		6.17	0.000670	2.02	589.71	200.00	0.32
Reach01	5750	Q50	1184.64	0.09	6.41		6.61	0.000611	2.03	676.59	200.00	0.31
Reach01	5750	Q100	1293.24	0.09	6.72		6.92	0.000575	2.05	738.92	200.00	0.30
Reach01	5700	Q25	1040.00	0.02	5.95		6.14	0.000634	1.99	610.18	200.00	0.31
Reach01	5700	Q50	1184.64	0.02	6.39		6.57	0.000578	2.00	697.59	200.00	0.30
Reach01	5700	Q100	1293.24	0.02	6.70		6.89	0.000545	2.01	760.22	200.00	0.29
Reach01	5650	Q25	1040.00	-0.04	5.90		6.10	0.000669	2.06	576.28	192.76	0.32
Reach01	5650	Q50	1184.64	-0.04	6.34		6.54	0.000614	2.08	663.65	200.00	0.31
Reach01	5650	Q100	1293.24	-0.04	6.65		6.86	0.000579	2.09	726.68	200.00	0.30
Reach01	5600	Q25	1040.00	-0.11	5.90		6.06	0.000581	1.79	604.53	200.00	0.30
Reach01	5600	Q50	1184.64	-0.11	6.34		6.50	0.000526	1.79	692.84	200.00	0.29
Reach01	5600	Q100	1293.24	-0.11	6.66		6.82	0.000493	1.80	756.10	200.00	0.28
Reach01	5550	Q25	1040.00	-0.18	5.87		6.03	0.000549	1.82	641.07	200.00	0.29
Reach01	5550	Q50	1184.64	-0.18	6.31		6.47	0.000501	1.84	729.86	200.00	0.28
Reach01	5550	Q100	1293.24	-0.18	6.63		6.79	0.000472	1.85	793.39	200.00	0.27
Reach01	5500	Q25	1040.00	-0.24	5.84		6.00	0.000560	1.85	636.76	200.00	0.29
Reach01	5500	Q50	1184.64	-0.24	6.29		6.45	0.000510	1.87	726.15	200.00	0.28
Reach01	5500	Q100	1293.24	-0.24	6.60		6.77	0.000480	1.88	790.04	200.00	0.27
Reach01	5450	Q25	1040.00	-0.31	5.85		5.96	0.000404	1.53	709.33	200.00	0.25
Reach01	5450	Q50	1184.64	-0.31	6.29		6.41	0.000372	1.56	798.63	200.00	0.24
Reach01	5450	Q100	1293.24	-0.31	6.61		6.74	0.000354	1.58	862.47	200.00	0.23
Reach01	5400	Q25	1040.00	-0.38	5.78		5.93	0.000727	1.79	614.52	200.02	0.30
Reach01	5400	Q50	1184.64	-0.38	6.23		6.39	0.000619	1.79	705.43	200.02	0.28
Reach01	5400	Q100	1293.24	-0.38	6.55		6.71	0.000562	1.79	770.20	200.02	0.27
Reach01	5350	Q25	1040.00	-0.44	5.74		5.90	0.000662	1.76	629.92	200.02	0.29
Reach01	5350	Q50	1184.64	-0.44	6.20		6.36	0.000571	1.77	721.74	200.02	0.28
Reach01	5350	Q100	1293.24	-0.44	6.53		6.68	0.000522	1.78	786.97	200.02	0.27
Reach01	5300	Q25	1040.00	-0.51	5.74		5.86	0.000421	1.56	692.44	200.00	0.25
Reach01	5300	Q50	1184.64	-0.51	6.20		6.32	0.000383	1.57	784.46	200.00	0.24
Reach01	5300	Q100	1293.24	-0.51	6.53		6.65	0.000362	1.59	849.80	200.00	0.24
Reach01	5250	Q25	1040.00	-0.58	5.71		5.84	0.000512	1.60	685.57	200.00	0.26
Reach01	5250	Q50	1184.64	-0.58	6.17		6.30	0.000451	1.62	778.15	200.00	0.25
Reach01	5250	Q100	1293.24	-0.58	6.50		6.63	0.000418	1.64	843.80	200.00	0.24
Reach01	5200	Q25	1040.00	-0.64	5.68		5.81	0.000497	1.62	687.80	200.00	0.26
Reach01	5200	Q50	1184.64	-0.64	6.15		6.28	0.000440	1.64	780.97	200.00	0.24

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	5200	Q100	1293.24	-0.64	6.48		6.61	0.000409	1.65	846.92	200.00	0.24
Reach01	5150	Q25	1040.00	-0.71	5.37		5.75	0.001086	2.75	385.96	100.00	0.39
Reach01	5150	Q50	1184.64	-0.71	5.80		6.22	0.001062	2.87	429.49	100.00	0.39
Reach01	5150	Q100	1293.24	-0.71	6.11		6.55	0.001047	2.95	460.39	100.00	0.39
Reach01	5100	Q25	1040.00	-0.78	5.32		5.70	0.001060	2.73	390.74	100.00	0.38
Reach01	5100	Q50	1184.64	-0.78	5.75		6.17	0.001037	2.85	434.47	100.00	0.38
Reach01	5100	Q100	1293.24	-0.78	6.06		6.50	0.001023	2.94	465.46	100.00	0.38
Reach01	5050	Q25	1040.00	-0.84	5.26		5.64	0.001088	2.74	383.42	100.00	0.39
Reach01	5050	Q50	1184.64	-0.84	5.70		6.11	0.001065	2.86	427.05	100.00	0.39
Reach01	5050	Q100	1293.24	-0.84	6.01		6.44	0.001050	2.95	458.05	100.00	0.39
Reach01	5000	Q25	1040.00	-0.91	5.21		5.59	0.001081	2.73	384.40	100.00	0.38
Reach01	5000	Q50	1184.64	-0.91	5.65		6.06	0.001058	2.85	428.16	100.00	0.39
Reach01	5000	Q100	1293.24	-0.91	5.96		6.39	0.001042	2.93	459.24	100.00	0.39
Reach01	4950	Q25	1040.00	-0.98	5.18		5.53	0.000947	2.67	417.95	100.00	0.36
Reach01	4950	Q50	1184.64	-0.98	5.62		6.00	0.000928	2.78	462.19	100.00	0.37
Reach01	4950	Q100	1293.24	-0.98	5.93		6.33	0.000918	2.86	493.49	100.00	0.37
Reach01	4900	Q25	1040.00	-1.04	5.13		5.48	0.000929	2.65	421.54	100.00	0.36
Reach01	4900	Q50	1184.64	-1.04	5.57		5.95	0.000911	2.77	465.89	100.00	0.36
Reach01	4900	Q100	1293.24	-1.04	5.89		6.29	0.000902	2.85	497.24	100.00	0.36
Reach01	4850	Q25	1040.00	-1.11	5.09		5.43	0.000903	2.63	427.84	100.00	0.36
Reach01	4850	Q50	1184.64	-1.11	5.54		5.90	0.000886	2.74	472.31	100.00	0.36
Reach01	4850	Q100	1293.24	-1.11	5.85		6.24	0.000878	2.83	503.71	100.00	0.36
Reach01	4800	Q25	1040.00	-1.18	5.04		5.39	0.000911	2.63	423.12	100.00	0.36
Reach01	4800	Q50	1184.64	-1.18	5.49		5.86	0.000894	2.75	467.62	100.00	0.36
Reach01	4800	Q100	1293.24	-1.18	5.80		6.19	0.000886	2.83	499.05	100.00	0.36
Reach01	4750	Q25	1040.00	-1.24	4.99		5.34	0.000926	2.64	417.51	100.00	0.36
Reach01	4750	Q50	1184.64	-1.24	5.44		5.81	0.000908	2.75	462.06	100.00	0.36
Reach01	4750	Q100	1293.24	-1.24	5.75		6.15	0.000898	2.84	493.51	100.00	0.36
Reach01	4700	Q25	1040.00	-1.31	4.97		5.29	0.000802	2.55	454.29	100.00	0.34
Reach01	4700	Q50	1184.64	-1.31	5.42		5.76	0.000793	2.66	499.01	100.00	0.34
Reach01	4700	Q100	1293.24	-1.31	5.74		6.10	0.000789	2.75	530.55	100.00	0.34
Reach01	4650	Q25	1040.00	-1.38	4.93		5.25	0.000800	2.55	452.36	100.00	0.34
Reach01	4650	Q50	1184.64	-1.38	5.38		5.72	0.000791	2.66	497.13	100.00	0.34
Reach01	4650	Q100	1293.24	-1.38	5.70		6.06	0.000788	2.74	528.67	100.00	0.34
Reach01	4600	Q25	1040.00	-1.44	4.90		5.21	0.000774	2.52	459.93	100.00	0.33
Reach01	4600	Q50	1184.64	-1.44	5.35		5.68	0.000766	2.64	504.75	100.00	0.34
Reach01	4600	Q100	1293.24	-1.44	5.66		6.02	0.000764	2.72	536.32	100.00	0.34
Reach01	4550	Q25	1040.00	-1.51	4.86		5.17	0.000771	2.52	458.45	100.00	0.33
Reach01	4550	Q50	1184.64	-1.51	5.31		5.64	0.000764	2.63	503.30	100.00	0.34
Reach01	4550	Q100	1293.24	-1.51	5.62		5.98	0.000762	2.72	534.87	100.00	0.34
Reach01	4500	Q25	1040.00	-1.58	4.82		5.13	0.000767	2.51	457.48	100.00	0.33
Reach01	4500	Q50	1184.64	-1.58	5.27		5.60	0.000760	2.62	502.36	100.00	0.33
Reach01	4500	Q100	1293.24	-1.58	5.59		5.94	0.000758	2.71	533.95	100.00	0.34
Reach01	4450	Q25	1040.00	-1.64	4.78		5.09	0.000773	2.51	453.64	100.00	0.33
Reach01	4450	Q50	1184.64	-1.64	5.23		5.57	0.000766	2.62	498.54	100.00	0.34
Reach01	4450	Q100	1293.24	-1.64	5.55		5.90	0.000764	2.71	530.13	100.00	0.34
Reach01	4400	Q25	1040.00	-1.71	4.74		5.05	0.000766	2.50	453.58	100.00	0.33
Reach01	4400	Q50	1184.64	-1.71	5.19		5.53	0.000759	2.62	498.51	100.00	0.33
Reach01	4400	Q100	1293.24	-1.71	5.51		5.86	0.000757	2.70	530.10	100.00	0.34
Reach01	4350	Q25	1040.00	-1.71	4.70		5.01	0.000771	2.51	454.78	100.00	0.33
Reach01	4350	Q50	1184.64	-1.71	5.15		5.49	0.000763	2.63	499.77	100.00	0.34
Reach01	4350	Q100	1293.24	-1.71	5.47		5.82	0.000761	2.71	531.38	100.00	0.34
Reach01	4300	Q25	1040.00	-1.75	4.63		4.97	0.000898	2.59	414.56	100.00	0.35
Reach01	4300	Q50	1184.64	-1.75	5.08		5.44	0.000883	2.70	459.29	100.00	0.36
Reach01	4300	Q100	1293.24	-1.75	5.39		5.78	0.000875	2.79	490.79	100.00	0.36

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	4250	Q25	1040.00	-1.80	4.58		4.92	0.000943	2.60	400.20	75.51	0.36
Reach01	4250	Q50	1184.64	-1.80	5.02		5.40	0.000967	2.73	433.73	77.27	0.37
Reach01	4250	Q100	1293.24	-1.80	5.33		5.73	0.000967	2.82	462.75	100.00	0.37
Reach01	4200	Q25	1040.00	-1.84	4.53		4.87	0.000948	2.60	399.56	75.47	0.36
Reach01	4200	Q50	1184.64	-1.84	4.97		5.35	0.000972	2.74	432.97	77.22	0.37
Reach01	4200	Q100	1293.24	-1.84	5.27		5.68	0.000990	2.83	457.00	78.46	0.37
Reach01	4150	Q25	1040.00	-1.88	4.48		4.83	0.000952	2.61	398.90	75.44	0.36
Reach01	4150	Q50	1184.64	-1.88	4.92		5.30	0.000977	2.74	432.18	77.18	0.37
Reach01	4150	Q100	1293.24	-1.88	5.22		5.63	0.000995	2.84	456.12	78.42	0.38
Reach01	4100	Q25	1040.00	-1.93	4.43		4.78	0.000951	2.61	399.09	75.45	0.36
Reach01	4100	Q50	1184.64	-1.93	4.87		5.25	0.000977	2.74	432.28	77.19	0.37
Reach01	4100	Q100	1293.24	-1.93	5.17		5.58	0.000995	2.84	456.14	78.42	0.38
Reach01	4050	Q25	1040.00	-1.97	4.38		4.73	0.000955	2.61	398.43	75.42	0.36
Reach01	4050	Q50	1184.64	-1.97	4.82		5.20	0.000982	2.75	431.49	77.15	0.37
Reach01	4050	Q100	1293.24	-1.97	5.12		5.53	0.000984	2.84	459.81	100.00	0.37
Reach01	4000	Q25	1040.00	-2.01	4.34		4.68	0.000931	2.61	405.62	100.00	0.36
Reach01	4000	Q50	1184.64	-2.01	4.77		5.15	0.000920	2.73	449.27	100.00	0.36
Reach01	4000	Q100	1293.24	-2.01	5.08		5.48	0.000914	2.82	480.25	100.00	0.36
Reach01	3950	Q25	1040.00	-2.05	4.29		4.64	0.000924	2.61	408.74	100.00	0.36
Reach01	3950	Q50	1184.64	-2.05	4.73		5.11	0.000912	2.73	452.51	100.00	0.36
Reach01	3950	Q100	1293.24	-2.05	5.04		5.44	0.000906	2.82	483.55	100.00	0.36
Reach01	3900	Q25	1040.00	-2.10	4.24		4.59	0.000945	2.61	402.77	100.00	0.36
Reach01	3900	Q50	1184.64	-2.10	4.68		5.06	0.000934	2.74	446.46	100.00	0.36
Reach01	3900	Q100	1293.24	-2.10	4.99		5.39	0.000926	2.82	477.49	100.00	0.37
Reach01	3850	Q25	1040.00	-2.14	4.19		4.54	0.000967	2.62	396.79	75.33	0.36
Reach01	3850	Q50	1184.64	-2.14	4.62		5.01	0.000995	2.76	429.60	77.05	0.37
Reach01	3850	Q100	1293.24	-2.14	4.93		5.34	0.001013	2.85	453.53	92.39	0.38
Reach01	3800	Q25	1040.00	-2.18	4.14		4.49	0.000972	2.63	396.06	75.29	0.37
Reach01	3800	Q50	1184.64	-2.18	4.57		4.96	0.001000	2.76	428.74	77.01	0.37
Reach01	3800	Q100	1293.24	-2.18	4.87		5.29	0.001019	2.86	452.39	86.12	0.38
Reach01	3750	Q25	1040.00	-2.23	4.09		4.45	0.000961	2.62	398.99	87.65	0.36
Reach01	3750	Q50	1184.64	-2.23	4.53		4.91	0.000957	2.75	440.78	100.00	0.37
Reach01	3750	Q100	1293.24	-2.23	4.83		5.24	0.000951	2.84	471.30	100.00	0.37
Reach01	3700	Q25	1040.00	-2.27	4.06		4.39	0.000872	2.59	426.37	100.00	0.35
Reach01	3700	Q50	1184.64	-2.27	4.49		4.86	0.000864	2.71	469.90	100.00	0.35
Reach01	3700	Q100	1293.24	-2.27	4.80		5.19	0.000861	2.80	500.60	100.00	0.36
Reach01	3650	Q25	1040.00	-2.31	4.01		4.35	0.000886	2.60	422.47	100.00	0.35
Reach01	3650	Q50	1184.64	-2.31	4.45		4.82	0.000877	2.72	466.02	100.00	0.36
Reach01	3650	Q100	1293.24	-2.31	4.75		5.14	0.000873	2.81	496.72	100.00	0.36
Reach01	3600	Q25	1040.00	-2.36	3.97		4.30	0.000847	2.57	434.17	100.00	0.35
Reach01	3600	Q50	1184.64	-2.36	4.41		4.77	0.000840	2.69	477.82	100.00	0.35
Reach01	3600	Q100	1293.24	-2.36	4.72		5.10	0.000837	2.78	508.57	100.00	0.35
Reach01	3550	Q25	1040.00	-2.40	3.90		4.26	0.000978	2.64	396.33	87.85	0.37
Reach01	3550	Q50	1184.64	-2.40	4.33		4.72	0.000970	2.76	439.05	100.00	0.37
Reach01	3550	Q100	1293.24	-2.40	4.64		5.05	0.000964	2.85	469.54	100.00	0.37
Reach01	3500	Q25	1040.00	-2.44	3.85		4.21	0.000966	2.64	400.78	100.00	0.37
Reach01	3500	Q50	1184.64	-2.44	4.29		4.67	0.000955	2.76	443.97	100.00	0.37
Reach01	3500	Q100	1293.24	-2.44	4.59		5.00	0.000949	2.85	474.54	100.00	0.37
Reach01	3450	Q25	1040.00	-2.49	3.81		4.16	0.000952	2.63	404.29	100.00	0.36
Reach01	3450	Q50	1184.64	-2.49	4.24		4.62	0.000941	2.76	447.61	100.00	0.37
Reach01	3450	Q100	1293.24	-2.49	4.55		4.95	0.000935	2.84	478.24	100.00	0.37
Reach01	3400	Q25	1040.00	-2.53	3.76		4.11	0.000973	2.64	399.51	100.00	0.37
Reach01	3400	Q50	1184.64	-2.53	4.19		4.58	0.000961	2.77	442.78	100.00	0.37
Reach01	3400	Q100	1293.24	-2.53	4.49		4.91	0.000954	2.85	473.41	100.00	0.37
Reach01	3350	Q25	1040.00	-2.57	3.71		4.06	0.000978	2.65	398.37	100.00	0.37
Reach01	3350	Q50	1184.64	-2.57	4.14		4.53	0.000967	2.77	441.68	100.00	0.37

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	3350	Q100	1293.24	-2.57	4.45		4.86	0.000959	2.86	472.34	100.00	0.37
Reach01	3300	Q25	1040.00	-2.62	3.68		4.01	0.000867	2.59	430.85	100.00	0.35
Reach01	3300	Q50	1184.64	-2.62	4.11		4.47	0.000858	2.71	474.52	100.00	0.35
Reach01	3300	Q100	1293.24	-2.62	4.42		4.80	0.000854	2.80	505.33	100.00	0.35
Reach01	3250	Q25	1040.00	-2.66	3.63		3.97	0.000869	2.60	430.50	100.00	0.35
Reach01	3250	Q50	1184.64	-2.66	4.07		4.43	0.000859	2.72	474.22	100.00	0.35
Reach01	3250	Q100	1293.24	-2.66	4.38		4.76	0.000856	2.80	505.06	100.00	0.36
Reach01	3200	Q25	1040.00	-2.70	3.56		3.92	0.000990	2.66	396.07	87.52	0.37
Reach01	3200	Q50	1184.64	-2.70	3.99		4.38	0.000983	2.78	437.61	100.00	0.37
Reach01	3200	Q100	1293.24	-2.70	4.30		4.71	0.000975	2.87	468.20	100.00	0.37
Reach01	3150	Q25	1040.00	-2.74	3.51		3.87	0.001015	2.66	390.28	74.98	0.37
Reach01	3150	Q50	1184.64	-2.74	3.93		4.33	0.001044	2.80	422.56	76.68	0.38
Reach01	3150	Q100	1293.24	-2.74	4.23		4.66	0.001064	2.90	445.73	77.88	0.39
Reach01	3100	Q25	1040.00	-2.79	3.45		3.82	0.001014	2.67	390.44	86.34	0.37
Reach01	3100	Q50	1184.64	-2.79	3.88		4.28	0.001015	2.80	430.13	100.00	0.38
Reach01	3100	Q100	1293.24	-2.79	4.18		4.61	0.001009	2.89	460.32	100.00	0.38
Reach01	3050	Q25	1040.00	-2.83	3.40		3.77	0.001014	2.67	391.46	92.99	0.37
Reach01	3050	Q50	1184.64	-2.83	3.83		4.23	0.001004	2.80	434.14	100.00	0.38
Reach01	3050	Q100	1293.24	-2.83	4.13		4.56	0.000997	2.89	464.41	100.00	0.38
Reach01	3000	Q25	1040.00	-2.87	3.36		3.71	0.000948	2.65	411.43	100.00	0.36
Reach01	3000	Q50	1184.64	-2.87	3.79		4.18	0.000936	2.77	454.61	100.00	0.37
Reach01	3000	Q100	1293.24	-2.87	4.10		4.50	0.000930	2.86	485.07	100.00	0.37
Reach01	2950	Q25	1040.00	-2.92	3.31		3.67	0.000940	2.65	413.31	100.00	0.36
Reach01	2950	Q50	1184.64	-2.92	3.75		4.13	0.000928	2.77	456.57	100.00	0.36
Reach01	2950	Q100	1293.24	-2.92	4.05		4.46	0.000922	2.85	487.06	100.00	0.37
Reach01	2900	Q25	1040.00	-2.96	3.26		3.62	0.000963	2.66	407.13	100.00	0.37
Reach01	2900	Q50	1184.64	-2.96	3.69		4.08	0.000950	2.78	450.32	100.00	0.37
Reach01	2900	Q100	1293.24	-2.96	4.00		4.41	0.000944	2.87	480.81	100.00	0.37
Reach01	2850	Q25	1040.00	-3.00	3.24		3.56	0.000839	2.59	444.75	100.00	0.35
Reach01	2850	Q50	1184.64	-3.00	3.67		4.03	0.000833	2.71	488.19	100.00	0.35
Reach01	2850	Q100	1293.24	-3.00	3.98		4.35	0.000831	2.79	518.79	100.00	0.35
Reach01	2800	Q25	1040.00	-3.05	3.19		3.52	0.000859	2.60	437.58	100.00	0.35
Reach01	2800	Q50	1184.64	-3.05	3.62		3.98	0.000852	2.72	481.02	100.00	0.35
Reach01	2800	Q100	1293.24	-3.05	3.93		4.31	0.000850	2.81	511.62	100.00	0.35
Reach01	2750	Q25	1040.00	-3.09	3.14		3.48	0.000874	2.62	432.82	100.00	0.35
Reach01	2750	Q50	1184.64	-3.09	3.57		3.94	0.000866	2.73	476.28	100.00	0.35
Reach01	2750	Q100	1293.24	-3.09	3.88		4.27	0.000863	2.82	506.88	100.00	0.36
Reach01	2700	Q25	1040.00	-3.13	3.06		3.43	0.000996	2.68	399.48	100.00	0.37
Reach01	2700	Q50	1184.64	-3.13	3.49		3.89	0.000982	2.81	442.64	100.00	0.37
Reach01	2700	Q100	1293.24	-3.13	3.80		4.22	0.000974	2.89	473.09	100.00	0.38
Reach01	2650	Q25	1040.00	-3.18	3.03		3.37	0.000899	2.63	426.82	100.00	0.36
Reach01	2650	Q50	1184.64	-3.18	3.47		3.84	0.000888	2.75	470.25	100.00	0.36
Reach01	2650	Q100	1293.24	-3.18	3.77		4.16	0.000884	2.84	500.83	100.00	0.36
Reach01	2600	Q25	1040.00	-3.22	2.99		3.33	0.000890	2.63	430.36	100.00	0.35
Reach01	2600	Q50	1184.64	-3.22	3.42		3.79	0.000879	2.74	473.86	100.00	0.36
Reach01	2600	Q100	1293.24	-3.22	3.73		4.12	0.000876	2.83	504.47	100.00	0.36
Reach01	2550	Q25	1040.00	-3.26	2.91		3.28	0.001011	2.70	397.02	100.00	0.37
Reach01	2550	Q50	1184.64	-3.26	3.34		3.74	0.000996	2.82	440.21	100.00	0.38
Reach01	2550	Q100	1293.24	-3.26	3.65		4.07	0.000988	2.90	470.67	100.00	0.38
Reach01	2500	Q25	1040.00	-3.30	2.86		3.23	0.001018	2.70	396.63	100.00	0.38
Reach01	2500	Q50	1184.64	-3.30	3.29		3.69	0.001001	2.82	439.90	100.00	0.38
Reach01	2500	Q100	1293.24	-3.30	3.60		4.02	0.000992	2.91	470.41	100.00	0.38
Reach01	2450	Q25	1040.00	-3.35	2.80		3.18	0.001072	2.71	383.11	74.60	0.38
Reach01	2450	Q50	1184.64	-3.35	3.22		3.64	0.001100	2.85	415.03	76.29	0.39
Reach01	2450	Q100	1293.24	-3.35	3.52		3.97	0.001113	2.95	439.53	96.64	0.40

