James Bay Native Development Corporation

Hydraulic Study

Hydraulic study of the bridge located at the 19th kilometer of the route du Nord in the municipality of Eeyou Istchee, James Bay

Preliminairy Report

Prepared for:
James Bay Native Development Corporation

Prepared by:
Stantec Experts-conseils ltée

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O/Réf. : 158100425

Sign-off sheet

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RECORD OF REVISIONS AND ISSUES		
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1.0 INTRODUCTION

The James Bay Native Development Corporation mandated Stantec Expert-Conseil ltée to produce a hydraulic study to replace the bridge located at the 19th kilometer of the Route du Nord in the municipality of Eeyou Istchee, James Bay. The study will establish the requirements for the design of the future bridge if necessary. This investigation will define the flows and water levels for different return periods by modeling with HEC-RAS software. Simulations for natural and actual conditions have been carried out.

This report presents the evaluation of the river flow, model inputs and simulation results necessary for the bridge design.

2.0 INFORMATION GATHERING

2.1 PROJECT INPUTS

The data used for this study are:

- IGO2's website IGO2 - Données Québec (gouv.qc.ca)
- MELCC'S website MELCC (gouv.qc.ca)
- Forêt ouverte's website Forêt ouverte (gouv.qc.ca)
- Stantec's bridge and field survey done on the 28th of September 2022. It is presented in appendix 2

2.2 FIELD SURVEY

There was no hydraulic field survey done for this report, consequently the information used comes from structural survey, land survey as well as the satellite pictures of Google earth, Bing maps and *Satellites.pro*. The following conclusions can be made.

The Barlow river, at the crossing of the bridge, is straight, but there are meanders upstream and downstream. No evidence of beaver dams nor debris jams can be observed. No evidence of scouring on the banks. The banks are composed mainly of medium vegetation and trees further inland.

The data provided in the field survey put the high watermark line at an average elevation of 366.48 meters for the upstream cross section and an average width of 41.24 meters.

2.3 WATERSHED

2.3.1 Delimitation and average slope of the watershed

The limits of the watershed upstream of the bridge location, has been determined with ArcGIS software. The watershed of the Barlow River, upstream of the bridge location, covers 455 km^2. A map of this watershed is presented in appendix 1.

IGO2's website supports the hypothesis made for the direction of the flow when delimiting the watershed and confirms the flow direction recorded in the structural survey is inverted. The water flows from north to south. This watershed has an average slope of 2,71 % (MFWP,2022).

2.3.2 Soil type

With the Minister of Forests, Wildlife and Parks' surface deposit maps, it was possible to characterize the soil.

The watershed of this bridge is based on deposits consisting of sand and sometimes gravel. There are also deposits consisting of decomposed organic matter that come from sphagnum, mosses, forest litter, etc. These are 4GS and 7 type deposits.

2.3.3 Watershed surface occupancy

Wetland occupancy was determined using data from the Minister of Forests, Wildlife and Park and the Southern Quebec Ecoforestry Inventory (EQM). The watershed of the bridge located at the 19th kilometer of the route du Nord is occupied at 3,3% of lakes and 16,4% of wetlands.

IGO2's website illustrates the disposition of possible wetlands in the watershed, this can be found in appendix 1.

Google Earth Pro's aerial pictures show that the territory is mostly occupied by forest. Paved surfaces are negligeable. Google earth's satellite pictures are presented in appendix 1.

2.4 FLOW ASSESSMENT

The peak flow of Barlow River was first assessed using regional, basin transfer, HP33 and HP40 methods since the aera of the watersheds is greater than 25 km². The methods are described in the next paragraph. Detailed calculations are presented in appendix 3.

A flow increases of 15% was added to consider climate change as recommended by Ministry of Transportation (MTQ, Tome III, ch. 2, section 2.3.1,2022) for watersheds over 400 km² in zone C – North of Quebec region. These peak flows are summarized in Table 1 and the presented calculation details are in appendix 3.

Table 1 Peak flows of the Barlow River – Area 455 km²

RETURN PERIOD (Years)	Calculated PEAK FLOW (m³/s)	PEAK FLOW (Increase 15 % - m³/s)
2	43.00	49.45
5	52.03	59.83
10	59.77	68.73
20	67.08	77.14
25	68.80	79.12
50	76.11	87.52
100	83.41	95.93

2.4.1 Floods frequency analysis for Quebec (H.P. 33)

Analysis method H.P. 33 uses the data from 76 hydrometric stations across 12 Quebec regions to determine the daily and instant flow rates of watersheds in these regions.

This method is limited to certain Quebec regions and, for each of them, the area of the watershed has to be inside the recommended limits. In the present case, the studied watershed is in a region covered by the method.

2.4.2 Estimation of daily flow of fall floods from meridional Quebec river method (H.P.40)

H.P. 40 method is another statistical method, similar to H.P. 33 previously described. H.P. 40's method is an analysis carried out from 81 hydrometric stations divided in 6 Quebec regions.

H.P. 40' method considers a more detailed application zone compared to H.P. 33's method since it compares the length of the waterway, the slope of the watershed, the importance of the forest cover, the surface of the lakes and the marsh, the altitude, and annual precipitations in addition to the area of the watersheds used for H.P. 33.

The studied watershed is located in Region 6 and almost every criteria is respected. The average slope of 3.2% exceeds the upper limit of 0.95% and the is no data for the annual precipitations.

2.4.3 Comparison by watershed transfer

This method statistically analyse the maximal flows registered at a hydrometric station of Quebec gage station network. The data from the gage station are used to determine a recurrence-flow relation.

An inventory of the existing hydrometric stations in the hydrographic region studied was conducted. The stations presenting a natural or lightly influenced flow regime and sufficient hydrometric data were retained. Other parameters were considered, including the topography, the watershed elevation, the precipitation intensity and more, to select the rivers that best match the studied site.

In this analysis, four (4) stations were selected : station 03016 located on river David, station 030101 in Nicolet southwest, station 023401 on river Beaurivage and station 023422 on river Famine. Then the calculation of the floods flow by transposition to the studied site was done.

It is important to note the recommended boundaries of this method: a watershed area ration between 0.5 and 2.0. This is respected for all selected stations. However, these stations are not in the same hydrometric region due to the localization of the studied site. There are zero stations in the region that present an area ration close to 0.5 or 2.0. The values obtained with this method should be used with caution.

2.4.4 Regional method

The regional method is a statistical method that uses a methematical equation based on the region (the province of Quebec is divided in three (3) regions). The necessary informations to obtain the floods flow are, the watershed area and the region of the watershed.

In the present case, the studied watershed is located in region III. This method comes from ANCTIL, François, Nicolas MARTEL et Van Diem HOANG (1998). « Analyse régionale des crues journalières de la province de Québec », Revue canadienne de génie civil, vol. 25, n° 2, p. 360-369.

2.4.5 Retained flow values

After analysis, three methods were retained for modelling, HP33, HP40 and regional method. The average and median of the three methods was analyzed on HEC RAS and the median was closest to the data received from the field survey. The median of methods HP33, HP40 and regional method was used for the model.

3.0 HYDRAULIC ANALYSIS

3.1 DESIGN CRITERIA

According to the MTQ, hydraulic criteria to be consider when modeling a bridge are the clearance of the structure above water surface, the increase of the water level compared to natural flow conditions, flow velocity as well as the flow surface width.

The table 2 presents the requirements related to each criteria as well as their applicability to this specific study.

Conception criteria are based on the 50 year flood. The annual average daily traffic (AADT) is not available for the structure. Therefore, an AADT over 200 is set so the bridge would not be considered as a low traffic road.

Table 1 - Hydraulic conception criterias of a bridge

Criteria	Requirements	Applicability
CAN/CSA S6-19 (art. 1.9.7.1)	Soffit located at least 300 mm above conception high watermark.	☑
MTQ – Tome III		
Presence of ice jams or debris (Without tide)	Clearance under the bridge: 1 m above expected extreme ice or debris level.	·
Without tide and without jams	Clearance under the bridge: 1 m above conception high watermark (except low traffic road).	☑
	Clearance under the bridge: 300 mm above centennial high watermark.	☑
Without tide and without jams (low traffic road)	Clearance under the bridge for a low traffic road: 300 mm above conception high watermark.	·
Tides with ice jams or debris	1 m above expected extreme ice or debris level.	·
Navigable waterway for small embarkations	Soffit located at 1.5 m above high watermark	☑
Road profile elevation	The elevation of the road profile is fixed as anticipating a security margin sufficient above the conception high watermark (E.H.C). The minimal clearance is 1000mm for highways and national roads, and 600mm for other roads.	☑
Free opening (Tome III, Chapter2, page22)	The high watermarks of a return period of 2 years correspond to the yearly water level average.	☑
Fishing and Oceans Canada	Conservation of natural flow conditions by maintaining the physical characteristics of the existing watercourse; the substrat, slope and width.	☑
Maximum flow velocity	It is recommended to limit the increase of the flow speeds compared to natural conditions. The protections usually support velocities inferior to 3,4 m/s for the 100-year flood.	☑

3.2 HYDRAULIC MODELISATION

The numeric model Geo HEC-RAS was used to simulate the water flow regime. The use of this model allowed establishing the actual flow conditions as well as simulate the natural flow conditions.

Manning's n is considered to be 0,032 for the waterbed and 0,065 for the banks.

A sketch including the localisation of the vertical cross-sections used for the modelisation is available at the top of appendix 5 as well as hydraulic profiles and sections for both simulations.

The simulations results tables for both conditions are presented in appendix 6.

3.3 RESULT SIMULATION – UNDEVELOPED AREA

In this scenario, the hydraulic model simulates the watercourse from the flow data presented in table 1. This model represents water flow without any human intervention. In this case, the bridge is not modelized. The results of this section gives the reference conditions for further analysis.

The table 3 presents flow characteristics in natural conditions in cross section 275 located 7m upstream of the studied bridge. The waterbed elevation at this cross section is 360.18 meters.

Table 2 - Flow characteristics in natural conditions – cross section 275

Recurrence									
2 years		10 years		25 years		50 years		100 years	
Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)
364.88	0.79	365.28	0.94	365.48	1.01	365.62	1.07	365.76	1.12

3.4 RESULT SIMULATION – ACTUAL CONDITIONS

The hydraulic model for existing conditions was modelized from the characteristics presented in table 4:

Table 3 - Characteristic of the actual structure

Characteristic	Actual bridge
Type of structure	Steel beams bridge
Bias relative to the stream (degree)	0
Total width of opening (m)	36.61
Height of the structure (m)	2.12
Geodesic elevation of the road (m)	370.39
Geodesic elevation of the soffit upstream (m)	368.31
Geodesic elevation of the soffit downstream (m)	368.27
Apron elevation upstream (m)	370.19
Apron elevation downstream (m)	370.16

The actual conditions were simulated for recurrences of 2, 10, 25, 50 and 100 years. Detailed results are presented in appendix 4, 5 and 6. The Figure 1 and the table 5 compare the flow characteristics from natural and actual conditions.

Figure 1 - Hydraulic profiles, actual vs natural conditions

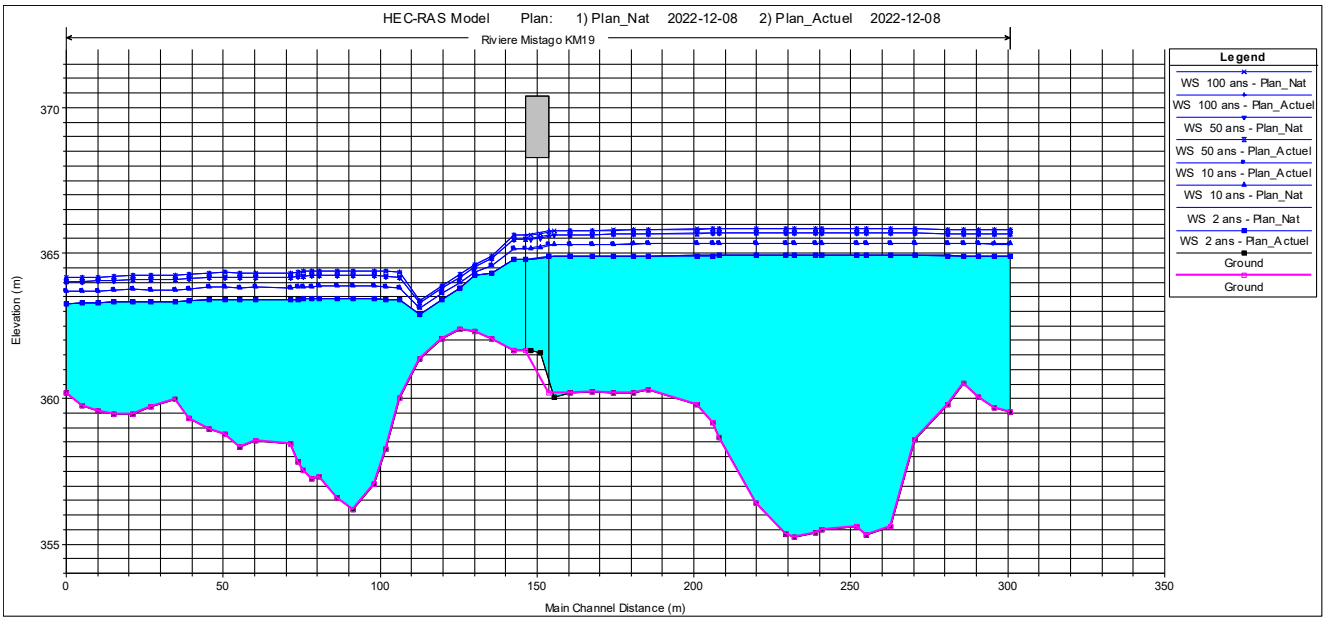

Table 4 - Flow characteristics - Cross section 275

Recurrence – Cross section 275									
2 years		10 years		25 years		50 years (1)		100 years	
Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)	Water surface elevation (m)	Velocity (m/s)
Natural conditions									
364.88	0.79	365.28	0.94	365.48	1.01	365.62	1.07	365.76	1.12
Actual conditions									
364.88	0.79	365.28	0.94	365.47	1.01	365.62	1.07	365.76	1.12

(1) The conception is based on the 50 years flood

The hydraulic profile analysis from natural and actual conditions indicates that the bridge causes no water rise for any recurrence. Therefore, the bridge is considered non-restrictive.

Table 5 - Bridge analysis

Norm	Conception criteria (geodesique meters)		Actual characteristic of the structure	Conformity
Soffit clearance above conception high watermark	Soffit minimum elevation = E.H50[1] + 0.3	365.62 + 0.3 = 365.92	367.27	Yes
Without tide and without jams	Soffit minimum elevation > E.H100 + 0.3	365.76 + 0.3 =366.06		Yes
Navigable waterway	Soffit minimum elevation > 1.5 + High watermark line	1.5 + 366.44 =367.94		Yes
Road profile	Road profile elevation > E.H50+0.6	365.62m + 0,6m = 366.22	370.39	Yes
Free opening	Minimum opening = 80% High watermark line	41.24 x 80% = 32.99	36.61	Yes
Velocity	Maximum velocity (m/s) 2 years – 100 years	< 3,4 m/s	1.51[2]-1.89[3]m/s	Yes

[1] Water surface level for the conception high watermark (50 years) under the bridge for the actual condition simulation.
[2] For the 2-year flood under the bridge in actual conditions simulation.
[3] For the 100-year flood under the bridge in actual conditions simulation.

4.0 PROTECTIVE STRUCTURE

There is already rip rap under and around the bridge nevertheless considering the MTQ's norm (Tome III, chap.2, art. 2.18.2.2) the characteristic of the rip rap should be as follow:

- Rockfill slope of 1,5H : 1V.
- Rock size 300-500 mm for 800mm width, embedded 1m under the natural waterbed of the river and raising up to 300mm above high conception watermarks.
- Rock size 200-300 mm for 500mm width, from the 300-500 up to the top of the slope.

These characteristics are valid for flow velocities equal or inferior to 3.4m/s. For higher velocities, rock sizes must be changed to be higher.

5.0 CONCLUSION

The present hydraulic study aims to analyze the impact of the existing bridge at kilometer 19 of *route du Nord* crossing *Barlow River*.

Two scenarios were analysed: natural and actual conditions. The actual conditions simulation allows us to confirm the conformity of the actual steel-wood bridge for all applicable norms.

Comparing the natural and actual condition simulations shows that the bridge is non-restrictive.

6.0 BIBLIOGRAPHICAL REFERENCES

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MISTÈRE DES FORÊTS; SERVICE DES INVENTAIRES FORESTIERS. (1995). Carte de dépôts de surface-Document de travail : Lac Waconichi Municipalité de la Baie-James, Québec 32J/1. https://diffusion.mffp.gouv.qc.ca/Diffusion/DonneeGratuite/Foret/DONNEES_FOR_ECO_SUD/Depots_surface/32J/

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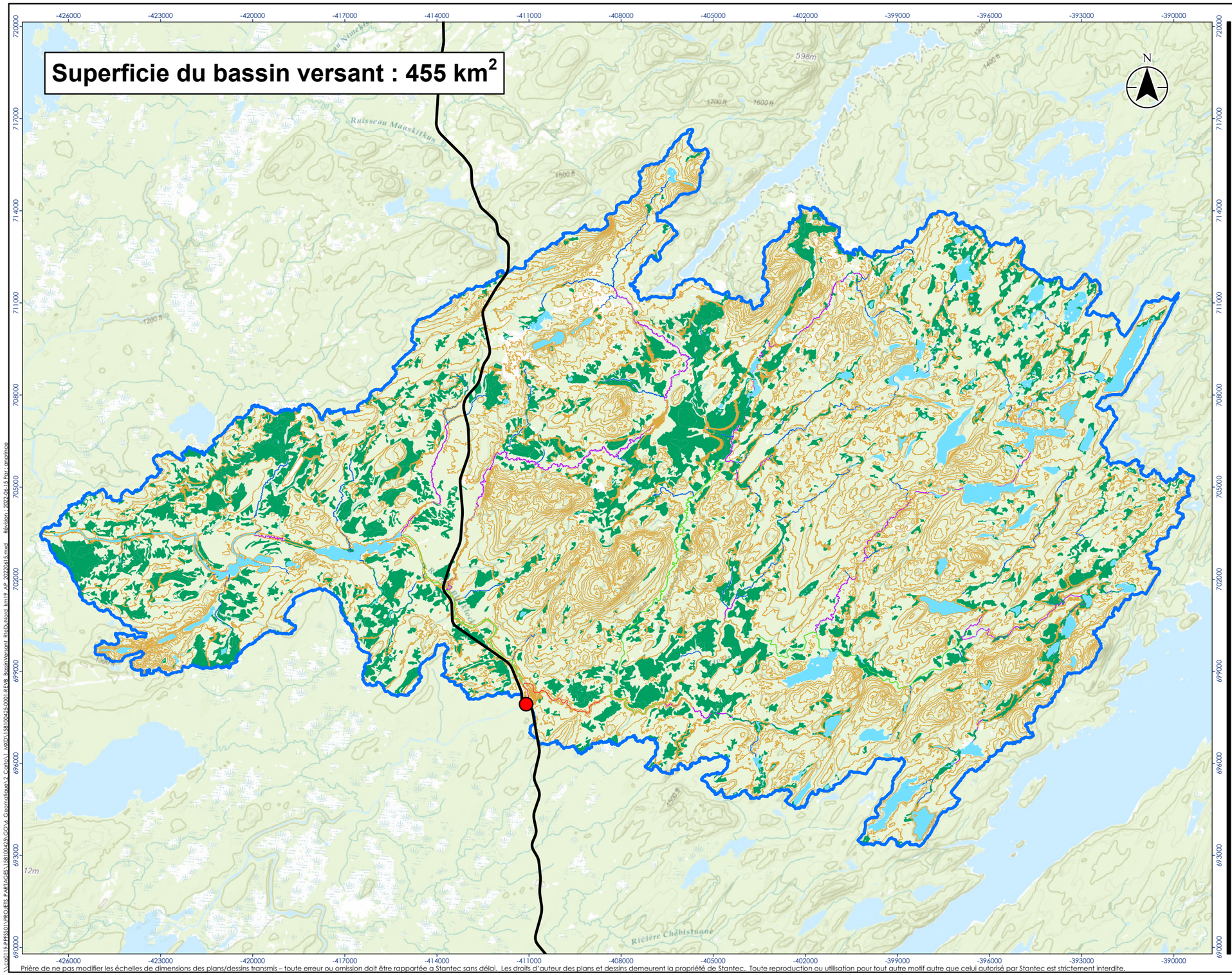
APPENDIX 1

Waster shed boundary



Stantec

- Exutoire du bassin versant
- Route du Nord
- Courbes de niveau (10 m)
- Bassin versant
- Lacs
- Milieux humides

Cours d'eau (Strahler)

- 3
- 4
- 5
- 6

0 2,400 4,800 mètres

1:125,000
(Au format original 11x17)

Sources

(1) Données d'élévation lidar : MFFP, 2022
(2) Lits d'écoulements potentiels : MFFP, 2022
(3) Hydrologie de surface : MFFP, 2022
(4) Lacs : RNH - Canada, 2020
(5) Bassin versant : Stantec, 2022
(6) Fond de carte : ESRI, 2022
(7) Système de coordonnées : NAD 1983 Québec Lambert

Localisation du projet
Baie-James, Québec

158100425-0001 REVA
Préparé par A. Prince le 2022-06-15
Vérifié par P. Charette le 2022-06-15

Client/Projet

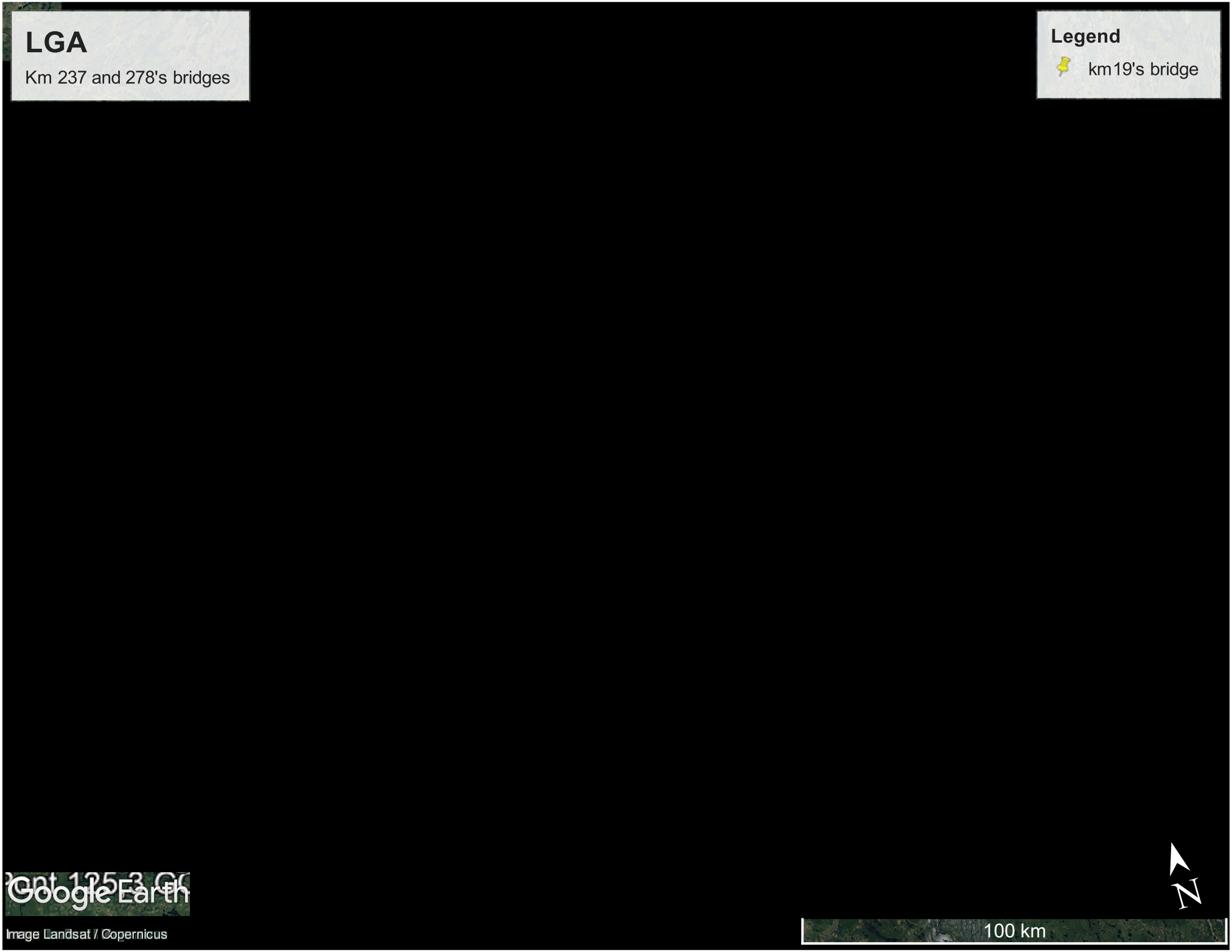
La Grande Alliance - Feasibility Study
Phase 1

Carte No.
1

CARTE DE TRAVAIL

Titre
Bassin versant - Route du Nord - km19

CARTE DE TRAVAIL


LGA
Km 237 and 278's bridges
Legend
km19's bridge
Google Earth
Image Landsat / Copernicus
N
100 km

APPENDIX 2

Pictures of the site and field survey

Photo : 1	Bridge	Date : 29 septembre 2022

Photo : 2	Soffit	Date : 29 septembre 2022

Photo : 3	Bridge	Date : 29 septembre 2022

Photo : 4	Bridge	Date : 29 septembre 2022

Photo : 5	Soffit	Date : 29 septembre 2022

Photo : 6	Under the bridge	Date : 29 septembre 2022

Photo : 7	Under the bridge	Date : 29 septembre 2022

Photo : 8	Soffit	Date : 29 septembre 2022

Photo : 9	Soffit	Date : 29 septembre 2022

Photo : 10	Soffit	Date : 29 septembre 2022

Photo : 11	Under the bridge	Date : 29 septembre 2022

Photo : 12	Soffit	Date : 29 septembre 2022

Photo : 13	Bridge from the side	Date : 29 septembre 2022

Photo : 14	Bridge from downstream	Date : 29 septembre 2022

Photo : 15	Bridge looking at downstream	Date : 29 septembre 2022

Photo : 16	Bridge looking upstream	Date : 29 septembre 2022

Photo : 17	Bridge number and river name	Date : 29 septembre 2022

Photo : 18	Bridge looking downstream	Date : 29 septembre 2022

Photo : 19	Looking downstream	Date : 29 septembre 2022

Photo : 20	Looking upstream	Date : 29 septembre 2022

Photo : 21	Looking upstream	Date : 29 septembre 2022

Photo : 22	On the bridge	Date : 29 septembre 2022

Photo : 23	On the bridge	Date : 29 septembre 2022

APPENDIX 3

Flow calculation

Estimation des débits journaliers de crue printanière des rivières du Québec méridional (H.P.-40)

Récurrence	Constante	Q journalier	Q instantanné
-	Région 6	m³/s	m³/s
2.33	**1.03**	**30.94**	**45.14**
5.00	**1.22**	**36.65**	**53.46**
10.00	**1.36**	**40.85**	**59.60**
20.00	**1.50**	**45.06**	**65.73**
25.00	**1.54**	**46.26**	**67.49**
50.00	**1.66**	**49.86**	**72.74**
100.00	**1.80**	**54.07**	**78.88**

Superficie	km²	455	OK
Pente moy.	%	6.68581967	À l'extérieur des limites recommandées
Longueur	km	21	OK
Couvert fores	%	74%	OK
Lacs et maréc	%	16.4	OK
Élévation	m	375 À 400	OK
Précipitations	mm	262800	À l'extérieur des limites recommandées

Hydrologie_ selon la méthode HP33

Récurrence (ans)	Débit (m3/s)
2	43.00
5	52.03
10	59.77
20	67.08
25	68.80
50	76.11
100	83.41

Méthode régionale

RÉCURRENCES	III
2	113.74
5	141.14
10	157.38
20	171.67
25	175.96
50	188.47
100	199.90

Méthode transfert

Station Respectant le critère Au/Aj

Station :	**030316**
St. fédérale	**02OF020**
Nom :	**David**
Bassin :	323.0 km²
Q2 :	93.0 m³/s
Q10 :	131.0 m³/s
Q20 :	141.0 m³/s
Q25 :	145.0 m³/s
Q50 :	153.0 m³/s
Q100 :	161.0 m³/s
Période :	1977-2011

Région hydrographique : St-Laurent sud-ouest

Régime d'écoulement : Naturel

Distance station météo la + près : Saint-Guillaume ±11 km

Élévation station météo la + près : ± 44 m

Élévation approx. de 030316 : ±15 m - Google Earth

Exemple :				Récurrence	Débit (m³/s)
T :	25.0	ans	0.0	2.0	126.6
QTu :	197.4	m³/s	0.0	10.0	178.3
QTj :	145.0	m³/s	0.0	20.0	191.9
Au :	455.0	km²	0.0	25.0	197.4
Aj :	323.0	km²	0.0	50.0	208.3
n :	0.9	0.0	0.0	100.0	219.2

Au/Aj : 1.409 **OK**

Station Respectant le critère Au/Aj

Station :	**030101**
St. fédérale	**02OD001**
Nom :	**Nicolet Sud-Ouest**
Bassin :	549.0 km²
Q2 :	134.0 m³/s
Q10 :	204.0 m³/s
Q20 :	230.0 m³/s
Q25 :	238.0 m³/s
Q50 :	263.0 m³/s
Q100 :	287.0 m³/s
Période :	1970-2011

Régime d'écoulement : Influencé journellement

Exemple :				Récurrence	Débit (m³/s)
T :	25.00	ans	0.0	2.0	113.2
QTu :	200.99	m³/s	0.0	10.0	172.3
QTj :	238.00	m³/s	0.0	20.0	194.2
Au :	455.00	km²	0.0	25.0	201.0
Aj :	549.00	km²	0.0	50.0	222.1
n :	0.90	0.0	0.0	100.0	242.4

Au/Aj : 0.829 **OK**

Station Respectant le critère régional

Station :	**81006**
St. fédérale	
Nom :	**Témiscamie**
Bassin :	7280.0 km²
Q2 :	954.0 m³/s
Q10 :	1219.0 m³/s
Q20 :	1307.0 m³/s
Q25 :	1333.0 m³/s
Q50 :	1413.0 m³/s
Q100 :	1489.0 m³/s
Période :	1970-1990, sans 1978

Région hydrographique : Baies de Hannah et de Rup

Régime d'écoulement : Naturel

Élévation approx. de la station : 427 m - Google Earth

Exemple :				Récurrence	Débit (m³/s)
T :	25.00	ans	0.0	2.0	78.7
QTu :	109.93	m³/s	0.0	10.0	100.5
QTj :	1333.00	m³/s	0.0	20.0	107.8
Au :	455.00	km²	0.0	25.0	109.9
Aj :	7280.00	km²	0.0	50.0	116.5
n :	0.90	0.0	0.0	100.0	122.8

Au/Aj : 0.0625 **NON APPLICABLE !**

Moyenne HP33, HP40 et Régionale (15% inclus)	
Récurrence	Débit (m³/s)
2	70.26
5	88.10
10	98.90
20	108.79
25	111.56
50	120.53
100	129.33

Médiane HP33, HP40 et régionale (15% inclus)	
Récurrence	Débit (m³/s)
2	49.4469117
5	59.83
10	68.73
20	77.14
25	79.12
50	87.52
100	95.93

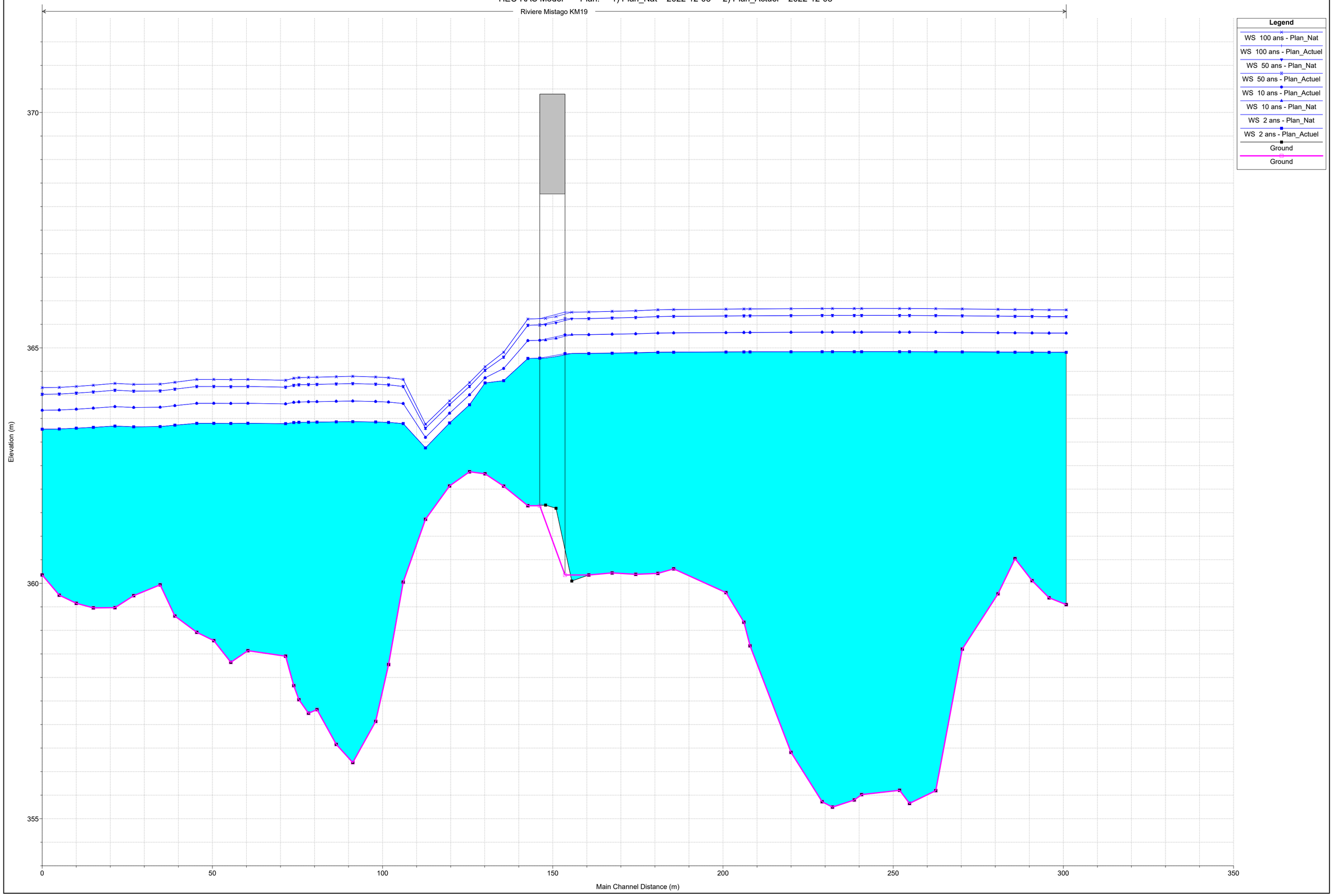
Médiane HP33, HP40 et régionale (15% non inclus)	
Récurrence	Débit (m³/s)
2	43.00
5	52.03
10	59.77
20	67.08
25	68.80
50	76.11
100	83.41

