Flood Plain Mapping Study

Ops #1 Drain/Jennings Creek

TECHNICAL APPENDICES FOR FINAL REPORT

April 2014

KAWARTHA CONSERVATION

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City of KAWARTHA LAKES

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Appendix A
Previous Report Excerpts

Appendix A.1

Aquafor Beech *Ops# 1 Drain Functional Storm Water Management Study*
November 2001

OPS # 1 DRAIN
FUNCTIONAL STORMWATER MANAGEMENT REPORT

Report Prepared for:

CITY OF KAWARTHA LAKES
&
KAWARTHA REGION
CONSERVATION AUTHORITY

Prepared by:

AQUAFOR BEECH LIMITED
14 Abacus Road, Brampton
ONT. L6T 5B7

November 2001
Project No.: 63804

Figure 3.2.2
Existing Conditions Land Use

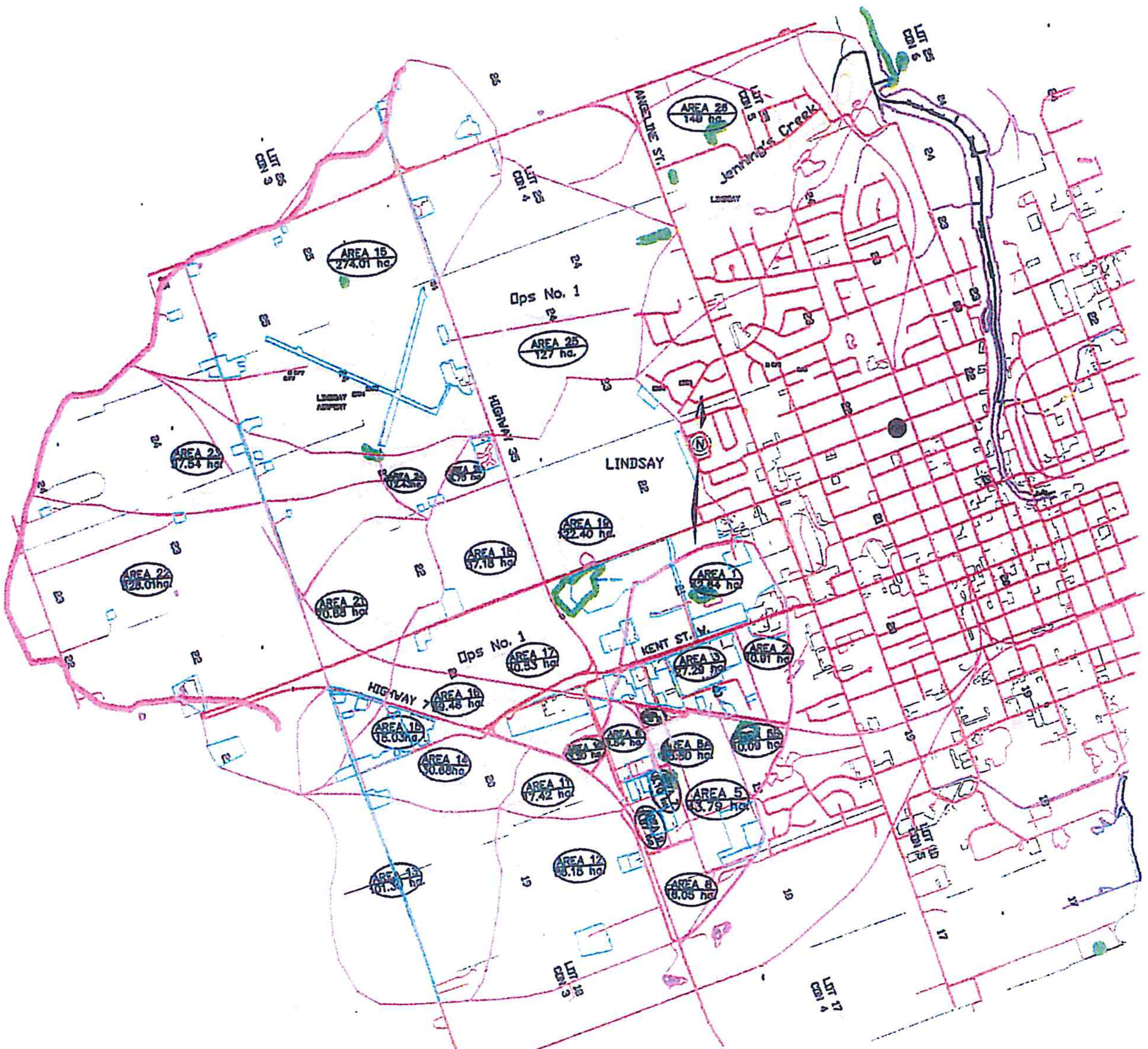


Figure 3.2.3
Near Future Conditions Land USE

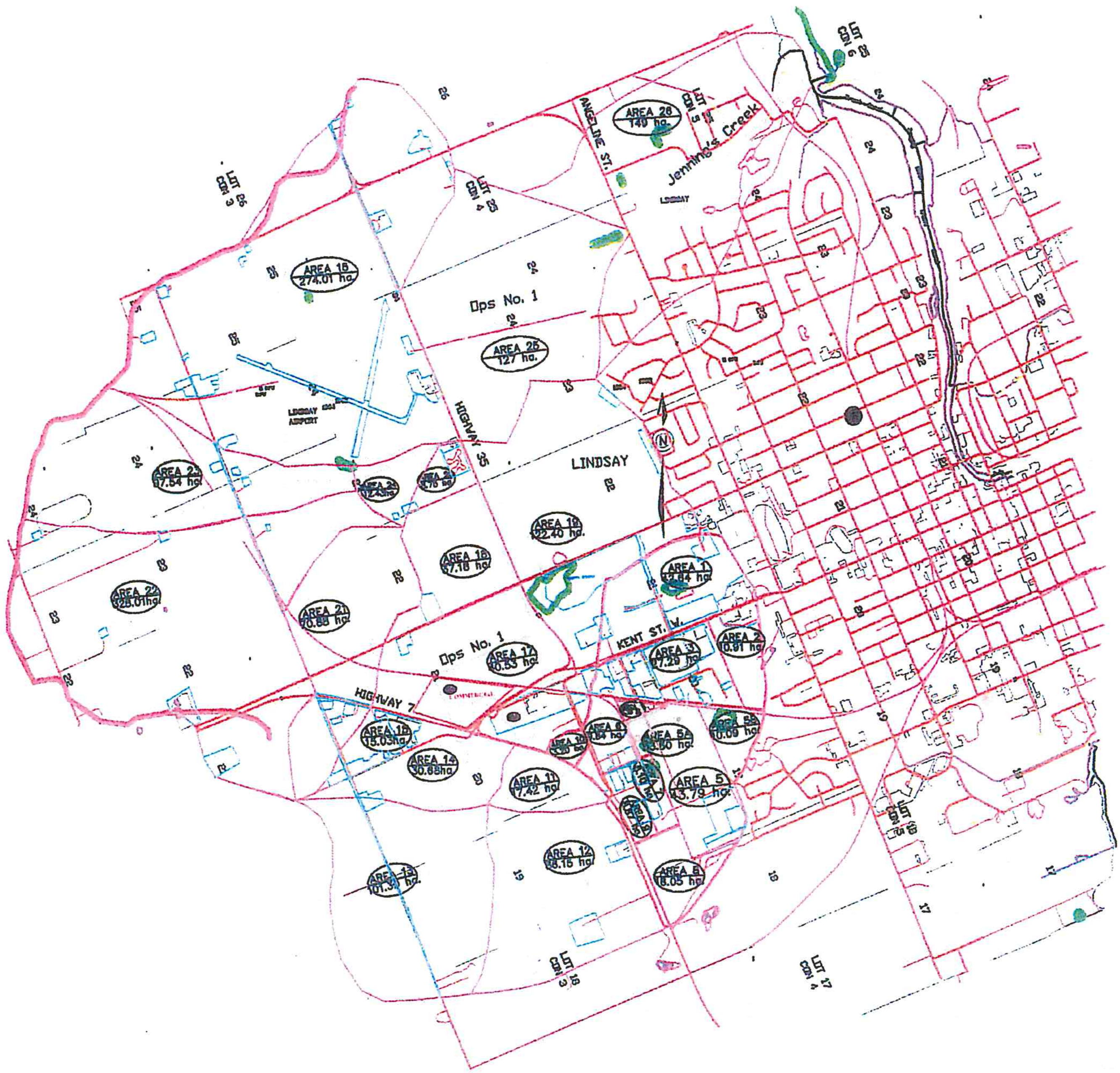


Figure 3.2.4
Intermediate Future Conditions Land Use

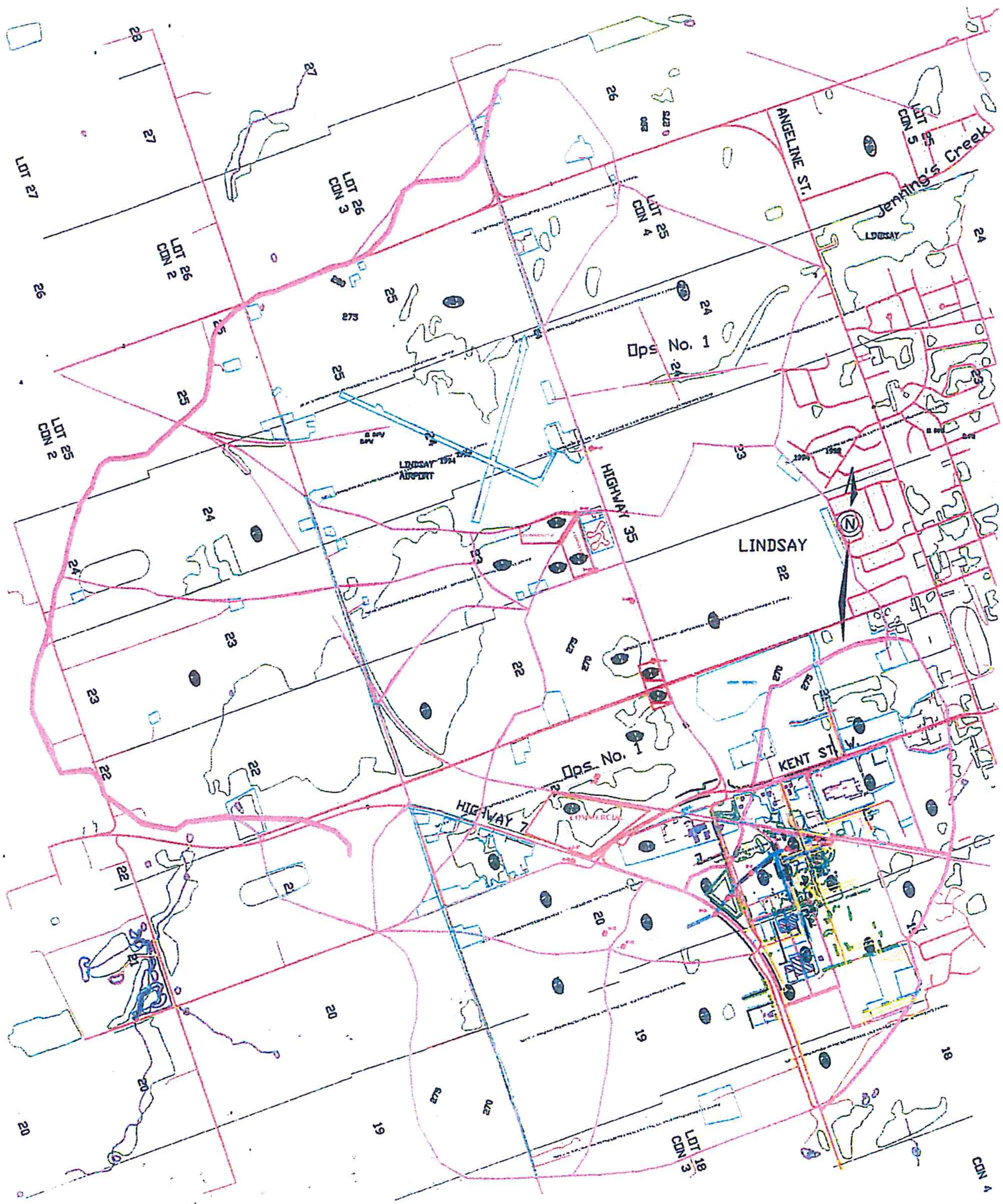


Figure 3.2.5
Ultimate Future Conditions Land Use

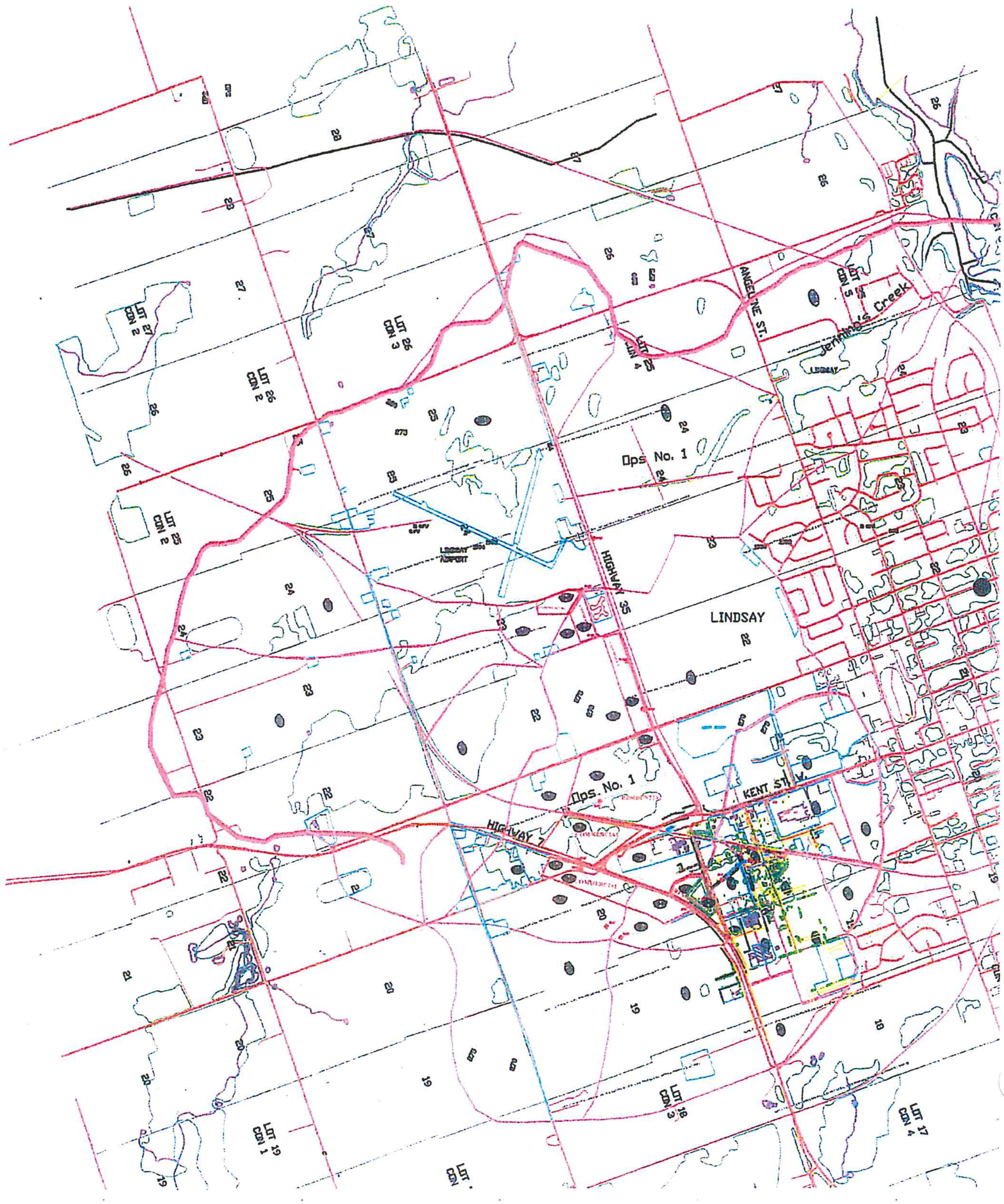


TABLE 3.4.6 OPS # 1 DRAIN 100 YEAR FLOWS

Flow Point	Existing Conditions			Near Future			Interim Future			Ultimate Future		
	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm
Highway 7-35, (*add hyd 12*)	9.9	58.2	42.9	10.0	58.8	42.9	10.0	58.8	42.9	10.2	60.0	43.5
170 ha. Drainage Area												
Highway 7 - Kent Street, (*add hyd 17*)	19.6	46.6	43.3	19.6	46.6	43.3	19.6	46.6	43.3	18.0	42.7	45.6
421 ha. Drainage Area												
Colborne Street, (*add hyd 20*)	17.3	34.5	42.9	17.4	34.7	43.6	17.4	34.7	43.7	17.5	34.9	45.8
501 ha. Drainage Area												
Highway 35 at Airport, (*add hyd 28*)	42.1	31.4	42.6	41.4	30.8	42.9	42.0	31.3	43.0	42.6	31.7	43.9
1342 ha. Drainage Area												
Angeline Street, (*add hyd 31*)	45.0	30.6	42.4	44.1	30.0	42.7	44.9	30.6	42.8	45.4	30.9	43.6
1469 ha. Drainage Area												
Canal, (*add hyd 33*)	50.5	31.2	43.5	49.3	30.5	43.8	50.3	31.1	43.9	50.9	31.5	44.7
1618 ha. Drainage Area												

TABLE 3.4.7 OPS # 1 DRAIN TIMMINS STORM FLOWS

Flow Point	Existing Conditions			Near Future			Interim Future			Ultimate Future		
	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm
Highway 7-35, (*add hyd 12*)	11.7	68.8	131.9	11.7	68.8	131.9	11.7	68.8	131.9	11.7	68.8	133.2
170 ha. Drainage Area												
Highway 7 - Kent Street, (*add hyd 17*)	26.2	62.2	135.0	26.2	62.2	135.0	26.2	62.2	135.0	26.4	62.7	136.8
421 ha. Drainage Area												
Colborne Street, (*add hyd 20*)	27.3	54.5	134.2	27.4	54.7	135.3	27.5	54.9	135.5	27.8	55.5	138.8
501 ha. Drainage Area												
Highway 35 at Airport, (*add hyd 28*)	70.2	52.3	135.2	69.1	51.5	135.6	69.9	51.5	135.9	67.1	50.0	137.2
1342 ha. Drainage Area												
Angeline Street, (*add hyd 31*)	76.1	51.8	134.9	74.8	50.9	135.3	75.8	51.6	135.5	72.7	49.5	136.8
1469 ha. Drainage Area												
Canal, (*add hyd 33*)	84.4	52.2	136.8	82.9	51.2	137.2	84.1	52.0	137.3	80.6	49.8	138.5
1618 ha. Drainage Area												

TABLE 3.4.6 OPS # 1 DRAIN 100 YEAR FLOWS

Flow Point	Existing Conditions			Near Future			Interim Future			Ultimate Future		
	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm
Highway 7-35, (*add hyd 12*) 170 ha. Drainage Area	9.9	58.2	42.9	10.0	58.8	42.9	10.0	58.8	42.9	10.2	60.0	43.5
Highway 7 - Kent Street, (*add hyd 17*) 421 ha. Drainage Area	19.6	46.6	43.3	19.6	46.6	43.3	19.6	46.6	43.3	18.0	42.7	45.6
Colborne Street, (*add hyd 20*) 501 ha. Drainage Area	17.3	34.5	42.9	17.4	34.7	43.6	17.4	34.7	43.7	17.5	34.9	45.8
Highway 35 at Airport, (*add hyd 28*) 1342 ha. Drainage Area	42.1	31.4	42.6	41.4	30.8	42.9	42.0	31.3	43.0	42.6	31.7	43.9
Angeline Street, (*add hyd 31*) 1469 ha. Drainage Area	45.0	30.6	42.4	44.1	30.0	42.7	44.9	30.6	42.8	45.4	30.9	43.6
Canal, (*add hyd 33*) 1618 ha. Drainage Area	50.5	31.2	43.5	49.3	30.5	43.8	50.3	31.1	43.9	50.9	31.5	44.7

TABLE 3.4.7 OPS # 1 DRAIN TIMMINS STORM FLOWS

Flow Point	Existing Conditions			Near Future			Interim Future			Ultimate Future		
	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm	m3/s	l/s/ha.	mm
Highway 7-35, (*add hyd 12*) 170 ha. Drainage Area	11.7	68.8	131.9	11.7	68.8	131.9	11.7	68.8	131.9	11.7	68.8	133.2
Highway 7 - Kent Street, (*add hyd 17*) 421 ha. Drainage Area	26.2	62.2	135.0	26.2	62.2	135.0	26.2	62.2	135.0	26.4	62.7	136.8
Colborne Street, (*add hyd 20*) 501 ha. Drainage Area	27.3	54.5	134.2	27.4	54.7	135.3	27.5	54.9	135.5	27.8	55.5	138.8
Highway 35 at Airport, (*add hyd 28*) 1342 ha. Drainage Area	70.2	52.3	135.2	69.1	51.5	135.6	69.9	51.5	135.9	67.1	50.0	137.2
Angeline Street, (*add hyd 31*) 1469 ha. Drainage Area	76.1	51.8	134.9	74.8	50.9	135.3	75.8	51.6	135.5	72.7	49.5	136.8
Canal, (*add hyd 33*) 1618 ha. Drainage Area	84.4	52.2	136.8	82.9	51.2	137.2	84.1	52.0	137.3	80.6	49.8	138.5

4.0 HYDRAULIC MODELING

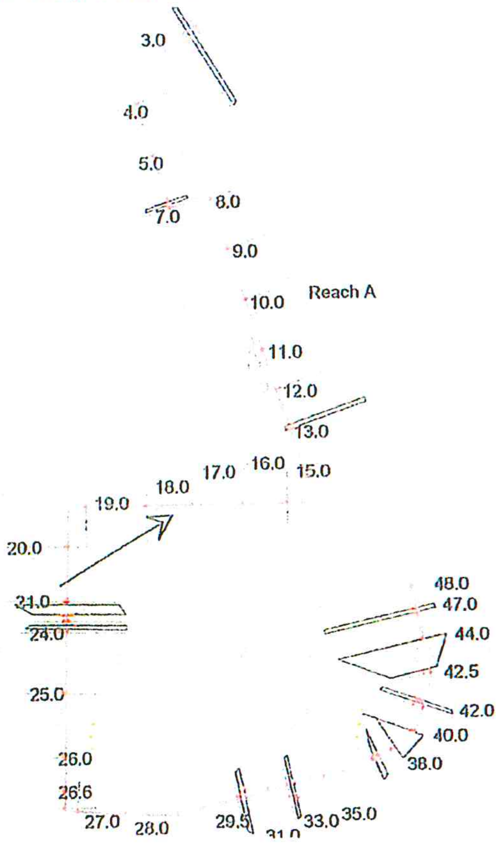
4.1 METHODOLOGY

The US Army Corps of Engineers HEC-RAS version 3.0.1 program was utilized to determine the water levels associated with the calculated flows from Highway 35 (at the Airport) upstream to Kent Street. A mixed flow regime was calculated such that both sub-critical and super-critical (calculated) water surface elevations would be obtained, rather than the model defaulting to critical depth. The model run was based upon steady state flow data (peak flow rates), as the HEC-RAS model does not yet have the capacity to calculate unsteady flows based on input hydrographs. The starting water surface utilized in the model was based upon a Manning's approximation of the flow depth in the channel/flood plain downstream of the Airport. Cross section data was obtained from a site surveys and 1:2000 base topographic mapping. Culvert characteristics (dimensions, material, slope, and depth of cover) from Highway 35 (at the Airport) to Kent Street were obtained during the site survey. Additional site visits were undertaken to obtain information on the Angeline, XXX, and Rail Trail Culverts. Summary details of the cross sections locations utilized in the HEC-RAS analysis are indicated on the appended Flood Line Drawing along with the Flood Lines calculated for the existing conditions Timmins Storm flows.

4.2 HYDRAULIC MODEL STRUCTURE

The relative locations of the cross sections utilized to determine water surface elevations within the OPS # 1 Drain are illustrated schematically in Figure 4.2.1, Hydraulic Model Structure, below and graphically on the attached Flood Line Drawing.

FIGURE 4.2.1, HYDRAULIC MODEL STRUCTURE



4.3 HYDRAULIC MODEL DATA

The hydraulic capacity of the OPS drain will be determined in large part by the lesser of either the channel conveyance capacity, or the roadway culvert capacity. In order to provide as accurate a determination of roughness values as possible, site walks were undertaken to assess roughness conditions along the channel and over-bank (flood plain) areas. Table 4.3.1, Roughness Values below presents the Mannings roughness values determined for the OPS drain.

TABLE 4.3.1, ROUGHNESS VALUES

River Sta	Frctn (n/K)	n #1	n #2	n #3
48	n	0.015	0.04	0.015
47	n	0.015	0.04	0.015
46	Culvert			
45	n	0.015	0.04	0.015
44	n	0.015	0.04	0.015
43.25	Culvert			
42.5	n	0.035	0.04	0.035
42	n	0.035	0.04	0.035
41.5	Culvert			
41	n	0.03	0.04	0.03
40	n	0.03	0.04	0.03
39	Culvert			
38	n	0.03	0.04	0.03
37	n	0.05	0.05	0.05
36.5	Culvert			
36	n	0.03	0.05	0.03
35	n	0.05	0.05	0.05
34	n	0.035	0.05	0.035
33.5	Culvert			
33	n	0.035	0.05	0.035
32	n	0.035	0.05	0.035
31	n	0.04	0.035	0.04
30.5	Culvert			
30	n	0.04	0.035	0.04
29.5	n	0.04	0.035	0.04
29	n	0.04	0.035	0.04
28	n	0.04	0.035	0.04
27	n	0.04	0.035	0.04
26.9	n	0.035	0.035	0.035
26.6	n	0.035	0.035	0.035
26	n	0.035	0.035	0.035
25	n	0.04	0.05	0.04
24	n	0.04	0.05	0.04
23.5	Culvert			
23	n	0.04	0.05	0.04
22	n	0.04	0.05	0.04
21.5	Culvert			
21	n	0.05	0.04	0.05
20	n	0.05	0.04	0.05
19	n	0.05	0.035	0.05
18	n	0.05	0.035	0.05
17	n	0.05	0.035	0.05
16	n	0.05	0.035	0.05
15	n	0.035	0.035	0.035
14	n	0.035	0.035	0.035
13	n	0.035	0.035	0.035
12.5	Culvert			
12	n	0.04	0.035	0.04
11	n	0.04	0.035	0.04
10	n	0.04	0.035	0.04
9	n	0.05	0.035	0.05
8	n	0.05	0.035	0.05
7	n	0.05	0.035	0.05
6.5	Culvert			
6	n	0.05	0.035	0.05
5	n	0.035	0.035	0.04
4	n	0.035	0.035	0.04
3	n	0.04	0.035	0.04
2	n	0.04	0.035	0.04
1.5	Culvert			
1	n	0.04	0.035	0.04

The capacity of the culverts located along the OPS drain will be largely determined by sizing and available headwater elevation. In order to obtain accurate data the topographic survey of the OPS drain obtained culvert lengths, span rise, slope, cover, and roadway profile data; the survey also determined that the majority of the CSP culverts had become deformed, (reduced height increased width). Due to the deformation of the culverts, equivalent culvert sizes were utilized for most of the CSP culverts. Table 4.3.2, Culvert Sizing below indicates the sizing of Culverts within the model and downstream of the modeled area.

TABLE 4.3.2, CULVERT SIZING

General				Surveyed		HEC-RAS	
Culvert #	X-Sec	Culvert Type	Desc.	Dimensions Span x Rise (m x m)	Total Area (m^2)	Dimensions Span x Rise (m x m)	Total Area (m^2)
1	1.5	T,E	M	3.1x1.74	33.89	2.96x2	37.20
2	6.5	S,E	P	2.6x2.2	17.97	2.83x1.9	16.89
3	12.5	T,E	M	2.1x1.3	17.15	1.86x1.4	16.36
4	21.5	T,E	M	2.1x1.5	19.79	2.06x1.5	19.42
5	23.5	T,E	P	2x1.6	21.11	2.06x1.5	19.42
6	30.5	S,E	M	2x1.1	6.91	1.73x1.3	7.07
7	33.5	S,E	P	1.65x0.9	4.67	1.42x1.0	4.46
8	36.5	T,C	P	0.9	10.18	0.9	10.18
9	39	S,C	H	1.8x1.0	5.65	1.46x1.1	5.05
10	41.5	S,C	P	1.2	9.05	1.2	9.05
11	43.25	S,C	H	1.28	10.29	1.28	10.29
12	46	S,C	M	1.22	9.35	1.22	9.35
Angelene Street		C.B.C.	P	2.6x4.2	2.5m cover		
Lindsay St.		C.S.P.A.	M	3.65	1.5m cover		
R.R.		C.I.B.C.	P	2.0x2.0	~3 m cover		

T= Twin
S= Single
E= Elliptical
C= Circular

		Entrance Loss
M=	Mitered to slope	0.7
P=	Projected from fill	0.9
H=	with Headwall	0.5

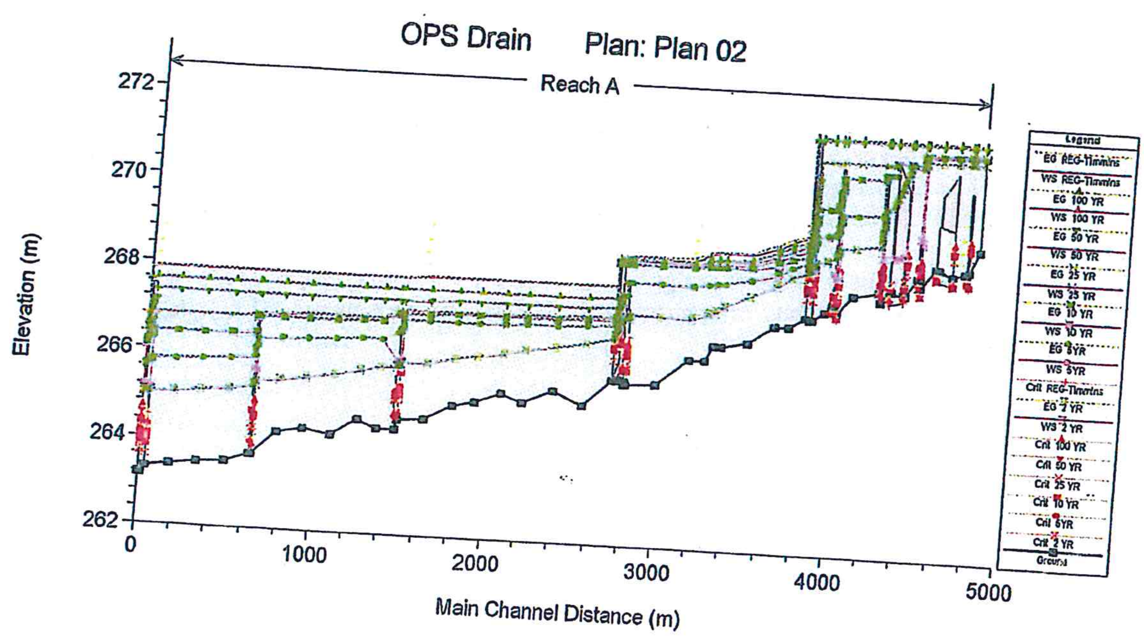
4.4 HYDRAULIC MODEL OUTPUT

Comparison of the Regional Storm flow data contained in Table 3.4.7 with the Culvert Size information contained in Table 3.4.2 above, taken in conjunction with the generally flat topography of the OPS # 1 Drain watershed, (and therefore relatively low culvert cover), indicates that insufficient culvert capacity is likely to be available to convey Regional flows.

Analysis of the approximate capacity (to overtopping of the roadway above the culvert), undertaken with the Haestad Methods Culvert Master Program for the Culverts downstream of the HEC-RAS model area determined that (*ignoring downstream backwater effects*) the Angelene St., and Lindsay St., culverts both have a potential capacity of approximately 40 m^3/s, while the downstream C.N.R. culvert only has a potential capacity of approximately 20 m^3/s. Based on the flows contained in Table 3.4.5 the Angelene St., and Lindsay St., culverts will, (*ignoring downstream backwater effects*) both be overtopped by flows in excess of approximately the 1:50 year event. Based on Table 3.4.2 the C.N.R. culvert (*ignoring downstream backwater effects*) will be overtopped by flows in excess of approximately the 1:5 year event.

The results predicted by the significantly more detailed HEC-RAS modeling undertaken for this study area similar to those obtained from the Culvert Master program in so much as significant inundation is shown to be occurring. Figure 4.4.1 HEC-RAS Profile Summary, below indicates that significant inundation is occurring during the Regional event, and that backwater effects are observable in events as low as a 1:5 year storm.

FIGURE 4.4.1 HEC-RAS PROFILE SUMMARY



Based on the graphical information displayed in Figure 4.4.1, and the tabular itemization of Regional water surface data presented in Table 4.4.1 Storm Flood Elevation Summary, and Table 4.4.2 HEC-RAS Output Summary, the limited capacity of the Highway # 35, Highway # 7, Highway # 7 - 35 culverts, and the capacity of the OPS # 1 Drain itself between HEC-RAS Sections 26 to 29, are all contributing to the over utilization of the OPS # 1 Drain Flood Plain. However, the inundation shown to occurring above the Highway # 35, Highway # 7, Highway # 7 - 35 culverts is not merely a product of the limited capacity of the culvert(s), but also a reflection of the greater (fill) height of provincial Highway profiles above the surrounding topography.

6.0 CONCLUSIONS & RECOMMENDATIONS

6.1 PLANNING / LAND USE ASSUMPTIONS

The Planning and Land use assumptions utilized within this study were supplied by the City of Kawartha Lakes Planning Department on a "without prejudice basis". In order for the land use assumptions / development scenarios and resultant flow rates to have legitimacy, a public process must be followed such that the relevant land owners, the general public, area interest groups, adjoining municipalities, provincial review agencies (MNR, MOE, MTO), the Federal Department of Fisheries and Oceans, and the Federal Department of Transport (Airport) may comment on the proposed scenarios. In addition environmental input as to the natural habitat or hydro-geologic value of the lands, and water, sanitary, and transportation servicing input, should all be factored into the proposed land use scenarios.

An Environmental Master Drainage Plan / Sub Watershed Study should therefore be initiated in accordance with the procedures defined within the June 2000 Municipal Class Environmental Assessment to determine appropriate land use scenarios for the OPS # 1 Drain watershed.

6.2 ENVIRONMENTAL INPUT

The environmental review of the OPS # 1 Drain undertaken for this study focused on the area upstream of the Highway # 35 (Airport) crossing, and determined that the drain is supporting a fish community, albeit within a degraded environment. Due to the disturbed nature of the OPS drain environment, opportunities for habitat enhancement exist. Natural channel modification of the OPS # 1 drain to improve is habitat and increase conveyance capacity should therefore be possible.

Initiation of a natural Channel design study (as part of the Environmental Master Drainage Plan Study) to examine alternatives to improve the habitat and conveyance capacity(s) of the OPS # 1 drain is therefore recommended.

6.3 HYDROLOGIC & HYDRAULIC MODELLING

Examination of the routing / flow attenuation predicted by the Hydrologic model in both sections 3.3 and 4.5 of this report, indicates that flood plain attenuation is not being accurately represented within the hydrologic model. Utilization of a either a (future) hydrologic model capable of routing flows through the flat topography persisting in the study area, or a hydraulic model capable of routing hydrographs such as EXTRAN or FLDWAV will be required to produce more accurate peak flow rates and flood elevations.

Refinement of the flows and flood levels produced by this study through utilization of a dynamic hydraulic model such as EXTRAN or FLDWAV is therefore recommended, (as part of the Environmental Master Drainage Plan Study).

Calibration data (rainfall and stream runoff) should be gathered to facilitate determination of internal parameters within any future hydrologic / hydraulic model. Ideally a network of at least 3 gauges would be installed within the watershed, however as a minimum a single gauging station should be established to, provide calibration data for any future event hydrologic / hydraulic model(s), and allow the implementation of a continuous simulation model.

Appendix A.2

Aecom *OPS #1 Drain Floodplain Mapping Update*
April 2010

City of
KAWARTHA LAKES
Catch the Kawartha spirit

DRAFT

OPS#1 DRAIN
FLOODPLAIN MAPPING UPDATE

April 2010

TSH
engineers
architects
planners

RECEIVED
MAY 14 2010
K.R.C.A.

FIGURE 4.2.3
VISUAL OTTHYMO MODEL SCHEMATIC
EXISTING CONDITIONS

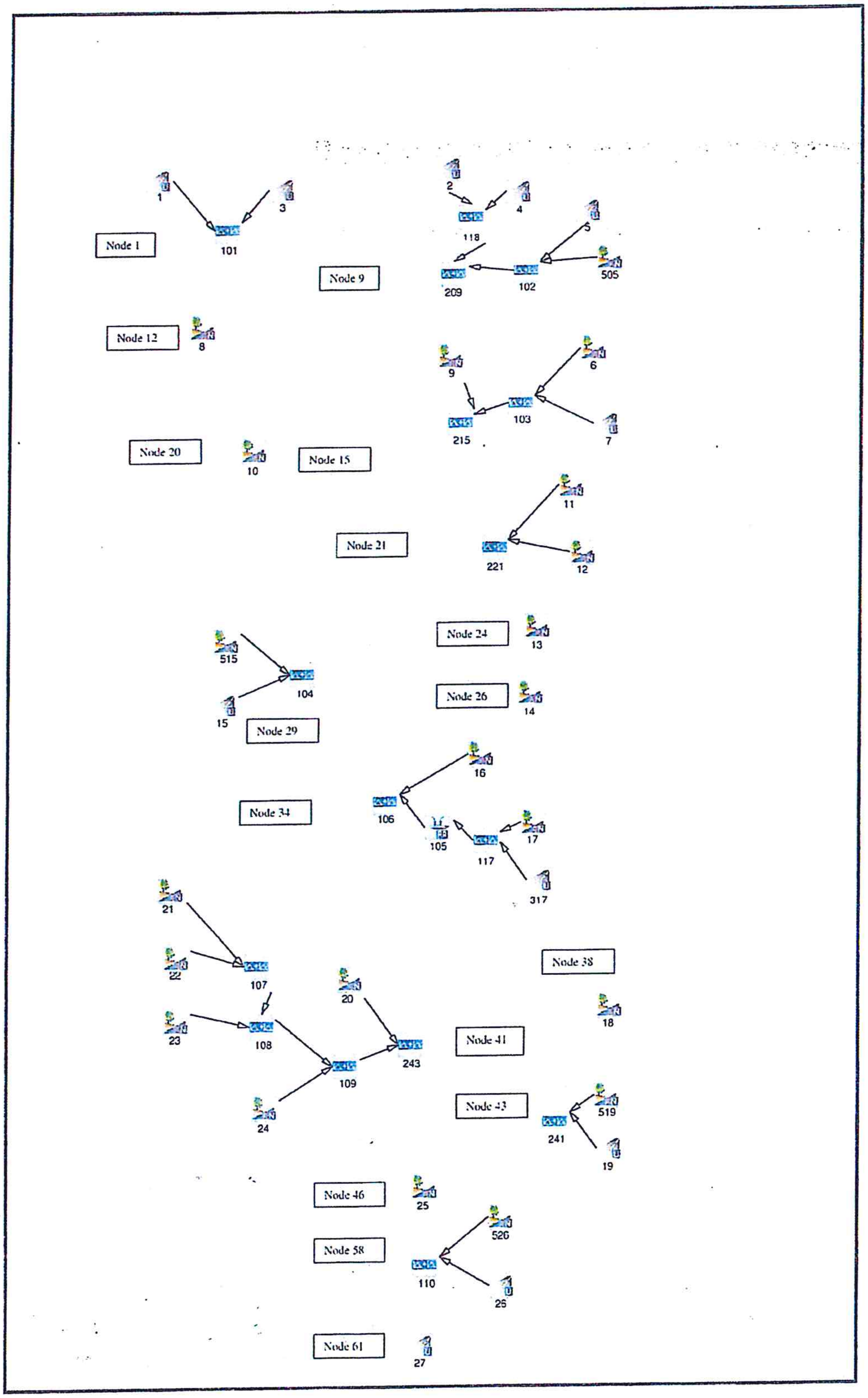


FIGURE 4.2.4
VISUAL OTTHYMO MODEL SCHEMATIC
FUTURE CONDITIONS

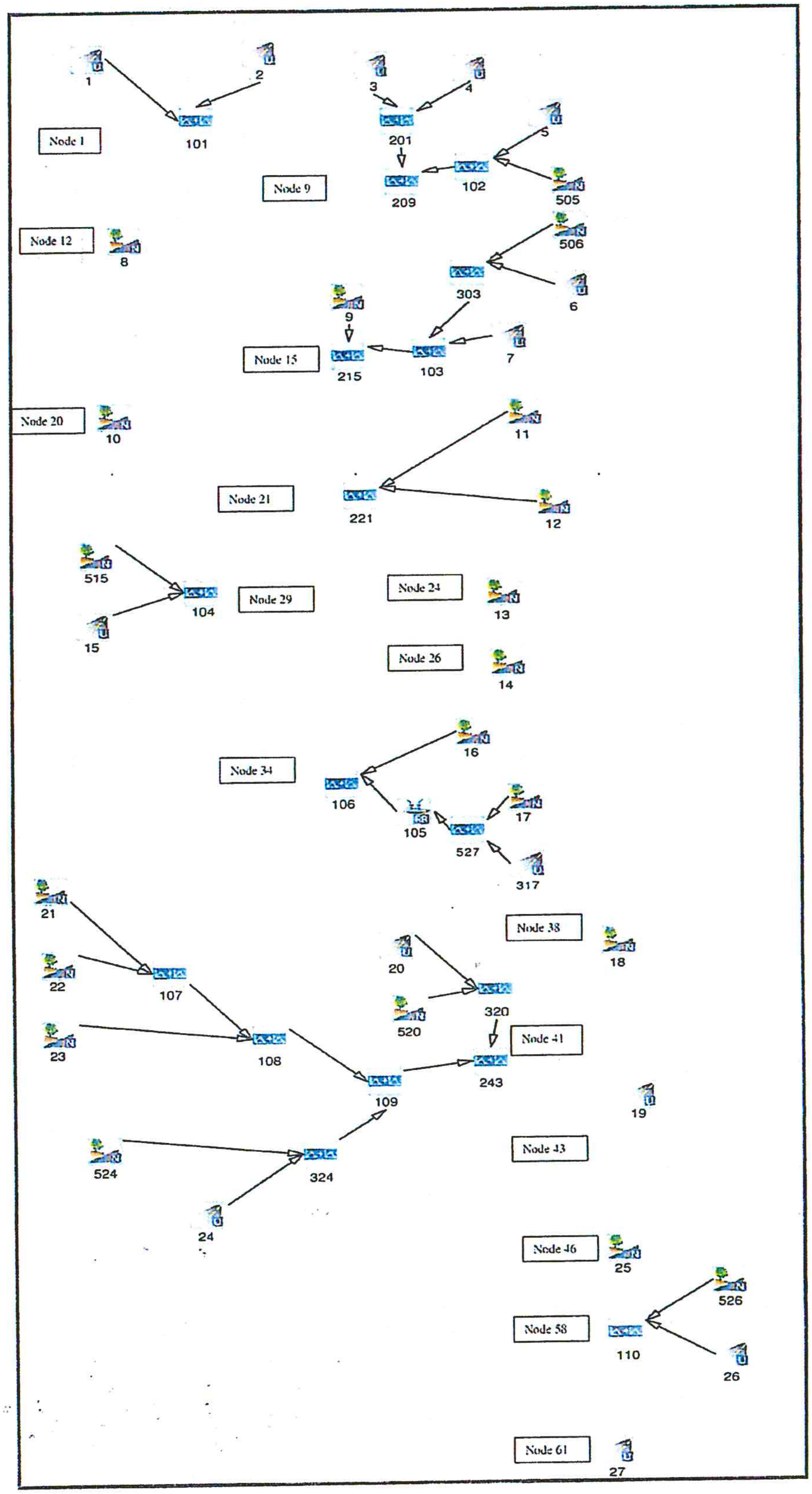


Table 4.3.1 Peak Flows Summary Generated by 4 hrs Chicago, 6 hrs SCS and 12 hrs SCS Distributions for Existing Conditions

NHYD	2 Year			5 year			10 year			25 year			50 year			100 year		
	4 Hr Chicago	6 Hr SCS	12 Hr SCS	4 Hr Chicago	6 Hr SCS	12 Hr SCS	4 Hr Chicago	6 Hr SCS	12 Hr SCS	4 Hr Chicago	6 Hr SCS	12 Hr SCS	4 Hr Chicago	6 Hr SCS	12 Hr SCS	4 Hr Chicago	6 Hr SCS	12 Hr SCS
201	7.56	7.56	6.67	11.10	11.04	9.65	13.27	13.73	11.77	16.26	16.96	14.37	18.90	21.63	16.29	21.17	24.53	19.20
209	2.39	2.6	2.34	3.41	4.13	3.44	4.58	5.12	4.19	5.70	6.54	5.40	6.54	7.58	6.45	7.37	8.66	7.33
8	0.04	0.06	0.07	0.10	0.13	0.12	0.14	0.19	0.17	0.20	0.26	0.23	0.25	0.32	0.28	0.30	0.38	0.32
215	0.93	0.99	0.81	1.28	1.48	1.15	1.52	1.95	1.39	1.83	2.62	1.70	2.11	3.04	2.00	2.36	3.48	2.25
10	0.20	0.3	0.31	0.45	0.62	0.57	0.63	0.87	0.79	0.89	1.21	1.06	1.10	1.48	1.27	1.32	1.76	1.49
221	1.88	2.64	2.75	4.05	5.4	5.05	5.70	7.5	6.75	7.95	10.36	9.06	9.79	12.59	10.90	11.68	14.89	12.81
13	0.42	0.64	0.69	0.89	1.37	1.31	1.26	1.94	1.78	1.80	2.72	2.40	2.25	3.33	2.88	2.71	3.97	3.38
14	0.17	0.22	0.23	0.33	0.42	0.39	0.45	0.57	0.52	0.61	0.77	0.68	0.74	0.93	0.81	0.87	1.09	0.94
104	2.08	2.04	1.79	2.90	3.05	2.69	3.50	3.76	3.30	4.24	4.68	4.04	4.83	5.39	4.61	5.53	6.62	5.18
106	0.48	0.73	0.72	1.06	1.51	1.36	1.50	2.12	1.87	2.11	2.99	2.56	2.61	3.69	3.11	3.13	4.42	3.68
18	0.44	0.65	0.68	0.97	1.35	1.26	1.37	1.9	1.70	1.92	2.63	2.28	2.38	3.21	2.73	2.84	3.8	3.20
241	1.59	2.14	2.21	3.20	4.36	4.04	4.39	6	5.33	5.89	8.18	7.08	7.18	9.78	8.40	8.53	11.51	9.67
243	2.80	3.79	3.90	6.00	7.79	7.25	8.51	10.89	9.79	11.98	15.17	13.22	14.83	18.55	15.94	17.79	22.05	18.81
25	2.35	3.19	3.29	4.99	6.43	6.04	6.99	8.9	8.14	9.73	12.39	10.97	11.96	15.13	13.17	14.26	17.98	15.44
110	2.15	8.55	2.90	3.99	13.793	4.92	5.35	17.2	6.41	7.26	21.72	8.41	8.81	25.19	9.96	10.42	28.74	11.58
27	1.88	6.05	2.49	3.80	13.085	4.29	5.44	17.37	5.91	7.30	23.21	7.67	8.82	27.77	9.07	11.08	32.5	10.51

Flows from Totten Sims Hubicki 2005 OPS#1 Drain Stormwater Management Plan

Table 5.1.6 -Computed Peak Flows - 100 Year Storm

CONDUIT ID	LOCATION	PEAK FLOW RATE (m^3/s)	
		Existing	Future
10910	Downstream of culvert across McLaughlin Rd	11.8	11.4
11213	Upstream of culvert across Uniroyal Road	11.8	11.1
11516	Upstream of culvert across Highway 7	12.8	12.3
12021	West of Highway 7 and east of Monarch Road where drain turns north	13.7	13.4
12122	Downstream of 12021 and parallel to Monarch Road	25.2	24.9
12425	Downstream of culverts across Dew Drop Road near Highway 7 crossing	25.6	25.4
12627	Downstream of twin culverts at Highway 7	26.0	25.7
12930	North of Kent St. and South of Colbourne Rd running parallel to Kent Street	24.0	23.8
53435 + 63435+ overflow weir	Twin culverts across Colbourne Rd.	20.6	20.6
13839	North of Colbourne Rd flowing parallel to Highway 35	19.4	19.3
14142	North of Colbourne Rd after drain curves to the west and back up northerly	21.9	21.9
14344	Upstream of the Lindsay Airport	31.0	32.0
14647	Downstream of the culvert at Highway 35 (near airport)	47.4	48.7
55960 + overflow	Culvert across Angeline Street	55.2	55.3
16162	Downstream of Angeline Street	60.4	79.9

Table 5.1.7 - Computed Peak Flows – Timmins Storm

CONDUIT ID	LOCATION	PEAK FLOW RATE (m^3/s)	
		Existing	Future
10910	Downstream of culvert across McLaughlin Rd	9.8	9.6
11213	Upstream of culvert across Uniroyal Road	9.9	9.8
11516	Upstream of culvert across Highway 7	12.0	12.0
12021	West of Highway 7 and east of Monarch Road where drain turns north	14.1	14.0
12122	Downstream of 12021 and parallel to Monarch Road	28.6	28.5
12425	Downstream of culverts across Dew Drop Road near Highway 7 crossing	30.1	30.0
12627	Downstream of twin culverts at Highway 7	30.9	25.7
12930	North of Kent St. and South of Colbourne Rd running parallel to Kent Street	30.8	30.6
53435 + 63435+ overflow weir	Twin culverts across Colbourne Rd.	28.7	32.7
13839	North of Colbourne Rd flowing parallel to Highway 35	30.7	34.3
14142	North of Colbourne Rd after drain curves to the west and back up northerly	35.6	39.2
14344	Upstream of the Lindsay Airport	58.6	62.7
14647	Downstream of the culvert at Highway 35 (near airport)	74.7	78.7
55960 + overflow	Culvert across Angeline Street	105.0	109.0
16162	Downstream of Angeline Street	95.9	111.0

Table 5.1.8 Routing Impacts–Flows (m3/s) at Typical Nodes – Existing Landuse – 100 Year Event

Location (Node #)	No Routing	Routing
24	51.6	25.1
34	63.0	20.2
46	96.6	47.4

5.2 Floodline Mapping

As mentioned earlier in this report, one of the primary objectives of this study was to establish updated floodlines along the full length of the OPS #1 drain from Kent Street downstream to Angeline Street. A further update completes the floodline mapping to the outlet at the Scugog River. To do this, a detailed hydraulic model was constructed using the hydraulic modeling software HEC-RAS.

5.2.1 HEC-RAS Model Setup

The HEC-RAS model produced by Aquafor-Beech as part of their 2001 study entitled "OPS #1 Drain Functional Stormwater Management Report" was the base for an updated TSH model produced in 2005.

- The Aquafor-Beech model represents that portion of the drain between Kent Street and the Highway 35 crossing near the airport, and was comprised of 49 cross sections.
- The 2005 TSH study extended the HEC-RAS model from Highway 35 downstream to several hundred metres east of Angeline Street, by incorporating an additional 16 cross sections and data pertaining to the Angeline Street Culvert.
- For the present update, 19 sections were added to extend to model from Angeline Street to the confluence with the Scugog River and existing cross sections were extended, to the east, between Highway 35 and Colbourne Street . Three culverts at the Victoria Transportation Corridor were also added to the model.

Subsequent to completion of the dynamic routing model, the routed peak flow rates (see **Tables 5.1.1** to **5.1.7**) were used in the HEC-RAS model to establish updated flood levels for the 2, 5, 10, 25, 50, 100, and Regional storms. As indicated in these tables, peak flows were derived based on hydrograph routing in EXTRAN under free flow conditions (i.e. all culverts removed to eliminate culvert related backwater/storage effects). This latter case represents the most conservative flow rates (maximum peak flows) expected to pass through the OPS #1 drain.

The relevant HEC-RAS computer files have been appended to this report on CD for future reference.

5.2.2 Regulatory Floodline Analysis

Updated floodlines, based on the routed peak flows (future landuse) and existing culvert conditions have been identified for the OPS #1 drain and Jennings Creek. Detailed flood levels for both existing and improved culverts under existing and future landuse conditions are summarized in the HEC-RAS summary printout in **Table 5.2.1** located in **Appendix A.** The Regulatory Floodline is plotted on **Map 1** through **Map 8** and is based on the larger of the 100 Year and Regional Storm water levels. The basemap, including contours and airphoto, was provided by the City of Kawartha Lakes.

Starting water levels at the most downstream end of the hydraulic model assumed critical depth for all Return Period events and assumed an elevation of 248.3m for the Regional Storm Event which is the highest recorded lake level for Sturgeon Lake, immediately downstream of the confluence of Jenning's Creek with Scugog River/Trent-Severn Canal. In addition, a sensitivity analysis determined that water levels upstream of the confluence were independent of the starting water level due to the magnitude of the flows and the relative steepness of Jenning's Creek (1%) in this area.

5.0 HYDRAULIC MODELLING

5.1 DYNAMIC ROUTING MODEL

5.1.1 Structure

The model structure is a system of open channel cross sections representing the OPS#1 drain: any culverts were modeled as natural channels to eliminate flow attenuation due to culverts and roadways.

Cross section and culvert data downstream of the culvert at Highway 35 was obtained from a site survey carried out by TSH staff and contour data provided by the City (produced by Higgins). Cross section and culvert information from the Highway 35 culvert and upstream, was obtained from the Aquafor-Beech HEC-RAS model. At each cross section location, a node/junction was defined in the EXTRAN conduit network. The node numbering ranged from 1 at the upstream end of the OPS #1 drain (south of Kent Street) to 62 at the downstream end of the OPS #1 drain (downstream of the culvert at Angeline Street) as seen in **Figure 5.1.1.** Channel data from the HEC-RAS model was adapted/modified as required to be compatible with the required EXTRAN data format, including channel cross section geometry, channel reach lengths, Manning's "n", channel and culvert inverts/slopes and road crossing elevations.

5.1.2 EXTRAN Model Output

The dynamic hydraulic routing capabilities of EXTRAN were utilized in this analysis in order to improve the accuracy of the routed peak flow rates established throughout the limits of the OPS #1 drain. These peak flows were then used as input to the HEC-RAS steady state hydraulic model used to produce the associated floodlines. The EXTRAN model was run for each of the two land use scenarios (existing and future conditions) for the seven event storms (2, 5, 10, 25, 50, 100 and Timmins). The computed peak routed flow rates for each conduit in the system are summarized in **Appendix D,** while peak flows in each conduit at each inflow hydrograph location are summarized in **Table 5.1.1** to **5.1.7.** An example of typical peak flow reduction is provided in **Table 5.1.8** where total non-routed flows from VO2 at selected nodes are compared to EXTRAN routed flows. A more extensive summary of the EXTRAN results is provided in **Appendix D** showing peak flow rates for all conduits modeled. Furthermore, a digital copy of all input and output files can be found on a CD at the end of the report.

A review of the results shows that the peak flows appear to fluctuate in magnitude (i.e. increase and decrease) moving from upstream to downstream through the watershed. While one might expect to see the peak flows increase moving farther downstream (due to increasing cumulative drainage area), the detailed dynamic routing model takes into account the relative timing of runoff hydrographs and peak flow rates from the various individual subcatchment areas (i.e. inflow hydrographs) within the watershed, as well as the routing and attenuation effects of the culverts and channel itself. These routing impacts have the effect of offsetting cumulative and incremental runoff patterns such that instantaneous peak flows will not necessarily increase consistently from upstream to downstream (although cumulative total runoff volume will). This is more realistic than the results obtained from less detailed routing algorithms such as those used in Visual OTTHYMO, as noted by Aquafor-Beech in their November 2001 report.

The hydraulic scenario used eliminated the existing culverts entirely in order to establish the most conservative peak routed flows to be potentially conveyed by the OPS #1 drain, should upstream culverts be upgraded in capacity over time. The peak flow rates from each scenario were subsequently used as input data for various scenarios simulated using the HEC-RAS floodline model (see **Section 5.2** for more information).

Table A1 - Calculation of Hydrologic Model Parameters
OPS #1 Drain - City of Kawartha Lakes
Revised March 2010 Data for Hydrology Study -Existing Conditions

Catchment Area Number	Soil Type	Soil Symbol	Hydrologic SG	Area (ha)	Total Catchment Area								Combined C	Time of Concentration			Time to Peak
					Total Area ha	%tot	CN-land AMC II	TIMP %	XIMP %	Ia mm	Length m	Slope %	C	Tc Formula	Tc min	Tc hrs	Tp Hrs
1				47.87													
	Cramahe Gravel	Cg	A		3.55	7.42%	6.6	5.93%	5.19%				0.05				
	Otonabee Loam	Ol / Ol-sh	B		10.26	21.43%	17.2	10.88%	9.52%				0.12				
	Solmesville Clay Loam	Socl	C		14.12	29.50%	26.9	20.30%	17.77%				0.20				
	Simcoe Clay	Sic	C		19.94	41.65%	39.2	33.32%	29.16%				0.30				
					47.87	100.00%	89.8	70.44%	61.64%				0.67	B-W			
										3.4							
2				13.34													
	Otonabee Loam	Ol / Ol-sh	B		3.65	27.36%	18.6	5.48%	2.35%				0.11				
	Solmesville Clay Loam	Socl	C		1.81	13.57%	11.1	4.75%	2.04%				0.07				
	Simcoe Clay	Sic	C		7.88	59.07%	55.5	47.26%	41.35%				0.43				
					13.34	100.00%	85.3	57.49%	45.73%				0.60	B-W			
										4.2							
3				5.51													
	Otonabee Loam	Ol / Ol-sh	B		3.13	56.81%	52.3	45.44%	39.76%				0.40				
	Solmesville Clay Loam	Socl	C		0.44	7.99%	7.5	6.39%	5.59%				0.06				
	Simcoe Clay	Sic	C		1.94	35.21%	33.1	28.17%	24.65%				0.25				
					5.51	100.00%	92.9	80.00%	70.00%				0.71	B-W			
										2.5							
317				7.51													
	Otonabee Loam	Ol / Ol-sh	B		1.67	22.24%	20.5	17.79%	15.57%				0.16				
	Solmesville Clay Loam	Socl	C		5.47	72.84%	68.5	58.27%	50.99%				0.52				
	Simcoe Clay	Sic	C		0.37	4.93%	4.6	3.94%	3.45%				0.04				
					7.51	100.00%	93.6	80.00%	70.00%				0.72	B-W			
										2.5							
4				8.17													
	Otonabee Loam	Ol / Ol-sh	B		2.67	32.68%	28.5	22.33%	19.53%				0.21				
	Simcoe Clay	Sic	C		5.50	67.32%	63.3	53.86%	47.12%				0.48				
					8.17	100.00%	91.8	76.18%	66.66%				2.13	B-W			
										2.9							
5	STANDHYD			44.60													
	Cramahe Gravel	Cg	A		11.08	24.84%	14.7	8.70%	3.73%				0.12				
	Solmesville Clay Loam	Socl	C		13.05	29.26%	25.1	14.47%	9.56%				0.17				
	Simcoe Clay	Sic	C		20.47	45.90%	40.0	24.90%	17.69%				0.27				
					44.60	100.00%	79.77	48.07%	30.97%				0.56	B-W			
										4.6							
505	NASHYD			8.95													
	Cramahe Gravel	Cg	A		4.03	45.03%	22.1	0.00%	0.00%				0.02				
	Solmesville Clay Loam	Socl	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Simcoe Clay	Sic	C		4.92	54.97%	43.4	0.00%	0.00%				0.07				
					8.95	100.00%	65.49	0.00%	0.00%		500	0.73	0.09	Airport	81.8	1.36	0.91
										10.0							
6				16.28													
	Cramahe Gravel	Cg	A		11.88	72.97%	35.8	0.00%	0.00%				0.04				
	Solmesville Clay Loam	Socl	C		4.40	27.03%	21.4	0.00%	0.00%				0.03				
					16.28	100.00%	57.1	0.00%	0.00%		500	1.8	0.07	Airport	61.9	1.03	0.69
										10.0							
7				7.19													
	Solmesville Clay Loam	Socl	C		3.83	53.27%	50.1	42.61%	37.29%				0.38				
	Simcoe Clay	Sic	C		3.36	46.73%	43.9	37.39%	32.71%				0.34				
					7.19	100.00%	94.0	80.00%	70.00%				0.72	B-W			
										2.5							
8				5.38													
	Otonabee Loam	Ol / Ol-sh	B		0.81	15.06%	10.4	0.00%	0.00%				0.01				
	Simcoe Clay	Sic	C		4.57	84.94%	67.1	0.00%	0.00%				0.10				
					5.38	100.00%	77.49	0.00%	0.00%		210	0.71	0.11	Airport	52.2	0.87	0.58
										10.0							
9				6.26													
	Simcoe Clay	Sic	C		6.26	100.00%	79.0	0.00%	0.00%				0.12				
					6.26	100.00%	79.00	0.00%	0.00%		260	0.39	0.12	Airport	70.3	1.17	0.78
										10.0							
10				17.28													
	Simcoe Clay	Sic	C		17.28	100.00%	80.4	0.00%	0.00%				0.45				

Table A1 - Calculation of Hydrologic Model Parameters
OPS #1 Drain - City of Kawartha Lakes
Revised March 2010 Data for Hydrology Study -Existing Conditions

Catchment Area Number	Soil Type	Soil Symbol	Hydrologic SG	Area (ha)	Total Catchment Area								Combined C	Time of Concentration			Time to Peak
					Total Area ha	%tot	CN-land AMC II	TIMP %	XIMP %	Ia mm	Length m	Slope %	C	Tc Formula	Tc min	Tc hrs	Tp Hrs
					17.28	100.00%	80.35	0.00%	0.00%		560	0.14	0.45	B-W	35.6	0.59	0.40
11				84.82						10.0							
	Brighton Sandy Loam	Brsl	AB		9.40	11.08%	7.5	0.32%	0.11%				0.03				
	Solmesville Clay Loam	Socl	C		5.16	6.08%	5.2	1.30%	1.14%				0.03				
	Waupoos Clay Loam	Wsc	D		0.30	0.35%	0.3	0.00%	0.00%				0.00				
	Cramahe Gravel	Cg	A		1.52	1.79%	1.1	0.00%	0.00%				0.00				
	Simcoe Clay	Sic	C		68.44	80.69%	64.7	0.33%	0.29%				0.36				
					84.82	100.00%	78.87	1.95%	1.53%		1220	0.86	0.43	B-W	46.0	0.77	0.51
12				99.85						9.8							
	Simcoe Clay	Sic	C		50.31	50.39%	40.4	0.36%	0.36%				0.22				
	Solmesville Clay Loam	Socl	C		1.32	1.32%	1.1	0.00%	0.00%				0.01				
	Waupoos Clay Loam	Wsc	D		48.22	48.29%	40.9	0.97%	0.89%				0.23				
					99.85	100.00%	82.44	1.33%	1.25%		·1250	0.52	0.46	B-W	51.2	0.85	0.57
13				30.47						9.9							
	Simcoe Clay	Sic	C		18.05	59.24%	47.7	0.47%	0.47%				0.27				
	Muck	M	B		4.39	14.41%	10.4	0.30%	0.30%				0.05				
	Waupoos Clay Loam	Wsc	D		8.03	26.35%	22.3	0.71%	0.57%				0.12				
					30.47	100.00%	80.45	1.48%	1.34%		659	1.21	0.44	B-W	25.7	0.43	0.29
14				14.86						9.8							
	Simcoe Clay	Sic	C		2.50	16.82%	15.3	11.31%	9.28%				0.11				
	Muck	M	B		1.17	7.87%	5.5	0.30%	0.30%				0.01				
	Waupoos Clay Loam	Wsc	D		11.19	75.30%	62.2	10.65%	7.83%				0.23				
					14.86	100.00%	82.97	22.26%	17.41%		750	1.15	0.35	Airport	64.1	1.07	0.72
15	STANDHYD			17.49						7.7							
	Otonabee Loam	Ol / Ol-sh	B		0.82	4.69%	4.3	3.75%	3.28%				0.03				
	Simcoe Clay	Sic	C		5.97	34.13%	32.1	27.31%	23.89%				0.25				
	Muck	M	B		10.70	61.18%	56.3	48.94%	42.82%				0.43				
	Waupoos Clay Loam	Wsc	D		0.00	0.00%	0.0	0.00%	0.00%				0.00				
					17.49	100.00%	92.68	80.00%	70.00%				0.71	B-W			
515	NASHYD			17.40						2.5							
	Otonabee Loam	Ol / Ol-sh	B		5.57	32.01%	22.1	0.00%	0.00%				0.03				
	Simcoe Clay	Sic	C		9.95	57.18%	45.1	0.00%	0.00%				0.11				
	Muck	M	B		0.60	3.45%	3.4	3.10%	3.10%				0.03				
	Waupoos Clay Loam	Wsc	D		1.28	7.36%	5.9	0.00%	0.00%				0.03				
					17.40	100.00%	76.48	3.10%	3.10%		300	1.3	0.20	Airport	46.8	0.78	0.52
16				41.77						9.7							
	Simcoe Clay	Sic	C		35.15	84.15%	65.9	0.28%	0.09%				0.34				
	Muck	M	B		1.43	3.42%	2.4	0.00%	0.00%				0.01				
	Solmesville Clay Loam	Socl	C		5.19	12.43%	9.8	0.00%	0.00%				0.05				
					41.77	100.00%	78.04	0.28%	0.09%		· 723	0.83	0.40	B-W	29.5	0.49	0.33
17				29.95						9.9							
	Simcoe Clay	Sic	C		7.59	25.34%	20.1	0.60%	0.60%				0.04				
	Otonabee Loam	Ol / Ol-sh	B		3.85	12.85%	8.8	0.30%	0.10%				0.01				
	Solmesville Clay Loam	Socl	C		18.51	61.80%	49.0	0.60%	0.60%				0.08				
					29.95	100.00%	77.95	1.50%	1.30%		905	1.38	0.13	Airport	85.7	1.43	0.96
18				37.49						9.8							
	Solmesville Clay Loam	Socl	C		20.40	54.41%	43.8	0.00%	0.00%				0.24				
	Simcoe Clay	Sic	C		17.09	45.59%	35.6	1.16%	0.75%				0.18				
					37.49	100.00%	79.40	1.16%	0.75%		880	1.08	0.42	B-W	34.4	0.57	0.38
19	STANDHYD			33.48						9.8							
	Simcoe Clay	Sic	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Otonabee Loam	Ol / Ol-sh	B		2.20	6.57%	4.9	2.30%	0.99%				0.03				
	Solmesville Clay Loam	Socl	C		31.28	93.43%	76.6	32.70%	14.01%				0.47				
					33.48	100.00%	81.47	35.00%	15.00%				0.50	B-W			
519	NASHYD			71.08						5.4							

Table A1 - Calculation of Hydrologic Model Parameters
OPS #1 Drain - City of Kawartha Lakes
Revised March 2010 Data for Hydrology Study -Existing Conditions

Catchment Area Number	Soil Type	Soil Symbol	Hydrologic SG	Area (ha)	Total Catchment Area								Combined C	Time of Concentration			Time to Peak
					Total Area ha	%tot	CN-land AMC II	TIMP %	XIMP %	Ia mm	Length m	Slope %	C	Tc Formula	Tc min	Tc hrs	Tp Hrs
	Simcoe Clay	Sic	C		51.20	72.03%	57.9	0.49%	0.49%				0.32				
	Otonabee Loam	Ol / Ol-sh	B		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Solmesville Clay Loam	Socl	C		19.88	27.97%	22.5	0.00%	0.00%				0.13				
					71.08	100.00%	80.39	0.49%	0.49%		910	0.38	0.45	B-W	41.1	0.68	0.46
										10.0							
20				9.38													
	Solmesville Clay Loam	Socl	C		0.77	8.21%	6.6	0.51%	0.17%				0.03				
	Simcoe Clay	Sic	C		8.61	91.79%	76.2	14.07%	12.31%				0.46				
					9.38	100.00%	82.83	14.58%	12.48%		375	2.83	0.49	B-W	13.9	0.23	0.15
										8.6							
21				69.91													
	Solmesville Clay Loam	Socl	C		9.20	13.16%	#VALUE!	0.00%	0.00%				0.06				
	Simcoe Clay	Sic	C		20.51	29.34%	23.7	0.51%	0.51%				0.13				
	Muck	M	B		18.30	26.18%	15.8	0.18%	0.18%				0.07				
	Waupoos Clay Loam	Wsc	D		21.90	31.33%	26.5	0.88%	0.63%				0.14				
					69.91	100.00%	#VALUE!	1.57%	1.32%		1360	0.51	0.41	B-W	58.9	0.98	0.66
										9.8							
22				214.54													
	Otonabee Loam	Ol / Ol-sh	B		8.71	4.06%	2.9	0.00%	0.00%				0.01				
	Simcoe Clay	Sic	C		71.01	33.10%	26.8	1.12%	0.98%				0.15				
	Muck	M	B		64.02	29.84%	18.8	0.25%	0.25%				0.09				
	Waupoos Clay Loam	Wsc	D		70.80	33.00%	27.9	0.26%	0.25%				0.16				
					214.54	100.00%	76.43	1.63%	1.49%		2060	0.55	0.41	B-W	77.4	1.29	0.86
										9.8							
23				96.04													
	Simcoe Clay	Sic	C		32.30	33.63%	26.7	0.44%	0.36%				0.14				
	Muck	M	B		4.34	4.52%	2.7	0.00%	0.00%				0.01				
	Waupoos Clay Loam	Wsc	D		59.40	61.85%	52.2	0.00%	0.00%				0.29				
					96.04	100.00%	81.64	0.44%	0.36%		1795	0.64	0.45	B-W	70.9	1.18	0.79
										9.9							
24				12.23													
	Solmesville Clay Loam	Socl	C		0.90	7.36%	6.0	0.22%	0.07%				0.03				
	Simcoe Clay	Sic	C		11.33	92.64%	73.9	0.00%	0.00%				0.40				
					12.23	100.00%	79.89	0.22%	0.07%		540	0.74	0.44	B-W	25.4	0.42	0.28
										9.9							
25				269.72													
	Muck	M	B		3.48	1.29%	0.9	0.00%	0.00%				0.00				
	Solmesville Clay Loam	Socl	C		34.20	12.68%	10.2	0.00%	0.00%				0.06				
	Waupoos Clay Loam	Wsc	D		46.00	17.05%	14.4	0.75%	0.47%				0.08				
	Otonabee Loam	Ol / Ol-sh	B		24.38	9.04%	6.5	0.00%	0.00%				0.03				
	Simcoe Clay	Sic	C		161.66	59.94%	48.4	3.52%	3.43%				0.28				
					269.72	100.00%	80.45	4.27%	3.90%		1900	0.84	0.44	B-W	64.1	1.07	0.72
										9.6							
26	STANDHYD			15.52													
	Solmesville Clay Loam	Socl	C		7.76	50.00%	41.0	17.50%	7.50%				0.25				
	Muck	M	B		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Otonabee Loam	Ol / Ol-sh	B		7.76	50.00%	37.0	17.50%	7.50%				0.25				
	Simcoe Clay	Sic	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
					15.52	100.00%	78.00	35.00%	15.00%				0.50	B-W			
										5.4							
526	NASHYD			144.56													
	Solmesville Clay Loam	Socl	C		24.24	16.77%	13.5	0.68%	0.35%				0.08				
	Muck	M	B		8.70	6.02%	4.0	0.00%	0.00%				0.02				
	Otonabee Loam	Ol / Ol-sh	B		48.99	33.89%	24.4	0.11%	0.11%				0.12				
	Simcoe Clay	Sic	C		62.63	43.32%	34.7	0.00%	0.00%				0.19				
					144.56	100.00%	76.64	0.79%	0.46%		1535	1.57	0.40	B-W	48.6	0.81	0.54
										9.9							
27				89.82													
	Solmesville Clay Loam	Socl	C		78.50	87.40%	70.6	16.74%	7.39%				0.35				
	Muck	M	B		9.90	11.02%	7.0	0.00%	0.00%				0.02				
	Otonabee Loam	Ol / Ol-sh	B		1.42	1.58%	1.3	0.74%	0.49%				0.01				
					89.82	100.00%	78.84	17.47%	7.88%		1250	0.88	0.39	Airport	85.9	1.43	0.96
										7.7							

Table A1 - Calculation of Hydrologic Model Parameters
OPS #1 Drain - City of Kawartha Lakes
Revised March 2010 Data for Hydrology Study - Future Conditions

Catchment Area Number	Soil Type	Soil Symbol	Hydrologic SG	Area (ha)	Total Catchment Area								Combined C	Time of Concentration			Time to Peak
					Total Area	%tot	CN-land AMC II	TIMP %	XIMP %	Ia mm	Length m	Slope %	C	Formula	Tc min	Tc hrs	Tp Hrs
1				47.87													
	Cramahe Gravel	Cg	A		3.55	7.42%	6.6	5.93%	5.19%				0.05				
	Otonabee Loam	Ol / Ol-sh	B		10.26	21.43%	17.2	10.88%	9.52%				0.12				
	Solmesville Clay Loam	Socl	C		14.12	29.50%	26.9	20.30%	17.77%				0.20				
	Simcoe Clay	Sic	C		19.94	41.65%	39.2	33.32%	29.16%				0.30				
					47.87	100.00%	89.8	70.44%	61.64%				0.67	B-W			
										3.4							
2				13.34													
	Otonabee Loam	Ol / Ol-sh	B		3.65	27.36%	18.6	5.46%	2.35%				0.11				
	Solmesville Clay Loam	Socl	C		1.81	13.57%	11.1	4.75%	2.04%				0.07				
	Simcoe Clay	Sic	C		7.88	59.07%	55.5	47.26%	41.35%				0.43				
					13.34	100.00%	85.3	57.49%	45.73%				0.60	B-W			
										4.2							
3				5.51													
	Otonabee Loam	Ol / Ol-sh	B		3.13	56.81%	52.3	45.44%	39.76%				0.40				
	Solmesville Clay Loam	Socl	C		0.44	7.99%	7.5	6.39%	5.59%				0.06				
	Simcoe Clay	Sic	C		1.94	35.21%	33.1	28.17%	24.65%				0.25				
					5.51	100.00%	92.86	80.00%	70.00%				0.71	B-W			
										2.5							
317				7.51													
	Otonabee Loam	Ol / Ol-sh	B		1.67	22.24%	20.5	17.79%	15.57%				0.16				
	Solmesville Clay Loam	Socl	C		5.47	72.84%	68.5	58.27%	50.99%				0.52				
	Simcoe Clay	Sic	C		0.37	4.93%	4.6	3.94%	3.45%				0.04				
					7.51	100.00%	93.56	80.00%	70.00%				0.72	B-W			
										2.5							
4				8.17													
	Otonabee Loam	Ol / Ol sh	B		2.67	32.68%	28.5	22.33%	19.53%				0.21				
	Simcoe Clay	Sic	C		5.50	67.32%	63.3	53.86%	47.12%				0.48				
					8.17	100.00%	91.82	76.18%	66.66%				2.13	B-W			
										2.9							
					2.67	32.68%	28.5	22.33%	19.53%				0.21	Airport			
5	STANDHYD			44.60													
	Cramahe Gravel	Cg	A		11.08	24.84%	14.7	8.70%	3.73%				0.12				
	Solmesville Clay Loam	Socl	C		13.05	29.26%	25.1	14.47%	9.56%				0.17				
	Simcoe Clay	Sic	C		20.47	45.90%	40.0	24.90%	17.69%				0.27				
					44.60	100.00%	79.77	48.07%	30.97%				0.56	B-W			
										4.6							
505	NASHYD			8.95													
	Cramahe Gravel	Cg	A		4.03	45.03%	22.1	0.00%	0.00%				0.02				
	Solmesville Clay Loam	Socl	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Simcoe Clay	Sic	C		4.92	54.97%	43.4	0.00%	0.00%				0.07				
					8.95	100.00%	65.49	0.00%	0.00%		500	0.73	0.09	Airport	81.8	1.36	0.91
										10.0							
6				2.95													
	Cramahe Gravel	Cg	A		2.95	100.00%	59.0	35.00%	15.00%				0.50				
	Solmesville Clay Loam	Socl	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
					2.95	100.00%	59.00	35.00%	15.00%				0.50	B-W			
										5.4							
506				13.33													
	Cramahe Gravel	Cg	A		8.93	66.99%	32.8	0.00%	0.00%				0.03				
	Solmesville Clay Loam	Socl	C		4.40	33.01%	26.1	0.00%	0.00%				0.04				
					13.33	100.00%	58.90	0.00%	0.00%		450	1.8	0.07	Airport	58.5	0.97	0.65
										10.0							
7				7.19													
	Solmesville Clay Loam	Socl	C		3.83	53.27%	50.1	42.61%	37.29%				0.38				
	Simcoe Clay	Sic	C		3.36	46.73%	43.9	37.39%	32.71%				0.34				
					7.19	100.00%	94.00	80.00%	70.00%				0.72	B-W			
										2.5							
8				5.38													
	Otonabee Loam	Ol / Ol-sh	B		0.81	15.06%	10.4	0.00%	0.00%				0.01				
	Simcoe Clay	Sic	C		4.57	84.94%	67.1	0.00%	0.00%				0.10				
					5.38	100.00%	77.49	0.00%	0.00%		210	0.71	0.11	Airport	52.2	0.87	0.58
										10.0							
9				6.26													
	Simcoe Clay	Sic	C		6.26	100.00%	79.0	0.00%	0.00%				0.12				
					6.26	100.00%	79.00	0.00%	0.00%		260	0.39	0.12	Airport	70.3	1.17	0.78
										10.0							
10				17.28													
	Simcoe Clay	Sic	C		17.28	100.00%	80.4	0.00%	0.00%				0.45				
					17.28	100.00%	80.35	0.00%	0.00%		560	0.14	0.45	B-W	35.6	0.59	0.40
										10.0							
11				84.82													
	Brighton Sandy Loam	Brsl	AB		9.40	11.08%	7.5	0.32%	0.11%				0.03				
	Solmesville Clay Loam	Socl	C		5.16	6.08%	5.2	1.30%	1.14%				0.03				
	Waupoos Clay Loam	Wsc	D		0.30	0.35%	0.3	0.00%	0.00%				0.00				
	Cramahe Gravel	Cg	A		1.52	1.79%	1.1	0.00%	0.00%				0.00				
	Simcoe Clay	Sic	C		68.44	80.69%	64.7	0.33%	0.29%				0.36				
					84.82	100.00%	78.87	1.95%	1.53%		1220	0.86	0.43	B-W	46.0	0.77	0.51
										9.8							
12				99.85													
	Simcoe Clay	Sic	C		50.31	50.39%	40.4	0.36%	0.36%				0.22				
	Solmesville Clay Loam	Socl	C		1.32	1.32%	1.1	0.00%	0.00%				0.01				
	Waupoos Clay Loam	Wsc	D		48.22	48.29%	40.9	0.97%	0.89%				0.23				
					99.85	100.00%	82.44	1.33%	1.25%		1250	0.52	0.46	B-W	51.2	0.85	0.57
										9.9							
13				30.47													
	Simcoe Clay	Sic	C		18.05	59.24%	47.7	0.47%	0.47%				0.27				
	Muck	M	B		4.39	14.41%	10.4	0.30%	0.30%				0.05				

Table A1 - Calculation of Hydrologic Model Parameters
OPS #1 Drain - City of Kawartha Lakes
Revised March 2010 Data for Hydrology Study - Future Conditions

Catchment Area Number	Soil Type	Soil Symbol	Hydrologic SG	Area (ha)	Total Catchment Area								Combined C	Time of Concentration			Time to Peak
					Total Area	%tot	CN-land AMC II	TIMP %	XIMP %	Ia mm	Length m	Slope %	C	Formula	Tc min	Tc hrs	Tp Hrs
	Waupoos Clay Loam	Wsc	D		8.03	26.35%	22.3	0.71%	0.57%				0.12				
					30.47	100.00%	80.45	1.46%	1.34%		659	1.21	0.44	B-W	25.7	0.43	0.29
										9.8							
14				14.66													
	Simcoe Clay	Sic	C		2.50	16.82%	15.3	11.31%	9.28%				0.11				
	Muck	M	B		1.17	7.87%	5.5	0.30%	0.30%				0.01				
	Waupoos Clay Loam	Wsc	D		11.19	75.30%	62.2	10.65%	7.83%				0.23				
					14.66	100.00%	82.97	22.26%	17.41%		750	1.15	0.35	Airport	64.1	1.07	0.72
										7.7							
15	STANDHYD			17.49													
	Otonabee Loam	Ol / Ol-sh	B		0.82	4.69%	4.3	3.75%	3.28%				0.03				
	Simcoe Clay	Sic	C		5.97	34.13%	32.1	27.31%	23.89%				0.25				
	Muck	M	B		10.70	61.18%	56.3	48.94%	42.82%				0.43				
	Waupoos Clay Loam	Wsc	D		0.00	0.00%	0.0	0.00%	0.00%				0.00				
					17.49	100.00%	92.68	80.00%	70.00%				0.71	B-W			
										2.5							
515	NASHYD			17.40													
	Otonabee Loam	Ol / Ol-sh	B		5.57	32.01%	22.1	0.00%	0.00%				0.03				
	Simcoe Clay	Sic	C		9.95	57.18%	45.1	0.00%	0.00%				0.11				
	Muck	M	B		0.60	3.45%	3.4	3.10%	3.10%				0.03				
	Waupoos Clay Loam	Wsc	D		1.28	7.36%	5.9	0.00%	0.00%				0.03				
					17.40	100.00%	76.48	3.10%	3.10%		300	1.3	0.20	Airport	46.8	0.78	0.52
										9.7							
16				41.77													
	Simcoe Clay	Sic	C		35.15	84.15%	66.4	2.19%	1.77%				0.35				
	Muck	M	B		1.43	3.42%	2.4	0.00%	0.00%				0.01				
	Solmesville Clay Loam	Socl	C		5.19	12.43%	9.8	0.00%	0.00%				0.05				
					41.77	100.00%	78.55	2.19%	1.77%		723	0.83	0.41	B-W	29.5	0.49	0.33
										9.8							
17				29.95													
	Simcoe Clay	Sic	C		7.59	25.34%	20.1	0.60%	0.60%				0.04				
	Otonabee Loam	Ol / Ol-sh	B		3.85	12.85%	8.8	0.30%	0.10%				0.01				
	Solmesville Clay Loam	Socl	C		18.51	61.80%	49.0	0.60%	0.60%				0.08				
					29.95	100.00%	77.95	1.50%	1.30%		905	1.38	0.13	Airport	85.7	1.43	0.96
										9.8							
18				37.49													
	Solmesville Clay Loam	Socl	C		20.40	54.41%	43.8	0.00%	0.00%				0.24				
	Simcoe Clay	Sic	C		17.09	45.59%	36.1	3.38%	2.70%				0.19				
					37.49	100.00%	79.81	3.38%	2.70%		880	1.08	0.43	B-W	34.4	0.57	0.38
										9.6							
19	STANDHYD			104.56													
	Simcoe Clay	Sic	C		51.20	48.97%	42.4	25.61%	17.70%				0.29				
	Otonabee Loam	Ol / Ol-sh	B		2.20	2.10%	1.6	0.74%	0.32%				0.01				
	Solmesville Clay Loam	Socl	C		51.16	48.93%	40.1	17.13%	7.34%				0.24				
					104.56	100.00%	84.09	43.47%	25.35%				0.54	B-W			
										4.9							
20				2.37													
	Solmesville Clay Loam	Socl	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Simcoe Clay	Sic	C		2.37	100.00%	94.0	80.00%	70.00%				0.72				
					2.37	100.00%	94.00	80.00%	70.00%		375	2.83	0.72	B-W	15.9	0.27	0.18
										2.5							
520				7.01													
	Solmesville Clay Loam	Socl	C		0.77	10.98%	8.9	0.68%	0.23%				0.04				
	Simcoe Clay	Sic	C		6.24	89.02%	71.7	0.00%	0.00%				0.40				
					7.01	100.00%	80.59	0.68%	0.23%		375	2.83	0.45	B-W	14.3	0.24	0.16
										9.8							
21				69.91													
	Solmesville Clay Loam	Socl	C		9.20	13.16%	10.6	0.00%	0.00%				0.06				
	Simcoe Clay	Sic	C		20.51	29.34%	23.7	0.51%	0.51%				0.13				
	Muck	M	B		18.30	26.18%	15.8	0.18%	0.18%				0.07				
	Waupoos Clay Loam	Wsc	D		21.90	31.33%	26.5	0.88%	0.63%				0.14				
					69.91	100.00%	76.54	1.57%	1.32%		1380	0.51	0.41	B-W	58.9	0.98	0.66
										9.8							
22				214.54													
	Otonabee Loam	Ol / Ol-sh	B		8.71	4.06%	2.9	0.00%	0.00%				0.01				
	Simcoe Clay	Sic	C		71.01	33.10%	26.8	1.12%	0.98%				0.15				
	Muck	M	B		64.02	29.84%	18.8	0.25%	0.25%				0.09				
	Waupoos Clay Loam	Wsc	D		70.80	33.00%	27.9	0.26%	0.25%				0.16				
					214.54	100.00%	76.43	1.63%	1.49%		2060	0.55	0.41	B-W	77.4	1.29	0.86
										9.8							
23				96.04													
	Simcoe Clay	Sic	C		32.30	33.63%	26.7	0.44%	0.36%				0.14				
	Muck	M	B		4.34	4.52%	2.7	0.00%	0.00%				0.01				
	Waupoos Clay Loam	Wsc	D		59.40	61.85%	52.2	0.00%	0.00%				0.29				
					96.04	100.00%	81.64	0.44%	0.36%		1795	0.64	0.45	B-W	70.9	1.18	0.79
										9.9							
24				2.31													
	Solmesville Clay Loam	Socl	C		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Simcoe Clay	Sic	C		2.31	100.00%	94.0	80.00%	70.00%				0.72				
					2.31	100.00%	94.00	80.00%	70.00%		540	0.74	0.72	B-W	30.1	0.50	0.34
										2.5							
524				9.92													
	Solmesville Clay Loam	Socl	C		0.90	9.07%	7.4	0.27%	0.09%				0.04				
	Simcoe Clay	Sic	C		9.02	90.93%	72.7	0.00%	0.00%				0.40				
					9.92	100.00%	80.10	0.27%	0.09%		540	0.74	0.44	B-W	26.0	0.43	0.29
										9.9							
25				269.72													
	Muck	M	B		3.48	1.29%	0.9	0.00%	0.00%				0.00				
	Solmesville Clay Loam	Socl	C		34.20	12.68%	10.2	0.00%	0.00%				0.06				
	Waupoos Clay Loam	Wsc	D		46.00	17.05%	14.4	0.75%	0.47%				0.09				

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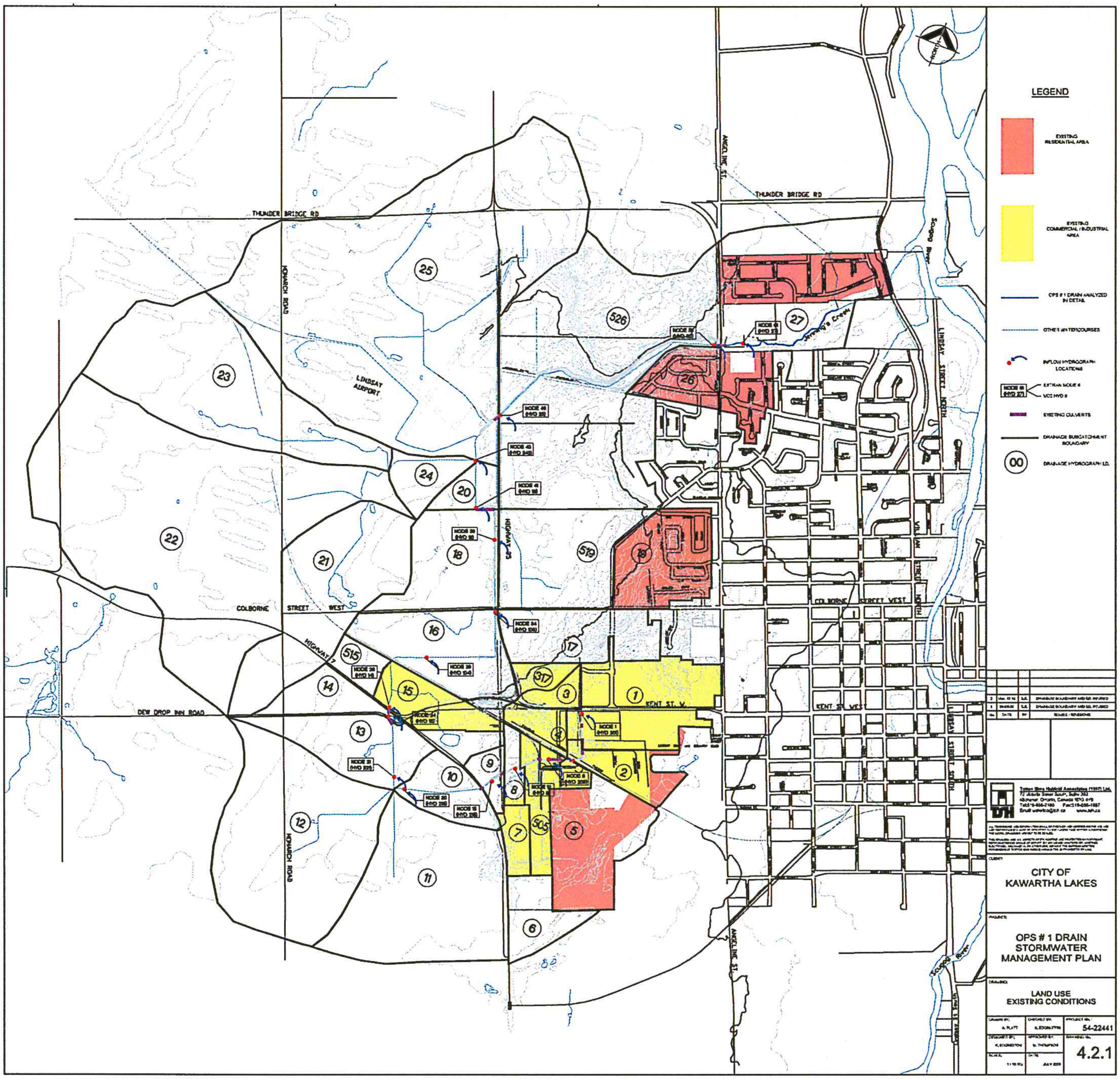
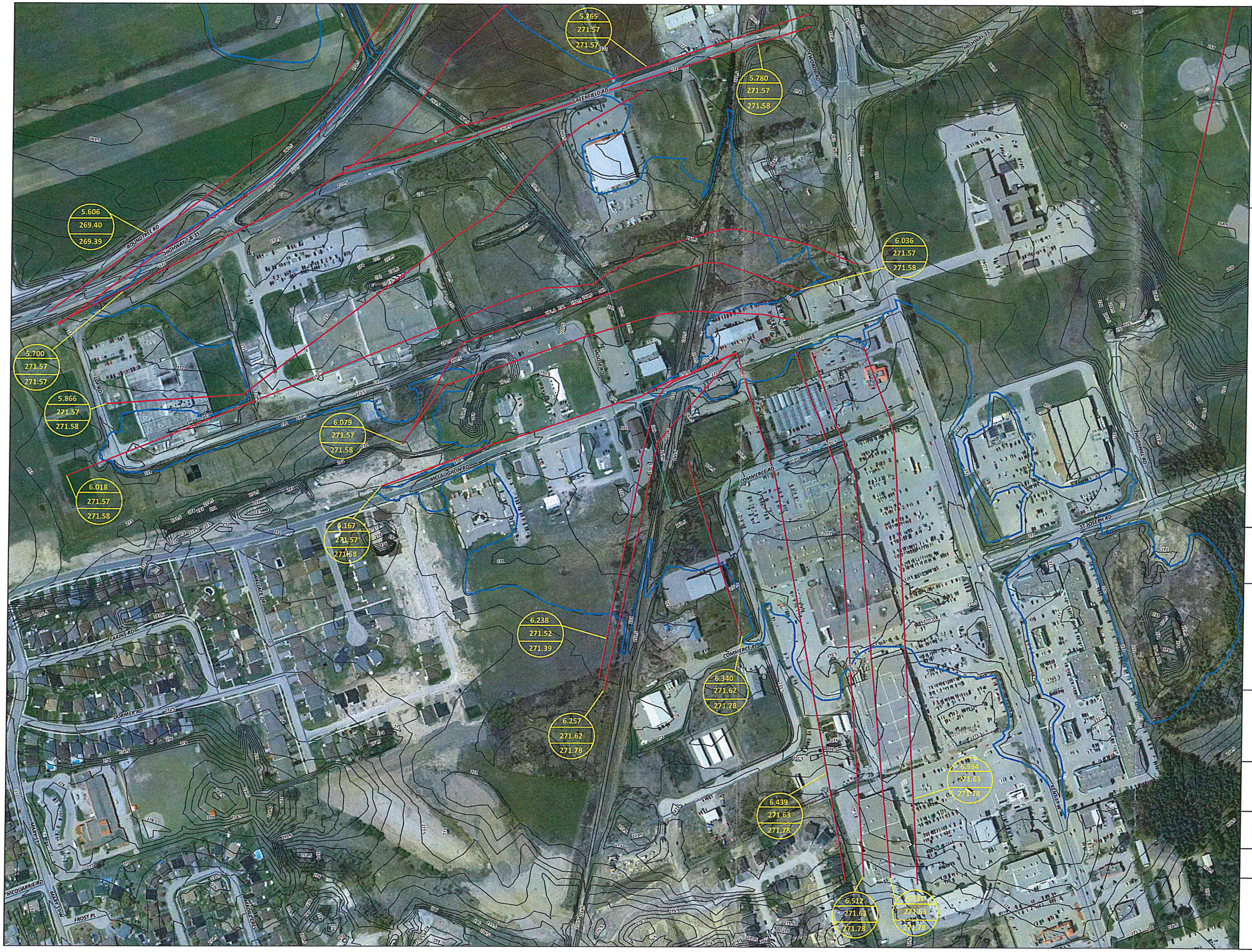
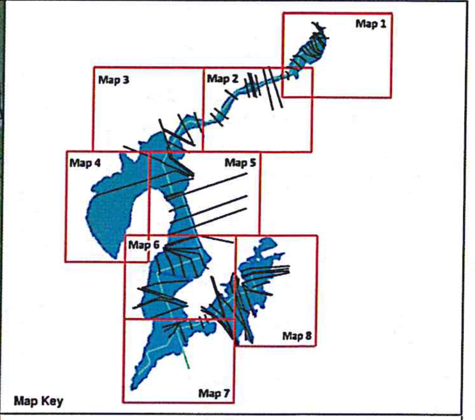
Catchment Area Number	Soil Type	Soil Symbol	Hydrologic SG	Area (ha)	Total Catchment Area								Combined C	Time of Concentration			Time to Peak
					Total Area	%Iot	CN-land AMC II	TIMP %	XIMP %	Ia mm	Length m	Slope %	C	Formula	Tc min	Tc hrs	Tp Hrs
	Otonabee Loam	OI / OI-sh	B		24.39	9.04%	6.5	0.00%	0.00%				0.03				
	Simcoe Clay	Sic	C		161.66	59.94%	48.4	3.52%	3.43%				0.28				
					269.72	100.00%	80.45	4.27%	3.90%		1900	0.84	0.44	B-W	64.1	1.07	0.72
26	STANDHYD			123.92						9.6							
	Solmesville Clay Loam	Socl	C		29.15	23.52%	19.3	8.23%	3.53%				0.12				
	Muck	M	B		8.70	7.02%	5.2	2.46%	1.05%				0.04				
	Otonabee Loam	OI / OI-sh	B		33.20	26.79%	19.8	9.38%	4.02%				0.13				
	Simcoe Clay	Sic	C		52.87	42.66%	35.3	16.02%	7.73%				0.22				
					123.92	100.00%	79.59	36.09%	16.33%				0.51	B-W			
526	NASHYD			36.16						5.3							
	Solmesville Clay Loam	Socl	C		2.65	7.88%	6.3	0.00%	0.00%				0.04				
	Muck	M	B		0.00	0.00%	0.0	0.00%	0.00%				0.00				
	Otonabee Loam	OI / OI-sh	B		23.55	65.13%	46.8	0.00%	0.00%				0.23				
	Simcoe Clay	Sic	C		9.76	26.99%	21.1	0.00%	0.00%				0.11				
					36.16	100.00%	74.23	0.00%	0.00%		550.0	2.20	0.37	Airport	43.0	0.72	0.48
27				89.82						10.0							
	Solmesville Clay Loam	Socl	C		78.50	87.40%	71.2	22.00%	9.43%				0.41				
	Muck	M	B		9.90	11.02%	8.2	3.86%	1.65%				0.06				
	Otonabee Loam	OI / OI-sh	B		1.42	1.58%	1.2	0.55%	0.24%				0.01				
					89.82	100.00%	80.52	26.42%	11.32%				0.47	B-W			
										6.5							



LEGEND
EXISTING RESIDENTIAL AREA
EXISTING COMMERCIAL / INDUSTRIAL AREA
OPS # 1 DRAIN ANALYZED IN DETAIL
OTHER WATERCOURSES
INFLOW HYDROGRAPH LOCATIONS
EXTRAN NODE #
VO2 HYD #
EXISTING CULVERTS
DRAINAGE SUBCATCHMENT BOUNDARY
DRAINAGE HYDROGRAPH I.D.
THUNDER BRIDGE RD
COLBORNE STREET WEST
DEW DROP INN ROAD
HIGHWAY 7
KENT ST. W
LINDSAY AIRPORT
ANGELINE ST.
LINDSAY STREET NORTH
LINDSAY STREET SOUTH
CITY OF KAWARTHA LAKES
OPS # 1 DRAIN STORMWATER MANAGEMENT PLAN
LAND USE EXISTING CONDITIONS
54-22441
4.2.1





Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00 — Cross Section Number
266.80 — Regional Storm Flood Elevation (Future Flows)
266.86 — 100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

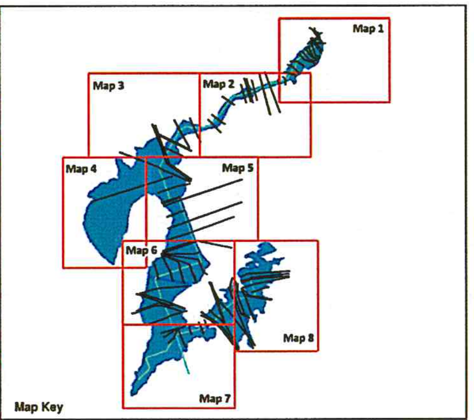
City of Kawartha Lakes
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 8: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM



Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00
266.80
266.86

Cross Section Number
Regional Storm Flood Elevation (Future Flows)
100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

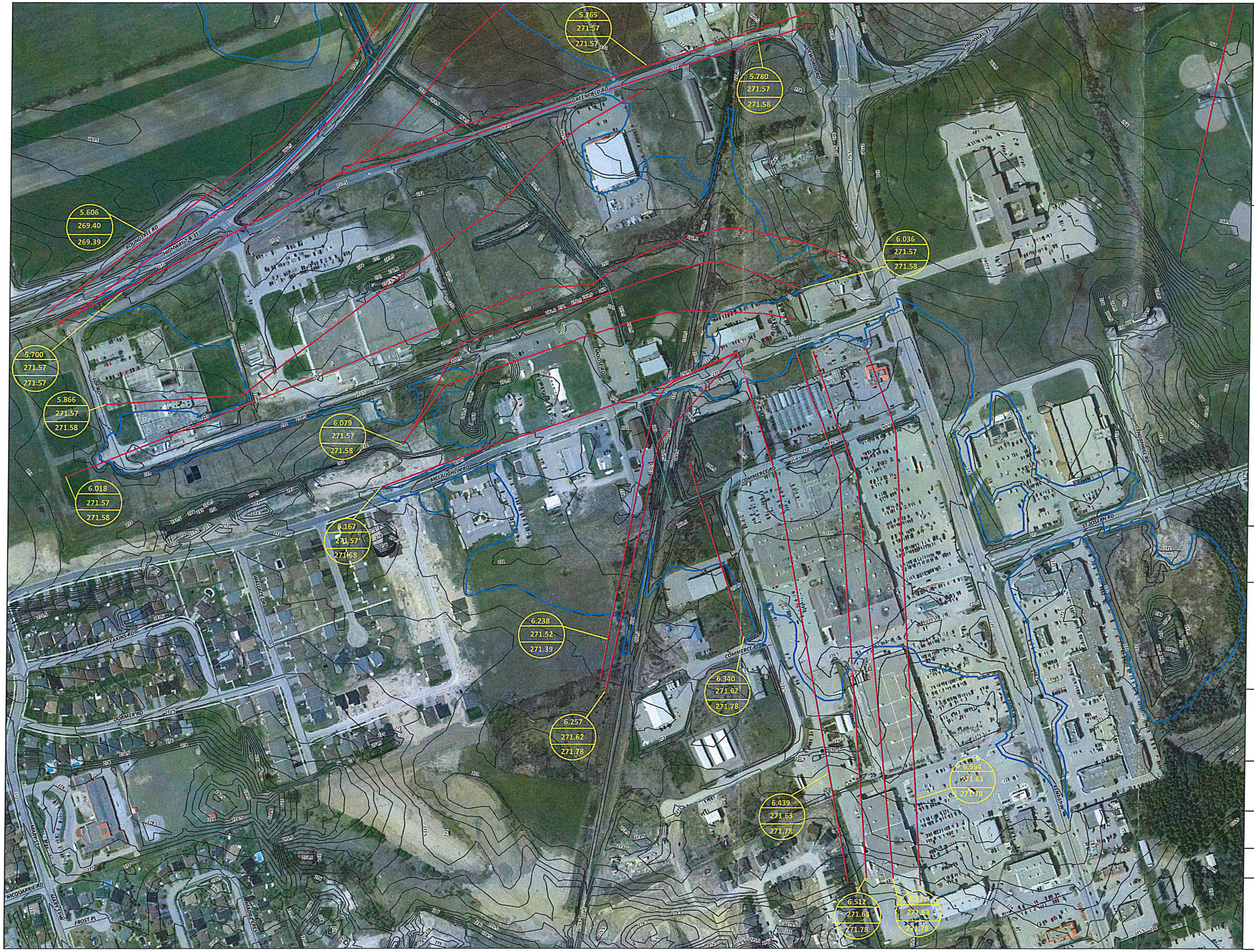
City of KAWARTHA LAKES
Catch the Kawartha spirit

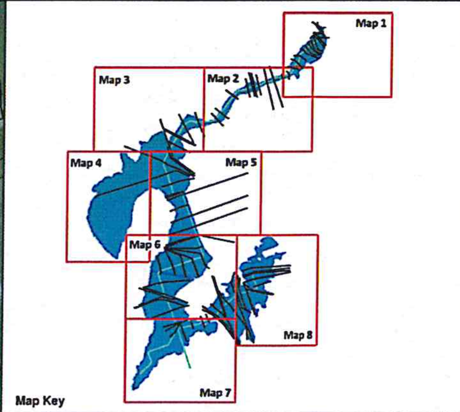
OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 7: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM





Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00	Cross Section Number
266.80	Regional Storm Flood Elevation (Future Flows)
266.86	100 Year Flood Elevation (Future Flows)

Z

0 0.05 0.1 0.2
Kilometers

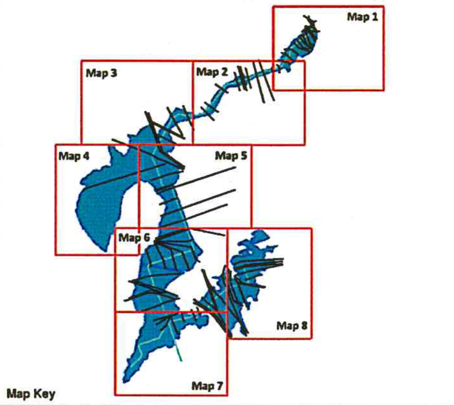
City of KAWARTHA LAKES
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 8: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM



Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00	Cross Section Number
266.80	Regional Storm Flood Elevation (Future Flows)
266.86	100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

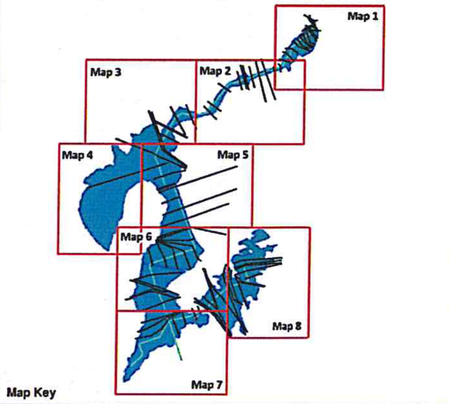
City of KAWARTHA LAKES
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 7: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM



Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00 — Cross Section Number
266.80 — Regional Storm Flood Elevation (Future Flows)
266.86 — 100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

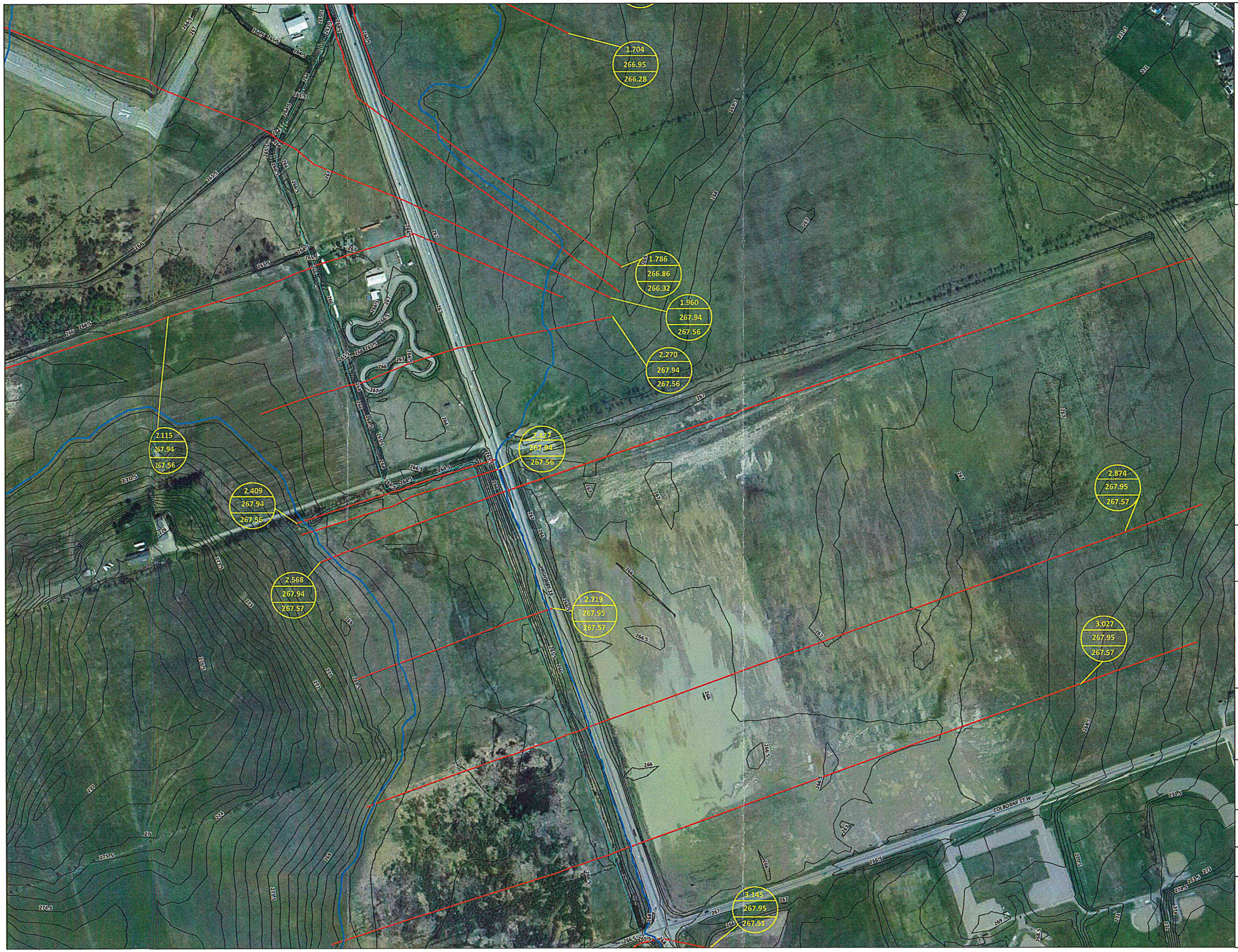
City of KAWARTHA LAKES
Catch the Kawartha spirit

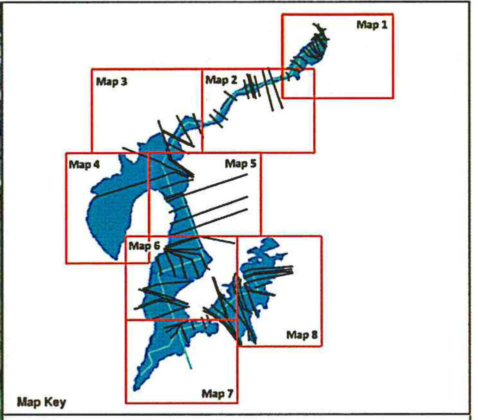
OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 6: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM





Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (1m Interval)
- Contours (0.5m Interval)
- Regulatory Flood Line

0.00 — Cross Section Number
266.80 — Regional Storm Flood Elevation (Future Flows)
266.86 — 100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

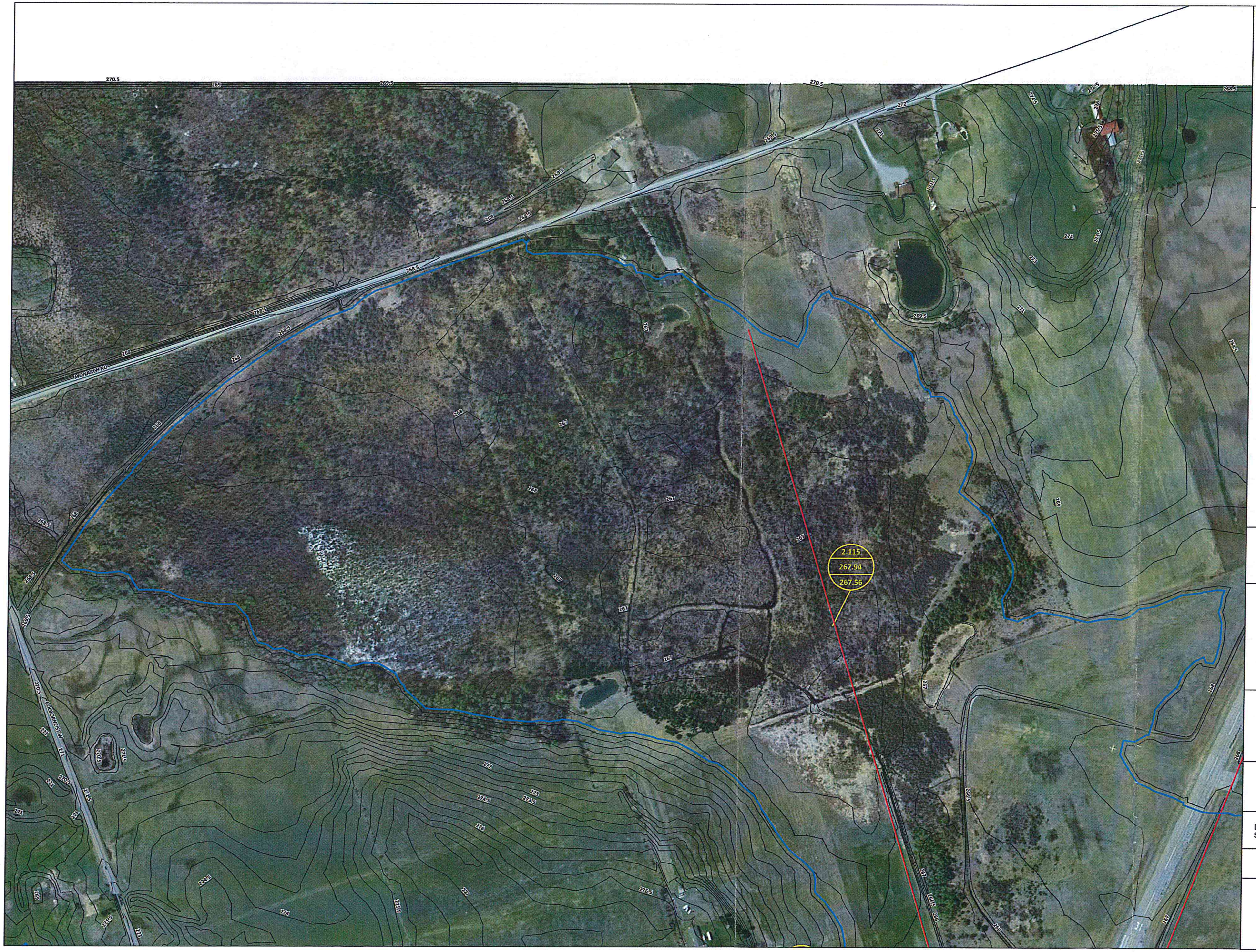
City of KAWARTHA LAKES
Catch the Kawartha spirit

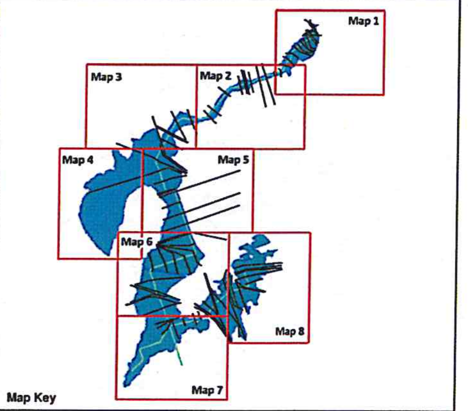
OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 5: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM





Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00 — Cross Section Number
266.80 — Regional Storm Flood Elevation (Future Flows)
266.86 — 100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

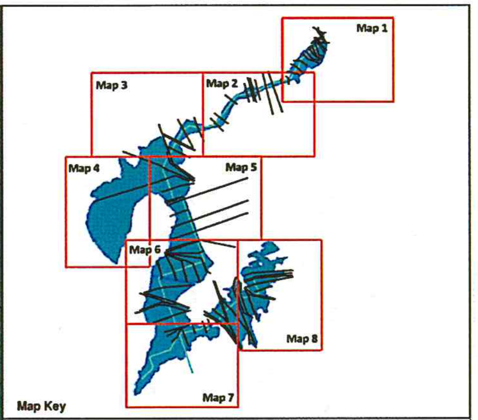
City of KAWARTHA LAKES
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 4: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM



Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00	Cross Section Number
266.80	Regional Storm Flood Elevation (Future Flows)
266.86	100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

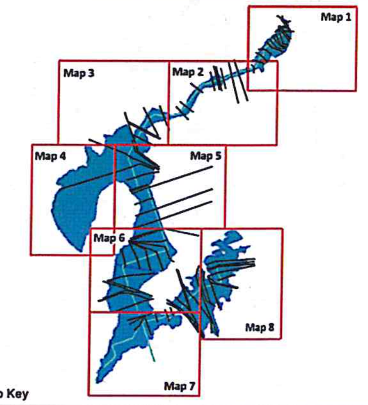
City of KAWARTHA LAKES
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 3: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM



Map Key

Legend

- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line

0.00	Cross Section Number
266.80	Regional Storm Flood Elevation (Future Flows)
266.86	100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

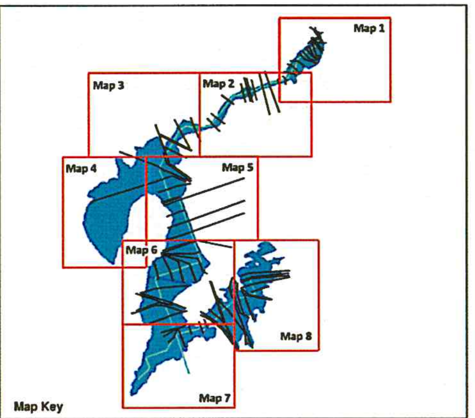
City of KAWARTHA LAKES
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 2: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM



Legend

- Study Limits
- Hydraulic Cross Sections
- OPS Drain #1
- Contours (0.5m Interval)
- Contours (1m Interval)
- Regulatory Flood Line
- Spill

0.00 — Cross Section Number
266.80 — Regional Storm Flood Elevation (Future Flows)
266.86 — 100 Year Flood Elevation (Future Flows)

N

0 0.05 0.1 0.2
Kilometers

City of KAWARTHA LAKES
Catch the Kawartha spirit

OPS #1 DRAIN FLOODPLAIN MAPPING UPDATE

MAP 1: FLOODPLAIN MAPPING

DATUM: NAD 83, Zone 17 SOURCE: CKL	DATE: APRIL 2010
SCALE: (ARCH D) 1:2,000	

AECOM

Appendix A.3

Greck and Associates *Ops 1 Drain Flood Hazard Management Guidelines*
July 2011

OPS# 1 DRAIN

FLOOD HAZARD MANAGEMENT GUIDELINES

FINAL REPORT

Prepared for:

Municipality of Kawartha Lakes
12 Peel Street
Lindsay, Ontario
K9V 5R8

Prepared by:

GRECK AND ASSOCIATES LIMITED
WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

57 Mill Street N, Suite 306
Brampton, Ontario
L6X 1S9

Date: July 2011

Project No: 160

EXECUTIVE SUMMARY

The Ops#1 Drain is a municipal drain, as identified under the Ontario Drainage Act, located in the City of Kawartha Lakes (former Town of Lindsay), see Figure 1. It was originally constructed in 1880 in the former Ops Township as an agricultural drain to enhance cultivation of otherwise poorly drained (swampy) soils within a low relief watershed. Jennings Creek provides the natural channel system outlet for the Ops#1 Drain. To address urban growth and flood hazards as defined by the Conservation Authorities Act, the City of Kawartha Lakes prepared floodline mapping for the entire Ops#1 Drain and Jennings Creek watershed.

The primary goal of this study was to interpret the floodline mapping and develop a set of guidelines to address flood hazards within the entire Ops#1 Drain and Jennings Creek watershed.

At about the same time the floodline mapping was completed, approval for a site specific development proposal was put forth to construct a new building by the Humane Society of Kawartha Lakes located on McLaughlin Road. This property is located within a flood hazard area as identified in the recently prepared floodline mapping.

The second goal of this study was to assess in detail the flood hazards associated with the approved development of the new Humane Society of Kawartha Lakes building on McLaughlin Road.

The City of Kawartha Lakes is growing, and with all growing cities it is essential to understand the policies in place which regulate development within flood hazard areas. It is important for growing communities to resist and control pressures to encroach on flood-prone lands. Infrastructure development on lands that are not flood-prone should be given priority, and land management tools, such as zoning, should be used to supplement infrastructure policies.

Two important acts which regulate development within the flood hazard areas are the Planning Act and the Conservation Authority Act. The Conservation Authority Act gives Kawartha Region Conservation Authority (KRCA) the powers to establish regulations and develop policies for managing land uses in flood prone areas. The KRCA has established Watershed Management Policies to regulate development and other land uses within flood hazard areas (KRCA 2002). Further details of the specific requirements are contained in the KRCA Watershed Management Polices Document.

The Ops#1 Drain and Jennings Creek watershed embody existing and future land uses and development proposed by the City of Kawartha Lakes. These development areas either contain fully residential, commercial, industrial or agricultural zoning. Using a combination of land use, development boundaries and major highway right of ways within the Ops#1 Drain watershed a set of six flood hazard management areas were defined, see Figure 3. These areas were introduced to provide an organized and tailored approach to address flood management and the nature of flood hazards within each specific area.

Each management area was examined to identify the nature and causes for flood hazards in the area. Area specific recommendations were developed included flood hazard policies to be used and infrastructure improvements.

The recommendations presented for each management area have been summarized in Table 6. The recommendations presented are not intended to address the operation or obligations for maintenance or improvement of the drain as required and defined under the Drainage Act.

To assist with implementation of provincial policies and the management of flood hazard areas by the City of Kawartha Lakes and the KRCA, a set of fact sheets have been prepared. The fact sheets summarize and organize in point form the key elements for flood hazard management in each management area.

This report provides discussion on implementing the recommendations provided including:

- Use of the one and two zone policies in the Ops#1 Drain/Jennings Creek watershed
- The need for suitable regulatory floodline mapping
- Works for the Ops#1 Drain to reduce flood hazard potential
- The need for stormwater management quantity controls
- The filling of Area 3 and construction of a new drain
- Using an adaptive management approach for long term flood hazard management
- Review of the Ontario Drainage Act and abandoning the Ops#1 Drain as defined by the Act.
- Responsibilities and who pays for flood hazard management works on the Ops#1Drain/Jennings Creek, and
- Listing of other regulations, acts and policies which need to be considered when implementing flood hazard management works.

Key findings of this study include:

1. Review of the existing floodline mapping and supporting analyses suggests a strong need to reassess the hydrology and hydraulics of the Ops#1 Drain/Jennings Creek watershed to ensure the flood hazards are correctly identified for management. As such, references to specific drain capacities, flow rates, storage volumes, flood elevations, culvert improvements etc. are subject to change. At best the floodline

mapping used provides an indication of the approximate elevation, depths and extents of flood hazard areas throughout the Ops#1 Drain/Jennings Creek watershed.

2. Flood hazards in Area 1 are primarily associated with undersized culverts at William Street N., a berm and Victoria Trail which causes backwater and flooding of adjacent lots. Furthermore, spills of flood water occur to undeveloped lands between these crossings.

3. Flood hazards in Area 2 for the regional storm event are primarily defined by backwater conditions caused by the limited capacity of the culvert at Angeline Road North.

4. Potential flood hazards for Area 3 occur as a result of the overtopping of Highway 35 and direct connection of the service culvert for this area. The low lying nature of this land would result in the retention of flood water from the Ops#1 Drain. While filling of Area 3 may remove it from a regulatory flood hazard designation, careful consideration is required to provide minor and major drainage system services for this area.

5. Area 4 and 5 have significant flood prone areas which are attributed to the limited capacity of culverts, design of the Ops#1 Drain, and the natural low lying topography of the flood plain.

6. Area 6 is a very urbanized area with significant potential for flooding. Limited culvert capacity and the natural low lying topography are the primary causes for flooding. However, hydraulic analyses completed in this study suggest flood hazards may not be as severe as suggested by existing floodline mapping. While Flood hazards are lower and place less of risk to the new Humane Society of Kawartha Lakes building, access to and from the building via McLaughlin Road remains.

The following is a list of recommendations prepared from the work completed by this study.

1. Prepare suitable regulatory floodline mapping stamped by a professional engineer for the entire Ops#1 Drain and Jennings Creek Watershed. This will require significant refinements to the latest hydrologic and hydraulic models developed for the entire watershed. The analyses should consider specific development plans and their stormwater management requirements as would be expected in a master drainage study. A number of improvements are particularly required in the routing of flood flows and the hydraulic modeling. The hydraulic model should be georeferenced for integration with other municipal planning documents and for day to day operations and review of development applications and approvals. The completion of this work is

important for the planning and implementation of policy development and related flood hazard management works in the watershed.

2. Future assessment of watershed hydrology, hydraulics and flood hazards should include an integrated assessment of the effects on channel erosion and water quality to ensure the Ops#1 Drain and Jennings Creek function efficiently.

3. The City of Kawartha Lakes should consider placing a priority on implementing drainage improvements at the twin culverts at Moose Lodge. The existing culverts and earth fill providing access to the playfield are a significant restriction to the passage of flood water in the Ops#1 Drain and increase flood risks to McLaughlin Road. Two options should be considered, complete removal of the culverts and fill with an alternative access route, or complete removal with a clear spanning bridge.

4. The City of Kawartha Lakes should coordinate the need for drainage improvements related to managing flood hazard, with the need for culvert improvements required by MTO.

5. The City of Kawartha Lakes, KRCA and proponents for land use changes in management Areas 2 and 3 should work together to develop a detail plan and strategy for the placement of fill and new drainage works to service these lands.

6. The KRCA together with the City of Kawartha Lakes should develop specific policy related to the use of a two zone policy in designated areas. To develop this policy a two zone study is required in management Areas 4, 5 and 6. Specifically this study should include but not be limited to defining the floodway and flood fringe areas, roadways with ingress and egress constraints, allowable areas of encroachment in the flood fringe, and requirements for flood proofing. This work could be completed as part of Recommendation 1 or completed subsequent to the completion of Recommendation 1. Due to the implications to current and future land uses and possible impacts to private and public lands this work should be completed following the spirit of Conservation Authority Class Environmental Assessment process.

7. The City of Kawartha Lakes and the KRCA should develop a strategy for implementing drainage improvement works on the Ops#1 Drain and Jennings Creek. This strategy should consider how to make use of development charges to offset the cost of these works.

8. The City of Kawartha Lakes should carryout maintenance works on the Ops#1 Drain including a drain cleanout and improvements to existing culverts. The drain cleanout should be carried out as required under the Drainage Act. The culvert improvements should be based on the requirements for managing flood hazards. The costs for these improvements should not be limited to those who receive benefits (as defined by the Drainage Act) from the Ops#1 drain.

9. The KRCA should review their current Watershed Management Policy Document and update this document as needed to reflect any of the guidelines adopted from this study.

10. The City of Kawartha Lakes should review the need to maintain the current municipal drain status of the Ops# 1 Drain. Based on the work completed in this study partial or complete abandonment of the drain should be considered.