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	2400	Q25	1040.00	-3.39	2.75		3.12	0.001049	2.72	389.04	100.00	0.38
Reach01	2400	Q50	1184.64	-3.39	3.17		3.58	0.001035	2.85	431.72	100.00	0.38
Reach01	2400	Q100	1293.24	-3.39	3.47		3.91	0.001027	2.93	461.88	100.00	0.38
Reach01	2350	Q25	1040.00	-3.43	2.70		3.07	0.001032	2.72	395.71	100.00	0.38
Reach01	2350	Q50	1184.64	-3.43	3.12		3.53	0.001016	2.84	438.58	100.00	0.38
Reach01	2350	Q100	1293.24	-3.43	3.43		3.86	0.001008	2.93	468.85	100.00	0.38
Reach01	2300	Q25	1040.00	-3.48	2.66		3.02	0.000968	2.69	412.85	100.00	0.37
Reach01	2300	Q50	1184.64	-3.48	3.09		3.48	0.000954	2.80	455.96	100.00	0.37
Reach01	2300	Q100	1293.24	-3.48	3.39		3.80	0.000948	2.89	486.33	100.00	0.37
Reach01	2250	Q25	1040.00	-3.52	2.61		2.97	0.000947	2.68	419.05	100.00	0.36
Reach01	2250	Q50	1184.64	-3.52	3.04		3.43	0.000934	2.79	462.27	100.00	0.37
Reach01	2250	Q100	1293.24	-3.52	3.35		3.75	0.000928	2.88	492.70	100.00	0.37
Reach01	2200	Q25	1040.00	-3.56	2.56		2.92	0.000961	2.69	415.87	100.00	0.37
Reach01	2200	Q50	1184.64	-3.56	2.99		3.38	0.000947	2.80	459.16	100.00	0.37
Reach01	2200	Q100	1293.24	-3.56	3.30		3.71	0.000940	2.89	489.61	100.00	0.37
Reach01	2150	Q25	1040.00	-3.61	2.48		2.86	0.001104	2.75	379.20	87.46	0.39
Reach01	2150	Q50	1184.64	-3.61	2.91		3.33	0.001090	2.88	421.50	100.00	0.39
Reach01	2150	Q100	1293.24	-3.61	3.21		3.65	0.001079	2.97	451.67	100.00	0.39
Reach01	2100	Q25	1040.00	-3.65	2.42		2.81	0.001122	2.76	377.27	74.28	0.39
Reach01	2100	Q50	1184.64	-3.65	2.84		3.27	0.001149	2.90	408.85	75.97	0.40
Reach01	2100	Q100	1293.24	-3.65	3.14		3.59	0.001171	3.00	431.45	77.15	0.40
Reach01	2050	Q25	1040.00	-3.69	2.36		2.75	0.001134	2.77	375.83	74.21	0.39
Reach01	2050	Q50	1184.64	-3.69	2.78		3.21	0.001163	2.91	407.25	75.88	0.40
Reach01	2050	Q100	1293.24	-3.69	3.07		3.54	0.001185	3.01	429.69	77.06	0.41
Reach01	2000	Q25	1040.00	-3.74	2.30		2.70	0.001140	2.77	375.22	74.17	0.39
Reach01	2000	Q50	1184.64	-3.74	2.72		3.15	0.001169	2.91	406.49	75.84	0.40
Reach01	2000	Q100	1293.24	-3.74	3.01		3.48	0.001182	3.01	430.64	88.51	0.41
Reach01	1950	Q25	1040.00	-3.78	2.24		2.64	0.001153	2.78	373.73	74.09	0.40
Reach01	1950	Q50	1184.64	-3.78	2.66		3.09	0.001183	2.93	404.82	75.75	0.40
Reach01	1950	Q100	1293.24	-3.78	2.95		3.42	0.001193	3.03	429.90	88.46	0.41
Reach01	1900	Q25	1040.00	-3.82	2.18		2.58	0.001168	2.79	372.14	74.01	0.40
Reach01	1900	Q50	1184.64	-3.82	2.59		3.04	0.001199	2.94	403.02	75.66	0.41
Reach01	1900	Q100	1293.24	-3.82	2.89		3.36	0.001211	3.04	427.54	88.41	0.41
Reach01	1850	Q25	1040.00	-3.87	2.12		2.52	0.001175	2.80	371.39	73.97	0.40
Reach01	1850	Q50	1184.64	-3.87	2.53		2.97	0.001207	2.95	402.10	75.61	0.41
Reach01	1850	Q100	1293.24	-3.87	2.82		3.30	0.001223	3.05	425.77	88.39	0.41
Reach01	1800	Q25	1040.00	-3.91	2.06		2.46	0.001190	2.81	369.71	73.88	0.40
Reach01	1800	Q50	1184.64	-3.91	2.47		2.91	0.001224	2.96	400.20	75.51	0.41
Reach01	1800	Q100	1293.24	-3.91	2.76		3.23	0.001247	3.06	422.16	76.66	0.42
Reach01	1750	Q25	1040.00	-3.95	2.00		2.40	0.001207	2.83	367.96	73.78	0.40
Reach01	1750	Q50	1184.64	-3.95	2.40		2.85	0.001242	2.97	398.21	75.40	0.41
Reach01	1750	Q100	1293.24	-3.95	2.69		3.17	0.001266	3.08	420.01	76.55	0.42
Reach01	1700	Q25	1040.00	-3.99	1.93		2.34	0.001225	2.84	366.12	73.68	0.41
Reach01	1700	Q50	1184.64	-3.99	2.33		2.79	0.001261	2.99	396.15	75.29	0.42
Reach01	1700	Q100	1293.24	-3.99	2.62		3.11	0.001286	3.10	417.79	76.44	0.42
Reach01	1650	Q25	1040.00	-4.04	1.87		2.28	0.001235	2.85	365.10	73.63	0.41
Reach01	1650	Q50	1184.64	-4.04	2.27		2.73	0.001272	3.00	394.94	75.23	0.42
Reach01	1650	Q100	1293.24	-4.04	2.55		3.04	0.001298	3.11	416.44	76.36	0.42
Reach01	1600	Q25	1040.00	-4.08	1.80		2.22	0.001255	2.86	363.11	73.52	0.41
Reach01	1600	Q50	1184.64	-4.08	2.20		2.66	0.001293	3.02	392.71	75.11	0.42
Reach01	1600	Q100	1293.24	-4.08	2.48		2.98	0.001319	3.12	414.06	78.50	0.43
Reach01	1550	Q25	1040.00	-4.12	1.73		2.15	0.001277	2.88	361.02	73.40	0.41
Reach01	1550	Q50	1184.64	-4.12	2.13		2.60	0.001316	3.03	390.38	74.99	0.42
Reach01	1550	Q100	1293.24	-4.12	2.41		2.91	0.001344	3.14	411.53	76.11	0.43
Reach01	1500	Q25	1040.00	-4.17	1.66		2.09	0.001290	2.89	359.77	73.34	0.42
Reach01	1500	Q50	1184.64	-4.17	2.06		2.53	0.001331	3.05	388.91	74.91	0.43

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	1500	Q100	1293.24	-4.17	2.34		2.84	0.001360	3.16	409.89	76.02	0.43
Reach01	1450	Q25	1040.00	-4.21	1.59		2.02	0.001314	2.91	357.51	73.21	0.42
Reach01	1450	Q50	1184.64	-4.21	1.98		2.46	0.001357	3.07	386.38	74.77	0.43
Reach01	1450	Q100	1293.24	-4.21	2.26		2.77	0.001386	3.18	407.18	75.88	0.44
Reach01	1400	Q25	1040.00	-4.25	1.52		1.96	0.001340	2.93	355.16	73.08	0.42
Reach01	1400	Q50	1184.64	-4.25	1.91		2.39	0.001384	3.09	383.76	74.63	0.43
Reach01	1400	Q100	1293.24	-4.25	2.18		2.70	0.001415	3.20	404.35	75.73	0.44
Reach01	1350	Q25	1040.00	-4.30	1.45		1.89	0.001357	2.94	353.61	73.00	0.43
Reach01	1350	Q50	1184.64	-4.30	1.83		2.32	0.001404	3.10	381.92	74.53	0.44
Reach01	1350	Q100	1293.24	-4.30	2.11		2.63	0.001436	3.21	402.32	75.62	0.45
Reach01	1300	Q25	1040.00	-4.34	1.37		1.82	0.001387	2.96	351.02	72.86	0.43
Reach01	1300	Q50	1184.64	-4.34	1.75		2.25	0.001435	3.13	379.03	74.38	0.44
Reach01	1300	Q100	1293.24	-4.34	2.02		2.56	0.001469	3.24	399.21	75.46	0.45
Reach01	1250	Q25	1040.00	-4.38	1.30		1.75	0.001419	2.99	348.29	72.71	0.44
Reach01	1250	Q50	1184.64	-4.38	1.67		2.18	0.001470	3.15	375.98	74.22	0.45
Reach01	1250	Q100	1293.24	-4.38	1.94		2.48	0.001505	3.27	395.92	75.28	0.45
Reach01	1200	Q25	1040.00	-4.43	1.22		1.68	0.001443	3.00	346.33	72.60	0.44
Reach01	1200	Q50	1184.64	-4.43	1.59		2.11	0.001496	3.17	373.71	74.09	0.45
Reach01	1200	Q100	1293.24	-4.43	1.86		2.41	0.001533	3.29	393.43	75.15	0.46
Reach01	1150	Q25	1040.00	-4.47	1.14		1.61	0.001481	3.03	343.31	72.43	0.44
Reach01	1150	Q50	1184.64	-4.47	1.51		2.03	0.001537	3.20	370.34	73.91	0.46
Reach01	1150	Q100	1293.24	-4.47	1.77		2.33	0.001576	3.32	389.73	74.95	0.46
Reach01	1100	Q25	1040.00	-4.51	1.05		1.53	0.001523	3.06	340.12	72.26	0.45
Reach01	1100	Q50	1184.64	-4.51	1.42		1.95	0.001582	3.23	366.70	73.71	0.46
Reach01	1100	Q100	1293.24	-4.51	1.68		2.25	0.001624	3.35	385.80	74.74	0.47
Reach01	1050	Q25	1040.00	-4.55	0.97		1.45	0.001570	3.09	336.64	72.06	0.46
Reach01	1050	Q50	1184.64	-4.55	1.33		1.87	0.001633	3.27	362.79	73.50	0.47
Reach01	1050	Q100	1293.24	-4.55	1.58		2.16	0.001677	3.39	381.57	74.52	0.48
Reach01	1000	Q25	1040.00	-4.60	0.88		1.37	0.001608	3.11	333.88	71.91	0.46
Reach01	1000	Q50	1184.64	-4.60	1.23		1.79	0.001676	3.29	359.61	73.33	0.48
Reach01	1000	Q100	1293.24	-4.60	1.48		2.08	0.001723	3.42	378.07	74.33	0.48
Reach01	950	Q25	1040.00	-4.64	0.83		1.29	0.001391	3.04	373.15	100.00	0.44
Reach01	950	Q50	1184.64	-4.64	1.19		1.69	0.001392	3.19	409.67	100.00	0.44
Reach01	950	Q100	1293.24	-4.64	1.45		1.98	0.001396	3.30	435.46	100.00	0.45
Reach01	900	Q25	1040.00	-4.68	0.77		1.21	0.001475	2.99	370.31	100.00	0.44
Reach01	900	Q50	1184.64	-4.68	1.13		1.62	0.001456	3.12	407.07	100.00	0.45
Reach01	900	Q100	1293.24	-4.68	1.39		1.90	0.001448	3.22	432.99	100.00	0.45
Reach01	850	Q25	1040.00	-4.73	0.73		1.13	0.001208	2.87	401.44	100.00	0.42
Reach01	850	Q50	1184.64	-4.73	1.10		1.54	0.001213	3.01	438.31	100.00	0.42
Reach01	850	Q100	1293.24	-4.73	1.36		1.82	0.001219	3.11	464.28	100.00	0.42
Reach01	800	Q25	1040.00	-4.77	0.50		1.04	0.001931	3.25	319.64	75.57	0.50
Reach01	800	Q50	1184.64	-4.77	0.85		1.44	0.001952	3.42	351.04	100.00	0.51
Reach01	800	Q100	1293.24	-4.77	1.10		1.73	0.001938	3.53	376.02	100.00	0.51
Reach01	750	Q25	1040.00	-4.81	0.53		0.92	0.001232	2.86	404.43	100.00	0.42
Reach01	750	Q50	1184.64	-4.81	0.89		1.32	0.001240	3.00	440.30	100.00	0.42
Reach01	750	Q100	1293.24	-4.81	1.14		1.60	0.001247	3.10	465.88	100.00	0.43
Reach01	700	Q25	1040.00	-4.86	0.50		0.84	0.001267	2.59	405.29	150.00	0.46
Reach01	700	Q50	1184.64	-4.86	0.88		1.23	0.001199	2.64	462.28	150.00	0.44
Reach01	700	Q100	1293.24	-4.86	1.15		1.51	0.001152	2.67	503.03	150.00	0.43
Reach01	650	Q25	1040.00	-4.90	0.26		0.75	0.002166	3.09	336.19	92.59	0.52
Reach01	650	Q50	1184.64	-4.90	0.61		1.14	0.002119	3.21	369.64	99.46	0.52
Reach01	650	Q100	1293.24	-4.90	0.87		1.42	0.002100	3.28	397.90	114.22	0.52
Reach01	600	Q25	1040.00	-4.94	0.11		0.63	0.002386	3.20	324.94	91.44	0.54
Reach01	600	Q50	1184.64	-4.94	0.46		1.02	0.002313	3.31	358.17	94.41	0.54
Reach01	600	Q100	1293.24	-4.94	0.72		1.30	0.002282	3.38	383.79	112.86	0.54

HEC-RAS Plan: Plan 06 River: Baclaran Reach: Reach01 (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)	
Reach01	550	Q25	1040.00	-4.99	0.33		0.46	0.000510	1.77	718.79	200.00	0.27
Reach01	550	Q50	1184.64	-4.99	0.71		0.85	0.000491	1.83	794.57	200.00	0.27
Reach01	550	Q100	1293.24	-4.99	0.98		1.13	0.000480	1.87	848.43	200.00	0.27
Reach01	500	Q25	1040.00	-5.03	-0.36		0.36	0.002808	3.76	276.92	68.67	0.60
Reach01	500	Q50	1184.64	-5.03	-0.08		0.73	0.002967	3.99	296.59	69.80	0.62
Reach01	500	Q100	1293.24	-5.03	0.12		1.00	0.003086	4.17	310.47	70.59	0.63
Reach01	450	Q25	1040.00	-5.07	-0.59		0.20	0.003244	3.94	263.88	67.90	0.64
Reach01	450	Q50	1184.64	-5.07	-0.34		0.57	0.003475	4.21	281.30	68.92	0.67
Reach01	450	Q100	1293.24	-5.07	-0.17		0.82	0.003658	4.41	293.26	69.61	0.69
Reach01	400	Q25	1040.00	-5.12	-0.90		0.01	0.003970	4.21	246.75	66.89	0.70
Reach01	400	Q50	1184.64	-5.12	-0.71		0.35	0.004431	4.57	259.41	67.64	0.74
Reach01	400	Q100	1293.24	-5.12	-0.61		0.59	0.004899	4.86	265.97	68.03	0.79
Reach01	350	Q25	1040.00	-5.16	-1.61	-1.61	-0.32	0.008954	5.03	206.61	79.74	1.00
Reach01	350	Q50	1184.64	-5.16	-1.31	-1.31	0.02	0.008993	5.11	231.90	87.91	1.00
Reach01	350	Q100	1293.24	-5.16	-1.10	-1.10	0.26	0.008933	5.15	251.10	93.64	1.00
Reach01	300	Q25	1040.00	-5.20	-1.80		-1.36	0.003399	3.15	391.99	200.00	0.66
Reach01	300	Q50	1184.64	-5.20	-1.58		-1.12	0.003231	3.22	436.47	200.00	0.64
Reach01	300	Q100	1293.24	-5.20	-1.42		-0.95	0.003111	3.27	469.18	200.00	0.63
Reach01	250	Q25	1040.00	-5.24	-1.95		-1.54	0.003299	3.06	402.93	200.00	0.64
Reach01	250	Q50	1184.64	-5.24	-1.72		-1.29	0.003084	3.12	449.80	200.00	0.62
Reach01	250	Q100	1293.24	-5.24	-1.55		-1.11	0.002944	3.16	484.03	200.00	0.61
Reach01	200	Q25	1040.00	-5.29	-2.08		-1.71	0.003010	3.05	432.65	200.00	0.60
Reach01	200	Q50	1184.64	-5.29	-1.84		-1.45	0.002810	3.11	481.74	200.00	0.59
Reach01	200	Q100	1293.24	-5.29	-1.66		-1.26	0.002687	3.16	517.29	200.00	0.58
Reach01	150	Q25	1040.00	-5.33	-2.11		-1.86	0.001939	2.54	511.06	200.00	0.48
Reach01	150	Q50	1184.64	-5.33	-1.87		-1.60	0.001871	2.63	560.51	200.00	0.48
Reach01	150	Q100	1293.24	-5.33	-1.69		-1.40	0.001827	2.70	596.32	200.00	0.48
Reach01	100	Q25	1040.00	-5.37	-2.18		-1.96	0.001609	2.31	537.99	200.00	0.44
Reach01	100	Q50	1184.64	-5.37	-1.93		-1.69	0.001564	2.41	588.04	200.00	0.44
Reach01	100	Q100	1293.24	-5.37	-1.75		-1.50	0.001535	2.48	624.20	200.00	0.44
Reach01	50	Q25	1040.00	-5.42	-2.23		-2.04	0.001332	2.17	577.52	200.00	0.40
Reach01	50	Q50	1184.64	-5.42	-1.98		-1.77	0.001314	2.27	627.88	200.00	0.40
Reach01	50	Q100	1293.24	-5.42	-1.80		-1.58	0.001303	2.35	664.24	200.00	0.40
Reach01	0	Q25	1040.00	-5.46	-2.32	-3.78	-2.11	0.001424	2.28	554.85	184.24	0.42
Reach01	0	Q50	1184.64	-5.46	-2.07	-3.65	-1.84	0.001424	2.40	600.61	184.24	0.42
Reach01	0	Q100	1293.24	-5.46	-1.89	-3.54	-1.65	0.001424	2.49	633.56	184.24	0.42

SCOUR ANALYSIS

Sta. No.: 0+100

Estimation by Blench formula

Design Parameters:

design discharge, Q	=	**1293.24** cu.m/sec
depth of water at design discharge, H	=	**3.62** m.
median grain size, dm	=	**3.5** mm
mean velocity, Vm	=	**2.48** m/sec

1. Flood discharge intensity, qf;

qf = Vb(H)
where:
Vb = velocity along the bank which is equal to 2/3(Vm)

qf = 5.985 cu.m/sec/m

2. Regime depth, yfo:

yfo = (qf^2/Fbo)^(1/3)
where:
Fbo = an empirical parameter dependent on the bed grain size. Please see attached Relationship of Blench's "zero bed factor" to the size of bed material (Figure 1)

Fbo = 0.79 m/sq.sec

yfo = 3.566 m.

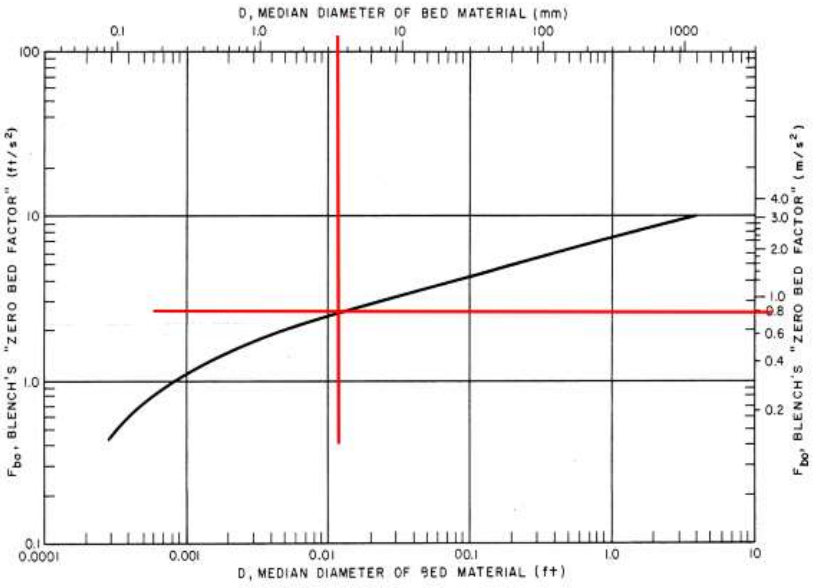
3. Maximum scoured depth, ys;

ys = yfo (z)
where:
z = multiplying factor
z = 1.75 for flow parallel to bank

ys = 6.240 m.

4. Depth of scour, ds;

ds = ys - H
ds = 2.620 m.



Relationship of Blench's "zero bed factor" to the size of bed material
FIGURE 1

Sta. No.: 0+350

Estimation by Blench formula

Design Parameters:

design discharge, Q	=	**1293.24** cu.m/sec
depth of water at design discharge, H	=	**4.06** m.
median grain size, dm	=	**3.5** mm
mean velocity, Vm	=	**5.15** m/sec

1. Flood discharge intensity, qf;

qf = Vb(H)
where:
Vb = velocity along the bank which is equal to 2/3(Vm)

qf = 13.939 cu.m/sec/m

2. Regime depth, yfo:

yfo = (qf^2/Fbo)^(1/3)
where:
Fbo = an empirical parameter dependent on the bed grain size. Please see attached Relationship of Blench's "zero bed factor" to the size of bed material (Figure 1)

Fbo = 0.79 m/sq.sec

yfo = 6.265 m.

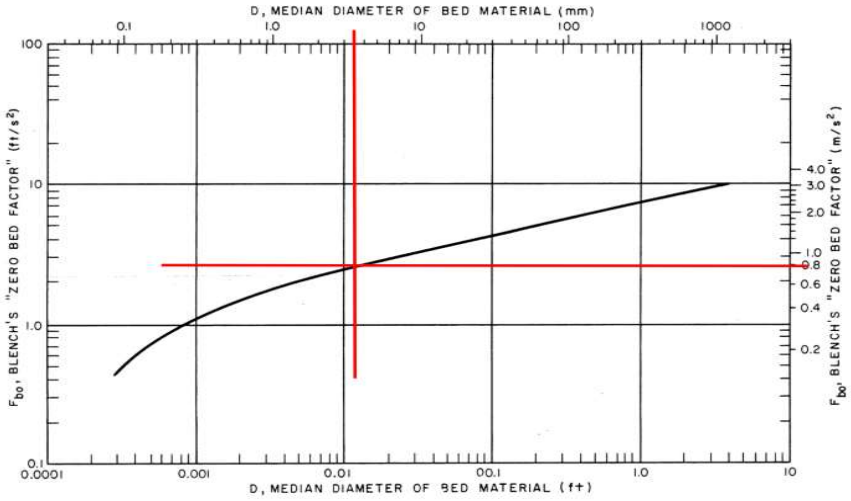
3. Maximum scoured depth, ys;

ys = yfo (z)
where:
z = multiplying factor
z = 1.75 for flow parallel to bank

ys = 10.965 m.

4. Depth of scour, ds;

ds = ys - H
ds = 6.905 m.



Relationship of Blench's "zero bed factor" to the size of bed material
FIGURE 1

Sta. No.: 1+250

Estimation by Blench formula

Design Parameters:

design discharge, Q	=	**1293.24** cu.m/sec
depth of water at design discharge, H	=	**6.32** m.
median grain size, dm	=	**3.5** mm
mean velocity, Vm	=	**3.27** m/sec

1. Flood discharge intensity, qf;

qf = Vb(H)
where:
Vb = velocity along the bank which is equal to 2/3(Vm)

qf = 13.778 cu.m/sec/m

2. Regime depth, yfo:

yfo = (qf^2/Fbo)^(1/3)
where:
Fbo = an empirical parameter dependent on the bed grain size. Please see attached Relationship of Blench's "zero bed factor" to the size of bed material (Figure 1)

Fbo = 0.79 m/sq.sec

yfo = 6.217 m.