APPENDIX 4

Hydraulic profiles

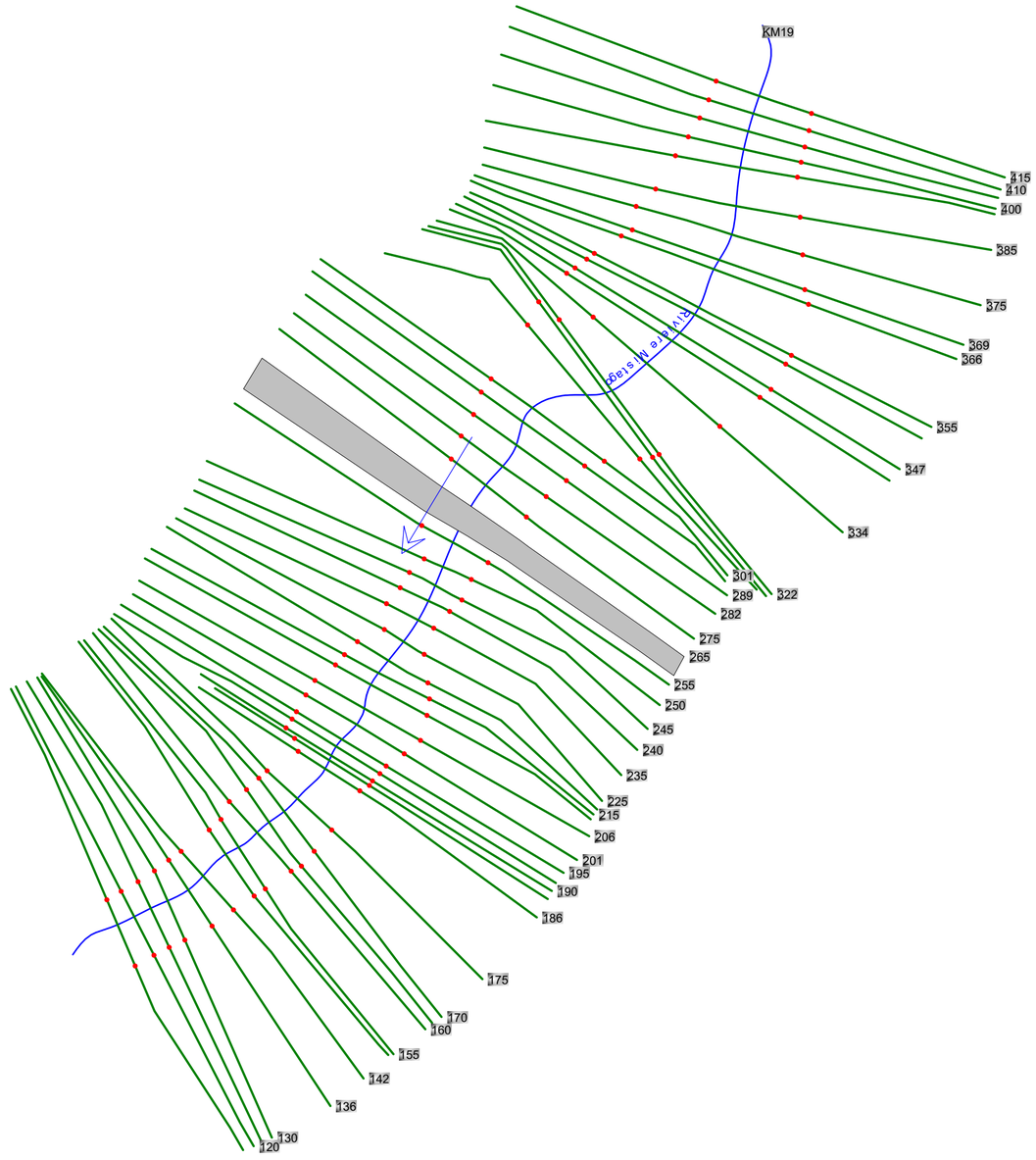
HEC-RAS Model Plan: 1) Plan_Nat 2022-12-08 2) Plan_Actuel 2022-12-08

Riviere Mistago KM19



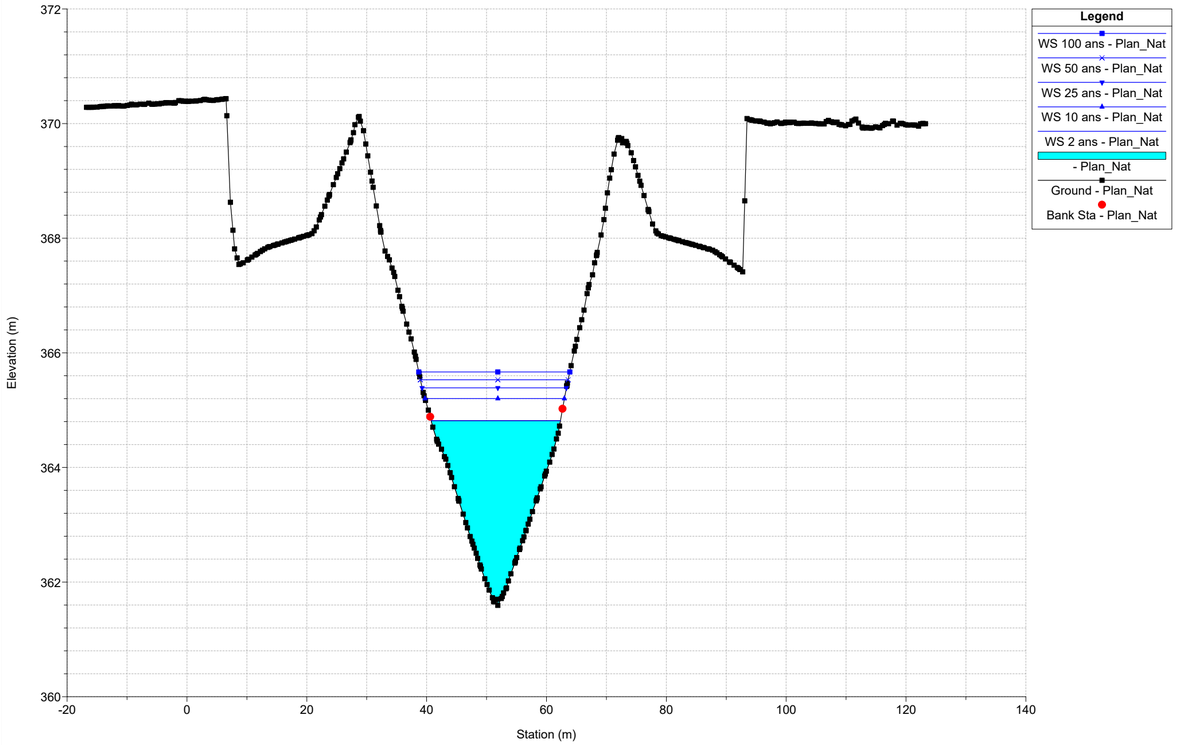
APPENDIX 5

Cross-sections

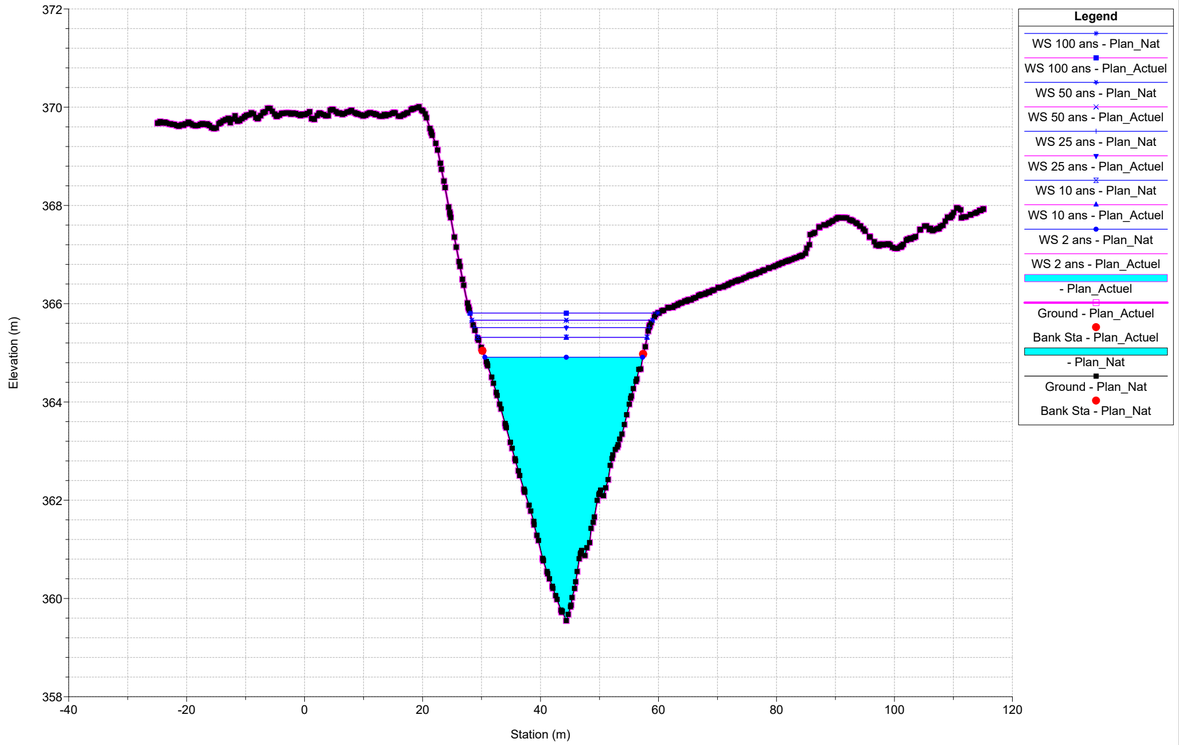


Some schematic data outside default extents (see View/Set Schematic Plot Extents...)

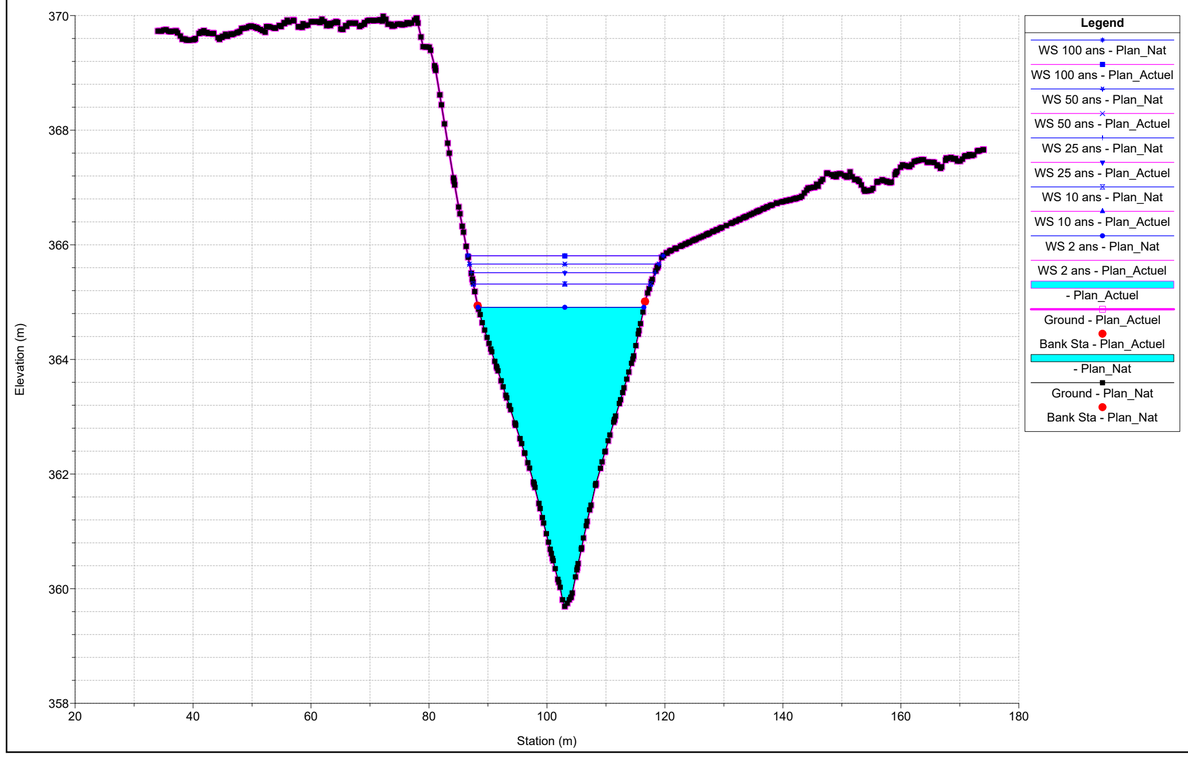
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 265



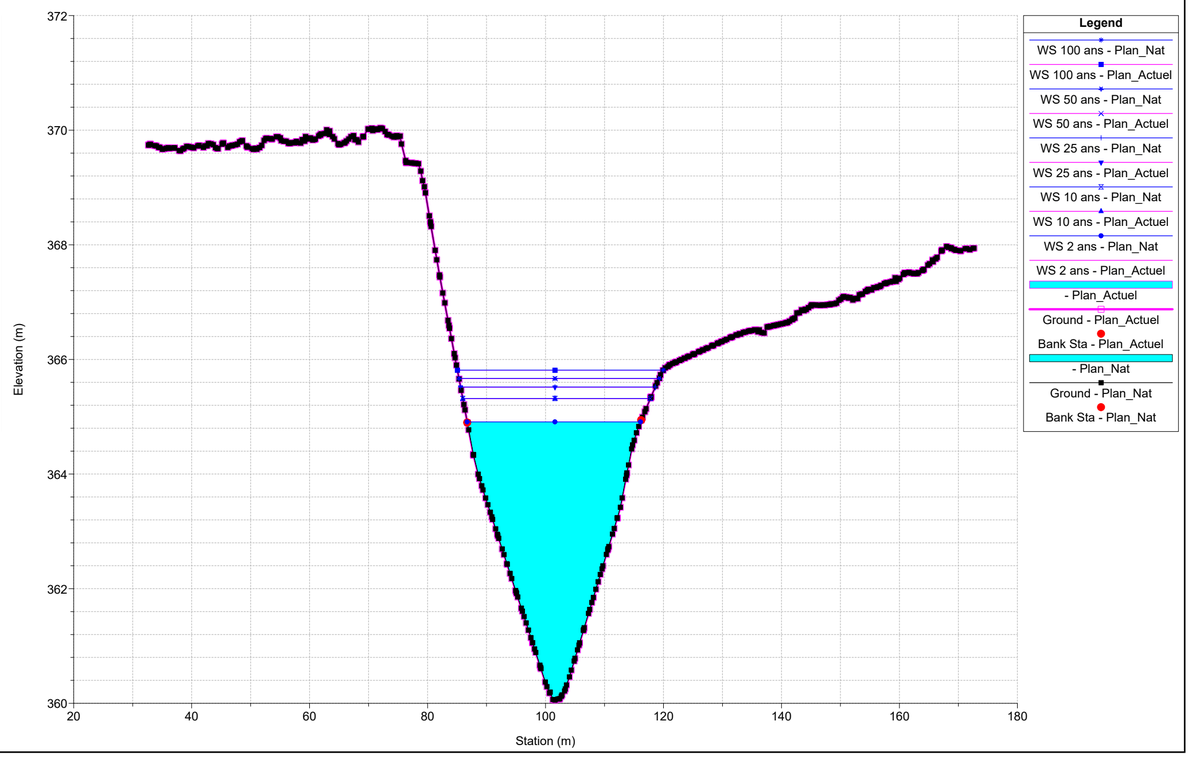
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 415



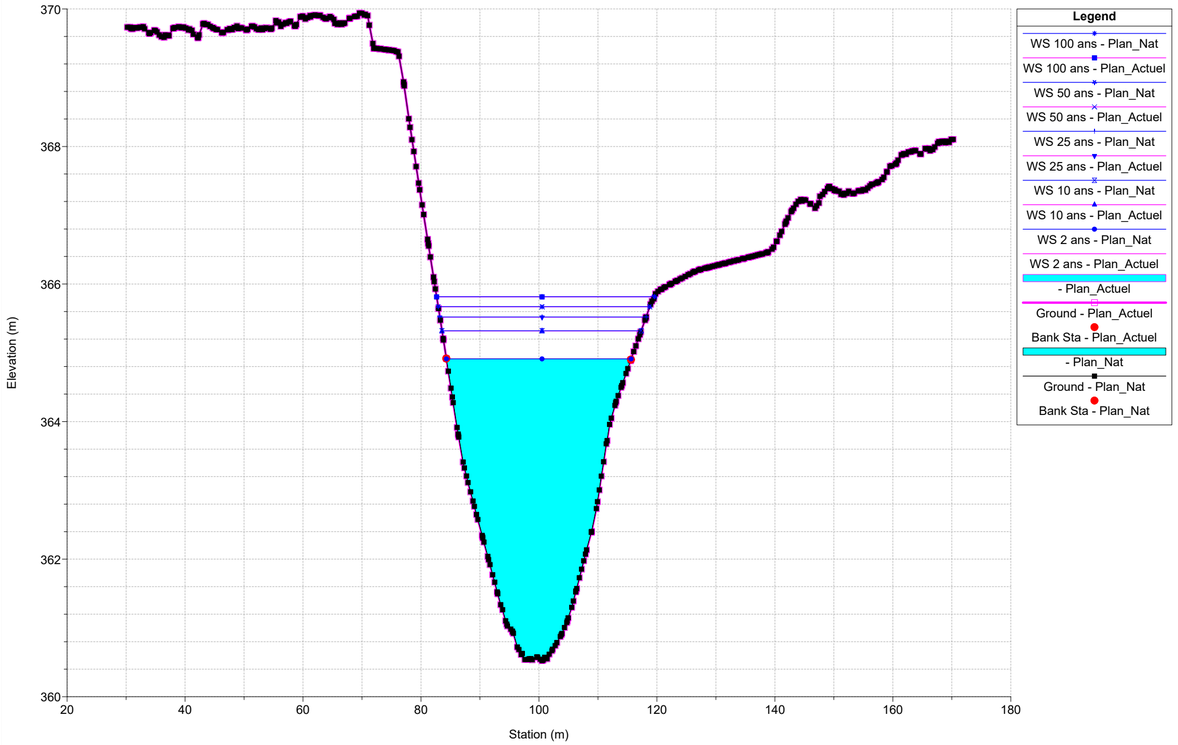
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 410



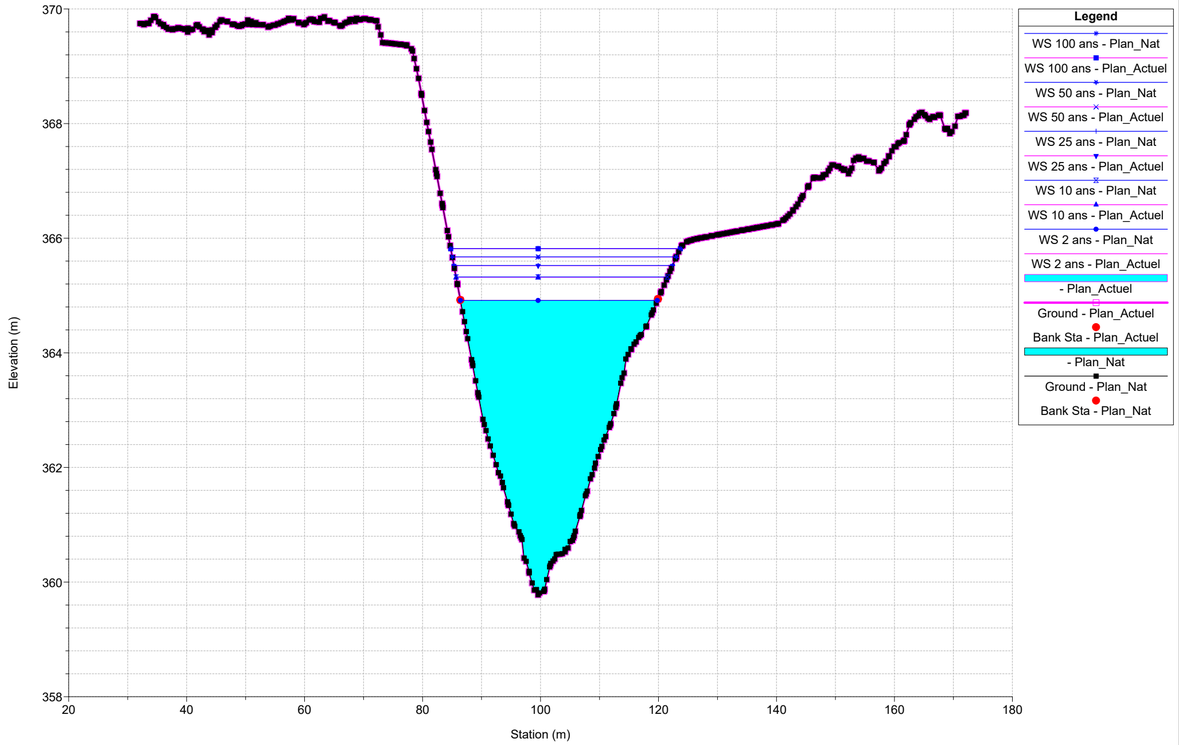
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 405



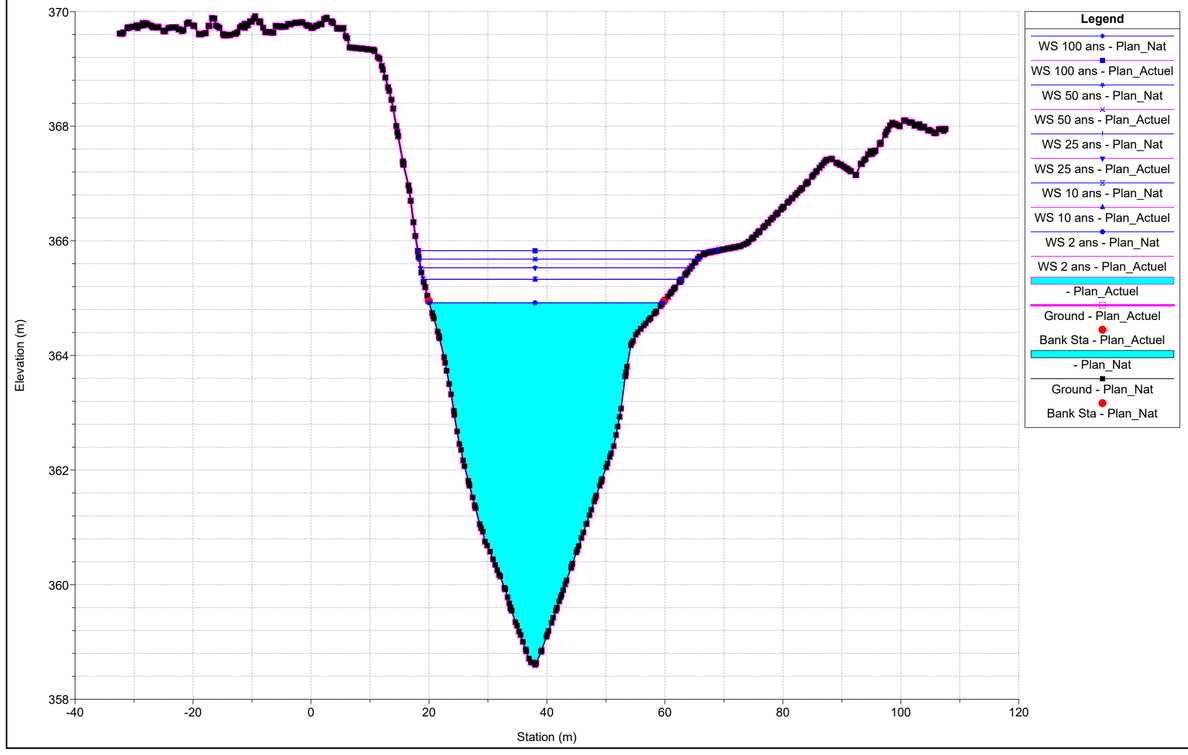
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 400



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 395



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 385



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
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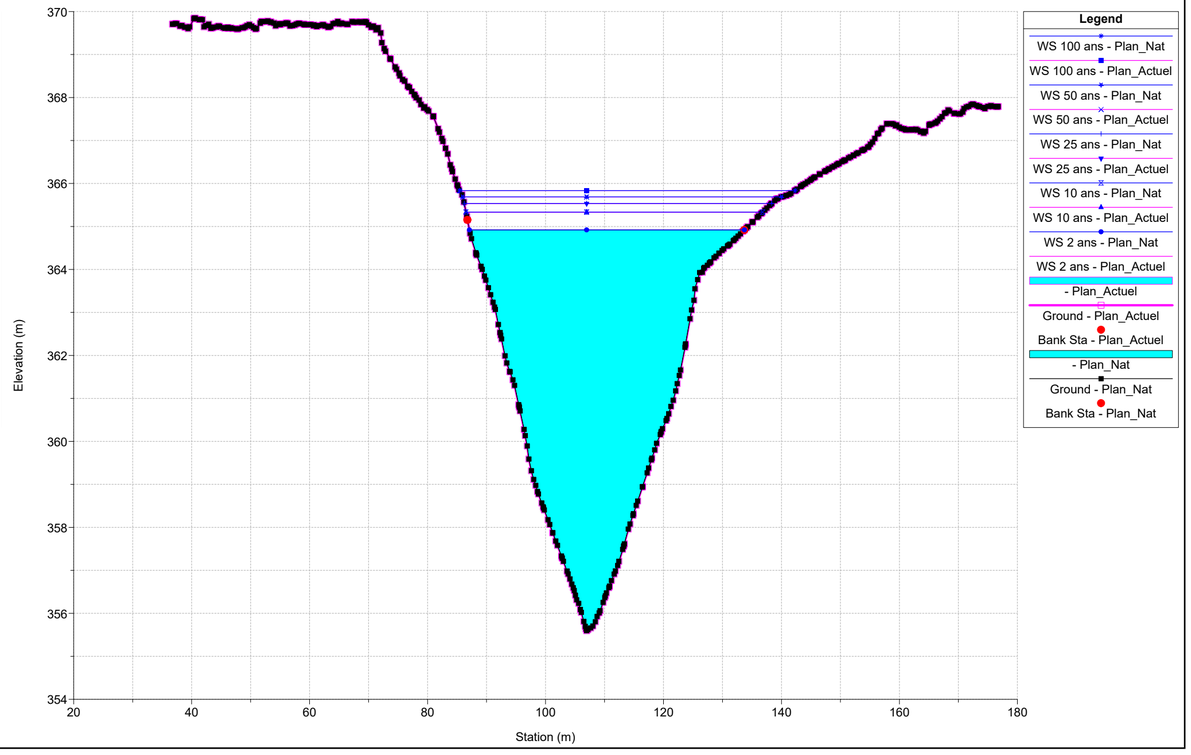
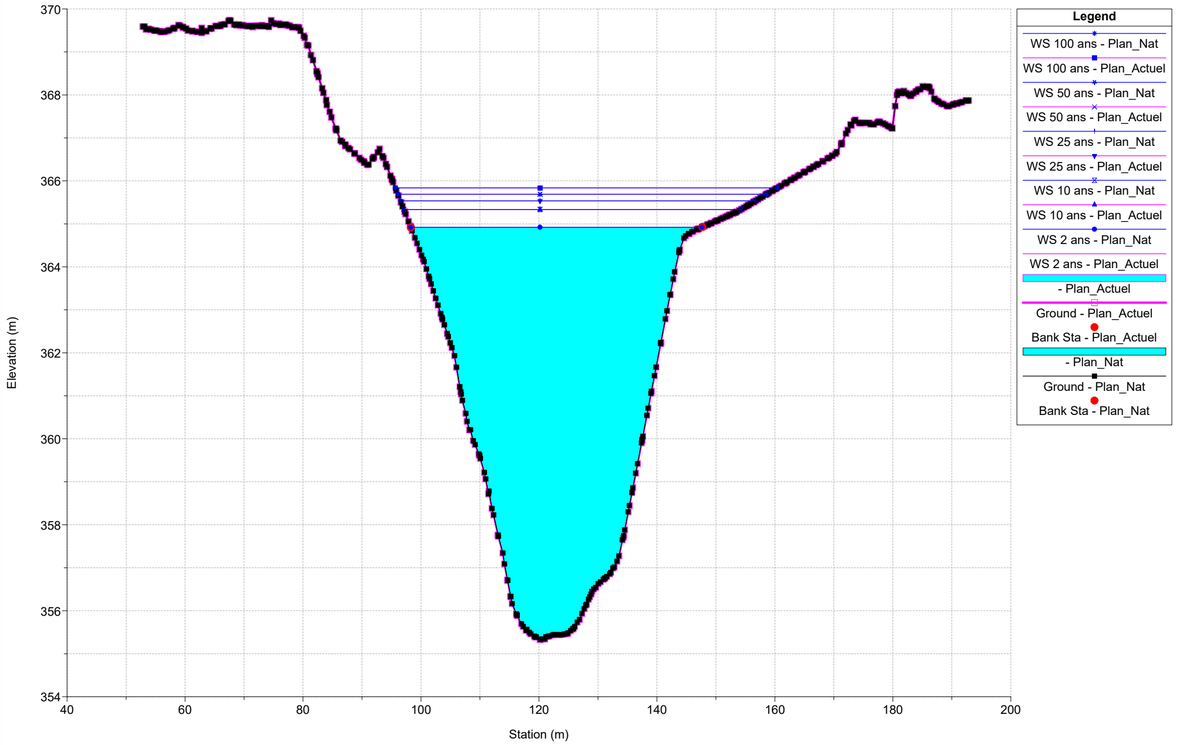
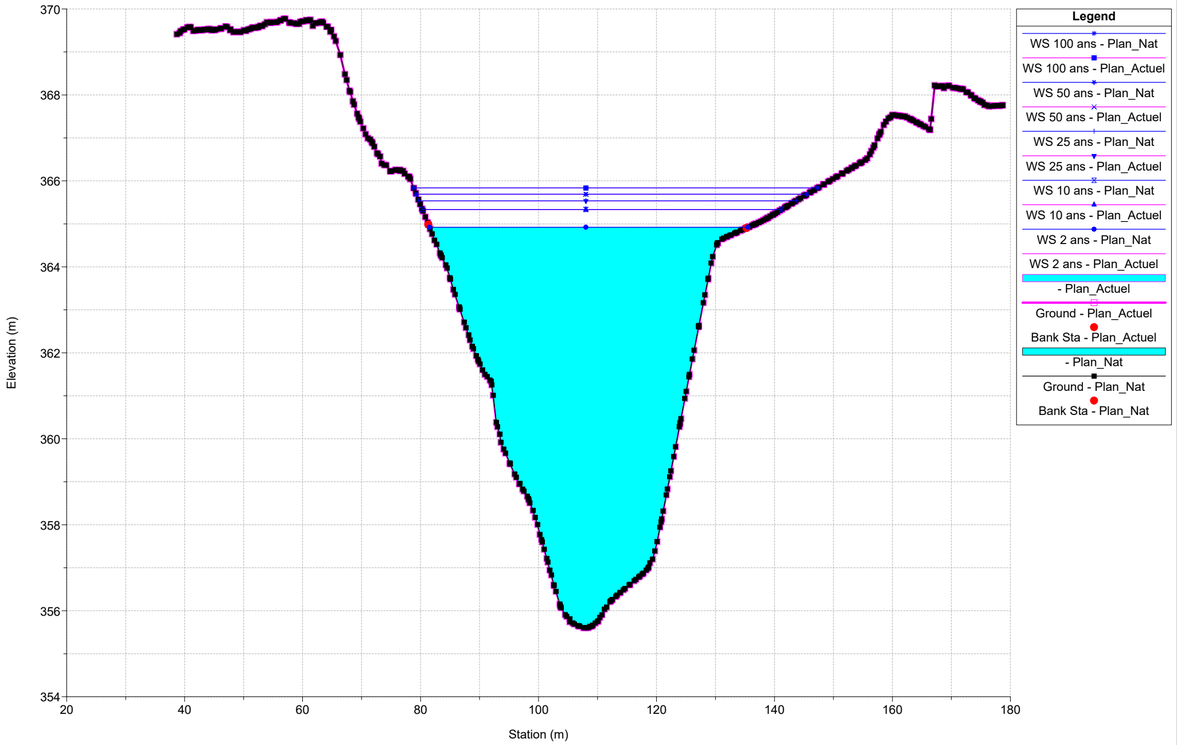


HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 369



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 366



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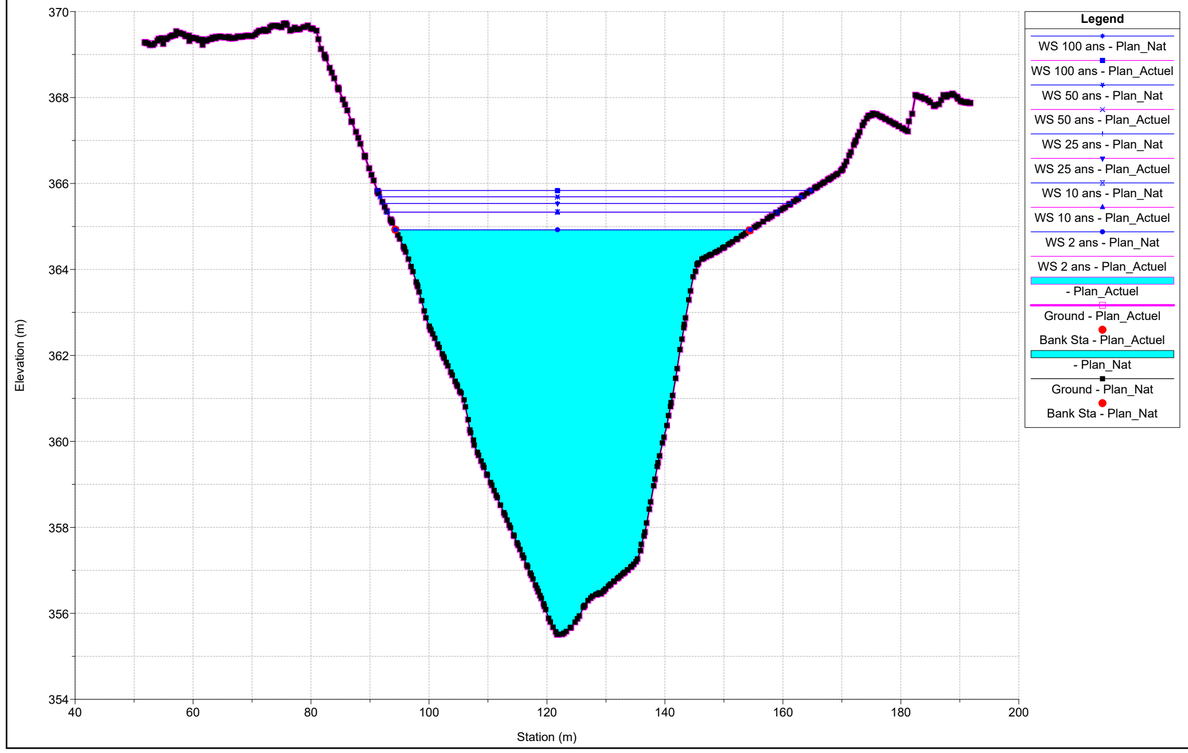
RS = 355



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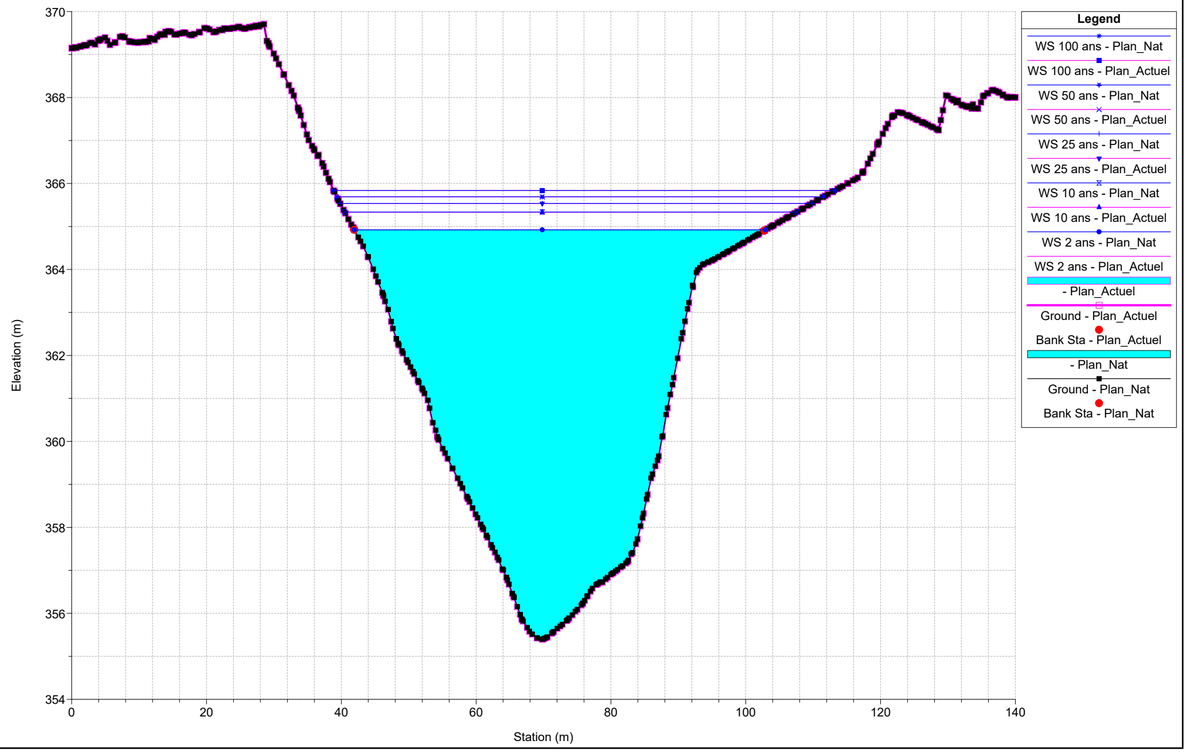