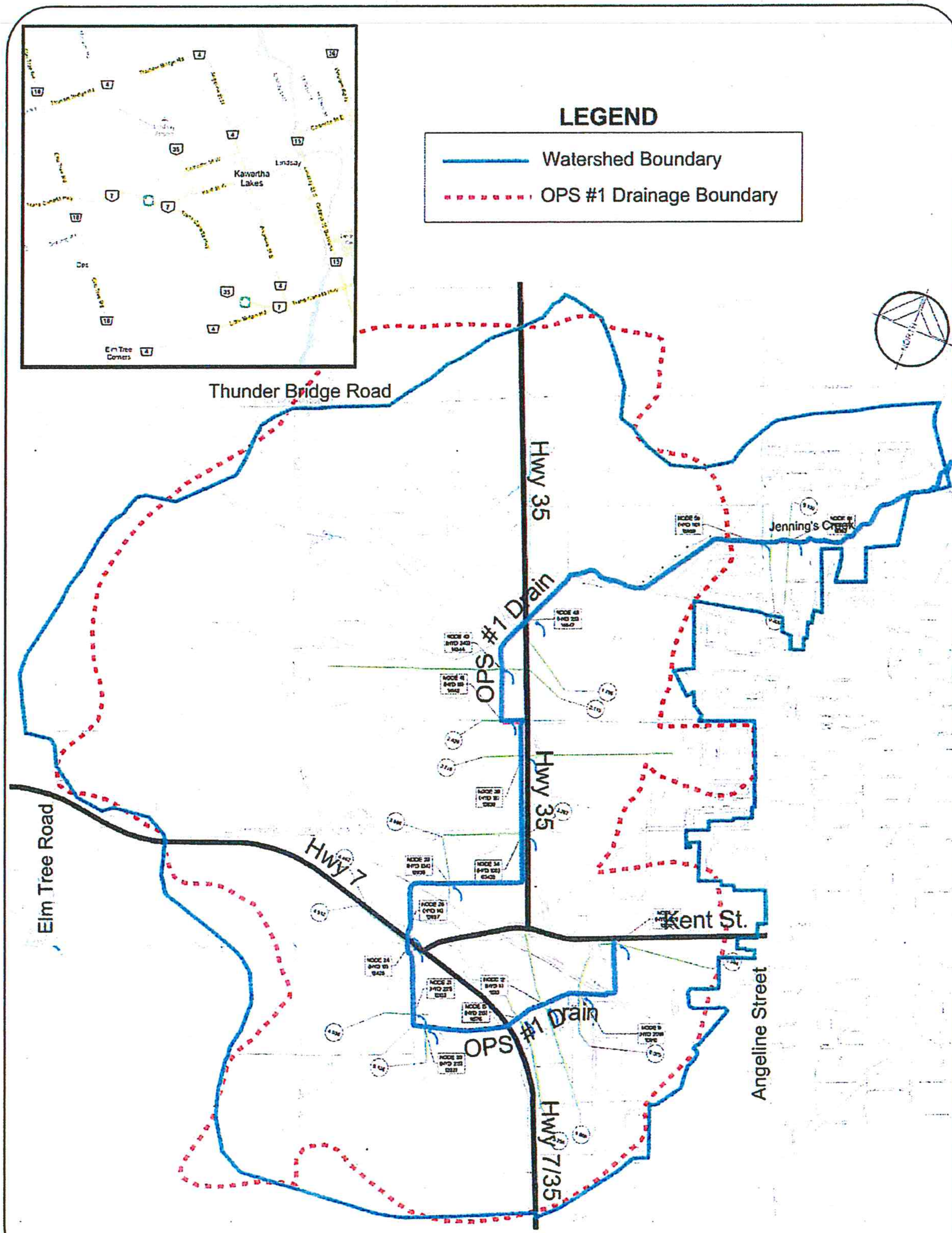


FIGURE 1: OPS #1 Drain / Jennings Creek Watershed

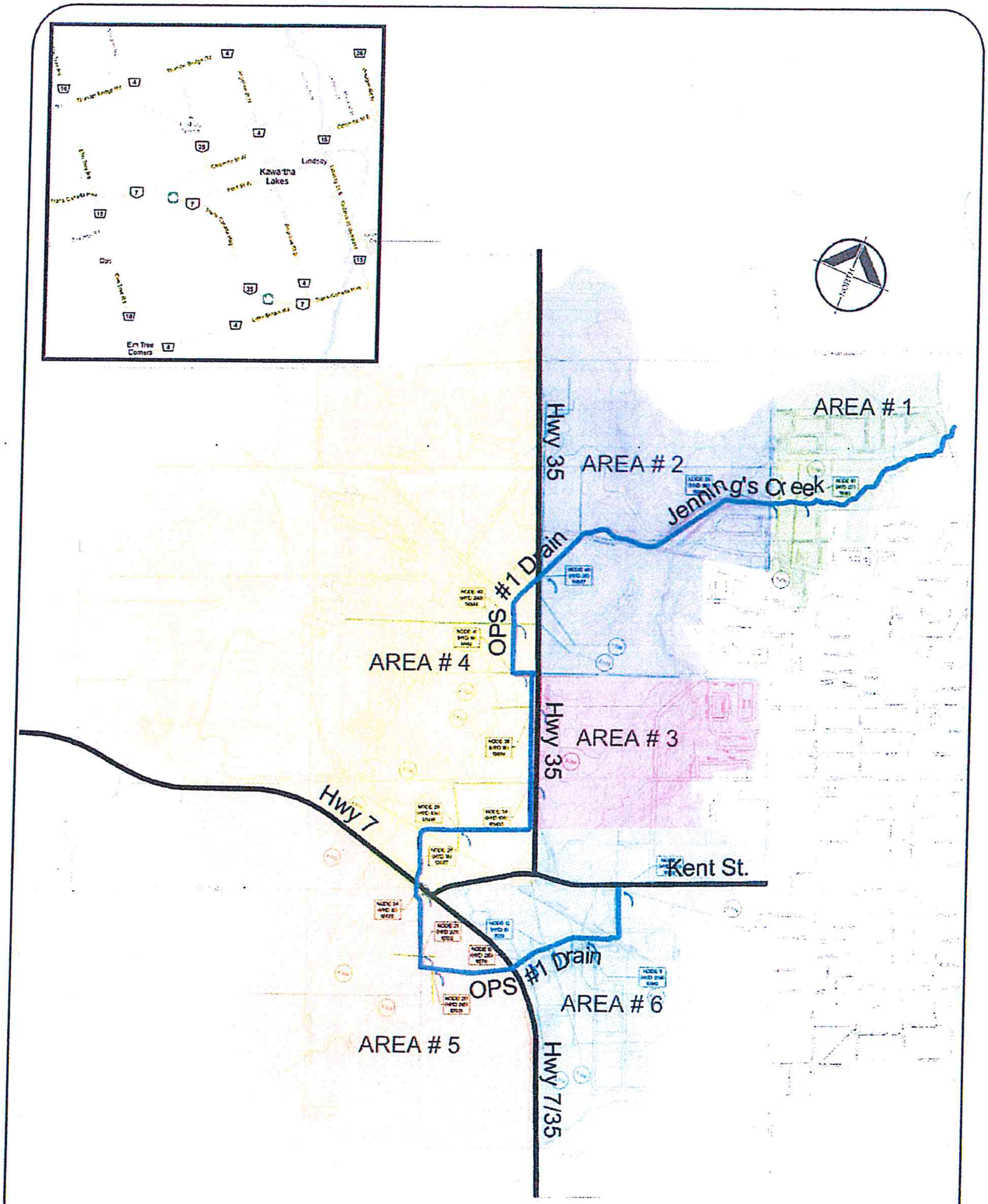


FIGURE 3: OPS #1 Drain / Jennings Creek Watershed Management Areas

Appendix A.4

City of Kawartha Lakes Community of Lindsay Storm Sewer Servicing Study

Totten Sims Hubicki

March 2004

CITY OF KAWARTHA LAKES

COMMUNITY OF LINDSAY - STORM SEWER SERVICING STUDY

STUDY REPORT

TSH Project No. 52-27501

engineers
architects
planners

March 9, 2004

Mr. Wayne Hancock, B.A.Sc., P.Eng.
Director, Engineering and Public Works
City of Kawartha Lakes
50 Wolfe Street
Lindsay, Ontario
K9V 2J2

Dear Mr. Hancock:

Re: City of Kawartha Lakes
Lindsay Community
Storm Sewer Servicing Study
TSH Project No. 52-27501

We are pleased to submit, herein, our final storm sewer servicing study report for the Lindsay community. The report addresses the following:

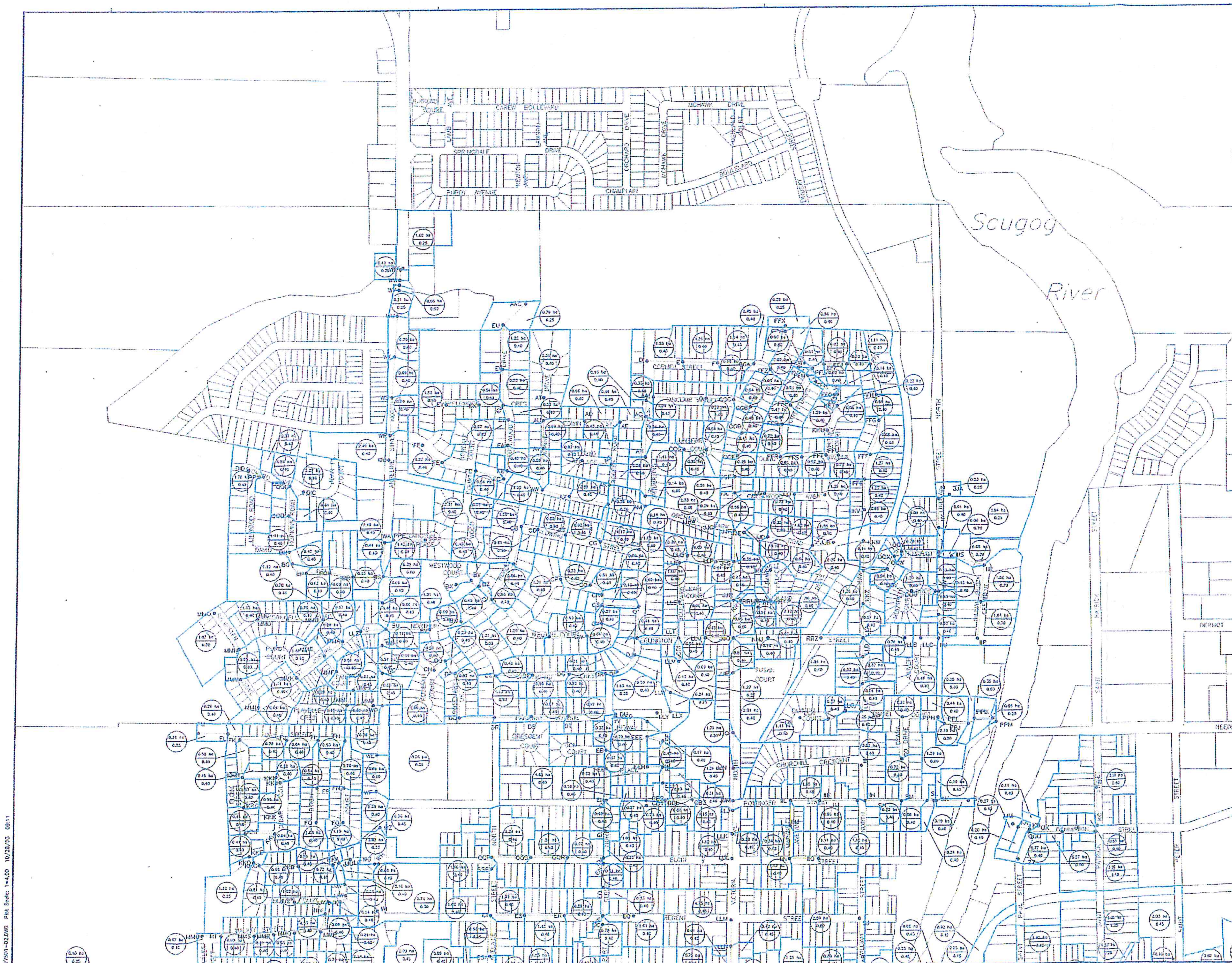
- A description of the study area
- A detailed inventory of the existing storm sewer system in the community
- An evaluation of the existing system performance
- A description of upgrades required in the storm sewer system
- Estimates of capital costs for upgrading

We wish to acknowledge the generous assistance provided to us by City's Environmental Services, Engineering and Planning staffs in undertaking this study.

Yours very truly,

R.B. Baker, P.Eng.
Senior Vice President

LDP/ldp
\\TSHFS01\ENVIRON\PROJECTS\Environmental\52-27501\reports\Lindsay Storm Sewer Report.doc



LEGEND

HS •	EXISTING STORM STRUCTURE
	EXISTING STORM SEWER
1.46 ha / 0.45	EXISTING STORM CATCHMENT AREA / EXISTING RUNOFF COEFFICIENT
——	CATCHMENT AREA BOUNDARY

City of KAWARTHA LAKES
Catch the Kawartha spirit

No.	DATE	BY	ISSUES / REVISIONS
1			

TSH engineers architects planners
Totten Sims Hubicki Associates (1997) Limited
72 Victoria St. S., Suite 210, Kitchener, Ontario
TEL: 519-886-2160
FAX: 519-886-1697
www.tsh.ca

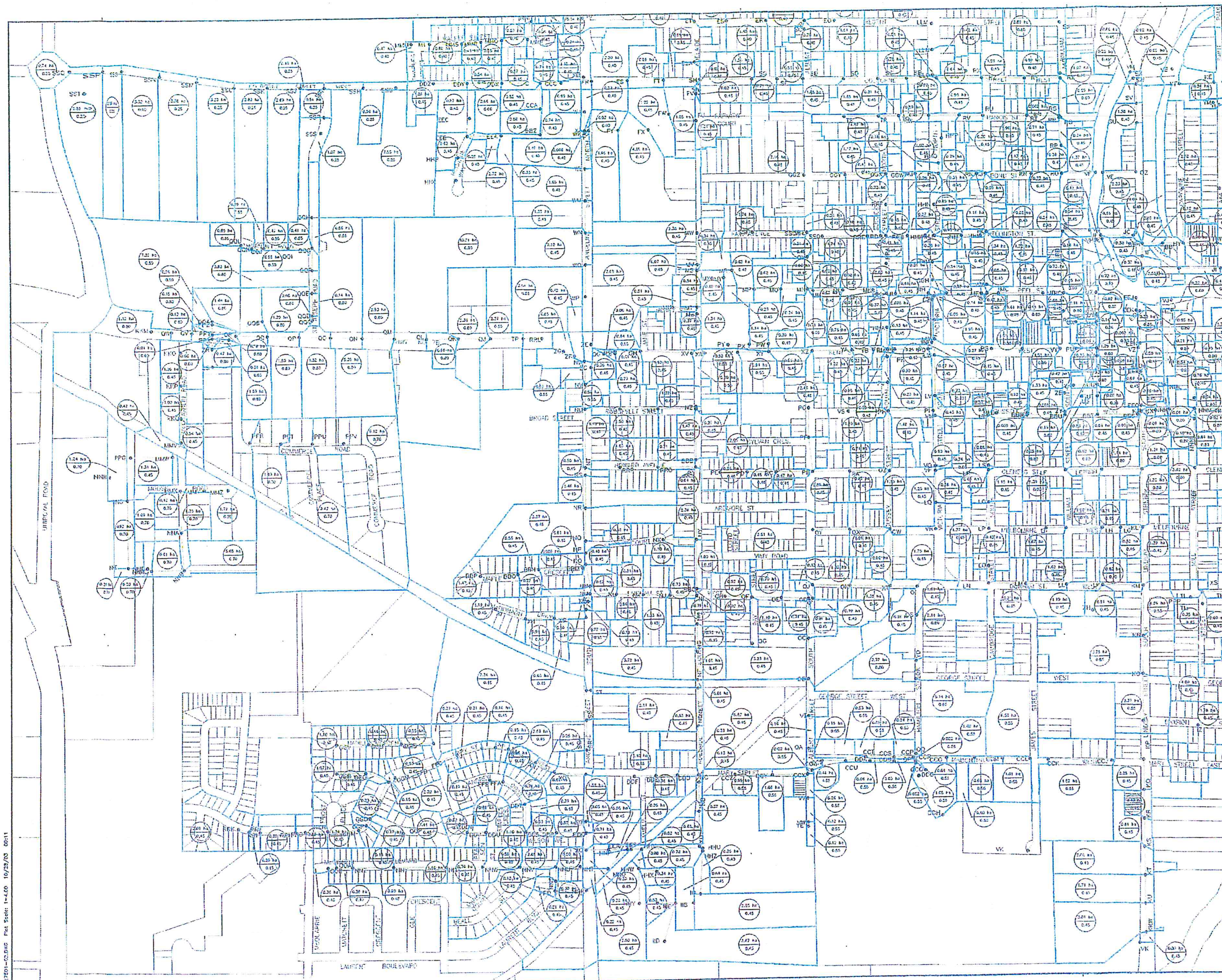
ALL DIMENSIONS AND INFORMATION SHALL BE CHECKED AND VERIFIED ON THE JOB AND ANY DISCREPANCIES MUST BE REPORTED TO THE CONSULTANT BEFORE COMMENCING THE WORK. DRAWINGS ARE NOT TO BE SCALED.

CLIENT:
CITY OF KAWARTHA LAKES

PROJECT:
CITY OF KAWARTHA LAKES COMMUNITY OF LINDSAY STORM SERVICING STUDY

DRAWING:
STORM CATCHMENT AREAS NORTHEAST QUADRANT
West

DRAWN BY: LC	CHECKED BY: CD	PROJECT No.: 52-27501
DESIGNED BY:	APPROVED BY:	DRAWING No.: 2A
SCALE: 1:4000	DATE: FEBRUARY 2004	



LEGEND

NS ●	EXISTING STORM STRUCTURE
	EXISTING STORM SEWER
1.48 ha 0.45	EXISTING STORM CATCHMENT AREA EXISTING RUNOFF COEFFICIENT
	CATCHMENT AREA BOUNDARY

City of Kawartha Lakes

Catch the Kawartha spirit

No.	DATE	BY	ISSUES / REVISIONS

TSH engineers architects planners

72 Victoria St. S., Suite 202
Kitchener, Ontario
N2G 4Y9
TEL: 519-566-2160
FAX: 519-566-1697
E-mail: waterloo@tsh.ca
www.tsh.ca
Totten Sims Hubicki Associates (1997) Limited

CLIENT:

CITY OF KAWARTHA LAKES

PROJECT:

CITY OF KAWARTHA LAKES COMMUNITY OF LINDSAY STORM SERVICING STUDY

DRAWING:

STORM CATCHMENT AREAS SOUTHWEST

DRAWN BY:	CHECKED BY:	PROJECT No.:
LC	DD	52-27501
DESIGNED BY:	APPROVED BY:	DRAWING No.
SCALE: 1:4000	DATE: FEBRUARY 2004	2C

Appendix A.5

Jennings Creek Flood Plain Mapping Study

Greck and Associates

May 2012

JENNINGS CREEK FLOODPLAIN MAPPING STUDY

Prepared For:

Dunster Investments
4 De Quincy Blvd.
Toronto, Ontario
M3H 1Y5

Prepared By:

GRECK AND ASSOCIATES LIMITED
WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

57 Mill Street N, Suite 306
Brampton, Ontario
L6X 1S9

May 2012
Project #208

JENNINGS CREEK FLOODPLAIN MAPPING STUDY

1.0 INTRODUCTION

Jennings Creek begins just East of Highway 35 where it receives water from the OPS#1 Municipal Drain and ends shortly East of Victoria Trail, where it then flows into the Scugog River. Currently there is no approved floodline mapping for the Jennings Creek. As such, Greck and Associates Limited have been retained by Dunster Investments on behalf of the Woods of Jennings Creek development to prepare floodplain mapping along Jennings Creek from Angeline Road downstream to the Scugog River.

The Woods of Jennings Creek Developments have been proposed in the City of Kawartha Lakes and are located East of Angeline Street and South of Thunder Bridge Road. The residential development will run along the south side of Jennings Creek beginning from Angeline Street downstream to the public trail known as Victoria Trail, see Figure 1.

Previous studies have shown that significant flooding near the lower end of Jennings Creek can be attributed to the limited capacity and earth embankments at the three culvert crossings including William St, an abandoned railway crossing and Victoria Trail. The current level of flooding puts existing residential housing at risk as well as limits future development opportunities. For these reasons, a hydraulic analysis has been provided to assess the combined and independent impacts of these structures, as well as provide alternative crossing concepts to lower these existing flood impacts.

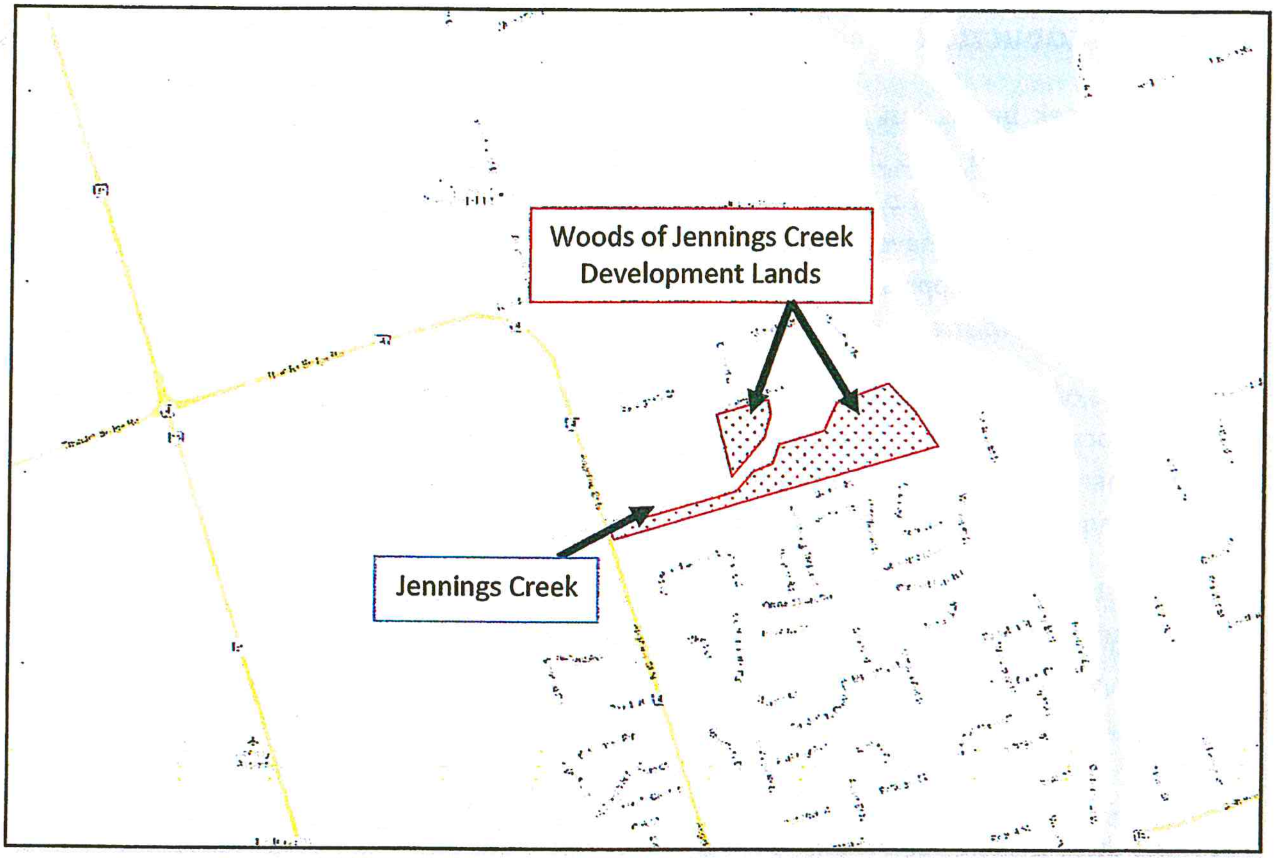


Figure 1 – Woods of Jennings Creek Development Lands

2.0 BACKGROUND INFORMATION

Jennings Creek provides the natural channel system outlet for the OPS#1 Municipal Drain. It is confined in a well defined 2.6km long valley which flows into the Scugog River part of the Trent Severn Canal system into Sturgeon Lake. Currently the creek is surrounded by dense riparian vegetation and cultivated land.

Previous studies have been completed by the City of Kawartha Lakes to assess the floodplain characteristics of Jennings Creek, including hydrology and hydraulic analysis. The recent studies which were reviewed and used to supplement this project included:

1. OPS#1 Drain Floodplain Mapping Update by Aecom April 2010 and the,
    - Hydrologic Modeling
    - Hydraulic Modeling
    - Floodplain Mapping
2. Flood Hazard Management Guidelines by Greck and Associates Limited, 2011.

The floodplain mapping, and hydraulic modeling produced from the 2010 Floodplain Mapping Report provided by the City had been deemed un-acceptable by the City of Kawartha Lakes and the Kawartha Lakes Conservation Authority (KRCA) and was therefore only used as a reference. Because of this, new suitable hydraulic modeling and floodplain mapping had to be prepared. Topographic survey information was used to develop both the hydraulic model and floodplain base mapping. The topographic survey information was retrieved in October and November of 2011 and provided by:

1. Coe Fisher Cameron Ontario Land Surveyors – *Woods of Jennings Creek Development and,*

2. A.R. (Sandy) Wakeling, Ontario Land Surveyors Association - *Proposed plan of subdivision located east of Angeline Street North in Part of Lot 24, Concession 5, and being Part 1 to 5 of Plan 57R-1007 (Angeline St. Investments Inc.)*

In addition, site visits were taking to ground truth topographic mapping and assess existing land characteristics.

3.0 HYDROLOGY

Hydrologic storm event flow rates were retrieved from a past study provided by the City of Kawartha Lakes. The City would like to redo the project; however for the time being it was agreed these calculated flows would be used. To accommodate any variance in flows a sensitivity analysis was completed. A 20% increase and decrease was applied to the existing flow rates and analyzed in the hydraulic model. Table 1, shows the flows used for this study retrieved from the past hydrology study.

Table 1 - Hydrology Flows for Hydraulic Modelling

Storm Event	Hec- Ras Section 1.25	Hec-Ras Section 1.16
	Flow (cms)	
2yr	14.1	18.9
5yr	26.4	33.2
10yr	34.6	45.1
25yr	43.6	59.1
50yr	49.8	49.8
100yr	55.3	79.9
Regional	109	111

4.0 HYDRAULICS AND FLOODLINE

A hydraulic analysis was performed using Hec-Ras software. The base model geometry was developed using topographic survey data retrieved in October and November of 2011. Cross-sections were cut accordingly and referenced geodetically, see Figure 2. Flows were extracted from the previous hydraulic study provide by the City of Kawartha Lakes. Crossing structures and channel characteristics were retrieved from survey data, previous studies, site inspection and photographs. Crossing infrastructure data used can be seen in Table 2.

Table 2 - Jennings Creek Crossing Structure Data

Crossing Structure	Modeled Structure Type	Dimensions (m) WxH	Mannings
Victoria Trail	Corrugated Metal Box	2 X 2	0.04
Abandoned Railway	Corrugated ~~Metal~~ Concrete Arch	2.2 X 2.3	0.035
Lindsay Street	Corrugated Metal Pipe	3.9 dia.	0.024
Angeline Street	Concrete Box	4.2 X 2.6	0.013

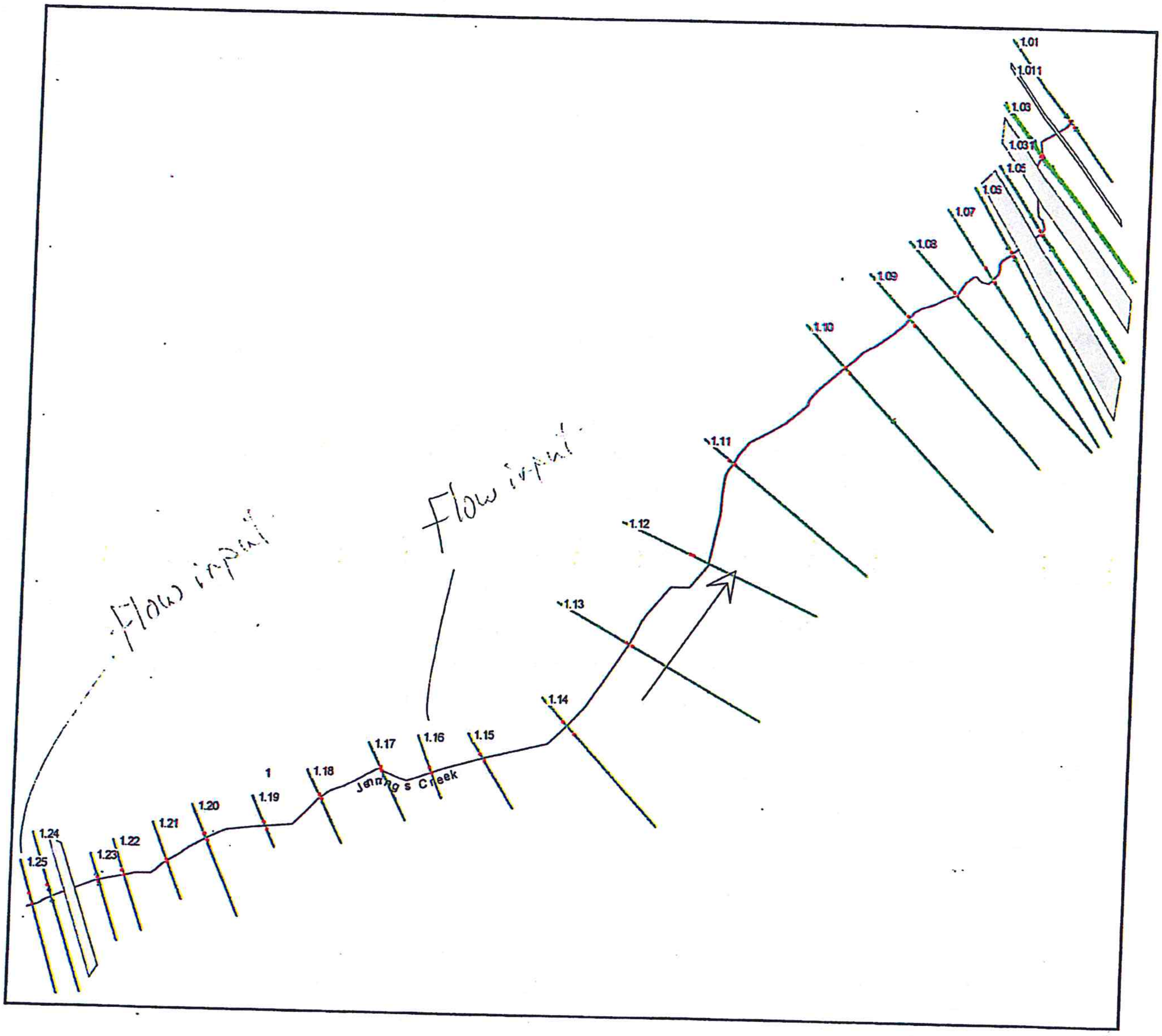


Figure 2 - Jennings Creek Hec-Ras Geometry

The downstream boundary conditions used for the hydraulic model can be seen in Table 3. The Regional and 100yr events used the recorded 100yr Lake Scugog level of 248.4m and the other event storms used the controlled Scugog Lake water level of 247.76m

Table 3 - Hec-Ras Starting Water Level Boundary Conditions

Storm Event	Starting Known W.S Elevation (m)
2yr	247.76
5yr	247.76
10yr	247.76
25yr	247.76
50yr	247.76
100yr	248.4
Regional	248.4

Minor topographic changes were made to the Hec-Ras geometry. Section 1.13 was adjusted to account for proposed fill conditions from Alcorn Drive and The Woods of Jennings Creek subdivision designs. The floodline was drawn on the mapping based on these future conditions which incorporated 1:3 slopes from the proposed rear of the lot to existing grade. Please see the Detail A on the Floodline Mapping included.

Results showed that regulatory flood levels generally remained within the confined slopes of Jennings Creek valley. However, downstream backwater accumulated behind Lindsay Street, Victoria Trail and the abandoned rail line culverts cause water to spill north along Lindsay Street and south down Victoria Trail, see floodline mapping in back pocket. These high flood water levels encroach onto existing properties as well as areas proposed for new development. The backwater affects extend 600m upstream of Lindsay Street (cross-section 1.13) and can be seen in Figure 3 which shows the Hec-Ras profile of Jennings Creek. Backwater conditions are present for the 2 year to Regional event storms, indicating that the current infrastructure is greatly undersized and restrictive to flow. Table 4 shows the estimated existing backwater flood elevations immediately upstream of the structures between sections 1.06 and 1.09.

The current plan for The Woods of Jennings Creek subdivision encroaches into the 5 year to Regional flood plain immediately upstream of Lindsay Street at an approximate flood level of 254.3m, sections 1.06 to 1.09 of the Hec-Ras model. The following section will introduce the flood relief options available to help lower these backwater flood levels.

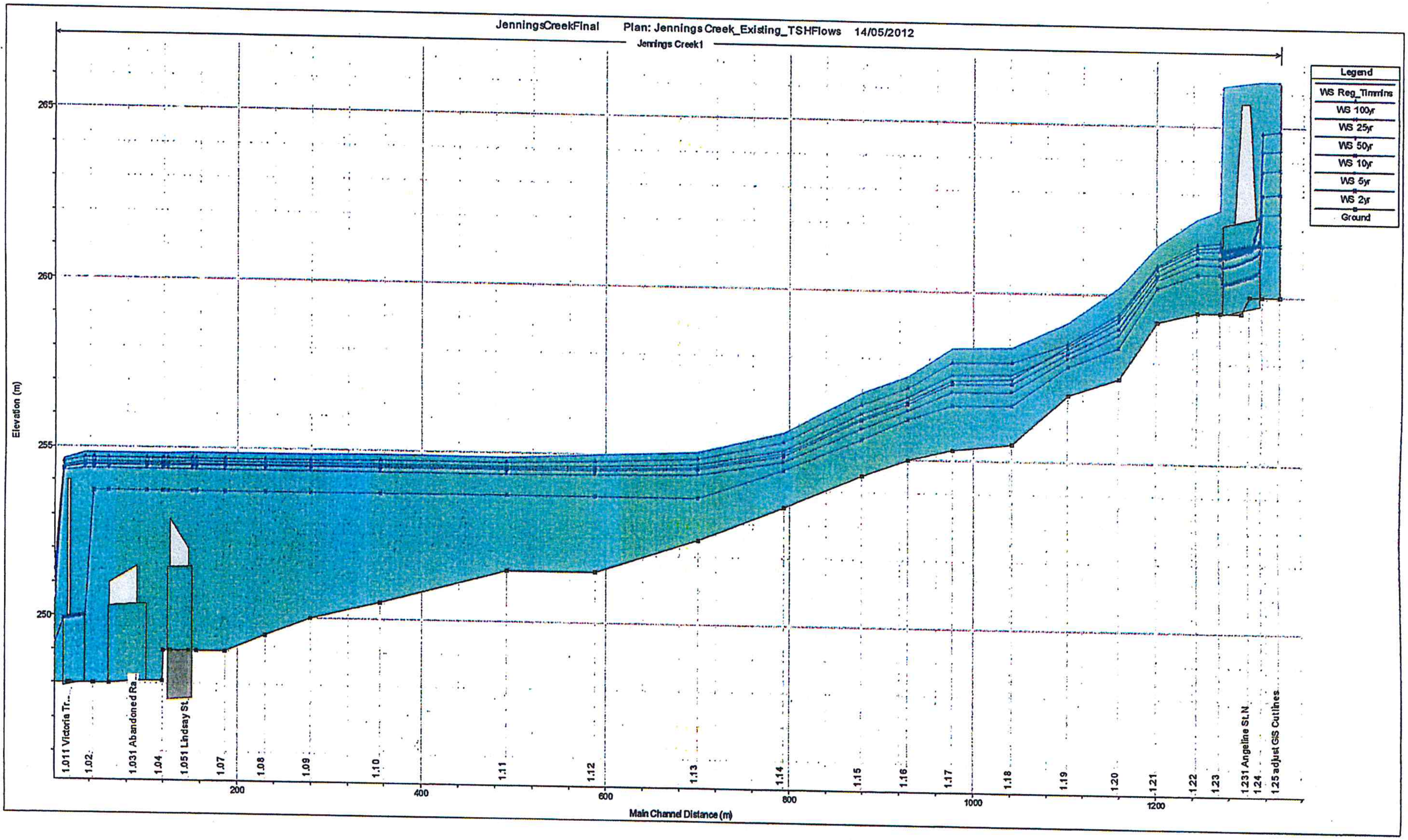


Figure 3 - Hec-Ras Profile of Jennings Creek Showing Existing Backwater Affect

Table 4 - Backwater Elevations Immediately Upstream on Jennings Creek Downstream Crossing Structures

Storm Event	Water Surface Elevation (m)
2yr	253.71
5yr	254.35
10yr	254.46
25yr	254.56
50yr	254.50
100yr	254.68
Regional	254.84

A sensitivity analysis was completed to assess potential variance in storm flows retrieved from the previous hydrology study and their potential impact on hydraulic conditions. A 20% increase and decrease was applied to the inflows and run through the model. These changes in flow showed a negligible change in hydraulic results. This shows stability in the model and shows that a variation of the calculated hydrologic flows would give similar hydraulic results. This sensitivity analysis can be seen under the "Existing_TSHFlows_20%QInc" and "Existing_TSHFlows_20%QDec" Hec-ras plan files.

A table of Hec-Ras outputs can be seen in the Appendix. Furthermore, a digital copy of the hydraulic model is enclosed with this report.

4.0 FLOOD RELIEF SOLUTIONS

Lindsay Street, the abandoned railway and Victoria Trail near the downstream end of Jennings Creek severely restrict regulatory flows causing significant backwater. This is due to the fact that these hydraulic structures are undersized and their crossing embankments act as dams.

Hydraulic analyses were completed to assess potential flood relief solutions. Various adjustments to the existing hydraulic infrastructure and crossing landforms were undertaken. It was found that increasing existing culvert sizing alone would have insignificant impact on backwater flood water elevations. In fact, the major cause for backwater can be attributed to the Victoria Trail embankment and abandoned railway landforms. Both these embankments could be adjusted and or removed to a point where flood elevations can become substantially lower.

Appendix B
Hydrology Modeling Parameters Selection

Hydrology Modeling Parameters Selection
Hydrologic Modeling (Visual OTTHYMO v 2.4
For Flood Plain Mapping Project, City of Kawartha Lakes
(September 2013)

<table>
<tr><td colspan="3">HYDROLOGICAL MODEL (Visual OTTHYMO 2.4)</td></tr>
<tr><td>COMMAND and PROPOSED ACTION REQUIRED</td><td>PARAMETER</td><td>PROPOSED HYDROLOGY FOR DERIVING PARAMETER VALUES</td></tr>
<tr><td>STANDHYD (should only be used when catchment area TIMP>20%)</td><td>AREA</td><td>LiDAR Survey, GIS ARC-HYDRO, will be used to delineate subcatchment areas. The detail is provided at the end of the document–engineer will confirm GIs catchment delineation</td></tr>
<tr><td></td><td>XIMP</td><td>Directly connected imperviousness to be obtained from SWM reports or site plans. Otherwise, based on a review of the OP, Zoning By-Law and/or air photos to determine land use within the developed area, calculate area-weighted XIMP based on the following table:
<table>
<tr><td>Land use</td><td>[1]XIMP (Roof Leaders to Road)</td><td>[2]XIMP (Roof Leaders to Lawn)</td></tr>
<tr><td>Estate Residential (>3/4 Acre Lot)</td><td>0.14</td><td>0.09</td></tr>
<tr><td>2 Acre Lot (180 ft wide)</td><td>0.11</td><td>0.08</td></tr>
<tr><td>1½Acre Lot (150 ft wide)</td><td>0.14</td><td>0.09</td></tr>
<tr><td>1 Acre Lot (130 ft wide)</td><td>0.17</td><td>0.10</td></tr>
<tr><td>Low Density Residential (1/3 to 3/4 Acre Lot)</td><td>0.23</td><td>0.15</td></tr>
<tr><td>¾ Acre Lot (110 ft wide)</td><td>0.18</td><td>0.13</td></tr>
</table></td></tr>
</table>

1/3 Acre Lot	0.29	
Medium Density	0.47	.45
¼ Acre Lot (60 ft wide)	0.35	
1/8 Acre Lot (50 ft wide)	0.52	
1/10 Acre Lot (40 ft wide)	0.55	
High Density Residential	0.65	.6
Townhouses		.75
Institutional (e.g. school, religious centre)	0.55	.75
Industrial	0.80	.90
Commercial/ Business	0.90	.90
Park	0.01	.2-.25

Notes:

1. Public roads are included in all reported XIMP values,
2. TIMP values derived from review of literature and typical site plans.

STANDHYD command should only be used for catchments with a TIMP>20%. In case where TIMP is <20% and there is a sizeable development area, it is often best to split the catchment into two using both NASHYD and STANDHYD command.

	LOSS	Rainfall loss can be either Halton's Infiltration Method, SCS Modified Curve Number Method or Proportional Loss Coefficient Method when using VO2. However it is proposed to use the SCS Modified Curve Number Method to calculate pervious area losses for the following reasons: • Horton is not recommended for storm durations ≥ 12 hours as predicted flows are often erroneous (may under estimate runoff if rainfall intensity is < sol infiltration capacity rate); • Horton's not recommended if there is significant soil variability; • Horton's typically used for urban conditions with short duration, high intensity storms (e.g. Chicago distribution) and not much soil variability; and • SCS Modified CN Method is generally more suitable for subwatershed studies and master drainage plans.
	CN	Same approach as NASHYD. This parameter can be "tweaked" during calibration to adjust runoff volume. Typically, the pervious components within a STANDHYD represents lawn or other grassed

		or widely distributed development
	CN	CN values are a function of land use and HSG. Use the same table as STANDHYD CN based on the following approach: 1. Area-weighted land use and soils data to be calculated using GIS, Soils information must be transformed to hydrologic soil group (HSG) classification using soil texture or reference tables such as Chart H2-6A in MTC Drainage Manual (1986). use chart 1.09 MTO Drainage Manual 1007 2. CN values to be calculated on an area-weighted basis using table 1.1 in Attachment1. 3. Traditional SCS Curve Number (CN) to be calculated based on area-weighted CN calculations and then must be transformed from CN to CN* using procedure outlined in the VO2 Reference Manual. This parameter can be "tweaked" during calibration to adjust runoff volume.
	IA	Same as STANDHYD (typically set between 1.0 and 5.0 if using CN*) note chart about shows 1 - 10
	N	Number of linear reservoir typically set to 3.0. This parameter can be "tweaked" during calibration to adjust hydrograph "peakness".
	TP	Time to peak (Tp) is calculated based on time of concentration (Tc). Tp can be "tweaked" during calibration to adjust the hydrograph timing. There are number of different methods used to calculate Tc and/or Tp, including the following: • Upland's Method • Bransby- Williams Method • Airport Method • Watt and Chow Method; and • HYMO Method Typically, Tc is calculated first and then Tp is estimated based on Tp=(N-1)/N*Tc or Tp=0.67Tc Various methods are described in the literature and the VO2 reference manual. It is proposed, however, to use either the Airport method or the Bransby- Williams method. The Airport method is

- Calibration is not always possible if historical flow and climate data are not available,
- Ideally should have many years of historical data.
- Typically it is only practical to calibrate models for large watershed with available WSC flow data and AES climate data.
- Calibration is not usually possible for small drainage areas (e.g. subdivisions).

The following procedure is proposed for model calibration (if suitable calibration data is available):

1. Obtain historical flow and climate data for selected stations for calibration period.
2. Separate baseflow from event flow data (flows in VO2 usually do not include base flow, unless baseflow constant is added).
3. Select parameter (i.e. CN*, Tp, etc.) values for model based on standard procedures
4. Run calibration events and plot simulate hydrograph with the actual hydrograph,
5. First match hydrograph volume by adjusting the CN* and note the factor by which CN* was adjusted.
6. Determine the Antecedent Precipitation Index (API) for the calibration events (e.g. 10-day API often used)
7. Plot CN* adjustment factor vs API for all calibration events.
8. Select the API corresponding to AMC II and apply this adjustment factor to the "calibrated" model
9. Next match the Tp of the hydrograph to the actual hydrograph for the calibration events.
10. Finally adjust the hydrograph shape and "peakness" by adjusting N (number of linear reservoirs).
11. Run verification events to test the model calibration
12. Using both calibration and verification events, try to establish uncertainty in simulated flows.

GENERAL WATERSHED MAPPING REQUIREMENTS

The following is a list of recommended general watershed mapping requirements:

1. Surficial soil mapping (including HSG)
2. Topography
3. Existing land use
4. Future land use
5. Aquatic and terrestrial natural features (not needed specifically for hydrology or water balance components)
6. Surficial geology

TABLE 1.1 NOT USED – REFER INSTEAD TO CKL DESIGN GUIDELINES

Curve Numbers CN (II) and Runoff Coefficients (C) for Various Land Uses

Land Use	CN Values							C Values						
	Hydrologic Soil Group													
	A	AB	B	BC	C	CD	D	A	AB	B	BC	C	CD	D
Commercial Residential	89	91	92	93	94	95	95	.9	.9	.9	.9	.9	.9	.9
High Density Residential	77	81	85	88	90	91	92	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Medium/Low Density Residential	59	67	74	78	82	85	87	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Estate	51	60	68	74	79	82	84	.25	.25	.25	0.25	0.25	0.25	0.25
Crop	64	70	75	79	82	84	85	0.22	0.35	0.40	0.45	0.50	0.55	0.55
Pasture	49	62	69	74	79	82	84	0.10	0.28	0.30	0.35	0.40	0.40	0.40
Woodlot	36	48	60	67	73	74	79	0.08	0.25	0.27	0.29	0.30	0.35	0.35
Open Space	49	59	69	74	79	80	80	.25	.25	.25	.25	.25	.25	.25

CN values AECOM (2010) C values – CKL Engineering Technical Standards (2007)

Land Use Description	Hydrologic Soil Group (AMC II)						
	A	AB	B	BC	C	CD	D
Industrial Areas (72% Impervious)	81	85	88	90	91	92	
Paved parking lots, Roofs Driveways	98	98	98	98	98	98	98
Streets and Roads							
Paved with curb and storm sewer connection	98	98	98	98	98	98	98
Gravel	76	81	85	87	89	90	91

Adapted from U.S. Soil Conservation Service National Engineering Handbook (1972) and MTO Drainage Manuals.

TABLE 1.2

RUNOFF COEFFICIENT FOR Tp CALCULATIONS

Topography and Land Use	SOIL TEXTURE		
	Open Sandy Loam	Loam and Silt Loam	Tight Clay loam and Clay
WOODLAND			
Flat (≤ 5% slope)	0.08	0.25	0.35
Rolling (5%-10% slope)	0.12	0.30	0.42
Hilly (10%-30% slope)	0.18	0.35	0.52
PASTURE			
Flat (≤ 5% slope)	0.10	0.28	0.40
Rolling (5%-10% slope)	0.15	0.35	0.45
Hilly (10%-30% slope)	0.22	0.40	0.55
CULTIVATED			
Flat (≤ 5% slope)	0.22	0.35	0.55
Rolling (5%-10% slope)	0.3	0.45	0.60
Hilly (10%-30% slope)	0.4	0.65	0.70
URBAN AREAS	**30% TIMP**	**50% TIMP**	**70% TIMP**
Flat (≤ 5% slope)	0.4	0.55	0.65
Rolling (5%-10% slope)	0.5	0.65	0.8

Adaptation from Determination of Runoff from Agricultural Areas (OMAF Publication 52) and MTC Drainage Manual Chapter B (1979).

Runoff coefficients are intended for 5-10 year storms.

TIMP refers to total impervious area.

e) *Stream Segmentation*

The stream segmentation function creates a grid of stream segments that have a unique identification. Either a segment may be a head segment, or it may be defined between two segment junctions. All the cells in a particular segment have the same grid code that is specific to that segment.

f) *Catchment Grid Delineation*

The Catchment Grid delineation function creates a grid in which each cell carries a value (grid code) indicating to which catchment the cell belongs. The value corresponds to the value carried by the stream segment that drains that area, defined in the input Link grid.

g) Catchment Polygon Processing

The catchment polygon processing function takes as input a catchment grid and converts it into a catchment polygon feature class. The adjacent cells in the grid that have the same grid code are combined in to a single area, whose boundary is then vectorized.

Final output will be one overall watershed polygon and individual catchment polygons that fall within the watershed.

Developing an Impervious Layer; (XIMP)

1. Using a variety of already existing datasets such as SWP Reports, Official Plans, Zoning By-Laws and air photos an impervious layer will be developed in a GIS. The following land use characteristics will be defined;

- Estate Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential

- Meadow
- Swamp, Fen, Marsh
- Open Water
- Pits, Quarries
- Other

* Some digitizing might need to take place to define more specific land use characteristics.

2. Create a Hydrologic Soil Group layer through GIS by categorizing the soil groups into the following;

- A - Fine Sand
- AB
- B - Fine Sandy Loam
- BC
- C - Silt Loam
- CD - Clay Loam
- D - Clay

CN Values will then be calculated based on the following approach;

1. Area-weighted land use and soils data will be calculated using GIS. Soils information will be transformed to Hydrologic Soil Group (HSG) classification using soil texture.
2. CN Values will be calculated on area-weighted bases using **Table 1.1 and 1.2 in Attachment 1.**

Appendix C
Rainfall Data

ATMOSPHERIC ENVIRONMENT SERVICE
SERVICE DE L"ENVIRONNEMENT ATMOSPHERIQUE

RAINFALL INTENSITY-DURATION FREQUENCY VALUES
INTENSITE, DUREE ET FREQUENCE DES PLUIES

DATA INTEGRATION DIVISION
LA DIVISION DU TRAITEMENT DES DONNEES

GUMBEL - METHOD OF MOMENTS/METHODE DES MOMENTS - 1990

****

TABLE 1 LINDSAY FILTRATION PLANT ONT 6164432

LATITUDE 4421 LONGITUDE 7844 ELEVATION/ALTITUDE 252 M

****

YEAR ANNEE	5 MIN	10 MIN	15 MIN	30 MIN	1 H	2 H	6 H	12 H	24 H
1965	14.7	21.6	22.9	30.7	31.5	32.5	55.9	56.1	56.1
1966	5.8	6.6	8.9	13.5	20.1	30.2	30.5	30.5	30.5
1967	8.4	11.4	14.5	15.5	15.5	18.5	27.4	39.1	49.0
1968	7.1	14.2	17.3	24.4	41.9	55.1	67.3	67.3	67.3
1969	4.6	7.1	8.1	9.4	12.2	12.4	23.4	32.5	40.6
1970	13.0	17.8	19.8	22.9	25.7	30.0	39.1	50.5	55.1
1971	11.9	13.2	17.0	19.6	27.9	33.5	36.6	37.6	39.1
1972	4.6	6.6	8.9	11.9	11.9	15.0	30.5	33.0	34.8
1973	7.4	14.5	15.0	17.5	19.0	22.4	31.0	32.3	43.9
1974	8.1	12.7	15.5	22.6	35.1	45.5	49.0	56.1	56.1
1975	10.4	15.2	15.5	22.4	22.4	29.0	39.1	39.1	40.1
1976	6.3	9.1	10.2	13.7	23.9	23.9	34.0	38.1	38.1
1977	9.7	12.7	14.7	16.8	21.3	21.6	35.8	43.4	43.9
1978	7.6	13.2	19.8	21.6	25.3	27.7	27.9	27.9	32.8
1979	11.0	13.9	13.9	14.1	14.1	16.6	21.0	34.8	35.2
1980	13.3	15.8	20.2	28.3	51.8	53.9	69.8	70.4	82.8
1981	7.8	15.2	19.8	32.4	33.4	33.7	35.3	36.0	36.0
1982	10.0	16.2	19.0	23.4	36.2	41.8	45.6	45.6	45.6
1983	14.0	18.8	18.8	20.1	23.8	23.9	26.4	27.8	30.9
1984	10.7	12.8	19.2	36.8	44.4	57.6	84.3	84.6	84.7
1985	7.7	12.8	17.3	25.2	27.5	32.4	42.4	42.4	42.4
1986	5.8	6.9	7.1	10.5	13.6	26.8	41.1	42.1	42.1
1987	7.1	8.2	10.3	14.6	17.3	20.7	22.7	22.8	34.1
1988	6.6	12.1	18.2	24.4	24.9	24.9	25.2	25.2	40.0
1989	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	48.6

NOTE:-99.9 INDICATES MSG DATA
DONNEES MANQUANTES

# YRS. ANNEES	24	24	24	24	24	24	24	24	25
MEAN MOYENNE	8.9	12.9	15.5	20.5	25.9	30.4	39.2	42.3	46.0
STD. DEV. ECART-TYPE	2.9	3.9	4.5	7.1	10.5	12.4	16.1	15.2	14.4
SKEW DISSYMETRIE	.49	.03	-.51	.45	.79	.90	1.41	1.28	1.58
KURTOSIS KURTOSIS	2.58	3.14	2.52	3.07	3.55	3.48	4.93	4.70	5.40

NOTE: -99.9 INDICATES LESS THAN 10 YEARS OF DATA AVAILABLE
INDIQUE MOINS DE 10 ANNEES DE DONNEES DISPONIBLES

RAINFALL INTENSITY-DURATION FREQUENCY VALUES
INTENSITE, DUREE ET FREQUENCE DES PLUIES

GUMBEL - METHOD OF MOMENTS/METHODE DES MOMENTS - 1990
****

TABLE 2 LINDSAY FILTRATION PLANT ONT 6164432

LATITUDE 4421 LONGITUDE 7844 ELEVATION/ALTITUDE 252 M
****

RETURN PERIOD RAINFALL AMOUNTS (MM)
PERIODE DE RETOUR QUANTITIES DE PLUIE (MM)

DURATION DUREE	2 YR/ANS	5 YR/ANS	10 YR/ANS	25 YR/ANS	50 YR/ANS	100 YR/ANS	# YEARS ANNEES
5 MIN	8.4	11.0	12.7	14.9	16.5	18.1	24
10 MIN	12.2	15.7	18.0	20.9	23.1	25.2	24
15 MIN	14.8	18.7	21.3	24.6	27.1	29.5	24
30 MIN	19.3	25.6	29.8	35.1	39.0	42.8	24
1 H	24.1	33.4	39.6	47.3	53.1	58.8	24
2 H	28.4	39.3	46.6	55.8	62.6	69.4	24
6 H	36.6	50.8	60.2	72.1	80.9	89.7	24
12 H	39.8	53.2	62.2	73.4	81.8	90.1	24
24 H	43.6	56.4	64.8	75.4	83.3	91.2	25

RETURN PERIOD RAINFALL RATES (MM/HR)-95% CONFIDENCE' LIMITS
INTENSITE DE LA PLUIE PAR PERIODE DE RETOUR (MM/H)-LIMITES DE CONFIANCE DE 95%

DURATION DUREE	2 YR/ANS	5 YR/ANS	10 YR/ANS	25 YR/ANS	50 YR/ANS	100 YR/ANS
5 MIN	101.0	132.2	152.8	178.9	198.2	217.5
	+/- 13.0	+/- 21.8	+/- 29.5	+/- 39.7	+/- 47.5	+/- 55.4
10 MIN	73.3	94.2	108.1	125.6	138.5	151.4
	+/- 8.7	+/- 14.6	+/- 19.8	+/- 26.7	+/- 31.9	+/- 37.2
15 MIN	59.1	74.8	85.3	98.4	108.2	117.9
	+/- 6.5	+/- 11.0	+/- 14.9	+/- 20.1	+/- 24.0	+/- 28.0
30 MIN	38.7	51.3	59.6	70.1	77.9	85.7
	+/- 5.2	+/- 8.8	+/- 11.9	+/- 16.0	+/- 19.2	+/- 22.3
1 H	24.1	33.4	39.6	47.3	53.1	58.8
	+/- 3.9	+/- 6.5	+/- 8.8	+/- 11.8	+/- 14.1	+/- 16.5
2 H	14.2	19.7	23.3	27.9	31.3	34.7
	+/- 2.3	+/- 3.8	+/- 5.2	+/- 7.0	+/- 8.4	+/- 9.8
6 H	6.1	8.5	10.0	12.0	13.5	14.9
	+/- 1.0	+/- 1.7	+/- 2.2	+/- 3.0	+/- 3.6	+/- 4.2
12 H	3.3	4.4	5.2	6.1	6.8	7.5
	+/- .5	+/- .8	+/- 1.1	+/- 1.4	+/- 1.7	+/- 2.0
24 H	1.8	2.3	2.7	3.1	3.5	3.8
	+/- .2	+/- .4	+/- .5	+/- .7	+/- .8	+/- .9

ATMOSPHERIC ENVIRONMENT SERVICE
SERVICE DE L"ENVIRONNEMENT ATMOSPHERIQUE

RAINFALL INTENSITY-DURATION FREQUENCY VALUES
INTENSITE, DUREE ET FREQUENCE DES PLUIES

GUMBEL - METHOD OF MOMENTS/METHODE DES MOMENTS - 1990
****

TABLE 3 LINDSAY FILTRATION PLANT ONT 6164432

LATITUDE 4421 LONGITUDE 7844 ELEVATION/ALTITUDE 252 M

****

INTERPOLATION EQUATION / EQUATION D"INTERPOLATION: R = A * T ** B
R = RAINFALL RATE / INTENSITE DE LA PLUIE (MM /HR)
T = TIME IN HOURS / TEMPS EN HEURES

STATISTICS STATISTIQUES	2 YR ANS	5 YR ANS	10 YR ANS	25 YR ANS	50 YR ANS	100 YR ANS
MEAN OF R MOYENNE DE R	35.7	46.7	54.0	63.2	70.1	76.9
STD. DEV. R ECART-TYPE	35.1	45.4	52.1	60.7	67.1	73.4
STD. ERROR ERREUR STANDARD	9.4	12.4	14.5	17.1	19.0	21.0
COEFF. (A) COEFFICIENT (A)	20.9	27.8	32.3	38.0	42.3	46.5
EXPONENT (B) EXPOSANT (B)	-.719	-.713	-.710	-.708	-.706	-.705
MEAN % ERROR % D'ERREUR	10.4	12.1	13.1	14.1	14.7	15.2

SHORT DURATION RAINFALL INTENSITY-DURATION FREQUENCY DATA FOR-
DONNEES SUR L'INTENSITE.LA DUREE ET LA FREQUENCE DES CHUTES DE PLUIE DE COURTE DUREE A LINDSAY FILTRATION PLANT ONT

GUMBEL-METHOD OF MOMENTS
METHODE DES MOMENTS

BASED ON RECORDING RAIN GAUGE DATA FOR THE PERIOD-
BASEES SUR LES DONNEES DU PLUVIOGRAPHES POUR LA PERIOD 1965 - 1989 25 YEARS/AN

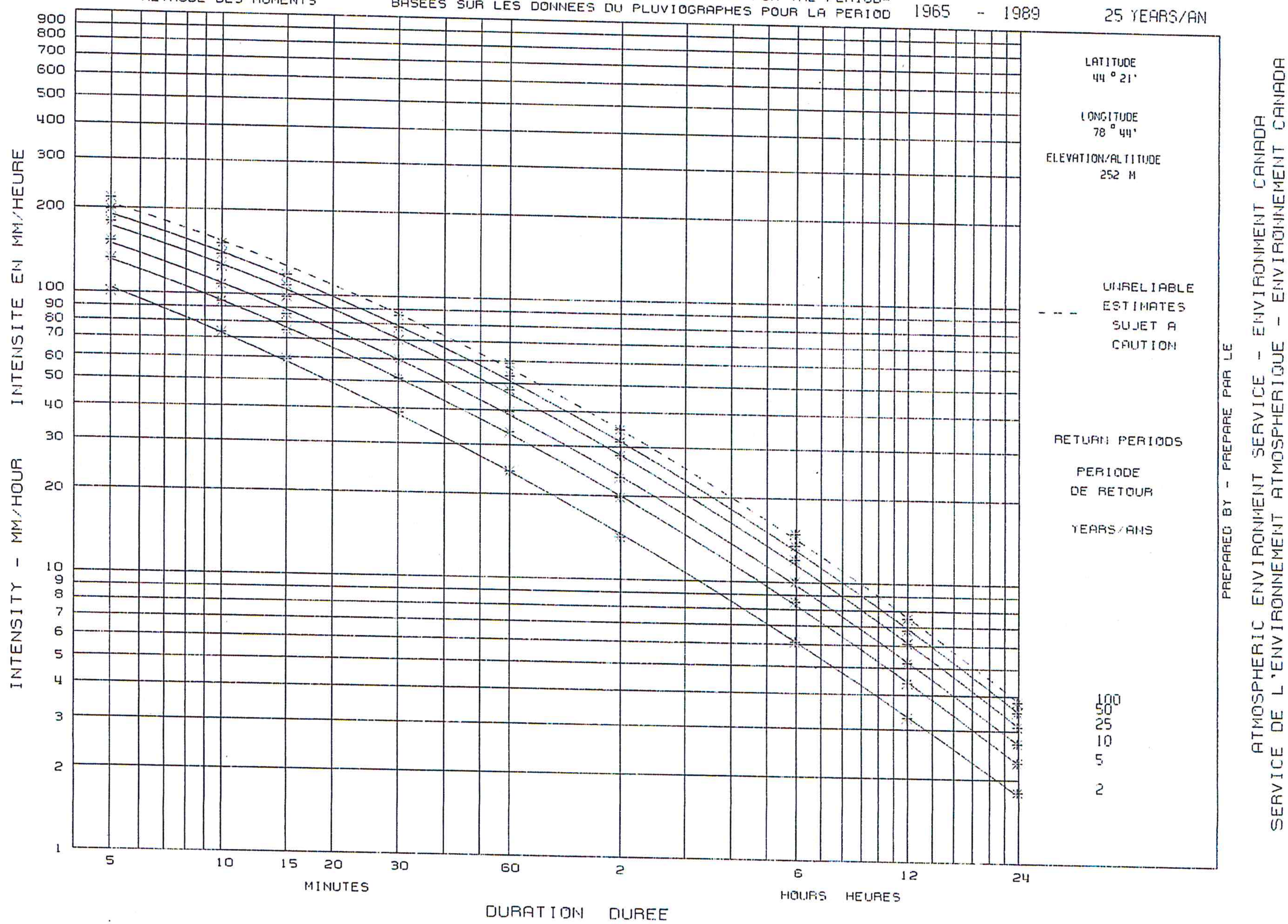


TABLE D-4

TIMMINS - RAINFALL DEPTHS

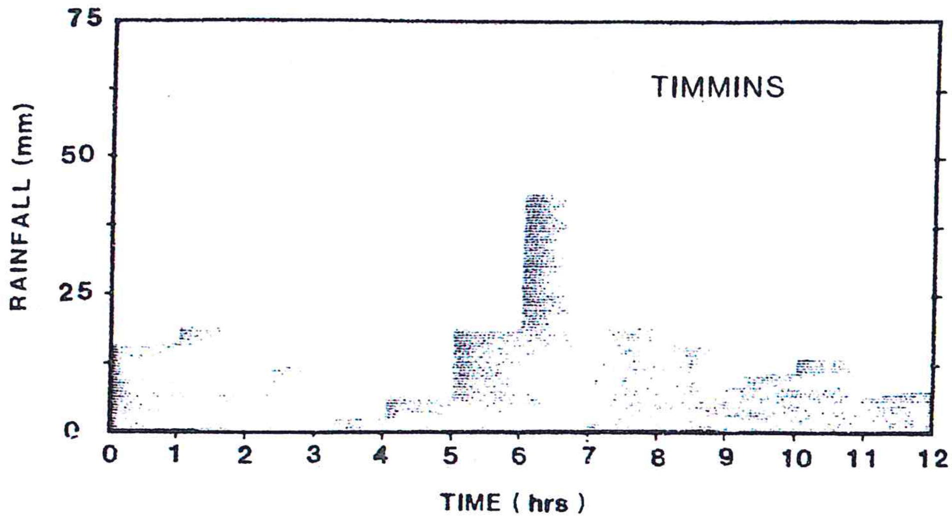
Hour		Depth (mm)	Depth Inches	Percent of 12 Hour
1st		15	0.6	8
2nd		20	0.8	10
3rd		10	0.4	6
4th		3	0.1	1
5th		5	0.2	3
6th		20	0.8	10
7th		43	1.7	23
8th		20	0.8	10
9th		23	0.9	12
10th		13	0.5	6
11th		13	0.5	7
12th		8	0.3	4
	TOTAL	193	7.6	

TABLE D-5

TIMMINS - AREAL REDUCTION

Area (km^2)	Reduction Factor Percentage
0 to 25	100 (no reduction)
26 to 50	97
51 to 75	94
76 to 100	90
101 to 150	87
151 to 200	84
201 to 250	82
251 to 375	79
376 to 500	76
501 to 750	74
751 to 1000	70
1001 to 1250	68
1251 to 1500	66
1501 to 1800	65
1801 to 2100	64
2101 to 2300	63
2301 to 2600	62
2601 to 3900	58
3901 to 5200	56
5201 to 6500	53
6501 to 8000	50

NOTE: Reduction factor to be multiplied by the rainfall.



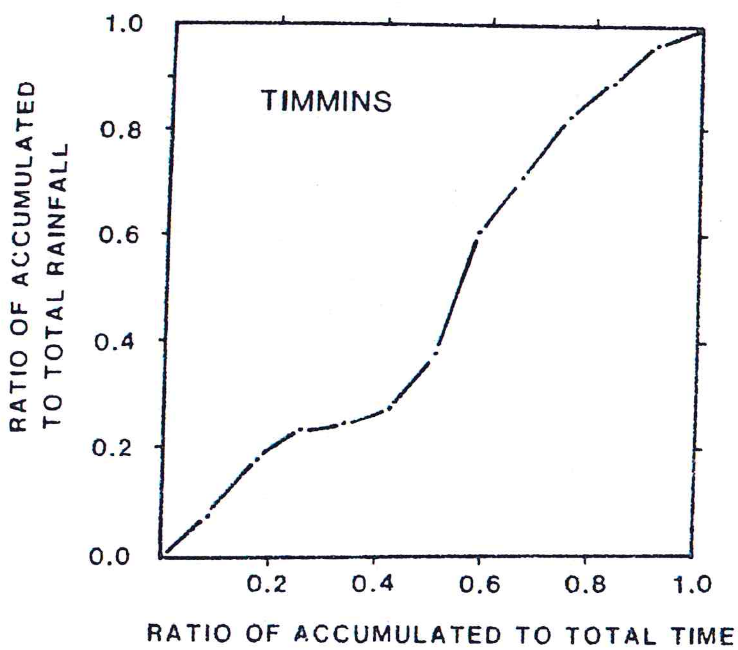


FIGURE D-4
TIMMINS STORM HYETOGRAPH AND DIMENSIONLESS DISTRIBUTION

Design Chart 1.04: Timmins Storm

	Depth		Percent of 12 hour
	(mm)	(inches)	
1st hour	15	0.6	8
2nd hour	20	0.8	10
3rd hour	10	0.4	6
4th hour	3	0.1	1
5th hour	5	0.2	3
6th hour	20	0.8	10
7th hour	43	1.7	23
8th hour	20	0.8	10
9th hour	23	0.9	12
10th hour	13	0.5	6
11th hour	13	0.5	7
12th hour	8	0.3	4
	193	7.6	100

Drainage Area (km^2)	Percentage
0 to 25	100.0
26 to 50	97
51 to 75	94
76 to 100	90
101 to 150	87
151 to 200	84
201 to 250	82
251 to 375	79
376 to 500	76
501 to 750	74
751 to 1000	70
1001 to 1250	68
1251 to 1500	66
1501 to 1800	65
1801 to 2100	64
2101 to 2300	63
2301 to 2600	62
2601 to 3900	58
3901 to 5200	56
5201 to 6500	53
6501 to 8000	50

Source: Ministry of Transportation, MTO (1989)

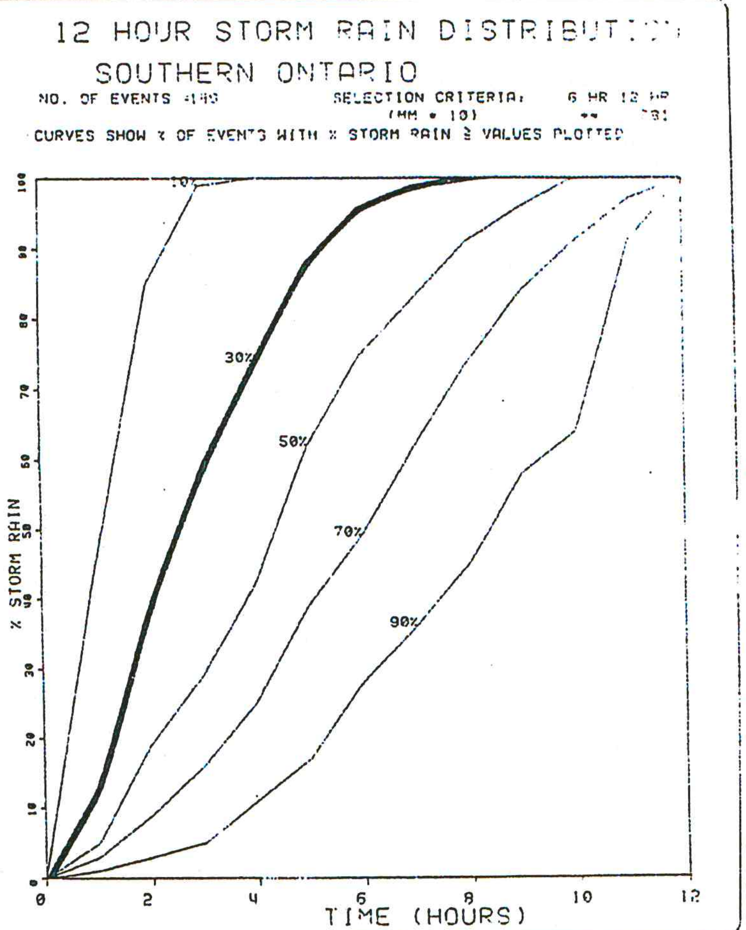
TABLE D-8

RAINFALL DISTRIBUTIONS - PERCENT

Type	Reference	Storm Duration	HOURS 1	2	3	4	5	6	7	8	9	10	11	12
Probable Maximum Storm	Small Dams	6 Hour	8	9	11	49	15	8	-	-	-	-	-	-
HAZEL	Ministry of Natural Resources	12 Hour	3	2	3	6	8	6	11	6	6	25	18	6
TIMMINS	Ministry of Natural Resources	12 Hour	8	10	6	1	3	10	23	10	12	6	7	4
Return Period Storms	SCS II	24 Hour 2 Hour Increment	2	3	3	4	6	48	16	6	4	3	3	2
	AES, 30% Southern Ontario	12 Hour	15	25	22	14	12	8	9	1	0	0	0	0
	AES, 30% Northern Ontario	12 Hour	8	17	15	14	18	14	6	3	3	1	1	0

NOTE: A.E.S. distributions represent 70% of all storms for which the accumulated hourly rainfall was equal or less than shown. Consequently, only 30% of the storms had higher accumulated rainfall.

For other distribution see page D-16.



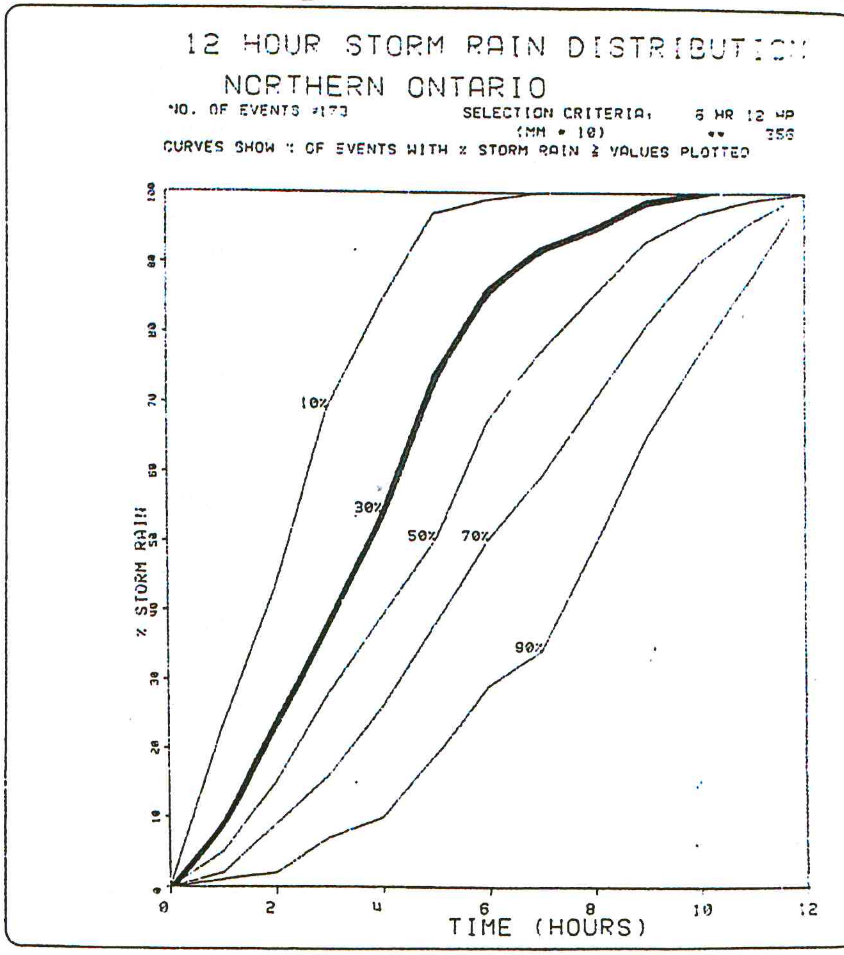


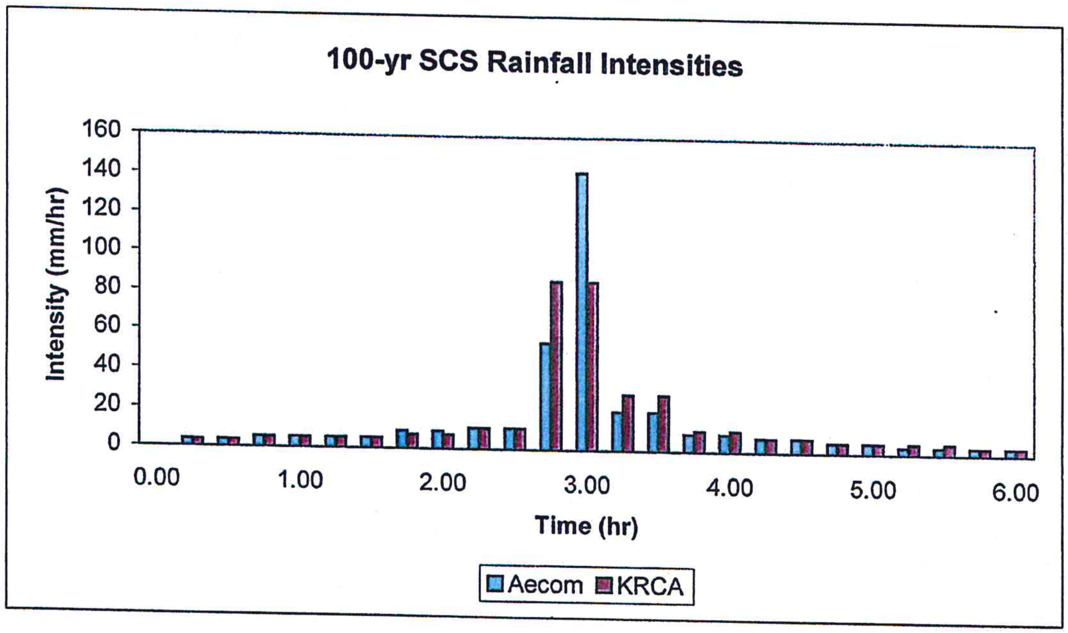
FIGURE D-7

12 - HOUR STORM DISTRIBUTION

Comparing Aecom and KRCA 100-year SCS Storms

Time (hr)	Intensity (mm/hr)	
	Aecom	KRCA
0.00	0	0.00
0.25	3.64	3.59
0.50	3.64	3.59
0.75	5.47	5.38
1.00	5.47	5.38
1.25	5.47	5.38
1.50	5.47	5.38
1.75	9.11	7.18
2.00	9.11	7.18
2.25	10.93	10.76
2.50	10.93	10.76
2.75	54.66	86.11
3.00	142.12	86.11
3.25	20.04	28.70
3.50	20.04	28.70
3.75	9.11	10.76
4.00	9.11	10.76
4.25	7.29	7.18
4.50	7.29	7.18
4.75	5.47	5.38
5.00	5.47	5.38
5.25	3.64	5.38
5.50	3.64	5.38
5.75	3.64	3.59
6.00	3.64	3.59

1.650409



Lindsay AES Data (comparing to Aecom report)

Intensity Values in AES 1965-1989

Minutes	Rainfall Intensity (mm/hr) 2-year	5-year	10-year	25-year	50-year	100-year
5	101.0	132.2	152.8	178.9	198.2	217.5
10	73.3	94.2	108.1	125.6	138.5	151.4
15	59.1	74.8	85.3	98.4	108.2	117.9
30	38.7	51.3	59.6	70.1	77.9	85.7
60	24.1	33.4	39.6	47.3	53.1	58.8
120	14.2	19.7	23.3	27.9	31.3	34.7
360	6.1	8.5	10.0	12.0	13.5	14.9
720	3.3	4.4	5.2	6.1	6.8	7.5
1440	1.8	2.3	2.7	3.1	3.5	3.8

Provided from AES

Return Period Parameters	2-year	5-year	10-year	25-year	50-year	100-year
a	20.9	27.8	32.3	38	42.3	46.5
b	-0.719	-0.713	-0.710	-0.708	-0.706	-0.705

Used in 2010 Aecom Report (CKL Engineering Standards)

Return Period Parameters	2-year	5-year	10-year	25-year	50-year	100-year
a	628.107	820.229	915.845	1041.821	1139.702	1230.783
b	5.3	6.0	6.0	6.0	6.0	6.0
c	0.78	0.768	0.757	0.748	0.743	0.738

Calculated Rainfall Intensities using a, b from AES printout

Minutes	Rainfall Intensity (mm/hr) 2-year	5-year	10-year	25-year	50-year	100-year
5	124.8	163.5	188.5	220.7	244.5	268.1
10	75.8	99.7	115.3	135.1	149.9	164.5
15	56.6	74.7	86.4	101.4	112.6	123.6
30	34.4	45.6	52.8	62.1	69.0	75.8
60	20.9	27.8	32.3	38.0	42.3	46.5
120	12.7	17.0	19.7	23.3	25.9	28.5
360	5.8	7.7	9.1	10.7	11.9	13.1
720	3.5	4.7	5.5	6.5	7.3	8.1
1440	2.1	2.9	3.4	4.0	4.5	4.9

Minutes	2-year	5-year	10-year	25-year	50-year	100-year
5	124%	124%	123%	123%	123%	123%
10	103%	106%	107%	108%	108%	109%
15	96%	100%	101%	103%	104%	105%
30	89%	89%	89%	89%	89%	88%
60	87%	83%	82%	80%	80%	79%
120	89%	86%	85%	83%	83%	82%
360	94%	91%	91%	89%	88%	88%
720	106%	107%	106%	107%	108%	108%
1440	118%	125%	125%	129%	128%	130%
average =	101%	101%	101%	101%	101%	101%
median =	96%	100%	101%	103%	104%	105%
min =	87%	83%	82%	80%	80%	79%
max =	124%	125%	125%	129%	128%	130%

Calculated Rainfall Intensities using a, b, c from Aecom Report

Minutes	Rainfall Intensity (mm/hr) 2-year	5-year	10-year	25-year	50-year	100-year
5	102.1	130.0	149.0	173.0	191.6	209.4
10	74.9	97.5	112.2	130.8	145.1	158.9
15	60.1	79.1	91.4	106.8	118.6	130.0
30	39.0	52.3	60.8	71.4	79.5	87.4
60	24.1	32.8	38.4	45.4	50.7	55.9
120	14.5	20.0	23.5	28.0	31.3	34.7
360	6.3	8.8	10.5	12.6	14.2	15.8
720	3.7	5.2	6.3	7.5	8.5	9.5
1440	2.2	3.1	3.7	4.5	5.1	5.7

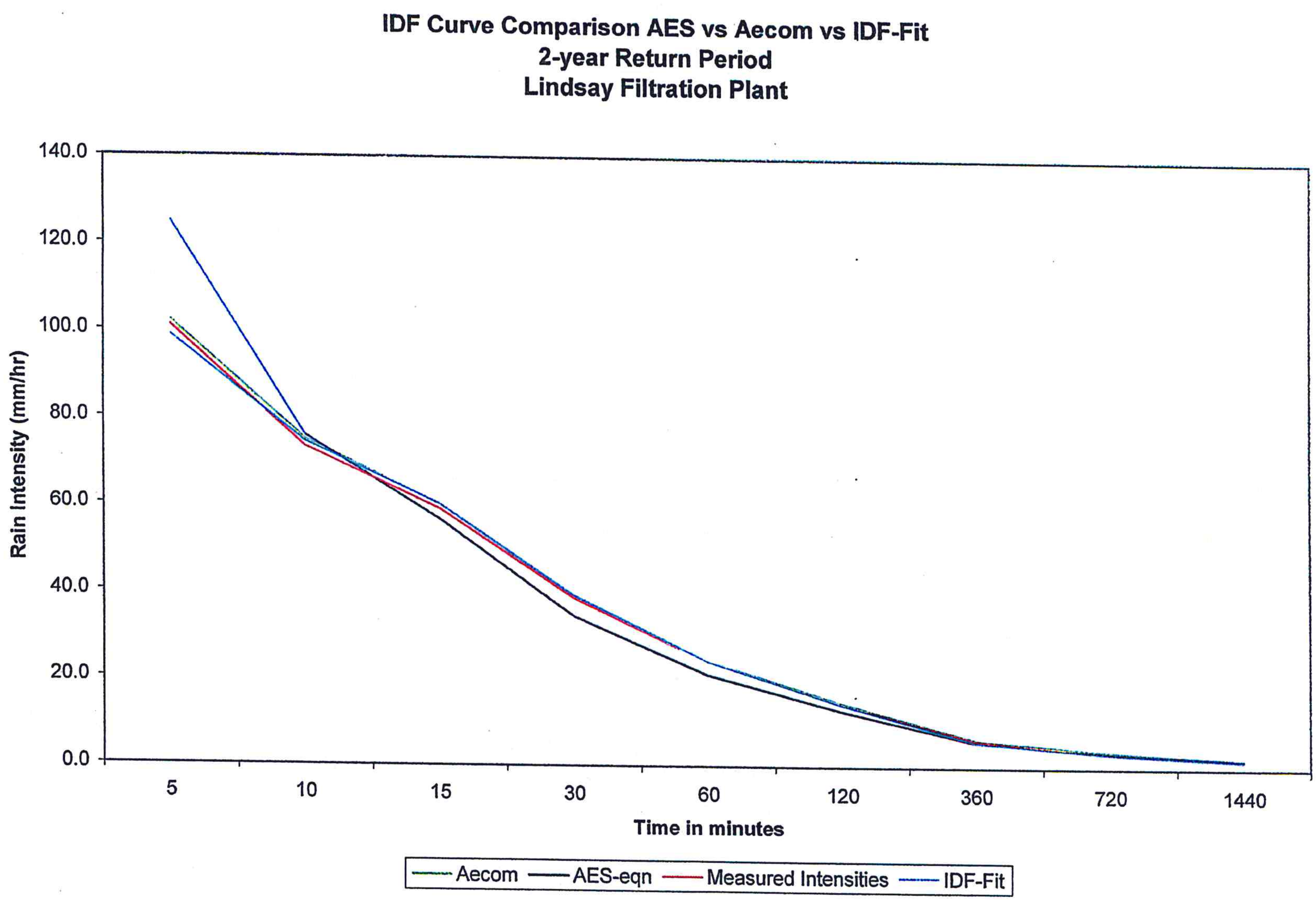
Minutes	2-year	5-year	10-year	25-year	50-year	100-year
5	101%	98%	98%	97%	97%	96%
10	102%	103%	104%	104%	105%	105%
15	102%	106%	107%	108%	110%	110%
30	101%	102%	102%	102%	102%	102%
60	100%	98%	97%	96%	95%	95%
120	102%	101%	101%	100%	100%	100%
360	103%	104%	105%	105%	105%	106%
720	112%	118%	120%	124%	125%	127%
1440	120%	133%	137%	145%	146%	151%
average =	105%	107%	108%	109%	109%	110%
median =	102%	103%	104%	104%	105%	105%
min =	100%	98%	97%	96%	95%	95%
max =	120%	133%	137%	145%	146%	151%

Calculated Rainfall Intensities using a, b,c from IDF-fit spreadsheet

	2-year	5-year	10-year	25-year	50-year	100-year
a =	808.299	1248.097	1486.792	1917.848	2142.007	2465.522
b =	7.413	9.760	10.44	11.842	12.182	12.897
c =	0.835	0.857	0.858605	0.872971	0.871993	0.879

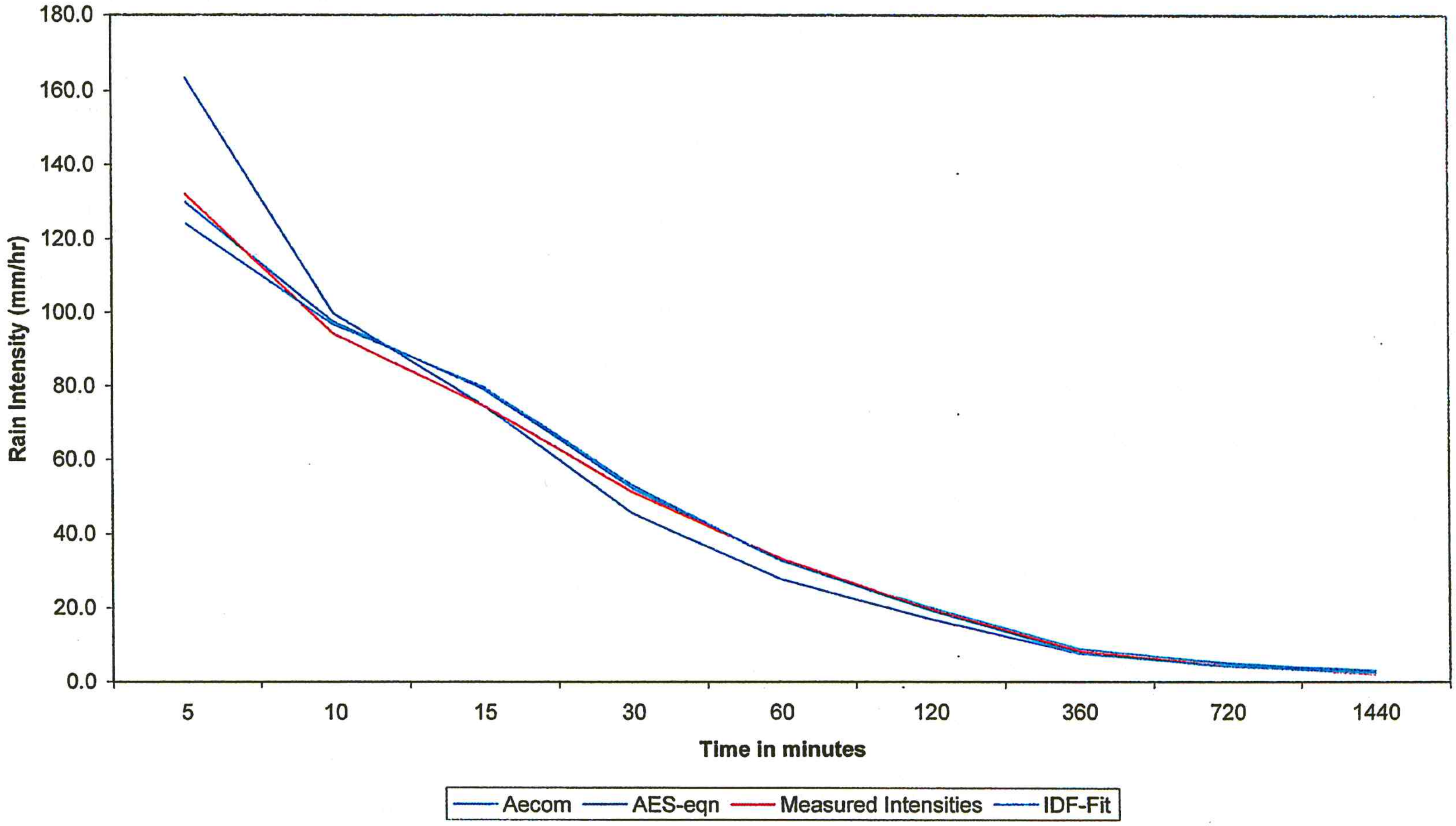
Minutes	Rainfall Intensity (mm/hr) 2-year	5-year	10-year	25-year	50-year	100-year
5	98.7	124.2	141.8	163.0	179.4	195.2
10	74.4	96.7	111.4	129.9	143.6	157.2
15	60.2	79.7	92.4	108.5	120.3	132.1
30	39.3	53.1	62.0	73.7	82.0	90.5
60	24.0	32.8	38.5	45.9	51.3	56.8
120	14.1	19.3	22.7	27.0	30.3	33.5
360	5.8	7.9	9.3	10.9	12.3	13.5
720	3.3	4.4	5.2	6.1	6.8	7.5
1440	1.9	2.4	2.9	3.3	3.7	4.1

Minutes	2-year	5-year	10-year	25-year	50-year	100-year
5	98%	94%	93%	91%	91%	90%
10	101%	103%	103%	103%	104%	104%
15	102%	107%	108%	110%	111%	112%
30	101%	104%	104%	105%	105%	106%
60	100%	98%	97%	97%	97%	97%
120	99%	98%	97%	97%	97%	97%
360	96%	92%	93%	91%	91%	91%
720	100%	100%	99%	99%	100%	100%
1440	103%	106%	106%	107%	107%	108%
average =	100%	100%	100%	100%	100%	100%
median =	100%	100%	99%	99%	100%	100%
min =	96%	92%	93%	91%	91%	90%
max =	103%	107%	108%	110%	111%	112%



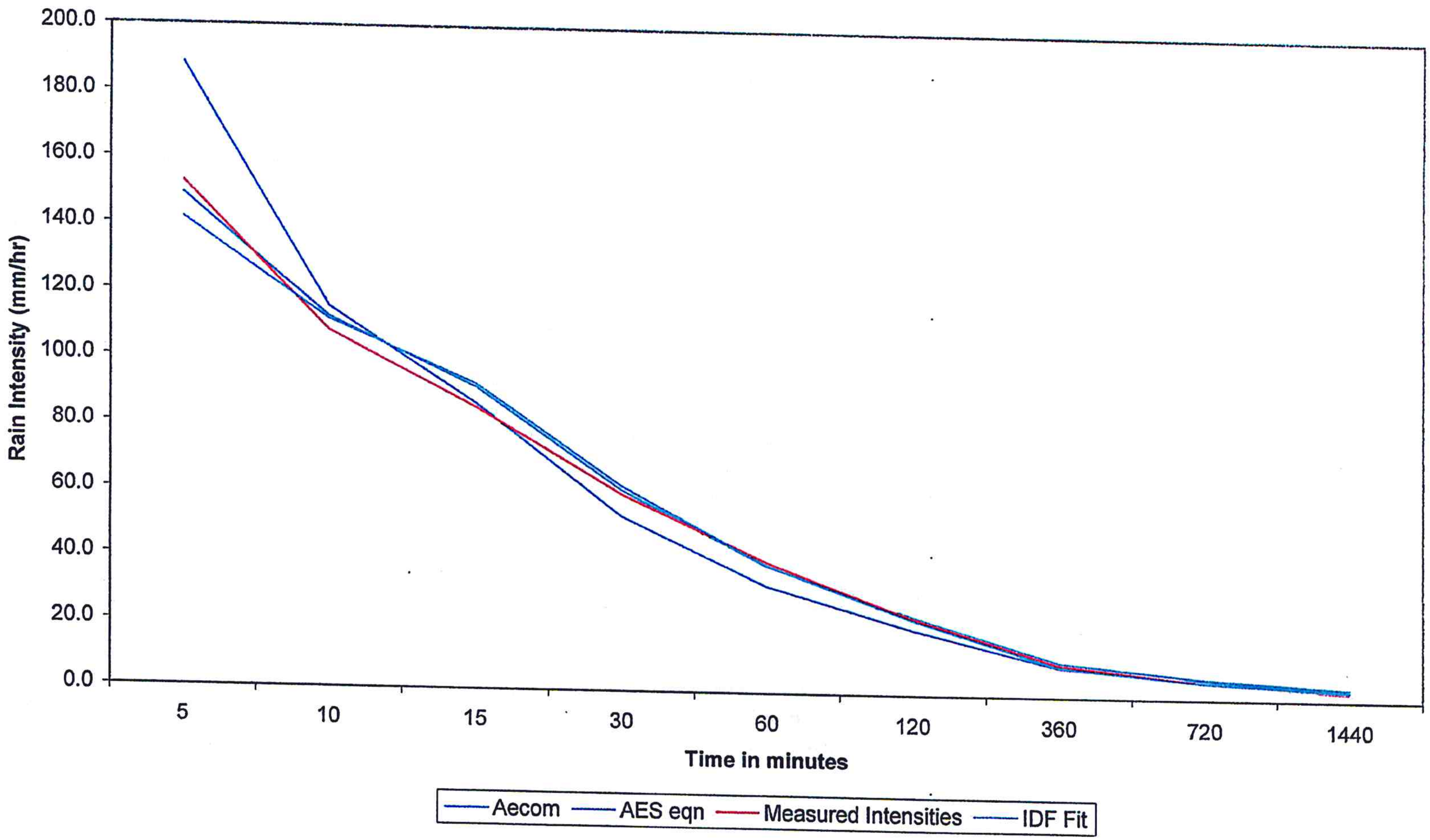
Comparing IDF Lindsay (Ops).xls
sheet: 2 year graph

IDF Curve Comparison AES vs Aecom vs IDF-Fit
5-year Return Period
Lindsay Filtration Plant



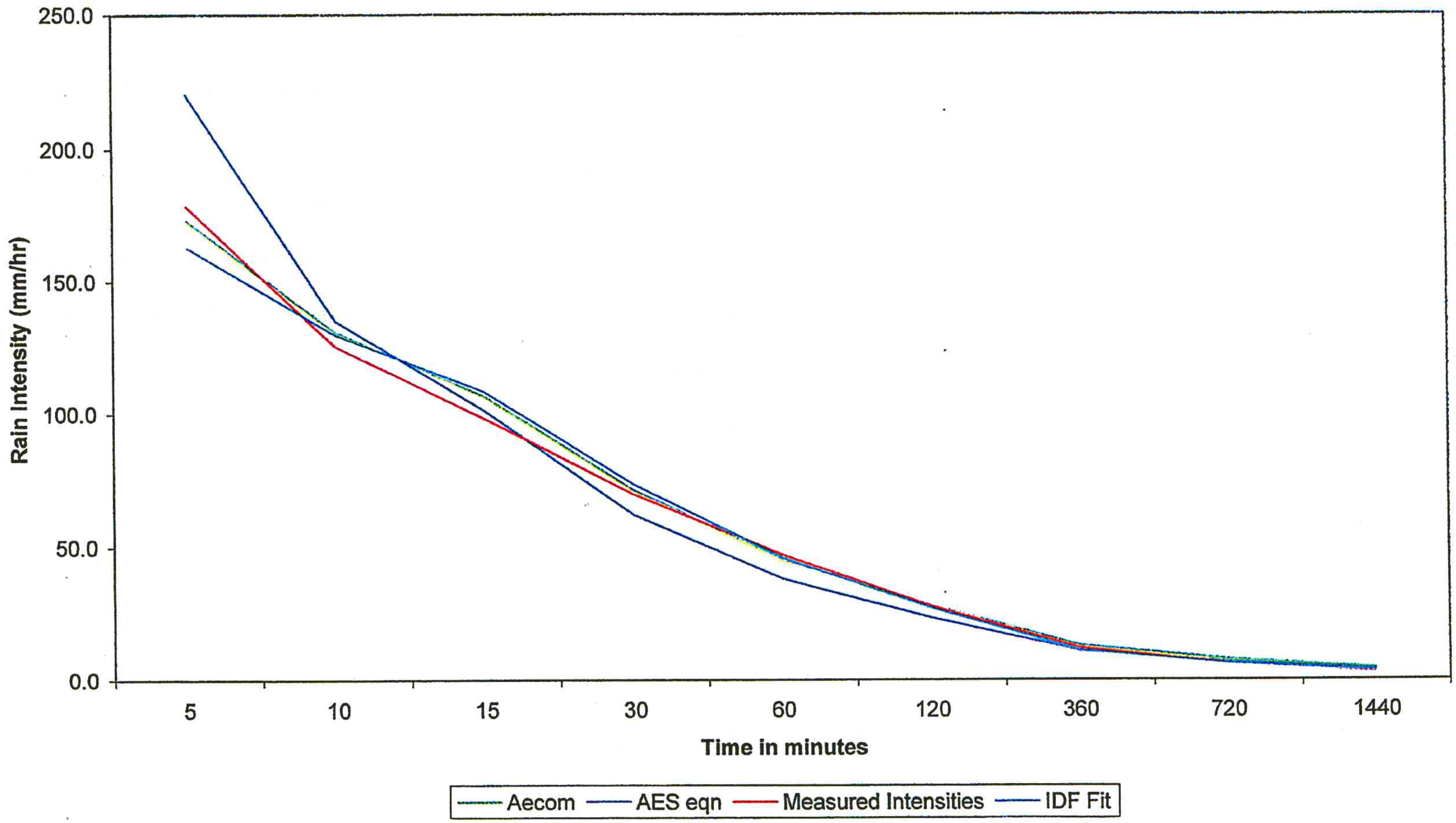
Comparing IDF Lindsay (Ops).xls
sheet: 5 year graph

IDF Curve Comparison AES vs Aecom vs IDF-Fit
10-year Return Period
Lindsay Filtration Plant



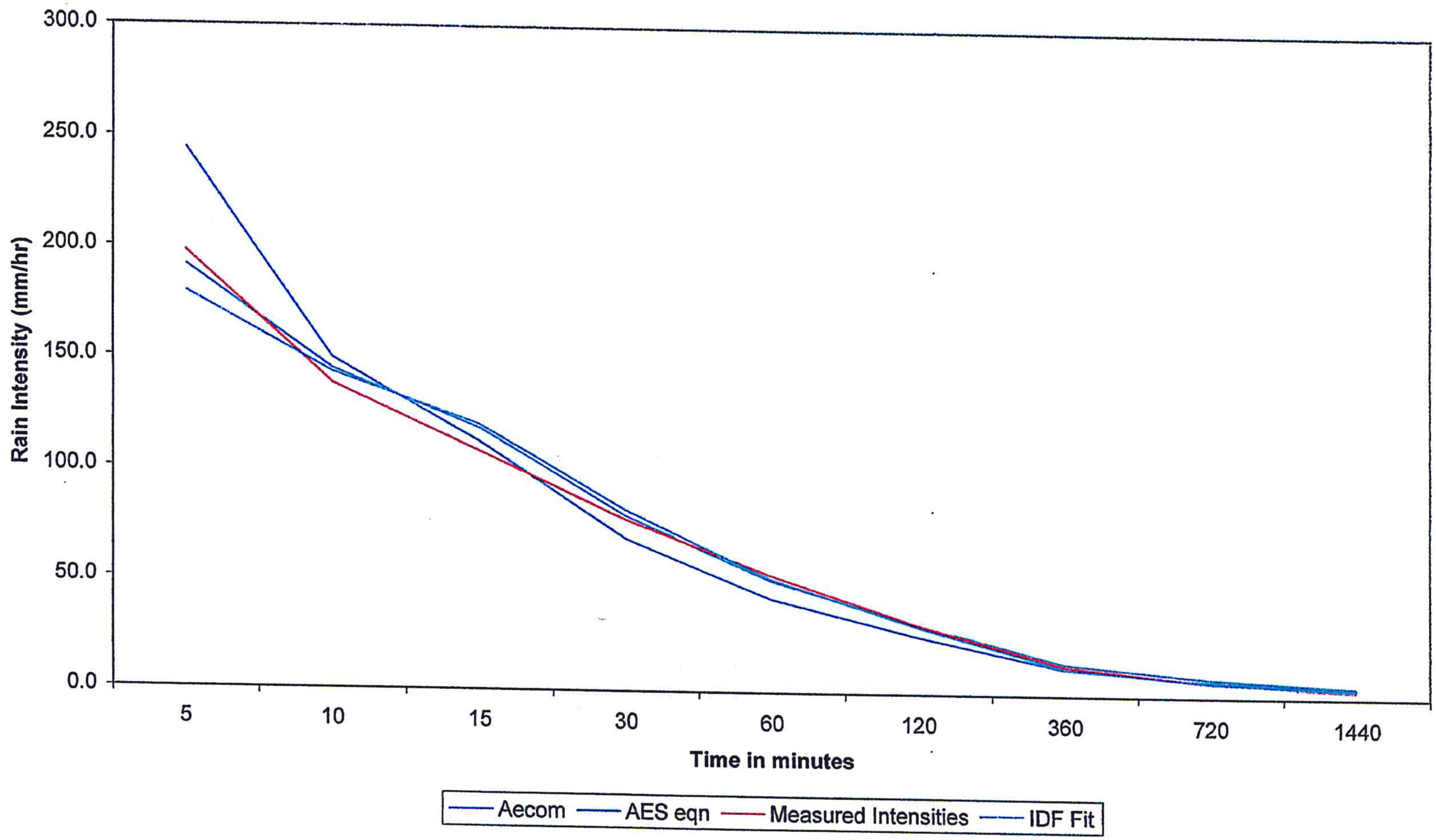
Comparing IDF Lindsay (Ops).xls
sheet: 10 year graph

IDF Curve Comparison AES vs Aecom vs IDF-Fit
25-year Return Period
Lindsay Filtration Plant

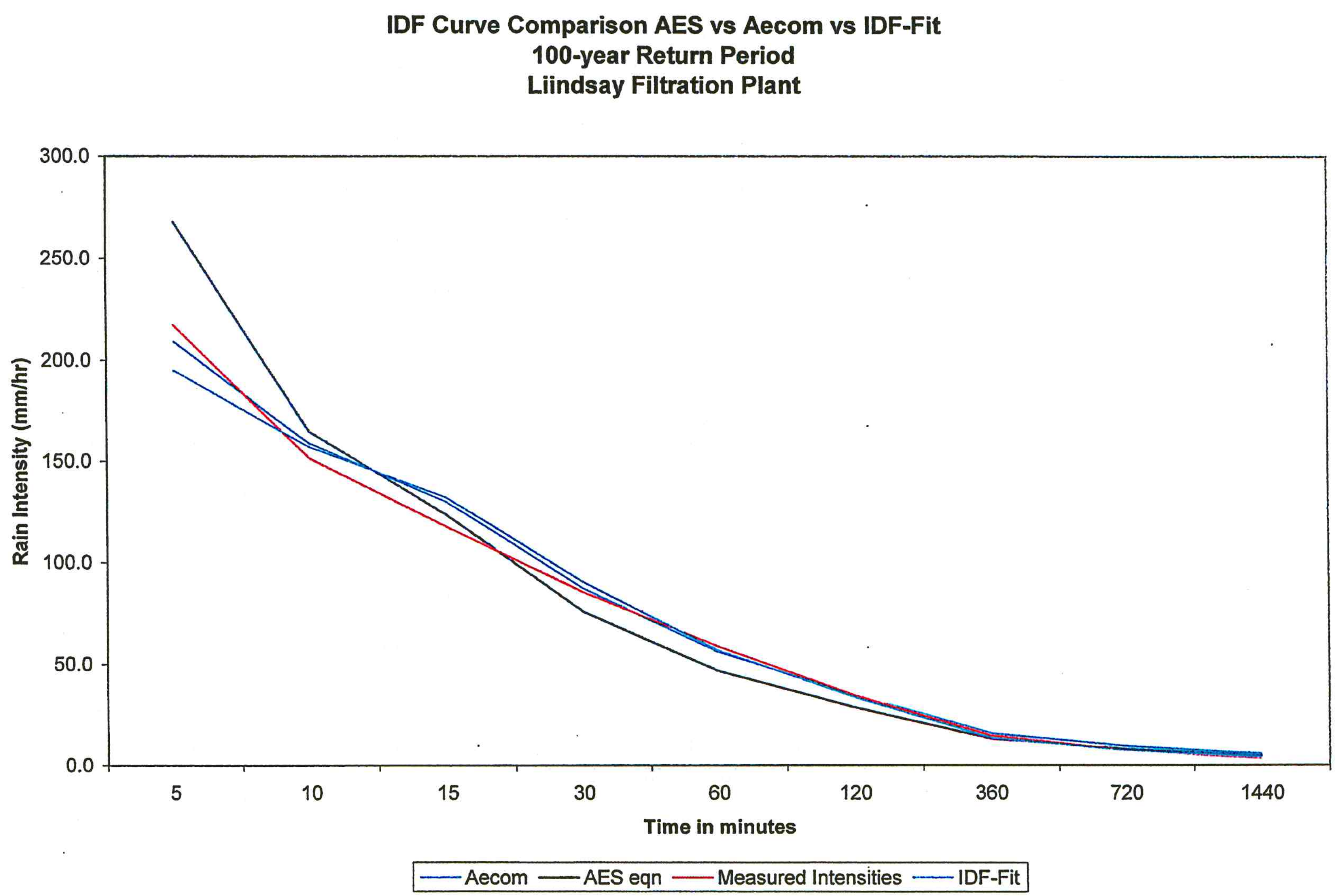


Comparing IDF Lindsay (Ops).xls
sheet: 25 year graph

IDF Curve Comparison AES vs Aecom vs IDF-Fit
50-year Return Period
Lindsay Filtration Plant



Comparing IDF Lindsay (Ops).xls
sheet: 50 year graph



Comparing IDF Lindsay (Ops).xls
sheet: 100 year graph

Comparing 12-hour Rainfall Volumes

Return Period Storm	Rainfall Volumes (mm)				
	Measured	Using CKL a, b, c	% Diff	Using new a, b, c	% Diff
2	39.8	44.3	111%	39.6	99%
5	53.2	62.5	117%	52.7	99%
10	62.2	75	121%	61.9	100%
25	73.4	90.6	123%	72.7	99%
50	81.8	100.4	123%	81.7	100%
100	90.1	114.3	127%	89.7	100%

```
==============================================================================
===========================

      V   V  I   SSSSS  U   U    A    L
      V   V  I   SS     U   U   A A   L
       V V   I    SS    U   U  AAAAA  L
       V V   I     SS   U   U  A   A  L
        VV   I   SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M  OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
```



```
              ***** S U M M A R Y   O U T P U T *****

  Input   filename: C:\Program Files\Visual OTTHYMO 2.2.4\voin.dat
  Output  filename: S:\Jessica\KRCA\OpsV02\Existing with CKL IDF.out
  Summary filename: S:\Jessica\KRCA\OpsV02\Existing with CKL IDF.sum

DATE: 13/09/2013                          TIME: 6:38:20 AM

USER:

COMMENTS: ____________________________________________________________

  ****************************
  ** SIMULATION NUMBER:   1 **
  ****************************
```
2 year
```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.    Qbase
                                    min    ha     cms   hrs     mm            cms

      START @    .00 hrs
      ---------------------
      CHIC STORM                    10.0
      [ Ptot= 44.26 mm ]
*
*     CALIB STANDHYD       0001  1  10.0   67.17   4.83  4.17  30.76   .70    .000
      [I%=35.0:S%=   .77]
*
  ****************************
  ** SIMULATION NUMBER:   2 **
  ****************************
```
5 year
```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.    Qbase
                                    min    ha     cms   hrs     mm            cms

      START @    .00 hrs
      ---------------------
      CHIC STORM                    10.0
      [ Ptot= 62.50 mm ]
*
*     CALIB STANDHYD       0001  1  10.0   67.17   7.51  4.17  47.56   .76    .000
      [I%=35.0:S%=   .77]
*
  ****************************
  ** SIMULATION NUMBER:   3 **
  ****************************
```
10yr
```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.    Qbase
                                    min    ha     cms   hrs     mm            cms

      START @    .00 hrs
      ---------------------
      CHIC STORM                    10.0
      [ Ptot= 75.03 mm ]
*
*     CALIB STANDHYD       0001  1  10.0   67.17   9.31  4.17  59.42   .79    .000
      [I%=35.0:S%=   .77]
*
  ****************************
  ** SIMULATION NUMBER:   4 **
  ****************************
```
25yr
```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.    Qbase
                                    min    ha     cms   hrs     mm            cms

      START @    .00 hrs
      ---------------------
      CHIC STORM                    10.0
      [ Ptot= 90.57 mm ]
*
*     CALIB STANDHYD       0001  1  10.0   67.17  15.19  4.00  74.32   .82    .000
      [I%=35.0:S%=   .77]
*
  ****************************
  ** SIMULATION NUMBER:   5 **
  ****************************
```
50yr
```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.    Qbase
                                    min    ha     cms   hrs     mm            cms

      START @    .00 hrs
      ---------------------
      CHIC STORM                    10.0
      [ Ptot=102.39 mm ]
*
*     CALIB STANDHYD       0001  1  10.0   67.17  17.60  4.00  85.77   .84    .000
      [I%=35.0:S%=   .77]
*
  ****************************
  ** SIMULATION NUMBER:   6 **
  ****************************
```
100yr

```
 W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.   Qbase
                                   min    ha     cms   hrs     mm          cms
     START @   .00 hrs
     --------------------
     CHIC STORM                    10.0
     [ Ptot=114.29 mm ]
*
  *  CALIB STANDHYD      0001  1  10.0   67.17  19.98  4.00  97.35  .85    .000
     [I%=35.0:S%=  .77]
*
 FINISH

===============================================================================
==========================
```

```
===============================================================================
===========================

     V   V   I   SSSSS  U   U    A    L
     V   V   I   SS     U   U   A A   L
      V V    I    SS    U   U  AAAAA  L
      V V    I     SS   U   U  A   A  L
       VV    I   SSSSS  UUUUU  A   A  LLLLL

      OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
     O   O    T      T    H   H   Y Y   MM MM  O   O
     O   O    T      T    H   H    Y    M   M  O   O
      OOO     T      T    H   H    Y    M   M   OOO

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                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files\Visual OTTHYMO 2.2.4\voin.dat
  Output  filename: S:\Jessica\KRCA\OpsVO2\Existing with new IDF.out
  Summary filename: S:\Jessica\KRCA\OpsVO2\Existing with new IDF.sum

DATE: 13/09/2013                      TIME: 6:49:38 AM

USER:

COMMENTS: ____________________________________________________________
```

```
  ****************************
  ** SIMULATION NUMBER:   1 **
  ****************************
```
2-year

```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
                                   min     ha     cms   hrs     mm           cms

      START @    .00 hrs
      --------------------
      CHIC STORM                  10.0
      [ Ptot= 39.55 mm ]
*
  *   CALIB STANDHYD      0001  1 10.0   67.17    4.64  4.17  26.56  .67     .000
      [I%=35.0:S%=  .77]
*
  ****************************
  ** SIMULATION NUMBER:   2 **
  ****************************
```
5 year

```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
                                   min     ha     cms   hrs     mm           cms

      START @    .00 hrs
      --------------------
      CHIC STORM                  10.0
      [ Ptot= 52.68 mm ]
*
  *   CALIB STANDHYD      0001  1 10.0   67.17    7.18  4.17  38.43  .73     .000
      [I%=35.0:S%=  .77]
*
  ****************************
  ** SIMULATION NUMBER:   3 **
  ****************************
```
10 year

```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
                                   min     ha     cms   hrs     mm           cms

      START @    .00 hrs
      --------------------
      CHIC STORM                  10.0
      [ Ptot= 61.89 mm ]
*
  *   CALIB STANDHYD      0001  1 10.0   67.17    8.93  4.17  46.98  .76     .000
      [I%=35.0:S%=  .77]
*
  ****************************
  ** SIMULATION NUMBER:   4 **
  ****************************
```
25 year

```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
                                   min     ha     cms   hrs     mm           cms

      START @    .00 hrs
      --------------------
      CHIC STORM                  10.0
      [ Ptot= 72.67 mm ]
*
  *   CALIB STANDHYD      0001  1 10.0   67.17   11.25  4.17  57.17  .79     .000
      [I%=35.0:S%=  .77]
*
  ****************************
  ** SIMULATION NUMBER:   5 **
  ****************************
```
50 year

```
  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
                                   min     ha     cms   hrs     mm           cms

      START @    .00 hrs
      --------------------
      CHIC STORM                  10.0
      [ Ptot= 81.67 mm ]
*
  *   CALIB STANDHYD      0001  1 10.0   67.17   16.58  4.00  65.76  .81     .000
      [I%=35.0:S%=  .77]
*
  ****************************
  ** SIMULATION NUMBER:   6 **
  ****************************
```
100 year

```
W/E COMMAND                HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.    Qbase
                                   min     ha     cms   hrs     mm            cms
     START @    .00 hrs
     --------------------
     CHIC STORM                    10.0
     [ Ptot= 89.68 mm ]
*
 *   CALIB STANDHYD       0001  1 10.0   67.17   18.87  4.00   73.47  .82     .000
     [I%=35.0:S%=   .77]
*
 FINISH

===================================================================================
===========================
```

Christie Peacock

From:	Jessica Mueller [jmueller@grca.on.ca]
Sent:	January-07-14 1:41 PM
To:	'Mark'; 'Christina Sisson'; 'Peter Waring'
Cc:	jburgess@kawarthaconservation.com; 'Christie Peacock'; pbuckley@kawarthaconservation.com
Subject:	Increased/Decreased precipitation data
Attachments:	ComparisonPPTvolume_increase_decrease_commercialArea_zoomIN.docx

Dear Technical Committee,
As discussed at the last meeting at KC regarding the floodplain mapping study for the Ops Drain #1/Jennings Creek a precipitation sensitivity analyses was carried-out as per the peer reviewer's recommendation. Please find the results attached and kindly review the memo to indicate which rainfall data should be used to generate the floodlines.

In order to meet the timelines determined during the last meeting, direction to staff is required by Friday 17th, 2014.

Thank you,
Jessica

Jessica Mueller
GIS / EngineeringTechnician
Ganaraska Region Conservation Authority
2216 County Road 28
Port Hope, Ontario
Email: jmueller@grca.on.ca

Memo regarding the use of rainfall data from Lindsay Filtration Plant

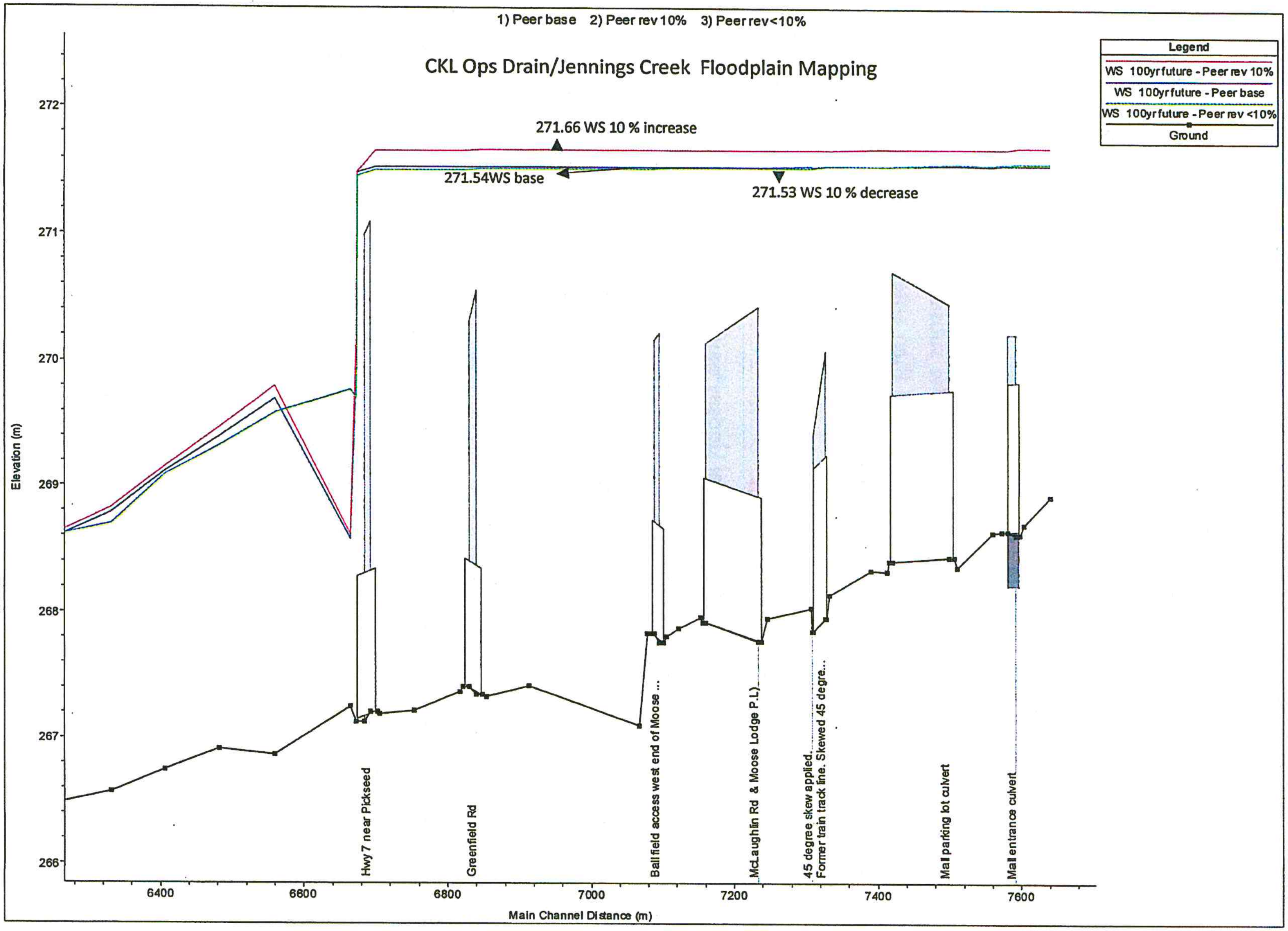
The hydrology peer review compared the Lindsay and Peterborough AES rain gauge data and determined that the Peterborough gauge experienced an increase in total rainfall volumes for the years following the abandonment of the Lindsay rain gauge. The technical committee for the Ops Drain #1/Jennings Creek floodplain model study directed staff to a carry out a sensitivity analysis of the precipitation volumes, as per the peer reviewer's recommendation.

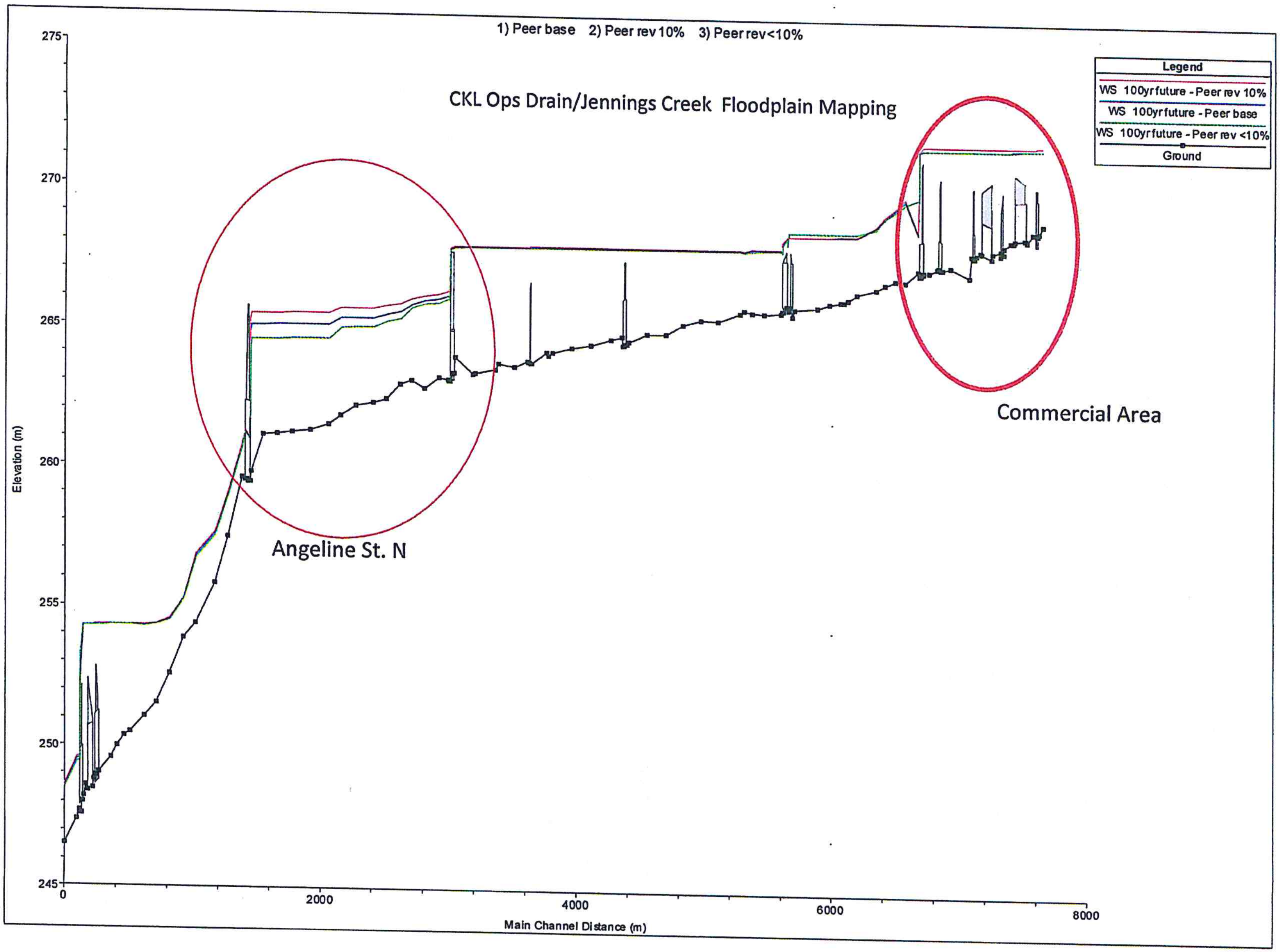
Rainfall volumes were reduced/increased by 10% of the original values and input into the PCSWMM hydrology model to determine the subsequent peak flows for the 12-hour Chicago storm. Resultant peak flows were then entered into the static HEC-RAS model. The figures above show a comparison of the calculated floodlines for the three separate scenarios:

- The pink line represents the floodline when storm volumes are increased 10%
- The blue line represents the original Lindsay gauge rainfall volumes
- The green line represents the floodline when storm volumes are decreased 10%

The results show that a difference in water surface elevations in two areas: upstream of Hwy 7, and between Angeline St and Hwy 35. Only the area upstream of Hwy 7 is of concern since at Angeline St. the Timmins storm is the event that determines the floodplain. The effect of the rainfall adjustment is therefore of consequence only for the commercial area. The second figure is a blow-up that indicates the differing water surface elevations: 271.66 m (10% increase), 271.54 m (original Lindsay data) to 271, 53 m (10% decrease).

In order to complete the report and maps, staff require direction from the committee whether the base rain data or the 10% increase should be used in the final analyses.


1) Peer base 2) Peer rev 10% 3) Peer rev<10%
CKL Ops Drain/Jennings Creek Floodplain Mapping
Legend
WS 100yr future - Peer rev 10%
WS 100yr future - Peer base
WS 100yr future - Peer rev <10%
Ground
271.66 WS 10 % increase
271.54WS base
271.53 WS 10 % decrease
Elevation (m)
272
271
270
269
268
267
266
Hwy 7 near Pickseed
Greenfield Rd
Ballfield access west end of Moose ...
McLaughlin Rd & Moose Lodge P.L)
45 degree skew applied.
Former train track line. Skewed 45 degre...
Mall parking lot culvert
Mall entrance culvert
6400
6600
6800
7000
7200
7400
7600
Main Channel Distance (m)


1) Peer base 2) Peer rev 10% 3) Peer rev<10%
CKL Ops Drain/Jennings Creek Floodplain Mapping
Legend
WS 100yrfuture - Peer rev 10%
WS 100yrfuture - Peer base
WS 100yrfuture - Peer rev <10%
Ground
Angeline St. N
Commercial Area
Elevation (m)
Main Channel Distance (m)
275
270
265
260
255
250
245
0
2000
4000
6000
8000

Christie Peacock

From: Jessica Mueller [jmueller@grca.on.ca]
Sent: January-15-14 9:59 AM
To: 'Christina Sisson'; 'Mark'; 'Peter Waring'
Cc: jburgess@kawarthaconservation.com; 'Christie Peacock'; pbuckley@kawarthaconservation.com
Subject: Follow up regarding Lindsay/Peterborough station rainfall data
Attachments: MemoComparisonPtboLindsayPPTdata.docx

Greetings!

Please find attached a memo regarding the comparison of the Peterborough versus Lindsay station rainfall data in addition to the memo sent on Jan 7, 2014. This second analysis determines that there is no difference of water surface elevation generated for the area in question if rainfall data of the Lindsay station is compared to the rainfall data recorded at the Peterborough station.

Therefore, staff recommends continuing using the original Lindsay station data for the final report and analyses.

Please kindly discuss these findings and advise staff by Jan 17th, 2014 of your recommendation.

Thank you,

Jessica Mueller
GIS / EngineeringTechnician
Ganaraska Region Conservation Authority
2216 County Road 28
Port Hope, Ontario
Email: jmueller@grca.on.ca

Memo regarding increased/decreased rainfall volumes by 10 % of the original values

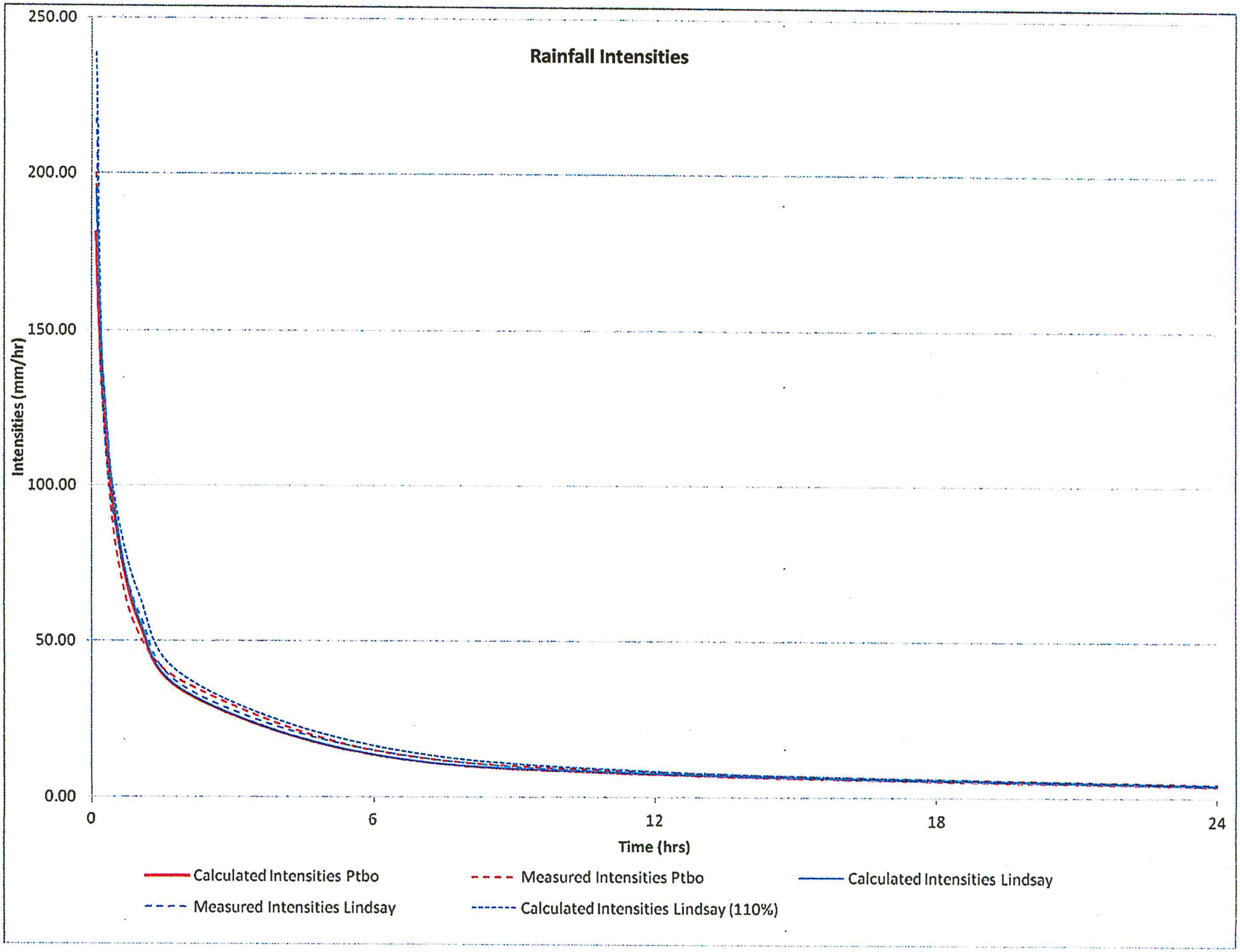
As mentioned in the previous memo the Peterborough gauge experienced an increase in total rainfall volumes in the years following the decommissioning of the Lindsay station. As shown in the memo sent on Jan 7, 2014 this increase has an impact for the commercial area. Consequently KC staff ran a second analysis comparing rainfall data from the Peterborough station versus the Lindsay station.

The first figure shows a comparison of the resultant rainfall intensities using respective IDF values for the measured and calculated values from the Peterborough station and the measured, calculated and increased values from the Lindsay station. A significant difference of intensities among curves cannot be observed.