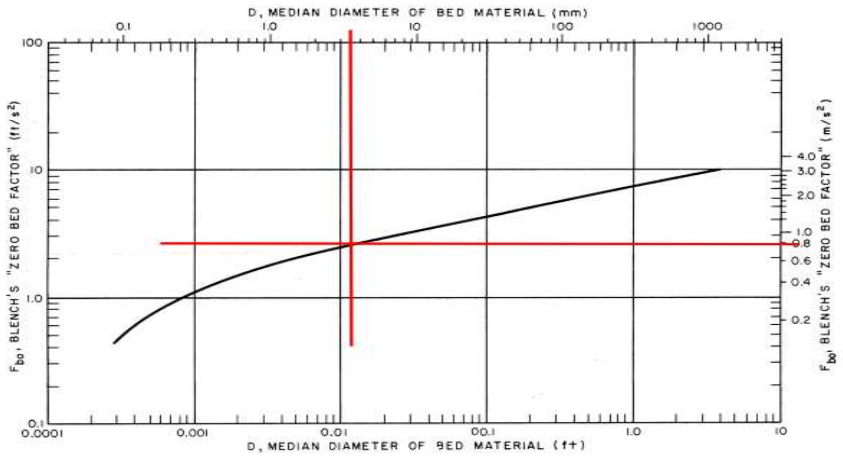
3. Maximum scoured depth, ys;

ys = yfo (z)
where:
z = multiplying factor
z = 1.75 for flow parallel to bank

ys = 10.880 m.

4. Depth of scour, ds;

ds = ys - H
ds = 4.560 m.



Relationship of Blench's "zero bed factor" to the size of bed material
FIGURE 1

Sta. No.: 5+100

Estimation by Blench formula

Design Parameters:

design discharge, Q	=	**1293.24** cu.m/sec
depth of water at design discharge, H	=	**3.31** m.
median grain size, dm	=	**3.5** mm
mean velocity, Vm	=	**2.94** m/sec

1. Flood discharge intensity, qf;

qf = Vb(H)
where:
Vb = velocity along the bank which is equal to 2/3(Vm)

qf = 6.488 cu.m/sec/m

2. Regime depth, yfo:

yfo = (qf^2/Fbo)^(1/3)
where:
Fbo = an empirical parameter dependent on the bed grain size. Please see attached Relationship of Blench's "zero bed factor" to the size of bed material (Figure 1)

Fbo = 0.79 m/sq.sec

yfo = 3.763 m.

3. Maximum scoured depth, ys;

ys = yfo (z)
where:
z = multiplying factor
z = 1.75 for flow parallel to bank

ys = 6.585 m.

4. Depth of scour, ds;

ds = ys - H
ds = 3.275 m.

Sta. No.: 9+650

Estimation by Blench formula

Design Parameters:

design discharge, Q	=	**1293.24** cu.m/sec
depth of water at design discharge, H	=	**5.62** m.
median grain size, dm	=	**3.5** mm
mean velocity, Vm	=	**3.67** m/sec

1. Flood discharge intensity, qf;

qf = Vb(H)
where:
Vb = velocity along the bank which is equal to 2/3(Vm)

qf = 13.750 cu.m/sec/m

2. Regime depth, yfo:

yfo = (qf^2/Fbo)^(1/3)
where:
Fbo = an empirical parameter dependent on the bed grain size. Please see attached Relationship of Blench's "zero bed factor" to the size of bed material (Figure 1)

Fbo = 0.79 m/sq.sec

yfo = 6.209 m.

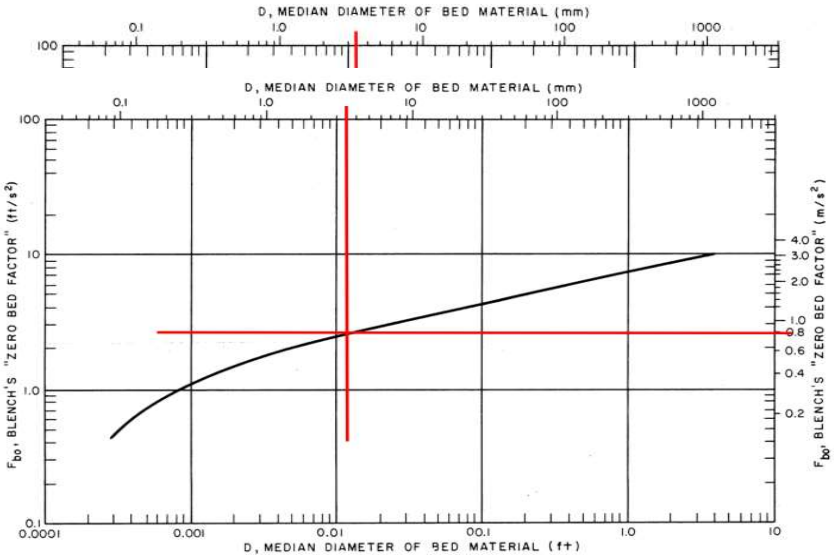
3. Maximum scoured depth, ys;

ys = yfo (z)
where:
z = multiplying factor
z = 1.75 for flow parallel to bank

ys = 10.865 m.

4. Depth of scour, ds;

ds = ys - H
ds = 5.245 m.



Relationship of Blench's "zero bed factor" to the size of bed material
FIGURE 1

Sta. No.: 9+800

Estimation by Blench formula

Design Parameters:

design discharge, Q	=	**1293.24** cu.m/sec
depth of water at design discharge, H =		**5.86** m.
median grain size, dm	=	**3.5** mm
mean velocity, Vm	=	**3.43** m/sec

1. Flood discharge intensity, qf;

qf = Vb(H)
where:
Vb = velocity along the bank which is equal to 2/3(Vm)

qf = 13.400 cu.m/sec/m

2. Regime depth, yfo:

yfo = (qf^2/Fbo)^(1/3)
where:
Fbo = an empirical parameter dependent on the bed grain size. Please see attached Relationship of Blench's "zero bed factor" to the size of bed material (Figure 1)

Fbo = 0.79 m/sq.sec

yfo = 6.103 m.

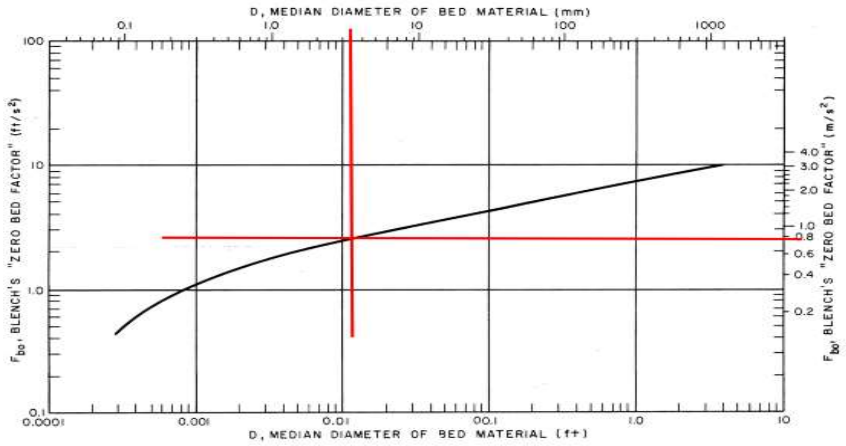
3. Maximum scoured depth, ys;

ys = yfo (z)
where:
z = multiplying factor
z = 1.75 for flow parallel to bank

ys = 10.680 m.

4. Depth of scour, ds;

ds = ys - H
ds = 4.820 m.



Relationship of Blench's "zero bed factor" to the size of bed material
FIGURE 1

Slope stability analysis

Input data

Project

Settings

Philippines

Stability analysis

Earthquake analysis : Standard
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor :	SF_S =	1.50	[–]

Safety factors			
Seismic design situation			
Safety factor :	SF_S =	1.10	[–]

Interface

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		-60.00	6.98	-50.00	6.76	-48.20	6.72
		-48.17	6.70	-36.02	0.98	-31.00	-1.38
		-25.00	-4.38	25.00	-4.38	31.00	-1.38
		35.72	0.98	47.41	6.82	48.12	6.82
		50.00	6.88	60.00	7.20		
2		-60.00	0.98	-36.02	0.98		
3		35.72	0.98	60.00	0.98		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m^3]
1	Poorly graded sand (SP), loose		32.00	0.00	11.00
2	Poorly graded sand (SP), medium dense		33.50	0.00	18.50

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m^3]	γ_s [kN/m^3]	n [–]
1	Poorly graded sand (SP), loose		11.00		
2	Poorly graded sand (SP), medium dense		18.50		

Soil parameters

Poorly graded sand (SP), loose

Unit weight : γ = 11.00 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 32.00 °
Cohesion of soil : c_{ef} = 0.00 kPa
Saturated unit weight : γ_{sat} = 11.00 kN/m^3

Poorly graded sand (SP), medium dense

Unit weight : γ = 18.50 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 33.50 °
Cohesion of soil : c_{ef} = 0.00 kPa
Saturated unit weight : γ_{sat} = 18.50 kN/m^3

Assigning and surfaces

2

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		60.00	0.98	60.00	7.20	Poorly graded sand (SP), loose
		50.00	6.88	48.12	6.82	
		47.41	6.82	35.72	0.98	
2		-36.02	0.98	-48.17	6.70	Poorly graded sand (SP), loose
		-48.20	6.72	-50.00	6.76	
		-60.00	6.98	-60.00	0.98	
3		35.72	0.98	31.00	-1.38	Poorly graded sand (SP), medium dense
		25.00	-4.38	-25.00	-4.38	
		-31.00	-1.38	-36.02	0.98	
		-60.00	0.98	-60.00	-9.38	
		60.00	-9.38	60.00	0.98	

Water

Water type : No water

Tensile crack

Tensile crack not input.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 1)

Analysis 1 (stage 1)

Circular slip surface

Slip surface parameters						
Center :	x =	-32.21	[m]	Angles :	α_1 =	-62.85 [°]
	z =	18.94	[m]		α_2 =	28.01 [°]
Radius :	R =	26.41	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 908.17 kN/m
Sum of passive forces : F_p = 2350.95 kN/m

Sliding moment : M_a = 23983.93 kNm/m
Resisting moment : M_p = 62086.39 kNm/m

Factor of safety = 2.59 > 1.50
Slope stability ACCEPTABLE

Analysis 2 (stage 1)

Circular slip surface

Slip surface parameters						
Center :	x =	30.68	[m]	Angles :	α_1 =	-27.03 [°]
	z =	18.91	[m]		α_2 =	62.91 [°]
Radius :	R =	26.15	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 869.07 kN/m
Sum of passive forces : F_p = 2092.68 kN/m

Sliding moment : M_a = 22727.56 kNm/m
Resisting moment : M_p = 54727.05 kNm/m

Factor of safety = 2.41 > 1.50
Slope stability ACCEPTABLE

Input data (Stage of construction 2)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		60.00	0.98	60.00	7.20	Poorly graded sand (SP), loose
		50.00	6.88	48.12	6.82	
		47.41	6.82	35.72	0.98	
2		-36.02	0.98	-48.17	6.70	Poorly graded sand (SP), loose
		-48.20	6.72	-50.00	6.76	
		-60.00	6.98	-60.00	0.98	
3		35.72	0.98	31.00	-1.38	Poorly graded sand (SP), medium dense
		25.00	-4.38	-25.00	-4.38	
		-31.00	-1.38	-36.02	0.98	
		-60.00	0.98	-60.00	-9.38	
		60.00	-9.38	60.00	0.98	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		-60.00	8.83	60.00	8.83		

Tensile crack

Tensile crack not input.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 2)

Analysis 1 (stage 2)

Circular slip surface

Slip surface parameters						
Center :	x =	-32.21	[m]	Angles :	α_1 =	-62.85 [°]
	z =	18.94	[m]		α_2 =	28.01 [°]
Radius :	R =	26.41	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 258.41 kN/m
Sum of passive forces : F_p = 898.51 kN/m

Sliding moment : M_a = 6824.68 kNm/m
Resisting moment : M_p = 23729.65 kNm/m

Factor of safety = 3.48 > 1.50
Slope stability ACCEPTABLE

Analysis 2 (stage 2)

Circular slip surface

Slip surface parameters						
Center :	x =	30.68	[m]	Angles :	α_1 =	-27.03 [°]
	z =	18.91	[m]		α_2 =	62.91 [°]
Radius :	R =	26.15	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 250.61 kN/m
Sum of passive forces : F_p = 799.75 kN/m

Sliding moment : M_a = 6553.32 kNm/m
Resisting moment : M_p = 20913.46 kNm/m

Factor of safety = 3.19 > 1.50
Slope stability ACCEPTABLE

Results (Stage of construction 3)

Analysis 1 (stage 3)

Circular slip surface

Slip surface parameters						
Center :	x =	-32.21	[m]	Angles :	α_1 =	-62.85 [°]
	z =	18.94	[m]		α_2 =	28.01 [°]
Radius :	R =	26.41	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 1452.12 kN/m
Sum of passive forces : F_p = 2252.06 kN/m

Sliding moment : M_a = 38350.48 kNm/m
Resisting moment : M_p = 59476.78 kNm/m

Factor of safety = 1.55 > 1.10
Slope stability ACCEPTABLE

Analysis 2 (stage 3)

Circular slip surface

Slip surface parameters						
Center :	x =	30.68	[m]	Angles :	α_1 =	-27.03 [°]
	z =	18.91	[m]		α_2 =	62.91 [°]
Radius :	R =	26.15	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

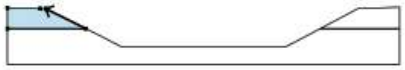
Sum of active forces : F_a = 1360.26 kN/m
Sum of passive forces : F_p = 1999.79 kN/m

Sliding moment : M_a = 35570.68 kNm/m
Resisting moment : M_p = 52294.47 kNm/m

Factor of safety = 1.47 > 1.10
Slope stability ACCEPTABLE

Input data (Stage of construction 4)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		60.00	0.98	60.00	7.20	Poorly graded sand (SP), loose
		50.00	6.88	48.12	6.82	
		47.41	6.82	35.72	0.98	
2		-36.02	0.98	-48.17	6.70	Poorly graded sand (SP), loose
		-48.20	6.72	-50.00	6.76	
		-60.00	6.98	-60.00	0.98	
3		35.72	0.98	31.00	-1.38	Poorly graded sand (SP), medium dense
		25.00	-4.38	-25.00	-4.38	
		-31.00	-1.38	-36.02	0.98	
		-60.00	0.98	-60.00	-9.38	
		60.00	-9.38	60.00	0.98	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		-60.00	8.83	60.00	8.83		

Tensile crack

Tensile crack not input.

Earthquake

Horizontal seismic coefficient : K_h = 0.2000

Vertical seismic coefficient : K_v = 0.0000

Settings of the stage of construction

Design situation : seismic

Results (Stage of construction 4)

Analysis 1 (stage 4)

Circular slip surface

Slip surface parameters						
Center :	x =	-34.27	[m]	Angles :	α_1 =	-74.78 [°]
	z =	11.89	[m]		α_2 =	32.52 [°]
Radius :	R =	19.29	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 662.42 kN/m
Sum of passive forces : F_p = 786.12 kN/m

Sliding moment : M_a = 12779.61 kNm/m
Resisting moment : M_p = 15166.20 kNm/m

Factor of safety = 1.19 > 1.10
Slope stability ACCEPTABLE

Analysis 2 (stage 4)

Circular slip surface

Slip surface parameters						
Center :	x =	32.37	[m]	Angles :	α_1 =	-32.11 [°]
	z =	11.91	[m]		α_2 =	74.93 [°]
Radius :	R =	19.23	[m]			
Analysis of the slip surface without optimization.						

Slope stability verification (Bishop)

Sum of active forces : F_a = 631.14 kN/m
Sum of passive forces : F_p = 700.51 kN/m

Sliding moment : M_a = 12137.63 kNm/m
Resisting moment : M_p = 13471.69 kNm/m

Factor of safety = 1.11 > 1.10
Slope stability ACCEPTABLE

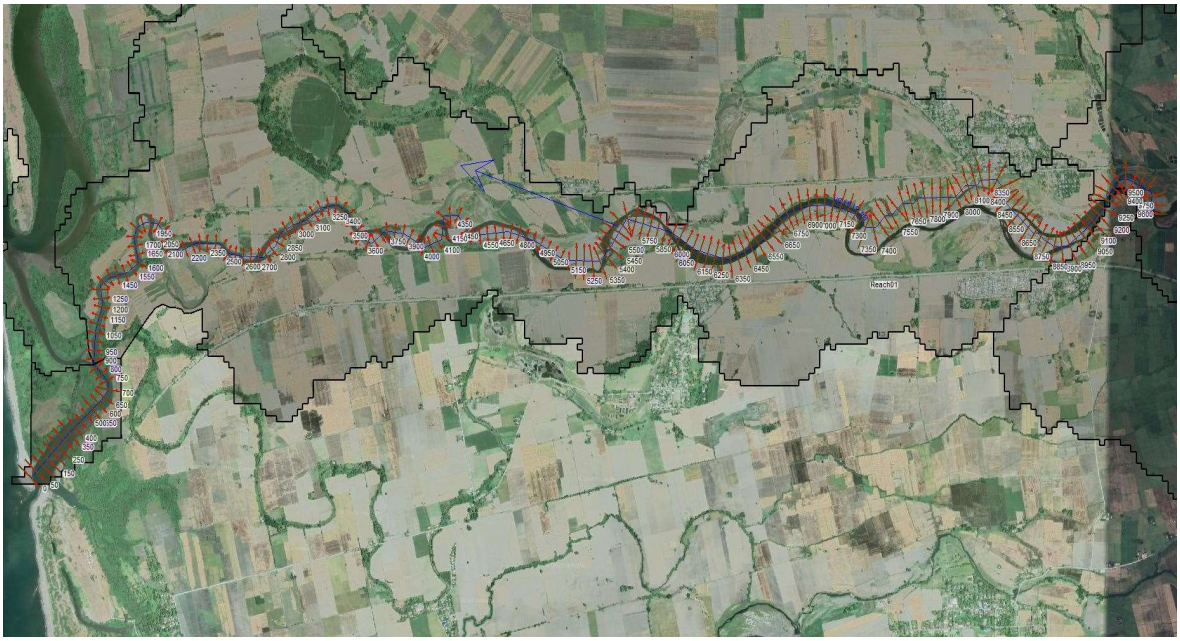
SEDIMENT TRANSPORT ANALYSIS

Based from the HYDRAULIC ANALYSIS

Hydraulic models in HEC-RAS requires three (3) files to run: (1) flow file, (2) geometry file and (3) a plan file to tie them together. After completing the files and testing the hydraulic model over the expected range of flows using steady flow analysis, the sediment and quasi-unsteady flow data will be entered to proceed with the sediment transport analysis.

Geometric Data

The river reach extends from Sta. 0+000 to Sta. 9+800 upstream. River cross-sections are taken every 50.0m of the river reach and extended beyond the main channel banks to the landside. Also, the Manning's coefficient (n) for the main channel and banks are specified for all cross-sections. The channel cross-sections are modified with a design slope of 0.001424 and side slopes of 1V:2H to suit the natural average slope of the river. Also, some sections are widened to avoid contraction of flow and heavy scouring at toe of banks.

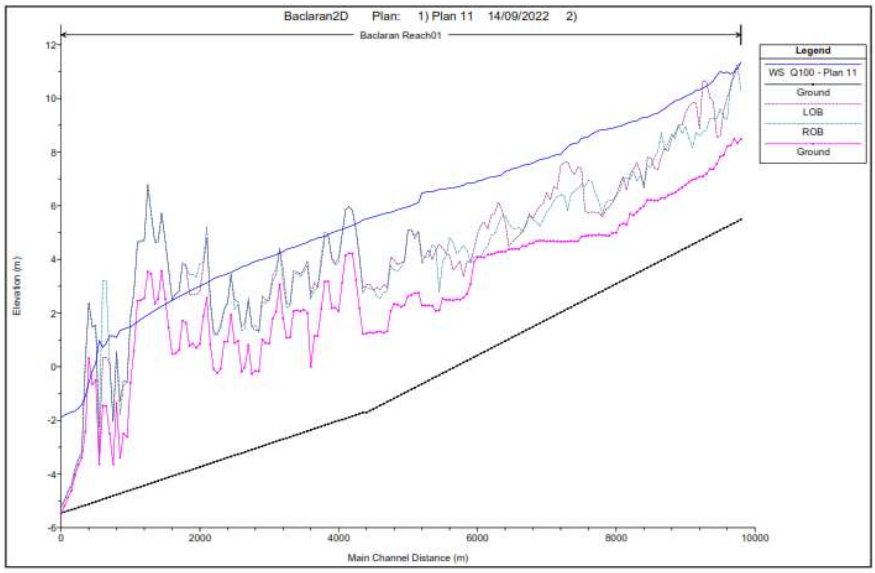


Geometric Plot

Steady flow Data

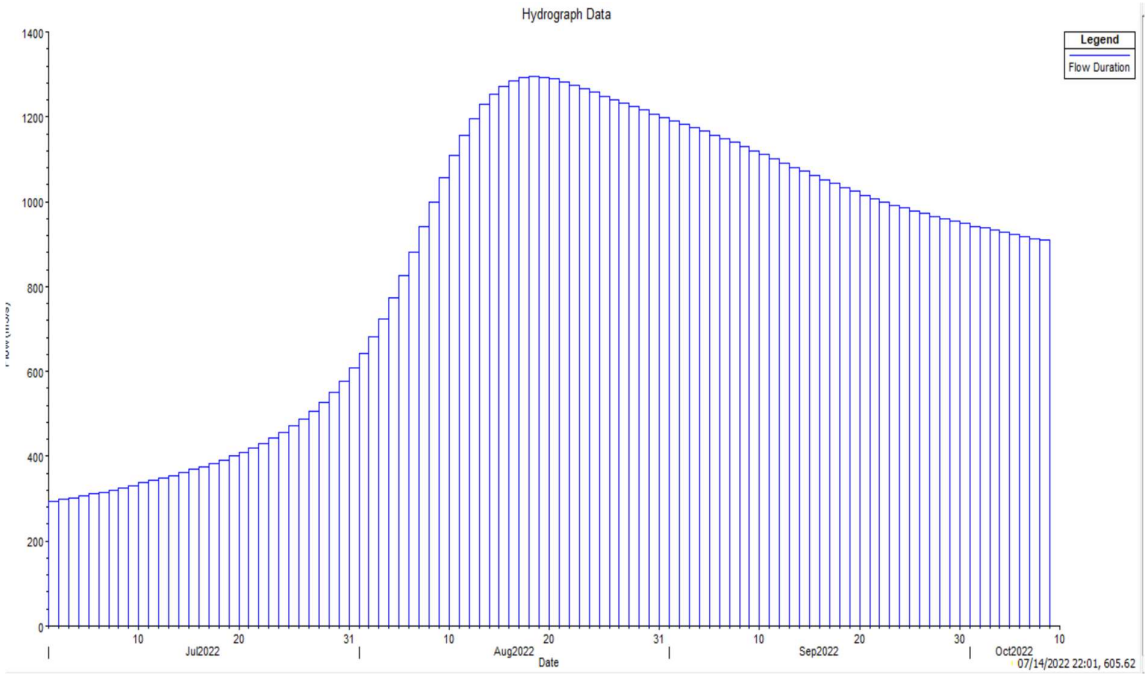
The 100-Yr return period discharge is used to simulate the water surface profile under steady flow condition. Normal depth (at S = 0.001424) is used as boundary condition for the simulated design discharge. The design discharge for the return period is presented in the Table below.