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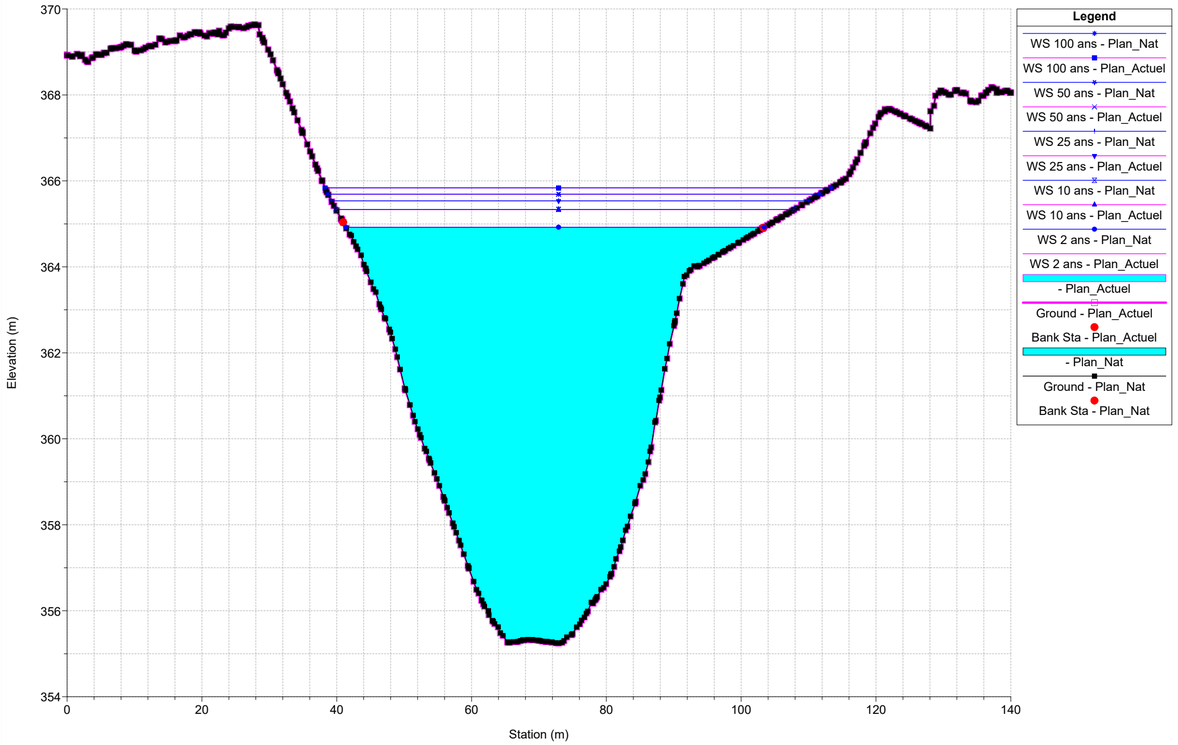
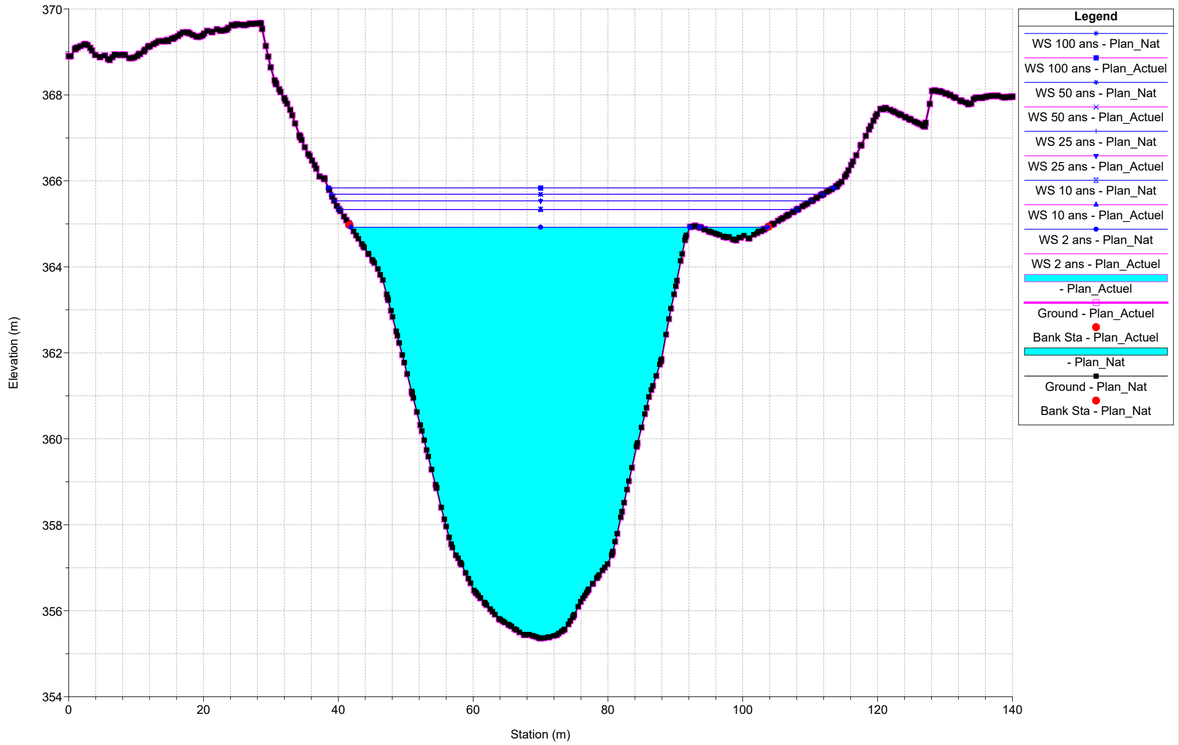
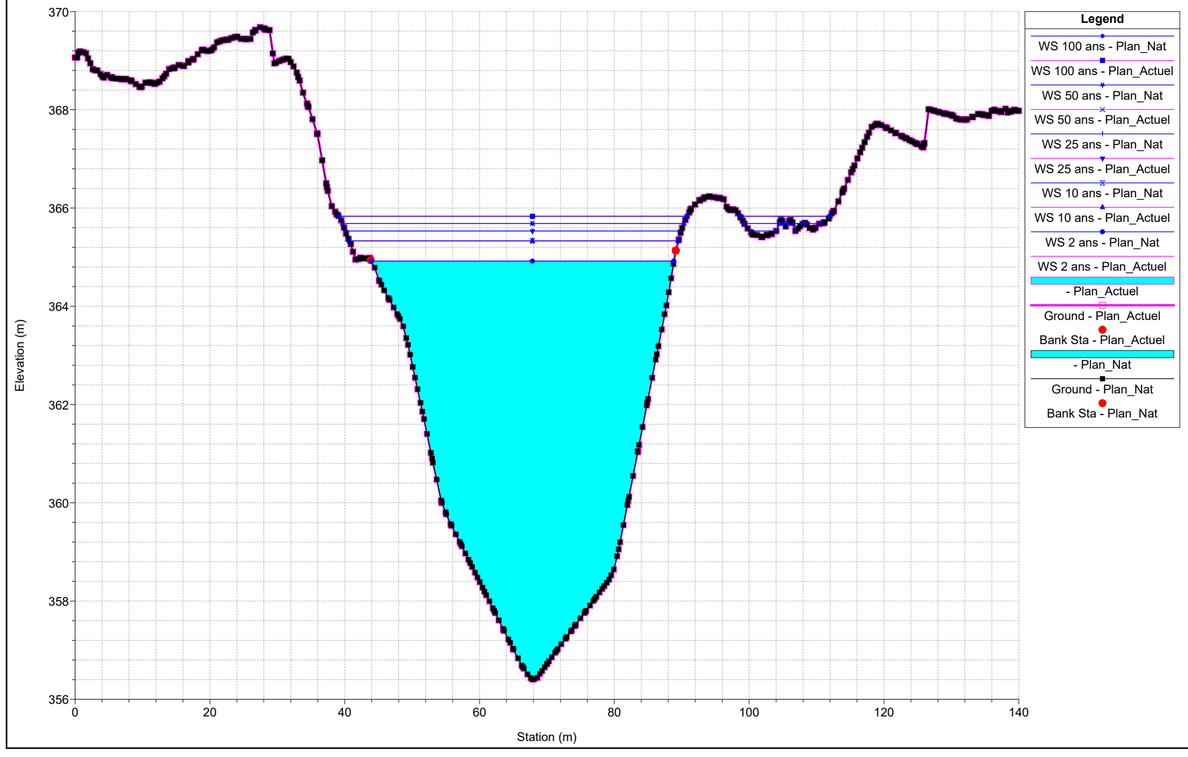


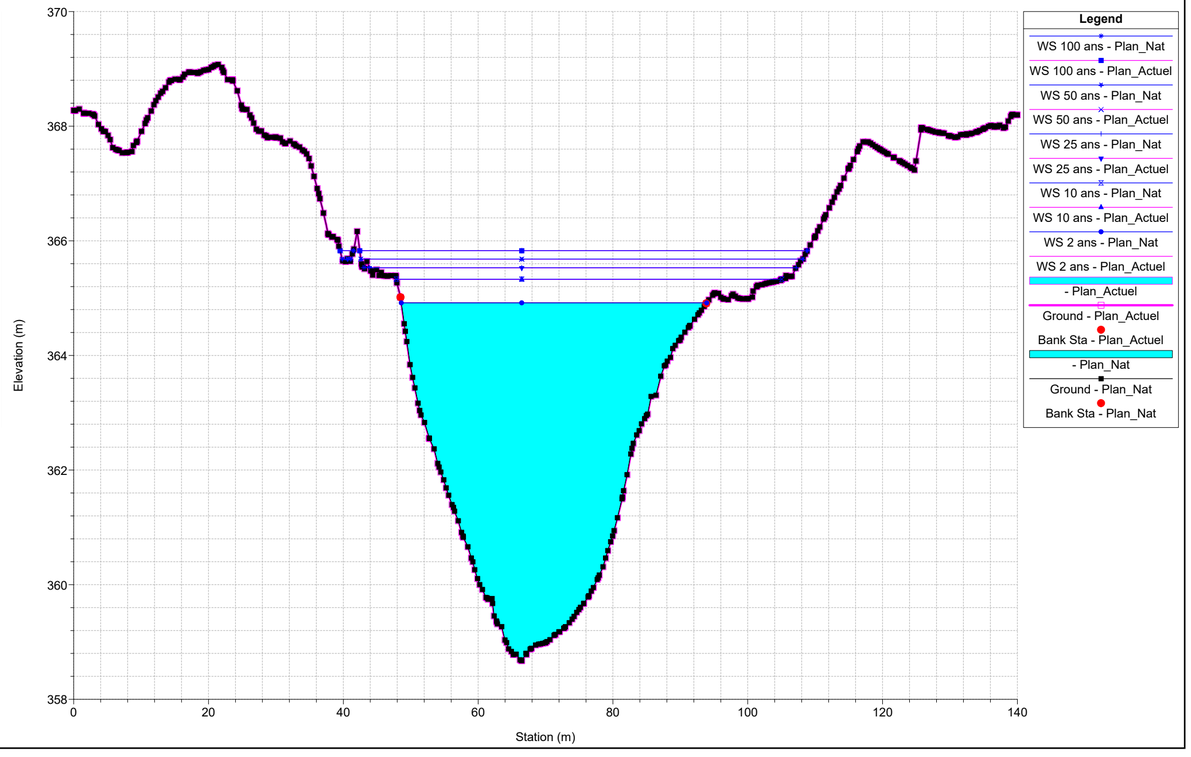
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 344



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 334



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 322



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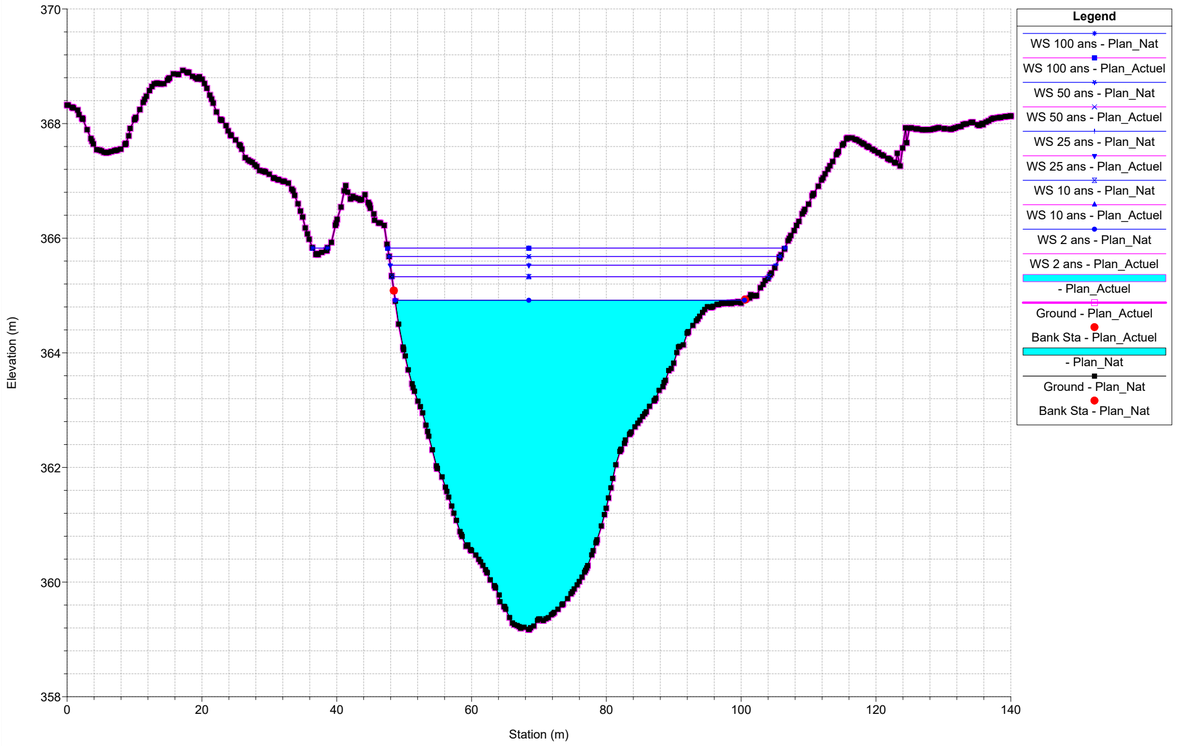

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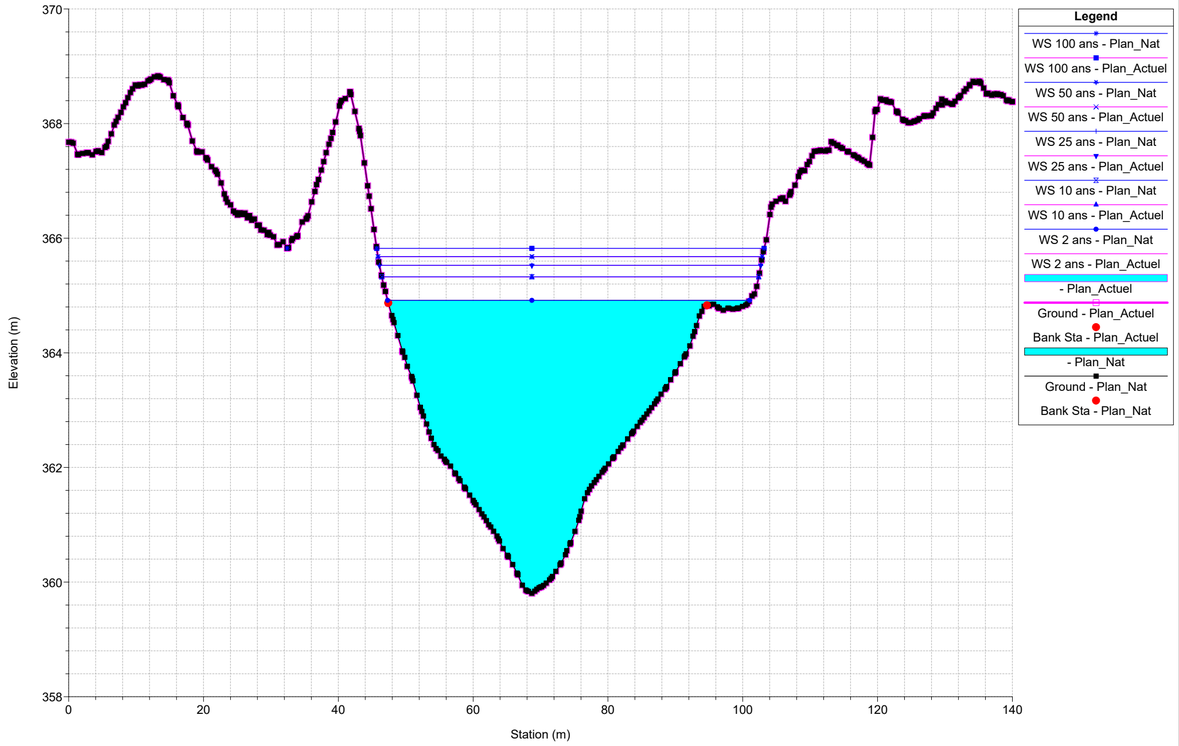

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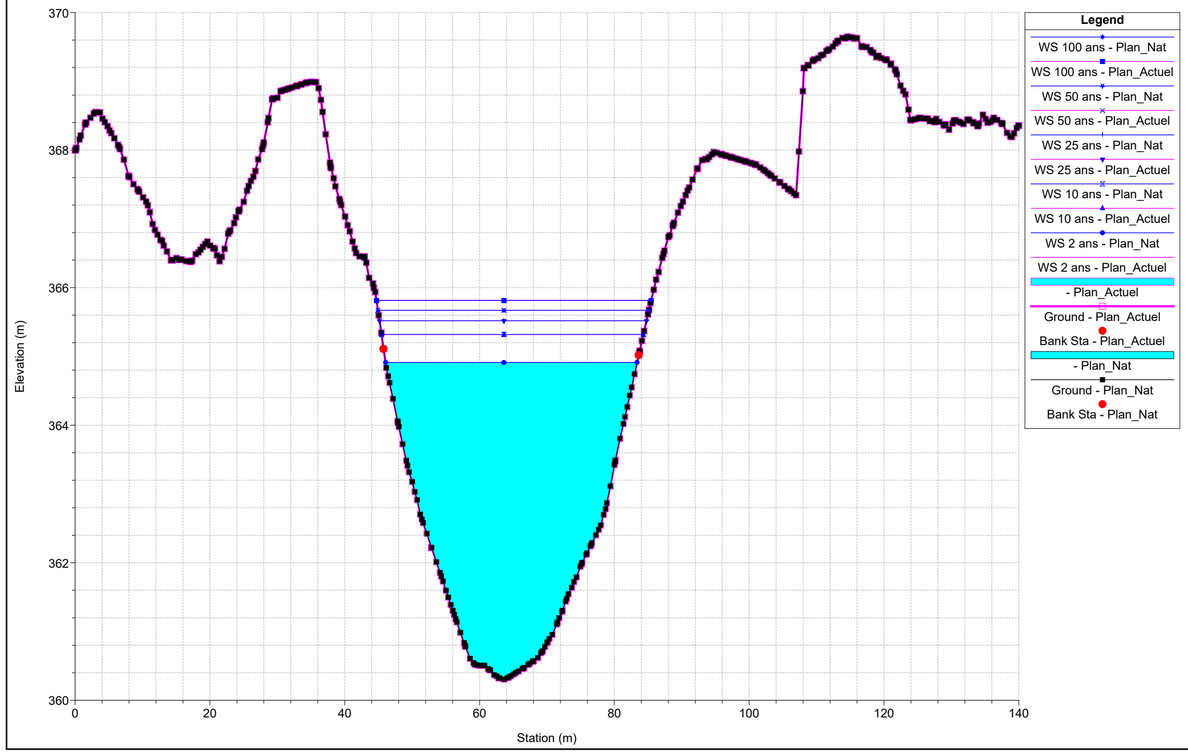
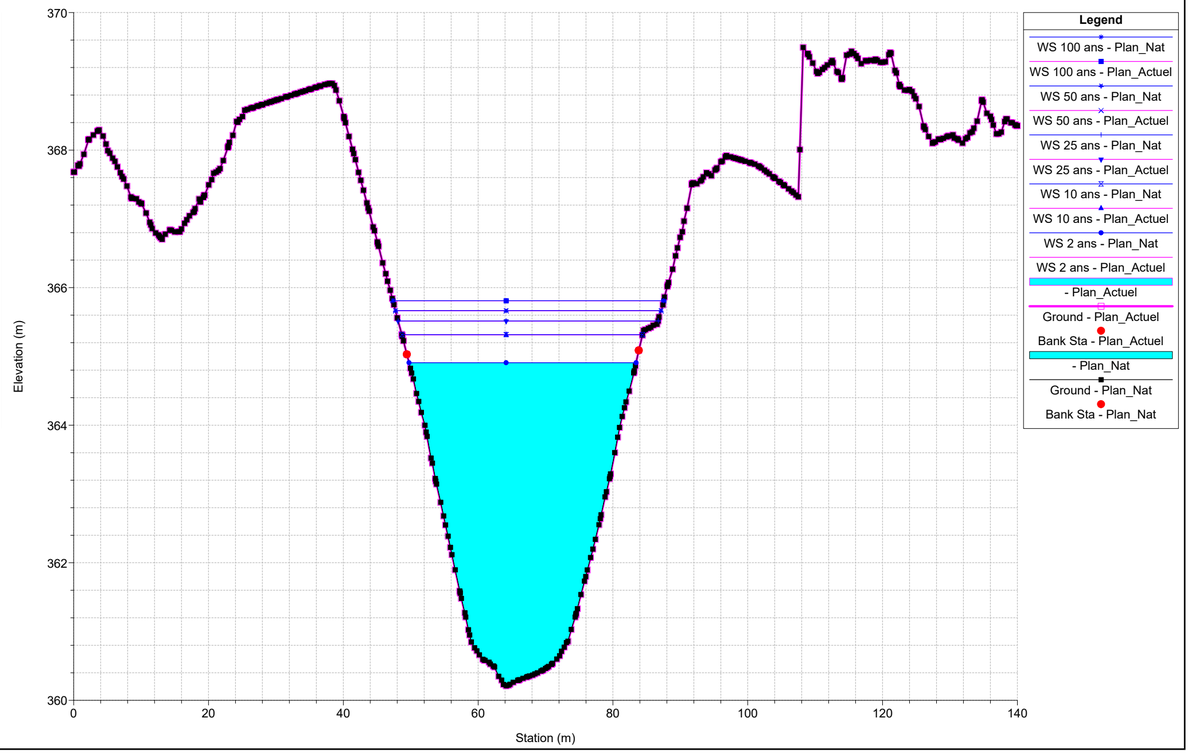
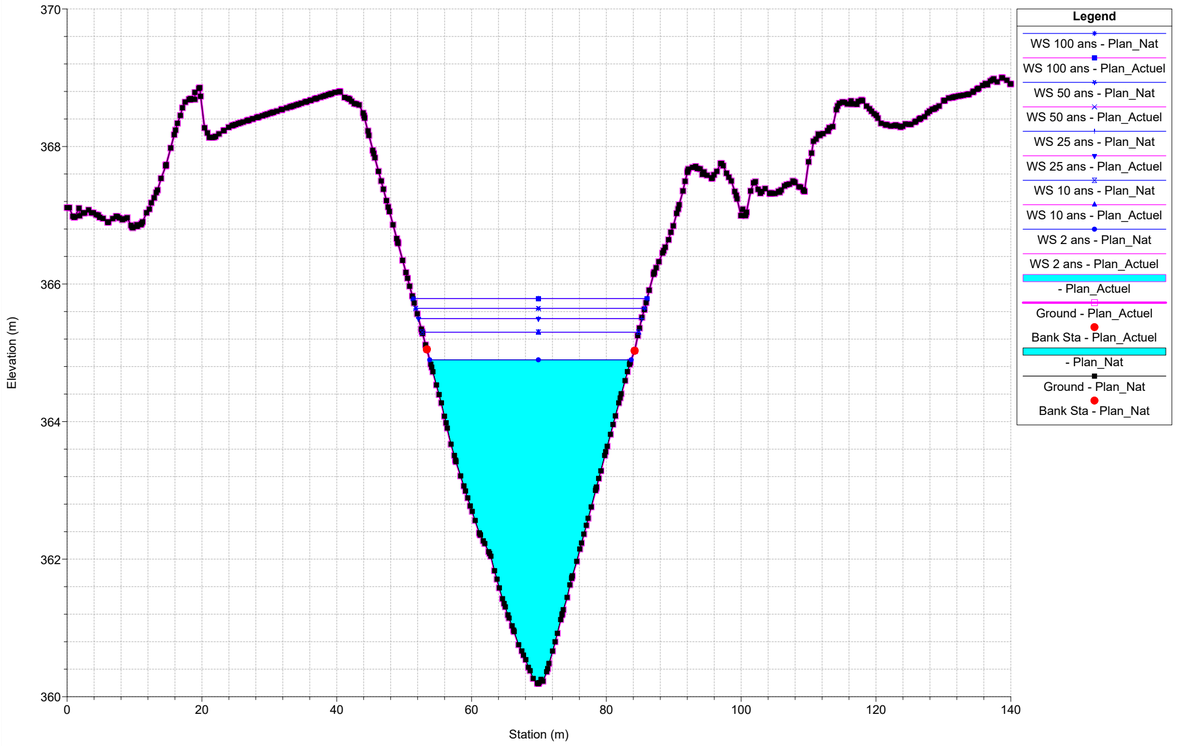


HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 296



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 289



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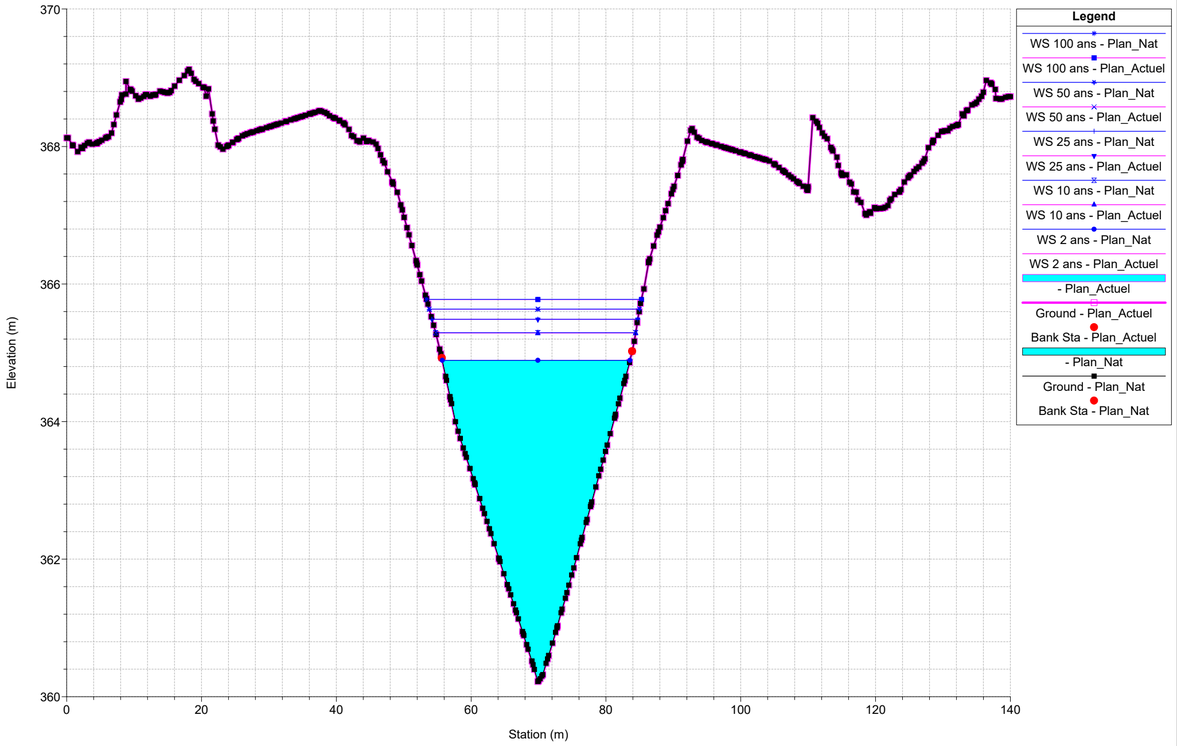

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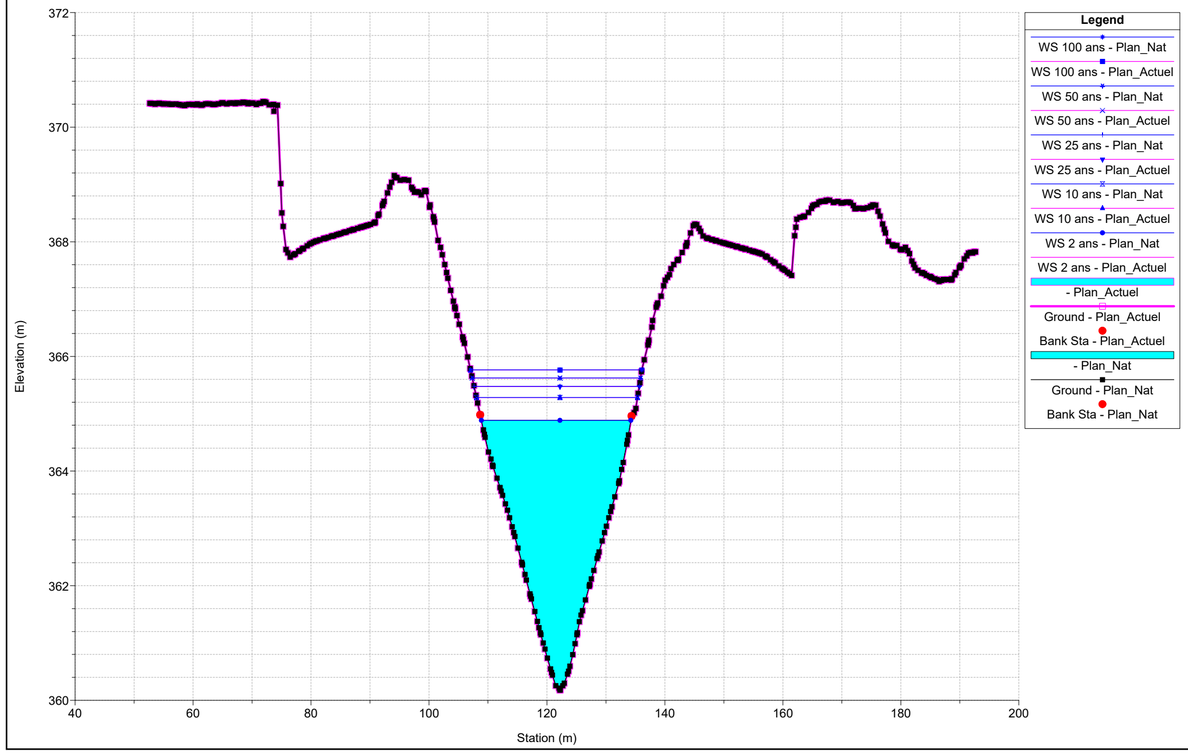

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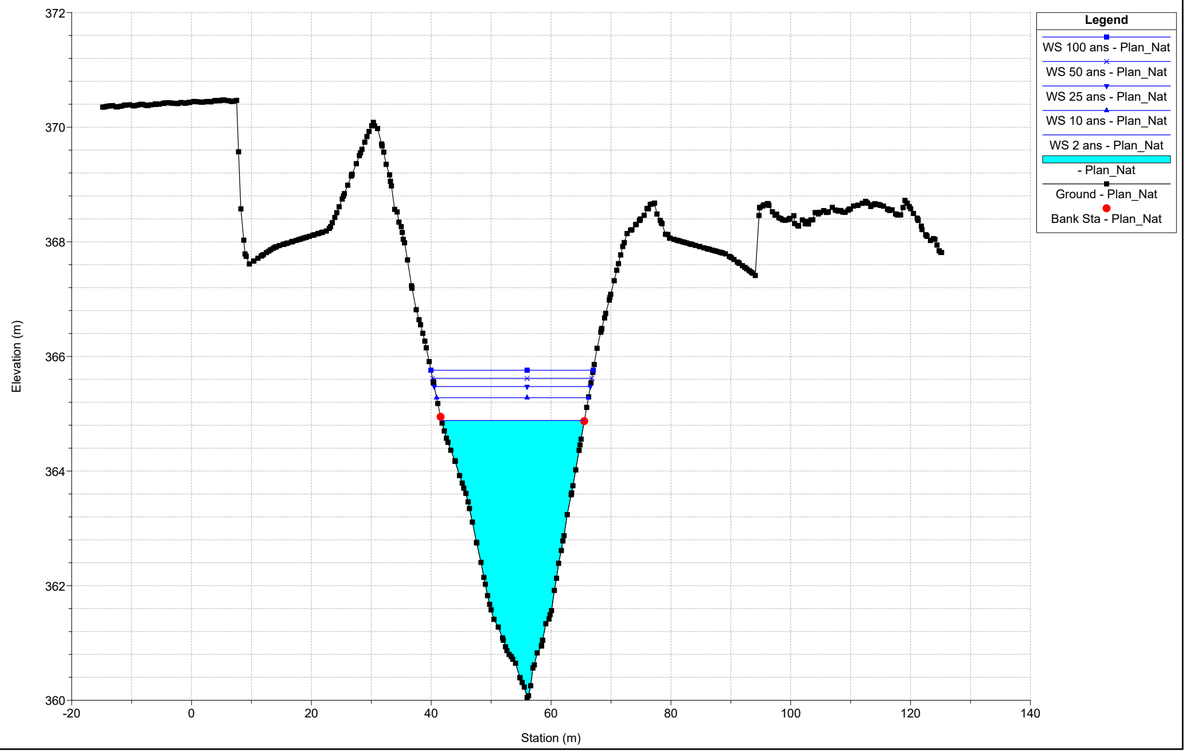

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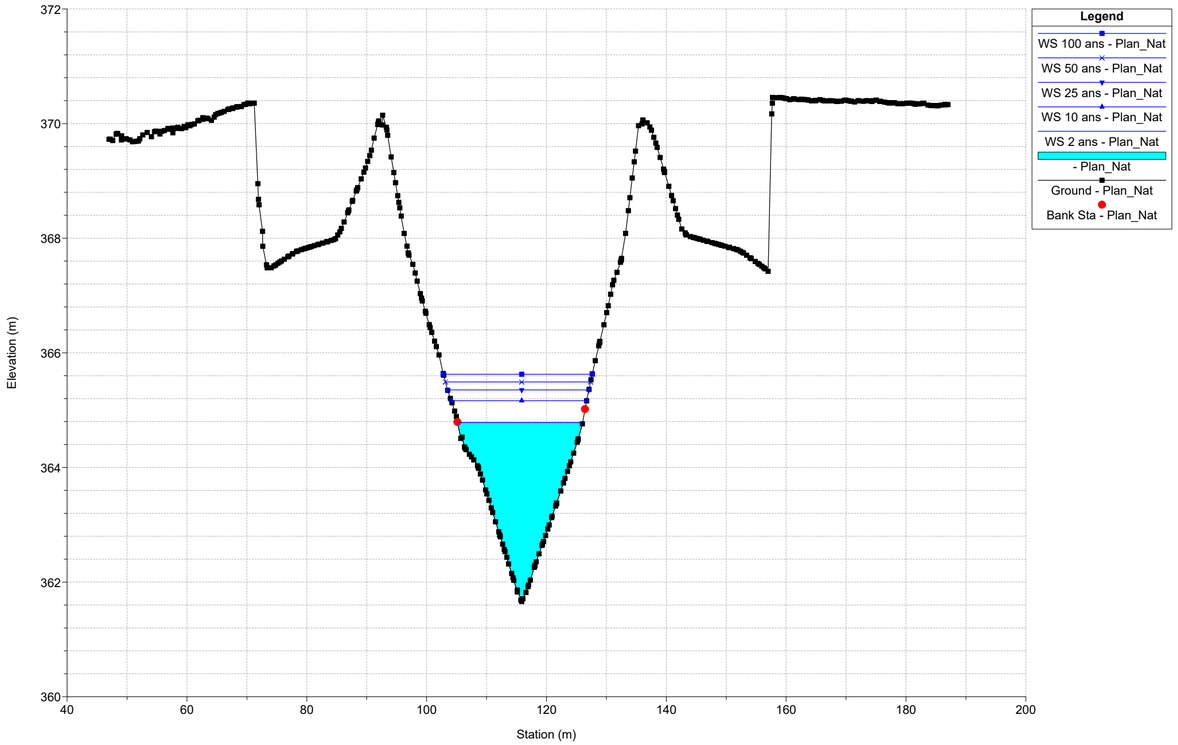
RS = 260