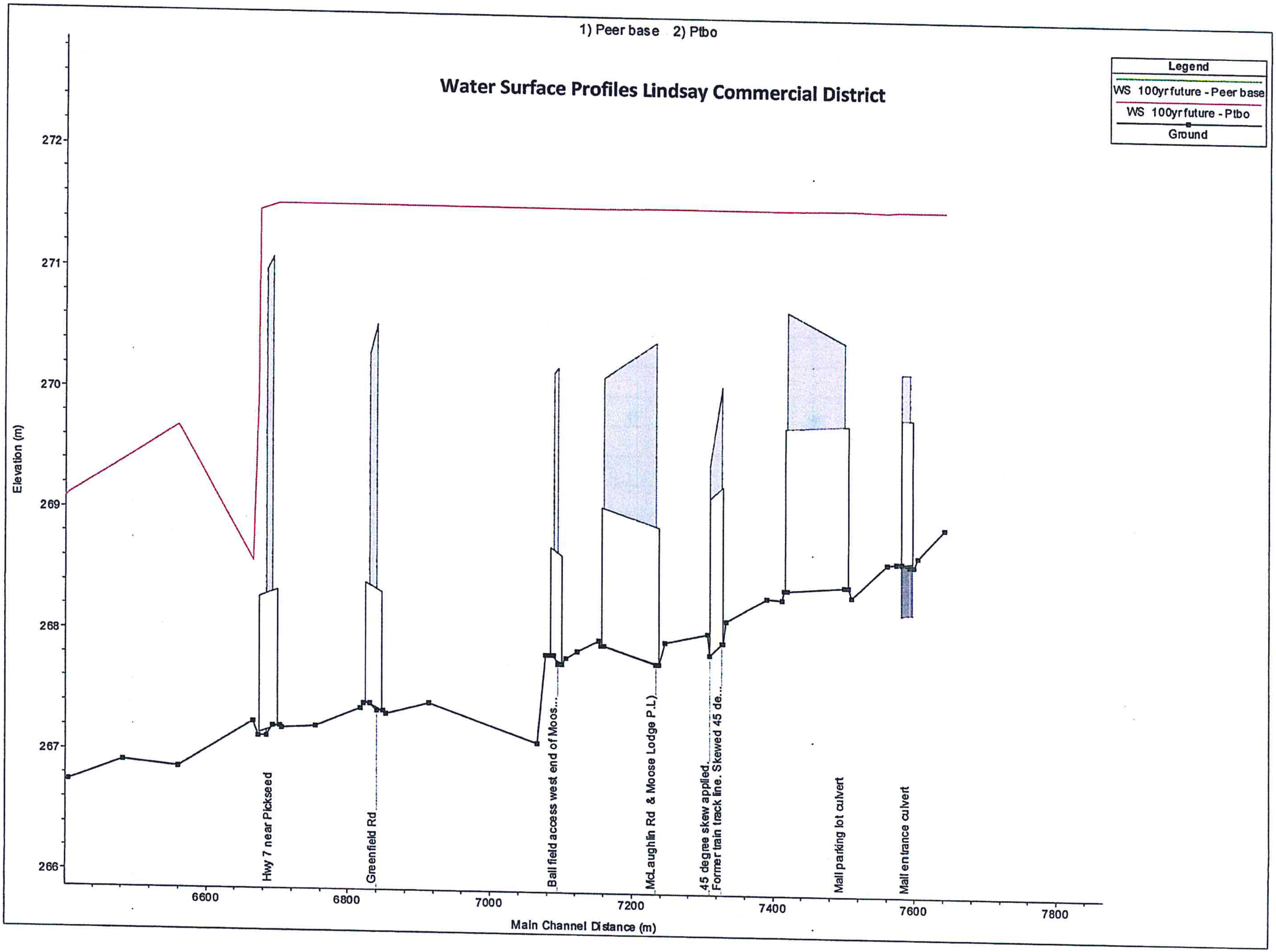
The table compares the future flows obtained from PCSWMM for the Chicago 100 yr storm events to evaluate the impact of the rainfall input adjustments. The results show that the flows with the Peterborough rainfall data are generally the same when compared to the original Lindsay gauge rainfall volumes and somewhat lower compared to the values where storm values were increased by 10 %.

The HEC-Ras profiles compare the differences of water surface elevation generated by the original Lindsay station and the Peterborough station rainfall data, respectively. As can be seen the water surfaces of 271.54 m are identical.

Therefore, staff recommends continue using the original Lindsay station data for the final analyses and report.



Rainfall Intensities
Intensities (mm/hr)
250.00
200.00
150.00
100.00
50.00
0.00
0
6
12
18
24
Time (hrs)
Calculated Intensities Ptbo
Measured Intensities Ptbo
Calculated Intensities Lindsay
Measured Intensities Lindsay
Calculated Intensities Lindsay (110%)


1) Peer base 2) Ptbo
Water Surface Profiles Lindsay Commercial District
Legend
WS 100yr future - Peer base
WS 100yr future - Ptbo
Ground
Elevation (m)
272
271
270
269
268
267
266
Hwy 7 near Pickseed
Greenfield Rd
Ball field access west end of Moos...
McLaughlin Rd & Moose Lodge P.L)
45 degree skew applied.
Former train track line. Skewed 45 de...
Mall parking lot culvert
Mall entrance culvert
6600
6800
7000
7200
7400
7600
7800
Main Channel Distance (m)

Future Flows			
RS	100yr future	Ptbo	Lindsay (110%)
7641.424	23.01	21.77	25.83
7510.949	19.15	18.23	21.24
7328.619	17.78	17.03	19.43
7246.49	16.2	15.57	17.72
7111.02	22.24	21.43	24.57
6853.017	19.34	18.81	21.66
6757.544	26.22	25.50	29.23
6190.578	25.05	24.56	27.33
5880.376	20.42	20.13	23.63
5653.55	33.48	33.24	39.43
5465.266	32.03	31.82	37.12
4968.21	24.37	24.33	29.26
4380.968	16.71	16.73	18.65
3957.179	15.7	15.74	18.64
3509.864	17.43	17.50	21.32
3187.848	43.2	42.96	45.55
2922.176	41.24	41.23	45.01
1455.968	54.49	54.44	67.37
273.7271	61.92	61.92	68.19
154.6483	62.6	62.63	58.09

Appendix D
Subcatchment Data
Existing Land Use

Appendix D.1
Summary Data
Existing Land Use

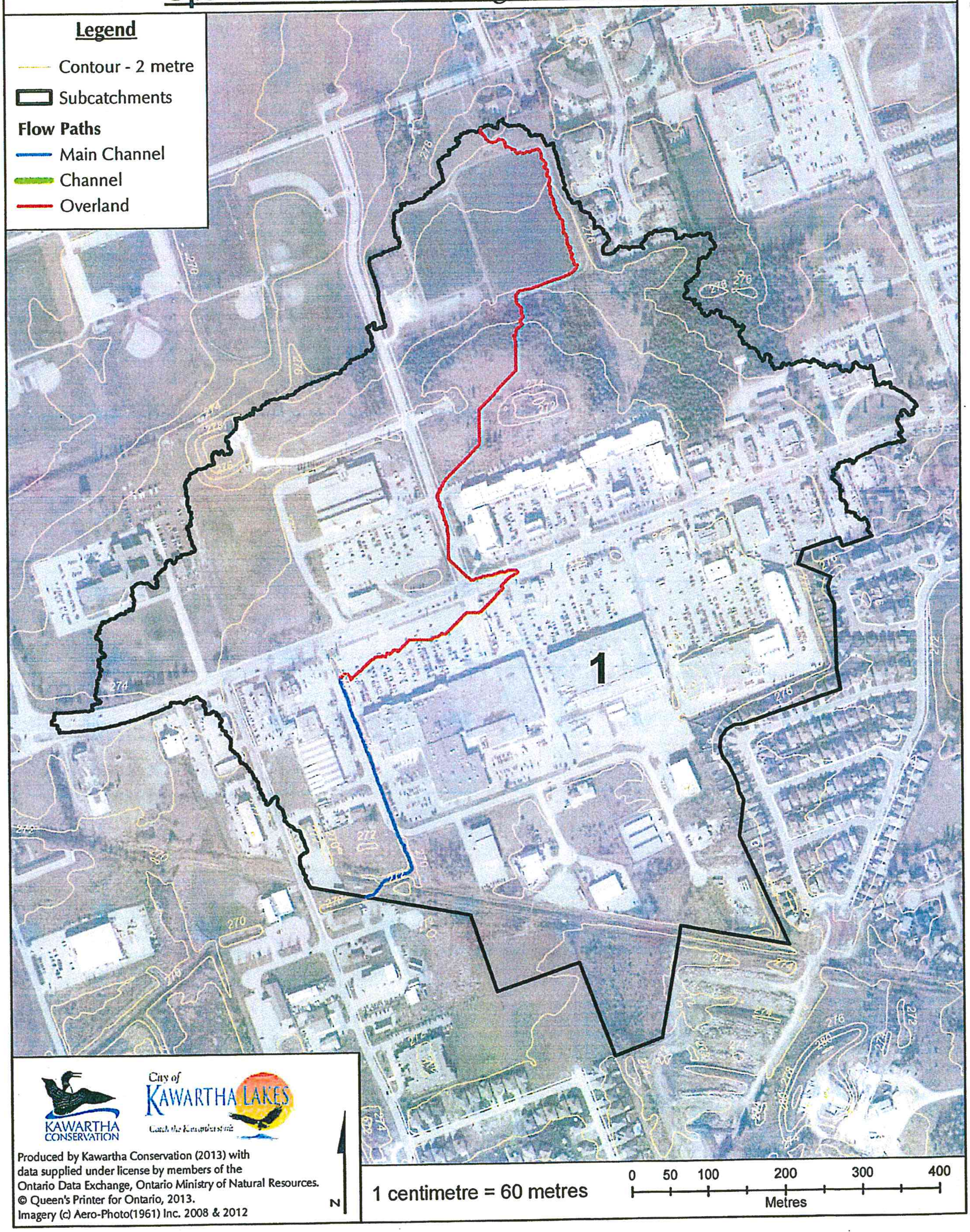
Summary of values for Ops Drain/Jennings Ck - Existing Conditions

Catchment	AREA	C	T_p	CN (II)	CN* (II)	CN (III)	CN* (III)	T_{imp}
1	67.2	0.72		87	89	95	96	46%
2	39.7	0.63		86	87	94	95	37%
3	32.8	0.51	0.95	75	73	88	87	13%
4	14.6	0.56	0.62	83	85	93	94	14%
5	250.0	0.49	1.08	83	85	93	94	4%
6	93.5	0.53	0.82	76	74	89	88	6%
7	93.6	0.34	1.88	80	80	91	91	1%
8	37.0	0.40	1.10	82	82	92	92	2%
9	288.7	0.61	2.14	73	70	87	85	2%
10	122.3	0.48	1.79	80	80	91	91	1%
11	279.2	0.42	1.73	79	78	90	90	3%
12	158.1	0.50	1.18	83	85	93	94	2%
13	138.0	0.32	1.92	77	74	89	88	1%
14	24.2	0.57		91	93	97	98	23%
15	22.4	0.63	0.45	88	89	95	96	5%
16	13.7	0.59	0.43	88	89	95	96	11%

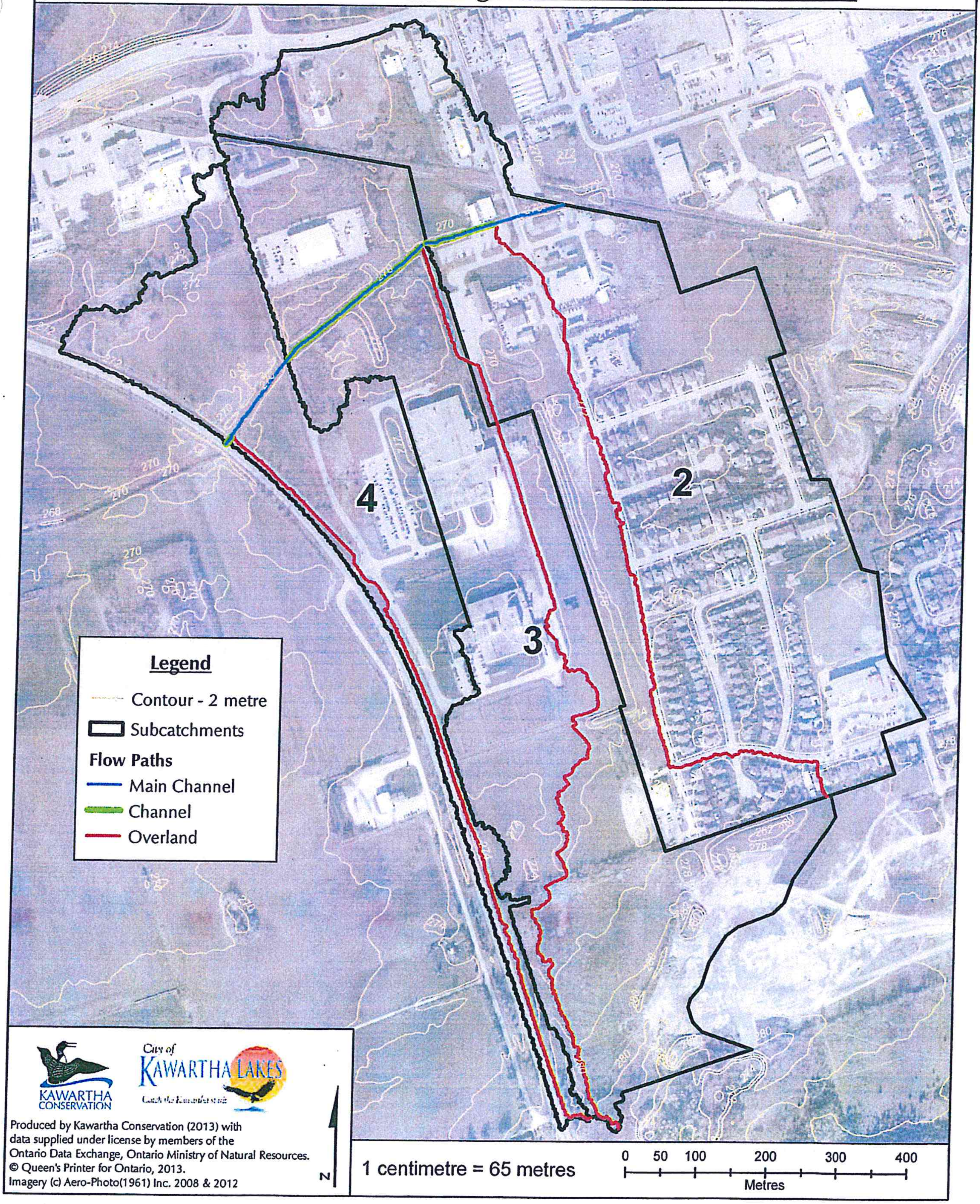
Total Area *1,674.7 Ha*

Appendix D.2
Subcatchment Maps

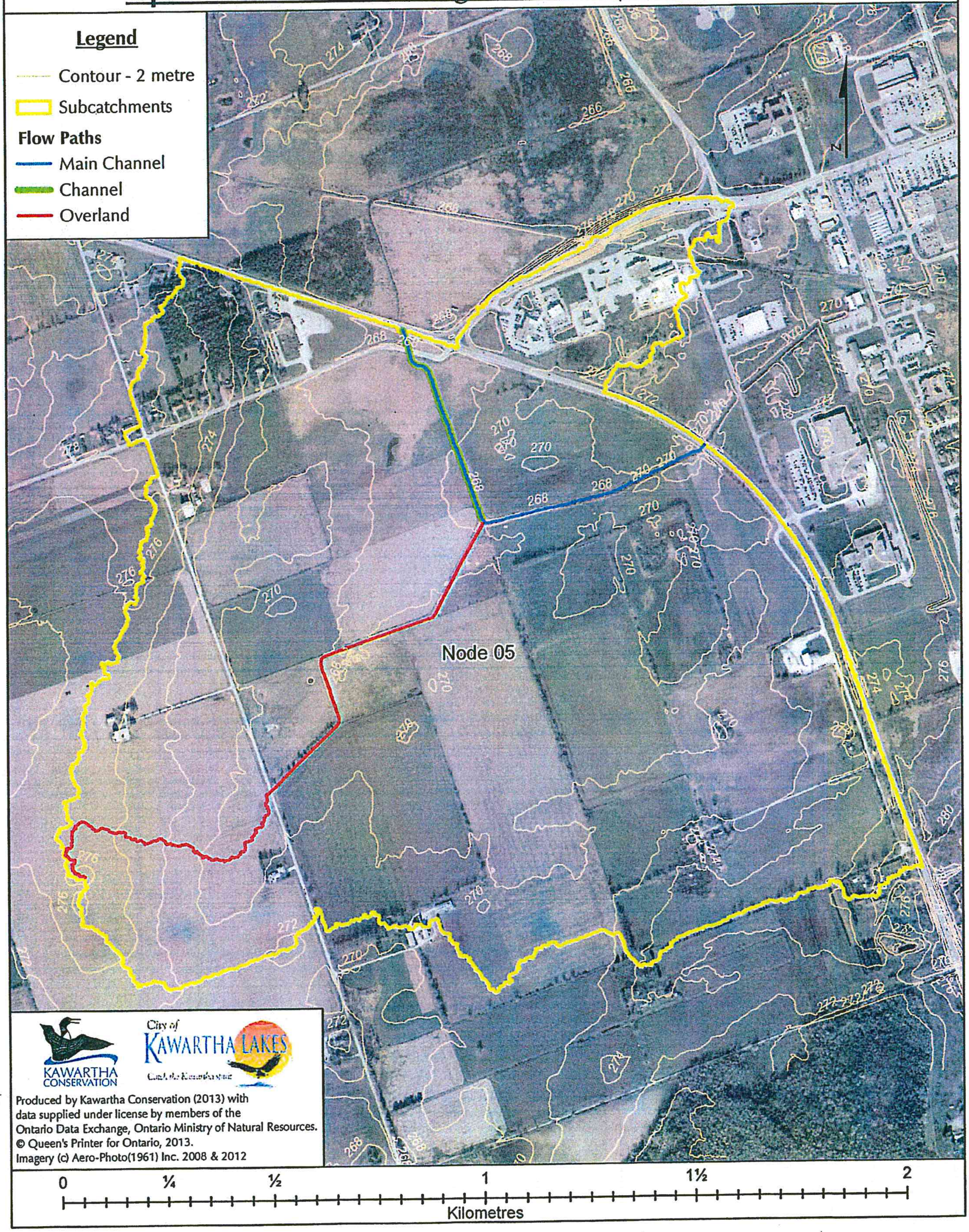
Ops #1 Drain and Jennings Creek: Catchment 1



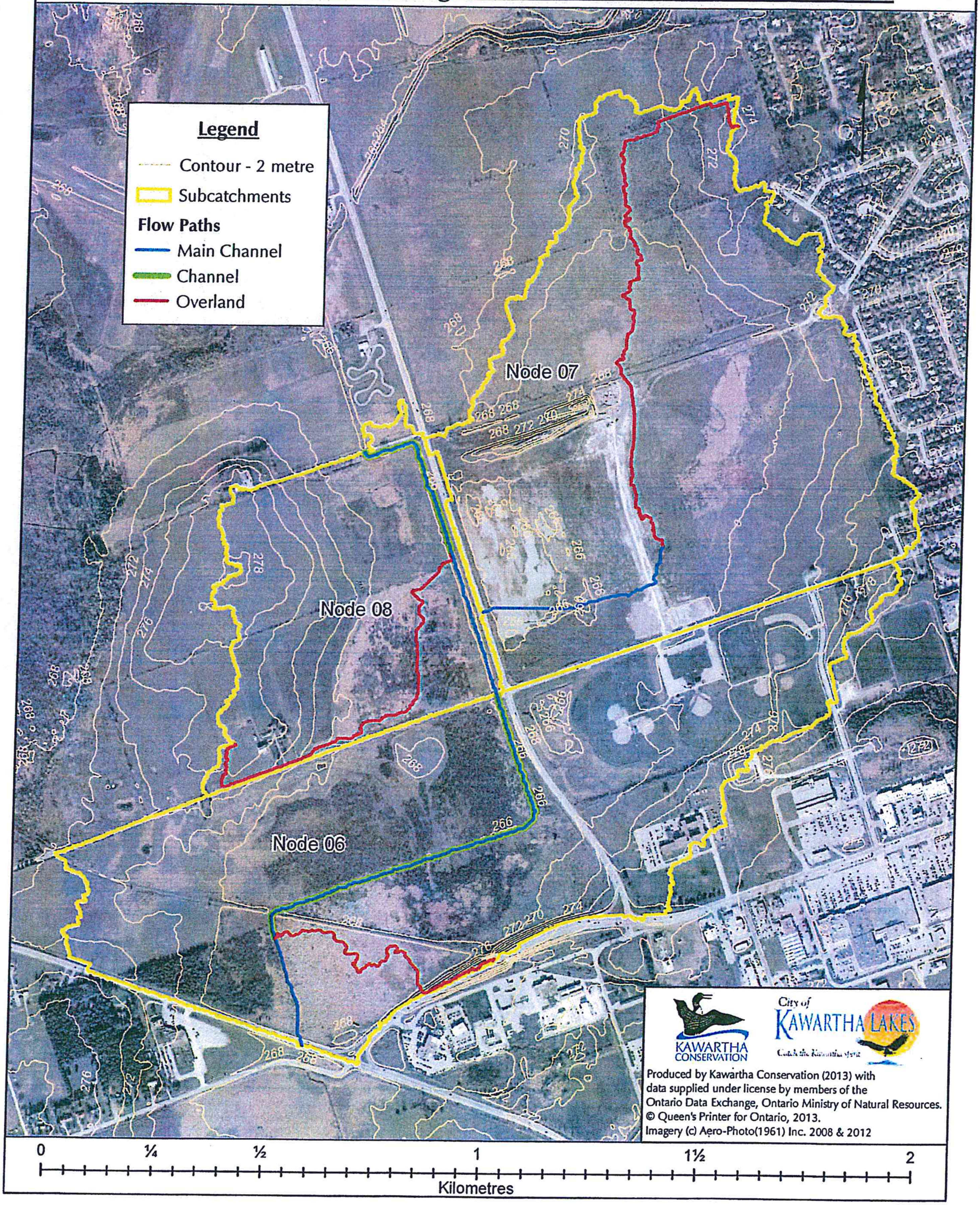
Ops #1 Drain and Jennings Creek: Catchments 2,3 & 4



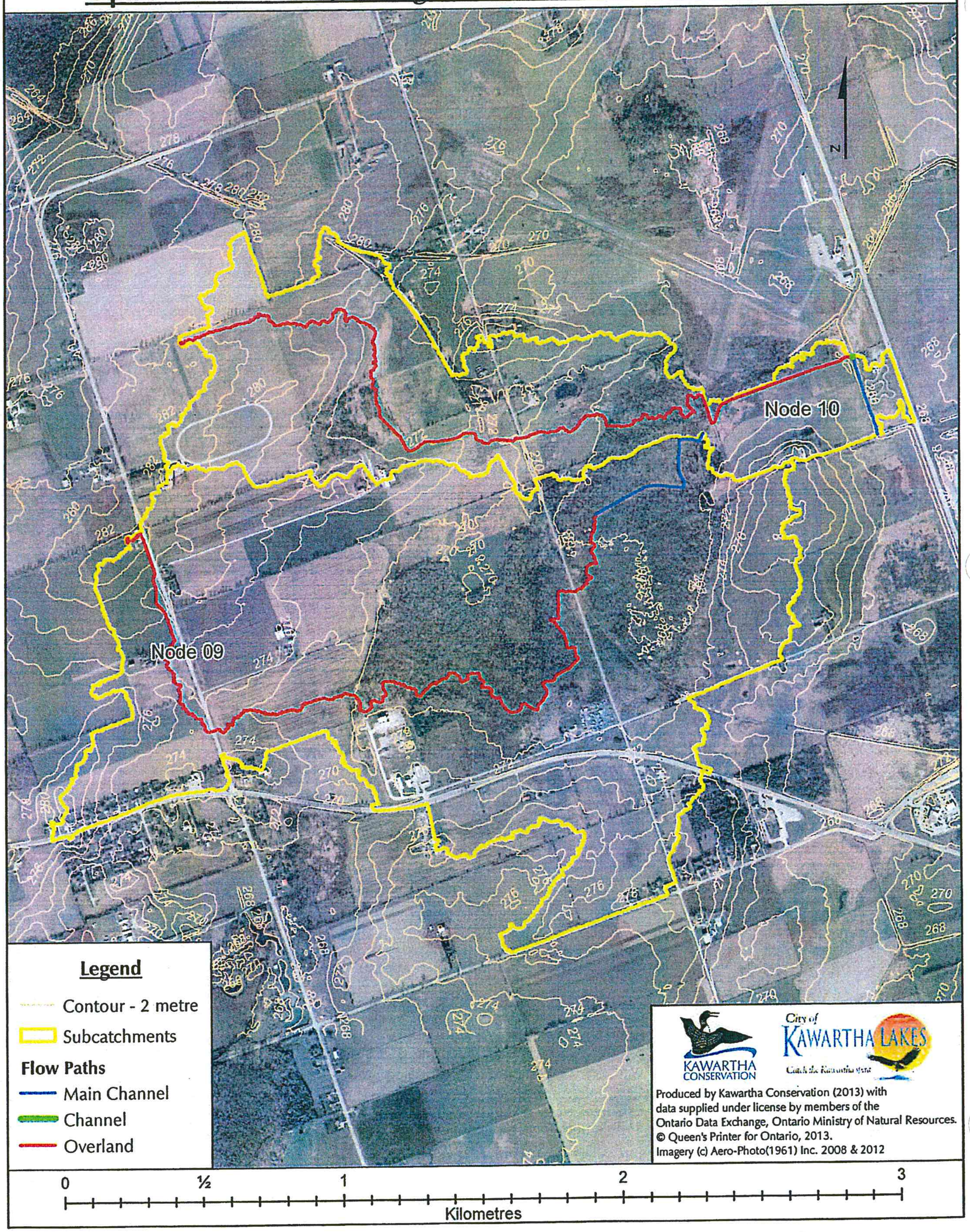
Ops #1 Drain and Jennings Creek: Node 5 Catchment



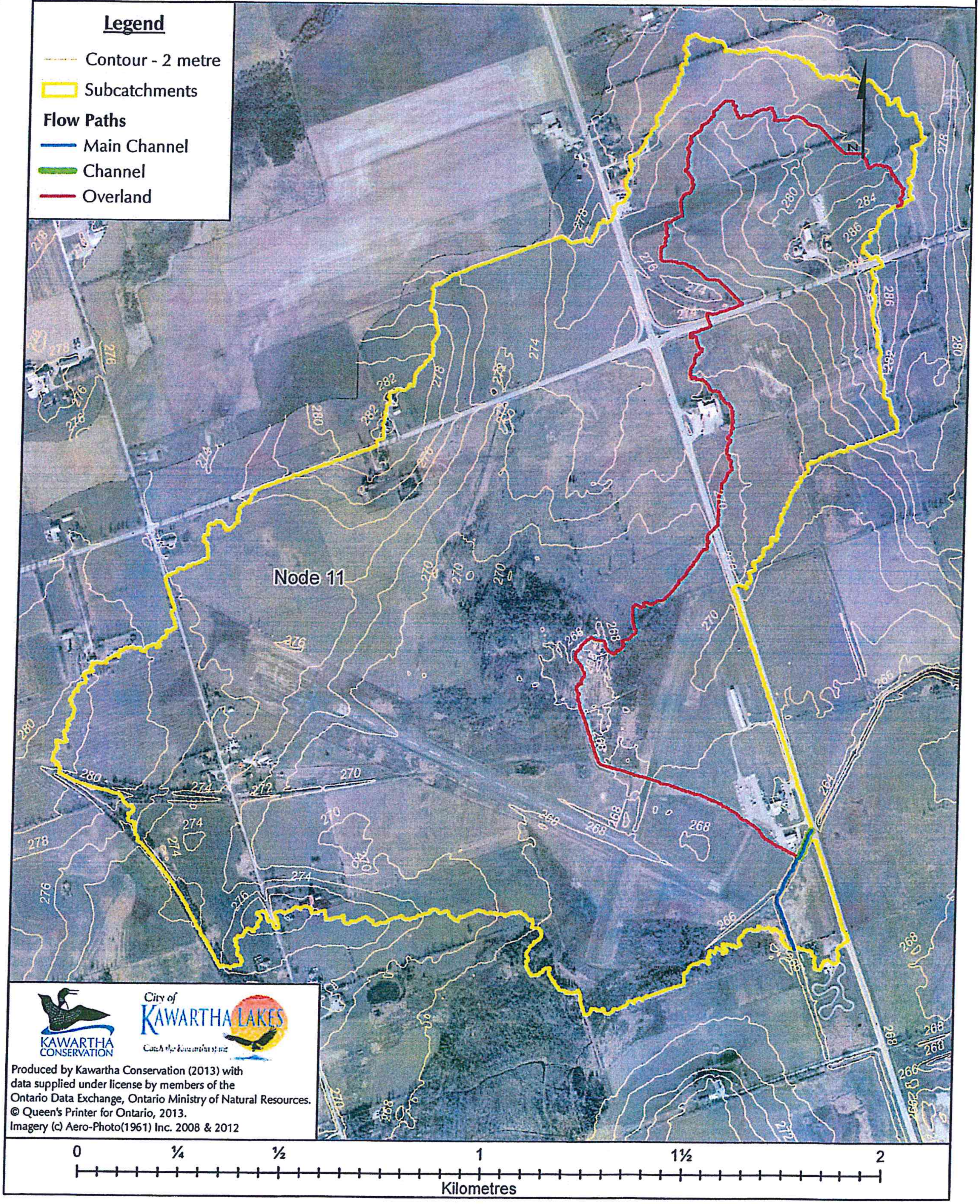
Ops #1 Drain and Jennings Creek: Node 6,7 & 8 Catchments



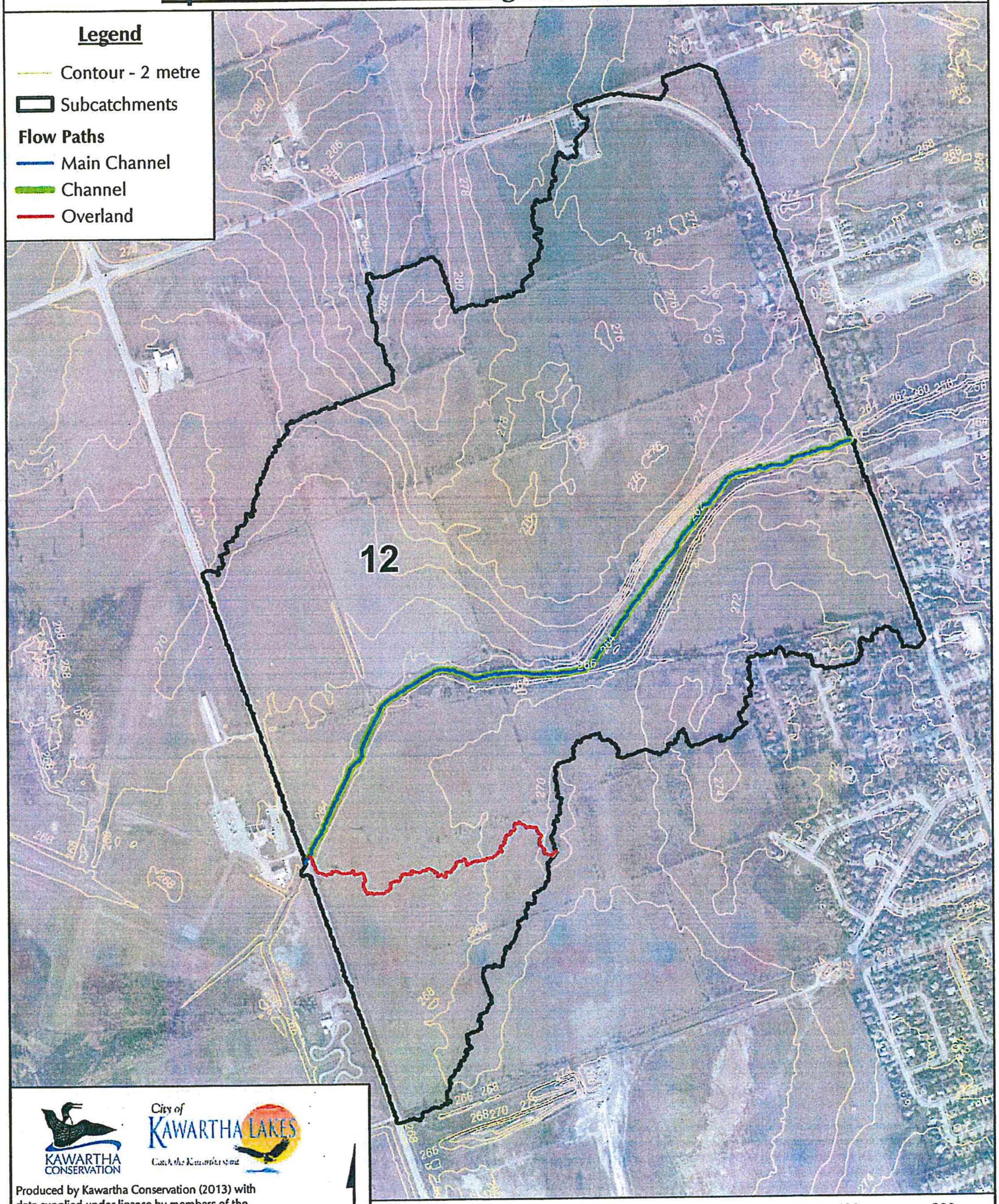
Ops #1 Drain and Jennings Creek: Node 9 & 10 Catchments



Ops #1 Drain and Jennings Creek: Node 11 Catchment



Ops #1 Drain and Jennings Creek: Catchment 12



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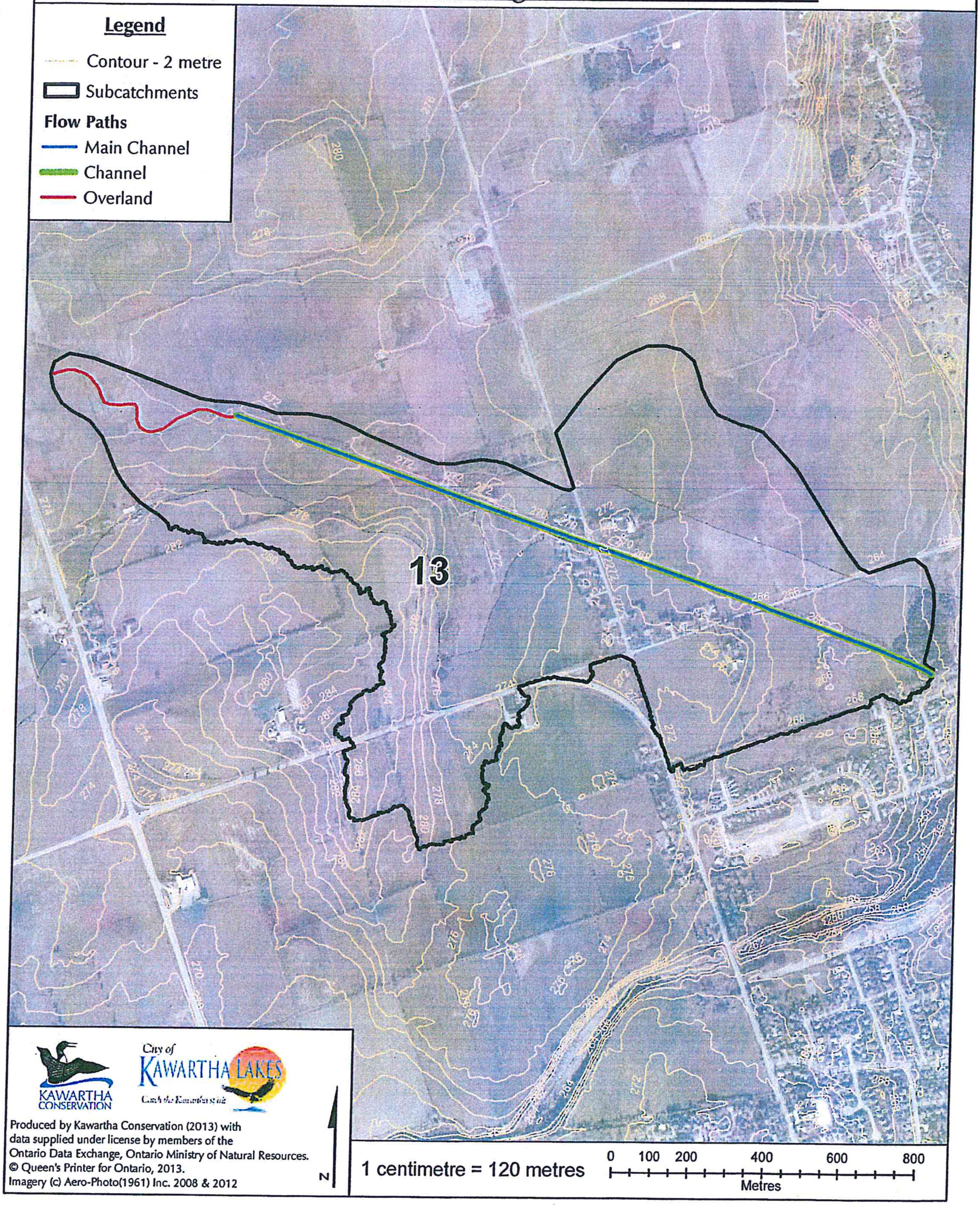
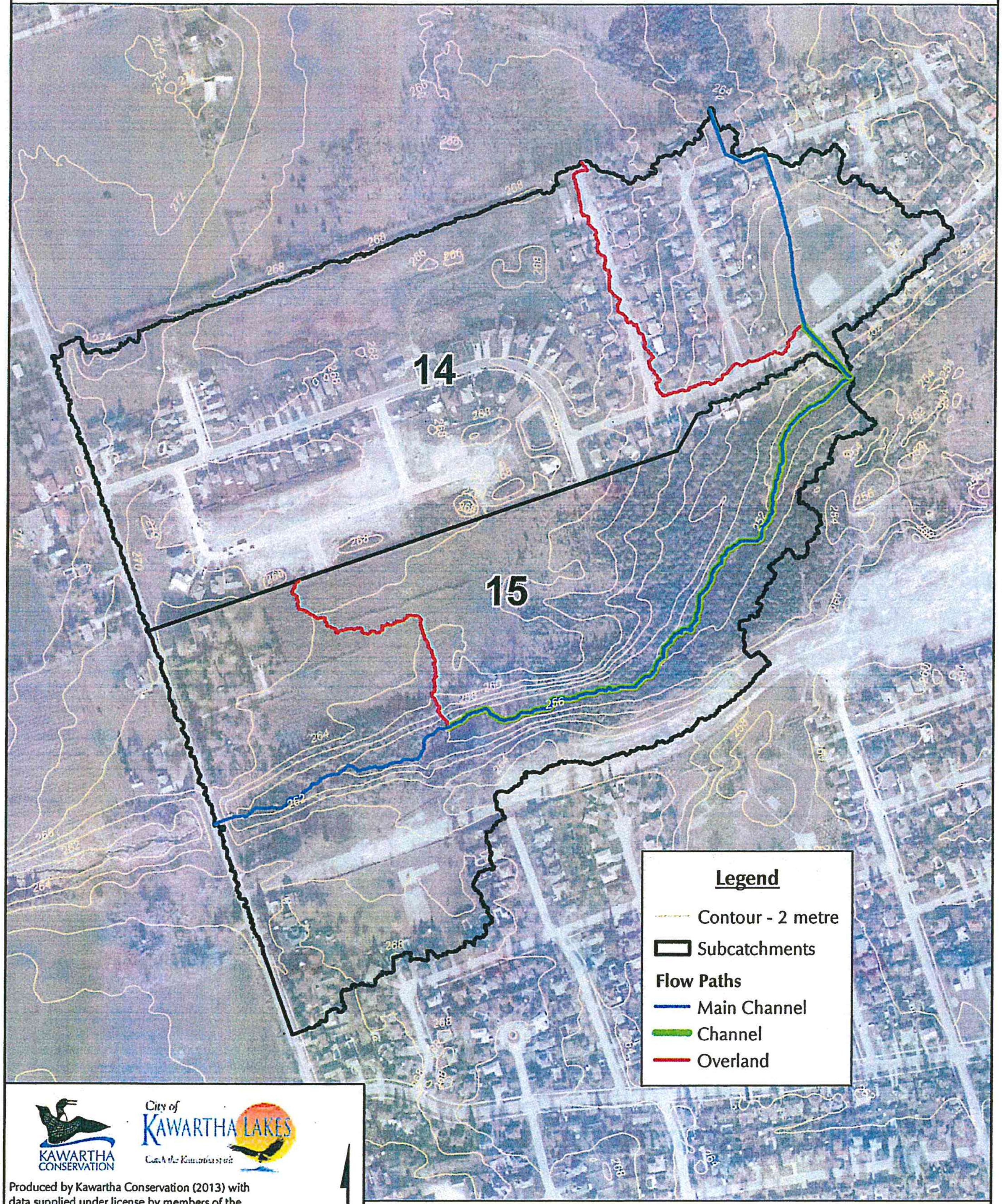
Ops #1 Drain and Jennings Creek: Catchment 13



Ops #1 Drain and Jennings Creek: Catchments 14 & 15



KAWARTHA CONSERVATION

City of KAWARTHA LAKES

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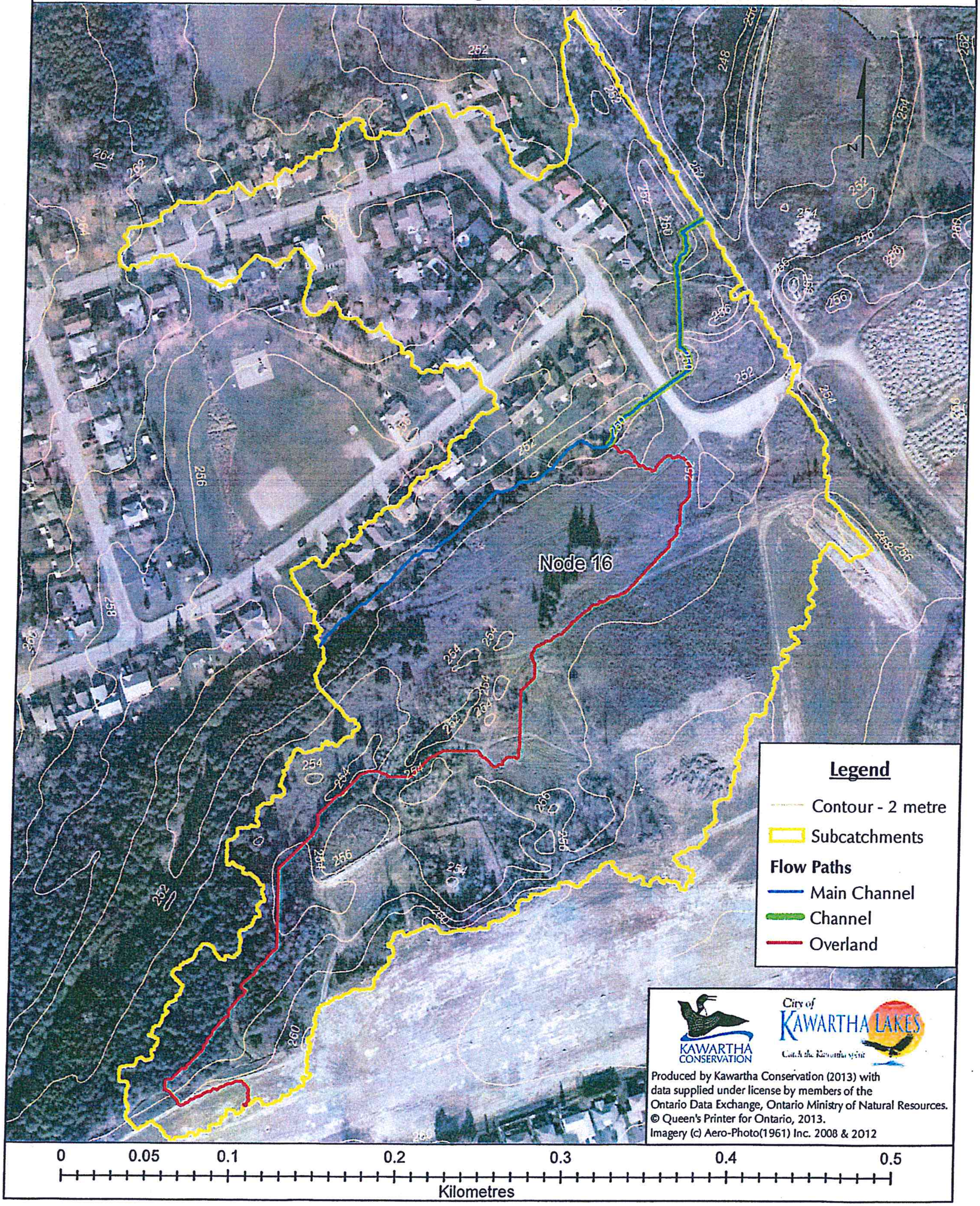
Ops #1 Drain and Jennings Creek: Node 16 Catchment



Appendix D.3

Subcatchment Slope and Time to Peak Calculations
Existing Land Use

Ops #1 Drain and Jennings Ck T_c and T_p calculations

16	Overland	Channel	Catchment	Main Channel	C
Length (m)	739	180	920	410	
Slope	1.4%	0.7%	1.2%	0.7%	0.59
Top Elevation	259.4	249.3	259.4	250.9	Area (Ha)
Bottom Elevation	249.3	248.0	248.0	248.0	13.73
Difference	*10.2*	*1.3*	*11.4*	*2.9*	
Tc (min)=	38.6	0.6	hr		
Tp (min)=	25.8	0.4	hr		

13	Overland	Channel	Catchment	Main Channel	C
Length (m)	2556		2556		
Slope	0.4%		0.4%		0.32
Top Elevation	273.1		273.1		
Bottom Elevation	262.5		262.5		
Difference	*10.6*		*10.6*		
Tc (min)=	172.9	2.9	hr		
Tp (min)=	115.4	1.9	hr		

15	Overland	Channel	Catchment	Main Channel	C
Length (m)	356	694	1050	1011	
Slope	3.2%	0.7%	1.5%	0.9%	0.63
Top Elevation	266.8	255.6	266.8	259.5	Area (Ha)
Bottom Elevation	255.6	250.9	250.9	250.9	22.35
Difference	*11.3*	*4.7*	*15.9*	*8.6*	
Tc (min)=	40.4	0.7	hr		
Tp (min)=	26.9	0.4	hr		

11	Overland	Channel	Catchment	Main Channel	C
Length (m)	4094	84	4178	351	
Slope	0.5%	1.0%	0.5%	0.1%	0.42
Top Elevation	284.0	264.0	284.0	263.5	Area (Ha)
Bottom Elevation	264.0	263.2	263.2	263.2	279.15
Difference	*20.0*	*0.8*	*20.8*	*0.3*	
Tc (min)=	155.9	2.6	hr		
Tp (min)=	104.0	1.7	hr		

12	Overland	Channel	Catchment	Main Channel	C
Length (m)	914	1689	2603	1706	
Slope	0.8%	0.2%	0.4%	0.2%	0.50
Top Elevation	270.7	263.2	270.7	263.2	Area (Ha)
Bottom Elevation	263.2	259.5	259.5	259.5	158.14
Difference	*7.5*	*3.7*	*11.2*	*3.7*	
Tc (min)=	105.9	1.8	hr		
Tp (min)=	70.6	1.2	hr		

10	Overland	Channel	Catchment	Main Channel	C
Length (m)	3838		3838	317	
Slope	0.4%		0.4%	0.1%	0.48
Top Elevation	280.5		280.5	263.8	Area (Ha)
Bottom Elevation	264.2		264.2	263.5	122.28
Difference	*16.3*		*16.3*	*0.3*	
Tc (min)=	160.6	2.7	hr		
Tp (min)=	107.1	1.8	hr		

9	Overland	Channel	Catchment	Main Channel	C
Length (m)	4775		4775		
Slope	0.3%		0.3%		0.61
Top Elevation	283.0		283.0		Area (Ha)
Bottom Elevation	267.1		267.1		288.72
Difference	*15.9*		*15.9*		
Tc (min)=	192.4	3.2	hr		
Tp (min)=	128.3	2.1	hr		

8	Overland	Channel	Catchment	Main Channel	C
Length (m)	1163	415	1578	794	
Slope	0.9%	0.3%	0.8%	0.1%	0.40
Top Elevation	275.9	265.1	275.9	264.5	
Bottom Elevation	265.1	263.8	263.8	263.8	
Difference	*10.7*	*1.3*	*12.1*	*0.7*	
Tc (min)=	98.6	1.6	hr		
Tp (min)=	65.7	1.1	hr		

6	Overland	Channel	Catchment	Main Channel	C
Length (m)	848	1074	1922	1342	
Slope	1.5%	0.2%	0.7%	0.1%	0.53
Top Elevation	278.8	266.3	278.8	265.8	Area (Ha)
Bottom Elevation	266.3	264.5	264.5	264.5	93.46
Difference	*12.4*	*1.8*	*14.2*	*1.3*	
Tc (min)=	73.9	1.2	hr		
Tp (min)=	49.3	0.8	hr		

7	Overland	Channel	Catchment	Main Channel	C
Length (m)	2184	422	2606	794	
Slope	0.5%	0.2%	0.4%	0.1%	0.34
Top Elevation	274.4	264.6	274.4	264.5	
Bottom Elevation	264.6	263.8	263.8	263.8	
Difference	*9.8*	*0.8*	*10.6*	*0.7*	
Tc (min)=	169.0	2.8	hr		
Tp (min)=	112.7	1.9	hr		

5	Overland	Channel	Catchment	Main Channel	C
Length (m)	1963	529	2491	1134	
Slope	0.5%	0.2%	0.4%	0.1%	0.49
Top Elevation	276.4	266.9	276.4	267.2	Area (Ha)
Bottom Elevation	266.9	265.8	265.8	265.8	249.97
Difference	*9.4*	*1.1*	*10.5*	*1.4*	
Tc (min)=	97.2	1.6	hr		
Tp (min)=	64.8	1.1	hr		

4	Overland	Channel	Catchment	Main Channel	C
Length (m)	1276	18	1294	157	
Slope	1.0%	1.5%	1.0%	0.1%	0.56
Top Elevation	280.5	267.5	280.5	267.4	Area (Ha)
Bottom Elevation	267.5	267.2	267.2	267.2	14.58
Difference	*13.0*	*0.3*	*13.3*	*0.2*	
Tc (min)=	56.1	0.9	hr		
Tp (min)=	37.4	0.6	hr		

3	Overland	Channel	Catchment	Main Channel	C
Length (m)	1733	255	1988	266	
Slope	0.8%	0.3%	0.7%	0.2%	0.51
Top Elevation	281.6	268.1	281.6	267.9	Area (Ha)
Bottom Elevation	268.1	267.4	267.4	267.4	32.75
Difference	*13.5*	*0.7*	*14.2*	*0.5*	
Tc (min)=	85.5	1.4	hr		
Tp (min)=	57.0	1.0	hr		

Appendix E
CN Calculations
Existing Land Use

Converting CN to CN*

Ops Jennings Ck Watershed (Existing Conditions)

P = 89.7 *mm*
standard I_a = 5 *mm*

Catchment	CN (AMC II)	CN (AMC III)	S (mm)	Ia	Q	S*	CN* (AMC III)	CN* (AMC II)
1	87	95	13	2.6	75.8	10.0	96	89
2	86	94	16	3.2	73.0	13.6	95	87
3	75	88	35	7	58.1	38.8	87	73
4	83	93	19	3.8	70.3	17.3	94	85
5	83	93	19	3.8	70.3	17.3	94	85
6	76	89	31	6.2	60.9	33.1	88	74
7	80	91	25	5	65.4	25.0	91	80
8	82	92	22	4.4	67.8	21.1	92	82
9	73	87	38	7.6	56.1	43.1	85	70
10	80	91	25	5	65.4	25.0	91	80
11	79	90	28	5.6	63.1	29.0	90	78
12	83	93	19	3.8	70.3	17.3	94	85
13	77	89	31	6.2	60.9	33.1	88	74
14	91	97	8	1.6	80.8	4.1	98	93
15	88	95	13	2.6	75.8	10.0	96	89
16	88	95	13	2.6	75.8	10.0	96	89

Use CN (AMC III) for Timmins storm. Use CN (AMC II) for 2- to 100-year storms.
89.7 mm is antecent rainfall for 100yr 6 hr storm

Procedure:

1. $$\text{CN (AMC III)} = \frac{25400}{(254 + S)}$$, *to calculate S*
2. $I_a = 0.2 * S$, *to give calculated I_a*
3. $$Q = \frac{(P-I_a)^2}{(P-I_a+S)}$$
4. $$Q = \frac{(P-I_a)^2}{(P-I_a+S^*)}$$, Using Q from 3 above, and I_a = 5mm, determine S*
5. $$\text{CN* (AMC III)} = \frac{25400}{(254 + S^*)}$$

Note:this procedure is outlined in the VO_2 Reference Manual.
Manual checks were undertaken to ensure accuracy of GIS-derived product

Subcatchment 1

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area	X_{imp}	X_{imp} * Area	C	C * Area
1 acre lot-size (residential)	B	651.3	0.07	68	4.76	0.17	0.01	0.25	0.02
1 acre lot-size (residential)	C	7.7	0.00	79	0.00	0.17	0.00	0.25	0.00
1/2 acre lot-size (residential)	D	876.3	0.09	87	7.83	0.23	0.02	0.45	0.04
1/4 acre lot-size (residential)	A	2,935.4	0.29	77	22.33	0.35	0.10	0.45	0.13
1/4 acre lot-size (residential)	D	4,307.1	0.43	92	39.56	0.35	0.15	0.45	0.19
1/8 acre lot-size (residential)	A	1,548.5	0.15	77	11.55	0.52	0.08	0.65	0.10
1/8 acre lot-size (residential)	B	2,103.3	0.21	85	17.85	0.52	0.11	0.65	0.14
1/8 acre lot-size (residential)	C	1,434.6	0.14	90	12.60	0.52	0.07	0.65	0.09
1/8 acre lot-size (residential)	D	989.8	0.10	92	9.20	0.52	0.05	0.65	0.07
Commercial	A	13,611.1	1.36	89	121.04	0.90	1.22	0.90	1.22
Commercial	B	59,597.3	5.96	92	548.32	0.90	5.36	0.90	5.36
Commercial	C	5,523.3	0.55	94	51.70	0.90	0.50	0.90	0.50
Commercial	D	253,505.5	25.35	95	2408.25	0.90	22.82	0.90	22.82
industrial	B	35,508.7	3.55	88	312.40	0.80	2.84	0.90	3.20
industrial	C	16,057.5	1.61	91	146.51	0.80	1.29	0.90	1.45
industrial	D	0.9	0.00	93	0.00	0.80	0.00	0.90	0.00
Meadow-good condition	B	70,294.2	7.03	66	463.98	0.01	0.07	0.28	1.97
Meadow-good condition	C	8,183.2	0.82	77	63.14	0.01	0.01	0.28	0.23
Meadow-good condition	D	78,101.6	7.81	82	640.42	0.01	0.08	0.40	3.12
open space	B	51,660.0	5.17	69	356.73	0.01	0.05	0.25	1.29
streets and roads	B	18,886.8	1.89	98	185.22			0.95	1.80
streets and roads	C	3,128.6	0.31	98	30.38			0.95	0.29
streets and roads	D	42,803.7	4.28	98	419.44			0.95	4.07

Total Area (Ha): ***67.17 Ha***

5873

Weighted CN (II)	***87***
CN (AMC III)	***95***

34.83

Avg X_{imp} ***0.52***

48.1

Avg C ***0.72***

Subcatchment 2

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	X_{imp}	X_{imp} * Area	C	C * Area
1/2 acre lot-size (residential)	A	2135.32	0.21	59	12.39	0.23	0.05	0.45	0.09
1/2 acre lot-size (residential)	C	1229.04	0.12	82	9.84	0.23	0.03	0.45	0.05
1/2 acre lot-size (residential)	D	2307.41	0.23	87	20.01	0.23	0.05	0.45	0.10
1/4 acre lot-size (residential)	A	25919.65	2.59	77	199.43	0.35	0.91	0.45	1.17
1/4 acre lot-size (residential)	C	32373.89	3.24	90	291.60	0.35	1.13	0.45	1.46
1/4 acre lot-size (residential)	D	33535.85	3.35	92	308.20	0.35	1.17	0.45	1.51
1/8 acre lot-size (residential)	A	9391.92	0.94	77	72.38	0.52	0.49	0.65	0.61
1/8 acre lot-size (residential)	C	10322.21	1.03	90	92.70	0.52	0.54	0.65	0.67
1/8 acre lot-size (residential)	D	495.59	0.05	92	4.60	0.52	0.03	0.65	0.03
Commercial	A	3387.43	0.34	89	30.26	0.90	0.31	0.90	0.31
Commercial	B	4515.54	0.45	92	41.40	0.90	0.41	0.90	0.41
Commercial	C	2533.75	0.25	94	23.50	0.90	0.23	0.90	0.23
Commercial	D	65739.3	6.57	95	624.15	0.90	5.91	0.90	5.91
industrial	A	25820.82	2.58	81	208.98	0.80	2.06	0.90	2.32
industrial	C	10.74	0	91	0.00	0.80	0.00	0.90	0.00
Meadow-good condition	A	1617.03	0.16	46	7.36			0.10	0.02
Meadow-good condition	B	29007.74	2.9	66	191.40			0.28	0.81
Meadow-good condition	C	11286.98	1.13	77	87.01			0.28	0.32
Meadow-good condition	D	40047.34	4	82	328.00			0.40	1.60
open space	A	4856.62	0.49	49	24.01			0.25	0.12
open space	C	6135.76	0.61	79	48.19			0.25	0.15
open space	D	12472.81	1.25	80	100.00			0.25	0.31
streets and roads	A	16148.73	1.61	98	157.78			0.95	1.53
streets and roads	B	2082.72	0.21	98	20.58			0.95	0.20
streets and roads	C	21453.48	2.15	98	210.70			0.95	2.04
streets and roads	D	31989.22	3.2	98	313.60			0.95	3.04
			39.66 Ha		***3428***		13.31		25.0
						Avg X_{imp}	***0.34***	***Avg C***	***0.63***

Weighted CN (II)	***86***
CN (AMC III)	***94***

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Subcatchment 3

Landuse	HSG	Area		CN	CN * Area	C	C * Area
		(m^2)	(Ha)				
Argri IAG	B	138.79	0.01	75	0.75	0.35	0.00
Argri IAG	D	16.13	0.00	85	0.00	0.55	0.00
Commercial	B	11274.97	1.13	92	103.96	0.90	1.02
Commercial	C	58981.76	5.90	94	554.60	0.90	5.31
Commercial	D	66638.92	6.66	95	632.70	0.90	5.99
Meadow-good condition	A	102046.35	10.20	46	469.20	0.10	1.02
Meadow-good condition	B	11264.66	1.13	66	74.58	0.28	0.32
Meadow-good condition	C	41509.7	4.15	77	319.55	0.28	1.16
Meadow-good condition	D	29344.11	2.93	82	240.26	0.40	1.17
open space	D	837.35	0.08	80	6.40	0.25	0.02
streets and roads	B	3098.63	0.31	98	30.38	0.95	0.29
streets and roads	D	2473.68	0.25	98	24.50	0.95	0.24
		Total Area (Ha):	***32.75 Ha***				16.5
		Total Area * CN=			***2457***	***Avg C***	***0.51***
			Weighted CN (II)		***75***		
			CN (AMC III)		***88***		

Subcatchment 4

Landuse	HSG	Area		CN	CN * Area
		(m^2)	(Ha)		
Argri IAG	B	30,408.9	3.04	75	228.00
Argri IAG	D	30,380.0	3.04	85	258.40
Commercial	B	2,272.8	0.23	92	21.16
Commercial	C	8,669.3	0.87	94	81.78
Commercial	D	33,637.2	3.36	95	319.20
Meadow-good condition	A	7,566.3	0.76	46	34.96
Meadow-good condition	B	7,160.0	0.72	66	47.52
Meadow-good condition	C	12,995.2	1.30	77	100.10
Meadow-good condition	D	7,025.2	0.70	82	57.40
streets and roads	B	44.1	0.00	98	0.00
streets and roads	C	489.9	0.05	98	4.90
streets and roads	D	5,070.8	0.51	98	49.98
		Total Area (Ha):	***14.58 Ha***		
					1203
			Weighted CN (II)		***83***
			CN (AMC III)		***93***

C	C * Area
0.35	1.06
0.55	1.67
0.90	0.21
0.90	0.78
0.90	3.02
0.10	0.08
0.28	0.20
0.28	0.36
0.40	0.28
0.95	0.00
0.95	0.05
0.95	0.48
	8.2
Avg C	***0.56***

Subcatchment 5

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	C	C * Area
1 acre lot-size (residential)	A	7,539.7	0.75	51	38.25	0.25	0.19
1 acre lot-size (residential)	C	66,892.3	6.69	79	528.51	0.25	1.67
1 acre lot-size (residential)	D	6,371.8	0.64	84	53.76	0.25	0.16
Argri IAG	Water	3,192.6	0.32	100	32.00	1.00	0.32
Argri IAG	A	63,737.2	6.37	64	407.68	0.22	1.40
Argri IAG	B	6,675.3	0.67	75	50.25	0.35	0.23
Argri IAG	C	510,104.6	51.01	82	4182.82	0.35	17.85
Argri IAG	D	1,179,818.0	117.98	85	10028.30	0.55	64.89
Argri NAG	Water	60,711.4	6.07	100	607.00	1.00	6.07
Argri NAG	A	18,966.6	1.90	49	93.10	0.10	0.19
Argri NAG	C	76.5	0.01	79	0.79	0.28	0.00
Argri NAG	D	267,549.2	26.75	84	2247.00	0.40	10.70
Commercial	B	21,163.5	2.12	92	195.04	0.90	1.91
Commercial	C	14,758.0	1.48	94	139.12	0.90	1.33
Commercial	D	73,995.5	7.40	95	703.00	0.90	6.66
Forest-Good Cover	C	37,107.6	3.71	73	270.83	0.25	0.93
Forest-Good Cover	D	66.1	0.01	79	0.79	0.35	0.00
Forest-Good Cover	D	9,578.6	0.96	79	75.84	0.35	0.34
Meadow-good condition	Water	17,314.7	1.73	100	173.00	1.00	1.73
Meadow-good condition	A	7,420.4	0.74	46	34.04	0.10	0.07
Meadow-good condition	B	21,763.4	2.18	66	143.88	0.28	0.61
Meadow-good condition	C	23,066.3	2.31	77	177.87	0.28	0.65
Meadow-good condition	D	61,930.4	6.19	82	507.58	0.40	2.48
streets and roads	B	2,343.9	0.23	98	22.54	0.95	0.22
streets and roads	C	119.2	0.01	98	0.98	0.95	0.01
Wetland	Water	13,114.1	1.31	50	65.50	1.00	1.31
Wetland	B	376.0	0.04	50	2.00	1.00	0.04
Wetland	D	3,910.2	0.39	50	19.50	1.00	0.39

Total Area (Ha): 249.97 Ha

	20801
Weighted CN (II)	***83***
CN (AMC III)	***93***

	122.4
Avg C	***0.49***

Subcatchment 6

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area	C	C * Area
1 acre lot-size (residential)	B	6,949.1	0.69	68	46.92	0.25	0.17
1 acre lot-size (residential)	C	634.0	0.06	79	4.74	0.25	0.02
Argri IAG	C	183.6	0.02	82	1.64	0.35	0.01
Argri IAG	D	68.9	0.01	85	0.85	0.55	0.01
Argri NAG	Water	6.1	0.00	100	0.00	1.00	0.00
Argri NAG	C	29,645.3	2.96	79	233.84	0.28	0.83
Argri NAG	D	298,969.2	29.90	84	2511.60	0.40	11.96
Commercial	B	305.1	0.03	92	2.76	0.90	0.03
Commercial	C	4.0	0.00	94	0.00	0.90	0.00
Commercial	D	126.0	0.01	95	0.95	0.90	0.01
Forest-Good Cover	C	915.5	0.09	73	6.57	0.25	0.02
Forest-Good Cover	D	15,080.3	1.51	79	119.29	0.35	0.53
industrial	B	11,899.3	1.19	88	104.72	0.90	1.07
industrial	C	51,799.2	5.18	91	471.38	0.90	4.66
Meadow-good condition	Water	267.5	0.03	100	3.00	1.00	0.03
Meadow-good condition	B	238.4	0.02	66	1.32	0.28	0.01
Meadow-good condition	C	24,588.4	2.46	77	189.42	0.28	0.69
Meadow-good condition	D	66,371.4	6.64	82	544.48	0.40	2.66
open space	B	33,204.8	3.32	69	229.08	0.25	0.83
open space	C	125,641.2	12.56	79	992.24	0.25	3.14
open space	D	50,835.4	5.08	80	406.40	0.25	1.27
streets and roads	B	5,114.0	0.51	98	49.98	0.95	0.48
streets and roads	C	13,224.5	1.32	98	129.36	0.95	1.25
streets and roads	D	8,859.6	0.89	98	87.22	0.95	0.85
Wetland	Water	81,868.7	8.19	50	409.50	1.00	8.19
Wetland	D	107,914.7	10.79	50	539.50	1.00	10.79
		Total Area (Ha):	***93.46 Ha***				49.5
					7087	***Avg C***	***0.53***
			Weighted CN (II)		***76***		
			CN (AMC III)		***89***		

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sheet 6

Subcatchment 7

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	C	C * Area
1/4 acre lot-size (residential)	B	3,982.6	0.40	85	34.00	0.45	0.18
1/4 acre lot-size (residential)	C	4,798.0	0.48	90	43.20	0.45	0.22
1/8 acre lot-size (residential)	C	3,926.5	0.39	90	35.10	0.65	0.25
Argri IAG	D	54.7	0.01	85	0.85	0.55	0.01
Argri NAG	B	4,401.7	0.44	69	30.36	0.28	0.12
Argri NAG	C	179,361.3	17.94	79	1417.26	0.28	5.02
Argri NAG	D	106,527.3	10.65	84	894.60	0.40	4.26
Meadow-good condition	B	3,117.0	0.31	66	20.46	0.28	0.09
Meadow-good condition	C	249,719.8	24.97	77	1922.69	0.28	6.99
Meadow-good condition	D	360,472.7	36.05	82	2956.10	0.40	14.42
open space	B	582.4	0.06	69	4.14	0.25	0.02
open space	C	15,599.9	1.56	79	123.24	0.25	0.39
streets and roads	B	1,906.2	0.19	98	18.62	0.95	0.18
streets and roads	C	1,185.7	0.12	98	11.76	0.95	0.11

Total Area (Ha): **93.57 Ha**

*Total Area * CN=* **7512**

32.3

Avg C **0.34**

Weighted CN (II)	*80*
CN (AMC III)	*91*

Subcatchment 8

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area
1 acre lot-size (residential)	C	6,675.0	0.67	79	52.93
Argri IAG	C	173,634.2	17.36	82	1423.52
Argri IAG	D	87,299.3	8.73	85	742.05
Argri NAG	C	51.1	0.01	79	0.79
Argri NAG	D	40.2	0.00	84	0.00
Meadow-good condition	C	18,762.0	1.88	77	144.76
Meadow-good condition	D	83,903.0	8.39	82	687.98
		Total Area (Ha):	***37.04 Ha***		
		Total Area * CN=			***3052***
			Weighted CN (II)		***82***
			CN (AMC III)		***92***

C	C * Area
0.25	0.17
0.35	6.08
0.55	4.80
0.28	0.00
0.40	0.00
0.28	0.53
0.40	3.36
	14.9
Avg C	***0.40***

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sheet 8

Subcatchment 9

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
1 acre lot-size (residential)	Water	388.2	0.04	100	4.00
1 acre lot-size (residential)	B	30,569.2	3.06	68	208.08
1 acre lot-size (residential)	C	73,774.4	7.38	79	583.02
1 acre lot-size (residential)	D	35,221.8	3.52	84	295.68
Argri IAG	Water	7,442.5	0.74	100	74.00
Argri IAG	B	156,278.9	15.63	75	1172.25
Argri IAG	C	857,220.8	85.72	82	7029.04
Argri IAG	D	495,626.7	49.56	85	4212.60
Argri NAG	C	32,591.0	3.26	79	257.54
Argri NAG	D	40,581.0	4.06	84	341.04
Commercial	Water	39,839.5	3.98	100	398.00
Commercial	C	16,572.2	1.66	94	156.04
Commercial	D	26,025.8	2.60	95	247.00
Forest-Good Cover	C	2,855.6	0.29	73	21.17
Forest-Good Cover	D	9,190.2	0.92	79	72.68
Meadow-good condition	Water	45,426.4	4.54	100	454.00
Meadow-good condition	C	5,074.2	0.51	77	39.27
Meadow-good condition	D	143,045.8	14.30	82	1172.60
Wetland	Water	739,300.5	73.93	50	3696.50
Wetland	D	130,175.6	13.02	50	651.00
		Total Area (Ha):	***288.72 Ha***		
		Total Area * CN=			***21086***
			Weighted CN (II)		***73***
			CN (AMC III)		***87***

C	C * Area
1.00	0.04
0.25	0.77
0.25	1.85
0.25	0.88
1.00	0.74
0.35	5.47
0.35	30.00
0.55	27.26
0.28	0.91
0.40	1.62
1.00	3.98
0.90	1.49
0.90	2.34
0.25	0.07
0.35	0.32
1.00	4.54
0.28	0.14
0.40	5.72
1.00	73.93
1.00	13.02
	175.1
Avg C	***0.61***

Subcatchment 10

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
1 acre lot-size (residential)	C	5,444.7	0.54	79	42.66
1 acre lot-size (residential)	D	34,974.3	3.50	84	294.00
Argri IAG	C	413,344.7	41.33	82	3389.06
Argri IAG	D	416,331.9	41.63	85	3538.55
Argri NAG	D	50.5	0.01	84	0.84
Commercial	D	22,540.7	2.25	95	213.75
Forest-Good Cover	C	47,223.8	4.72	73	344.56
Forest-Good Cover	D	19,639.0	1.96	79	154.84
Meadow-good condition	C	71,614.8	7.16	77	551.32
Meadow-good condition	D	73,721.8	7.37	82	604.34
Wetland	Water	51,446.1	5.14	50	257.00
Wetland	D	66,703.8	6.67	50	333.50

Total Area (Ha): ***122.28 Ha***

Total Area * CN= ***9724***

Weighted CN (II)	***80***
CN (AMC III)	***91***

C	C * Area
0.25	0.14
0.25	0.88
0.35	14.47
0.55	22.90
0.40	0.00
0.90	2.03
0.25	1.18
0.35	0.69
0.28	2.00
0.40	2.95
1.00	5.14
1.00	6.67
	59.0
Avg C	***0.48***

Subcatchment 11

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area	C	C * Area
1 acre lot-size (residential)	B	26822.49	2.68	68	182.24	0.25	0.67
1 acre lot-size (residential)	C	11419.14	1.14	79	90.06	0.25	0.29
1 acre lot-size (residential)	D	29204.02	2.92	84	245.28	0.25	0.73
Argri IAG	B	437544.91	43.75	75	3281.25	0.35	15.31
Argri IAG	C	259055.27	25.91	82	2124.62	0.35	9.07
Argri IAG	D	448687.43	44.87	85	3813.95	0.55	24.68
Argri NAG	Water	48.01	0	100	0.00	1.00	0.00
Argri NAG	B	10619.2	1.06	69	73.14	0.28	0.30
Argri NAG	C	340936.29	34.09	79	2693.11	0.28	9.55
Argri NAG	D	284854.93	28.49	84	2393.16	0.40	11.40
Commercial	Water	15503.34	1.55	100	155.00	1.00	1.55
Commercial	B	2977.8	0.3	92	27.60	0.90	0.27
Commercial	D	29639.28	2.96	95	281.20	0.90	2.66
Forest-Good Cover	C	13710.42	1.37	73	100.01	0.25	0.34
Forest-Good Cover	D	7753.98	0.78	79	61.62	0.35	0.27
Meadow-good condition	Water	19350.28	1.94	100	194.00	1.00	1.94
Meadow-good condition	B	4597.34	0.46	66	30.36	0.28	0.13
Meadow-good condition	C	48370.19	4.84	77	372.68	0.28	1.36
Meadow-good condition	D	159751.92	15.98	82	1310.36	0.40	6.39
open space	Water	21823.85	2.18	100	218.00	1.00	2.18
open space	D	440655.28	44.07	80	3525.60	0.25	11.02
Wetland	Water	14550.2	1.46	50	73.00	1.00	1.46
Wetland	D	163545.54	16.35	50	817.50	1.00	16.35

Total Area (Ha): 279.15 Ha

22064

Weighted CN (II)	***79***
CN (AMC III)	***90***

117.9

Avg C ***0.42***

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sheet 11

Subcatchment 12

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	C	C * Area
1 acre lot-size (residential)	B	3312.05	0.33	68	22.44	0.25	0.08
1 acre lot-size (residential)	C	13066.92	1.31	79	103.49	0.25	0.33
1/2 acre lot-size (residential)	Water	505.42	0.05	100	5.00	1.00	0.05
1/2 acre lot-size (residential)	B	13230.83	1.32	74	97.68	0.45	0.59
1/2 acre lot-size (residential)	C	16109.85	1.61	82	132.02	0.45	0.72
1/4 acre lot-size (residential)	Water	15165.69	1.52	100	152.00	1.00	1.52
1/4 acre lot-size (residential)	B	50108.57	5.01	85	425.85	0.45	2.25
1/4 acre lot-size (residential)	C	34832.08	3.48	90	313.20	0.45	1.57
Argri IAG	Water	24433.64	2.44	100	244.00	1.00	2.44
Argri IAG	B	469396.06	46.94	75	3520.50	0.35	16.43
Argri IAG	C	78511.13	7.85	82	643.70	0.35	2.75
Argri IAG	D	281613.87	28.16	85	2393.60	0.55	15.49
Argri NAG	Water	69469.91	6.95	100	695.00	1.00	6.95
Argri NAG	B	1836.85	0.18	69	12.42	0.28	0.05
Argri NAG	C	84785.38	8.48	79	669.92	0.28	2.37
Argri NAG	D	248362.64	24.84	84	2086.56	0.40	9.94
Commercial	Water	104.43	0.01	100	1.00	1.00	0.01
Commercial	C	4421.68	0.44	94	41.36	0.90	0.40
Commercial	D	131.05	0.01	95	0.95	0.90	0.01
Forest-Good Cover	Water	20740.32	2.07	100	207.00	1.00	2.07
Forest-Good Cover	C	239.53	0.02	73	1.46	0.25	0.01
Meadow-good condition	Water	78696.31	7.87	100	787.00	1.00	7.87
Meadow-good condition	B	14613.02	1.46	66	96.36	0.28	0.41
Meadow-good condition	C	1310.24	0.13	77	10.01	0.28	0.04
Meadow-good condition	D	2015.93	0.2	82	16.40	0.40	0.08
open space	Water	1267.38	0.13	100	13.00	1.00	0.13
open space	B	9881.51	0.99	69	68.31	0.25	0.25
open space	D	370.99	0.04	80	3.20	0.25	0.01
streets and roads	Water	1057.13	0.11	98	10.78	1.00	0.11
streets and roads	B	23935.03	2.39	98	234.22	0.95	2.27
streets and roads	C	17996.17	1.8	98	176.40	0.95	1.71
			158.14 Ha				78.9
					13185	***Avg C***	***0.50***

Weighted CN (II)	***83***
CN (AMC III)	***93***

Subcatchment 13

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area	C	C * Area
1 acre lot-size (residential)	B	2811.57	0.28	68	19.04	0.25	0.07
1 acre lot-size (residential)	C	74199.83	7.42	79	586.18	0.25	1.86
1/2 acre lot-size (residential)	C	1915.89	0.19	82	15.58	0.45	0.09
1/4 acre lot-size (residential)	C	9627.17	0.96	90	86.40	0.45	0.43
Argri IAG	B	285612.76	28.56	75	2142.00	0.35	10.00
Argri IAG	C	395906.76	39.59	82	3246.38	0.35	13.86
Argri NAG	B	78459.35	7.85	69	541.65	0.28	2.20
Argri NAG	C	250536	25.05	79	1978.95	0.28	7.01
Commercial	C	5335.44	0.53	94	49.82	0.90	0.48
Forest-Good Cover	B	47940.21	4.79	60	287.40	0.25	1.20
Forest-Good Cover	C	49713	4.97	73	362.81	0.25	1.24
Meadow-good condition	B	1763.08	0.18	66	11.88	0.28	0.05
Meadow-good condition	C	158808.3	15.88	77	1222.76	0.28	4.45
Meadow-good condition	D	16685.91	1.67	82	136.94	0.40	0.67
streets and roads	C	429.87	0.04	98	3.92	0.95	0.04
			137.96 Ha		**10692**		43.6
						Avg C	**0.32**

Weighted CN (II)	**77**
CN (AMC III)	**89**

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sheet: 13

Subcatchment 14

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
1 acre lot-size (residential)	C	61.58	0.01	79	0.79
1/2 acre lot-size (residential)	Water	19.25	0	100	0.00
1/2 acre lot-size (residential)	C	12757.67	1.28	82	104.96
1/4 acre lot-size (residential)	Water	1619.52	0.16	100	16.00
1/4 acre lot-size (residential)	C	143272.19	14.33	90	1289.70
1/8 acre lot-size (residential)	C	3488.93	0.35	90	31.50
Argri IAG	C	154.13	0.02	82	1.64
Forest-Good Cover	C	15.52	0	73	0.00
Meadow-good condition	Water	27.78	0	100	0.00
Meadow-good condition	C	866.01	0.09	77	6.93
open space	C	15890.03	1.59	79	125.61
streets and roads	Water	2878.96	0.29	98	28.42
streets and roads	C	60511.04	6.05	98	592.90
			24.17 Ha		
					2198
				Weighted CN (II)	***91***
				CN (AMC III)	***97***

X_{imp}	X_{imp} * Area
0.17	0.00
0.23	0.00
0.23	0.29
0.35	0.06
0.35	5.02
0.52	0.18
	5.55
Avg X_{imp}	***0.23***

C	C * Area
0.25	0.00
1.00	0.00
0.45	0.58
1.00	0.16
0.45	6.45
0.65	0.23
0.35	0.01
0.25	0.00
1.00	0.00
0.28	0.03
0.25	0.40
1.00	0.29
0.95	5.75
	13.9
Avg C	***0.57***

Subcatchment 15

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
1 acre lot-size (residential)	Water	7422.45	0.74	100	74.00
1 acre lot-size (residential)	B	2758.43	0.28	68	19.04
1 acre lot-size (residential)	C	17255	1.73	79	136.67
1/2 acre lot-size (residential)	B	5460.2	0.55	74	40.70
1/2 acre lot-size (residential)	C	3209.82	0.32	82	26.24
1/4 acre lot-size (residential)	Water	2281.72	0.23	100	23.00
1/4 acre lot-size (residential)	B	891.11	0.09	85	7.65
1/4 acre lot-size (residential)	C	6748.19	0.67	90	60.30
Meadow-good condition	Water	90884.72	9.09	100	909.00
Meadow-good condition	C	68103.6	6.81	77	524.37
open space	B	436.58	0.04	69	2.76
open space	C	12534.71	1.25	79	98.75
streets and roads	Water	1724.25	0.17	98	16.66
streets and roads	B	1912.55	0.19	98	18.62
streets and roads	C	1889.21	0.19	98	18.62
			22.35 Ha		***1976***

Weighted CN (II)	***88***
CN (AMC III)	***95***

C	C * Area
1.00	0.74
0.25	0.07
0.25	0.43
0.45	0.25
0.45	0.14
1.00	0.23
0.45	0.04
0.45	0.30
1.00	9.09
0.28	1.91
0.25	0.01
0.25	0.31
1.00	0.17
0.95	0.18
0.95	0.18
	14.1
Avg C	***0.63***

Subcatchment 16

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
1/2 acre lot-size (residential)	Water	2515.01	0.25	100	25.00
1/2 acre lot-size (residential)	C	2864.8	0.29	82	23.78
1/4 acre lot-size (residential)	Water	15205.96	1.52	100	152.00
1/4 acre lot-size (residential)	C	15747.99	1.57	90	141.30
Forest-Good Cover	Water	3152.83	0.32	100	32.00
Forest-Good Cover	C	2601.29	0.26	73	18.98
Meadow-good condition	Water	24762.65	2.48	100	248.00
Meadow-good condition	C	59960.95	6	77	462.00
open space	C	62.65	0.01	79	0.79
streets and roads	Water	2661.7	0.27	98	26.46
streets and roads	C	7622.42	0.76	98	74.48
			13.73 Ha		
					1205
			Weighted CN (II)		***88***
			CN (AMC III)		***95***

C	C * Area
1.00	0.25
0.45	0.13
1.00	1.52
0.45	0.71
1.00	0.32
0.25	0.07
1.00	2.48
0.28	1.68
0.25	0.00
1.00	0.27
0.95	0.72
	8.1
Avg C	***0.59***

Appendix F
Flow Length Theory

Water Systems Models

Hydrology

A guide to the Rain, Temperature and Runoff modules of the USEPA SWMM4

Edited and compiled by
William James and Robert C. James

Based on the *USEPA SWMM4 User's Manual*

The width of the pervious subarea, A2, is the entire subcatchment width, whereas the widths of the impervious subareas, A1, A3, A4, are in proportion to the ratio of their area to the total impervious area, as implied in Figure 4-3. Specification of each subarea is through the use of parameters WAREA and WW(3) in Group H1, PCTZER in group B4 and SNN1 in group I1. If desired, any subcatchment may consist entirely of any one (or more) types of subareas.

Of course, real subcatchments seldom exhibit the uniform rectangular geometries shown in Figure 4-3. In terms of the flow routing, all geometrical properties are merely parameters (as explained below) and no inherent "shape" can be assumed in the non-linear reservoir technique. However, in terms of parameter selection, the conceptual geometry of Figure 4-3 is useful because it aids in explaining the flow routing.

Routing and Time Step Considerations

The routing and time step discussion given earlier for channel/pipes applies almost identically for subcatchments. The routing is performed separately for each of the three of four subareas of the subcatchment. Convergence problems are rarely encountered during subcatchment routing because total subcatchment volumes (area times depth) are usually large compared to outflow volumes.

Parameter selection is aided with reference to Figure 4-15 in which the subcatchment "reservoir" is shown in relation to inflows and outflows (or losses). The outflow to channel/pipes (links) and inlets (nodes) is computed as the product of velocity (from Manning's equation based on the difference between total depth and depression storage), depth and width,

$$Q = W\frac{1.49}{n}(d-d_p)^{5/3}S^{1/2} \qquad (4\text{-}93)$$

where

Q = WFLOW = subcatchment (or subarea) outflow, cfs,
W = WW(1) = subcatchment width, ft,
n = WW(5) or WW(6) = Manning's roughness coefficient,
d = WDEPTH = water depth, ft,
dp = WSTORE = depth of depression (retention) storage, ft, and
S = WSLOPE = slope, ft/ft.

The FORTRAN parameters listed above are the RUNOFF Module parameters. When combined with the continuity equation and divided by the surface area, a new routing parameter is defined for the pervious and total impervious subcatchment areas and used in all subsequent calculations,

$$WCON = -\frac{1.49W}{A \cdot n}S^{1/2} \qquad (4\text{-}94)$$

where WCON = routing parameter used in subroutine WSHED, ft-sec units, and
A = surface area of pervious or total impervious subarea, ft^2.

Note that the width, slope and roughness parameters are combined into one parameter. Thus, equivalent changes may be caused by appropriate alteration of any of the three parameters. Note also that the width and slope are the same for both pervious and impervious areas. Manning's roughness and relative area are the only parameters available to the modeler to characterize the relative contributions of pervious and impervious areas to the outlet hydrograph. (However, see further comments below on the subcatchment width.) Flows computed in the RUNOFF Module and transferred to subsequent modules are instantaneous values at the end of a time step.

Subcatchment Width

If overland flow is visualized (Figure 4-3) as running down-slope off an idealized, rectangular catchment, then the width of the subcatchment (data group H1) is the physical width of overland flow. This may be further seen when the lateral flow per unit width, q_L, is computed and multiplied by the width to obtain the total inflow into the channel. (As mentioned previously, the SWMM channel/pipes can only receive a concentrated inflow, however, and do not receive a distributed inflow in a specific fashion.) Note also that for this idealized case, if the two sides of the subcatchment are symmetrical the total width is twice the length of the drainage channel.

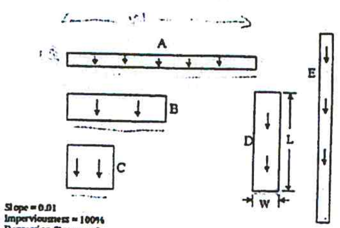
Since real subcatchments will not be rectangular with properties of symmetry and uniformity, it is necessary to adopt other procedures to obtain the width for more general cases. This is of special importance, because if the slope and roughness are fixed (see equation 4-94), the width can be used to alter the hydrograph shape.

For example, consider the five different subcatchment shapes shown on Figure 4-19. Catchment hydraulic properties, routing parameters and time of concentration are also given. The latter is calculated using the kinematic wave formulation Eagleson, 1970, p. 340),

$$t_c = \left(\frac{L}{a \cdot i^{*m-1}}\right)^{1/m} \qquad (4\text{-}95)$$

where t_c = time of concentration, sec,

L = subcatchment length ,ft,
i* = rainfall excess (rainfall minus losses), ft/sec, and
a,m = kinematic wave parameters.



Slope = 0.01
Imperviousness = 100%
Depression Storage = 0
n = 0.02
Equilibrium outflow = i*A = 0.926 cfs

DELT = 5 min = 300 sec
i* = Rainfall = 1.0 in/hr = 0.000023148 ft/sec

Shape	A (ft^2)	W (ft)	L (ft)	t_c[a] (min)	WCON[b] (ft-sec units)
A	40,000	800	50	3.7	-0.149
B	40,000	400	100	5.7	-0.0745
C	40,000	200	200	8.6	-0.03725
D	40,000	100	400	13.0	-0.018625
E	40,000	50	800	19.7	-0.0093125

a - Equation 4-145
b - Equation 4-144

Figure 4-19. Different Subcatchment Shapes to Illustrate Effect of Subcatchment Width.

The kinematic wave formulation assumes that the runoff per unit width (velocity times depth) from the subcatchment is

$$q_L = a\,d^m \tag{4-96}$$

where q_L = flow per unit width, ft²/sec, and
d = depth of flow, ft.

Parameters a and m depend upon the uniform flow equation used for normal flow. For Manning's equation,

$$a = (1.49/n)\cdot S^{1/2} \tag{4-97}$$

and

$$m = 5/3 \tag{4-98}$$

Note that the units of a depend upon the value of m, and for Manning's equation, feet-second units should be used for all calculations. The subcatchment length may be computed for the assumed rectangular shape simply by dividing the area by the width.

Finally, note the dependence of time of concentration upon the rainfall intensity. As i* increases, t_c decreases. The calculation using equation 4-95 is consistent with the definition of t_c given earlier: t_c is the time to equilibrium, at which inflow equals outflow (for an impervious catchment). Equivalently, t_c is the time taken for the most remote portion of the catchment to contribute to flow at the outlet (node), which is the time taken by a wave (not a parcel of water) to travel from the remote point to the outlet (node).

Outflow hydrographs for continuous rainfall and for rainfall of duration 20 min are shown on Figure 4-20. These were computed by the RUNOFF Module non- linear reservoir equations using a time step of 5 min.

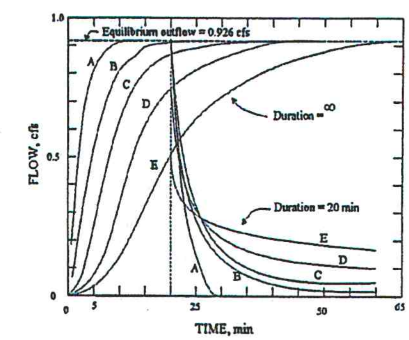


Figure 4-20. Subcatchment Hydrographs for Different Shapes of Figure 4-19.

Clearly, as the subcatchment width is narrowed (i.e. the outlet (node) is constricted), the time to equilibrium increases. Thus, it is achieved quite rapidly for cases A and B and more slowly for cases C, D and E. The kinematic wave computation of t_c (Figure 4-19) is not particularly accurate for the non-linear reservoirs for which the asymptotic value of equilibrium outflow is approached exponentially. However, it may be used for guidance.

Two routing effects may be observed. A storage effect is very noticeable, especially when comparing hydrographs A and E for a duration of 20 min. The subcatchment thus behaves in the familiar manner of a reservoir. For case E, the outflow is constricted (narrow); hence, for the same amount of inflow (rainfall) more water is stored and less released. For case A, on the other hand, water is released rapidly and little is stored. Thus case A has both the fastest rising and recession limbs of the hydrographs.

A shape effect is also evident. Theoretically, all the hydrographs peak simultaneously (at the cessation of rainfall). However, a large width (e.g. case A) will cause equilibrium outflow to be achieved rapidly, producing a flat-topped hydrograph for the remainder of the (constant) rainfall. Thus, for a catchment schematized with several subcatchments and subject to variable rainfall, increasing the widths tends to cause peak flows to occur sooner. In general, however, shifting hydrograph peaks in time is difficult to achieve through adjustment of RUNOFF Module flow routing parameters. The time distribution of runoff is far and away the most sensitive to the time distribution of rainfall. Further discussion of the effect of subcatchment width on hydrograph shapes was given earlier under *Subcatchment Aggregation and Lumping*.

What is the best estimate of subcatchment width? If the drainage channel is on the side of the catchment as in Figure 4-19, the width is just equal to the length of the channel. A good estimate for the width can be obtained by first determining the maximum length of overland flow and dividing the area by this length.

Most real subcatchments will be irregular in shape and have a drainage channel which is off center, as in Figure 4-21. This is especially true of rural or undeveloped catchments. A simple way of handling this case is given by DiGiano et al. (1977). A skew factor is computed,

$$S_k = (A_2 - A_1)/A \qquad (4\text{-}99)$$

where

S_k = skew factor, $0 \le S_k \le 1$,
A_1 = area to one side of channel,
A_2 = area to other side of channel, and
A = total area.

The width is simply weighted between the two limits of l and $2l$ as

$$W = (2 - S_k) \cdot l \qquad (4\text{-}100)$$

where

W = subcatchment width, and
l = length of main drainage channel.

To reiterate, changing the subcatchment width changes the routing parameter WCON of equation 4-94. Thus, identical effects to those discussed above may be created by appropriate variation of the roughness and/or slope.

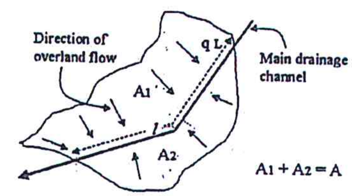


Figure 4-21. Irregular Subcatchment Shape for Width Calculation. (After DiGiano et al., 1977, p. 165.)

Subcatchment Area

In principle, the catchment and subcatchment area can be defined by constructing drainage divides on topographic maps. In practice, this may or may not be easy because of the lack of detailed contour information and the presence of unknown inflows and outflows. This may be most noticeably brought to the modeler's attention when the measured runoff volume exceeds the measured rainfall volume, if the latter is correct. Actually storm rainfall is seldom accurately measured over all subcatchments.

From the modeling standpoint, there are no upper or lower bounds on subcatchment area (other than to avoid convergence problems, as discussed earlier). Subcatchments are usually chosen to coincide with different land uses, with drainage divides, and to ease parameter estimation, i.e. homogeneous slopes, soils, etc. Further guidance is given later under subcatchment aggregation.

Imperviousness

The percent imperviousness of a subcatchment is another parameter that can, in principle, be measured accurately from aerial photos or land use maps. In practice, such work tends to be tedious, and it is common to make careful measurements for only a few representative areas and extrapolate to the rest.

Care must be taken to ensure that impervious areas are hydraulically (directly) connected to the drainage system. For instance, if rooftops drain onto adjacent pervious areas, they should not be treated as a hydraulically effective impervious area in the RUNOFF Module. Such areas are noneffective impervious areas (Doyle and Miller, 1980). On the other hand, if a driveway drains to a street and thence to a stormwater inlet, the driveway would be considered to be hydraulically connected. Rooftops with downspouts connected directly to a sewer are definitely hydraulically connected.

Should rooftops be treated as "pervious," the real surrounding pervious area is subject to more incoming water than rainfall alone and thus might produce

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Estimating subcatchment width

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The subcatchment width parameter is normally estimated by first estimating a representative length of overland flow, then dividing the area by this length. The advantage of this approach is that it works equally well in both rural and urbanized subcatchments. The trick is in estimating the representative length of overland flow. Ideally this should be the length of sheet flow (< 300ft | 100m), which is typically significantly slower than channelized flow. However, in large subcatchments the sheet flow has likely transitioned into rivulets and/or swales/streams and, in urban areas, gutters and pipes.

Increasing the length of overland flow to include some of this concentrated flow routing may improve the computed response time at the expense of artificially increasing the time for infiltration to occur over the pervious surfaces. The ideal solution is to increase subcatchment and conveyance system discretization to match the required model accuracy.

Further discussion

SWMM5's non-linear reservoir formulation for subcatchment routing requires a width in Q = depth x width x velocity. If the kinematic wave formulation were used we would still need a flow cross section area, so programmers are stuck with some kind of width estimate regardless of method.The original programmers of the SWMM runoff routines proposed linking width W to the total length of gutters, conceptualizing each subcatchment as draining overland into a transverse (horizontal) gutter, which could then be individually modeled. As SWMM is equally well applied to rural areas, this gutter concept is not useful in many applications, and should be replaced with another method of estimation.

Instead, we recommend estimating the representative length of overland flow instead, and have the program calculate W=A/L internally, where A is subcatchment area and L is a self-consistent measure of overland flow length - this is what PCSWMM does. Taking a look out your window at an urban or rural subcatchment: one cannot remotely visualize anything approximating a sub-catchment width W. Clearly W has no physical explanation; it is a mathematical construct; one cannot devise a field instrument to measure it. One can't even visualize a representative slope, though one can conjecture an overland flow path, or many of them.

Think rather of W as being a "tuning parameter" - small W implies attenuated responses, large W yields fast responses. It is inherently uncertain, like the curve number CN in SCS hydrology (to which it could be considered analogous). The only way to get W correct is to accept that it's (very) uncertain, estimate it from W=A/L, and calibrate your self-consistent methodology against observations, or some other measure you assume to be reliable.

Now no-one knows which self-consistent method is best - after all the moisture content of your catchment is continuously changing, and what works for a 100 y storm is unlikely to be appropriate for a 0.01 y storm. The tuning parameter W represents an averaged, representative response time of your overland flow system. If you are not explicitly modeling the gutters and local stormwater pipes, you will have to adjust W accordingly. However engineers build gutters and pipes to carry away the flow, and in them one can expect velocities of up to 1 m/s. On the other hand, watching full-scale and lab-scale overland flow processes on lawns and impervious pavements indicates velocities perhaps 3 orders of magnitude smaller. The response time is dominated by the slower flow processes, and thus one often need not worry about pipes and gutters. This does not apply if the conduits choke or surcharge, of course, or if all you have is roofs, gutters and pipes.

Naturally this position (considering only slow-flow processes) may not apply to your own conceptualization of your particular problem, however so long as you consistently estimate your length of overland flow (e.g. maximum, mean, representative, include gutters, etc) for all subcatchments, you should be able to reasonably defend calibration of your method (i.e. optimize all estimated W at once) rather than have to optimize each W individually. This is important because individual optimization of W for the numbers of subcatchments that we see in models today (as many as 30,000) would still be difficult. The fundamental position is that W is a top-candidate parameter for calibration.

The fact is that the single-flat-plane concept is inherently uncertain, as is the assumption of steady flow over the time-step, the hydraulic parameters themselves, and the rest of the design process. The saving grace is that the finer the time and space resolution the less important these uncertainties become. This is because the correct spatial and time discretization carries in itself important information about the likely response.

In summary, what any user includes in their estimate of overland flow path L, is unimportant so long as users are consistent, modify L later in the light of confirmatory evidence, and interpret the final result carefully. One does what one can, given one's limited resources: ignore the pipes and gutters, estimate the longest slow-flow paths, and calibrate. Fortunately all of this can be done semi-automatically in PCSWMM for both urban and rural areas.

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Creating a flow path layer to estimate flow length/width

Modified on: Sun, Jul 7, 2013 at 8:48 PM

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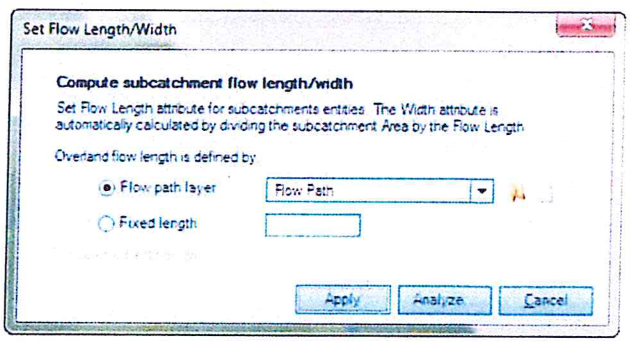
1. Click on the **Tools** button and click on **Subcatchmentsin** the tools browser.
2. Select **Set Flow/Width** from the **Subcatchment** sub menu.

3. Select the option to use a **Flow path layer** and click on the **New** button beside the Flow path layer drop down box.



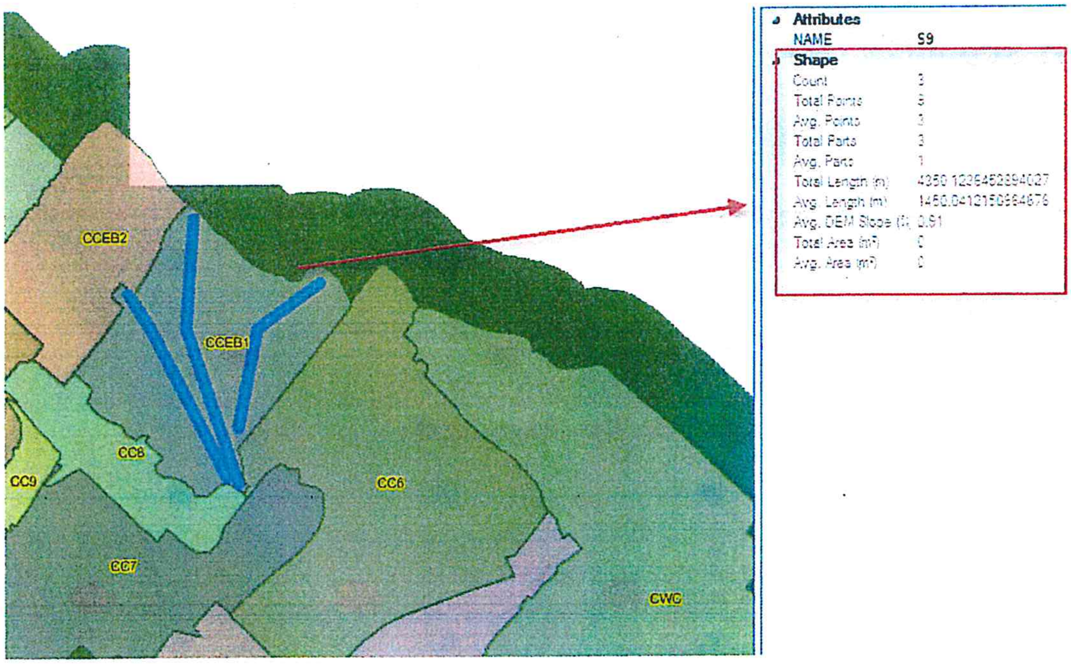
4. **Save** the flow path layer in a location that you are able to navigate to.
5. Select the newly created *flow path layer* in the **Layers panel.**

6. Click on the **Add** button.
7. Draw 1-3 flow path lines on each subcatchment. The lines will be named according to the subcatchment it is in.

8. Once complete, click on the **Tools** button and click on **Subcatchments** in the tools browser.
9. Select **Set Flow/Width** from the **Subcatchment** sub menu.
10. In the **Set Flow/Width** window ensure the **Flow path layer** option is selected and in the drop down box select the flow path layer.

11. Click **Analyze...** a report will be generated with the new widths and length values.

The flow path layer can also be used to estimate slope values for each subcatchment. Just select all the lines in the flow path layer for a subcatchment and the values will appear in the attributes panel (be sure to have a DEM loaded as a background layer).



Version: 5.1
Updated: 2012.10.10

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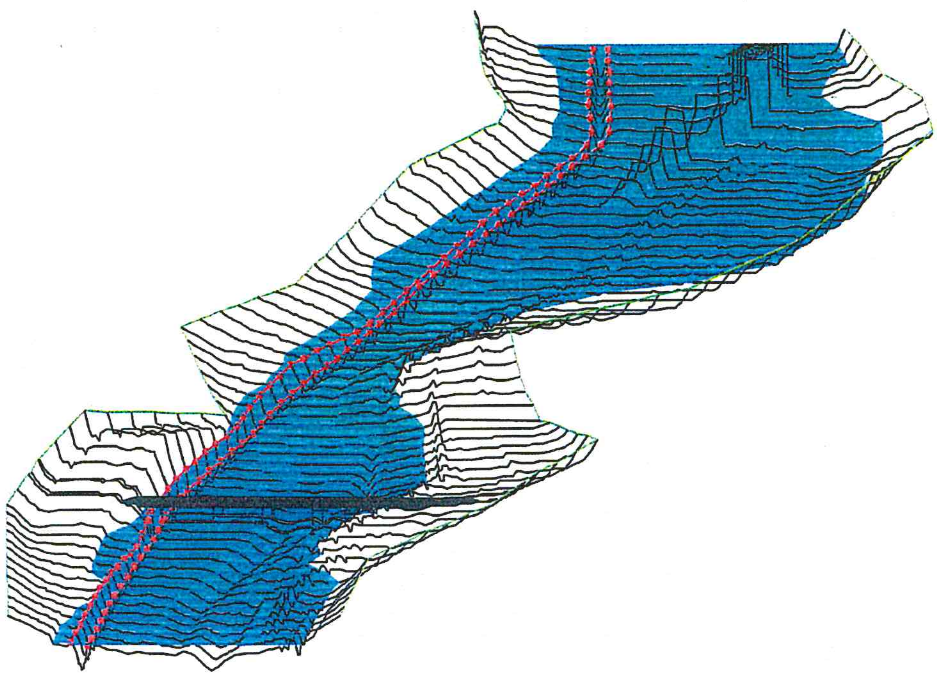
- Creating a look-up table using the area-weighting tool
- How to save a GIS layer in a different format
- How to perform an area-weighed operation from a points layer to a polygon layer

Appendix G
Manning n values

US Army Corps
of Engineers
Hydrologic Engineering Center

HEC-RAS
River Analysis System



Hydraulic Reference Manual

Version 4.1
January 2010

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CPD-69

Table 3-1 Manning's 'n' Values

Type of Channel and Description	Minimum	Normal	Maximum
A. *Natural Streams*			
1. Main Channels			
a. Clean, straight, full, no rifts or deep pools	0.025	0.030	0.033
b. Same as above, but more stones and weeds	0.030	0.035	0.040
c. Clean, winding, some pools and shoals	0.033	0.040	0.045
d. Same as above, but some weeds and stones	0.035	0.045	0.050
e. Same as above, lower stages, more ineffective slopes and sections	0.040	0.048	0.055
f. Same as "d" but more stones	0.045	0.050	0.060
g. Sluggish reaches, weedy. deep pools	0.050	0.070	0.080
h. Very weedy reaches, deep pools, or floodways with heavy stands of timber and brush	0.070	0.100	0.150
2. Flood Plains			
a. Pasture no brush			
1. Short grass	0.025	0.030	0.035
2. High grass	0.030	0.035	0.050
b. Cultivated areas			
1. No crop	0.020	0.030	0.040
2. Mature row crops	0.025	0.035	0.045
3. Mature field crops	0.030	0.040	0.050
c. Brush			
1. Scattered brush, heavy weeds	0.035	0.050	0.070
2. Light brush and trees, in winter	0.035	0.050	0.060
3. Light brush and trees, in summer	0.040	0.060	0.080
4. Medium to dense brush, in winter	0.045	0.070	0.110
5. Medium to dense brush, in summer	0.070	0.100	0.160
d. Trees			
1. Cleared land with tree stumps, no sprouts	0.030	0.040	0.050
2. Same as above, but heavy sprouts	0.050	0.060	0.080
3. Heavy stand of timber, few down trees, little undergrowth, flow below branches	0.080	0.100	0.120
4. Same as above, but with flow into branches	0.100	0.120	0.160
5. Dense willows, summer, straight	0.110	0.150	0.200
3. Mountain Streams, no vegetation in channel, banks usually steep, with trees and brush on banks submerged			
a. Bottom: gravels, cobbles, and few boulders	0.030	0.040	0.050
b. Bottom: cobbles with large boulders	0.040	0.050	0.070

Table 3-1 (Continued) Manning's 'n' Values

Type of Channel and Description	Minimum	Normal	Maximum
B. *Lined or Built-Up Channels*			
1. Concrete			
a. Trowel finish	0.011	0.013	0.015
b. Float Finish	0.013	0.015	0.016
c. Finished, with gravel bottom	0.015	0.017	0.020
d. Unfinished	0.014	0.017	0.020
e. Gunite, good section	0.016	0.019	0.023
f. Gunite, wavy section	0.018	0.022	0.025
g. On good excavated rock	0.017	0.020	
h. On irregular excavated rock	0.022	0.027	
2. Concrete bottom float finished with sides of:			
a. Dressed stone in mortar	0.015	0.017	0.020
b. Random stone in mortar	0.017	0.020	0.024
c. Cement rubble masonry, plastered	0.016	0.020	0.024
d. Cement rubble masonry	0.020	0.025	0.030
e. Dry rubble on riprap	0.020	0.030	0.035
3. Gravel bottom with sides of:			
a. Formed concrete	0.017	0.020	0.025
b. Random stone in mortar	0.020	0.023	0.026
c. Dry rubble or riprap	0.023	0.033	0.036
4. Brick			
a. Glazed	0.011	0.013	0.015
b. In cement mortar	0.012	0.015	0.018
5. Metal			
a. Smooth steel surfaces	0.011	0.012	0.014
b. Corrugated metal	0.021	0.025	0.030
6. Asphalt			
a. Smooth	0.013	0.013	
b. Rough	0.016	0.016	
7. Vegetal lining	0.030		0.500

Table 3-1 (Continued) Manning's 'n' Values

Type of Channel and Description	Minimum	Normal	Maximum
C. *Excavated or Dredged Channels*			
1. Earth, straight and uniform			
a. Clean, recently completed	0.016	0.018	0.020
b. Clean, after weathering	0.018	0.022	0.025
c. Gravel, uniform section, clean	0.022	0.025	0.030
d. With short grass, few weeds	0.022	0.027	0.033
2. Earth, winding and sluggish			
a. No vegetation	0.023	0.025	0.030
b. Grass, some weeds	0.025	0.030	0.033
c. Dense weeds or aquatic plants in deep channels	0.030	0.035	0.040
d. Earth bottom and rubble side	0.028	0.030	0.035
e. Stony bottom and weedy banks	0.025	0.035	0.040
f. Cobble bottom and clean sides	0.030	0.040	0.050
3. Dragline-excavated or dredged			
a. No vegetation	0.025	0.028	0.033
b. Light brush on banks	0.035	0.050	0.060
4. Rock cuts			
a. Smooth and uniform	0.025	0.035	0.040
b. Jagged and irregular	0.035	0.040	0.050
5. Channels not maintained, weeds and brush			
a. Clean bottom, brush on sides	0.040	0.050	0.080
b. Same as above, highest stage of flow	0.045	0.070	0.110
c. Dense weeds, high as flow depth	0.050	0.080	0.120
d. Dense brush, high stage	0.080	0.100	0.140

Other sources that include pictures of selected streams as a guide to n value determination are available (Fasken, 1963; Barnes, 1967; and Hicks and Mason, 1991). In general, these references provide color photos with tables of calibrated n values for a range of flows.

Although there are many factors that affect the selection of the n value for the channel, some of the most important factors are the type and size of materials that compose the bed and banks of a channel, and the shape of the channel. Cowan (1956) developed a procedure for estimating the effects of these factors to determine the value of Manning's n of a channel. In Cowan's procedure, the value of n is computed by the following equation:

Manning's n values for Ops Drain & Jenning's Creek HEC-RAS model

River Station		LOB 1st	LOB 2nd	channel	ROB 1st	ROB 2nd	Rationale for Choosing n Value: LOB	channel	ROB	
7641.424		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7604.08		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7598.352		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7580 Mall Entrance Culvert										
7573.521		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7560.665		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7510.949		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7506.531		0.016		0.04	0.016		B6b (nor)	A1b (max)	B6b (nor)	
7460 Mall Parking Lot Culvert										
7416.162		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7413.256		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
7390.724		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
7333.219		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7328.619		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7319 Former Train Line Culvert										
7309.586		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7306.937		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7246.49		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7238.63		0.016		0.04	0.035		B6b (nor)	A1b (max)	A2a2 (nor)	
7190 McLachlin Rd Culvert										
7156.184		0.016		0.04	0.025		B6b (nor)	A1b (max)	A2a2 (min)	*ball park mowed grass*
7153.097		0.016		0.04	0.025		B6b (nor)	A1b (max)	A2a2 (min)	
7127.958		0.016		0.04	0.025		B6b (nor)	A1b (max)	A2a2 (min)	
7111.02		0.016		0.04	0.025		B6b (nor)	A1b (max)	A2a2 (min)	
7106.395		0.016		0.04	0.025		B6b (nor)	A1b (max)	A2a2 (min)	
7095 Ball Field Access Culvert										
7088.943		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
7083.163		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
7071.306		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
6917.282		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6857.851		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6853.017		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6840 Greenfield Rd Culvert										
6826.129		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
6821.096		0.035		0.04	0.035		A2a2 (nor)	A1b (max)	A2a2 (nor)	
6757.544		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6710.332		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6706.899		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6690 Hwy 7 (Pickseed) Culvert										
6676.99		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6669.684		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6564.455		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6486.756		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6410.625		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6335.876		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6190.578		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6116.845		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6084.086		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
6062.64		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5975.085		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5880.376		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5704.059		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5690.101		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5675 Dew Drop Inn Rd Culvert										
5665.793		0.03		0.035	0.03		A2a1 (nor)	A1b (nor)	A2a1 (nor)	
5653.55		0.03		0.035	0.03		A2a1 (nor)	A1b (nor)	A2a1 (nor)	
5646.039		0.03		0.035	0.03		A2a1 (nor)	A1b (nor)	A2a1 (nor)	
5620 Hwy 7 Culvert										
5604.418		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5595.644		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5465.266		0.06		0.035	0.035		A2c3 (nor)	A1b (nor)	A2a2 (nor)	
5374.119		0.06		0.035	0.035		A2c3 (nor)	A1b (nor)	A2a2 (nor)	
5310.141		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
5276.091		0.05		0.035	0.035		A2c1 (nor)	A1b (nor)	A2a2 (nor)	
5103.876		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4968.21		0.1		0.035	0.05		A2c5 (nor)	A1b (nor)	A2c1 (nor)	
4826.403		0.05		0.035	0.05		A2c1 (nor)	A1b (nor)	A2c1 (nor)	
4692.952		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4546.604		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4405.269		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4384.664		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4380.968		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4365 Colborne Rd W Culvert										
4356.489		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4347.811		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4263.057		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
4108.305		0.1		0.035	0.035		A2c5 (nor)	A1b (nor)	A2a2 (nor)	
3957.179		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
3804.186		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
3775.164		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
3762.625		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
3734.707		0.035		0.035	0.05		A2a2 (nor)	A1b (nor)	A2c1 (nor)	
3649.104		0.035		0.035	0.05		A2a2 (nor)	A1b (nor)	A2c1 (nor)	
3640.294		0.035		0.035	0.05		A2a2 (nor)	A1b (nor)	A2c1 (nor)	
3630 Private Laneway Culvert										
3621.185		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	
3613.455		0.035		0.035	0.035		A2a2 (nor)	A1b (nor)	A2a2 (nor)	

Manning's n values for Ops Drain & Jenning's Creek HEC-RAS model

River Station		LOB		channel	ROB	
		1st	2nd		1st	2nd
3509.864		0.035		0.035	0.016	
3380.367		0.035		0.035	0.016	
3358.095		0.035		0.035	0.016	
3200.809		0.035		0.035	0.035	
3187.848		0.035		0.035	0.035	
3046.813		0.016		0.035	0.035	
3035.535		0.016		0.035	0.035	
3010 Hwy 35 Twin Culvert						
3000.11		0.035		0.035	0.035	
2986.996		0.035		0.035	0.035	
2922.176		0.035		0.035	0.035	
2810.224		0.035		0.035	0.035	
2707.776		0.035		0.035	0.035	
2618.286		0.035		0.035	0.035	
2509.792		0.035		0.035	0.035	
2406.341		0.035		0.035	0.035	
2277.683		0.035	0.06	0.035	0.1	0.035
2156.937		0.035		0.035	0.1	0.035
2059.866		0.035		0.035	0.1	0.035
1920.857		0.035		0.035	0.1	0.035
1779.22		0.035		0.035	0.1	0.035
1662.759		0.035		0.035	0.035	
1549.464		0.035		0.035	0.035	
1455.968		0.035	0.05	0.035	0.05	
1448.974		0.035		0.035	0.05	
1426 Angeline Culvert						
1407.546		0.05	0.1	0.035	0.1	
1386.646		0.05	0.1	0.035	0.1	0.05
1276.628		0.035	0.1	0.035	0.1	0.05
1177.635		0.035	0.1	0.035	0.1	0.05
1021.897		0.1		0.035	0.1	
927.3901		0.1		0.035	0.1	0.05
818.7001		0.1		0.035	0.1	
718.5652		0.1		0.035	0.1	
625.0873		0.1		0.035	0.1	0.05
517.84		0.03		0.035	0.1	0.05
463.252		0.03		0.035	0.05	
411.8737		0.03		0.035	0.05	
367.2808		0.03		0.035	0.05	
273.7271		0.03		0.035	0.05	
267		0.03		0.035	0.05	
260 William St N Culvert						
240.5027		0.06		0.035	0.035	
236.8376		0.06		0.035	0.035	
228		0.1		0.035	0.06	
220		0.1		0.035	0.06	
210 Culvert						
175		0.03	0.1	0.035	0.1	
168.8194		0.03	0.1	0.035	0.1	
154.6483		0.06		0.035	0.1	
144.1		0.06		0.035	0.1	
130 Rail Trail Culvert						
121		0.1		0.035	0.1	
114		0.1		0.035	0.1	
96.54452		0.1		0.035	0.1	

Rationale for Choosing n Value

LOB		channel	ROB	
A2a2 (nor)		A1b (nor)	B6b (nor)	
A2a2 (nor)		A1b (nor)	B6b (nor)	
A2a2 (nor)		A1b (nor)	B6b (nor)	
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
B6b (nor)		A1b (nor)	A2a2 (nor)	
B6b (nor)		A1b (nor)	A2a2 (nor)	
		A1b (nor)		
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
A2a2 (nor)		A1b (nor)	A2a2 (nor)	
A2b2 (nor)		A1b (nor)	A2a2 (nor)	
A2b2 (nor)		A1b (nor)	A2a2 (nor)	
A2b2 (nor)		A1b (nor)	A2a2 (nor)	
A2b2 (nor)	A2c3 (nor)	A1b (nor)	A2c5 (nor)	A2a2 (nor)
A2b2 (nor)		A1b (nor)	A2c5 (nor)	A2a2 (nor)
A2b2 (nor)		A1b (nor)	A2c5 (nor)	A2a2 (nor)
A2b2 (nor)		A1b (nor)	A2c5 (nor)	A2a2 (nor)
A2b2 (nor)		A1b (nor)	A2c5 (nor)	A2a2 (nor)
A2b2 (nor)		A1b (nor)		
A2b2 (nor)		A1b (nor)		
A2b2 (nor)	A2c1 (nor)	A1b (nor)	A2c1 (nor)	
A2b2 (nor)		A1b (nor)	A2c1 (nor)	
A2c1 (nor)	A2c5 (nor)	A1b (nor)	A2c5 (nor)	
A2c1 (nor)	A2c5 (nor)	A1b (nor)	A2c5 (nor)	A2c1 (nor)
A2b2 (nor)	A2c5 (nor)	A1b (nor)	A2c5 (nor)	A2c1 (nor)
A2b2 (nor)	A2c5 (nor)	A1b (nor)	A2c5 (nor)	A2c1 (nor)
A2c5 (nor)		A1b (nor)	A2c5 (nor)	
A2c5 (nor)		A1b (nor)	A2c5 (nor)	A2c1 (nor)
A2c5 (nor)		A1b (nor)	A2c5 (nor)	
A2c5 (nor)		A1b (nor)	A2c5 (nor)	
A2c5 (nor)		A1b (nor)	A2c5 (nor)	A2c1 (nor)
A2a1 (nor)		A1b (nor)	A2c5 (nor)	A2c1 (nor)
A2a1 (nor)		A1b (nor)	A2c1 (nor)	
A2a1 (nor)		A1b (nor)	A2c1 (nor)	
A2a1 (nor)		A1b (nor)	A2c1 (nor)	
A2a1 (nor)		A1b (nor)	A2c1 (nor)	
A2a1 (nor)		A1b (nor)	A2c1 (nor)	
A2c3 (nor)		A1b (nor)	A2b2 (nor)	
A2c3 (nor)		A1b (nor)	A2b2 (nor)	
A2c5 (nor)		A1b (nor)	A2c3 (nor)	
A2c5 (nor)		A1b (nor)	A2c3 (nor)	
A2a1 (nor)	A2c5 (nor)	A1b (nor)	A2c5 (nor)	
A2a1 (nor)	A2c5 (nor)	A1b (nor)	A2c5 (nor)	
A2c3 (nor)		A1b (nor)	A2c5 (nor)	
A2c3 (nor)		A1b (nor)	A2c5 (nor)	
A2c5 (nor)		A1b (nor)	A2c5 (nor)	
A2c5 (nor)		A1b (nor)	A2c5 (nor)	
A2c5 (nor)		A1b (nor)	A2c5 (nor)	

Comparing HEC RAS and PCSWMM Channel Lenghts

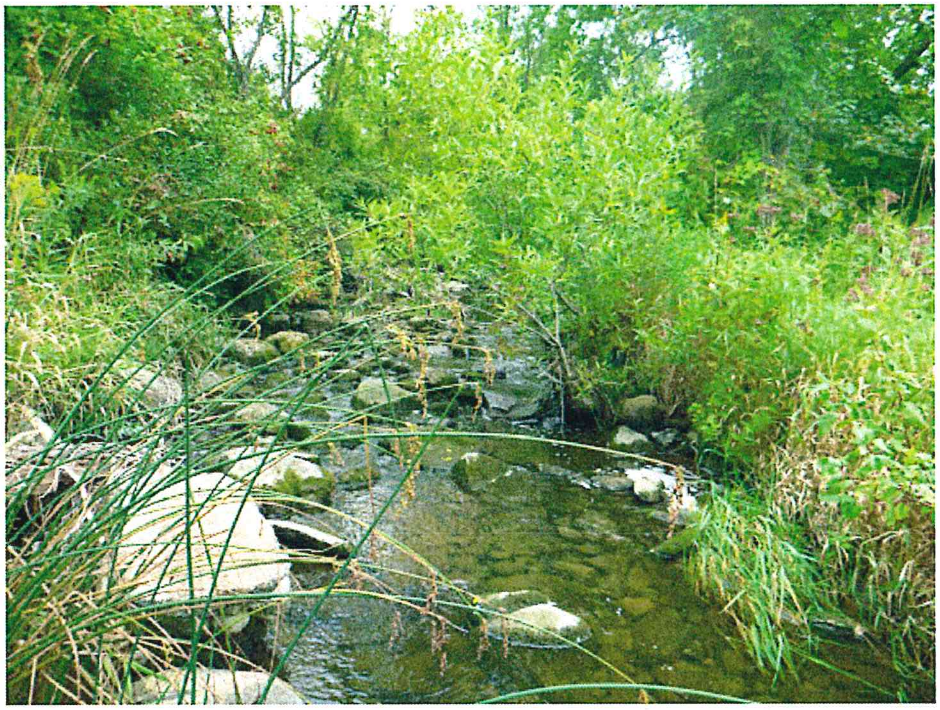
HEC-RAS		PCSWMM		
River Station	Channel (m)	Conduit ID	Channel (m)	*Added lenghts (m)*
7641.424	37.34	7641.424	57.88	
7604.08	5.73	7604.08	43.41	*43.42*
7598.352	24.83			
7580	*Culvert*			
7573.521	12.86			
7560.665	49.72	7560.665	49.72	
7510.949	4.42	7510.949	120.22	*120.23*
7506.531	90.37			
7460	*Culvert*			
7416.162	2.91			
7413.256	22.53			
7390.724	57.51	7390.724	57.51	
7333.219	4.5			
7328.619	18.9			
7319	*Former Train Track Culvert*			
7309.586	2.65			
7306.937	60.45	7306.937	86.75	*86.5*
7246.49	7.86	7246.49	118.53	*123.31*
7238.63	82.45			
7190	*McLachlin Rd Culvert*			
7156.184	3.09			
7153.097	29.91			
7127.958	16.94	7127.958	16.94	
7111.02	4.63	7111.02	27.87	*27.86*
7106.395	17.45			
7095	*Ball Field Culvert (Uniroyal Rd extension)*			
7088.943	5.78			
7083.163	11.4	7083.163	11.85	
7071.306	154.02	7071.306	154.04	
6917.282	59.43	6917.282	59.45	
6857.851	4.83			
6853.017	26.89			
6840	*Greenfield Rd Culvert*			
6826.129	5.03			
6821.096	63.55	6821.096	100.32	*100.3*
6757.544	47.21	6757.544	80.55	*80.55*
6710.332	3.43			
6706.899	29.91			
6690	*Hwy 7 Culvert*			
6676.99	7.31			
6669.684	105.23	6669.684	112.53	*112.54*
6564.455	77.7	6564.455	77.69	
6486.756	76.13	6486.756	76.13	
6410.625	74.75001	6410.625	74.75	
6335.876	145.3	6335.876	145.3	
6190.578	73.73	6190.578	73.73	
6116.845	32.76	6116.845	32.76	
6084.086	21.45	6084.086	21.45	
6062.64	87.56	6062.64	87.56	
5975.085	94.71	5975.085	94.71	
5880.376	176.32	5880.376	176.32	
5704.059	13.96	5704.059	38.26	*38.27*
5690.101	24.31			
5675	*Dew Drop Inn Culvert*			
5665.793	12.24	5665.793	12.24	
5653.55	7.51	5653.55	57.91	*56.28*
5646.039	40			
5620	*Hwy 7 Culvert*			
5604.418	8.77			
5595.644	130.38	5595.644	130.38	
5465.266	91.15	5465.266	91.13	
5374.119	63.98	5374.119	62.62	
5310.141	34.05	5310.141	35.26	
5276.091	172.22	5276.091	172.37	
5103.876	135.67	5103.876	135.67	
4968.21	141.81	4968.21	141.81	
4826.403	133.45	4826.403	133.46	
4692.952	146.35	4692.952	146.35	
4546.604	141.34	4546.604	141.34	
4405.269	20.61			
4384.664	3.7	4384.664	48.77	*48.79*

Comparing HEC RAS and PCSWMM Channel Lenghts

HEC-RAS		PCSWMM		
River Station	**Channel (m)**	**Conduit ID**	**Channel (m)**	***Added lenghts (m)***
4380.968	24.48			
4365	*Colborne St W Culvert*			
4356.489	8.68			
4347.811	84.75	4347.811	93.44	*93.43*
4263.057	154.75	4263.057	154.76	
4108.305	151.13	4108.305	151.13	
3957.179	152.99	3957.179	152.99	
3804.186	29.02	3804.186	29.02	
3775.164	12.54	3775.164	12.54	
3762.625	28	3762.625	27.92	
3734.707	85.6	3734.707	111.86	*113.52*
3649.104	8.81			
3640.294	19.11			
3630	*Private Laneway Culvert*			
3621.185	7.73			
3613.455	103.59	3613.455	111.32	*111.32*
3509.864	129.5	3509.864	129.5	
3380.367	22.27	3380.367	22.27	
3358.095	157.29	3358.095	157.29	
3200.809	12.96	3200.809	12.96	
3187.848	141.04	3187.848	141.03	
3046.813	11.28	3046.813	46.21	*46.7*
3035.535	35.42			
3010	*Hwy 35 Twin Culvert*			
3000.11	13.11	3000.11	13.12	
2986.996	64.82	2986.996	64.82	
2922.176	111.95	2922.176	111.95	
2810.224	102.45	2810.224	102.46	
2707.776	89.49	2707.776	89.5	
2618.286	108.49	2618.286	108.5	
2509.792	103.45	2509.792	103.45	
2406.341	128.66	2406.341	128.66	
2277.683	120.75	2277.683	120.75	
2156.937	97.07	2156.937	97.07	
2059.866	139.01	2059.866	139.01	
1920.857	141.64	1920.857	141.64	
1779.22	116.46	1779.22	116.46	
1662.759	113.3	1662.759	113.29	
1549.464	93.5	1549.464	93.5	
1455.968	6.89	1455.968	69.33	*69.29*
1448.974	41.5			
1426	*Angeline St Culvert*			
1407.546	20.9			
1386.646	110.02	1386.646	110.01	
1276.628	98.99	1276.628	98.99	
1177.635	155.74	1177.635	155.76	
1021.897	94.51	1021.897	94.5	
927.3901	108.69	927.3901	108.69	
818.7001	100.13	818.7001	100.14	
718.5652	93.48	718.5652	93.48	
625.0873	107.25	625.0873	107.25	
517.84	54.14	517.84	54.58	
463.252	51.38	463.252	51.38	
411.8737	44.59	411.8737	44.59	
367.2808	93.55	367.2808	93.56	
273.7271	6.3	273.7271	36.89	*37.03*
267	26.93			
260	*William St Culvert*			
240.5027	3.8			
236.8376	8.21			
228	5.4	228	67.87	*68.21*
220	46.5			
210	*Abandoned Railway Culvert*			
175	8.1			
168.8194	16.27	168.8194	16	
154.6483	5.4	154.6483	35.12	*35.54*
144.1	23.54			
130	*Rail Trail Culvert*			
121	6.6			
114	17.46			
96.54452	96.54	96.54452	114.98	*114*