Return Period	Design Discharge (m^3/sec)
100-Yr	**1,293.24**



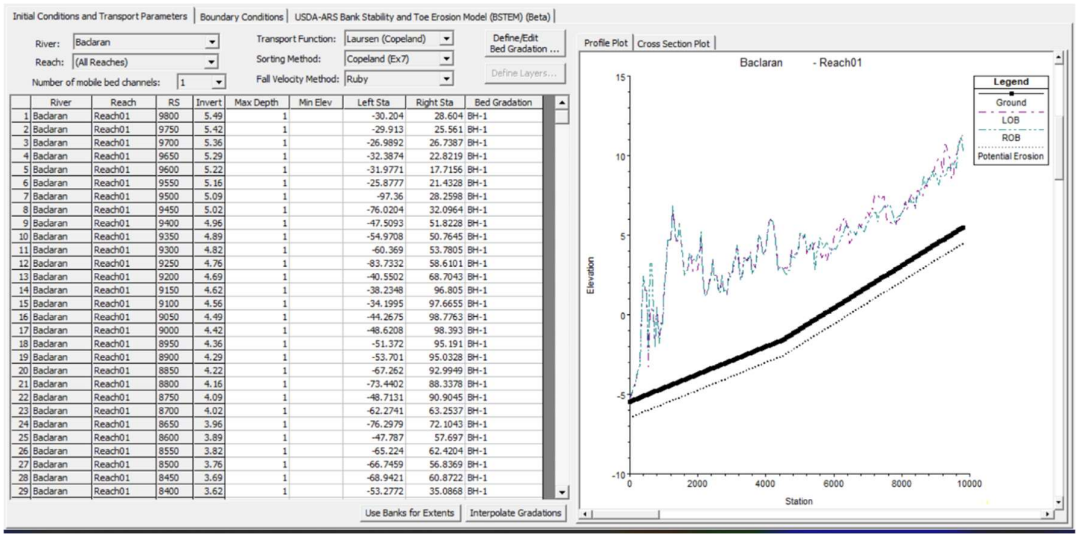
Quasi-Steady Flow Data

The quasi-unsteady flow data will be used to simulate the water surface profile and run the sediment transport analysis. The quasi-unsteady approach approximates a flow hydrograph by a series of steady flow profiles associated with the corresponding flow durations (USACE, 2016). HEC-RAS includes several quasi-unsteady boundary conditions, but only one upstream boundary type: flow series boundary. Downstream boundary conditions, on the other hand, includes three options: (1) stage-time series, (2) rating curve and (3) normal depth. For this study, the normal depth condition will be used which only requires the friction slope (S = 0.001424) for the downstream and flow series derived using HEC-HMS is used for the upstream.



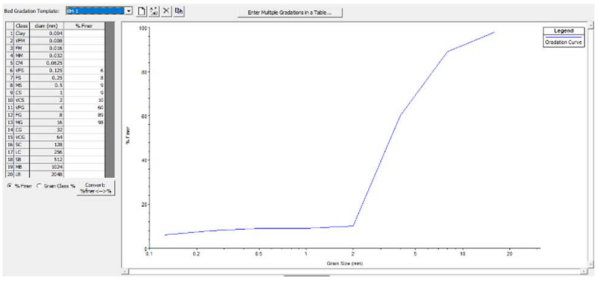
Sediment Data

The sediment data will be specified in the hydraulic model in terms of bed gradation. Based on the geotechnical data obtained, the soil strata of the riverbed is predominantly underlain by hard brown silty clay and sand. The maximum depth of sediment control volume for erosion was set at 1.0m while the erodible limit will be set at the foot of the bank slope protection.



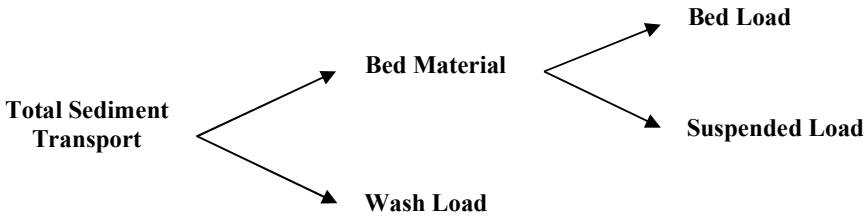
	River	Reach	RS	Invert	Max Depth	Min Elev	Left Sta	Right Sta	Bed Gradation
1	Baclaran	Reach01	9800	5.49	1		-30.204	28.604	BH-1
2	Baclaran	Reach01	9750	5.42	1		-29.913	25.561	BH-1
3	Baclaran	Reach01	9700	5.36	1		-26.9892	26.7387	BH-1
4	Baclaran	Reach01	9650	5.29	1		-32.3874	22.8219	BH-1
5	Baclaran	Reach01	9600	5.22	1		-31.9771	17.7156	BH-1
6	Baclaran	Reach01	9550	5.16	1		-25.8777	21.4328	BH-1
7	Baclaran	Reach01	9500	5.09	1		-97.36	28.2598	BH-1
8	Baclaran	Reach01	9450	5.02	1		-76.0204	32.0964	BH-1
9	Baclaran	Reach01	9400	4.96	1		-47.5093	51.8228	BH-1
10	Baclaran	Reach01	9350	4.89	1		-54.9708	50.7645	BH-1
11	Baclaran	Reach01	9300	4.82	1		-60.369	53.7805	BH-1
12	Baclaran	Reach01	9250	4.76	1		-83.7332	58.6101	BH-1
13	Baclaran	Reach01	9200	4.69	1		-40.5502	68.7043	BH-1
14	Baclaran	Reach01	9150	4.62	1		-38.2348	96.805	BH-1
15	Baclaran	Reach01	9100	4.56	1		-34.1995	97.6655	BH-1
16	Baclaran	Reach01	9050	4.49	1		-44.2675	98.7763	BH-1
17	Baclaran	Reach01	9000	4.42	1		-48.6208	98.393	BH-1
18	Baclaran	Reach01	8950	4.36	1		-51.372	95.191	BH-1
19	Baclaran	Reach01	8900	4.29	1		-53.701	95.0328	BH-1
20	Baclaran	Reach01	8850	4.22	1		-67.262	92.9949	BH-1
21	Baclaran	Reach01	8800	4.16	1		-73.4402	88.3378	BH-1
22	Baclaran	Reach01	8750	4.09	1		-48.7131	90.9045	BH-1
23	Baclaran	Reach01	8700	4.02	1		-62.2741	63.2537	BH-1
24	Baclaran	Reach01	8650	3.96	1		-76.2979	72.1043	BH-1
25	Baclaran	Reach01	8600	3.89	1		-47.787	57.697	BH-1
26	Baclaran	Reach01	8550	3.82	1		-65.224	62.4204	BH-1
27	Baclaran	Reach01	8500	3.76	1		-66.7459	56.8369	BH-1
28	Baclaran	Reach01	8450	3.69	1		-68.9421	60.8722	BH-1
29	Baclaran	Reach01	8400	3.62	1		-53.2772	35.0868	BH-1

Bed Gradation



Sediment Transport Analysis

The transport of sediments by river flow is the over-all solid transport of particles that passes through a cross section of the watercourse. The total transport of sediments is composed of different modes of transport which correspond to different physical mechanisms shown below.



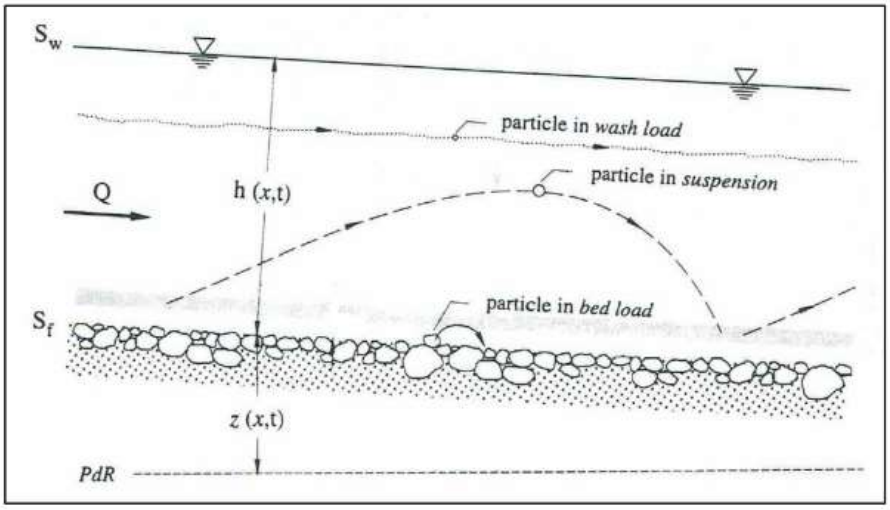
Total Sediment Transport Composition

The solid phase of sediments in a watercourse are transported as:

Bed load – are particles that stay in close contact with the bed. These particles (relatively large) displace themselves by gliding, rolling or shortly jumping.

Suspended load – are particles that occasionally stay in contact with the bed. These particles (relatively small) displace themselves by making more or less large jumps and remain often surrounded by water.

Wash load – are particles that are almost never in contact with the bed. These particles (relatively fine) are washed through the cross section by the flow.



Scheme of the Modes of Transport

Many formulae are introduced to calculate the solid discharge that allow determining the capacity of the transport of sediments for a given flow. Under such condition, the transport of sediments is said to be in equilibrium. However, for the case of Santo Tomas River, the supply of solid discharge is not equal to the capacity of transport causing aggradation, thus, not in equilibrium.

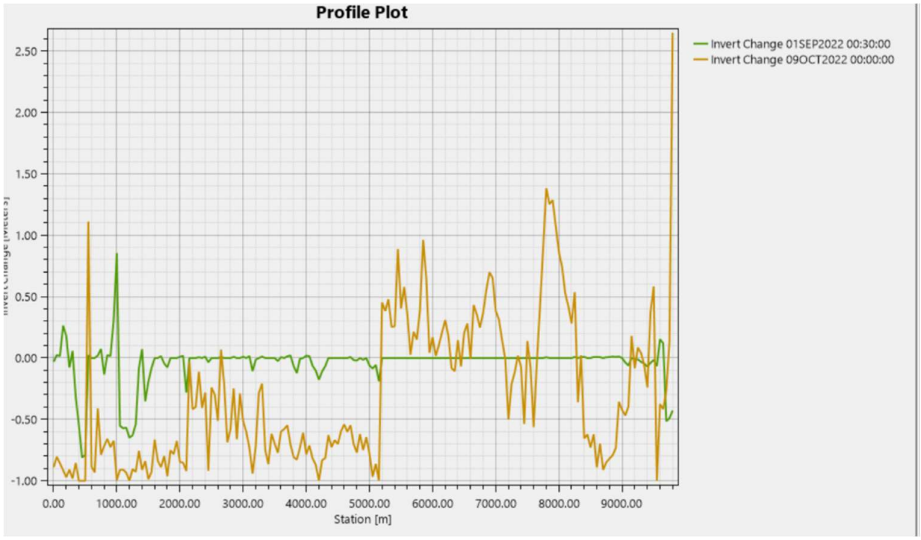
HEC-RAS uses the Saint-Venant-Exner Equation, as shown below, in simulating unsteady and non-uniform flow in a prismatic open channel with a small bed slope. For simplification of the hydraulic process in sediment transport analysis, it is assumed that since variation in liquid discharge and bed elevation are generally short-term and long-term phenomena, respectively, a quasi-steady flow is maintained (Graf, 1998) for flows with small Froude numbers (Fr < 0.6), which will be used for this study.

Transport functions compute transport potential without consideration of movable sediment volume (Hydrologic Engineering Center, 2019), meaning the equation computes the transportable sediment volume based on the given cross sections regardless of the amount of deposition in the river. The bed sorting method used by HEC-RAS will monitor the bed gradation to calculate the grain-class specific capacities and simulate armoring processes that regulate supply. For this study, the Copeland (Ex7) sorting method and Toffaleti fall velocity method, which are designed for sand bed rivers, will be used.

RESULTS AND INTERPRETATION

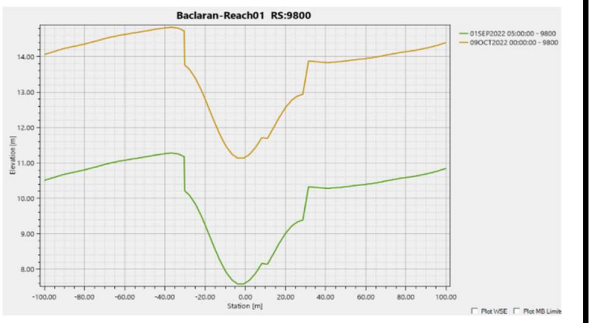
Based on the results of the one-dimensional simulation using the data presented above, the river is prone to sandbar formation, thus dredging is necessary. Considering the bed material, the river may still accumulate sediments coming from the upstream watershed which was not considered in the analysis due to lack of available sediment records.

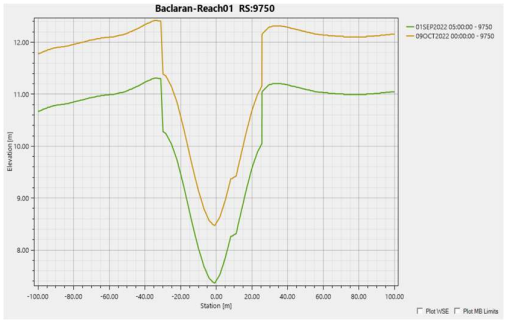
It can also be observed that adjacent areas can be potentially flooded because of bank overtopping mainly due to insufficient height of bank and protection. Although the dredging project increases the capacity of the river, sections with insufficient bank height and protection still needs attention and immediate action to protect adjacent areas from inundation due to overflowing of river.

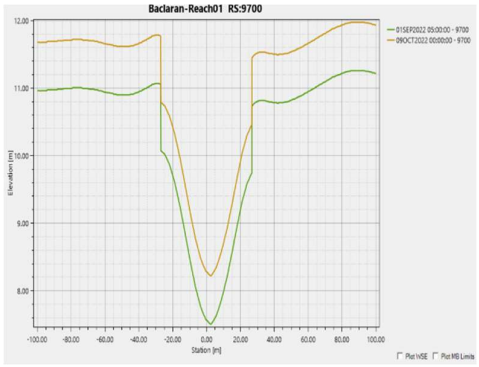


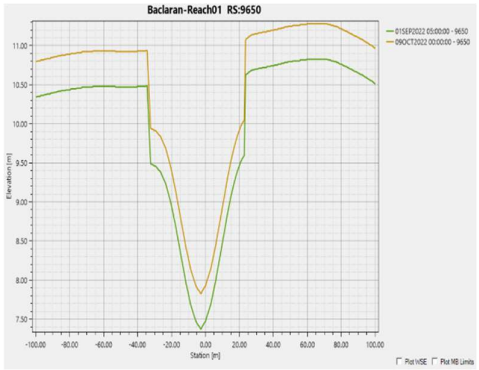
Sand bar formation is significantly reduced. However, sediment accumulation is still prominent. Control measures, e.g. spurdike and/or revetment, are recommended.