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
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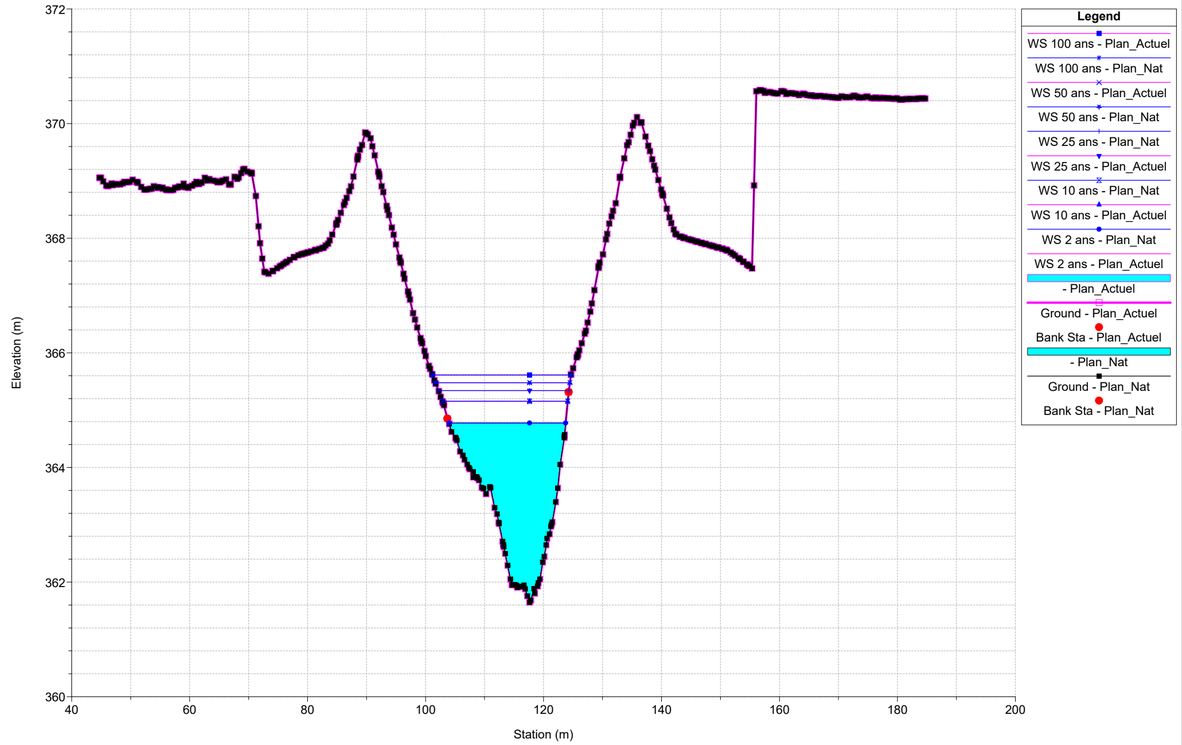
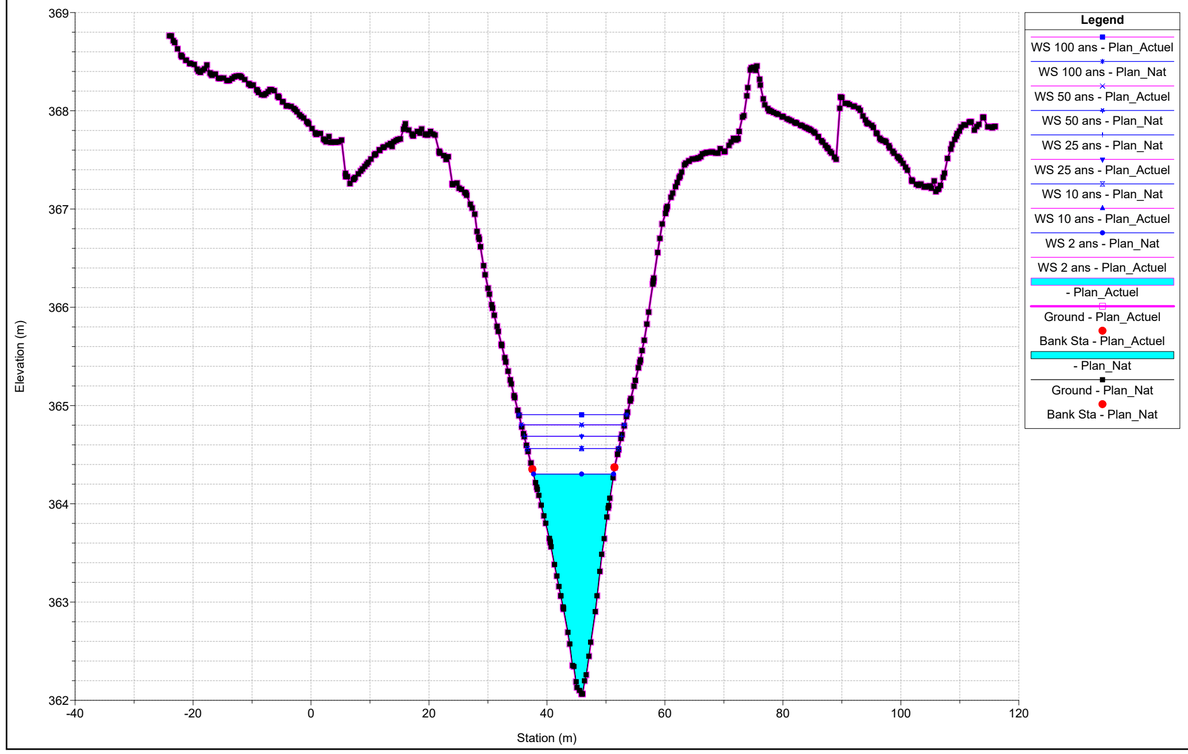
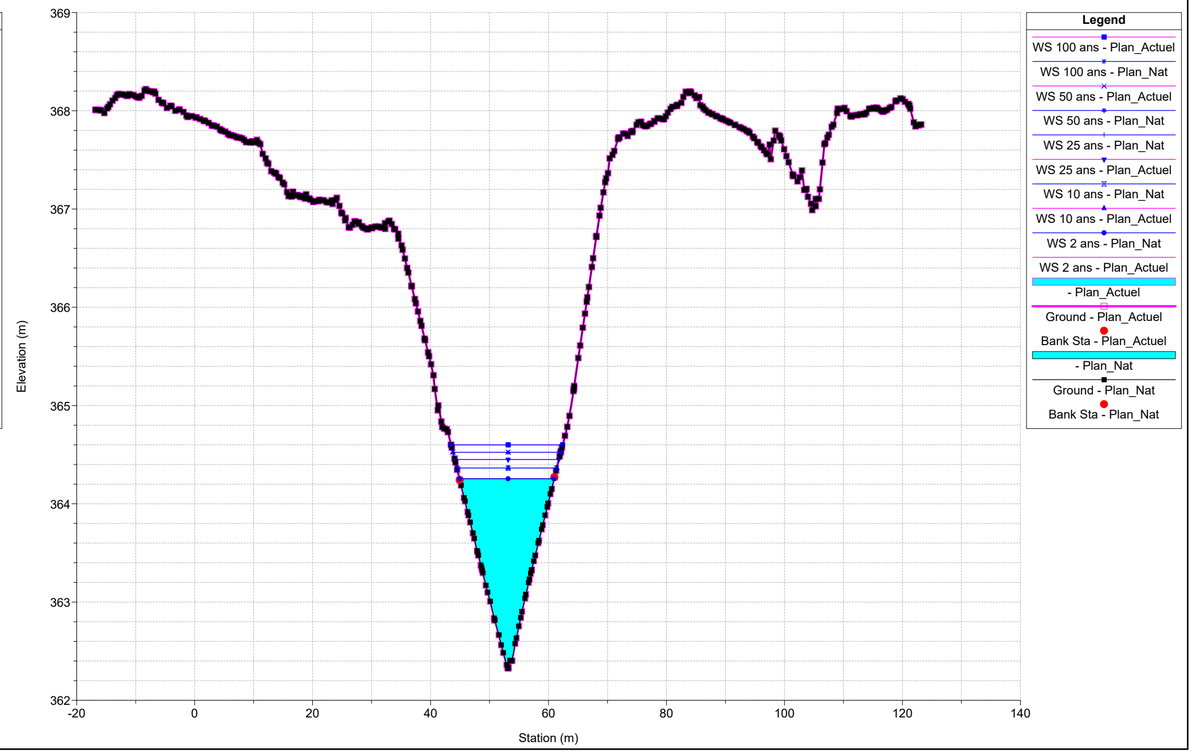


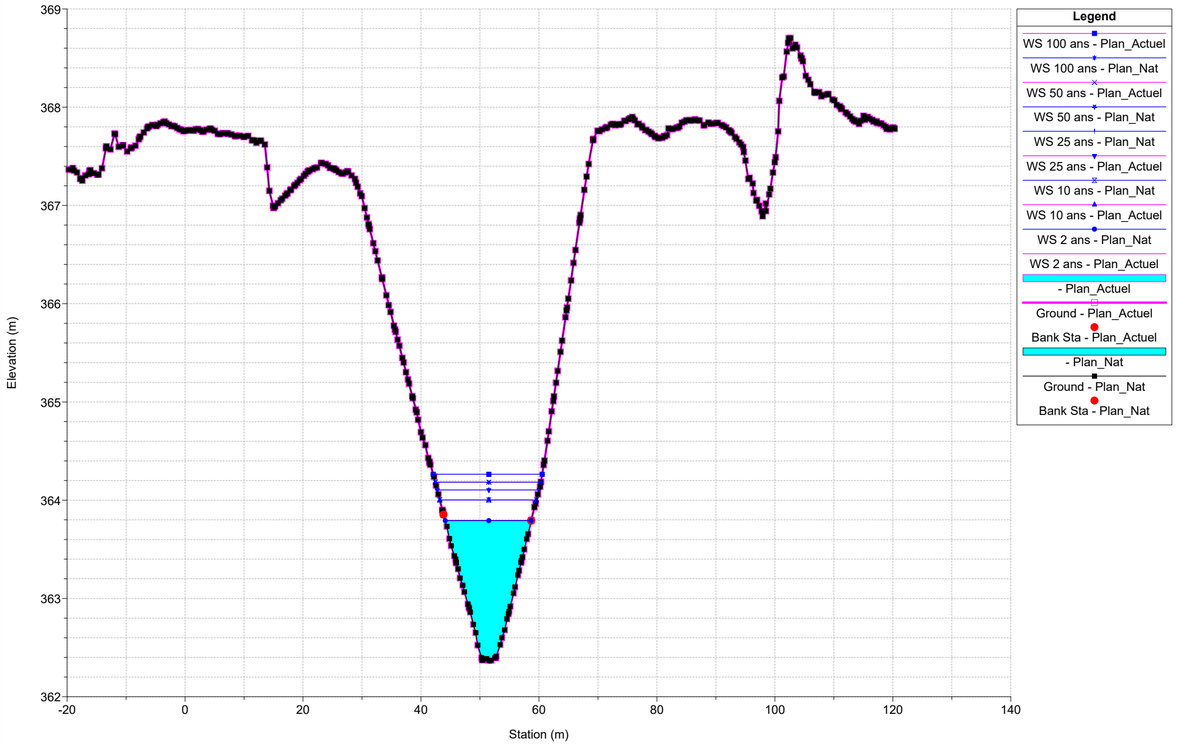
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 250



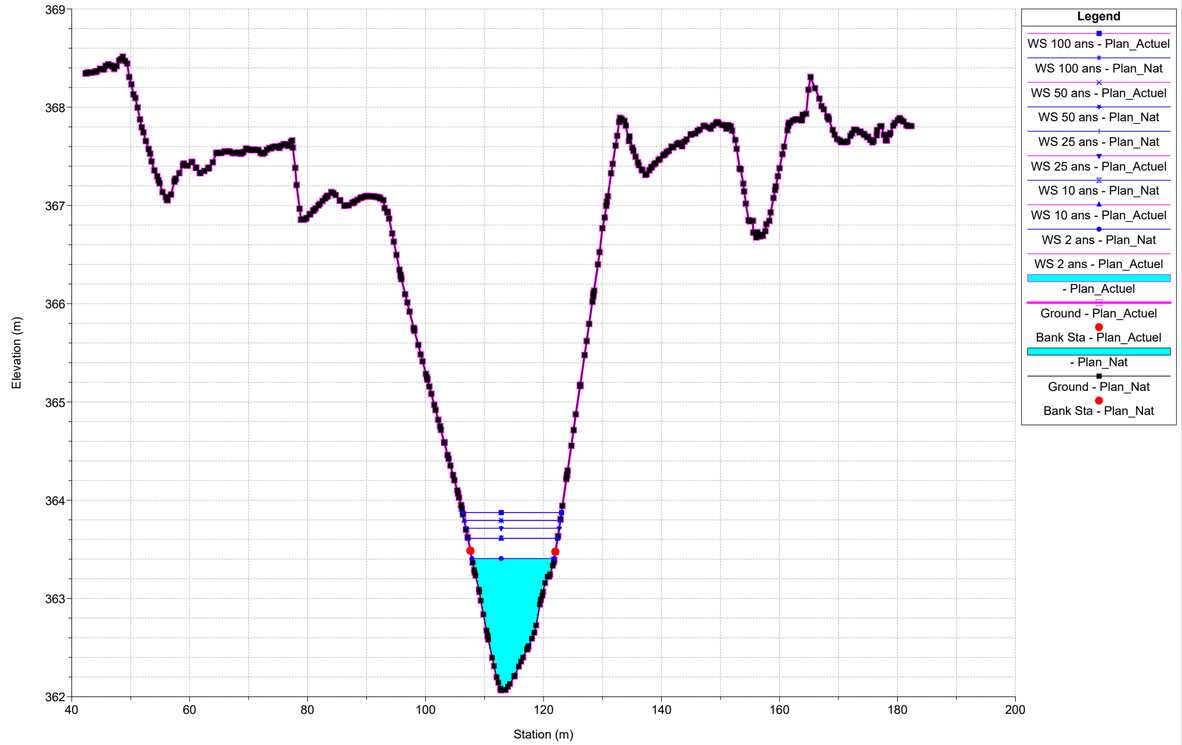
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 245



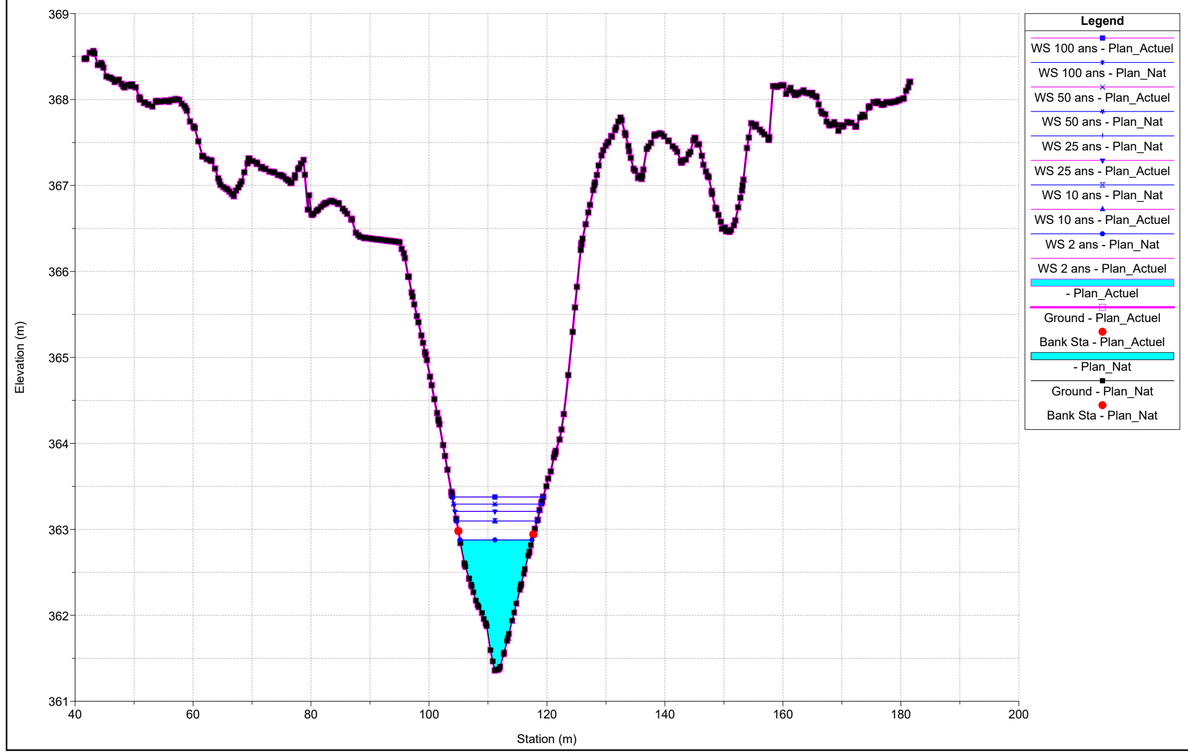
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 240



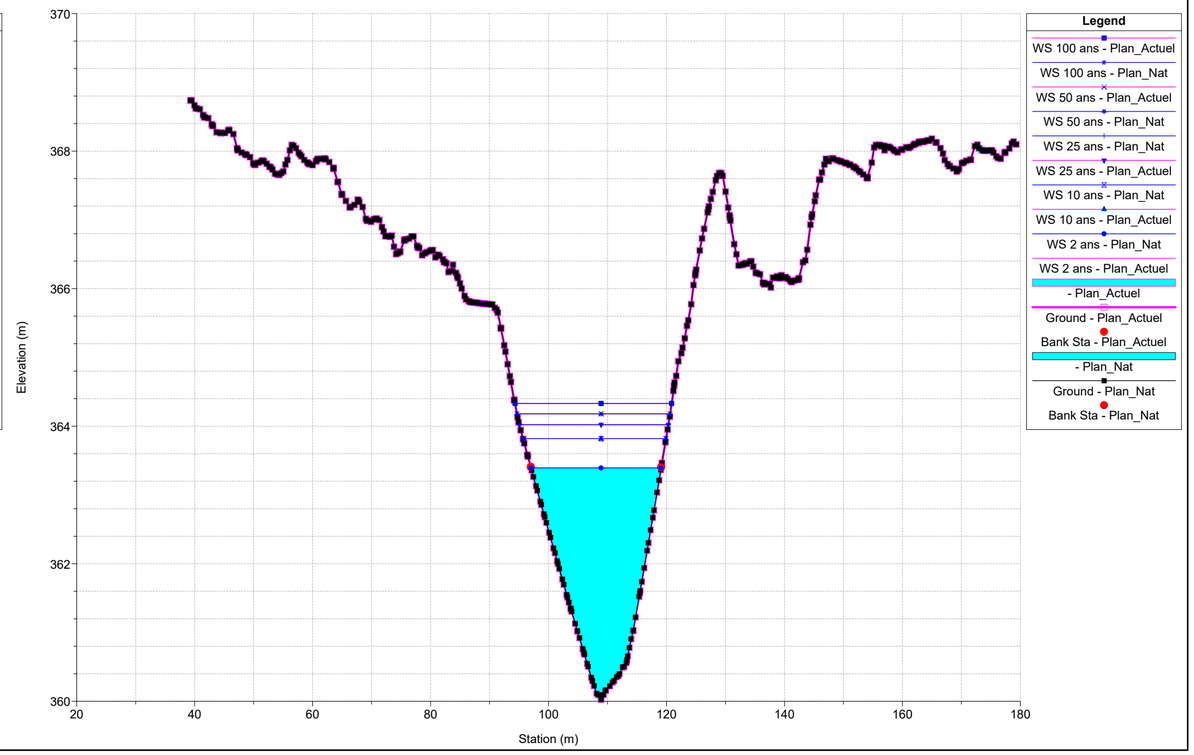
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 235



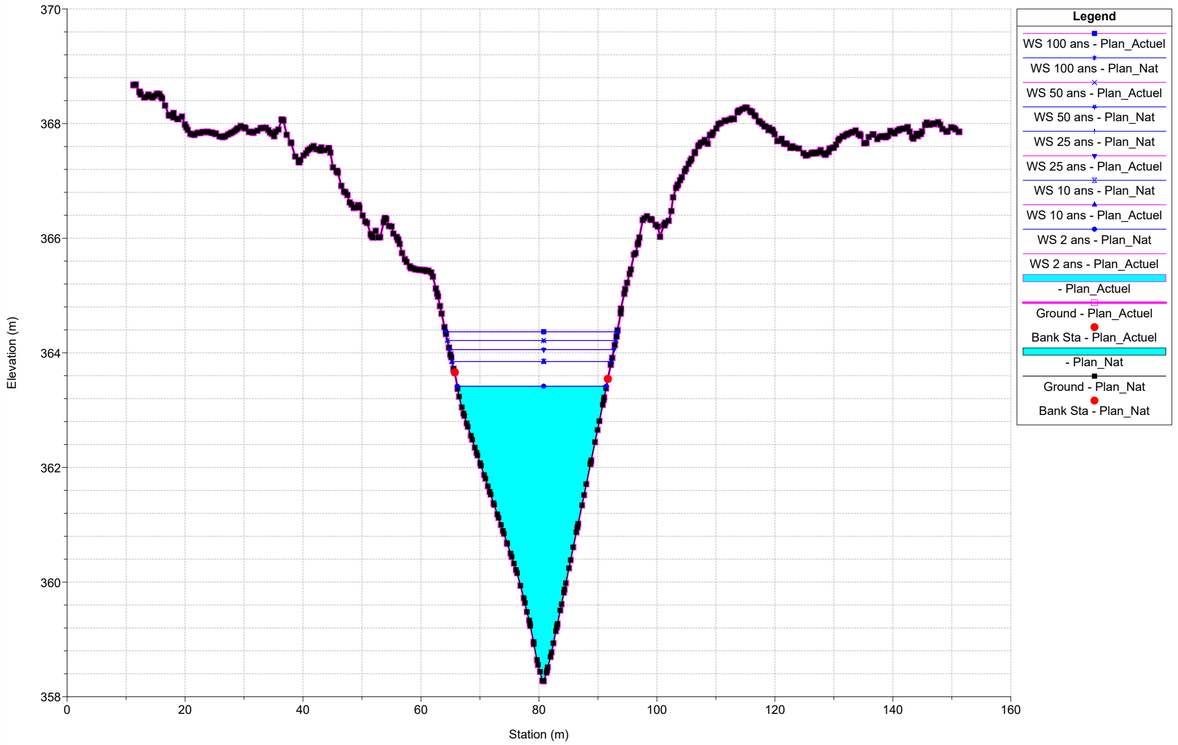
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 225



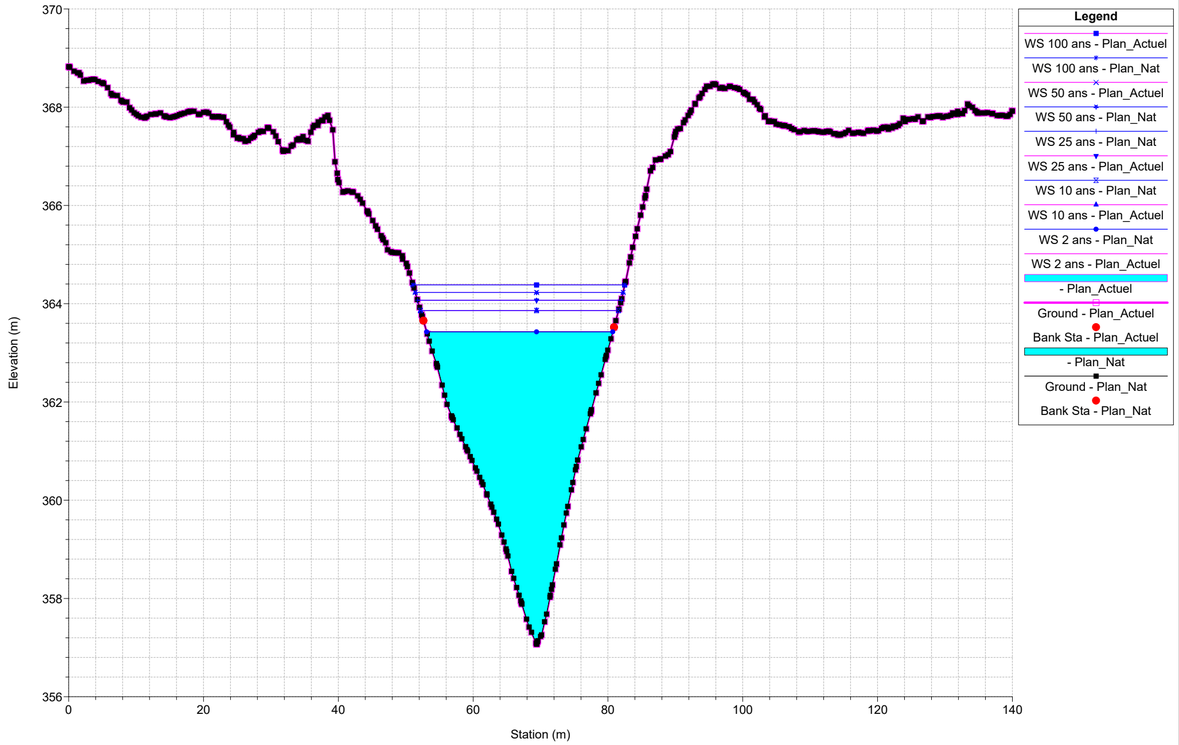
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 220



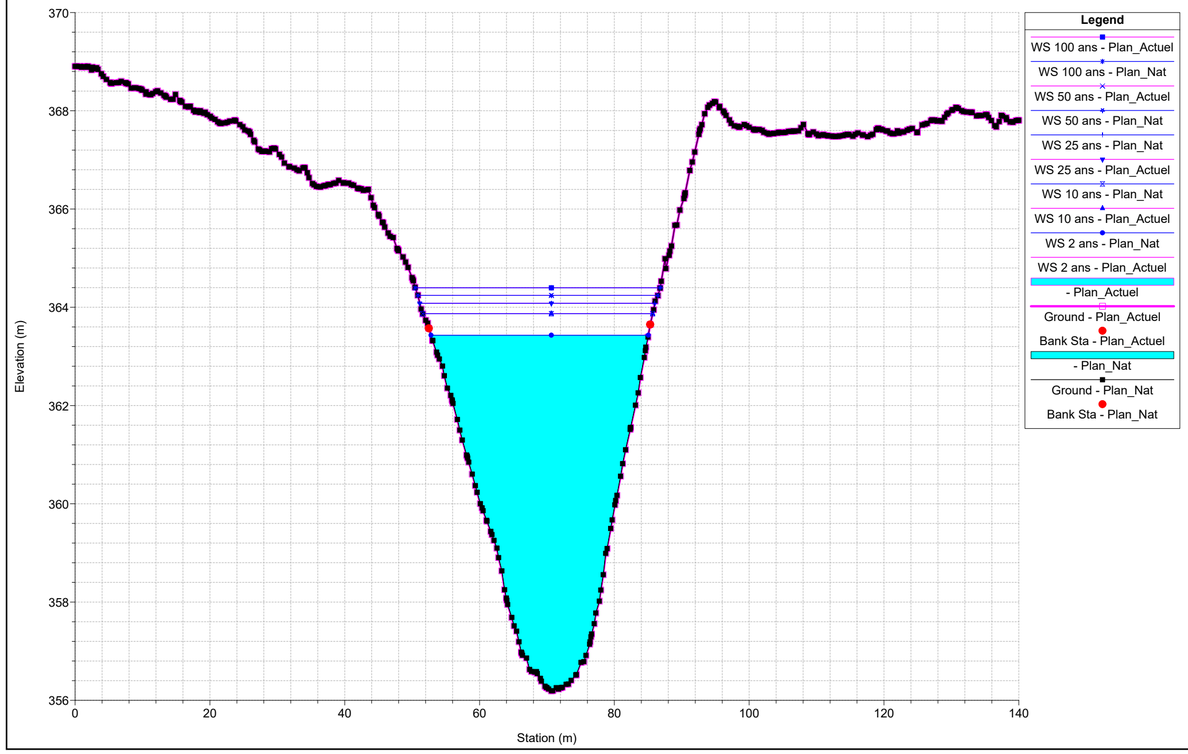
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 215



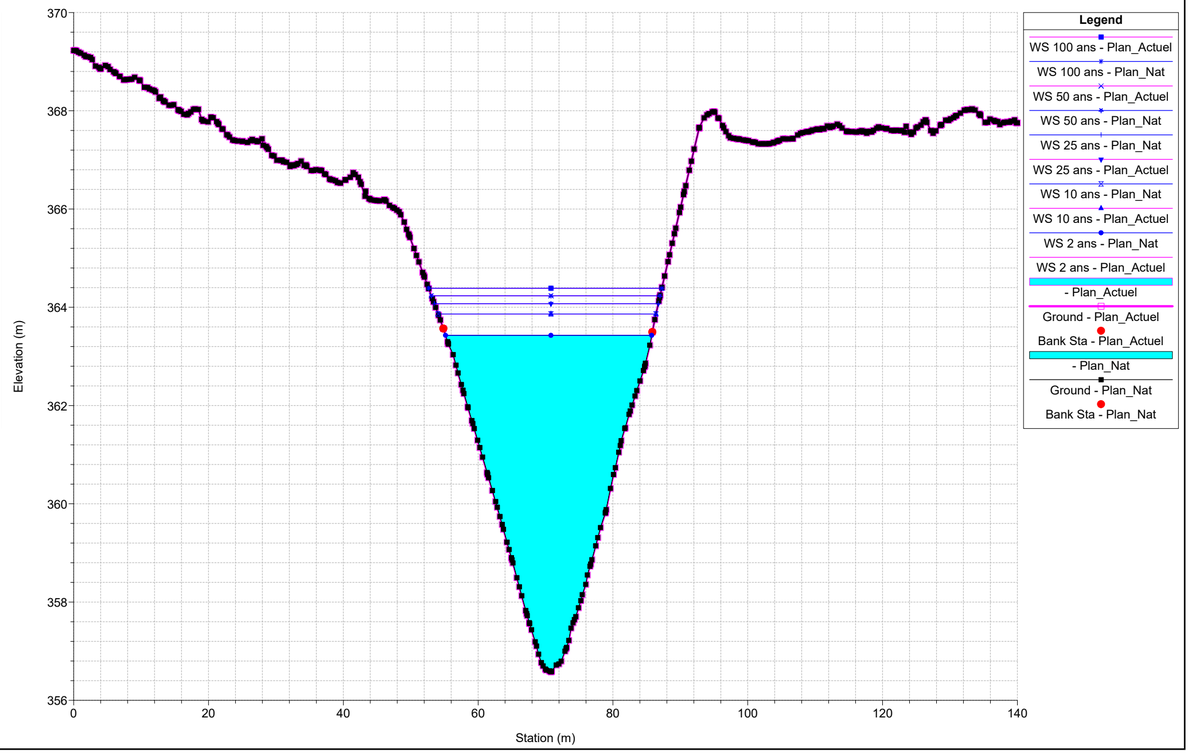
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 213



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 206



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 201



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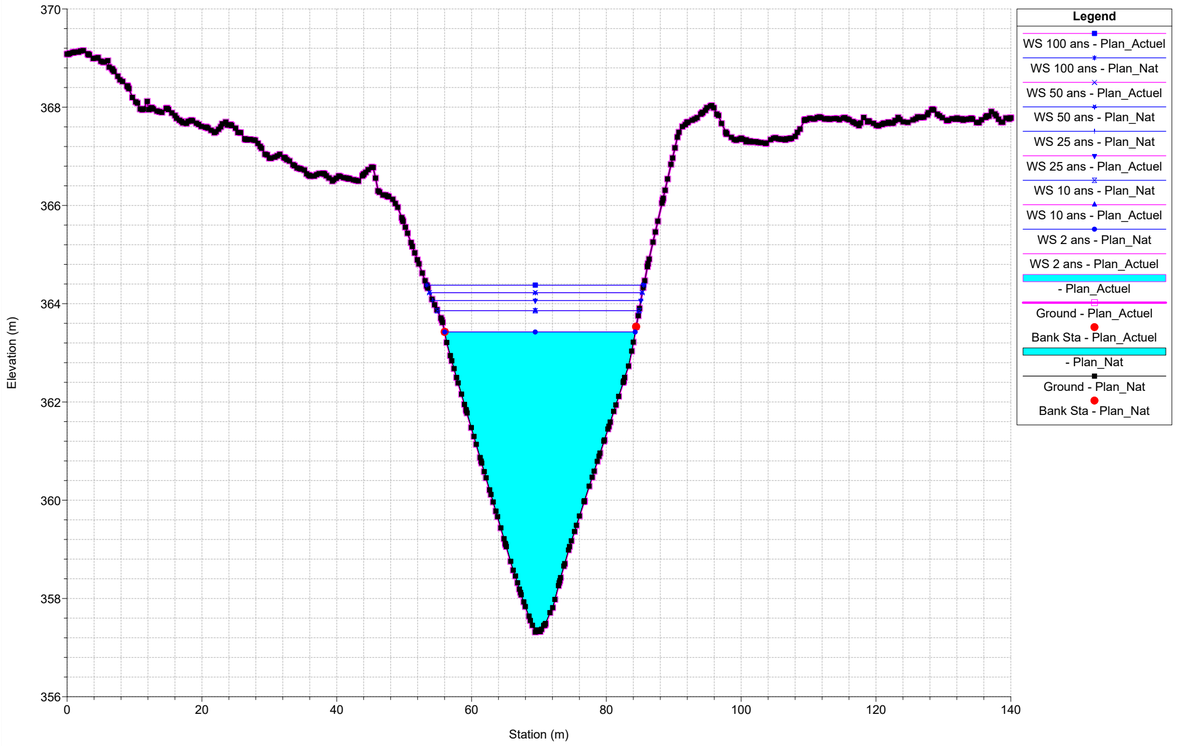
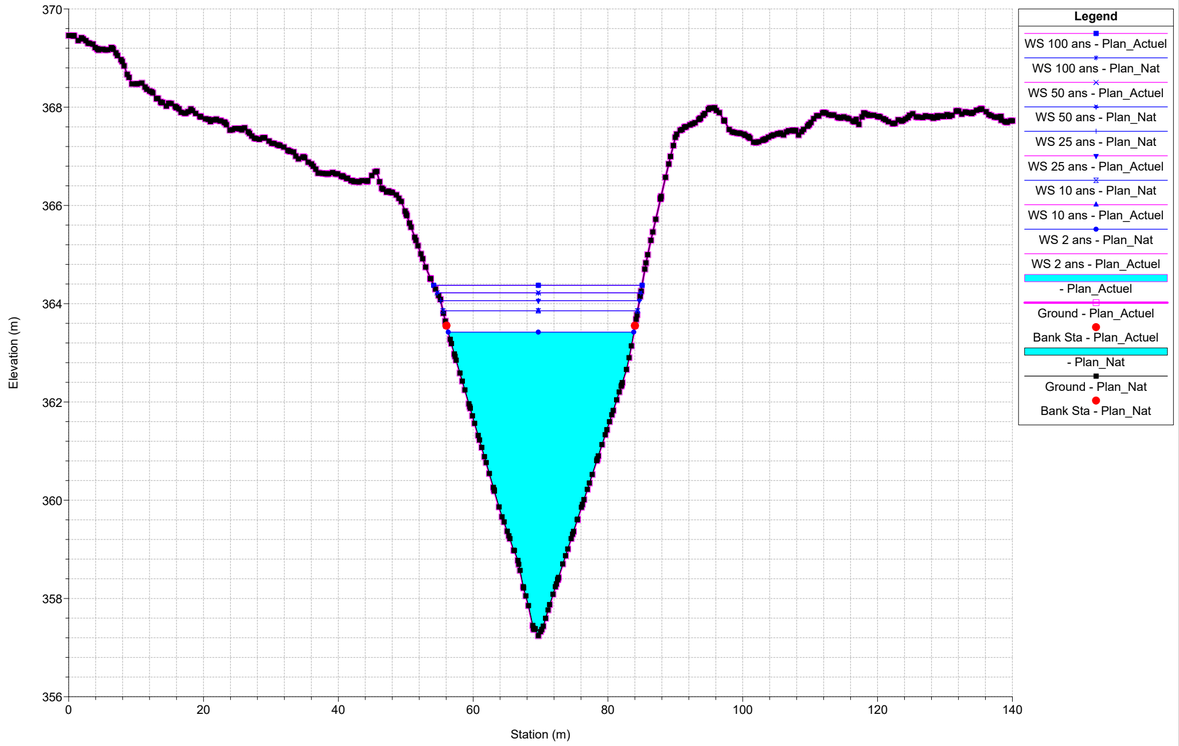
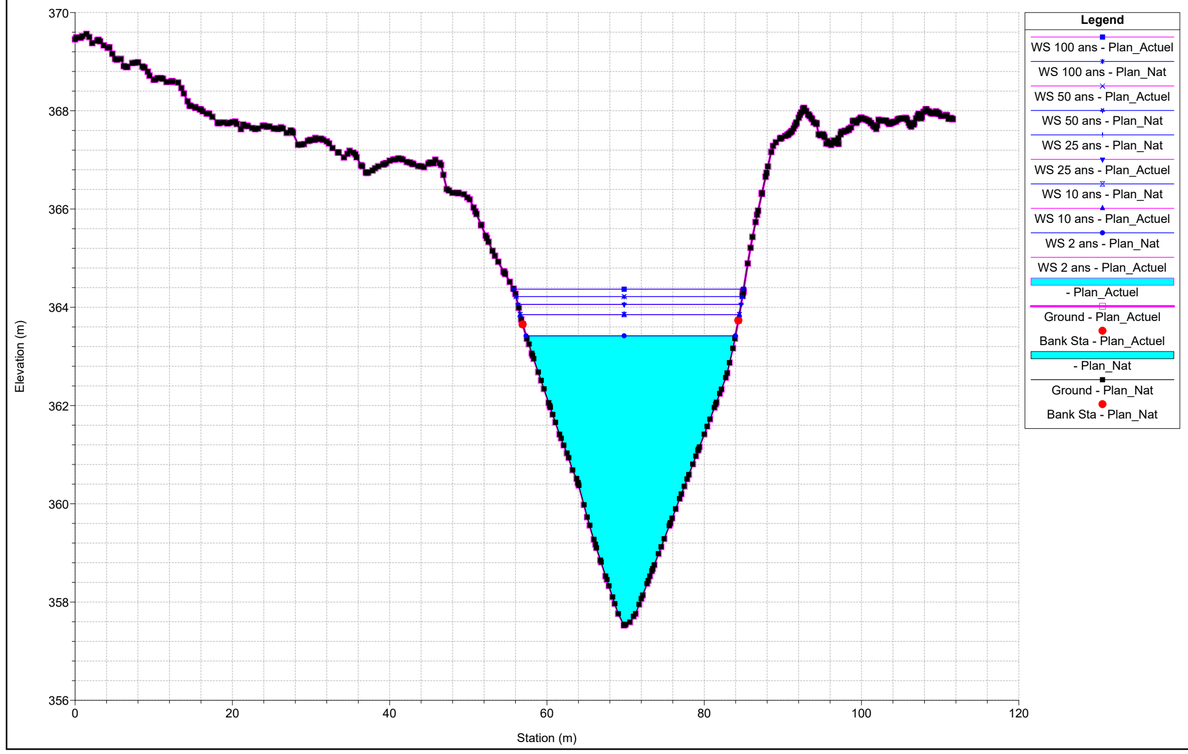


HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 193



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 190



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
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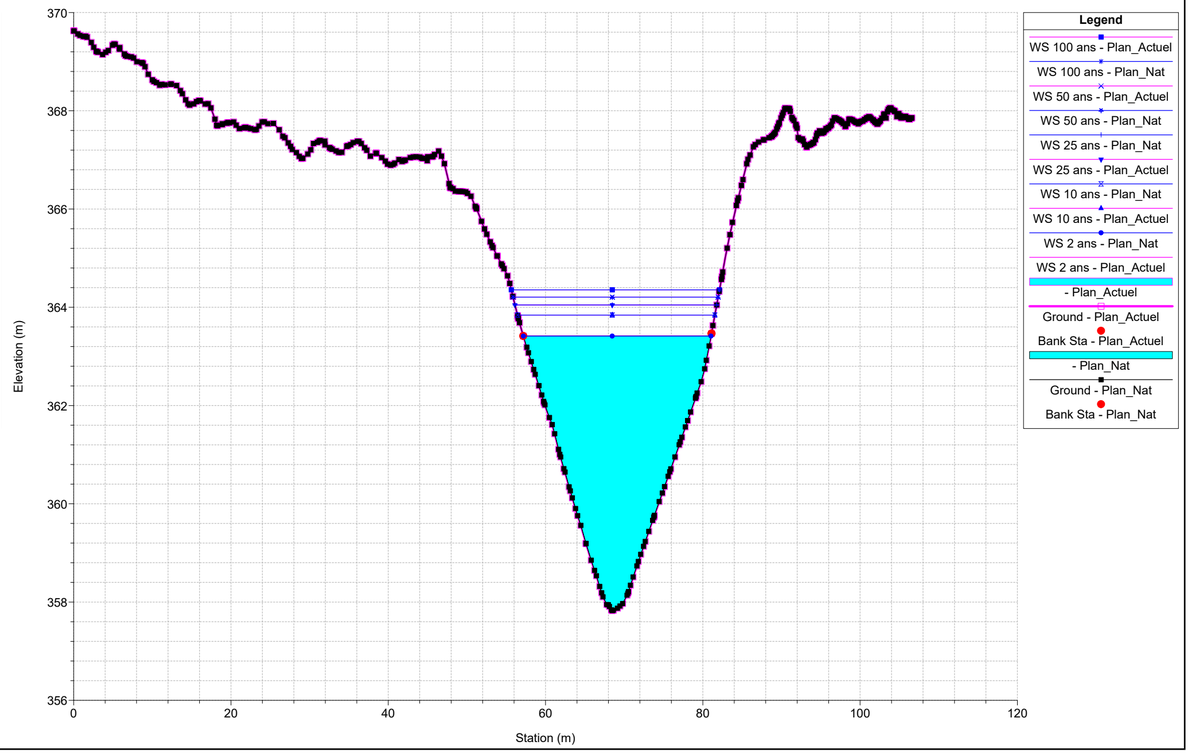

HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
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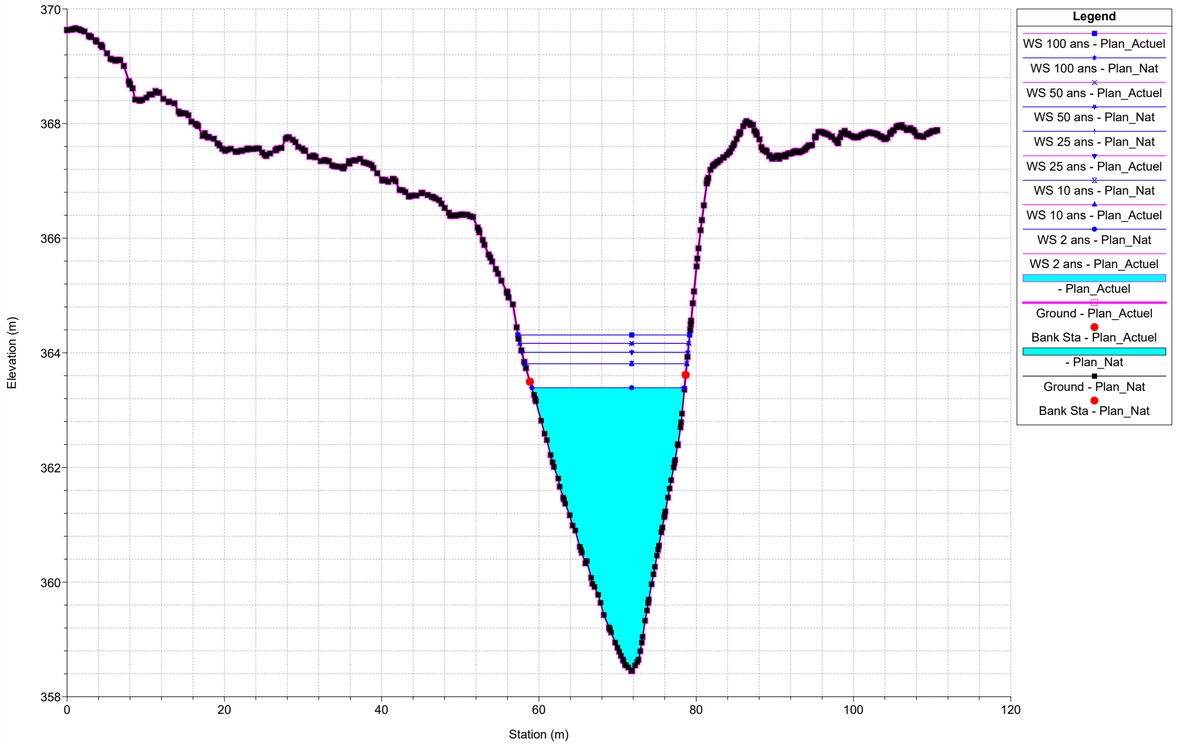

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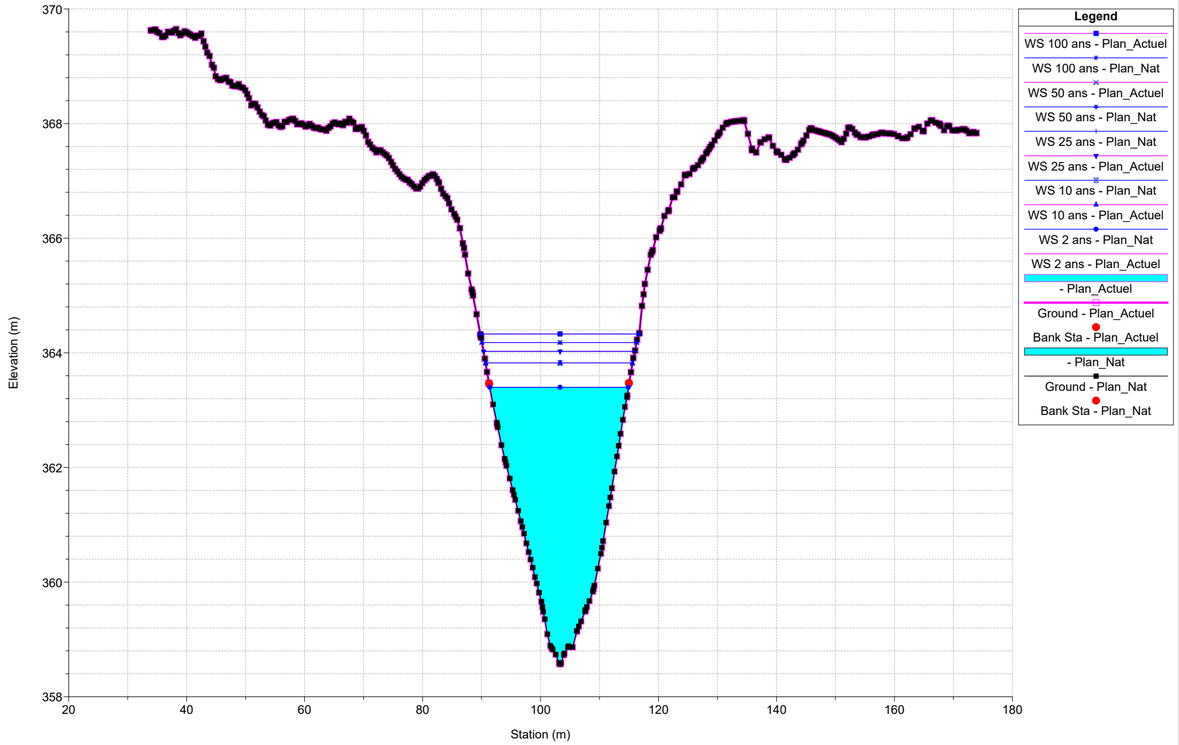
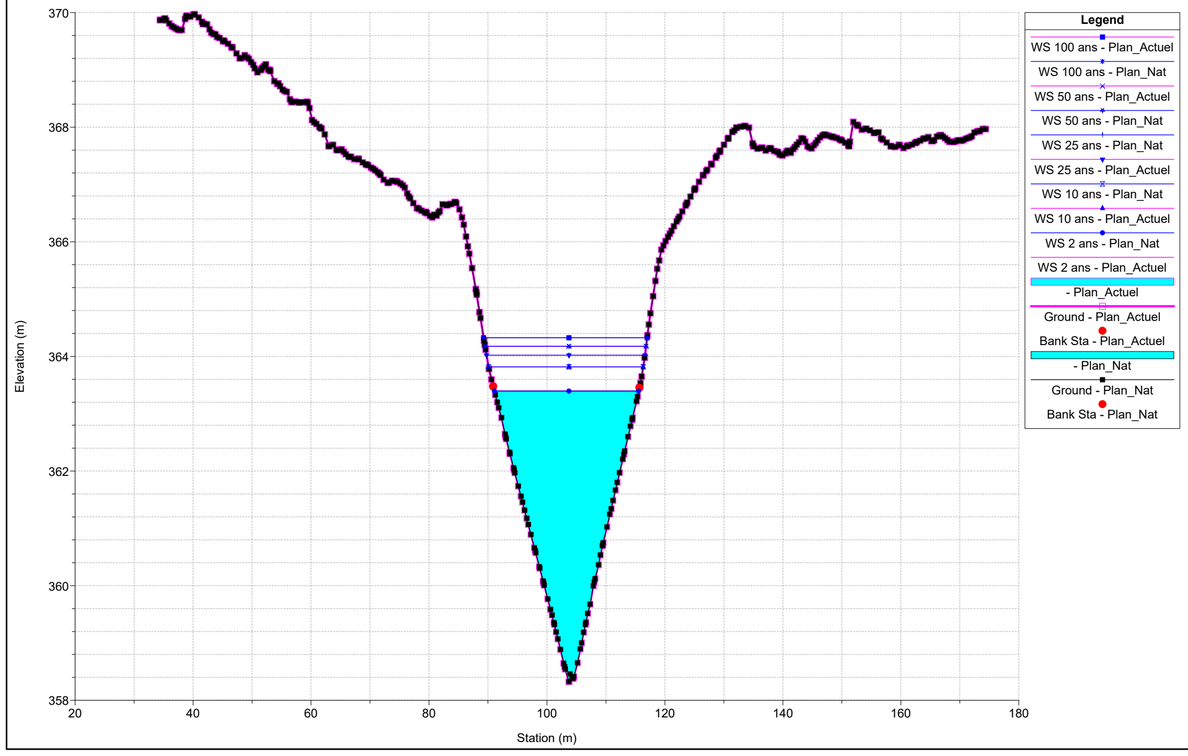
RS = 175



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 170



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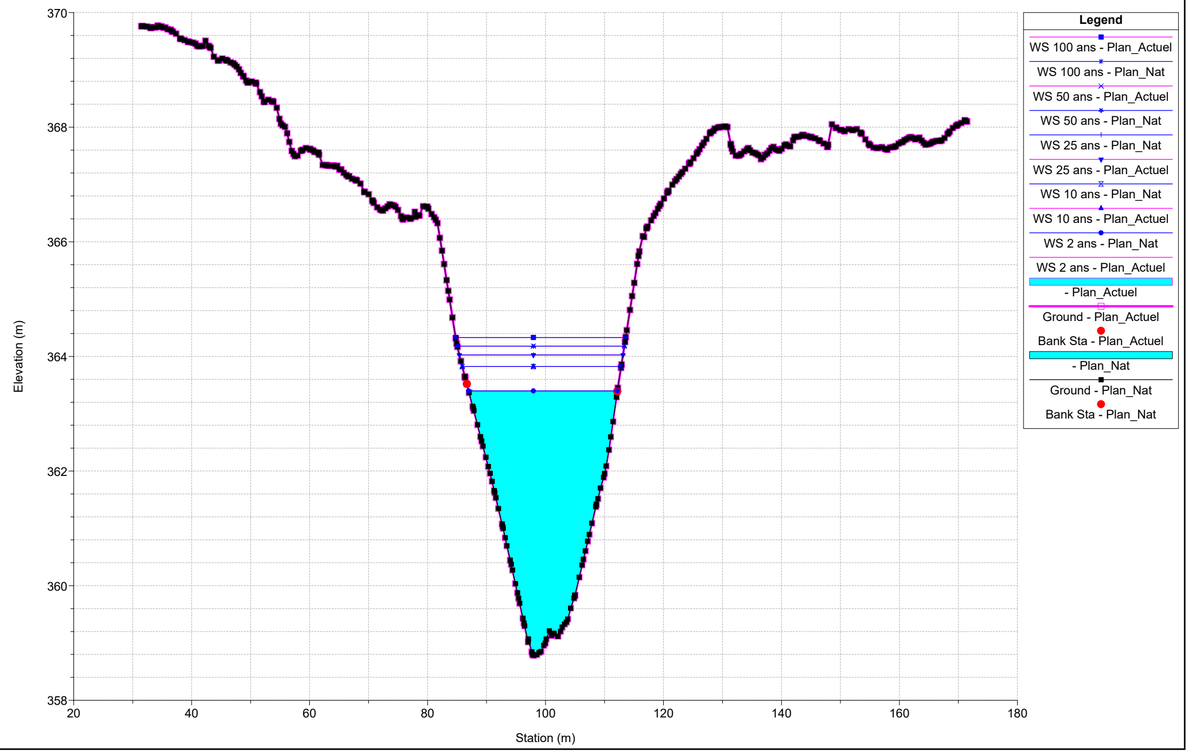

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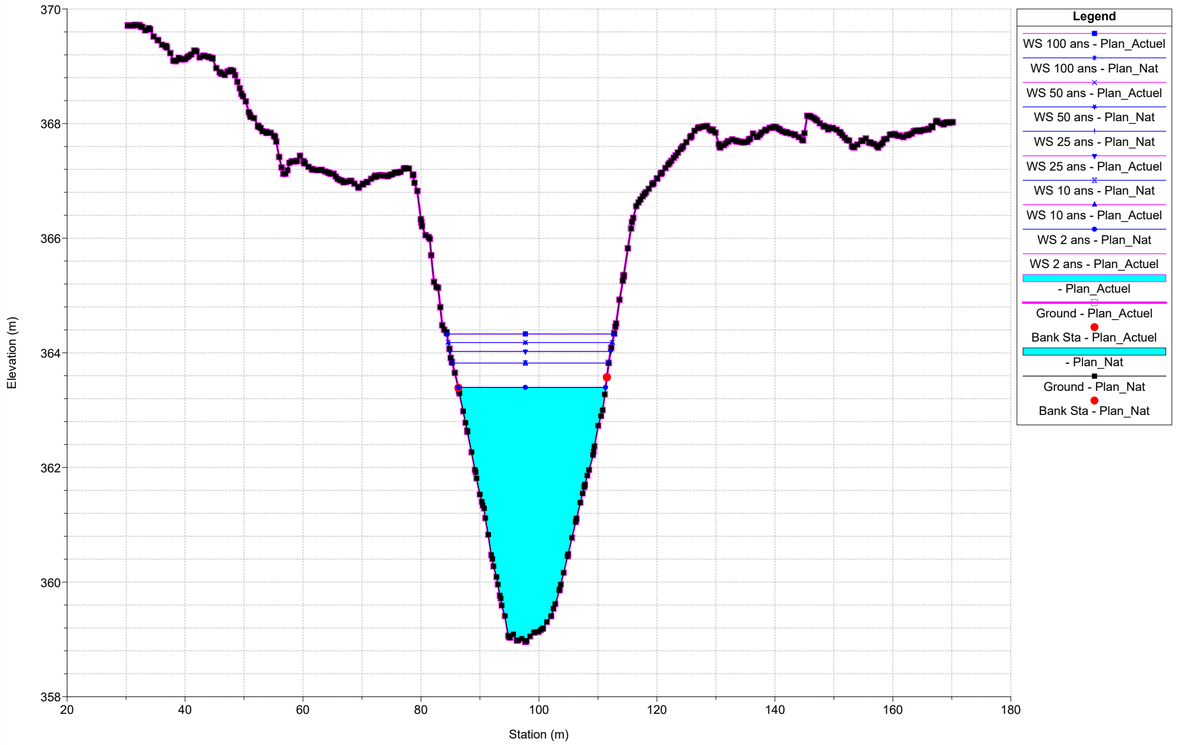

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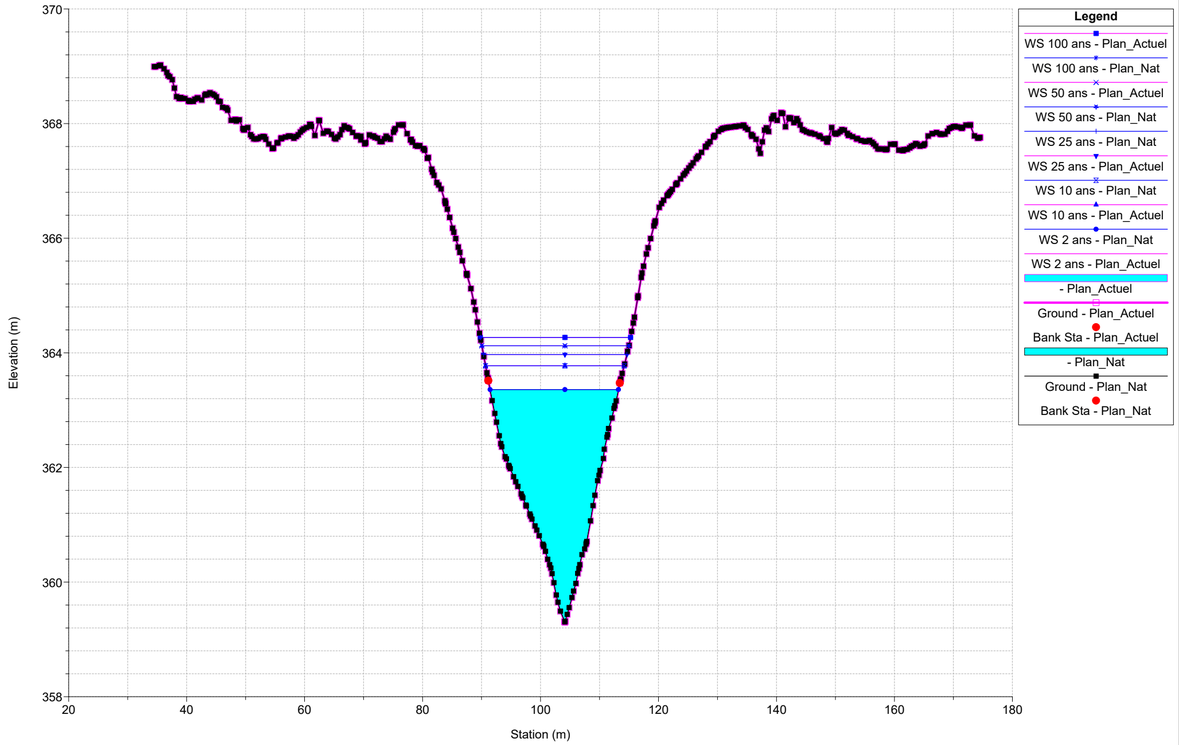
RS = 155



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
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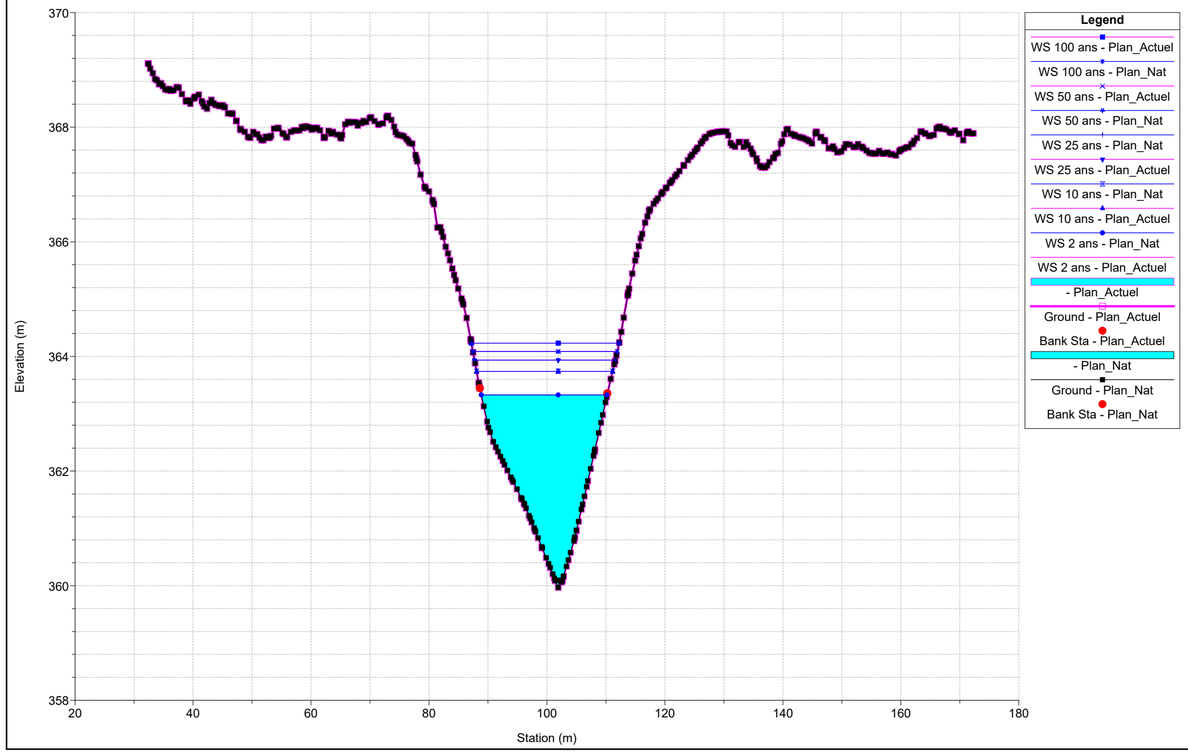

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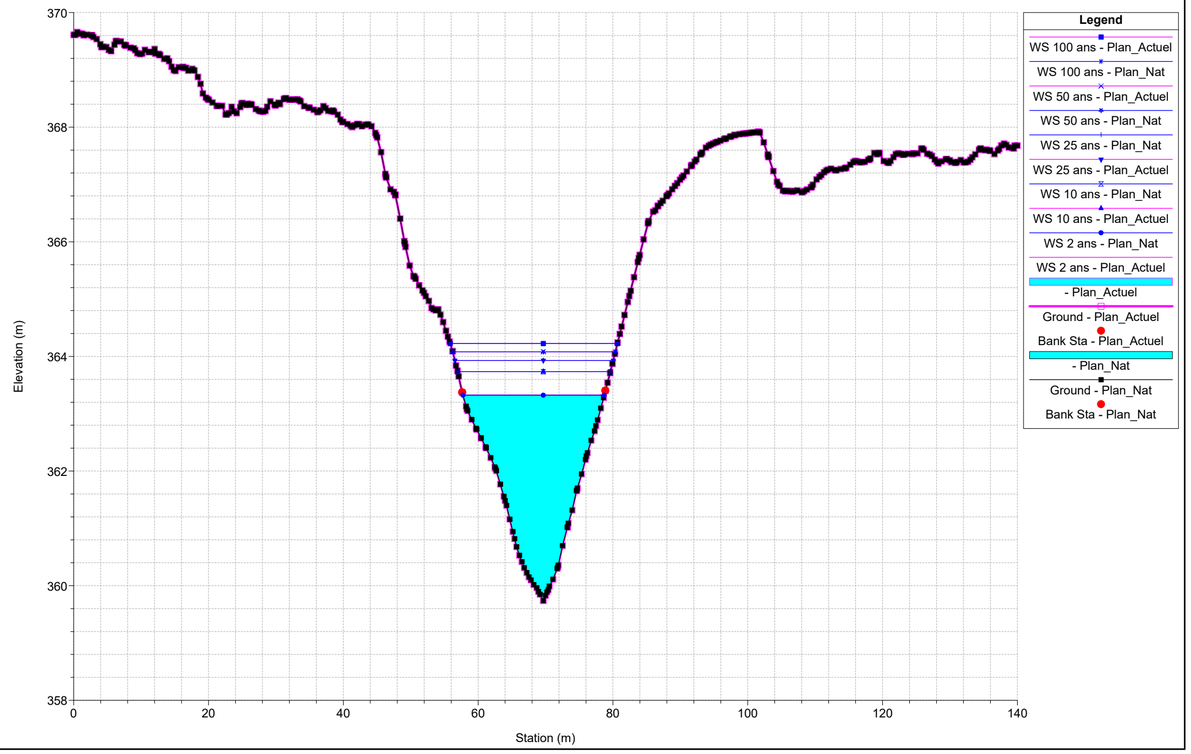

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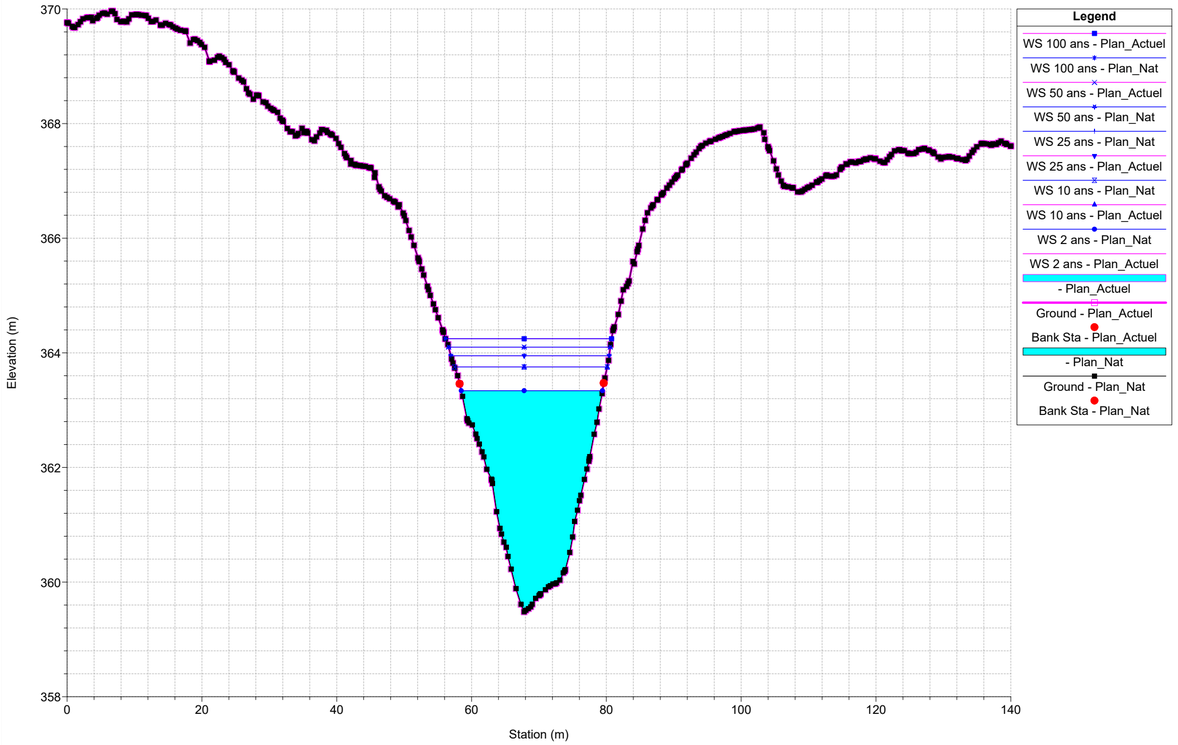
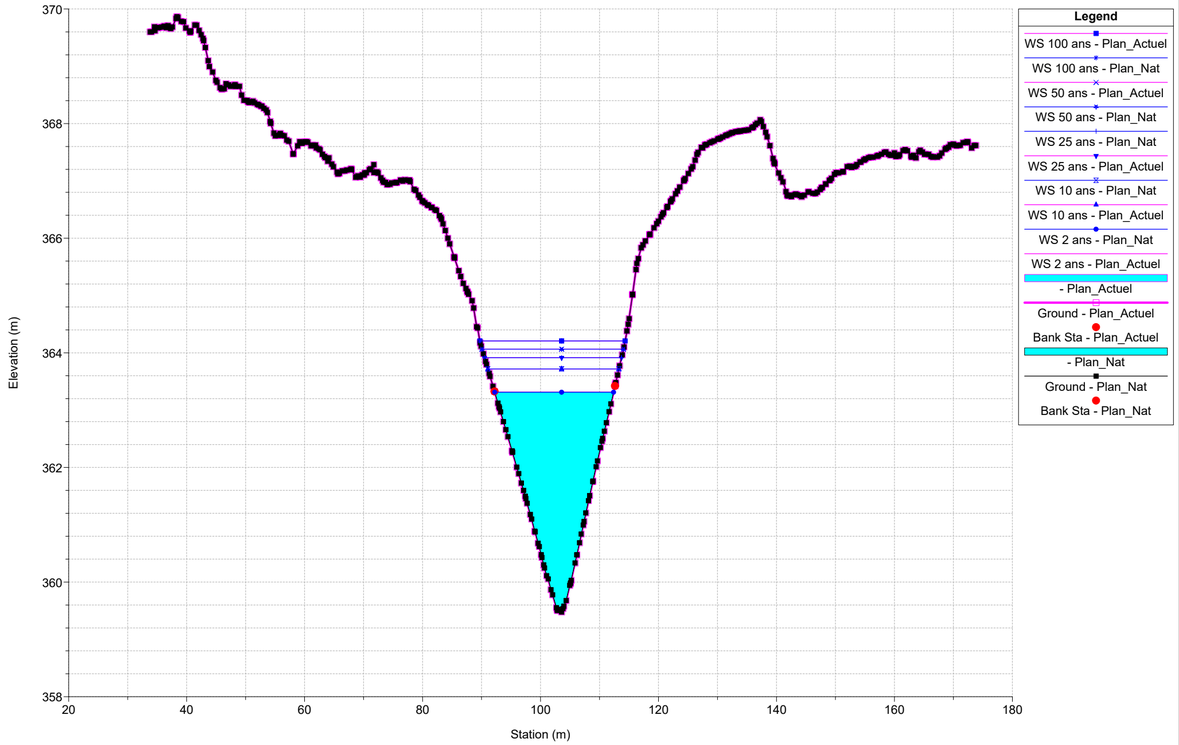
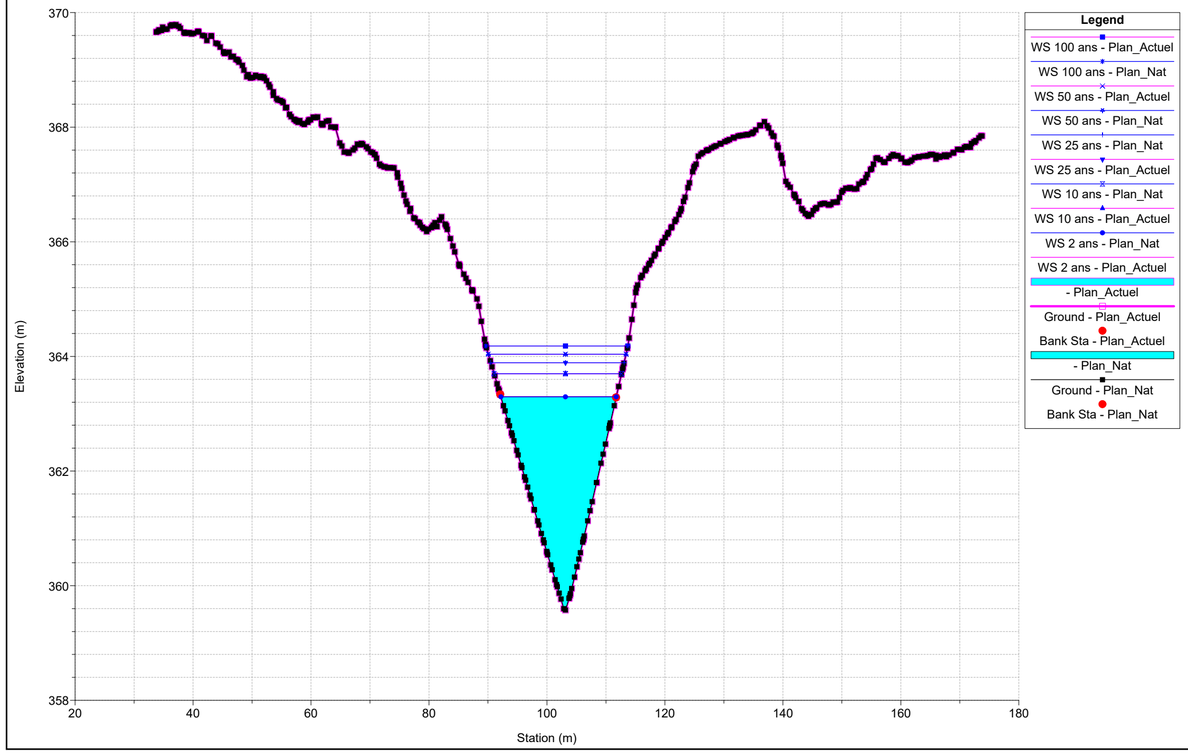


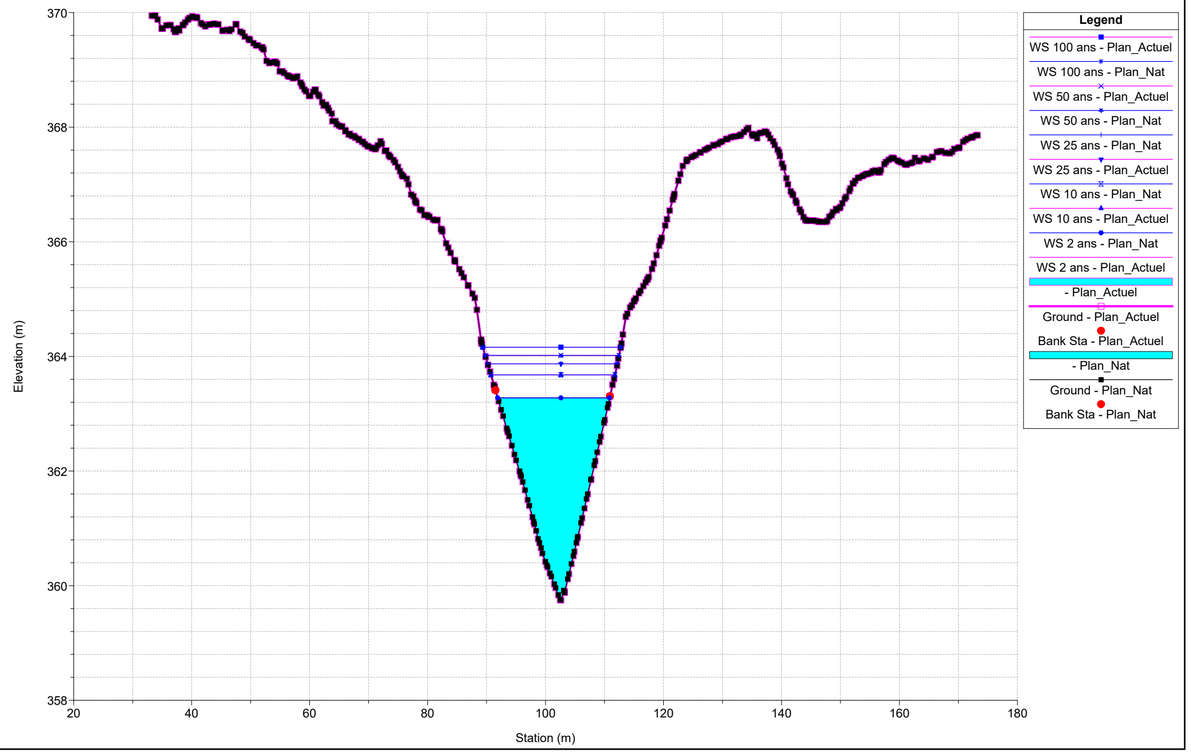
HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 130