Appendix H
Cross-section Photo Inventory

96.5445



Upstream

Downstream

367.281

Upstream

Downstream

411.874

Right Bank Facing Upstream

Left Bank Facing Upstream

463.252

Right Bank Facing Upstream

Left Bank Facing Upstream

517.84

Left Bank Facing Upstream

Right Facing Upstream

Left Bank Facing Downstream

Right Bank Facing Downstream

625.087

Left Bank Facing Upstream

Right Bank Facing Upstream

718.565

Right Bank Facing Upstream

Left Bank Facing Downstream

818.7

Right Bank Facing Upstream

Left Bank Facing Upstream

927.39

Right Bank Facing Upstream

Left Bank Facing Upstream

1021.9

Right Bank Facing Upstream

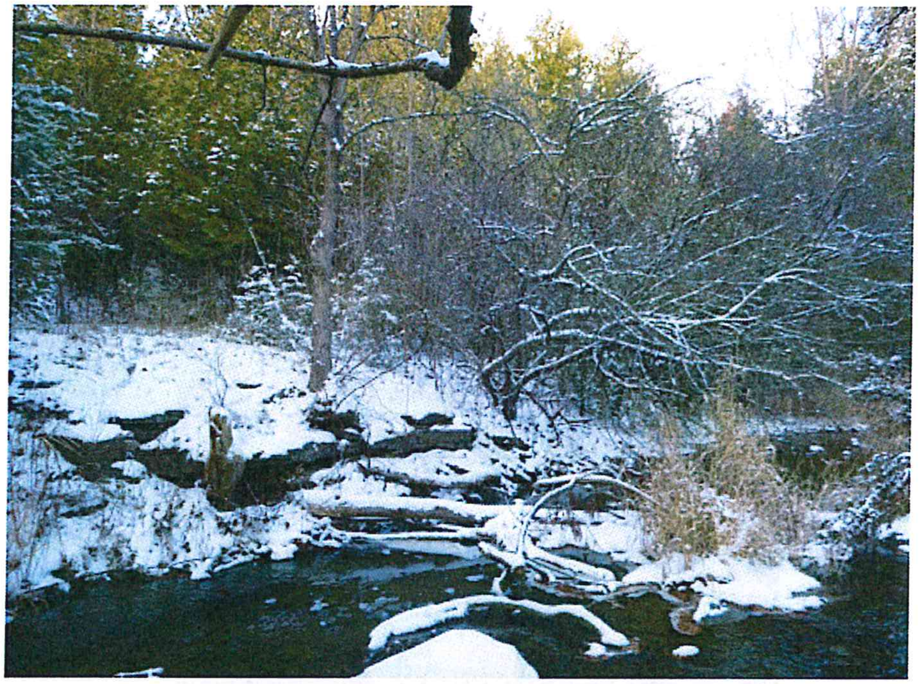
Left Bank Facing Upstream

1177.64

Right Bank Facing Upstream

Left Bank Facing Upstream

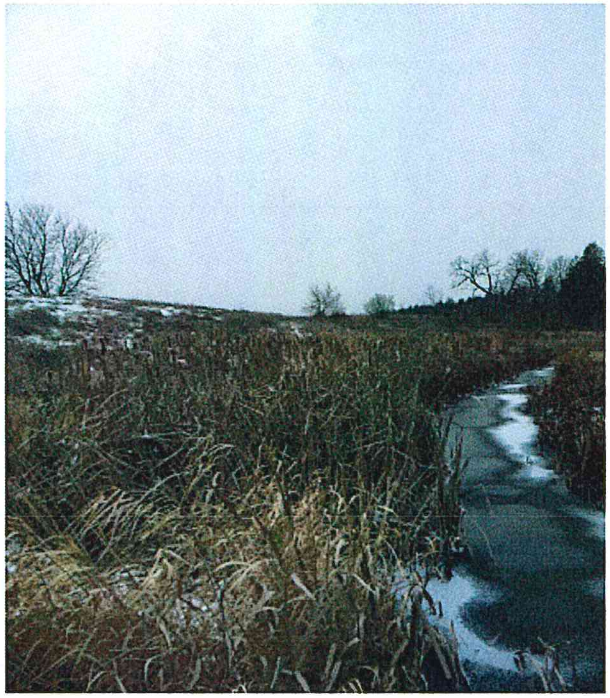
1276.63



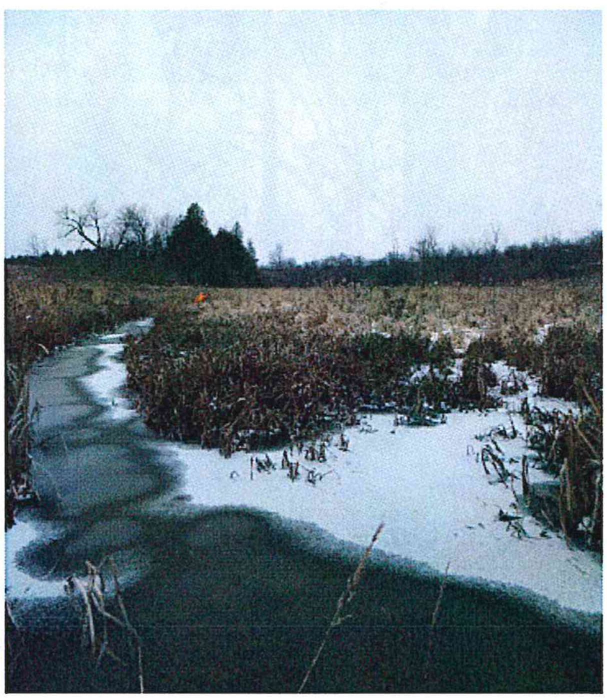
Left Bank Facing Downstream

Right Bank Facing Upstream

1549.46



Right Bank Facing Upstream



Left Bank Facing Upstream

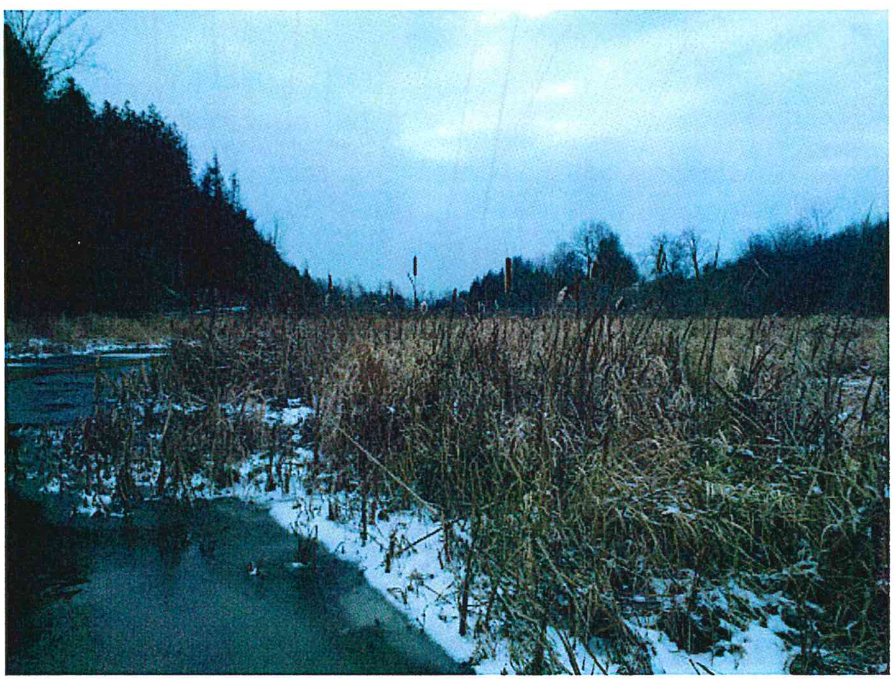
1662.76

Right Bank Facing Downstream

Left Bank Facing Upstream

1779.22

Right Bank Facing Upstream



Left Bank Facing Upstream

1920.86

Right Bank Facing Downstream

Left Bank Facing Upstream

2059.87

Right Bank Facing Upstream

Left Bank Facing Downstream

2156.94

Right Bank Facing Downstream

Left Bank Facing Upstream

2277.68

Left Bank Facing Upstream

Right Bank Facing Upstream

2406.34

Right Bank Facing Downstream

Left Bank Facing Downstream

2509.79

Left Bank Facing Upstream

Right Bank Facing Upstream

2618.29

Left Back Facing Downstream

Right Bank Facing Downstream

2707.78

Left Bank Facing Downstream

Right Bank Facing Downstream

2810.22

Right Bank Facing Upstream

Right Bank Facing Downstream

2922.18

Left Bank Facing Downstream

Right Bank Facing Upstream

3187.85

Right Bank Facing Upstream

Left Bank Facing Downstream

3358.09

Right Bank Facing Downstream

Left Bank Facing Upstream

3380.37

Right Bank Facing Upstream

Left Bank Facing Upstream

3509.86

Left Bank Facing Downstream

Right Bank Facing Downstream

3762.63

Left Bank Facing Upstream

Right Bank Facing Downstream

37758.16

Left Bank Facing Downstream

Right Bank Facing Downstream

3804.19

Right Bank Facing Upstream

Left Bank Facing Upstream

3957.18

Left Bank Facing Upstream

Right Bank Facing Downstream

4108.31

Left Bank Facing Downstream

Right Bank Facing Downstream

4263.06

Left Bank Facing Downstream

Right Bank Facing Downstream

4405.27

Left Bank Facing Downstream

Right Bank Facing Downstream

4546.6

Right Bank Facing Downstream

Left Bank Facing Downstream

4692.95

Right Bank Facing Upstream

Left Bank Facing Upstream

4826.4

Right Bank Facing Upstream

Left Bank Facing Downstream

4968.21

Left Bank Facing Upstream

Right Bank Facing Upstream

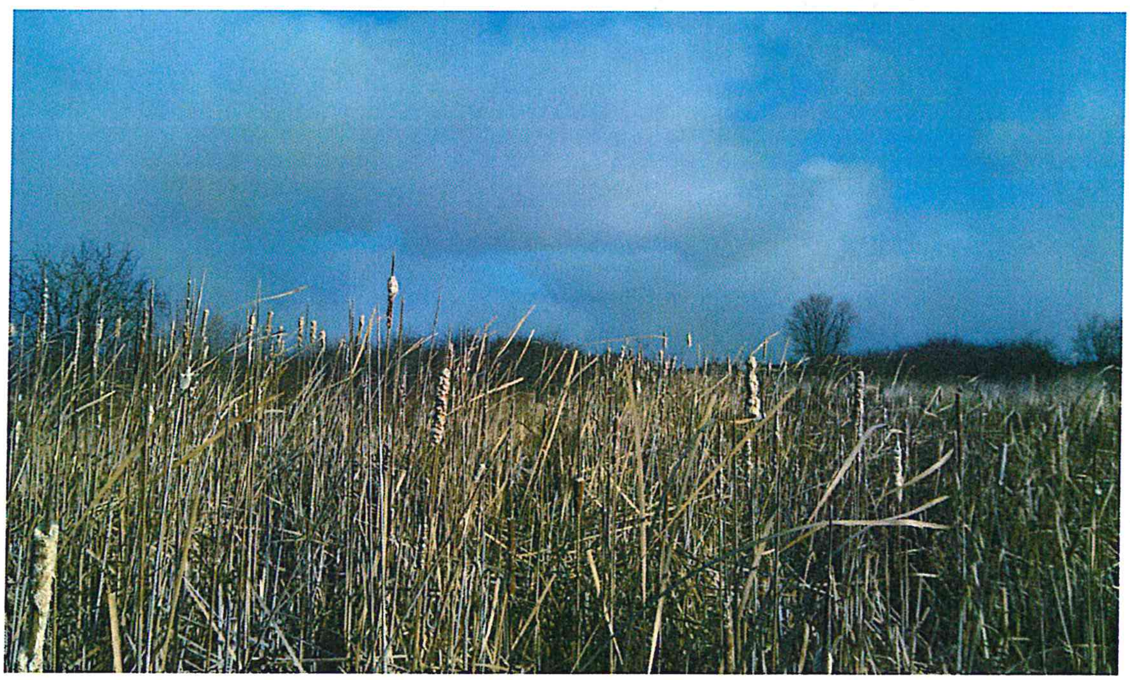
5103.88

Left Bank Facing Downstream

Right Bank Facing Downstream

5276.09

Right Bank Facing Downstream



Left Bank Facing Downstream

5310.14

Left Bank Facing Downstream

Old Rail Line at Cross Section

Left Bank Facing Upstream

5374.12

Left Bank Facing Downstream

Left Bank Facing Upstream

5880.38

Left Bank Facing Downstream

Right Bank Facing Upstream

5975.08

Right Bank Facing Downstream

Right Bank Facing Upstream

6062.64

Right Bank Facing Downstream

Right Bank Facing Upstream

6084.09

Right Bank Facing Downstream

Right Bank Facing Upstream

6116.85

Right Bank Facing Downstream

Right Bank Facing Upstream

6190.58

Right Bank Facing Downstream

Right Bank Facing Upstream

6335.88

Right Bank Facing Downstream

Left Bank Facing Upstream

6486.76

Left Bank Facing Downstream

Left Bank Facing Upstream

6564.46

Left Bank Facing Downstream

Left Bank Facing Upstream

6757.54

Hwy 7 Facing Upstream

Green Field Road Facing Downstream

6917.28

Right Bank Facing Downstream

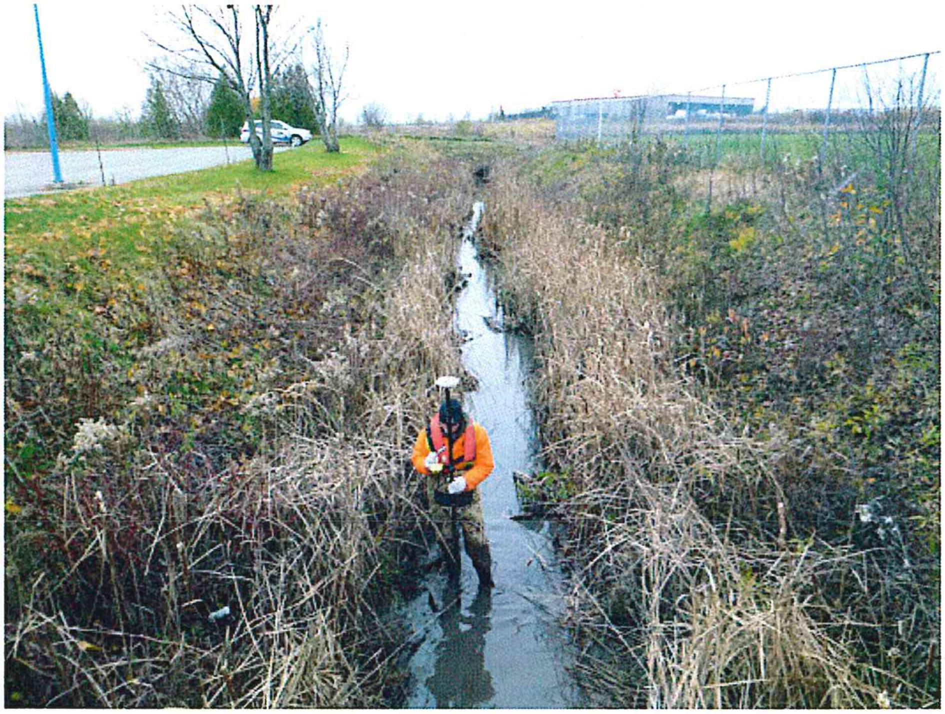
Left Bank Facing Upstream

7071.31

Left Bank Facing Downstream

Left Bank Facing Upstream

7127.96



Moose Lodge Culvert Looking Downstream

Downstream Moose Lodge Culvert Looking Upstream

7390.72

Right Bank Facing Downstream

Left Bank Facing Upstream

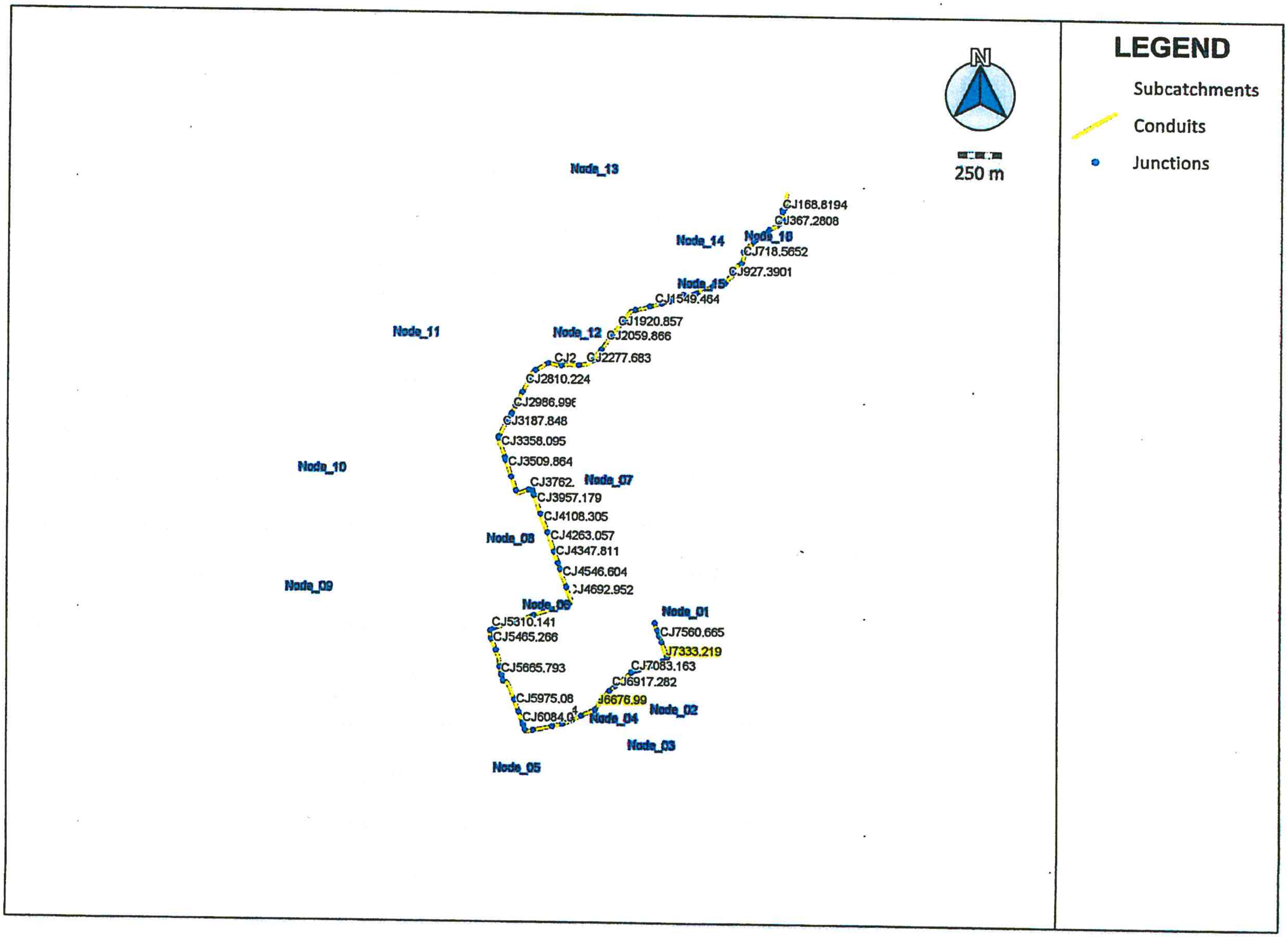
7641.42

Right Bank Facing Downstream

Right Bank Facing Upstream

Appendix I

Model Schematics (PCSWMM and VO_2)
Existing Land Use Conditions


LEGEND
Subcatchments
Conduits
Junctions
N
250 m
Node_13
Node_14
Node_16
Node_15
Node_12
Node_11
Node_10
Node_07
Node_08
Node_09
Node_06
Node_01
Node_02
Node_04
Node_03
Node_05
CJ168.8194
CJ367.2808
CJ718.5652
CJ927.3901
CJ1549.464
CJ1920.857
CJ2059.866
CJ2
CJ2277.683
CJ2810.224
CJ3187.848
CJ3358.095
CJ3509.864
CJ3762.
CJ3957.179
CJ4108.305
CJ4263.057
CJ4347.811
CJ4546.604
CJ5310.141
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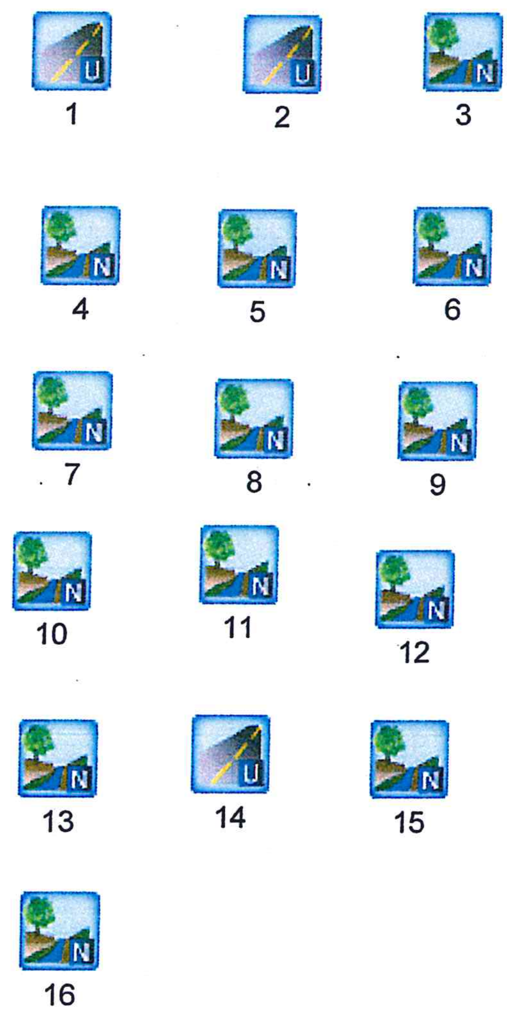
CJ7083.163
CJ6917.282
J6676.99



VO_2 Existing Conditions Model Schematic

Appendix J
Hydrology Sensitivity Analyses

Sensitivity Analyses

Base Model (100yr 12hr Chicago)

	100-year Chicago Storm Q_p (m^3/s)			100yr Q_p (m^3/s)		100yr Q_p (m^3/s)		100yr Q_p (m^3/s)		100yr Q_p (m^3/s) Subarea Routing (1,2,14)		100yr Q_p (m^3/s)		100yr Q_p (m^3/s)	
Catchment ID	12-hour	50% width	% Diff	150% width	% Diff	80% CN	% Diff	120% CN	% Diff	Imp	% Diff	50% I_a	% Diff	150% I_a	% Diff
1	20.67	16.45	80%	22.65	110%	15.39	74%	24.60	119%	18.42	89%	21.09	102%	20.08	97%
2	5.97	4.02	67%	7.25	121%	4.84	81%	7.99	134%	4.98	83%	6.2	104%	5.73	96%
3	2.55	2.02	79%	2.95	116%	1.98	78%	4.02	158%	2.55	100%	2.8	110%	2.32	91%
4	2.33	1.68	72%	2.81	121%	1.34	58%	4.05	174%	2.33	100%	2.52	108%	2.13	91%
5	15.20	9.59	63%	19.79	130%	7.08	47%	30.94	204%	15.20	100%	16.73	110%	13.73	90%
6	6.31	4.46	71%	7.92	126%	3.59	57%	12.94	205%	6.31	100%	7.36	117%	5.4	86%
7	4.16	2.61	63%	5.34	128%	1.90	46%	9.45	227%	4.16	100%	4.62	111%	3.69	89%
8	3.41	2.22	65%	4.12	121%	1.54	45%	7.78	228%	3.41	100%	3.72	109%	3.08	90%
9	4.72	3.21	68%	6.20	131%	2.94	62%	9.21	195%	4.72	100%	5.39	114%	4.09	87%
10	3.98	2.45	62%	5.20	131%	1.83	46%	8.91	224%	3.98	100%	4.4	111%	3.56	89%
11	8.57	5.52	64%	11.23	131%	4.72	55%	18.87	220%	8.57	100%	9.55	111%	7.63	89%
12	10.44	6.62	63%	13.61	130%	4.57	44%	21.36	205%	10.44	100%	11.51	110%	9.48	91%
13	3.27	2.02	62%	4.28	131%	1.56	48%	6.79	208%	3.27	100%	3.68	113%	2.87	88%
14	4.76	3.37	71%	5.68	119%	2.91	61%	5.84	123%	3.99	84%	4.96	104%	4.52	95%
15	4.68	3.13	67%	5.64	121%	1.92	41%	7.01	150%	4.68	100%	4.96	106%	4.32	92%
16	3.74	2.80	75%	4.21	113%	1.85	49%	5.02	134%	3.74	100%	3.86	103%	3.56	95%
		Average =	*68%*	*Average =*	*124%*	*Average =*	*56%*	*Average =*	*182%*	*Average =*	*97%*	*Average =*	*109%*	*Average =*	*91%*
		Max =	*80%*	*Max =*	*131%*	*Max =*	*81%*	*Max =*	*228%*	*Max =*	*100%*	*Max =*	*117%*	*Max =*	*97%*
		Min =	*62%*	*Min =*	*110%*	*Min =*	*41%*	*Min =*	*119%*	*Min =*	*83%*	*Min =*	*102%*	*Min =*	*86%*

Sensitivity Analyses

Base Model (100yr 12hr Chicago)

Node	100-year 12hr Chicago Storm Q_p (m^3/s)			100yr Q_p (m^3/s)	
	Base	120% manning	% Diff	80% manning	% Diff
Start of System	19.24	18.96	99%	19.35	101%
Commerce Rd culvert	16.26	14.61	90%	16.35	101%
former train track culvert	15.41	12.87	83%	15.34	100%
McLachlin Rd Culvert	14.11	12.13	86%	14.74	105%
Ballfield Culvert	18.24	16.30	89%	18.89	104%
Greenfield Rd culvert	16.27	14.71	90%	17.63	108%
Hwy 7 Culvert	19.26	17.32	90%	21.01	109%
W of Hwy 7 at 90-degree bend in Drain	17.14	17.12	100%	20.95	122%
North of 90-degree bend	13.12	12.32	94%	14.15	108%
between Dew Drop Inn Rd & Hwy 7	24.78	23.29	94%	26.26	106%
D/S of Hwy 7	23.77	21.96	92%	25.15	106%
North of Hwy 7 past 90-degree bend	19.17	16.47	86%	19.46	102%
Colborne St Culvert	12.97	13.69	106%	16.84	130%
D/S of Colborne St	11.58	9.98	86%	13.76	119%
D/S of private driveway	12.92	10.95	85%	15.21	118%
U/S of Airport	27.24	22.94	84%	26.86	99%
D/S of Hwy 35 (near airport)	27.19	22.92	84%	26.85	99%
Angeline St Culvert	33.93	28.83	85%	33.69	99%
D/S of Angeline St	38.85	33.38	86%	38.80	100%
William St culvert	39.23	33.72	86%	39.22	100%
		Average =	90%	Average =	107%
		Max =	106%	Max =	130%
		Min =	83%	Min =	99%

\\192.168.2.3\Shared\Jessica\KRCA\Reports Working\Final hydrology report\Excel files\Flow comparison-final.xlsx
Sheet:Existing Nodes

Appendix K
Model Output for Existing Conditions

Flow Comparison for 100-year and Regional Storms for Existing Conditions

From KRCA PCSWMM Model

Catchment ID	100-year Chi. Storm Q_p (m^3/s) 6-hour	12-hour
1	17.27	20.67
2	5.17	5.97
3	1.99	2.55
4	1.86	2.33
5	13.73	15.20
6	5.57	6.31
7	3.73	4.16
8	3.01	3.41
9	4.23	4.72
10	3.59	3.98
11	7.69	8.57
12	9.47	10.44
13	2.93	3.27
14	3.79	4.76
15	3.73	4.68
16	2.82	3.74

100-year Storm Q_p (m^3/s)	
6-hour SCS	6-hour AES
14.11	6.71
5.29	2.99
2.24	1.38
2.08	1.13
15.91	12.49
6.83	4.24
4.64	3.96
3.58	2.18
5.72	6.30
4.66	4.34
10.18	9.49
10.70	8.14
3.91	3.88
4.01	2.20
3.97	2.02
2.71	1.29

Timmins Storm Q_p (m^3/s)	
CN* (II)	CN* (III)
8.05	8.24
4.35	4.55
2.93	3.51
1.63	1.74
23.35	25.82
8.76	10.47
7.85	9.20
3.85	4.28
14.47	20.31
8.80	10.57
19.80	24.25
15.24	16.81
8.58	11.27
2.82	2.87
2.61	2.72
1.62	1.68

Comparing PCSWMM and VO_2 Peaks

Catchment ID	100-year 6-hour SCS Q_p (m^3/s) PCSWMM	VO_2	% Diff
1	14.11	11.05	78%
2	5.29	6.18	117%
3	2.24	1.42	63%
4	2.08	1.16	56%
5	15.91	13.90	87%
6	6.83	4.59	67%
7	4.64	2.98	64%
8	3.58	1.87	52%
9	5.72	6.35	111%
10	4.66	4.05	87%
11	10.18	8.96	88%
12	10.70	8.25	77%
13	3.91	3.67	94%
14	4.01	4.34	108%
15	3.97	2.41	61%
16	2.71	1.51	56%
		Average =	79%
		Max =	117%
		Min =	52%

Timmins CN (III) Q_p (m^3/s) PCSWMM	VO_2	% Diff
8.24	7.89	96%
4.55	4.66	102%
3.51	2.51	71%
1.74	1.43	82%
25.82	19.54	76%
10.47	7.70	74%
9.20	5.83	63%
4.28	2.83	66%
20.31	16.07	79%
10.57	7.74	73%
24.25	17.68	73%
16.81	11.90	71%
11.27	8.27	73%
2.87	2.86	100%
2.72	2.43	89%
1.68	1.51	90%
	Average =	80%
	Max =	102%
	Min =	63%

Comparing Aecom and KRCA Peaks

100-year SCS Storm Q_p (m^3/s) Aecom VO2	KRCA VO2		PCSWMM
17.72	7.89		14.11
15.48	4.66		5.29
3.00	2.51		2.24
N/A	1.43		2.08
18.90	19.54		15.91
4.43	7.70		6.83
11.63	5.83		4.64
3.79	2.83		3.58
22.00	16.07		5.72
N/A	7.74		4.66
17.98	17.68		10.18
12.90	11.90		10.70
N/A	8.27		3.91
12.82	2.86		4.01
	2.43		3.97
	1.51		2.71

Catchment ID	100yr Chicago Storm Q_p (m^3/s) PCSWMM	VO_2	% Diff
1	20.67	19.06	92%
2	5.97	10.84	182%
3	2.55	1.33	52%
4	2.33	1.17	50%
5	15.20	13.19	87%
6	6.31	4.34	69%
7	4.16	2.73	66%
8	3.41	1.76	51%
9	4.72	5.69	121%
10	3.98	3.71	93%
11	8.57	8.22	96%
12	10.44	7.78	75%
13	3.27	3.33	102%
14	4.76	7.47	157%
15	4.68	2.51	54%
16	3.74	1.61	43%
		Average =	87%
		Max =	182%
		Min =	43%

Comparing 100-year and Regional Peak Flows for Existing Conditions

Aecom (2010) Extran Routed Flows vs KRCA PCSWMM Routed Flow

Node	Flow from critical storm in m^3/s	
	Aecom 6hr SCS	KRCA 12hr Chicago
Start of System	N/A	19.24
Commerce Rd culvert	N/A	16.26
former train track culvert	N/A	15.41
McLachlin Rd Culvert	N/A	14.11
Ballfield Culvert	11.8	18.24
Greenfield Rd culvert	N/A	16.27
Hwy 7 Culvert	12.8	19.26
W of Hwy 7 at 90-degree bend in Drain	13.7	17.14
North of 90-degree bend	25.2	13.12
between Dew Drop Inn Rd & Hwy 7	25.6	24.78
D/S of Hwy 7	26.0	23.77
North of Hwy 7 past 90-degree bend	24.0	19.17
Colborne St Culvert	20.6	12.97
D/S of Colborne St	19.4	11.58
D/S of private driveway	21.9	12.92
U/S of Airport	31.0	27.24
D/S of Hwy 35 (near airport)	47.4	27.19
Angeline St Culvert	55.2	33.93
D/S of Angeline St	60.4	38.85
William St culvert	N/A	39.23

Node	Flow from Timmins Storm in m^3/s		
	Aecom (2010)	KRCA	
	CN (III)	CN* (III)	CN * (II)
Start of system	N/A	8.22	8.03
Commerce Rd culvert	N/A	8.12	7.92
former train track culvert	N/A	8.08	7.87
McLachlin Rd Culvert	N/A	8.10	7.89
Ballfield Culvert	9.9	12.43	12.00
Greenfield Rd culvert	N/A	12.49	12.04
Hwy 7 Culvert	12.0	17.29	16.19
W of Hwy 7 at 90-degree bend in Drain	14.1	17.24	16.14
North of 90-degree bend	28.6	17.11	15.85
between Dew Drop Inn Rd & Hwy 7	30.1	39.13	35.52
D/S of Hwy 7	30.9	37.24	33.94
North of Hwy 7 past 90-degree bend	30.8	29.09	27.10
Colborne St Culvert	28.7	27.85	27.58
D/S of Colborne St	30.7	22.86	22.83
D/S of private driveway	35.6	24.07	24.01
U/S of Airport	58.6	61.08	51.25
D/S of Hwy 35 (near airport)	74.7	60.56	50.96
Angeline St Culvert	105.0	69.33	58.28
D/S of Angeline St	95.9	80.16	67.94
William St culvert	N/A	80.94	68.67

Flow file for HEC-RAS

Existing Conditions (PCSWMM)

Start of System	19.24	*100yr*
Commerce Rd culvert	16.26	*100yr*
former train track culvert	15.41	*100yr*
McLachlin Rd Culvert	14.11	*100yr*
Ballfield Culvert	18.24	*100yr*
Greenfield Rd culvert	16.27	*100yr*
Hwy 7 Culvert	19.26	*100yr*
W of Hwy 7 at 90-degree bend in Drain	17.24	*Timmins*
North of 90-degree bend	17.11	*Timmins*
between Dew Drop Inn Rd & Hwy 7	39.13	*Timmins*
D/S of Hwy 7	37.24	*Timmins*
North of Hwy 7 past 90-degree bend	29.09	*Timmins*
Colborne St Culvert	27.85	*Timmins*
D/S of Colborne St	22.86	*Timmins*
D/S of private driveway	24.07	*Timmins*
U/S of Airport	61.08	*Timmins*
D/S of Hwy 35 (near airport)	60.56	*Timmins*
Angeline St Culvert	69.33	*Timmins*
D/S of Angeline St	80.16	*Timmins*
William St culvert	80.94	*Timmins*

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

Base model (JenningsCreek 2013 UpdatedWorking)
with 100-yr 12-hour Chicago Storm

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CMS
Process Models:
  Rainfall/Runoff ........ YES
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Starting Date ............ JAN-01-2013 00:00:00
Ending Date .............. JAN-02-2013 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:00:10
Wet Time Step ............ 00:00:10
Dry Time Step ............ 00:00:10
Routing Time Step ........ 5.00 sec


WARNING 03: negative offset ignored for Link CJ4384.664

WARNING 03: negative offset ignored for Link CJ5704.059

WARNING 02: maximum depth increased for Node J114

WARNING 02: maximum depth increased for Node J154.6483

WARNING 02: maximum depth increased for Node J168.8194

WARNING 02: maximum depth increased for Node J236.8376

WARNING 02: maximum depth increased for Node J411.8737

WARNING 02: maximum depth increased for Node J625.0873

WARNING 02: maximum depth increased for Node J718.5652

WARNING 02: maximum depth increased for Node J818.7001

WARNING 02: maximum depth increased for Node J927.3901

WARNING 02: maximum depth increased for Node J1021.897

WARNING 02: maximum depth increased for Node J1177.635

WARNING 02: maximum depth increased for Node J1386.646
```



```
WARNING 02: maximum depth increased for Node J1549.464

WARNING 02: maximum depth increased for Node J1662.759

WARNING 02: maximum depth increased for Node J1920.857

WARNING 02: maximum depth increased for Node J2156.937

WARNING 02: maximum depth increased for Node J2618.286

WARNING 02: maximum depth increased for Node J2707.776

WARNING 02: maximum depth increased for Node J2922.176

WARNING 02: maximum depth increased for Node J2986.996

WARNING 02: maximum depth increased for Node J3000.11

WARNING 02: maximum depth increased for Node J3380.367

WARNING 02: maximum depth increased for Node J3509.864

WARNING 02: maximum depth increased for Node J3734.707

WARNING 02: maximum depth increased for Node J3762.625

WARNING 02: maximum depth increased for Node J3775.164

WARNING 02: maximum depth increased for Node J3804.186

WARNING 02: maximum depth increased for Node J3957.179

WARNING 02: maximum depth increased for Node J4108.305

WARNING 02: maximum depth increased for Node J4263.057

WARNING 02: maximum depth increased for Node J4356.489

WARNING 02: maximum depth increased for Node J4405.269

WARNING 02: maximum depth increased for Node J4546.604

WARNING 02: maximum depth increased for Node J4692.952

WARNING 02: maximum depth increased for Node J4826.403

WARNING 02: maximum depth increased for Node J4968.21

WARNING 02: maximum depth increased for Node J5103.876

WARNING 02: maximum depth increased for Node J5276.091

WARNING 02: maximum depth increased for Node J5310.141

WARNING 02: maximum depth increased for Node J5374.119

WARNING 02: maximum depth increased for Node J5465.266

WARNING 02: maximum depth increased for Node J5595.644

WARNING 02: maximum depth increased for Node J5665.793

WARNING 02: maximum depth increased for Node J5704.059
```



```
WARNING 02: maximum depth increased for Node J5975.085

WARNING 02: maximum depth increased for Node J6062.64

WARNING 02: maximum depth increased for Node J6116.845

WARNING 02: maximum depth increased for Node J6190.578

WARNING 02: maximum depth increased for Node J6335.876

WARNING 02: maximum depth increased for Node J6410.625

WARNING 02: maximum depth increased for Node J6486.756

WARNING 02: maximum depth increased for Node J6564.455

WARNING 02: maximum depth increased for Node J6676.99

WARNING 02: maximum depth increased for Node J6757.544

WARNING 02: maximum depth increased for Node J6917.282

WARNING 02: maximum depth increased for Node J7071.306

WARNING 02: maximum depth increased for Node J7083.163

WARNING 02: maximum depth increased for Node J7111.02

WARNING 02: maximum depth increased for Node J7127.958

WARNING 02: maximum depth increased for Node J7246.49

WARNING 02: maximum depth increased for Node J7333.219

WARNING 02: maximum depth increased for Node J7390.724

WARNING 02: maximum depth increased for Node J7510.949

WARNING 02: maximum depth increased for Node J7560.665

WARNING 02: maximum depth increased for Node J7604.08

WARNING 02: maximum depth increased for Node J7641.424

*************
Element Count
*************
Number of rain gages ...... 11
Number of subcatchments ... 16
Number of nodes ........... 89
Number of links ........... 87
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                Data        Recording
Name            Data Source                     Type        Interval
-------------------------------------------------------------------------
Timmins         Timmins_Storm_(Northern_Ontario)CUMULATIVE    60 min.
```



```
Chicago(4hr)        Chicago_4hr          INTENSITY    10 min.
100yrSCS12h         100yrSCS12h          INTENSITY    10 min.
100yr6hSCS          100yr6hSCS           INTENSITY    10 min.
Chicago_12hr_100yearChicago_12hr_100yearINTENSITY     10 min.
Chicago_12hr_2year  Chicago_12hr_2year   INTENSITY    10 min.
Chicago_12hr_50year Chicago_12hr_50year  INTENSITY    10 min.
Chicago_12hr_25year Chicago_12hr_25year  INTENSITY    10 min.
Chicago_12hr_10year Chicago_12hr_10year  INTENSITY    10 min.
Chicago_12hr_5year  Chicago_12hr_5year   INTENSITY    10 min.
Chicago_12hr_100yr  100yrChicago_12hr    INTENSITY    10 min.


********************
Subcatchment Summary
********************
Name                       Area      Width    %Imperv     %Slope    Rain Gage
 Outlet

------------------------------------------------------------------------------------
--------------------
  Node_04                 14.57     286.97      14.00     1.0000
Chicago_12hr_100year J6757.544
  Node_05                249.97    2473.02       4.00     0.4000
Chicago_12hr_100year J5653.55
  Node_06                 93.47    1771.33       6.00     0.7000
Chicago_12hr_100year J4405.269
  Node_07                 93.57     895.11       1.00     0.4000
Chicago_12hr_100year J3775.164
  Node_08                 37.04     682.59       2.00     0.8000
Chicago_12hr_100year J3621.185
  Node_09                288.73    1431.92       2.00     0.3000
Chicago_12hr_100year J3187.848
  Node_10                122.31     730.81       1.00     0.4000
Chicago_12hr_100year J3187.848
  Node_11                279.15    1505.59       3.00     0.5000
Chicago_12hr_100year J3187.848
  Node_12                158.16    1887.53       2.00     0.4000
Chicago_12hr_100year J1455.968
  Node_14                 24.16     319.96      23.00     0.7100
Chicago_12hr_100year J517.84
  Node_15                 22.35     618.12       5.00     1.5000
Chicago_12hr_100year J517.84
  Node_16                 13.72     659.74      11.00     1.2000
Chicago_12hr_100year J154.6483
  Node_13                137.98     790.66       1.00     0.4000
Chicago_12hr_100year J517.84
  Node_02                 39.68     276.04      37.00     0.7100
Chicago_12hr_100year J7111.02
  Node_03                 32.76     373.03      13.00     0.7000
Chicago_12hr_100year J6857.851
  Node_01                 67.17    1952.69      46.00     0.7700
Chicago_12hr_100year J7641.424