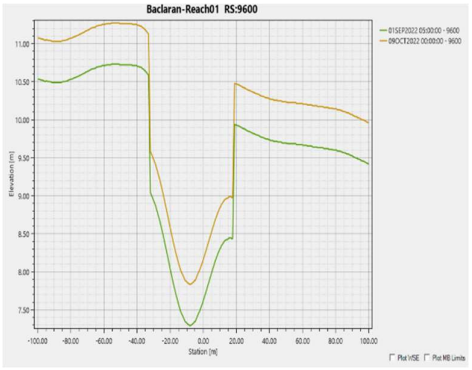
Sediment Mass Change Per Cross-Sections

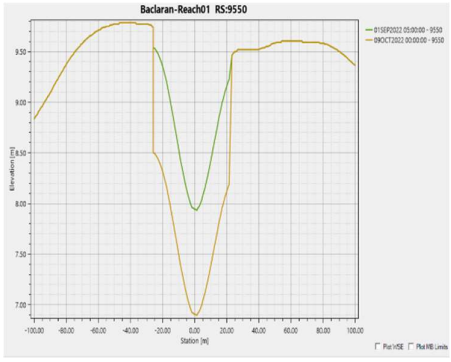


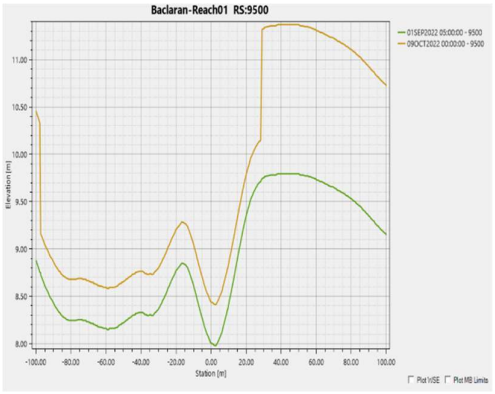


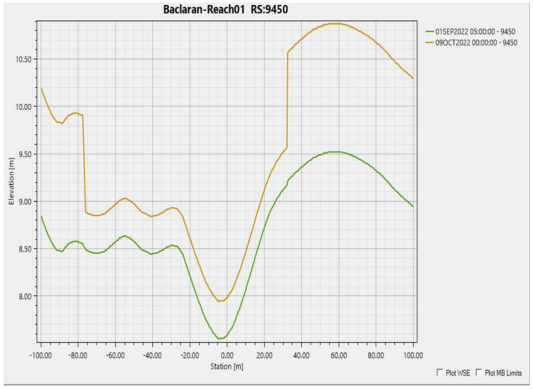


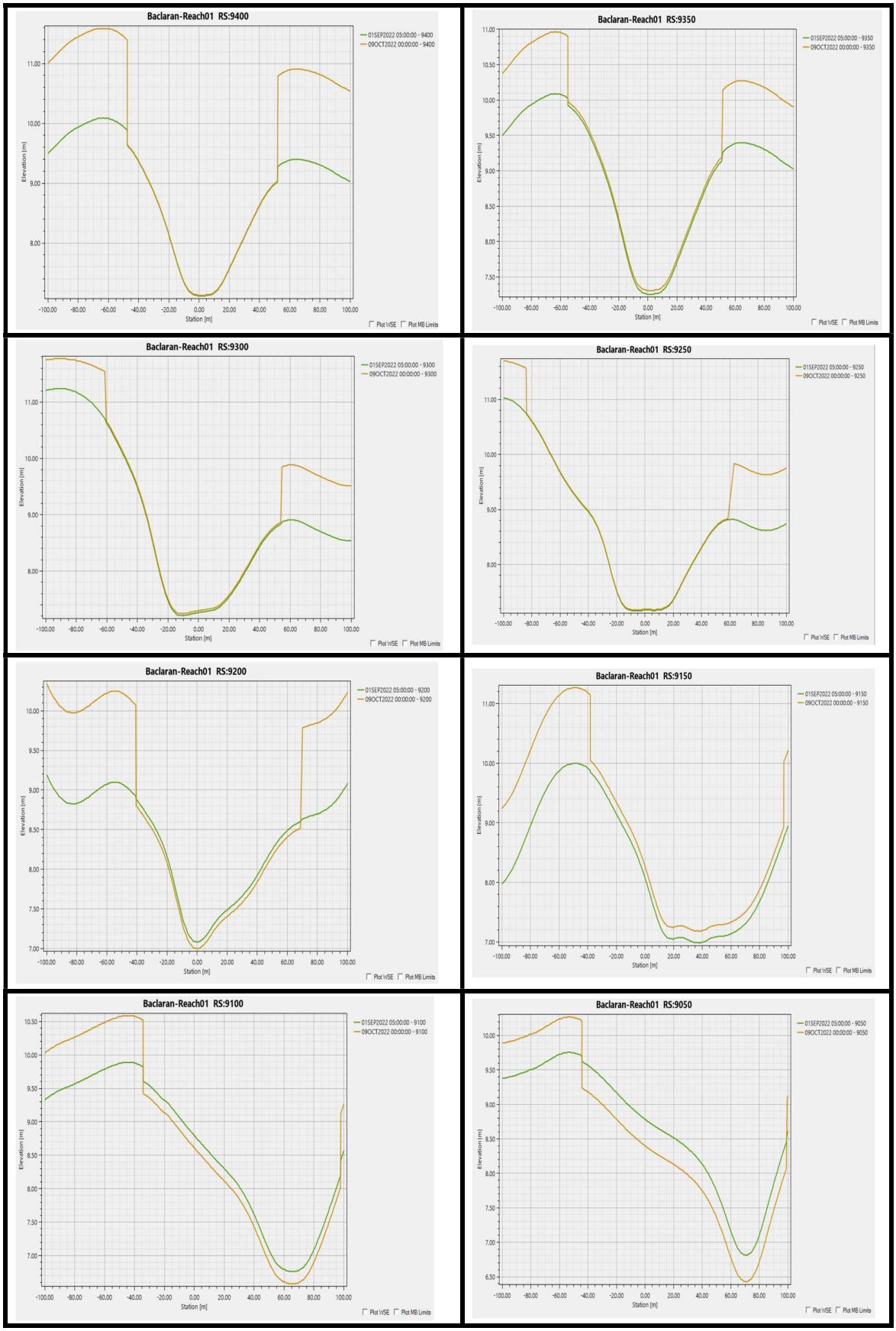








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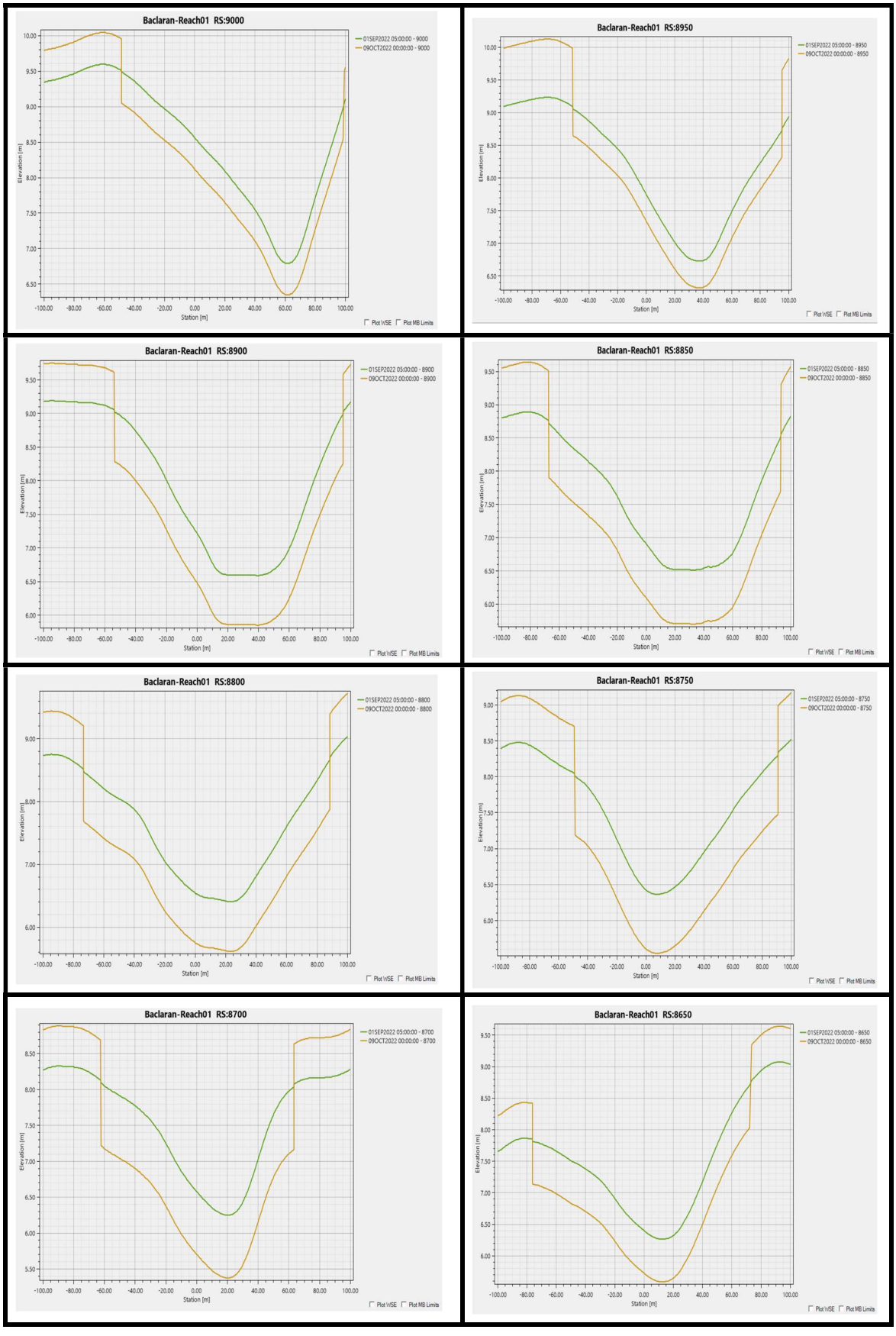
Plot MB Limits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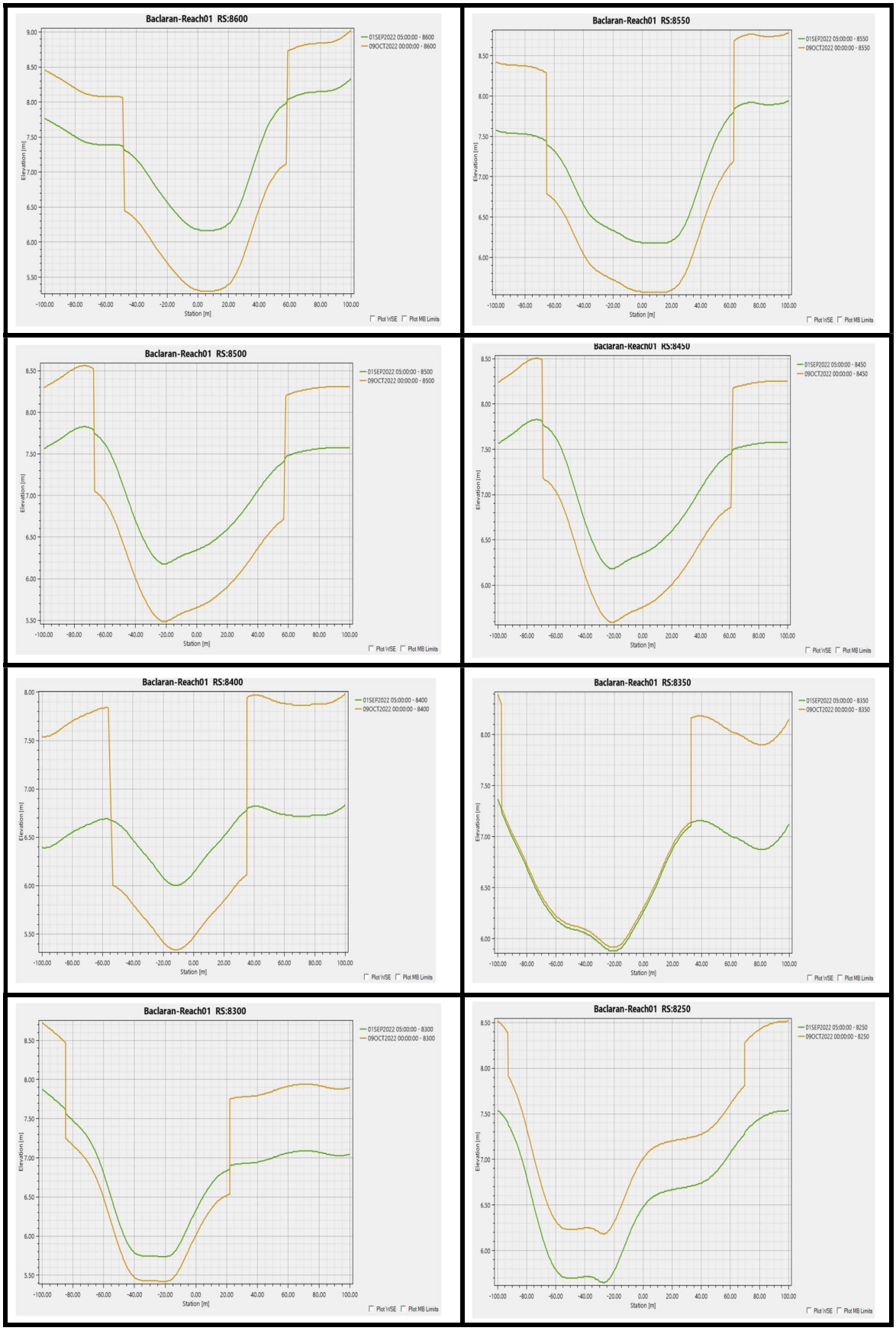
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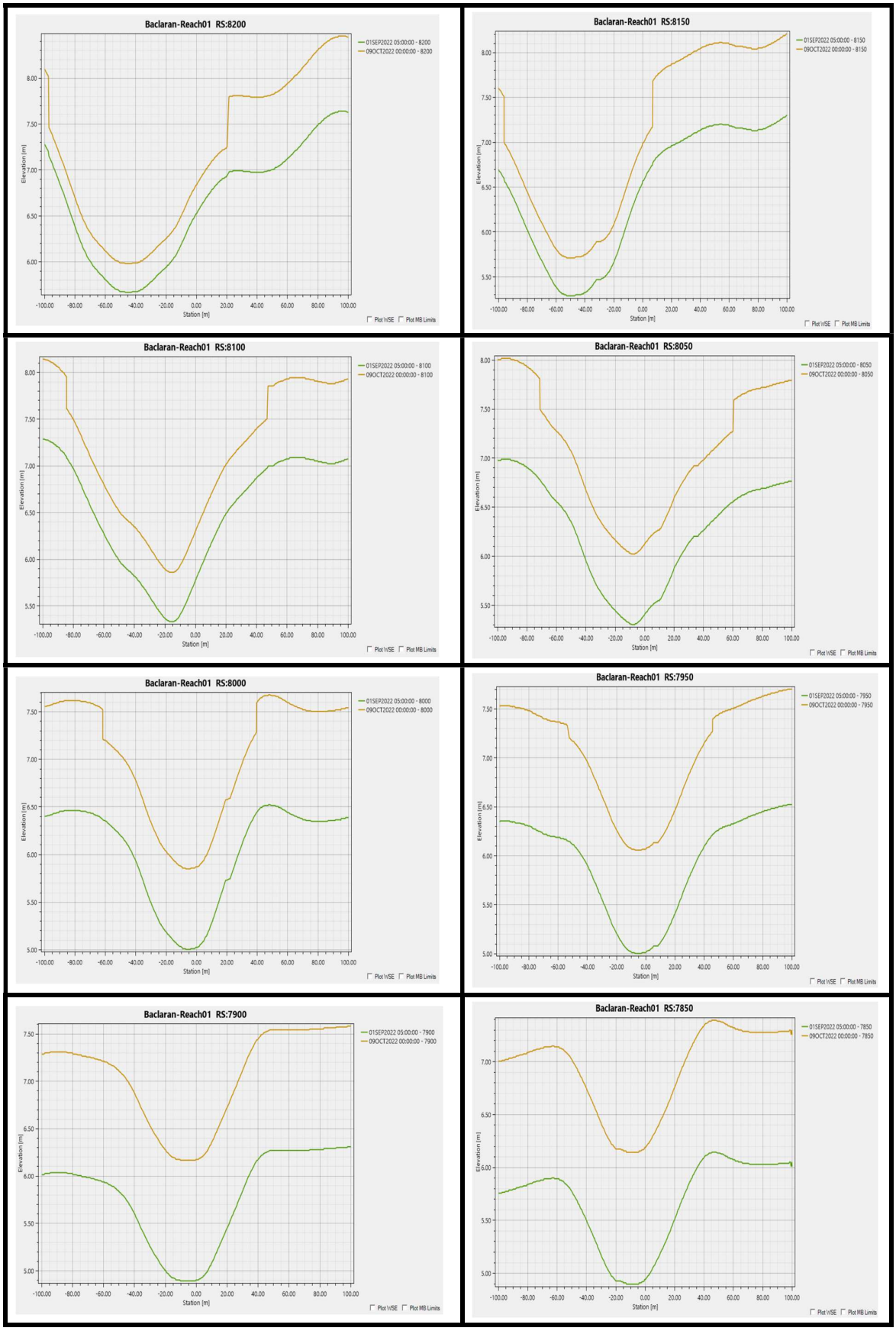
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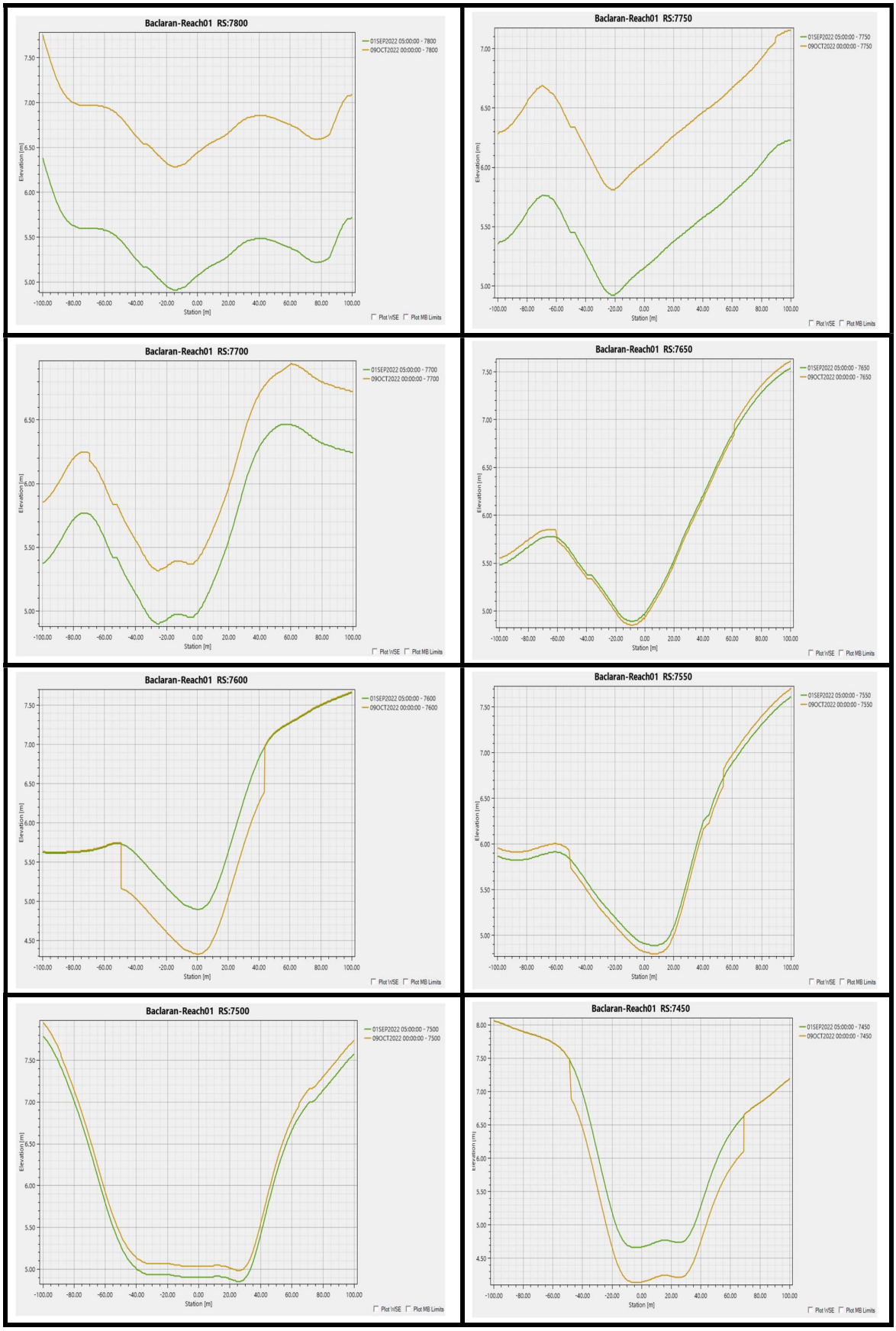
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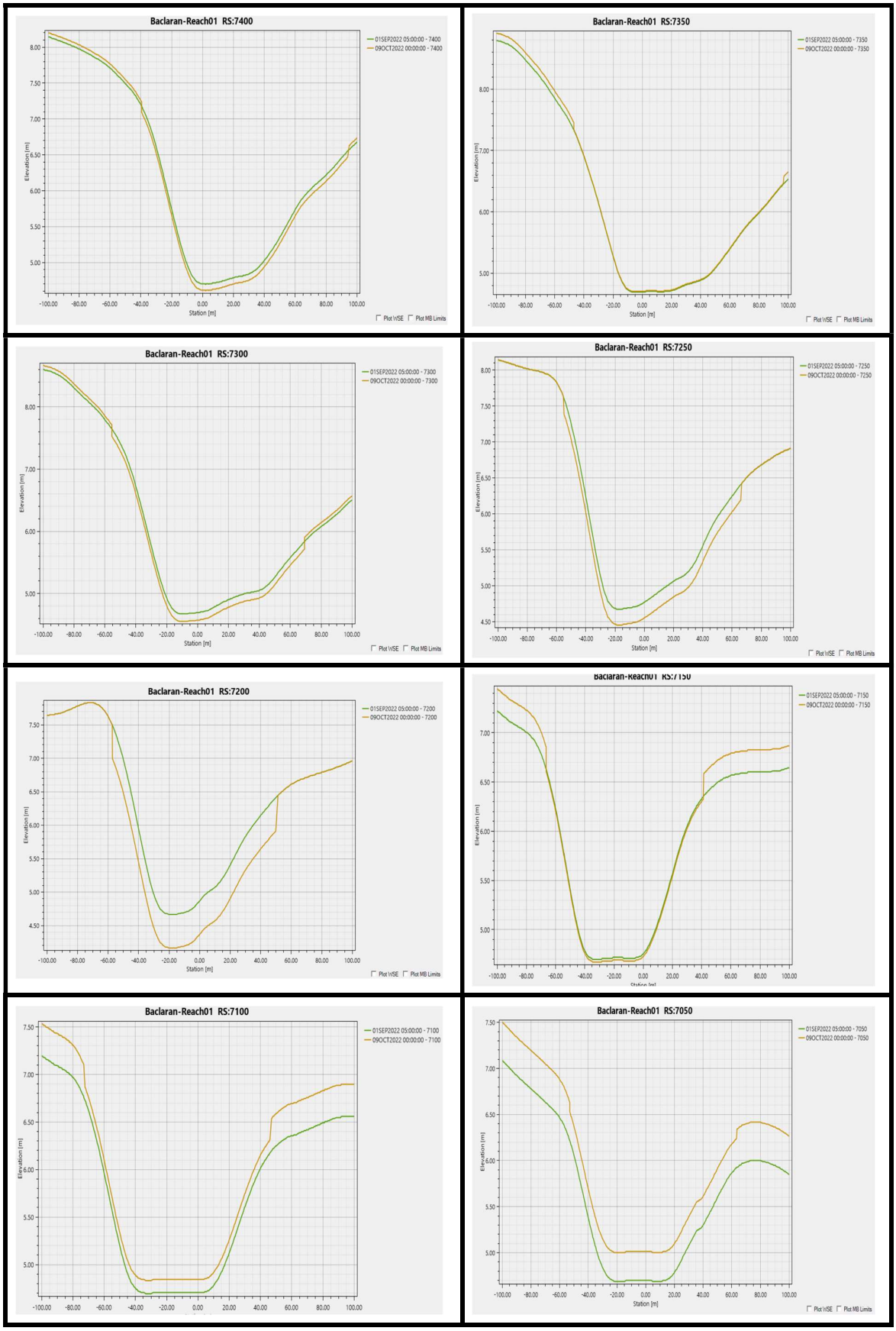
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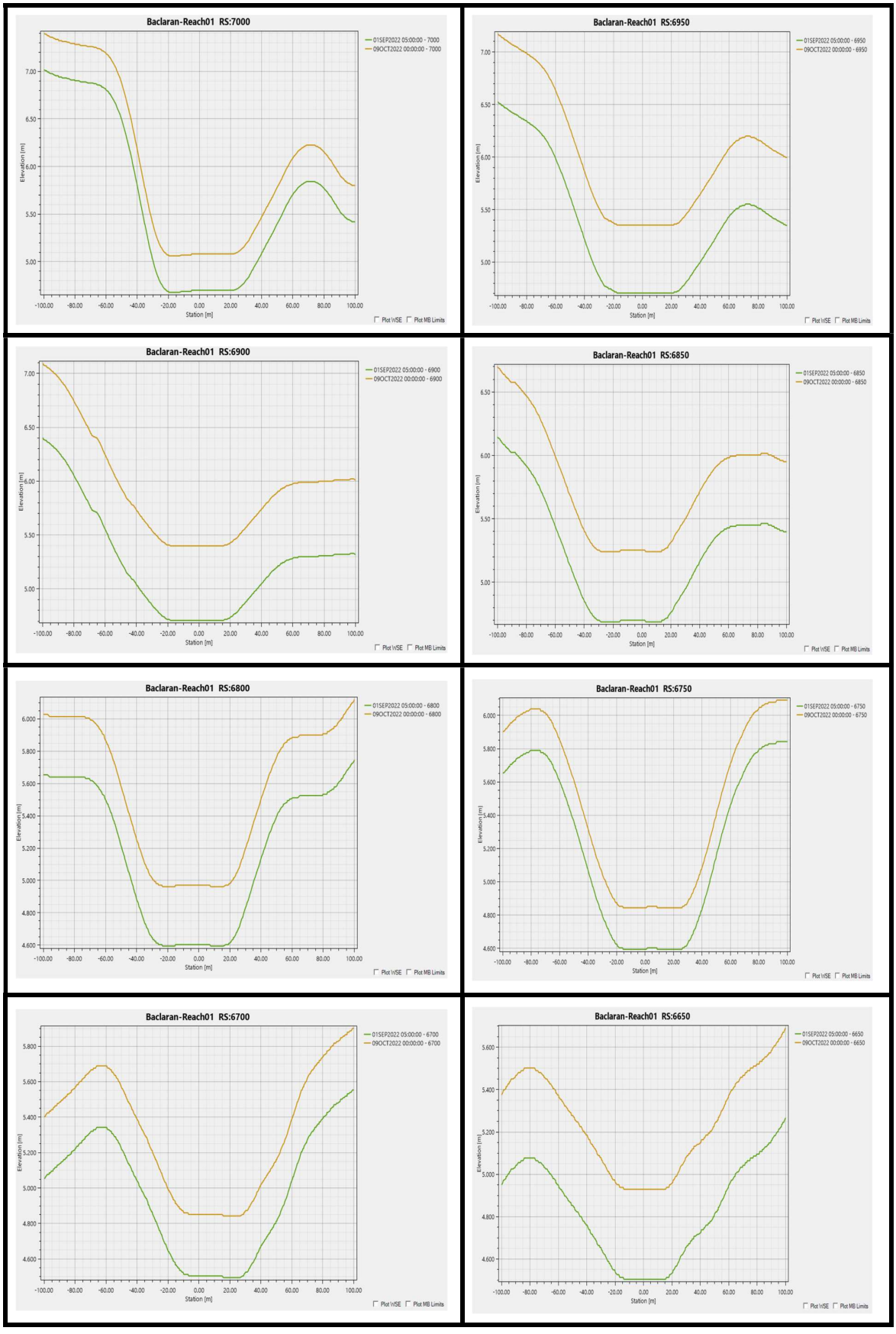
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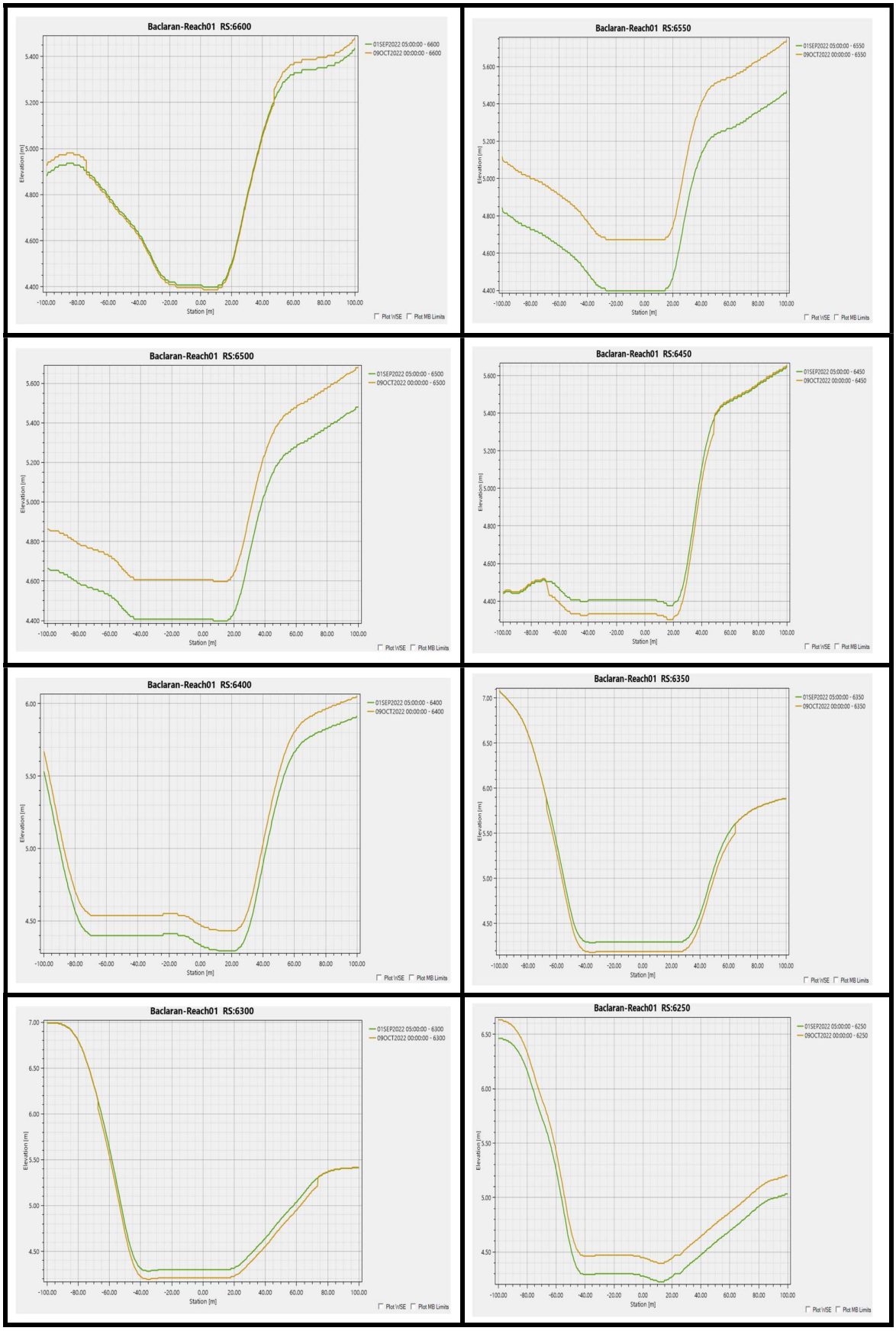
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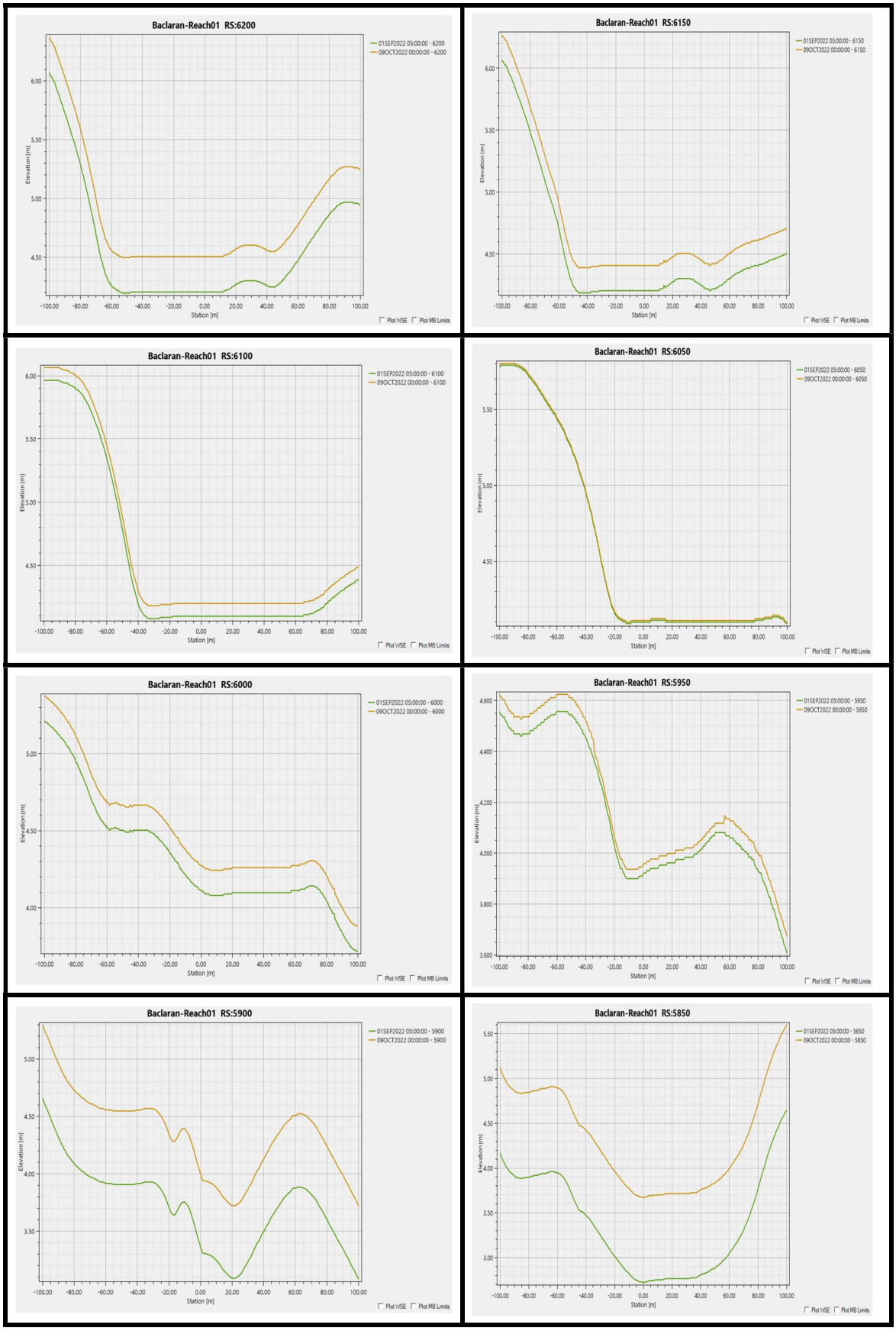
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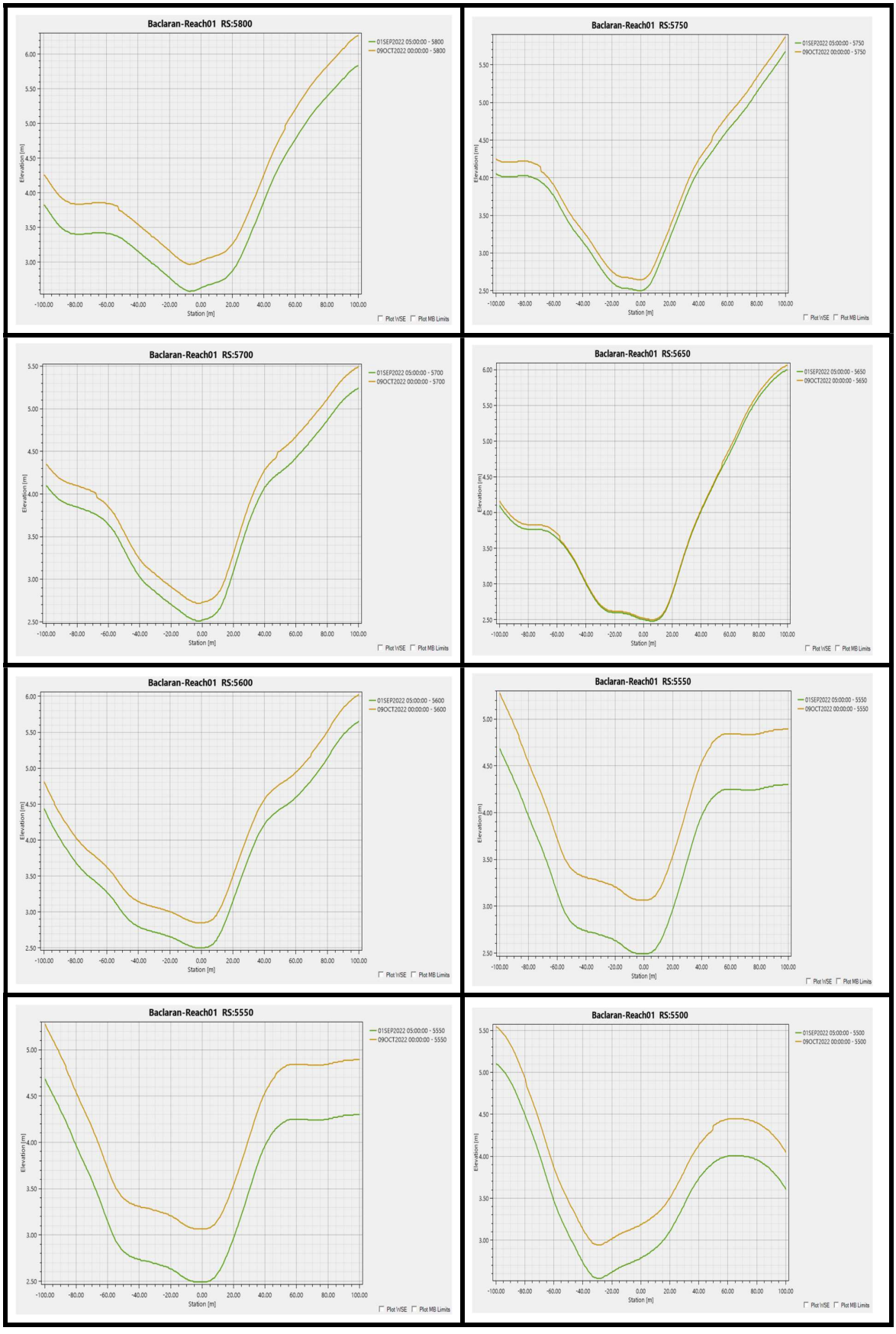