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 125

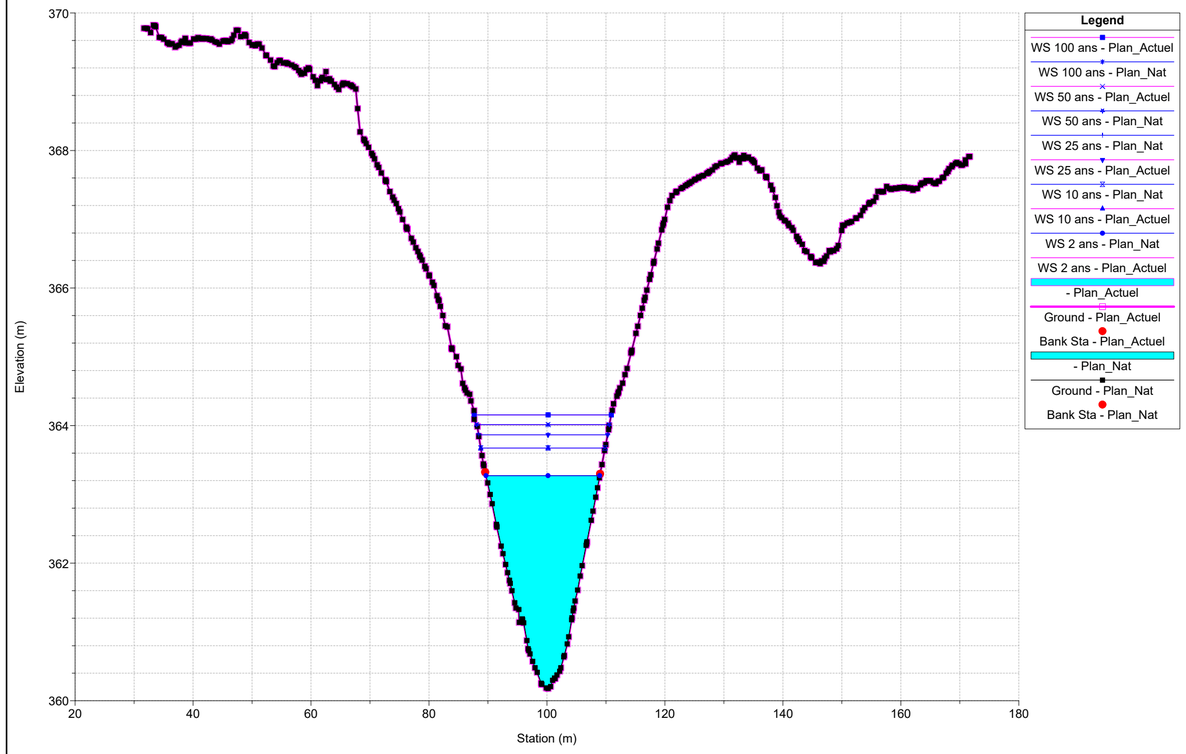


HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel
RS = 120



HEC-RAS Model Plan: 1) Plan_Nat 2) Plan_Actuel

RS = 115



APPENDIX 6

Hydraulic Tables

HEC-RAS River: Riviere Mistago Reach: KM19

Reach	River Sta	Profile	Plan	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)	
KM19	415	2 ans	Plan_Nat	49.44	359.55	364.91	361.89	364.93	0.000143	0.68	72.29	26.73	0.13
KM19	415	2 ans	Plan_Actuel	49.44	359.55	364.91	361.88	364.93	0.000144	0.68	72.18	26.72	0.13
KM19	415	5 ans	Plan_Nat	59.83	359.55	365.14	362.10	365.17	0.000163	0.76	78.55	27.92	0.14
KM19	415	5 ans	Plan_Actuel	59.83	359.55	365.13	362.10	365.16	0.000164	0.76	78.44	27.90	0.14
KM19	415	10 ans	Plan_Nat	68.73	359.55	365.32	362.26	365.35	0.000176	0.82	83.60	28.77	0.15
KM19	415	10 ans	Plan_Actuel	68.73	359.55	365.31	362.26	365.35	0.000177	0.83	83.49	28.75	0.15
KM19	415	20 ans	Plan_Nat	77.14	359.55	365.48	362.39	365.52	0.000187	0.88	88.28	29.51	0.16
KM19	415	20 ans	Plan_Actuel	77.14	359.55	365.47	362.39	365.51	0.000188	0.88	88.18	29.50	0.16
KM19	415	25 ans	Plan_Nat	79.12	359.55	365.52	362.42	365.56	0.000189	0.89	89.42	29.70	0.16
KM19	415	25 ans	Plan_Actuel	79.12	359.55	365.51	362.41	365.55	0.000190	0.89	89.32	29.69	0.16
KM19	415	50 ans	Plan_Nat	87.52	359.55	365.67	362.53	365.71	0.000199	0.94	93.93	30.64	0.16
KM19	415	50 ans	Plan_Actuel	87.52	359.55	365.66	362.52	365.71	0.000200	0.94	93.84	30.62	0.16
KM19	415	100 ans	Plan_Nat	95.93	359.55	365.81	362.63	365.86	0.000208	0.99	98.42	31.85	0.17
KM19	415	100 ans	Plan_Actuel	95.93	359.55	365.81	362.64	365.86	0.000209	0.99	98.33	31.81	0.17
KM19	410	2 ans	Plan_Nat	49.44	359.69	364.91		364.93	0.000152	0.69	71.88	28.11	0.14
KM19	410	2 ans	Plan_Actuel	49.44	359.69	364.90		364.93	0.000152	0.69	71.76	28.09	0.14
KM19	410	5 ans	Plan_Nat	59.83	359.69	365.14		365.17	0.000168	0.76	78.44	29.15	0.15
KM19	410	5 ans	Plan_Actuel	59.83	359.69	365.13		365.16	0.000169	0.76	78.32	29.13	0.15
KM19	410	10 ans	Plan_Nat	68.73	359.69	365.32		365.35	0.000180	0.82	83.72	30.07	0.15
KM19	410	10 ans	Plan_Actuel	68.73	359.69	365.31		365.35	0.000181	0.82	83.61	30.05	0.15
KM19	410	20 ans	Plan_Nat	77.14	359.69	365.48		365.52	0.000190	0.88	88.63	30.97	0.16
KM19	410	20 ans	Plan_Actuel	77.14	359.69	365.47		365.51	0.000191	0.88	88.52	30.95	0.16
KM19	410	25 ans	Plan_Nat	79.12	359.69	365.51		365.56	0.000192	0.89	89.82	31.19	0.16
KM19	410	25 ans	Plan_Actuel	79.12	359.69	365.51		365.55	0.000193	0.89	89.72	31.17	0.16
KM19	410	50 ans	Plan_Nat	87.52	359.69	365.66		365.71	0.000201	0.94	94.56	32.13	0.16
KM19	410	50 ans	Plan_Actuel	87.52	359.69	365.66		365.71	0.000201	0.94	94.46	32.11	0.17
KM19	410	100 ans	Plan_Nat	95.93	359.69	365.81		365.86	0.000209	0.98	99.25	33.12	0.17
KM19	410	100 ans	Plan_Actuel	95.93	359.69	365.81		365.86	0.000209	0.98	99.17	33.09	0.17
KM19	405	2 ans	Plan_Nat	49.44	360.06	364.91		364.93	0.000115	0.62	79.14	29.39	0.12
KM19	405	2 ans	Plan_Actuel	49.44	360.06	364.91		364.93	0.000115	0.63	79.02	29.37	0.12
KM19	405	5 ans	Plan_Nat	59.83	360.06	365.14		365.17	0.000129	0.70	86.06	30.75	0.13
KM19	405	5 ans	Plan_Actuel	59.83	360.06	365.14		365.16	0.000129	0.70	85.93	30.73	0.13
KM19	405	10 ans	Plan_Nat	68.73	360.06	365.32		365.35	0.000139	0.75	91.64	31.81	0.14
KM19	405	10 ans	Plan_Actuel	68.73	360.06	365.32		365.34	0.000140	0.75	91.53	31.79	0.14
KM19	405	20 ans	Plan_Nat	77.14	360.06	365.48		365.51	0.000148	0.80	96.85	32.77	0.14
KM19	405	20 ans	Plan_Actuel	77.14	360.06	365.48		365.51	0.000148	0.80	96.73	32.75	0.14
KM19	405	25 ans	Plan_Nat	79.12	360.06	365.52		365.55	0.000149	0.81	98.11	33.00	0.14
KM19	405	25 ans	Plan_Actuel	79.12	360.06	365.52		365.55	0.000150	0.82	98.00	32.98	0.14
KM19	405	50 ans	Plan_Nat	87.52	360.06	365.67		365.71	0.000157	0.86	103.14	33.99	0.15
KM19	405	50 ans	Plan_Actuel	87.52	360.06	365.67		365.70	0.000158	0.86	103.03	33.96	0.15
KM19	405	100 ans	Plan_Nat	95.93	360.06	365.81		365.85	0.000165	0.90	108.10	34.92	0.15
KM19	405	100 ans	Plan_Actuel	95.93	360.06	365.81		365.85	0.000165	0.91	108.01	34.90	0.15
KM19	400	2 ans	Plan_Nat	49.44	360.52	364.91		364.93	0.000096	0.58	85.39	31.33	0.11
KM19	400	2 ans	Plan_Actuel	49.44	360.52	364.91		364.92	0.000096	0.58	85.26	31.31	0.11
KM19	400	5 ans	Plan_Nat	59.83	360.52	365.14		365.16	0.000107	0.65	92.77	32.71	0.12
KM19	400	5 ans	Plan_Actuel	59.83	360.52	365.14		365.16	0.000108	0.65	92.63	32.68	0.12
KM19	400	10 ans	Plan_Nat	68.73	360.52	365.32		365.35	0.000116	0.70	98.72	33.78	0.13
KM19	400	10 ans	Plan_Actuel	68.73	360.52	365.32		365.34	0.000117	0.70	98.59	33.76	0.13
KM19	400	20 ans	Plan_Nat	77.14	360.52	365.48		365.51	0.000124	0.75	104.25	34.75	0.13
KM19	400	20 ans	Plan_Actuel	77.14	360.52	365.48		365.51	0.000124	0.75	104.13	34.73	0.13
KM19	400	25 ans	Plan_Nat	79.12	360.52	365.52		365.55	0.000125	0.76	105.59	34.98	0.13
KM19	400	25 ans	Plan_Actuel	79.12	360.52	365.52		365.55	0.000126	0.76	105.48	34.97	0.13
KM19	400	50 ans	Plan_Nat	87.52	360.52	365.67		365.70	0.000132	0.80	110.92	35.88	0.14
KM19	400	50 ans	Plan_Actuel	87.52	360.52	365.67		365.70	0.000133	0.80	110.81	35.86	0.14
KM19	400	100 ans	Plan_Nat	95.93	360.52	365.82		365.85	0.000139	0.84	116.19	36.96	0.14
KM19	400	100 ans	Plan_Actuel	95.93	360.52	365.81		365.85	0.000139	0.84	116.10	36.95	0.14
KM19	395	2 ans	Plan_Nat	49.44	359.78	364.91		364.93	0.000082	0.54	92.15	33.37	0.10
KM19	395	2 ans	Plan_Actuel	49.44	359.78	364.91		364.92	0.000082	0.54	92.01	33.35	0.10
KM19	395	5 ans	Plan_Nat	59.83	359.78	365.14		365.16	0.000092	0.60	100.01	34.78	0.11
KM19	395	5 ans	Plan_Actuel	59.83	359.78	365.14		365.16	0.000093	0.60	99.87	34.75	0.11
KM19	395	10 ans	Plan_Nat	68.73	359.78	365.32		365.34	0.000100	0.65	106.34	35.87	0.12
KM19	395	10 ans	Plan_Actuel	68.73	359.78	365.32		365.34	0.000101	0.65	106.21	35.84	0.12
KM19	395	20 ans	Plan_Nat	77.14	359.78	365.48		365.51	0.000107	0.69	112.23	36.85	0.12
KM19	395	20 ans	Plan_Actuel	77.14	359.78	365.48		365.51	0.000107	0.69	112.10	36.83	0.12
KM19	395	25 ans	Plan_Nat	79.12	359.78	365.52		365.55	0.000108	0.70	113.65	37.08	0.12
KM19	395	25 ans	Plan_Actuel	79.12	359.78	365.52		365.55	0.000109	0.70	113.53	37.06	0.12
KM19	395	50 ans	Plan_Nat	87.52	359.78	365.67		365.70	0.000114	0.74	119.31	37.99	0.13
KM19	395	50 ans	Plan_Actuel	87.52	359.78	365.67		365.70	0.000115	0.74	119.19	37.97	0.13
KM19	395	100 ans	Plan_Nat	95.93	359.78	365.82		365.85	0.000120	0.78	124.89	38.94	0.13
KM19	395	100 ans	Plan_Actuel	95.93	359.78	365.82		365.85	0.000120	0.78	124.79	38.93	0.13
KM19	385	2 ans	Plan_Nat	49.44	358.60	364.92		364.93	0.000032	0.38	130.35	39.58	0.07
KM19	385	2 ans	Plan_Actuel	49.44	358.60	364.91		364.92	0.000033	0.38	130.18	39.54	0.07
KM19	385	5 ans	Plan_Nat	59.83	358.60	365.15		365.16	0.000038	0.43	139.80	42.00	0.07
KM19	385	5 ans	Plan_Actuel	59.83	358.60	365.15		365.15	0.000038	0.43	139.63	41.96	0.07
KM19	385	10 ans	Plan_Nat	68.73	358.60	365.33		365.34	0.000043	0.47	147.54	43.86	0.08
KM19	385	10 ans	Plan_Actuel	68.73	358.60	365.33		365.34	0.000043	0.47	147.37	43.82	0.08
KM19	385	20 ans	Plan_Nat	77.14	358.60	365.49		365.51	0.000046	0.50	154.80	45.45	0.08
KM19	385	20 ans	Plan_Actuel	77.14	358.60	365.49		365.50	0.000047	0.50	154.64	45.42	0.08
KM19	385	25 ans	Plan_Nat	79.12	358.60	365.53		365.54	0.000047	0.51	156.56	45.81	0.08
KM19	385	25 ans	Plan_Actuel	79.12	358.60	365.53		365.54	0.000047	0.51	156.42	45.78	0.08

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	385	50 ans	Plan_Nat	87.52	358.60	365.68		365.70	0.000051	0.54	163.62	47.25	0.09
KM19	385	50 ans	Plan_Actuel	87.52	358.60	365.68		365.69	0.000051	0.54	163.47	47.23	0.09
KM19	385	100 ans	Plan_Nat	95.93	358.60	365.83		365.85	0.000054	0.57	170.69	50.80	0.09
KM19	385	100 ans	Plan_Actuel	95.93	358.60	365.83		365.84	0.000054	0.57	170.56	50.67	0.09
KM19	375	2 ans	Plan_Nat	49.44	355.60	364.92		364.92	0.000008	0.23	211.28	46.62	0.04
KM19	375	2 ans	Plan_Actuel	49.44	355.60	364.92		364.92	0.000008	0.23	211.09	46.59	0.04
KM19	375	5 ans	Plan_Nat	59.83	355.60	365.15		365.16	0.000011	0.27	222.37	48.70	0.04
KM19	375	5 ans	Plan_Actuel	59.83	355.60	365.15		365.15	0.000011	0.27	222.16	48.67	0.04
KM19	375	10 ans	Plan_Nat	68.73	355.60	365.33		365.34	0.000012	0.30	231.31	50.31	0.04
KM19	375	10 ans	Plan_Actuel	68.73	355.60	365.33		365.33	0.000012	0.30	231.13	50.28	0.04
KM19	375	20 ans	Plan_Nat	77.14	355.60	365.50		365.50	0.000014	0.32	239.65	51.77	0.05
KM19	375	20 ans	Plan_Actuel	77.14	355.60	365.49		365.50	0.000014	0.32	239.47	51.74	0.05
KM19	375	25 ans	Plan_Nat	79.12	355.60	365.54		365.54	0.000014	0.33	241.66	52.11	0.05
KM19	375	25 ans	Plan_Actuel	79.12	355.60	365.53		365.54	0.000014	0.33	241.49	52.09	0.05
KM19	375	50 ans	Plan_Nat	87.52	355.60	365.69		365.69	0.000016	0.35	249.72	54.09	0.05
KM19	375	50 ans	Plan_Actuel	87.52	355.60	365.69		365.69	0.000016	0.35	249.56	54.01	0.05
KM19	375	100 ans	Plan_Nat	95.93	355.60	365.83		365.84	0.000017	0.38	257.87	56.91	0.05
KM19	375	100 ans	Plan_Actuel	95.93	355.60	365.83		365.84	0.000017	0.38	257.73	56.87	0.05
KM19	369	2 ans	Plan_Nat	49.44	355.33	364.92		364.92	0.000004	0.18	272.68	49.35	0.02
KM19	369	2 ans	Plan_Actuel	49.44	355.33	364.92		364.92	0.000004	0.18	272.47	49.27	0.02
KM19	369	5 ans	Plan_Nat	59.83	355.33	365.15		365.16	0.000005	0.21	284.69	53.84	0.03
KM19	369	5 ans	Plan_Actuel	59.83	355.33	365.15		365.15	0.000005	0.21	284.46	53.76	0.03
KM19	369	10 ans	Plan_Nat	68.73	355.33	365.34		365.34	0.000006	0.23	294.74	57.17	0.03
KM19	369	10 ans	Plan_Actuel	68.73	355.33	365.33		365.33	0.000006	0.23	294.53	57.11	0.03
KM19	369	20 ans	Plan_Nat	77.14	355.33	365.50		365.50	0.000007	0.26	304.29	59.64	0.03
KM19	369	20 ans	Plan_Actuel	77.14	355.33	365.50		365.50	0.000007	0.26	304.08	59.59	0.03
KM19	369	25 ans	Plan_Nat	79.12	355.33	365.54		365.54	0.000007	0.26	306.62	60.23	0.03
KM19	369	25 ans	Plan_Actuel	79.12	355.33	365.53		365.54	0.000007	0.26	306.42	60.18	0.03
KM19	369	50 ans	Plan_Nat	87.52	355.33	365.69		365.69	0.000008	0.28	315.97	62.52	0.04
KM19	369	50 ans	Plan_Actuel	87.52	355.33	365.69		365.69	0.000008	0.28	315.78	62.47	0.04
KM19	369	100 ans	Plan_Nat	95.93	355.33	365.84		365.84	0.000009	0.30	325.30	64.77	0.04
KM19	369	100 ans	Plan_Actuel	95.93	355.33	365.83		365.84	0.000009	0.30	325.14	64.73	0.04
KM19	366	2 ans	Plan_Nat	49.44	355.60	364.92		364.92	0.000004	0.18	275.22	54.01	0.03
KM19	366	2 ans	Plan_Actuel	49.44	355.60	364.92		364.92	0.000004	0.18	274.99	53.93	0.03
KM19	366	5 ans	Plan_Nat	59.83	355.60	365.15		365.16	0.000005	0.21	288.30	58.21	0.03
KM19	366	5 ans	Plan_Actuel	59.83	355.60	365.15		365.15	0.000005	0.21	288.06	58.15	0.03
KM19	366	10 ans	Plan_Nat	68.73	355.60	365.34		365.34	0.000006	0.23	299.08	60.93	0.03
KM19	366	10 ans	Plan_Actuel	68.73	355.60	365.33		365.33	0.000006	0.23	298.86	60.87	0.03
KM19	366	20 ans	Plan_Nat	77.14	355.60	365.50		365.50	0.000007	0.25	309.24	63.38	0.03
KM19	366	20 ans	Plan_Actuel	77.14	355.60	365.50		365.50	0.000007	0.25	309.02	63.33	0.03
KM19	366	25 ans	Plan_Nat	79.12	355.60	365.54		365.54	0.000007	0.26	311.71	63.95	0.03
KM19	366	25 ans	Plan_Actuel	79.12	355.60	365.53		365.54	0.000007	0.26	311.50	63.90	0.03
KM19	366	50 ans	Plan_Nat	87.52	355.60	365.69		365.69	0.000008	0.28	321.63	66.24	0.04
KM19	366	50 ans	Plan_Actuel	87.52	355.60	365.69		365.69	0.000008	0.28	321.43	66.20	0.04
KM19	366	100 ans	Plan_Nat	95.93	355.60	365.84		365.84	0.000009	0.29	331.51	68.50	0.04
KM19	366	100 ans	Plan_Actuel	95.93	355.60	365.83		365.84	0.000009	0.30	331.34	68.46	0.04
KM19	355	2 ans	Plan_Nat	49.44	355.51	364.92		364.92	0.000004	0.17	296.68	60.19	0.02
KM19	355	2 ans	Plan_Actuel	49.44	355.51	364.92		364.92	0.000004	0.17	296.43	60.13	0.02
KM19	355	5 ans	Plan_Nat	59.83	355.51	365.15		365.16	0.000005	0.19	311.09	63.59	0.03
KM19	355	5 ans	Plan_Actuel	59.83	355.51	365.15		365.15	0.000005	0.19	310.83	63.53	0.03
KM19	355	10 ans	Plan_Nat	68.73	355.51	365.34		365.34	0.000005	0.21	322.84	66.23	0.03
KM19	355	10 ans	Plan_Actuel	68.73	355.51	365.33		365.33	0.000005	0.21	322.60	66.17	0.03
KM19	355	20 ans	Plan_Nat	77.14	355.51	365.50		365.50	0.000006	0.23	333.87	68.62	0.03
KM19	355	20 ans	Plan_Actuel	77.14	355.51	365.50		365.50	0.000006	0.23	333.63	68.57	0.03
KM19	355	25 ans	Plan_Nat	79.12	355.51	365.54		365.54	0.000006	0.24	336.54	69.19	0.03
KM19	355	25 ans	Plan_Actuel	79.12	355.51	365.53		365.54	0.000006	0.24	336.32	69.14	0.03
KM19	355	50 ans	Plan_Nat	87.52	355.51	365.69		365.69	0.000007	0.26	347.26	71.39	0.03
KM19	355	50 ans	Plan_Actuel	87.52	355.51	365.69		365.69	0.000007	0.26	347.04	71.35	0.03
KM19	355	100 ans	Plan_Nat	95.93	355.51	365.84		365.84	0.000008	0.27	357.89	73.54	0.04
KM19	355	100 ans	Plan_Actuel	95.93	355.51	365.83		365.84	0.000008	0.27	357.70	73.51	0.04
KM19	353	2 ans	Plan_Nat	49.44	355.40	364.92		364.92	0.000003	0.16	303.00	61.03	0.02
KM19	353	2 ans	Plan_Actuel	49.44	355.40	364.92		364.92	0.000004	0.16	302.75	60.97	0.02
KM19	353	5 ans	Plan_Nat	59.83	355.40	365.15		365.16	0.000004	0.19	317.61	64.44	0.03
KM19	353	5 ans	Plan_Actuel	59.83	355.40	365.15		365.15	0.000004	0.19	317.34	64.38	0.03
KM19	353	10 ans	Plan_Nat	68.73	355.40	365.34		365.34	0.000005	0.21	329.51	67.08	0.03
KM19	353	10 ans	Plan_Actuel	68.73	355.40	365.33		365.33	0.000005	0.21	329.26	67.02	0.03
KM19	353	20 ans	Plan_Nat	77.14	355.40	365.50		365.50	0.000006	0.23	340.67	69.46	0.03
KM19	353	20 ans	Plan_Actuel	77.14	355.40	365.50		365.50	0.000006	0.23	340.44	69.41	0.03
KM19	353	25 ans	Plan_Nat	79.12	355.40	365.54		365.54	0.000006	0.23	343.38	70.02	0.03
KM19	353	25 ans	Plan_Actuel	79.12	355.40	365.53		365.54	0.000006	0.23	343.15	69.97	0.03
KM19	353	50 ans	Plan_Nat	87.52	355.40	365.69		365.69	0.000007	0.25	354.23	72.22	0.03
KM19	353	50 ans	Plan_Actuel	87.52	355.40	365.69		365.69	0.000007	0.25	354.01	72.18	0.03
KM19	353	100 ans	Plan_Nat	95.93	355.40	365.84		365.84	0.000007	0.27	364.97	74.36	0.04
KM19	353	100 ans	Plan_Actuel	95.93	355.40	365.83		365.84	0.000007	0.27	364.79	74.33	0.04
KM19	347	2 ans	Plan_Nat	49.44	355.25	364.92		364.92	0.000003	0.15	324.79	62.09	0.02
KM19	347	2 ans	Plan_Actuel	49.44	355.25	364.92		364.92	0.000003	0.15	324.53	62.03	0.02
KM19	347	5 ans	Plan_Nat	59.83	355.25	365.15		365.16	0.000004	0.18	339.63	65.41	0.02
KM19	347	5 ans	Plan_Actuel	59.83	355.25	365.15		365.15	0.000004	0.18	339.36	65.36	0.02
KM19	347	10 ans	Plan_Nat	68.73	355.25	365.34		365.34	0.000004	0.20	351.71	68.00	0.03

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	347	10 ans	Plan_Actuel	68.73	355.25	365.33		365.33	0.000004	0.20	351.46	67.95	0.03
KM19	347	20 ans	Plan_Nat	77.14	355.25	365.50		365.50	0.000005	0.21	363.02	70.35	0.03
KM19	347	20 ans	Plan_Actuel	77.14	355.25	365.50		365.50	0.000005	0.21	362.78	70.30	0.03
KM19	347	25 ans	Plan_Nat	79.12	355.25	365.54		365.54	0.000005	0.22	365.77	70.89	0.03
KM19	347	25 ans	Plan_Actuel	79.12	355.25	365.53		365.54	0.000005	0.22	365.54	70.85	0.03
KM19	347	50 ans	Plan_Nat	87.52	355.25	365.69		365.69	0.000006	0.23	376.74	73.02	0.03
KM19	347	50 ans	Plan_Actuel	87.52	355.25	365.69		365.69	0.000006	0.23	376.52	72.98	0.03
KM19	347	100 ans	Plan_Nat	95.93	355.25	365.84		365.84	0.000006	0.25	387.61	75.08	0.03
KM19	347	100 ans	Plan_Actuel	95.93	355.25	365.83		365.84	0.000006	0.25	387.42	75.04	0.03
KM19	344	2 ans	Plan_Nat	49.44	355.36	364.92		364.92	0.000004	0.16	302.18	60.35	0.02
KM19	344	2 ans	Plan_Actuel	49.44	355.36	364.92		364.92	0.000004	0.16	301.94	60.21	0.02
KM19	344	5 ans	Plan_Nat	59.83	355.36	365.15		365.16	0.000005	0.19	316.95	65.25	0.03
KM19	344	5 ans	Plan_Actuel	59.83	355.36	365.15		365.15	0.000005	0.19	316.68	65.19	0.03
KM19	344	10 ans	Plan_Nat	68.73	355.36	365.34		365.34	0.000005	0.21	329.00	67.95	0.03
KM19	344	10 ans	Plan_Actuel	68.73	355.36	365.33		365.33	0.000005	0.21	328.75	67.90	0.03
KM19	344	20 ans	Plan_Nat	77.14	355.36	365.50		365.50	0.000006	0.23	340.31	70.32	0.03
KM19	344	20 ans	Plan_Actuel	77.14	355.36	365.50		365.50	0.000006	0.23	340.07	70.28	0.03
KM19	344	25 ans	Plan_Nat	79.12	355.36	365.54		365.54	0.000006	0.23	343.05	70.87	0.03
KM19	344	25 ans	Plan_Actuel	79.12	355.36	365.53		365.54	0.000006	0.23	342.82	70.83	0.03
KM19	344	50 ans	Plan_Nat	87.52	355.36	365.69		365.69	0.000007	0.25	354.01	72.95	0.03
KM19	344	50 ans	Plan_Actuel	87.52	355.36	365.69		365.69	0.000007	0.25	353.79	72.90	0.03
KM19	344	100 ans	Plan_Nat	95.93	355.36	365.84		365.84	0.000008	0.27	364.86	74.99	0.04
KM19	344	100 ans	Plan_Actuel	95.93	355.36	365.83		365.84	0.000008	0.27	364.67	74.95	0.04
KM19	334	2 ans	Plan_Nat	49.44	356.41	364.92		364.92	0.000006	0.21	231.21	44.88	0.03
KM19	334	2 ans	Plan_Actuel	49.44	356.41	364.92		364.92	0.000006	0.21	231.03	44.86	0.03
KM19	334	5 ans	Plan_Nat	59.83	356.41	365.15		365.16	0.000008	0.25	242.16	48.02	0.03
KM19	334	5 ans	Plan_Actuel	59.83	356.41	365.15		365.15	0.000008	0.25	241.96	48.01	0.03
KM19	334	10 ans	Plan_Nat	68.73	356.41	365.33		365.34	0.000009	0.27	250.90	48.83	0.04
KM19	334	10 ans	Plan_Actuel	68.73	356.41	365.33		365.33	0.000009	0.28	250.72	48.81	0.04
KM19	334	20 ans	Plan_Nat	77.14	356.41	365.50		365.50	0.000010	0.30	259.09	52.93	0.04
KM19	334	20 ans	Plan_Actuel	77.14	356.41	365.49		365.50	0.000010	0.30	258.91	52.85	0.04
KM19	334	25 ans	Plan_Nat	79.12	356.41	365.54		365.54	0.000010	0.31	261.16	53.82	0.04
KM19	334	25 ans	Plan_Actuel	79.12	356.41	365.53		365.54	0.000010	0.31	260.99	53.75	0.04
KM19	334	50 ans	Plan_Nat	87.52	356.41	365.69		365.69	0.000012	0.33	269.79	60.42	0.04
KM19	334	50 ans	Plan_Actuel	87.52	356.41	365.68		365.69	0.000012	0.33	269.61	60.14	0.04
KM19	334	100 ans	Plan_Nat	95.93	356.41	365.83		365.84	0.000013	0.35	279.05	65.11	0.05
KM19	334	100 ans	Plan_Actuel	95.93	356.41	365.83		365.84	0.000013	0.35	278.89	65.07	0.05
KM19	322	2 ans	Plan_Nat	49.44	358.67	364.92		364.92	0.000018	0.30	163.32	45.31	0.05
KM19	322	2 ans	Plan_Actuel	49.44	358.67	364.91		364.92	0.000018	0.30	163.13	45.28	0.05
KM19	322	5 ans	Plan_Nat	59.83	358.67	365.15		365.16	0.000022	0.34	174.79	52.78	0.06
KM19	322	5 ans	Plan_Actuel	59.83	358.67	365.15		365.15	0.000022	0.34	174.57	52.74	0.06
KM19	322	10 ans	Plan_Nat	68.73	358.67	365.33		365.34	0.000025	0.38	184.62	57.20	0.06
KM19	322	10 ans	Plan_Actuel	68.73	358.67	365.33		365.33	0.000025	0.38	184.41	57.09	0.06
KM19	322	20 ans	Plan_Nat	77.14	358.67	365.49		365.50	0.000027	0.41	194.42	62.94	0.06
KM19	322	20 ans	Plan_Actuel	77.14	358.67	365.49		365.50	0.000027	0.41	194.21	62.88	0.06
KM19	322	25 ans	Plan_Nat	79.12	358.67	365.53		365.54	0.000027	0.41	196.86	63.55	0.06
KM19	322	25 ans	Plan_Actuel	79.12	358.67	365.53		365.54	0.000028	0.41	196.66	63.48	0.06
KM19	322	50 ans	Plan_Nat	87.52	358.67	365.68		365.69	0.000030	0.44	206.71	66.77	0.07
KM19	322	50 ans	Plan_Actuel	87.52	358.67	365.68		365.69	0.000030	0.44	206.51	66.68	0.07
KM19	322	100 ans	Plan_Nat	95.93	358.67	365.83		365.84	0.000032	0.47	216.57	68.37	0.07
KM19	322	100 ans	Plan_Actuel	95.93	358.67	365.83		365.84	0.000032	0.47	216.39	68.34	0.07
KM19	321	2 ans	Plan_Nat	49.44	359.17	364.92		364.92	0.000025	0.32	154.85	51.81	0.06
KM19	321	2 ans	Plan_Actuel	49.44	359.17	364.91		364.92	0.000026	0.32	154.64	51.76	0.06
KM19	321	5 ans	Plan_Nat	59.83	359.17	365.15		365.16	0.000029	0.36	167.25	54.54	0.06
KM19	321	5 ans	Plan_Actuel	59.83	359.17	365.14		365.15	0.000029	0.36	167.02	54.51	0.06
KM19	321	10 ans	Plan_Nat	68.73	359.17	365.33		365.34	0.000032	0.39	177.20	55.95	0.07
KM19	321	10 ans	Plan_Actuel	68.73	359.17	365.33		365.33	0.000032	0.39	176.99	55.93	0.07
KM19	321	20 ans	Plan_Nat	77.14	359.17	365.49		365.50	0.000035	0.42	186.39	57.03	0.07
KM19	321	20 ans	Plan_Actuel	77.14	359.17	365.49		365.50	0.000035	0.42	186.19	57.01	0.07
KM19	321	25 ans	Plan_Nat	79.12	359.17	365.53		365.54	0.000035	0.42	188.60	57.23	0.07
KM19	321	25 ans	Plan_Actuel	79.12	359.17	365.53		365.54	0.000035	0.42	188.41	57.22	0.07
KM19	321	50 ans	Plan_Nat	87.52	359.17	365.68		365.69	0.000037	0.45	197.34	58.03	0.07
KM19	321	50 ans	Plan_Actuel	87.52	359.17	365.68		365.69	0.000037	0.45	197.16	58.01	0.07
KM19	321	100 ans	Plan_Nat	95.93	359.17	365.83		365.84	0.000039	0.47	206.03	61.13	0.08
KM19	321	100 ans	Plan_Actuel	95.93	359.17	365.83		365.84	0.000040	0.47	205.87	61.10	0.08
KM19	316	2 ans	Plan_Nat	49.44	359.80	364.92		364.92	0.000036	0.37	135.06	53.69	0.07
KM19	316	2 ans	Plan_Actuel	49.44	359.80	364.91		364.92	0.000036	0.37	134.84	53.67	0.07
KM19	316	5 ans	Plan_Nat	59.83	359.80	365.15		365.15	0.000040	0.41	147.68	55.26	0.07
KM19	316	5 ans	Plan_Actuel	59.83	359.80	365.14		365.15	0.000040	0.41	147.45	55.23	0.08
KM19	316	10 ans	Plan_Nat	68.73	359.80	365.33		365.34	0.000044	0.45	157.67	55.92	0.08
KM19	316	10 ans	Plan_Actuel	68.73	359.80	365.32		365.33	0.000044	0.45	157.47	55.91	0.08
KM19	316	20 ans	Plan_Nat	77.14	359.80	365.49		365.50	0.000047	0.48	166.80	56.45	0.08
KM19	316	20 ans	Plan_Actuel	77.14	359.80	365.49		365.50	0.000047	0.48	166.60	56.44	0.08
KM19	316	25 ans	Plan_Nat	79.12	359.80	365.53		365.54	0.000047	0.48	168.98	56.57	0.08
KM19	316	25 ans	Plan_Actuel	79.12	359.80	365.52		365.54	0.000047	0.48	168.80	56.56	0.08
KM19	316	50 ans	Plan_Nat	87.52	359.80	365.68		365.69	0.000050	0.51	177.58	57.02	0.09
KM19	316	50 ans	Plan_Actuel	87.52	359.80	365.68		365.69	0.000050	0.51	177.40	57.01	0.09
KM19	316	100 ans	Plan_Nat	95.93	359.80	365.82		365.84	0.000052	0.54	185.91	57.48	0.09
KM19	316	100 ans	Plan_Actuel	95.93	359.80	365.82		365.84	0.000052	0.54	185.76	57.47	0.09