************
Node Summary
************
                                           Invert      Max.    Ponded   External
Name                 Type                   Elev.     Depth      Area   Inflow
-------------------------------------------------------------------------------
J114                 JUNCTION              247.71     11.83       0.0
J154.6483            JUNCTION              248.22     11.95       0.0
J168.8194            JUNCTION              248.62     11.95       0.0
```

J236.8376	JUNCTION	248.93	11.20	0.0
J273.7271	JUNCTION	249.05	10.95	0.0
J367.2808	JUNCTION	249.58	10.42	0.0
J411.8737	JUNCTION	250.01	9.99	0.0
J463.252	JUNCTION	250.35	9.65	0.0
J517.84	JUNCTION	250.50	9.50	0.0
J625.0873	JUNCTION	251.08	8.67	0.0
J718.5652	JUNCTION	251.58	8.67	0.0
J818.7001	JUNCTION	252.60	9.47	0.0
J927.3901	JUNCTION	253.88	10.48	0.0
J1021.897	JUNCTION	254.38	11.39	0.0
J1177.635	JUNCTION	255.79	11.39	0.0
J1276.628	JUNCTION	257.49	10.83	0.0
J1386.646	JUNCTION	259.57	9.30	0.0
J1455.968	JUNCTION	259.78	9.30	0.0
J1549.464	JUNCTION	261.09	12.35	0.0
J1662.759	JUNCTION	261.13	14.24	0.0
J1779.22	JUNCTION	261.20	14.24	0.0
J1920.857	JUNCTION	261.27	14.01	0.0
J2059.866	JUNCTION	261.50	12.76	0.0
J2156.937	JUNCTION	261.80	10.86	0.0
J2277.683	JUNCTION	262.18	8.28	0.0
J2406.341	JUNCTION	262.29	6.99	0.0
J2509.792	JUNCTION	262.41	6.04	0.0
J2618.286	JUNCTION	262.96	5.42	0.0
J2707.776	JUNCTION	263.11	5.00	0.0
J2810.224	JUNCTION	262.82	5.00	0.0
J2922.176	JUNCTION	263.19	4.02	0.0
J2986.996	JUNCTION	263.13	5.20	0.0
J3000.11	JUNCTION	263.11	6.11	0.0
J3046.813	JUNCTION	263.21	6.79	0.0
J3187.848	JUNCTION	263.35	4.82	0.0
J3200.809	JUNCTION	263.39	4.72	0.0
J3358.095	JUNCTION	263.53	4.62	0.0
J3380.367	JUNCTION	263.72	5.56	0.0
J3509.864	JUNCTION	263.64	7.31	0.0
J3621.185	JUNCTION	263.81	7.89	0.0
J3734.707	JUNCTION	263.93	5.27	0.0
J3762.625	JUNCTION	264.15	5.40	0.0
J3775.164	JUNCTION	264.05	5.40	0.0
J3804.186	JUNCTION	264.17	5.26	0.0
J3957.179	JUNCTION	264.33	5.15	0.0
J4108.305	JUNCTION	264.43	4.56	0.0
J4263.057	JUNCTION	264.65	5.56	0.0
J4356.489	JUNCTION	264.60	5.56	0.0
J4405.269	JUNCTION	264.59	3.81	0.0
J4546.604	JUNCTION	264.88	3.81	0.0
J4692.952	JUNCTION	264.87	9.01	0.0
J4826.403	JUNCTION	265.24	9.01	0.0
J4968.21	JUNCTION	265.42	3.73	0.0
J5103.876	JUNCTION	265.36	5.49	0.0
J5276.091	JUNCTION	265.66	5.49	0.0
J5310.141	JUNCTION	265.76	5.92	0.0
J5374.119	JUNCTION	265.69	7.74	0.0
J5465.266	JUNCTION	265.65	7.74	0.0
J5595.644	JUNCTION	265.69	4.03	0.0
J5653.55	JUNCTION	265.81	4.04	0.0
J5665.793	JUNCTION	265.95	4.09	0.0
J5704.059	JUNCTION	265.84	4.46	0.0
J5880.376	JUNCTION	265.91	4.46	0.0
J5975.085	JUNCTION	266.03	4.35	0.0
J6062.64	JUNCTION	266.13	3.88	0.0
J6084.086	JUNCTION	266.10	3.43	0.0

J6116.845	JUNCTION	266.17	3.28	0.0
J6190.578	JUNCTION	266.39	3.55	0.0
J6335.876	JUNCTION	266.57	3.55	0.0
J6410.625	JUNCTION	266.74	3.83	0.0
J6486.756	JUNCTION	266.91	3.88	0.0
J6564.455	JUNCTION	266.86	4.08	0.0
J6676.99	JUNCTION	267.12	4.95	0.0
J6757.544	JUNCTION	267.21	7.60	0.0
J6857.851	JUNCTION	267.32	7.68	0.0
J6917.282	JUNCTION	267.41	7.91	0.0
J7071.306	JUNCTION	267.09	7.91	0.0
J7083.163	JUNCTION	267.82	7.20	0.0
J7111.02	JUNCTION	267.84	7.20	0.0
J7127.958	JUNCTION	267.86	7.14	0.0
J7246.49	JUNCTION	267.94	7.06	0.0
J7333.219	JUNCTION	268.13	6.98	0.0
J7390.724	JUNCTION	268.32	6.68	0.0
J7510.949	JUNCTION	268.34	6.66	0.0
J7560.665	JUNCTION	268.62	6.38	0.0
J7604.08	JUNCTION	268.68	6.32	0.0
J7641.424	JUNCTION	268.91	6.09	0.0
J0	JUNCTION	0.00	0.00	0.0
OF1	OUTFALL	247.39	6.83	0.0

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Link Summary
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Name Roughness	From Node	To Node	Type	Length	%Slope
CJ96.54452 0.0350	J114	OF1	CONDUIT	115.0	0.2809
CJ154.6483 0.0350	J154.6483	J114	CONDUIT	35.1	1.4523
CJ168.8194 0.0350	J168.8194	J154.6483	CONDUIT	16.0	2.4820
CJ228 0.0350	J236.8376	J168.8194	CONDUIT	67.9	0.4568
CJ273.7271 0.0350	J273.7271	J236.8376	CONDUIT	36.9	0.3253
CJ367.2808 0.0350	J367.2808	J273.7271	CONDUIT	93.6	0.5665
CJ411.8737 0.0350	J411.8737	J367.2808	CONDUIT	44.6	0.9644
CJ463.252 0.0350	J463.252	J411.8737	CONDUIT	51.4	0.6618
CJ517.84 0.0350	J517.84	J463.252	CONDUIT	54.6	0.2748
CJ625.0873 0.0350	J625.0873	J517.84	CONDUIT	107.3	0.5408
CJ718.5652 0.0350	J718.5652	J625.0873	CONDUIT	93.5	0.5349
CJ818.7001 0.0350	J818.7001	J718.5652	CONDUIT	100.1	1.0186
CJ927.3901 0.0930	J927.3901	J818.7001	CONDUIT	108.7	1.1777
CJ1021.897 0.0350	J1021.897	J927.3901	CONDUIT	94.5	0.5291
CJ1177.635 0.0350	J1177.635	J1021.897	CONDUIT	155.8	0.9053

CJ1276.628 0.0350	J1276.628	J1177.635	CONDUIT	99.0	1.7176
CJ1386.646 0.0350	J1386.646	J1276.628	CONDUIT	110.0	1.8911
CJ1455.968 0.0350	J1455.968	J1386.646	CONDUIT	69.3	0.3029
CJ1549.464 0.0350	J1549.464	J1455.968	CONDUIT	93.5	1.4012
CJ1662.759 0.0350	J1662.759	J1549.464	CONDUIT	113.3	0.0353
CJ1779.22 0.0350	J1779.22	J1662.759	CONDUIT	116.5	0.0601
CJ1920.857 0.0350	J1920.857	J1779.22	CONDUIT	141.6	0.0494
CJ2059.866 0.0350	J2059.866	J1920.857	CONDUIT	139.0	0.1655
CJ2156.937 0.0350	J2156.937	J2059.866	CONDUIT	97.1	0.3091
CJ2277.683 0.0350	J2277.683	J2156.937	CONDUIT	120.8	0.3147
CJ2406.341 0.0350	J2406.341	J2277.683	CONDUIT	128.7	0.0855
CJ2509.792 0.0350	J2509.792	J2406.341	CONDUIT	103.4	0.1160
CJ2618.286 0.0350	J2618.286	J2509.792	CONDUIT	108.5	0.5069
CJ2707.776 0.0350	J2707.776	J2618.286	CONDUIT	89.5	0.1676
CJ2810.224 0.0350	J2707.776	J2810.224	CONDUIT	102.5	0.2830
CJ2922.176 0.0350	J2922.176	J2810.224	CONDUIT	112.0	0.3305
CJ2986.996 0.0350	J2922.176	J2986.996	CONDUIT	64.8	0.0926
CJ3000.11 0.0350	J2986.996	J3000.11	CONDUIT	13.1	0.1524
CJ3046.813 0.0350	J3046.813	J3000.11	CONDUIT	46.2	0.1082
CJ3187.848 0.0350	J3187.848	J3046.813	CONDUIT	141.0	0.0993
CJ3200.809 0.0350	J3200.809	J3187.848	CONDUIT	13.0	0.3318
CJ3358.095 0.0350	J3358.095	J3200.809	CONDUIT	157.3	0.0871
CJ3380.367 0.0350	J3380.367	J3358.095	CONDUIT	22.3	0.8532
CJ3509.864 0.0350	J3380.367	J3509.864	CONDUIT	129.5	0.0618
CJ3613.455 0.0350	J3621.185	J3509.864	CONDUIT	111.3	0.1527
CJ3734.707 0.0350	J3734.707	J3621.185	CONDUIT	111.9	0.1073
CJ3762.625 0.0350	J3762.625	J3734.707	CONDUIT	27.9	0.7880
CJ3775.164 0.0350	J3762.625	J3775.164	CONDUIT	12.5	0.7975
CJ3804.186 0.0350	J3804.186	J3775.164	CONDUIT	29.0	0.4135
CJ3957.179 0.0350	J3957.179	J3804.186	CONDUIT	153.0	0.1046
CJ4108.305 0.0350	J4108.305	J3957.179	CONDUIT	151.1	0.0662
CJ4263.057	J4263.057	J4108.305	CONDUIT	154.8	0.1422

0.0350

CJ4347.811 0.0350	J4263.057	J4356.489	CONDUIT	93.4	0.0557
CJ4384.664 0.0350	J4356.489	J4405.269	CONDUIT	48.8	0.0164
CJ4546.604 0.0350	J4546.604	J4405.269	CONDUIT	141.3	0.2052
CJ4692.952 0.0350	J4546.604	J4692.952	CONDUIT	146.3	0.0068
CJ4826.403 0.0350	J4826.403	J4692.952	CONDUIT	133.5	0.2772
CJ4968.21 0.0350	J4968.21	J4826.403	CONDUIT	141.8	0.1269
CJ5103.876 0.0350	J4968.21	J5103.876	CONDUIT	135.7	0.0442
CJ5276.091 0.0350	J5276.091	J5103.876	CONDUIT	172.4	0.1717
CJ5310.141 0.0350	J5310.141	J5276.091	CONDUIT	35.3	0.2950
CJ5374.119 0.0350	J5310.141	J5374.119	CONDUIT	62.6	0.1118
CJ5465.266 0.0350	J5374.119	J5465.266	CONDUIT	91.1	0.0439
CJ5595.644 0.0350	J5595.644	J5465.266	CONDUIT	130.4	0.0291
CJ5653.55 0.0350	J5653.55	J5595.644	CONDUIT	57.9	0.2020
CJ5665.793 0.0350	J5665.793	J5653.55	CONDUIT	12.2	1.1766
CJ5704.059 0.0350	J5665.793	J5704.059	CONDUIT	38.3	0.2927
CJ5880.376 0.0350	J5880.376	J5704.059	CONDUIT	176.3	0.0414
CJ5975.085 0.0350	J5975.085	J5880.376	CONDUIT	94.7	0.1267
CJ6062.64 0.0350	J6062.64	J5975.085	CONDUIT	87.6	0.1142
CJ6084.086 0.0350	J6062.64	J6084.086	CONDUIT	21.4	0.1399
CJ6116.845 0.0350	J6116.845	J6084.086	CONDUIT	32.8	0.2137
CJ6190.578 0.0350	J6190.578	J6116.845	CONDUIT	73.7	0.2984
CJ6335.876 0.0350	J6335.876	J6190.578	CONDUIT	145.3	0.1239
CJ6410.625 0.0350	J6410.625	J6335.876	CONDUIT	74.8	0.2274
CJ6486.756 0.0350	J6486.756	J6410.625	CONDUIT	76.1	0.2233
CJ6564.455 0.0350	J6486.756	J6564.455	CONDUIT	77.7	0.0644
CJ6669.684 0.0350	J6676.99	J6564.455	CONDUIT	112.5	0.2311
CJ6757.544 0.0350	J6757.544	J6676.99	CONDUIT	80.5	0.0037
CJ6821.096 0.0400	J6857.851	J6757.544	CONDUIT	100.3	0.1116
CJ6917.282 0.0350	J6917.282	J6857.851	CONDUIT	59.5	0.1514
CJ7071.306 0.0400	J6917.282	J7071.306	CONDUIT	154.0	0.2077
CJ7083.163 0.0400	J7083.163	J7071.306	CONDUIT	11.8	6.1721

CJ7111.02	J7111.02	J7083.163	CONDUIT	27.9	0.0718	0.0400
CJ7127.958	J7127.958	J7111.02	CONDUIT	16.9	0.1181	0.0400
CJ7246.49	J7246.49	J7127.958	CONDUIT	118.5	0.0675	0.0400
CJ7306.937	J7333.219	J7246.49	CONDUIT	86.8	0.2190	0.0400
CJ7390.724	J7390.724	J7333.219	CONDUIT	57.5	0.3304	0.0400
CJ7510.949	J7510.949	J7390.724	CONDUIT	120.2	0.0166	0.0400
CJ7560.665	J7560.665	J7510.949	CONDUIT	49.7	0.5632	0.0400
CJ7604.08	J7604.08	J7560.665	CONDUIT	43.4	0.1382	0.0400
CJ7641.424	J7641.424	J7604.08	CONDUIT	37.3	0.6160	0.0400

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
CJ96.54452	96.54452	6.83	605.89	1.03	144.80	1	933.26
CJ154.6483	154.6483	11.83	1587.67	1.51	302.50	1	7208.58
CJ168.8194	168.8194	11.95	1588.34	5.23	288.70	1	21550.21
CJ228	228	11.20	1494.71	2.32	235.50	1	5053.56
CJ273.7271	273.7271	10.95	1330.65	4.40	234.90	1	5821.99
CJ367.2808	367.2808	10.42	1631.93	3.88	298.10	1	8662.55
CJ411.8737	411.8737	9.99	1376.68	3.45	255.70	1	8813.11
CJ463.252	463.252	9.65	1655.29	3.70	292.10	1	9206.16
CJ517.84	517.84	9.50	2083.55	4.07	326.70	1	7953.35
CJ625.0873	625.0873	6.82	736.27	1.26	214.06	1	1801.52
CJ718.5652	718.5652	8.67	1109.93	1.13	227.46	1	2520.07
CJ818.7001	818.7001	8.07	921.01	1.34	184.40	1	3227.24
CJ927.3901	927.3901	9.47	514.17	5.70	102.22	1	1915.41
CJ1021.897	1021.897	10.48	428.71	1.57	72.43	1	1201.42
CJ1177.635	1177.635	11.39	1665.70	2.40	582.65	1	8111.42
CJ1276.628	1276.628	10.83	1608.44	1.97	585.30	1	9451.46
CJ1386.646	1386.646	8.86	807.23	1.66	290.49	1	

4440.34

CJ1455.968	1455.968	9.30	886.01	2.30	333.24	1	2425.72
CJ1549.464	1549.464	8.87	791.05	2.98	262.40	1	5545.81
CJ1662.759	1662.759	12.35	970.56	4.32	222.72	1	1381.82
CJ1779.22	1779.22	14.24	1204.84	3.90	205.41	1	2092.96
CJ1920.857	1920.857	14.01	1563.72	3.86	239.62	1	2444.26
CJ2059.866	2059.866	12.76	1407.11	3.06	230.77	1	3450.93
CJ2156.937	2156.937	10.86	1103.29	2.58	250.76	1	3294.05
CJ2277.683	2277.683	8.28	523.38	2.62	181.59	1	1594.61
CJ2406.341	2406.341	6.99	676.88	1.89	354.30	1	863.19
CJ2509.792	2509.792	6.04	577.28	1.64	348.50	1	780.06
CJ2618.286	2618.286	5.42	502.07	1.32	375.75	1	1230.18
CJ2707.776	2707.776	4.64	199.06	1.26	155.40	1	272.30
CJ2810.224	2810.224	5.00	301.46	0.76	391.07	1	383.23
CJ2922.176	2922.176	3.73	120.66	0.44	278.28	1	114.33
CJ2986.996	2986.996	4.02	264.44	0.75	349.30	1	189.61
CJ3000.11	3000.11	5.20	777.77	1.50	512.40	1	1137.12
CJ3046.813	3046.813	6.06	735.17	4.84	211.00	1	1976.17
CJ3187.848	3187.848	4.82	537.22	0.99	538.60	1	479.82
CJ3200.809	3200.809	4.72	801.36	1.03	773.64	1	1344.46
CJ3358.095	3358.095	4.62	1024.82	1.75	832.42	1	1257.25
CJ3380.367	3380.367	4.04	572.14	1.27	633.09	1	1767.29
CJ3509.864	3509.864	5.56	939.87	2.79	684.40	1	1324.38
CJ3613.455	3613.455	7.31	1266.77	3.58	350.30	1	3308.25
CJ3734.707	3734.707	2.66	16.96	1.06	13.41	1	16.55
CJ3762.625	3762.625	5.27	786.12	2.57	301.80	1	3745.88
CJ3775.164	3775.164	5.40	749.04	2.54	291.80	1	3556.31
CJ3804.186	3804.186	5.26	635.59	2.40	261.40	1	2094.83
CJ3957.179	3957.179	5.15	577.25	2.25	254.35	1	915.90
CJ4108.305	4108.305	4.29	567.62	0.52	298.54	1	269.56
CJ4263.057	4263.057	4.56	950.88	0.58	412.00	1	709.80
CJ4347.811	4347.811	5.56	1592.48	0.80	497.00	1	927.78

CJ4384.664	4384.664	3.78	668.83	0.36	413.80	1	124.97
CJ4546.604	4546.604	3.81	833.90	0.48	505.80	1	661.65
CJ4692.952	4692.952	3.43	1058.37	0.45	696.00	1	145.80
CJ4826.403	4826.403	9.01	5112.51	4.23	702.80	1	20123.58
CJ4968.21	4968.21	3.34	1004.06	0.65	556.40	1	765.11
CJ5103.876	5103.876	3.73	862.48	0.90	385.00	1	482.43
CJ5276.091	5276.091	5.49	1216.91	2.25	342.90	1	2474.11
CJ5310.141	5310.141	3.38	132.93	0.77	168.59	1	173.43
CJ5374.119	5374.119	5.92	2781.40	3.61	642.10	1	6253.82
CJ5465.266	5465.266	7.74	3797.87	4.69	625.30	1	6375.05
CJ5595.644	5595.644	2.71	450.25	0.85	523.80	1	197.56
CJ5653.55	5653.55	4.03	973.34	2.19	555.47	1	2110.03
CJ5665.793	5665.793	3.91	985.99	2.23	554.21	1	5221.50
CJ5704.059	5704.059	4.09	1456.98	2.23	651.20	1	3843.29
CJ5880.376	5880.376	4.46	1159.46	2.41	478.10	1	1211.58
CJ5975.085	5975.085	4.35	891.46	1.80	492.99	1	1339.43
CJ6062.64	6062.64	3.88	724.53	1.56	460.88	1	940.44
CJ6084.086	6084.086	3.43	594.40	1.23	479.25	1	728.88
CJ6116.845	6116.845	3.21	710.65	1.43	493.90	1	1188.95
CJ6190.578	6190.578	3.28	299.32	1.06	279.80	1	485.87
CJ6335.876	6335.876	3.55	149.69	0.89	165.49	1	139.43
CJ6410.625	6410.625	3.50	120.17	0.73	162.55	1	132.58
CJ6486.756	6486.756	3.83	155.29	0.88	175.34	1	191.93
CJ6564.455	6564.455	3.88	87.55	0.74	118.25	1	52.13
CJ6669.684	6669.684	4.08	460.64	1.05	435.44	1	652.13
CJ6757.544	6757.544	4.86	412.60	1.56	259.60	1	96.92
CJ6821.096	6821.096	7.60	2021.19	5.09	472.50	1	4995.35
CJ6917.282	6917.282	5.06	312.85	1.43	215.26	1	441.73
CJ7071.306	7071.306	7.91	1542.66	4.21	489.71	1	4580.26
CJ7083.163	7083.163	7.18	1567.85	4.04	488.79	1	24697.93
CJ7111.02	7111.02	7.20	1857.14	9.67	538.30	1	5645.88
CJ7127.958	7127.958	7.14	1947.60	10.33	538.10	1	

7939.80

CJ7246.49	7246.49	7.06	1118.70	8.07	365.00	1	2924.87
CJ7306.937	7306.937	6.98	1020.03	10.84	266.80	1	5845.42
CJ7390.724	7390.724	6.68	699.03	4.00	209.50	1	2530.11
CJ7510.949	7510.949	6.66	570.49	5.61	481.44	1	581.05
CJ7560.665	7560.665	6.38	383.53	5.45	470.67	1	2228.37
CJ7604.08	7604.08	6.32	851.97	7.70	455.58	1	3087.01
CJ7641.424	7641.424	6.09	1339.01	15.85	314.30	1	16583.49

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Transect Summary
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Transect 96.54452

Area:

0.0001	0.0006	0.0015	0.0024	0.0037
0.0069	0.0149	0.0273	0.0407	0.0546
0.0691	0.0839	0.0989	0.1141	0.1296
0.1453	0.1612	0.1774	0.1938	0.2105
0.2275	0.2449	0.2625	0.2804	0.2985
0.3168	0.3356	0.3576	0.3814	0.4057
0.4308	0.4569	0.4834	0.5103	0.5377
0.5655	0.5938	0.6225	0.6523	0.6832
0.7142	0.7453	0.7766	0.8081	0.8397
0.8714	0.9033	0.9354	0.9676	1.0000

Hrad:

0.0634	0.1054	0.2125	0.3130	0.3748
0.2824	0.1819	0.1537	0.1633	0.1845
0.2042	0.2289	0.2561	0.2815	0.3070
0.3343	0.3585	0.3843	0.4094	0.4357
0.4590	0.4779	0.5044	0.5268	0.5530
0.5796	0.6055	0.6204	0.6362	0.6460
0.6554	0.6716	0.6894	0.7031	0.7144
0.7337	0.7472	0.7638	0.7706	0.7850
0.8064	0.8261	0.8453	0.8683	0.8886
0.9117	0.9291	0.9515	0.9755	1.0000

Width:

0.0061	0.0227	0.0284	0.0307	0.0556
0.1830	0.3230	0.3972	0.4217	0.4356
0.4487	0.4568	0.4599	0.4693	0.4779
0.4827	0.4927	0.4995	0.5071	0.5129
0.5273	0.5376	0.5423	0.5519	0.5567
0.5608	0.6077	0.7230	0.7366	0.7577
0.7931	0.8056	0.8162	0.8315	0.8473
0.8563	0.8721	0.8856	0.9403	0.9483
0.9514	0.9566	0.9624	0.9649	0.9703
0.9731	0.9814	0.9854	0.9878	1.0000

Transect 114

Area:

0.0002	0.0009	0.0023	0.0059	0.0144
0.0256	0.0400	0.0561	0.0728	0.0897
0.1067	0.1239	0.1414	0.1591	0.1770
0.1953	0.2137	0.2325	0.2515	0.2707

0.2900	0.3094	0.3292	0.3492	0.3693
0.3898	0.4107	0.4320	0.4536	0.4753
0.4974	0.5203	0.5438	0.5676	0.5923
0.6173	0.6426	0.6682	0.6939	0.7200
0.7470	0.7744	0.8021	0.8298	0.8576
0.8857	0.9139	0.9424	0.9710	1.0000

Hrad:

0.0543	0.1081	0.1381	0.1307	0.1125
0.1198	0.1305	0.1465	0.1700	0.1957
0.2218	0.2471	0.2729	0.2972	0.3217
0.3461	0.3694	0.3946	0.4182	0.4434
0.4691	0.4916	0.5132	0.5370	0.5595
0.5805	0.5966	0.6167	0.6400	0.6587
0.6791	0.6823	0.6998	0.7178	0.7193
0.7429	0.7618	0.7846	0.8068	0.8282
0.8411	0.8625	0.8812	0.9039	0.9259
0.9415	0.9607	0.9812	0.9984	1.0000

Width:

0.0150	0.0310	0.0678	0.2549	0.3311
0.4316	0.5164	0.5558	0.5693	0.5737
0.5784	0.5867	0.5931	0.6033	0.6123
0.6214	0.6323	0.6379	0.6466	0.6515
0.6549	0.6636	0.6736	0.6796	0.6877
0.6983	0.7153	0.7259	0.7315	0.7430
0.7560	0.7857	0.7989	0.8172	0.8463
0.8500	0.8630	0.8684	0.8758	0.9014
0.9260	0.9299	0.9371	0.9394	0.9436
0.9531	0.9597	0.9649	0.9735	1.0000

Transect 121
Area:

0.0005	0.0013	0.0023	0.0046	0.0083
0.0144	0.0213	0.0283	0.0356	0.0433
0.0511	0.0592	0.0674	0.0759	0.0845
0.0934	0.1026	0.1121	0.1225	0.1341
0.1461	0.1587	0.1728	0.1886	0.2056
0.2245	0.2448	0.2658	0.2880	0.3115
0.3389	0.3705	0.4040	0.4383	0.4727
0.5074	0.5422	0.5772	0.6123	0.6475
0.6827	0.7179	0.7531	0.7884	0.8236
0.8589	0.8941	0.9294	0.9647	1.0000

Hrad:

0.1232	0.2309	0.3527	0.3257	0.2991
0.2605	0.2753	0.3042	0.3360	0.3689
0.4039	0.4394	0.4726	0.5077	0.5426
0.5770	0.6066	0.6392	0.6652	0.6880
0.7110	0.7304	0.7330	0.7423	0.7539
0.7465	0.7401	0.6636	0.6844	0.7041
0.7162	0.7229	0.7164	0.7299	0.7459
0.7649	0.7856	0.8078	0.8162	0.8425
0.8696	0.8972	0.9254	0.9541	0.9831
1.0124	1.0420	1.0718	1.1018	1.0000

Width:

0.0169	0.0232	0.0370	0.0734	0.1279
0.1734	0.1777	0.1831	0.1915	0.1988
0.2037	0.2081	0.2155	0.2192	0.2241
0.2291	0.2409	0.2509	0.2883	0.3026
0.3124	0.3362	0.3744	0.4206	0.4579
0.5066	0.5261	0.5559	0.5792	0.6476
0.7641	0.8394	0.8755	0.8804	0.8874
0.8902	0.8936	0.8963	0.9017	0.9019
0.9021	0.9024	0.9026	0.9029	0.9031
0.9034	0.9036	0.9039	0.9041	1.0000

Transect 144.1
Area:

0.0005	0.0011	0.0019	0.0032	0.0049
0.0084	0.0136	0.0193	0.0251	0.0312
0.0375	0.0440	0.0506	0.0574	0.0644
0.0715	0.0790	0.0881	0.0984	0.1094
0.1210	0.1331	0.1460	0.1601	0.1753
0.1920	0.2122	0.2357	0.2613	0.2888
0.3217	0.3561	0.3909	0.4258	0.4609
0.4961	0.5314	0.5668	0.6023	0.6378
0.6735	0.7093	0.7451	0.7810	0.8170
0.8532	0.8895	0.9261	0.9629	1.0000

Hrad:

0.1282	0.1894	0.2878	0.3630	0.3982
0.3390	0.3229	0.3481	0.3846	0.4272
0.4674	0.5122	0.5584	0.6053	0.6515
0.6964	0.7287	0.7231	0.7426	0.7578
0.7762	0.7918	0.7932	0.8169	0.8373
0.8206	0.8313	0.8343	0.8365	0.8388
0.8264	0.8234	0.8294	0.8409	0.8557
0.8737	0.8941	0.9159	0.9394	0.9634
0.9887	1.0147	1.0412	1.0671	1.0939
1.1206	1.1447	1.1698	1.1921	1.0000

Width:

0.0114	0.0173	0.0223	0.0344	0.0532
0.1089	0.1288	0.1336	0.1385	0.1423
0.1484	0.1525	0.1562	0.1598	0.1632
0.1669	0.1921	0.2284	0.2467	0.2628
0.2756	0.2891	0.3056	0.3432	0.3636
0.4276	0.5078	0.5797	0.6083	0.7019
0.7914	0.8050	0.8095	0.8115	0.8158
0.8179	0.8198	0.8227	0.8242	0.8272
0.8288	0.8304	0.8320	0.8355	0.8375
0.8398	0.8474	0.8516	0.8583	1.0000

Transect 154.6483
Area:

0.0004	0.0011	0.0024	0.0046	0.0076
0.0116	0.0159	0.0205	0.0252	0.0301
0.0351	0.0402	0.0454	0.0508	0.0564
0.0622	0.0686	0.0764	0.0859	0.0961
0.1066	0.1174	0.1285	0.1405	0.1540
0.1712	0.1928	0.2178	0.2443	0.2745
0.3089	0.3440	0.3794	0.4149	0.4506
0.4864	0.5222	0.5582	0.5943	0.6306
0.6670	0.7035	0.7400	0.7767	0.8134
0.8502	0.8872	0.9242	0.9614	1.0000

Hrad:

0.1042	0.2196	0.2629	0.2974	0.3146
0.3379	0.3758	0.4219	0.4694	0.5155
0.5636	0.6104	0.6540	0.6996	0.7395
0.7736	0.7760	0.7936	0.7700	0.7892
0.8096	0.8310	0.8533	0.8675	0.8719
0.8231	0.8102	0.7951	0.7850	0.7720
0.7592	0.7582	0.7648	0.7760	0.7917
0.8108	0.8321	0.8544	0.8771	0.9019
0.9275	0.9538	0.9806	1.0077	1.0348
1.0624	1.0905	1.1187	1.1436	1.0000

Width:

0.0136	0.0170	0.0426	0.0531	0.0808
0.0948	0.1003	0.1026	0.1059	0.1100
0.1120	0.1144	0.1182	0.1209	0.1258

0.1316	0.1572	0.1924	0.2217	0.2290
0.2361	0.2431	0.2493	0.2743	0.3565
0.4314	0.5261	0.5714	0.6308	0.7419
0.7733	0.7815	0.7859	0.7905	0.7927
0.7942	0.7956	0.7991	0.8040	0.8062
0.8082	0.8099	0.8117	0.8137	0.8163
0.8182	0.8197	0.8236	0.8305	1.0000

Transect 168.8194
Area:

0.0004	0.0013	0.0030	0.0048	0.0067
0.0088	0.0110	0.0133	0.0157	0.0183
0.0211	0.0240	0.0270	0.0303	0.0344
0.0393	0.0455	0.0526	0.0608	0.0694
0.0786	0.0889	0.1020	0.1180	0.1395
0.1638	0.1899	0.2186	0.2516	0.2851
0.3188	0.3526	0.3865	0.4207	0.4550
0.4894	0.5239	0.5585	0.5933	0.6281
0.6631	0.6982	0.7334	0.7687	0.8041
0.8397	0.8754	0.9134	0.9566	1.0000

Hrad:

0.0353	0.0538	0.0761	0.1066	0.1368
0.1670	0.1970	0.2250	0.2494	0.2672
0.2936	0.3190	0.3377	0.3603	0.3394
0.3469	0.3616	0.3664	0.3764	0.3758
0.3970	0.4159	0.4161	0.3882	0.3928
0.4012	0.4121	0.4248	0.4339	0.4554
0.4809	0.5085	0.5376	0.5680	0.5990
0.6318	0.6644	0.6980	0.7318	0.7651
0.7991	0.8320	0.8666	0.9008	0.9309
0.9652	0.9982	0.9333	0.9667	1.0000

Width:

0.0121	0.0343	0.0402	0.0436	0.0465
0.0491	0.0513	0.0538	0.0572	0.0624
0.0652	0.0681	0.0726	0.0859	0.1069
0.1314	0.1524	0.1799	0.1946	0.2002
0.2231	0.2595	0.3359	0.4456	0.5415
0.5732	0.6298	0.7312	0.7702	0.7734
0.7761	0.7804	0.7847	0.7879	0.7909
0.7928	0.7962	0.7981	0.8002	0.8036
0.8059	0.8099	0.8114	0.8133	0.8188
0.8208	0.8241	0.9928	0.9963	1.0000

Transect 175
Area:

0.0005	0.0010	0.0016	0.0023	0.0030
0.0039	0.0050	0.0061	0.0073	0.0086
0.0099	0.0114	0.0130	0.0148	0.0167
0.0188	0.0216	0.0254	0.0299	0.0350
0.0411	0.0490	0.0587	0.0719	0.0887
0.1119	0.1390	0.1687	0.2013	0.2377
0.2744	0.3112	0.3481	0.3851	0.4223
0.4597	0.4971	0.5347	0.5723	0.6101
0.6480	0.6860	0.7240	0.7621	0.8004
0.8387	0.8772	0.9158	0.9562	1.0000

Hrad:

0.0241	0.0436	0.0601	0.0695	0.0827
0.0856	0.1009	0.1153	0.1286	0.1412
0.1568	0.1711	0.1829	0.1972	0.2125
0.2261	0.1958	0.2072	0.2291	0.2471
0.2631	0.2727	0.2822	0.2804	0.2926
0.2665	0.2920	0.3170	0.3500	0.3806
0.4175	0.4564	0.4960	0.5363	0.5760

0.6163	0.6566	0.6968	0.7369	0.7765
0.8163	0.8561	0.8956	0.9337	0.9725
1.0106	1.0479	1.0850	0.9588	1.0000

Width:

0.0116	0.0126	0.0135	0.0165	0.0184
0.0235	0.0249	0.0262	0.0278	0.0297
0.0325	0.0348	0.0381	0.0415	0.0451
0.0529	0.0760	0.0940	0.1084	0.1261
0.1518	0.2029	0.2445	0.3367	0.4529
0.5871	0.6471	0.7116	0.8154	0.8318
0.8372	0.8396	0.8428	0.8450	0.8495
0.8521	0.8545	0.8569	0.8592	0.8623
0.8641	0.8657	0.8671	0.8706	0.8723
0.8749	0.8782	0.8813	0.9962	1.0000

Transect 220
Area:

0.0005	0.0010	0.0016	0.0026	0.0037
0.0051	0.0069	0.0096	0.0132	0.0173
0.0219	0.0287	0.0367	0.0449	0.0532
0.0617	0.0703	0.0791	0.0879	0.0971
0.1064	0.1166	0.1288	0.1465	0.1678
0.1907	0.2148	0.2400	0.2670	0.2963
0.3270	0.3591	0.3923	0.4262	0.4603
0.4947	0.5292	0.5640	0.5990	0.6343
0.6698	0.7055	0.7416	0.7779	0.8145
0.8515	0.8886	0.9258	0.9629	1.0000

Hrad:

0.0904	0.1636	0.1924	0.2453	0.2822
0.3087	0.3431	0.3431	0.3316	0.3456
0.3614	0.3197	0.3398	0.3675	0.4007
0.4339	0.4703	0.5075	0.5429	0.5768
0.6141	0.6433	0.6534	0.5377	0.5158
0.5193	0.5301	0.5403	0.5532	0.5090
0.5127	0.5355	0.5339	0.5614	0.5895
0.6177	0.6447	0.6728	0.7025	0.7302
0.7572	0.7839	0.8135	0.8387	0.8655
0.8920	0.9264	0.9608	0.9952	1.0000

Width:

0.0124	0.0136	0.0217	0.0282	0.0318
0.0410	0.0496	0.0850	0.0983	0.1097
0.1377	0.1993	0.2058	0.2110	0.2143
0.2187	0.2214	0.2244	0.2288	0.2337
0.2471	0.2788	0.3719	0.5136	0.5670
0.6031	0.6278	0.6552	0.7211	0.7683
0.8059	0.8361	0.8616	0.8668	0.8717
0.8770	0.8842	0.8901	0.8942	0.9008
0.9083	0.9161	0.9216	0.9301	0.9377
0.9457	0.9458	0.9459	0.9460	1.0000

Transect 228
Area:

0.0003	0.0007	0.0013	0.0022	0.0040
0.0063	0.0092	0.0126	0.0167	0.0214
0.0276	0.0349	0.0425	0.0501	0.0580
0.0659	0.0739	0.0821	0.0905	0.0992
0.1094	0.1216	0.1388	0.1598	0.1832
0.2078	0.2331	0.2597	0.2884	0.3179
0.3481	0.3792	0.4109	0.4429	0.4752
0.5079	0.5417	0.5768	0.6120	0.6473
0.6825	0.7178	0.7530	0.7883	0.8236
0.8589	0.8941	0.9294	0.9647	1.0000

Hrad:

0.0646	0.1312	0.1876	0.1689	0.1962
0.2153	0.2345	0.2480	0.2637	0.2832
0.2712	0.2933	0.3200	0.3494	0.3813
0.4144	0.4452	0.4789	0.5112	0.5384
0.5584	0.5194	0.4700	0.4474	0.4278
0.4417	0.4508	0.4546	0.4471	0.4639
0.4876	0.4927	0.5181	0.5434	0.5688
0.5952	0.6082	0.6160	0.6457	0.6775
0.7095	0.7416	0.7737	0.8059	0.8382
0.8705	0.9028	0.9352	0.9676	1.0000

Width:

0.0111	0.0137	0.0182	0.0379	0.0588
0.0735	0.0861	0.1081	0.1253	0.1435
0.2069	0.2102	0.2153	0.2197	0.2232
0.2261	0.2310	0.2337	0.2374	0.2680
0.3134	0.4296	0.5547	0.6250	0.6874
0.7053	0.7344	0.7893	0.8220	0.8444
0.8693	0.8957	0.9032	0.9115	0.9199
0.9381	0.9836	0.9954	0.9988	0.9989
0.9990	0.9991	0.9992	0.9994	0.9995
0.9996	0.9997	0.9998	0.9999	1.0000

Transect 236.8376

Area:

0.0003	0.0008	0.0015	0.0026	0.0040
0.0058	0.0080	0.0108	0.0141	0.0182
0.0234	0.0293	0.0355	0.0419	0.0485
0.0553	0.0622	0.0694	0.0773	0.0864
0.0978	0.1138	0.1346	0.1588	0.1841
0.2101	0.2368	0.2646	0.2934	0.3239
0.3562	0.3893	0.4227	0.4564	0.4903
0.5243	0.5582	0.5922	0.6262	0.6601
0.6941	0.7281	0.7620	0.7960	0.8300
0.8640	0.8980	0.9320	0.9660	1.0000

Hrad:

0.0313	0.0638	0.0849	0.1037	0.1222
0.1367	0.1446	0.1533	0.1467	0.1374
0.1418	0.1636	0.1924	0.2229	0.2510
0.2786	0.3067	0.3295	0.3540	0.3694
0.2935	0.2798	0.2740	0.2302	0.2583
0.2805	0.3019	0.3192	0.3463	0.3448
0.3651	0.3945	0.4254	0.4556	0.4883
0.5227	0.5570	0.5913	0.6256	0.6599
0.6941	0.7282	0.7623	0.7964	0.8304
0.8644	0.8984	0.9323	0.9662	1.0000

Width:

0.0135	0.0169	0.0244	0.0358	0.0474
0.0575	0.0757	0.0863	0.1075	0.1421
0.1714	0.1789	0.1856	0.1901	0.1959
0.2018	0.2070	0.2155	0.2548	0.2827
0.3986	0.5470	0.6809	0.7396	0.7580
0.7715	0.7966	0.8318	0.8712	0.9300
0.9661	0.9790	0.9862	0.9946	0.9981
0.9982	0.9984	0.9985	0.9986	0.9987
0.9989	0.9990	0.9991	0.9992	0.9994
0.9995	0.9996	0.9997	0.9999	1.0000

Transect 240.5027

Area:

0.0007	0.0014	0.0023	0.0033	0.0045
0.0059	0.0077	0.0098	0.0124	0.0158
0.0200	0.0250	0.0307	0.0369	0.0434
0.0503	0.0575	0.0653	0.0755	0.0876

0.1033	0.1238	0.1466	0.1711	0.1977
0.2257	0.2554	0.2858	0.3165	0.3477
0.3792	0.4112	0.4435	0.4760	0.5087
0.5415	0.5742	0.6069	0.6396	0.6724
0.7051	0.7379	0.7706	0.8034	0.8361
0.8689	0.9017	0.9344	0.9672	1.0000

Hrad:

0.0423	0.0792	0.1103	0.1281	0.1598
0.1781	0.1868	0.1963	0.1893	0.1855
0.1846	0.1900	0.2075	0.2307	0.2532
0.2756	0.2981	0.3132	0.3013	0.2876
0.2271	0.2028	0.2267	0.2421	0.2656
0.2837	0.2885	0.3188	0.3485	0.3783
0.4073	0.4358	0.4657	0.4955	0.5287
0.5626	0.5965	0.6303	0.6641	0.6978
0.7315	0.7652	0.7988	0.8324	0.8659
0.8994	0.9328	0.9662	0.9995	1.0000

Width:

0.0209	0.0231	0.0257	0.0328	0.0368
0.0468	0.0577	0.0668	0.0841	0.1108
0.1331	0.1560	0.1724	0.1833	0.1943
0.2046	0.2141	0.2585	0.3325	0.3876
0.5425	0.6420	0.6765	0.7515	0.7899
0.8392	0.8747	0.8857	0.8976	0.9082
0.9204	0.9333	0.9403	0.9472	0.9486
0.9488	0.9489	0.9490	0.9491	0.9493
0.9494	0.9495	0.9496	0.9498	0.9499
0.9500	0.9501	0.9503	0.9504	1.0000

Transect 267

Area:

0.0006	0.0013	0.0021	0.0032	0.0045
0.0061	0.0079	0.0099	0.0123	0.0150
0.0180	0.0214	0.0262	0.0336	0.0433
0.0546	0.0679	0.0815	0.0954	0.1096
0.1248	0.1409	0.1583	0.1770	0.1986
0.2232	0.2504	0.2792	0.3087	0.3385
0.3685	0.3987	0.4293	0.4599	0.4909
0.5222	0.5542	0.5869	0.6207	0.6550
0.6895	0.7239	0.7584	0.7928	0.8273
0.8618	0.8964	0.9309	0.9654	1.0000

Hrad:

0.0446	0.0841	0.1186	0.1474	0.1714
0.1951	0.2171	0.2377	0.2537	0.2711
0.2899	0.2991	0.2924	0.2693	0.2557
0.2431	0.2473	0.2645	0.2829	0.3035
0.3142	0.3333	0.3439	0.3562	0.3525
0.3609	0.3658	0.3861	0.4108	0.4427
0.4749	0.5048	0.5378	0.5715	0.6050
0.6381	0.6704	0.7020	0.7327	0.7635
0.7951	0.8271	0.8593	0.8918	0.9243
0.9569	0.9896	1.0222	1.0548	1.0000

Width:

0.0172	0.0199	0.0243	0.0318	0.0388
0.0446	0.0514	0.0584	0.0680	0.0771
0.0847	0.0998	0.1669	0.2339	0.2751
0.3443	0.3583	0.3658	0.3759	0.3855
0.4146	0.4469	0.4762	0.5227	0.6203
0.7041	0.7545	0.7777	0.7935	0.7969
0.8006	0.8144	0.8166	0.8209	0.8292
0.8404	0.8615	0.8845	0.9084	0.9182
0.9186	0.9189	0.9193	0.9197	0.9201
0.9205	0.9208	0.9212	0.9216	1.0000

Transect 273.7271

Area:

0.0004	0.0010	0.0017	0.0026	0.0039
0.0057	0.0078	0.0102	0.0129	0.0158
0.0191	0.0229	0.0273	0.0335	0.0427
0.0547	0.0687	0.0837	0.0992	0.1155
0.1325	0.1501	0.1682	0.1877	0.2088
0.2328	0.2604	0.2901	0.3202	0.3505
0.3810	0.4116	0.4424	0.4737	0.5053
0.5371	0.5699	0.6029	0.6359	0.6688
0.7019	0.7349	0.7680	0.8010	0.8341
0.8673	0.9004	0.9336	0.9668	1.0000

Hrad:

0.0369	0.0721	0.0997	0.1140	0.1399
0.1675	0.1947	0.2197	0.2460	0.2706
0.2904	0.3058	0.3212	0.3184	0.2817
0.2724	0.2644	0.2731	0.2897	0.3049
0.3219	0.3430	0.3606	0.3800	0.3787
0.3872	0.4040	0.4143	0.4430	0.4731
0.5037	0.5355	0.5656	0.5950	0.6282
0.6612	0.6931	0.7255	0.7582	0.7912
0.8242	0.8573	0.8904	0.9234	0.9564
0.9893	1.0221	1.0548	1.0873	1.0000

Width:

0.0133	0.0163	0.0199	0.0272	0.0426
0.0508	0.0582	0.0663	0.0722	0.0797
0.0902	0.1041	0.1353	0.1861	0.2824
0.3334	0.3728	0.3972	0.4086	0.4278
0.4488	0.4603	0.4900	0.5203	0.5813
0.6719	0.7396	0.7788	0.7819	0.7850
0.7900	0.7923	0.8031	0.8166	0.8169
0.8377	0.8518	0.8524	0.8530	0.8536
0.8542	0.8548	0.8554	0.8560	0.8566
0.8572	0.8577	0.8583	0.8589	1.0000

Transect 367.2808

Area:

0.0003	0.0008	0.0013	0.0025	0.0040
0.0056	0.0074	0.0094	0.0115	0.0138
0.0163	0.0190	0.0220	0.0251	0.0286
0.0325	0.0378	0.0470	0.0606	0.0758
0.0915	0.1076	0.1242	0.1409	0.1581
0.1757	0.1939	0.2140	0.2379	0.2642
0.2927	0.3247	0.3580	0.3939	0.4308
0.4679	0.5056	0.5436	0.5816	0.6196
0.6576	0.6957	0.7337	0.7717	0.8097
0.8478	0.8858	0.9239	0.9619	1.0000

Hrad:

0.0383	0.0763	0.1083	0.1139	0.1469
0.1826	0.2171	0.2487	0.2813	0.3075
0.3330	0.3612	0.3864	0.4083	0.4268
0.4418	0.4247	0.3946	0.3360	0.3251
0.3355	0.3511	0.3717	0.3938	0.4129
0.4317	0.4466	0.4693	0.4248	0.4308
0.4393	0.4389	0.4662	0.4905	0.5170
0.5448	0.5728	0.6030	0.6342	0.6660
0.6984	0.7312	0.7643	0.7976	0.8311
0.8648	0.8985	0.9323	0.9661	1.0000

Width:

0.0105	0.0134	0.0184	0.0358	0.0417
0.0451	0.0488	0.0534	0.0571	0.0635
0.0699	0.0744	0.0800	0.0867	0.0948

0.1152	0.1882	0.3121	0.3820	0.4066
0.4194	0.4291	0.4369	0.4445	0.4569
0.4677	0.4850	0.5935	0.6615	0.7144
0.8028	0.8686	0.8876	0.9671	0.9716
0.9823	0.9979	0.9981	0.9983	0.9984
0.9986	0.9987	0.9989	0.9990	0.9992
0.9994	0.9995	0.9997	0.9998	1.0000

Transect 411.8737

Area:

0.0002	0.0007	0.0014	0.0024	0.0037
0.0052	0.0068	0.0087	0.0109	0.0133
0.0160	0.0189	0.0224	0.0262	0.0303
0.0352	0.0432	0.0564	0.0738	0.0922
0.1110	0.1301	0.1494	0.1691	0.1899
0.2140	0.2388	0.2645	0.2916	0.3207
0.3510	0.3829	0.4169	0.4512	0.4854
0.5197	0.5540	0.5882	0.6225	0.6568
0.6911	0.7254	0.7597	0.7940	0.8283
0.8626	0.8970	0.9313	0.9656	1.0000

Hrad:

0.0309	0.0695	0.1059	0.1370	0.1657
0.1976	0.2284	0.2563	0.2806	0.3094
0.3282	0.3465	0.3611	0.3863	0.4098
0.4201	0.3728	0.3273	0.2956	0.3086
0.3303	0.3548	0.3815	0.4093	0.4295
0.4150	0.4378	0.4559	0.4603	0.4808
0.4997	0.5125	0.5306	0.5613	0.5926
0.6244	0.6565	0.6889	0.7214	0.7541
0.7869	0.8197	0.8526	0.8856	0.9185
0.9515	0.9845	1.0175	1.0504	1.0000

Width:

0.0102	0.0164	0.0234	0.0301	0.0374
0.0424	0.0478	0.0543	0.0617	0.0674
0.0759	0.0860	0.0981	0.1068	0.1160
0.1677	0.3010	0.4100	0.4918	0.5015
0.5099	0.5186	0.5259	0.5330	0.6353
0.6622	0.6804	0.7098	0.7724	0.7993
0.8335	0.9001	0.9227	0.9229	0.9231
0.9233	0.9234	0.9236	0.9238	0.9240
0.9241	0.9243	0.9245	0.9247	0.9249
0.9250	0.9252	0.9254	0.9256	1.0000

Transect 463.252

Area:

0.0002	0.0006	0.0012	0.0024	0.0042
0.0063	0.0086	0.0115	0.0155	0.0199
0.0246	0.0295	0.0346	0.0399	0.0456
0.0531	0.0636	0.0775	0.0948	0.1150
0.1367	0.1590	0.1818	0.2051	0.2286
0.2533	0.2792	0.3059	0.3337	0.3624
0.3925	0.4234	0.4551	0.4871	0.5192
0.5512	0.5833	0.6153	0.6473	0.6794
0.7114	0.7435	0.7755	0.8076	0.8397
0.8717	0.9038	0.9359	0.9679	1.0000

Hrad:

0.0312	0.0711	0.0874	0.1028	0.1232
0.1505	0.1697	0.1932	0.2057	0.2221
0.2437	0.2681	0.2925	0.3140	0.3242
0.3232	0.2967	0.2878	0.2642	0.2559
0.2687	0.2912	0.3157	0.3407	0.3674
0.3912	0.4144	0.4362	0.4524	0.4661
0.4781	0.5029	0.5201	0.5509	0.5819

0.6129	0.6441	0.6753	0.7066	0.7378
0.7691	0.8003	0.8315	0.8626	0.8938
0.9248	0.9558	0.9868	1.0177	1.0000

Width:

0.0110	0.0132	0.0194	0.0510	0.0568
0.0624	0.0759	0.1033	0.1243	0.1341
0.1412	0.1467	0.1523	0.1597	0.1819
0.2694	0.3618	0.4491	0.5563	0.6295
0.6440	0.6656	0.6770	0.6875	0.6953
0.7470	0.7700	0.7999	0.8268	0.8640
0.8997	0.9141	0.9404	0.9405	0.9406
0.9407	0.9407	0.9408	0.9409	0.9410
0.9411	0.9411	0.9412	0.9413	0.9414
0.9415	0.9416	0.9416	0.9417	1.0000

Transect 517.84
Area:

0.0003	0.0007	0.0012	0.0018	0.0031
0.0058	0.0095	0.0142	0.0201	0.0266
0.0336	0.0411	0.0489	0.0571	0.0662
0.0774	0.0921	0.1097	0.1292	0.1502
0.1726	0.1965	0.2206	0.2451	0.2708
0.2975	0.3251	0.3529	0.3809	0.4091
0.4374	0.4658	0.4947	0.5240	0.5534
0.5832	0.6129	0.6427	0.6724	0.7022
0.7320	0.7617	0.7915	0.8213	0.8511
0.8809	0.9106	0.9404	0.9702	1.0000

Hrad:

0.0313	0.0708	0.1065	0.1386	0.1367
0.1196	0.1277	0.1405	0.1519	0.1700
0.1899	0.2089	0.2345	0.2599	0.2813
0.2930	0.2713	0.2651	0.2642	0.2748
0.2859	0.2974	0.3188	0.3406	0.3615
0.3785	0.3998	0.4237	0.4482	0.4731
0.4984	0.5248	0.5398	0.5649	0.5879
0.6128	0.6404	0.6681	0.6958	0.7236
0.7513	0.7791	0.8068	0.8345	0.8622
0.8899	0.9175	0.9450	0.9725	1.0000

Width:

0.0140	0.0155	0.0167	0.0264	0.0693
0.1070	0.1511	0.1783	0.2135	0.2250
0.2406	0.2568	0.2663	0.2901	0.3208
0.4492	0.5526	0.6444	0.6822	0.7248
0.7745	0.8074	0.8134	0.8359	0.8793
0.9243	0.9317	0.9366	0.9420	0.9475
0.9528	0.9538	0.9798	0.9843	0.9934
0.9988	0.9989	0.9990	0.9991	0.9992
0.9993	0.9993	0.9994	0.9995	0.9996
0.9997	0.9998	0.9998	0.9999	1.0000

Transect 625.0873
Area:

0.0004	0.0013	0.0026	0.0045	0.0079
0.0130	0.0186	0.0244	0.0305	0.0370
0.0438	0.0508	0.0580	0.0656	0.0734
0.0816	0.0903	0.0994	0.1090	0.1191
0.1298	0.1413	0.1542	0.1713	0.1921
0.2142	0.2380	0.2626	0.2875	0.3130
0.3393	0.3660	0.3931	0.4207	0.4488
0.4781	0.5097	0.5422	0.5760	0.6123
0.6493	0.6870	0.7253	0.7642	0.8033
0.8424	0.8816	0.9209	0.9604	1.0000

Hrad:

0.0804	0.1464	0.1988	0.2206	0.1932
0.1965	0.2192	0.2475	0.2765	0.3020
0.3325	0.3639	0.3941	0.4221	0.4475
0.4707	0.4948	0.5086	0.5256	0.5396
0.5503	0.5578	0.5321	0.5056	0.4399
0.4585	0.4830	0.5100	0.5382	0.5573
0.5838	0.6111	0.6389	0.6633	0.6897
0.7112	0.7063	0.7314	0.7533	0.7662
0.7897	0.8128	0.7717	0.8036	0.8366
0.8695	0.9024	0.9354	0.9671	1.0000

Width:

0.0149	0.0262	0.0401	0.0559	0.1181
0.1370	0.1440	0.1504	0.1575	0.1680
0.1743	0.1800	0.1863	0.1937	0.2025
0.2129	0.2226	0.2357	0.2482	0.2626
0.2796	0.2994	0.3642	0.4757	0.5463
0.5807	0.6127	0.6250	0.6316	0.6545
0.6682	0.6790	0.6886	0.7022	0.7221
0.7605	0.8133	0.8289	0.8990	0.9246
0.9423	0.9575	0.9785	0.9831	0.9853
0.9878	0.9903	0.9928	0.9975	1.0000

Transect 718.5652
Area:

0.0003	0.0008	0.0018	0.0031	0.0063
0.0112	0.0163	0.0216	0.0271	0.0328
0.0387	0.0448	0.0510	0.0574	0.0642
0.0721	0.0825	0.0951	0.1099	0.1280
0.1471	0.1669	0.1875	0.2093	0.2325
0.2569	0.2827	0.3091	0.3359	0.3631
0.3908	0.4188	0.4472	0.4762	0.5060
0.5365	0.5676	0.5991	0.6307	0.6626
0.6947	0.7270	0.7597	0.7927	0.8263
0.8602	0.8947	0.9296	0.9647	1.0000

Hrad:

0.0999	0.1857	0.2161	0.2509	0.2112
0.2016	0.2222	0.2500	0.2802	0.3112
0.3427	0.3741	0.4047	0.4315	0.4492
0.4416	0.4417	0.4396	0.4390	0.4071
0.4090	0.4249	0.4419	0.4581	0.4735
0.4876	0.5011	0.4794	0.5051	0.5293
0.5541	0.5795	0.6023	0.6221	0.6403
0.6577	0.6809	0.7085	0.7359	0.7634
0.7911	0.8161	0.8411	0.8616	0.8849
0.9051	0.9241	0.9506	0.9780	1.0000

Width:

0.0111	0.0237	0.0332	0.0428	0.1289
0.1412	0.1470	0.1525	0.1579	0.1631
0.1680	0.1727	0.1778	0.1849	0.1982
0.2584	0.3194	0.3771	0.4633	0.5306
0.5498	0.5681	0.5909	0.6402	0.6623
0.7117	0.7362	0.7501	0.7593	0.7717
0.7829	0.7929	0.8071	0.8258	0.8467
0.8688	0.8819	0.8879	0.8941	0.9001
0.9056	0.9147	0.9235	0.9381	0.9488
0.9632	0.9791	0.9850	0.9895	1.0000

Transect 818.7001
Area:

0.0004	0.0012	0.0024	0.0040	0.0080
0.0150	0.0226	0.0304	0.0385	0.0468
0.0553	0.0641	0.0743	0.0857	0.0979
0.1109	0.1248	0.1408	0.1584	0.1778

0.1978	0.2179	0.2384	0.2592	0.2802
0.3017	0.3236	0.3473	0.3724	0.3983
0.4247	0.4519	0.4803	0.5090	0.5379
0.5672	0.5969	0.6269	0.6571	0.6874
0.7178	0.7483	0.7791	0.8101	0.8414
0.8729	0.9045	0.9361	0.9679	1.0000

Hrad:

0.0779	0.1686	0.2275	0.2677	0.2085
0.1735	0.1836	0.2036	0.2269	0.2519
0.2774	0.3020	0.3192	0.3353	0.3507
0.3648	0.3593	0.3510	0.3618	0.3468
0.3689	0.3910	0.4131	0.4352	0.4557
0.4787	0.5004	0.5187	0.5361	0.5381
0.5587	0.5708	0.5927	0.6151	0.6377
0.6583	0.6759	0.7009	0.7264	0.7521
0.7779	0.8037	0.8276	0.8511	0.8746
0.9012	0.9278	0.9546	0.9797	1.0000

Width:

0.0210	0.0282	0.0443	0.0673	0.1716
0.2298	0.2380	0.2460	0.2536	0.2607
0.2675	0.2758	0.3388	0.3661	0.3900
0.4128	0.4609	0.5240	0.5738	0.6128
0.6204	0.6288	0.6377	0.6469	0.6599
0.6681	0.7063	0.7505	0.7903	0.8092
0.8246	0.8748	0.8835	0.8915	0.8996
0.9131	0.9256	0.9309	0.9352	0.9392
0.9431	0.9472	0.9555	0.9644	0.9734
0.9760	0.9785	0.9809	0.9864	1.0000

Transect 927.3901
Area:

0.0009	0.0035	0.0078	0.0140	0.0208
0.0285	0.0373	0.0479	0.0596	0.0718
0.0847	0.0991	0.1142	0.1302	0.1470
0.1642	0.1819	0.1999	0.2182	0.2370
0.2563	0.2762	0.2966	0.3172	0.3382
0.3594	0.3811	0.4033	0.4257	0.4484
0.4716	0.4950	0.5186	0.5427	0.5671
0.5917	0.6167	0.6419	0.6675	0.6935
0.7199	0.7467	0.7740	0.8022	0.8310
0.8605	0.8928	0.9273	0.9633	1.0000

Hrad:

0.0139	0.0416	0.0578	0.0764	0.0985
0.1202	0.1401	0.1516	0.1764	0.2017
0.2256	0.2424	0.2644	0.2861	0.3097
0.3374	0.3656	0.3938	0.4215	0.4452
0.4720	0.4941	0.5229	0.5508	0.5796
0.6047	0.6277	0.6559	0.6827	0.7088
0.7356	0.7634	0.7897	0.8142	0.8407
0.8685	0.8947	0.9192	0.9443	0.9668
0.9891	1.0092	1.0250	1.0344	1.0502
1.0626	0.9979	0.9907	1.0027	1.0000

Width:

0.0614	0.0715	0.1542	0.1733	0.1934
0.2169	0.2530	0.3036	0.3171	0.3301
0.3643	0.3922	0.4128	0.4353	0.4533
0.4637	0.4730	0.4822	0.4917	0.5077
0.5185	0.5364	0.5438	0.5525	0.5594
0.5703	0.5838	0.5912	0.6000	0.6093
0.6177	0.6250	0.6334	0.6436	0.6516
0.6582	0.6662	0.6755	0.6843	0.6952
0.7062	0.7190	0.7352	0.7568	0.7737
0.7960	0.8963	0.9410	0.9621	1.0000

Transect 1021.897
Area:

0.0006	0.0026	0.0061	0.0120	0.0200
0.0293	0.0396	0.0507	0.0626	0.0750
0.0880	0.1014	0.1155	0.1300	0.1450
0.1603	0.1760	0.1922	0.2087	0.2257
0.2430	0.2608	0.2790	0.2977	0.3169
0.3365	0.3566	0.3771	0.3981	0.4196
0.4417	0.4643	0.4874	0.5111	0.5352
0.5599	0.5852	0.6121	0.6403	0.6694
0.6992	0.7300	0.7623	0.7952	0.8285
0.8620	0.8960	0.9303	0.9650	1.0000

Hrad:

0.0703	0.0970	0.1340	0.1458	0.1648
0.1870	0.2120	0.2356	0.2614	0.2876
0.3131	0.3371	0.3615	0.3863	0.4111
0.4361	0.4603	0.4839	0.5072	0.5299
0.5517	0.5723	0.5928	0.6127	0.6327
0.6524	0.6719	0.6905	0.7081	0.7252
0.7419	0.7581	0.7751	0.7918	0.8085
0.8245	0.8330	0.8206	0.8285	0.8408
0.8508	0.8582	0.8588	0.8800	0.9008
0.9214	0.9417	0.9622	0.9833	1.0000

Width:

0.0344	0.0783	0.1264	0.2049	0.2463
0.2796	0.3020	0.3262	0.3432	0.3579
0.3726	0.3890	0.4035	0.4163	0.4282
0.4389	0.4501	0.4616	0.4726	0.4839
0.4959	0.5088	0.5216	0.5347	0.5473
0.5599	0.5725	0.5860	0.6006	0.6154
0.6306	0.6462	0.6607	0.6752	0.6896
0.7047	0.7288	0.7817	0.8095	0.8310
0.8561	0.8854	0.9264	0.9346	0.9438
0.9534	0.9637	0.9740	0.9837	1.0000

Transect 1177.635
Area:

0.0006	0.0020	0.0053	0.0093	0.0134
0.0176	0.0220	0.0266	0.0313	0.0363
0.0415	0.0469	0.0526	0.0585	0.0646
0.0710	0.0777	0.0846	0.0919	0.0995
0.1074	0.1155	0.1239	0.1329	0.1425
0.1525	0.1630	0.1742	0.1870	0.2003
0.2139	0.2279	0.2423	0.2570	0.2723
0.2901	0.3122	0.3385	0.3679	0.4020
0.4398	0.4812	0.5275	0.5757	0.6310
0.6969	0.7683	0.8430	0.9209	1.0000

Hrad:

0.0625	0.1006	0.1172	0.1748	0.2342
0.2928	0.3485	0.4021	0.4541	0.5018
0.5495	0.5961	0.6412	0.6850	0.7271
0.7680	0.8060	0.8441	0.8779	0.9162
0.9575	0.9975	1.0273	1.0197	1.0488
1.0762	1.1021	1.0967	1.0949	1.1356
1.1753	1.2148	1.2566	1.2966	1.3249
1.3218	1.2473	1.1971	1.1945	1.1481
1.0212	1.0340	0.9918	1.0178	0.9831
0.9984	0.8939	0.9293	0.9558	1.0000

Width:

0.0107	0.0300	0.0491	0.0508	0.0521
0.0537	0.0561	0.0584	0.0606	0.0641
0.0669	0.0697	0.0725	0.0754	0.0785

0.0818	0.0856	0.0894	0.0937	0.0971
0.1001	0.1033	0.1078	0.1181	0.1232
0.1285	0.1344	0.1518	0.1648	0.1689
0.1735	0.1782	0.1822	0.1867	0.2053
0.2454	0.3085	0.3526	0.3956	0.4520
0.4905	0.5681	0.5914	0.6366	0.7746
0.8708	0.9229	0.9548	0.9903	1.0000

Transect 1276.628
Area:

0.0007	0.0019	0.0038	0.0058	0.0084
0.0116	0.0148	0.0182	0.0218	0.0261
0.0307	0.0356	0.0406	0.0459	0.0514
0.0570	0.0629	0.0689	0.0751	0.0814
0.0879	0.0946	0.1015	0.1086	0.1159
0.1235	0.1314	0.1396	0.1483	0.1589
0.1721	0.1872	0.2046	0.2257	0.2492
0.2734	0.2985	0.3276	0.3620	0.4022
0.4475	0.4956	0.5442	0.5957	0.6529
0.7142	0.7792	0.8475	0.9219	1.0000

Hrad:

0.0759	0.1595	0.2252	0.2936	0.3277
0.3770	0.4344	0.4908	0.5425	0.5809
0.6248	0.6699	0.7159	0.7619	0.8073
0.8525	0.8983	0.9448	0.9915	1.0370
1.0799	1.1192	1.1561	1.1995	1.2393
1.2600	1.2885	1.3120	1.3394	1.3227
1.2679	1.2390	1.0834	0.9629	0.9630
1.0013	1.0286	0.9902	0.9869	0.8688
0.8337	0.8730	0.9179	0.9584	0.9739
1.0099	1.0425	1.0764	1.1030	1.0000

Width:

0.0132	0.0213	0.0248	0.0271	0.0380
0.0409	0.0422	0.0444	0.0499	0.0572
0.0602	0.0630	0.0655	0.0680	0.0706
0.0731	0.0753	0.0774	0.0793	0.0813
0.0836	0.0862	0.0892	0.0914	0.0939
0.0986	0.1026	0.1072	0.1145	0.1551
0.1791	0.2074	0.2413	0.2819	0.3061
0.3101	0.3393	0.4036	0.4700	0.5380
0.6040	0.6140	0.6251	0.6902	0.7519
0.8007	0.8437	0.8972	0.9772	1.0000

Transect 1386.646
Area:

0.0005	0.0013	0.0039	0.0090	0.0145
0.0204	0.0265	0.0329	0.0395	0.0464
0.0535	0.0608	0.0684	0.0761	0.0841
0.0922	0.1007	0.1093	0.1182	0.1273
0.1367	0.1466	0.1572	0.1684	0.1801
0.1922	0.2046	0.2172	0.2299	0.2429
0.2561	0.2696	0.2845	0.3020	0.3204
0.3409	0.3661	0.3932	0.4261	0.4693
0.5157	0.5633	0.6134	0.6644	0.7158
0.7681	0.8235	0.8796	0.9381	1.0000

Hrad:

0.0805	0.1173	0.1242	0.1477	0.1939
0.2425	0.2905	0.3363	0.3828	0.4284
0.4731	0.5166	0.5603	0.6029	0.6439
0.6832	0.7227	0.7606	0.7981	0.8329
0.8581	0.8621	0.8847	0.8996	0.9315
0.9613	0.9934	1.0345	1.0753	1.1090
1.1400	1.1710	1.1945	1.0788	1.0424

1.0127	1.0038	0.9987	0.8397	0.7527
0.7819	0.8070	0.8264	0.8596	0.8929
0.8642	0.9036	0.9428	0.9779	1.0000

Width:

0.0093	0.0211	0.0625	0.0848	0.0894
0.0936	0.0978	0.1025	0.1062	0.1097
0.1132	0.1167	0.1198	0.1230	0.1264
0.1301	0.1336	0.1373	0.1409	0.1449
0.1510	0.1625	0.1700	0.1802	0.1856
0.1915	0.1967	0.1989	0.2011	0.2050
0.2097	0.2176	0.2615	0.2808	0.3039
0.3703	0.4140	0.4448	0.5828	0.7241
0.7355	0.7713	0.7949	0.8025	0.8074
0.8667	0.8724	0.8867	0.9513	1.0000

Transect 1407.546
Area:

0.0012	0.0025	0.0044	0.0073	0.0111
0.0157	0.0211	0.0271	0.0336	0.0404
0.0475	0.0550	0.0629	0.0712	0.0798
0.0887	0.0980	0.1075	0.1173	0.1274
0.1380	0.1492	0.1610	0.1734	0.1863
0.1995	0.2130	0.2269	0.2411	0.2559
0.2709	0.2863	0.3020	0.3183	0.3354
0.3544	0.3755	0.3976	0.4205	0.4455
0.4781	0.5204	0.5741	0.6312	0.6896
0.7483	0.8071	0.8673	0.9306	1.0000

Hrad:

0.1371	0.2543	0.2869	0.3727	0.4221
0.4616	0.4986	0.5394	0.5814	0.6278
0.6742	0.7216	0.7610	0.8032	0.8481
0.8884	0.9289	0.9712	1.0130	1.0479
1.0729	1.1001	1.1252	1.1504	1.1742
1.2075	1.2386	1.2673	1.2915	1.3171
1.3498	1.3777	1.4068	1.4153	1.4362
1.3820	1.3806	1.3836	1.3849	1.3646
1.1128	1.0505	0.9467	0.9514	0.9707
0.9973	1.0265	1.0479	1.0408	1.0000

Width:

0.0173	0.0192	0.0334	0.0487	0.0560
0.0693	0.0781	0.0849	0.0912	0.0956
0.1001	0.1041	0.1109	0.1159	0.1194
0.1245	0.1287	0.1319	0.1353	0.1407
0.1495	0.1573	0.1653	0.1728	0.1790
0.1827	0.1869	0.1916	0.1980	0.2040
0.2074	0.2127	0.2172	0.2295	0.2390
0.2801	0.2961	0.3076	0.3190	0.3784
0.4979	0.6585	0.7652	0.7930	0.8004
0.8023	0.8055	0.8376	0.8916	1.0000

Transect 1448.974
Area:

0.0013	0.0027	0.0041	0.0056	0.0072
0.0091	0.0114	0.0140	0.0169	0.0204
0.0242	0.0284	0.0332	0.0390	0.0458
0.0536	0.0622	0.0717	0.0820	0.0928
0.1041	0.1158	0.1279	0.1403	0.1529
0.1659	0.1791	0.1927	0.2066	0.2211
0.2361	0.2517	0.2679	0.2850	0.3031
0.3231	0.3442	0.3667	0.3917	0.4214
0.4543	0.4905	0.5361	0.5952	0.6581
0.7222	0.7877	0.8546	0.9248	1.0000

Hrad:

0.0853	0.1623	0.2325	0.2963	0.3374
0.3832	0.4154	0.4453	0.4568	0.4643
0.4999	0.5238	0.5283	0.5353	0.5331
0.5313	0.5604	0.5875	0.6133	0.6645
0.7178	0.7703	0.8236	0.8804	0.9366
0.9924	1.0420	1.0921	1.1395	1.1759
1.2173	1.2511	1.2810	1.3132	1.3128
1.3253	1.3496	1.2167	1.2071	1.1345
1.0851	1.0437	0.9066	0.7479	0.8069
0.8576	0.8671	0.9336	0.9593	1.0000

Width:

0.0176	0.0183	0.0189	0.0196	0.0221
0.0274	0.0322	0.0360	0.0413	0.0477
0.0519	0.0579	0.0689	0.0826	0.0952
0.1082	0.1186	0.1285	0.1387	0.1448
0.1500	0.1549	0.1597	0.1632	0.1666
0.1700	0.1750	0.1795	0.1844	0.1927
0.1991	0.2077	0.2177	0.2278	0.2496
0.2682	0.2793	0.3137	0.3420	0.4138
0.4499	0.4881	0.7212	0.8075	0.8288
0.8435	0.8610	0.8875	0.9569	1.0000

Transect 1455.968
Area:

0.0010	0.0020	0.0034	0.0049	0.0067
0.0086	0.0108	0.0139	0.0179	0.0227
0.0285	0.0347	0.0416	0.0498	0.0587
0.0678	0.0772	0.0870	0.0971	0.1076
0.1183	0.1294	0.1407	0.1522	0.1640
0.1761	0.1884	0.2011	0.2141	0.2276
0.2417	0.2565	0.2720	0.2885	0.3063
0.3261	0.3484	0.3739	0.4030	0.4337
0.4728	0.5211	0.5717	0.6236	0.6782
0.7376	0.7993	0.8635	0.9306	1.0000

Hrad:

0.0763	0.1440	0.1952	0.2434	0.2939
0.3451	0.3904	0.3742	0.3948	0.3944
0.4277	0.4609	0.4935	0.4868	0.5295
0.5715	0.6132	0.6532	0.6960	0.7382
0.7810	0.8249	0.8715	0.9170	0.9595
1.0055	1.0474	1.0875	1.1222	1.1585
1.1768	1.2064	1.2213	1.2344	1.2316
1.1468	1.0718	1.0647	1.0494	1.0223
0.9478	0.7339	0.7736	0.8098	0.8283
0.8223	0.8655	0.9163	0.9626	1.0000

Width:

0.0145	0.0160	0.0210	0.0236	0.0266
0.0294	0.0332	0.0519	0.0609	0.0794
0.0854	0.0935	0.1045	0.1252	0.1283
0.1323	0.1370	0.1428	0.1469	0.1513
0.1557	0.1601	0.1632	0.1666	0.1711
0.1740	0.1784	0.1832	0.1897	0.1953
0.2082	0.2159	0.2303	0.2453	0.2653
0.2969	0.3384	0.3978	0.4260	0.4682
0.6284	0.7171	0.7332	0.7555	0.8229
0.8702	0.8976	0.9316	0.9804	1.0000

Transect 1549.464
Area:

0.0007	0.0020	0.0036	0.0055	0.0076
0.0106	0.0144	0.0192	0.0248	0.0309
0.0377	0.0451	0.0532	0.0619	0.0713
0.0813	0.0918	0.1029	0.1145	0.1266

0.1393	0.1526	0.1664	0.1806	0.1952
0.2104	0.2262	0.2424	0.2592	0.2763
0.2939	0.3123	0.3315	0.3517	0.3735
0.3985	0.4270	0.4571	0.4882	0.5208
0.5553	0.5926	0.6330	0.6764	0.7236
0.7743	0.8275	0.8837	0.9414	1.0000

Hrad:

0.0397	0.0779	0.1154	0.1574	0.1852
0.1710	0.1941	0.2092	0.2472	0.2795
0.3030	0.3409	0.3682	0.3989	0.4242
0.4594	0.4973	0.5274	0.5621	0.5985
0.6232	0.6532	0.6920	0.7312	0.7640
0.7899	0.8220	0.8553	0.8923	0.9274
0.9530	0.9711	0.9882	0.9855	0.9541
0.9413	0.8469	0.8785	0.9024	0.9087
0.9160	0.8881	0.8800	0.8961	0.8568
0.8760	0.8849	0.9115	0.9509	1.0000

Width:

0.0175	0.0250	0.0306	0.0340	0.0398
0.0602	0.0727	0.0903	0.0987	0.1088
0.1226	0.1306	0.1427	0.1534	0.1661
0.1750	0.1826	0.1930	0.2015	0.2093
0.2213	0.2313	0.2381	0.2445	0.2530
0.2637	0.2725	0.2808	0.2876	0.2950
0.3055	0.3186	0.3325	0.3540	0.3906
0.4528	0.5019	0.5182	0.5388	0.5711
0.6080	0.6656	0.7179	0.7565	0.8439
0.8834	0.9445	0.9694	0.9900	1.0000

Transect 1662.759
Area:

0.0009	0.0020	0.0036	0.0090	0.0156
0.0228	0.0304	0.0385	0.0470	0.0558
0.0649	0.0743	0.0839	0.0938	0.1042
0.1151	0.1262	0.1377	0.1496	0.1619
0.1747	0.1893	0.2047	0.2209	0.2377
0.2551	0.2732	0.2918	0.3113	0.3316
0.3526	0.3738	0.3953	0.4169	0.4388
0.4610	0.4837	0.5079	0.5331	0.5595
0.5911	0.6281	0.6692	0.7112	0.7540
0.7984	0.8455	0.8942	0.9451	1.0000

Hrad:

0.0474	0.0886	0.0796	0.0806	0.1254
0.1706	0.2149	0.2583	0.3008	0.3446
0.3886	0.4317	0.4729	0.5093	0.5372
0.5756	0.6123	0.6465	0.6795	0.7042
0.7269	0.6874	0.7111	0.7366	0.7651
0.7926	0.8199	0.8431	0.8629	0.8788
0.9200	0.9672	1.0124	1.0567	1.0957
1.1379	1.1512	1.1345	1.1468	1.1518
1.1172	1.0887	0.8999	0.9349	0.9768
0.9825	0.9876	1.0165	1.0049	1.0000

Width:

0.0187	0.0212	0.0600	0.1094	0.1222
0.1311	0.1390	0.1461	0.1529	0.1582
0.1628	0.1674	0.1723	0.1787	0.1883
0.1937	0.1995	0.2061	0.2129	0.2224
0.2384	0.2672	0.2795	0.2912	0.3017
0.3126	0.3236	0.3364	0.3507	0.3671
0.3729	0.3760	0.3797	0.3837	0.3896
0.3941	0.4092	0.4368	0.4540	0.4900
0.6133	0.7054	0.7339	0.7509	0.7666
0.8029	0.8467	0.8704	0.9315	1.0000

Transect 1779.22
Area:

0.0006	0.0021	0.0058	0.0120	0.0201
0.0293	0.0393	0.0496	0.0602	0.0712
0.0825	0.0941	0.1059	0.1180	0.1303
0.1430	0.1559	0.1691	0.1826	0.1963
0.2102	0.2244	0.2389	0.2537	0.2689
0.2843	0.3001	0.3164	0.3344	0.3541
0.3751	0.3976	0.4225	0.4512	0.4802
0.5093	0.5386	0.5680	0.5977	0.6277
0.6581	0.6896	0.7229	0.7568	0.7921
0.8291	0.8679	0.9091	0.9532	1.0000

Hrad:

0.0402	0.0841	0.0875	0.0933	0.1221
0.1645	0.2090	0.2560	0.3012	0.3440
0.3890	0.4336	0.4767	0.5172	0.5580
0.5983	0.6373	0.6752	0.7137	0.7526
0.7906	0.8262	0.8605	0.8907	0.9236
0.9580	0.9884	0.9934	0.9783	0.9857
0.9920	0.9930	0.9686	0.9642	0.9907
1.0172	1.0436	1.0664	1.0887	1.1039
1.1175	1.0423	1.0577	1.0632	1.0601
1.0488	1.0364	1.0164	1.0072	1.0000

Width:

0.0234	0.0354	0.1060	0.1501	0.1820
0.1986	0.2091	0.2157	0.2225	0.2301
0.2356	0.2406	0.2458	0.2519	0.2576
0.2631	0.2689	0.2749	0.2801	0.2849
0.2897	0.2957	0.3015	0.3086	0.3150
0.3209	0.3282	0.3493	0.3905	0.4179
0.4466	0.4813	0.5607	0.5964	0.5986
0.6013	0.6043	0.6090	0.6142	0.6222
0.6315	0.6779	0.6920	0.7123	0.7398
0.7768	0.8203	0.8806	0.9358	1.0000

Transect 1920.857
Area:

0.0003	0.0009	0.0020	0.0053	0.0127
0.0230	0.0342	0.0458	0.0580	0.0706
0.0835	0.0966	0.1099	0.1236	0.1374
0.1516	0.1660	0.1807	0.1957	0.2109
0.2264	0.2422	0.2582	0.2744	0.2908
0.3075	0.3243	0.3414	0.3587	0.3763
0.3943	0.4134	0.4357	0.4631	0.4926
0.5222	0.5520	0.5819	0.6119	0.6420
0.6721	0.7035	0.7363	0.7704	0.8057
0.8420	0.8795	0.9183	0.9585	1.0000

Hrad:

0.0343	0.0882	0.1058	0.0673	0.0718
0.0973	0.1410	0.1817	0.2218	0.2631
0.3055	0.3473	0.3870	0.4280	0.4682
0.5065	0.5446	0.5826	0.6207	0.6569
0.6920	0.7254	0.7620	0.7995	0.8371
0.8728	0.9061	0.9402	0.9734	1.0042
1.0258	1.0085	0.9379	0.9226	0.9374
0.9604	0.9842	1.0105	1.0387	1.0671
1.0948	1.0087	0.9896	0.9794	0.9885
0.9903	0.9979	0.9925	1.0110	1.0000

Width:

0.0134	0.0163	0.0365	0.1313	0.1987
0.2545	0.2651	0.2779	0.2887	0.2970
0.3026	0.3081	0.3147	0.3200	0.3256

0.3327	0.3397	0.3460	0.3515	0.3578
0.3640	0.3707	0.3758	0.3803	0.3845
0.3894	0.3952	0.4005	0.4063	0.4136
0.4265	0.4691	0.6018	0.6849	0.6891
0.6920	0.6951	0.6975	0.6994	0.7015
0.7040	0.7528	0.7819	0.8110	0.8318
0.8595	0.8858	0.9252	0.9506	1.0000

Transect 2059.866
Area:

0.0007	0.0027	0.0048	0.0070	0.0103
0.0184	0.0314	0.0450	0.0590	0.0732
0.0879	0.1030	0.1183	0.1339	0.1496
0.1656	0.1817	0.1982	0.2148	0.2317
0.2487	0.2660	0.2835	0.3013	0.3194
0.3376	0.3561	0.3748	0.3937	0.4128
0.4321	0.4517	0.4715	0.4918	0.5140
0.5385	0.5658	0.5947	0.6249	0.6559
0.6871	0.7185	0.7501	0.7826	0.8156
0.8493	0.8847	0.9214	0.9596	1.0000

Hrad:

0.0378	0.1055	0.1784	0.2322	0.2278
0.1691	0.1782	0.2063	0.2401	0.2750
0.3094	0.3435	0.3798	0.4170	0.4537
0.4873	0.5217	0.5559	0.5893	0.6246
0.6598	0.6938	0.7255	0.7571	0.7901
0.8236	0.8569	0.8904	0.9236	0.9565
0.9886	1.0186	1.0450	1.0668	1.0091
1.0054	0.9742	0.9837	0.9871	1.0139
1.0404	1.0639	1.0707	1.0611	1.0729
1.0764	1.0310	1.0369	1.0235	1.0000

Width:

0.0377	0.0496	0.0514	0.0571	0.1303
0.2808	0.3194	0.3297	0.3373	0.3457
0.3550	0.3641	0.3698	0.3738	0.3779
0.3840	0.3895	0.3950	0.4007	0.4054
0.4101	0.4155	0.4219	0.4281	0.4336
0.4388	0.4440	0.4489	0.4539	0.4590
0.4644	0.4707	0.4786	0.4900	0.5657
0.6040	0.6770	0.7027	0.7396	0.7437
0.7472	0.7521	0.7646	0.7835	0.7964
0.8172	0.8651	0.8910	0.9358	1.0000

Transect 2156.937
Area:

0.0004	0.0011	0.0023	0.0040	0.0061
0.0095	0.0154	0.0232	0.0319	0.0412
0.0517	0.0629	0.0746	0.0866	0.0990
0.1116	0.1245	0.1376	0.1508	0.1643
0.1780	0.1920	0.2062	0.2206	0.2352
0.2500	0.2649	0.2800	0.2956	0.3119
0.3289	0.3470	0.3659	0.3871	0.4109
0.4372	0.4668	0.4978	0.5300	0.5639
0.6008	0.6414	0.6830	0.7253	0.7685
0.8126	0.8578	0.9040	0.9513	1.0000

Hrad:

0.0568	0.1103	0.1323	0.1668	0.2118
0.2064	0.1695	0.1812	0.2150	0.2505
0.2758	0.3118	0.3514	0.3911	0.4317
0.4708	0.5123	0.5560	0.5988	0.6396
0.6748	0.7134	0.7549	0.7957	0.8366
0.8773	0.9173	0.9561	0.9912	1.0236
1.0436	1.0071	1.0133	0.9731	0.9416

0.9440	0.8765	0.8912	0.8922	0.8978
0.8667	0.8543	0.8677	0.8890	0.9034
0.9197	0.9451	0.9587	0.9826	1.0000

Width:

0.0124	0.0164	0.0298	0.0398	0.0493
0.0870	0.1454	0.1694	0.1820	0.1962
0.2215	0.2329	0.2404	0.2469	0.2525
0.2585	0.2633	0.2670	0.2708	0.2751
0.2811	0.2859	0.2897	0.2934	0.2970
0.3004	0.3041	0.3082	0.3233	0.3361
0.3553	0.3732	0.4069	0.4521	0.5137
0.5616	0.6147	0.6373	0.6668	0.7009
0.7942	0.8333	0.8499	0.8640	0.8839
0.9050	0.9220	0.9493	0.9708	1.0000

Transect 2277.683
Area:

0.0022	0.0055	0.0091	0.0128	0.0169
0.0214	0.0262	0.0313	0.0368	0.0427
0.0491	0.0557	0.0624	0.0694	0.0765
0.0838	0.0913	0.0990	0.1070	0.1153
0.1238	0.1326	0.1418	0.1520	0.1636
0.1757	0.1880	0.2013	0.2160	0.2325
0.2501	0.2693	0.2902	0.3134	0.3393
0.3670	0.3973	0.4309	0.4668	0.5055
0.5472	0.5915	0.6387	0.6871	0.7362
0.7863	0.8373	0.8897	0.9438	1.0000

Hrad:

0.0449	0.0995	0.1548	0.2032	0.2573
0.3110	0.3605	0.4068	0.4485	0.4868
0.5238	0.5628	0.6019	0.6412	0.6799
0.7179	0.7545	0.7902	0.8252	0.8592
0.8920	0.9239	0.9547	0.9748	0.9765
0.9994	1.0231	1.0428	1.0568	1.0637
1.0677	1.0652	1.0518	1.0261	0.9466
0.9426	0.9287	0.9159	0.9118	0.9004
0.8986	0.8933	0.8939	0.9073	0.9197
0.9392	0.9555	0.9682	0.9852	1.0000

Width:

0.0531	0.0603	0.0631	0.0686	0.0745
0.0800	0.0861	0.0916	0.0997	0.1076
0.1135	0.1164	0.1192	0.1220	0.1251
0.1286	0.1328	0.1371	0.1414	0.1460
0.1508	0.1558	0.1692	0.1868	0.2087
0.2122	0.2218	0.2431	0.2703	0.2982
0.3188	0.3459	0.3816	0.4273	0.4685
0.4995	0.5570	0.6087	0.6426	0.7011
0.7466	0.7949	0.8333	0.8482	0.8681
0.8812	0.9013	0.9302	0.9552	1.0000

Transect 2406.341
Area:

0.0003	0.0008	0.0013	0.0021	0.0031
0.0044	0.0058	0.0075	0.0093	0.0113
0.0134	0.0157	0.0181	0.0206	0.0234
0.0263	0.0293	0.0325	0.0359	0.0396
0.0436	0.0481	0.0532	0.0594	0.0686
0.0793	0.0909	0.1038	0.1190	0.1357
0.1542	0.1748	0.1978	0.2241	0.2529
0.2830	0.3147	0.3484	0.3843	0.4219
0.4629	0.5105	0.5623	0.6163	0.6735
0.7323	0.7931	0.8570	0.9274	1.0000

Hrad:

0.0553	0.1112	0.1319	0.1627	0.1935
0.2123	0.2570	0.3022	0.3363	0.3753
0.4193	0.4634	0.5024	0.5395	0.5739
0.6073	0.6467	0.6891	0.7275	0.6986
0.7035	0.7085	0.6940	0.6292	0.4876
0.5117	0.5388	0.5704	0.5329	0.5793
0.5854	0.6232	0.6506	0.6405	0.6225
0.6712	0.7055	0.7206	0.7662	0.7933
0.7848	0.7545	0.7827	0.8317	0.8536
0.9074	0.9391	0.9900	0.9449	1.0000

Width:

0.0058	0.0064	0.0093	0.0120	0.0149
0.0193	0.0214	0.0233	0.0260	0.0283
0.0302	0.0318	0.0339	0.0360	0.0384
0.0408	0.0427	0.0448	0.0487	0.0529
0.0581	0.0640	0.0753	0.0970	0.1403
0.1517	0.1654	0.1946	0.2204	0.2366
0.2683	0.3013	0.3362	0.3815	0.4044
0.4200	0.4446	0.4824	0.5005	0.5329
0.5998	0.6895	0.7188	0.7680	0.7915
0.8145	0.8445	0.9295	0.9817	1.0000

Transect 2509.792
Area:

0.0003	0.0009	0.0014	0.0020	0.0027
0.0034	0.0047	0.0062	0.0081	0.0102
0.0125	0.0149	0.0174	0.0201	0.0228
0.0257	0.0287	0.0318	0.0350	0.0382
0.0416	0.0452	0.0488	0.0527	0.0567
0.0611	0.0656	0.0703	0.0755	0.0816
0.0889	0.0980	0.1122	0.1299	0.1554
0.1881	0.2250	0.2674	0.3145	0.3650
0.4200	0.4782	0.5385	0.6003	0.6629
0.7264	0.7912	0.8587	0.9280	1.0000

Hrad:

0.0516	0.1101	0.1646	0.2131	0.2570
0.1967	0.2286	0.2390	0.2745	0.3178
0.3633	0.4106	0.4582	0.5050	0.5501
0.5958	0.6418	0.6872	0.7317	0.7744
0.8143	0.8511	0.8847	0.9127	0.9064
0.9419	0.9813	0.9735	0.9700	0.8496
0.7935	0.7946	0.5114	0.5363	0.4157
0.4399	0.4767	0.4388	0.4680	0.5099
0.5584	0.5936	0.6413	0.7049	0.7707
0.8299	0.8690	0.9154	0.9667	1.0000

Width:

0.0066	0.0075	0.0080	0.0084	0.0088
0.0155	0.0185	0.0240	0.0275	0.0300
0.0321	0.0339	0.0355	0.0371	0.0387
0.0402	0.0416	0.0430	0.0444	0.0458
0.0474	0.0493	0.0513	0.0537	0.0585
0.0607	0.0625	0.0679	0.0749	0.0918
0.1079	0.1526	0.2173	0.2848	0.4065
0.4716	0.5384	0.6145	0.6719	0.7231
0.7853	0.8066	0.8409	0.8525	0.8675
0.8758	0.9108	0.9383	0.9677	1.0000

Transect 2618.286
Area:

0.0003	0.0007	0.0012	0.0018	0.0024
0.0032	0.0042	0.0053	0.0067	0.0084
0.0103	0.0123	0.0144	0.0166	0.0188
0.0212	0.0236	0.0261	0.0287	0.0314

0.0343	0.0376	0.0416	0.0466	0.0521
0.0580	0.0647	0.0721	0.0802	0.0890
0.0990	0.1141	0.1353	0.1623	0.1927
0.2248	0.2586	0.2943	0.3328	0.3756
0.4204	0.4673	0.5176	0.5746	0.6366
0.7019	0.7706	0.8432	0.9196	1.0000

Hrad:

0.0591	0.1132	0.1686	0.2194	0.2494
0.2701	0.2933	0.3196	0.3377	0.3663
0.4027	0.4563	0.5133	0.5686	0.6223
0.6738	0.7242	0.7730	0.8192	0.8688
0.8867	0.9253	0.9222	0.8945	0.8790
0.8874	0.7041	0.7541	0.7766	0.8187
0.8567	0.8499	0.8194	0.7842	0.5580
0.6028	0.5981	0.6524	0.6973	0.6912
0.7468	0.7842	0.8047	0.7932	0.8187
0.8470	0.8969	0.9334	1.0000	1.0000

Width:

0.0045	0.0058	0.0066	0.0073	0.0088
0.0109	0.0132	0.0156	0.0188	0.0217
0.0242	0.0255	0.0265	0.0275	0.0284
0.0295	0.0305	0.0315	0.0327	0.0336
0.0383	0.0438	0.0550	0.0640	0.0707
0.0753	0.0885	0.0956	0.1044	0.1138
0.1520	0.2205	0.2984	0.3597	0.3872
0.4068	0.4302	0.4489	0.5042	0.5418
0.5623	0.5970	0.6467	0.7471	0.7804
0.8304	0.8642	0.9269	0.9648	1.0000

Transect 2707.776
Area:

0.0018	0.0040	0.0065	0.0090	0.0117
0.0146	0.0179	0.0214	0.0252	0.0293
0.0335	0.0379	0.0424	0.0472	0.0522
0.0575	0.0632	0.0691	0.0753	0.0818
0.0885	0.0955	0.1028	0.1104	0.1185
0.1268	0.1358	0.1454	0.1561	0.1696
0.1854	0.2023	0.2210	0.2414	0.2642
0.2884	0.3143	0.3419	0.3712	0.4053
0.4469	0.4977	0.5547	0.6133	0.6732
0.7340	0.7961	0.8609	0.9292	1.0000

Hrad:

0.0614	0.1206	0.1842	0.2448	0.2890
0.3303	0.3609	0.4044	0.4482	0.4934
0.5372	0.5826	0.6304	0.6770	0.6844
0.7211	0.7549	0.7858	0.8200	0.8537
0.8894	0.9249	0.9520	0.9721	1.0019
1.0137	1.0237	1.0161	0.9203	0.7748
0.8098	0.7964	0.8051	0.7908	0.7987
0.8308	0.8401	0.8698	0.8876	0.8108
0.8263	0.7875	0.6885	0.7549	0.8219
0.8850	0.9461	0.9513	1.0113	1.0000

Width:

0.0288	0.0330	0.0344	0.0355	0.0389
0.0425	0.0476	0.0509	0.0540	0.0568
0.0596	0.0620	0.0640	0.0660	0.0725
0.0759	0.0796	0.0837	0.0874	0.0912
0.0948	0.0983	0.1029	0.1084	0.1129
0.1197	0.1271	0.1375	0.1642	0.2137
0.2238	0.2490	0.2697	0.3007	0.3264
0.3428	0.3699	0.3890	0.4240	0.5015
0.6322	0.7671	0.8046	0.8171	0.8329
0.8487	0.8669	0.9245	0.9628	1.0000

Transect 2810.224
Area:

0.0006	0.0019	0.0034	0.0052	0.0073
0.0097	0.0122	0.0148	0.0175	0.0205
0.0236	0.0269	0.0304	0.0340	0.0378
0.0417	0.0457	0.0499	0.0542	0.0587
0.0632	0.0679	0.0728	0.0778	0.0831
0.0886	0.0943	0.1002	0.1064	0.1129
0.1201	0.1283	0.1373	0.1474	0.1587
0.1713	0.1882	0.2077	0.2285	0.2531
0.2809	0.3153	0.3588	0.4116	0.4717
0.5469	0.6413	0.7499	0.8710	1.0000

Hrad:

0.0856	0.1706	0.2633	0.3437	0.4111
0.4961	0.6014	0.6977	0.7797	0.8406
0.9106	0.9867	1.0667	1.1475	1.2259
1.2995	1.3742	1.4511	1.5268	1.6018
1.6765	1.7449	1.8084	1.8397	1.9031
1.9556	1.9847	2.0271	2.0551	2.0388
1.9742	1.8778	1.7567	1.7493	1.6586
1.5908	1.2742	1.3240	1.3657	1.2331
1.2595	1.1560	0.9499	0.9483	0.9990
0.9560	0.8654	0.8946	0.9731	1.0000

Width:

0.0075	0.0108	0.0127	0.0149	0.0174
0.0192	0.0198	0.0205	0.0217	0.0235
0.0250	0.0263	0.0274	0.0284	0.0295
0.0306	0.0317	0.0327	0.0337	0.0347
0.0357	0.0368	0.0380	0.0400	0.0412
0.0428	0.0449	0.0467	0.0490	0.0526
0.0580	0.0654	0.0752	0.0813	0.0928
0.1048	0.1450	0.1542	0.1739	0.2027
0.2300	0.2936	0.3826	0.4424	0.4926
0.6707	0.7802	0.8991	0.9768	1.0000

Transect 2922.176
Area:

0.0012	0.0036	0.0066	0.0100	0.0136
0.0173	0.0211	0.0250	0.0291	0.0336
0.0384	0.0434	0.0487	0.0544	0.0604
0.0666	0.0730	0.0795	0.0862	0.0931
0.1001	0.1073	0.1147	0.1222	0.1300
0.1379	0.1459	0.1541	0.1625	0.1710
0.1797	0.1886	0.1977	0.2070	0.2167
0.2268	0.2377	0.2495	0.2623	0.2763
0.2913	0.3074	0.3247	0.3472	0.3864
0.4508	0.5492	0.6807	0.8311	1.0000

Hrad:

0.1174	0.2104	0.3441	0.4737	0.6165
0.7532	0.8843	1.0106	1.0849	1.1573
1.2572	1.3458	1.4346	1.4794	1.5889
1.6963	1.8023	1.9126	2.0210	2.1276
2.2276	2.3247	2.4216	2.5216	2.6204
2.7187	2.8181	2.9158	3.0125	3.1031
3.1905	3.2775	3.3492	3.4181	3.4458
3.3923	3.3118	3.2429	3.0935	3.0609
3.0153	2.9513	2.9569	2.6325	2.2810
1.9705	1.7338	0.9425	1.0481	1.0000

Width:

0.0101	0.0166	0.0187	0.0204	0.0211
0.0218	0.0225	0.0232	0.0251	0.0271
0.0284	0.0300	0.0316	0.0343	0.0354

0.0365	0.0375	0.0385	0.0394	0.0403
0.0414	0.0424	0.0435	0.0444	0.0454
0.0463	0.0472	0.0481	0.0491	0.0501
0.0512	0.0522	0.0536	0.0550	0.0572
0.0610	0.0659	0.0709	0.0786	0.0840
0.0902	0.0976	0.1032	0.1810	0.2857
0.4743	0.6820	0.8232	0.9346	1.0000

Transect 2986.996
Area:

0.0008	0.0022	0.0042	0.0065	0.0091
0.0117	0.0145	0.0173	0.0207	0.0243
0.0281	0.0320	0.0360	0.0402	0.0445
0.0490	0.0536	0.0583	0.0632	0.0681
0.0732	0.0783	0.0836	0.0889	0.0944
0.1000	0.1057	0.1115	0.1174	0.1234
0.1295	0.1357	0.1419	0.1483	0.1548
0.1615	0.1684	0.1758	0.1877	0.2088
0.2458	0.2965	0.3612	0.4394	0.5228
0.6091	0.7023	0.7987	0.8972	1.0000

Hrad:

0.0696	0.1392	0.2047	0.2835	0.3627
0.4546	0.5436	0.6122	0.6139	0.6942
0.7612	0.8345	0.9102	0.9852	1.0470
1.1177	1.1887	1.2626	1.3351	1.4021
1.4715	1.5448	1.6167	1.6896	1.7532
1.8000	1.8644	1.9341	2.0064	2.0779
2.1474	2.2152	2.2800	2.3326	2.3806
2.4049	2.4411	2.4518	2.2841	1.7535
1.1624	0.8315	0.8336	0.7553	0.8093
0.8609	0.7990	0.8977	0.9921	1.0000

Width:

0.0112	0.0161	0.0205	0.0230	0.0249
0.0256	0.0263	0.0284	0.0332	0.0344
0.0362	0.0376	0.0387	0.0399	0.0415
0.0428	0.0439	0.0449	0.0460	0.0471
0.0482	0.0490	0.0499	0.0508	0.0518
0.0534	0.0545	0.0553	0.0561	0.0568
0.0576	0.0584	0.0593	0.0605	0.0619
0.0640	0.0658	0.0785	0.1535	0.2653
0.4138	0.5365	0.6811	0.7700	0.7963
0.8368	0.9015	0.9174	0.9380	1.0000

Transect 3000.11
Area:

0.0003	0.0014	0.0024	0.0035	0.0046
0.0058	0.0072	0.0086	0.0101	0.0117
0.0133	0.0149	0.0167	0.0185	0.0203
0.0222	0.0241	0.0261	0.0282	0.0304
0.0327	0.0351	0.0377	0.0405	0.0437
0.0473	0.0514	0.0567	0.0634	0.0721
0.0834	0.0968	0.1174	0.1472	0.1830
0.2221	0.2644	0.3092	0.3569	0.4077
0.4607	0.5139	0.5681	0.6236	0.6808
0.7402	0.8020	0.8661	0.9318	1.0000

Hrad:

0.0227	0.0886	0.1521	0.2118	0.2675
0.3189	0.3229	0.3730	0.4000	0.4443
0.4882	0.5278	0.5674	0.6127	0.6574
0.7013	0.7445	0.7801	0.7988	0.8178
0.8518	0.8842	0.8718	0.8845	0.8417
0.8015	0.7849	0.7477	0.6576	0.5700
0.4626	0.4837	0.4214	0.4216	0.3412

0.3831	0.4300	0.4722	0.5141	0.5553
0.5930	0.6601	0.7063	0.7663	0.8215
0.8626	0.9021	0.9305	0.9947	1.0000

Width:

0.0147	0.0152	0.0155	0.0162	0.0170
0.0180	0.0207	0.0214	0.0222	0.0231
0.0239	0.0249	0.0259	0.0266	0.0272
0.0278	0.0285	0.0294	0.0312	0.0330
0.0342	0.0364	0.0389	0.0444	0.0497
0.0552	0.0665	0.0902	0.1042	0.1500
0.1761	0.2324	0.3750	0.4929	0.5438
0.5977	0.6342	0.6710	0.7249	0.7635
0.7758	0.7792	0.8051	0.8187	0.8540
0.8796	0.9212	0.9410	0.9841	1.0000

Transect 3035.535
Area:

0.0019	0.0041	0.0065	0.0091	0.0120
0.0149	0.0179	0.0209	0.0240	0.0274
0.0310	0.0347	0.0386	0.0426	0.0467
0.0510	0.0555	0.0600	0.0647	0.0695
0.0743	0.0793	0.0845	0.0900	0.0957
0.1017	0.1079	0.1145	0.1212	0.1281
0.1352	0.1424	0.1505	0.1597	0.1718
0.1970	0.2392	0.2917	0.3484	0.4060
0.4643	0.5228	0.5815	0.6404	0.6994
0.7587	0.8182	0.8780	0.9381	1.0000

Hrad:

0.0418	0.0795	0.1116	0.1439	0.1810
0.2190	0.2561	0.2921	0.3284	0.3641
0.3797	0.4149	0.4490	0.4843	0.5206
0.5540	0.5921	0.6318	0.6718	0.7119
0.7511	0.7832	0.7889	0.8216	0.8477
0.8705	0.8932	0.9288	0.9656	1.0026
1.0403	1.0753	0.9613	0.9652	0.9503
0.8557	0.7185	0.6622	0.5275	0.5581
0.5207	0.5786	0.6370	0.6957	0.7540
0.8110	0.8677	0.9236	0.9705	1.0000

Width:

0.0324	0.0359	0.0404	0.0441	0.0457
0.0467	0.0476	0.0486	0.0515	0.0555
0.0582	0.0604	0.0625	0.0645	0.0666
0.0701	0.0718	0.0733	0.0747	0.0762
0.0778	0.0806	0.0862	0.0890	0.0926
0.0969	0.1021	0.1054	0.1081	0.1108
0.1135	0.1165	0.1393	0.1604	0.2567
0.5395	0.7719	0.8872	0.9077	0.9194
0.9279	0.9308	0.9331	0.9356	0.9386
0.9429	0.9467	0.9511	0.9607	1.0000

Transect 3046.813
Area:

0.0008	0.0019	0.0033	0.0048	0.0064
0.0080	0.0098	0.0117	0.0137	0.0158
0.0179	0.0202	0.0226	0.0252	0.0280
0.0311	0.0344	0.0384	0.0437	0.0510
0.0641	0.0878	0.1157	0.1458	0.1764
0.2071	0.2379	0.2688	0.2998	0.3309
0.3624	0.3955	0.4291	0.4626	0.4962
0.5297	0.5633	0.5968	0.6304	0.6640
0.6975	0.7311	0.7647	0.7983	0.8319
0.8655	0.8991	0.9327	0.9664	1.0000

Hrad:

0.0186	0.0383	0.0573	0.0784	0.0989
0.1192	0.1391	0.1582	0.1768	0.1946
0.2110	0.2281	0.2432	0.2505	0.2534
0.2588	0.2741	0.2637	0.2143	0.1706
0.1557	0.1466	0.1346	0.1581	0.1913
0.2248	0.2584	0.2917	0.3247	0.3571
0.3872	0.4037	0.4392	0.4748	0.5104
0.5461	0.5818	0.6174	0.6530	0.6885
0.7240	0.7594	0.7946	0.8298	0.8649
0.8998	0.9346	0.9694	1.0040	1.0000

Width:

0.0303	0.0363	0.0408	0.0440	0.0472
0.0499	0.0526	0.0554	0.0582	0.0612
0.0645	0.0675	0.0711	0.0771	0.0850
0.0928	0.0971	0.1371	0.1660	0.2471
0.5523	0.7641	0.8325	0.8796	0.8817
0.8838	0.8859	0.8891	0.8929	0.8982
0.9201	0.9639	0.9641	0.9642	0.9644
0.9645	0.9647	0.9649	0.9650	0.9652
0.9654	0.9655	0.9657	0.9658	0.9660
0.9662	0.9663	0.9665	0.9667	1.0000

Transect 3187.848
Area:

0.0002	0.0005	0.0009	0.0013	0.0018
0.0023	0.0028	0.0033	0.0039	0.0044
0.0051	0.0060	0.0072	0.0086	0.0102
0.0119	0.0136	0.0154	0.0172	0.0191
0.0211	0.0231	0.0252	0.0273	0.0295
0.0317	0.0340	0.0364	0.0390	0.0421
0.0464	0.0535	0.0696	0.0937	0.1226
0.1567	0.1963	0.2396	0.2863	0.3341
0.3828	0.4335	0.4875	0.5450	0.6034
0.6654	0.7320	0.8119	0.9042	1.0000

Hrad:

0.0681	0.1360	0.1961	0.2627	0.3270
0.3857	0.4399	0.4905	0.5380	0.5416
0.5192	0.5016	0.4774	0.4953	0.5538
0.6108	0.6742	0.7375	0.7994	0.8610
0.9216	0.9799	1.0367	1.0943	1.1511
1.2064	1.2528	1.2673	1.2594	1.2519
0.8740	0.7811	0.5038	0.3810	0.4218
0.4606	0.5199	0.5497	0.5901	0.6754
0.7607	0.8365	0.9015	0.9052	0.9909
1.0393	1.1056	1.1411	1.1912	1.0000

Width:

0.0028	0.0036	0.0043	0.0047	0.0049
0.0051	0.0053	0.0055	0.0057	0.0066
0.0083	0.0104	0.0134	0.0157	0.0166
0.0176	0.0182	0.0188	0.0194	0.0200
0.0205	0.0211	0.0217	0.0223	0.0229
0.0234	0.0242	0.0257	0.0279	0.0374
0.0505	0.1118	0.2219	0.2707	0.3274
0.3877	0.4301	0.4752	0.4888	0.4989
0.5095	0.5393	0.5820	0.6009	0.6218
0.6592	0.7355	0.9163	0.9786	1.0000

Transect 3200.809
Area:

0.0001	0.0004	0.0006	0.0008	0.0011
0.0014	0.0017	0.0021	0.0025	0.0030
0.0036	0.0044	0.0053	0.0063	0.0074
0.0085	0.0097	0.0113	0.0129	0.0148

0.0167	0.0188	0.0209	0.0232	0.0256
0.0282	0.0309	0.0338	0.0370	0.0405
0.0451	0.0529	0.0651	0.0801	0.0977
0.1181	0.1409	0.1697	0.2069	0.2490
0.3002	0.3605	0.4258	0.4956	0.5706
0.6507	0.7341	0.8205	0.9092	1.0000

Hrad:

0.0633	0.1372	0.2011	0.2579	0.3095
0.3571	0.3928	0.3977	0.4098	0.4296
0.4371	0.3994	0.4525	0.5151	0.5781
0.6394	0.6861	0.7203	0.7546	0.7893
0.8271	0.8650	0.9055	0.9466	0.9834
1.0127	1.0410	1.0758	1.0652	1.0513
0.9034	0.6764	0.6307	0.5011	0.5273
0.5770	0.6202	0.6400	0.6467	0.5897
0.6389	0.6794	0.7104	0.6549	0.7245
0.7452	0.8173	0.8913	0.9493	1.0000

Width:

0.0023	0.0025	0.0027	0.0028	0.0030
0.0032	0.0035	0.0043	0.0052	0.0061
0.0073	0.0100	0.0108	0.0113	0.0117
0.0121	0.0154	0.0177	0.0192	0.0207
0.0220	0.0233	0.0244	0.0256	0.0270
0.0291	0.0311	0.0326	0.0367	0.0411
0.0616	0.1089	0.1525	0.1776	0.2103
0.2334	0.2661	0.3764	0.4329	0.5032
0.6241	0.6897	0.7460	0.7939	0.8544
0.9005	0.9370	0.9604	0.9933	1.0000

Transect 3358.095
Area:

0.0001	0.0002	0.0003	0.0005	0.0007
0.0009	0.0012	0.0016	0.0021	0.0026
0.0033	0.0039	0.0047	0.0054	0.0062
0.0070	0.0078	0.0087	0.0096	0.0105
0.0115	0.0125	0.0135	0.0147	0.0160
0.0185	0.0219	0.0263	0.0322	0.0393
0.0477	0.0611	0.0781	0.0965	0.1170
0.1412	0.1724	0.2100	0.2524	0.3008
0.3581	0.4222	0.4907	0.5617	0.6334
0.7055	0.7780	0.8513	0.9252	1.0000

Hrad:

0.0323	0.0716	0.1047	0.1341	0.1543
0.1506	0.1598	0.1762	0.1999	0.2342
0.2693	0.3122	0.3560	0.4005	0.4454
0.4901	0.5325	0.5748	0.6171	0.6593
0.7015	0.7417	0.7650	0.7625	0.7001
0.6636	0.6399	0.6056	0.5687	0.5359
0.5195	0.3131	0.3139	0.3423	0.3656
0.3891	0.3951	0.4185	0.4634	0.4985
0.5340	0.5663	0.6050	0.5939	0.6612
0.7338	0.8037	0.8710	0.9381	1.0000

Width:

0.0015	0.0017	0.0019	0.0022	0.0026
0.0037	0.0048	0.0059	0.0069	0.0079
0.0088	0.0092	0.0097	0.0101	0.0105
0.0109	0.0113	0.0118	0.0123	0.0127
0.0132	0.0137	0.0145	0.0160	0.0213
0.0410	0.0481	0.0654	0.0900	0.1020
0.1350	0.2185	0.2341	0.2599	0.2849
0.3628	0.4640	0.5408	0.5893	0.7068
0.8147	0.8916	0.9344	0.9524	0.9580
0.9626	0.9710	0.9803	0.9918	1.0000

Transect 3380.367
Area:

0.0001	0.0003	0.0004	0.0006	0.0008
0.0011	0.0016	0.0022	0.0029	0.0036
0.0045	0.0053	0.0063	0.0073	0.0084
0.0095	0.0108	0.0120	0.0135	0.0150
0.0167	0.0185	0.0204	0.0225	0.0248
0.0271	0.0298	0.0340	0.0390	0.0455
0.0544	0.0651	0.0783	0.0937	0.1120
0.1325	0.1570	0.1879	0.2263	0.2695
0.3184	0.3724	0.4301	0.4946	0.5653
0.6458	0.7327	0.8215	0.9107	1.0000

Hrad:

0.0550	0.0983	0.1346	0.1665	0.1698
0.1819	0.2186	0.2646	0.3251	0.3959
0.4743	0.5486	0.6224	0.6960	0.7709
0.8448	0.9111	0.9615	0.9994	1.0376
1.0699	1.1072	1.1493	1.2008	1.2262
1.2894	1.3258	1.2974	1.2816	1.2218
1.1549	1.0670	0.9916	0.9424	0.8794
0.7701	0.7415	0.7269	0.6531	0.5534
0.6044	0.6674	0.7348	0.7801	0.8331
0.8544	0.9017	0.8782	0.9283	1.0000

Width:

0.0015	0.0017	0.0019	0.0020	0.0028
0.0045	0.0058	0.0071	0.0082	0.0090
0.0096	0.0103	0.0110	0.0117	0.0124
0.0132	0.0140	0.0151	0.0164	0.0179
0.0195	0.0211	0.0227	0.0241	0.0260
0.0273	0.0359	0.0530	0.0578	0.0935
0.1105	0.1304	0.1575	0.1928	0.2167
0.2492	0.3034	0.3886	0.4652	0.5076
0.5824	0.6219	0.6834	0.7496	0.8442
0.9548	0.9901	0.9963	0.9979	1.0000

Transect 3509.864
Area:

0.0000	0.0001	0.0002	0.0002	0.0004
0.0005	0.0006	0.0009	0.0013	0.0018
0.0024	0.0031	0.0038	0.0047	0.0056
0.0066	0.0076	0.0087	0.0098	0.0109
0.0121	0.0133	0.0145	0.0158	0.0171
0.0189	0.0224	0.0292	0.0418	0.0583
0.0771	0.0985	0.1240	0.1522	0.1836
0.2195	0.2610	0.3049	0.3506	0.3978
0.4479	0.5002	0.5538	0.6094	0.6662
0.7242	0.7836	0.8484	0.9202	1.0000

Hrad:

0.0186	0.0378	0.0522	0.0647	0.0761
0.0869	0.0833	0.0991	0.1238	0.1521
0.1842	0.2234	0.2643	0.3057	0.3529
0.4033	0.4529	0.5024	0.5566	0.6095
0.6611	0.7116	0.7609	0.8091	0.8549
0.8566	0.7755	0.5825	0.4473	0.4275
0.4272	0.4531	0.4754	0.4798	0.5305
0.5540	0.5762	0.6181	0.6613	0.7008
0.7069	0.7578	0.8037	0.8476	0.8986
0.9453	0.9935	1.0111	1.0126	1.0000

Width:

0.0006	0.0008	0.0010	0.0012	0.0013
0.0015	0.0029	0.0042	0.0054	0.0066
0.0079	0.0089	0.0099	0.0109	0.0117

0.0123	0.0129	0.0135	0.0139	0.0143
0.0148	0.0152	0.0156	0.0160	0.0165
0.0302	0.0545	0.1174	0.1903	0.2172
0.2441	0.2824	0.3340	0.3688	0.4027
0.4809	0.5317	0.5555	0.5716	0.5975
0.6381	0.6517	0.6733	0.6957	0.7083
0.7239	0.7506	0.8474	0.9612	1.0000

Transect 3613.455
Area:

0.0002	0.0004	0.0006	0.0009	0.0012
0.0017	0.0022	0.0029	0.0038	0.0047
0.0056	0.0066	0.0077	0.0088	0.0099
0.0111	0.0124	0.0138	0.0182	0.0283
0.0449	0.0665	0.0906	0.1159	0.1418
0.1683	0.1954	0.2230	0.2515	0.2816
0.3125	0.3438	0.3757	0.4082	0.4411
0.4746	0.5087	0.5434	0.5788	0.6150
0.6517	0.6889	0.7265	0.7644	0.8026
0.8412	0.8802	0.9197	0.9597	1.0000

Hrad:

0.0331	0.0611	0.0847	0.1053	0.1029
0.1095	0.1241	0.1395	0.1595	0.1832
0.2079	0.2325	0.2568	0.2799	0.3021
0.3223	0.3420	0.3582	0.2954	0.1133
0.1216	0.1344	0.1470	0.1825	0.2187
0.2528	0.2877	0.3201	0.3541	0.3706
0.4059	0.4392	0.4715	0.5047	0.5363
0.5677	0.5996	0.6252	0.6547	0.6799
0.7125	0.7432	0.7792	0.8124	0.8458
0.8776	0.9057	0.9330	0.9664	1.0000

Width:

0.0049	0.0055	0.0061	0.0067	0.0097
0.0131	0.0160	0.0189	0.0213	0.0229
0.0243	0.0255	0.0266	0.0278	0.0291
0.0306	0.0321	0.0454	0.1779	0.3374
0.4829	0.5705	0.6178	0.6333	0.6464
0.6639	0.6774	0.6970	0.7172	0.7586
0.7685	0.7817	0.7958	0.8076	0.8214
0.8351	0.8474	0.8684	0.8835	0.9040
0.9142	0.9266	0.9320	0.9406	0.9486
0.9583	0.9717	0.9856	0.9930	1.0000

Transect 3621.185
Area:

0.0004	0.0007	0.0011	0.0015	0.0019
0.0024	0.0029	0.0035	0.0041	0.0049
0.0057	0.0065	0.0074	0.0084	0.0095
0.0117	0.0184	0.0313	0.0501	0.0713
0.0935	0.1162	0.1396	0.1638	0.1889
0.2144	0.2404	0.2680	0.2961	0.3249
0.3539	0.3833	0.4131	0.4431	0.4738
0.5050	0.5371	0.5701	0.6036	0.6379
0.6725	0.7075	0.7429	0.7787	0.8148
0.8513	0.8882	0.9254	0.9626	1.0000

Hrad:

0.0349	0.0650	0.0915	0.1151	0.1365
0.1527	0.1595	0.1690	0.1797	0.1968
0.2150	0.2294	0.2446	0.2614	0.2774
0.2573	0.1878	0.1290	0.1169	0.1237
0.1559	0.1889	0.2210	0.2489	0.2793
0.3126	0.3437	0.3593	0.3851	0.4210
0.4512	0.4854	0.5161	0.5491	0.5756

0.5977	0.6158	0.6388	0.6663	0.6907
0.7245	0.7514	0.7810	0.8096	0.8398
0.8693	0.8961	0.9304	0.9658	1.0000

Width:

0.0098	0.0102	0.0106	0.0110	0.0113
0.0122	0.0144	0.0167	0.0190	0.0206
0.0219	0.0237	0.0255	0.0271	0.0288
0.1178	0.2396	0.4588	0.5494	0.5856
0.5979	0.6135	0.6376	0.6618	0.6748
0.6848	0.7113	0.7446	0.7677	0.7707
0.7833	0.7885	0.7993	0.8107	0.8221
0.8440	0.8716	0.8918	0.9076	0.9231
0.9278	0.9412	0.9509	0.9616	0.9701
0.9792	0.9912	0.9946	0.9967	1.0000

Transect 3640.294
Area:

0.0001	0.0005	0.0009	0.0014	0.0021
0.0032	0.0044	0.0058	0.0073	0.0088
0.0106	0.0126	0.0147	0.0168	0.0190
0.0213	0.0236	0.0262	0.0300	0.0400
0.0578	0.0786	0.1003	0.1229	0.1474
0.1731	0.1994	0.2267	0.2547	0.2833
0.3125	0.3421	0.3726	0.4042	0.4361
0.4684	0.5009	0.5336	0.5667	0.6004
0.6355	0.6716	0.7086	0.7477	0.7875
0.8287	0.8705	0.9125	0.9558	1.0000

Hrad:

0.0144	0.0517	0.0819	0.1078	0.1048
0.1181	0.1429	0.1672	0.1900	0.2120
0.2209	0.2379	0.2617	0.2860	0.3098
0.3318	0.3418	0.3533	0.3275	0.2161
0.1233	0.1567	0.1966	0.2330	0.2545
0.2879	0.3242	0.3584	0.3932	0.4296
0.4680	0.5013	0.5385	0.5628	0.6000
0.6397	0.6801	0.7208	0.7531	0.7832
0.7936	0.8199	0.8413	0.8463	0.8757
0.8959	0.9316	0.9650	0.9836	1.0000

Width:

0.0080	0.0090	0.0100	0.0110	0.0209
0.0267	0.0291	0.0313	0.0337	0.0359
0.0426	0.0454	0.0468	0.0479	0.0490
0.0503	0.0554	0.0596	0.1429	0.3092
0.4517	0.4793	0.4852	0.5271	0.5572
0.5801	0.5950	0.6134	0.6296	0.6422
0.6511	0.6667	0.6976	0.7044	0.7136
0.7197	0.7246	0.7288	0.7416	0.7625
0.7917	0.8109	0.8501	0.8777	0.8980
0.9212	0.9313	0.9439	0.9704	1.0000

Transect 3649.104
Area:

0.0005	0.0019	0.0036	0.0054	0.0075
0.0097	0.0121	0.0147	0.0175	0.0204
0.0236	0.0271	0.0309	0.0350	0.0412
0.0521	0.0653	0.0803	0.0968	0.1147
0.1339	0.1546	0.1766	0.1996	0.2237
0.2486	0.2743	0.3007	0.3278	0.3554
0.3835	0.4123	0.4415	0.4712	0.5013
0.5319	0.5630	0.5945	0.6264	0.6588
0.6914	0.7243	0.7575	0.7910	0.8248
0.8590	0.8936	0.9285	0.9640	1.0000

Hrad:

0.0212	0.0491	0.0749	0.0962	0.1147
0.1315	0.1471	0.1618	0.1758	0.1892
0.2007	0.2126	0.2250	0.2377	0.2489
0.2427	0.2426	0.2491	0.2603	0.2740
0.2888	0.3050	0.3229	0.3429	0.3637
0.3856	0.4079	0.4316	0.4560	0.4805
0.5048	0.5290	0.5543	0.5793	0.6042
0.6289	0.6534	0.6775	0.7018	0.7303
0.7588	0.7873	0.8158	0.8433	0.8708
0.8982	0.9257	0.9509	0.9754	1.0000

Width:

0.0291	0.0431	0.0482	0.0534	0.0585
0.0637	0.0688	0.0739	0.0791	0.0844
0.0925	0.1006	0.1087	0.1168	0.2431
0.3343	0.3914	0.4352	0.4732	0.5106
0.5502	0.5881	0.6214	0.6487	0.6745
0.6974	0.7191	0.7371	0.7527	0.7682
0.7838	0.7993	0.8118	0.8242	0.8367
0.8491	0.8616	0.8744	0.8871	0.8948
0.9026	0.9103	0.9181	0.9277	0.9373
0.9469	0.9564	0.9700	0.9850	1.0000

Transect 3734.707
Area:

0.0006	0.0023	0.0044	0.0067	0.0094
0.0123	0.0155	0.0190	0.0228	0.0269
0.0314	0.0364	0.0417	0.0475	0.0537
0.0607	0.0707	0.0830	0.0974	0.1141
0.1331	0.1535	0.1753	0.1987	0.2232
0.2485	0.2746	0.3014	0.3287	0.3564
0.3844	0.4126	0.4410	0.4696	0.4985
0.5275	0.5568	0.5863	0.6161	0.6463
0.6767	0.7075	0.7388	0.7707	0.8036
0.8398	0.8785	0.9181	0.9586	1.0000

Hrad:

0.0233	0.0531	0.0842	0.1108	0.1348
0.1570	0.1779	0.1979	0.2172	0.2323
0.2480	0.2642	0.2808	0.2977	0.3249
0.2972	0.2719	0.2734	0.2843	0.2894
0.3120	0.3363	0.3549	0.3755	0.4050
0.4340	0.4629	0.4913	0.5236	0.5552
0.5869	0.6180	0.6486	0.6786	0.7081
0.7370	0.7654	0.7926	0.8190	0.8449
0.8703	0.8952	0.9162	0.9364	0.9499
0.9387	0.9531	0.9696	0.9851	1.0000

Width:

0.0284	0.0461	0.0528	0.0595	0.0663
0.0730	0.0797	0.0864	0.0932	0.1029
0.1127	0.1225	0.1323	0.1421	0.1530
0.2017	0.2680	0.3185	0.3674	0.4306
0.4679	0.5003	0.5384	0.5721	0.5922
0.6115	0.6284	0.6453	0.6539	0.6623
0.6677	0.6728	0.6779	0.6830	0.6881
0.6932	0.6984	0.7054	0.7131	0.7207
0.7283	0.7360	0.7513	0.7675	0.7987
0.9040	0.9321	0.9515	0.9727	1.0000

Transect 3762.625
Area:

0.0001	0.0002	0.0003	0.0005	0.0006
0.0008	0.0009	0.0011	0.0015	0.0020
0.0029	0.0039	0.0051	0.0064	0.0080
0.0099	0.0119	0.0142	0.0166	0.0196

0.0239	0.0306	0.0439	0.0631	0.0849
0.1115	0.1414	0.1728	0.2054	0.2387
0.2732	0.3083	0.3440	0.3801	0.4168
0.4539	0.4914	0.5291	0.5670	0.6052
0.6435	0.6821	0.7211	0.7603	0.7998
0.8395	0.8793	0.9194	0.9596	1.0000

Hrad:

0.0288	0.0527	0.0713	0.0868	0.1005
0.1130	0.1246	0.1168	0.1063	0.0949
0.1067	0.1305	0.1530	0.1749	0.1936
0.2112	0.2043	0.2309	0.2565	0.2757
0.2796	0.2655	0.2220	0.1576	0.1525
0.1803	0.2107	0.2149	0.2542	0.2849
0.3190	0.3542	0.3884	0.4206	0.4562
0.4943	0.5288	0.5667	0.6025	0.6402
0.6787	0.7139	0.7461	0.7828	0.8175
0.8536	0.8905	0.9272	0.9626	1.0000

Width:

0.0026	0.0029	0.0032	0.0035	0.0038
0.0041	0.0044	0.0064	0.0105	0.0182
0.0238	0.0266	0.0295	0.0371	0.0426
0.0477	0.0544	0.0574	0.0638	0.0877
0.1293	0.2394	0.4134	0.5054	0.6001
0.7110	0.7544	0.8035	0.8071	0.8442
0.8641	0.8712	0.8850	0.9033	0.9134
0.9179	0.9290	0.9333	0.9409	0.9452
0.9479	0.9610	0.9664	0.9720	0.9782
0.9834	0.9875	0.9916	0.9969	1.0000

Transect 3775.164
Area:

0.0001	0.0003	0.0005	0.0007	0.0010
0.0012	0.0015	0.0020	0.0026	0.0034
0.0045	0.0057	0.0070	0.0083	0.0097
0.0112	0.0127	0.0142	0.0159	0.0177
0.0198	0.0226	0.0270	0.0376	0.0587
0.0858	0.1170	0.1493	0.1824	0.2166
0.2516	0.2874	0.3237	0.3604	0.3978
0.4359	0.4743	0.5130	0.5520	0.5913
0.6308	0.6706	0.7108	0.7513	0.7922
0.8334	0.8746	0.9162	0.9580	1.0000

Hrad:

0.0313	0.0608	0.0851	0.1061	0.1249
0.1421	0.1350	0.1276	0.1349	0.1422
0.1480	0.1760	0.2036	0.2313	0.2597
0.2881	0.3155	0.3419	0.3662	0.3867
0.4030	0.3991	0.3336	0.2369	0.1855
0.1355	0.1551	0.1922	0.2284	0.2631
0.3007	0.3346	0.3726	0.4100	0.4436
0.4798	0.5155	0.5555	0.5938	0.6309
0.6714	0.7047	0.7406	0.7782	0.8128
0.8500	0.8899	0.9238	0.9622	1.0000

Width:

0.0041	0.0045	0.0050	0.0054	0.0059
0.0063	0.0087	0.0130	0.0167	0.0213
0.0275	0.0294	0.0311	0.0327	0.0340
0.0351	0.0363	0.0376	0.0421	0.0462
0.0508	0.0845	0.1246	0.3934	0.5901
0.7070	0.7532	0.7778	0.8010	0.8225
0.8405	0.8581	0.8683	0.8785	0.8963
0.9081	0.9197	0.9232	0.9294	0.9369
0.9393	0.9514	0.9597	0.9654	0.9746
0.9804	0.9827	0.9918	0.9956	1.0000

Transect 3804.186
Area:

0.0002	0.0004	0.0006	0.0008	0.0011
0.0014	0.0022	0.0032	0.0044	0.0058
0.0072	0.0088	0.0103	0.0120	0.0137
0.0154	0.0172	0.0190	0.0209	0.0230
0.0252	0.0278	0.0314	0.0418	0.0645
0.0937	0.1239	0.1548	0.1868	0.2198
0.2536	0.2882	0.3233	0.3588	0.3951
0.4320	0.4692	0.5072	0.5457	0.5849
0.6246	0.6648	0.7054	0.7466	0.7881
0.8298	0.8718	0.9142	0.9569	1.0000

Hrad:

0.0307	0.0613	0.0864	0.1081	0.1273
0.1040	0.0920	0.1130	0.1375	0.1597
0.1927	0.2247	0.2558	0.2861	0.3158
0.3447	0.3731	0.3994	0.4243	0.4452
0.4640	0.4726	0.4119	0.2153	0.1551
0.1366	0.1758	0.2119	0.2492	0.2862
0.3203	0.3563	0.3968	0.4329	0.4676
0.5041	0.5360	0.5734	0.6060	0.6427
0.6756	0.7106	0.7488	0.7802	0.8190
0.8581	0.8967	0.9272	0.9656	1.0000

Width:

0.0046	0.0050	0.0054	0.0059	0.0063
0.0113	0.0213	0.0259	0.0295	0.0334
0.0347	0.0359	0.0370	0.0382	0.0394
0.0405	0.0416	0.0429	0.0458	0.0503
0.0544	0.0661	0.1393	0.3441	0.6522
0.6881	0.7028	0.7291	0.7483	0.7734
0.7905	0.8078	0.8136	0.8324	0.8440
0.8561	0.8745	0.8838	0.8999	0.9121
0.9241	0.9352	0.9418	0.9567	0.9620
0.9669	0.9720	0.9858	0.9909	1.0000

Transect 3957.179
Area:

0.0001	0.0004	0.0008	0.0014	0.0021
0.0029	0.0038	0.0050	0.0065	0.0081
0.0098	0.0116	0.0135	0.0154	0.0174
0.0195	0.0217	0.0243	0.0272	0.0317
0.0432	0.0597	0.0801	0.1012	0.1232
0.1462	0.1703	0.1952	0.2216	0.2489
0.2776	0.3078	0.3387	0.3698	0.4023
0.4360	0.4709	0.5071	0.5438	0.5812
0.6197	0.6592	0.6995	0.7404	0.7817
0.8236	0.8665	0.9102	0.9549	1.0000

Hrad:

0.0314	0.0592	0.0696	0.0928	0.1196
0.1443	0.1577	0.1675	0.1870	0.2136
0.2454	0.2775	0.3060	0.3385	0.3702
0.3958	0.4160	0.4260	0.3959	0.2148
0.1351	0.1705	0.1730	0.2152	0.2474
0.2864	0.3177	0.3410	0.3715	0.4094
0.4297	0.4537	0.4954	0.5334	0.5501
0.5795	0.5954	0.6301	0.6679	0.7034
0.7171	0.7563	0.7794	0.8169	0.8519
0.8861	0.9053	0.9323	0.9649	1.0000

Width:

0.0045	0.0064	0.0109	0.0142	0.0167
0.0192	0.0236	0.0292	0.0337	0.0368
0.0387	0.0403	0.0423	0.0436	0.0449

0.0469	0.0525	0.0603	0.0659	0.1510
0.3310	0.4240	0.4613	0.4732	0.4970
0.5211	0.5345	0.5711	0.5952	0.6065
0.6448	0.6772	0.6825	0.6922	0.7302
0.7513	0.7901	0.8040	0.8152	0.8313
0.8638	0.8778	0.8971	0.9060	0.9173
0.9292	0.9569	0.9762	0.9897	1.0000

Transect 4108.305
Area:

0.0002	0.0004	0.0008	0.0012	0.0016
0.0021	0.0026	0.0031	0.0039	0.0048
0.0058	0.0068	0.0080	0.0093	0.0106
0.0121	0.0135	0.0151	0.0167	0.0186
0.0209	0.0235	0.0268	0.0320	0.0405
0.0544	0.0795	0.1115	0.1467	0.1827
0.2188	0.2551	0.2918	0.3292	0.3667
0.4044	0.4424	0.4812	0.5208	0.5615
0.6040	0.6469	0.6901	0.7337	0.7774
0.8214	0.8656	0.9102	0.9550	1.0000

Hrad:

0.1147	0.2219	0.3160	0.4296	0.5352
0.6380	0.7353	0.7017	0.7148	0.8025
0.8936	0.9822	1.0697	1.1632	1.2560
1.3427	1.4252	1.5056	1.5750	1.6260
1.6437	1.6335	1.5922	1.4427	1.0037
0.8014	0.5992	0.4890	0.4449	0.4417
0.4537	0.4719	0.4915	0.5157	0.5453
0.5765	0.6029	0.6213	0.6475	0.6673
0.6367	0.6777	0.7181	0.7593	0.8014
0.8397	0.8803	0.9200	0.9596	1.0000

Width:

0.0049	0.0067	0.0084	0.0093	0.0102
0.0109	0.0117	0.0150	0.0185	0.0201
0.0224	0.0250	0.0274	0.0292	0.0307
0.0322	0.0334	0.0345	0.0396	0.0455
0.0545	0.0641	0.0864	0.1505	0.2349
0.4144	0.6486	0.7591	0.7929	0.7990
0.8021	0.8101	0.8219	0.8305	0.8328
0.8351	0.8504	0.8643	0.8888	0.9215
0.9485	0.9547	0.9616	0.9667	0.9700
0.9787	0.9838	0.9897	0.9955	1.0000

Transect 4263.057
Area:

0.0001	0.0002	0.0004	0.0007	0.0011
0.0015	0.0020	0.0024	0.0030	0.0037
0.0044	0.0053	0.0061	0.0070	0.0079
0.0089	0.0100	0.0115	0.0145	0.0209
0.0325	0.0496	0.0718	0.0962	0.1219
0.1488	0.1765	0.2062	0.2375	0.2694
0.3018	0.3345	0.3674	0.4004	0.4338
0.4685	0.5045	0.5410	0.5783	0.6156
0.6532	0.6909	0.7289	0.7669	0.8051
0.8435	0.8823	0.9214	0.9606	1.0000

Hrad:

0.1025	0.1941	0.2769	0.2879	0.4203
0.5321	0.6200	0.7042	0.7967	0.8691
0.9226	0.9796	1.0452	1.1130	1.1795
1.2009	1.2025	0.9588	0.8802	0.6571
0.4671	0.3622	0.3136	0.3001	0.3037
0.3193	0.3412	0.3571	0.3701	0.3913
0.4188	0.4466	0.4760	0.5054	0.5347

0.5324	0.5687	0.5841	0.6164	0.6537
0.6885	0.7240	0.7612	0.7965	0.8329
0.8626	0.8984	0.9316	0.9672	1.0000

Width:

0.0025	0.0037	0.0054	0.0095	0.0100
0.0108	0.0120	0.0132	0.0142	0.0192
0.0203	0.0213	0.0222	0.0230	0.0239
0.0255	0.0303	0.0515	0.1074	0.2267
0.3634	0.5126	0.6031	0.6278	0.6752
0.6848	0.7257	0.7737	0.8026	0.8125
0.8237	0.8304	0.8343	0.8398	0.8535
0.9033	0.9171	0.9326	0.9446	0.9471
0.9534	0.9583	0.9605	0.9653	0.9683
0.9800	0.9844	0.9900	0.9934	1.0000

Transect 4347.811
Area:

0.0001	0.0003	0.0005	0.0009	0.0014
0.0019	0.0026	0.0033	0.0040	0.0048
0.0055	0.0063	0.0072	0.0083	0.0102
0.0152	0.0276	0.0454	0.0662	0.0889
0.1124	0.1359	0.1596	0.1834	0.2074
0.2316	0.2571	0.2841	0.3129	0.3424
0.3720	0.4019	0.4323	0.4632	0.4948
0.5268	0.5592	0.5921	0.6254	0.6589
0.6925	0.7262	0.7600	0.7940	0.8281
0.8624	0.8966	0.9310	0.9654	1.0000

Hrad:

0.1033	0.1827	0.2399	0.2556	0.3519
0.4468	0.5380	0.6302	0.7179	0.8016
0.8891	0.9740	1.0488	0.8447	0.8106
0.6104	0.3621	0.2673	0.2362	0.2318
0.2483	0.2706	0.2947	0.3207	0.3457
0.3733	0.3994	0.4077	0.4108	0.4020
0.4361	0.4621	0.4942	0.5158	0.5464
0.5713	0.6008	0.6259	0.6555	0.6863
0.7180	0.7508	0.7816	0.8120	0.8441
0.8759	0.9082	0.9401	0.9725	1.0000

Width:

0.0039	0.0057	0.0081	0.0131	0.0157
0.0177	0.0193	0.0203	0.0213	0.0222
0.0229	0.0236	0.0253	0.0402	0.0780
0.2508	0.4451	0.5657	0.6289	0.6725
0.6776	0.6796	0.6839	0.6869	0.6951
0.7100	0.7573	0.8099	0.8425	0.8527
0.8543	0.8732	0.8812	0.9045	0.9141
0.9297	0.9382	0.9543	0.9620	0.9672
0.9708	0.9723	0.9769	0.9818	0.9841
0.9869	0.9887	0.9911	0.9935	1.0000

Transect 4356.489
Area:

0.0000	0.0001	0.0003	0.0006	0.0010
0.0013	0.0018	0.0023	0.0028	0.0035
0.0042	0.0051	0.0060	0.0071	0.0081
0.0092	0.0103	0.0114	0.0126	0.0140
0.0157	0.0177	0.0210	0.0299	0.0496
0.0748	0.1034	0.1349	0.1689	0.2043
0.2402	0.2766	0.3137	0.3520	0.3909
0.4299	0.4690	0.5083	0.5484	0.5888
0.6293	0.6698	0.7104	0.7509	0.7915
0.8322	0.8734	0.9152	0.9574	1.0000

Hrad:

0.0832	0.1557	0.2091	0.3349	0.4487
0.5551	0.6421	0.7146	0.7728	0.8371
0.8857	0.9227	1.0089	1.1414	1.2898
1.4383	1.5829	1.7194	1.8466	1.9201
1.9607	1.9514	1.7845	1.2709	0.7418
0.5182	0.4439	0.4113	0.3923	0.4033
0.4199	0.4427	0.4684	0.4882	0.5079
0.5362	0.5699	0.6031	0.6350	0.6163
0.6587	0.7011	0.7435	0.7855	0.8272
0.8672	0.9027	0.9282	0.9630	1.0000

Width:

0.0016	0.0034	0.0064	0.0074	0.0084
0.0094	0.0107	0.0123	0.0142	0.0162
0.0186	0.0215	0.0235	0.0245	0.0249
0.0253	0.0258	0.0269	0.0282	0.0372
0.0432	0.0562	0.1099	0.3317	0.5560
0.6315	0.7090	0.7643	0.8269	0.8346
0.8470	0.8596	0.8836	0.9084	0.9140
0.9159	0.9177	0.9333	0.9441	0.9500
0.9502	0.9504	0.9506	0.9513	0.9524
0.9577	0.9755	0.9864	0.9960	1.0000

Transect 4380.968
Area:

0.0005	0.0013	0.0020	0.0028	0.0036
0.0043	0.0051	0.0059	0.0067	0.0075
0.0083	0.0091	0.0099	0.0107	0.0115
0.0124	0.0132	0.0142	0.0158	0.0179
0.0203	0.0229	0.0258	0.0305	0.0385
0.0503	0.0684	0.0909	0.1153	0.1419
0.1703	0.2010	0.2344	0.2716	0.3115
0.3531	0.3957	0.4387	0.4823	0.5265
0.5716	0.6172	0.6633	0.7101	0.7576
0.8053	0.8530	0.9009	0.9500	1.0000

Hrad:

0.1439	0.3373	0.5228	0.7010	0.8724
1.0375	1.1967	1.3504	1.4988	1.6424
1.7815	1.9162	2.0469	2.1737	2.2970
2.4168	2.5169	2.5689	2.4332	2.3066
2.2193	2.1302	2.0487	1.8162	1.4823
1.1974	0.9216	0.7351	0.6576	0.6143
0.6056	0.6047	0.6086	0.6112	0.5708
0.5916	0.5980	0.6298	0.6595	0.6885
0.7172	0.7462	0.7801	0.8133	0.8498
0.8733	0.9126	0.9518	0.9856	1.0000

Width:

0.0148	0.0150	0.0151	0.0152	0.0153
0.0154	0.0155	0.0156	0.0157	0.0159
0.0160	0.0161	0.0162	0.0163	0.0164
0.0165	0.0168	0.0256	0.0374	0.0439
0.0495	0.0548	0.0660	0.1285	0.1861
0.2959	0.4085	0.4689	0.5059	0.5494
0.5818	0.6355	0.7034	0.7752	0.8101
0.8355	0.8517	0.8580	0.8738	0.8861
0.9018	0.9114	0.9223	0.9388	0.9465
0.9481	0.9489	0.9613	0.9824	1.0000

Transect 4384.664
Area:

0.0000	0.0001	0.0003	0.0005	0.0008
0.0011	0.0015	0.0020	0.0025	0.0031
0.0037	0.0042	0.0048	0.0055	0.0061
0.0067	0.0074	0.0083	0.0097	0.0116

0.0140	0.0165	0.0199	0.0265	0.0372
0.0510	0.0672	0.0880	0.1156	0.1493
0.1853	0.2223	0.2598	0.2981	0.3376
0.3786	0.4209	0.4638	0.5070	0.5504
0.5939	0.6375	0.6813	0.7251	0.7693
0.8147	0.8606	0.9069	0.9534	1.0000

Hrad:

0.1030	0.2189	0.3500	0.4366	0.5078
0.5526	0.5804	0.5776	0.6825	0.7857
0.9032	1.0162	1.1253	1.2306	1.3325
1.4271	1.4725	1.4834	1.4043	1.2086
1.1303	1.0818	0.9630	0.7502	0.5777
0.4905	0.4547	0.3917	0.3727	0.3674
0.3782	0.3999	0.4276	0.4574	0.4811
0.5044	0.5343	0.5506	0.5906	0.6297
0.6703	0.7111	0.7519	0.7922	0.8235
0.8547	0.8621	0.9083	0.9558	1.0000

Width:

0.0017	0.0029	0.0038	0.0060	0.0064
0.0072	0.0098	0.0109	0.0115	0.0121
0.0124	0.0126	0.0129	0.0132	0.0135
0.0139	0.0156	0.0252	0.0334	0.0495
0.0518	0.0544	0.1101	0.1774	0.2638
0.3204	0.3956	0.5024	0.6829	0.7521
0.7841	0.7973	0.8107	0.8225	0.8637
0.8915	0.9148	0.9222	0.9249	0.9292
0.9315	0.9341	0.9360	0.9382	0.9588
0.9785	0.9889	0.9923	0.9945	1.0000

Transect 4405.269
Area:

0.0000	0.0001	0.0003	0.0006	0.0008
0.0012	0.0016	0.0023	0.0029	0.0037
0.0044	0.0051	0.0059	0.0067	0.0076
0.0085	0.0094	0.0105	0.0118	0.0141
0.0175	0.0217	0.0271	0.0345	0.0488
0.0673	0.0872	0.1077	0.1310	0.1590
0.1904	0.2226	0.2554	0.2887	0.3225
0.3573	0.3927	0.4294	0.4674	0.5068
0.5467	0.5875	0.6303	0.6779	0.7289
0.7809	0.8344	0.8892	0.9444	1.0000

Hrad:

0.0977	0.1110	0.2790	0.4256	0.5591
0.6487	0.5752	0.7445	0.8905	1.0349
1.1760	1.3134	1.4050	1.4926	1.5844
1.7119	1.8201	1.9006	1.9091	1.7397
1.5109	0.9401	0.9280	0.8761	0.7256
0.6234	0.5880	0.6008	0.6118	0.6125
0.6154	0.6323	0.6574	0.6868	0.7196
0.7496	0.7835	0.8182	0.8398	0.8458
0.8842	0.9170	0.9375	0.9368	0.8672
0.8869	0.8824	0.9115	0.9596	1.0000

Width:

0.0008	0.0034	0.0041	0.0047	0.0053
0.0063	0.0103	0.0120	0.0125	0.0128
0.0131	0.0134	0.0142	0.0150	0.0157
0.0161	0.0175	0.0203	0.0291	0.0519
0.0669	0.0866	0.1065	0.1673	0.3041
0.3460	0.3608	0.3818	0.4539	0.5370
0.5708	0.5791	0.5883	0.5994	0.6101
0.6238	0.6426	0.6614	0.6965	0.7068
0.7175	0.7402	0.7954	0.8937	0.9181
0.9347	0.9676	0.9807	0.9859	1.0000

Transect 4546.604
Area:

0.0000	0.0001	0.0002	0.0003	0.0004
0.0006	0.0010	0.0015	0.0019	0.0024
0.0029	0.0035	0.0040	0.0046	0.0053
0.0060	0.0068	0.0077	0.0087	0.0098
0.0126	0.0220	0.0374	0.0576	0.0832
0.1119	0.1416	0.1723	0.2037	0.2357
0.2683	0.3015	0.3350	0.3688	0.4031
0.4382	0.4739	0.5103	0.5475	0.5853
0.6236	0.6622	0.7015	0.7417	0.7827
0.8242	0.8663	0.9095	0.9542	1.0000

Hrad:

0.0827	0.1691	0.2659	0.3464	0.2746
0.2576	0.3618	0.4893	0.6065	0.7147
0.8124	0.8988	0.9753	1.0407	1.0834
1.1118	1.1087	1.0820	1.0616	1.0659
0.8567	0.4766	0.2816	0.2353	0.2004
0.2291	0.2625	0.2975	0.3338	0.3710
0.4072	0.4451	0.4828	0.5199	0.5559
0.5871	0.6214	0.6532	0.6808	0.7176
0.7485	0.7861	0.8143	0.8248	0.8579
0.9002	0.9273	0.9638	0.9747	1.0000

Width:

0.0010	0.0016	0.0018	0.0020	0.0038
0.0078	0.0092	0.0097	0.0101	0.0106
0.0113	0.0120	0.0128	0.0137	0.0148
0.0161	0.0180	0.0203	0.0229	0.0284
0.1265	0.2826	0.3871	0.4943	0.6015
0.6337	0.6508	0.6722	0.6870	0.6975
0.7125	0.7202	0.7285	0.7373	0.7499
0.7664	0.7785	0.7958	0.8127	0.8225
0.8335	0.8405	0.8575	0.8800	0.8936
0.9013	0.9215	0.9564	0.9756	1.0000

Transect 4692.952
Area:

0.0000	0.0000	0.0001	0.0001	0.0002
0.0003	0.0005	0.0007	0.0009	0.0012
0.0016	0.0019	0.0023	0.0027	0.0031
0.0035	0.0040	0.0045	0.0050	0.0056
0.0062	0.0071	0.0092	0.0146	0.0279
0.0465	0.0702	0.1002	0.1343	0.1710
0.2089	0.2474	0.2864	0.3260	0.3661
0.4066	0.4471	0.4879	0.5289	0.5701
0.6115	0.6531	0.6951	0.7376	0.7803
0.8232	0.8667	0.9105	0.9550	1.0000

Hrad:

0.0675	0.1349	0.2024	0.2699	0.3089
0.3522	0.3961	0.4194	0.4694	0.5462
0.6775	0.8003	0.9158	1.0249	1.1154
1.1115	1.2042	1.2466	1.2686	1.2936
1.3213	1.3196	1.0742	0.6653	0.3058
0.2371	0.2184	0.1744	0.1885	0.2140
0.2399	0.2818	0.3208	0.3576	0.3992
0.4427	0.4856	0.5295	0.5691	0.6119
0.6547	0.6982	0.7287	0.7689	0.8122
0.8541	0.8863	0.9311	0.9565	1.0000

Width:

0.0004	0.0007	0.0011	0.0015	0.0021
0.0028	0.0037	0.0051	0.0063	0.0073
0.0076	0.0080	0.0083	0.0087	0.0092

0.0101	0.0107	0.0114	0.0124	0.0135
0.0146	0.0282	0.0717	0.1941	0.3671
0.4626	0.6001	0.7126	0.7916	0.8332
0.8480	0.8573	0.8707	0.8862	0.8935
0.8978	0.9018	0.9050	0.9113	0.9158
0.9195	0.9230	0.9368	0.9446	0.9491
0.9566	0.9685	0.9759	0.9939	1.0000

Transect 4826.403
Area:

0.0000	0.0001	0.0004	0.0006	0.0009
0.0013	0.0021	0.0062	0.0168	0.0331
0.0537	0.0755	0.0979	0.1209	0.1441
0.1675	0.1910	0.2147	0.2386	0.2627
0.2871	0.3115	0.3359	0.3603	0.3847
0.4092	0.4337	0.4581	0.4826	0.5071
0.5317	0.5562	0.5807	0.6053	0.6299
0.6545	0.6791	0.7037	0.7283	0.7530
0.7776	0.8023	0.8269	0.8516	0.8763
0.9010	0.9257	0.9505	0.9752	1.0000

Hrad:

0.0254	0.0266	0.0626	0.0956	0.1188
0.1500	0.1293	0.0650	0.0524	0.0617
0.0747	0.0949	0.1165	0.1388	0.1613
0.1847	0.2085	0.2324	0.2563	0.2799
0.2976	0.3221	0.3466	0.3710	0.3955
0.4199	0.4443	0.4688	0.4932	0.5176
0.5420	0.5662	0.5905	0.6147	0.6390
0.6633	0.6874	0.7116	0.7357	0.7599
0.7842	0.8085	0.8326	0.8566	0.8805
0.9044	0.9283	0.9522	0.9762	1.0000

Width:

0.0019	0.0084	0.0093	0.0104	0.0132
0.0161	0.0778	0.2805	0.5611	0.7938
0.8551	0.8923	0.9179	0.9321	0.9422
0.9469	0.9532	0.9591	0.9694	0.9781
0.9846	0.9851	0.9856	0.9862	0.9869
0.9875	0.9881	0.9885	0.9891	0.9896
0.9900	0.9906	0.9913	0.9919	0.9924
0.9929	0.9935	0.9941	0.9946	0.9950
0.9953	0.9955	0.9959	0.9965	0.9972
0.9978	0.9985	0.9989	0.9994	1.0000

Transect 4968.21
Area:

0.0000	0.0001	0.0002	0.0004	0.0007
0.0011	0.0016	0.0021	0.0025	0.0030
0.0036	0.0041	0.0047	0.0054	0.0061
0.0069	0.0082	0.0100	0.0132	0.0241
0.0445	0.0704	0.0989	0.1288	0.1592
0.1899	0.2210	0.2523	0.2839	0.3156
0.3474	0.3794	0.4114	0.4436	0.4758
0.5081	0.5406	0.5733	0.6063	0.6399
0.6738	0.7084	0.7442	0.7804	0.8166
0.8530	0.8895	0.9261	0.9630	1.0000

Hrad:

0.0497	0.0939	0.1606	0.1324	0.1841
0.2546	0.3469	0.4363	0.5230	0.6072
0.6247	0.6954	0.7371	0.7800	0.8238
0.8576	0.6706	0.6809	0.6217	0.3635
0.2329	0.1989	0.2007	0.2149	0.2399
0.2662	0.2965	0.3266	0.3579	0.3902
0.4219	0.4554	0.4882	0.5208	0.5541

0.5876	0.6183	0.6498	0.6804	0.7104
0.7408	0.7719	0.7786	0.8107	0.8429
0.8749	0.9067	0.9386	0.9702	1.0000

Width:

0.0010	0.0023	0.0029	0.0076	0.0107
0.0123	0.0125	0.0127	0.0130	0.0132
0.0151	0.0157	0.0170	0.0183	0.0215
0.0250	0.0434	0.0572	0.1494	0.4354
0.6418	0.7454	0.7910	0.8201	0.8242
0.8394	0.8420	0.8496	0.8548	0.8576
0.8630	0.8635	0.8664	0.8702	0.8719
0.8737	0.8812	0.8868	0.8983	0.9130
0.9262	0.9445	0.9756	0.9777	0.9805
0.9831	0.9885	0.9929	0.9983	1.0000

Transect 5103.876
Area:

0.0000	0.0001	0.0003	0.0005	0.0008
0.0012	0.0018	0.0025	0.0032	0.0040
0.0049	0.0057	0.0067	0.0077	0.0088
0.0109	0.0183	0.0321	0.0511	0.0740
0.0995	0.1267	0.1547	0.1832	0.2120
0.2409	0.2698	0.2989	0.3281	0.3574
0.3868	0.4166	0.4477	0.4795	0.5114
0.5436	0.5758	0.6081	0.6404	0.6728
0.7052	0.7376	0.7701	0.8027	0.8353
0.8680	0.9009	0.9338	0.9668	1.0000

Hrad:

0.0399	0.0799	0.1177	0.1552	0.1872
0.2167	0.2513	0.2897	0.3416	0.3900
0.4351	0.4775	0.5127	0.5423	0.5594
0.4874	0.2825	0.1752	0.1402	0.1312
0.1409	0.1339	0.1648	0.1953	0.2294
0.2638	0.2980	0.3320	0.3664	0.4002
0.4345	0.4679	0.4812	0.5129	0.5441
0.5752	0.6083	0.6412	0.6738	0.7063
0.7386	0.7709	0.8033	0.8358	0.8675
0.8973	0.9290	0.9611	0.9919	1.0000

Width:

0.0019	0.0038	0.0058	0.0080	0.0106
0.0138	0.0195	0.0218	0.0231	0.0243
0.0256	0.0268	0.0292	0.0318	0.0422
0.1173	0.3260	0.4822	0.6462	0.7311
0.7941	0.8309	0.8528	0.8613	0.8653
0.8680	0.8714	0.8752	0.8775	0.8813
0.8861	0.9093	0.9514	0.9561	0.9625
0.9685	0.9688	0.9698	0.9711	0.9724
0.9737	0.9752	0.9767	0.9783	0.9806
0.9846	0.9877	0.9902	0.9938	1.0000

Transect 5276.091
Area:

0.0005	0.0013	0.0022	0.0031	0.0040
0.0050	0.0061	0.0074	0.0110	0.0208
0.0351	0.0512	0.0685	0.0862	0.1043
0.1229	0.1421	0.1621	0.1834	0.2051
0.2271	0.2494	0.2721	0.2950	0.3183
0.3417	0.3654	0.3894	0.4140	0.4390
0.4642	0.4898	0.5158	0.5421	0.5686
0.5954	0.6224	0.6494	0.6765	0.7037
0.7309	0.7589	0.7881	0.8176	0.8475
0.8777	0.9081	0.9386	0.9692	1.0000

Hrad:

0.0314	0.0708	0.1154	0.1580	0.1991
0.2373	0.2627	0.2800	0.2247	0.1487
0.1310	0.1368	0.1545	0.1762	0.1995
0.2210	0.2436	0.2615	0.2776	0.3037
0.3294	0.3534	0.3776	0.4036	0.4270
0.4529	0.4790	0.4965	0.5176	0.5417
0.5649	0.5873	0.6057	0.6319	0.6554
0.6814	0.7100	0.7386	0.7671	0.7966
0.8262	0.8305	0.8338	0.8511	0.8701
0.8975	0.9248	0.9505	0.9762	1.0000

Width:

0.0229	0.0282	0.0290	0.0299	0.0308
0.0333	0.0367	0.0614	0.1928	0.4184
0.4879	0.5485	0.5633	0.5816	0.5950
0.6110	0.6344	0.6679	0.6977	0.7060
0.7150	0.7272	0.7379	0.7443	0.7554
0.7616	0.7669	0.7874	0.8018	0.8109
0.8213	0.8327	0.8453	0.8520	0.8623
0.8689	0.8719	0.8747	0.8776	0.8790
0.8865	0.9312	0.9463	0.9604	0.9744
0.9791	0.9819	0.9874	0.9927	1.0000

Transect 5310.141
Area:

0.0003	0.0018	0.0050	0.0091	0.0134
0.0178	0.0224	0.0272	0.0322	0.0375
0.0428	0.0484	0.0540	0.0597	0.0656
0.0720	0.0795	0.0895	0.1010	0.1132
0.1258	0.1387	0.1517	0.1651	0.1786
0.1922	0.2059	0.2198	0.2338	0.2479
0.2622	0.2766	0.2913	0.3061	0.3211
0.3362	0.3516	0.3677	0.3879	0.4146
0.4453	0.4824	0.5257	0.5753	0.6323
0.6964	0.7662	0.8386	0.9167	1.0000

Hrad:

0.0388	0.0741	0.1231	0.1851	0.2627
0.3374	0.4089	0.4722	0.5330	0.5974
0.6657	0.7333	0.8010	0.8674	0.9321
0.9858	1.0248	1.0319	1.0448	1.0625
1.0923	1.1315	1.1748	1.2193	1.2705
1.3240	1.3792	1.4341	1.4898	1.5450
1.5992	1.6527	1.7069	1.7616	1.8163
1.8707	1.9249	1.9745	1.9972	1.9812
1.9576	1.9077	1.8558	1.8003	1.7401
1.6528	1.5693	1.5074	1.4209	1.0000

Width:

0.0094	0.0255	0.0456	0.0492	0.0510
0.0527	0.0545	0.0572	0.0601	0.0622
0.0637	0.0651	0.0663	0.0676	0.0708
0.0784	0.1028	0.1314	0.1366	0.1459
0.1486	0.1508	0.1536	0.1570	0.1583
0.1596	0.1609	0.1623	0.1638	0.1656
0.1677	0.1699	0.1719	0.1739	0.1758
0.1778	0.1816	0.1981	0.2761	0.3408
0.3809	0.4728	0.5338	0.6140	0.7128
0.7945	0.8303	0.8781	0.9447	1.0000

Transect 5374.119
Area:

0.0001	0.0003	0.0005	0.0007	0.0010
0.0013	0.0016	0.0020	0.0032	0.0065
0.0131	0.0236	0.0383	0.0555	0.0752
0.0972	0.1210	0.1456	0.1705	0.1957

0.2210	0.2465	0.2722	0.2980	0.3241
0.3502	0.3765	0.4029	0.4294	0.4564
0.4834	0.5104	0.5375	0.5646	0.5917
0.6188	0.6459	0.6731	0.7003	0.7275
0.7547	0.7819	0.8091	0.8364	0.8636
0.8909	0.9182	0.9454	0.9727	1.0000

Hrad:

0.0193	0.0425	0.0658	0.0921	0.1161
0.1264	0.1384	0.1524	0.0981	0.0688
0.0608	0.0571	0.0697	0.0883	0.1067
0.1273	0.1455	0.1653	0.1836	0.2103
0.2376	0.2638	0.2895	0.3159	0.3422
0.3690	0.3948	0.4211	0.4468	0.4697
0.4965	0.5232	0.5490	0.5759	0.6027
0.6296	0.6560	0.6817	0.7083	0.7348
0.7613	0.7879	0.8145	0.8410	0.8677
0.8944	0.9211	0.9478	0.9744	1.0000

Width:

0.0054	0.0072	0.0085	0.0091	0.0096
0.0114	0.0133	0.0159	0.0747	0.1774
0.3030	0.4702	0.5888	0.6729	0.7718
0.8478	0.8897	0.9048	0.9205	0.9267
0.9294	0.9361	0.9453	0.9507	0.9556
0.9585	0.9645	0.9681	0.9797	0.9890
0.9894	0.9907	0.9917	0.9919	0.9921
0.9923	0.9940	0.9947	0.9952	0.9959
0.9964	0.9968	0.9972	0.9978	0.9980
0.9982	0.9983	0.9985	0.9989	1.0000

Transect 5465.266
Area:

0.0001	0.0002	0.0003	0.0005	0.0006
0.0008	0.0011	0.0024	0.0075	0.0193
0.0357	0.0553	0.0769	0.0997	0.1230
0.1467	0.1708	0.1953	0.2199	0.2446
0.2693	0.2941	0.3190	0.3440	0.3690
0.3940	0.4190	0.4441	0.4691	0.4942
0.5193	0.5444	0.5695	0.5947	0.6199
0.6451	0.6703	0.6955	0.7208	0.7460
0.7713	0.7967	0.8220	0.8474	0.8727
0.8982	0.9236	0.9491	0.9745	1.0000

Hrad:

0.0143	0.0406	0.0651	0.0867	0.1076
0.1256	0.1113	0.0404	0.0371	0.0422
0.0576	0.0717	0.0914	0.1092	0.1333
0.1572	0.1809	0.2054	0.2300	0.2549
0.2798	0.3038	0.3284	0.3535	0.3788
0.4042	0.4294	0.4542	0.4795	0.5048
0.5302	0.5549	0.5797	0.6046	0.6291
0.6544	0.6797	0.7045	0.7284	0.7535
0.7785	0.8036	0.8277	0.8525	0.8763
0.9009	0.9254	0.9502	0.9750	1.0000

Width:

0.0044	0.0052	0.0055	0.0059	0.0065
0.0078	0.0205	0.1020	0.3389	0.5642
0.7106	0.8182	0.8701	0.9073	0.9224
0.9397	0.9553	0.9621	0.9678	0.9701
0.9721	0.9765	0.9791	0.9804	0.9809
0.9813	0.9819	0.9834	0.9838	0.9841
0.9844	0.9856	0.9867	0.9882	0.9888
0.9890	0.9892	0.9901	0.9920	0.9924
0.9928	0.9941	0.9946	0.9956	0.9969
0.9977	0.9986	0.9991	0.9997	1.0000

Transect 5595.644
Area:

0.0000	0.0001	0.0003	0.0004	0.0006
0.0009	0.0012	0.0015	0.0019	0.0023
0.0028	0.0033	0.0039	0.0046	0.0055
0.0065	0.0076	0.0087	0.0098	0.0110
0.0123	0.0136	0.0150	0.0168	0.0205
0.0274	0.0391	0.0545	0.0750	0.0996
0.1278	0.1586	0.1918	0.2262	0.2611
0.2965	0.3337	0.3725	0.4128	0.4551
0.5000	0.5474	0.5967	0.6476	0.7011
0.7573	0.8153	0.8754	0.9373	1.0000

Hrad:

0.0354	0.0711	0.1034	0.1346	0.1652
0.1955	0.2256	0.2556	0.2855	0.3216
0.3639	0.3466	0.3427	0.3488	0.3531
0.3809	0.4217	0.4650	0.5072	0.5486
0.5789	0.6064	0.6279	0.6350	0.5710
0.4716	0.3840	0.2728	0.2834	0.3074
0.2965	0.3360	0.3725	0.4116	0.4728
0.5331	0.5827	0.6385	0.6916	0.7419
0.7875	0.8283	0.8755	0.9204	0.9003
0.9421	0.9862	0.9880	1.0400	1.0000

Width:

0.0011	0.0018	0.0024	0.0031	0.0037
0.0044	0.0050	0.0057	0.0063	0.0068
0.0071	0.0089	0.0108	0.0127	0.0150
0.0164	0.0173	0.0180	0.0187	0.0193
0.0204	0.0216	0.0231	0.0396	0.0793
0.1476	0.2129	0.2877	0.3576	0.4235
0.4717	0.5059	0.5395	0.5505	0.5570
0.5710	0.6027	0.6299	0.6561	0.6909
0.7331	0.7696	0.7934	0.8254	0.8777
0.9077	0.9337	0.9748	0.9897	1.0000

Transect 5604.418
Area:

0.0002	0.0005	0.0008	0.0011	0.0015
0.0018	0.0022	0.0026	0.0031	0.0036
0.0043	0.0051	0.0060	0.0070	0.0079
0.0089	0.0099	0.0110	0.0121	0.0133
0.0149	0.0170	0.0200	0.0238	0.0286
0.0355	0.0468	0.0619	0.0799	0.1021
0.1271	0.1539	0.1831	0.2148	0.2484
0.2835	0.3223	0.3651	0.4107	0.4583
0.5082	0.5600	0.6126	0.6658	0.7196
0.7746	0.8302	0.8863	0.9431	1.0000

Hrad:

0.0434	0.0936	0.1398	0.1827	0.2230
0.2613	0.2979	0.3330	0.3492	0.3195
0.3109	0.3137	0.3492	0.3958	0.4415
0.4862	0.5299	0.5699	0.5607	0.5874
0.5304	0.4471	0.4499	0.3615	0.3696
0.3763	0.3550	0.2970	0.3160	0.2794
0.2898	0.3342	0.3809	0.4203	0.4457
0.4932	0.5350	0.5468	0.5552	0.5932
0.5975	0.6391	0.6623	0.7137	0.7656
0.8026	0.8517	0.9024	0.9446	1.0000

Width:

0.0048	0.0051	0.0055	0.0059	0.0062
0.0066	0.0070	0.0073	0.0082	0.0107
0.0131	0.0156	0.0166	0.0169	0.0172

0.0175	0.0178	0.0182	0.0205	0.0215
0.0341	0.0412	0.0603	0.0757	0.0926
0.1516	0.2381	0.2877	0.3534	0.4210
0.4529	0.4938	0.5294	0.5800	0.5972
0.6413	0.7193	0.7791	0.8175	0.8569
0.8991	0.9171	0.9288	0.9385	0.9578
0.9714	0.9784	0.9919	0.9988	1.0000

Transect 5646.039
Area:

0.0001	0.0003	0.0006	0.0010	0.0014
0.0018	0.0023	0.0028	0.0034	0.0040
0.0048	0.0057	0.0066	0.0076	0.0086
0.0097	0.0109	0.0122	0.0140	0.0162
0.0190	0.0224	0.0266	0.0331	0.0412
0.0504	0.0606	0.0717	0.0833	0.0956
0.1085	0.1220	0.1363	0.1533	0.1755
0.2061	0.2440	0.2870	0.3347	0.3847
0.4357	0.4885	0.5465	0.6094	0.6735
0.7380	0.8027	0.8679	0.9338	1.0000

Hrad:

0.0255	0.0511	0.0887	0.1261	0.1604
0.1926	0.2232	0.2472	0.2632	0.2697
0.2800	0.3168	0.3636	0.4089	0.4493
0.4888	0.5271	0.5589	0.5615	0.5698
0.5589	0.5630	0.5393	0.4967	0.4649
0.4716	0.4809	0.5137	0.5355	0.5765
0.5988	0.6263	0.6633	0.6664	0.6629
0.6356	0.6295	0.6269	0.6215	0.6533
0.6760	0.7024	0.7379	0.7633	0.7158
0.7729	0.8328	0.8887	0.9476	1.0000

Width:

0.0021	0.0042	0.0051	0.0057	0.0063
0.0069	0.0074	0.0082	0.0093	0.0110
0.0127	0.0136	0.0141	0.0148	0.0164
0.0172	0.0181	0.0226	0.0315	0.0352
0.0493	0.0520	0.0810	0.1078	0.1340
0.1482	0.1613	0.1712	0.1787	0.1895
0.1979	0.2092	0.2277	0.2837	0.3950
0.5211	0.6135	0.6863	0.7433	0.7608
0.7744	0.8227	0.9211	0.9627	0.9686
0.9740	0.9753	0.9901	0.9959	1.0000

Transect 5653.55
Area:

0.0001	0.0002	0.0003	0.0005	0.0007
0.0010	0.0014	0.0018	0.0023	0.0028
0.0033	0.0039	0.0045	0.0052	0.0060
0.0069	0.0078	0.0092	0.0117	0.0165
0.0240	0.0335	0.0454	0.0594	0.0766
0.0977	0.1210	0.1460	0.1733	0.2020
0.2317	0.2625	0.2942	0.3268	0.3601
0.3947	0.4338	0.4747	0.5158	0.5574
0.5994	0.6418	0.6848	0.7287	0.7732
0.8179	0.8630	0.9084	0.9541	1.0000

Hrad:

0.0257	0.0496	0.0706	0.0876	0.0937
0.1180	0.1406	0.1607	0.1880	0.2173
0.2466	0.2742	0.2983	0.3157	0.3263
0.3472	0.3597	0.3685	0.3033	0.2508
0.2228	0.2232	0.2283	0.2327	0.2427
0.2506	0.2750	0.2890	0.3144	0.3460
0.3727	0.4004	0.4366	0.4653	0.5074

0.5349	0.5579	0.5515	0.5880	0.6262
0.6636	0.7049	0.7307	0.7635	0.8031
0.8427	0.8809	0.9198	0.9613	1.0000

Width:

0.0020	0.0027	0.0034	0.0042	0.0059
0.0071	0.0082	0.0095	0.0109	0.0114
0.0119	0.0128	0.0140	0.0159	0.0187
0.0202	0.0229	0.0416	0.0716	0.1405
0.1861	0.2289	0.2783	0.3338	0.4189
0.4855	0.5252	0.5751	0.6013	0.6341
0.6578	0.6833	0.6918	0.7164	0.7291
0.7953	0.8789	0.8885	0.8989	0.9072
0.9165	0.9247	0.9445	0.9647	0.9667
0.9740	0.9816	0.9888	0.9947	1.0000

Transect 5665.793
Area:

0.0002	0.0004	0.0007	0.0010	0.0014
0.0017	0.0021	0.0025	0.0030	0.0035
0.0040	0.0047	0.0053	0.0061	0.0080
0.0111	0.0159	0.0218	0.0284	0.0363
0.0462	0.0585	0.0736	0.0916	0.1128
0.1364	0.1615	0.1876	0.2147	0.2429
0.2717	0.3014	0.3319	0.3630	0.3951
0.4277	0.4619	0.4991	0.5385	0.5784
0.6186	0.6589	0.6995	0.7408	0.7830
0.8257	0.8689	0.9124	0.9561	1.0000

Hrad:

0.0262	0.0540	0.0789	0.1059	0.1314
0.1556	0.1774	0.1967	0.2110	0.2187
0.2479	0.2753	0.3014	0.3193	0.2875
0.2563	0.2247	0.2224	0.2327	0.2373
0.2466	0.2422	0.2475	0.2629	0.2679
0.2837	0.3069	0.3382	0.3572	0.3881
0.4206	0.4528	0.4848	0.5163	0.5491
0.5797	0.6095	0.6415	0.6317	0.6635
0.7018	0.7404	0.7724	0.8046	0.8178
0.8531	0.8849	0.9241	0.9591	1.0000

Width:

0.0053	0.0062	0.0070	0.0075	0.0079
0.0084	0.0089	0.0096	0.0104	0.0125
0.0136	0.0146	0.0156	0.0254	0.0637
0.0854	0.1212	0.1420	0.1627	0.1997
0.2491	0.3037	0.3767	0.4422	0.5117
0.5545	0.5860	0.6065	0.6314	0.6467
0.6635	0.6886	0.6999	0.7257	0.7357
0.7505	0.8063	0.8787	0.9043	0.9111
0.9159	0.9173	0.9341	0.9490	0.9695
0.9752	0.9865	0.9902	0.9980	1.0000

Transect 5690.101
Area:

0.0002	0.0004	0.0008	0.0013	0.0018
0.0023	0.0028	0.0034	0.0039	0.0044
0.0050	0.0056	0.0063	0.0072	0.0088
0.0107	0.0147	0.0206	0.0284	0.0396
0.0535	0.0691	0.0868	0.1066	0.1301
0.1557	0.1825	0.2103	0.2391	0.2689
0.2994	0.3310	0.3634	0.3967	0.4306
0.4652	0.5002	0.5356	0.5715	0.6078
0.6443	0.6813	0.7194	0.7579	0.7969
0.8367	0.8770	0.9177	0.9586	1.0000

Hrad:

0.0300	0.0556	0.0809	0.1080	0.1446
0.1818	0.2178	0.2525	0.2863	0.3190
0.3507	0.3762	0.3961	0.3852	0.3374
0.3196	0.1518	0.1581	0.1753	0.1773
0.1689	0.1950	0.2183	0.2468	0.2274
0.2455	0.2845	0.3220	0.3544	0.3872
0.4131	0.4490	0.4792	0.5098	0.5399
0.5769	0.6020	0.6303	0.6626	0.6940
0.7305	0.7626	0.7778	0.8162	0.8485
0.8748	0.8986	0.9375	0.9666	1.0000

Width:

0.0055	0.0080	0.0103	0.0120	0.0123
0.0124	0.0125	0.0127	0.0128	0.0129
0.0133	0.0157	0.0177	0.0321	0.0421
0.0626	0.1238	0.1540	0.2361	0.2995
0.3600	0.4068	0.4499	0.5209	0.5941
0.6347	0.6574	0.6800	0.7090	0.7254
0.7430	0.7720	0.7892	0.8076	0.8262
0.8379	0.8477	0.8551	0.8705	0.8761
0.8822	0.9002	0.9253	0.9291	0.9505
0.9629	0.9762	0.9790	0.9919	1.0000

Transect 5704.059
Area:

0.0001	0.0002	0.0003	0.0004	0.0006
0.0009	0.0012	0.0015	0.0021	0.0027
0.0035	0.0049	0.0070	0.0096	0.0146
0.0235	0.0354	0.0501	0.0677	0.0875
0.1086	0.1310	0.1546	0.1788	0.2036
0.2296	0.2568	0.2847	0.3132	0.3421
0.3716	0.4016	0.4320	0.4625	0.4933
0.5243	0.5558	0.5874	0.6191	0.6513
0.6842	0.7176	0.7516	0.7861	0.8209
0.8559	0.8915	0.9274	0.9636	1.0000

Hrad:

0.0259	0.0509	0.0728	0.0860	0.0985
0.1216	0.1187	0.1271	0.1261	0.1400
0.1465	0.1267	0.1105	0.1305	0.1026
0.1005	0.1078	0.1244	0.1409	0.1608
0.1862	0.2116	0.2356	0.2674	0.2993
0.3199	0.3405	0.3685	0.3966	0.4280
0.4568	0.4848	0.5177	0.5492	0.5832
0.6149	0.6431	0.6769	0.7113	0.7383
0.7672	0.7983	0.8051	0.8265	0.8588
0.8824	0.9087	0.9405	0.9666	1.0000

Width:

0.0022	0.0029	0.0036	0.0048	0.0061
0.0068	0.0094	0.0118	0.0159	0.0189
0.0305	0.0409	0.0691	0.0842	0.1882
0.2939	0.3583	0.4435	0.5175	0.5576
0.6002	0.6290	0.6555	0.6676	0.6963
0.7313	0.7552	0.7715	0.7886	0.7986
0.8153	0.8274	0.8333	0.8411	0.8448
0.8559	0.8630	0.8665	0.8715	0.8925
0.9077	0.9200	0.9413	0.9498	0.9545
0.9687	0.9797	0.9847	0.9955	1.0000

Transect 5880.376
Area:

0.0001	0.0003	0.0005	0.0008	0.0011
0.0014	0.0018	0.0029	0.0056	0.0097
0.0165	0.0248	0.0347	0.0464	0.0588
0.0728	0.0879	0.1040	0.1210	0.1386

0.1568	0.1762	0.1967	0.2184	0.2411
0.2649	0.2895	0.3146	0.3403	0.3665
0.3932	0.4203	0.4480	0.4762	0.5051
0.5345	0.5646	0.5951	0.6261	0.6574
0.6893	0.7221	0.7552	0.7888	0.8229
0.8577	0.8927	0.9280	0.9636	1.0000

Hrad:

0.0261	0.0539	0.0679	0.0910	0.1205
0.1485	0.1748	0.1392	0.1145	0.1114
0.1103	0.1241	0.1415	0.1554	0.1743
0.1990	0.2088	0.2329	0.2560	0.2860
0.3091	0.3256	0.3419	0.3627	0.3819
0.4014	0.4271	0.4575	0.4815	0.5099
0.5385	0.5654	0.5891	0.6128	0.6360
0.6603	0.6835	0.7107	0.7411	0.7645
0.7913	0.8059	0.8354	0.8593	0.8822
0.9044	0.9337	0.9640	0.9855	1.0000

Width:

0.0042	0.0051	0.0073	0.0085	0.0088
0.0091	0.0103	0.0601	0.0865	0.1449
0.2119	0.2382	0.3091	0.3243	0.3647
0.3951	0.4232	0.4522	0.4719	0.4837
0.5072	0.5473	0.5749	0.6021	0.6345
0.6630	0.6774	0.6879	0.7063	0.7184
0.7297	0.7435	0.7601	0.7780	0.7938
0.8105	0.8258	0.8371	0.8475	0.8597
0.8807	0.8966	0.9089	0.9206	0.9370
0.9482	0.9560	0.9626	0.9790	1.0000

Transect 5975.085
Area:

0.0001	0.0003	0.0004	0.0006	0.0009
0.0011	0.0013	0.0016	0.0019	0.0022
0.0026	0.0035	0.0068	0.0140	0.0245
0.0376	0.0519	0.0673	0.0834	0.1004
0.1182	0.1367	0.1562	0.1764	0.1971
0.2183	0.2399	0.2624	0.2856	0.3097
0.3346	0.3601	0.3864	0.4133	0.4408
0.4686	0.4969	0.5259	0.5557	0.5865
0.6187	0.6530	0.6902	0.7288	0.7692
0.8119	0.8571	0.9043	0.9520	1.0000

Hrad:

0.0350	0.0715	0.1030	0.1333	0.1624
0.1894	0.2148	0.2389	0.2513	0.2535
0.2652	0.2343	0.1489	0.1231	0.1310
0.1488	0.1764	0.2125	0.2480	0.2806
0.3149	0.3469	0.3793	0.4164	0.4519
0.4881	0.5272	0.5512	0.5770	0.6135
0.6486	0.6692	0.6979	0.7301	0.7652
0.8027	0.8359	0.8624	0.8773	0.9110
0.9346	0.9105	0.8931	0.9201	0.9373
0.9462	0.9729	0.9161	0.9568	1.0000

Width:

0.0029	0.0034	0.0039	0.0044	0.0047
0.0050	0.0054	0.0057	0.0064	0.0076
0.0118	0.0332	0.1130	0.1797	0.2536
0.2822	0.3114	0.3284	0.3422	0.3612
0.3774	0.3954	0.4126	0.4236	0.4356
0.4464	0.4588	0.4749	0.4940	0.5084
0.5247	0.5398	0.5526	0.5650	0.5749
0.5827	0.5934	0.6101	0.6325	0.6559
0.6871	0.7452	0.7913	0.8167	0.8658
0.9105	0.9676	0.9871	0.9950	1.0000

Transect 6062.64
Area:

0.0001	0.0002	0.0004	0.0006	0.0008
0.0010	0.0013	0.0015	0.0018	0.0021
0.0024	0.0028	0.0032	0.0048	0.0093
0.0194	0.0319	0.0450	0.0594	0.0760
0.0934	0.1118	0.1315	0.1520	0.1731
0.1948	0.2169	0.2395	0.2626	0.2860
0.3099	0.3343	0.3592	0.3846	0.4109
0.4382	0.4662	0.4950	0.5245	0.5550
0.5873	0.6243	0.6663	0.7114	0.7585
0.8062	0.8542	0.9024	0.9510	1.0000

Hrad:

0.0372	0.0704	0.0928	0.1175	0.1509
0.1816	0.2102	0.2370	0.2623	0.2865
0.3057	0.3114	0.3125	0.2351	0.1531
0.1182	0.1452	0.1798	0.2079	0.2260
0.2662	0.2932	0.3275	0.3636	0.3997
0.4394	0.4797	0.5183	0.5552	0.5959
0.6312	0.6713	0.7059	0.7382	0.7624
0.7816	0.8082	0.8415	0.8581	0.8874
0.9113	0.8783	0.8771	0.9061	0.7860
0.8323	0.8767	0.9212	0.9623	1.0000

Width:

0.0022	0.0028	0.0036	0.0044	0.0047
0.0050	0.0052	0.0055	0.0057	0.0060
0.0064	0.0073	0.0145	0.0500	0.1492
0.2481	0.2583	0.2733	0.3143	0.3491
0.3584	0.3886	0.4055	0.4205	0.4346
0.4441	0.4523	0.4618	0.4724	0.4792
0.4912	0.4969	0.5077	0.5224	0.5420
0.5601	0.5759	0.5868	0.6098	0.6251
0.6935	0.8017	0.8971	0.9365	0.9648
0.9689	0.9742	0.9795	0.9882	1.0000

Transect 6084.086
Area:

0.0001	0.0002	0.0004	0.0005	0.0008
0.0010	0.0012	0.0015	0.0018	0.0021
0.0024	0.0027	0.0031	0.0035	0.0040
0.0049	0.0063	0.0095	0.0167	0.0294
0.0457	0.0631	0.0818	0.1015	0.1228
0.1451	0.1683	0.1926	0.2181	0.2442
0.2712	0.2991	0.3279	0.3573	0.3883
0.4209	0.4545	0.4886	0.5230	0.5578
0.5932	0.6293	0.6665	0.7059	0.7488
0.7951	0.8433	0.8934	0.9454	1.0000

Hrad:

0.0407	0.0741	0.1033	0.1376	0.1716
0.2070	0.2397	0.2705	0.2939	0.3130
0.3327	0.3579	0.3839	0.4039	0.4060
0.3737	0.3363	0.2677	0.1986	0.1610
0.1816	0.2164	0.2548	0.2912	0.3288
0.3620	0.4002	0.4281	0.4744	0.5161
0.5540	0.5958	0.6265	0.6696	0.6947
0.7057	0.7423	0.7918	0.8359	0.8788
0.9205	0.9640	0.9900	0.9869	1.0223
1.0597	1.0812	1.0231	0.9912	1.0000

Width:

0.0018	0.0025	0.0032	0.0037	0.0041
0.0043	0.0045	0.0047	0.0051	0.0056
0.0061	0.0065	0.0068	0.0072	0.0143

0.0201	0.0337	0.0940	0.1750	0.2783
0.3053	0.3273	0.3456	0.3687	0.3962
0.4102	0.4275	0.4559	0.4638	0.4799
0.4965	0.5135	0.5248	0.5427	0.5802
0.5989	0.6132	0.6180	0.6256	0.6345
0.6460	0.6591	0.6863	0.7373	0.8207
0.8541	0.8857	0.9200	0.9642	1.0000

Transect 6116.845
Area:

0.0000	0.0001	0.0001	0.0003	0.0005
0.0007	0.0010	0.0013	0.0017	0.0021
0.0024	0.0028	0.0032	0.0037	0.0041
0.0046	0.0052	0.0058	0.0072	0.0115
0.0210	0.0353	0.0513	0.0705	0.0918
0.1149	0.1388	0.1640	0.1908	0.2187
0.2480	0.2786	0.3113	0.3458	0.3810
0.4169	0.4543	0.4927	0.5320	0.5717
0.6118	0.6526	0.6941	0.7365	0.7796
0.8231	0.8669	0.9111	0.9555	1.0000

Hrad:

0.0176	0.0351	0.0524	0.0648	0.0752
0.0982	0.1163	0.1314	0.1572	0.1745
0.2016	0.2280	0.2538	0.2705	0.2860
0.3006	0.3118	0.3270	0.2974	0.2161
0.1517	0.1444	0.1653	0.1782	0.2036
0.2273	0.2648	0.2954	0.3187	0.3489
0.3776	0.4085	0.4282	0.4635	0.4961
0.5319	0.5442	0.5668	0.5999	0.6405
0.6739	0.7094	0.7466	0.7869	0.8038
0.8415	0.8795	0.9175	0.9591	1.0000

Width:

0.0007	0.0014	0.0024	0.0037	0.0049
0.0060	0.0069	0.0078	0.0082	0.0086
0.0088	0.0090	0.0092	0.0099	0.0107
0.0116	0.0128	0.0161	0.0570	0.1434
0.2831	0.3453	0.3819	0.4603	0.4977
0.5310	0.5463	0.5843	0.6093	0.6417
0.6660	0.7052	0.7604	0.7847	0.7947
0.8191	0.8528	0.8705	0.8864	0.8922
0.9077	0.9243	0.9407	0.9578	0.9702
0.9779	0.9857	0.9930	0.9961	1.0000

Transect 6190.578
Area:

0.0001	0.0003	0.0004	0.0007	0.0009
0.0012	0.0015	0.0019	0.0023	0.0028
0.0034	0.0041	0.0049	0.0058	0.0068
0.0078	0.0089	0.0101	0.0112	0.0125
0.0138	0.0154	0.0176	0.0208	0.0289
0.0431	0.0624	0.0832	0.1064	0.1317
0.1587	0.1872	0.2167	0.2476	0.2803
0.3151	0.3535	0.3942	0.4358	0.4787
0.5231	0.5693	0.6165	0.6654	0.7159
0.7690	0.8238	0.8805	0.9393	1.0000

Hrad:

0.0417	0.0806	0.1148	0.1476	0.1776
0.2058	0.2327	0.2586	0.2605	0.2561
0.2761	0.2846	0.3036	0.3335	0.3690
0.4037	0.4376	0.4723	0.5037	0.5347
0.5651	0.5792	0.5764	0.5491	0.4341
0.3502	0.3104	0.3238	0.3449	0.3691
0.3509	0.3914	0.4386	0.4826	0.5251

0.5721	0.5930	0.5843	0.6377	0.6753
0.7228	0.7520	0.8090	0.8647	0.8585
0.8820	0.9110	0.9379	0.9888	1.0000

Width:

0.0022	0.0029	0.0035	0.0040	0.0045
0.0049	0.0054	0.0059	0.0072	0.0092
0.0105	0.0125	0.0143	0.0155	0.0163
0.0172	0.0180	0.0188	0.0197	0.0206
0.0215	0.0322	0.0396	0.0850	0.1755
0.2858	0.3290	0.3534	0.3964	0.4282
0.4513	0.4763	0.4921	0.5180	0.5427
0.5966	0.6525	0.6735	0.6848	0.7078
0.7447	0.7588	0.7852	0.8126	0.8365
0.8804	0.9083	0.9427	0.9749	1.0000

Transect 6335.876
Area:

0.0004	0.0009	0.0015	0.0021	0.0027
0.0036	0.0047	0.0059	0.0072	0.0086
0.0102	0.0119	0.0137	0.0157	0.0177
0.0198	0.0221	0.0244	0.0268	0.0294
0.0320	0.0347	0.0376	0.0407	0.0439
0.0473	0.0527	0.0619	0.0743	0.0904
0.1121	0.1362	0.1610	0.1872	0.2156
0.2454	0.2787	0.3169	0.3586	0.4024
0.4471	0.4943	0.5426	0.5921	0.6457
0.7040	0.7708	0.8448	0.9221	1.0000

Hrad:

0.0548	0.1160	0.1679	0.2133	0.2368
0.2424	0.2754	0.3098	0.3455	0.3810
0.4179	0.4541	0.4911	0.5309	0.5700
0.6085	0.6476	0.6861	0.7233	0.7602
0.7942	0.8250	0.8558	0.8748	0.8937
0.9314	0.9218	0.8613	0.7984	0.7431
0.6721	0.6675	0.6736	0.6614	0.5693
0.6338	0.6688	0.6117	0.6501	0.7121
0.7682	0.8039	0.8723	0.9152	0.9472
0.9485	0.8510	0.8834	0.9316	1.0000

Width:

0.0065	0.0070	0.0075	0.0080	0.0093
0.0125	0.0143	0.0161	0.0177	0.0194
0.0209	0.0225	0.0240	0.0253	0.0266
0.0278	0.0291	0.0303	0.0316	0.0328
0.0343	0.0359	0.0375	0.0399	0.0423
0.0438	0.0932	0.1393	0.1731	0.2370
0.3038	0.3101	0.3218	0.3479	0.3726
0.3978	0.4616	0.5132	0.5499	0.5608
0.5862	0.6111	0.6182	0.6491	0.7206
0.7778	0.9065	0.9728	0.9897	1.0000

Transect 6410.625
Area:

0.0004	0.0014	0.0031	0.0049	0.0068
0.0088	0.0108	0.0129	0.0151	0.0173
0.0196	0.0221	0.0247	0.0275	0.0305
0.0336	0.0369	0.0403	0.0439	0.0475
0.0513	0.0552	0.0592	0.0633	0.0676
0.0719	0.0764	0.0809	0.0856	0.0904
0.0954	0.1006	0.1074	0.1182	0.1355
0.1604	0.1955	0.2369	0.2828	0.3314
0.3836	0.4398	0.4976	0.5571	0.6184
0.6820	0.7491	0.8212	0.9064	1.0000

Hrad:

0.0476	0.0994	0.1603	0.2423	0.3190
0.3911	0.4592	0.5240	0.5858	0.6449
0.6884	0.7222	0.7614	0.7998	0.8387
0.8791	0.9249	0.9722	1.0190	1.0655
1.1129	1.1607	1.2090	1.2568	1.3033
1.3489	1.3941	1.4390	1.4799	1.5152
1.5509	1.5782	1.5658	1.4874	1.3591
1.2065	1.0292	0.5283	0.5878	0.6627
0.7286	0.7256	0.8067	0.8743	0.9357
1.0207	1.0487	1.0987	1.0561	1.0000

Width:

0.0080	0.0144	0.0190	0.0197	0.0204
0.0211	0.0218	0.0225	0.0232	0.0239
0.0252	0.0271	0.0287	0.0305	0.0322
0.0339	0.0354	0.0367	0.0380	0.0393
0.0406	0.0418	0.0429	0.0441	0.0452
0.0464	0.0476	0.0488	0.0502	0.0518
0.0535	0.0555	0.0872	0.1520	0.2155
0.3213	0.4192	0.4607	0.5019	0.5305
0.5814	0.6022	0.6130	0.6380	0.6575
0.6974	0.7174	0.8295	0.9499	1.0000

Transect 6486.756
Area:

0.0003	0.0008	0.0015	0.0023	0.0032
0.0042	0.0052	0.0063	0.0075	0.0089
0.0105	0.0123	0.0143	0.0165	0.0189
0.0215	0.0242	0.0272	0.0302	0.0334
0.0367	0.0401	0.0436	0.0472	0.0510
0.0549	0.0590	0.0631	0.0674	0.0719
0.0764	0.0811	0.0859	0.0908	0.0960
0.1022	0.1188	0.1466	0.1853	0.2379
0.3008	0.3700	0.4411	0.5154	0.5914
0.6695	0.7493	0.8310	0.9147	1.0000

Hrad:

0.0667	0.1260	0.1501	0.2072	0.2588
0.3063	0.3507	0.3808	0.4076	0.4367
0.4534	0.4765	0.5069	0.5397	0.5713
0.6058	0.6461	0.6927	0.7386	0.7839
0.8297	0.8765	0.9225	0.9632	1.0038
1.0444	1.0844	1.1243	1.1646	1.2078
1.2496	1.2912	1.3325	1.3611	1.3830
1.3649	1.2184	1.0221	0.6137	0.5021
0.4361	0.4517	0.5323	0.5884	0.6565
0.7271	0.8015	0.8579	0.9327	1.0000

Width:

0.0048	0.0056	0.0091	0.0098	0.0105
0.0113	0.0120	0.0134	0.0152	0.0170
0.0196	0.0221	0.0243	0.0265	0.0289
0.0311	0.0330	0.0345	0.0359	0.0374
0.0388	0.0400	0.0413	0.0428	0.0444
0.0459	0.0475	0.0491	0.0506	0.0519
0.0534	0.0548	0.0562	0.0583	0.0609
0.1011	0.2700	0.3893	0.5113	0.6742
0.7811	0.8134	0.8364	0.8696	0.8943
0.9141	0.9278	0.9613	0.9730	1.0000

Transect 6564.455
Area:

0.0002	0.0009	0.0019	0.0031	0.0046
0.0062	0.0080	0.0099	0.0122	0.0149
0.0178	0.0211	0.0247	0.0287	0.0331
0.0379	0.0429	0.0482	0.0538	0.0598

0.0661	0.0726	0.0793	0.0863	0.0936
0.1011	0.1089	0.1171	0.1255	0.1343
0.1433	0.1526	0.1622	0.1719	0.1819
0.1921	0.2027	0.2141	0.2291	0.2570
0.3002	0.3516	0.4105	0.4747	0.5495
0.6315	0.7160	0.8046	0.9000	1.0000

Hrad:

0.0498	0.1059	0.1669	0.2218	0.2788
0.3345	0.3869	0.4371	0.4313	0.4788
0.5270	0.5612	0.5990	0.6293	0.6715
0.7206	0.7695	0.8192	0.8642	0.9095
0.9646	1.0196	1.0738	1.1254	1.1750
1.2244	1.2693	1.3137	1.3572	1.4004
1.4514	1.5069	1.5617	1.6159	1.6681
1.7141	1.7579	1.7844	1.7616	1.6167
0.6837	0.6785	0.6922	0.7493	0.7120
0.7717	0.8463	0.8812	0.9423	1.0000

Width:

0.0045	0.0082	0.0105	0.0128	0.0147
0.0163	0.0179	0.0195	0.0246	0.0270
0.0293	0.0328	0.0361	0.0402	0.0437
0.0465	0.0494	0.0522	0.0554	0.0585
0.0609	0.0632	0.0655	0.0680	0.0706
0.0732	0.0761	0.0790	0.0821	0.0851
0.0877	0.0898	0.0920	0.0941	0.0964
0.0991	0.1020	0.1167	0.1981	0.3605
0.4475	0.5408	0.5769	0.6471	0.7661
0.7917	0.8185	0.8842	0.9252	1.0000

Transect 6669.684
Area:

0.0001	0.0003	0.0005	0.0008	0.0011
0.0014	0.0018	0.0021	0.0026	0.0031
0.0036	0.0043	0.0051	0.0060	0.0072
0.0084	0.0097	0.0111	0.0125	0.0140
0.0156	0.0172	0.0188	0.0205	0.0222
0.0240	0.0258	0.0277	0.0297	0.0318
0.0347	0.0403	0.0507	0.0719	0.1008
0.1347	0.1731	0.2165	0.2667	0.3221
0.3835	0.4469	0.5117	0.5777	0.6445
0.7127	0.7824	0.8534	0.9255	1.0000

Hrad:

0.0421	0.0908	0.1459	0.1940	0.2373
0.2771	0.3145	0.3499	0.3608	0.3714
0.3853	0.3939	0.4071	0.4107	0.4207
0.4607	0.5095	0.5572	0.6042	0.6504
0.6972	0.7468	0.7932	0.8360	0.8784
0.9209	0.9629	0.9927	1.0176	1.0560
1.0594	0.9870	0.5710	0.4660	0.3221
0.3489	0.3897	0.3748	0.4149	0.4563
0.4725	0.5415	0.6076	0.6731	0.7406
0.7993	0.8587	0.9288	0.9826	1.0000

Width:

0.0019	0.0030	0.0034	0.0037	0.0040
0.0043	0.0047	0.0050	0.0059	0.0069
0.0081	0.0096	0.0111	0.0133	0.0155
0.0167	0.0174	0.0182	0.0189	0.0196
0.0203	0.0208	0.0215	0.0222	0.0229
0.0235	0.0242	0.0252	0.0264	0.0273
0.0563	0.0880	0.2079	0.3374	0.4060
0.4738	0.5231	0.6118	0.6870	0.7546
0.8138	0.8306	0.8518	0.8585	0.8722
0.8943	0.9117	0.9271	0.9424	1.0000

Transect 6676.99
Area:

0.0003	0.0007	0.0012	0.0016	0.0020
0.0026	0.0031	0.0037	0.0044	0.0051
0.0059	0.0068	0.0078	0.0089	0.0102
0.0117	0.0136	0.0156	0.0178	0.0203
0.0230	0.0259	0.0290	0.0322	0.0355
0.0389	0.0424	0.0467	0.0533	0.0612
0.0713	0.0836	0.0989	0.1198	0.1462
0.1766	0.2103	0.2485	0.2919	0.3413
0.3945	0.4512	0.5112	0.5745	0.6404
0.7069	0.7759	0.8474	0.9222	1.0000

Hrad:

0.0691	0.1342	0.1920	0.2443	0.2849
0.3236	0.3611	0.3931	0.4238	0.4552
0.4696	0.4884	0.4988	0.5251	0.5466
0.4735	0.5080	0.5362	0.5541	0.5777
0.6080	0.6484	0.6920	0.7431	0.7921
0.8398	0.8856	0.8956	0.7155	0.5856
0.5211	0.5135	0.4575	0.4237	0.4509
0.4766	0.5127	0.5142	0.5522	0.5688
0.5952	0.6325	0.6974	0.7515	0.7608
0.8299	0.8932	0.9649	0.9821	1.0000

Width:

0.0049	0.0051	0.0054	0.0056	0.0062
0.0067	0.0073	0.0080	0.0088	0.0096
0.0108	0.0121	0.0138	0.0151	0.0167
0.0227	0.0247	0.0270	0.0301	0.0331
0.0358	0.0379	0.0398	0.0411	0.0425
0.0440	0.0455	0.0721	0.0916	0.1145
0.1399	0.1663	0.2276	0.3066	0.3651
0.4074	0.4507	0.5191	0.5916	0.6563
0.6957	0.7463	0.7857	0.8288	0.8417
0.8605	0.8943	0.9285	0.9765	1.0000

Transect 6706.899
Area:

0.0003	0.0006	0.0009	0.0012	0.0016
0.0020	0.0025	0.0033	0.0040	0.0048
0.0057	0.0069	0.0081	0.0094	0.0108
0.0123	0.0139	0.0159	0.0182	0.0207
0.0235	0.0270	0.0315	0.0371	0.0444
0.0534	0.0657	0.0808	0.1001	0.1227
0.1493	0.1794	0.2115	0.2458	0.2846
0.3271	0.3709	0.4158	0.4610	0.5062
0.5515	0.5973	0.6447	0.6938	0.7435
0.7936	0.8444	0.8958	0.9478	1.0000

Hrad:

0.0492	0.0926	0.1314	0.1668	0.1922
0.1974	0.1808	0.2106	0.2404	0.2701
0.2887	0.2782	0.3123	0.3425	0.3721
0.4013	0.4075	0.4118	0.3743	0.4097
0.4348	0.4173	0.3597	0.3673	0.3863
0.3871	0.2906	0.3079	0.3240	0.3219
0.3376	0.3376	0.3682	0.3897	0.4138
0.4118	0.4558	0.4822	0.5342	0.5861
0.6349	0.6818	0.7067	0.7351	0.7834
0.8243	0.8676	0.9067	0.9499	1.0000

Width:

0.0055	0.0058	0.0062	0.0065	0.0072
0.0089	0.0129	0.0141	0.0152	0.0164
0.0192	0.0231	0.0243	0.0258	0.0272

0.0287	0.0351	0.0409	0.0468	0.0486
0.0604	0.0779	0.0954	0.1216	0.1521
0.2016	0.2657	0.3225	0.4045	0.4713
0.5508	0.6019	0.6273	0.6927	0.7777
0.8308	0.8493	0.8639	0.8643	0.8646
0.8695	0.8858	0.9246	0.9456	0.9560
0.9670	0.9737	0.9883	0.9979	1.0000

Transect 6710.332
Area:

0.0001	0.0002	0.0005	0.0008	0.0012
0.0016	0.0020	0.0025	0.0030	0.0036
0.0043	0.0050	0.0057	0.0065	0.0073
0.0082	0.0091	0.0100	0.0110	0.0121
0.0132	0.0144	0.0157	0.0169	0.0183
0.0198	0.0231	0.0328	0.0498	0.0715
0.0957	0.1228	0.1551	0.1901	0.2281
0.2693	0.3131	0.3595	0.4075	0.4559
0.5056	0.5559	0.6080	0.6622	0.7169
0.7722	0.8282	0.8850	0.9423	1.0000

Hrad:

0.0297	0.0669	0.0923	0.1225	0.1626
0.1995	0.2340	0.2604	0.2613	0.2932
0.3138	0.3481	0.3806	0.4093	0.4377
0.4671	0.4963	0.5250	0.5456	0.5439
0.5746	0.6052	0.6310	0.6519	0.6720
0.6612	0.5895	0.2491	0.1808	0.1814
0.2231	0.2629	0.2886	0.3228	0.3521
0.3843	0.4219	0.4525	0.4903	0.5457
0.5842	0.6374	0.6688	0.7029	0.7567
0.8031	0.8517	0.8961	0.9445	1.0000

Width:

0.0024	0.0034	0.0048	0.0062	0.0067
0.0071	0.0076	0.0084	0.0102	0.0109
0.0121	0.0126	0.0132	0.0139	0.0147
0.0153	0.0160	0.0166	0.0176	0.0195
0.0202	0.0209	0.0217	0.0228	0.0239
0.0329	0.0979	0.2417	0.3512	0.3960
0.4402	0.5152	0.5838	0.6284	0.6882
0.7414	0.7747	0.8288	0.8322	0.8460
0.8663	0.8808	0.9212	0.9436	0.9545
0.9657	0.9729	0.9879	0.9979	1.0000

Transect 6757.544
Area:

0.0001	0.0004	0.0008	0.0013	0.0019
0.0026	0.0033	0.0041	0.0049	0.0058
0.0069	0.0080	0.0094	0.0108	0.0123
0.0139	0.0155	0.0173	0.0191	0.0209
0.0228	0.0248	0.0268	0.0290	0.0312
0.0335	0.0359	0.0386	0.0438	0.0571
0.0772	0.1039	0.1332	0.1686	0.2088
0.2516	0.2967	0.3423	0.3897	0.4377
0.4875	0.5395	0.5935	0.6489	0.7052
0.7627	0.8212	0.8802	0.9398	1.0000

Hrad:

0.0314	0.0754	0.1149	0.1433	0.1640
0.2027	0.2389	0.2730	0.2971	0.3190
0.3333	0.3475	0.3701	0.3979	0.4300
0.4644	0.4981	0.5319	0.5650	0.5975
0.6290	0.6598	0.6905	0.7177	0.7418
0.7593	0.7623	0.7699	0.7166	0.5499
0.3037	0.2294	0.2586	0.2780	0.3116

0.3535	0.4004	0.4547	0.5016	0.5489
0.5908	0.6254	0.6733	0.7086	0.7583
0.8048	0.8566	0.9086	0.9598	1.0000

Width:

0.0041	0.0056	0.0067	0.0095	0.0106
0.0114	0.0121	0.0129	0.0143	0.0158
0.0180	0.0204	0.0225	0.0241	0.0255
0.0266	0.0276	0.0287	0.0297	0.0307
0.0318	0.0329	0.0340	0.0352	0.0367
0.0386	0.0416	0.0457	0.1482	0.2604
0.4050	0.4520	0.5227	0.6340	0.6763
0.7222	0.7428	0.7580	0.7783	0.7988
0.8293	0.8758	0.8898	0.9169	0.9310
0.9487	0.9592	0.9691	0.9792	1.0000

Transect 6821.096
Area:

0.0001	0.0002	0.0003	0.0005	0.0008
0.0012	0.0016	0.0021	0.0026	0.0032
0.0038	0.0045	0.0052	0.0059	0.0067
0.0076	0.0094	0.0131	0.0176	0.0238
0.0354	0.0539	0.0775	0.1029	0.1294
0.1580	0.1891	0.2211	0.2546	0.2899
0.3254	0.3608	0.3963	0.4318	0.4673
0.5028	0.5383	0.5738	0.6093	0.6448
0.6803	0.7158	0.7513	0.7868	0.8224
0.8579	0.8934	0.9289	0.9645	1.0000

Hrad:

0.0204	0.0389	0.0537	0.0609	0.0738
0.0935	0.1149	0.1355	0.1551	0.1749
0.1952	0.2158	0.2355	0.2541	0.2712
0.2859	0.2592	0.2185	0.1991	0.1766
0.1571	0.1196	0.1406	0.1655	0.1936
0.2132	0.2375	0.2687	0.2966	0.3263
0.3578	0.3900	0.4228	0.4560	0.4895
0.5231	0.5570	0.5909	0.6249	0.6590
0.6931	0.7273	0.7614	0.7955	0.8297
0.8638	0.8979	0.9320	0.9660	1.0000

Width:

0.0028	0.0037	0.0048	0.0068	0.0085
0.0113	0.0127	0.0141	0.0157	0.0170
0.0181	0.0191	0.0202	0.0215	0.0231
0.0258	0.0806	0.1155	0.1369	0.2479
0.3797	0.6386	0.6941	0.7362	0.7669
0.8638	0.8908	0.9177	0.9862	0.9985
0.9985	0.9986	0.9987	0.9988	0.9989
0.9989	0.9990	0.9991	0.9992	0.9992
0.9993	0.9994	0.9995	0.9995	0.9996
0.9997	0.9998	0.9998	0.9999	1.0000

Transect 6826.129
Area:

0.0002	0.0005	0.0008	0.0011	0.0014
0.0018	0.0022	0.0027	0.0032	0.0038
0.0045	0.0051	0.0059	0.0066	0.0075
0.0084	0.0102	0.0137	0.0182	0.0232
0.0309	0.0439	0.0647	0.0890	0.1150
0.1423	0.1710	0.2011	0.2350	0.2707
0.3071	0.3436	0.3800	0.4164	0.4529
0.4893	0.5258	0.5622	0.5987	0.6351
0.6716	0.7081	0.7445	0.7810	0.8175
0.8540	0.8905	0.9270	0.9635	1.0000

Hrad:

0.0281	0.0522	0.0730	0.0912	0.1102
0.1235	0.1379	0.1587	0.1796	0.2002
0.2211	0.2404	0.2593	0.2764	0.2948
0.3114	0.2951	0.2379	0.2170	0.2210
0.2136	0.1894	0.1542	0.1666	0.1916
0.2169	0.2444	0.2720	0.2847	0.3133
0.3443	0.3766	0.4097	0.4434	0.4774
0.5117	0.5462	0.5809	0.6156	0.6505
0.6854	0.7203	0.7553	0.7903	0.8253
0.8603	0.8952	0.9302	0.9651	1.0000

Width:

0.0067	0.0072	0.0078	0.0085	0.0094
0.0112	0.0128	0.0141	0.0157	0.0169
0.0179	0.0192	0.0205	0.0226	0.0235
0.0287	0.0699	0.1173	0.1265	0.1610
0.2586	0.4742	0.6373	0.6898	0.7252
0.7724	0.7968	0.8699	0.9626	0.9966
0.9977	0.9979	0.9980	0.9981	0.9982
0.9983	0.9985	0.9986	0.9987	0.9988
0.9989	0.9990	0.9992	0.9993	0.9994
0.9995	0.9996	0.9998	0.9999	1.0000

Transect 6853.017
Area:

0.0003	0.0006	0.0009	0.0013	0.0017
0.0022	0.0028	0.0035	0.0043	0.0051
0.0059	0.0069	0.0079	0.0090	0.0110
0.0170	0.0261	0.0364	0.0476	0.0605
0.0750	0.0911	0.1108	0.1338	0.1598
0.1870	0.2148	0.2443	0.2749	0.3069
0.3406	0.3753	0.4099	0.4446	0.4793
0.5140	0.5487	0.5834	0.6181	0.6528
0.6875	0.7222	0.7569	0.7916	0.8263
0.8611	0.8958	0.9305	0.9653	1.0000

Hrad:

0.0321	0.0589	0.0823	0.0979	0.1129
0.1259	0.1393	0.1565	0.1751	0.1920
0.2081	0.2254	0.2341	0.2487	0.2394
0.1713	0.0917	0.1217	0.1416	0.1595
0.1852	0.2007	0.2016	0.2033	0.2264
0.2479	0.2796	0.3069	0.3370	0.3666
0.3932	0.4223	0.4526	0.4836	0.5150
0.5468	0.5788	0.6109	0.6432	0.6756
0.7080	0.7405	0.7730	0.8055	0.8380
0.8705	0.9029	0.9353	0.9677	1.0000

Width:

0.0083	0.0091	0.0100	0.0118	0.0137
0.0161	0.0186	0.0205	0.0221	0.0239
0.0258	0.0275	0.0305	0.0328	0.1073
0.2234	0.2865	0.3068	0.3395	0.4010
0.4326	0.5199	0.6145	0.7077	0.7779
0.7894	0.8150	0.8704	0.9054	0.9353
0.9954	0.9979	0.9980	0.9982	0.9983
0.9984	0.9985	0.9986	0.9987	0.9988
0.9990	0.9991	0.9992	0.9993	0.9994
0.9995	0.9997	0.9998	0.9999	1.0000

Transect 6857.851
Area:

0.0001	0.0002	0.0005	0.0008	0.0012
0.0017	0.0023	0.0029	0.0037	0.0047
0.0056	0.0067	0.0078	0.0089	0.0101
0.0121	0.0159	0.0220	0.0326	0.0457

0.0599	0.0760	0.0951	0.1170	0.1403
0.1649	0.1910	0.2183	0.2475	0.2788
0.3112	0.3461	0.3824	0.4187	0.4550
0.4913	0.5276	0.5639	0.6002	0.6365
0.6728	0.7092	0.7455	0.7818	0.8182
0.8545	0.8909	0.9273	0.9636	1.0000

Hrad:

0.0250	0.0442	0.0582	0.0755	0.0872
0.1000	0.1190	0.1330	0.1437	0.1646
0.1870	0.2092	0.2309	0.2496	0.2636
0.2578	0.2242	0.1646	0.1026	0.1202
0.1517	0.1652	0.1679	0.1987	0.2138
0.2441	0.2733	0.2922	0.3189	0.3506
0.3816	0.4085	0.4378	0.4683	0.4998
0.5319	0.5644	0.5973	0.6304	0.6638
0.6972	0.7308	0.7644	0.7980	0.8317
0.8654	0.8991	0.9328	0.9664	1.0000

Width:

0.0034	0.0056	0.0074	0.0091	0.0120
0.0151	0.0173	0.0202	0.0241	0.0261
0.0277	0.0291	0.0305	0.0323	0.0349
0.0938	0.1233	0.2183	0.3228	0.3813
0.4009	0.4728	0.5766	0.6230	0.6609
0.6875	0.7396	0.7616	0.8396	0.8751
0.9077	0.9973	0.9974	0.9976	0.9977
0.9979	0.9980	0.9982	0.9983	0.9985
0.9986	0.9988	0.9989	0.9991	0.9992
0.9994	0.9995	0.9997	0.9998	1.0000

Transect 6917.282
Area:

0.0003	0.0007	0.0012	0.0019	0.0027
0.0038	0.0050	0.0063	0.0078	0.0094
0.0111	0.0129	0.0149	0.0170	0.0192
0.0216	0.0241	0.0269	0.0297	0.0327
0.0358	0.0391	0.0426	0.0484	0.0589
0.0762	0.0988	0.1242	0.1506	0.1780
0.2066	0.2362	0.2668	0.2978	0.3295
0.3616	0.3939	0.4265	0.4598	0.4937
0.5282	0.5630	0.5990	0.6376	0.6827
0.7395	0.8015	0.8654	0.9317	1.0000

Hrad:

0.0476	0.0934	0.1329	0.1694	0.1867
0.2133	0.2523	0.2922	0.3308	0.3659
0.4001	0.4338	0.4676	0.5014	0.5349
0.5675	0.5782	0.6149	0.6511	0.6861
0.7181	0.7488	0.7731	0.7353	0.5809
0.4210	0.2745	0.3324	0.3905	0.4383
0.4987	0.5412	0.6020	0.6584	0.7174
0.7805	0.8444	0.8988	0.9483	1.0019
1.0594	1.1149	1.1584	1.1851	1.2309
1.2544	1.2757	1.2482	1.2817	1.0000

Width:

0.0053	0.0070	0.0087	0.0104	0.0135
0.0165	0.0184	0.0201	0.0218	0.0236
0.0255	0.0275	0.0293	0.0312	0.0330
0.0349	0.0385	0.0402	0.0420	0.0438
0.0458	0.0479	0.0547	0.1195	0.1833
0.2937	0.3585	0.3724	0.3845	0.4050
0.4130	0.4355	0.4422	0.4514	0.4585
0.4623	0.4653	0.4732	0.4835	0.4914
0.4970	0.5046	0.5300	0.5773	0.7321
0.8766	0.9031	0.9294	0.9659	1.0000

Transect 7071.306
Area:

0.0004	0.0010	0.0018	0.0026	0.0035
0.0045	0.0056	0.0067	0.0080	0.0092
0.0108	0.0126	0.0146	0.0167	0.0188
0.0209	0.0232	0.0260	0.0301	0.0369
0.0469	0.0586	0.0720	0.0870	0.1039
0.1218	0.1408	0.1612	0.1834	0.2078
0.2352	0.2658	0.3011	0.3413	0.3824
0.4235	0.4646	0.5057	0.5468	0.5880
0.6291	0.6703	0.7115	0.7526	0.7938
0.8351	0.8763	0.9175	0.9587	1.0000

Hrad:

0.0283	0.0538	0.0803	0.1101	0.1384
0.1532	0.1819	0.2102	0.2372	0.2644
0.2842	0.2959	0.3010	0.3316	0.3627
0.3941	0.4221	0.4358	0.4335	0.4007
0.3639	0.3338	0.3331	0.3413	0.3566
0.3785	0.4023	0.4195	0.4347	0.4438
0.4660	0.4553	0.4771	0.4902	0.5204
0.5536	0.5890	0.6259	0.6639	0.7028
0.7424	0.7824	0.8229	0.8637	0.9048
0.9460	0.9874	1.0290	1.0706	1.0000

Width:

0.0105	0.0141	0.0163	0.0173	0.0183
0.0210	0.0224	0.0236	0.0248	0.0266
0.0342	0.0383	0.0409	0.0416	0.0423
0.0429	0.0520	0.0621	0.1051	0.1801
0.2155	0.2531	0.2841	0.3098	0.3481
0.3693	0.3900	0.4178	0.4641	0.5125
0.5749	0.6466	0.7687	0.8179	0.8181
0.8183	0.8186	0.8188	0.8190	0.8193
0.8195	0.8197	0.8200	0.8202	0.8204
0.8207	0.8209	0.8211	0.8214	1.0000

Transect 7083.163
Area:

0.0001	0.0002	0.0005	0.0008	0.0012
0.0017	0.0022	0.0029	0.0035	0.0043
0.0050	0.0059	0.0068	0.0078	0.0089
0.0103	0.0125	0.0187	0.0304	0.0449
0.0602	0.0769	0.0944	0.1127	0.1315
0.1515	0.1741	0.2000	0.2277	0.2585
0.2925	0.3283	0.3650	0.4022	0.4395
0.4768	0.5141	0.5514	0.5887	0.6261
0.6634	0.7008	0.7381	0.7755	0.8129
0.8503	0.8877	0.9251	0.9626	1.0000

Hrad:

0.0224	0.0442	0.0579	0.0732	0.0888
0.1081	0.1230	0.1481	0.1738	0.2020
0.2290	0.2534	0.2766	0.2976	0.3157
0.3279	0.3038	0.2257	0.1857	0.1859
0.2076	0.2238	0.2547	0.2861	0.3194
0.3443	0.3548	0.3640	0.3962	0.4239
0.4492	0.4766	0.5059	0.5093	0.5467
0.5850	0.6237	0.6629	0.7023	0.7420
0.7819	0.8219	0.8621	0.9023	0.9425
0.9829	1.0232	1.0636	1.1039	1.0000

Width:

0.0029	0.0040	0.0061	0.0086	0.0098
0.0111	0.0133	0.0148	0.0158	0.0168
0.0179	0.0196	0.0213	0.0235	0.0265

0.0351	0.0813	0.2183	0.3083	0.3319
0.3575	0.3834	0.4002	0.4133	0.4308
0.4693	0.5372	0.6049	0.6416	0.7364
0.7868	0.8056	0.8293	0.8326	0.8329
0.8331	0.8333	0.8336	0.8338	0.8341
0.8343	0.8346	0.8348	0.8351	0.8353
0.8355	0.8358	0.8360	0.8363	1.0000

Transect 7088.943
Area:

0.0002	0.0005	0.0008	0.0015	0.0025
0.0038	0.0056	0.0088	0.0129	0.0180
0.0238	0.0300	0.0362	0.0426	0.0494
0.0568	0.0664	0.0803	0.0990	0.1202
0.1418	0.1644	0.1874	0.2107	0.2346
0.2594	0.2864	0.3143	0.3428	0.3723
0.4026	0.4337	0.4651	0.4965	0.5279
0.5593	0.5908	0.6222	0.6536	0.6851
0.7165	0.7480	0.7795	0.8110	0.8424
0.8739	0.9054	0.9370	0.9685	1.0000

Hrad:

0.0274	0.0532	0.0697	0.0776	0.0904
0.1027	0.1098	0.1099	0.1219	0.1400
0.1615	0.1873	0.2222	0.2554	0.2874
0.3158	0.3323	0.3268	0.3196	0.3251
0.3414	0.3580	0.3827	0.4085	0.4353
0.4588	0.4637	0.4913	0.5110	0.5297
0.5507	0.5749	0.6076	0.6408	0.6743
0.7081	0.7422	0.7765	0.8109	0.8454
0.8801	0.9148	0.9496	0.9844	1.0193
1.0542	1.0892	1.1241	1.1590	1.0000

Width:

0.0067	0.0073	0.0126	0.0224	0.0296
0.0375	0.0729	0.0935	0.1246	0.1461
0.1619	0.1637	0.1651	0.1783	0.1841
0.2079	0.3067	0.4452	0.5515	0.5676
0.5856	0.6071	0.6129	0.6282	0.6438
0.6903	0.7333	0.7478	0.7673	0.7984
0.8158	0.8341	0.8343	0.8345	0.8347
0.8349	0.8351	0.8353	0.8355	0.8357
0.8359	0.8361	0.8363	0.8365	0.8367
0.8369	0.8371	0.8373	0.8375	1.0000

Transect 7106.395
Area:

0.0002	0.0005	0.0007	0.0010	0.0014
0.0017	0.0022	0.0027	0.0034	0.0040
0.0047	0.0054	0.0062	0.0070	0.0080
0.0090	0.0104	0.0151	0.0279	0.0430
0.0613	0.0837	0.1085	0.1351	0.1620
0.1894	0.2177	0.2472	0.2783	0.3109
0.3442	0.3784	0.4128	0.4472	0.4816
0.5160	0.5505	0.5850	0.6194	0.6540
0.6885	0.7230	0.7576	0.7922	0.8268
0.8614	0.8960	0.9307	0.9653	1.0000

Hrad:

0.0111	0.0207	0.0286	0.0330	0.0402
0.0461	0.0519	0.0611	0.0724	0.0847
0.0974	0.1087	0.1188	0.1303	0.1408
0.1490	0.1486	0.1225	0.0917	0.1002
0.1045	0.1202	0.1474	0.1711	0.2038
0.2346	0.2653	0.2977	0.3189	0.3485
0.3743	0.4008	0.4340	0.4673	0.5008

0.5343	0.5678	0.6013	0.6348	0.6683
0.7017	0.7351	0.7684	0.8017	0.8349
0.8681	0.9012	0.9342	0.9671	1.0000

Width:

0.0069	0.0072	0.0078	0.0095	0.0102
0.0112	0.0144	0.0174	0.0184	0.0191
0.0198	0.0214	0.0236	0.0256	0.0282
0.0332	0.0677	0.2571	0.4140	0.4599
0.5862	0.6915	0.7475	0.7711	0.7836
0.7962	0.8346	0.8685	0.9278	0.9434
0.9762	0.9909	0.9914	0.9920	0.9925
0.9930	0.9935	0.9940	0.9945	0.9950
0.9955	0.9960	0.9965	0.9970	0.9975
0.9980	0.9985	0.9990	0.9995	1.0000

Transect 7111.02
Area:

0.0000	0.0001	0.0003	0.0005	0.0008
0.0012	0.0016	0.0020	0.0025	0.0031
0.0037	0.0043	0.0050	0.0060	0.0083
0.0116	0.0153	0.0202	0.0313	0.0455
0.0634	0.0848	0.1101	0.1381	0.1665
0.1954	0.2258	0.2574	0.2899	0.3233
0.3571	0.3908	0.4246	0.4584	0.4922
0.5260	0.5598	0.5936	0.6275	0.6613
0.6951	0.7290	0.7628	0.7967	0.8306
0.8644	0.8983	0.9322	0.9661	1.0000

Hrad:

0.0061	0.0118	0.0192	0.0240	0.0316
0.0389	0.0458	0.0529	0.0602	0.0706
0.0824	0.0941	0.1062	0.1125	0.1141
0.1240	0.1476	0.1696	0.1520	0.1593
0.1515	0.1695	0.1693	0.2061	0.2436
0.2846	0.3116	0.3514	0.3879	0.4207
0.4622	0.5038	0.5454	0.5870	0.6285
0.6700	0.7114	0.7527	0.7940	0.8352
0.8763	0.9173	0.9582	0.9990	1.0397
1.0804	1.1209	1.1614	1.2018	1.0000

Width:

0.0017	0.0035	0.0046	0.0063	0.0075
0.0088	0.0101	0.0114	0.0126	0.0138
0.0151	0.0162	0.0172	0.0449	0.0691
0.0842	0.0957	0.1447	0.3083	0.3766
0.4782	0.5486	0.6616	0.6794	0.6883
0.6981	0.7476	0.7671	0.7888	0.8089
0.8091	0.8092	0.8094	0.8096	0.8098
0.8099	0.8101	0.8103	0.8105	0.8106
0.8108	0.8110	0.8112	0.8113	0.8115
0.8117	0.8118	0.8120	0.8122	1.0000

Transect 7127.958
Area:

0.0001	0.0004	0.0006	0.0010	0.0023
0.0040	0.0061	0.0090	0.0128	0.0173
0.0223	0.0281	0.0342	0.0404	0.0468
0.0533	0.0607	0.0701	0.0825	0.0996
0.1180	0.1393	0.1624	0.1879	0.2164
0.2455	0.2759	0.3069	0.3382	0.3695
0.4008	0.4322	0.4636	0.4950	0.5264
0.5578	0.5893	0.6208	0.6523	0.6838
0.7153	0.7469	0.7784	0.8100	0.8416
0.8733	0.9049	0.9366	0.9683	1.0000

Hrad:

0.0092	0.0205	0.0304	0.0356	0.0461
0.0767	0.1043	0.1189	0.1339	0.1664
0.2003	0.2206	0.2615	0.3059	0.3485
0.3908	0.4250	0.4457	0.4446	0.4247
0.4238	0.3517	0.3738	0.3393	0.3683
0.4021	0.4257	0.4618	0.4982	0.5350
0.5721	0.6094	0.6469	0.6845	0.7221
0.7596	0.7972	0.8348	0.8723	0.9098
0.9472	0.9845	1.0217	1.0589	1.0960
1.1330	1.1699	1.2068	1.2435	1.0000

Width:

0.0054	0.0059	0.0064	0.0197	0.0415
0.0476	0.0587	0.0870	0.1053	0.1177
0.1417	0.1503	0.1562	0.1596	0.1639
0.1690	0.2166	0.2622	0.4021	0.4443
0.4931	0.5776	0.6074	0.6960	0.7333
0.7498	0.7827	0.7881	0.7937	0.7942
0.7947	0.7952	0.7956	0.7961	0.7966
0.7971	0.7976	0.7981	0.7986	0.7991
0.7995	0.8000	0.8005	0.8010	0.8015
0.8020	0.8025	0.8030	0.8035	1.0000

Transect 7153.097
Area:

0.0001	0.0003	0.0005	0.0009	0.0019
0.0030	0.0043	0.0058	0.0078	0.0113
0.0165	0.0221	0.0280	0.0340	0.0402
0.0466	0.0532	0.0603	0.0691	0.0814
0.0979	0.1173	0.1414	0.1691	0.1983
0.2281	0.2588	0.2903	0.3223	0.3543
0.3864	0.4185	0.4507	0.4828	0.5150
0.5472	0.5794	0.6116	0.6439	0.6761
0.7084	0.7407	0.7731	0.8054	0.8378
0.8702	0.9026	0.9351	0.9675	1.0000

Hrad:

0.0077	0.0155	0.0215	0.0244	0.0385
0.0606	0.0836	0.1053	0.0916	0.0991
0.1133	0.1445	0.1765	0.2093	0.2429
0.2751	0.3038	0.3262	0.3387	0.3392
0.3185	0.3043	0.2844	0.2927	0.3069
0.3257	0.3404	0.3603	0.3869	0.4154
0.4442	0.4734	0.5027	0.5321	0.5616
0.5912	0.6207	0.6503	0.6798	0.7093
0.7387	0.7680	0.7973	0.8265	0.8557
0.8847	0.9137	0.9425	0.9713	1.0000

Width:

0.0042	0.0055	0.0074	0.0245	0.0328
0.0373	0.0421	0.0471	0.0843	0.1389
0.1696	0.1764	0.1830	0.1885	0.1933
0.1989	0.2099	0.2358	0.3056	0.4708
0.5460	0.6685	0.7959	0.8923	0.9060
0.9297	0.9580	0.9804	0.9867	0.9873
0.9879	0.9886	0.9892	0.9898	0.9905
0.9911	0.9917	0.9924	0.9930	0.9936
0.9943	0.9949	0.9956	0.9962	0.9968
0.9975	0.9981	0.9987	0.9994	1.0000

Transect 7156.184
Area:

0.0004	0.0007	0.0011	0.0016	0.0027
0.0040	0.0055	0.0072	0.0094	0.0123
0.0161	0.0200	0.0242	0.0285	0.0330
0.0377	0.0428	0.0490	0.0564	0.0659

0.0820	0.1036	0.1282	0.1552	0.1841
0.2157	0.2482	0.2806	0.3131	0.3456
0.3781	0.4107	0.4432	0.4758	0.5084
0.5411	0.5737	0.6064	0.6391	0.6718
0.7045	0.7373	0.7700	0.8028	0.8356
0.8685	0.9013	0.9342	0.9671	1.0000

Hrad:

0.0107	0.0201	0.0285	0.0343	0.0437
0.0619	0.0823	0.0962	0.1008	0.1094
0.1274	0.1570	0.1862	0.2166	0.2436
0.2739	0.2987	0.3143	0.3239	0.3258
0.2504	0.2294	0.1987	0.2173	0.2362
0.2543	0.2845	0.3155	0.3468	0.3784
0.4101	0.4418	0.4736	0.5053	0.5370
0.5686	0.6001	0.6316	0.6629	0.6941
0.7253	0.7563	0.7872	0.8180	0.8486
0.8791	0.9095	0.9398	0.9700	1.0000

Width:

0.0110	0.0114	0.0119	0.0261	0.0368
0.0429	0.0476	0.0572	0.0763	0.1044
0.1184	0.1238	0.1292	0.1334	0.1393
0.1472	0.1694	0.2075	0.2430	0.3811
0.5882	0.7221	0.7795	0.8538	0.9118
0.9851	0.9857	0.9864	0.9870	0.9876
0.9882	0.9888	0.9895	0.9901	0.9907
0.9913	0.9919	0.9926	0.9932	0.9938
0.9944	0.9950	0.9957	0.9963	0.9969
0.9975	0.9981	0.9988	0.9994	1.0000

Transect 7238.63
Area:

0.0004	0.0009	0.0014	0.0019	0.0024
0.0031	0.0038	0.0045	0.0052	0.0060
0.0069	0.0077	0.0086	0.0096	0.0106
0.0117	0.0129	0.0145	0.0174	0.0249
0.0381	0.0573	0.0793	0.1046	0.1345
0.1666	0.1999	0.2337	0.2678	0.3022
0.3368	0.3715	0.4063	0.4410	0.4758
0.5106	0.5454	0.5802	0.6151	0.6500
0.6849	0.7198	0.7548	0.7897	0.8247
0.8597	0.8948	0.9298	0.9649	1.0000

Hrad:

0.0146	0.0275	0.0390	0.0496	0.0591
0.0695	0.0813	0.0932	0.1051	0.1167
0.1280	0.1389	0.1487	0.1590	0.1687
0.1774	0.1854	0.1912	0.1854	0.1618
0.1530	0.1605	0.1966	0.2304	0.2551
0.2912	0.3285	0.3676	0.4071	0.4468
0.4871	0.5282	0.5692	0.6103	0.6512
0.6920	0.7325	0.7729	0.8131	0.8530
0.8927	0.9322	0.9714	1.0104	1.0491
1.0875	1.1258	1.1637	1.2014	1.0000

Width:

0.0104	0.0110	0.0115	0.0120	0.0138
0.0158	0.0165	0.0172	0.0179	0.0186
0.0195	0.0205	0.0220	0.0230	0.0244
0.0261	0.0327	0.0418	0.1083	0.2353
0.3619	0.4996	0.5253	0.6568	0.7312
0.7653	0.7827	0.7879	0.7961	0.8030
0.8064	0.8069	0.8074	0.8079	0.8084
0.8089	0.8094	0.8099	0.8104	0.8109
0.8114	0.8119	0.8124	0.8129	0.8134
0.8139	0.8144	0.8149	0.8154	1.0000

Transect 7246.49
Area:

0.0001	0.0004	0.0007	0.0012	0.0017
0.0024	0.0030	0.0038	0.0045	0.0053
0.0061	0.0070	0.0079	0.0089	0.0100
0.0111	0.0124	0.0144	0.0187	0.0259
0.0389	0.0569	0.0799	0.1070	0.1368
0.1681	0.2009	0.2341	0.2676	0.3013
0.3352	0.3691	0.4031	0.4378	0.4727
0.5077	0.5427	0.5777	0.6128	0.6479
0.6830	0.7181	0.7532	0.7884	0.8236
0.8588	0.8941	0.9294	0.9647	1.0000

Hrad:

0.0089	0.0167	0.0286	0.0379	0.0464
0.0560	0.0703	0.0853	0.0998	0.1138
0.1276	0.1412	0.1521	0.1641	0.1761
0.1873	0.1958	0.1966	0.1852	0.1778
0.1677	0.1878	0.2019	0.2256	0.2600
0.2977	0.3388	0.3818	0.4248	0.4690
0.5134	0.5578	0.6016	0.6390	0.6823
0.7255	0.7683	0.8109	0.8531	0.8951
0.9367	0.9780	1.0189	1.0595	1.0998
1.1397	1.1793	1.2186	1.2575	1.0000

Width:

0.0038	0.0075	0.0088	0.0107	0.0127
0.0145	0.0153	0.0159	0.0167	0.0175
0.0182	0.0188	0.0214	0.0226	0.0239
0.0263	0.0324	0.0756	0.1164	0.2232
0.3235	0.4515	0.5457	0.6337	0.6579
0.7032	0.7179	0.7220	0.7317	0.7338
0.7355	0.7372	0.7418	0.7583	0.7589
0.7594	0.7600	0.7605	0.7611	0.7616
0.7622	0.7627	0.7633	0.7638	0.7644
0.7649	0.7655	0.7660	0.7666	1.0000

Transect 7306.937
Area:

0.0002	0.0005	0.0008	0.0013	0.0019
0.0026	0.0034	0.0042	0.0051	0.0061
0.0074	0.0090	0.0107	0.0126	0.0150
0.0187	0.0230	0.0279	0.0340	0.0440
0.0601	0.0800	0.1029	0.1301	0.1596
0.1904	0.2216	0.2538	0.2875	0.3213
0.3552	0.3891	0.4230	0.4569	0.4908
0.5247	0.5586	0.5926	0.6265	0.6604
0.6944	0.7283	0.7622	0.7962	0.8302
0.8641	0.8981	0.9320	0.9660	1.0000

Hrad:

0.0081	0.0171	0.0246	0.0298	0.0359
0.0454	0.0545	0.0648	0.0751	0.0846
0.0918	0.0985	0.1053	0.1118	0.1164
0.1143	0.1151	0.1159	0.1118	0.1117
0.1176	0.1315	0.1474	0.1610	0.1805
0.2143	0.2491	0.2795	0.3082	0.3455
0.3829	0.4203	0.4577	0.4951	0.5324
0.5696	0.6067	0.6437	0.6807	0.7175
0.7543	0.7909	0.8274	0.8638	0.9001
0.9363	0.9723	1.0083	1.0441	1.0000

Width:

0.0071	0.0093	0.0114	0.0146	0.0175
0.0199	0.0221	0.0242	0.0260	0.0327
0.0385	0.0440	0.0494	0.0550	0.0883

0.1094	0.1234	0.1462	0.2049	0.3925
0.4914	0.5746	0.7029	0.7680	0.8376
0.8497	0.8603	0.8976	0.9277	0.9280
0.9281	0.9283	0.9284	0.9285	0.9287
0.9288	0.9289	0.9291	0.9292	0.9293
0.9295	0.9296	0.9297	0.9299	0.9300
0.9301	0.9303	0.9304	0.9305	1.0000

Transect 7309.586
Area:

0.0003	0.0007	0.0011	0.0015	0.0019
0.0024	0.0030	0.0036	0.0044	0.0053
0.0063	0.0077	0.0094	0.0113	0.0134
0.0164	0.0206	0.0253	0.0308	0.0373
0.0464	0.0618	0.0846	0.1119	0.1419
0.1740	0.2066	0.2395	0.2730	0.3075
0.3421	0.3767	0.4112	0.4458	0.4804
0.5150	0.5496	0.5842	0.6189	0.6535
0.6881	0.7227	0.7574	0.7920	0.8267
0.8613	0.8960	0.9306	0.9653	1.0000

Hrad:

0.0122	0.0215	0.0289	0.0352	0.0415
0.0482	0.0570	0.0662	0.0752	0.0847
0.0951	0.1025	0.1103	0.1192	0.1290
0.1274	0.1277	0.1305	0.1327	0.1348
0.1374	0.1138	0.1254	0.1465	0.1733
0.2082	0.2462	0.2828	0.3205	0.3546
0.3943	0.4341	0.4738	0.5134	0.5529
0.5922	0.6313	0.6703	0.7092	0.7478
0.7863	0.8246	0.8628	0.9007	0.9385
0.9761	1.0135	1.0508	1.0878	1.0000

Width:

0.0088	0.0094	0.0100	0.0107	0.0115
0.0148	0.0164	0.0183	0.0212	0.0247
0.0284	0.0414	0.0467	0.0518	0.0577
0.1003	0.1155	0.1304	0.1480	0.1918
0.2856	0.5228	0.6588	0.7437	0.8175
0.8439	0.8490	0.8625	0.8886	0.8974
0.8975	0.8976	0.8978	0.8979	0.8981
0.8982	0.8984	0.8985	0.8987	0.8988
0.8990	0.8991	0.8993	0.8994	0.8996
0.8997	0.8999	0.9000	0.9002	1.0000

Transect 7328.619
Area:

0.0006	0.0013	0.0020	0.0027	0.0034
0.0041	0.0049	0.0057	0.0065	0.0073
0.0081	0.0090	0.0099	0.0109	0.0119
0.0134	0.0152	0.0175	0.0200	0.0226
0.0253	0.0282	0.0312	0.0344	0.0377
0.0416	0.0477	0.0554	0.0664	0.0790
0.0929	0.1076	0.1228	0.1383	0.1547
0.1727	0.1945	0.2202	0.2571	0.3030
0.3597	0.4225	0.4901	0.5607	0.6323
0.7046	0.7776	0.8512	0.9254	1.0000

Hrad:

0.0248	0.0454	0.0629	0.0782	0.0916
0.1037	0.1146	0.1246	0.1338	0.1424
0.1505	0.1582	0.1623	0.1664	0.1714
0.1755	0.1769	0.1795	0.1941	0.2102
0.2273	0.2453	0.2627	0.2820	0.3029
0.3190	0.3214	0.3188	0.3115	0.3063
0.2915	0.3109	0.3346	0.3597	0.3854

0.4089	0.3991	0.4257	0.4386	0.4587
0.4647	0.4889	0.5347	0.5778	0.6464
0.7153	0.7862	0.8533	0.9305	1.0000

Width:

0.0086	0.0089	0.0092	0.0094	0.0097
0.0099	0.0102	0.0105	0.0107	0.0110
0.0113	0.0115	0.0125	0.0135	0.0158
0.0221	0.0269	0.0323	0.0338	0.0354
0.0372	0.0389	0.0412	0.0430	0.0444
0.0633	0.0899	0.1322	0.1582	0.1760
0.1908	0.1985	0.2039	0.2097	0.2277
0.2527	0.3196	0.3892	0.5432	0.6721
0.8048	0.8613	0.9253	0.9488	0.9551
0.9651	0.9743	0.9823	0.9870	1.0000

Transect 7333.219
Area:

0.0001	0.0004	0.0007	0.0010	0.0014
0.0024	0.0036	0.0049	0.0062	0.0075
0.0090	0.0104	0.0120	0.0137	0.0156
0.0177	0.0200	0.0224	0.0249	0.0275
0.0302	0.0330	0.0359	0.0391	0.0435
0.0495	0.0593	0.0724	0.0868	0.1018
0.1173	0.1334	0.1501	0.1672	0.1848
0.2030	0.2237	0.2482	0.2762	0.3098
0.3556	0.4143	0.4818	0.5523	0.6251
0.6989	0.7733	0.8482	0.9237	1.0000

Hrad:

0.0164	0.0347	0.0492	0.0606	0.0601
0.0510	0.0729	0.0939	0.1141	0.1336
0.1520	0.1695	0.1868	0.2057	0.2199
0.2387	0.2600	0.2827	0.3070	0.3320
0.3578	0.3852	0.4129	0.4372	0.4503
0.4403	0.4169	0.3327	0.3436	0.3631
0.3872	0.4093	0.4386	0.4701	0.5026
0.5367	0.5648	0.5390	0.5606	0.5876
0.5837	0.5822	0.6105	0.6471	0.6814
0.7422	0.8144	0.8873	0.9449	1.0000

Width:

0.0028	0.0033	0.0037	0.0049	0.0079
0.0153	0.0160	0.0166	0.0173	0.0180
0.0187	0.0196	0.0206	0.0227	0.0266
0.0285	0.0301	0.0316	0.0329	0.0343
0.0356	0.0366	0.0377	0.0496	0.0650
0.1030	0.1501	0.1797	0.1904	0.1970
0.2029	0.2123	0.2183	0.2237	0.2292
0.2491	0.2929	0.3426	0.3753	0.5085
0.6672	0.8289	0.8948	0.9219	0.9451
0.9562	0.9621	0.9694	0.9759	1.0000

Transect 7390.724
Area:

0.0002	0.0004	0.0007	0.0010	0.0013
0.0018	0.0025	0.0033	0.0041	0.0051
0.0061	0.0073	0.0088	0.0124	0.0166
0.0214	0.0275	0.0355	0.0443	0.0558
0.0723	0.0919	0.1123	0.1355	0.1616
0.1885	0.2163	0.2463	0.2777	0.3105
0.3441	0.3783	0.4128	0.4473	0.4818
0.5163	0.5508	0.5853	0.6198	0.6543
0.6889	0.7234	0.7580	0.7925	0.8271
0.8616	0.8962	0.9308	0.9654	1.0000

Hrad:

0.0234	0.0445	0.0617	0.0769	0.0863
0.0913	0.1144	0.1358	0.1564	0.1765
0.1960	0.2151	0.2228	0.1982	0.1980
0.2004	0.1905	0.1952	0.2199	0.2295
0.2383	0.2410	0.2668	0.2819	0.3066
0.3345	0.3634	0.3887	0.4165	0.4429
0.4733	0.5024	0.5353	0.5690	0.6034
0.6383	0.6735	0.7089	0.7446	0.7804
0.8162	0.8521	0.8881	0.9240	0.9600
0.9959	1.0317	1.0675	1.1033	1.0000

Width:

0.0052	0.0063	0.0074	0.0084	0.0102
0.0150	0.0180	0.0203	0.0226	0.0249
0.0273	0.0297	0.0649	0.1003	0.1100
0.1353	0.1744	0.2113	0.2428	0.3877
0.4382	0.5031	0.5375	0.6206	0.6659
0.6815	0.7133	0.7678	0.8033	0.8341
0.8464	0.8609	0.8611	0.8613	0.8615
0.8617	0.8618	0.8620	0.8622	0.8624
0.8626	0.8627	0.8629	0.8631	0.8633
0.8635	0.8637	0.8638	0.8640	1.0000

Transect 7413.256
Area:

0.0001	0.0003	0.0006	0.0009	0.0015
0.0022	0.0030	0.0038	0.0046	0.0055
0.0064	0.0074	0.0083	0.0093	0.0104
0.0115	0.0127	0.0139	0.0152	0.0167
0.0186	0.0214	0.0265	0.0364	0.0492
0.0637	0.0806	0.1006	0.1244	0.1501
0.1779	0.2072	0.2387	0.2720	0.3069
0.3431	0.3835	0.4292	0.4760	0.5229
0.5699	0.6169	0.6641	0.7113	0.7588
0.8065	0.8544	0.9026	0.9511	1.0000

Hrad:

0.0252	0.0530	0.0737	0.0769	0.0889
0.1123	0.1446	0.1798	0.2140	0.2473
0.2798	0.3115	0.3426	0.3728	0.4014
0.4290	0.4554	0.4808	0.5043	0.5209
0.5288	0.5155	0.4593	0.3709	0.3283
0.3233	0.3204	0.3184	0.3276	0.3509
0.3702	0.4004	0.4146	0.4448	0.4765
0.5099	0.5377	0.4697	0.5138	0.5586
0.6039	0.6492	0.6947	0.7399	0.7833
0.8273	0.8711	0.9159	0.9567	1.0000

Width:

0.0038	0.0047	0.0060	0.0091	0.0129
0.0152	0.0163	0.0169	0.0175	0.0182
0.0188	0.0194	0.0201	0.0208	0.0219
0.0230	0.0243	0.0256	0.0282	0.0353
0.0436	0.0730	0.1471	0.2361	0.2779
0.3161	0.3629	0.4593	0.5019	0.5391
0.5810	0.6207	0.6547	0.6973	0.7145
0.7751	0.8782	0.9488	0.9514	0.9532
0.9546	0.9562	0.9577	0.9601	0.9658
0.9705	0.9754	0.9787	0.9890	1.0000

Transect 7416.162
Area:

0.0006	0.0012	0.0019	0.0026	0.0033
0.0041	0.0049	0.0057	0.0065	0.0074
0.0084	0.0094	0.0104	0.0116	0.0129
0.0143	0.0157	0.0173	0.0190	0.0207

0.0225	0.0245	0.0267	0.0292	0.0321
0.0355	0.0399	0.0449	0.0517	0.0607
0.0758	0.0954	0.1183	0.1473	0.1824
0.2229	0.2685	0.3188	0.3719	0.4273
0.4838	0.5404	0.5972	0.6541	0.7112
0.7685	0.8260	0.8837	0.9416	1.0000

Hrad:

0.0165	0.0311	0.0443	0.0564	0.0675
0.0779	0.0874	0.0962	0.1046	0.1127
0.1198	0.1255	0.1306	0.1361	0.1453
0.1548	0.1683	0.1820	0.1959	0.2101
0.2245	0.2352	0.2458	0.2554	0.2635
0.2739	0.2744	0.2868	0.2903	0.2845
0.2697	0.2429	0.2568	0.2792	0.2864
0.3162	0.3274	0.3497	0.3912	0.4412
0.4839	0.5413	0.5993	0.6575	0.7153
0.7739	0.8322	0.8898	0.9474	1.0000

Width:

0.0105	0.0110	0.0115	0.0120	0.0125
0.0130	0.0135	0.0141	0.0148	0.0154
0.0162	0.0174	0.0188	0.0203	0.0225
0.0244	0.0258	0.0273	0.0287	0.0300
0.0315	0.0350	0.0390	0.0448	0.0527
0.0670	0.0783	0.0935	0.1300	0.1922
0.3028	0.3476	0.4326	0.5410	0.6424
0.7291	0.8093	0.8773	0.9152	0.9482
0.9537	0.9565	0.9590	0.9616	0.9657
0.9679	0.9708	0.9751	0.9793	1.0000

Transect 7506.531
Area:

0.0004	0.0009	0.0015	0.0021	0.0027
0.0034	0.0043	0.0053	0.0065	0.0078
0.0093	0.0111	0.0135	0.0163	0.0205
0.0284	0.0389	0.0567	0.0793	0.1029
0.1277	0.1539	0.1811	0.2094	0.2389
0.2686	0.2983	0.3281	0.3579	0.3879
0.4178	0.4479	0.4780	0.5082	0.5384
0.5687	0.5991	0.6296	0.6601	0.6906
0.7213	0.7520	0.7828	0.8136	0.8445
0.8755	0.9065	0.9376	0.9688	1.0000

Hrad:

0.0194	0.0351	0.0486	0.0603	0.0711
0.0811	0.0914	0.1054	0.1252	0.1459
0.1649	0.1877	0.1997	0.2206	0.2164
0.2333	0.2603	0.2662	0.2973	0.3543
0.4163	0.4803	0.5455	0.6079	0.6733
0.7418	0.8116	0.8821	0.9530	1.0240
1.0950	1.1659	1.2365	1.3069	1.3769
1.4466	1.5159	1.5848	1.6533	1.7214
1.7891	1.8563	1.9231	1.9895	2.0554
2.1209	2.1860	2.2507	2.3149	1.0000

Width:

0.0039	0.0044	0.0049	0.0054	0.0059
0.0065	0.0083	0.0095	0.0108	0.0121
0.0140	0.0173	0.0230	0.0262	0.0457
0.0761	0.1161	0.1879	0.1983	0.2065
0.2202	0.2305	0.2364	0.2503	0.2541
0.2547	0.2553	0.2558	0.2564	0.2570
0.2575	0.2581	0.2587	0.2592	0.2598
0.2604	0.2609	0.2615	0.2620	0.2626
0.2632	0.2637	0.2643	0.2649	0.2654
0.2660	0.2666	0.2671	0.2677	1.0000

Transect 7510.949
Area:

0.0001	0.0003	0.0006	0.0010	0.0016
0.0023	0.0031	0.0041	0.0051	0.0064
0.0079	0.0113	0.0156	0.0199	0.0252
0.0319	0.0414	0.0564	0.0773	0.1018
0.1274	0.1540	0.1817	0.2101	0.2399
0.2700	0.3001	0.3303	0.3605	0.3907
0.4209	0.4511	0.4814	0.5117	0.5421
0.5724	0.6028	0.6332	0.6636	0.6941
0.7246	0.7551	0.7856	0.8162	0.8467
0.8773	0.9080	0.9386	0.9693	1.0000

Hrad:

0.0133	0.0263	0.0370	0.0436	0.0453
0.0557	0.0678	0.0846	0.1029	0.1228
0.1372	0.1453	0.1850	0.2356	0.2735
0.3163	0.3506	0.3583	0.3536	0.4033
0.4629	0.5177	0.5859	0.6561	0.7220
0.7948	0.8692	0.9445	1.0202	1.0960
1.1719	1.2476	1.3231	1.3982	1.4730
1.5474	1.6214	1.6949	1.7680	1.8406
1.9127	1.9842	2.0553	2.1259	2.1960
2.2656	2.3347	2.4033	2.4714	1.0000

Width:

0.0016	0.0023	0.0032	0.0043	0.0057
0.0069	0.0079	0.0089	0.0101	0.0113
0.0198	0.0362	0.0384	0.0394	0.0542
0.0622	0.1042	0.1593	0.2140	0.2224
0.2316	0.2422	0.2512	0.2570	0.2677
0.2680	0.2682	0.2684	0.2686	0.2688
0.2691	0.2693	0.2695	0.2697	0.2699
0.2702	0.2704	0.2706	0.2708	0.2710
0.2713	0.2715	0.2717	0.2719	0.2721
0.2724	0.2726	0.2728	0.2730	1.0000

Transect 7560.665
Area:

0.0002	0.0007	0.0012	0.0018	0.0028
0.0040	0.0054	0.0071	0.0090	0.0110
0.0132	0.0156	0.0183	0.0222	0.0288
0.0361	0.0463	0.0588	0.0737	0.0919
0.1141	0.1412	0.1710	0.2011	0.2313
0.2616	0.2918	0.3222	0.3525	0.3829
0.4134	0.4439	0.4744	0.5050	0.5356
0.5662	0.5969	0.6277	0.6585	0.6893
0.7202	0.7511	0.7821	0.8131	0.8441
0.8752	0.9063	0.9375	0.9687	1.0000

Hrad:

0.0137	0.0291	0.0419	0.0445	0.0533
0.0690	0.0885	0.1103	0.1356	0.1639
0.1944	0.2258	0.2424	0.2495	0.2495
0.2925	0.3242	0.3571	0.3877	0.4215
0.3688	0.4312	0.4895	0.5585	0.6301
0.7030	0.7767	0.8506	0.9244	0.9981
1.0715	1.1444	1.2169	1.2889	1.3604
1.4313	1.5017	1.5715	1.6407	1.7094
1.7774	1.8450	1.9119	1.9783	2.0441
2.1093	2.1741	2.2382	2.3019	1.0000

Width:

0.0024	0.0030	0.0036	0.0054	0.0069
0.0081	0.0099	0.0114	0.0126	0.0137
0.0145	0.0154	0.0185	0.0377	0.0436

0.0555	0.0737	0.0879	0.1066	0.1210
0.1693	0.1820	0.1924	0.1927	0.1929
0.1932	0.1935	0.1937	0.1940	0.1943
0.1946	0.1948	0.1951	0.1954	0.1957
0.1959	0.1962	0.1965	0.1968	0.1970
0.1973	0.1976	0.1979	0.1981	0.1984
0.1987	0.1990	0.1992	0.1995	1.0000

Transect 7573.521
Area:

0.0004	0.0008	0.0014	0.0020	0.0027
0.0035	0.0046	0.0057	0.0071	0.0085
0.0101	0.0117	0.0140	0.0181	0.0233
0.0297	0.0388	0.0495	0.0623	0.0832
0.1062	0.1315	0.1607	0.1913	0.2220
0.2527	0.2834	0.3142	0.3450	0.3759
0.4067	0.4377	0.4686	0.4996	0.5306
0.5616	0.5927	0.6239	0.6550	0.6862
0.7174	0.7487	0.7800	0.8113	0.8427
0.8741	0.9055	0.9370	0.9685	1.0000

Hrad:

0.0082	0.0148	0.0200	0.0245	0.0276
0.0318	0.0390	0.0470	0.0556	0.0654
0.0755	0.0859	0.0857	0.0866	0.0986
0.1131	0.1248	0.1397	0.1443	0.1321
0.1569	0.1807	0.2036	0.2302	0.2588
0.2885	0.3188	0.3495	0.3803	0.4113
0.4422	0.4730	0.5038	0.5344	0.5649
0.5952	0.6253	0.6553	0.6851	0.7147
0.7441	0.7733	0.8023	0.8311	0.8597
0.8882	0.9164	0.9445	0.9723	1.0000

Width:

0.0133	0.0152	0.0176	0.0205	0.0252
0.0301	0.0347	0.0394	0.0441	0.0474
0.0513	0.0558	0.0996	0.1542	0.1750
0.2414	0.3258	0.3607	0.5424	0.7062
0.7463	0.8656	0.9703	0.9714	0.9725
0.9736	0.9747	0.9758	0.9769	0.9780
0.9791	0.9802	0.9813	0.9824	0.9835
0.9846	0.9857	0.9868	0.9879	0.9890
0.9901	0.9912	0.9923	0.9934	0.9945
0.9956	0.9967	0.9978	0.9989	1.0000

Transect 7598.352
Area:

0.0004	0.0008	0.0013	0.0019	0.0025
0.0032	0.0040	0.0049	0.0060	0.0071
0.0083	0.0107	0.0156	0.0219	0.0318
0.0458	0.0623	0.0821	0.1033	0.1249
0.1477	0.1730	0.2006	0.2297	0.2589
0.2881	0.3174	0.3467	0.3760	0.4054
0.4348	0.4642	0.4937	0.5232	0.5527
0.5823	0.6119	0.6416	0.6712	0.7010
0.7307	0.7605	0.7903	0.8202	0.8500
0.8800	0.9099	0.9399	0.9699	1.0000

Hrad:

0.0158	0.0292	0.0410	0.0524	0.0642
0.0788	0.0948	0.1119	0.1311	0.1538
0.1772	0.1547	0.1504	0.1712	0.1925
0.2102	0.2437	0.2782	0.3301	0.3853
0.4402	0.4923	0.5419	0.5912	0.6456
0.7021	0.7598	0.8184	0.8774	0.9367
0.9962	1.0556	1.1150	1.1742	1.2333

1.2921	1.3507	1.4091	1.4671	1.5249
1.5824	1.6396	1.6965	1.7531	1.8094
1.8653	1.9209	1.9762	2.0312	1.0000

Width:

0.0046	0.0052	0.0057	0.0063	0.0072
0.0084	0.0096	0.0110	0.0122	0.0128
0.0134	0.0420	0.0608	0.0833	0.1312
0.1694	0.2037	0.2303	0.2356	0.2451
0.2606	0.2998	0.3151	0.3219	0.3223
0.3227	0.3231	0.3235	0.3238	0.3242
0.3246	0.3250	0.3254	0.3257	0.3261
0.3265	0.3269	0.3273	0.3276	0.3280
0.3284	0.3288	0.3292	0.3296	0.3299
0.3303	0.3307	0.3311	0.3315	1.0000

Transect 7604.08
Area:

0.0001	0.0004	0.0007	0.0011	0.0016
0.0021	0.0028	0.0035	0.0043	0.0052
0.0064	0.0091	0.0134	0.0196	0.0281
0.0404	0.0558	0.0741	0.0950	0.1181
0.1441	0.1716	0.2001	0.2293	0.2586
0.2880	0.3173	0.3467	0.3761	0.4055
0.4350	0.4645	0.4940	0.5235	0.5531
0.5827	0.6123	0.6420	0.6717	0.7014
0.7311	0.7609	0.7907	0.8205	0.8503
0.8802	0.9101	0.9401	0.9700	1.0000

Hrad:

0.0105	0.0282	0.0510	0.0728	0.0944
0.1181	0.1434	0.1696	0.1966	0.2209
0.2005	0.1412	0.1488	0.1760	0.2023
0.2189	0.2298	0.2619	0.3012	0.3426
0.3801	0.4315	0.4830	0.5346	0.5898
0.6460	0.7029	0.7600	0.8174	0.8749
0.9323	0.9897	1.0470	1.1041	1.1611
1.2178	1.2744	1.3308	1.3869	1.4428
1.4985	1.5539	1.6090	1.6640	1.7186
1.7731	1.8272	1.8812	1.9348	1.0000

Width:

0.0023	0.0045	0.0051	0.0063	0.0078
0.0091	0.0102	0.0112	0.0122	0.0134
0.0245	0.0506	0.0819	0.0998	0.1510
0.2086	0.2437	0.3009	0.3257	0.3699
0.4000	0.4133	0.4289	0.4332	0.4336
0.4340	0.4344	0.4348	0.4352	0.4357
0.4361	0.4365	0.4369	0.4373	0.4377
0.4381	0.4385	0.4389	0.4394	0.4398
0.4402	0.4406	0.4410	0.4414	0.4418
0.4422	0.4426	0.4431	0.4435	1.0000

Transect 7641.424
Area:

0.0000	0.0001	0.0002	0.0004	0.0007
0.0010	0.0014	0.0019	0.0024	0.0034
0.0070	0.0142	0.0262	0.0409	0.0562
0.0736	0.0926	0.1119	0.1329	0.1551
0.1783	0.2033	0.2308	0.2590	0.2874
0.3158	0.3442	0.3727	0.4011	0.4296
0.4580	0.4865	0.5150	0.5434	0.5719
0.6004	0.6289	0.6574	0.6859	0.7144
0.7430	0.7715	0.8000	0.8286	0.8571
0.8857	0.9143	0.9428	0.9714	1.0000

Hrad:

0.0049	0.0088	0.0121	0.0153	0.0214
0.0298	0.0395	0.0496	0.0596	0.0630
0.0530	0.0507	0.0652	0.0868	0.1100
0.1250	0.1493	0.1736	0.1970	0.2190
0.2330	0.2550	0.2726	0.2839	0.3111
0.3386	0.3663	0.3941	0.4219	0.4498
0.4777	0.5056	0.5335	0.5614	0.5892
0.6170	0.6447	0.6724	0.7001	0.7276
0.7552	0.7826	0.8100	0.8374	0.8646
0.8919	0.9190	0.9461	0.9731	1.0000

Width:

0.0023	0.0034	0.0047	0.0082	0.0101
0.0127	0.0149	0.0172	0.0204	0.0802
0.1922	0.3128	0.5000	0.5244	0.5587
0.6468	0.6704	0.7037	0.7579	0.7969
0.8243	0.9337	0.9758	0.9938	0.9941
0.9943	0.9945	0.9948	0.9950	0.9952
0.9955	0.9957	0.9960	0.9962	0.9964
0.9967	0.9969	0.9971	0.9974	0.9976
0.9979	0.9981	0.9983	0.9986	0.9988
0.9990	0.9993	0.9995	0.9998	1.0000

Transect 130_HC
Area:

0.0004	0.0016	0.0036	0.0063	0.0099
0.0142	0.0194	0.0254	0.0323	0.0399
0.0482	0.0573	0.0672	0.0780	0.0896
0.1021	0.1154	0.1293	0.1442	0.1598
0.1761	0.1933	0.2113	0.2301	0.2497
0.2702	0.2914	0.3133	0.3362	0.3598
0.3842	0.4094	0.4354	0.4622	0.4898
0.5182	0.5474	0.5774	0.6082	0.6399
0.6723	0.7055	0.7395	0.7743	0.8099
0.8463	0.8836	0.9216	0.9604	1.0000

Hrad:

0.0233	0.0387	0.0618	0.0782	0.1016
0.1200	0.1389	0.1581	0.1775	0.2022
0.2215	0.2410	0.2605	0.2801	0.2964
0.3168	0.3371	0.3602	0.3799	0.3978
0.4196	0.4414	0.4580	0.4785	0.5003
0.5215	0.5394	0.5592	0.5811	0.5997
0.6182	0.6400	0.6618	0.6778	0.6989
0.7207	0.7413	0.7592	0.7796	0.8015
0.8194	0.8386	0.8604	0.8822	0.8975
0.9193	0.9411	0.9610	0.9789	1.0000

Width:

0.0177	0.0404	0.0576	0.0809	0.0975
0.1186	0.1396	0.1607	0.1818	0.1973
0.2176	0.2379	0.2582	0.2784	0.3021
0.3222	0.3422	0.3591	0.3795	0.4036
0.4198	0.4380	0.4614	0.4809	0.4992
0.5180	0.5401	0.5603	0.5785	0.6000
0.6214	0.6397	0.6579	0.6819	0.7008
0.7190	0.7385	0.7606	0.7801	0.7984
0.8205	0.8413	0.8595	0.8777	0.9024
0.9206	0.9389	0.9590	0.9811	1.0000

Transect 210_HC
Area:

0.0002	0.0009	0.0021	0.0037	0.0058
0.0082	0.0111	0.0144	0.0181	0.0222
0.0267	0.0316	0.0369	0.0427	0.0488
0.0554	0.0623	0.0697	0.0777	0.0871

0.0981	0.1107	0.1249	0.1406	0.1578
0.1767	0.1971	0.2191	0.2427	0.2678
0.2945	0.3227	0.3525	0.3831	0.4145
0.4466	0.4796	0.5133	0.5479	0.5832
0.6193	0.6562	0.6939	0.7324	0.7723
0.8141	0.8578	0.9033	0.9507	1.0000

Hrad:

0.0243	0.0487	0.0731	0.1003	0.1274
0.1541	0.1806	0.2068	0.2328	0.2588
0.2848	0.3107	0.3364	0.3623	0.3881
0.4137	0.4395	0.4653	0.4895	0.5065
0.5188	0.5288	0.5379	0.5470	0.5569
0.5677	0.5793	0.5921	0.6061	0.6208
0.6364	0.6529	0.6738	0.6987	0.7248
0.7515	0.7785	0.8060	0.8337	0.8615
0.8894	0.9173	0.9453	0.9700	0.9665
0.9672	0.9718	0.9789	0.9885	1.0000

Width:

0.0094	0.0188	0.0281	0.0365	0.0447
0.0529	0.0611	0.0693	0.0775	0.0857
0.0938	0.1020	0.1102	0.1184	0.1266
0.1348	0.1430	0.1512	0.1721	0.2033
0.2347	0.2659	0.2971	0.3285	0.3596
0.3909	0.4222	0.4534	0.4846	0.5158
0.5472	0.5784	0.6014	0.6172	0.6328
0.6484	0.6643	0.6798	0.6955	0.7112
0.7269	0.7426	0.7583	0.7761	0.8133
0.8508	0.8880	0.9255	0.9628	1.0000

Transect 260_HC
Area:

0.0003	0.0019	0.0046	0.0081	0.0131
0.0191	0.0279	0.0400	0.0536	0.0686
0.0852	0.1034	0.1230	0.1430	0.1634
0.1845	0.2066	0.2300	0.2539	0.2779
0.3019	0.3259	0.3499	0.3739	0.3979
0.4219	0.4459	0.4700	0.4940	0.5180
0.5421	0.5661	0.5902	0.6142	0.6383
0.6624	0.6865	0.7105	0.7346	0.7587
0.7828	0.8069	0.8310	0.8552	0.8793
0.9034	0.9276	0.9517	0.9758	1.0000

Hrad:

0.0126	0.0210	0.0388	0.0543	0.0605
0.0778	0.0863	0.0952	0.1071	0.1200
0.1330	0.1464	0.1587	0.1825	0.2049
0.2201	0.2370	0.2611	0.2846	0.3084
0.3324	0.3563	0.3803	0.4043	0.4282
0.4520	0.4758	0.4995	0.5231	0.5466
0.5701	0.5934	0.6167	0.6399	0.6630
0.6860	0.7090	0.7318	0.7546	0.7773
0.7999	0.8225	0.8449	0.8673	0.8896
0.9118	0.9340	0.9561	0.9781	1.0000

Width:

0.0293	0.0948	0.1262	0.1750	0.2316
0.2617	0.4684	0.5308	0.5924	0.6548
0.7207	0.7840	0.8259	0.8351	0.8493
0.8996	0.9286	0.9923	0.9925	0.9928
0.9930	0.9933	0.9935	0.9937	0.9940
0.9942	0.9945	0.9947	0.9949	0.9952
0.9954	0.9957	0.9959	0.9961	0.9964
0.9966	0.9969	0.9971	0.9973	0.9976
0.9978	0.9981	0.9983	0.9986	0.9988
0.9990	0.9993	0.9995	0.9998	1.0000

Transect 1426_HC
Area:

0.0016	0.0055	0.0111	0.0178	0.0250
0.0329	0.0413	0.0502	0.0595	0.0693
0.0793	0.0897	0.1006	0.1119	0.1234
0.1352	0.1479	0.1618	0.1762	0.1909
0.2059	0.2215	0.2376	0.2540	0.2710
0.2886	0.3085	0.3318	0.3575	0.3843
0.4121	0.4405	0.4694	0.4984	0.5276
0.5570	0.5865	0.6162	0.6462	0.6764
0.7067	0.7371	0.7680	0.7992	0.8307
0.8628	0.8962	0.9303	0.9649	1.0000

Hrad:

0.0190	0.0413	0.0627	0.0909	0.1159
0.1444	0.1698	0.1960	0.2220	0.2481
0.2724	0.3017	0.3206	0.3452	0.3752
0.4017	0.4164	0.4040	0.4276	0.4549
0.4775	0.4973	0.5169	0.5419	0.5627
0.5887	0.6012	0.5771	0.4919	0.5224
0.5496	0.5799	0.6101	0.6410	0.6717
0.6969	0.7287	0.7279	0.7583	0.7883
0.8206	0.8539	0.8863	0.9183	0.9500
0.9771	0.9703	0.9870	1.0119	1.0000

Width:

0.0831	0.1340	0.1809	0.1972	0.2181
0.2303	0.2456	0.2587	0.2708	0.2799
0.2919	0.2981	0.3147	0.3252	0.3300
0.3441	0.3810	0.4020	0.4137	0.4214
0.4330	0.4471	0.4615	0.4774	0.4846
0.5203	0.6142	0.7033	0.7446	0.7761
0.7983	0.8131	0.8225	0.8269	0.8307
0.8362	0.8385	0.8477	0.8531	0.8589
0.8619	0.8693	0.8821	0.8887	0.9002
0.9261	0.9584	0.9775	0.9871	1.0000

Transect 3010_HC
Area:

0.0004	0.0017	0.0036	0.0064	0.0100
0.0143	0.0194	0.0253	0.0321	0.0396
0.0479	0.0570	0.0669	0.0775	0.0890
0.1013	0.1143	0.1281	0.1427	0.1581
0.1743	0.1913	0.2091	0.2277	0.2470
0.2671	0.2880	0.3098	0.3323	0.3555
0.3796	0.4045	0.4301	0.4566	0.4838
0.5119	0.5410	0.5709	0.6018	0.6335
0.6662	0.6998	0.7343	0.7696	0.8059
0.8431	0.8812	0.9200	0.9596	1.0000

Hrad:

0.0209	0.0417	0.0625	0.0833	0.1030
0.1225	0.1441	0.1627	0.1835	0.2028
0.2225	0.2439	0.2650	0.2849	0.3061
0.3247	0.3458	0.3662	0.3868	0.4079
0.4266	0.4471	0.4676	0.4887	0.5098
0.5284	0.5482	0.5694	0.5905	0.6116
0.6301	0.6500	0.6711	0.6922	0.7133
0.7259	0.7449	0.7639	0.7832	0.8025
0.8159	0.8355	0.8552	0.8749	0.8936
0.9088	0.9292	0.9529	0.9765	1.0000

Width:

0.0210	0.0397	0.0583	0.0769	0.0967
0.1171	0.1349	0.1557	0.1749	0.1952
0.2152	0.2336	0.2523	0.2721	0.2908

0.3118	0.3305	0.3499	0.3690	0.3877
0.4087	0.4278	0.4472	0.4658	0.4845
0.5055	0.5254	0.5441	0.5627	0.5814
0.6025	0.6223	0.6410	0.6596	0.6783
0.7053	0.7264	0.7474	0.7684	0.7895
0.8165	0.8376	0.8586	0.8797	0.9019
0.9277	0.9483	0.9656	0.9828	1.0000

Transect 3630_HC

Area:

0.0002	0.0027	0.0090	0.0193	0.0319
0.0451	0.0590	0.0729	0.0874	0.1027
0.1188	0.1354	0.1524	0.1696	0.1873
0.2053	0.2236	0.2423	0.2612	0.2802
0.2995	0.3191	0.3390	0.3597	0.3805
0.4015	0.4227	0.4440	0.4654	0.4870
0.5086	0.5303	0.5523	0.5745	0.5974
0.6208	0.6447	0.6689	0.6938	0.7196
0.7460	0.7726	0.7999	0.8276	0.8555
0.8836	0.9119	0.9408	0.9702	1.0000

Hrad:

0.0111	0.0189	0.0402	0.0534	0.0743
0.0995	0.1284	0.1576	0.1831	0.1991
0.2210	0.2428	0.2703	0.2942	0.3164
0.3430	0.3653	0.3904	0.4165	0.4423
0.4686	0.4888	0.5141	0.5226	0.5507
0.5780	0.6014	0.6284	0.6551	0.6830
0.7104	0.7359	0.7552	0.7743	0.7825
0.7930	0.8101	0.8307	0.8385	0.8311
0.8515	0.8698	0.8774	0.8981	0.9227
0.9500	0.9661	0.9772	0.9931	1.0000

Width:

0.0255	0.1724	0.2684	0.3902	0.4296
0.4539	0.4595	0.4649	0.4923	0.5188
0.5379	0.5581	0.5641	0.5768	0.5921
0.5988	0.6124	0.6207	0.6273	0.6339
0.6394	0.6530	0.6695	0.6885	0.6912
0.6948	0.7029	0.7067	0.7105	0.7131
0.7159	0.7206	0.7312	0.7420	0.7634
0.7828	0.7958	0.8066	0.8427	0.8659
0.8761	0.8882	0.9116	0.9214	0.9272
0.9301	0.9470	0.9628	0.9770	1.0000

Transect 4365_HC

Area:

0.0033	0.0099	0.0185	0.0291	0.0413
0.0538	0.0668	0.0802	0.0939	0.1081
0.1226	0.1376	0.1530	0.1687	0.1849
0.2014	0.2184	0.2358	0.2535	0.2717
0.2902	0.3092	0.3285	0.3483	0.3684
0.3889	0.4098	0.4309	0.4523	0.4741
0.4962	0.5188	0.5417	0.5651	0.5888
0.6130	0.6377	0.6627	0.6882	0.7143
0.7409	0.7679	0.7955	0.8235	0.8519
0.8807	0.9099	0.9395	0.9695	1.0000

Hrad:

0.0184	0.0401	0.0589	0.0770	0.1023
0.1293	0.1556	0.1812	0.2063	0.2308
0.2549	0.2782	0.3015	0.3239	0.3465
0.3685	0.3903	0.4115	0.4329	0.4538
0.4743	0.4946	0.5148	0.5350	0.5554
0.5772	0.5990	0.6203	0.6419	0.6627
0.6812	0.6994	0.7170	0.7347	0.7528

0.7701	0.7869	0.8035	0.8209	0.8340
0.8500	0.8665	0.8774	0.8954	0.9129
0.9304	0.9478	0.9653	0.9828	1.0000

Width:

0.1816	0.2476	0.3145	0.3784	0.4034
0.4164	0.4294	0.4423	0.4554	0.4684
0.4812	0.4947	0.5074	0.5209	0.5336
0.5467	0.5596	0.5729	0.5857	0.5986
0.6119	0.6252	0.6382	0.6510	0.6635
0.6739	0.6841	0.6946	0.7047	0.7155
0.7284	0.7417	0.7555	0.7691	0.7823
0.7961	0.8104	0.8249	0.8410	0.8585
0.8746	0.8906	0.9066	0.9197	0.9332
0.9465	0.9600	0.9733	0.9865	1.0000

Transect 5620_HC

Area:

0.0000	0.0001	0.0003	0.0005	0.0010
0.0019	0.0035	0.0061	0.0097	0.0141
0.0192	0.0249	0.0312	0.0382	0.0458
0.0539	0.0625	0.0716	0.0810	0.0906
0.1007	0.1198	0.1398	0.1605	0.1820
0.2044	0.2277	0.2518	0.2768	0.3030
0.3321	0.3626	0.3938	0.4254	0.4576
0.4901	0.5232	0.5568	0.5909	0.6255
0.6604	0.6959	0.7320	0.7687	0.8060
0.8438	0.8821	0.9209	0.9602	1.0000

Hrad:

0.0220	0.0492	0.0592	0.0724	0.0771
0.0838	0.0911	0.0967	0.1109	0.1331
0.1580	0.1835	0.2024	0.2224	0.2491
0.2764	0.3035	0.3201	0.3432	0.3809
0.4126	0.4093	0.4144	0.4295	0.4477
0.3594	0.3870	0.4103	0.4377	0.4427
0.4442	0.4770	0.5090	0.5395	0.5657
0.5980	0.6295	0.6581	0.6889	0.7201
0.7506	0.7808	0.8102	0.8396	0.8647
0.8941	0.9220	0.9434	0.9725	1.0000

Width:

0.0015	0.0022	0.0053	0.0078	0.0177
0.0290	0.0521	0.0772	0.1016	0.1185
0.1331	0.1500	0.1674	0.1811	0.1955
0.2104	0.2205	0.2310	0.2385	0.2418
0.4680	0.4879	0.5077	0.5274	0.5488
0.5705	0.5932	0.6140	0.6342	0.6876
0.7549	0.7714	0.7857	0.7972	0.8086
0.8202	0.8332	0.8460	0.8576	0.8684
0.8797	0.8925	0.9111	0.9254	0.9386
0.9505	0.9639	0.9762	0.9874	1.0000

Transect 5675_HC

Area:

0.0006	0.0023	0.0050	0.0086	0.0124
0.0165	0.0208	0.0253	0.0302	0.0353
0.0407	0.0462	0.0519	0.0577	0.0637
0.0720	0.0854	0.1042	0.1239	0.1445
0.1661	0.1884	0.2114	0.2349	0.2593
0.2842	0.3097	0.3355	0.3617	0.3883
0.4153	0.4426	0.4702	0.4982	0.5267
0.5556	0.5849	0.6145	0.6444	0.6747
0.7054	0.7365	0.7681	0.8001	0.8324
0.8652	0.8985	0.9321	0.9659	1.0000

Hrad:

0.0160	0.0377	0.0533	0.0778	0.1091
0.1360	0.1616	0.1907	0.2042	0.2298
0.2565	0.2820	0.3091	0.3346	0.3485
0.3602	0.1585	0.1848	0.2098	0.2343
0.2584	0.2837	0.3108	0.3378	0.3590
0.3852	0.4125	0.4413	0.4695	0.4952
0.5225	0.5504	0.5784	0.6047	0.6284
0.6518	0.6777	0.7060	0.7339	0.7579
0.7852	0.8119	0.8244	0.8511	0.8763
0.8950	0.9186	0.9442	0.9722	1.0000

Width:

0.0375	0.0627	0.0945	0.1102	0.1175
0.1218	0.1288	0.1355	0.1486	0.1537
0.1595	0.1646	0.1678	0.1724	0.1910
0.2946	0.5387	0.5640	0.5906	0.6169
0.6426	0.6640	0.6801	0.7008	0.7223
0.7379	0.7508	0.7608	0.7704	0.7856
0.7948	0.8042	0.8129	0.8247	0.8381
0.8524	0.8631	0.8705	0.8815	0.8906
0.9035	0.9178	0.9318	0.9401	0.9514
0.9684	0.9782	0.9871	0.9936	1.0000

Transect 6690_HC

Area:

0.0001	0.0003	0.0007	0.0012	0.0019
0.0027	0.0037	0.0049	0.0061	0.0076
0.0092	0.0109	0.0128	0.0148	0.0170
0.0194	0.0218	0.0245	0.0273	0.0302
0.0333	0.0366	0.0400	0.0435	0.0497
0.0622	0.0767	0.0933	0.1121	0.1337
0.1581	0.1854	0.2156	0.2487	0.2846
0.3235	0.3653	0.4085	0.4522	0.4969
0.5426	0.5893	0.6371	0.6858	0.7356
0.7865	0.8383	0.8912	0.9451	1.0000

Hrad:

0.0277	0.0554	0.0845	0.1124	0.1406
0.1679	0.1953	0.2228	0.2504	0.2779
0.3055	0.3332	0.3608	0.3884	0.4161
0.4438	0.4714	0.4991	0.5268	0.5544
0.5821	0.6098	0.6375	0.6652	0.6471
0.5718	0.5295	0.5061	0.4947	0.4890
0.4886	0.4930	0.5005	0.5110	0.5241
0.5384	0.5479	0.5859	0.6203	0.6464
0.6748	0.7078	0.7414	0.7769	0.8126
0.8500	0.8876	0.9244	0.9629	1.0000

Width:

0.0028	0.0056	0.0083	0.0110	0.0136
0.0163	0.0191	0.0218	0.0245	0.0272
0.0300	0.0327	0.0354	0.0381	0.0409
0.0436	0.0463	0.0491	0.0518	0.0545
0.0572	0.0600	0.0627	0.0654	0.2063
0.2443	0.2800	0.3180	0.3636	0.4157
0.4674	0.5181	0.5701	0.6222	0.6739
0.7271	0.7744	0.7841	0.7963	0.8146
0.8338	0.8515	0.8704	0.8886	0.9077
0.9258	0.9439	0.9633	0.9808	1.0000

Transect 6840_HC

Area:

0.0014	0.0059	0.0131	0.0221	0.0318
0.0426	0.0548	0.0679	0.0817	0.0961
0.1114	0.1281	0.1456	0.1641	0.1837
0.2043	0.2262	0.2493	0.2727	0.2962

0.3196	0.3430	0.3665	0.3899	0.4134
0.4368	0.4603	0.4837	0.5072	0.5306
0.5541	0.5775	0.6010	0.6244	0.6479
0.6714	0.6948	0.7183	0.7418	0.7652
0.7887	0.8122	0.8356	0.8591	0.8826
0.9061	0.9296	0.9530	0.9765	1.0000

Hrad:

0.0128	0.0260	0.0398	0.0618	0.0833
0.1021	0.1170	0.1342	0.1534	0.1718
0.1891	0.2039	0.2202	0.2352	0.2508
0.2663	0.2790	0.2926	0.3158	0.3402
0.3647	0.3893	0.4139	0.4387	0.4634
0.4882	0.5130	0.5379	0.5627	0.5875
0.6123	0.6371	0.6618	0.6866	0.7113
0.7360	0.7607	0.7853	0.8100	0.8346
0.8591	0.8837	0.9082	0.9327	0.9571
0.9815	1.0059	1.0302	1.0545	1.0000

Width:

0.1166	0.2322	0.3397	0.3696	0.3960
0.4595	0.5057	0.5312	0.5562	0.5869
0.6342	0.6782	0.7100	0.7570	0.7953
0.8396	0.8967	0.9249	0.9272	0.9272
0.9273	0.9274	0.9274	0.9275	0.9276
0.9276	0.9277	0.9277	0.9278	0.9279
0.9279	0.9280	0.9281	0.9281	0.9282
0.9282	0.9283	0.9284	0.9284	0.9285
0.9286	0.9286	0.9287	0.9287	0.9288
0.9289	0.9289	0.9290	0.9291	1.0000

Transect 7095_HC

Area:

0.0000	0.0002	0.0006	0.0014	0.0034
0.0069	0.0119	0.0188	0.0273	0.0374
0.0491	0.0621	0.0765	0.0922	0.1092
0.1270	0.1448	0.1632	0.1831	0.2042
0.2267	0.2506	0.2758	0.3022	0.3290
0.3558	0.3825	0.4093	0.4361	0.4629
0.4897	0.5165	0.5433	0.5701	0.5969
0.6238	0.6506	0.6774	0.7043	0.7311
0.7580	0.7849	0.8117	0.8386	0.8655
0.8924	0.9193	0.9462	0.9731	1.0000

Hrad:

0.0154	0.0278	0.0365	0.0484	0.0377
0.0512	0.0637	0.0765	0.0905	0.1068
0.1233	0.1408	0.1579	0.1747	0.1914
0.2219	0.2528	0.2822	0.3091	0.3342
0.3578	0.3801	0.4015	0.4230	0.4472
0.4725	0.4986	0.5254	0.5528	0.5805
0.6086	0.6369	0.6655	0.6942	0.7231
0.7521	0.7813	0.8105	0.8398	0.8692
0.8986	0.9281	0.9576	0.9872	1.0168
1.0464	1.0761	1.1057	1.1354	1.0000

Width:

0.0026	0.0080	0.0206	0.0374	0.0914
0.1363	0.1927	0.2492	0.3038	0.3552
0.4012	0.4447	0.4883	0.5319	0.5753
0.5768	0.5781	0.6218	0.6656	0.7093
0.7528	0.7967	0.8400	0.8691	0.8693
0.8695	0.8697	0.8699	0.8701	0.8703
0.8704	0.8706	0.8708	0.8710	0.8712
0.8714	0.8716	0.8718	0.8720	0.8722
0.8724	0.8726	0.8728	0.8730	0.8732
0.8734	0.8736	0.8738	0.8740	1.0000

Transect 7190_HC
Area:

0.0015	0.0058	0.0115	0.0192	0.0288
0.0412	0.0556	0.0708	0.0892	0.1094
0.1305	0.1517	0.1731	0.1947	0.2164
0.2381	0.2600	0.2821	0.3044	0.3267
0.3490	0.3714	0.3937	0.4161	0.4385
0.4608	0.4832	0.5056	0.5280	0.5504
0.5728	0.5952	0.6177	0.6401	0.6625
0.6850	0.7074	0.7299	0.7524	0.7748
0.7973	0.8198	0.8423	0.8648	0.8873
0.9098	0.9324	0.9549	0.9775	1.0000

Hrad:

0.0185	0.0299	0.0477	0.0658	0.0776
0.0918	0.1091	0.1281	0.1415	0.1567
0.1740	0.1938	0.2144	0.2351	0.2565
0.2781	0.2984	0.3191	0.3400	0.3621
0.3842	0.4063	0.4284	0.4504	0.4725
0.4944	0.5163	0.5382	0.5600	0.5817
0.6033	0.6249	0.6464	0.6678	0.6892
0.7105	0.7317	0.7528	0.7738	0.7948
0.8156	0.8364	0.8572	0.8778	0.8984
0.9188	0.9392	0.9596	0.9798	1.0000

Width:

0.1211	0.2218	0.3053	0.3653	0.5002
0.6051	0.6534	0.7369	0.8705	0.9191
0.9391	0.9471	0.9521	0.9595	0.9625
0.9656	0.9763	0.9841	0.9900	0.9904
0.9907	0.9910	0.9913	0.9916	0.9920
0.9923	0.9926	0.9929	0.9933	0.9936
0.9939	0.9942	0.9945	0.9949	0.9952
0.9955	0.9958	0.9961	0.9965	0.9968
0.9971	0.9974	0.9978	0.9981	0.9984
0.9987	0.9990	0.9994	0.9997	1.0000

Transect 7319_HC
Area:

0.0001	0.0006	0.0013	0.0020	0.0029
0.0039	0.0049	0.0060	0.0072	0.0085
0.0099	0.0114	0.0129	0.0146	0.0163
0.0181	0.0199	0.0218	0.0237	0.0257
0.0282	0.0310	0.0345	0.0387	0.0446
0.0520	0.0603	0.0700	0.0841	0.1034
0.1249	0.1497	0.1776	0.2096	0.2483
0.2920	0.3372	0.3838	0.4324	0.4822
0.5328	0.5841	0.6356	0.6872	0.7390
0.7909	0.8429	0.8951	0.9475	1.0000

Hrad:

0.0171	0.0563	0.0950	0.1290	0.1604
0.1903	0.2214	0.2522	0.2813	0.3087
0.3329	0.3554	0.3835	0.4121	0.4437
0.4745	0.5056	0.5372	0.5682	0.5974
0.6151	0.6263	0.6254	0.5706	0.4843
0.3226	0.3639	0.3770	0.3604	0.3690
0.3902	0.4087	0.4248	0.3927	0.4067
0.4353	0.4667	0.5018	0.5380	0.5619
0.5669	0.6046	0.6554	0.7063	0.7566
0.8061	0.8563	0.9063	0.9556	1.0000

Width:

0.0068	0.0116	0.0133	0.0152	0.0171
0.0190	0.0206	0.0220	0.0236	0.0252
0.0270	0.0291	0.0306	0.0320	0.0330

0.0341	0.0352	0.0361	0.0370	0.0414
0.0503	0.0580	0.0710	0.0970	0.1261
0.1549	0.1649	0.2187	0.3281	0.3904
0.4433	0.4964	0.5624	0.6657	0.8133
0.8441	0.8691	0.9024	0.9352	0.9552
0.9648	0.9762	0.9781	0.9799	0.9826
0.9861	0.9886	0.9911	0.9943	1.0000

Transect 7460_HC
Area:

0.0009	0.0039	0.0105	0.0214	0.0355
0.0531	0.0719	0.0912	0.1110	0.1312
0.1516	0.1725	0.1939	0.2155	0.2371
0.2587	0.2803	0.3020	0.3236	0.3453
0.3670	0.3887	0.4103	0.4320	0.4538
0.4755	0.4972	0.5190	0.5407	0.5625
0.5843	0.6061	0.6279	0.6497	0.6715
0.6933	0.7151	0.7370	0.7589	0.7807
0.8026	0.8245	0.8464	0.8683	0.8902
0.9122	0.9341	0.9561	0.9780	1.0000

Hrad:

0.0303	0.0572	0.0804	0.1042	0.1414
0.1741	0.2302	0.2871	0.3441	0.4000
0.4558	0.5093	0.5628	0.6179	0.6734
0.7290	0.7848	0.8405	0.8961	0.9517
1.0071	1.0624	1.1176	1.1725	1.2273
1.2819	1.3363	1.3905	1.4445	1.4983
1.5519	1.6053	1.6584	1.7114	1.7642
1.8167	1.8691	1.9212	1.9731	2.0249
2.0764	2.1277	2.1788	2.2297	2.2805
2.3310	2.3813	2.4314	2.4813	1.0000

Width:

0.0310	0.0774	0.1507	0.2191	0.2613
0.3165	0.3243	0.3356	0.3407	0.3476
0.3517	0.3627	0.3687	0.3689	0.3691
0.3693	0.3694	0.3696	0.3698	0.3700
0.3701	0.3703	0.3705	0.3707	0.3709
0.3710	0.3712	0.3714	0.3716	0.3717
0.3719	0.3721	0.3723	0.3725	0.3726
0.3728	0.3730	0.3732	0.3733	0.3735
0.3737	0.3739	0.3740	0.3742	0.3744
0.3746	0.3748	0.3749	0.3751	1.0000

Transect 7580_HC
Area:

0.0008	0.0032	0.0082	0.0167	0.0278
0.0408	0.0557	0.0718	0.0882	0.1047
0.1222	0.1405	0.1610	0.1822	0.2045
0.2269	0.2493	0.2717	0.2942	0.3167
0.3392	0.3617	0.3842	0.4067	0.4293
0.4519	0.4745	0.4971	0.5198	0.5425
0.5651	0.5879	0.6106	0.6333	0.6561
0.6789	0.7017	0.7245	0.7474	0.7702
0.7931	0.8160	0.8390	0.8619	0.8849
0.9079	0.9309	0.9539	0.9769	1.0000

Hrad:

0.0396	0.0745	0.1021	0.1216	0.1671
0.2177	0.2675	0.3199	0.3870	0.4500
0.5109	0.5733	0.6278	0.6823	0.7349
0.7926	0.8520	0.9126	0.9740	1.0358
1.0980	1.1603	1.2227	1.2851	1.3474
1.4097	1.4718	1.5337	1.5955	1.6570
1.7184	1.7795	1.8404	1.9011	1.9614

2.0216	2.0815	2.1411	2.2005	2.2596
2.3184	2.3770	2.4353	2.4933	2.5511
2.6086	2.6658	2.7228	2.7795	1.0000

Width:

0.0218	0.0478	0.0933	0.1434	0.1736
0.2037	0.2270	0.2345	0.2362	0.2451
0.2540	0.2749	0.3009	0.3151	0.3218
0.3221	0.3224	0.3227	0.3230	0.3233
0.3235	0.3238	0.3241	0.3244	0.3247
0.3250	0.3253	0.3256	0.3258	0.3261
0.3264	0.3267	0.3270	0.3273	0.3276
0.3278	0.3281	0.3284	0.3287	0.3290
0.3293	0.3296	0.3298	0.3301	0.3304
0.3307	0.3310	0.3313	0.3316	1.0000

Transect 0
Area:

0.0022	0.0065	0.0117	0.0171	0.0227
0.0286	0.0346	0.0407	0.0469	0.0532
0.0597	0.0663	0.0731	0.0803	0.0876
0.0952	0.1030	0.1110	0.1193	0.1277
0.1364	0.1456	0.1594	0.1782	0.1986
0.2219	0.2469	0.2723	0.2984	0.3249
0.3518	0.3793	0.4073	0.4356	0.4641
0.4938	0.5240	0.5551	0.5875	0.6212
0.6558	0.6911	0.7270	0.7633	0.8003
0.8388	0.8784	0.9186	0.9591	1.0000

Hrad:

0.0541	0.1211	0.1831	0.2454	0.3043
0.3602	0.4169	0.4728	0.5278	0.5813
0.6329	0.6812	0.7248	0.7678	0.8098
0.8489	0.8863	0.9234	0.9600	0.9950
1.0295	1.0422	1.0205	0.9778	0.9434
0.9030	0.8736	0.8574	0.8419	0.8376
0.8381	0.8367	0.8395	0.8486	0.8566
0.8675	0.8787	0.8875	0.8961	0.9038
0.9047	0.9154	0.9265	0.9382	0.9505
0.9602	0.9686	0.9778	0.9907	1.0000

Width:

0.0907	0.1173	0.1298	0.1333	0.1393
0.1451	0.1472	0.1493	0.1516	0.1546
0.1579	0.1625	0.1701	0.1755	0.1807
0.1868	0.1928	0.1980	0.2030	0.2084
0.2134	0.2459	0.4279	0.4721	0.5307
0.5933	0.6133	0.6224	0.6393	0.6488
0.6573	0.6759	0.6841	0.6888	0.7055
0.7271	0.7436	0.7735	0.8081	0.8259
0.8520	0.8657	0.8785	0.8862	0.9127
0.9515	0.9695	0.9806	0.9872	1.0000

****

Runoff Quantity Continuity	Volume hectare-m	Depth mm
**************************	---------	-------
Total Precipitation	150.202	89.684
Evaporation Loss	0.000	0.000
Infiltration Loss	63.669	38.016
Surface Runoff	78.316	46.762
Final Surface Storage	8.217	4.907
Continuity Error (%)	-0.000	

************************** Volume Volume

Flow Routing Continuity	hectare-m	10^6 ltr
**************************	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	78.316	783.166
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.001	0.009
External Outflow	77.932	779.328
Internal Outflow	0.000	0.000
Storage Losses	0.000	0.000
Initial Stored Volume	0.002	0.017
Final Stored Volume	0.285	2.845
Continuity Error (%)	0.130	

****
Highest Flow Instability Indexes
****
All links are stable.

****
Routing Time Step Summary
****

Minimum Time Step	:	5.00 sec
Average Time Step	:	5.00 sec
Maximum Time Step	:	5.00 sec
Percent in Steady State	:	0.00
Average Iterations per Step	:	2.00

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
Node_04	89.68	0.00	0.00	26.88	58.84	8.57	2.33	0.656
Node_05	89.68	0.00	0.00	30.01	54.56	136.39	15.20	0.608
Node_06	89.68	0.00	0.00	44.94	41.72	39.00	6.31	0.465
Node_07	89.68	0.00	0.00	38.91	45.89	42.94	4.16	0.512
Node_08	89.68	0.00	0.00	35.48	50.08	18.55	3.41	0.558
Node_09	89.68	0.00	0.00	51.83	32.42	93.60	4.72	0.361
Node_10	89.68	0.00	0.00	38.91	45.11	55.17	3.98	0.503
Node_11	89.68	0.00	0.00	41.00	43.34	120.98	8.57	0.483

Node_12	89.68	0.00	0.00	30.64	54.03	85.46	10.44	0.602
Node_14	89.68	0.00	0.00	12.43	72.93	17.62	4.76	0.813
Node_15	89.68	0.00	0.00	22.88	62.34	13.93	4.68	0.695
Node_16	89.68	0.00	0.00	21.44	64.08	8.79	3.74	0.715
Node_13	89.68	0.00	0.00	47.33	37.16	51.28	3.27	0.414
Node_02	89.68	0.00	0.00	17.49	68.40	27.14	5.97	0.763
Node_03	89.68	0.00	0.00	42.74	43.82	14.36	2.55	0.489
Node_01	89.68	0.00	0.00	13.01	73.52	49.39	20.67	0.820

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	hr:min
J114	JUNCTION	0.88	1.84	249.55	0	05:22
J154.6483	JUNCTION	0.61	1.53	249.75	0	05:22
J168.8194	JUNCTION	0.51	1.34	249.96	0	05:22
J236.8376	JUNCTION	0.83	1.87	250.80	0	05:21
J273.7271	JUNCTION	0.85	1.97	251.02	0	05:21
J367.2808	JUNCTION	0.75	1.85	251.43	0	05:21
J411.8737	JUNCTION	0.73	1.79	251.80	0	05:20
J463.252	JUNCTION	0.70	1.67	252.02	0	05:20
J517.84	JUNCTION	0.72	1.65	252.15	0	05:20
J625.0873	JUNCTION	0.59	1.46	252.54	0	05:21
J718.5652	JUNCTION	0.71	1.65	253.23	0	05:20
J818.7001	JUNCTION	0.53	1.29	253.89	0	05:19
J927.3901	JUNCTION	0.78	1.83	255.71	0	05:17
J1021.897	JUNCTION	0.81	1.94	256.32	0	05:17
J1177.635	JUNCTION	0.45	1.05	256.84	0	05:15
J1276.628	JUNCTION	0.39	1.02	258.51	0	05:14
J1386.646	JUNCTION	0.48	1.05	260.62	0	05:13
J1455.968	JUNCTION	0.63	1.61	261.39	0	05:13
J1549.464	JUNCTION	0.48	1.25	262.34	0	05:23
J1662.759	JUNCTION	0.75	1.60	262.73	0	05:22
J1779.22	JUNCTION	0.81	1.71	262.91	0	05:21
J1920.857	JUNCTION	0.92	1.86	263.13	0	05:20
J2059.866	JUNCTION	0.79	1.76	263.26	0	05:18
J2156.937	JUNCTION	0.78	1.78	263.58	0	05:14
J2277.683	JUNCTION	0.59	1.55	263.73	0	05:13
J2406.341	JUNCTION	0.98	2.12	264.41	0	05:11
J2509.792	JUNCTION	1.01	2.23	264.64	0	05:11
J2618.286	JUNCTION	0.85	2.04	265.00	0	05:10
J2707.776	JUNCTION	0.82	2.07	265.18	0	05:09
J2810.224	JUNCTION	1.14	2.49	265.31	0	05:09
J2922.176	JUNCTION	0.88	2.24	265.43	0	05:08
J2986.996	JUNCTION	0.97	2.34	265.47	0	05:08
J3000.11	JUNCTION	1.00	2.37	265.48	0	05:08
J3046.813	JUNCTION	0.92	2.31	265.52	0	05:08
J3187.848	JUNCTION	1.16	2.57	265.92	0	05:04
J3200.809	JUNCTION	1.12	2.53	265.92	0	05:05

J3358.095	JUNCTION	1.06	2.43	265.96	0	05:05
J3380.367	JUNCTION	0.92	2.24	265.96	0	05:06
J3509.864	JUNCTION	1.24	2.39	266.03	0	05:06
J3621.185	JUNCTION	1.13	2.28	266.09	0	05:07
J3734.707	JUNCTION	1.13	2.27	266.20	0	07:29
J3762.625	JUNCTION	0.97	2.08	266.23	0	07:30
J3775.164	JUNCTION	1.07	2.19	266.24	0	07:31
J3804.186	JUNCTION	0.97	2.09	266.26	0	07:33
J3957.179	JUNCTION	0.92	2.11	266.44	0	07:44
J4108.305	JUNCTION	0.91	2.12	266.55	0	07:45
J4263.057	JUNCTION	0.84	1.97	266.62	0	07:41
J4356.489	JUNCTION	0.91	2.04	266.64	0	07:37
J4405.269	JUNCTION	0.96	2.09	266.68	0	07:27
J4546.604	JUNCTION	0.82	1.86	266.74	0	07:10
J4692.952	JUNCTION	0.92	1.95	266.82	0	06:42
J4826.403	JUNCTION	0.66	1.59	266.83	0	06:40
J4968.21	JUNCTION	0.63	1.48	266.90	0	05:57
J5103.876	JUNCTION	0.74	1.67	267.03	0	05:43
J5276.091	JUNCTION	0.51	1.40	267.06	0	05:40
J5310.141	JUNCTION	0.50	1.39	267.15	0	05:33
J5374.119	JUNCTION	0.60	1.51	267.20	0	05:29
J5465.266	JUNCTION	0.70	1.62	267.27	0	05:18
J5595.644	JUNCTION	0.75	1.75	267.44	0	05:09
J5653.55	JUNCTION	0.68	1.76	267.56	0	05:06
J5665.793	JUNCTION	0.55	1.61	267.56	0	05:06
J5704.059	JUNCTION	0.65	1.73	267.57	0	05:06
J5880.376	JUNCTION	0.58	1.66	267.57	0	05:06
J5975.085	JUNCTION	0.52	1.55	267.58	0	05:04
J6062.64	JUNCTION	0.49	1.49	267.62	0	04:59
J6084.086	JUNCTION	0.53	1.54	267.64	0	04:53
J6116.845	JUNCTION	0.51	1.51	267.68	0	04:45
J6190.578	JUNCTION	0.48	1.83	268.22	0	04:40
J6335.876	JUNCTION	0.50	2.27	268.84	0	04:39
J6410.625	JUNCTION	0.43	2.28	269.02	0	04:39
J6486.756	JUNCTION	0.46	2.35	269.26	0	04:38
J6564.455	JUNCTION	0.60	2.58	269.44	0	04:38
J6676.99	JUNCTION	0.50	2.49	269.61	0	04:37
J6757.544	JUNCTION	0.54	2.56	269.77	0	04:36
J6857.851	JUNCTION	0.51	2.55	269.87	0	04:36
J6917.282	JUNCTION	0.47	2.53	269.94	0	04:35
J7071.306	JUNCTION	0.76	2.87	269.96	0	04:35
J7083.163	JUNCTION	0.27	2.15	269.97	0	04:34
J7111.02	JUNCTION	0.45	2.17	270.01	0	04:34
J7127.958	JUNCTION	0.43	2.15	270.01	0	04:34
J7246.49	JUNCTION	0.39	2.20	270.14	0	04:31
J7333.219	JUNCTION	0.30	2.07	270.20	0	04:29
J7390.724	JUNCTION	0.31	2.04	270.36	0	04:25
J7510.949	JUNCTION	0.45	2.10	270.44	0	04:24
J7560.665	JUNCTION	0.31	1.89	270.51	0	04:22
J7604.08	JUNCTION	0.31	1.85	270.53	0	04:21
J7641.424	JUNCTION	0.27	1.62	270.53	0	04:22
J0	JUNCTION	0.00	0.00	0.00	0	00:00
OF1	OUTFALL	0.67	1.17	248.56	0	05:22

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Node Inflow Summary
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Maximum Maximum Lateral

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr
J114	JUNCTION	0.000	39.234	0	05:21	0.000	779.391
J154.6483	JUNCTION	3.741	39.235	0	05:21	8.789	779.388
J168.8194	JUNCTION	0.000	38.847	0	05:21	0.000	770.614
J236.8376	JUNCTION	0.000	38.847	0	05:21	0.000	770.654
J273.7271	JUNCTION	0.000	38.847	0	05:21	0.000	770.699
J367.2808	JUNCTION	0.000	38.847	0	05:20	0.000	770.730
J411.8737	JUNCTION	0.000	38.848	0	05:20	0.000	770.764
J463.252	JUNCTION	0.000	38.854	0	05:19	0.000	770.807
J517.84	JUNCTION	11.485	38.872	0	05:18	82.829	770.990
J625.0873	JUNCTION	0.000	33.907	0	05:20	0.000	688.387
J718.5652	JUNCTION	0.000	33.914	0	05:19	0.000	688.184
J818.7001	JUNCTION	0.000	33.918	0	05:18	0.000	688.234
J927.3901	JUNCTION	0.000	33.916	0	05:17	0.000	688.367
J1021.897	JUNCTION	0.000	33.927	0	05:15	0.000	688.549
J1177.635	JUNCTION	0.000	33.929	0	05:14	0.000	688.577
J1276.628	JUNCTION	0.000	33.931	0	05:14	0.000	688.623
J1386.646	JUNCTION	0.000	33.931	0	05:13	0.000	688.649
J1455.968	JUNCTION	10.443	33.932	0	05:13	85.455	688.617
J1549.464	JUNCTION	0.000	27.066	0	05:22	0.000	603.299
J1662.759	JUNCTION	0.000	27.069	0	05:21	0.000	603.494
J1779.22	JUNCTION	0.000	27.086	0	05:19	0.000	603.749
J1920.857	JUNCTION	0.000	27.123	0	05:16	0.000	603.917
J2059.866	JUNCTION	0.000	27.165	0	05:13	0.000	604.059
J2156.937	JUNCTION	0.000	27.171	0	05:12	0.000	604.105
J2277.683	JUNCTION	0.000	27.175	0	05:11	0.000	604.171
J2406.341	JUNCTION	0.000	27.176	0	05:11	0.000	604.244
J2509.792	JUNCTION	0.000	27.178	0	05:10	0.000	

							604.295
J2618.286	JUNCTION	0.000	27.179	0	05:09	0.000	604.336
J2707.776	JUNCTION	0.000	27.182	0	05:08	0.000	604.381
J2810.224	JUNCTION	0.000	27.187	0	05:07	0.000	604.577
J2922.176	JUNCTION	0.000	27.195	0	05:06	0.000	604.612
J2986.996	JUNCTION	0.000	27.202	0	05:05	0.000	604.654
J3000.11	JUNCTION	0.000	27.213	0	05:04	0.000	604.691
J3046.813	JUNCTION	0.000	27.239	0	05:03	0.000	604.780
J3187.848	JUNCTION	17.131	27.247	0	05:03	269.750	606.798
J3200.809	JUNCTION	0.000	12.967	0	07:48	0.000	338.180
J3358.095	JUNCTION	0.000	12.936	0	07:48	0.000	336.527
J3380.367	JUNCTION	0.000	12.918	0	07:48	0.000	335.397
J3509.864	JUNCTION	0.000	12.902	0	07:48	0.000	335.201
J3621.185	JUNCTION	3.412	12.890	0	07:47	18.549	335.224
J3734.707	JUNCTION	0.000	12.590	0	07:51	0.000	316.698
J3762.625	JUNCTION	0.000	12.586	0	07:50	0.000	316.674
J3775.164	JUNCTION	4.160	12.584	0	07:50	42.939	317.470
J3804.186	JUNCTION	0.000	11.584	0	08:04	0.000	274.665
J3957.179	JUNCTION	0.000	11.526	0	07:54	0.000	273.938
J4108.305	JUNCTION	0.000	11.801	0	07:12	0.000	273.774
J4263.057	JUNCTION	0.000	12.432	0	06:48	0.000	273.877
J4356.489	JUNCTION	0.000	12.973	0	06:45	0.000	273.915
J4405.269	JUNCTION	6.306	13.744	0	06:37	39.000	274.826
J4546.604	JUNCTION	0.000	13.674	0	06:18	0.000	236.798
J4692.952	JUNCTION	0.000	15.795	0	06:03	0.000	235.627
J4826.403	JUNCTION	0.000	19.168	0	05:49	0.000	236.263
J4968.21	JUNCTION	0.000	20.007	0	05:38	0.000	235.619
J5103.876	JUNCTION	0.000	20.959	0	05:29	0.000	235.519
J5276.091	JUNCTION	0.000	21.935	0	05:21	0.000	235.335
J5310.141	JUNCTION	0.000	22.550	0	05:19	0.000	235.630
J5374.119	JUNCTION	0.000	23.766	0	05:14	0.000	235.946
J5465.266	JUNCTION	0.000	24.589	0	05:09	0.000	235.713

J5595.644	JUNCTION	0.000	24.778	0	05:05	0.000	235.503
J5653.55	JUNCTION	15.200	24.820	0	05:04	136.389	247.140
J5665.793	JUNCTION	0.000	12.868	0	05:07	0.000	120.912
J5704.059	JUNCTION	0.000	13.121	0	05:00	0.000	111.770
J5880.376	JUNCTION	0.000	16.775	0	04:40	0.000	101.878
J5975.085	JUNCTION	0.000	18.567	0	04:42	0.000	99.421
J6062.64	JUNCTION	0.000	18.919	0	04:41	0.000	99.172
J6084.086	JUNCTION	0.000	19.057	0	04:41	0.000	99.197
J6116.845	JUNCTION	0.000	19.142	0	04:40	0.000	99.205
J6190.578	JUNCTION	0.000	19.138	0	04:40	0.000	99.189
J6335.876	JUNCTION	0.000	19.155	0	04:39	0.000	99.172
J6410.625	JUNCTION	0.000	19.160	0	04:38	0.000	99.180
J6486.756	JUNCTION	0.000	19.165	0	04:38	0.000	99.182
J6564.455	JUNCTION	0.000	19.213	0	04:36	0.000	99.207
J6676.99	JUNCTION	0.000	19.260	0	04:35	0.000	99.224
J6757.544	JUNCTION	2.335	19.383	0	04:34	8.574	99.249
J6857.851	JUNCTION	2.550	18.053	0	04:33	14.357	90.684
J6917.282	JUNCTION	0.000	16.831	0	04:29	0.000	76.353
J7071.306	JUNCTION	0.000	17.947	0	04:27	0.000	76.500
J7083.163	JUNCTION	0.000	18.244	0	04:26	0.000	76.508
J7111.02	JUNCTION	5.968	18.743	0	04:26	27.142	76.521
J7127.958	JUNCTION	0.000	14.108	0	04:25	0.000	49.403
J7246.49	JUNCTION	0.000	14.715	0	04:24	0.000	49.402
J7333.219	JUNCTION	0.000	15.413	0	04:23	0.000	49.412
J7390.724	JUNCTION	0.000	16.263	0	04:22	0.000	49.433
J7510.949	JUNCTION	0.000	16.853	0	04:21	0.000	49.394
J7560.665	JUNCTION	0.000	17.432	0	04:20	0.000	49.398
J7604.08	JUNCTION	0.000	19.244	0	04:20	0.000	49.418
J7641.424	JUNCTION	20.665	20.665	0	04:20	49.389	49.389
J0	JUNCTION	0.000	0.000	0	00:00	0.000	0.000
OF1	OUTFALL	0.000	39.227	0	05:22	0.000	779.333

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
J0	JUNCTION	24.00	0.000	0.000

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Node Flooding Summary
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No nodes were flooded.

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Outfall Loading Summary
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Outfall Node	Flow Freq. Pcnt.	Avg. Flow CMS	Max. Flow CMS	Total Volume 10^6 ltr
OF1	99.83	9.036	39.227	779.333
System	99.83	9.036	39.227	779.333

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Link Flow Summary
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Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
CJ96.54452	CHANNEL	39.227	0	05:22	1.19	0.04	0.22
CJ154.6483	CHANNEL	39.234	0	05:21	1.50	0.01	0.14
CJ168.8194	CHANNEL	38.847	0	05:22	2.77	0.00	0.12
CJ228	CHANNEL	38.847	0	05:21	2.66	0.01	0.14
CJ273.7271	CHANNEL	38.847	0	05:21	2.37	0.01	0.18
CJ367.2808	CHANNEL	38.847	0	05:21	2.00	0.00	0.18
CJ411.8737	CHANNEL	38.847	0	05:20	2.52	0.00	0.18
CJ463.252	CHANNEL	38.848	0	05:20	1.55	0.00	0.18
CJ517.84	CHANNEL	38.854	0	05:19	1.31	0.00	0.17
CJ625.0873	CHANNEL	33.908	0	05:21	0.99	0.02	0.23
CJ718.5652	CHANNEL	33.907	0	05:20	1.13	0.01	0.18
CJ818.7001	CHANNEL	33.914	0	05:19	1.19	0.01	0.18
CJ927.3901	CHANNEL	33.918	0	05:18	1.30	0.02	0.16
CJ1021.897	CHANNEL	33.916	0	05:17	>50.00	0.03	0.18
CJ1177.635	CHANNEL	33.927	0	05:15	1.01	0.00	0.13
CJ1276.628	CHANNEL	33.929	0	05:14	2.68	0.00	0.10
CJ1386.646	CHANNEL	33.931	0	05:14	2.15	0.01	0.12
CJ1455.968	CHANNEL	33.931	0	05:13	3.38	0.01	0.14
CJ1549.464	CHANNEL	27.065	0	05:23	1.86	0.00	0.16

CJ1662.759	CHANNEL	27.066	0	05:22	1.34	0.02	0.12
CJ1779.22	CHANNEL	27.069	0	05:21	0.85	0.01	0.12
CJ1920.857	CHANNEL	27.086	0	05:19	0.88	0.01	0.13
CJ2059.866	CHANNEL	27.123	0	05:16	0.71	0.01	0.14
CJ2156.937	CHANNEL	27.165	0	05:13	1.34	0.01	0.16
CJ2277.683	CHANNEL	27.171	0	05:12	1.21	0.02	0.20
CJ2406.341	CHANNEL	27.175	0	05:11	2.18	0.03	0.26
CJ2509.792	CHANNEL	27.176	0	05:11	1.48	0.03	0.36
CJ2618.286	CHANNEL	27.178	0	05:10	1.77	0.02	0.39
CJ2707.776	CHANNEL	27.179	0	05:09	1.42	0.10	0.44
CJ2810.224	CHANNEL	27.182	0	05:08	1.26	0.07	0.46
CJ2922.176	CHANNEL	27.187	0	05:07	1.21	0.24	0.63
CJ2986.996	CHANNEL	27.195	0	05:06	0.90	0.14	0.57
CJ3000.11	CHANNEL	27.202	0	05:05	0.95	0.02	0.45
CJ3046.813	CHANNEL	27.213	0	05:04	0.89	0.01	0.38
CJ3187.848	CHANNEL	27.239	0	05:03	1.74	0.06	0.51
CJ3200.809	CHANNEL	12.999	0	07:48	0.72	0.01	0.54
CJ3358.095	CHANNEL	12.967	0	07:48	0.86	0.01	0.54
CJ3380.367	CHANNEL	12.936	0	07:48	0.85	0.01	0.58
CJ3509.864	CHANNEL	12.918	0	07:48	1.38	0.01	0.42
CJ3613.455	CHANNEL	12.902	0	07:48	0.98	0.00	0.32
CJ3734.707	CHANNEL	12.599	0	07:52	1.05	0.76	0.85
CJ3762.625	CHANNEL	12.590	0	07:51	0.79	0.00	0.41
CJ3775.164	CHANNEL	12.586	0	07:50	0.99	0.00	0.40
CJ3804.186	CHANNEL	11.625	0	08:06	0.79	0.01	0.41
CJ3957.179	CHANNEL	11.584	0	08:04	0.68	0.01	0.41
CJ4108.305	CHANNEL	11.526	0	07:54	0.74	0.04	0.49
CJ4263.057	CHANNEL	11.801	0	07:12	0.71	0.02	0.45
CJ4347.811	CHANNEL	12.432	0	06:48	0.56	0.01	0.36
CJ4384.664	CHANNEL	12.973	0	06:45	0.99	0.10	0.55
CJ4546.604	CHANNEL	12.634	0	06:40	0.61	0.02	0.52
CJ4692.952	CHANNEL	13.674	0	06:18	0.63	0.09	0.55
CJ4826.403	CHANNEL	15.795	0	06:03	4.14	0.00	0.20
CJ4968.21	CHANNEL	19.168	0	05:49	1.50	0.03	0.46
CJ5103.876	CHANNEL	20.007	0	05:38	0.56	0.04	0.42
CJ5276.091	CHANNEL	20.959	0	05:29	0.43	0.01	0.28
CJ5310.141	CHANNEL	21.935	0	05:21	5.36	0.13	0.41
CJ5374.119	CHANNEL	22.550	0	05:19	0.96	0.00	0.24
CJ5465.266	CHANNEL	23.766	0	05:14	1.02	0.00	0.20
CJ5595.644	CHANNEL	24.589	0	05:09	0.71	0.12	0.62
CJ5653.55	CHANNEL	24.778	0	05:05	0.98	0.01	0.43
CJ5665.793	CHANNEL	12.921	0	05:09	1.01	0.00	0.43
CJ5704.059	CHANNEL	12.868	0	05:07	0.76	0.00	0.41
CJ5880.376	CHANNEL	13.121	0	05:00	0.19	0.01	0.38
CJ5975.085	CHANNEL	16.775	0	04:40	0.68	0.01	0.37
CJ6062.64	CHANNEL	18.567	0	04:42	0.81	0.02	0.39
CJ6084.086	CHANNEL	18.919	0	04:41	0.85	0.03	0.44
CJ6116.845	CHANNEL	19.057	0	04:41	0.73	0.02	0.47
CJ6190.578	CHANNEL	19.142	0	04:40	1.93	0.04	0.51
CJ6335.876	CHANNEL	19.138	0	04:40	1.76	0.14	0.58
CJ6410.625	CHANNEL	19.155	0	04:39	1.54	0.14	0.65
CJ6486.756	CHANNEL	19.160	0	04:38	1.69	0.10	0.60
CJ6564.455	CHANNEL	19.165	0	04:38	1.45	0.37	0.64
CJ6669.684	CHANNEL	19.213	0	04:36	1.21	0.03	0.62
CJ6757.544	CHANNEL	19.260	0	04:35	1.45	0.20	0.51
CJ6821.096	CHANNEL	17.834	0	04:35	1.05	0.00	0.34
CJ6917.282	CHANNEL	16.270	0	04:33	1.03	0.04	0.50
CJ7071.306	CHANNEL	16.831	0	04:29	0.49	0.00	0.34
CJ7083.163	CHANNEL	17.947	0	04:27	1.16	0.00	0.35
CJ7111.02	CHANNEL	18.244	0	04:26	>50.00	0.00	0.30
CJ7127.958	CHANNEL	13.514	0	04:26	0.22	0.00	0.30
CJ7246.49	CHANNEL	14.108	0	04:25	1.30	0.00	0.31
CJ7306.937	CHANNEL	14.715	0	04:24	1.02	0.00	0.31

CJ7390.724	CHANNEL	15.413	0	04:23	1.72	0.01	0.31
CJ7510.949	CHANNEL	16.263	0	04:22	1.08	0.03	0.31
CJ7560.665	CHANNEL	16.853	0	04:21	1.37	0.01	0.31
CJ7604.08	CHANNEL	17.432	0	04:20	1.05	0.01	0.30
CJ7641.424	CHANNEL	19.244	0	04:20	1.21	0.00	0.28

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Avg. Froude Number	Avg. Flow Change
		--- Fraction of Time in Flow Class ----								
CJ96.54452	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.37	0.0000
CJ154.6483	1.00	0.00	0.05	0.00	0.95	0.00	0.00	0.00	0.39	0.0000
CJ168.8194	1.00	0.05	0.04	0.00	0.69	0.22	0.00	0.00	0.83	0.0000
CJ228	1.00	0.09	0.00	0.00	0.47	0.44	0.00	0.00	0.84	0.0000
CJ273.7271	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.47	0.0000
CJ367.2808	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.46	0.0000
CJ411.8737	1.00	0.06	0.00	0.00	0.92	0.01	0.00	0.00	0.71	0.0000
CJ463.252	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.53	0.0000
CJ517.84	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.43	0.0000
CJ625.0873	1.00	0.05	0.12	0.00	0.83	0.00	0.00	0.00	0.31	0.0000
CJ718.5652	1.00	0.16	0.00	0.00	0.84	0.00	0.00	0.00	0.46	0.0000
CJ818.7001	1.00	0.14	0.00	0.00	0.86	0.00	0.00	0.00	0.36	0.0000
CJ927.3901	1.00	0.10	0.00	0.00	0.90	0.00	0.00	0.00	0.32	0.0000
CJ1021.897	1.00	0.09	0.00	0.00	0.89	0.03	0.00	0.00	0.58	0.0000
CJ1177.635	1.00	0.07	0.00	0.00	0.89	0.04	0.00	0.00	0.32	0.0000
CJ1276.628	1.00	0.06	0.00	0.00	0.78	0.15	0.00	0.00	0.73	0.0000
CJ1386.646	1.00	0.06	0.00	0.00	0.22	0.73	0.00	0.00	1.09	0.0000
CJ1455.968	1.00	0.05	0.00	0.00	0.75	0.19	0.00	0.00	0.58	0.0000
CJ1549.464	1.00	0.05	0.14	0.00	0.81	0.00	0.00	0.00	0.56	0.0000
CJ1662.759	1.00	0.18	0.00	0.00	0.82	0.00	0.00	0.00	0.37	0.0000

CJ1779.22	1.00	0.17	0.00	0.00	0.83	0.00	0.00	0.00	0.20	0.0000
CJ1920.857	1.00	0.16	0.00	0.00	0.84	0.00	0.00	0.00	0.21	0.0000
CJ2059.866	1.00	0.15	0.00	0.00	0.85	0.00	0.00	0.00	0.15	0.0000
CJ2156.937	1.00	0.14	0.00	0.00	0.86	0.00	0.00	0.00	0.34	0.0000
CJ2277.683	1.00	0.14	0.00	0.00	0.86	0.00	0.00	0.00	0.20	0.0000
CJ2406.341	1.00	0.13	0.00	0.00	0.87	0.00	0.00	0.00	0.46	0.0000
CJ2509.792	1.00	0.12	0.00	0.00	0.88	0.00	0.00	0.00	0.26	0.0000
CJ2618.286	1.00	0.12	0.00	0.00	0.88	0.00	0.00	0.00	0.36	0.0000
CJ2707.776	1.00	0.12	0.00	0.00	0.88	0.00	0.00	0.00	0.25	0.0000
CJ2810.224	1.00	0.09	0.03	0.00	0.88	0.00	0.00	0.00	0.19	0.0000
CJ2922.176	1.00	0.09	0.00	0.00	0.91	0.00	0.00	0.00	0.18	0.0000
CJ2986.996	1.00	0.08	0.01	0.00	0.91	0.00	0.00	0.00	0.17	0.0000
CJ3000.11	1.00	0.06	0.02	0.00	0.93	0.00	0.00	0.00	0.14	0.0000
CJ3046.813	1.00	0.06	0.00	0.00	0.92	0.00	0.00	0.02	0.16	0.0000
CJ3187.848	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.37	0.0000
CJ3200.809	1.00	0.05	0.01	0.00	0.94	0.00	0.00	0.00	0.14	0.0000
CJ3358.095	1.00	0.06	0.01	0.00	0.93	0.00	0.00	0.00	0.17	0.0000
CJ3380.367	1.00	0.07	0.02	0.00	0.90	0.00	0.00	0.00	0.23	0.0000
CJ3509.864	1.00	0.06	0.04	0.00	0.90	0.00	0.00	0.00	0.32	0.0000
CJ3613.455	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.14	0.0000
CJ3734.707	1.00	0.05	0.02	0.00	0.93	0.00	0.00	0.00	0.21	0.0001
CJ3762.625	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.25	0.0000
CJ3775.164	1.00	0.05	0.02	0.00	0.93	0.00	0.00	0.00	0.20	0.0000
CJ3804.186	1.00	0.05	0.02	0.00	0.93	0.00	0.00	0.00	0.15	0.0000
CJ3957.179	1.00	0.07	0.02	0.00	0.91	0.00	0.00	0.00	0.16	0.0000
CJ4108.305	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.18	0.0000
CJ4263.057	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.20	0.0000
CJ4347.811	1.00	0.06	0.01	0.00	0.93	0.00	0.00	0.00	0.12	0.0000
CJ4384.664	1.00	0.05	0.00	0.00	0.94	0.00	0.00	0.00	0.18	0.0000
CJ4546.604	1.00	0.05	0.07	0.00	0.87	0.00	0.00	0.00	0.17	0.0000
CJ4692.952	1.00	0.13	0.00	0.00	0.87	0.00	0.00	0.00	0.17	0.0000
CJ4826.403	1.00	0.14	0.01	0.00	0.85	0.00	0.00	0.00	0.11	

										0.0000
CJ4968.21	1.00	0.14	0.00	0.00	0.86	0.00	0.00	0.00	0.19	0.0000
CJ5103.876	1.00	0.11	0.03	0.00	0.86	0.00	0.00	0.00	0.13	0.0000
CJ5276.091	1.00	0.10	0.00	0.00	0.90	0.00	0.00	0.00	0.06	0.0000
CJ5310.141	1.00	0.09	0.00	0.00	0.89	0.01	0.00	0.00	0.31	0.0000
CJ5374.119	1.00	0.08	0.02	0.00	0.91	0.00	0.00	0.00	0.17	0.0000
CJ5465.266	1.00	0.06	0.01	0.00	0.92	0.00	0.00	0.00	0.18	0.0000
CJ5595.644	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.19	0.0000
CJ5653.55	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.21	0.0000
CJ5665.793	1.00	0.05	0.02	0.00	0.93	0.00	0.00	0.00	0.07	0.0000
CJ5704.059	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.10	0.0000
CJ5880.376	1.00	0.08	0.04	0.00	0.88	0.00	0.00	0.00	0.04	0.0000
CJ5975.085	1.00	0.12	0.02	0.00	0.87	0.00	0.00	0.00	0.11	0.0000
CJ6062.64	1.00	0.13	0.00	0.00	0.87	0.00	0.00	0.00	0.17	0.0000
CJ6084.086	1.00	0.13	0.00	0.00	0.87	0.00	0.00	0.00	0.17	0.0000
CJ6116.845	1.00	0.12	0.00	0.00	0.88	0.00	0.00	0.00	0.19	0.0000
CJ6190.578	1.00	0.11	0.00	0.00	0.85	0.03	0.00	0.00	0.28	0.0000
CJ6335.876	1.00	0.11	0.00	0.00	0.89	0.00	0.00	0.00	0.22	0.0000
CJ6410.625	1.00	0.10	0.00	0.00	0.90	0.00	0.00	0.00	0.19	0.0000
CJ6486.756	1.00	0.09	0.00	0.00	0.91	0.00	0.00	0.00	0.29	0.0000
CJ6564.455	1.00	0.08	0.01	0.00	0.91	0.00	0.00	0.00	0.23	0.0000
CJ6669.684	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.18	0.0000
CJ6757.544	1.00	0.05	0.00	0.00	0.54	0.00	0.00	0.41	0.24	0.0000
CJ6821.096	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.15	0.0000
CJ6917.282	1.00	0.05	0.03	0.00	0.92	0.00	0.00	0.00	0.17	0.0000
CJ7071.306	1.00	0.06	0.02	0.00	0.92	0.00	0.00	0.00	0.03	0.0000
CJ7083.163	1.00	0.06	0.00	0.00	0.90	0.04	0.00	0.00	0.18	0.0000
CJ7111.02	1.00	0.05	0.00	0.00	0.93	0.02	0.00	0.00	0.61	0.0000
CJ7127.958	1.00	0.05	0.01	0.00	0.94	0.00	0.00	0.00	0.05	0.0000
CJ7246.49	1.00	0.06	0.02	0.00	0.92	0.00	0.00	0.00	0.09	0.0000
CJ7306.937	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.11	0.0000
CJ7390.724	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.28	0.0000

CJ7510.949	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.20	0.0000
CJ7560.665	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.14	0.0000
CJ7604.08	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.23	0.0000
CJ7641.424	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.30	0.0000

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Wed Mar 19 09:55:29 2014
Analysis ended on: Wed Mar 19 09:55:37 2014
Total elapsed time: 00:00:08

VO2 MODEL OUTPUT