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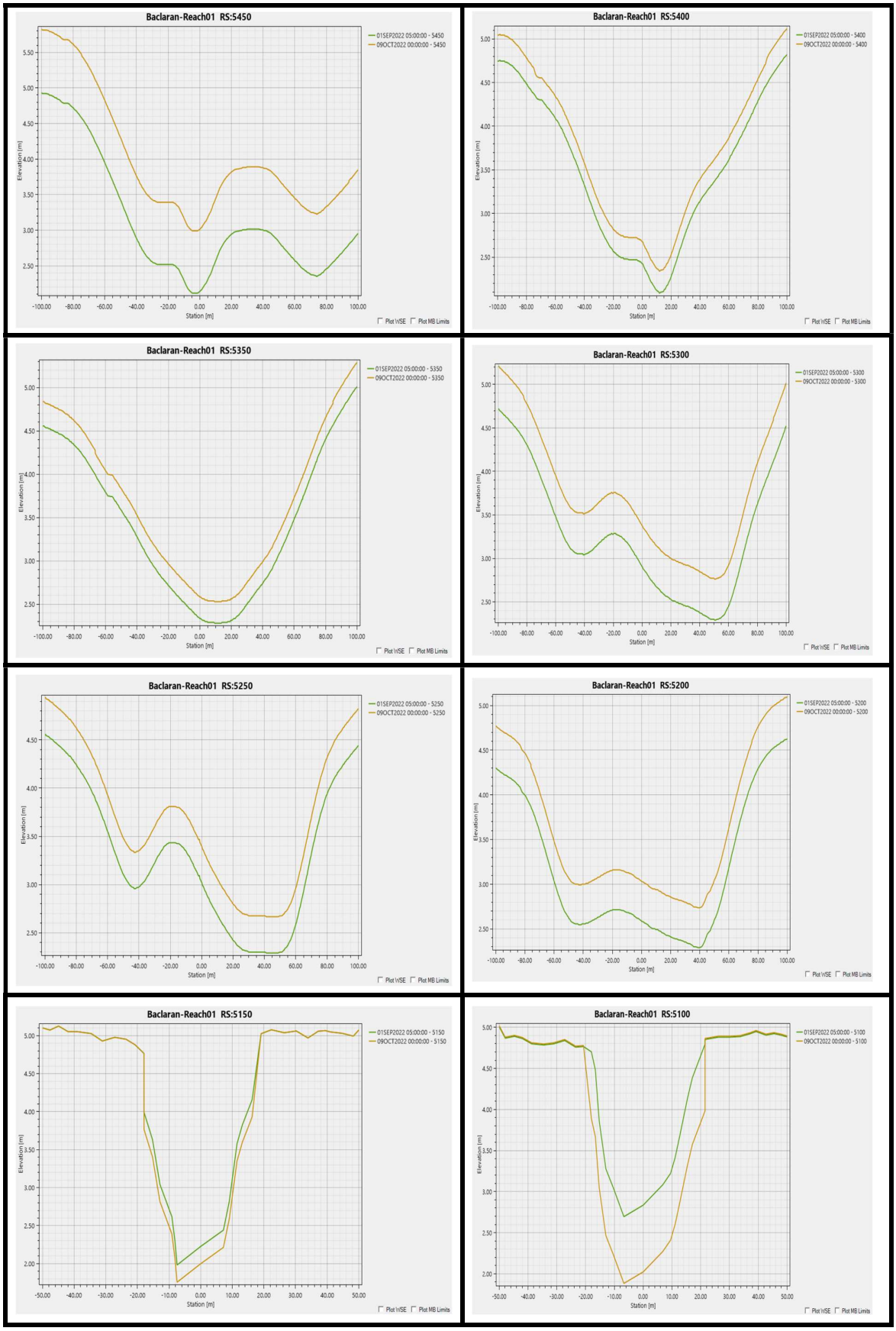
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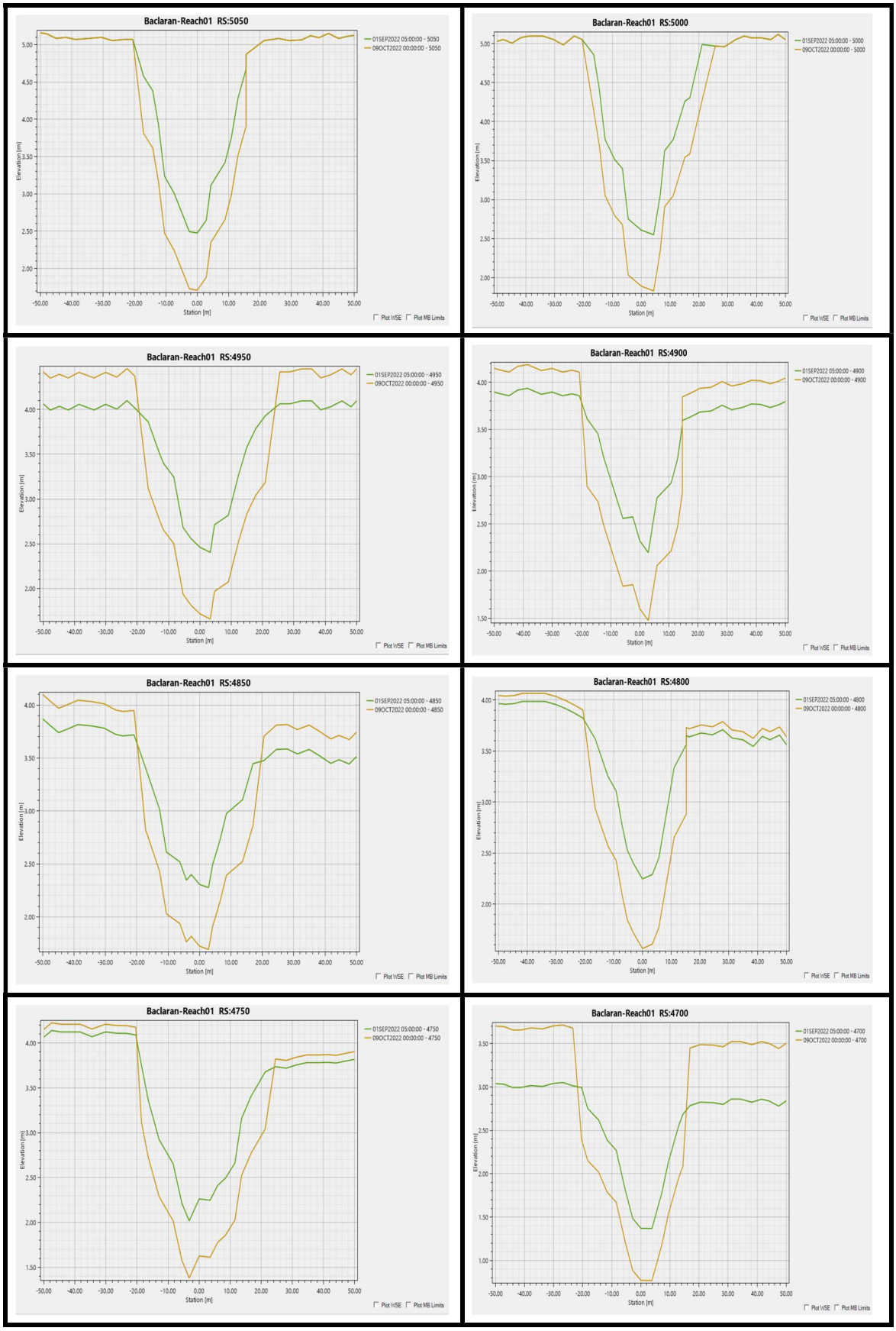
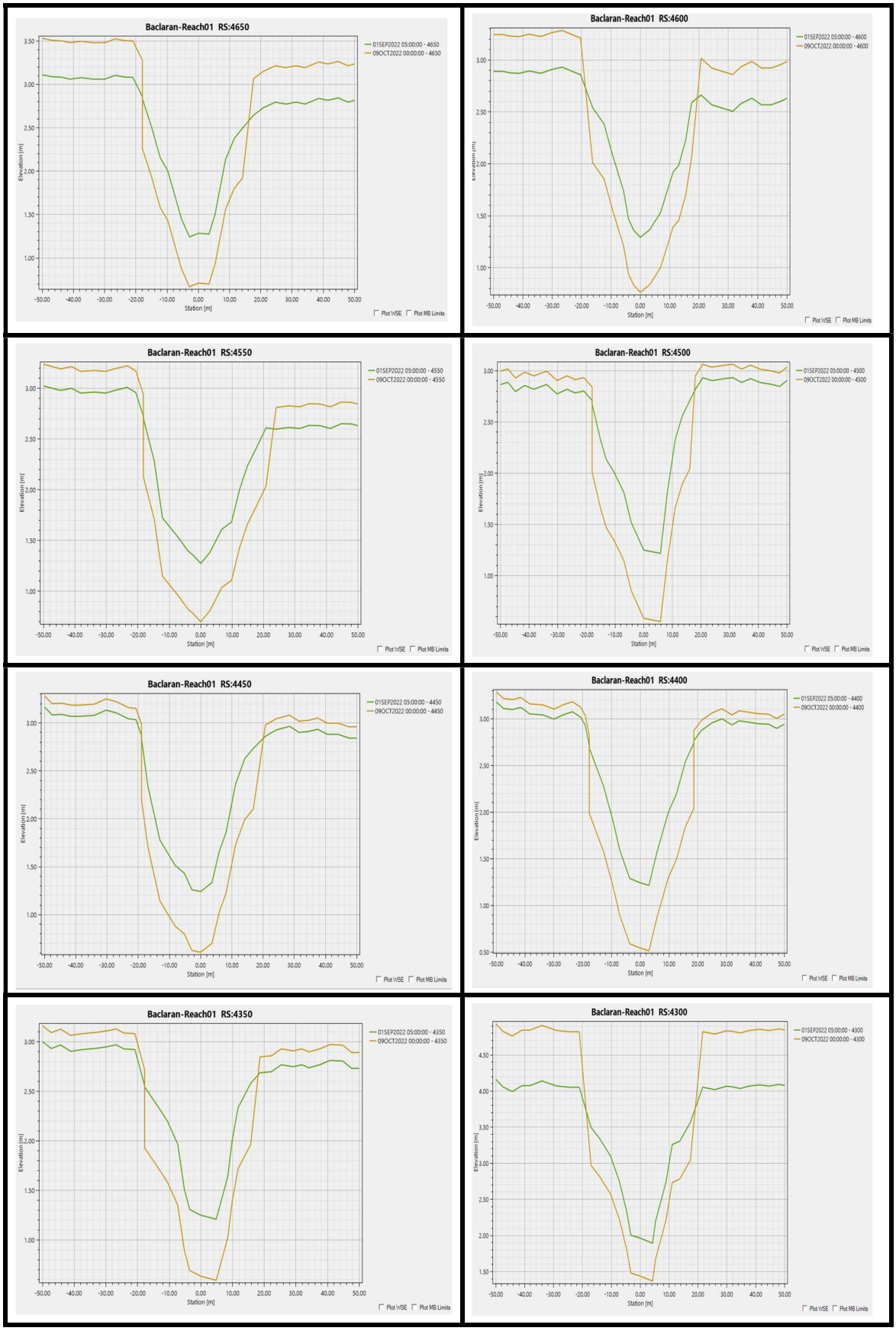
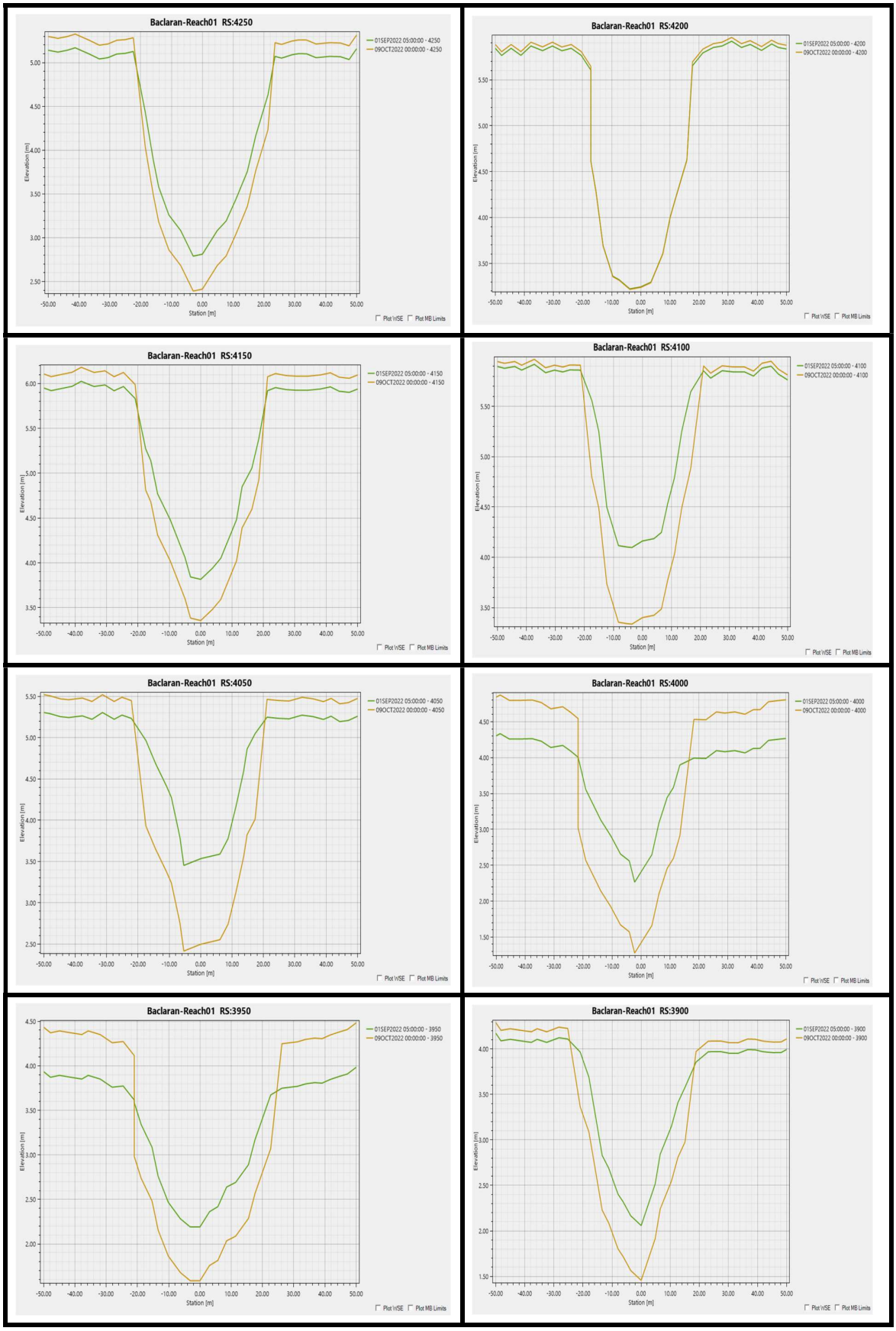
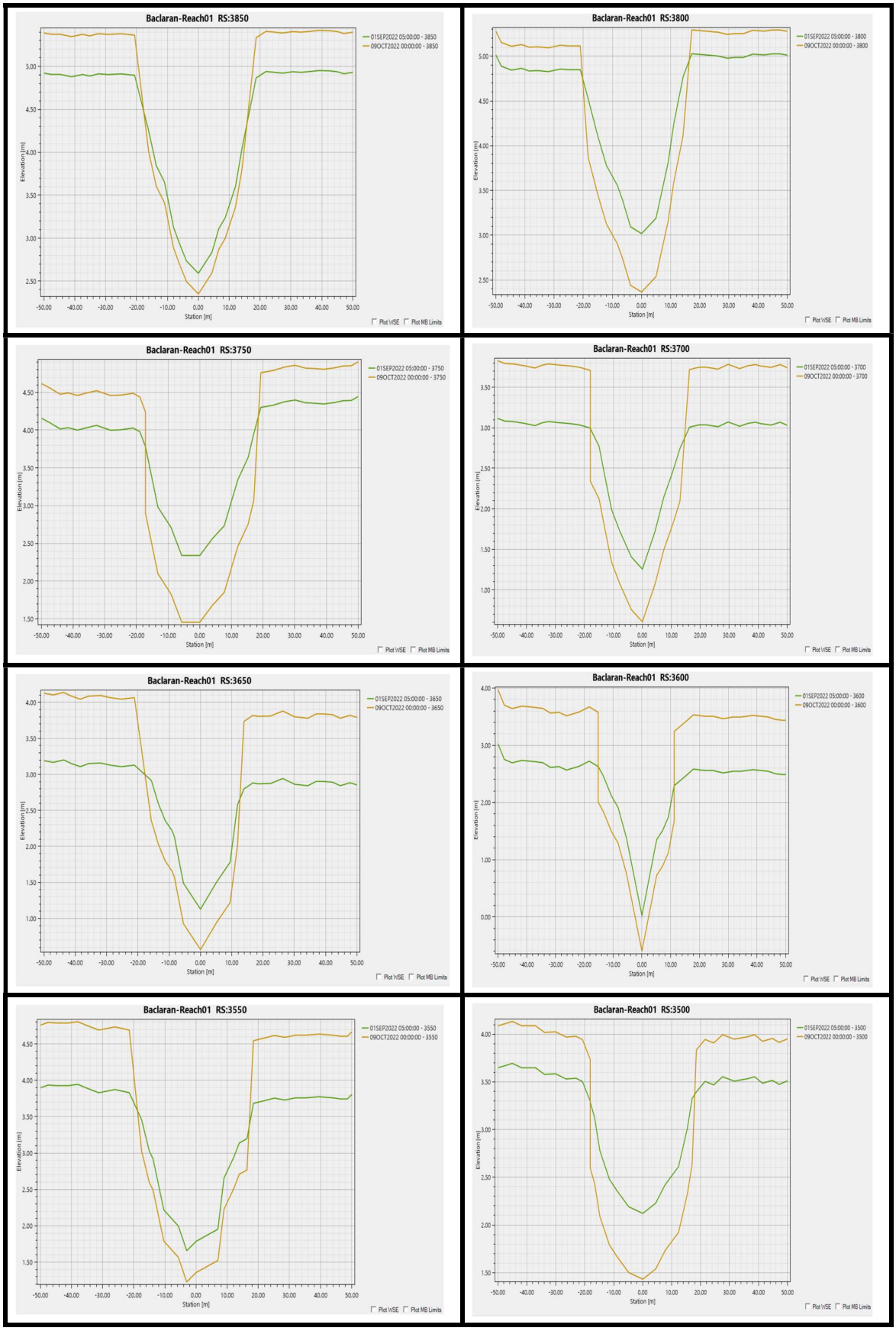
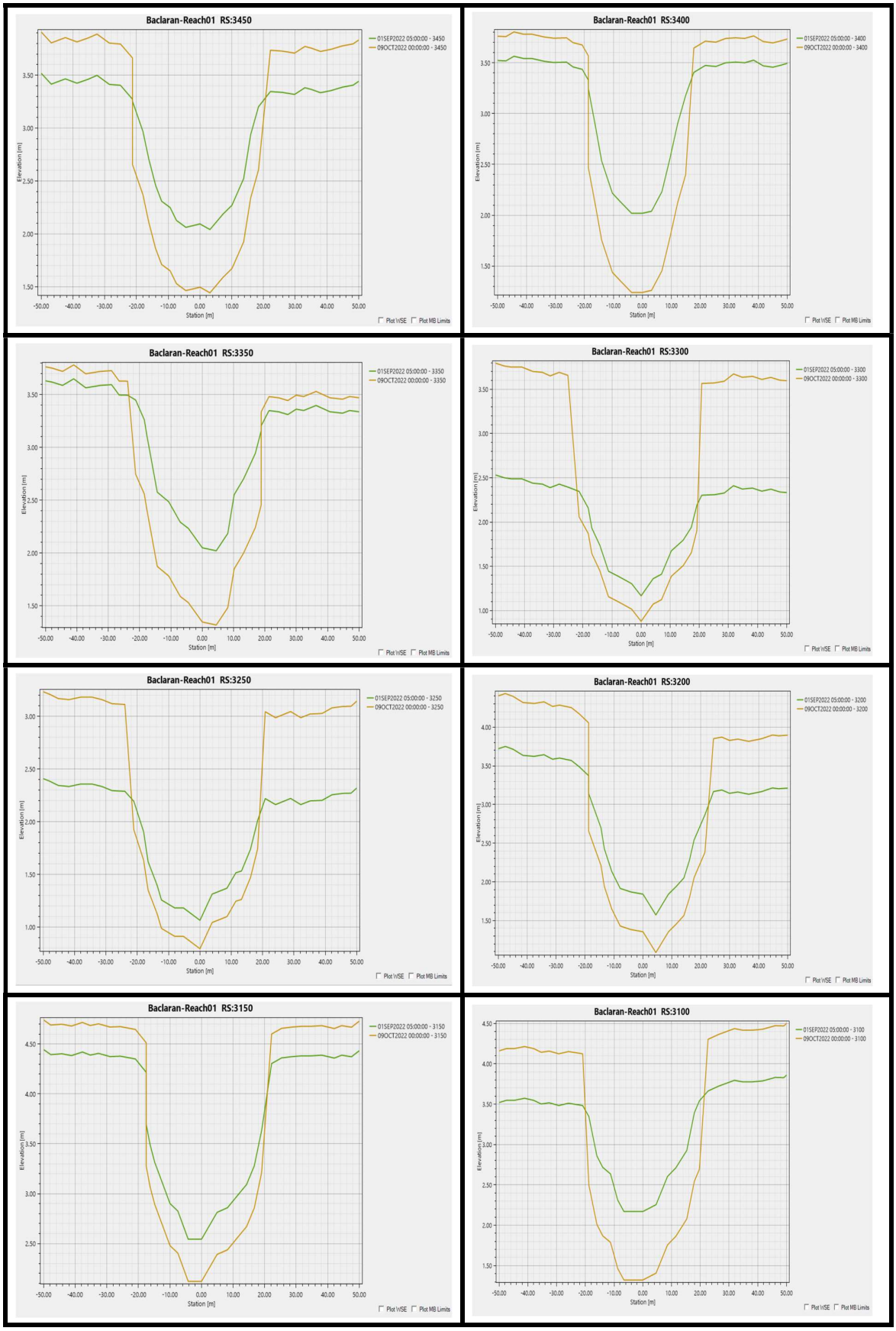
09OCT2022 00:00:00 - 5450
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5400
01SEP2022 05:00:00 - 5400
09OCT2022 00:00:00 - 5400
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5350
01SEP2022 05:00:00 - 5350
09OCT2022 00:00:00 - 5350
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5300
01SEP2022 05:00:00 - 5300
09OCT2022 00:00:00 - 5300
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5250
01SEP2022 05:00:00 - 5250
09OCT2022 00:00:00 - 5250
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5200
01SEP2022 05:00:00 - 5200
09OCT2022 00:00:00 - 5200
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5150
01SEP2022 05:00:00 - 5150
09OCT2022 00:00:00 - 5150
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5100
01SEP2022 05:00:00 - 5100
09OCT2022 00:00:00 - 5100
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