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	301	2 ans	Plan_Nat	49.44	360.31	364.91		364.92	0.000048	0.44	112.59	37.30	0.08
KM19	301	2 ans	Plan_Actuel	49.44	360.31	364.91		364.92	0.000048	0.44	112.43	37.28	0.08
KM19	301	5 ans	Plan_Nat	59.83	360.31	365.14		365.15	0.000056	0.49	121.28	38.19	0.09
KM19	301	5 ans	Plan_Actuel	59.83	360.31	365.14		365.15	0.000056	0.49	121.12	38.17	0.09
KM19	301	10 ans	Plan_Nat	68.73	360.31	365.32		365.34	0.000061	0.54	128.17	38.84	0.09
KM19	301	10 ans	Plan_Actuel	68.73	360.31	365.32		365.33	0.000062	0.54	128.02	38.83	0.09
KM19	301	20 ans	Plan_Nat	77.14	360.31	365.48		365.50	0.000066	0.57	134.49	39.46	0.10
KM19	301	20 ans	Plan_Actuel	77.14	360.31	365.48		365.50	0.000066	0.58	134.35	39.45	0.10
KM19	301	25 ans	Plan_Nat	79.12	360.31	365.52		365.54	0.000067	0.58	136.01	39.61	0.10
KM19	301	25 ans	Plan_Actuel	79.12	360.31	365.52		365.53	0.000067	0.58	135.88	39.60	0.10
KM19	301	50 ans	Plan_Nat	87.52	360.31	365.67		365.69	0.000072	0.62	142.01	40.20	0.10
KM19	301	50 ans	Plan_Actuel	87.52	360.31	365.67		365.69	0.000072	0.62	141.89	40.18	0.10
KM19	301	100 ans	Plan_Nat	95.93	360.31	365.82		365.84	0.000076	0.65	147.86	40.76	0.11
KM19	301	100 ans	Plan_Actuel	95.93	360.31	365.81		365.83	0.000076	0.65	147.76	40.74	0.11
KM19	296	2 ans	Plan_Nat	49.44	360.21	364.91		364.92	0.000057	0.48	103.14	33.68	0.09
KM19	296	2 ans	Plan_Actuel	49.44	360.21	364.90		364.92	0.000057	0.48	103.00	33.66	0.09
KM19	296	5 ans	Plan_Nat	59.83	360.21	365.14		365.15	0.000067	0.54	111.00	34.81	0.10
KM19	296	5 ans	Plan_Actuel	59.83	360.21	365.13		365.15	0.000067	0.54	110.86	34.79	0.10
KM19	296	10 ans	Plan_Nat	68.73	360.21	365.32		365.33	0.000074	0.59	117.29	35.71	0.10
KM19	296	10 ans	Plan_Actuel	68.73	360.21	365.31		365.33	0.000074	0.59	117.16	35.69	0.10
KM19	296	20 ans	Plan_Nat	77.14	360.21	365.48		365.50	0.000080	0.63	123.20	38.33	0.11
KM19	296	20 ans	Plan_Actuel	77.14	360.21	365.47		365.49	0.000080	0.63	123.07	38.31	0.11
KM19	296	25 ans	Plan_Nat	79.12	360.21	365.52		365.54	0.000081	0.64	124.68	38.59	0.11
KM19	296	25 ans	Plan_Actuel	79.12	360.21	365.51		365.53	0.000081	0.64	124.55	38.57	0.11
KM19	296	50 ans	Plan_Nat	87.52	360.21	365.67		365.69	0.000086	0.68	130.52	39.41	0.11
KM19	296	50 ans	Plan_Actuel	87.52	360.21	365.66		365.69	0.000086	0.68	130.40	39.39	0.11
KM19	296	100 ans	Plan_Nat	95.93	360.21	365.81		365.84	0.000091	0.71	136.26	40.17	0.12
KM19	296	100 ans	Plan_Actuel	95.93	360.21	365.81		365.83	0.000091	0.71	136.16	40.16	0.12
KM19	289	2 ans	Plan_Nat	49.44	360.19	364.90		364.92	0.000134	0.65	75.94	29.89	0.13
KM19	289	2 ans	Plan_Actuel	49.44	360.19	364.89		364.91	0.000134	0.65	75.81	29.86	0.13
KM19	289	5 ans	Plan_Nat	59.83	360.19	365.12		365.15	0.000153	0.72	82.90	31.23	0.14
KM19	289	5 ans	Plan_Actuel	59.83	360.19	365.12		365.15	0.000153	0.72	82.77	31.21	0.14
KM19	289	10 ans	Plan_Nat	68.73	360.19	365.30		365.33	0.000163	0.78	88.49	32.11	0.15
KM19	289	10 ans	Plan_Actuel	68.73	360.19	365.30		365.33	0.000164	0.78	88.37	32.09	0.15
KM19	289	20 ans	Plan_Nat	77.14	360.19	365.46		365.50	0.000171	0.83	93.68	32.93	0.15
KM19	289	20 ans	Plan_Actuel	77.14	360.19	365.46		365.49	0.000172	0.83	93.56	32.91	0.15
KM19	289	25 ans	Plan_Nat	79.12	360.19	365.50		365.53	0.000173	0.84	94.93	33.12	0.15
KM19	289	25 ans	Plan_Actuel	79.12	360.19	365.50		365.53	0.000173	0.84	94.82	33.10	0.15
KM19	289	50 ans	Plan_Nat	87.52	360.19	365.65		365.69	0.000180	0.88	99.91	33.96	0.16
KM19	289	50 ans	Plan_Actuel	87.52	360.19	365.64		365.68	0.000181	0.88	99.80	33.95	0.16
KM19	289	100 ans	Plan_Nat	95.93	360.19	365.79		365.83	0.000187	0.93	104.80	34.72	0.16
KM19	289	100 ans	Plan_Actuel	95.93	360.19	365.79		365.83	0.000188	0.93	104.71	34.71	0.16
KM19	282	2 ans	Plan_Nat	49.44	360.22	364.89		364.92	0.000175	0.72	68.25	27.84	0.15
KM19	282	2 ans	Plan_Actuel	49.44	360.22	364.89		364.91	0.000176	0.73	68.13	27.82	0.15
KM19	282	5 ans	Plan_Nat	59.83	360.22	365.12		365.15	0.000194	0.80	74.67	28.91	0.16
KM19	282	5 ans	Plan_Actuel	59.83	360.22	365.11		365.15	0.000195	0.80	74.54	28.89	0.16
KM19	282	10 ans	Plan_Nat	68.73	360.22	365.29		365.33	0.000206	0.86	79.80	29.67	0.16
KM19	282	10 ans	Plan_Actuel	68.73	360.22	365.29		365.33	0.000207	0.86	79.69	29.65	0.16
KM19	282	20 ans	Plan_Nat	77.14	360.22	365.45		365.49	0.000217	0.92	84.56	30.36	0.17
KM19	282	20 ans	Plan_Actuel	77.14	360.22	365.45		365.49	0.000217	0.92	84.45	30.34	0.17
KM19	282	25 ans	Plan_Nat	79.12	360.22	365.49		365.53	0.000218	0.93	85.71	30.53	0.17
KM19	282	25 ans	Plan_Actuel	79.12	360.22	365.49		365.53	0.000219	0.93	85.60	30.51	0.17
KM19	282	50 ans	Plan_Nat	87.52	360.22	365.64		365.68	0.000228	0.98	90.25	31.19	0.18
KM19	282	50 ans	Plan_Actuel	87.52	360.22	365.63		365.68	0.000228	0.98	90.16	31.18	0.18
KM19	282	100 ans	Plan_Nat	95.93	360.22	365.78		365.83	0.000236	1.03	94.72	31.88	0.18
KM19	282	100 ans	Plan_Actuel	95.93	360.22	365.77		365.83	0.000237	1.03	94.63	31.87	0.18
KM19	275	2 ans	Plan_Nat	49.44	360.18	364.88		364.92	0.000205	0.79	62.96	25.34	0.16
KM19	275	2 ans	Plan_Actuel	49.44	360.18	364.88	362.35	364.91	0.000206	0.79	62.85	25.32	0.16
KM19	275	5 ans	Plan_Nat	59.83	360.18	365.11		365.15	0.000229	0.87	68.80	26.68	0.17
KM19	275	5 ans	Plan_Actuel	59.83	360.18	365.10	362.54	365.14	0.000230	0.87	68.68	26.67	0.17
KM19	275	10 ans	Plan_Nat	68.73	360.18	365.28		365.33	0.000245	0.94	73.50	27.30	0.18
KM19	275	10 ans	Plan_Actuel	68.73	360.18	365.28	362.69	365.32	0.000246	0.94	73.39	27.29	0.18
KM19	275	20 ans	Plan_Nat	77.14	360.18	365.44		365.49	0.000257	1.00	77.84	27.89	0.18
KM19	275	20 ans	Plan_Actuel	77.14	360.18	365.44	362.81	365.49	0.000258	1.00	77.74	27.88	0.18
KM19	275	25 ans	Plan_Nat	79.12	360.18	365.48		365.53	0.000260	1.01	78.89	28.03	0.18
KM19	275	25 ans	Plan_Actuel	79.12	360.18	365.47	362.84	365.53	0.000261	1.01	78.79	28.02	0.19
KM19	275	50 ans	Plan_Nat	87.52	360.18	365.62		365.68	0.000271	1.07	83.02	28.55	0.19
KM19	275	50 ans	Plan_Actuel	87.52	360.18	365.62	362.95	365.68	0.000272	1.07	82.93	28.54	0.19
KM19	275	100 ans	Plan_Nat	95.93	360.18	365.76		365.83	0.000282	1.12	87.07	29.06	0.20
KM19	275	100 ans	Plan_Actuel	95.93	360.18	365.76	363.07	365.83	0.000283	1.12	86.99	29.04	0.20
KM19	270	2 ans	Plan_Nat	49.44	360.05	364.88		364.91	0.000206	0.80	61.84	23.84	0.16
KM19	270	5 ans	Plan_Nat	59.83	360.05	365.11		365.15	0.000230	0.89	67.28	24.69	0.17
KM19	270	10 ans	Plan_Nat	68.73	360.05	365.28		365.33	0.000249	0.96	71.62	25.33	0.18
KM19	270	20 ans	Plan_Nat	77.14	360.05	365.44		365.49	0.000264	1.03	75.63	25.90	0.19
KM19	270	25 ans	Plan_Nat	79.12	360.05	365.47		365.53	0.000267	1.04	76.60	26.04	0.19
KM19	270	50 ans	Plan_Nat	87.52	360.05	365.62		365.68	0.000281	1.10	80.42	26.57	0.19
KM19	270	100 ans	Plan_Nat	95.93	360.05	365.76		365.83	0.000294	1.16	84.17	27.08	0.20
KM19	265	2 ans	Plan_Nat	49.44	361.59	364.82		364.91	0.000949	1.34	36.98	21.57	0.33
KM19	265	5 ans	Plan_Nat	59.83	361.59	365.03		365.14	0.000961	1.43	41.77	22.50	0.33

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	265	10 ans	Plan_Nat	68.73	361.59	365.20		365.32	0.000954	1.51	45.61	23.28	0.34
KM19	265	20 ans	Plan_Nat	77.14	361.59	365.35		365.48	0.000947	1.58	49.20	23.93	0.34
KM19	265	25 ans	Plan_Nat	79.12	361.59	365.39		365.52	0.000943	1.59	50.07	24.07	0.34
KM19	265	50 ans	Plan_Nat	87.52	361.59	365.53		365.67	0.000940	1.66	53.51	24.66	0.34
KM19	265	100 ans	Plan_Nat	95.93	361.59	365.67		365.82	0.000938	1.72	56.89	25.20	0.35
KM19	260	2 ans	Plan_Nat	49.44	361.66	364.78		364.90	0.001404	1.52	32.46	20.87	0.39
KM19	260	5 ans	Plan_Nat	59.83	361.66	365.00		365.13	0.001364	1.62	37.06	21.78	0.39
KM19	260	10 ans	Plan_Nat	68.73	361.66	365.17		365.31	0.001329	1.69	40.75	22.60	0.39
KM19	260	20 ans	Plan_Nat	77.14	361.66	365.32		365.47	0.001297	1.76	44.22	23.40	0.39
KM19	260	25 ans	Plan_Nat	79.12	361.66	365.35		365.51	0.001286	1.77	45.07	23.58	0.39
KM19	260	50 ans	Plan_Nat	87.52	361.66	365.49		365.66	0.001266	1.84	48.42	24.22	0.39
KM19	260	100 ans	Plan_Nat	95.93	361.66	365.63		365.81	0.001247	1.90	51.72	24.85	0.39
KM19	255	2 ans	Plan_Nat	49.44	361.65	364.78		364.89	0.001349	1.52	32.57	19.77	0.38
KM19	255	2 ans	Plan_Actuel	49.44	361.65	364.78		364.89	0.001349	1.52	32.57	19.77	0.38
KM19	255	5 ans	Plan_Nat	59.83	361.65	364.99		365.12	0.001355	1.62	36.88	20.60	0.38
KM19	255	5 ans	Plan_Actuel	59.83	361.65	364.99		365.12	0.001355	1.62	36.88	20.60	0.38
KM19	255	10 ans	Plan_Nat	68.73	361.65	365.15		365.30	0.001355	1.71	40.34	21.26	0.39
KM19	255	10 ans	Plan_Actuel	68.73	361.65	365.15		365.30	0.001355	1.71	40.34	21.26	0.39
KM19	255	20 ans	Plan_Nat	77.14	361.65	365.30		365.47	0.001351	1.78	43.58	21.93	0.39
KM19	255	20 ans	Plan_Actuel	77.14	361.65	365.30		365.47	0.001351	1.78	43.58	21.93	0.39
KM19	255	25 ans	Plan_Nat	79.12	361.65	365.34		365.50	0.001344	1.80	44.37	22.10	0.39
KM19	255	25 ans	Plan_Actuel	79.12	361.65	365.34		365.50	0.001344	1.80	44.37	22.10	0.39
KM19	255	50 ans	Plan_Nat	87.52	361.65	365.48		365.66	0.001332	1.86	47.49	22.83	0.39
KM19	255	50 ans	Plan_Actuel	87.52	361.65	365.48		365.66	0.001332	1.86	47.49	22.83	0.39
KM19	255	100 ans	Plan_Nat	95.93	361.65	365.61		365.80	0.001320	1.93	50.59	23.49	0.40
KM19	255	100 ans	Plan_Actuel	95.93	361.65	365.61		365.80	0.001320	1.93	50.59	23.49	0.40
KM19	250	2 ans	Plan_Nat	49.44	362.06	364.30	364.27	364.83	0.009719	3.22	15.36	13.57	0.97
KM19	250	2 ans	Plan_Actuel	49.44	362.06	364.30	364.27	364.83	0.009719	3.22	15.36	13.57	0.97
KM19	250	5 ans	Plan_Nat	59.83	362.06	364.42	364.42	365.05	0.010447	3.51	17.04	14.42	1.02
KM19	250	5 ans	Plan_Actuel	59.83	362.06	364.42	364.42	365.05	0.010447	3.51	17.04	14.42	1.02
KM19	250	10 ans	Plan_Nat	68.73	362.06	364.56	364.56	365.23	0.009642	3.63	19.10	15.50	0.99
KM19	250	10 ans	Plan_Actuel	68.73	362.06	364.56	364.56	365.23	0.009642	3.63	19.10	15.50	0.99
KM19	250	20 ans	Plan_Nat	77.14	362.06	364.68	364.68	365.39	0.009265	3.75	20.92	16.41	0.99
KM19	250	20 ans	Plan_Actuel	77.14	362.06	364.68	364.68	365.39	0.009265	3.75	20.92	16.41	0.99
KM19	250	25 ans	Plan_Nat	79.12	362.06	364.69	364.69	365.43	0.009470	3.81	21.13	16.51	1.00
KM19	250	25 ans	Plan_Actuel	79.12	362.06	364.69	364.69	365.43	0.009470	3.81	21.13	16.51	1.00
KM19	250	50 ans	Plan_Nat	87.52	362.06	364.80	364.80	365.58	0.008979	3.90	23.10	17.47	0.98
KM19	250	50 ans	Plan_Actuel	87.52	362.06	364.80	364.80	365.58	0.008979	3.90	23.10	17.47	0.98
KM19	250	100 ans	Plan_Nat	95.93	362.06	364.91	364.91	365.72	0.008725	4.01	24.93	18.31	0.98
KM19	250	100 ans	Plan_Actuel	95.93	362.06	364.91	364.91	365.72	0.008725	4.01	24.93	18.31	0.98
KM19	245	2 ans	Plan_Nat	49.44	362.32	364.26	364.26	364.76	0.010925	3.16	15.65	16.03	1.02
KM19	245	2 ans	Plan_Actuel	49.44	362.32	364.26	364.26	364.76	0.010925	3.16	15.65	16.03	1.02
KM19	245	5 ans	Plan_Nat	59.83	362.32	364.28	364.39	364.99	0.014703	3.72	16.08	16.25	1.19
KM19	245	5 ans	Plan_Actuel	59.83	362.32	364.28	364.39	364.99	0.014703	3.72	16.08	16.25	1.19
KM19	245	10 ans	Plan_Nat	68.73	362.32	364.36	364.51	365.16	0.014911	3.95	17.44	16.93	1.21
KM19	245	10 ans	Plan_Actuel	68.73	362.32	364.36	364.51	365.16	0.014911	3.95	17.44	16.93	1.21
KM19	245	20 ans	Plan_Nat	77.14	362.32	364.43	364.62	365.32	0.015345	4.17	18.61	17.50	1.24
KM19	245	20 ans	Plan_Actuel	77.14	362.32	364.43	364.62	365.32	0.015345	4.17	18.61	17.50	1.24
KM19	245	25 ans	Plan_Nat	79.12	362.32	364.45	364.64	365.35	0.015295	4.21	18.94	17.65	1.24
KM19	245	25 ans	Plan_Actuel	79.12	362.32	364.45	364.64	365.35	0.015295	4.21	18.94	17.65	1.24
KM19	245	50 ans	Plan_Nat	87.52	362.32	364.52	364.73	365.50	0.015203	4.37	20.28	18.26	1.25
KM19	245	50 ans	Plan_Actuel	87.52	362.32	364.52	364.73	365.50	0.015203	4.37	20.28	18.26	1.25
KM19	245	100 ans	Plan_Nat	95.93	362.32	364.60	364.84	365.64	0.015004	4.52	21.66	18.90	1.26
KM19	245	100 ans	Plan_Actuel	95.93	362.32	364.60	364.84	365.64	0.015004	4.52	21.66	18.90	1.26
KM19	240	2 ans	Plan_Nat	49.44	362.37	363.79	364.02	364.66	0.023129	4.12	12.00	14.55	1.45
KM19	240	2 ans	Plan_Actuel	49.44	362.37	363.79	364.02	364.66	0.023129	4.12	12.00	14.55	1.45
KM19	240	5 ans	Plan_Nat	59.83	362.37	363.91	364.17	364.88	0.022203	4.36	13.77	15.57	1.45
KM19	240	5 ans	Plan_Actuel	59.83	362.37	363.91	364.17	364.88	0.022203	4.36	13.77	15.57	1.45
KM19	240	10 ans	Plan_Nat	68.73	362.37	364.00	364.29	365.05	0.021314	4.55	15.24	16.39	1.44
KM19	240	10 ans	Plan_Actuel	68.73	362.37	364.00	364.29	365.05	0.021314	4.55	15.24	16.39	1.44
KM19	240	20 ans	Plan_Nat	77.14	362.37	364.08	364.40	365.22	0.020702	4.72	16.61	17.09	1.44
KM19	240	20 ans	Plan_Actuel	77.14	362.37	364.08	364.40	365.22	0.020702	4.72	16.61	17.09	1.44
KM19	240	25 ans	Plan_Nat	79.12	362.37	364.10	364.42	365.25	0.020406	4.74	16.98	17.28	1.43
KM19	240	25 ans	Plan_Actuel	79.12	362.37	364.10	364.42	365.25	0.020406	4.74	16.98	17.28	1.43
KM19	240	50 ans	Plan_Nat	87.52	362.37	364.18	364.52	365.40	0.019872	4.90	18.35	17.90	1.43
KM19	240	50 ans	Plan_Actuel	87.52	362.37	364.18	364.52	365.40	0.019872	4.90	18.35	17.90	1.43
KM19	240	100 ans	Plan_Nat	95.93	362.37	364.26	364.62	365.54	0.019097	5.01	19.83	18.46	1.42
KM19	240	100 ans	Plan_Actuel	95.93	362.37	364.26	364.62	365.54	0.019097	5.01	19.83	18.46	1.42
KM19	235	2 ans	Plan_Nat	49.44	362.07	363.40	363.72	364.48	0.031436	4.59	10.76	13.93	1.67
KM19	235	2 ans	Plan_Actuel	49.44	362.07	363.40	363.72	364.48	0.031436	4.59	10.76	13.93	1.67
KM19	235	5 ans	Plan_Nat	59.83	362.07	363.52	363.87	364.71	0.029926	4.82	12.41	14.64	1.66
KM19	235	5 ans	Plan_Actuel	59.83	362.07	363.52	363.87	364.71	0.029926	4.82	12.41	14.64	1.66
KM19	235	10 ans	Plan_Nat	68.73	362.07	363.61	363.99	364.89	0.028201	5.01	13.78	15.20	1.64
KM19	235	10 ans	Plan_Actuel	68.73	362.07	363.61	363.99	364.89	0.028201	5.01	13.78	15.20	1.64
KM19	235	20 ans	Plan_Nat	77.14	362.07	363.69	364.10	365.06	0.027101	5.18	15.02	15.71	1.63
KM19	235	20 ans	Plan_Actuel	77.14	362.07	363.69	364.10	365.06	0.027101	5.18	15.02	15.71	1.63
KM19	235	25 ans	Plan_Nat	79.12	362.07	363.71	364.12	365.09	0.026559	5.20	15.37	15.84	1.62
KM19	235	25 ans	Plan_Actuel	79.12	362.07	363.71	364.12	365.09	0.026559	5.20	15.37	15.84	1.62
KM19	235	50 ans	Plan_Nat	87.52	362.07	363.79	364.23	365.25	0.025461	5.34	16.64	16.30	1.60

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	235	50 ans	Plan_Actuel	87.52	362.07	363.79	364.23	365.25	0.025461	5.34	16.64	16.30	1.60
KM19	235	100 ans	Plan_Nat	95.93	362.07	363.87	364.32	365.39	0.024267	5.46	17.98	16.77	1.58
KM19	235	100 ans	Plan_Actuel	95.93	362.07	363.87	364.32	365.39	0.024267	5.46	17.98	16.77	1.58
KM19	225	2 ans	Plan_Nat	49.44	361.36	362.88	363.28	364.21	0.038007	5.11	9.68	12.20	1.83
KM19	225	2 ans	Plan_Actuel	49.44	361.36	362.88	363.28	364.21	0.038007	5.11	9.68	12.20	1.83
KM19	225	5 ans	Plan_Nat	59.83	361.36	363.00	363.43	364.46	0.036384	5.35	11.19	12.95	1.82
KM19	225	5 ans	Plan_Actuel	59.83	361.36	363.00	363.43	364.46	0.036384	5.35	11.19	12.95	1.82
KM19	225	10 ans	Plan_Nat	68.73	361.36	363.10	363.56	364.64	0.033356	5.51	12.54	13.69	1.78
KM19	225	10 ans	Plan_Actuel	68.73	361.36	363.10	363.56	364.64	0.033356	5.51	12.54	13.69	1.78
KM19	225	20 ans	Plan_Nat	77.14	361.36	363.18	363.69	364.82	0.031619	5.67	13.75	14.18	1.75
KM19	225	20 ans	Plan_Actuel	77.14	361.36	363.18	363.69	364.82	0.031619	5.67	13.75	14.18	1.75
KM19	225	25 ans	Plan_Nat	79.12	361.36	363.21	363.71	364.85	0.030798	5.69	14.10	14.31	1.74
KM19	225	25 ans	Plan_Actuel	79.12	361.36	363.21	363.71	364.85	0.030798	5.69	14.10	14.31	1.74
KM19	225	50 ans	Plan_Nat	87.52	361.36	363.29	363.82	365.02	0.029370	5.83	15.32	14.85	1.72
KM19	225	50 ans	Plan_Actuel	87.52	361.36	363.29	363.82	365.02	0.029370	5.83	15.32	14.85	1.72
KM19	225	100 ans	Plan_Nat	95.93	361.36	363.38	363.94	365.18	0.027916	5.96	16.60	15.40	1.69
KM19	225	100 ans	Plan_Actuel	95.93	361.36	363.38	363.94	365.18	0.027916	5.96	16.60	15.40	1.69
KM19	220	2 ans	Plan_Nat	49.44	360.02	363.39	361.84	363.46	0.000600	1.15	42.87	22.03	0.26
KM19	220	2 ans	Plan_Actuel	49.44	360.02	363.39	361.84	363.46	0.000600	1.15	42.87	22.03	0.26
KM19	220	5 ans	Plan_Nat	59.83	360.02	363.63	362.00	363.71	0.000599	1.24	48.31	23.29	0.27
KM19	220	5 ans	Plan_Actuel	59.83	360.02	363.63	362.00	363.71	0.000599	1.24	48.31	23.29	0.27
KM19	220	10 ans	Plan_Nat	68.73	360.02	363.82	362.14	363.91	0.000600	1.31	52.74	24.27	0.27
KM19	220	10 ans	Plan_Actuel	68.73	360.02	363.82	362.14	363.91	0.000600	1.31	52.74	24.27	0.27
KM19	220	20 ans	Plan_Nat	77.14	360.02	363.98	362.25	364.08	0.000602	1.38	56.85	25.11	0.28
KM19	220	20 ans	Plan_Actuel	77.14	360.02	363.98	362.25	364.08	0.000602	1.38	56.85	25.11	0.28
KM19	220	25 ans	Plan_Nat	79.12	360.02	364.02	362.28	364.12	0.000602	1.39	57.80	25.29	0.28
KM19	220	25 ans	Plan_Actuel	79.12	360.02	364.02	362.28	364.12	0.000602	1.39	57.80	25.29	0.28
KM19	220	50 ans	Plan_Nat	87.52	360.02	364.18	362.39	364.29	0.000603	1.45	61.83	25.97	0.28
KM19	220	50 ans	Plan_Actuel	87.52	360.02	364.18	362.39	364.29	0.000603	1.45	61.83	25.97	0.28
KM19	220	100 ans	Plan_Nat	95.93	360.02	364.33	362.49	364.45	0.000603	1.50	65.79	26.54	0.28
KM19	220	100 ans	Plan_Actuel	95.93	360.02	364.33	362.49	364.45	0.000603	1.50	65.79	26.54	0.28
KM19	215	2 ans	Plan_Nat	49.44	358.27	363.42		363.45	0.000195	0.77	64.17	25.27	0.15
KM19	215	2 ans	Plan_Actuel	49.44	358.27	363.42		363.45	0.000195	0.77	64.17	25.27	0.15
KM19	215	5 ans	Plan_Nat	59.83	358.27	363.66		363.70	0.000218	0.85	70.42	26.18	0.16
KM19	215	5 ans	Plan_Actuel	59.83	358.27	363.66		363.70	0.000218	0.85	70.42	26.18	0.16
KM19	215	10 ans	Plan_Nat	68.73	358.27	363.85		363.89	0.000230	0.91	75.45	27.04	0.17
KM19	215	10 ans	Plan_Actuel	68.73	358.27	363.85		363.89	0.000230	0.91	75.45	27.04	0.17
KM19	215	20 ans	Plan_Nat	77.14	358.27	364.02		364.06	0.000240	0.97	80.05	27.73	0.18
KM19	215	20 ans	Plan_Actuel	77.14	358.27	364.02		364.06	0.000240	0.97	80.05	27.73	0.18
KM19	215	25 ans	Plan_Nat	79.12	358.27	364.06		364.10	0.000242	0.98	81.13	27.88	0.18
KM19	215	25 ans	Plan_Actuel	79.12	358.27	364.06		364.10	0.000242	0.98	81.13	27.88	0.18
KM19	215	50 ans	Plan_Nat	87.52	358.27	364.21		364.27	0.000250	1.03	85.62	28.54	0.18
KM19	215	50 ans	Plan_Actuel	87.52	358.27	364.21		364.27	0.000250	1.03	85.62	28.54	0.18
KM19	215	100 ans	Plan_Nat	95.93	358.27	364.37		364.43	0.000258	1.08	90.01	29.12	0.19
KM19	215	100 ans	Plan_Actuel	95.93	358.27	364.37		364.43	0.000258	1.08	90.01	29.12	0.19
KM19	213	2 ans	Plan_Nat	49.44	357.07	363.43		363.44	0.000083	0.57	86.82	27.61	0.10
KM19	213	2 ans	Plan_Actuel	49.44	357.07	363.43		363.44	0.000083	0.57	86.82	27.61	0.10
KM19	213	5 ans	Plan_Nat	59.83	357.07	363.67		363.69	0.000097	0.64	93.69	28.61	0.11
KM19	213	5 ans	Plan_Actuel	59.83	357.07	363.67		363.69	0.000097	0.64	93.69	28.61	0.11
KM19	213	10 ans	Plan_Nat	68.73	357.07	363.86		363.89	0.000106	0.69	99.21	29.39	0.12
KM19	213	10 ans	Plan_Actuel	68.73	357.07	363.86		363.89	0.000106	0.69	99.21	29.39	0.12
KM19	213	20 ans	Plan_Nat	77.14	357.07	364.03		364.06	0.000114	0.74	104.24	30.08	0.12
KM19	213	20 ans	Plan_Actuel	77.14	357.07	364.03		364.06	0.000114	0.74	104.24	30.08	0.12
KM19	213	25 ans	Plan_Nat	79.12	357.07	364.07		364.10	0.000116	0.75	105.41	30.24	0.12
KM19	213	25 ans	Plan_Actuel	79.12	357.07	364.07		364.10	0.000116	0.75	105.41	30.24	0.12
KM19	213	50 ans	Plan_Nat	87.52	357.07	364.23		364.26	0.000123	0.80	110.30	30.83	0.13
KM19	213	50 ans	Plan_Actuel	87.52	357.07	364.23		364.26	0.000123	0.80	110.30	30.83	0.13
KM19	213	100 ans	Plan_Nat	95.93	357.07	364.38		364.42	0.000130	0.84	115.08	31.40	0.13
KM19	213	100 ans	Plan_Actuel	95.93	357.07	364.38		364.42	0.000130	0.84	115.08	31.40	0.13
KM19	206	2 ans	Plan_Nat	49.44	356.19	363.43		363.44	0.000022	0.36	138.69	32.24	0.05
KM19	206	2 ans	Plan_Actuel	49.44	356.19	363.43		363.44	0.000022	0.36	138.69	32.24	0.05
KM19	206	5 ans	Plan_Nat	59.83	356.19	363.68		363.69	0.000027	0.41	146.72	33.08	0.06
KM19	206	5 ans	Plan_Actuel	59.83	356.19	363.68		363.69	0.000027	0.41	146.72	33.08	0.06
KM19	206	10 ans	Plan_Nat	68.73	356.19	363.87		363.88	0.000031	0.45	153.16	34.12	0.07
KM19	206	10 ans	Plan_Actuel	68.73	356.19	363.87		363.88	0.000031	0.45	153.16	34.12	0.07
KM19	206	20 ans	Plan_Nat	77.14	356.19	364.04		364.05	0.000035	0.49	159.03	34.74	0.07
KM19	206	20 ans	Plan_Actuel	77.14	356.19	364.04		364.05	0.000035	0.49	159.03	34.74	0.07
KM19	206	25 ans	Plan_Nat	79.12	356.19	364.08		364.09	0.000035	0.49	160.40	34.86	0.07
KM19	206	25 ans	Plan_Actuel	79.12	356.19	364.08		364.09	0.000035	0.49	160.40	34.86	0.07
KM19	206	50 ans	Plan_Nat	87.52	356.19	364.24		364.26	0.000039	0.53	166.08	35.62	0.08
KM19	206	50 ans	Plan_Actuel	87.52	356.19	364.24		364.26	0.000039	0.53	166.08	35.62	0.08
KM19	206	100 ans	Plan_Nat	95.93	356.19	364.40		364.41	0.000042	0.56	171.65	36.34	0.08
KM19	206	100 ans	Plan_Actuel	95.93	356.19	364.40		364.41	0.000042	0.56	171.65	36.34	0.08
KM19	201	2 ans	Plan_Nat	49.44	356.58	363.43		363.44	0.000040	0.44	112.02	30.58	0.07
KM19	201	2 ans	Plan_Actuel	49.44	356.58	363.43		363.44	0.000040	0.44	112.02	30.58	0.07
KM19	201	5 ans	Plan_Nat	59.83	356.58	363.67		363.69	0.000048	0.50	119.62	31.53	0.08
KM19	201	5 ans	Plan_Actuel	59.83	356.58	363.67		363.69	0.000048	0.50	119.62	31.53	0.08
KM19	201	10 ans	Plan_Nat	68.73	356.58	363.86		363.88	0.000054	0.55	125.71	32.33	0.09
KM19	201	10 ans	Plan_Actuel	68.73	356.58	363.86		363.88	0.000054	0.55	125.71	32.33	0.09