```
=============================================================================
==========================

      V   V   I   SSSSS  U   U    A    L
      V   V   I   SS     U   U   A A   L
       V V    I    SS    U   U  AAAAA  L
       V V    I     SS   U   U  A   A  L
        VV    I   SSSSS  UUUUU  A   A  LLLLL

       OOO  TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
      O   O   T      T    H   H   Y Y   MM MM  O   O
      O   O   T      T    H   H    Y    M   M  O   O
       OOO    T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D   O U T P U T *****

Input filename: C:\Program Files\Visual OTTHYMO 2.2.4\voin.dat
Output filename: S:\Jessica\KRCA\OpsVO2\TimminsCNIII existing.out
Summary filename: S:\Jessica\KRCA\OpsVO2\TimminsCNIII existing.sum

DATE: 12/09/2013 TIME: 11:06:54 AM

USER:

COMMENTS: ____________________

****
** SIMULATION NUMBER: 1 **
****

| READ STORM |
| Ptotal=193.00 mm |

Filename: S:\Jessica\KRCA\OpsVO2\Storm Files\Timmins.txt
Comments: Timmins Storm event mm/hr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.10	15.00	3.10	3.00	6.10	43.00	9.10	13.00
.20	15.00	3.20	3.00	6.20	43.00	9.20	13.00
.30	15.00	3.30	3.00	6.30	43.00	9.30	13.00
.40	15.00	3.40	3.00	6.40	43.00	9.40	13.00
.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
.60	15.00	3.60	3.00	6.60	43.00	9.60	13.00
.70	15.00	3.70	3.00	6.70	43.00	9.70	13.00
.80	15.00	3.80	3.00	6.80	43.00	9.80	13.00
.90	15.00	3.90	3.00	6.90	43.00	9.90	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.10	20.00	4.10	5.00	7.10	20.00	10.10	13.00
1.20	20.00	4.20	5.00	7.20	20.00	10.20	13.00
1.30	20.00	4.30	5.00	7.30	20.00	10.30	13.00
1.40	20.00	4.40	5.00	7.40	20.00	10.40	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.60	20.00	4.60	5.00	7.60	20.00	10.60	13.00
1.70	20.00	4.70	5.00	7.70	20.00	10.70	13.00
1.80	20.00	4.80	5.00	7.80	20.00	10.80	13.00
1.90	20.00	4.90	5.00	7.90	20.00	10.90	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.10	10.00	5.10	20.00	8.10	23.00	11.10	8.00
2.20	10.00	5.20	20.00	8.20	23.00	11.20	8.00
2.30	10.00	5.30	20.00	8.30	23.00	11.30	8.00
2.40	10.00	5.40	20.00	8.40	23.00	11.40	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.60	10.00	5.60	20.00	8.60	23.00	11.60	8.00
2.70	10.00	5.70	20.00	8.70	23.00	11.70	8.00
2.80	10.00	5.80	20.00	8.80	23.00	11.80	8.00
2.90	10.00	5.90	20.00	8.90	23.00	11.90	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

| CALIB |
| STANDHYD (0001) |
| ID= 1 DT=10.0 min |

Area (ha)= 67.17
Total Imp(%)= 46.00 Dir. Conn.(%)= 35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	30.90	36.27
Dep. Storage	(mm)=	1.50	5.00
Average Slope	(%)=	.80	.77
Length	(m)=	669.20	40.00
Mannings n	=	.013	.025