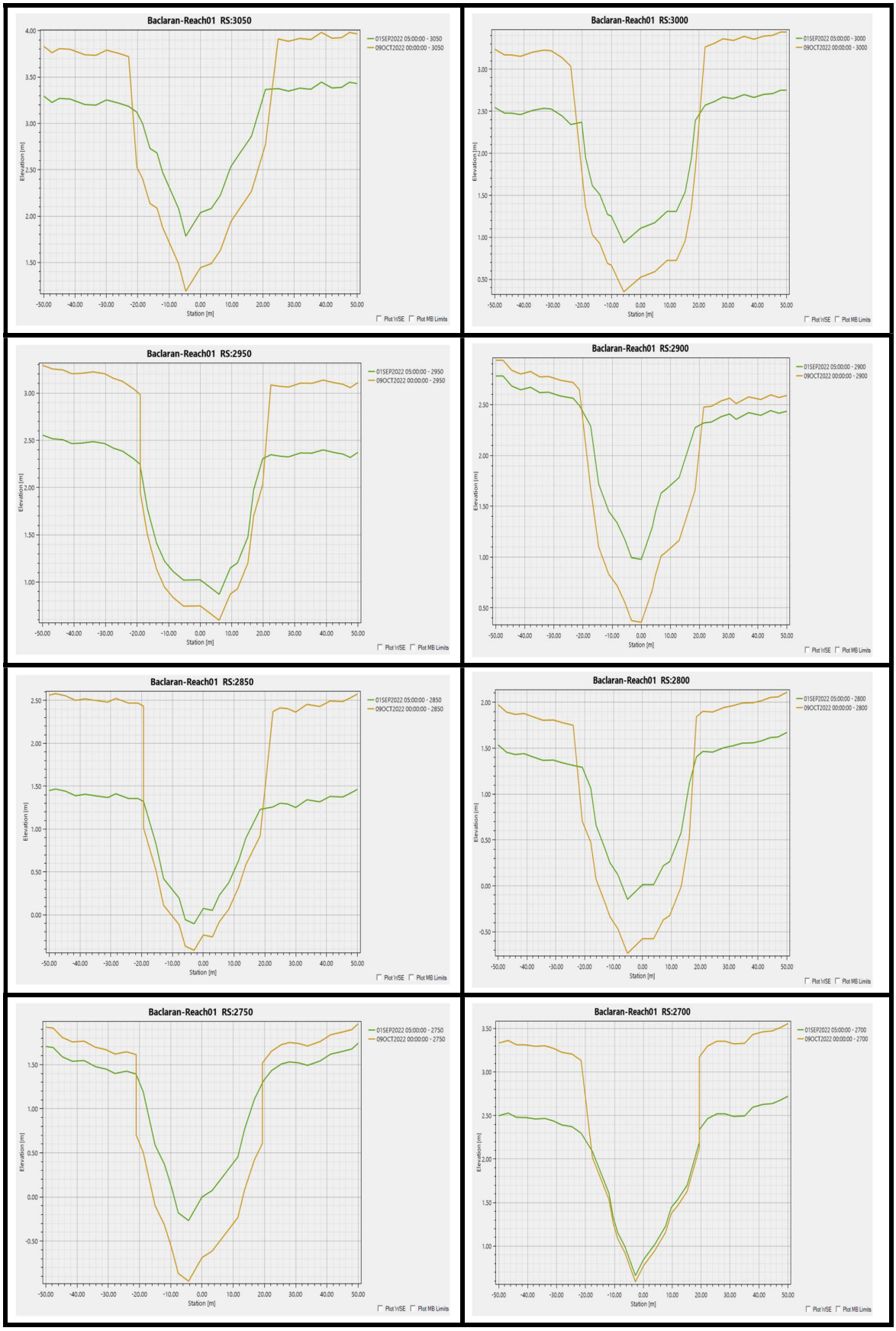

Baclaran-Reach01 RS:5050
01SEP2022 05:00:00 - 5050
09OCT2022 00:00:00 - 5050
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:5000
01SEP2022 05:00:00 - 5000
09OCT2022 00:00:00 - 5000
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4950
01SEP2022 05:00:00 - 4950
09OCT2022 00:00:00 - 4950
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4900
01SEP2022 05:00:00 - 4900
09OCT2022 00:00:00 - 4900
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4850
01SEP2022 05:00:00 - 4850
09OCT2022 00:00:00 - 4850
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4800
01SEP2022 05:00:00 - 4800
09OCT2022 00:00:00 - 4800
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4750
01SEP2022 05:00:00 - 4750
09OCT2022 00:00:00 - 4750
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4700
01SEP2022 05:00:00 - 4700
09OCT2022 00:00:00 - 4700
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

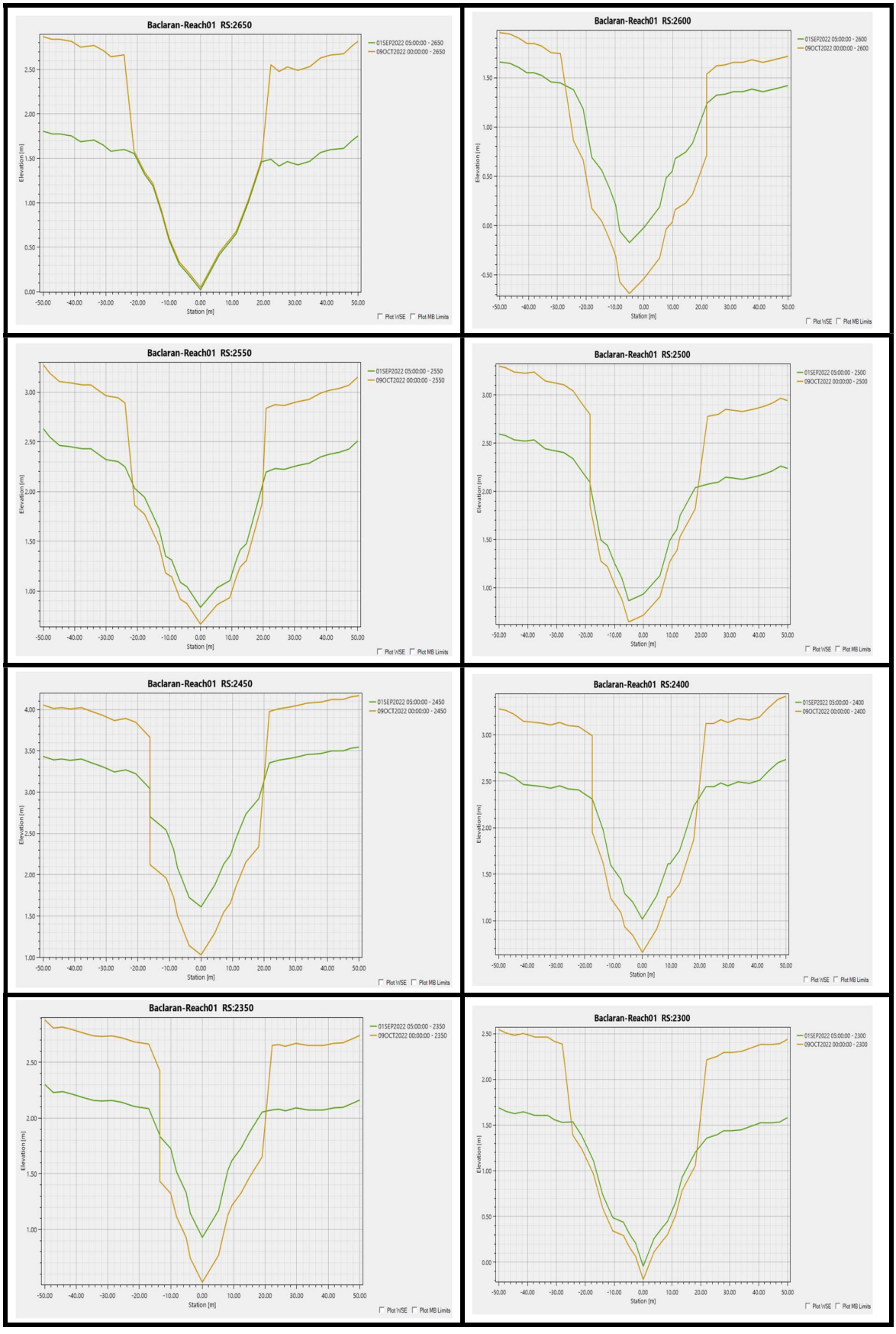

Baclaran-Reach01 RS:4650
01SEP2022 05:00:00 - 4650
09OCT2022 00:00:00 - 4650
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4600
01SEP2022 05:00:00 - 4600
09OCT2022 00:00:00 - 4600
Elevation (m)
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4550
01SEP2022 05:00:00 - 4550
09OCT2022 00:00:00 - 4550
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4500
01SEP2022 05:00:00 - 4500
09OCT2022 00:00:00 - 4500
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4450
01SEP2022 05:00:00 - 4450
09OCT2022 00:00:00 - 4450
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4400
01SEP2022 05:00:00 - 4400
09OCT2022 00:00:00 - 4400
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4350
01SEP2022 05:00:00 - 4350
09OCT2022 00:00:00 - 4350
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4300
01SEP2022 05:00:00 - 4300
09OCT2022 00:00:00 - 4300
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

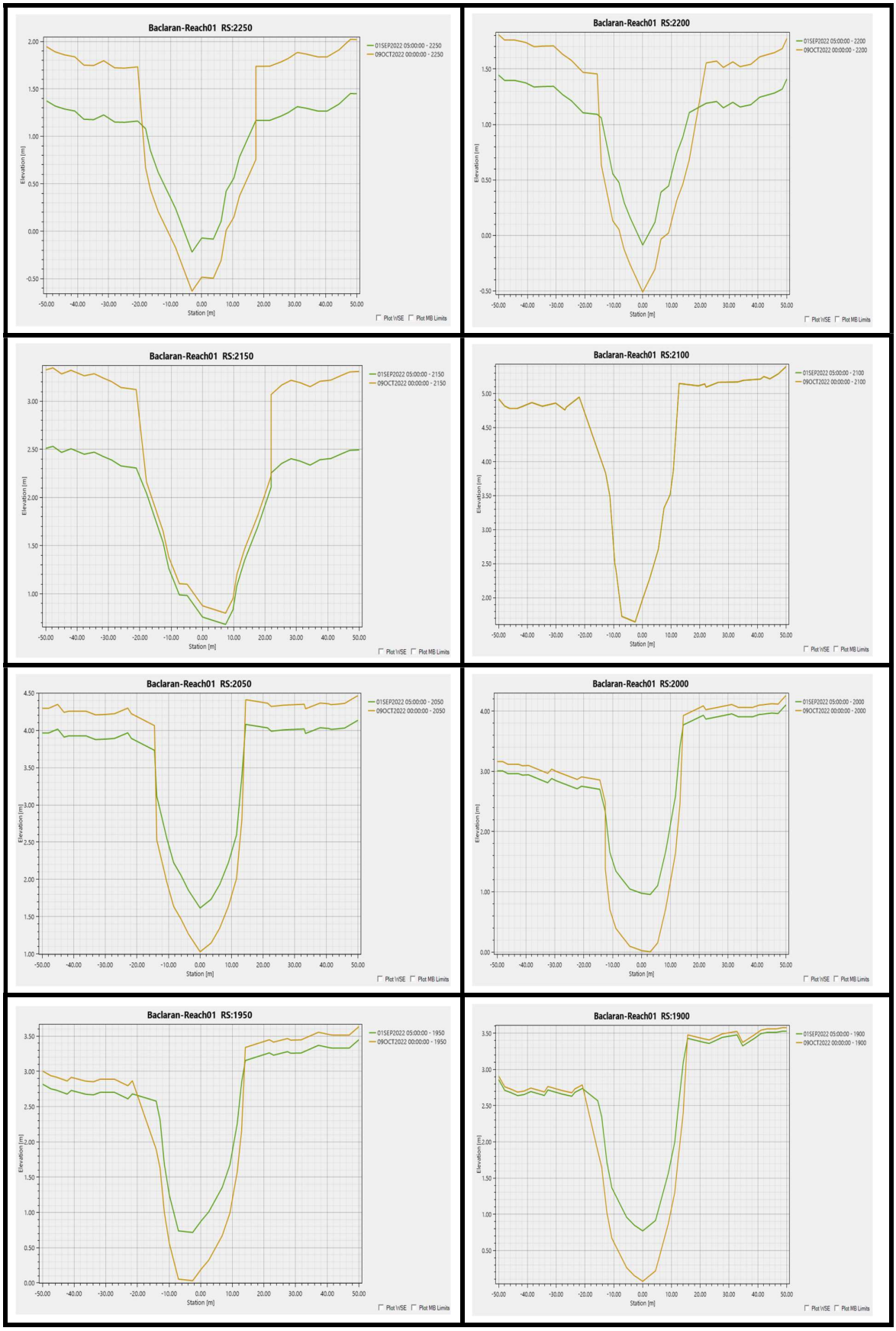

Baclaran-Reach01 RS:4250
01SEP2022 05:00:00 - 4250
09OCT2022 00:00:00 - 4250
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4200
01SEP2022 05:00:00 - 4200
09OCT2022 00:00:00 - 4200
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4150
01SEP2022 05:00:00 - 4150
09OCT2022 00:00:00 - 4150
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4100
01SEP2022 05:00:00 - 4100
09OCT2022 00:00:00 - 4100
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4050
01SEP2022 05:00:00 - 4050
09OCT2022 00:00:00 - 4050
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:4000
01SEP2022 05:00:00 - 4000
09OCT2022 00:00:00 - 4000
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3950
01SEP2022 05:00:00 - 3950
09OCT2022 00:00:00 - 3950
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3900
01SEP2022 05:00:00 - 3900
09OCT2022 00:00:00 - 3900
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

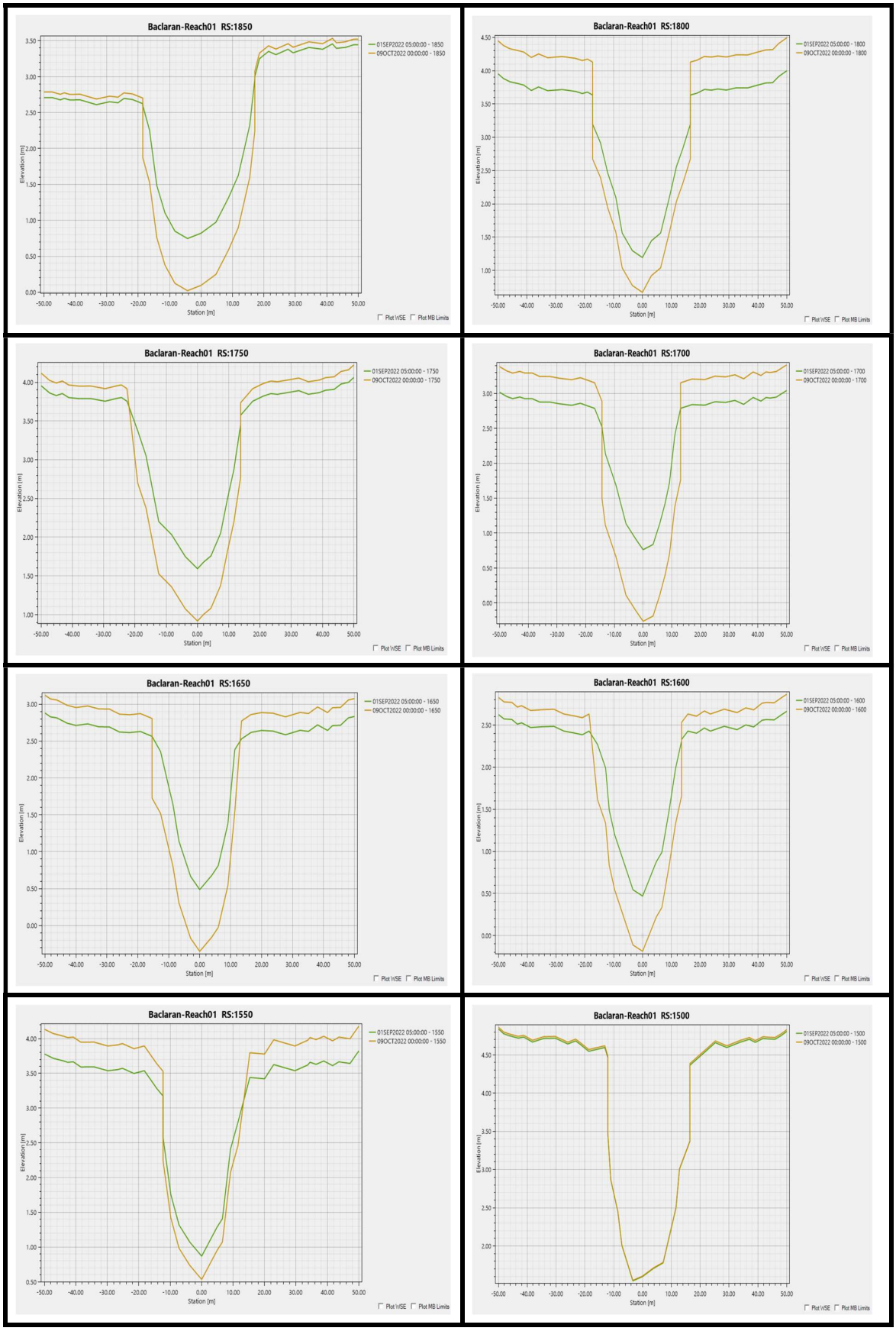

Baclaran-Reach01 RS:3850
01SEP2022 05:00:00 - 3850
09OCT2022 00:00:00 - 3850
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3800
01SEP2022 05:00:00 - 3800
09OCT2022 00:00:00 - 3800
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3750
01SEP2022 05:00:00 - 3750
09OCT2022 00:00:00 - 3750
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3700
01SEP2022 05:00:00 - 3700
09OCT2022 00:00:00 - 3700
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3650
01SEP2022 05:00:00 - 3650
09OCT2022 00:00:00 - 3650
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3600
01SEP2022 05:00:00 - 3600
09OCT2022 00:00:00 - 3600
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3550
01SEP2022 05:00:00 - 3550
09OCT2022 00:00:00 - 3550
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3500
01SEP2022 05:00:00 - 3500
09OCT2022 00:00:00 - 3500
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

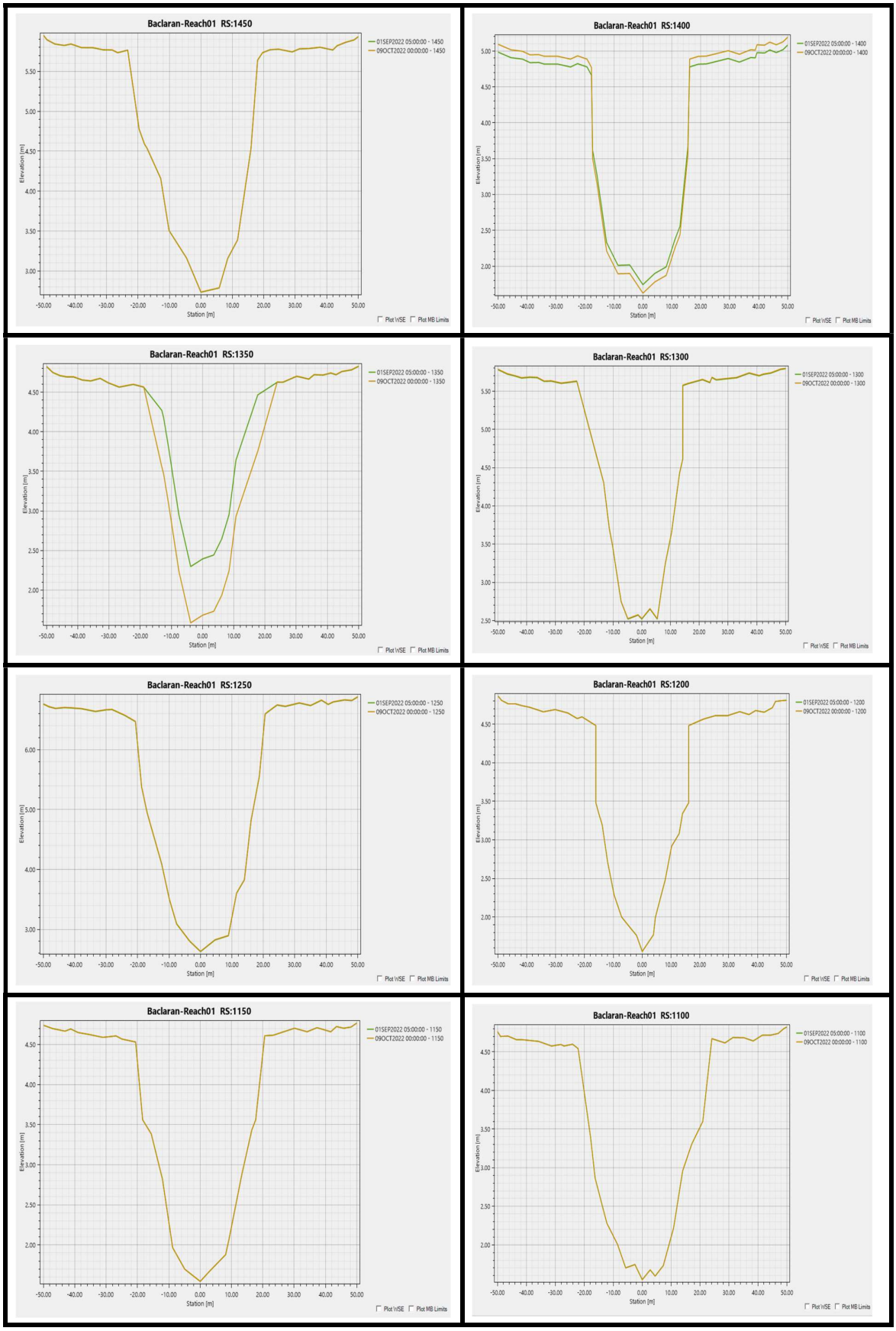

Baclaran-Reach01 RS:3450
01SEP2022 05:00:00 - 3450
09OCT2022 00:00:00 - 3450
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3400
01SEP2022 05:00:00 - 3400
09OCT2022 00:00:00 - 3400
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3350
01SEP2022 05:00:00 - 3350
09OCT2022 00:00:00 - 3350
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3300
01SEP2022 05:00:00 - 3300
09OCT2022 00:00:00 - 3300
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3250
01SEP2022 05:00:00 - 3250
09OCT2022 00:00:00 - 3250
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3200
01SEP2022 05:00:00 - 3200
09OCT2022 00:00:00 - 3200
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3150
01SEP2022 05:00:00 - 3150
09OCT2022 00:00:00 - 3150
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3100
01SEP2022 05:00:00 - 3100
09OCT2022 00:00:00 - 3100
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