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	201	20 ans	Plan_Nat	77.14	356.58	364.03		364.05	0.000060	0.59	131.25	33.07	0.09
KM19	201	20 ans	Plan_Actuel	77.14	356.58	364.03		364.05	0.000060	0.59	131.25	33.07	0.09
KM19	201	25 ans	Plan_Nat	79.12	356.58	364.07		364.09	0.000061	0.60	132.55	33.23	0.09
KM19	201	25 ans	Plan_Actuel	79.12	356.58	364.07		364.09	0.000061	0.60	132.55	33.23	0.09
KM19	201	50 ans	Plan_Nat	87.52	356.58	364.23		364.25	0.000066	0.64	137.94	33.92	0.10
KM19	201	50 ans	Plan_Actuel	87.52	356.58	364.23		364.25	0.000066	0.64	137.94	33.92	0.10
KM19	201	100 ans	Plan_Nat	95.93	356.58	364.39		364.41	0.000070	0.68	143.22	34.59	0.10
KM19	201	100 ans	Plan_Actuel	95.93	356.58	364.39		364.41	0.000070	0.68	143.22	34.59	0.10
KM19	195	2 ans	Plan_Nat	49.44	357.32	363.42		363.44	0.000066	0.53	93.29	28.24	0.09
KM19	195	2 ans	Plan_Actuel	49.44	357.32	363.42		363.44	0.000066	0.53	93.29	28.24	0.09
KM19	195	5 ans	Plan_Nat	59.83	357.32	363.67		363.69	0.000077	0.60	100.26	29.01	0.10
KM19	195	5 ans	Plan_Actuel	59.83	357.32	363.67		363.69	0.000077	0.60	100.26	29.01	0.10
KM19	195	10 ans	Plan_Nat	68.73	357.32	363.86		363.88	0.000085	0.65	105.86	29.93	0.11
KM19	195	10 ans	Plan_Actuel	68.73	357.32	363.86		363.88	0.000085	0.65	105.86	29.93	0.11
KM19	195	20 ans	Plan_Nat	77.14	357.32	364.03		364.05	0.000092	0.70	110.97	30.71	0.11
KM19	195	20 ans	Plan_Actuel	77.14	357.32	364.03		364.05	0.000092	0.70	110.97	30.71	0.11
KM19	195	25 ans	Plan_Nat	79.12	357.32	364.06		364.09	0.000094	0.71	112.16	30.89	0.11
KM19	195	25 ans	Plan_Actuel	79.12	357.32	364.06		364.09	0.000094	0.71	112.16	30.89	0.11
KM19	195	50 ans	Plan_Nat	87.52	357.32	364.22		364.25	0.000101	0.75	117.15	31.55	0.12
KM19	195	50 ans	Plan_Actuel	87.52	357.32	364.22		364.25	0.000101	0.75	117.15	31.55	0.12
KM19	195	100 ans	Plan_Nat	95.93	357.32	364.38		364.41	0.000107	0.80	122.03	32.20	0.12
KM19	195	100 ans	Plan_Actuel	95.93	357.32	364.38		364.41	0.000107	0.80	122.03	32.20	0.12
KM19	193	2 ans	Plan_Nat	49.44	357.24	363.42		363.44	0.000078	0.56	87.95	27.53	0.10
KM19	193	2 ans	Plan_Actuel	49.44	357.24	363.42		363.44	0.000078	0.56	87.95	27.53	0.10
KM19	193	5 ans	Plan_Nat	59.83	357.24	363.67		363.69	0.000091	0.63	94.75	28.32	0.11
KM19	193	5 ans	Plan_Actuel	59.83	357.24	363.67		363.69	0.000091	0.63	94.75	28.32	0.11
KM19	193	10 ans	Plan_Nat	68.73	357.24	363.85		363.88	0.000100	0.69	100.16	28.89	0.12
KM19	193	10 ans	Plan_Actuel	68.73	357.24	363.85		363.88	0.000100	0.69	100.16	28.89	0.12
KM19	193	20 ans	Plan_Nat	77.14	357.24	364.02		364.05	0.000109	0.74	105.07	29.37	0.12
KM19	193	20 ans	Plan_Actuel	77.14	357.24	364.02		364.05	0.000109	0.74	105.07	29.37	0.12
KM19	193	25 ans	Plan_Nat	79.12	357.24	364.06		364.09	0.000110	0.75	106.21	29.48	0.12
KM19	193	25 ans	Plan_Actuel	79.12	357.24	364.06		364.09	0.000110	0.75	106.21	29.48	0.12
KM19	193	50 ans	Plan_Nat	87.52	357.24	364.22		364.25	0.000118	0.79	110.96	30.19	0.13
KM19	193	50 ans	Plan_Actuel	87.52	357.24	364.22		364.25	0.000118	0.79	110.96	30.19	0.13
KM19	193	100 ans	Plan_Nat	95.93	357.24	364.37		364.41	0.000124	0.84	115.62	30.91	0.13
KM19	193	100 ans	Plan_Actuel	95.93	357.24	364.37		364.41	0.000124	0.84	115.62	30.91	0.13
KM19	190	2 ans	Plan_Nat	49.44	357.53	363.42		363.44	0.000090	0.59	83.10	26.61	0.11
KM19	190	2 ans	Plan_Actuel	49.44	357.53	363.42		363.44	0.000090	0.59	83.10	26.61	0.11
KM19	190	5 ans	Plan_Nat	59.83	357.53	363.66		363.68	0.000106	0.67	89.65	27.37	0.12
KM19	190	5 ans	Plan_Actuel	59.83	357.53	363.66		363.68	0.000106	0.67	89.65	27.37	0.12
KM19	190	10 ans	Plan_Nat	68.73	357.53	363.85		363.88	0.000117	0.72	94.88	27.88	0.12
KM19	190	10 ans	Plan_Actuel	68.73	357.53	363.85		363.88	0.000117	0.72	94.88	27.88	0.12
KM19	190	20 ans	Plan_Nat	77.14	357.53	364.02		364.05	0.000126	0.78	99.59	28.28	0.13
KM19	190	20 ans	Plan_Actuel	77.14	357.53	364.02		364.05	0.000126	0.78	99.59	28.28	0.13
KM19	190	25 ans	Plan_Nat	79.12	357.53	364.06		364.09	0.000128	0.79	100.69	28.37	0.13
KM19	190	25 ans	Plan_Actuel	79.12	357.53	364.06		364.09	0.000128	0.79	100.69	28.37	0.13
KM19	190	50 ans	Plan_Nat	87.52	357.53	364.22		364.25	0.000136	0.83	105.23	28.77	0.14
KM19	190	50 ans	Plan_Actuel	87.52	357.53	364.22		364.25	0.000136	0.83	105.23	28.77	0.14
KM19	190	100 ans	Plan_Nat	95.93	357.53	364.37		364.41	0.000143	0.88	109.65	29.24	0.14
KM19	190	100 ans	Plan_Actuel	95.93	357.53	364.37		364.41	0.000143	0.88	109.65	29.24	0.14
KM19	188	2 ans	Plan_Nat	49.44	357.83	363.41		363.44	0.000120	0.68	73.23	23.86	0.12
KM19	188	2 ans	Plan_Actuel	49.44	357.83	363.41		363.44	0.000120	0.68	73.23	23.86	0.12
KM19	188	5 ans	Plan_Nat	59.83	357.83	363.65		363.68	0.000138	0.76	79.07	24.56	0.13
KM19	188	5 ans	Plan_Actuel	59.83	357.83	363.65		363.68	0.000138	0.76	79.07	24.56	0.13
KM19	188	10 ans	Plan_Nat	68.73	357.83	363.84		363.88	0.000151	0.82	83.74	25.10	0.14
KM19	188	10 ans	Plan_Actuel	68.73	357.83	363.84		363.88	0.000151	0.82	83.74	25.10	0.14
KM19	188	20 ans	Plan_Nat	77.14	357.83	364.01		364.05	0.000163	0.88	87.96	25.55	0.15
KM19	188	20 ans	Plan_Actuel	77.14	357.83	364.01		364.05	0.000163	0.88	87.96	25.55	0.15
KM19	188	25 ans	Plan_Nat	79.12	357.83	364.05		364.09	0.000165	0.89	88.94	25.66	0.15
KM19	188	25 ans	Plan_Actuel	79.12	357.83	364.05		364.09	0.000165	0.89	88.94	25.66	0.15
KM19	188	50 ans	Plan_Nat	87.52	357.83	364.21		364.25	0.000176	0.95	93.02	26.08	0.15
KM19	188	50 ans	Plan_Actuel	87.52	357.83	364.21		364.25	0.000176	0.95	93.02	26.08	0.15
KM19	188	100 ans	Plan_Nat	95.93	357.83	364.36		364.41	0.000186	1.00	96.99	26.47	0.16
KM19	188	100 ans	Plan_Actuel	95.93	357.83	364.36		364.41	0.000186	1.00	96.99	26.47	0.16
KM19	186	2 ans	Plan_Nat	49.44	358.45	363.39		363.43	0.000269	0.92	53.61	19.39	0.18
KM19	186	2 ans	Plan_Actuel	49.44	358.45	363.39		363.43	0.000269	0.92	53.61	19.39	0.18
KM19	186	5 ans	Plan_Nat	59.83	358.45	363.63		363.68	0.000308	1.03	58.28	20.09	0.19
KM19	186	5 ans	Plan_Actuel	59.83	358.45	363.63		363.68	0.000308	1.03	58.28	20.09	0.19
KM19	186	10 ans	Plan_Nat	68.73	358.45	363.81		363.87	0.000332	1.11	62.01	20.60	0.20
KM19	186	10 ans	Plan_Actuel	68.73	358.45	363.81		363.87	0.000332	1.11	62.01	20.60	0.20
KM19	186	20 ans	Plan_Nat	77.14	358.45	363.97		364.04	0.000353	1.18	65.39	21.02	0.21
KM19	186	20 ans	Plan_Actuel	77.14	358.45	363.97		364.04	0.000353	1.18	65.39	21.02	0.21
KM19	186	25 ans	Plan_Nat	79.12	358.45	364.01		364.08	0.000358	1.20	66.18	21.12	0.21
KM19	186	25 ans	Plan_Actuel	79.12	358.45	364.01		364.08	0.000358	1.20	66.18	21.12	0.21
KM19	186	50 ans	Plan_Nat	87.52	358.45	364.16		364.25	0.000376	1.27	69.46	21.50	0.22
KM19	186	50 ans	Plan_Actuel	87.52	358.45	364.16		364.25	0.000376	1.27	69.46	21.50	0.22
KM19	186	100 ans	Plan_Nat	95.93	358.45	364.31		364.40	0.000393	1.33	72.65	21.84	0.22
KM19	186	100 ans	Plan_Actuel	95.93	358.45	364.31		364.40	0.000393	1.33	72.65	21.84	0.22
KM19	175	2 ans	Plan_Nat	49.44	358.57	363.40		363.43	0.000166	0.75	65.63	23.48	0.14

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	175	2 ans	Plan_Actuel	49.44	358.57	363.40		363.43	0.000166	0.75	65.63	23.48	0.14
KM19	175	5 ans	Plan_Nat	59.83	358.57	363.64		363.67	0.000187	0.84	71.33	24.31	0.15
KM19	175	5 ans	Plan_Actuel	59.83	358.57	363.64		363.67	0.000187	0.84	71.33	24.31	0.15
KM19	175	10 ans	Plan_Nat	68.73	358.57	363.82		363.86	0.000202	0.91	75.89	24.90	0.16
KM19	175	10 ans	Plan_Actuel	68.73	358.57	363.82		363.86	0.000202	0.91	75.89	24.90	0.16
KM19	175	20 ans	Plan_Nat	77.14	358.57	363.99		364.03	0.000215	0.97	80.03	25.51	0.17
KM19	175	20 ans	Plan_Actuel	77.14	358.57	363.99		364.03	0.000215	0.97	80.03	25.51	0.17
KM19	175	25 ans	Plan_Nat	79.12	358.57	364.02		364.07	0.000218	0.98	80.99	25.67	0.17
KM19	175	25 ans	Plan_Actuel	79.12	358.57	364.02		364.07	0.000218	0.98	80.99	25.67	0.17
KM19	175	50 ans	Plan_Nat	87.52	358.57	364.18		364.24	0.000230	1.04	85.03	26.21	0.18
KM19	175	50 ans	Plan_Actuel	87.52	358.57	364.18		364.24	0.000230	1.04	85.03	26.21	0.18
KM19	175	100 ans	Plan_Nat	95.93	358.57	364.33		364.39	0.000240	1.09	88.99	26.92	0.18
KM19	175	100 ans	Plan_Actuel	95.93	358.57	364.33		364.39	0.000240	1.09	88.99	26.92	0.18
KM19	170	2 ans	Plan_Nat	49.44	358.32	363.40		363.43	0.000198	0.78	63.14	24.45	0.16
KM19	170	2 ans	Plan_Actuel	49.44	358.32	363.40		363.43	0.000198	0.78	63.14	24.45	0.16
KM19	170	5 ans	Plan_Nat	59.83	358.32	363.63		363.67	0.000219	0.87	69.10	25.52	0.17
KM19	170	5 ans	Plan_Actuel	59.83	358.32	363.63		363.67	0.000219	0.87	69.10	25.52	0.17
KM19	170	10 ans	Plan_Nat	68.73	358.32	363.82		363.86	0.000233	0.93	73.89	26.22	0.17
KM19	170	10 ans	Plan_Actuel	68.73	358.32	363.82		363.86	0.000233	0.93	73.89	26.22	0.17
KM19	170	20 ans	Plan_Nat	77.14	358.32	363.98		364.03	0.000246	0.99	78.25	26.75	0.18
KM19	170	20 ans	Plan_Actuel	77.14	358.32	363.98		364.03	0.000246	0.99	78.25	26.75	0.18
KM19	170	25 ans	Plan_Nat	79.12	358.32	364.02		364.07	0.000248	1.01	79.26	26.86	0.18
KM19	170	25 ans	Plan_Actuel	79.12	358.32	364.02		364.07	0.000248	1.01	79.26	26.86	0.18
KM19	170	50 ans	Plan_Nat	87.52	358.32	364.18		364.23	0.000259	1.06	83.48	27.31	0.19
KM19	170	50 ans	Plan_Actuel	87.52	358.32	364.18		364.23	0.000259	1.06	83.48	27.31	0.19
KM19	170	100 ans	Plan_Nat	95.93	358.32	364.33		364.39	0.000268	1.11	87.58	27.72	0.19
KM19	170	100 ans	Plan_Actuel	95.93	358.32	364.33		364.39	0.000268	1.11	87.58	27.72	0.19
KM19	165	2 ans	Plan_Nat	49.44	358.78	363.40		363.42	0.000153	0.72	68.88	25.20	0.14
KM19	165	2 ans	Plan_Actuel	49.44	358.78	363.40		363.42	0.000153	0.72	68.88	25.20	0.14
KM19	165	5 ans	Plan_Nat	59.83	358.78	363.64		363.67	0.000172	0.80	75.02	26.19	0.15
KM19	165	5 ans	Plan_Actuel	59.83	358.78	363.64		363.67	0.000172	0.80	75.02	26.19	0.15
KM19	165	10 ans	Plan_Nat	68.73	358.78	363.82		363.86	0.000185	0.86	79.95	26.95	0.16
KM19	165	10 ans	Plan_Actuel	68.73	358.78	363.82		363.86	0.000185	0.86	79.95	26.95	0.16
KM19	165	20 ans	Plan_Nat	77.14	358.78	363.99		364.03	0.000196	0.92	84.44	27.60	0.16
KM19	165	20 ans	Plan_Actuel	77.14	358.78	363.99		364.03	0.000196	0.92	84.44	27.60	0.16
KM19	165	25 ans	Plan_Nat	79.12	358.78	364.02		364.07	0.000198	0.93	85.49	27.74	0.16
KM19	165	25 ans	Plan_Actuel	79.12	358.78	364.02		364.07	0.000198	0.93	85.49	27.74	0.16
KM19	165	50 ans	Plan_Nat	87.52	358.78	364.18		364.23	0.000208	0.98	89.87	28.34	0.17
KM19	165	50 ans	Plan_Actuel	87.52	358.78	364.18		364.23	0.000208	0.98	89.87	28.34	0.17
KM19	165	100 ans	Plan_Nat	95.93	358.78	364.33		364.38	0.000217	1.03	94.14	28.83	0.17
KM19	165	100 ans	Plan_Actuel	95.93	358.78	364.33		364.38	0.000217	1.03	94.14	28.83	0.17
KM19	160	2 ans	Plan_Nat	49.44	358.96	363.40		363.42	0.000149	0.72	69.09	24.96	0.14
KM19	160	2 ans	Plan_Actuel	49.44	358.96	363.40		363.42	0.000149	0.72	69.09	24.96	0.14
KM19	160	5 ans	Plan_Nat	59.83	358.96	363.64		363.67	0.000168	0.80	75.15	25.82	0.15
KM19	160	5 ans	Plan_Actuel	59.83	358.96	363.64		363.67	0.000168	0.80	75.15	25.82	0.15
KM19	160	10 ans	Plan_Nat	68.73	358.96	363.82		363.86	0.000181	0.86	80.01	26.55	0.15
KM19	160	10 ans	Plan_Actuel	68.73	358.96	363.82		363.86	0.000181	0.86	80.01	26.55	0.15
KM19	160	20 ans	Plan_Nat	77.14	358.96	363.99		364.03	0.000193	0.92	84.43	27.15	0.16
KM19	160	20 ans	Plan_Actuel	77.14	358.96	363.99		364.03	0.000193	0.92	84.43	27.15	0.16
KM19	160	25 ans	Plan_Nat	79.12	358.96	364.02		364.07	0.000195	0.93	85.46	27.26	0.16
KM19	160	25 ans	Plan_Actuel	79.12	358.96	364.02		364.07	0.000195	0.93	85.46	27.26	0.16
KM19	160	50 ans	Plan_Nat	87.52	358.96	364.18		364.23	0.000205	0.98	89.75	27.80	0.17
KM19	160	50 ans	Plan_Actuel	87.52	358.96	364.18		364.23	0.000205	0.98	89.75	27.80	0.17
KM19	160	100 ans	Plan_Nat	95.93	358.96	364.33		364.38	0.000215	1.03	93.95	28.36	0.17
KM19	160	100 ans	Plan_Actuel	95.93	358.96	364.33		364.38	0.000215	1.03	93.95	28.36	0.17
KM19	155	2 ans	Plan_Nat	49.44	359.31	363.36		363.42	0.000492	1.08	45.65	21.76	0.24
KM19	155	2 ans	Plan_Actuel	49.44	359.31	363.36		363.42	0.000492	1.08	45.65	21.76	0.24
KM19	155	5 ans	Plan_Nat	59.83	359.31	363.59		363.66	0.000522	1.18	50.83	22.70	0.25
KM19	155	5 ans	Plan_Actuel	59.83	359.31	363.59		363.66	0.000522	1.18	50.83	22.70	0.25
KM19	155	10 ans	Plan_Nat	68.73	359.31	363.77		363.85	0.000533	1.25	55.02	23.51	0.26
KM19	155	10 ans	Plan_Actuel	68.73	359.31	363.77		363.85	0.000533	1.25	55.02	23.51	0.26
KM19	155	20 ans	Plan_Nat	77.14	359.31	363.93		364.02	0.000543	1.32	58.85	24.18	0.26
KM19	155	20 ans	Plan_Actuel	77.14	359.31	363.93		364.02	0.000543	1.32	58.85	24.18	0.26
KM19	155	25 ans	Plan_Nat	79.12	359.31	363.97		364.06	0.000545	1.33	59.75	24.32	0.26
KM19	155	25 ans	Plan_Actuel	79.12	359.31	363.97		364.06	0.000545	1.33	59.75	24.32	0.26
KM19	155	50 ans	Plan_Nat	87.52	359.31	364.12		364.22	0.000553	1.39	63.50	24.94	0.27
KM19	155	50 ans	Plan_Actuel	87.52	359.31	364.12		364.22	0.000553	1.39	63.50	24.94	0.27
KM19	155	100 ans	Plan_Nat	95.93	359.31	364.27		364.38	0.000561	1.45	67.18	25.47	0.27
KM19	155	100 ans	Plan_Actuel	95.93	359.31	364.27		364.38	0.000561	1.45	67.18	25.47	0.27
KM19	150	2 ans	Plan_Nat	49.44	359.97	363.33		363.41	0.000839	1.29	38.30	21.31	0.31
KM19	150	2 ans	Plan_Actuel	49.44	359.97	363.33		363.41	0.000839	1.29	38.30	21.31	0.31
KM19	150	5 ans	Plan_Nat	59.83	359.97	363.56		363.66	0.000834	1.38	43.35	22.32	0.31
KM19	150	5 ans	Plan_Actuel	59.83	359.97	363.56		363.66	0.000834	1.38	43.35	22.32	0.31
KM19	150	10 ans	Plan_Nat	68.73	359.97	363.74		363.85	0.000825	1.46	47.43	23.07	0.31
KM19	150	10 ans	Plan_Actuel	68.73	359.97	363.74		363.85	0.000825	1.46	47.43	23.07	0.31
KM19	150	20 ans	Plan_Nat	77.14	359.97	363.90		364.02	0.000821	1.52	51.16	23.73	0.32
KM19	150	20 ans	Plan_Actuel	77.14	359.97	363.90		364.02	0.000821	1.52	51.16	23.73	0.32
KM19	150	25 ans	Plan_Nat	79.12	359.97	363.94		364.06	0.000820	1.54	52.03	23.87	0.32
KM19	150	25 ans	Plan_Actuel	79.12	359.97	363.94		364.06	0.000820	1.54	52.03	23.87	0.32
KM19	150	50 ans	Plan_Nat	87.52	359.97	364.09		364.22	0.000815	1.60	55.68	24.48	0.32

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	150	50 ans	Plan_Actuel	87.52	359.97	364.09		364.22	0.000815	1.60	55.68	24.48	0.32
KM19	150	100 ans	Plan_Nat	95.93	359.97	364.23		364.37	0.000811	1.65	59.27	25.06	0.32
KM19	150	100 ans	Plan_Actuel	95.93	359.97	364.23		364.37	0.000811	1.65	59.27	25.06	0.32
KM19	142	2 ans	Plan_Nat	49.44	359.74	363.32		363.41	0.000795	1.28	38.75	20.94	0.30
KM19	142	2 ans	Plan_Actuel	49.44	359.74	363.32		363.41	0.000795	1.28	38.75	20.94	0.30
KM19	142	5 ans	Plan_Nat	59.83	359.74	363.55		363.65	0.000798	1.37	43.71	21.93	0.31
KM19	142	5 ans	Plan_Actuel	59.83	359.74	363.55		363.65	0.000798	1.37	43.71	21.93	0.31
KM19	142	10 ans	Plan_Nat	68.73	359.74	363.73		363.84	0.000796	1.45	47.71	22.68	0.31
KM19	142	10 ans	Plan_Actuel	68.73	359.74	363.73		363.84	0.000796	1.45	47.71	22.68	0.31
KM19	142	20 ans	Plan_Nat	77.14	359.74	363.89		364.01	0.000796	1.52	51.38	23.36	0.31
KM19	142	20 ans	Plan_Actuel	77.14	359.74	363.89		364.01	0.000796	1.52	51.38	23.36	0.31
KM19	142	25 ans	Plan_Nat	79.12	359.74	363.93		364.05	0.000796	1.53	52.23	23.51	0.31
KM19	142	25 ans	Plan_Actuel	79.12	359.74	363.93		364.05	0.000796	1.53	52.23	23.51	0.31
KM19	142	50 ans	Plan_Nat	87.52	359.74	364.08		364.21	0.000795	1.59	55.83	24.13	0.32
KM19	142	50 ans	Plan_Actuel	87.52	359.74	364.08		364.21	0.000795	1.59	55.83	24.13	0.32
KM19	142	100 ans	Plan_Nat	95.93	359.74	364.23		364.36	0.000795	1.65	59.37	24.81	0.32
KM19	142	100 ans	Plan_Actuel	95.93	359.74	364.23		364.36	0.000795	1.65	59.37	24.81	0.32
KM19	136	2 ans	Plan_Nat	49.44	359.48	363.34		363.39	0.000410	1.04	47.67	20.95	0.22
KM19	136	2 ans	Plan_Actuel	49.44	359.48	363.34		363.39	0.000410	1.04	47.67	20.95	0.22
KM19	136	5 ans	Plan_Nat	59.83	359.48	363.57		363.64	0.000445	1.14	52.63	21.79	0.23
KM19	136	5 ans	Plan_Actuel	59.83	359.48	363.57		363.64	0.000445	1.14	52.63	21.79	0.23
KM19	136	10 ans	Plan_Nat	68.73	359.48	363.75		363.83	0.000464	1.22	56.64	22.66	0.24
KM19	136	10 ans	Plan_Actuel	68.73	359.48	363.75		363.83	0.000464	1.22	56.64	22.66	0.24
KM19	136	20 ans	Plan_Nat	77.14	359.48	363.91		364.00	0.000480	1.29	60.33	23.38	0.25
KM19	136	20 ans	Plan_Actuel	77.14	359.48	363.91		364.00	0.000480	1.29	60.33	23.38	0.25
KM19	136	25 ans	Plan_Nat	79.12	359.48	363.95		364.04	0.000483	1.30	61.19	23.49	0.25
KM19	136	25 ans	Plan_Actuel	79.12	359.48	363.95		364.04	0.000483	1.30	61.19	23.49	0.25
KM19	136	50 ans	Plan_Nat	87.52	359.48	364.10		364.20	0.000496	1.37	64.79	23.97	0.25
KM19	136	50 ans	Plan_Actuel	87.52	359.48	364.10		364.20	0.000496	1.37	64.79	23.97	0.25
KM19	136	100 ans	Plan_Nat	95.93	359.48	364.25		364.35	0.000508	1.43	68.31	24.66	0.26
KM19	136	100 ans	Plan_Actuel	95.93	359.48	364.25		364.35	0.000508	1.43	68.31	24.66	0.26
KM19	130	2 ans	Plan_Nat	49.44	359.48	363.31		363.39	0.000679	1.23	40.18	20.14	0.28
KM19	130	2 ans	Plan_Actuel	49.44	359.48	363.31		363.39	0.000679	1.23	40.18	20.14	0.28
KM19	130	5 ans	Plan_Nat	59.83	359.48	363.54		363.63	0.000702	1.33	44.94	21.32	0.29
KM19	130	5 ans	Plan_Actuel	59.83	359.48	363.54		363.63	0.000702	1.33	44.94	21.32	0.29
KM19	130	10 ans	Plan_Nat	68.73	359.48	363.72		363.82	0.000713	1.42	48.82	22.23	0.29
KM19	130	10 ans	Plan_Actuel	68.73	359.48	363.72		363.82	0.000713	1.42	48.82	22.23	0.29
KM19	130	20 ans	Plan_Nat	77.14	359.48	363.88		363.99	0.000724	1.49	52.40	23.04	0.30
KM19	130	20 ans	Plan_Actuel	77.14	359.48	363.88		363.99	0.000724	1.49	52.40	23.04	0.30
KM19	130	25 ans	Plan_Nat	79.12	359.48	363.91		364.03	0.000726	1.51	53.24	23.23	0.30
KM19	130	25 ans	Plan_Actuel	79.12	359.48	363.91		364.03	0.000726	1.51	53.24	23.23	0.30
KM19	130	50 ans	Plan_Nat	87.52	359.48	364.06		364.19	0.000733	1.57	56.77	23.99	0.30
KM19	130	50 ans	Plan_Actuel	87.52	359.48	364.06		364.19	0.000733	1.57	56.77	23.99	0.30
KM19	130	100 ans	Plan_Nat	95.93	359.48	364.21		364.34	0.000740	1.63	60.27	24.63	0.31
KM19	130	100 ans	Plan_Actuel	95.93	359.48	364.21		364.34	0.000740	1.63	60.27	24.63	0.31
KM19	125	2 ans	Plan_Nat	49.44	359.58	363.29		363.38	0.000842	1.33	37.15	19.54	0.31
KM19	125	2 ans	Plan_Actuel	49.44	359.58	363.29		363.38	0.000842	1.33	37.15	19.54	0.31
KM19	125	5 ans	Plan_Nat	59.83	359.58	363.52		363.63	0.000851	1.44	41.74	20.71	0.32
KM19	125	5 ans	Plan_Actuel	59.83	359.58	363.52		363.63	0.000851	1.44	41.74	20.71	0.32
KM19	125	10 ans	Plan_Nat	68.73	359.58	363.70		363.82	0.000860	1.52	45.47	21.61	0.32
KM19	125	10 ans	Plan_Actuel	68.73	359.58	363.70		363.82	0.000860	1.52	45.47	21.61	0.32
KM19	125	20 ans	Plan_Nat	77.14	359.58	363.85		363.98	0.000868	1.60	48.91	22.42	0.33
KM19	125	20 ans	Plan_Actuel	77.14	359.58	363.85		363.98	0.000868	1.60	48.91	22.42	0.33
KM19	125	25 ans	Plan_Nat	79.12	359.58	363.89		364.02	0.000869	1.62	49.73	22.61	0.33
KM19	125	25 ans	Plan_Actuel	79.12	359.58	363.89		364.02	0.000869	1.62	49.73	22.61	0.33
KM19	125	50 ans	Plan_Nat	87.52	359.58	364.04		364.18	0.000874	1.68	53.14	23.36	0.33
KM19	125	50 ans	Plan_Actuel	87.52	359.58	364.04		364.18	0.000874	1.68	53.14	23.36	0.33
KM19	125	100 ans	Plan_Nat	95.93	359.58	364.18		364.34	0.000878	1.75	56.52	24.06	0.33
KM19	125	100 ans	Plan_Actuel	95.93	359.58	364.18		364.34	0.000878	1.75	56.52	24.06	0.33
KM19	120	2 ans	Plan_Nat	49.44	359.75	363.28		363.38	0.000986	1.41	35.02	18.97	0.33
KM19	120	2 ans	Plan_Actuel	49.44	359.75	363.28		363.38	0.000986	1.41	35.02	18.97	0.33
KM19	120	5 ans	Plan_Nat	59.83	359.75	363.50		363.62	0.001006	1.52	39.46	20.13	0.34
KM19	120	5 ans	Plan_Actuel	59.83	359.75	363.50		363.62	0.001006	1.52	39.46	20.13	0.34
KM19	120	10 ans	Plan_Nat	68.73	359.75	363.68		363.81	0.001007	1.60	43.07	21.03	0.35
KM19	120	10 ans	Plan_Actuel	68.73	359.75	363.68		363.81	0.001007	1.60	43.07	21.03	0.35
KM19	120	20 ans	Plan_Nat	77.14	359.75	363.84		363.98	0.001008	1.68	46.41	21.83	0.35
KM19	120	20 ans	Plan_Actuel	77.14	359.75	363.84		363.98	0.001008	1.68	46.41	21.83	0.35
KM19	120	25 ans	Plan_Nat	79.12	359.75	363.87		364.02	0.001008	1.70	47.19	21.99	0.35
KM19	120	25 ans	Plan_Actuel	79.12	359.75	363.87		364.02	0.001008	1.70	47.19	21.99	0.35
KM19	120	50 ans	Plan_Nat	87.52	359.75	364.02		364.18	0.001008	1.77	50.49	22.68	0.35
KM19	120	50 ans	Plan_Actuel	87.52	359.75	364.02		364.18	0.001008	1.77	50.49	22.68	0.35
KM19	120	100 ans	Plan_Nat	95.93	359.75	364.16		364.33	0.001007	1.83	53.76	23.39	0.36
KM19	120	100 ans	Plan_Actuel	95.93	359.75	364.16		364.33	0.001007	1.83	53.76	23.39	0.36
KM19	115	2 ans	Plan_Nat	49.44	360.18	363.27	362.03	363.37	0.001001	1.41	35.03	19.28	0.33
KM19	115	2 ans	Plan_Actuel	49.44	360.18	363.27	362.03	363.37	0.001001	1.41	35.03	19.28	0.33
KM19	115	5 ans	Plan_Nat	59.83	360.18	363.50	362.21	363.62	0.001001	1.52	39.52	20.36	0.34
KM19	115	5 ans	Plan_Actuel	59.83	360.18	363.50	362.21	363.62	0.001001	1.52	39.52	20.36	0.34
KM19	115	10 ans	Plan_Nat	68.73	360.18	363.67	362.34	363.81	0.001000	1.60	43.16	21.08	0.35
KM19	115	10 ans	Plan_Actuel	68.73	360.18	363.67	362.34	363.81	0.001000	1.60	43.16	21.08	0.35

HEC-RAS River: Riviere Mistago Reach: KM19 (Continued)

Reach	River Sta	Profile	Plan	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)	
KM19	115	20 ans	Plan_Nat	77.14	360.18	363.83	362.46	363.97	0.001001	1.68	46.49	21.74	0.35
KM19	115	20 ans	Plan_Actuel	77.14	360.18	363.83	362.46	363.97	0.001001	1.68	46.49	21.74	0.35
KM19	115	25 ans	Plan_Nat	79.12	360.18	363.87	362.48	364.01	0.001001	1.70	47.28	21.88	0.35
KM19	115	25 ans	Plan_Actuel	79.12	360.18	363.87	362.48	364.01	0.001001	1.70	47.28	21.88	0.35
KM19	115	50 ans	Plan_Nat	87.52	360.18	364.01	362.60	364.17	0.001001	1.76	50.55	22.50	0.35
KM19	115	50 ans	Plan_Actuel	87.52	360.18	364.01	362.60	364.17	0.001001	1.76	50.55	22.50	0.35
KM19	115	100 ans	Plan_Nat	95.93	360.18	364.16	362.70	364.33	0.001000	1.83	53.81	23.25	0.36
KM19	115	100 ans	Plan_Actuel	95.93	360.18	364.16	362.70	364.33	0.001000	1.83	53.81	23.25	0.36

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 2 ans

E.G. US. (m)	364.91	Element	Inside BR US	Inside BR DS
W.S. US. (m)	364.88	E.G. Elev (m)	364.91	364.90
Q Total (m3/s)	49.44	W.S. Elev (m)	364.88	364.78
Q Bridge (m3/s)	49.44	Crit W.S. (m)	362.36	363.73
Q Weir (m3/s)		Max Chl Dpth (m)	4.70	3.13
Weir Sta Lft (m)		Vel Total (m/s)	0.79	1.51
Weir Sta Rgt (m)		Flow Area (m2)	62.81	32.69
Weir Submerg		Froude # Chl	0.16	0.38
Weir Max Depth (m)		Specif Force (m3)	105.63	43.69
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.48	1.65
Min El Prs (m)	368.27	W.P. Total (m)	27.08	21.44
Delta EG (m)	0.02	Conv. Total (m3/s)	3439.1	1353.4
Delta WS (m)	0.10	Top Width (m)	25.32	19.79
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.51	C & E Loss (m)	0.01	0.00
BR Sluice Coef		Shear Total (N/m2)	4.70	19.96
BR Sel Method	Energy only	Power Total (N/m s)	3.70	30.18

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 5 ans

E.G. US. (m)	365.14	Element	Inside BR US	Inside BR DS
W.S. US. (m)	365.10	E.G. Elev (m)	365.14	365.13
Q Total (m3/s)	59.83	W.S. Elev (m)	365.10	365.00
Q Bridge (m3/s)	59.83	Crit W.S. (m)	362.55	363.92
Q Weir (m3/s)		Max Chl Dpth (m)	4.93	3.35
Weir Sta Lft (m)		Vel Total (m/s)	0.87	1.62
Weir Sta Rgt (m)		Flow Area (m2)	68.64	37.02
Weir Submerg		Froude # Chl	0.17	0.38
Weir Max Depth (m)		Specif Force (m3)	121.74	53.38
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.57	1.80
Min El Prs (m)	368.27	W.P. Total (m)	28.52	22.39
Delta EG (m)	0.02	Conv. Total (m3/s)	3941.0	1634.2
Delta WS (m)	0.12	Top Width (m)	26.66	20.62
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.62	C & E Loss (m)	0.01	0.00
BR Sluice Coef		Shear Total (N/m2)	5.44	21.73
BR Sel Method	Energy only	Power Total (N/m s)	4.74	35.12

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 10 ans

E.G. US. (m)	365.32	Element	Inside BR US	Inside BR DS
W.S. US. (m)	365.28	E.G. Elev (m)	365.32	365.31
Q Total (m3/s)	68.73	W.S. Elev (m)	365.28	365.16
Q Bridge (m3/s)	68.73	Crit W.S. (m)	362.70	364.05
Q Weir (m3/s)		Max Chl Dpth (m)	5.10	3.51
Weir Sta Lft (m)		Vel Total (m/s)	0.94	1.70
Weir Sta Rgt (m)		Flow Area (m2)	73.34	40.48
Weir Submerg		Froude # Chl	0.18	0.39
Weir Max Depth (m)		Specif Force (m3)	135.39	61.85
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.69	1.90
Min El Prs (m)	368.27	W.P. Total (m)	29.23	23.16
Delta EG (m)	0.02	Conv. Total (m3/s)	4380.6	1876.8
Delta WS (m)	0.12	Top Width (m)	27.28	21.29
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.70	C & E Loss (m)	0.01	0.00

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 10 ans (Continued)

BR Sluice Coef		Shear Total (N/m2)	6.06	22.99
BR Sel Method	Energy only	Power Total (N/m s)	5.68	39.03

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 20 ans

E.G. US. (m)	365.49	Element	Inside BR US	Inside BR DS
W.S. US. (m)	365.44	E.G. Elev (m)	365.49	365.47
Q Total (m3/s)	77.14	W.S. Elev (m)	365.43	365.31
Q Bridge (m3/s)	77.14	Crit W.S. (m)	362.82	364.17
Q Weir (m3/s)		Max Chl Dpth (m)	5.26	3.66
Weir Sta Lft (m)		Vel Total (m/s)	0.99	1.76
Weir Sta Rgt (m)		Flow Area (m2)	77.68	43.72
Weir Submerg		Froude # Chl	0.18	0.39
Weir Max Depth (m)		Specif Force (m3)	148.55	70.18
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.79	1.99
Min El Prs (m)	368.27	W.P. Total (m)	29.90	23.91
Delta EG (m)	0.02	Conv. Total (m3/s)	4794.1	2108.4
Delta WS (m)	0.13	Top Width (m)	27.87	21.96
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.76	C & E Loss (m)	0.01	0.00
BR Sluice Coef		Shear Total (N/m2)	6.60	24.00
BR Sel Method	Energy only	Power Total (N/m s)	6.55	42.35

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 25 ans

E.G. US. (m)	365.53	Element	Inside BR US	Inside BR DS
W.S. US. (m)	365.47	E.G. Elev (m)	365.52	365.51
Q Total (m3/s)	79.12	W.S. Elev (m)	365.47	365.35
Q Bridge (m3/s)	79.12	Crit W.S. (m)	362.85	364.20
Q Weir (m3/s)		Max Chl Dpth (m)	5.30	3.70
Weir Sta Lft (m)		Vel Total (m/s)	1.00	1.78
Weir Sta Rgt (m)		Flow Area (m2)	78.74	44.51
Weir Submerg		Froude # Chl	0.19	0.39
Weir Max Depth (m)		Specif Force (m3)	151.80	72.25
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.81	2.01
Min El Prs (m)	368.27	W.P. Total (m)	30.06	24.10
Delta EG (m)	0.02	Conv. Total (m3/s)	4895.3	2168.9
Delta WS (m)	0.13	Top Width (m)	28.01	22.13
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.78	C & E Loss (m)	0.01	0.00
BR Sluice Coef		Shear Total (N/m2)	6.71	24.10
BR Sel Method	Energy only	Power Total (N/m s)	6.74	42.83

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 50 ans

E.G. US. (m)	365.68	Element	Inside BR US	Inside BR DS
W.S. US. (m)	365.62	E.G. Elev (m)	365.68	365.66
Q Total (m3/s)	87.52	W.S. Elev (m)	365.62	365.49
Q Bridge (m3/s)	87.52	Crit W.S. (m)	362.97	364.31
Q Weir (m3/s)		Max Chl Dpth (m)	5.44	3.84
Weir Sta Lft (m)		Vel Total (m/s)	1.06	1.84
Weir Sta Rgt (m)		Flow Area (m2)	82.88	47.64
Weir Submerg		Froude # Chl	0.19	0.39
Weir Max Depth (m)		Specif Force (m3)	164.98	80.77
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.90	2.08
Min El Prs (m)	368.27	W.P. Total (m)	30.66	24.90

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 50 ans (Continued)

Delta EG (m)	0.02	Conv. Total (m3/s)	5297.6	2409.4
Delta WS (m)	0.14	Top Width (m)	28.53	22.86
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.84	C & E Loss (m)	0.01	0.00
BR Sluice Coef		Shear Total (N/m2)	7.23	24.76
BR Sel Method	Energy only	Power Total (N/m s)	7.64	45.49

Plan: Plan_Actuel Riviere Mistago KM19 RS: 265 Profile: 100 ans

E.G. US. (m)	365.83	Element	Inside BR US	Inside BR DS
W.S. US. (m)	365.76	E.G. Elev (m)	365.82	365.81
Q Total (m3/s)	95.93	W.S. Elev (m)	365.76	365.62
Q Bridge (m3/s)	95.93	Crit W.S. (m)	363.08	364.41
Q Weir (m3/s)		Max Chl Dpth (m)	5.58	3.97
Weir Sta Lft (m)		Vel Total (m/s)	1.10	1.89
Weir Sta Rgt (m)		Flow Area (m2)	86.93	50.74
Weir Submerg		Froude # Chl	0.20	0.39
Weir Max Depth (m)		Specif Force (m3)	178.35	89.55
Min El Weir Flow (m)	370.39	Hydr Depth (m)	2.99	2.16
Min El Prs (m)	368.27	W.P. Total (m)	31.24	25.62
Delta EG (m)	0.02	Conv. Total (m3/s)	5697.5	2651.6
Delta WS (m)	0.15	Top Width (m)	29.04	23.52
BR Open Area (m2)	131.91	Frctn Loss (m)	0.00	0.00
BR Open Vel (m/s)	1.89	C & E Loss (m)	0.01	0.00
BR Sluice Coef		Shear Total (N/m2)	7.74	25.42
BR Sel Method	Energy only	Power Total (N/m s)	8.54	48.07