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00

```
         2.333    10.00 | 5.333    20.00 | 8.333    23.00 | 11.33     8.00
         2.500    10.00 | 5.500    20.00 | 8.500    23.00 | 11.50     8.00
         2.667    10.00 | 5.667    20.00 | 8.667    23.00 | 11.67     8.00
         2.833    10.00 | 5.833    20.00 | 8.833    23.00 | 11.83     8.00
         3.000    10.00 | 6.000    20.00 | 9.000    23.00 | 12.00     8.00

     Max.Eff.Inten.(mm/hr)=       43.00          51.47
               over (min)         10.00          20.00
     Storage Coeff.  (min)=       11.98 (ii)     15.06 (ii)
     Unit Hyd. Tpeak (min)=       10.00          20.00
     Unit Hyd. peak  (cms)=         .10            .07
                                                           *TOTALS*
     PEAK FLOW        (cms)=       2.80           5.10       7.895 (iii)
     TIME TO PEAK     (hrs)=        .00           7.00        7.00
     RUNOFF VOLUME     (mm)=     191.50         180.44      184.31
     TOTAL RAINFALL    (mm)=     193.00         193.00      193.00
     RUNOFF COEFFICIENT    =        .99            .93         .95

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  96.0     Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| STANDHYD  (0002) |   Area     (ha)=  39.68
|ID= 1 DT=10.0 min |   Total Imp(%)=  37.00    Dir. Conn.(%)=  34.00
--------------------
                              IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      14.68          25.00
     Dep. Storage     (mm)=       1.50           5.00
     Average Slope     (%)=        .70            .70
     Length            (m)=     514.34          40.00
     Mannings n           =       .013           .025

     Max.Eff.Inten.(mm/hr)=      43.00          44.54
               over (min)        10.00          20.00
     Storage Coeff.  (min)=      10.65 (ii)     14.00 (ii)
     Unit Hyd. Tpeak (min)=      10.00          20.00
     Unit Hyd. peak  (cms)=        .10            .07
                                                           *TOTALS*
     PEAK FLOW        (cms)=      1.61           3.05       4.656 (iii)
     TIME TO PEAK     (hrs)=       .00           7.00        7.00
     RUNOFF VOLUME     (mm)=    191.50         176.28      181.45
     TOTAL RAINFALL    (mm)=    193.00         193.00      193.00
     RUNOFF COEFFICIENT    =       .99            .91         .94

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  95.0     Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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| CALIB            |
| NASHYD    (0003) |   Area     (ha)=  32.76   Curve Number   (CN)= 87.0
|ID= 1 DT=10.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=     .95

     Unit Hyd Qpeak  (cms)=    1.317

     PEAK FLOW       (cms)=    2.506 (i)
     TIME TO PEAK    (hrs)=    7.667
     RUNOFF VOLUME    (mm)=  156.411
     TOTAL RAINFALL   (mm)=  193.000
     RUNOFF COEFFICIENT   =     .810

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| NASHYD    (0004) |   Area     (ha)=  14.57   Curve Number   (CN)= 94.0
|ID= 1 DT=10.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=     .62

     Unit Hyd Qpeak  (cms)=     .898

     PEAK FLOW       (cms)=    1.428 (i)
     TIME TO PEAK    (hrs)=    7.167
     RUNOFF VOLUME    (mm)=  173.015
     TOTAL RAINFALL   (mm)=  193.000
     RUNOFF COEFFICIENT   =     .896

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| NASHYD    (0005) |   Area     (ha)= 249.97   Curve Number   (CN)= 94.0
|ID= 1 DT=10.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=    1.08

     Unit Hyd Qpeak  (cms)=    8.840

     PEAK FLOW       (cms)=   19.536 (i)
     TIME TO PEAK    (hrs)=    7.667
     RUNOFF VOLUME    (mm)=  173.068
     TOTAL RAINFALL   (mm)=  193.000
     RUNOFF COEFFICIENT   =     .897

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD    (0006) |   Area     (ha)=  93.47   Curve Number   (CN)= 88.0
|ID= 1 DT=10.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=     .82
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     Unit Hyd Qpeak  (cms)=    4.354

     PEAK FLOW        (cms)=    7.703 (i)
     TIME TO PEAK     (hrs)=    7.333
     RUNOFF VOLUME     (mm)= 158.734
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .822

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------
--------------------
| CALIB             |
| NASHYD     (0007) |   Area     (ha)=   93.56   Curve Number    (CN)= 91.0
|ID= 1 DT=10.0 min  |   Ia         (mm)=    5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=    1.88

     Unit Hyd Qpeak  (cms)=    1.901

     PEAK FLOW        (cms)=    5.828 (i)
     TIME TO PEAK     (hrs)=    9.333
     RUNOFF VOLUME     (mm)= 165.839
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .859

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB             |
| NASHYD     (0008) |   Area     (ha)=   37.04   Curve Number    (CN)= 92.0
|ID= 1 DT=10.0 min  |   Ia         (mm)=    5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=    1.09

     Unit Hyd Qpeak  (cms)=    1.298

     PEAK FLOW        (cms)=    2.829 (i)
     TIME TO PEAK     (hrs)=    7.833
     RUNOFF VOLUME     (mm)= 168.229
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .872

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB             |
| NASHYD     (0009) |   Area     (ha)=  288.72   Curve Number    (CN)= 85.0
|ID= 1 DT=10.0 min  |   Ia         (mm)=    5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=    2.14

     Unit Hyd Qpeak  (cms)=    5.153

     PEAK FLOW        (cms)=   16.071 (i)
     TIME TO PEAK     (hrs)=    9.667
     RUNOFF VOLUME     (mm)= 151.806
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .787

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB             |
| NASHYD     (0010) |   Area     (ha)=  122.30   Curve Number    (CN)= 91.0
|ID= 1 DT=10.0 min  |   Ia         (mm)=    5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=    1.79

     Unit Hyd Qpeak  (cms)=    2.610

     PEAK FLOW        (cms)=    7.736 (i)
     TIME TO PEAK     (hrs)=    9.167
     RUNOFF VOLUME     (mm)= 165.839
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .859

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------
--------------------
| CALIB             |
| NASHYD     (0011) |   Area     (ha)=  279.14   Curve Number    (CN)= 90.0
|ID= 1 DT=10.0 min  |   Ia         (mm)=    5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=    1.73

     Unit Hyd Qpeak  (cms)=    6.163

     PEAK FLOW        (cms)=   17.677 (i)
     TIME TO PEAK     (hrs)=    9.167
     RUNOFF VOLUME     (mm)= 163.460
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .847

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------
--------------------
| CALIB             |
| NASHYD     (0012) |   Area     (ha)=  158.15   Curve Number    (CN)= 94.0
|ID= 1 DT=10.0 min  |   Ia         (mm)=    5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=    1.18

     Unit Hyd Qpeak  (cms)=    5.119

     PEAK FLOW        (cms)=   11.900 (i)
     TIME TO PEAK     (hrs)=    7.833
     RUNOFF VOLUME     (mm)= 173.070
     TOTAL RAINFALL    (mm)= 193.000
     RUNOFF COEFFICIENT   =     .897

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------
```

```
--------------------
| CALIB             |
| NASHYD    (0013)  |   Area      (ha)= 137.97   Curve Number    (CN)= 88.0
|ID= 1 DT=10.0 min  |   Ia        (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=     1.92

     Unit Hyd Qpeak  (cms)=    2.745

     PEAK FLOW         (cms)=    8.274 (i)
     TIME TO PEAK      (hrs)=    9.500
     RUNOFF VOLUME      (mm)=  158.751
     TOTAL RAINFALL     (mm)=  193.000
     RUNOFF COEFFICIENT    =     .823

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB             |
| NASHYD    (0015)  |   Area      (ha)=  22.35   Curve Number    (CN)= 96.0
|ID= 1 DT=10.0 min  |   Ia        (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=      .45

     Unit Hyd Qpeak  (cms)=    1.897

     PEAK FLOW         (cms)=    2.432 (i)
     TIME TO PEAK      (hrs)=    7.000
     RUNOFF VOLUME      (mm)=  177.767
     TOTAL RAINFALL     (mm)=  193.000
     RUNOFF COEFFICIENT    =     .921

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB             |
| NASHYD    (0016)  |   Area      (ha)=  13.72   Curve Number    (CN)= 96.0
|ID= 1 DT=10.0 min  |   Ia        (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------    U.H. Tp(hrs)=      .43

     Unit Hyd Qpeak  (cms)=    1.218

     PEAK FLOW         (cms)=    1.511 (i)
     TIME TO PEAK      (hrs)=    7.000
     RUNOFF VOLUME      (mm)=  177.725
     TOTAL RAINFALL     (mm)=  193.000
     RUNOFF COEFFICIENT    =     .921

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB             |
| STANDHYD  (0014)  |   Area      (ha)=  24.16
|ID= 1 DT=10.0 min  |   Total Imp(%)=  23.00   Dir. Conn.(%)=  23.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area      (ha)=       5.56        18.60
     Dep. Storage      (mm)=       1.50         5.00
     Average Slope      (%)=        .70          .70
     Length             (m)=     401.30        40.00
     Mannings n            =       .013         .025

     Max.Eff.Inten.(mm/hr)=       43.00        42.91
               over (min)        10.00        20.00
     Storage Coeff.  (min)=       9.17 (ii)   12.58 (ii)
     Unit Hyd. Tpeak (min)=      10.00        20.00
     Unit Hyd. peak  (cms)=        .11          .07
                                                          *TOTALS*
     PEAK FLOW        (cms)=        .66         2.20       2.861 (iii)
     TIME TO PEAK     (hrs)=        .00         7.00        7.00
     RUNOFF VOLUME     (mm)=     191.50       182.96      184.92
     TOTAL RAINFALL    (mm)=     193.00       193.00      193.00
     RUNOFF COEFFICIENT   =        .99          .95         .96

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

     (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  98.0     Ia = Dep. Storage  (Above)
    (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
         THAN THE STORAGE COEFFICIENT.
   (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
  ****************************
  ** SIMULATION NUMBER:   2 **
  ****************************

--------------------
|   READ STORM      |   Filename: S:\Jessica\KRCA\OpsV02\
|                   |             Storm Files\Timmins.txt
| Ptotal=193.00 mm  |   Comments: Timmins Storm  event   mm/hr
--------------------
         TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
          hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
          .10   15.00 |  3.10    3.00 |  6.10   43.00 |  9.10   13.00
          .20   15.00 |  3.20    3.00 |  6.20   43.00 |  9.20   13.00
          .30   15.00 |  3.30    3.00 |  6.30   43.00 |  9.30   13.00
          .40   15.00 |  3.40    3.00 |  6.40   43.00 |  9.40   13.00
          .50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
          .60   15.00 |  3.60    3.00 |  6.60   43.00 |  9.60   13.00
          .70   15.00 |  3.70    3.00 |  6.70   43.00 |  9.70   13.00
          .80   15.00 |  3.80    3.00 |  6.80   43.00 |  9.80   13.00
          .90   15.00 |  3.90    3.00 |  6.90   43.00 |  9.90   13.00
         1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
         1.10   20.00 |  4.10    5.00 |  7.10   20.00 | 10.10   13.00
         1.20   20.00 |  4.20    5.00 |  7.20   20.00 | 10.20   13.00
         1.30   20.00 |  4.30    5.00 |  7.30   20.00 | 10.30   13.00
         1.40   20.00 |  4.40    5.00 |  7.40   20.00 | 10.40   13.00
         1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
         1.60   20.00 |  4.60    5.00 |  7.60   20.00 | 10.60   13.00
         1.70   20.00 |  4.70    5.00 |  7.70   20.00 | 10.70   13.00
         1.80   20.00 |  4.80    5.00 |  7.80   20.00 | 10.80   13.00
```

```
==========================================================================================
=========================

      V    V   I   SSSSS  U   U    A    L
      V    V   I   SS     U   U   A A   L
       V  V    I    SS    U   U  AAAAA  L
       V  V    I     SS   U   U  A   A  L
        VV     I   SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
```



```
                 ***** S U M M A R Y   O U T P U T *****

  Input   filename: C:\Program Files\Visual OTTHYMO 2.2.4\voin.dat
  Output  filename: S:\Jessica\KRCA\OpsVO2\CN (II) existing.out
  Summary filename: S:\Jessica\KRCA\OpsVO2\CN (II) existing.sum


DATE: 12/09/2013                         TIME: 11:07:48 AM

USER:

COMMENTS: ____________________________________________________________

  ****************************
  ** SIMULATION NUMBER:   4 **
  ****************************

  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
                                    min    ha     cms   hrs     mm           cms

      START @    .00 hrs
      --------------------
      CHIC STORN                   10.0
      [ Ptot= 81.20 mm ]
*
  *   CALIB STANDHYD       0001  1 10.0   67.17   10.30  2.00  65.31  .80    .000
      [I%=35.0:S%=  .77]
*
  *   CALIB STANDHYD       0002  1 10.0   39.68   10.39  2.00  61.32  .76    .000
      [I%=34.0:S%=  .71]
*
  *   CALIB NASHYD         0003  1 10.0   32.76    1.23  3.17  34.13  .42    .000
      [CN=73.0          ]
      [ N = 3.0:Tp  .95]
*
  *   CALIB NASHYD         0004  1 10.0   14.57    1.09  2.67  47.97  .59    .000
      [CN=85.0          ]
      [ N = 3.0:Tp  .62]
*
  *   CALIB NASHYD         0005  1 10.0  249.97   12.30  3.17  47.98  .59    .000
      [CN=65.0          ]
      [ N = 3.0:Tp 1.08]
*
  *   CALIB NASHYD         0006  1 10.0   93.47    4.02  3.00  35.10  .43    .000
      [CN=74.0          ]
      [ N = 3.0:Tp  .82]
*
  *   CALIB NASHYD         0007  1 10.0   93.56    2.55  4.17  41.57  .51    .000
      [CN=80.0          ]
      [ N = 3.0:Tp 1.88]
*
  *   CALIB NASHYD         0008  1 10.0   37.04    1.63  3.33  44.01  .54    .000
      [CN=82.0          ]
      [ N = 3.0:Tp 1.10]
*
  *   CALIB NASHYD         0009  1 10.0  288.72    5.28  4.50  31.38  .39    .000
      [CN=70.0          ]
      [ N = 3.0:Tp 2.14]
*
  *   CALIB NASHYD         0010  1 10.0  122.30    3.46  4.17  41.57  .51    .000
      [CN=80.0          ]
      [ N = 3.0:Tp 1.79]
*
  *   CALIB NASHYD         0011  1 10.0  279.14    7.65  4.00  39.28  .48    .000
      [CN=78.0          ]
      [ N = 3.0:Tp 1.73]
*
  *   CALIB NASHYD         0012  1 10.0  158.15    7.27  3.33  47.98  .59    .000
      [CN=85.0          ]
      [ N = 3.0:Tp 1.18]
*
  *   CALIB NASHYD         0013  1 10.0  137.97    3.09  4.33  35.10  .43    .000
      [CN=74.0          ]
      [ N = 3.0:Tp 1.92]
*
  *   CALIB NASHYD         0015  1 10.0   22.35    2.37  2.50  53.91  .66    .000
      [CN=89.0          ]
      [ N = 3.0:Tp  .45]
*
  *   CALIB NASHYD         0016  1 10.0   13.72    1.49  2.33  53.89  .66    .000
      [CN=89.0          ]
      [ N = 3.0:Tp  .43]
*
  *   CALIB STANDHYD       0014  1 10.0   24.16    7.19  2.00  65.24  .80    .000
      [I%=23.0:S%=  .71]
*
  ****************************
  ** SIMULATION NUMBER:   5 **
  ****************************

  W/E COMMAND              HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.    Qbase
```

```
                                     min     ha      cms   hrs     mm          cms
   START @    .00 hrs
   --------------------
   MASS STORM                       10.0
   [ Ptot= 89.40 mm ]
*
** CALIB STANDHYD           0001  1 10.0   67.17    6.40  1.50  73.19  .82    .000
   [I%=35.0:S%=   .77]
*
** CALIB STANDHYD           0002  1 10.0   39.68    3.54  1.50  69.00  .77    .000
   [I%=34.0:S%=   .71]
*
** CALIB NASHYD             0003  1 10.0   32.76    1.27  3.00  39.94  .45    .000
   [CN=73.0          ]
   [ N = 3.0:Tp   .95]
*
** CALIB NASHYD             0004  1 10.0   14.57     .89  2.33  55.11  .62    .000
   [CN=85.0          ]
   [ N = 3.0:Tp   .62]
*
** CALIB NASHYD             0005  1 10.0  249.97   12.64  3.00  55.12  .62    .000
   [CN=85.0          ]
   [ N = 3.0:Tp 1.08]
*
** CALIB NASHYD             0006  1 10.0   93.47    3.90  2.83  41.02  .46    .000
   [CN=74.0          ]
   [ N = 3.0:Tp   .82]
*
** CALIB NASHYD             0007  1 10.0   93.56    3.03  4.00  48.16  .54    .000
   [CN=80.0          ]
   [ N = 3.0:Tp 1.88]
*
** CALIB NASHYD             0008  1 10.0   37.04    1.71  3.17  50.82  .57    .000
   [CN=82.0          ]
   [ N = 3.0:Tp 1.10]
*
** CALIB NASHYD             0009  1 10.0  288.72    6.53  4.17  36.86  .41    .000
   [CN=70.0          ]
   [ N = 3.0:Tp 2.14]
*
** CALIB NASHYD             0010  1 10.0  122.30    4.11  3.83  48.16  .54    .000
   [CN=80.0          ]
   [ N = 3.0:Tp 1.79]
*
** CALIB NASHYD             0011  1 10.0  279.14    9.09  3.83  45.65  .51    .000
   [CN=78.0          ]
   [ N = 3.0:Tp 1.73]
*
** CALIB NASHYD             0012  1 10.0  158.15    7.68  3.17  55.12  .62    .000
   [CN=85.0          ]
   [ N = 3.0:Tp 1.18]
*
** CALIB NASHYD             0013  1 10.0  137.97    3.76  4.00  41.02  .46    .000
   [CN=74.0          ]
   [ N = 3.0:Tp 1.92]
*
```

```
** CALIB NASHYD             0015  1 10.0   22.35    1.69  1.83  61.44  .69    .000
   [CN=89.0          ]
   [ N = 3.0:Tp   .45]
*
** CALIB NASHYD             0016  1 10.0   13.72    1.05  1.83  61.43  .69    .000
   [CN=89.0          ]
   [ N = 3.0:Tp   .43]
*
*  CALIB STANDHYD           0014  1 10.0   24.16    2.39  1.50  73.20  .82    .000
   [I%=23.0:S%=   .71]
*
****************************
** SIMULATION NUMBER:   6 **
****************************

W/E COMMAND              HYD ID    DT     AREA   Qpeak Tpeak   R.V.  R.C.   Qbase
                                   min     ha     cms   hrs     mm           cms
    START @    .00 hrs
    --------------------
    MASS STORM                     10.0
    [ Ptot= 89.40 mm ]
*
*   CALIB STANDHYD          0001  1 10.0   67.17   11.05  3.17  73.19  .82    .000
    [I%=35.0:S%=   .77]
*
*   CALIB STANDHYD          0002  1 10.0   39.68    6.18  3.17  69.00  .77    .000
    [I%=34.0:S%=   .71]
*
*   CALIB NASHYD            0003  1 10.0   32.76    1.42  4.17  39.94  .45    .000
    [CN=73.0          ]
    [ N = 3.0:Tp   .95]
*
*   CALIB NASHYD            0004  1 10.0   14.57    1.16  3.67  55.11  .62    .000
    [CN=85.0          ]
    [ N = 3.0:Tp   .62]
*
*   CALIB NASHYD            0005  1 10.0  249.97   13.90  4.33  55.12  .62    .000
    [CN=85.0          ]
    [ N = 3.0:Tp 1.08]
*
*   CALIB NASHYD            0006  1 10.0   93.47    4.59  4.00  41.02  .46    .000
    [CN=74.0          ]
    [ N = 3.0:Tp   .82]
*
*   CALIB NASHYD            0007  1 10.0   93.56    2.98  5.33  48.16  .54    .000
    [CN=80.0          ]
    [ N = 3.0:Tp 1.88]
*
*   CALIB NASHYD            0008  1 10.0   37.04    1.87  4.33  50.82  .57    .000
    [CN=82.0          ]
    [ N = 3.0:Tp 1.10]
*
*   CALIB NASHYD            0009  1 10.0  288.72    6.35  5.67  36.86  .41    .000
    [CN=70.0          ]
    [ N = 3.0:Tp 2.14]
*
```

```
 *   CALIB NASHYD          0010  1 10.0  122.30    4.05  5.17  48.16  .54    .000
     [CN=80.0         ]
     [ N = 3.0:Tp 1.79]
*
 *   CALIB NASHYD          0011  1 10.0  279.14    8.96  5.17  45.65  .51    .000
     [CN=78.0         ]
     [ N = 3.0:Tp 1.73]
*
 *   CALIB NASHYD          0012  1 10.0  158.15    8.25  4.33  55.12  .62    .000
     [CN=85.0         ]
     [ N = 3.0:Tp 1.18]
*
 *   CALIB NASHYD          0013  1 10.0  137.97    3.67  5.33  41.02  .46    .000
     [CN=74.0         ]
     [ N = 3.0:Tp 1.92]
*
 *   CALIB NASHYD          0015  1 10.0   22.35    2.41  3.50  61.44  .69    .000
     [CN=89.0         ]
     [ N = 3.0:Tp  .45]
*
 *   CALIB NASHYD          0016  1 10.0   13.72    1.51  3.50  61.43  .69    .000
     [CN=89.0         ]
     [ N = 3.0:Tp  .43]
*
 *   CALIB STANDHYD        0014  1 10.0   24.16    4.34  3.00  73.20  .82    .000
     [I%=23.0:S%=  .71]
*
 ****************************
 ** SIMULATION NUMBER:    7 **
 ****************************

 W/E COMMAND               HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.     Qbase
                                   min     ha     cms   hrs     mm            cms

     START @   .00 hrs
     --------------------
     READ STORM                    6.0
     [ Ptot=193.00 mm ]
     fname : S:\Jessica\KRCA\OpsV02\Storm Files\Timmins.txt
     remark: Timmins Storm  event    mm/hr
*
 **  CALIB STANDHYD        0001  1 10.0   67.17    7.69  7.00 174.88  .91    .000
     [I%=35.0:S%=  .77]
*
 **  CALIB STANDHYD        0002  1 10.0   39.68    4.47  7.00 169.29  .88    .000
     [I%=34.0:S%=  .71]
*
 **  CALIB NASHYD          0003  1 10.0   32.76    2.02  7.67 125.35  .65    .000
     [CN=73.0         ]
     [ N = 3.0:Tp  .95]
*
 **  CALIB NASHYD          0004  1 10.0   14.57    1.29  7.17 151.75  .79    .000
     [CN=85.0         ]
     [ N = 3.0:Tp  .62]
*
 **  CALIB NASHYD          0005  1 10.0  249.97   17.64  7.83 151.80  .79    .000
     [CN=85.0         ]
     [ N = 3.0:Tp 1.08]
*
 **  CALIB NASHYD          0006  1 10.0   93.47    6.24  7.50 127.47  .66    .000
     [CN=74.0         ]
     [ N = 3.0:Tp  .82]
*
 **  CALIB NASHYD          0007  1 10.0   93.56    5.12  9.50 140.53  .73    .000
     [CN=80.0         ]
     [ N = 3.0:Tp 1.88]
*
 **  CALIB NASHYD          0008  1 10.0   37.04    2.48  7.83 144.99  .75    .000
     [CN=82.0         ]
     [ N = 3.0:Tp 1.10]
*
 **  CALIB NASHYD          0009  1 10.0  288.72   12.95 10.00 119.06  .62    .000
     [CN=70.0         ]
     [ N = 3.0:Tp 2.14]
*
 **  CALIB NASHYD          0010  1 10.0  122.30    6.80  9.33 140.53  .73    .000
     [CN=80.0         ]
     [ N = 3.0:Tp 1.79]
*
 **  CALIB NASHYD          0011  1 10.0  279.14   15.26  9.33 136.13  .71    .000
     [CN=78.0         ]
     [ N = 3.0:Tp 1.73]
*
 **  CALIB NASHYD          0012  1 10.0  158.15   10.74  8.00 151.80  .79    .000
     [CN=85.0         ]
     [ N = 3.0:Tp 1.18]
*
 **  CALIB NASHYD          0013  1 10.0  137.97    6.87  9.67 127.48  .66    .000
     [CN=74.0         ]
     [ N = 3.0:Tp 1.92]
*
 **  CALIB NASHYD          0015  1 10.0   22.35    2.29  7.00 160.91  .83    .000
     [CN=89.0         ]
     [ N = 3.0:Tp  .45]
*
 **  CALIB NASHYD          0016  1 10.0   13.72    1.42  7.00 160.87  .83    .000
     [CN=89.0         ]
     [ N = 3.0:Tp  .43]
*
 *   CALIB STANDHYD        0014  1 10.0   24.16    2.81  7.00 175.44  .91    .000
     [I%=23.0:S%=  .71]
*
 ****************************
 ** SIMULATION NUMBER:    8 **
 ****************************

 W/E COMMAND               HYD ID   DT    AREA   Qpeak Tpeak   R.V. R.C.     Qbase
                                   min     ha     cms   hrs     mm            cms

     START @   .00 hrs
     --------------------
     CHIC STORM                   10.0
     [ Ptot= 89.68 mm ]
*
```

```
 *   CALIB STANDHYD      0001  1 10.0   67.17   19.06  4.17  73.46  .82    .000
     [I%=35.0:S%=  .77]
*
 *   CALIB STANDHYD      0002  1 10.0   39.68   10.84  4.17  69.26  .77    .000
     [I%=34.0:S%=  .71]
*
 *   CALIB NASHYD        0003  1 10.0   32.76    1.33  5.17  40.14  .45    .000
     [CN=73.0          ]
     [ N = 3.0:Tp  .95]
*
 *   CALIB NASHYD        0004  1 10.0   14.57    1.17  4.83  55.35  .62    .000
     [CN=85.0          ]
     [ N = 3.0:Tp  .62]
*
 *   CALIB NASHYD        0005  1 10.0  249.97   13.19  5.33  55.37  .62    .000
     [CN=85.0          ]
     [ N = 3.0:Tp 1.08]
*
 *   CALIB NASHYD        0006  1 10.0   93.47    4.34  5.00  41.23  .46    .000
     [CN=74.0          ]
     [ N = 3.0:Tp  .82]
*
 *   CALIB NASHYD        0007  1 10.0   93.56    2.73  6.33  48.39  .54    .000
     [CN=80.0          ]
     [ N = 3.0:Tp 1.88]
*
 *   CALIB NASHYD        0008  1 10.0   37.04    1.76  5.33  51.06  .57    .000
     [CN=82.0          ]
     [ N = 3.0:Tp 1.10]
*
 *   CALIB NASHYD        0009  1 10.0  288.72    5.69  6.67  37.05  .41    .000
     [CN=70.0          ]
     [ N = 3.0:Tp 2.14]
*
 *   CALIB NASHYD        0010  1 10.0  122.30    3.71  6.17  48.39  .54    .000
     [CN=80.0          ]
     [ N = 3.0:Tp 1.79]
*
 *   CALIB NASHYD        0011  1 10.0  279.14    8.22  6.17  45.87  .51    .000
     [CN=78.0          ]
     [ N = 3.0:Tp 1.73]
*
 *   CALIB NASHYD        0012  1 10.0  158.15    7.78  5.50  55.37  .62    .000
     [CN=85.0          ]
     [ N = 3.0:Tp 1.18]
*
 *   CALIB NASHYD        0013  1 10.0  137.97    3.32  6.33  41.23  .46    .000
     [CN=74.0          ]
     [ N = 3.0:Tp 1.92]
*
 *   CALIB NASHYD        0015  1 10.0   22.35    2.51  4.67  61.70  .69    .000
     [CN=89.0          ]
     [ N = 3.0:Tp  .45]
*
 *   CALIB NASHYD        0016  1 10.0   13.72    1.60  4.50  61.69  .69    .000
     [CN=89.0          ]
     [ N = 3.0:Tp  .43]

*
 *   CALIB STANDHYD      0014  1 10.0   24.16    7.47  4.17  73.48  .82    .000
     [I%=23.0:S%=  .71]
*
FINISH

===============================================================================
==========================
```

```
===============================================================================
==========================

   V     V   I    SSSSS  U    U     A      L
   V     V   I    SS     U    U    A A     L
    V   V    I     SS    U    U   AAAAA    L
    V   V    I      SS   U    U   A   A    L
     VV      I    SSSSS  UUUUU   A    A    LLLLL

    OOO    TTTTT  TTTTT  H    H  Y    Y  M    M    OOO     TM
   O   O     T      T    H    H   Y  Y   MM  MM   O   O
   O   O     T      T    H    H    Y     M    M   O   O
    OOO      T      T    H    H    Y     M    M    OOO

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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files\Visual OTTHYMO 2.2.4\voin.dat
  Output  filename: S:\Jessica\KRCA\OpsVO2\CN (II) existing.out
  Summary filename: S:\Jessica\KRCA\OpsVO2\CN (II) existing.sum

DATE: 12/09/2013                      TIME: 11:07:48 AM

USER:

COMMENTS: ______________________________________________________________

  ****************************
  ** SIMULATION NUMBER:   4 **
  ****************************

  W/E COMMAND              HYD ID   DT    AREA    Qpeak  Tpeak   R.V.  R.C.    Qbase
                                   min     ha      cms    hrs     mm            cms

      START @    .00 hrs
      -------------------
      CHIC STORM                  10.0
      [ Ptot= 81.20 mm ]
 *
   *  CALIB STANDHYD      0001  1 10.0   67.17    18.38   2.00  65.31  .80     .000
      [I%=35.0:S%=  .77]
 *
   *  CALIB STANDHYD      0002  1 10.0   39.68    10.39   2.00  61.32  .76     .000
      [I%=34.0:S%=  .71]
 *
   *  CALIB NASHYD        0003  1 10.0   32.76     1.23   3.17  34.13  .42     .000
      [CN=73.0         ]
      [ N = 3.0:Tp  .95]
 *
   *  CALIB NASHYD        0004  1 10.0   14.57     1.09   2.67  47.97  .59     .000
      [CN=85.0         ]
      [ N = 3.0:Tp  .62]
 *
   *  CALIB NASHYD        0005  1 10.0  249.97    12.30   3.17  47.98  .59     .000
      [CN=85.0         ]
      [ N = 3.0:Tp 1.08]
 *
   *  CALIB NASHYD        0006  1 10.0   93.47     4.02   3.00  35.10  .43     .000
      [CN=74.0         ]
      [ N = 3.0:Tp  .82]
 *
   *  CALIB NASHYD        0007  1 10.0   93.56     2.55   4.17  41.57  .51     .000
      [CN=80.0         ]
      [ N = 3.0:Tp 1.88]
 *
   *  CALIB NASHYD        0008  1 10.0   37.04     1.63   3.33  44.01  .54     .000
      [CN=82.0         ]
      [ N = 3.0:Tp 1.10]
 *
   *  CALIB NASHYD        0009  1 10.0  288.72     5.28   4.50  31.38  .39     .000
      [CN=70.0         ]
      [ N = 3.0:Tp 2.14]
 *
   *  CALIB NASHYD        0010  1 10.0  122.30     3.46   4.17  41.57  .51     .000
      [CN=80.0         ]
      [ N = 3.0:Tp 1.79]
 *
   *  CALIB NASHYD        0011  1 10.0  279.14     7.65   4.00  39.28  .48     .000
      [CN=78.0         ]
      [ N = 3.0:Tp 1.73]
 *
   *  CALIB NASHYD        0012  1 10.0  158.15     7.27   3.33  47.98  .59     .000
      [CN=85.0         ]
      [ N = 3.0:Tp 1.18]
 *
   *  CALIB NASHYD        0013  1 10.0  137.97     3.09   4.33  35.10  .43     .000
      [CN=74.0         ]
      [ N = 3.0:Tp 1.92]
 *
   *  CALIB NASHYD        0015  1 10.0   22.35     2.37   2.50  53.91  .66     .000
      [CN=89.0         ]
      [ N = 3.0:Tp  .45]
 *
   *  CALIB NASHYD        0016  1 10.0   13.72     1.49   2.33  53.89  .66     .000
      [CN=89.0         ]
      [ N = 3.0:Tp  .43]
 *
   *  CALIB STANDHYD      0014  1 10.0   24.16     7.19   2.00  65.24  .80     .000
      [I%=23.0:S%=  .71]
 *
  ****************************
  ** SIMULATION NUMBER:   5 **
  ****************************

  W/E COMMAND              HYD ID   DT    AREA    Qpeak  Tpeak   R.V.  R.C.    Qbase
```

```
                                 min     ha      cms    hrs      mm           cms
     START @    .00 hrs
     --------------------
     MASS STORM                  10.0
     [ Ptot= 89.40 mm ]
*
 **  CALIB STANDHYD      0001  1 10.0   67.17    6.40  1.50  73.19  .82    .000
     [I%=35.0:S%=  .77]
*
 **  CALIB STANDHYD      0002  1 10.0   39.68    3.54  1.50  69.00  .77    .000
     [I%=34.0:S%=  .71]
*
 **  CALIB NASHYD        0003  1 10.0   32.76    1.27  3.00  39.94  .45    .000
     [CN=73.0           ]
     [ N = 3.0:Tp  .95]
*
 **  CALIB NASHYD        0004  1 10.0   14.57     .89  2.33  55.11  .62    .000
     [CN=85.0           ]
     [ N = 3.0:Tp  .62]
*
 **  CALIB NASHYD        0005  1 10.0  249.97   12.64  3.00  55.12  .62    .000
     [CN=85.0           ]
     [ N = 3.0:Tp 1.08]
*
 **  CALIB NASHYD        0006  1 10.0   93.47    3.90  2.83  41.02  .46    .000
     [CN=74.0           ]
     [ N = 3.0:Tp  .82]
*
 **  CALIB NASHYD        0007  1 10.0   93.56    3.03  4.00  48.16  .54    .000
     [CN=80.0           ]
     [ N = 3.0:Tp 1.88]
*
 **  CALIB NASHYD        0008  1 10.0   37.04    1.71  3.17  50.82  .57    .000
     [CN=82.0           ]
     [ N = 3.0:Tp 1.10]
*
 **  CALIB NASHYD        0009  1 10.0  288.72    6.53  4.17  36.86  .41    .000
     [CN=70.0           ]
     [ N = 3.0:Tp 2.14]
*
 **  CALIB NASHYD        0010  1 10.0  122.30    4.11  3.83  48.16  .54    .000
     [CN=80.0           ]
     [ N = 3.0:Tp 1.79]
*
 **  CALIB NASHYD        0011  1 10.0  279.14    9.09  3.83  45.65  .51    .000
     [CN=78.0           ]
     [ N = 3.0:Tp 1.73]
*
 **  CALIB NASHYD        0012  1 10.0  158.15    7.68  3.17  55.12  .62    .000
     [CN=85.0           ]
     [ N = 3.0:Tp 1.18]
*
 **  CALIB NASHYD        0013  1 10.0  137.97    3.76  4.00  41.02  .46    .000
     [CN=74.0           ]
     [ N = 3.0:Tp 1.92]
*
 **  CALIB NASHYD        0015  1 10.0   22.35    1.69  1.83  61.44  .69    .000
     [CN=89.0           ]
     [ N = 3.0:Tp  .45]
*
 **  CALIB NASHYD        0016  1 10.0   13.72    1.05  1.83  61.43  .69    .000
     [CN=89.0           ]
     [ N = 3.0:Tp  .43]
*
 *   CALIB STANDHYD      0014  1 10.0   24.16    2.39  1.50  73.20  .82    .000
     [I%=23.0:S%=  .71]
*
***************************
** SIMULATION NUMBER:   6 **
***************************

W/E COMMAND              HYD ID   DT     AREA   Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha     cms   hrs     mm          cms
     START @    .00 hrs
     --------------------
     MASS STORM                  10.0
     [ Ptot= 89.40 mm ]
*
 *   CALIB STANDHYD      0001  1 10.0   67.17   11.05  3.17  73.19  .82    .000
     [I%=35.0:S%=  .77]
*
 *   CALIB STANDHYD      0002  1 10.0   39.68    6.18  3.17  69.00  .77    .000
     [I%=34.0:S%=  .71]
*
 *   CALIB NASHYD        0003  1 10.0   32.76    1.42  4.17  39.94  .45    .000
     [CN=73.0           ]
     [ N = 3.0:Tp  .95]
*
 *   CALIB NASHYD        0004  1 10.0   14.57    1.16  3.67  55.11  .62    .000
     [CN=85.0           ]
     [ N = 3.0:Tp  .62]
*
 *   CALIB NASHYD        0005  1 10.0  249.97   13.90  4.33  55.12  .62    .000
     [CN=85.0           ]
     [ N = 3.0:Tp 1.08]
*
 *   CALIB NASHYD        0006  1 10.0   93.47    4.59  4.00  41.02  .46    .000
     [CN=74.0           ]
     [ N = 3.0:Tp  .82]
*
 *   CALIB NASHYD        0007  1 10.0   93.56    2.98  5.33  48.16  .54    .000
     [CN=80.0           ]
     [ N = 3.0:Tp 1.88]
*
 *   CALIB NASHYD        0008  1 10.0   37.04    1.87  4.33  50.82  .57    .000
     [CN=82.0           ]
     [ N = 3.0:Tp 1.10]
*
 *   CALIB NASHYD        0009  1 10.0  288.72    6.35  5.67  36.86  .41    .000
     [CN=70.0           ]
     [ N = 3.0:Tp 2.14]
*
```

```
 *   CALIB NASHYD        0010  1 10.0  122.30    4.05  5.17  48.16  .54    .000
     [CN=80.0          ]
     [ N = 3.0:Tp 1.79]
*
 *   CALIB NASHYD        0011  1 10.0  279.14    8.96  5.17  45.65  .51    .000
     [CN=78.0          ]
     [ N = 3.0:Tp 1.73]
*
 *   CALIB NASHYD        0012  1 10.0  158.15    8.25  4.33  55.12  .62    .000
     [CN=85.0          ]
     [ N = 3.0:Tp 1.18]
*
 *   CALIB NASHYD        0013  1 10.0  137.97    3.67  5.33  41.02  .46    .000
     [CN=74.0          ]
     [ N = 3.0:Tp 1.92]
*
 *   CALIB NASHYD        0015  1 10.0   22.35    2.41  3.50  61.44  .69    .000
     [CN=89.0          ]
     [ N = 3.0:Tp  .45]
*
 *   CALIB NASHYD        0016  1 10.0   13.72    1.51  3.50  61.43  .69    .000
     [CN=89.0          ]
     [ N = 3.0:Tp  .43]
*
 *   CALIB STANDHYD      0014  1 10.0   24.16    4.34  3.00  73.20  .82    .000
     [I%=23.0:S%=  .71]
*
 ****************************
 ** SIMULATION NUMBER:   7 **
 ****************************

 W/E COMMAND            HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.   Qbase
                                 min    ha     cms   hrs     mm           cms

     START @   .00 hrs
     --------------------
     READ STORM                  6.0
     [ Ptot=193.00 mm ]
     fname : S:\Jessica\KRCA\OpsV02\Storm Files\Timmins.txt
     remark: Timmins Storm  event    mm/hr
*
 **  CALIB STANDHYD      0001  1 10.0   67.17    7.69  7.00 174.88  .91    .000
     [I%=35.0:S%=  .77]
*
 **  CALIB STANDHYD      0002  1 10.0   39.68    4.47  7.00 169.29  .88    .000
     [I%=34.0:S%=  .71]
*
 **  CALIB NASHYD        0003  1 10.0   32.76    2.02  7.67 125.35  .65    .000
     [CN=73.0          ]
     [ N = 3.0:Tp  .95]
*
 **  CALIB NASHYD        0004  1 10.0   14.57    1.29  7.17 151.75  .79    .000
     [CN=85.0          ]
     [ N = 3.0:Tp  .62]
*
 **  CALIB NASHYD        0005  1 10.0  249.97   17.64  7.83 151.80  .79    .000
     [CN=85.0          ]
```

```
     [ N = 3.0:Tp 1.08]
*
 **  CALIB NASHYD        0006  1 10.0   93.47    6.24  7.50 127.47  .66    .000
     [CN=74.0          ]
     [ N = 3.0:Tp  .82]
*
 **  CALIB NASHYD        0007  1 10.0   93.56    5.12  9.50 140.53  .73    .000
     [CN=80.0          ]
     [ N = 3.0:Tp 1.88]
*
 **  CALIB NASHYD        0008  1 10.0   37.04    2.48  7.83 144.99  .75    .000
     [CN=82.0          ]
     [ N = 3.0:Tp 1.10]
*
 **  CALIB NASHYD        0009  1 10.0  288.72   12.95 10.00 119.06  .62    .000
     [CN=70.0          ]
     [ N = 3.0:Tp 2.14]
*
 **  CALIB NASHYD        0010  1 10.0  122.30    6.80  9.33 140.53  .73    .000
     [CN=80.0          ]
     [ N = 3.0:Tp 1.79]
*
 **  CALIB NASHYD        0011  1 10.0  279.14   15.26  9.33 136.13  .71    .000
     [CN=78.0          ]
     [ N = 3.0:Tp 1.73]
*
 **  CALIB NASHYD        0012  1 10.0  158.15   10.74  8.00 151.80  .79    .000
     [CN=85.0          ]
     [ N = 3.0:Tp 1.18]
*
 **  CALIB NASHYD        0013  1 10.0  137.97    6.87  9.67 127.48  .66    .000
     [CN=74.0          ]
     [ N = 3.0:Tp 1.92]
*
 **  CALIB NASHYD        0015  1 10.0   22.35    2.29  7.00 160.91  .83    .000
     [CN=89.0          ]
     [ N = 3.0:Tp  .45]
*
 **  CALIB NASHYD        0016  1 10.0   13.72    1.42  7.00 160.87  .83    .000
     [CN=89.0          ]
     [ N = 3.0:Tp  .43]
*
 *   CALIB STANDHYD      0014  1 10.0   24.16    2.81  7.00 175.44  .91    .000
     [I%=23.0:S%=  .71]
*
 ****************************
 ** SIMULATION NUMBER:   8 **
 ****************************

 W/E COMMAND            HYD ID   DT    AREA   Qpeak Tpeak   R.V.  R.C.   Qbase
                                 min    ha     cms   hrs     mm           cms

     START @   .00 hrs
     --------------------
     CHIC STORM                 10.0
     [ Ptot= 89.68 mm ]
*
```

```
 *  CALIB STANDHYD      0001  1 10.0   67.17   19.06  4.17  73.46  .82    .000
    [I%=35.0:S%=  .77]
*
 *  CALIB STANDHYD      0002  1 10.0   39.68   10.84  4.17  69.26  .77    .000
    [I%=34.0:S%=  .71]
*
 *  CALIB NASHYD        0003  1 10.0   32.76    1.33  5.17  40.14  .45    .000
    [CN=73.0          ]
    [ N = 3.0:Tp  .95]
*
 *  CALIB NASHYD        0004  1 10.0   14.57    1.17  4.83  55.35  .62    .000
    [CN=85.0          ]
    [ N = 3.0:Tp  .62]
*
 *  CALIB NASHYD        0005  1 10.0  249.97   13.19  5.33  55.37  .62    .000
    [CN=85.0          ]
    [ N = 3.0:Tp 1.08]
*
 *  CALIB NASHYD        0006  1 10.0   93.47    4.34  5.00  41.23  .46    .000
    [CN=74.0          ]
    [ N = 3.0:Tp  .82]
*
 *  CALIB NASHYD        0007  1 10.0   93.56    2.73  6.33  48.39  .54    .000
    [CN=80.0          ]
    [ N = 3.0:Tp 1.88]
*
 *  CALIB NASHYD        0008  1 10.0   37.04    1.76  5.33  51.06  .57    .000
    [CN=82.0          ]
    [ N = 3.0:Tp 1.10]
*
 *  CALIB NASHYD        0009  1 10.0  288.72    5.69  6.67  37.05  .41    .000
    [CN=70.0          ]
    [ N = 3.0:Tp 2.14]
*
 *  CALIB NASHYD        0010  1 10.0  122.30    3.71  6.17  48.39  .54    .000
    [CN=80.0          ]
    [ N = 3.0:Tp 1.79]
*
 *  CALIB NASHYD        0011  1 10.0  279.14    8.22  6.17  45.87  .51    .000
    [CN=78.0          ]
    [ N = 3.0:Tp 1.73]
*
 *  CALIB NASHYD        0012  1 10.0  158.15    7.78  5.50  55.37  .62    .000
    [CN=85.0          ]
    [ N = 3.0:Tp 1.18]
*
 *  CALIB NASHYD        0013  1 10.0  137.97    3.32  6.33  41.23  .46    .000
    [CN=74.0          ]
    [ N = 3.0:Tp 1.92]
*
 *  CALIB NASHYD        0015  1 10.0   22.35    2.51  4.67  61.70  .69    .000
    [CN=89.0          ]
    [ N = 3.0:Tp  .45]
*
 *  CALIB NASHYD        0016  1 10.0   13.72    1.60  4.50  61.69  .69    .000
    [CN=89.0          ]
    [ N = 3.0:Tp  .43]

*
 *  CALIB STANDHYD      0014  1 10.0   24.16    7.47  4.17  73.48  .82    .000
    [I%=23.0:S%=  .71]
*
FINISH

===============================================================================
===========================
```

Appendix L
Summary Data
Future Land Use

Summary of values for Ops Drain/Jennings Ck - Future Land Use

Catchment	AREA	C	T_p	CN (II)	CN* (II)	CN (III)	CN* (III)	X_{imp}	T_{imp}
1	67.2	0.85		92	93	97	98	0.73	0.74
2	39.7	0.80		91	93	97	98	0.49	0.58
3	32.8	0.82		89	91	96	97	0.69	0.77
4	14.6	0.76		89	91	96	97	0.40	0.42
5	250.0	0.55	1.08	85	87	94	95		
6	93.5	0.57	0.82	86	87	94	95		
7	93.6	0.65		91	93	97	98	0.24	0.50
8	37.0	0.47	0.73	84	85	93	94		
9	288.7	0.63	2.14	88	89	95	96		
10	122.3	0.50	1.79	85	87	94	95		
11	279.1	0.59		86	87	94	95	0.21	0.24
12	158.2	0.71		90	91	96	97	0.23	0.49
13	138.0	0.40	1.72	81	80	91	91		
14	24.2	0.73		92	93	97	98	0.18	0.38
15	22.4	0.79		94	99	98	100	0.23	0.48
16	13.7	0.79		94	99	98	100	0.15	0.30

Total Area *1,674.7 Ha*

Converting CN to CN*

Ops Jennings Ck Watershed (Future Land Use)

P = *89.7 mm*

standard I_a = *5 mm*

Catchment	CN (AMC II)	CN (AMC III)	S (mm)	Ia	Q	S*	CN* (AMC III)	CN* (AMC II)
1	92	97	8	1.6	80.8	4.1	98	93
2	91	97	8	1.6	80.8	4.1	98	93
3	89	96	11	2.2	77.7	7.6	97	91
4	89	96	11	2.2	77.7	7.6	97	91
5	85	94	16	3.2	73.0	13.6	95	87
6	86	94	16	3.2	73.0	13.6	95	87
7	91	97	8	1.6	80.8	4.1	98	93
8	84	93	19	3.8	70.3	17.3	94	85
9	88	95	13	2.6	75.8	10.0	96	89
10	85	94	16	3.2	73.0	13.6	95	87
11	86	94	16	3.2	73.0	13.6	95	87
12	90	96	11	2.2	77.7	7.6	97	91
13	81	91	25	5	65.4	25.0	91	80
14	92	97	8	1.6	80.8	4.1	98	93
15	94	98	5	1	84.0	0.7	100	99
16	94	98	5	1	84.0	0.7	100	99

Use CN (AMC III) for Timmins storm. Use CN (AMC II) for 2- to 100-year storms.
89.7 mm is antecent rainfall for 100yr 6 hr storm

Procedure:

1. $\text{CN (AMC III)} = \frac{25400}{(254 + S)}$, *to calculate S*
2. $I_a = 0.2 * S$, *to give calculated I_a*
3. $Q = \frac{(P-I_a)^2}{(P-I_a+S)}$
4. $Q = \frac{(P-I_a)^2}{(P-I_a+S^*)}$, Using Q from 3 above, and I_a = 5mm, determine S*
5. $\text{CN* (AMC III)} = \frac{25400}{(254 + S^*)}$

Note:this procedure is outlined in the VO_2 Reference Manual.
Manual checks were undertaken to ensure accuracy of GIS-derived product

Subcatchment 1 - Future Land Use

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area
Commercial	A	13,611	1.36	89	121.14
Commercial	B	165,263	16.53	92	1520.42
Commercial	C	29,746	2.97	94	279.61
Commercial	D	331,433	33.14	95	3148.61
Parks and Open Space	B	51,660	5.17	69	356.45
Residential	A	4,484	0.45	77	34.53
Residential	B	2,755	0.28	85	23.41
Residential	C	1,461	0.15	90	13.15
Residential	D	6,348	0.63	92	58.41
Roads	B	19,024	1.90	98	186.44
Roads	C	3,129	0.31	98	30.66
Roads	D	42,804	4.28	98	419.48
		Total Area (Ha):	***67.17 Ha***		
			Total Area * CN=		***6192***
			Weighted CN (II)		***92***
			CN (AMC III)		*97*

T_{imp}	T_{imp} * Area
0.90	1.23
0.90	14.87
0.90	2.68
0.90	29.83
0.01	0.05
0.52	0.23
0.52	0.14
0.52	0.08
0.52	0.33
	49.44
Avg T_{imp}	***0.74***

X_{imp}	X_{imp} * Area
0.90	1.23
0.90	14.87
0.90	2.68
0.90	29.83
0.01	0.05
0.25	0.11
0.25	0.07
0.25	0.04
0.25	0.16
	49.03
Avg X_{imp}	***0.73***

C	C * Area
0.90	1.23
0.90	14.87
0.90	2.68
0.90	29.83
0.25	1.29
0.65	0.29
0.65	0.18
0.65	0.09
0.65	0.41
0.95	1.81
0.95	0.30
0.95	4.07
	57.0
Avg C	***0.85***

Subcatchment 2 - Future Land Use

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area
Commercial	A	29,352	2.94	89	261.23
Commercial	B	33,294	3.33	92	306.30
Commercial	C	13,821	1.38	94	129.91
Commercial	D	105,787	10.58	95	1004.97
Parks and Open Space	A	4,857	0.49	49	23.80
Parks and Open Space	C	6,136	0.61	79	48.47
Parks and Open Space	D	12,473	1.25	80	99.78
Residential	A	38,352	3.84	77	295.31
Residential	C	44,028	4.40	90	396.25
Residential	D	36,617	3.66	92	336.88
Roads	A	16,717	1.67	98	163.83
Roads	B	2,312	0.23	98	22.66
Roads	C	21,361	2.14	98	209.34
Roads	D	31,711	3.17	98	310.77
		Total Area (Ha):	***39.68 Ha***		
			Total Area * CN=		***3610***
			Weighted CN (II)		***91***
			CN (AMC III)		***97***

T_{Imp}	T_{Imp} * Area
0.90	2.64
0.90	3.00
0.90	1.24
0.90	9.52
0.01	0.00
0.01	0.01
0.01	0.01
0.52	1.99
0.52	2.29
0.52	2.29
	23.00
Avg T_{Imp}	***0.58***

X_{Imp}	X_{Imp} * Area
0.90	2.64
0.90	3.00
0.90	1.24
0.90	9.52
0.01	0.00
0.01	0.01
0.01	0.01
0.25	0.96
0.25	1.10
0.25	0.92
	19.40
Avg X_{Imp}	***0.49***

C	C * Area
0.90	2.64
0.90	3.00
0.90	1.24
0.90	9.52
0.25	0.12
0.25	0.15
0.25	0.31
0.65	2.49
0.65	2.86
0.65	2.38
0.95	1.59
0.95	0.22
0.95	2.03
0.95	3.01
	31.6
Avg C	***0.80***

Subcatchment 3 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	T_{Imp}	T_{Imp} * Area	X_{Imp}	X_{Imp} * Area	C	C * Area
Agricultural	B	400	0.04	75	3.00					0.35	0.01
Agricultural	D	2,350	0.24	85	19.98					0.55	0.13
Commercial	A	7,438	0.74	89	66.20	0.90	0.67	0.90	0.67	0.90	0.67
Commercial	B	22,491	2.25	92	206.92	0.90	2.02	0.90	2.02	0.90	2.02
Commercial	C	96,845	9.68	94	910.34	0.90	8.72	0.90	8.72	0.90	8.72
Commercial	D	95,983	9.60	95	911.84	0.90	8.64	0.90	8.64	0.90	8.64
Parks and Open Space	D	837	0.08	80	6.70	0.01	0.00	0.01	0.00	0.25	0.02
Residential	A	94,608	9.46	77	728.48	0.52	4.92	0.25	2.37	0.65	6.15
Residential	C	3,311	0.33	90	29.80	0.52	0.17	0.25	0.08	0.65	0.22
Roads	B	2,885	0.29	98	28.28		25.14		22.50	0.95	0.27
Roads	C	335	0.03	98	3.28	*Avg T_{imp}*	*0.77*	*Avg X_{imp}*	*0.69*	0.95	0.03
Roads	D	140	0.01	98	1.37					0.95	0.01
		Total Area (Ha):	*32.76 Ha*								26.9
		*Total Area * CN=*			*2916*					*Avg C*	*0.82*

Weighted CN (II)	***89***
CN (AMC III)	*96*

Subcatchment 4 - Futuer Land Use

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area	T_{Imp}	T_{Imp} * Area	X_{imp}	X_{imp} * Area	C	C * Area
Agricultural	B	17,920	1.79	75	134.40					0.35	0.63
Agricultural	D	30,905	3.09	85	262.69					0.55	1.70
Commercial	C	12,126	1.21	94	113.99	0.90	1.09	0.90	1.09	0.90	1.09
Commercial	D	33,637	3.36	95	319.55	0.90	3.03	0.90	3.03	0.90	3.03
Industrial	B	20,489	2.05	88	180.31	0.80	1.64	0.75	1.54	0.90	1.84
Residential	A	4,651	0.47	77	35.81	0.52	0.24	0.25	0.12	0.65	0.30
Residential	C	1,613	0.16	90	14.52	0.52	0.08	0.25	0.04	0.65	0.10
Roads	A	2,916	0.29	98	28.57					0.95	0.28
Roads	B	1,477	0.15	98	14.47					0.95	0.14
Roads	C	8,415	0.84	98	82.47					0.95	0.80
Roads	D	11,571	1.16	98	113.40					0.95	1.10
		Total Area (Ha):	***14.57 Ha***		***1300***		6.08		5.81		11.0
						Avg T_{Imp}	***0.42***	***Avg X_{Imp}***	***0.40***	***Avg C***	***0.76***

Weighted CN (II)	***89***
CN (AMC III)	*96*

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Subcatchment 5 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	T_{Imp}	T_{Imp} * Area	X_{Imp}	X_{Imp} * Area	C	C * Area
Agricultural	A	84,748	8.47	64	542.39					0.22	1.86
Agricultural	B	1,509	0.15	75	11.32					0.35	0.05
Agricultural	C	586,152	58.62	82	4806.44					0.35	20.52
Agricultural	D	1,468,721	146.87	85	12484.13					0.55	80.78
Agricultural	Water	66,539	6.65	100	665.39					1.00	6.65
Commercial	B	1,509	0.15	92	13.88	0.90	0.14	0.90	0.14	0.90	0.14
Commercial	C	4,634	0.46	94	43.56	0.90	0.42	0.90	0.42	0.90	0.42
Commercial	D	15,358	1.54	95	145.90	0.90	1.38	0.90	1.38	0.90	1.38
Industrial	B	41,478	4.15	88	365.01	0.80	3.32	0.75	3.11	0.90	3.73
Industrial	C	10,518	1.05	91	95.71	0.80	0.84	0.75	0.79	0.90	0.95
Industrial	D	56,991	5.70	93	530.01	0.80	4.56	0.75	4.27	0.90	5.13
Industrial	Water	7,418	0.74	100	74.18	0.80	0.59	0.75	0.56	1.00	0.74
Roads	A	12,916	1.29	98	126.58					0.95	1.23
Roads	B	7,826	0.78	98	76.69					0.95	0.74
Roads	C	50,822	5.08	98	498.05					0.95	4.83
Roads	D	62,150	6.22	98	609.07					0.95	5.90
Roads	Water	20,376	2.04	98	199.68					1.00	2.04
		Total Area (Ha):	***249.97 Ha***				11.25		10.67		137.1
					21288	***Avg T_{Imp}***	***0.04***	***Avg X_{Imp}***	***0.04***	***Avg C***	***0.55***

Weighted CN (II)	***85***
CN (AMC III)	*94*

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Subcatchment 6 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
Agricultural	C	44,445	4.44	82	364.45
Agricultural	D	435,518	43.55	85	3701.90
Agricultural	Water	63,583	6.36	100	635.83
Commercial	B	12,443	1.24	92	114.47
Commercial	C	51,799	5.18	94	486.91
Commercial	D	30,469	3.05	95	289.45
Commercial	Water	7,494	0.75	100	74.94
Parks and Open Space	B	33,205	3.32	69	229.11
Parks and Open Space	C	125,641	12.56	79	992.57
Parks and Open Space	D	50,835	5.08	80	406.68
Residential	B	6,949	0.69	85	59.07
Residential	C	571	0.06	90	5.14
Roads	B	5,114	0.51	98	50.12
Roads	C	24,179	2.42	98	236.95
Roads	D	31,404	3.14	98	307.76
Roads	Water	11,066	1.11	98	108.45
		Total Area (Ha):	93.47 Ha		8064
			Weighted CN (II)		86
			CN (AMC III)		94

T_{imp}	T_{imp} * Area
0.90	1.12
0.90	4.66
0.90	2.74
0.90	0.67
0.01	0.03
0.01	0.13
0.01	0.05
0.52	0.36
0.52	0.03
	9.80
Avg T_{imp}	0.10

X_{imp}	X_{imp} * Area
0.90	1.12
0.90	4.66
0.90	2.74
0.90	0.67
0.01	0.03
0.01	0.13
0.01	0.05
0.25	0.17
0.25	0.01
	3.81
Avg X_{imp}	0.04

C	C * Area
0.35	1.56
0.55	23.95
1.00	6.36
0.90	1.12
0.90	4.66
0.90	2.74
1.00	0.75
0.25	0.83
0.25	3.14
0.25	1.27
0.65	0.45
0.65	0.04
0.95	0.49
0.95	2.30
0.95	2.98
1.00	1.11
	53.7
Avg C	0.57

Subcatchment 7 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
Parks and Open Space	B	582	0.06	69	4.02
Parks and Open Space	C	15,600	1.56	79	123.24
Residential	B	10,488	1.05	85	89.15
Residential	C	431,395	43.14	90	3882.55
Residential	D	453,185	45.32	92	4169.30
Roads	B	2,920	0.29	98	28.61
Roads	C	7,597	0.76	98	74.45
Roads	D	13,870	1.39	98	135.93

Total Area (Ha): ***93.56 Ha***

Total Area * CN= ***8507***

Weighted CN (II)	***91***
CN (AMC III)	*97*

T_{imp}	T_{imp} * Area
0.01	0.00
0.01	0.02
0.52	0.55
0.52	22.43
0.52	23.57
	46.56
Avg T_{imp}	***0.50***

X_{imp}	X_{imp} * Area
0.01	0.00
0.01	0.02
0.25	0.26
0.25	10.78
0.25	11.33
	22.39
Avg X_{imp}	***0.24***

C	C * Area
0.25	0.01
0.25	0.39
0.65	0.68
0.65	28.04
0.65	29.46
0.95	0.28
0.95	0.72
0.95	1.32
	60.9
Avg C	***0.65***

Subcatchment 8 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
Agricultural	C	195,890	19.59	82	1606.30
Agricultural	D	154,121	15.41	85	1310.03
Commercial	D	4,106	0.41	95	39.01
Residential	D	83	0.01	92	0.77
Roads	C	3,232	0.32	98	31.67
Roads	D	12,933	1.29	98	126.74

Total Area (Ha): ***37.04 Ha***

*Total Area * CN=* ***3115***

Weighted CN (II)	***84***
CN (AMC III)	*93*

T_{imp}	T_{imp} * Area
0.90	0.37
0.52	0.00
	0.37
Avg T_{imp}	***0.01***

X_{imp}	X_{imp} * Area
0.90	0.37
0.25	0.00
	0.37
Avg X_{imp}	***0.01***

C	C * Area
0.35	6.86
0.55	8.48
0.90	0.37
0.65	0.01
0.95	0.31
0.95	1.23
	17.2
Avg C	***0.47***

Subcatchment 9 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	T_{imp}	T_{imp} * Area	X_{imp}	X_{imp} * Area	C	C * Area
Agricultural	B	180,811	18.08	75	1356.08					0.35	6.33
Agricultural	C	905,612	90.56	82	7426.02					0.35	31.70
Agricultural	D	793,783	79.38	85	6747.16					0.55	43.66
Agricultural	Water	777,804	77.78	100	7778.04					1.00	77.78
Commercial	C	24,950	2.50	94	234.53	0.90	2.25	0.90	2.25	0.90	2.25
Commercial	D	16,394	1.64	95	155.75	0.90	1.48	0.90	1.48	0.90	1.48
Commercial	Water	36,717	3.67	100	367.17	0.90	3.30	0.90	3.30	1.00	3.67
Industrial	D	5,253	0.53	93	48.86	0.80	0.42	0.75	0.39	0.90	0.47
Industrial	Water	3,274	0.33	100	32.74	0.80	0.26	0.75	0.25	1.00	0.33
Roads	B	6,037	0.60	98	59.17					0.95	0.57
Roads	C	57,526	5.75	98	563.76					0.95	5.46
Roads	D	64,436	6.44	98	631.47					0.95	6.12
Roads	Water	14,602	1.46	98	143.10					1.00	1.46

Total Area (Ha):	288.72 Ha			
Total Area * CN=		25544		
	Weighted CN (II)	88		
	CN (AMC III)	95		

	7.71		7.67		181.3
Avg T_{imp}	0.03	Avg X_{imp}	0.03	Avg C	0.63

Subcatchment 10 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area
Agricultural	C	537,628	53.76	82	4408.55
Agricultural	D	579,459	57.95	85	4925.40
Agricultural	Water	50,867	5.09	100	508.67
Commercial	D	23,081	2.31	95	219.27
Industrial	D	17,541	1.75	93	163.13
Industrial	Water	580	0.06	100	5.80
Roads	D	13,880	1.39	98	136.03

Total Area (Ha): *122.30 Ha*

*Total Area * CN=* *10367*

Weighted CN (II)	***85***
CN (AMC III)	*94*

T_{imp}	T_{imp} * Area
0.90	2.08
0.80	1.40
0.80	0.05
	3.53
Avg T_{imp}	***0.03***

X_{imp}	X_{imp} * Area
0.90	2.08
0.75	1.32
0.75	0.04
	3.44
Avg X_{imp}	***0.03***

C	C * Area
0.35	18.82
0.55	31.87
1.00	5.09
0.90	2.08
0.90	1.58
1.00	0.06
0.95	1.32
	60.8
Avg C	***0.50***

Subcatchment 11 - Future Land Use

Landuse	HSG	Area (m²)	Area (Ha)	CN	CN * Area	T_{Imp}	T_{Imp} * Area	X_{Imp}	X_{Imp} * Area	C	C * Area
Agricultural	B	405,741	40.57	75	3043.06					0.35	14.20
Agricultural	C	593,726	59.37	82	4868.55					0.35	20.78
Agricultural	D	757,095	75.71	85	6435.31					0.55	41.64
Agricultural	Water	409	0.04	100	4.09					1.00	0.04
Commercial	B	2,687	0.27	92	24.72	0.90	0.24	0.90	0.24	0.90	0.24
Commercial	D	12,447	1.24	95	118.25	0.90	1.12	0.90	1.12	0.90	1.12
Industrial	C	28,914	2.89	91	263.12	0.80	2.31	0.75	2.17	0.90	2.60
Industrial	D	579,153	57.92	93	5386.12	0.80	46.33	0.75	43.44	0.90	52.12
Industrial	Water	69,092	6.91	100	690.92	0.80	5.53	0.75	5.18	1.00	6.91
Residential	B	52,767	5.28	85	448.52	0.52	2.74	0.25	1.32	0.65	3.43
Residential	C	1,875	0.19	90	16.88	0.52	0.10	0.25	0.05	0.65	0.12
Residential	D	174,728	17.47	92	1607.50	0.52	9.09	0.25	4.37	0.65	11.36
Roads	B	21,367	2.14	98	209.40					0.95	2.03
Roads	C	48,977	4.90	98	479.97					0.95	4.65
Roads	D	40,669	4.07	98	398.56					0.95	3.86
Roads	Water	1,775	0.18	98	17.40					1.00	0.18
		Total Area (Ha):	***279.14 Ha***		***24012***		67.46		57.88		165.3
						Avg T_{Imp}	***0.24***	***Avg X_{Imp}***	***0.21***	***Avg C***	***0.59***

Weighted CN (II)	***86***
CN (AMC III)	*94*

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Subcatchment 12 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	T_{Imp}	T_{Imp} * Area	X_{Imp}	X_{Imp} * Area	C	C * Area
Agricultural	B	7,360	0.74	75	55.20					0.35	0.26
Industrial	Water	51	0.01	100	0.51	0.80	0.00	0.75	0.00	1.00	0.01
Parks and Open Space	B	9,882	0.99	69	68.18					0.25	0.25
Parks and Open Space	Water	1,267	0.13	100	12.67					1.00	0.13
Residential	B	536,010	53.60	85	4556.08	0.52	27.87	0.25	13.40	0.65	34.84
Residential	C	230,969	23.10	90	2078.72	0.52	12.01	0.25	5.77	0.65	15.01
Residential	D	512,349	51.23	92	4713.61	0.52	26.64	0.25	12.81	0.65	33.30
Residential	Water	204,767	20.48	100	2047.67	0.52	10.65	0.25	5.12	1.00	20.48
Roads	B	33,063	3.31	98	324.02					0.95	3.14
Roads	C	20,304	2.03	98	198.97					0.95	1.93
Roads	D	20,145	2.01	98	197.42					0.95	1.91
Roads	Water	5,355	0.54	98	52.48					1.00	0.54
			158.15 Ha		**14306**		77.18		37.11		111.8
						Avg T_{Imp}	***0.49***	***Avg X_{Imp}***	***0.23***	***Avg C***	***0.71***

Weighted CN (II)	***90***
CN (AMC III)	***96***

Subcatchment 13 - Future Land Use

Landuse	HSG	Area		CN	CN * Area	T_{Imp}	T_{Imp} * Area	X_{Imp}	X_{Imp} * Area	C	C * Area
		(m^2)	(Ha)								
Agricultural	B	334,919	33.49	75	2511.89					0.35	11.72
Agricultural	C	862,542	86.25	82	7072.85					0.35	30.19
Agricultural	D	16,686	1.67	85	141.83					0.55	0.92
Residential	B	70,504	7.05	85	599.28	0.52	3.67	0.25	1.76	0.65	4.58
Residential	C	47,527	4.75	90	427.75	0.52	2.47	0.25	1.19	0.65	3.09
Roads	B	11,165	1.12	98	109.41					0.95	1.06
Roads	C	36,403	3.64	98	356.75					0.95	3.46
			137.97 Ha		11220		6.14		2.95		55.0
						Avg T_{Imp}	0.04	Avg X_{Imp}	0.02	Avg C	0.40

Weighted CN (II)	81
CN (AMC III)	91

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Subcatchment 14 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	T_{imp}	T_{imp} * Area	X_{imp}	X_{imp} * Area	C	C * Area
Agricultural	C	16	0.00	82	0.13					0.35	0.00
Residential	C	176,809	17.68	90	1591.28	0.52	9.19	0.25	4.42	0.65	11.49
Residential	Water	1,655	0.17	100	16.55	0.52	0.09	0.25	0.04	1.00	0.17
Roads	C	60,193	6.02	98	589.89					0.95	5.72
Roads	Water	2,891	0.29	98	28.33					1.00	0.29
			24.16 Ha		2226		9.28		4.46		17.7
						Avg T_{imp}	*0.38*	*Avg X_{imp}*	*0.18*	*Avg C*	*0.73*

Weighted CN (II)	*92*
CN (AMC III)	*97*

Subcatchment 15 - Future Land Use

Landuse	HSG	Area (m^2)	Area (Ha)	CN	CN * Area	T_{imp}	T_{imp} * Area	X_{imp}	X_{imp} * Area	C	C * Area
Parks and Open Space	B	436.58	0.04	69	3.01					0.25	0.01
Parks and Open Space	C	12534.71	1.25	79	99.02					0.25	0.31
Residential	B	9109.74	0.91	85	77.43	0.52	0.47	0.25	0.23	0.65	0.59
Residential	C	95316.65	9.53	90	857.85	0.52	4.96	0.25	2.38	0.65	6.20
Residential	Water	100588.93	10.06	100	1005.89	0.52	5.23	0.25	2.51	1.00	10.06
Roads	B	1912.55	0.19	98	18.74					0.95	0.18
Roads	C	1889.21	0.19	98	18.51					0.95	0.18
Roads	Water	1724.25	0.17	98	16.90					1.00	0.17

22.35 Ha

2097

Weighted CN (II)	***94***
CN (AMC III)	***98***

10.66

Avg T_{imp} ***0.48***

5.13

Avg X_{imp} ***0.23***

17.7

Avg C ***0.79***

Subcatchment 16 - Future Land Use

Landuse	HSG	Area		CN	CN * Area
		(m^2)	(Ha)		
Agricultural	C	2,053	0.21	82	16.84
Agricultural	Water	1,872	0.19	100	18.72
Residential	C	78,482	7.85	90	706.34
Residential	Water	41,175	4.12	100	411.75
Roads	C	8,324	0.83	98	81.58
Roads	Water	5,252	0.53	98	51.47
			13.72 Ha		**1287**
			Weighted CN (II)		**94**
			CN (AMC III)		**98**

T_{Imp}	T_{Imp} * Area
0.52	0.10
0.52	4.08
	4.18
Avg T_{Imp}	***0.30***

X_{Imp}	X_{Imp} * Area
0.25	0.05
0.25	1.96
	2.01
Avg X_{Imp}	***0.15***

C	C * Area
0.35	0.07
1.00	0.19
0.65	5.10
1.00	4.12
0.95	0.79
1.00	0.53
	10.8
Avg C	***0.79***

Appendix M
Model Output for Future Land Use Conditions

Flow Comparison for 100-year and Regional Storms for Future Conditions

From KRCA PCSWMM Model

Catchment ID	100-year Chicago Storm Q_p (m^3/s)		
	Existing	Future	
1	20.7	24.4	118%
2	6.0	7.9	132%
3	2.6	8.5	335%
4	2.3	4.2	180%
5	15.2	16.8	111%
6	6.3	13.2	209%
7	4.2	18.1	434%
8	3.4	3.9	115%
9	4.7	12.0	253%
10	4.0	5.8	145%
11	8.6	27.8	324%
12	10.4	32.7	313%
13	3.3	4.6	141%
14	4.8	5.7	120%
15	4.7	8.7	185%
16	3.7	5.4	144%

Timmins CN III Q_p (m^3/s)	
Existing	Future
8.2	8.3
4.6	4.7
3.5	4.0
1.7	1.8
25.8	26.0
10.5	11.1
9.2	11.1
4.3	4.3
20.3	24.0
10.6	11.2
24.3	28.8
16.8	19.0
11.3	12.0
2.9	2.9
2.7	2.8
1.7	1.7

Comparing PCSWMM and VO_2 Peaks

Timmins CN (III) Q_p (m^3/s)		
PCSWMM	VO_2	*% Diff*
8.3	8.0	*96%*
4.7	4.7	*99%*
4.0	3.9	*98%*
1.8	1.7	*97%*
26.0	19.7	*76%*
11.1	8.3	*75%*
11.1	11.0	*99%*
4.3	3.4	*79%*
24.0	17.9	*74%*
11.2	8.0	*71%*
28.8	30.9	*107%*
19.0	18.3	*97%*
12.0	8.8	*73%*
2.9	2.9	*98%*
2.8	2.7	*97%*
1.7	1.6	*96%*
	Average =	*90%*
	Max =	*107%*
	Min =	*71%*

Comparing 100-year and Regional Peak Flows for Future Conditions

Aecom (2010) Extran Routed Flows vs KRCA PCSWMM Routed Flow

Node	100-year Flow in m^3/s		
	Aecom Future 6hr SCS Storm	KRCA 12 hr Chicago	
		Existing	Future
Start of System	N/A	19.24	23.01
Commerce Rd culvert	N/A	16.26	19.15
former train track culvert	N/A	15.41	17.78
McLachlin Rd Culvert	N/A	14.11	16.20
Ballfield Culvert	11.8	18.24	22.24
Greenfield Rd culvert	N/A	16.27	19.34
Hwy 7 Culvert	12.8	19.26	26.22
W of Hwy 7 at 90-degree bend in Drain	13.7	17.14	25.05
North of 90-degree bend	25.2	13.12	20.42
between Dew Drop Inn Rd & Hwy 7	25.6	24.78	33.48
D/S of Hwy 7	26	23.77	32.03
North of Hwy 7 past 90-degree bend	24	19.17	24.37
Colborne St Culvert	20.6	12.97	16.71
D/S of Colborne St	19.4	11.58	15.70
D/S of private driveway	21.9	12.92	17.43
U/S of Airport	31	27.24	43.20
D/S of Hwy 35 (near airport)	47.4	27.19	41.24
Angeline St Culvert	55.2	33.93	54.49
D/S of Angeline St	60.4	38.85	61.92
William St culvert	N/A	39.23	62.60

Node	Flow from Timmins Storm in m^3/s		
	Aecom (2010) CN (III)	KRCA CN*(III)	
		Existing	Future
Start of System	N/A	8.22	8.26
Commerce Rd culvert		8.12	8.17
former train track culvert		8.08	8.14
McLachlin Rd Culvert		8.10	8.20
Ballfield Culvert	9.6	12.43	12.70
Greenfield Rd culvert		12.49	12.88
Hwy 7 Culvert	9.8	17.29	18.14
W of Hwy 7 at 90-degree bend in Drain	12.0	17.24	18.09
North of 90-degree bend	14.0	17.11	18.15
between Dew Drop Inn Rd & Hwy 7	28.5	39.13	40.27
D/S of Hwy 7	30.0	37.24	38.27
North of Hwy 7 past 90-degree bend	25.7	29.09	28.98
Colborne St Culvert	30.6	27.85	27.61
D/S of Colborne St	32.7	22.86	24.10
D/S of private driveway	34.3	24.07	24.02
U/S of Airport	39.2	61.08	63.24
D/S of Hwy 35 (near airport)	62.7	60.56	63.16
Angeline St Culvert	78.7	69.33	72.99
D/S of Angeline St	109.0	80.16	84.46
William St culvert	111.0	80.94	85.24

Flow file for HEC-RAS	*Existing*	*Future*	
Start of System	19.24	23.01	*100year*
Commerce Rd culvert	16.26	19.15	*100year*
former train track culvert	15.41	17.78	*100year*
McLachlin Rd Culvert	14.11	16.20	*100year*
Ballfield Culvert	18.24	22.24	*100year*
Greenfield Rd culvert	16.27	19.34	*100year*
Hwy 7 Culvert	19.26	26.22	*100year*
W of Hwy 7 at 90-degree bend in Drain	17.24	25.05	*100year*
North of 90-degree bend	17.11	20.42	*100year*
between Dew Drop Inn Rd & Hwy 7	39.13	40.27	*Timmins*
D/S of Hwy 7	37.24	38.27	*Timmins*
North of Hwy 7 past 90-degree bend	29.09	28.98	*Timmins*
Colborne St Culvert	27.85	27.61	*Timmins*
D/S of Colborne St	22.86	24.10	*Timmins*
D/S of private driveway	24.07	24.02	*Timmins*
U/S of Airport	61.08	63.24	*Timmins*
D/S of Hwy 35 (near airport)	60.56	63.16	*Timmins*
Angeline St Culvert	69.33	72.99	*Timmins*
D/S of Angeline St	80.16	84.46	*Timmins*
William St culvert	80.94	85.24	*Timmins*

Comparing 100-year and Regional Peak Flows for Future Conditions

Using VO2 hydrographs routed in PCSWMM

Node	100-year Flow in m^3/s		
	Aecom Future 6hr SCS Storm	KRCA 12 hr Chicago	
		Existing	Future
Start of System	N/A	17.33	22.19
Commerce Rd culvert	N/A	14.34	15.82
former train track culvert	N/A	13.50	14.47
McLachlin Rd Culvert	N/A	13.12	14.16
Ballfield Culvert	11.8	19.92	22.52
Greenfield Rd culvert	N/A	18.21	20.94
Hwy 7 Culvert	12.8	19.12	27.55
W of Hwy 7 at 90-degree bend in Drain	13.7	19.01	26.28
North of 90-degree bend	25.2	11.48	19.51
between Dew Drop Inn Rd & Hwy 7	25.6	21.36	31.27
D/S of Hwy 7	26.0	20.42	29.30
North of Hwy 7 past 90-degree bend	24.0	16.71	21.82
Colborne St Culvert	20.6	15.38	20.83
D/S of Colborne St	19.4	11.58	17.20
D/S of private driveway	21.9	13.28	16.57
U/S of Airport	31.0	27.73	41.54
D/S of Hwy 35 (near airport)	47.4	27.72	40.55
Angeline St Culvert	55.2	31.87	60.16
D/S of Angeline St	60.4	35.44	64.31
William St culvert	N/A	35.58	65.18

Node	Flow from Timmins Storm in m^3/s		
	Aecom (2010) CN (III)	KRCA CN*(III)	
		Existing	Future
Start of System	N/A	7.86	7.92
Commerce Rd culvert		7.74	7.77
former train track culvert		7.69	7.72
McLachlin Rd Culvert		7.67	7.79
Ballfield Culvert	9.6	12.07	12.21
Greenfield Rd culvert		11.82	15.88
Hwy 7 Culvert	9.8	15.41	21.21
W of Hwy 7 at 90-degree bend in Drain	12.0	15.39	38.45
North of 90-degree bend	14.0	13.67	36.38
between Dew Drop Inn Rd & Hwy 7	28.5	32.34	54.09
D/S of Hwy 7	30.0	31.36	50.32
North of Hwy 7 past 90-degree bend	25.7	26.93	31.70
Colborne St Culvert	30.6	29.12	36.85
D/S of Colborne St	32.7	22.79	36.83
D/S of private driveway	34.3	24.08	24.39
U/S of Airport	39.2	60.33	61.37
D/S of Hwy 35 (near airport)	62.7	58.62	61.01
Angeline St Culvert	78.7	67.06	69.49
D/S of Angeline St	109	76.74	80.90
William St culvert	111	77.25	81.68

Flow file for HEC-RAS	*Existing*	*Future*	
Start of System	17.33	22.19	*100year*
Commerce Rd culvert	14.34	15.82	*100year*
former train track culvert	13.50	14.47	*100year*
McLachlin Rd Culvert	13.12	14.16	*100year*
Ballfield Culvert	19.92	22.52	*100year*
Greenfield Rd culvert	18.21	20.94	*100year*
Hwy 7 Culvert	19.12	27.55	*100year*
W of Hwy 7 at 90-degree bend in Drain	19.01	38.45	*Timmins*
North of 90-degree bend	13.67	36.38	*Timmins*
between Dew Drop Inn Rd & Hwy 7	32.34	54.09	*Timmins*
D/S of Hwy 7	31.36	50.32	*Timmins*
North of Hwy 7 past 90-degree bend	26.93	31.70	*Timmins*
Colborne St Culvert	29.12	36.85	*Timmins*
D/S of Colborne St	22.79	36.83	*Timmins*
D/S of private driveway	24.08	24.39	*Timmins*
U/S of Airport	60.33	61.37	*Timmins*
D/S of Hwy 35 (near airport)	58.62	61.01	*Timmins*
Angeline St Culvert	67.06	69.49	*Timmins*
D/S of Angeline St	76.74	80.90	*Timmins*
William St culvert	77.25	81.68	*Timmins*

Node	100-year Flow in m^3/s			
	Aecom Future 6hr SCS Storm	KRCA 12 hr Chicago		
		PCSWMM	VO_2	
Start of System	N/A	23.01	22.19	96%
Commerce Rd culvert	N/A	19.15	15.82	83%
former train track culvert	N/A	17.78	14.47	81%
McLachlin Rd Culvert	N/A	16.20	14.16	87%
Ballfield Culvert	11.8	22.24	22.52	101%
Greenfield Rd culvert	N/A	19.34	20.94	108%
Hwy 7 Culvert	12.8	26.22	27.55	105%
W of Hwy 7 at 90-degree bend in Drain	13.7	25.05	26.28	105%
North of 90-degree bend	25.2	20.42	19.51	96%
between Dew Drop Inn Rd & Hwy 7	25.6	33.48	31.27	93%
D/S of Hwy 7	26.0	32.03	29.30	91%
North of Hwy 7 past 90-degree bend	24.0	24.37	21.82	90%
Colborne St Culvert	20.6	16.71	20.83	125%
D/S of Colborne St	19.4	15.70	17.20	110%
D/S of private driveway	21.9	17.43	16.57	95%
U/S of Airport	31.0	43.20	41.54	96%
D/S of Hwy 35 (near airport)	47.4	41.24	40.55	98%
Angeline St Culvert	55.2	54.49	60.16	110%
D/S of Angeline St	60.4	61.92	64.31	104%
William St culvert	N/A	62.60	65.18	104%
			average =	99%
			max =	125%
			min =	81%

Node	Timmins Flow in m^3/s			
	Aecom Future	KRCA		
		PCSWMM	VO2	
Start of System	N/A	8.26	7.92	96%
Commerce Rd culvert		8.18	7.77	95%
former train track culvert		8.15	7.72	95%
McLachlin Rd Culvert		8.20	7.79	95%
Ballfield Culvert	9.6	12.71	12.21	96%
Greenfield Rd culvert		12.90	15.88	123%
Hwy 7 Culvert	9.8	18.16	21.21	117%
W of Hwy 7 at 90-degree bend in Drain	12	18.10	38.45	212%
North of 90-degree bend	14	18.16	36.38	200%
between Dew Drop Inn Rd & Hwy 7	28.5	40.71	54.09	133%
D/S of Hwy 7	30	38.81	50.32	130%
North of Hwy 7 past 90-degree bend	25.7	32.13	31.70	99%
Colborne St Culvert	30.6	21.23	36.85	174%
D/S of Colborne St	32.7	22.61	36.83	163%
D/S of private driveway	34.3	24.19	24.39	101%
U/S of Airport	39.2	65.18	61.37	94%
D/S of Hwy 35 (near airport)	62.7	63.84	61.01	96%
Angeline St Culvert	78.7	73.44	69.49	95%
D/S of Angeline St	109	85.13	80.90	95%
William St culvert	111	86.00	81.68	95%
			average =	120%
			max =	212%
			min =	94%

PCSWMM MODEL OUTPUT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)

Base model (JenningsCreek 2013 UpdatedWorking)
Timmins Storm
for future land use conditions

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units .... CMS
Process Models:
  Rainfall/Runoff .... YES
  Snowmelt .... NO
  Groundwater .... NO
  Flow Routing .... YES
  Ponding Allowed .... NO
  Water Quality .... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Starting Date JAN-01-2013 00:00:00
Ending Date JAN-02-2013 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:00:10
Wet Time Step 00:00:10
Dry Time Step 00:00:10
Routing Time Step .... 5.00 sec

WARNING 03: negative offset ignored for Link CJ4384.664

WARNING 03: negative offset ignored for Link CJ5704.059

WARNING 02: maximum depth increased for Node J114

WARNING 02: maximum depth increased for Node J154.6483

WARNING 02: maximum depth increased for Node J168.8194

WARNING 02: maximum depth increased for Node J236.8376

WARNING 02: maximum depth increased for Node J411.8737

WARNING 02: maximum depth increased for Node J625.0873

WARNING 02: maximum depth increased for Node J718.5652

WARNING 02: maximum depth increased for Node J818.7001

WARNING 02: maximum depth increased for Node J927.3901

WARNING 02: maximum depth increased for Node J1021.897

WARNING 02: maximum depth increased for Node J1177.635

WARNING 02: maximum depth increased for Node J1386.646

WARNING 02: maximum depth increased for Node J1549.464

WARNING 02: maximum depth increased for Node J1662.759

WARNING 02: maximum depth increased for Node J1920.857

WARNING 02: maximum depth increased for Node J2156.937

WARNING 02: maximum depth increased for Node J2618.286

WARNING 02: maximum depth increased for Node J2707.776

WARNING 02: maximum depth increased for Node J2922.176

WARNING 02: maximum depth increased for Node J2986.996

WARNING 02: maximum depth increased for Node J3000.11

WARNING 02: maximum depth increased for Node J3380.367

WARNING 02: maximum depth increased for Node J3509.864

WARNING 02: maximum depth increased for Node J3734.707

WARNING 02: maximum depth increased for Node J3762.625

WARNING 02: maximum depth increased for Node J3775.164

WARNING 02: maximum depth increased for Node J3804.186

WARNING 02: maximum depth increased for Node J3957.179

WARNING 02: maximum depth increased for Node J4108.305

WARNING 02: maximum depth increased for Node J4263.057

WARNING 02: maximum depth increased for Node J4356.489

WARNING 02: maximum depth increased for Node J4405.269

WARNING 02: maximum depth increased for Node J4546.604

WARNING 02: maximum depth increased for Node J4692.952

WARNING 02: maximum depth increased for Node J4826.403

WARNING 02: maximum depth increased for Node J4968.21

WARNING 02: maximum depth increased for Node J5103.876

WARNING 02: maximum depth increased for Node J5276.091

WARNING 02: maximum depth increased for Node J5310.141

WARNING 02: maximum depth increased for Node J5374.119

WARNING 02: maximum depth increased for Node J5465.266

WARNING 02: maximum depth increased for Node J5595.644

WARNING 02: maximum depth increased for Node J5665.793

WARNING 02: maximum depth increased for Node J5704.059

WARNING 02: maximum depth increased for Node J5975.085

WARNING 02: maximum depth increased for Node J6062.64

WARNING 02: maximum depth increased for Node J6116.845

WARNING 02: maximum depth increased for Node J6190.578

WARNING 02: maximum depth increased for Node J6335.876

WARNING 02: maximum depth increased for Node J6410.625

WARNING 02: maximum depth increased for Node J6486.756

WARNING 02: maximum depth increased for Node J6564.455

WARNING 02: maximum depth increased for Node J6676.99

WARNING 02: maximum depth increased for Node J6757.544

WARNING 02: maximum depth increased for Node J6917.282

WARNING 02: maximum depth increased for Node J7071.306

WARNING 02: maximum depth increased for Node J7083.163

WARNING 02: maximum depth increased for Node J7111.02

WARNING 02: maximum depth increased for Node J7127.958

WARNING 02: maximum depth increased for Node J7246.49

WARNING 02: maximum depth increased for Node J7333.219

WARNING 02: maximum depth increased for Node J7390.724

WARNING 02: maximum depth increased for Node J7510.949

WARNING 02: maximum depth increased for Node J7560.665

WARNING 02: maximum depth increased for Node J7604.08

WARNING 02: maximum depth increased for Node J7641.424

****
Element Count
****
Number of rain gages 6
Number of subcatchments ... 16
Number of nodes 88
Number of links 87
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Timmins	Timmins_Storm_(Northern_Ontario)	CUMULATIVE	60 min.
Chicago(4hr)	Chicago_4hr	INTENSITY	10 min.
Raingage2	100yrSCS12h	INTENSITY	10 min.
Raingage3	100yr6hSCS	INTENSITY	10 min.
Chicago_6hr	Chicago_6hr	INTENSITY	5 min.
Chicago_12hr_100yr	Chicago_12hr_100yr	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
Node_04	14.57	286.97	42.00	1.0000	Timmins	J6757.544
Node_05	249.97	2473.02	4.00	0.4000	Timmins	J5653.55
Node_06	93.47	1771.33	10.00	0.7000	Timmins	J4405.269
Node_07	93.57	895.11	50.00	0.4000	Timmins	J3775.164
Node_08	37.04	682.59	2.00	0.8000	Timmins	J3621.185

Node_09	288.73	1431.92	3.00	0.3000	Timmins	J3187.848
Node_10	122.31	730.81	3.00	0.4000	Timmins	J3187.848
Node_11	279.15	1505.59	24.00	0.5000	Timmins	J3187.848
Node_12	158.16	1887.53	49.00	0.4000	Timmins	J1455.968
Node_14	24.16	319.96	38.00	0.7100	Timmins	J517.84
Node_15	22.35	618.12	48.00	1.5000	Timmins	J517.84
Node_16	13.72	659.74	30.00	1.2000	Timmins	J154.6483
Node_13	137.98	790.66	4.00	0.4000	Timmins	J517.84
Node_02	39.68	276.04	58.00	0.7100	Timmins	J7111.02
Node_03	32.76	373.03	77.00	0.7000	Timmins	J6857.851
Node_01	67.17	1952.69	74.00	0.7700	Timmins	J7641.424

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J114	JUNCTION	247.71	11.83	0.0	
J154.6483	JUNCTION	248.22	11.95	0.0	
J168.8194	JUNCTION	248.62	11.95	0.0	
J236.8376	JUNCTION	248.93	11.20	0.0	
J273.7271	JUNCTION	249.05	10.95	0.0	
J367.2808	JUNCTION	249.58	10.42	0.0	
J411.8737	JUNCTION	250.01	9.99	0.0	
J463.252	JUNCTION	250.35	9.65	0.0	
J517.84	JUNCTION	250.50	9.50	0.0	
J625.0873	JUNCTION	251.08	8.67	0.0	
J718.5652	JUNCTION	251.58	8.67	0.0	
J818.7001	JUNCTION	252.60	9.47	0.0	
J927.3901	JUNCTION	253.88	10.48	0.0	
J1021.897	JUNCTION	254.38	11.39	0.0	
J1177.635	JUNCTION	255.79	11.39	0.0	
J1276.628	JUNCTION	257.49	10.83	0.0	
J1386.646	JUNCTION	259.57	9.30	0.0	
J1455.968	JUNCTION	259.78	9.30	0.0	
J1549.464	JUNCTION	261.09	12.35	0.0	
J1662.759	JUNCTION	261.13	14.24	0.0	
J1779.22	JUNCTION	261.20	14.24	0.0	
J1920.857	JUNCTION	261.27	14.01	0.0	
J2059.866	JUNCTION	261.50	12.76	0.0	
J2156.937	JUNCTION	261.80	10.86	0.0	
J2277.683	JUNCTION	262.18	8.28	0.0	
J2406.341	JUNCTION	262.29	6.99	0.0	
J2509.792	JUNCTION	262.41	6.04	0.0	
J2618.286	JUNCTION	262.96	5.42	0.0	
J2707.776	JUNCTION	263.11	5.00	0.0	
J2810.224	JUNCTION	262.82	5.00	0.0	
J2922.176	JUNCTION	263.19	4.02	0.0	
J2986.996	JUNCTION	263.13	5.20	0.0	
J3000.11	JUNCTION	263.11	6.11	0.0	
J3046.813	JUNCTION	263.21	6.79	0.0	
J3187.848	JUNCTION	263.35	4.82	0.0	
J3200.809	JUNCTION	263.39	4.72	0.0	
J3358.095	JUNCTION	263.53	4.62	0.0	
J3380.367	JUNCTION	263.72	5.56	0.0	
J3509.864	JUNCTION	263.64	7.31	0.0	
J3621.185	JUNCTION	263.81	7.89	0.0	
J3734.707	JUNCTION	263.93	5.27	0.0	
J3762.625	JUNCTION	264.15	5.40	0.0	
J3775.164	JUNCTION	264.05	5.40	0.0	
J3804.186	JUNCTION	264.17	5.26	0.0	
J3957.179	JUNCTION	264.33	5.15	0.0	
J4108.305	JUNCTION	264.43	4.56	0.0	
J4263.057	JUNCTION	264.65	5.56	0.0	
J4356.489	JUNCTION	264.60	5.56	0.0	
J4405.269	JUNCTION	264.59	3.81	0.0	
J4546.604	JUNCTION	264.88	3.81	0.0	
J4692.952	JUNCTION	264.87	9.01	0.0	
J4826.403	JUNCTION	265.24	9.01	0.0	
J4968.21	JUNCTION	265.42	3.73	0.0	
J5103.876	JUNCTION	265.36	5.49	0.0	
J5276.091	JUNCTION	265.66	5.49	0.0	
J5310.141	JUNCTION	265.76	5.92	0.0	
J5374.119	JUNCTION	265.69	7.74	0.0	
J5465.266	JUNCTION	265.65	7.74	0.0	
J5595.644	JUNCTION	265.69	4.03	0.0	
J5653.55	JUNCTION	265.81	4.04	0.0	
J5665.793	JUNCTION	265.95	4.09	0.0	
J5704.059	JUNCTION	265.84	4.46	0.0	
J5880.376	JUNCTION	265.91	4.46	0.0	
J5975.085	JUNCTION	266.03	4.35	0.0	
J6062.64	JUNCTION	266.13	3.88	0.0	
J6084.086	JUNCTION	266.10	3.43	0.0	
J6116.845	JUNCTION	266.17	3.28	0.0	
J6190.578	JUNCTION	266.39	3.55	0.0	
J6335.876	JUNCTION	266.57	3.55	0.0	
J6410.625	JUNCTION	266.74	3.83	0.0	
J6486.756	JUNCTION	266.91	3.88	0.0	
J6564.455	JUNCTION	266.86	4.08	0.0	
J6676.99	JUNCTION	267.12	4.95	0.0	
J6757.544	JUNCTION	267.21	7.60	0.0	
J6857.851	JUNCTION	267.32	7.68	0.0	
J6917.282	JUNCTION	267.41	7.91	0.0	
J7071.306	JUNCTION	267.09	7.91	0.0	
J7083.163	JUNCTION	267.82	7.20	0.0	
J7111.02	JUNCTION	267.84	7.20	0.0	
J7127.958	JUNCTION	267.86	7.14	0.0	
J7246.49	JUNCTION	267.94	7.06	0.0	
J7333.219	JUNCTION	268.13	6.98	0.0	
J7390.724	JUNCTION	268.32	6.68	0.0	
J7510.949	JUNCTION	268.34	6.66	0.0	
J7560.665	JUNCTION	268.62	6.38	0.0	
J7604.08	JUNCTION	268.68	6.32	0.0	
J7641.424	JUNCTION	268.91	6.09	0.0	
OF1	OUTFALL	247.39	5.32	0.0	

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
CJ96.54452	J114	OF1	CONDUIT	115.0	0.2809	0.0350
CJ154.6483	J154.6483	J114	CONDUIT	35.1	1.4523	0.0350
CJ168.8194	J168.8194	J154.6483	CONDUIT	16.0	2.4820	0.0350
CJ228	J236.8376	J168.8194	CONDUIT	67.9	0.4568	0.0350
CJ273.7271	J273.7271	J236.8376	CONDUIT	36.9	0.3253	0.0350
CJ367.2808	J367.2808	J273.7271	CONDUIT	93.6	0.5665	0.0350
CJ411.8737	J411.8737	J367.2808	CONDUIT	44.6	0.9644	0.0350
CJ463.252	J463.252	J411.8737	CONDUIT	51.4	0.6618	0.0350
CJ517.84	J517.84	J463.252	CONDUIT	54.6	0.2748	0.0350
CJ625.0873	J625.0873	J517.84	CONDUIT	107.3	0.5408	0.0350
CJ718.5652	J718.5652	J625.0873	CONDUIT	93.5	0.5349	0.0350
CJ818.7001	J818.7001	J718.5652	CONDUIT	100.1	1.0186	0.0350
CJ927.3901	J927.3901	J818.7001	CONDUIT	108.7	1.1777	0.0930
CJ1021.897	J1021.897	J927.3901	CONDUIT	94.5	0.5291	0.0350
CJ1177.635	J1177.635	J1021.897	CONDUIT	155.8	0.9053	0.0350
CJ1276.628	J1276.628	J1177.635	CONDUIT	99.0	1.7176	0.0350
CJ1386.646	J1386.646	J1276.628	CONDUIT	110.0	1.8911	0.0350
CJ1455.968	J1455.968	J1386.646	CONDUIT	69.3	0.3029	0.0350
CJ1549.464	J1549.464	J1455.968	CONDUIT	93.5	1.4012	0.0350
CJ1662.759	J1662.759	J1549.464	CONDUIT	113.3	0.0353	0.0350
CJ1779.22	J1779.22	J1662.759	CONDUIT	116.5	0.0601	0.0350
CJ1920.857	J1920.857	J1779.22	CONDUIT	141.6	0.0494	0.0350
CJ2059.866	J2059.866	J1920.857	CONDUIT	139.0	0.1655	0.0350
CJ2156.937	J2156.937	J2059.866	CONDUIT	97.1	0.3091	0.0350
CJ2277.683	J2277.683	J2156.937	CONDUIT	120.8	0.3147	0.0350
CJ2406.341	J2406.341	J2277.683	CONDUIT	128.7	0.0855	0.0350
CJ2509.792	J2509.792	J2406.341	CONDUIT	103.4	0.1160	0.0350
CJ2618.286	J2618.286	J2509.792	CONDUIT	108.5	0.5069	0.0350
CJ2707.776	J2707.776	J2618.286	CONDUIT	89.5	0.1676	0.0350
CJ2810.224	J2707.776	J2810.224	CONDUIT	102.5	0.2830	0.0350
CJ2922.176	J2922.176	J2810.224	CONDUIT	112.0	0.3305	0.0350
CJ2986.996	J2922.176	J2986.996	CONDUIT	64.8	0.0926	0.0350
CJ3000.11	J2986.996	J3000.11	CONDUIT	13.1	0.1524	0.0350
CJ3046.813	J3046.813	J3000.11	CONDUIT	46.2	0.1082	0.0350
CJ3187.848	J3187.848	J3046.813	CONDUIT	141.0	0.0993	0.0350
CJ3200.809	J3200.809	J3187.848	CONDUIT	13.0	0.3318	0.0350
CJ3358.095	J3358.095	J3200.809	CONDUIT	157.3	0.0871	0.0350
CJ3380.367	J3380.367	J3358.095	CONDUIT	22.3	0.8532	0.0350
CJ3509.864	J3380.367	J3509.864	CONDUIT	129.5	0.0618	0.0350
CJ3613.455	J3621.185	J3509.864	CONDUIT	111.3	0.1527	0.0350
CJ3734.707	J3734.707	J3621.185	CONDUIT	111.9	0.1073	0.0350
CJ3762.625	J3762.625	J3734.707	CONDUIT	27.9	0.7880	0.0350
CJ3775.164	J3762.625	J3775.164	CONDUIT	12.5	0.7975	0.0350

CJ3804.186	J3804.186	J3775.164	CONDUIT	29.0	0.4135	0.0350
CJ3957.179	J3957.179	J3804.186	CONDUIT	153.0	0.1046	0.0350
CJ4108.305	J4108.305	J3957.179	CONDUIT	151.1	0.0662	0.0350
CJ4263.057	J4263.057	J4108.305	CONDUIT	154.8	0.1422	0.0350
CJ4347.811	J4263.057	J4356.489	CONDUIT	93.4	0.0557	0.0350
CJ4384.664	J4356.489	J4405.269	CONDUIT	48.8	0.0164	0.0350
CJ4546.604	J4546.604	J4405.269	CONDUIT	141.3	0.2052	0.0350
CJ4692.952	J4546.604	J4692.952	CONDUIT	146.3	0.0068	0.0350
CJ4826.403	J4826.403	J4692.952	CONDUIT	133.5	0.2772	0.0350
CJ4968.21	J4968.21	J4826.403	CONDUIT	141.8	0.1269	0.0350
CJ5103.876	J4968.21	J5103.876	CONDUIT	135.7	0.0442	0.0350
CJ5276.091	J5276.091	J5103.876	CONDUIT	172.4	0.1717	0.0350
CJ5310.141	J5310.141	J5276.091	CONDUIT	35.3	0.2950	0.0350
CJ5374.119	J5310.141	J5374.119	CONDUIT	62.6	0.1118	0.0350
CJ5465.266	J5374.119	J5465.266	CONDUIT	91.1	0.0439	0.0350
CJ5595.644	J5595.644	J5465.266	CONDUIT	130.4	0.0291	0.0350
CJ5653.55	J5653.55	J5595.644	CONDUIT	57.9	0.2020	0.0350
CJ5665.793	J5665.793	J5653.55	CONDUIT	12.2	1.1766	0.0350
CJ5704.059	J5665.793	J5704.059	CONDUIT	38.3	0.2927	0.0350
CJ5880.376	J5880.376	J5704.059	CONDUIT	176.3	0.0414	0.0350
CJ5975.085	J5975.085	J5880.376	CONDUIT	94.7	0.1267	0.0350
CJ6062.64	J6062.64	J5975.085	CONDUIT	87.6	0.1142	0.0350
CJ6084.086	J6062.64	J6084.086	CONDUIT	21.4	0.1399	0.0350
CJ6116.845	J6116.845	J6084.086	CONDUIT	32.8	0.2137	0.0350
CJ6190.578	J6190.578	J6116.845	CONDUIT	73.7	0.2984	0.0350
CJ6335.876	J6335.876	J6190.578	CONDUIT	145.3	0.1239	0.0350
CJ6410.625	J6410.625	J6335.876	CONDUIT	74.8	0.2274	0.0350
CJ6486.756	J6486.756	J6410.625	CONDUIT	76.1	0.2233	0.0350
CJ6564.455	J6486.756	J6564.455	CONDUIT	77.7	0.0644	0.0350
CJ6669.684	J6676.99	J6564.455	CONDUIT	112.5	0.2311	0.0350
CJ6757.544	J6757.544	J6676.99	CONDUIT	80.5	0.0037	0.0350
CJ6821.096	J6857.851	J6757.544	CONDUIT	100.3	0.1116	0.0400
CJ6917.282	J6917.282	J6857.851	CONDUIT	59.5	0.1514	0.0350
CJ7071.306	J6917.282	J7071.306	CONDUIT	154.0	0.2077	0.0400
CJ7083.163	J7083.163	J7071.306	CONDUIT	11.8	6.1721	0.0400
CJ7111.02	J7111.02	J7083.163	CONDUIT	27.9	0.0718	0.0400
CJ7127.958	J7127.958	J7111.02	CONDUIT	16.9	0.1181	0.0400
CJ7246.49	J7246.49	J7127.958	CONDUIT	118.5	0.0675	0.0400
CJ7306.937	J7333.219	J7246.49	CONDUIT	86.8	0.2190	0.0400
CJ7390.724	J7390.724	J7333.219	CONDUIT	57.5	0.3304	0.0400
CJ7510.949	J7510.949	J7390.724	CONDUIT	120.2	0.0166	0.0400
CJ7560.665	J7560.665	J7510.949	CONDUIT	49.7	0.5632	0.0400
CJ7604.08	J7604.08	J7560.665	CONDUIT	43.4	0.1382	0.0400
CJ7641.424	J7641.424	J7604.08	CONDUIT	37.3	0.6160	0.0400

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
CJ96.54452	96.54452	5.32	118.27	0.83	59.55	1	158.18
CJ154.6483	154.6483	11.83	1587.67	1.51	302.50	1	7208.58
CJ168.8194	168.8194	11.95	1588.34	5.23	288.70	1	21550.21
CJ228	228	11.20	1494.71	2.32	235.50	1	5053.56
CJ273.7271	273.7271	10.95	1330.65	4.40	234.90	1	5821.99
CJ367.2808	367.2808	10.42	1631.93	3.88	298.10	1	8662.55
CJ411.8737	411.8737	9.99	1376.68	3.45	255.70	1	8813.11
CJ463.252	463.252	9.65	1655.29	3.70	292.10	1	9206.16
CJ517.84	517.84	9.50	2083.55	4.07	326.70	1	7953.35
CJ625.0873	625.0873	6.82	736.27	1.26	214.06	1	1801.52
CJ718.5652	718.5652	8.67	1109.93	1.13	227.46	1	2520.07
CJ818.7001	818.7001	8.07	921.01	1.34	184.40	1	3227.24
CJ927.3901	927.3901	9.47	514.17	5.70	102.22	1	1915.41
CJ1021.897	1021.897	10.48	428.71	1.57	72.43	1	1201.42
CJ1177.635	1177.635	11.39	1665.70	2.40	582.65	1	8111.42
CJ1276.628	1276.628	10.83	1608.44	1.97	585.30	1	9451.46
CJ1386.646	1386.646	8.86	807.23	1.66	290.49	1	4440.34
CJ1455.968	1455.968	9.30	886.01	2.30	333.24	1	2425.72
CJ1549.464	1549.464	8.87	791.05	2.98	262.40	1	5545.81
CJ1662.759	1662.759	12.35	970.56	4.32	222.72	1	1381.82
CJ1779.22	1779.22	14.24	1204.84	3.90	205.41	1	2092.96
CJ1920.857	1920.857	14.01	1563.72	3.86	239.62	1	2444.26
CJ2059.866	2059.866	12.76	1407.11	3.06	230.77	1	3450.93
CJ2156.937	2156.937	10.86	1103.29	2.58	250.76	1	3294.05
CJ2277.683	2277.683	8.28	523.38	2.62	181.59	1	1594.61
CJ2406.341	2406.341	6.99	676.88	1.89	354.30	1	863.19
CJ2509.792	2509.792	6.04	577.28	1.64	348.50	1	780.06
CJ2618.286	2618.286	5.42	502.07	1.32	375.75	1	1230.18
CJ2707.776	2707.776	4.64	199.06	1.26	155.40	1	272.30
CJ2810.224	2810.224	5.00	301.46	0.76	391.07	1	383.23
CJ2922.176	2922.176	3.73	120.66	0.44	278.28	1	114.33
CJ2986.996	2986.996	4.02	264.44	0.75	349.30	1	189.61
CJ3000.11	3000.11	5.20	777.77	1.50	512.40	1	1137.12
CJ3046.813	3046.813	6.06	735.17	4.84	211.00	1	1976.17
CJ3187.848	3187.848	4.82	537.22	0.99	538.60	1	479.82
CJ3200.809	3200.809	4.72	801.36	1.03	773.64	1	1344.46
CJ3358.095	3358.095	4.62	1024.82	1.75	832.42	1	1257.25
CJ3380.367	3380.367	4.04	572.14	1.27	633.09	1	1767.29
CJ3509.864	3509.864	5.56	939.87	2.79	684.40	1	1324.38
CJ3613.455	3613.455	7.31	1266.77	3.58	350.30	1	3308.25
CJ3734.707	3734.707	2.66	16.96	1.06	13.41	1	16.55
CJ3762.625	3762.625	5.27	786.12	2.57	301.80	1	3745.88
CJ3775.164	3775.164	5.40	749.04	2.54	291.80	1	3556.31
CJ3804.186	3804.186	5.26	635.59	2.40	261.40	1	2094.83
CJ3957.179	3957.179	5.15	577.25	2.25	254.35	1	915.90
CJ4108.305	4108.305	4.29	567.62	0.52	298.54	1	269.56
CJ4263.057	4263.057	4.56	950.88	0.58	412.00	1	709.80
CJ4347.811	4347.811	5.56	1592.48	0.80	497.00	1	927.78
CJ4384.664	4384.664	3.78	668.83	0.36	413.80	1	124.97
CJ4546.604	4546.604	3.81	833.90	0.48	505.80	1	661.65
CJ4692.952	4692.952	3.43	1058.37	0.45	696.00	1	145.80
CJ4826.403	4826.403	9.01	5112.51	4.23	702.80	1	20123.58
CJ4968.21	4968.21	3.34	1004.06	0.65	556.40	1	765.11
CJ5103.876	5103.876	3.73	862.48	0.90	385.00	1	482.43
CJ5276.091	5276.091	5.49	1216.91	2.25	342.90	1	2474.11
CJ5310.141	5310.141	3.38	132.93	0.77	168.59	1	173.43
CJ5374.119	5374.119	5.92	2781.40	3.61	642.10	1	6253.82
CJ5465.266	5465.266	7.74	3797.87	4.69	625.30	1	6375.05

	CJ5595.644	5595.644	2.71	450.25	0.85	523.80
1	197.56					
	CJ5653.55	5653.55	4.03	973.34	2.19	555.47
1	2110.03					
	CJ5665.793	5665.793	3.91	985.99	2.23	554.21
1	5221.50					
	CJ5704.059	5704.059	4.09	1456.98	2.23	651.20
1	3843.29					
	CJ5880.376	5880.376	4.46	1159.46	2.41	478.10
1	1211.58					
	CJ5975.085	5975.085	4.35	891.46	1.80	492.99
1	1339.43					
	CJ6062.64	6062.64	3.88	724.53	1.56	460.88
1	940.44					
	CJ6084.086	6084.086	3.43	594.40	1.23	479.25
1	728.88					
	CJ6116.845	6116.845	3.21	710.65	1.43	493.90
1	1188.95					
	CJ6190.578	6190.578	3.28	299.32	1.06	279.80
1	485.87					
	CJ6335.876	6335.876	3.55	149.69	0.89	165.49
1	139.43					
	CJ6410.625	6410.625	3.50	120.17	0.73	162.55
1	132.58					
	CJ6486.756	6486.756	3.83	155.29	0.88	175.34
1	191.93					
	CJ6564.455	6564.455	3.88	87.55	0.74	118.25
1	52.13					
	CJ6669.684	6669.684	4.08	460.64	1.05	435.44
1	652.13					
	CJ6757.544	6757.544	4.86	412.60	1.56	259.60
1	96.92					
	CJ6821.096	6821.096	7.60	2021.19	5.09	472.50
1	4995.35					
	CJ6917.282	6917.282	5.06	312.85	1.43	215.26
1	441.73					
	CJ7071.306	7071.306	7.91	1542.66	4.21	489.71
1	4580.26					
	CJ7083.163	7083.163	7.18	1567.85	4.04	488.79
1	24697.93					
	CJ7111.02	7111.02	7.20	1857.14	9.67	538.30
1	5645.88					
	CJ7127.958	7127.958	7.14	1947.60	10.33	538.10
1	7939.80					
	CJ7246.49	7246.49	7.06	1118.70	8.07	365.00
1	2924.87					
	CJ7306.937	7306.937	6.98	1020.03	10.84	266.80
1	5845.42					
	CJ7390.724	7390.724	6.68	699.03	4.00	209.50
1	2530.11					
	CJ7510.949	7510.949	6.66	570.49	5.61	481.44
1	581.05					
	CJ7560.665	7560.665	6.38	383.53	5.45	470.67
1	2228.37					
	CJ7604.08	7604.08	6.32	851.97	7.70	455.58
1	3087.01					
	CJ7641.424	7641.424	6.09	1339.01	15.85	314.30
1	16583.49					

****
Transect Summary
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Transect 96.54452
Area:

0.0003	0.0015	0.0044	0.0080	0.0119
0.0160	0.0204	0.0253	0.0317	0.0413
0.0523	0.0634	0.0745	0.0857	0.0971
0.1086	0.1202	0.1320	0.1442	0.1565
0.1690	0.1816	0.1944	0.2074	0.2205
0.2338	0.2473	0.2609	0.2747	0.2887
0.3028	0.3172	0.3317	0.3467	0.3664
0.3979	0.4334	0.4699	0.5073	0.5467
0.5884	0.6310	0.6744	0.7186	0.7633
0.8085	0.8545	0.9011	0.9485	1.0000

Hrad:

0.0609	0.0812	0.1686	0.2721	0.3665
0.4544	0.5351	0.5993	0.6218	0.5920
0.5871	0.6004	0.6228	0.6501	0.6802
0.7120	0.7440	0.7745	0.8058	0.8371
0.8685	0.8999	0.9310	0.9617	0.9918
1.0214	1.0507	1.0795	1.1079	1.1356
1.1629	1.1895	1.2156	1.2405	1.2421
1.1963	1.1500	1.1159	1.0904	1.0644
1.0442	1.0303	1.0207	1.0168	1.0151
1.0152	1.0170	1.0207	1.0242	1.0000

Width:

0.0114	0.0433	0.0627	0.0709	0.0752
0.0796	0.0851	0.1001	0.1546	0.2036
0.2053	0.2070	0.2089	0.2109	0.2130
0.2151	0.2183	0.2242	0.2281	0.2317
0.2348	0.2374	0.2401	0.2430	0.2463
0.2497	0.2528	0.2559	0.2591	0.2626
0.2660	0.2697	0.2734	0.3007	0.4797
0.6522	0.6735	0.6889	0.7064	0.7700
0.7869	0.8019	0.8204	0.8285	0.8384
0.8508	0.8639	0.8770	0.8940	1.0000

Transect 114
Area:

0.0002	0.0010	0.0025	0.0059	0.0127
0.0250	0.0398	0.0578	0.0784	0.0996
0.1209	0.1423	0.1638	0.1853	0.2069
0.2285	0.2502	0.2720	0.2938	0.3157
0.3376	0.3596	0.3817	0.4038	0.4260
0.4482	0.4704	0.4928	0.5151	0.5375
0.5600	0.5825	0.6051	0.6277	0.6504
0.6732	0.6960	0.7189	0.7418	0.7648
0.7879	0.8110	0.8341	0.8574	0.8806
0.9040	0.9276	0.9514	0.9755	1.0000

Hrad:

0.0431	0.0769	0.1121	0.1265	0.1156
0.1057	0.1114	0.1224	0.1357	0.1566
0.1784	0.2007	0.2233	0.2460	0.2688
0.2916	0.3143	0.3369	0.3595	0.3820
0.4044	0.4267	0.4490	0.4712	0.4933
0.5153	0.5372	0.5591	0.5808	0.6024
0.6239	0.6452	0.6665	0.6877	0.7088
0.7298	0.7507	0.7715	0.7921	0.8127
0.8332	0.8536	0.8740	0.8942	0.9141
0.9331	0.9521	0.9705	0.9887	1.0000

Width:

0.0176	0.0424	0.0883	0.1739	0.4092
0.5230	0.6576	0.7667	0.8251	0.8301
0.8347	0.8369	0.8390	0.8411	0.8434
0.8459	0.8485	0.8510	0.8535	0.8560
0.8584	0.8605	0.8624	0.8643	0.8663
0.8682	0.8700	0.8719	0.8738	0.8757
0.8782	0.8806	0.8831	0.8854	0.8875
0.8896	0.8918	0.8943	0.8968	0.8993
0.9015	0.9034	0.9053	0.9073	0.9107
0.9181	0.9245	0.9337	0.9431	1.0000

Transect 121
Area:

0.0006	0.0014	0.0025	0.0038	0.0066
0.0104	0.0165	0.0245	0.0327	0.0412
0.0498	0.0588	0.0681	0.0775	0.0872
0.0970	0.1070	0.1172	0.1276	0.1382
0.1490	0.1601	0.1716	0.1835	0.1969
0.2110	0.2255	0.2405	0.2564	0.2739
0.2932	0.3136	0.3360	0.3604	0.3861
0.4128	0.4412	0.4717	0.5047	0.5421
0.5842	0.6286	0.6742	0.7203	0.7666
0.8130	0.8596	0.9063	0.9531	1.0000

Hrad:

0.1298	0.2314	0.3612	0.4581	0.4287
0.4109	0.3528	0.3405	0.3589	0.3873
0.4188	0.4513	0.4850	0.5203	0.5561
0.5916	0.6244	0.6603	0.6958	0.7308
0.7650	0.7939	0.8272	0.8583	0.8801
0.9034	0.9266	0.9474	0.9624	0.9621
0.9710	0.9810	0.9864	0.9707	0.9581
0.9590	0.8343	0.8286	0.8388	0.8236
0.8350	0.8465	0.8433	0.8614	0.8815
0.9026	0.9259	0.9499	0.9749	1.0000

Width:

0.0152	0.0210	0.0237	0.0409	0.0701
0.0976	0.1618	0.1741	0.1775	0.1813
0.1877	0.1937	0.1990	0.2027	0.2062
0.2100	0.2163	0.2189	0.2224	0.2263
0.2307	0.2410	0.2479	0.2623	0.2946
0.3033	0.3109	0.3265	0.3596	0.3958
0.4200	0.4449	0.5016	0.5321	0.5533
0.5856	0.6290	0.6612	0.7444	0.8497
0.9259	0.9523	0.9768	0.9799	0.9845
0.9882	0.9900	0.9927	0.9946	1.0000

Transect 144.1
Area:

0.0004	0.0009	0.0017	0.0028	0.0043
0.0074	0.0120	0.0169	0.0221	0.0275
0.0330	0.0388	0.0447	0.0507	0.0569
0.0631	0.0697	0.0776	0.0867	0.0964
0.1066	0.1173	0.1286	0.1412	0.1552
0.1708	0.1904	0.2138	0.2406	0.2687
0.3015	0.3361	0.3713	0.4068	0.4427
0.4791	0.5158	0.5525	0.5894	0.6262
0.6632	0.7002	0.7373	0.7744	0.8117
0.8490	0.8864	0.9241	0.9619	1.0000

Hrad:

0.1034	0.1528	0.2317	0.2932	0.3226
0.2757	0.2612	0.2810	0.3100	0.3443
0.3767	0.4128	0.4499	0.4876	0.5249
0.5612	0.5882	0.5842	0.5997	0.6125
0.6267	0.6416	0.6399	0.6373	0.6329
0.5960	0.5771	0.5617	0.5152	0.5347
0.5423	0.5523	0.5656	0.5833	0.6048
0.6163	0.6430	0.6703	0.6984	0.7269
0.7554	0.7845	0.8139	0.8432	0.8719
0.9011	0.9288	0.9562	0.9843	1.0000

Width:

0.0114	0.0173	0.0222	0.0343	0.0526
0.1081	0.1286	0.1333	0.1384	0.1421
0.1481	0.1523	0.1559	0.1596	0.1629
0.1666	0.1860	0.2250	0.2451	0.2617
0.2748	0.2873	0.3065	0.3502	0.3833
0.4607	0.5602	0.6740	0.7162	0.7902
0.8975	0.9148	0.9266	0.9347	0.9492
0.9599	0.9614	0.9641	0.9653	0.9665
0.9693	0.9705	0.9718	0.9736	0.9766
0.9785	0.9843	0.9896	0.9929	1.0000

Transect 154.6483
Area:

0.0004	0.0011	0.0024	0.0046	0.0076
0.0116	0.0159	0.0205	0.0252	0.0301
0.0351	0.0402	0.0454	0.0508	0.0564
0.0622	0.0686	0.0764	0.0859	0.0961
0.1066	0.1174	0.1285	0.1405	0.1540
0.1712	0.1928	0.2178	0.2443	0.2745
0.3089	0.3440	0.3794	0.4149	0.4506
0.4864	0.5222	0.5582	0.5943	0.6306
0.6670	0.7035	0.7400	0.7767	0.8134

0.8502	0.8872	0.9242	0.9614	1.0000

Hrad:

0.1042	0.2196	0.2629	0.2974	0.3146
0.3379	0.3758	0.4219	0.4694	0.5155
0.5636	0.6104	0.6540	0.6996	0.7395
0.7736	0.7760	0.7936	0.7700	0.7892
0.8096	0.8310	0.8533	0.8675	0.8719
0.8231	0.8102	0.7951	0.7850	0.7720
0.7592	0.7582	0.7648	0.7760	0.7917
0.8108	0.8321	0.8544	0.8771	0.9019
0.9275	0.9538	0.9806	1.0077	1.0348
1.0624	1.0905	1.1187	1.1436	1.0000

Width:

0.0136	0.0170	0.0426	0.0531	0.0808
0.0948	0.1003	0.1026	0.1059	0.1100
0.1120	0.1144	0.1182	0.1209	0.1258
0.1316	0.1572	0.1924	0.2217	0.2290
0.2361	0.2431	0.2493	0.2743	0.3565
0.4314	0.5261	0.5714	0.6308	0.7419
0.7733	0.7815	0.7859	0.7905	0.7927
0.7942	0.7956	0.7991	0.8040	0.8062
0.8082	0.8099	0.8117	0.8137	0.8163
0.8182	0.8197	0.8236	0.8305	1.0000

Transect 168.8194

Area:

0.0004	0.0013	0.0030	0.0048	0.0067
0.0088	0.0110	0.0133	0.0157	0.0183
0.0211	0.0240	0.0270	0.0303	0.0344
0.0393	0.0455	0.0526	0.0608	0.0694
0.0786	0.0889	0.1020	0.1180	0.1395
0.1638	0.1899	0.2186	0.2516	0.2851
0.3188	0.3526	0.3865	0.4207	0.4550
0.4894	0.5239	0.5585	0.5933	0.6281
0.6631	0.6982	0.7334	0.7687	0.8041
0.8397	0.8754	0.9134	0.9566	1.0000

Hrad:

0.0353	0.0538	0.0761	0.1066	0.1368
0.1670	0.1970	0.2250	0.2494	0.2672
0.2936	0.3190	0.3377	0.3603	0.3394
0.3469	0.3616	0.3664	0.3764	0.3758
0.3970	0.4159	0.4161	0.3882	0.3928
0.4012	0.4121	0.4248	0.4339	0.4554
0.4809	0.5085	0.5376	0.5680	0.5990
0.6318	0.6644	0.6980	0.7318	0.7651
0.7991	0.8320	0.8666	0.9008	0.9309
0.9652	0.9982	0.9333	0.9667	1.0000

Width:

0.0121	0.0343	0.0402	0.0436	0.0465
0.0491	0.0513	0.0538	0.0572	0.0624
0.0652	0.0681	0.0726	0.0859	0.1069
0.1314	0.1524	0.1799	0.1946	0.2002
0.2231	0.2595	0.3359	0.4456	0.5415
0.5732	0.6298	0.7312	0.7702	0.7734
0.7761	0.7804	0.7847	0.7879	0.7909
0.7928	0.7962	0.7981	0.8002	0.8036
0.8059	0.8099	0.8114	0.8133	0.8188
0.8208	0.8241	0.9928	0.9963	1.0000

Transect 175

Area:

0.0005	0.0010	0.0016	0.0023	0.0030
0.0039	0.0050	0.0061	0.0073	0.0086
0.0099	0.0114	0.0130	0.0148	0.0167
0.0188	0.0216	0.0254	0.0299	0.0350
0.0411	0.0490	0.0587	0.0719	0.0887
0.1119	0.1390	0.1687	0.2013	0.2377
0.2744	0.3112	0.3481	0.3851	0.4223
0.4597	0.4971	0.5347	0.5723	0.6101
0.6480	0.6860	0.7240	0.7621	0.8004
0.8387	0.8772	0.9158	0.9562	1.0000

Hrad:

0.0241	0.0436	0.0601	0.0695	0.0827
0.0856	0.1009	0.1153	0.1286	0.1412
0.1568	0.1711	0.1829	0.1972	0.2125
0.2261	0.1958	0.2072	0.2291	0.2471
0.2631	0.2727	0.2822	0.2804	0.2926
0.2665	0.2920	0.3170	0.3500	0.3806
0.4175	0.4564	0.4960	0.5363	0.5760
0.6163	0.6566	0.6968	0.7369	0.7765
0.8163	0.8561	0.8956	0.9337	0.9725
1.0106	1.0479	1.0850	0.9588	1.0000

Width:

0.0116	0.0126	0.0135	0.0165	0.0184
0.0235	0.0249	0.0262	0.0278	0.0297
0.0325	0.0348	0.0381	0.0415	0.0451
0.0529	0.0760	0.0940	0.1084	0.1261
0.1518	0.2029	0.2445	0.3367	0.4529
0.5871	0.6471	0.7116	0.8154	0.8318
0.8372	0.8396	0.8428	0.8450	0.8495
0.8521	0.8545	0.8569	0.8592	0.8623
0.8641	0.8657	0.8671	0.8706	0.8723
0.8749	0.8782	0.8813	0.9962	1.0000

Transect 220

Area:

0.0005	0.0010	0.0016	0.0026	0.0037
0.0051	0.0069	0.0096	0.0132	0.0173
0.0219	0.0287	0.0367	0.0449	0.0532
0.0617	0.0703	0.0791	0.0879	0.0971
0.1064	0.1166	0.1288	0.1465	0.1678
0.1907	0.2148	0.2400	0.2670	0.2963
0.3270	0.3591	0.3923	0.4262	0.4603
0.4947	0.5292	0.5640	0.5990	0.6343
0.6698	0.7055	0.7416	0.7779	0.8145
0.8515	0.8886	0.9258	0.9629	1.0000

Hrad:

0.0904	0.1636	0.1924	0.2453	0.2822
0.3087	0.3431	0.3431	0.3316	0.3456
0.3614	0.3197	0.3398	0.3675	0.4007
0.4339	0.4703	0.5075	0.5429	0.5768
0.6141	0.6433	0.6534	0.5377	0.5158
0.5193	0.5301	0.5403	0.5532	0.5090
0.5127	0.5355	0.5339	0.5614	0.5895
0.6177	0.6447	0.6728	0.7025	0.7302
0.7572	0.7839	0.8135	0.8387	0.8655
0.8920	0.9264	0.9608	0.9952	1.0000

Width:

0.0124	0.0136	0.0217	0.0282	0.0318
0.0410	0.0496	0.0850	0.0983	0.1097
0.1377	0.1993	0.2058	0.2110	0.2143
0.2187	0.2214	0.2244	0.2288	0.2337
0.2471	0.2788	0.3719	0.5136	0.5670
0.6031	0.6278	0.6552	0.7211	0.7683
0.8059	0.8361	0.8616	0.8668	0.8717
0.8770	0.8842	0.8901	0.8942	0.9008
0.9083	0.9161	0.9216	0.9301	0.9377
0.9457	0.9458	0.9459	0.9460	1.0000

Transect 228

Area:

0.0003	0.0007	0.0013	0.0022	0.0040
0.0063	0.0092	0.0126	0.0167	0.0214
0.0276	0.0349	0.0425	0.0501	0.0580
0.0659	0.0739	0.0821	0.0905	0.0992
0.1094	0.1216	0.1388	0.1598	0.1832
0.2078	0.2331	0.2597	0.2884	0.3179
0.3481	0.3792	0.4109	0.4429	0.4752
0.5079	0.5417	0.5768	0.6120	0.6473
0.6825	0.7178	0.7530	0.7883	0.8236
0.8589	0.8941	0.9294	0.9647	1.0000

Hrad:

0.0646	0.1312	0.1876	0.1689	0.1962
0.2153	0.2345	0.2480	0.2637	0.2832
0.2712	0.2933	0.3200	0.3494	0.3813
0.4144	0.4452	0.4789	0.5112	0.5384
0.5584	0.5194	0.4700	0.4474	0.4278
0.4417	0.4508	0.4546	0.4471	0.4639
0.4876	0.4927	0.5181	0.5434	0.5688
0.5952	0.6082	0.6160	0.6457	0.6775
0.7095	0.7416	0.7737	0.8059	0.8382
0.8705	0.9028	0.9352	0.9676	1.0000

Width:

0.0111	0.0137	0.0182	0.0379	0.0588
0.0735	0.0861	0.1081	0.1253	0.1435
0.2069	0.2102	0.2153	0.2197	0.2232
0.2261	0.2310	0.2337	0.2374	0.2680
0.3134	0.4296	0.5547	0.6250	0.6874
0.7053	0.7344	0.7893	0.8220	0.8444
0.8693	0.8957	0.9032	0.9115	0.9199
0.9381	0.9836	0.9954	0.9988	0.9989
0.9990	0.9991	0.9992	0.9994	0.9995
0.9996	0.9997	0.9998	0.9999	1.0000

Transect 236.8376

Area:

0.0003	0.0008	0.0015	0.0026	0.0040
0.0058	0.0080	0.0108	0.0141	0.0182
0.0234	0.0293	0.0355	0.0419	0.0485
0.0553	0.0622	0.0694	0.0773	0.0864
0.0978	0.1138	0.1346	0.1588	0.1841
0.2101	0.2368	0.2646	0.2934	0.3239
0.3562	0.3893	0.4227	0.4564	0.4903
0.5243	0.5582	0.5922	0.6262	0.6601
0.6941	0.7281	0.7620	0.7960	0.8300
0.8640	0.8980	0.9320	0.9660	1.0000

Hrad:

0.0313	0.0638	0.0849	0.1037	0.1222
0.1367	0.1446	0.1533	0.1467	0.1374
0.1418	0.1636	0.1924	0.2229	0.2510
0.2786	0.3067	0.3295	0.3540	0.3694
0.2935	0.2798	0.2740	0.2302	0.2583
0.2805	0.3019	0.3192	0.3463	0.3448
0.3651	0.3945	0.4254	0.4556	0.4883
0.5227	0.5570	0.5913	0.6256	0.6599
0.6941	0.7282	0.7623	0.7964	0.8304
0.8644	0.8984	0.9323	0.9662	1.0000

Width:

0.0135	0.0169	0.0244	0.0358	0.0474
0.0575	0.0757	0.0863	0.1075	0.1421
0.1714	0.1789	0.1856	0.1901	0.1959
0.2018	0.2070	0.2155	0.2548	0.2827
0.3986	0.5470	0.6809	0.7396	0.7580
0.7715	0.7966	0.8318	0.8712	0.9300
0.9661	0.9790	0.9862	0.9946	0.9981
0.9982	0.9984	0.9985	0.9986	0.9987
0.9989	0.9990	0.9991	0.9992	0.9994
0.9995	0.9996	0.9997	0.9999	1.0000

Transect 240.5027

Area:

0.0007	0.0014	0.0023	0.0033	0.0045
0.0059	0.0077	0.0098	0.0124	0.0158
0.0200	0.0250	0.0307	0.0369	0.0434
0.0503	0.0575	0.0653	0.0755	0.0876
0.1033	0.1238	0.1466	0.1711	0.1977
0.2257	0.2554	0.2858	0.3165	0.3477
0.3792	0.4112	0.4435	0.4760	0.5087
0.5415	0.5742	0.6069	0.6396	0.6724
0.7051	0.7379	0.7706	0.8034	0.8361
0.8689	0.9017	0.9344	0.9672	1.0000

Hrad:

0.0423	0.0792	0.1103	0.1281	0.1598
0.1781	0.1868	0.1963	0.1893	0.1855
0.1846	0.1900	0.2075	0.2307	0.2532
0.2756	0.2981	0.3132	0.3013	0.2876

0.2271	0.2028	0.2267	0.2421	0.2656
0.2837	0.2885	0.3188	0.3485	0.3783
0.4073	0.4358	0.4657	0.4955	0.5287
0.5626	0.5965	0.6303	0.6641	0.6978
0.7315	0.7652	0.7988	0.8324	0.8659
0.8994	0.9328	0.9662	0.9995	1.0000

Width:

0.0209	0.0231	0.0257	0.0328	0.0368
0.0468	0.0577	0.0668	0.0841	0.1108
0.1331	0.1560	0.1724	0.1833	0.1943
0.2046	0.2141	0.2585	0.3325	0.3876
0.5425	0.6420	0.6765	0.7515	0.7899
0.8392	0.8747	0.8857	0.8976	0.9082
0.9204	0.9333	0.9403	0.9472	0.9486
0.9488	0.9489	0.9490	0.9491	0.9493
0.9494	0.9495	0.9496	0.9498	0.9499
0.9500	0.9501	0.9503	0.9504	1.0000

Transect 267

Area:

0.0007	0.0016	0.0026	0.0039	0.0055
0.0075	0.0097	0.0122	0.0151	0.0185
0.0223	0.0264	0.0323	0.0415	0.0534
0.0674	0.0838	0.1005	0.1177	0.1352
0.1532	0.1716	0.1907	0.2106	0.2336
0.2593	0.2865	0.3139	0.3413	0.3688
0.3965	0.4245	0.4530	0.4816	0.5105
0.5400	0.5702	0.6013	0.6337	0.6668
0.7001	0.7333	0.7666	0.7999	0.8332
0.8665	0.8999	0.9332	0.9666	1.0000

Hrad:

0.0410	0.0774	0.1091	0.1356	0.1576
0.1794	0.1996	0.2186	0.2334	0.2493
0.2666	0.2751	0.2690	0.2477	0.2352
0.2236	0.2274	0.2432	0.2602	0.2791
0.3003	0.3237	0.3459	0.3642	0.3688
0.3894	0.4147	0.4422	0.4712	0.5008
0.5309	0.5584	0.5894	0.6212	0.6528
0.6840	0.7142	0.7434	0.7714	0.7996
0.8287	0.8583	0.8883	0.9186	0.9491
0.9797	1.0103	1.0409	1.0715	1.0000

Width:

0.0214	0.0249	0.0303	0.0397	0.0485
0.0558	0.0643	0.0730	0.0850	0.0963
0.1058	0.1248	0.2086	0.2923	0.3439
0.4303	0.4477	0.4572	0.4698	0.4818
0.4887	0.5065	0.5222	0.5637	0.6627
0.7330	0.7373	0.7398	0.7419	0.7461
0.7508	0.7681	0.7708	0.7761	0.7866
0.8005	0.8269	0.8557	0.8855	0.8978
0.8982	0.8987	0.8992	0.8996	0.9001
0.9006	0.9011	0.9015	0.9020	1.0000

Transect 273.7271

Area:

0.0004	0.0010	0.0017	0.0026	0.0039
0.0057	0.0078	0.0102	0.0129	0.0158
0.0191	0.0229	0.0273	0.0335	0.0427
0.0547	0.0687	0.0837	0.0992	0.1155
0.1325	0.1501	0.1682	0.1877	0.2088
0.2328	0.2604	0.2901	0.3202	0.3505
0.3810	0.4116	0.4424	0.4737	0.5053
0.5371	0.5699	0.6029	0.6359	0.6688
0.7019	0.7349	0.7680	0.8010	0.8341
0.8673	0.9004	0.9336	0.9668	1.0000

Hrad:

0.0369	0.0721	0.0997	0.1140	0.1399
0.1675	0.1947	0.2197	0.2460	0.2706
0.2904	0.3058	0.3212	0.3184	0.2817
0.2724	0.2644	0.2731	0.2897	0.3049
0.3219	0.3430	0.3606	0.3800	0.3787
0.3872	0.4040	0.4143	0.4430	0.4731
0.5037	0.5355	0.5656	0.5950	0.6282
0.6612	0.6931	0.7255	0.7582	0.7912
0.8242	0.8573	0.8904	0.9234	0.9564
0.9893	1.0221	1.0548	1.0873	1.0000

Width:

0.0133	0.0163	0.0199	0.0272	0.0426
0.0508	0.0582	0.0663	0.0722	0.0797
0.0902	0.1041	0.1353	0.1861	0.2824
0.3334	0.3728	0.3972	0.4086	0.4278
0.4488	0.4603	0.4900	0.5203	0.5813
0.6719	0.7396	0.7788	0.7819	0.7850
0.7900	0.7923	0.8031	0.8166	0.8169
0.8377	0.8518	0.8524	0.8530	0.8536
0.8542	0.8548	0.8554	0.8560	0.8566
0.8572	0.8577	0.8583	0.8589	1.0000

Transect 367.2808

Area:

0.0003	0.0008	0.0013	0.0025	0.0040
0.0056	0.0074	0.0094	0.0115	0.0138
0.0163	0.0190	0.0220	0.0251	0.0286
0.0325	0.0378	0.0470	0.0606	0.0758
0.0915	0.1076	0.1242	0.1409	0.1581
0.1757	0.1939	0.2140	0.2379	0.2642
0.2927	0.3247	0.3580	0.3939	0.4308
0.4679	0.5056	0.5436	0.5816	0.6196
0.6576	0.6957	0.7337	0.7717	0.8097
0.8478	0.8858	0.9239	0.9619	1.0000

Hrad:

0.0383	0.0763	0.1083	0.1139	0.1469
0.1826	0.2171	0.2487	0.2813	0.3075
0.3330	0.3612	0.3864	0.4083	0.4268
0.4418	0.4247	0.3946	0.3360	0.3251
0.3355	0.3511	0.3717	0.3938	0.4129
0.4317	0.4466	0.4693	0.4248	0.4308
0.4393	0.4389	0.4662	0.4905	0.5170
0.5448	0.5728	0.6030	0.6342	0.6660
0.6984	0.7312	0.7643	0.7976	0.8311
0.8648	0.8985	0.9323	0.9661	1.0000

Width:

0.0105	0.0134	0.0184	0.0358	0.0417
0.0451	0.0488	0.0534	0.0571	0.0635
0.0699	0.0744	0.0800	0.0867	0.0948
0.1152	0.1882	0.3121	0.3820	0.4066
0.4194	0.4291	0.4369	0.4445	0.4569
0.4677	0.4850	0.5935	0.6615	0.7144
0.8028	0.8686	0.8876	0.9671	0.9716
0.9823	0.9979	0.9981	0.9983	0.9984
0.9986	0.9987	0.9989	0.9990	0.9992
0.9994	0.9995	0.9997	0.9998	1.0000

Transect 411.8737

Area:

0.0002	0.0007	0.0014	0.0024	0.0037
0.0052	0.0068	0.0087	0.0109	0.0133
0.0160	0.0189	0.0224	0.0262	0.0303
0.0352	0.0432	0.0564	0.0738	0.0922
0.1110	0.1301	0.1494	0.1691	0.1899
0.2140	0.2388	0.2645	0.2916	0.3207
0.3510	0.3829	0.4169	0.4512	0.4854
0.5197	0.5540	0.5882	0.6225	0.6568
0.6911	0.7254	0.7597	0.7940	0.8283
0.8626	0.8970	0.9313	0.9656	1.0000

Hrad:

0.0309	0.0695	0.1059	0.1370	0.1657
0.1976	0.2284	0.2563	0.2806	0.3094
0.3282	0.3465	0.3611	0.3863	0.4098
0.4201	0.3728	0.3273	0.2956	0.3086
0.3303	0.3548	0.3815	0.4093	0.4295
0.4150	0.4378	0.4559	0.4603	0.4808
0.4997	0.5125	0.5306	0.5613	0.5926
0.6244	0.6565	0.6889	0.7214	0.7541
0.7869	0.8197	0.8526	0.8856	0.9185
0.9515	0.9845	1.0175	1.0504	1.0000

Width:

0.0102	0.0164	0.0234	0.0301	0.0374
0.0424	0.0478	0.0543	0.0617	0.0674
0.0759	0.0860	0.0981	0.1068	0.1160
0.1677	0.3010	0.4100	0.4918	0.5015
0.5099	0.5186	0.5259	0.5330	0.6353
0.6622	0.6804	0.7098	0.7724	0.7993
0.8335	0.9001	0.9227	0.9229	0.9231
0.9233	0.9234	0.9236	0.9238	0.9240
0.9241	0.9243	0.9245	0.9247	0.9249
0.9250	0.9252	0.9254	0.9256	1.0000

Transect 463.252

Area:

0.0002	0.0006	0.0012	0.0024	0.0042
0.0063	0.0086	0.0115	0.0155	0.0199
0.0246	0.0295	0.0346	0.0399	0.0456
0.0531	0.0636	0.0775	0.0948	0.1150
0.1367	0.1590	0.1818	0.2051	0.2286
0.2533	0.2792	0.3059	0.3337	0.3624
0.3925	0.4234	0.4551	0.4871	0.5192
0.5512	0.5833	0.6153	0.6473	0.6794
0.7114	0.7435	0.7755	0.8076	0.8397
0.8717	0.9038	0.9359	0.9679	1.0000

Hrad:

0.0312	0.0711	0.0874	0.1028	0.1232
0.1505	0.1697	0.1932	0.2057	0.2221
0.2437	0.2681	0.2925	0.3140	0.3242
0.3232	0.2967	0.2878	0.2642	0.2559
0.2687	0.2912	0.3157	0.3407	0.3674
0.3912	0.4144	0.4362	0.4524	0.4661
0.4781	0.5029	0.5201	0.5509	0.5819
0.6129	0.6441	0.6753	0.7066	0.7378
0.7691	0.8003	0.8315	0.8626	0.8938
0.9248	0.9558	0.9868	1.0177	1.0000

Width:

0.0110	0.0132	0.0194	0.0510	0.0568
0.0624	0.0759	0.1033	0.1243	0.1341
0.1412	0.1467	0.1523	0.1597	0.1819
0.2694	0.3618	0.4491	0.5563	0.6295
0.6440	0.6656	0.6770	0.6875	0.6953
0.7470	0.7700	0.7999	0.8268	0.8640
0.8997	0.9141	0.9404	0.9405	0.9406
0.9407	0.9407	0.9408	0.9409	0.9410
0.9411	0.9411	0.9412	0.9413	0.9414
0.9415	0.9416	0.9416	0.9417	1.0000

Transect 517.84

Area:

0.0003	0.0007	0.0012	0.0018	0.0031
0.0058	0.0095	0.0142	0.0201	0.0266
0.0336	0.0411	0.0489	0.0571	0.0662
0.0774	0.0921	0.1097	0.1292	0.1502
0.1726	0.1965	0.2206	0.2451	0.2708
0.2975	0.3251	0.3529	0.3809	0.4091
0.4374	0.4658	0.4947	0.5240	0.5534
0.5832	0.6129	0.6427	0.6724	0.7022
0.7320	0.7617	0.7915	0.8213	0.8511
0.8809	0.9106	0.9404	0.9702	1.0000

Hrad:

0.0313	0.0708	0.1065	0.1386	0.1367
0.1196	0.1277	0.1405	0.1519	0.1700
0.1899	0.2089	0.2345	0.2599	0.2813
0.2930	0.2713	0.2651	0.2642	0.2748
0.2859	0.2974	0.3188	0.3406	0.3615
0.3785	0.3998	0.4237	0.4482	0.4731
0.4984	0.5248	0.5398	0.5649	0.5879
0.6128	0.6404	0.6681	0.6958	0.7236
0.7513	0.7791	0.8068	0.8345	0.8622
0.8899	0.9175	0.9450	0.9725	1.0000

Width:

0.0140	0.0155	0.0167	0.0264	0.0693
0.1070	0.1511	0.1783	0.2135	0.2250
0.2406	0.2568	0.2663	0.2901	0.3208
0.4492	0.5526	0.6444	0.6822	0.7248
0.7745	0.8074	0.8134	0.8359	0.8793
0.9243	0.9317	0.9366	0.9420	0.9475
0.9528	0.9538	0.9798	0.9843	0.9934
0.9988	0.9989	0.9990	0.9991	0.9992
0.9993	0.9993	0.9994	0.9995	0.9996
0.9997	0.9998	0.9998	0.9999	1.0000

Transect 625.0873

Area:

0.0004	0.0013	0.0026	0.0045	0.0079
0.0130	0.0186	0.0244	0.0305	0.0370
0.0438	0.0508	0.0580	0.0656	0.0734
0.0816	0.0903	0.0994	0.1090	0.1191
0.1298	0.1413	0.1542	0.1713	0.1921
0.2142	0.2380	0.2626	0.2875	0.3130
0.3393	0.3660	0.3931	0.4207	0.4488
0.4781	0.5097	0.5422	0.5760	0.6123
0.6493	0.6870	0.7253	0.7642	0.8033
0.8424	0.8816	0.9209	0.9604	1.0000

Hrad:

0.0804	0.1464	0.1988	0.2206	0.1932
0.1965	0.2192	0.2475	0.2765	0.3020
0.3325	0.3639	0.3941	0.4221	0.4475
0.4707	0.4948	0.5086	0.5256	0.5396
0.5503	0.5578	0.5321	0.5056	0.4399
0.4585	0.4830	0.5100	0.5382	0.5573
0.5838	0.6111	0.6389	0.6633	0.6897
0.7112	0.7063	0.7314	0.7533	0.7662
0.7897	0.8128	0.7717	0.8036	0.8366
0.8695	0.9024	0.9354	0.9671	1.0000

Width:

0.0149	0.0262	0.0401	0.0559	0.1181
0.1370	0.1440	0.1504	0.1575	0.1680
0.1743	0.1800	0.1863	0.1937	0.2025
0.2129	0.2226	0.2357	0.2482	0.2626
0.2796	0.2994	0.3642	0.4757	0.5463
0.5807	0.6127	0.6250	0.6316	0.6545
0.6682	0.6790	0.6886	0.7022	0.7221
0.7605	0.8133	0.8289	0.8990	0.9246
0.9423	0.9575	0.9785	0.9831	0.9853
0.9878	0.9903	0.9928	0.9975	1.0000

Transect 718.5652

Area:

0.0003	0.0008	0.0018	0.0031	0.0063
0.0112	0.0163	0.0216	0.0271	0.0328
0.0387	0.0448	0.0510	0.0574	0.0642
0.0721	0.0825	0.0951	0.1099	0.1280
0.1471	0.1669	0.1875	0.2093	0.2325
0.2569	0.2827	0.3091	0.3359	0.3631
0.3908	0.4188	0.4472	0.4762	0.5060
0.5365	0.5676	0.5991	0.6307	0.6626
0.6947	0.7270	0.7597	0.7927	0.8263
0.8602	0.8947	0.9296	0.9647	1.0000

Hrad:

0.0999	0.1857	0.2161	0.2509	0.2112
0.2016	0.2222	0.2500	0.2802	0.3112
0.3427	0.3741	0.4047	0.4315	0.4492
0.4416	0.4417	0.4396	0.4390	0.4071
0.4090	0.4249	0.4419	0.4581	0.4735
0.4876	0.5011	0.4794	0.5051	0.5293
0.5541	0.5795	0.6023	0.6221	0.6403
0.6577	0.6809	0.7085	0.7359	0.7634
0.7911	0.8161	0.8411	0.8616	0.8849
0.9051	0.9241	0.9506	0.9780	1.0000

Width:

0.0111	0.0237	0.0332	0.0428	0.1289
0.1412	0.1470	0.1525	0.1579	0.1631
0.1680	0.1727	0.1778	0.1849	0.1982
0.2584	0.3194	0.3771	0.4633	0.5306
0.5498	0.5681	0.5909	0.6402	0.6623
0.7117	0.7362	0.7501	0.7593	0.7717
0.7829	0.7929	0.8071	0.8258	0.8467
0.8688	0.8819	0.8879	0.8941	0.9001
0.9056	0.9147	0.9235	0.9381	0.9488
0.9632	0.9791	0.9850	0.9895	1.0000

Transect 818.7001

Area:

0.0004	0.0012	0.0024	0.0040	0.0080
0.0150	0.0226	0.0304	0.0385	0.0468
0.0553	0.0641	0.0743	0.0857	0.0979
0.1109	0.1248	0.1408	0.1584	0.1778
0.1978	0.2179	0.2384	0.2592	0.2802
0.3017	0.3236	0.3473	0.3724	0.3983
0.4247	0.4519	0.4803	0.5090	0.5379
0.5672	0.5969	0.6269	0.6571	0.6874
0.7178	0.7483	0.7791	0.8101	0.8414
0.8729	0.9045	0.9361	0.9679	1.0000

Hrad:

0.0779	0.1686	0.2275	0.2677	0.2085
0.1735	0.1836	0.2036	0.2269	0.2519
0.2774	0.3020	0.3192	0.3353	0.3507
0.3648	0.3593	0.3510	0.3618	0.3468
0.3689	0.3910	0.4131	0.4352	0.4557
0.4787	0.5004	0.5187	0.5361	0.5381
0.5587	0.5708	0.5927	0.6151	0.6377
0.6583	0.6759	0.7009	0.7264	0.7521
0.7779	0.8037	0.8276	0.8511	0.8746
0.9012	0.9278	0.9546	0.9797	1.0000

Width:

0.0210	0.0282	0.0443	0.0673	0.1716
0.2298	0.2380	0.2460	0.2536	0.2607
0.2675	0.2758	0.3388	0.3661	0.3900
0.4128	0.4609	0.5240	0.5738	0.6128
0.6204	0.6288	0.6377	0.6469	0.6599
0.6681	0.7063	0.7505	0.7903	0.8092
0.8246	0.8748	0.8835	0.8915	0.8996
0.9131	0.9256	0.9309	0.9352	0.9392
0.9431	0.9472	0.9555	0.9644	0.9734
0.9760	0.9785	0.9809	0.9864	1.0000

Transect 927.3901

Area:

0.0009	0.0035	0.0078	0.0140	0.0208
0.0285	0.0373	0.0479	0.0596	0.0718
0.0847	0.0991	0.1142	0.1302	0.1470
0.1642	0.1819	0.1999	0.2182	0.2370
0.2563	0.2762	0.2966	0.3172	0.3382
0.3594	0.3811	0.4033	0.4257	0.4484
0.4716	0.4950	0.5186	0.5427	0.5671
0.5917	0.6167	0.6419	0.6675	0.6935
0.7199	0.7467	0.7740	0.8022	0.8310
0.8605	0.8928	0.9273	0.9633	1.0000

Hrad:

0.0139	0.0416	0.0578	0.0764	0.0985
0.1202	0.1401	0.1516	0.1764	0.2017
0.2256	0.2424	0.2644	0.2861	0.3097
0.3374	0.3656	0.3938	0.4215	0.4452
0.4720	0.4941	0.5229	0.5508	0.5796
0.6047	0.6277	0.6559	0.6827	0.7088
0.7356	0.7634	0.7897	0.8142	0.8407
0.8685	0.8947	0.9192	0.9443	0.9668
0.9891	1.0092	1.0250	1.0344	1.0502
1.0626	0.9979	0.9907	1.0027	1.0000