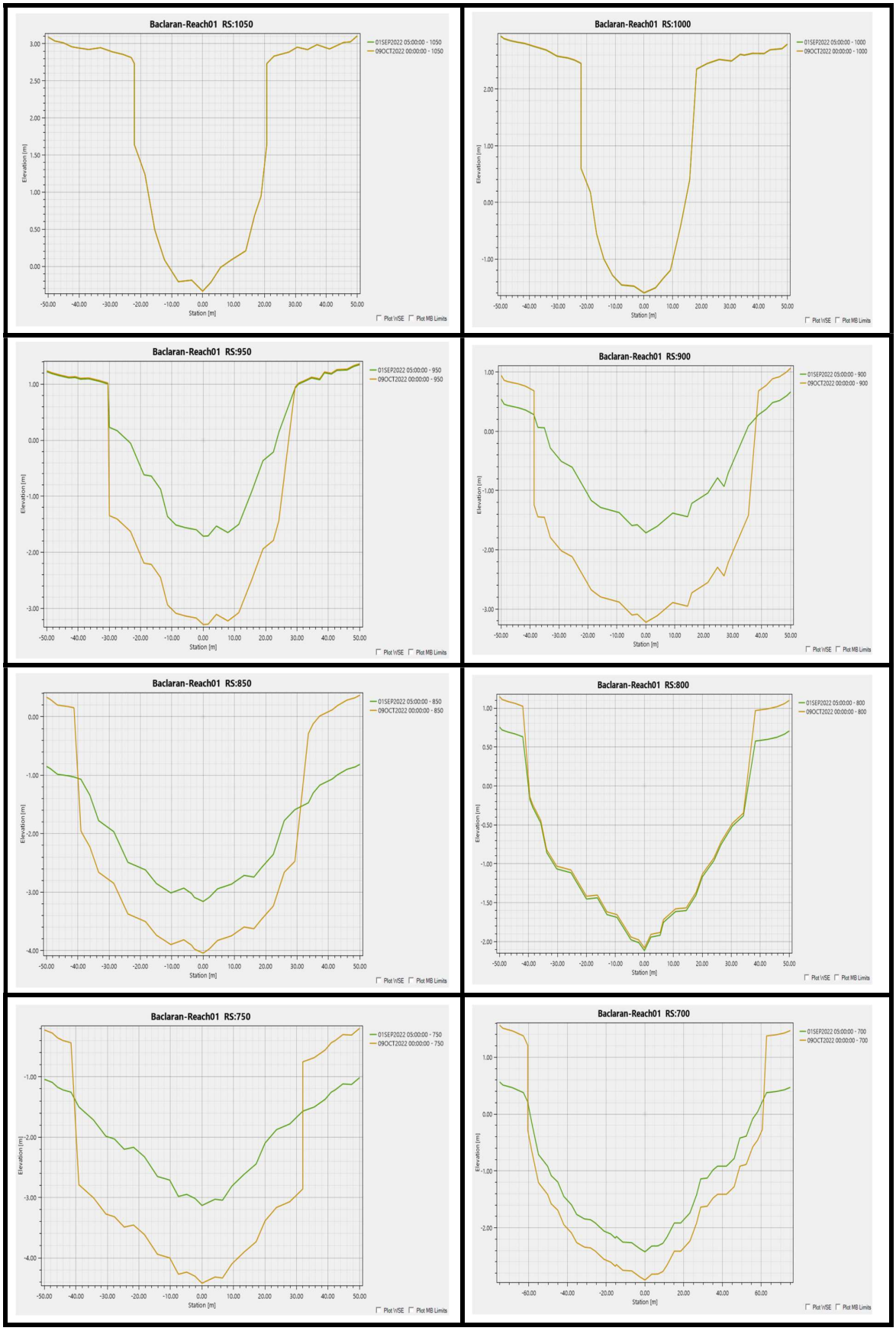

Baclaran-Reach01 RS:3050
01SEP2022 05:00:00 - 3050
09OCT2022 00:00:00 - 3050
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:3000
01SEP2022 05:00:00 - 3000
09OCT2022 00:00:00 - 3000
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2950
01SEP2022 05:00:00 - 2950
09OCT2022 00:00:00 - 2950
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2900
01SEP2022 05:00:00 - 2900
09OCT2022 00:00:00 - 2900
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2850
01SEP2022 05:00:00 - 2850
09OCT2022 00:00:00 - 2850
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2800
01SEP2022 05:00:00 - 2800
09OCT2022 00:00:00 - 2800
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2750
01SEP2022 05:00:00 - 2750
09OCT2022 00:00:00 - 2750
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2700
01SEP2022 05:00:00 - 2700
09OCT2022 00:00:00 - 2700
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

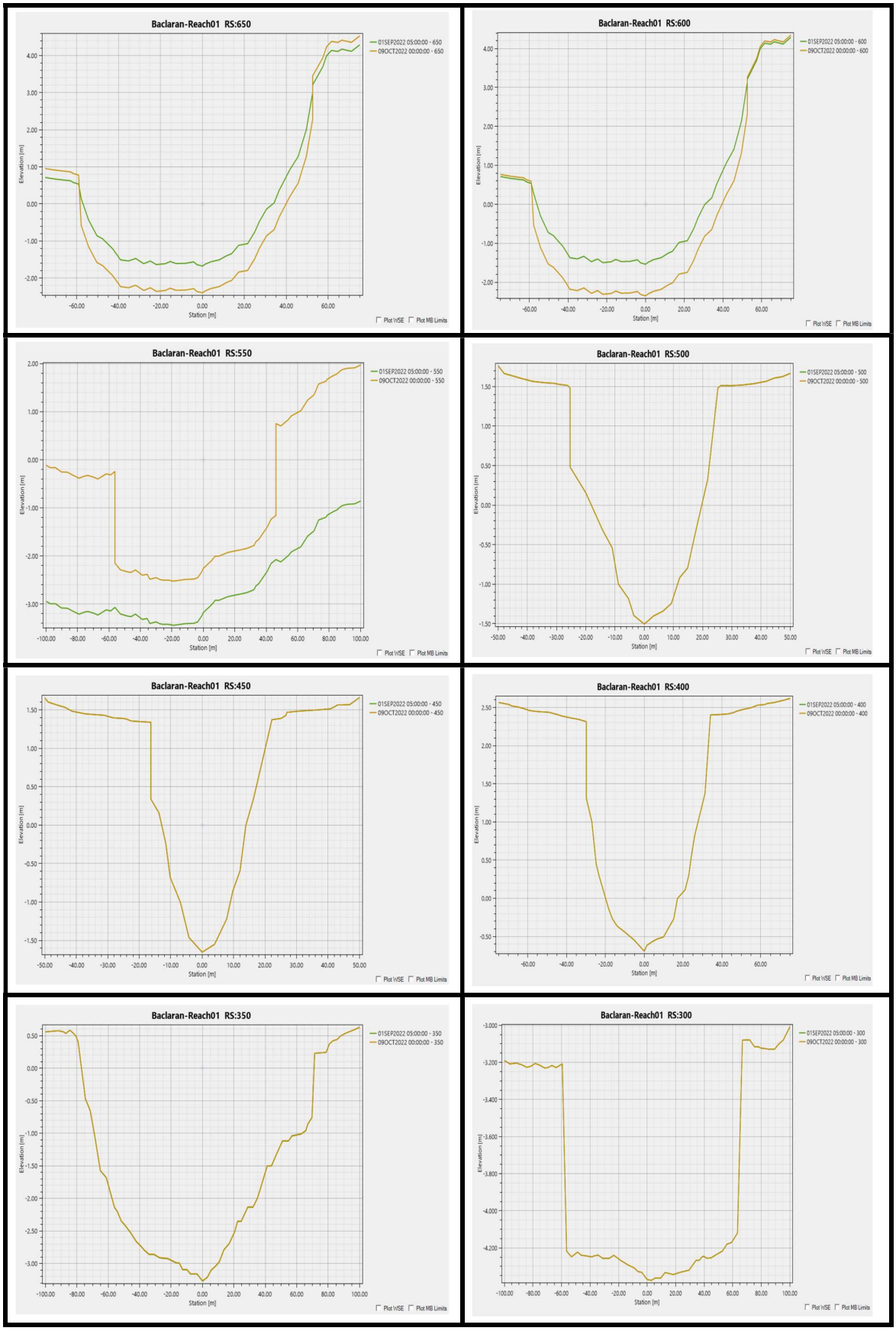

Baclaran-Reach01 RS:2650
01SEP2022 05:00:00 - 2650
09OCT2022 00:00:00 - 2650
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2600
01SEP2022 05:00:00 - 2600
09OCT2022 00:00:00 - 2600
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2550
01SEP2022 05:00:00 - 2550
09OCT2022 00:00:00 - 2550
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2500
01SEP2022 05:00:00 - 2500
09OCT2022 00:00:00 - 2500
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2450
01SEP2022 05:00:00 - 2450
09OCT2022 00:00:00 - 2450
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2400
01SEP2022 05:00:00 - 2400
09OCT2022 00:00:00 - 2400
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2350
01SEP2022 05:00:00 - 2350
09OCT2022 00:00:00 - 2350
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2300
01SEP2022 05:00:00 - 2300
09OCT2022 00:00:00 - 2300
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits


Baclaran-Reach01 RS:2250
01SEP2022 05:00:00 - 2250
09OCT2022 00:00:00 - 2250
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2200
01SEP2022 05:00:00 - 2200
09OCT2022 00:00:00 - 2200
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2150
01SEP2022 05:00:00 - 2150
09OCT2022 00:00:00 - 2150
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2100
01SEP2022 05:00:00 - 2100
09OCT2022 00:00:00 - 2100
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2050
01SEP2022 05:00:00 - 2050
09OCT2022 00:00:00 - 2050
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:2000
01SEP2022 05:00:00 - 2000
09OCT2022 00:00:00 - 2000
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1950
01SEP2022 05:00:00 - 1950
09OCT2022 00:00:00 - 1950
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1900
01SEP2022 05:00:00 - 1900
09OCT2022 00:00:00 - 1900
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits


Baclaran-Reach01 RS:1850
01SEP2022 05:00:00 - 1850
09OCT2022 00:00:00 - 1850
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1800
01SEP2022 05:00:00 - 1800
09OCT2022 00:00:00 - 1800
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1750
01SEP2022 05:00:00 - 1750
09OCT2022 00:00:00 - 1750
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1700
01SEP2022 05:00:00 - 1700
09OCT2022 00:00:00 - 1700
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1650
01SEP2022 05:00:00 - 1650
09OCT2022 00:00:00 - 1650
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1600
01SEP2022 05:00:00 - 1600
09OCT2022 00:00:00 - 1600
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1550
01SEP2022 05:00:00 - 1550
09OCT2022 00:00:00 - 1550
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1500
01SEP2022 05:00:00 - 1500
09OCT2022 00:00:00 - 1500
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits


Baclaran-Reach01 RS:1450
01SEP2022 05:00:00 - 1450
09OCT2022 00:00:00 - 1450
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1400
01SEP2022 05:00:00 - 1400
09OCT2022 00:00:00 - 1400
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1350
01SEP2022 05:00:00 - 1350
09OCT2022 00:00:00 - 1350
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1300
01SEP2022 05:00:00 - 1300
09OCT2022 00:00:00 - 1300
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1250
01SEP2022 05:00:00 - 1250
09OCT2022 00:00:00 - 1250
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1200
01SEP2022 05:00:00 - 1200
09OCT2022 00:00:00 - 1200
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1150
01SEP2022 05:00:00 - 1150
09OCT2022 00:00:00 - 1150
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1100
01SEP2022 05:00:00 - 1100
09OCT2022 00:00:00 - 1100
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits


Baclaran-Reach01 RS:1050
01SEP2022 05:00:00 - 1050
09OCT2022 00:00:00 - 1050
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:1000
01SEP2022 05:00:00 - 1000
09OCT2022 00:00:00 - 1000
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:950
01SEP2022 05:00:00 - 950
09OCT2022 00:00:00 - 950
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:900
01SEP2022 05:00:00 - 900
09OCT2022 00:00:00 - 900
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:850
01SEP2022 05:00:00 - 850
09OCT2022 00:00:00 - 850
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:800
01SEP2022 05:00:00 - 800
09OCT2022 00:00:00 - 800
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:750
01SEP2022 05:00:00 - 750
09OCT2022 00:00:00 - 750
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:700
01SEP2022 05:00:00 - 700
09OCT2022 00:00:00 - 700
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits


Baclaran-Reach01 RS:650
01SEP2022 05:00:00 - 650
09OCT2022 00:00:00 - 650
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:600
01SEP2022 05:00:00 - 600
09OCT2022 00:00:00 - 600
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:550
01SEP2022 05:00:00 - 550
09OCT2022 00:00:00 - 550
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:500
01SEP2022 05:00:00 - 500
09OCT2022 00:00:00 - 500
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:450
01SEP2022 05:00:00 - 450
09OCT2022 00:00:00 - 450
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:400
01SEP2022 05:00:00 - 400
09OCT2022 00:00:00 - 400
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:350
01SEP2022 05:00:00 - 350
09OCT2022 00:00:00 - 350
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits
Baclaran-Reach01 RS:300
01SEP2022 05:00:00 - 300
09OCT2022 00:00:00 - 300
Elevation [m]
Station [m]
Plot WSE
Plot MB Limits

QUANTITY CALCULATION

QUANTITY CALCULATION

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
0+000	0.00	0	50	0.00
0+050	0.00	0	50	0.00
0+100	0.00	0	50	0.00
0+150	0.00	0	50	0.00
0+200	0.00	0	50	0.00
0+250	0.00	0	50	0.00
0+300	0.00	88.97	50	4448.50
0+350	177.94	289.38	50	14469.00
0+400	400.82	383.72	50	19186.00
0+450	366.62	361.22	50	18061.00
0+500	355.82	222.075	50	11103.75
0+550	88.33	155.02	50	7751.00
0+600	221.71	213.105	50	10655.25
0+650	204.50	178.575	50	8928.75
0+700	152.65	124.31	50	6215.50
0+750	95.97	168.52	50	8426.00
0+800	241.07	170.57	50	8528.50
0+850	100.07	125.56	50	6278.00
0+900	151.05	158.74	50	7937.00
0+950	166.43	248.39	50	12419.50
1+000	330.35	366.83	50	18341.50
1+050	403.31	484.585	50	24229.25
1+100	565.86			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
1+100	565.86	568.31	50	28415.50
1+150	570.76	574.185	50	28709.25
1+200	577.61	646.64	50	32332.00
1+250	715.67	684.17	50	34208.50
1+300	652.67	605.335	50	30266.75
1+350	558.00	552.955	50	27647.75
1+400	547.91	594.3	50	29715.00
1+450	640.69	596.855	50	29842.75
1+500	553.02	509.205	50	25460.25
1+550	465.39	419.85	50	20992.50
1+600	374.31	380.32	50	19016.00
1+650	386.33	386.275	50	19313.75
1+700	386.22	422.895	50	21144.75
1+750	459.57	457.48	50	22874.00
1+800	455.39	417.65	50	20882.50
1+850	379.91	385.73	50	19286.50
1+900	391.55	387.14	50	19357.00
1+950	382.73	389.745	50	19487.25
2+000	396.76	423.395	50	21169.75
2+050	450.03	496.91	50	24845.50
2+100	543.79	436.95	50	21847.50
2+150	330.11	294.49	50	14724.50
2+200	258.87	254.415	50	12720.75
2+250	249.96	254.73	50	12736.50
2+300	259.50			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
2+300	259.50	288.33	50	14416.50
2+350	317.16	319.745	50	15987.25
2+400	322.33	359.67	50	17983.50
2+450	397.01	351.68	50	17584.00
2+500	306.35	306.135	50	15306.75
2+550	305.92	268.335	50	13416.75
2+600	230.75	236.78	50	11839.00
2+650	242.81	273.94	50	13697.00
2+700	305.07	265.555	50	13277.75
2+750	226.04	224.205	50	11210.25
2+800	222.37	219.385	50	10969.25
2+850	216.40	257.02	50	12851.00
2+900	297.64	288.44	50	14422.00
2+950	279.24	278.48	50	13924.00
3+000	277.72	312.335	50	15616.75
3+050	346.95	350.465	50	17523.25
3+100	353.98	388.44	50	19422.00
3+150	422.90	379.835	50	18991.75
3+200	336.77	298.93	50	14946.50
3+250	261.09	261.825	50	13091.25
3+300	262.56	299.915	50	14995.75
3+350	337.27	337.845	50	16892.25
3+400	338.42	331.33	50	16566.50
3+450	324.24	328.585	50	16429.25
3+500	332.93			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
3+500	332.93	341.19	50	17059.50
3+550	349.45	306.62	50	15331.00
3+600	263.79	276.015	50	13800.75
3+650	288.24	284.815	50	14240.75
3+700	281.39	312.615	50	15630.75
3+750	343.84	381.55	50	19077.50
3+800	419.26	418.47	50	20923.50
3+850	417.68	379.445	50	18972.25
3+900	341.21	327.165	50	16358.25
3+950	313.12	319.885	50	15994.25
4+000	326.65	362.285	50	18114.25
4+050	397.92	432.085	50	21604.25
4+100	466.25	469.42	50	23471.00
4+150	472.59	467.215	50	23360.75
4+200	461.84	425.875	50	21293.75
4+250	389.91	355.83	50	17791.50
4+300	321.75	278.385	50	13919.25
4+350	235.02	237.32	50	11866.00
4+400	239.62	236.695	50	11834.75
4+450	233.77	231.165	50	11558.25
4+500	228.56	221.895	50	11094.75
4+550	215.23	214.27	50	10713.50
4+600	213.31	215.44	50	10772.00
4+650	217.57	215.71	50	10785.50
4+700	213.85			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
4+700	213.85	241.015	50	12050.75
4+750	268.18	269.525	50	13476.25
4+800	270.87	262.06	50	13103.00
4+850	253.25	255.36	50	12768.00
4+900	257.47	258.39	50	12919.50
4+950	259.31	287.06	50	14353.00
5+000	314.81	315.27	50	15763.50
5+050	315.73	302.65	50	15132.50
5+100	289.57	295.845	50	14792.25
5+150	302.12	241.245	50	12062.25
5+200	180.37	190.475	50	9523.75
5+250	200.58	196.87	50	9843.50
5+300	193.16	178.11	50	8905.50
5+350	163.06	160.13	50	8006.50
5+400	157.20	157.845	50	7892.25
5+450	158.49	166.255	50	8312.75
5+500	174.02	168.04	50	8402.00
5+550	162.06	162.375	50	8118.75
5+600	162.69	157.065	50	7853.25
5+650	151.44	153.09	50	7654.50
5+700	154.74	152.825	50	7641.25
5+750	150.91	147.865	50	7393.25
5+800	144.82	144.605	50	7230.25
5+850	144.39	161.21	50	8060.50
5+900	178.03			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
5+900	178.03	192.83	50	9641.50
5+950	207.63	212.405	50	10620.25
6+000	217.18	213.57	50	10678.50
6+050	209.96	205.695	50	10284.75
6+100	201.43	203.69	50	10184.50
6+150	205.95	203.66	50	10183.00
6+200	201.37	201.135	50	10056.75
6+250	200.90	200.035	50	10001.75
6+300	199.17	196.375	50	9818.75
6+350	193.58	193.045	50	9652.25
6+400	192.51	192.65	50	9632.50
6+450	192.79	191.285	50	9564.25
6+500	189.78	188	50	9400.00
6+550	186.22	184.725	50	9236.25
6+600	183.23	183.32	50	9166.00
6+650	183.41	181.895	50	9094.75
6+700	180.38	180.505	50	9025.25
6+750	180.63	178.54	50	8927.00
6+800	176.45	177.5	50	8875.00
6+850	178.55	176.855	50	8842.75
6+900	175.16	172.64	50	8632.00
6+950	170.12	168.085	50	8404.25
7+000	166.05	164.975	50	8248.75
7+050	163.90	165.365	50	8268.25
7+100	166.83			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
7+100	166.83	170.05	50	8502.50
7+150	173.27	170.955	50	8547.75
7+200	168.64	161.535	50	8076.75
7+250	154.43	153.105	50	7655.25
7+300	151.78	151.625	50	7581.25
7+350	151.47	155.13	50	7756.50
7+400	158.79	150.775	50	7538.75
7+450	142.76	139.565	50	6978.25
7+500	136.37	140.03	50	7001.50
7+550	143.69	147.19	50	7359.50
7+600	150.69	146.675	50	7333.75
7+650	142.66	140.22	50	7011.00
7+700	137.78	134.86	50	6743.00
7+750	131.94	128.255	50	6412.75
7+800	124.57	123.935	50	6196.75
7+850	123.30	120.52	50	6026.00
7+900	117.74	118.58	50	5929.00
7+950	119.42	120.295	50	6014.75
8+000	121.17	126.27	50	6313.50
8+050	131.37	139.915	50	6995.75
8+100	148.46	162.015	50	8100.75
8+150	175.57	176.025	50	8801.25
8+200	176.48	169.045	50	8452.25
8+250	161.61	160.69	50	8034.50
8+300	159.77			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
8+300	159.77	158.31	50	7915.50
8+350	156.85	151.115	50	7555.75
8+400	145.38	148.825	50	7441.25
8+450	152.27	150.13	50	7506.50
8+500	147.99	141.15	50	7057.50
8+550	134.31	136.14	50	6807.00
8+600	137.97	141.85	50	7092.50
8+650	145.73	148.99	50	7449.50
8+700	152.25	149.41	50	7470.50
8+750	146.57	144.31	50	7215.50
8+800	142.05	148.095	50	7404.75
8+850	154.14	161.77	50	8088.50
8+900	169.40	179.88	50	8994.00
8+950	190.36	214.81	50	10740.50
9+000	239.26	250.125	50	12506.25
9+050	260.99	262.33	50	13116.50
9+100	263.67	233.58	50	11679.00
9+150	203.49	183.52	50	9176.00
9+200	163.55	153.56	50	7678.00
9+250	143.57	146.37	50	7318.50
9+300	149.17	159.82	50	7991.00
9+350	170.47	168.165	50	8408.25
9+400	165.86	174.215	50	8710.75
9+450	182.57	191.29	50	9564.50
9+500	200.01			

BACLARAN RIVER

STATION	AREA (sq.m.)	AVERAGE AREA (sq.m.)	DISTANCE (m)	VOLUME (cu.m.)
9+500	200.01	205.235	50	10261.75
9+550	210.46	215.125	50	10756.25
9+600	219.79	236.99	50	11849.50
9+650	254.19	263.385	50	13169.25
9+700	272.58	273.005	50	13650.25
9+750	273.43	259.5	50	12975.00
9+800	245.57		TOTAL VOLUME:	2,421,514.25