Width:

0.0614	0.0715	0.1542	0.1733	0.1934
0.2169	0.2530	0.3036	0.3171	0.3301
0.3643	0.3922	0.4128	0.4353	0.4533
0.4637	0.4730	0.4822	0.4917	0.5077
0.5185	0.5364	0.5438	0.5525	0.5594
0.5703	0.5838	0.5912	0.6000	0.6093
0.6177	0.6250	0.6334	0.6436	0.6516
0.6582	0.6662	0.6755	0.6843	0.6952
0.7062	0.7190	0.7352	0.7568	0.7737
0.7960	0.8963	0.9410	0.9621	1.0000

Transect 1021.897

Area:

0.0006	0.0026	0.0061	0.0120	0.0200
0.0293	0.0396	0.0507	0.0626	0.0750
0.0880	0.1014	0.1155	0.1300	0.1450
0.1603	0.1760	0.1922	0.2087	0.2257
0.2430	0.2608	0.2790	0.2977	0.3169
0.3365	0.3566	0.3771	0.3981	0.4196
0.4417	0.4643	0.4874	0.5111	0.5352
0.5599	0.5852	0.6121	0.6403	0.6694
0.6992	0.7300	0.7623	0.7952	0.8285
0.8620	0.8960	0.9303	0.9650	1.0000

Hrad:

0.0703	0.0970	0.1340	0.1458	0.1648
0.1870	0.2120	0.2356	0.2614	0.2876
0.3131	0.3371	0.3615	0.3863	0.4111
0.4361	0.4603	0.4839	0.5072	0.5299
0.5517	0.5723	0.5928	0.6127	0.6327
0.6524	0.6719	0.6905	0.7081	0.7252
0.7419	0.7581	0.7751	0.7918	0.8085
0.8245	0.8330	0.8206	0.8285	0.8408
0.8508	0.8582	0.8588	0.8800	0.9008
0.9214	0.9417	0.9622	0.9833	1.0000

Width:

0.0344	0.0783	0.1264	0.2049	0.2463
0.2796	0.3020	0.3262	0.3432	0.3579
0.3726	0.3890	0.4035	0.4163	0.4282
0.4389	0.4501	0.4616	0.4726	0.4839
0.4959	0.5088	0.5216	0.5347	0.5473
0.5599	0.5725	0.5860	0.6006	0.6154
0.6306	0.6462	0.6607	0.6752	0.6896
0.7047	0.7288	0.7817	0.8095	0.8310
0.8561	0.8854	0.9264	0.9346	0.9438
0.9534	0.9637	0.9740	0.9837	1.0000

Transect 1177.635

Area:

0.0006	0.0020	0.0053	0.0093	0.0134
0.0176	0.0220	0.0266	0.0313	0.0363
0.0415	0.0469	0.0526	0.0585	0.0646
0.0710	0.0777	0.0846	0.0919	0.0995
0.1074	0.1155	0.1239	0.1329	0.1425
0.1525	0.1630	0.1742	0.1870	0.2003
0.2139	0.2279	0.2423	0.2570	0.2723
0.2901	0.3122	0.3385	0.3679	0.4020
0.4398	0.4812	0.5275	0.5757	0.6310
0.6969	0.7683	0.8430	0.9209	1.0000

Hrad:

0.0625	0.1006	0.1172	0.1748	0.2342
0.2928	0.3485	0.4021	0.4541	0.5018
0.5495	0.5961	0.6412	0.6850	0.7271
0.7680	0.8060	0.8441	0.8779	0.9162
0.9575	0.9975	1.0273	1.0197	1.0488
1.0762	1.1021	1.0967	1.0949	1.1356
1.1753	1.2148	1.2566	1.2966	1.3249
1.3218	1.2473	1.1971	1.1945	1.1481
1.0212	1.0340	0.9918	1.0178	0.9831
0.9984	0.8939	0.9293	0.9558	1.0000

Width:

0.0107	0.0300	0.0491	0.0508	0.0521
0.0537	0.0561	0.0584	0.0606	0.0641
0.0669	0.0697	0.0725	0.0754	0.0785
0.0818	0.0856	0.0894	0.0937	0.0971
0.1001	0.1033	0.1078	0.1181	0.1232

0.1285	0.1344	0.1518	0.1648	0.1689
0.1735	0.1782	0.1822	0.1867	0.2053
0.2454	0.3085	0.3526	0.3956	0.4520
0.4905	0.5681	0.5914	0.6366	0.7746
0.8708	0.9229	0.9548	0.9903	1.0000

Transect 1276.628

Area:

0.0007	0.0019	0.0038	0.0058	0.0084
0.0116	0.0148	0.0182	0.0218	0.0261
0.0307	0.0356	0.0406	0.0459	0.0514
0.0570	0.0629	0.0689	0.0751	0.0814
0.0879	0.0946	0.1015	0.1086	0.1159
0.1235	0.1314	0.1396	0.1483	0.1589
0.1721	0.1872	0.2046	0.2257	0.2492
0.2734	0.2985	0.3276	0.3620	0.4022
0.4475	0.4956	0.5442	0.5957	0.6529
0.7142	0.7792	0.8475	0.9219	1.0000

Hrad:

0.0759	0.1595	0.2252	0.2936	0.3277
0.3770	0.4344	0.4908	0.5425	0.5809
0.6248	0.6699	0.7159	0.7619	0.8073
0.8525	0.8983	0.9448	0.9915	1.0370
1.0799	1.1192	1.1561	1.1995	1.2393
1.2600	1.2885	1.3120	1.3394	1.3227
1.2679	1.2390	1.0834	0.9629	0.9630
1.0013	1.0286	0.9902	0.9869	0.8688
0.8337	0.8730	0.9179	0.9584	0.9739
1.0099	1.0425	1.0764	1.1030	1.0000

Width:

0.0132	0.0213	0.0248	0.0271	0.0380
0.0409	0.0422	0.0444	0.0499	0.0572
0.0602	0.0630	0.0655	0.0680	0.0706
0.0731	0.0753	0.0774	0.0793	0.0813
0.0836	0.0862	0.0892	0.0914	0.0939
0.0986	0.1026	0.1072	0.1145	0.1551
0.1791	0.2074	0.2413	0.2819	0.3061
0.3101	0.3393	0.4036	0.4700	0.5380
0.6040	0.6140	0.6251	0.6902	0.7519
0.8007	0.8437	0.8972	0.9772	1.0000

Transect 1386.646

Area:

0.0005	0.0013	0.0039	0.0090	0.0145
0.0204	0.0265	0.0329	0.0395	0.0464
0.0535	0.0608	0.0684	0.0761	0.0841
0.0922	0.1007	0.1093	0.1182	0.1273
0.1367	0.1466	0.1572	0.1684	0.1801
0.1922	0.2046	0.2172	0.2299	0.2429
0.2561	0.2696	0.2845	0.3020	0.3204
0.3409	0.3661	0.3932	0.4261	0.4693
0.5157	0.5633	0.6134	0.6644	0.7158
0.7681	0.8235	0.8796	0.9381	1.0000

Hrad:

0.0805	0.1173	0.1242	0.1477	0.1939
0.2425	0.2905	0.3363	0.3828	0.4284
0.4731	0.5166	0.5603	0.6029	0.6439
0.6832	0.7227	0.7606	0.7981	0.8329
0.8581	0.8621	0.8847	0.8996	0.9315
0.9613	0.9934	1.0345	1.0753	1.1090
1.1400	1.1710	1.1945	1.0788	1.0424
1.0127	1.0038	0.9987	0.8397	0.7527
0.7819	0.8070	0.8264	0.8596	0.8929
0.8642	0.9036	0.9428	0.9779	1.0000

Width:

0.0093	0.0211	0.0625	0.0848	0.0894
0.0936	0.0978	0.1025	0.1062	0.1097
0.1132	0.1167	0.1198	0.1230	0.1264
0.1301	0.1336	0.1373	0.1409	0.1449
0.1510	0.1625	0.1700	0.1802	0.1856
0.1915	0.1967	0.1989	0.2011	0.2050
0.2097	0.2176	0.2615	0.2808	0.3039
0.3703	0.4140	0.4448	0.5828	0.7241
0.7355	0.7713	0.7949	0.8025	0.8074
0.8667	0.8724	0.8867	0.9513	1.0000

Transect 1407.546

Area:

0.0012	0.0025	0.0044	0.0073	0.0111
0.0157	0.0211	0.0271	0.0336	0.0404
0.0475	0.0550	0.0629	0.0712	0.0798
0.0887	0.0980	0.1075	0.1173	0.1274
0.1380	0.1492	0.1610	0.1734	0.1863
0.1995	0.2130	0.2269	0.2411	0.2559
0.2709	0.2863	0.3020	0.3183	0.3354
0.3544	0.3755	0.3976	0.4205	0.4455
0.4781	0.5204	0.5741	0.6312	0.6896
0.7483	0.8071	0.8673	0.9306	1.0000

Hrad:

0.1371	0.2543	0.2869	0.3727	0.4221
0.4616	0.4986	0.5394	0.5814	0.6278
0.6742	0.7216	0.7610	0.8032	0.8481
0.8884	0.9289	0.9712	1.0130	1.0479
1.0729	1.1001	1.1252	1.1504	1.1742
1.2075	1.2386	1.2673	1.2915	1.3171
1.3498	1.3777	1.4068	1.4153	1.4362
1.3820	1.3806	1.3836	1.3849	1.3646
1.1128	1.0505	0.9467	0.9514	0.9707
0.9973	1.0265	1.0479	1.0408	1.0000

Width:

0.0173	0.0192	0.0334	0.0487	0.0560
0.0693	0.0781	0.0849	0.0912	0.0956
0.1001	0.1041	0.1109	0.1159	0.1194
0.1245	0.1287	0.1319	0.1353	0.1407
0.1495	0.1573	0.1653	0.1728	0.1790
0.1827	0.1869	0.1916	0.1980	0.2040
0.2074	0.2127	0.2172	0.2295	0.2390
0.2801	0.2961	0.3076	0.3190	0.3784
0.4979	0.6585	0.7652	0.7930	0.8004
0.8023	0.8055	0.8376	0.8916	1.0000

Transect 1448.974

Area:

0.0013	0.0027	0.0041	0.0056	0.0072
0.0091	0.0114	0.0140	0.0169	0.0204
0.0242	0.0284	0.0332	0.0390	0.0458
0.0536	0.0622	0.0717	0.0820	0.0928
0.1041	0.1158	0.1279	0.1403	0.1529
0.1659	0.1791	0.1927	0.2066	0.2211
0.2361	0.2517	0.2679	0.2850	0.3031
0.3231	0.3442	0.3667	0.3917	0.4214
0.4543	0.4905	0.5361	0.5952	0.6581
0.7222	0.7877	0.8546	0.9248	1.0000

Hrad:

0.0853	0.1623	0.2325	0.2963	0.3374
0.3832	0.4154	0.4453	0.4568	0.4643
0.4999	0.5238	0.5283	0.5353	0.5331
0.5313	0.5604	0.5875	0.6133	0.6645
0.7178	0.7703	0.8236	0.8804	0.9366
0.9924	1.0420	1.0921	1.1395	1.1759
1.2173	1.2511	1.2810	1.3132	1.3128
1.3253	1.3496	1.2167	1.2071	1.1345
1.0851	1.0437	0.9066	0.7479	0.8069
0.8576	0.8671	0.9336	0.9593	1.0000

Width:

0.0176	0.0183	0.0189	0.0196	0.0221
0.0274	0.0322	0.0360	0.0413	0.0477
0.0519	0.0579	0.0689	0.0826	0.0952
0.1082	0.1186	0.1285	0.1387	0.1448
0.1500	0.1549	0.1597	0.1632	0.1666
0.1700	0.1750	0.1795	0.1844	0.1927
0.1991	0.2077	0.2177	0.2278	0.2496
0.2682	0.2793	0.3137	0.3420	0.4138
0.4499	0.4881	0.7212	0.8075	0.8288
0.8435	0.8610	0.8875	0.9569	1.0000

Transect 1455.968

Area:

0.0010	0.0020	0.0034	0.0049	0.0067
0.0086	0.0108	0.0139	0.0179	0.0227
0.0285	0.0347	0.0416	0.0498	0.0587
0.0678	0.0772	0.0870	0.0971	0.1076
0.1183	0.1294	0.1407	0.1522	0.1640
0.1761	0.1884	0.2011	0.2141	0.2276
0.2417	0.2565	0.2720	0.2885	0.3063
0.3261	0.3484	0.3739	0.4030	0.4337
0.4728	0.5211	0.5717	0.6236	0.6782
0.7376	0.7993	0.8635	0.9306	1.0000

Hrad:

0.0763	0.1440	0.1952	0.2434	0.2939
0.3451	0.3904	0.3742	0.3948	0.3944
0.4277	0.4609	0.4935	0.4868	0.5295
0.5715	0.6132	0.6532	0.6960	0.7382
0.7810	0.8249	0.8715	0.9170	0.9595
1.0055	1.0474	1.0875	1.1222	1.1585
1.1768	1.2064	1.2213	1.2344	1.2316
1.1468	1.0718	1.0647	1.0494	1.0223
0.9478	0.7339	0.7736	0.8098	0.8283
0.8223	0.8655	0.9163	0.9626	1.0000

Width:

0.0145	0.0160	0.0210	0.0236	0.0266
0.0294	0.0332	0.0519	0.0609	0.0794
0.0854	0.0935	0.1045	0.1252	0.1283
0.1323	0.1370	0.1428	0.1469	0.1513
0.1557	0.1601	0.1632	0.1666	0.1711
0.1740	0.1784	0.1832	0.1897	0.1953
0.2082	0.2159	0.2303	0.2453	0.2653
0.2969	0.3384	0.3978	0.4260	0.4682
0.6284	0.7171	0.7332	0.7555	0.8229
0.8702	0.8976	0.9316	0.9804	1.0000

Transect 1549.464

Area:

0.0007	0.0020	0.0036	0.0055	0.0076
0.0106	0.0144	0.0192	0.0248	0.0309
0.0377	0.0451	0.0532	0.0619	0.0713
0.0813	0.0918	0.1029	0.1145	0.1266
0.1393	0.1526	0.1664	0.1806	0.1952
0.2104	0.2262	0.2424	0.2592	0.2763
0.2939	0.3123	0.3315	0.3517	0.3735
0.3985	0.4270	0.4571	0.4882	0.5208
0.5553	0.5926	0.6330	0.6764	0.7236
0.7743	0.8275	0.8837	0.9414	1.0000

Hrad:

0.0397	0.0779	0.1154	0.1574	0.1852
0.1710	0.1941	0.2092	0.2472	0.2795
0.3030	0.3409	0.3682	0.3989	0.4242
0.4594	0.4973	0.5274	0.5621	0.5985
0.6232	0.6532	0.6920	0.7312	0.7640
0.7899	0.8220	0.8553	0.8923	0.9274
0.9530	0.9711	0.9882	0.9855	0.9541
0.9413	0.8469	0.8785	0.9024	0.9087
0.9160	0.8881	0.8800	0.8961	0.8568
0.8760	0.8849	0.9115	0.9509	1.0000

Width:

0.0175	0.0250	0.0306	0.0340	0.0398
0.0602	0.0727	0.0903	0.0987	0.1088
0.1226	0.1306	0.1427	0.1534	0.1661
0.1750	0.1826	0.1930	0.2015	0.2093
0.2213	0.2313	0.2381	0.2445	0.2530
0.2637	0.2725	0.2808	0.2876	0.2950
0.3055	0.3186	0.3325	0.3540	0.3906
0.4528	0.5019	0.5182	0.5388	0.5711
0.6080	0.6656	0.7179	0.7565	0.8439
0.8834	0.9445	0.9694	0.9900	1.0000

Transect 1662.759

Area:

0.0009	0.0020	0.0036	0.0090	0.0156
0.0228	0.0304	0.0385	0.0470	0.0558
0.0649	0.0743	0.0839	0.0938	0.1042
0.1151	0.1262	0.1377	0.1496	0.1619
0.1747	0.1893	0.2047	0.2209	0.2377
0.2551	0.2732	0.2918	0.3113	0.3316
0.3526	0.3738	0.3953	0.4169	0.4388
0.4610	0.4837	0.5079	0.5331	0.5595
0.5911	0.6281	0.6692	0.7112	0.7540
0.7984	0.8455	0.8942	0.9451	1.0000

Hrad:

0.0474	0.0886	0.0796	0.0806	0.1254
0.1706	0.2149	0.2583	0.3008	0.3446
0.3886	0.4317	0.4729	0.5093	0.5372
0.5756	0.6123	0.6465	0.6795	0.7042
0.7269	0.6874	0.7111	0.7366	0.7651
0.7926	0.8199	0.8431	0.8629	0.8788
0.9200	0.9672	1.0124	1.0567	1.0957
1.1379	1.1512	1.1345	1.1468	1.1518
1.1172	1.0887	0.8999	0.9349	0.9768
0.9825	0.9876	1.0165	1.0049	1.0000

Width:

0.0187	0.0212	0.0600	0.1094	0.1222
0.1311	0.1390	0.1461	0.1529	0.1582
0.1628	0.1674	0.1723	0.1787	0.1883
0.1937	0.1995	0.2061	0.2129	0.2224
0.2384	0.2672	0.2795	0.2912	0.3017
0.3126	0.3236	0.3364	0.3507	0.3671
0.3729	0.3760	0.3797	0.3837	0.3896
0.3941	0.4092	0.4368	0.4540	0.4900
0.6133	0.7054	0.7339	0.7509	0.7666
0.8029	0.8467	0.8704	0.9315	1.0000

Transect 1779.22

Area:

0.0006	0.0021	0.0058	0.0120	0.0201
0.0293	0.0393	0.0496	0.0602	0.0712
0.0825	0.0941	0.1059	0.1180	0.1303
0.1430	0.1559	0.1691	0.1826	0.1963
0.2102	0.2244	0.2389	0.2537	0.2689
0.2843	0.3001	0.3164	0.3344	0.3541
0.3751	0.3976	0.4225	0.4512	0.4802
0.5093	0.5386	0.5680	0.5977	0.6277
0.6581	0.6896	0.7229	0.7568	0.7921
0.8291	0.8679	0.9091	0.9532	1.0000

Hrad:

0.0402	0.0841	0.0875	0.0933	0.1221
0.1645	0.2090	0.2560	0.3012	0.3440
0.3890	0.4336	0.4767	0.5172	0.5580
0.5983	0.6373	0.6752	0.7137	0.7526
0.7906	0.8262	0.8605	0.8907	0.9236
0.9580	0.9884	0.9934	0.9783	0.9857
0.9920	0.9930	0.9686	0.9642	0.9907
1.0172	1.0436	1.0664	1.0887	1.1039
1.1175	1.0423	1.0577	1.0632	1.0601
1.0488	1.0364	1.0164	1.0072	1.0000

Width:

0.0234	0.0354	0.1060	0.1501	0.1820
0.1986	0.2091	0.2157	0.2225	0.2301
0.2356	0.2406	0.2458	0.2519	0.2576
0.2631	0.2689	0.2749	0.2801	0.2849
0.2897	0.2957	0.3015	0.3086	0.3150
0.3209	0.3282	0.3493	0.3905	0.4179
0.4466	0.4813	0.5607	0.5964	0.5986
0.6013	0.6043	0.6090	0.6142	0.6222
0.6315	0.6779	0.6920	0.7123	0.7398
0.7768	0.8203	0.8806	0.9358	1.0000

Transect 1920.857

Area:

0.0003	0.0009	0.0020	0.0053	0.0127
0.0230	0.0342	0.0458	0.0580	0.0706
0.0835	0.0966	0.1099	0.1236	0.1374
0.1516	0.1660	0.1807	0.1957	0.2109
0.2264	0.2422	0.2582	0.2744	0.2908
0.3075	0.3243	0.3414	0.3587	0.3763
0.3943	0.4134	0.4357	0.4631	0.4926
0.5222	0.5520	0.5819	0.6119	0.6420
0.6721	0.7035	0.7363	0.7704	0.8057
0.8420	0.8795	0.9183	0.9585	1.0000

Hrad:

0.0343	0.0982	0.1058	0.0673	0.0718
0.0973	0.1410	0.1817	0.2218	0.2631
0.3055	0.3473	0.3870	0.4280	0.4682
0.5065	0.5446	0.5826	0.6207	0.6569
0.6920	0.7254	0.7620	0.7995	0.8371
0.8728	0.9061	0.9402	0.9734	1.0042
1.0258	1.0085	0.9379	0.9226	0.9374
0.9604	0.9842	1.0105	1.0387	1.0671
1.0948	1.0087	0.9896	0.9794	0.9885
0.9903	0.9979	0.9925	1.0110	1.0000

Width:

0.0134	0.0163	0.0365	0.1313	0.1987
0.2545	0.2651	0.2779	0.2887	0.2970
0.3026	0.3081	0.3147	0.3200	0.3256
0.3327	0.3397	0.3460	0.3515	0.3578
0.3640	0.3707	0.3758	0.3803	0.3845
0.3894	0.3952	0.4005	0.4063	0.4136
0.4265	0.4691	0.6018	0.6849	0.6891
0.6920	0.6951	0.6975	0.6994	0.7015
0.7040	0.7528	0.7819	0.8110	0.8318
0.8595	0.8858	0.9252	0.9506	1.0000

Transect 2059.866

Area:

0.0007	0.0027	0.0048	0.0070	0.0103
0.0184	0.0314	0.0450	0.0590	0.0732
0.0879	0.1030	0.1183	0.1339	0.1496
0.1656	0.1817	0.1982	0.2148	0.2317
0.2487	0.2660	0.2835	0.3013	0.3194
0.3376	0.3561	0.3748	0.3937	0.4128
0.4321	0.4517	0.4715	0.4918	0.5140
0.5385	0.5658	0.5947	0.6249	0.6559
0.6871	0.7185	0.7501	0.7826	0.8156
0.8493	0.8847	0.9214	0.9596	1.0000

Hrad:

0.0378	0.1055	0.1784	0.2322	0.2278
0.1691	0.1782	0.2063	0.2401	0.2750
0.3094	0.3435	0.3798	0.4170	0.4537
0.4873	0.5217	0.5559	0.5893	0.6246
0.6598	0.6938	0.7255	0.7571	0.7901
0.8236	0.8569	0.8904	0.9236	0.9565
0.9886	1.0186	1.0450	1.0668	1.0091
1.0054	0.9742	0.9837	0.9871	1.0139
1.0404	1.0639	1.0707	1.0611	1.0729
1.0764	1.0310	1.0369	1.0235	1.0000

Width:

0.0377	0.0496	0.0514	0.0571	0.1303
0.2808	0.3194	0.3297	0.3373	0.3457
0.3550	0.3641	0.3698	0.3738	0.3779
0.3840	0.3895	0.3950	0.4007	0.4054
0.4101	0.4155	0.4219	0.4281	0.4336
0.4388	0.4440	0.4489	0.4539	0.4590
0.4644	0.4707	0.4786	0.4900	0.5657
0.6040	0.6770	0.7027	0.7396	0.7437
0.7472	0.7521	0.7646	0.7835	0.7964
0.8172	0.8651	0.8910	0.9358	1.0000

Transect 2156.937

Area:

0.0004	0.0011	0.0023	0.0040	0.0061
0.0095	0.0154	0.0232	0.0319	0.0412
0.0517	0.0629	0.0746	0.0866	0.0990
0.1116	0.1245	0.1376	0.1508	0.1643
0.1780	0.1920	0.2062	0.2206	0.2352
0.2500	0.2649	0.2800	0.2956	0.3119
0.3289	0.3470	0.3659	0.3871	0.4109
0.4372	0.4668	0.4978	0.5300	0.5639
0.6008	0.6414	0.6830	0.7253	0.7685
0.8126	0.8578	0.9040	0.9513	1.0000

Hrad:

0.0568	0.1103	0.1323	0.1668	0.2118
0.2064	0.1695	0.1812	0.2150	0.2505
0.2758	0.3118	0.3514	0.3911	0.4317
0.4708	0.5123	0.5560	0.5988	0.6396
0.6748	0.7134	0.7549	0.7957	0.8366
0.8773	0.9173	0.9561	0.9912	1.0236
1.0436	1.0071	1.0133	0.9731	0.9416
0.9440	0.8765	0.8912	0.8922	0.8978
0.8667	0.8543	0.8677	0.8890	0.9034
0.9197	0.9451	0.9587	0.9826	1.0000

Width:

0.0124	0.0164	0.0298	0.0398	0.0493
0.0870	0.1454	0.1694	0.1820	0.1962
0.2215	0.2329	0.2404	0.2469	0.2525
0.2585	0.2633	0.2670	0.2708	0.2751
0.2811	0.2859	0.2897	0.2934	0.2970
0.3004	0.3041	0.3082	0.3233	0.3361
0.3553	0.3732	0.4069	0.4521	0.5137
0.5616	0.6147	0.6373	0.6668	0.7009
0.7942	0.8333	0.8499	0.8640	0.8839
0.9050	0.9220	0.9493	0.9708	1.0000

Transect 2277.683

Area:

0.0022	0.0055	0.0091	0.0128	0.0169
0.0214	0.0262	0.0313	0.0368	0.0427
0.0491	0.0557	0.0624	0.0694	0.0765
0.0838	0.0913	0.0990	0.1070	0.1153
0.1238	0.1326	0.1418	0.1520	0.1636
0.1757	0.1880	0.2013	0.2160	0.2325
0.2501	0.2693	0.2902	0.3134	0.3393
0.3670	0.3973	0.4309	0.4668	0.5055
0.5472	0.5915	0.6387	0.6871	0.7362
0.7863	0.8373	0.8897	0.9438	1.0000

Hrad:

0.0449	0.0995	0.1548	0.2032	0.2573
0.3110	0.3605	0.4068	0.4485	0.4868
0.5238	0.5628	0.6019	0.6412	0.6799
0.7179	0.7545	0.7902	0.8252	0.8592
0.8920	0.9239	0.9547	0.9748	0.9765
0.9994	1.0231	1.0428	1.0568	1.0637
1.0677	1.0652	1.0518	1.0261	0.9466
0.9426	0.9287	0.9159	0.9118	0.9004
0.8986	0.8933	0.8939	0.9073	0.9197
0.9392	0.9555	0.9682	0.9852	1.0000

Width:

0.0531	0.0603	0.0631	0.0686	0.0745
0.0800	0.0861	0.0916	0.0997	0.1076
0.1135	0.1164	0.1192	0.1220	0.1251
0.1286	0.1328	0.1371	0.1414	0.1460
0.1508	0.1558	0.1692	0.1868	0.2087
0.2122	0.2218	0.2431	0.2703	0.2982
0.3188	0.3459	0.3816	0.4273	0.4685
0.4995	0.5570	0.6087	0.6426	0.7011
0.7466	0.7949	0.8333	0.8482	0.8681
0.8812	0.9013	0.9302	0.9552	1.0000

Transect 2406.341

Area:

0.0003	0.0008	0.0013	0.0021	0.0031
0.0044	0.0058	0.0075	0.0093	0.0113
0.0134	0.0157	0.0181	0.0206	0.0234
0.0263	0.0293	0.0325	0.0359	0.0396

0.0436	0.0481	0.0532	0.0594	0.0686
0.0793	0.0909	0.1038	0.1190	0.1357
0.1542	0.1748	0.1978	0.2241	0.2529
0.2830	0.3147	0.3484	0.3843	0.4219
0.4629	0.5105	0.5623	0.6163	0.6735
0.7323	0.7931	0.8570	0.9274	1.0000

Hrad:

0.0553	0.1112	0.1319	0.1627	0.1935
0.2123	0.2570	0.3022	0.3363	0.3753
0.4193	0.4634	0.5024	0.5395	0.5739
0.6073	0.6467	0.6891	0.7275	0.6986
0.7035	0.7085	0.6940	0.6292	0.4876
0.5117	0.5388	0.5704	0.5329	0.5793
0.5854	0.6232	0.6506	0.6405	0.6225
0.6712	0.7055	0.7206	0.7662	0.7933
0.7848	0.7545	0.7827	0.8317	0.8536
0.9074	0.9391	0.9900	0.9449	1.0000

Width:

0.0058	0.0064	0.0093	0.0120	0.0149
0.0193	0.0214	0.0233	0.0260	0.0283
0.0302	0.0318	0.0339	0.0360	0.0384
0.0408	0.0427	0.0448	0.0487	0.0529
0.0581	0.0640	0.0753	0.0970	0.1403
0.1517	0.1654	0.1946	0.2204	0.2366
0.2683	0.3013	0.3362	0.3815	0.4044
0.4200	0.4446	0.4824	0.5005	0.5329
0.5998	0.6895	0.7188	0.7680	0.7915
0.8145	0.8445	0.9295	0.9817	1.0000

Transect 2509.792

Area:

0.0003	0.0009	0.0014	0.0020	0.0027
0.0034	0.0047	0.0062	0.0081	0.0102
0.0125	0.0149	0.0174	0.0201	0.0228
0.0257	0.0287	0.0318	0.0350	0.0382
0.0416	0.0452	0.0488	0.0527	0.0567
0.0611	0.0656	0.0703	0.0755	0.0816
0.0889	0.0980	0.1122	0.1299	0.1554
0.1881	0.2250	0.2674	0.3145	0.3650
0.4200	0.4782	0.5385	0.6003	0.6629
0.7264	0.7912	0.8587	0.9280	1.0000

Hrad:

0.0516	0.1101	0.1646	0.2131	0.2570
0.1967	0.2286	0.2390	0.2745	0.3178
0.3633	0.4106	0.4582	0.5050	0.5501
0.5958	0.6418	0.6872	0.7317	0.7744
0.8143	0.8511	0.8847	0.9127	0.9064
0.9419	0.9813	0.9735	0.9700	0.8496
0.7935	0.7946	0.5114	0.5363	0.4157
0.4399	0.4767	0.4388	0.4680	0.5099
0.5584	0.5936	0.6413	0.7049	0.7707
0.8299	0.8690	0.9154	0.9667	1.0000

Width:

0.0066	0.0075	0.0080	0.0084	0.0088

0.0155	0.0185	0.0240	0.0275	0.0300
0.0321	0.0339	0.0355	0.0371	0.0387
0.0402	0.0416	0.0430	0.0444	0.0458
0.0474	0.0493	0.0513	0.0537	0.0585
0.0607	0.0625	0.0679	0.0749	0.0918
0.1079	0.1526	0.2173	0.2848	0.4065
0.4716	0.5384	0.6145	0.6719	0.7231
0.7853	0.8066	0.8409	0.8525	0.8675
0.8758	0.9108	0.9383	0.9677	1.0000

Transect 2618.286

Area:

0.0003	0.0007	0.0012	0.0018	0.0024
0.0032	0.0042	0.0053	0.0067	0.0084
0.0103	0.0123	0.0144	0.0166	0.0188
0.0212	0.0236	0.0261	0.0287	0.0314
0.0343	0.0376	0.0416	0.0466	0.0521
0.0580	0.0647	0.0721	0.0802	0.0890
0.0990	0.1141	0.1353	0.1623	0.1927
0.2248	0.2586	0.2943	0.3328	0.3756
0.4204	0.4673	0.5176	0.5746	0.6366
0.7019	0.7706	0.8432	0.9196	1.0000

Hrad:

0.0591	0.1132	0.1686	0.2194	0.2494
0.2701	0.2933	0.3196	0.3377	0.3663
0.4027	0.4563	0.5133	0.5686	0.6223
0.6738	0.7242	0.7730	0.8192	0.8688
0.8867	0.9253	0.9222	0.8945	0.8790
0.8874	0.7041	0.7541	0.7766	0.8187
0.8567	0.8499	0.8194	0.7842	0.5580
0.6026	0.5981	0.6524	0.6973	0.6912
0.7468	0.7842	0.8047	0.7932	0.8187
0.8470	0.8969	0.9334	1.0000	1.0000

Width:

0.0045	0.0058	0.0066	0.0073	0.0088
0.0109	0.0132	0.0156	0.0188	0.0217
0.0242	0.0255	0.0265	0.0275	0.0284
0.0295	0.0305	0.0315	0.0327	0.0336
0.0383	0.0438	0.0550	0.0640	0.0707
0.0753	0.0885	0.0956	0.1044	0.1138
0.1520	0.2205	0.2984	0.3597	0.3872
0.4068	0.4302	0.4489	0.5042	0.5418
0.5623	0.5970	0.6467	0.7471	0.7804
0.8304	0.8642	0.9269	0.9648	1.0000

Transect 2707.776

Area:

0.0018	0.0040	0.0065	0.0090	0.0117
0.0146	0.0179	0.0214	0.0252	0.0293
0.0335	0.0379	0.0424	0.0472	0.0522
0.0575	0.0632	0.0691	0.0753	0.0818
0.0885	0.0955	0.1028	0.1104	0.1185
0.1268	0.1358	0.1454	0.1561	0.1696
0.1854	0.2023	0.2210	0.2414	0.2642

0.2884	0.3143	0.3419	0.3712	0.4053
0.4469	0.4977	0.5547	0.6133	0.6732
0.7340	0.7961	0.8609	0.9292	1.0000

Hrad:

0.0614	0.1206	0.1842	0.2448	0.2890
0.3303	0.3609	0.4044	0.4482	0.4934
0.5372	0.5826	0.6304	0.6770	0.6844
0.7211	0.7549	0.7858	0.8200	0.8537
0.8894	0.9249	0.9520	0.9721	1.0019
1.0137	1.0237	1.0161	0.9203	0.7748
0.8098	0.7964	0.8051	0.7908	0.7987
0.8308	0.8401	0.8698	0.8876	0.8108
0.8263	0.7875	0.6885	0.7549	0.8219
0.8850	0.9461	0.9513	1.0113	1.0000

Width:

0.0288	0.0330	0.0344	0.0355	0.0389
0.0425	0.0476	0.0509	0.0540	0.0568
0.0596	0.0620	0.0640	0.0660	0.0725
0.0759	0.0796	0.0837	0.0874	0.0912
0.0948	0.0983	0.1029	0.1084	0.1129
0.1197	0.1271	0.1375	0.1642	0.2137
0.2238	0.2490	0.2697	0.3007	0.3264
0.3428	0.3699	0.3890	0.4240	0.5015
0.6322	0.7671	0.8046	0.8171	0.8329
0.8487	0.8669	0.9245	0.9628	1.0000

Transect 2810.224

Area:

0.0006	0.0019	0.0034	0.0052	0.0073
0.0097	0.0122	0.0148	0.0175	0.0205
0.0236	0.0269	0.0304	0.0340	0.0378
0.0417	0.0457	0.0499	0.0542	0.0587
0.0632	0.0679	0.0728	0.0778	0.0831
0.0886	0.0943	0.1002	0.1064	0.1129
0.1201	0.1283	0.1373	0.1474	0.1587
0.1713	0.1882	0.2077	0.2285	0.2531
0.2809	0.3153	0.3588	0.4116	0.4717
0.5469	0.6413	0.7499	0.8710	1.0000

Hrad:

0.0856	0.1706	0.2633	0.3437	0.4111
0.4961	0.6014	0.6977	0.7797	0.8406
0.9106	0.9867	1.0667	1.1475	1.2259
1.2995	1.3742	1.4511	1.5268	1.6018
1.6765	1.7449	1.8084	1.8397	1.9031
1.9556	1.9847	2.0271	2.0551	2.0388
1.9742	1.8778	1.7567	1.7493	1.6586
1.5908	1.2742	1.3240	1.3657	1.2331
1.2595	1.1560	0.9499	0.9483	0.9990
0.9560	0.8654	0.8946	0.9731	1.0000

Width:

0.0075	0.0108	0.0127	0.0149	0.0174
0.0192	0.0198	0.0205	0.0217	0.0235
0.0250	0.0263	0.0274	0.0284	0.0295
0.0306	0.0317	0.0327	0.0337	0.0347

0.0357	0.0368	0.0380	0.0400	0.0412
0.0428	0.0449	0.0467	0.0490	0.0526
0.0580	0.0654	0.0752	0.0813	0.0928
0.1048	0.1450	0.1542	0.1739	0.2027
0.2300	0.2936	0.3826	0.4424	0.4926
0.6707	0.7802	0.8991	0.9768	1.0000

Transect 2922.176

Area:

0.0012	0.0036	0.0066	0.0100	0.0136
0.0173	0.0211	0.0250	0.0291	0.0336
0.0384	0.0434	0.0487	0.0544	0.0604
0.0666	0.0730	0.0795	0.0862	0.0931
0.1001	0.1073	0.1147	0.1222	0.1300
0.1379	0.1459	0.1541	0.1625	0.1710
0.1797	0.1886	0.1977	0.2070	0.2167
0.2268	0.2377	0.2495	0.2623	0.2763
0.2913	0.3074	0.3247	0.3472	0.3864
0.4508	0.5492	0.6807	0.8311	1.0000

Hrad:

0.1174	0.2104	0.3441	0.4737	0.6165
0.7532	0.8843	1.0106	1.0849	1.1573
1.2572	1.3458	1.4346	1.4794	1.5889
1.6963	1.8023	1.9126	2.0210	2.1276
2.2276	2.3247	2.4216	2.5216	2.6204
2.7187	2.8181	2.9158	3.0125	3.1031
3.1905	3.2775	3.3492	3.4181	3.4458
3.3923	3.3118	3.2429	3.0935	3.0609
3.0153	2.9513	2.9569	2.6325	2.2810
1.9705	1.7338	0.9425	1.0481	1.0000

Width:

0.0101	0.0166	0.0187	0.0204	0.0211
0.0218	0.0225	0.0232	0.0251	0.0271
0.0284	0.0300	0.0316	0.0343	0.0354
0.0365	0.0375	0.0385	0.0394	0.0403
0.0414	0.0424	0.0435	0.0444	0.0454
0.0463	0.0472	0.0481	0.0491	0.0501
0.0512	0.0522	0.0536	0.0550	0.0572
0.0610	0.0659	0.0709	0.0786	0.0840
0.0902	0.0976	0.1032	0.1810	0.2857
0.4743	0.6820	0.8232	0.9346	1.0000

Transect 2986.996

Area:

0.0008	0.0022	0.0042	0.0065	0.0091
0.0117	0.0145	0.0173	0.0207	0.0243
0.0281	0.0320	0.0360	0.0402	0.0445
0.0490	0.0536	0.0583	0.0632	0.0681
0.0732	0.0783	0.0836	0.0889	0.0944
0.1000	0.1057	0.1115	0.1174	0.1234
0.1295	0.1357	0.1419	0.1483	0.1548
0.1615	0.1684	0.1758	0.1877	0.2088
0.2458	0.2965	0.3612	0.4394	0.5228
0.6091	0.7023	0.7987	0.8972	1.0000

Hrad:

0.0696	0.1392	0.2047	0.2835	0.3627
0.4546	0.5436	0.6122	0.6139	0.6942
0.7612	0.8345	0.9102	0.9852	1.0470
1.1177	1.1887	1.2626	1.3351	1.4021
1.4715	1.5448	1.6167	1.6896	1.7532
1.8000	1.8644	1.9341	2.0064	2.0779
2.1474	2.2152	2.2800	2.3326	2.3806
2.4049	2.4411	2.4518	2.2841	1.7535
1.1624	0.8315	0.8336	0.7553	0.8093
0.8609	0.7990	0.8977	0.9921	1.0000

Width:

0.0112	0.0161	0.0205	0.0230	0.0249
0.0256	0.0263	0.0284	0.0332	0.0344
0.0362	0.0376	0.0387	0.0399	0.0415
0.0428	0.0439	0.0449	0.0460	0.0471
0.0482	0.0490	0.0499	0.0508	0.0518
0.0534	0.0545	0.0553	0.0561	0.0568
0.0576	0.0584	0.0593	0.0605	0.0619
0.0640	0.0658	0.0785	0.1535	0.2653
0.4138	0.5365	0.6811	0.7700	0.7963
0.8368	0.9015	0.9174	0.9380	1.0000

Transect 3000.11

Area:

0.0003	0.0014	0.0024	0.0035	0.0046
0.0058	0.0072	0.0086	0.0101	0.0117
0.0133	0.0149	0.0167	0.0185	0.0203
0.0222	0.0241	0.0261	0.0282	0.0304
0.0327	0.0351	0.0377	0.0405	0.0437
0.0473	0.0514	0.0567	0.0634	0.0721
0.0834	0.0968	0.1174	0.1472	0.1830
0.2221	0.2644	0.3092	0.3569	0.4077
0.4607	0.5139	0.5681	0.6236	0.6808
0.7402	0.8020	0.8661	0.9318	1.0000

Hrad:

0.0227	0.0886	0.1521	0.2118	0.2675
0.3189	0.3229	0.3730	0.4000	0.4443
0.4882	0.5278	0.5674	0.6127	0.6574
0.7013	0.7445	0.7801	0.7988	0.8178
0.8518	0.8842	0.8718	0.8845	0.8417
0.8015	0.7849	0.7477	0.6576	0.5700
0.4626	0.4837	0.4214	0.4216	0.3412
0.3831	0.4300	0.4722	0.5141	0.5553
0.5930	0.6601	0.7063	0.7663	0.8215
0.8626	0.9021	0.9305	0.9947	1.0000

Width:

0.0147	0.0152	0.0155	0.0162	0.0170
0.0180	0.0207	0.0214	0.0222	0.0231
0.0239	0.0249	0.0259	0.0266	0.0272
0.0278	0.0285	0.0294	0.0312	0.0330
0.0342	0.0364	0.0389	0.0444	0.0497
0.0552	0.0665	0.0902	0.1042	0.1500
0.1761	0.2324	0.3750	0.4929	0.5438
0.5977	0.6342	0.6710	0.7249	0.7635
0.7758	0.7792	0.8051	0.8187	0.8540
0.8796	0.9212	0.9410	0.9841	1.0000

Transect 3035.535

Area:

0.0019	0.0041	0.0065	0.0091	0.0120
0.0149	0.0179	0.0209	0.0240	0.0274
0.0310	0.0347	0.0386	0.0426	0.0467
0.0510	0.0555	0.0600	0.0647	0.0695
0.0743	0.0793	0.0845	0.0900	0.0957
0.1017	0.1079	0.1145	0.1212	0.1281
0.1352	0.1424	0.1505	0.1597	0.1718
0.1970	0.2392	0.2917	0.3484	0.4060
0.4643	0.5228	0.5815	0.6404	0.6994
0.7587	0.8182	0.8780	0.9381	1.0000

Hrad:

0.0418	0.0795	0.1116	0.1439	0.1810
0.2190	0.2561	0.2921	0.3284	0.3641
0.3797	0.4149	0.4490	0.4843	0.5206
0.5540	0.5921	0.6318	0.6718	0.7119
0.7511	0.7832	0.7889	0.8216	0.8477
0.8705	0.8932	0.9288	0.9656	1.0026
1.0403	1.0753	0.9613	0.9652	0.9503
0.8557	0.7185	0.6622	0.5275	0.5581
0.5207	0.5786	0.6370	0.6957	0.7540
0.8110	0.8677	0.9236	0.9705	1.0000

Width:

0.0324	0.0359	0.0404	0.0441	0.0457
0.0467	0.0476	0.0486	0.0515	0.0555
0.0582	0.0604	0.0625	0.0645	0.0666
0.0701	0.0718	0.0733	0.0747	0.0762
0.0778	0.0806	0.0862	0.0890	0.0926
0.0969	0.1021	0.1054	0.1081	0.1108
0.1135	0.1165	0.1393	0.1604	0.2567
0.5395	0.7719	0.8872	0.9077	0.9194
0.9279	0.9308	0.9331	0.9356	0.9386
0.9429	0.9467	0.9511	0.9607	1.0000

Transect 3046.813

Area:

0.0008	0.0019	0.0033	0.0048	0.0064
0.0080	0.0098	0.0117	0.0137	0.0158
0.0179	0.0202	0.0226	0.0252	0.0280
0.0311	0.0344	0.0384	0.0437	0.0510
0.0641	0.0876	0.1157	0.1458	0.1764
0.2071	0.2379	0.2688	0.2998	0.3309
0.3624	0.3955	0.4291	0.4626	0.4962
0.5297	0.5633	0.5968	0.6304	0.6640
0.6975	0.7311	0.7647	0.7983	0.8319
0.8655	0.8991	0.9327	0.9664	1.0000

Hrad:

0.0186	0.0383	0.0573	0.0784	0.0989
0.1192	0.1391	0.1582	0.1768	0.1946
0.2110	0.2281	0.2432	0.2505	0.2534
0.2588	0.2741	0.2637	0.2143	0.1706
0.1557	0.1466	0.1346	0.1581	0.1913
0.2248	0.2584	0.2917	0.3247	0.3571
0.3872	0.4037	0.4392	0.4748	0.5104
0.5461	0.5818	0.6174	0.6530	0.6885
0.7240	0.7594	0.7946	0.8298	0.8649
0.8998	0.9346	0.9694	1.0040	1.0000

Width:

0.0303	0.0363	0.0408	0.0440	0.0472
0.0499	0.0526	0.0554	0.0582	0.0612
0.0645	0.0675	0.0711	0.0771	0.0850
0.0928	0.0971	0.1371	0.1660	0.2471
0.5523	0.7641	0.8325	0.8796	0.8817
0.8838	0.8859	0.8891	0.8929	0.8982
0.9201	0.9639	0.9641	0.9642	0.9644
0.9645	0.9647	0.9649	0.9650	0.9652
0.9654	0.9655	0.9657	0.9658	0.9660
0.9662	0.9663	0.9665	0.9667	1.0000

Transect 3187.848

Area:

0.0002	0.0005	0.0009	0.0013	0.0018
0.0023	0.0028	0.0033	0.0039	0.0044
0.0051	0.0060	0.0072	0.0086	0.0102
0.0119	0.0136	0.0154	0.0172	0.0191
0.0211	0.0231	0.0252	0.0273	0.0295
0.0317	0.0340	0.0364	0.0390	0.0421
0.0464	0.0535	0.0696	0.0937	0.1226
0.1567	0.1963	0.2396	0.2863	0.3341
0.3828	0.4335	0.4875	0.5450	0.6034
0.6654	0.7320	0.8119	0.9042	1.0000

Hrad:

0.0681	0.1360	0.1961	0.2627	0.3270
0.3857	0.4399	0.4905	0.5380	0.5416
0.5192	0.5016	0.4774	0.4953	0.5538
0.6108	0.6742	0.7375	0.7994	0.8610
0.9216	0.9799	1.0367	1.0943	1.1511
1.2064	1.2528	1.2673	1.2594	1.2519
0.8740	0.7811	0.5038	0.3810	0.4218
0.4606	0.5199	0.5497	0.5901	0.6754
0.7607	0.8365	0.9015	0.9052	0.9909
1.0393	1.1056	1.1411	1.1912	1.0000

Width:

0.0028	0.0036	0.0043	0.0047	0.0049
0.0051	0.0053	0.0055	0.0057	0.0066
0.0083	0.0104	0.0134	0.0157	0.0166
0.0176	0.0182	0.0188	0.0194	0.0200
0.0205	0.0211	0.0217	0.0223	0.0229
0.0234	0.0242	0.0257	0.0279	0.0374
0.0505	0.1118	0.2219	0.2707	0.3274
0.3877	0.4301	0.4752	0.4888	0.4989
0.5095	0.5393	0.5820	0.6009	0.6218
0.6592	0.7355	0.9163	0.9786	1.0000

Transect 3200.809

Area:

0.0001	0.0004	0.0006	0.0008	0.0011
0.0014	0.0017	0.0021	0.0025	0.0030
0.0036	0.0044	0.0053	0.0063	0.0074
0.0085	0.0097	0.0113	0.0129	0.0148
0.0167	0.0188	0.0209	0.0232	0.0256
0.0282	0.0309	0.0338	0.0370	0.0405
0.0451	0.0529	0.0651	0.0801	0.0977
0.1181	0.1409	0.1697	0.2069	0.2490
0.3002	0.3605	0.4258	0.4956	0.5706
0.6507	0.7341	0.8205	0.9092	1.0000

Hrad:

0.0633	0.1372	0.2011	0.2579	0.3095
0.3571	0.3928	0.3977	0.4098	0.4296
0.4371	0.3994	0.4525	0.5151	0.5781
0.6394	0.6861	0.7203	0.7546	0.7893
0.8271	0.8650	0.9055	0.9466	0.9834
1.0127	1.0410	1.0758	1.0652	1.0513
0.9034	0.6764	0.6307	0.5011	0.5273
0.5770	0.6202	0.6400	0.6467	0.5897
0.6389	0.6794	0.7104	0.6549	0.7245
0.7452	0.8173	0.8913	0.9493	1.0000

Width:

0.0023	0.0025	0.0027	0.0028	0.0030
0.0032	0.0035	0.0043	0.0052	0.0061
0.0073	0.0100	0.0108	0.0113	0.0117
0.0121	0.0154	0.0177	0.0192	0.0207
0.0220	0.0233	0.0244	0.0256	0.0270
0.0291	0.0311	0.0326	0.0367	0.0411
0.0616	0.1089	0.1525	0.1776	0.2103
0.2334	0.2661	0.3764	0.4329	0.5032
0.6241	0.6897	0.7460	0.7939	0.8544
0.9005	0.9370	0.9604	0.9933	1.0000

Transect 3358.095

Area:

0.0001	0.0002	0.0003	0.0005	0.0007
0.0009	0.0012	0.0016	0.0021	0.0026
0.0033	0.0039	0.0047	0.0054	0.0062
0.0070	0.0078	0.0087	0.0096	0.0105
0.0115	0.0125	0.0135	0.0147	0.0160
0.0185	0.0219	0.0263	0.0322	0.0393
0.0477	0.0611	0.0781	0.0965	0.1170
0.1412	0.1724	0.2100	0.2524	0.3008
0.3581	0.4222	0.4907	0.5617	0.6334
0.7055	0.7780	0.8513	0.9252	1.0000

Hrad:

0.0323	0.0716	0.1047	0.1341	0.1543
0.1506	0.1598	0.1762	0.1999	0.2342
0.2693	0.3122	0.3560	0.4005	0.4454
0.4901	0.5325	0.5748	0.6171	0.6593
0.7015	0.7417	0.7650	0.7625	0.7001

0.6636	0.6399	0.6056	0.5687	0.5359
0.5195	0.3131	0.3139	0.3423	0.3656
0.3891	0.3951	0.4185	0.4634	0.4985
0.5340	0.5663	0.6050	0.5939	0.6612
0.7338	0.8037	0.8710	0.9381	1.0000

Width:

0.0015	0.0017	0.0019	0.0022	0.0026
0.0037	0.0048	0.0059	0.0069	0.0079
0.0088	0.0092	0.0097	0.0101	0.0105
0.0109	0.0113	0.0118	0.0123	0.0127
0.0132	0.0137	0.0145	0.0160	0.0213
0.0410	0.0481	0.0654	0.0900	0.1020
0.1350	0.2185	0.2341	0.2599	0.2849
0.3628	0.4640	0.5408	0.5893	0.7068
0.8147	0.8916	0.9344	0.9524	0.9580
0.9626	0.9710	0.9803	0.9918	1.0000

Transect 3380.367

Area:

0.0001	0.0003	0.0004	0.0006	0.0008
0.0011	0.0016	0.0022	0.0029	0.0036
0.0045	0.0053	0.0063	0.0073	0.0084
0.0095	0.0108	0.0120	0.0135	0.0150
0.0167	0.0185	0.0204	0.0225	0.0248
0.0271	0.0298	0.0340	0.0390	0.0455
0.0544	0.0651	0.0783	0.0937	0.1120
0.1325	0.1570	0.1879	0.2263	0.2695
0.3184	0.3724	0.4301	0.4946	0.5653
0.6458	0.7327	0.8215	0.9107	1.0000

Hrad:

0.0550	0.0983	0.1346	0.1665	0.1698
0.1819	0.2186	0.2646	0.3251	0.3959
0.4743	0.5486	0.6224	0.6960	0.7709
0.8448	0.9111	0.9615	0.9994	1.0376
1.0699	1.1072	1.1493	1.2008	1.2262
1.2894	1.3258	1.2974	1.2816	1.2218
1.1549	1.0670	0.9916	0.9424	0.8794
0.7701	0.7415	0.7269	0.6531	0.5534
0.6044	0.6674	0.7348	0.7801	0.8331
0.8544	0.9017	0.8782	0.9283	1.0000

Width:

0.0015	0.0017	0.0019	0.0020	0.0028
0.0045	0.0058	0.0071	0.0082	0.0090
0.0096	0.0103	0.0110	0.0117	0.0124
0.0132	0.0140	0.0151	0.0164	0.0179
0.0195	0.0211	0.0227	0.0241	0.0260
0.0273	0.0359	0.0530	0.0578	0.0935
0.1105	0.1304	0.1575	0.1928	0.2167
0.2492	0.3034	0.3886	0.4652	0.5076
0.5824	0.6219	0.6834	0.7496	0.8442
0.9548	0.9901	0.9963	0.9979	1.0000

Transect 3509.864

Area:

0.0000	0.0001	0.0002	0.0002	0.0004
0.0005	0.0006	0.0009	0.0013	0.0018
0.0024	0.0031	0.0038	0.0047	0.0056
0.0066	0.0076	0.0087	0.0098	0.0109
0.0121	0.0133	0.0145	0.0158	0.0171
0.0189	0.0224	0.0292	0.0418	0.0583
0.0771	0.0985	0.1240	0.1522	0.1836
0.2195	0.2610	0.3049	0.3506	0.3978
0.4479	0.5002	0.5538	0.6094	0.6662
0.7242	0.7836	0.8484	0.9202	1.0000

Hrad:

0.0186	0.0378	0.0522	0.0647	0.0761
0.0869	0.0833	0.0991	0.1238	0.1521
0.1842	0.2234	0.2643	0.3057	0.3529
0.4033	0.4529	0.5024	0.5566	0.6095
0.6611	0.7116	0.7609	0.8091	0.8549
0.8566	0.7755	0.5825	0.4473	0.4275
0.4272	0.4531	0.4754	0.4798	0.5305
0.5540	0.5762	0.6181	0.6613	0.7008
0.7069	0.7578	0.8037	0.8476	0.8986
0.9453	0.9935	1.0111	1.0126	1.0000

Width:

0.0006	0.0008	0.0010	0.0012	0.0013
0.0015	0.0029	0.0042	0.0054	0.0066
0.0079	0.0089	0.0099	0.0109	0.0117
0.0123	0.0129	0.0135	0.0139	0.0143
0.0148	0.0152	0.0156	0.0160	0.0165
0.0302	0.0545	0.1174	0.1903	0.2172
0.2441	0.2824	0.3340	0.3688	0.4027
0.4809	0.5317	0.5555	0.5716	0.5975
0.6381	0.6517	0.6733	0.6957	0.7083
0.7239	0.7506	0.8474	0.9612	1.0000

Transect 3613.455

Area:

0.0002	0.0004	0.0006	0.0009	0.0012
0.0017	0.0022	0.0029	0.0038	0.0047
0.0056	0.0066	0.0077	0.0088	0.0099
0.0111	0.0124	0.0138	0.0182	0.0283
0.0449	0.0665	0.0906	0.1159	0.1418
0.1683	0.1954	0.2230	0.2515	0.2816
0.3125	0.3438	0.3757	0.4082	0.4411
0.4746	0.5087	0.5434	0.5788	0.6150
0.6517	0.6889	0.7265	0.7644	0.8026
0.8412	0.8802	0.9197	0.9597	1.0000

Hrad:

0.0331	0.0611	0.0847	0.1053	0.1029
0.1095	0.1241	0.1395	0.1595	0.1832
0.2079	0.2325	0.2568	0.2799	0.3021
0.3223	0.3420	0.3582	0.2954	0.1133
0.1216	0.1344	0.1470	0.1825	0.2187
0.2528	0.2877	0.3201	0.3541	0.3706
0.4059	0.4392	0.4715	0.5047	0.5363
0.5677	0.5996	0.6252	0.6547	0.6799
0.7125	0.7432	0.7792	0.8124	0.8458
0.8776	0.9057	0.9330	0.9664	1.0000

Width:

0.0049	0.0055	0.0061	0.0067	0.0097
0.0131	0.0160	0.0189	0.0213	0.0229
0.0243	0.0255	0.0266	0.0278	0.0291
0.0306	0.0321	0.0454	0.1779	0.3374
0.4829	0.5705	0.6178	0.6333	0.6464
0.6639	0.6774	0.6970	0.7172	0.7586
0.7685	0.7817	0.7958	0.8076	0.8214
0.8351	0.8474	0.8684	0.8835	0.9040
0.9142	0.9266	0.9320	0.9406	0.9486
0.9583	0.9717	0.9856	0.9930	1.0000

Transect 3621.185

Area:

0.0004	0.0007	0.0011	0.0015	0.0019
0.0024	0.0029	0.0035	0.0041	0.0049
0.0057	0.0065	0.0074	0.0084	0.0095
0.0117	0.0184	0.0313	0.0501	0.0713
0.0935	0.1162	0.1396	0.1638	0.1889
0.2144	0.2404	0.2680	0.2961	0.3249
0.3539	0.3833	0.4131	0.4431	0.4738
0.5050	0.5371	0.5701	0.6036	0.6379
0.6725	0.7075	0.7429	0.7787	0.8148
0.8513	0.8882	0.9254	0.9626	1.0000

Hrad:

0.0349	0.0650	0.0915	0.1151	0.1365
0.1527	0.1595	0.1690	0.1797	0.1968
0.2150	0.2294	0.2446	0.2614	0.2774
0.2573	0.1878	0.1290	0.1169	0.1237
0.1559	0.1889	0.2210	0.2489	0.2793
0.3126	0.3437	0.3593	0.3851	0.4210
0.4512	0.4854	0.5161	0.5491	0.5756
0.5977	0.6158	0.6388	0.6663	0.6907
0.7245	0.7514	0.7810	0.8096	0.8398
0.8693	0.8961	0.9304	0.9658	1.0000

Width:

0.0098	0.0102	0.0106	0.0110	0.0113
0.0122	0.0144	0.0167	0.0190	0.0206
0.0219	0.0237	0.0255	0.0271	0.0288
0.1178	0.2396	0.4588	0.5494	0.5856
0.5979	0.6135	0.6376	0.6618	0.6748
0.6848	0.7113	0.7446	0.7677	0.7707
0.7833	0.7885	0.7993	0.8107	0.8221
0.8440	0.8716	0.8918	0.9076	0.9231
0.9278	0.9412	0.9509	0.9616	0.9701
0.9792	0.9912	0.9946	0.9967	1.0000

Transect 3640.294

Area:

0.0001	0.0005	0.0009	0.0014	0.0021
0.0032	0.0044	0.0058	0.0073	0.0088
0.0106	0.0126	0.0147	0.0168	0.0190
0.0213	0.0236	0.0262	0.0300	0.0400
0.0578	0.0786	0.1003	0.1229	0.1474
0.1731	0.1994	0.2267	0.2547	0.2833
0.3125	0.3421	0.3726	0.4042	0.4361
0.4684	0.5009	0.5336	0.5667	0.6004
0.6355	0.6716	0.7086	0.7477	0.7875
0.8287	0.8705	0.9125	0.9558	1.0000

Hrad:

0.0144	0.0517	0.0819	0.1078	0.1048
0.1181	0.1429	0.1672	0.1900	0.2120
0.2209	0.2379	0.2617	0.2860	0.3098
0.3318	0.3418	0.3533	0.3275	0.2161
0.1233	0.1567	0.1966	0.2330	0.2545
0.2879	0.3242	0.3584	0.3932	0.4296
0.4680	0.5013	0.5385	0.5628	0.6000
0.6397	0.6801	0.7208	0.7531	0.7832
0.7936	0.8199	0.8413	0.8463	0.8757
0.8959	0.9316	0.9650	0.9836	1.0000

Width:

0.0080	0.0090	0.0100	0.0110	0.0209
0.0267	0.0291	0.0313	0.0337	0.0359
0.0426	0.0454	0.0468	0.0479	0.0490
0.0503	0.0554	0.0596	0.1429	0.3092
0.4517	0.4793	0.4852	0.5271	0.5572
0.5801	0.5950	0.6134	0.6296	0.6422
0.6511	0.6667	0.6976	0.7044	0.7136
0.7197	0.7246	0.7288	0.7416	0.7625
0.7917	0.8109	0.8501	0.8777	0.8980
0.9212	0.9313	0.9439	0.9704	1.0000

Transect 3649.104

Area:

0.0005	0.0019	0.0036	0.0054	0.0075
0.0097	0.0121	0.0147	0.0175	0.0204
0.0236	0.0271	0.0309	0.0350	0.0412
0.0521	0.0653	0.0803	0.0968	0.1147
0.1339	0.1546	0.1766	0.1996	0.2237
0.2486	0.2743	0.3007	0.3278	0.3554
0.3835	0.4123	0.4415	0.4712	0.5013
0.5319	0.5630	0.5945	0.6264	0.6588
0.6914	0.7243	0.7575	0.7910	0.8248
0.8590	0.8936	0.9285	0.9640	1.0000

Hrad:

0.0212	0.0491	0.0749	0.0962	0.1147
0.1315	0.1471	0.1618	0.1758	0.1892
0.2007	0.2126	0.2250	0.2377	0.2489
0.2427	0.2426	0.2491	0.2603	0.2740
0.2888	0.3050	0.3229	0.3429	0.3637
0.3856	0.4079	0.4316	0.4560	0.4805
0.5048	0.5290	0.5543	0.5793	0.6042
0.6289	0.6534	0.6775	0.7018	0.7303
0.7588	0.7873	0.8158	0.8433	0.8708
0.8982	0.9257	0.9509	0.9754	1.0000

Width:

0.0291	0.0431	0.0482	0.0534	0.0585
0.0637	0.0688	0.0739	0.0791	0.0844
0.0925	0.1006	0.1087	0.1168	0.2431
0.3343	0.3914	0.4352	0.4732	0.5106
0.5502	0.5881	0.6214	0.6487	0.6745
0.6974	0.7191	0.7371	0.7527	0.7682
0.7838	0.7993	0.8118	0.8242	0.8367
0.8491	0.8616	0.8744	0.8871	0.8948
0.9026	0.9103	0.9181	0.9277	0.9373
0.9469	0.9564	0.9700	0.9850	1.0000

Transect 3734.707

Area:

0.0006	0.0023	0.0044	0.0067	0.0094
0.0123	0.0155	0.0190	0.0228	0.0269
0.0314	0.0364	0.0417	0.0475	0.0537
0.0607	0.0707	0.0830	0.0974	0.1141
0.1331	0.1535	0.1753	0.1987	0.2232
0.2485	0.2746	0.3014	0.3287	0.3564
0.3844	0.4126	0.4410	0.4696	0.4985
0.5275	0.5568	0.5863	0.6161	0.6463
0.6767	0.7075	0.7388	0.7707	0.8036
0.8398	0.8785	0.9181	0.9586	1.0000

Hrad:

0.0233	0.0531	0.0842	0.1108	0.1348
0.1570	0.1779	0.1979	0.2172	0.2323
0.2480	0.2642	0.2808	0.2977	0.3249
0.2972	0.2719	0.2734	0.2843	0.2894
0.3120	0.3363	0.3549	0.3755	0.4050
0.4340	0.4629	0.4913	0.5236	0.5552
0.5869	0.6180	0.6486	0.6786	0.7081
0.7370	0.7654	0.7926	0.8190	0.8449
0.8703	0.8952	0.9162	0.9364	0.9499
0.9387	0.9531	0.9696	0.9851	1.0000

Width:

0.0284	0.0461	0.0528	0.0595	0.0663
0.0730	0.0797	0.0864	0.0932	0.1029
0.1127	0.1225	0.1323	0.1421	0.1530
0.2017	0.2680	0.3185	0.3674	0.4306
0.4679	0.5003	0.5384	0.5721	0.5922
0.6115	0.6284	0.6453	0.6539	0.6623
0.6677	0.6728	0.6779	0.6830	0.6881
0.6932	0.6984	0.7054	0.7131	0.7207
0.7283	0.7360	0.7513	0.7675	0.7987
0.9040	0.9321	0.9515	0.9727	1.0000

Transect 3762.625

Area:

0.0001	0.0002	0.0003	0.0005	0.0006
0.0008	0.0009	0.0011	0.0015	0.0020
0.0029	0.0039	0.0051	0.0064	0.0080
0.0099	0.0119	0.0142	0.0166	0.0196
0.0239	0.0306	0.0439	0.0631	0.0849
0.1115	0.1414	0.1728	0.2054	0.2387
0.2732	0.3083	0.3440	0.3801	0.4168
0.4539	0.4914	0.5291	0.5670	0.6052
0.6435	0.6821	0.7211	0.7603	0.7998
0.8395	0.8793	0.9194	0.9596	1.0000

Hrad:

0.0288	0.0527	0.0713	0.0868	0.1005
0.1130	0.1246	0.1168	0.1063	0.0949
0.1067	0.1305	0.1530	0.1749	0.1936
0.2112	0.2043	0.2309	0.2565	0.2757
0.2796	0.2655	0.2220	0.1576	0.1525
0.1803	0.2107	0.2149	0.2542	0.2849
0.3190	0.3542	0.3884	0.4206	0.4562
0.4943	0.5288	0.5667	0.6025	0.6402
0.6787	0.7139	0.7461	0.7828	0.8175
0.8536	0.8905	0.9272	0.9626	1.0000

Width:

0.0026	0.0029	0.0032	0.0035	0.0038
0.0041	0.0044	0.0064	0.0105	0.0182
0.0238	0.0266	0.0295	0.0371	0.0426
0.0477	0.0544	0.0574	0.0638	0.0877
0.1293	0.2394	0.4134	0.5054	0.6001
0.7110	0.7544	0.8035	0.8071	0.8442
0.8641	0.8712	0.8850	0.9033	0.9134
0.9179	0.9290	0.9333	0.9409	0.9452
0.9479	0.9610	0.9664	0.9720	0.9782
0.9834	0.9875	0.9916	0.9969	1.0000

Transect 3775.164

Area:

0.0001	0.0003	0.0005	0.0007	0.0010
0.0012	0.0015	0.0020	0.0026	0.0034
0.0045	0.0057	0.0070	0.0083	0.0097
0.0112	0.0127	0.0142	0.0159	0.0177
0.0198	0.0226	0.0270	0.0376	0.0587
0.0858	0.1170	0.1493	0.1824	0.2166
0.2516	0.2874	0.3237	0.3604	0.3978
0.4359	0.4743	0.5130	0.5520	0.5913
0.6308	0.6706	0.7108	0.7513	0.7922
0.8334	0.8746	0.9162	0.9580	1.0000

Hrad:

0.0313	0.0608	0.0851	0.1061	0.1249
0.1421	0.1350	0.1276	0.1349	0.1422
0.1480	0.1760	0.2036	0.2313	0.2597
0.2881	0.3155	0.3419	0.3662	0.3867
0.4030	0.3991	0.3336	0.2369	0.1855
0.1355	0.1551	0.1922	0.2284	0.2631
0.3007	0.3346	0.3726	0.4100	0.4436
0.4798	0.5155	0.5555	0.5938	0.6309
0.6714	0.7047	0.7406	0.7782	0.8128
0.8500	0.8899	0.9238	0.9622	1.0000

Width:

0.0041	0.0045	0.0050	0.0054	0.0059
0.0063	0.0087	0.0130	0.0167	0.0213
0.0275	0.0294	0.0311	0.0327	0.0340
0.0351	0.0363	0.0376	0.0421	0.0462
0.0508	0.0845	0.1246	0.3934	0.5901
0.7070	0.7532	0.7778	0.8010	0.8225
0.8405	0.8581	0.8683	0.8785	0.8963
0.9081	0.9197	0.9232	0.9294	0.9369
0.9393	0.9514	0.9597	0.9654	0.9746
0.9804	0.9827	0.9918	0.9956	1.0000

Transect 3804.186

Area:

0.0002	0.0004	0.0006	0.0008	0.0011
0.0014	0.0022	0.0032	0.0044	0.0058
0.0072	0.0088	0.0103	0.0120	0.0137
0.0154	0.0172	0.0190	0.0209	0.0230
0.0252	0.0278	0.0314	0.0418	0.0645
0.0937	0.1239	0.1548	0.1868	0.2198
0.2536	0.2882	0.3233	0.3588	0.3951
0.4320	0.4692	0.5072	0.5457	0.5849
0.6246	0.6648	0.7054	0.7466	0.7881
0.8298	0.8718	0.9142	0.9569	1.0000

Hrad:

0.0307	0.0613	0.0864	0.1081	0.1273
0.1040	0.0920	0.1130	0.1375	0.1597
0.1927	0.2247	0.2558	0.2861	0.3158
0.3447	0.3731	0.3994	0.4243	0.4452
0.4640	0.4726	0.4119	0.2153	0.1551
0.1366	0.1758	0.2119	0.2492	0.2862
0.3203	0.3563	0.3968	0.4329	0.4676
0.5041	0.5360	0.5734	0.6060	0.6427
0.6756	0.7106	0.7488	0.7802	0.8190
0.8581	0.8967	0.9272	0.9656	1.0000

Width:

0.0046	0.0050	0.0054	0.0059	0.0063
0.0113	0.0213	0.0259	0.0295	0.0334
0.0347	0.0359	0.0370	0.0382	0.0394
0.0405	0.0416	0.0429	0.0458	0.0503
0.0544	0.0661	0.1393	0.3441	0.6522
0.6881	0.7028	0.7291	0.7483	0.7734
0.7905	0.8078	0.8136	0.8324	0.8440
0.8561	0.8745	0.8838	0.8999	0.9121
0.9241	0.9352	0.9418	0.9567	0.9620
0.9669	0.9720	0.9858	0.9909	1.0000

Transect 3957.179

Area:

0.0001	0.0004	0.0008	0.0014	0.0021
0.0029	0.0038	0.0050	0.0065	0.0081
0.0098	0.0116	0.0135	0.0154	0.0174
0.0195	0.0217	0.0243	0.0272	0.0317
0.0432	0.0597	0.0801	0.1012	0.1232
0.1462	0.1703	0.1952	0.2216	0.2489
0.2776	0.3078	0.3387	0.3698	0.4023
0.4360	0.4709	0.5071	0.5438	0.5812
0.6197	0.6592	0.6995	0.7404	0.7817
0.8236	0.8665	0.9102	0.9549	1.0000

Hrad:

0.0314	0.0592	0.0696	0.0928	0.1196
0.1443	0.1577	0.1675	0.1870	0.2136
0.2454	0.2775	0.3060	0.3385	0.3702
0.3958	0.4160	0.4260	0.3959	0.2148
0.1351	0.1705	0.1730	0.2152	0.2474
0.2864	0.3177	0.3410	0.3715	0.4094
0.4297	0.4537	0.4954	0.5334	0.5501
0.5795	0.5954	0.6301	0.6679	0.7034
0.7171	0.7563	0.7794	0.8169	0.8519
0.8861	0.9053	0.9323	0.9649	1.0000

Width:

0.0045	0.0064	0.0109	0.0142	0.0167
0.0192	0.0236	0.0292	0.0337	0.0368
0.0387	0.0403	0.0423	0.0436	0.0449
0.0469	0.0525	0.0603	0.0659	0.1510
0.3310	0.4240	0.4613	0.4732	0.4970
0.5211	0.5345	0.5711	0.5952	0.6065
0.6448	0.6772	0.6825	0.6922	0.7302
0.7513	0.7901	0.8040	0.8152	0.8313
0.8638	0.8778	0.8971	0.9060	0.9173
0.9292	0.9569	0.9762	0.9897	1.0000

Transect 4108.305

Area:

0.0002	0.0004	0.0008	0.0012	0.0016
0.0021	0.0026	0.0031	0.0039	0.0048
0.0058	0.0068	0.0080	0.0093	0.0106
0.0121	0.0135	0.0151	0.0167	0.0186
0.0209	0.0235	0.0268	0.0320	0.0405
0.0544	0.0795	0.1115	0.1467	0.1827
0.2188	0.2551	0.2918	0.3292	0.3667
0.4044	0.4424	0.4812	0.5208	0.5615
0.6040	0.6469	0.6901	0.7337	0.7774
0.8214	0.8656	0.9102	0.9550	1.0000

Hrad:

0.1147	0.2219	0.3160	0.4296	0.5352
0.6380	0.7353	0.7017	0.7148	0.8025
0.8936	0.9822	1.0697	1.1632	1.2560
1.3427	1.4252	1.5056	1.5750	1.6260
1.6437	1.6335	1.5922	1.4427	1.0037
0.8014	0.5992	0.4890	0.4449	0.4417
0.4537	0.4719	0.4915	0.5157	0.5453
0.5765	0.6029	0.6213	0.6475	0.6673
0.6367	0.6777	0.7181	0.7593	0.8014
0.8397	0.8803	0.9200	0.9596	1.0000

Width:

0.0049	0.0067	0.0084	0.0093	0.0102
0.0109	0.0117	0.0150	0.0185	0.0201
0.0224	0.0250	0.0274	0.0292	0.0307
0.0322	0.0334	0.0345	0.0396	0.0455
0.0545	0.0641	0.0864	0.1505	0.2349
0.4144	0.6486	0.7591	0.7929	0.7990

0.8021	0.8101	0.8219	0.8305	0.8328
0.8351	0.8504	0.8643	0.8888	0.9215
0.9485	0.9547	0.9616	0.9667	0.9700
0.9787	0.9838	0.9897	0.9955	1.0000

Transect 4263.057

Area:

0.0001	0.0002	0.0004	0.0007	0.0011
0.0015	0.0020	0.0024	0.0030	0.0037
0.0044	0.0053	0.0061	0.0070	0.0079
0.0089	0.0100	0.0115	0.0145	0.0209
0.0325	0.0496	0.0718	0.0962	0.1219
0.1488	0.1765	0.2062	0.2375	0.2694
0.3018	0.3345	0.3674	0.4004	0.4338
0.4685	0.5045	0.5410	0.5783	0.6156
0.6532	0.6909	0.7289	0.7669	0.8051
0.8435	0.8823	0.9214	0.9606	1.0000

Hrad:

0.1025	0.1941	0.2769	0.2879	0.4203
0.5321	0.6200	0.7042	0.7967	0.8691
0.9226	0.9796	1.0452	1.1130	1.1795
1.2009	1.2025	0.9588	0.8802	0.6571
0.4671	0.3622	0.3136	0.3001	0.3037
0.3193	0.3412	0.3571	0.3701	0.3913
0.4188	0.4466	0.4760	0.5054	0.5347
0.5324	0.5687	0.5841	0.6164	0.6537
0.6885	0.7240	0.7612	0.7965	0.8329
0.8626	0.8984	0.9316	0.9672	1.0000

Width:

0.0025	0.0037	0.0054	0.0095	0.0100
0.0108	0.0120	0.0132	0.0142	0.0192
0.0203	0.0213	0.0222	0.0230	0.0239
0.0255	0.0303	0.0515	0.1074	0.2267
0.3634	0.5126	0.6031	0.6278	0.6752
0.6848	0.7257	0.7737	0.8026	0.8125
0.8237	0.8304	0.8343	0.8398	0.8535
0.9033	0.9171	0.9326	0.9446	0.9471
0.9534	0.9583	0.9605	0.9653	0.9683
0.9800	0.9844	0.9900	0.9934	1.0000

Transect 4347.811

Area:

0.0001	0.0003	0.0005	0.0009	0.0014
0.0019	0.0026	0.0033	0.0040	0.0048
0.0055	0.0063	0.0072	0.0083	0.0102
0.0152	0.0276	0.0454	0.0662	0.0889
0.1124	0.1359	0.1596	0.1834	0.2074
0.2316	0.2571	0.2841	0.3129	0.3424
0.3720	0.4019	0.4323	0.4632	0.4948
0.5268	0.5592	0.5921	0.6254	0.6589
0.6925	0.7262	0.7600	0.7940	0.8281
0.8624	0.8966	0.9310	0.9654	1.0000

Hrad:

0.1033	0.1827	0.2399	0.2556	0.3519
0.4468	0.5380	0.6302	0.7179	0.8016
0.8891	0.9740	1.0488	0.8447	0.8106
0.6104	0.3621	0.2673	0.2362	0.2318
0.2483	0.2706	0.2947	0.3207	0.3457
0.3733	0.3994	0.4077	0.4108	0.4020
0.4361	0.4621	0.4942	0.5158	0.5464
0.5713	0.6008	0.6259	0.6555	0.6863
0.7180	0.7508	0.7816	0.8120	0.8441
0.8759	0.9082	0.9401	0.9725	1.0000

Width:

0.0039	0.0057	0.0081	0.0131	0.0157
0.0177	0.0193	0.0203	0.0213	0.0222
0.0229	0.0236	0.0253	0.0402	0.0780
0.2508	0.4451	0.5657	0.6289	0.6725
0.6776	0.6796	0.6839	0.6869	0.6951
0.7100	0.7573	0.8099	0.8425	0.8527
0.8543	0.8732	0.8812	0.9045	0.9141
0.9297	0.9382	0.9543	0.9620	0.9672
0.9708	0.9723	0.9769	0.9818	0.9841
0.9869	0.9887	0.9911	0.9935	1.0000

Transect 4356.489

Area:

0.0000	0.0001	0.0003	0.0006	0.0010
0.0013	0.0018	0.0023	0.0028	0.0035
0.0042	0.0051	0.0060	0.0071	0.0081
0.0092	0.0103	0.0114	0.0126	0.0140
0.0157	0.0177	0.0210	0.0299	0.0496
0.0748	0.1034	0.1349	0.1689	0.2043
0.2402	0.2766	0.3137	0.3520	0.3909
0.4299	0.4690	0.5083	0.5484	0.5888
0.6293	0.6698	0.7104	0.7509	0.7915
0.8322	0.8734	0.9152	0.9574	1.0000

Hrad:

0.0832	0.1557	0.2091	0.3349	0.4487
0.5551	0.6421	0.7146	0.7728	0.8371
0.8857	0.9227	1.0089	1.1414	1.2898
1.4383	1.5829	1.7194	1.8466	1.9201
1.9607	1.9514	1.7845	1.2709	0.7418
0.5182	0.4439	0.4113	0.3923	0.4033
0.4199	0.4427	0.4684	0.4882	0.5079
0.5362	0.5699	0.6031	0.6350	0.6163
0.6587	0.7011	0.7435	0.7855	0.8272
0.8672	0.9027	0.9282	0.9630	1.0000

Width:

0.0016	0.0034	0.0064	0.0074	0.0084
0.0094	0.0107	0.0123	0.0142	0.0162
0.0186	0.0215	0.0235	0.0245	0.0249
0.0253	0.0258	0.0269	0.0282	0.0372
0.0432	0.0562	0.1099	0.3317	0.5560
0.6315	0.7090	0.7643	0.8269	0.8346
0.8470	0.8596	0.8836	0.9084	0.9140
0.9159	0.9177	0.9333	0.9441	0.9500
0.9502	0.9504	0.9506	0.9513	0.9524
0.9577	0.9755	0.9864	0.9960	1.0000

Transect 4380.968

Area:

0.0005	0.0013	0.0020	0.0028	0.0036
0.0043	0.0051	0.0059	0.0067	0.0075
0.0083	0.0091	0.0099	0.0107	0.0115
0.0124	0.0132	0.0142	0.0158	0.0179
0.0203	0.0229	0.0258	0.0305	0.0385
0.0503	0.0684	0.0909	0.1153	0.1419
0.1703	0.2010	0.2344	0.2716	0.3115
0.3531	0.3957	0.4387	0.4823	0.5265
0.5716	0.6172	0.6633	0.7101	0.7576
0.8053	0.8530	0.9009	0.9500	1.0000

Hrad:

0.1439	0.3373	0.5228	0.7010	0.8724
1.0375	1.1967	1.3504	1.4988	1.6424
1.7815	1.9162	2.0469	2.1737	2.2970
2.4168	2.5169	2.5689	2.4332	2.3066
2.2193	2.1302	2.0487	1.8162	1.4823
1.1974	0.9216	0.7351	0.6576	0.6143
0.6056	0.6047	0.6086	0.6112	0.5708
0.5916	0.5980	0.6298	0.6595	0.6885
0.7172	0.7462	0.7801	0.8133	0.8498
0.8733	0.9126	0.9518	0.9856	1.0000

Width:

0.0148	0.0150	0.0151	0.0152	0.0153
0.0154	0.0155	0.0156	0.0157	0.0159
0.0160	0.0161	0.0162	0.0163	0.0164
0.0165	0.0168	0.0256	0.0374	0.0439
0.0495	0.0548	0.0660	0.1285	0.1861
0.2959	0.4085	0.4689	0.5059	0.5494
0.5818	0.6355	0.7034	0.7752	0.8101
0.8355	0.8517	0.8580	0.8738	0.8861
0.9018	0.9114	0.9223	0.9388	0.9465
0.9481	0.9489	0.9613	0.9824	1.0000

Transect 4384.664

Area:

0.0000	0.0001	0.0003	0.0005	0.0008
0.0011	0.0015	0.0020	0.0025	0.0031
0.0037	0.0042	0.0048	0.0055	0.0061
0.0067	0.0074	0.0083	0.0097	0.0116
0.0140	0.0165	0.0199	0.0265	0.0372
0.0510	0.0672	0.0880	0.1156	0.1493
0.1853	0.2223	0.2598	0.2981	0.3376
0.3786	0.4209	0.4638	0.5070	0.5504
0.5939	0.6375	0.6813	0.7251	0.7693
0.8147	0.8606	0.9069	0.9534	1.0000

Hrad:

0.1030	0.2189	0.3500	0.4366	0.5078
0.5526	0.5804	0.5776	0.6825	0.7857
0.9032	1.0162	1.1253	1.2306	1.3325
1.4271	1.4725	1.4834	1.4043	1.2086
1.1303	1.0818	0.9630	0.7502	0.5777
0.4905	0.4547	0.3917	0.3727	0.3674
0.3782	0.3999	0.4276	0.4574	0.4811
0.5044	0.5343	0.5506	0.5906	0.6297
0.6703	0.7111	0.7519	0.7922	0.8235
0.8547	0.8621	0.9083	0.9558	1.0000

Width:

0.0017	0.0029	0.0038	0.0060	0.0064
0.0072	0.0098	0.0109	0.0115	0.0121
0.0124	0.0126	0.0129	0.0132	0.0135
0.0139	0.0156	0.0252	0.0334	0.0495
0.0518	0.0544	0.1101	0.1774	0.2638
0.3204	0.3956	0.5024	0.6829	0.7521
0.7841	0.7973	0.8107	0.8225	0.8637
0.8915	0.9148	0.9222	0.9249	0.9292
0.9315	0.9341	0.9360	0.9382	0.9588
0.9785	0.9889	0.9923	0.9945	1.0000

Transect 4405.269

Area:

0.0000	0.0001	0.0003	0.0006	0.0008
0.0012	0.0016	0.0023	0.0029	0.0037
0.0044	0.0051	0.0059	0.0067	0.0076
0.0085	0.0094	0.0105	0.0118	0.0141
0.0175	0.0217	0.0271	0.0345	0.0488
0.0673	0.0872	0.1077	0.1310	0.1590
0.1904	0.2226	0.2554	0.2887	0.3225
0.3573	0.3927	0.4294	0.4674	0.5068
0.5467	0.5875	0.6303	0.6779	0.7289
0.7809	0.8344	0.8892	0.9444	1.0000

Hrad:

0.0977	0.1110	0.2790	0.4256	0.5591
0.6487	0.5752	0.7445	0.8905	1.0349
1.1760	1.3134	1.4050	1.4926	1.5844
1.7119	1.8201	1.9006	1.9091	1.7397
1.5109	0.9401	0.9280	0.8761	0.7256
0.6234	0.5880	0.6008	0.6118	0.6125
0.6154	0.6323	0.6574	0.6868	0.7196
0.7496	0.7835	0.8182	0.8398	0.8458
0.8842	0.9170	0.9375	0.9368	0.8672
0.8869	0.8824	0.9115	0.9596	1.0000

Width:

0.0008	0.0034	0.0041	0.0047	0.0053
0.0063	0.0103	0.0120	0.0125	0.0128
0.0131	0.0134	0.0142	0.0150	0.0157
0.0161	0.0175	0.0203	0.0291	0.0519
0.0669	0.0866	0.1065	0.1673	0.3041
0.3460	0.3608	0.3818	0.4539	0.5370
0.5708	0.5791	0.5883	0.5994	0.6101
0.6238	0.6426	0.6614	0.6965	0.7068
0.7175	0.7402	0.7954	0.8937	0.9181
0.9347	0.9676	0.9807	0.9859	1.0000

Transect 4546.604

Area:

0.0000	0.0001	0.0002	0.0003	0.0004
0.0006	0.0010	0.0015	0.0019	0.0024
0.0029	0.0035	0.0040	0.0046	0.0053
0.0060	0.0068	0.0077	0.0087	0.0098
0.0126	0.0220	0.0374	0.0576	0.0832
0.1119	0.1416	0.1723	0.2037	0.2357
0.2683	0.3015	0.3350	0.3688	0.4031
0.4382	0.4739	0.5103	0.5475	0.5853
0.6236	0.6622	0.7015	0.7417	0.7827
0.8242	0.8663	0.9095	0.9542	1.0000

Hrad:

0.0827	0.1691	0.2659	0.3464	0.2746
0.2576	0.3618	0.4893	0.6065	0.7147
0.8124	0.8988	0.9753	1.0407	1.0834
1.1118	1.1087	1.0820	1.0616	1.0659
0.8567	0.4766	0.2816	0.2353	0.2004
0.2291	0.2625	0.2975	0.3338	0.3710
0.4072	0.4451	0.4828	0.5199	0.5559
0.5871	0.6214	0.6532	0.6808	0.7176
0.7485	0.7861	0.8143	0.8248	0.8579
0.9002	0.9273	0.9638	0.9747	1.0000

Width:

0.0010	0.0016	0.0018	0.0020	0.0038
0.0078	0.0092	0.0097	0.0101	0.0106
0.0113	0.0120	0.0128	0.0137	0.0148
0.0161	0.0180	0.0203	0.0229	0.0284
0.1265	0.2826	0.3871	0.4943	0.6015
0.6337	0.6508	0.6722	0.6870	0.6975
0.7125	0.7202	0.7285	0.7373	0.7499
0.7664	0.7785	0.7958	0.8127	0.8225
0.8335	0.8405	0.8575	0.8800	0.8936
0.9013	0.9215	0.9564	0.9756	1.0000

Transect 4692.952

Area:

0.0000	0.0000	0.0001	0.0001	0.0002
0.0003	0.0005	0.0007	0.0009	0.0012
0.0016	0.0019	0.0023	0.0027	0.0031
0.0035	0.0040	0.0045	0.0050	0.0056
0.0062	0.0071	0.0092	0.0146	0.0279
0.0465	0.0702	0.1002	0.1343	0.1710
0.2089	0.2474	0.2864	0.3260	0.3661
0.4066	0.4471	0.4879	0.5289	0.5701
0.6115	0.6531	0.6951	0.7376	0.7803
0.8232	0.8667	0.9105	0.9550	1.0000

Hrad:

0.0675	0.1349	0.2024	0.2699	0.3089
0.3522	0.3961	0.4194	0.4694	0.5462
0.6775	0.8003	0.9158	1.0249	1.1154
1.1115	1.2042	1.2466	1.2686	1.2936
1.3213	1.3196	1.0742	0.6653	0.3058
0.2371	0.2184	0.1744	0.1885	0.2140
0.2399	0.2818	0.3208	0.3576	0.3992

0.4427	0.4856	0.5295	0.5691	0.6119
0.6547	0.6982	0.7287	0.7689	0.8122
0.8541	0.8863	0.9311	0.9565	1.0000

Width:

0.0004	0.0007	0.0011	0.0015	0.0021
0.0028	0.0037	0.0051	0.0063	0.0073
0.0076	0.0080	0.0083	0.0087	0.0092
0.0101	0.0107	0.0114	0.0124	0.0135
0.0146	0.0282	0.0717	0.1941	0.3671
0.4626	0.6001	0.7126	0.7916	0.8332
0.8480	0.8573	0.8707	0.8862	0.8935
0.8978	0.9018	0.9050	0.9113	0.9158
0.9195	0.9230	0.9368	0.9446	0.9491
0.9566	0.9685	0.9759	0.9939	1.0000

Transect 4826.403

Area:

0.0000	0.0001	0.0004	0.0006	0.0009
0.0013	0.0021	0.0062	0.0168	0.0331
0.0537	0.0755	0.0979	0.1209	0.1441
0.1675	0.1910	0.2147	0.2386	0.2627
0.2871	0.3115	0.3359	0.3603	0.3847
0.4092	0.4337	0.4581	0.4826	0.5071
0.5317	0.5562	0.5807	0.6053	0.6299
0.6545	0.6791	0.7037	0.7283	0.7530
0.7776	0.8023	0.8269	0.8516	0.8763
0.9010	0.9257	0.9505	0.9752	1.0000

Hrad:

0.0254	0.0266	0.0626	0.0956	0.1188
0.1500	0.1293	0.0650	0.0524	0.0617
0.0747	0.0949	0.1165	0.1388	0.1613
0.1847	0.2085	0.2324	0.2563	0.2799
0.2976	0.3221	0.3466	0.3710	0.3955
0.4199	0.4443	0.4688	0.4932	0.5176
0.5420	0.5662	0.5905	0.6147	0.6390
0.6633	0.6874	0.7116	0.7357	0.7599
0.7842	0.8085	0.8326	0.8566	0.8805
0.9044	0.9283	0.9522	0.9762	1.0000

Width:

0.0019	0.0084	0.0093	0.0104	0.0132
0.0161	0.0778	0.2805	0.5611	0.7938
0.8551	0.8923	0.9179	0.9321	0.9422
0.9469	0.9532	0.9591	0.9694	0.9781
0.9846	0.9851	0.9856	0.9862	0.9869
0.9875	0.9881	0.9885	0.9891	0.9896
0.9900	0.9906	0.9913	0.9919	0.9924
0.9929	0.9935	0.9941	0.9946	0.9950
0.9953	0.9955	0.9959	0.9965	0.9972
0.9978	0.9985	0.9989	0.9994	1.0000

Transect 4968.21

Area:

0.0000	0.0001	0.0002	0.0004	0.0007
0.0011	0.0016	0.0021	0.0025	0.0030
0.0036	0.0041	0.0047	0.0054	0.0061
0.0069	0.0082	0.0100	0.0132	0.0241
0.0445	0.0704	0.0989	0.1288	0.1592
0.1899	0.2210	0.2523	0.2839	0.3156
0.3474	0.3794	0.4114	0.4436	0.4758
0.5081	0.5406	0.5733	0.6063	0.6399
0.6738	0.7084	0.7442	0.7804	0.8166
0.8530	0.8895	0.9261	0.9630	1.0000

Hrad:

0.0497	0.0939	0.1606	0.1324	0.1841
0.2546	0.3469	0.4363	0.5230	0.6072
0.6247	0.6954	0.7371	0.7800	0.8238
0.8576	0.6706	0.6809	0.6217	0.3635
0.2329	0.1989	0.2007	0.2149	0.2399
0.2662	0.2965	0.3266	0.3579	0.3902
0.4219	0.4554	0.4882	0.5208	0.5541
0.5876	0.6183	0.6498	0.6804	0.7104
0.7408	0.7719	0.7786	0.8107	0.8429
0.8749	0.9067	0.9386	0.9702	1.0000

Width:

0.0010	0.0023	0.0029	0.0076	0.0107
0.0123	0.0125	0.0127	0.0130	0.0132
0.0151	0.0157	0.0170	0.0183	0.0215
0.0250	0.0434	0.0572	0.1494	0.4354
0.6418	0.7454	0.7910	0.8201	0.8242
0.8394	0.8420	0.8496	0.8548	0.8576
0.8630	0.8635	0.8664	0.8702	0.8719
0.8737	0.8812	0.8868	0.8983	0.9130
0.9262	0.9445	0.9756	0.9777	0.9805
0.9831	0.9885	0.9929	0.9983	1.0000

Transect 5103.876

Area:

0.0000	0.0001	0.0003	0.0005	0.0008
0.0012	0.0018	0.0025	0.0032	0.0040
0.0049	0.0057	0.0067	0.0077	0.0088
0.0109	0.0183	0.0321	0.0511	0.0740
0.0995	0.1267	0.1547	0.1832	0.2120
0.2409	0.2698	0.2989	0.3281	0.3574
0.3868	0.4166	0.4477	0.4795	0.5114
0.5436	0.5758	0.6081	0.6404	0.6728
0.7052	0.7376	0.7701	0.8027	0.8353
0.8680	0.9009	0.9338	0.9668	1.0000

Hrad:

0.0399	0.0799	0.1177	0.1552	0.1872
0.2167	0.2513	0.2897	0.3416	0.3900
0.4351	0.4775	0.5127	0.5423	0.5594
0.4874	0.2825	0.1752	0.1402	0.1312
0.1409	0.1339	0.1648	0.1953	0.2294
0.2638	0.2980	0.3320	0.3664	0.4002
0.4345	0.4679	0.4812	0.5129	0.5441
0.5752	0.6083	0.6412	0.6738	0.7063
0.7386	0.7709	0.8033	0.8358	0.8675
0.8973	0.9290	0.9611	0.9919	1.0000

Width:

0.0019	0.0038	0.0058	0.0080	0.0106
0.0138	0.0195	0.0218	0.0231	0.0243
0.0256	0.0268	0.0292	0.0318	0.0422
0.1173	0.3260	0.4822	0.6462	0.7311
0.7941	0.8309	0.8528	0.8613	0.8653
0.8680	0.8714	0.8752	0.8775	0.8813
0.8861	0.9093	0.9514	0.9561	0.9625
0.9685	0.9688	0.9698	0.9711	0.9724
0.9737	0.9752	0.9767	0.9783	0.9806
0.9846	0.9877	0.9902	0.9938	1.0000

Transect 5276.091

Area:

0.0005	0.0013	0.0022	0.0031	0.0040
0.0050	0.0061	0.0074	0.0110	0.0208
0.0351	0.0512	0.0685	0.0862	0.1043
0.1229	0.1421	0.1621	0.1834	0.2051
0.2271	0.2494	0.2721	0.2950	0.3183
0.3417	0.3654	0.3894	0.4140	0.4390
0.4642	0.4898	0.5158	0.5421	0.5686
0.5954	0.6224	0.6494	0.6765	0.7037
0.7309	0.7589	0.7881	0.8176	0.8475
0.8777	0.9081	0.9386	0.9692	1.0000

Hrad:

0.0314	0.0708	0.1154	0.1580	0.1991
0.2373	0.2627	0.2800	0.2247	0.1487
0.1310	0.1368	0.1545	0.1762	0.1995
0.2210	0.2436	0.2615	0.2776	0.3037
0.3294	0.3534	0.3776	0.4036	0.4270
0.4529	0.4790	0.4965	0.5176	0.5417
0.5649	0.5873	0.6057	0.6319	0.6554
0.6814	0.7100	0.7386	0.7671	0.7966
0.8262	0.8305	0.8338	0.8511	0.8701
0.8975	0.9248	0.9505	0.9762	1.0000

Width:

0.0229	0.0282	0.0290	0.0299	0.0308
0.0333	0.0367	0.0614	0.1928	0.4184
0.4879	0.5485	0.5633	0.5816	0.5950
0.6110	0.6344	0.6679	0.6977	0.7060
0.7150	0.7272	0.7379	0.7443	0.7554
0.7616	0.7669	0.7874	0.8018	0.8109
0.8213	0.8327	0.8453	0.8520	0.8623
0.8689	0.8719	0.8747	0.8776	0.8790
0.8865	0.9312	0.9463	0.9604	0.9744
0.9791	0.9819	0.9874	0.9927	1.0000

Transect 5310.141

Area:

0.0003	0.0018	0.0050	0.0091	0.0134
0.0178	0.0224	0.0272	0.0322	0.0375
0.0428	0.0484	0.0540	0.0597	0.0656
0.0720	0.0795	0.0895	0.1010	0.1132
0.1258	0.1387	0.1517	0.1651	0.1786

0.1922	0.2059	0.2198	0.2338	0.2479
0.2622	0.2766	0.2913	0.3061	0.3211
0.3362	0.3516	0.3677	0.3879	0.4146
0.4453	0.4824	0.5257	0.5753	0.6323
0.6964	0.7662	0.8386	0.9167	1.0000

Hrad:

0.0388	0.0741	0.1231	0.1851	0.2627
0.3374	0.4089	0.4722	0.5330	0.5974
0.6657	0.7333	0.8010	0.8674	0.9321
0.9858	1.0248	1.0319	1.0448	1.0625
1.0923	1.1315	1.1748	1.2193	1.2705
1.3240	1.3792	1.4341	1.4898	1.5450
1.5992	1.6527	1.7069	1.7616	1.8163
1.8707	1.9249	1.9745	1.9972	1.9812
1.9576	1.9077	1.8558	1.8003	1.7401
1.6528	1.5693	1.5074	1.4209	1.0000

Width:

0.0094	0.0255	0.0456	0.0492	0.0510
0.0527	0.0545	0.0572	0.0601	0.0622
0.0637	0.0651	0.0663	0.0676	0.0708
0.0784	0.1028	0.1314	0.1366	0.1459
0.1486	0.1508	0.1536	0.1570	0.1583
0.1596	0.1609	0.1623	0.1638	0.1656
0.1677	0.1699	0.1719	0.1739	0.1758
0.1778	0.1816	0.1981	0.2761	0.3408
0.3809	0.4728	0.5338	0.6140	0.7128
0.7945	0.8303	0.8781	0.9447	1.0000

Transect 5374.119
Area:

0.0001	0.0003	0.0005	0.0007	0.0010
0.0013	0.0016	0.0020	0.0032	0.0065
0.0131	0.0236	0.0383	0.0555	0.0752
0.0972	0.1210	0.1456	0.1705	0.1957
0.2210	0.2465	0.2722	0.2980	0.3241
0.3502	0.3765	0.4029	0.4294	0.4564
0.4834	0.5104	0.5375	0.5646	0.5917
0.6188	0.6459	0.6731	0.7003	0.7275
0.7547	0.7819	0.8091	0.8364	0.8636
0.8909	0.9182	0.9454	0.9727	1.0000

Hrad:

0.0193	0.0425	0.0658	0.0921	0.1161
0.1264	0.1384	0.1524	0.0981	0.0688
0.0608	0.0571	0.0697	0.0883	0.1067
0.1273	0.1455	0.1653	0.1836	0.2103
0.2376	0.2638	0.2895	0.3159	0.3422
0.3690	0.3948	0.4211	0.4468	0.4697
0.4965	0.5232	0.5490	0.5759	0.6027
0.6296	0.6560	0.6817	0.7083	0.7348
0.7613	0.7879	0.8145	0.8410	0.8677
0.8944	0.9211	0.9478	0.9744	1.0000

Width:

0.0054	0.0072	0.0085	0.0091	0.0096
0.0114	0.0133	0.0159	0.0747	0.1774
0.3030	0.4702	0.5888	0.6729	0.7718
0.8478	0.8897	0.9048	0.9205	0.9267
0.9294	0.9361	0.9453	0.9507	0.9556
0.9585	0.9645	0.9681	0.9797	0.9890
0.9894	0.9907	0.9917	0.9919	0.9921
0.9923	0.9940	0.9947	0.9952	0.9959
0.9964	0.9968	0.9972	0.9978	0.9980
0.9982	0.9983	0.9985	0.9989	1.0000

Transect 5465.266
Area:

0.0001	0.0002	0.0003	0.0005	0.0006
0.0008	0.0011	0.0024	0.0075	0.0193
0.0357	0.0553	0.0769	0.0997	0.1230
0.1467	0.1708	0.1953	0.2199	0.2446
0.2693	0.2941	0.3190	0.3440	0.3690
0.3940	0.4190	0.4441	0.4691	0.4942
0.5193	0.5444	0.5695	0.5947	0.6199
0.6451	0.6703	0.6955	0.7208	0.7460
0.7713	0.7967	0.8220	0.8474	0.8727
0.8982	0.9236	0.9491	0.9745	1.0000

Hrad:

0.0143	0.0406	0.0651	0.0867	0.1076
0.1256	0.1113	0.0404	0.0371	0.0422
0.0576	0.0717	0.0914	0.1092	0.1333
0.1572	0.1809	0.2054	0.2300	0.2549
0.2798	0.3038	0.3284	0.3535	0.3788
0.4042	0.4294	0.4542	0.4795	0.5048
0.5302	0.5549	0.5797	0.6046	0.6291
0.6544	0.6797	0.7045	0.7284	0.7535
0.7785	0.8036	0.8277	0.8525	0.8763
0.9009	0.9254	0.9502	0.9750	1.0000

Width:

0.0044	0.0052	0.0055	0.0059	0.0065
0.0078	0.0205	0.1020	0.3389	0.5642
0.7106	0.8182	0.8701	0.9073	0.9224
0.9397	0.9553	0.9621	0.9678	0.9701
0.9721	0.9765	0.9791	0.9804	0.9809
0.9813	0.9819	0.9834	0.9838	0.9841
0.9844	0.9856	0.9867	0.9882	0.9888
0.9890	0.9892	0.9901	0.9920	0.9924
0.9928	0.9941	0.9946	0.9956	0.9969
0.9977	0.9986	0.9991	0.9997	1.0000

Transect 5595.644
Area:

0.0000	0.0001	0.0003	0.0004	0.0006
0.0009	0.0012	0.0015	0.0019	0.0023
0.0028	0.0033	0.0039	0.0046	0.0055
0.0065	0.0076	0.0087	0.0098	0.0110
0.0123	0.0136	0.0150	0.0168	0.0205
0.0274	0.0391	0.0545	0.0750	0.0996
0.1278	0.1586	0.1918	0.2262	0.2611
0.2965	0.3337	0.3725	0.4128	0.4551
0.5000	0.5474	0.5967	0.6476	0.7011
0.7573	0.8153	0.8754	0.9373	1.0000

Hrad:

0.0354	0.0711	0.1034	0.1346	0.1652
0.1955	0.2256	0.2556	0.2855	0.3216
0.3639	0.3466	0.3427	0.3488	0.3531
0.3809	0.4217	0.4650	0.5072	0.5486
0.5789	0.6064	0.6279	0.6350	0.5710
0.4716	0.3840	0.2728	0.2834	0.3074
0.2965	0.3360	0.3725	0.4116	0.4728
0.5331	0.5827	0.6385	0.6916	0.7419
0.7875	0.8283	0.8755	0.9204	0.9003
0.9421	0.9862	0.9880	1.0400	1.0000

Width:

0.0011	0.0018	0.0024	0.0031	0.0037
0.0044	0.0050	0.0057	0.0063	0.0068
0.0071	0.0089	0.0108	0.0127	0.0150
0.0164	0.0173	0.0180	0.0187	0.0193
0.0204	0.0216	0.0231	0.0396	0.0793
0.1476	0.2129	0.2877	0.3576	0.4235
0.4717	0.5059	0.5395	0.5505	0.5570
0.5710	0.6027	0.6299	0.6561	0.6909
0.7331	0.7696	0.7934	0.8254	0.8777
0.9077	0.9337	0.9748	0.9897	1.0000

Transect 5604.418
Area:

0.0002	0.0005	0.0008	0.0011	0.0015
0.0018	0.0022	0.0026	0.0031	0.0036
0.0043	0.0051	0.0060	0.0070	0.0079
0.0089	0.0099	0.0110	0.0121	0.0133
0.0149	0.0170	0.0200	0.0238	0.0286
0.0355	0.0468	0.0619	0.0799	0.1021
0.1271	0.1539	0.1831	0.2148	0.2484
0.2835	0.3223	0.3651	0.4107	0.4583
0.5082	0.5600	0.6126	0.6658	0.7196
0.7746	0.8302	0.8863	0.9431	1.0000

Hrad:

0.0434	0.0936	0.1398	0.1827	0.2230
0.2613	0.2979	0.3330	0.3492	0.3195
0.3109	0.3137	0.3492	0.3958	0.4415
0.4862	0.5299	0.5699	0.5607	0.5874
0.5304	0.4471	0.4499	0.3615	0.3696
0.3763	0.3550	0.2970	0.3160	0.2794
0.2898	0.3342	0.3809	0.4203	0.4457
0.4932	0.5350	0.5468	0.5552	0.5932
0.5975	0.6391	0.6623	0.7137	0.7656
0.8026	0.8517	0.9024	0.9446	1.0000

Width:

0.0048	0.0051	0.0055	0.0059	0.0062
0.0066	0.0070	0.0073	0.0082	0.0107
0.0131	0.0156	0.0166	0.0169	0.0172
0.0175	0.0178	0.0182	0.0205	0.0215
0.0341	0.0412	0.0603	0.0757	0.0926
0.1516	0.2381	0.2877	0.3534	0.4210
0.4529	0.4938	0.5294	0.5800	0.5972
0.6413	0.7193	0.7791	0.8175	0.8569
0.8991	0.9171	0.9288	0.9385	0.9578
0.9714	0.9784	0.9919	0.9988	1.0000

Transect 5646.039
Area:

0.0001	0.0003	0.0006	0.0010	0.0014
0.0018	0.0023	0.0028	0.0034	0.0040
0.0048	0.0057	0.0066	0.0076	0.0086
0.0097	0.0109	0.0122	0.0140	0.0162
0.0190	0.0224	0.0266	0.0331	0.0412
0.0504	0.0606	0.0717	0.0833	0.0956
0.1085	0.1220	0.1363	0.1533	0.1755
0.2061	0.2440	0.2870	0.3347	0.3847
0.4357	0.4885	0.5465	0.6094	0.6735
0.7380	0.8027	0.8679	0.9338	1.0000

Hrad:

0.0255	0.0511	0.0887	0.1261	0.1604
0.1926	0.2232	0.2472	0.2632	0.2697
0.2800	0.3168	0.3636	0.4089	0.4493
0.4888	0.5271	0.5589	0.5615	0.5698
0.5589	0.5630	0.5393	0.4967	0.4649
0.4716	0.4809	0.5137	0.5355	0.5765
0.5988	0.6263	0.6633	0.6664	0.6629
0.6356	0.6295	0.6269	0.6215	0.6533
0.6760	0.7024	0.7379	0.7633	0.7158
0.7729	0.8328	0.8887	0.9476	1.0000

Width:

0.0021	0.0042	0.0051	0.0057	0.0063
0.0069	0.0074	0.0082	0.0093	0.0110
0.0127	0.0136	0.0141	0.0148	0.0164
0.0172	0.0181	0.0226	0.0315	0.0352
0.0493	0.0520	0.0810	0.1078	0.1340
0.1482	0.1613	0.1712	0.1787	0.1895
0.1979	0.2092	0.2277	0.2837	0.3950
0.5211	0.6135	0.6863	0.7433	0.7608
0.7744	0.8227	0.9211	0.9627	0.9686
0.9740	0.9753	0.9901	0.9959	1.0000

Transect 5653.55
Area:

0.0001	0.0002	0.0003	0.0005	0.0007
0.0010	0.0014	0.0018	0.0023	0.0028
0.0033	0.0039	0.0045	0.0052	0.0060
0.0069	0.0078	0.0092	0.0117	0.0165
0.0240	0.0335	0.0454	0.0594	0.0766
0.0977	0.1210	0.1460	0.1733	0.2020
0.2317	0.2625	0.2942	0.3268	0.3601
0.3947	0.4338	0.4747	0.5158	0.5574
0.5994	0.6418	0.6848	0.7287	0.7732
0.8179	0.8630	0.9084	0.9541	1.0000

Hrad:

0.0257	0.0496	0.0706	0.0876	0.0937
0.1180	0.1406	0.1607	0.1880	0.2173
0.2466	0.2742	0.2983	0.3157	0.3263
0.3472	0.3597	0.3685	0.3033	0.2508
0.2228	0.2232	0.2283	0.2327	0.2427
0.2506	0.2750	0.2890	0.3144	0.3460
0.3727	0.4004	0.4366	0.4653	0.5074
0.5349	0.5579	0.5515	0.5880	0.6262
0.6636	0.7049	0.7307	0.7635	0.8031
0.8427	0.8809	0.9198	0.9613	1.0000

Width:

0.0020	0.0027	0.0034	0.0042	0.0059
0.0071	0.0082	0.0095	0.0109	0.0114
0.0119	0.0128	0.0140	0.0159	0.0187
0.0202	0.0229	0.0416	0.0716	0.1405
0.1861	0.2289	0.2783	0.3338	0.4189
0.4855	0.5252	0.5751	0.6013	0.6341
0.6578	0.6833	0.6918	0.7164	0.7291
0.7953	0.8789	0.8885	0.8989	0.9072
0.9165	0.9247	0.9445	0.9647	0.9667
0.9740	0.9816	0.9888	0.9947	1.0000

Transect 5665.793
Area:

0.0002	0.0004	0.0007	0.0010	0.0014
0.0017	0.0021	0.0025	0.0030	0.0035
0.0040	0.0047	0.0053	0.0061	0.0080
0.0111	0.0159	0.0218	0.0284	0.0363
0.0462	0.0585	0.0736	0.0916	0.1128
0.1364	0.1615	0.1876	0.2147	0.2429
0.2717	0.3014	0.3319	0.3630	0.3951
0.4277	0.4619	0.4991	0.5385	0.5784
0.6186	0.6589	0.6995	0.7408	0.7830
0.8257	0.8689	0.9124	0.9561	1.0000

Hrad:

0.0262	0.0540	0.0789	0.1059	0.1314
0.1556	0.1774	0.1967	0.2110	0.2187
0.2479	0.2753	0.3014	0.3193	0.2875
0.2563	0.2247	0.2224	0.2327	0.2373
0.2466	0.2422	0.2475	0.2629	0.2679
0.2837	0.3069	0.3382	0.3572	0.3881
0.4206	0.4528	0.4848	0.5163	0.5491
0.5797	0.6095	0.6415	0.6317	0.6635
0.7018	0.7404	0.7724	0.8046	0.8178
0.8531	0.8849	0.9241	0.9591	1.0000

Width:

0.0053	0.0062	0.0070	0.0075	0.0079
0.0084	0.0089	0.0096	0.0104	0.0125
0.0136	0.0146	0.0156	0.0254	0.0637
0.0854	0.1212	0.1420	0.1627	0.1997
0.2491	0.3037	0.3767	0.4422	0.5117
0.5545	0.5860	0.6065	0.6314	0.6467
0.6635	0.6886	0.6999	0.7257	0.7357
0.7505	0.8063	0.8787	0.9043	0.9111

0.9159	0.9173	0.9341	0.9490	0.9695
0.9752	0.9865	0.9902	0.9980	1.0000

Transect 5690.101
Area:

0.0002	0.0004	0.0008	0.0013	0.0018
0.0023	0.0028	0.0034	0.0039	0.0044
0.0050	0.0056	0.0063	0.0072	0.0088
0.0107	0.0147	0.0206	0.0284	0.0396
0.0535	0.0691	0.0868	0.1066	0.1301
0.1557	0.1825	0.2103	0.2391	0.2689
0.2994	0.3310	0.3634	0.3967	0.4306
0.4652	0.5002	0.5356	0.5715	0.6078
0.6443	0.6813	0.7194	0.7579	0.7969
0.8367	0.8770	0.9177	0.9586	1.0000

Hrad:

0.0300	0.0556	0.0809	0.1080	0.1446
0.1818	0.2178	0.2525	0.2863	0.3190
0.3507	0.3762	0.3961	0.3852	0.3374
0.3196	0.1518	0.1581	0.1753	0.1773
0.1689	0.1950	0.2183	0.2468	0.2274
0.2455	0.2845	0.3220	0.3544	0.3872
0.4131	0.4490	0.4792	0.5098	0.5399
0.5769	0.6020	0.6303	0.6626	0.6940
0.7305	0.7626	0.7778	0.8162	0.8485
0.8748	0.8986	0.9375	0.9666	1.0000

Width:

0.0055	0.0080	0.0103	0.0120	0.0123
0.0124	0.0125	0.0127	0.0128	0.0129
0.0133	0.0157	0.0177	0.0321	0.0421
0.0626	0.1238	0.1540	0.2361	0.2995
0.3600	0.4068	0.4499	0.5209	0.5941
0.6347	0.6574	0.6800	0.7090	0.7254
0.7430	0.7720	0.7892	0.8076	0.8262
0.8379	0.8477	0.8551	0.8705	0.8761
0.8822	0.9002	0.9253	0.9291	0.9505
0.9629	0.9762	0.9790	0.9919	1.0000

Transect 5704.059
Area:

0.0001	0.0002	0.0003	0.0004	0.0006
0.0009	0.0012	0.0015	0.0021	0.0027
0.0035	0.0049	0.0070	0.0096	0.0146
0.0235	0.0354	0.0501	0.0677	0.0875
0.1086	0.1310	0.1546	0.1788	0.2036
0.2296	0.2568	0.2847	0.3132	0.3421
0.3716	0.4016	0.4320	0.4625	0.4933
0.5243	0.5558	0.5874	0.6191	0.6513
0.6842	0.7176	0.7516	0.7861	0.8209
0.8559	0.8915	0.9274	0.9636	1.0000

Hrad:

0.0259	0.0509	0.0728	0.0860	0.0985
0.1216	0.1187	0.1271	0.1261	0.1400
0.1465	0.1267	0.1105	0.1305	0.1026

0.1005	0.1078	0.1244	0.1409	0.1608
0.1862	0.2116	0.2356	0.2674	0.2993
0.3199	0.3405	0.3685	0.3966	0.4280
0.4568	0.4848	0.5177	0.5492	0.5832
0.6149	0.6431	0.6769	0.7113	0.7383
0.7672	0.7983	0.8051	0.8265	0.8588
0.8824	0.9087	0.9405	0.9666	1.0000

Width:

0.0022	0.0029	0.0036	0.0048	0.0061
0.0068	0.0094	0.0118	0.0159	0.0189
0.0305	0.0409	0.0691	0.0842	0.1882
0.2939	0.3583	0.4435	0.5175	0.5576
0.6002	0.6290	0.6555	0.6676	0.6963
0.7313	0.7552	0.7715	0.7886	0.7986
0.8153	0.8274	0.8333	0.8411	0.8448
0.8559	0.8630	0.8665	0.8715	0.8925
0.9077	0.9200	0.9413	0.9498	0.9545
0.9687	0.9797	0.9847	0.9955	1.0000

Transect 5880.376
Area:

0.0001	0.0003	0.0005	0.0008	0.0011
0.0014	0.0018	0.0029	0.0056	0.0097
0.0165	0.0248	0.0347	0.0464	0.0588
0.0728	0.0879	0.1040	0.1210	0.1386
0.1568	0.1762	0.1967	0.2184	0.2411
0.2649	0.2895	0.3146	0.3403	0.3665
0.3932	0.4203	0.4480	0.4762	0.5051
0.5345	0.5646	0.5951	0.6261	0.6574
0.6893	0.7221	0.7552	0.7888	0.8229
0.8577	0.8927	0.9280	0.9636	1.0000

Hrad:

0.0261	0.0539	0.0679	0.0910	0.1205
0.1485	0.1748	0.1392	0.1145	0.1114
0.1103	0.1241	0.1415	0.1554	0.1743
0.1990	0.2088	0.2329	0.2560	0.2860
0.3091	0.3256	0.3419	0.3627	0.3819
0.4014	0.4271	0.4575	0.4815	0.5099
0.5385	0.5654	0.5891	0.6128	0.6360
0.6603	0.6835	0.7107	0.7411	0.7645
0.7913	0.8059	0.8354	0.8593	0.8822
0.9044	0.9337	0.9640	0.9855	1.0000

Width:

0.0042	0.0051	0.0073	0.0085	0.0088
0.0091	0.0103	0.0601	0.0865	0.1449
0.2119	0.2382	0.3091	0.3243	0.3647
0.3951	0.4232	0.4522	0.4719	0.4837
0.5072	0.5473	0.5749	0.6021	0.6345
0.6630	0.6774	0.6879	0.7063	0.7184
0.7297	0.7435	0.7601	0.7780	0.7938
0.8105	0.8258	0.8371	0.8475	0.8597
0.8807	0.8966	0.9089	0.9206	0.9370
0.9482	0.9560	0.9626	0.9790	1.0000

Transect 5975.085
Area:

0.0001	0.0003	0.0004	0.0006	0.0009
0.0011	0.0013	0.0016	0.0019	0.0022
0.0026	0.0035	0.0068	0.0140	0.0245
0.0376	0.0519	0.0673	0.0834	0.1004
0.1182	0.1367	0.1562	0.1764	0.1971
0.2183	0.2399	0.2624	0.2856	0.3097
0.3346	0.3601	0.3864	0.4133	0.4408
0.4686	0.4969	0.5259	0.5557	0.5865
0.6187	0.6530	0.6902	0.7288	0.7692
0.8119	0.8571	0.9043	0.9520	1.0000

Hrad:

0.0350	0.0715	0.1030	0.1333	0.1624
0.1894	0.2148	0.2389	0.2513	0.2535
0.2652	0.2343	0.1489	0.1231	0.1310
0.1488	0.1764	0.2125	0.2480	0.2806
0.3149	0.3469	0.3793	0.4164	0.4519
0.4881	0.5272	0.5512	0.5770	0.6135
0.6486	0.6692	0.6979	0.7301	0.7652
0.8027	0.8359	0.8624	0.8773	0.9110
0.9346	0.9105	0.8931	0.9201	0.9373
0.9462	0.9729	0.9161	0.9568	1.0000

Width:

0.0029	0.0034	0.0039	0.0044	0.0047
0.0050	0.0054	0.0057	0.0064	0.0076
0.0118	0.0332	0.1130	0.1797	0.2536
0.2822	0.3114	0.3284	0.3422	0.3612
0.3774	0.3954	0.4126	0.4236	0.4356
0.4464	0.4588	0.4749	0.4940	0.5084
0.5247	0.5398	0.5526	0.5650	0.5749
0.5827	0.5934	0.6101	0.6325	0.6559
0.6871	0.7452	0.7913	0.8167	0.8658
0.9105	0.9676	0.9871	0.9950	1.0000

Transect 6062.64
Area:

0.0001	0.0002	0.0004	0.0006	0.0008
0.0010	0.0013	0.0015	0.0018	0.0021
0.0024	0.0028	0.0032	0.0048	0.0093
0.0194	0.0319	0.0450	0.0594	0.0760
0.0934	0.1118	0.1315	0.1520	0.1731
0.1948	0.2169	0.2395	0.2626	0.2860
0.3099	0.3343	0.3592	0.3846	0.4109
0.4382	0.4662	0.4950	0.5245	0.5550
0.5873	0.6243	0.6663	0.7114	0.7585
0.8062	0.8542	0.9024	0.9510	1.0000

Hrad:

0.0372	0.0704	0.0928	0.1175	0.1509
0.1816	0.2102	0.2370	0.2623	0.2865
0.3057	0.3114	0.3125	0.2351	0.1531
0.1182	0.1452	0.1798	0.2079	0.2260
0.2662	0.2932	0.3275	0.3636	0.3997
0.4394	0.4797	0.5183	0.5552	0.5959

0.6312	0.6713	0.7059	0.7382	0.7624
0.7816	0.8082	0.8415	0.8581	0.8874
0.9113	0.8783	0.8771	0.9061	0.7860
0.8323	0.8767	0.9212	0.9623	1.0000

Width:

0.0022	0.0028	0.0036	0.0044	0.0047
0.0050	0.0052	0.0055	0.0057	0.0060
0.0064	0.0073	0.0145	0.0500	0.1492
0.2481	0.2583	0.2733	0.3143	0.3491
0.3584	0.3886	0.4055	0.4205	0.4346
0.4441	0.4523	0.4618	0.4724	0.4792
0.4912	0.4969	0.5077	0.5224	0.5420
0.5601	0.5759	0.5868	0.6098	0.6251
0.6935	0.8017	0.8971	0.9365	0.9648
0.9689	0.9742	0.9795	0.9882	1.0000

Transect 6084.086

Area:

0.0001	0.0002	0.0004	0.0005	0.0008
0.0010	0.0012	0.0015	0.0018	0.0021
0.0024	0.0027	0.0031	0.0035	0.0040
0.0049	0.0063	0.0095	0.0167	0.0294
0.0457	0.0631	0.0818	0.1015	0.1228
0.1451	0.1683	0.1926	0.2181	0.2442
0.2712	0.2991	0.3279	0.3573	0.3883
0.4209	0.4545	0.4886	0.5230	0.5578
0.5932	0.6293	0.6665	0.7059	0.7488
0.7951	0.8433	0.8934	0.9454	1.0000

Hrad:

0.0407	0.0741	0.1033	0.1376	0.1716
0.2070	0.2397	0.2705	0.2939	0.3130
0.3327	0.3579	0.3839	0.4039	0.4060
0.3737	0.3363	0.2677	0.1986	0.1610
0.1816	0.2164	0.2548	0.2912	0.3288
0.3620	0.4002	0.4281	0.4744	0.5161
0.5540	0.5958	0.6265	0.6696	0.6947
0.7057	0.7423	0.7918	0.8359	0.8788
0.9205	0.9640	0.9900	0.9869	1.0223
1.0597	1.0812	1.0231	0.9912	1.0000

Width:

0.0018	0.0025	0.0032	0.0037	0.0041
0.0043	0.0045	0.0047	0.0051	0.0056
0.0061	0.0065	0.0068	0.0072	0.0143
0.0201	0.0337	0.0940	0.1750	0.2783
0.3053	0.3273	0.3456	0.3687	0.3962
0.4102	0.4275	0.4559	0.4638	0.4799
0.4965	0.5135	0.5248	0.5427	0.5802
0.5989	0.6132	0.6180	0.6256	0.6345
0.6460	0.6591	0.6863	0.7373	0.8207
0.8541	0.8857	0.9200	0.9642	1.0000

Transect 6116.845

Area:

0.0000	0.0001	0.0001	0.0003	0.0005
0.0007	0.0010	0.0013	0.0017	0.0021
0.0024	0.0028	0.0032	0.0037	0.0041
0.0046	0.0052	0.0058	0.0072	0.0115
0.0210	0.0353	0.0513	0.0705	0.0918
0.1149	0.1388	0.1640	0.1908	0.2187
0.2480	0.2786	0.3113	0.3458	0.3810
0.4169	0.4543	0.4927	0.5320	0.5717
0.6118	0.6526	0.6941	0.7365	0.7796
0.8231	0.8669	0.9111	0.9555	1.0000

Hrad:

0.0176	0.0351	0.0524	0.0648	0.0752
0.0982	0.1163	0.1314	0.1572	0.1745
0.2016	0.2280	0.2538	0.2705	0.2860
0.3006	0.3118	0.3270	0.2974	0.2161
0.1517	0.1444	0.1653	0.1782	0.2036
0.2273	0.2648	0.2954	0.3187	0.3489
0.3776	0.4085	0.4282	0.4635	0.4961
0.5319	0.5442	0.5668	0.5999	0.6405
0.6739	0.7094	0.7466	0.7869	0.8038
0.8415	0.8795	0.9175	0.9591	1.0000

Width:

0.0007	0.0014	0.0024	0.0037	0.0049
0.0060	0.0069	0.0078	0.0082	0.0086
0.0088	0.0090	0.0092	0.0099	0.0107
0.0116	0.0128	0.0161	0.0570	0.1434
0.2831	0.3453	0.3819	0.4603	0.4977
0.5310	0.5463	0.5843	0.6093	0.6417
0.6660	0.7052	0.7604	0.7847	0.7947
0.8191	0.8528	0.8705	0.8864	0.8922
0.9077	0.9243	0.9407	0.9578	0.9702
0.9779	0.9857	0.9930	0.9961	1.0000

Transect 6190.578

Area:

0.0001	0.0003	0.0004	0.0007	0.0009
0.0012	0.0015	0.0019	0.0023	0.0028
0.0034	0.0041	0.0049	0.0058	0.0068
0.0078	0.0089	0.0101	0.0112	0.0125
0.0138	0.0154	0.0176	0.0208	0.0289
0.0431	0.0624	0.0832	0.1064	0.1317
0.1587	0.1872	0.2167	0.2476	0.2803
0.3151	0.3535	0.3942	0.4358	0.4787
0.5231	0.5693	0.6165	0.6654	0.7159
0.7690	0.8238	0.8805	0.9393	1.0000

Hrad:

0.0417	0.0806	0.1148	0.1476	0.1776
0.2058	0.2327	0.2586	0.2605	0.2561
0.2761	0.2846	0.3036	0.3335	0.3690
0.4037	0.4376	0.4723	0.5037	0.5347
0.5651	0.5792	0.5764	0.5491	0.4341
0.3502	0.3104	0.3238	0.3449	0.3691
0.3509	0.3914	0.4386	0.4826	0.5251
0.5721	0.5930	0.5843	0.6377	0.6753
0.7228	0.7520	0.8090	0.8647	0.8585
0.8820	0.9110	0.9379	0.9888	1.0000

Width:

0.0022	0.0029	0.0035	0.0040	0.0045
0.0049	0.0054	0.0059	0.0072	0.0092
0.0105	0.0125	0.0143	0.0155	0.0163
0.0172	0.0180	0.0188	0.0197	0.0206
0.0215	0.0322	0.0396	0.0850	0.1755
0.2858	0.3290	0.3534	0.3964	0.4282
0.4513	0.4763	0.4921	0.5180	0.5427
0.5966	0.6525	0.6735	0.6848	0.7078
0.7447	0.7588	0.7852	0.8126	0.8365
0.8804	0.9083	0.9427	0.9749	1.0000

Transect 6335.876

Area:

0.0004	0.0009	0.0015	0.0021	0.0027
0.0036	0.0047	0.0059	0.0072	0.0086
0.0102	0.0119	0.0137	0.0157	0.0177
0.0198	0.0221	0.0244	0.0268	0.0294
0.0320	0.0347	0.0376	0.0407	0.0439
0.0473	0.0527	0.0619	0.0743	0.0904
0.1121	0.1362	0.1610	0.1872	0.2156
0.2454	0.2787	0.3169	0.3586	0.4024
0.4471	0.4943	0.5426	0.5921	0.6457
0.7040	0.7708	0.8448	0.9221	1.0000

Hrad:

0.0548	0.1160	0.1679	0.2133	0.2368
0.2424	0.2754	0.3098	0.3455	0.3810
0.4179	0.4541	0.4911	0.5309	0.5700
0.6085	0.6476	0.6861	0.7233	0.7602
0.7942	0.8250	0.8558	0.8748	0.8937
0.9314	0.9218	0.8613	0.7984	0.7431
0.6721	0.6675	0.6736	0.6614	0.5693
0.6338	0.6688	0.6117	0.6501	0.7121
0.7682	0.8039	0.8723	0.9152	0.9472
0.9485	0.8510	0.8834	0.9316	1.0000

Width:

0.0065	0.0070	0.0075	0.0080	0.0093
0.0125	0.0143	0.0161	0.0177	0.0194
0.0209	0.0225	0.0240	0.0253	0.0266
0.0278	0.0291	0.0303	0.0316	0.0328
0.0343	0.0359	0.0375	0.0399	0.0423
0.0438	0.0932	0.1393	0.1731	0.2370
0.3038	0.3101	0.3218	0.3479	0.3726
0.3978	0.4616	0.5132	0.5499	0.5608
0.5862	0.6111	0.6182	0.6491	0.7206
0.7778	0.9065	0.9728	0.9897	1.0000

Transect 6410.625

Area:

0.0004	0.0014	0.0031	0.0049	0.0068
0.0088	0.0108	0.0129	0.0151	0.0173
0.0196	0.0221	0.0247	0.0275	0.0305
0.0336	0.0369	0.0403	0.0439	0.0475
0.0513	0.0552	0.0592	0.0633	0.0676
0.0719	0.0764	0.0809	0.0856	0.0904
0.0954	0.1006	0.1074	0.1182	0.1355
0.1604	0.1955	0.2369	0.2828	0.3314
0.3836	0.4398	0.4976	0.5571	0.6184
0.6820	0.7491	0.8212	0.9064	1.0000

Hrad:

0.0476	0.0994	0.1603	0.2423	0.3190
0.3911	0.4592	0.5240	0.5858	0.6449
0.6884	0.7222	0.7614	0.7998	0.8387
0.8791	0.9249	0.9722	1.0190	1.0655
1.1129	1.1607	1.2090	1.2568	1.3033
1.3489	1.3941	1.4390	1.4799	1.5152
1.5509	1.5782	1.5658	1.4874	1.3591
1.2065	1.0292	0.5283	0.5878	0.6627
0.7286	0.7256	0.8067	0.8743	0.9357
1.0207	1.0487	1.0987	1.0561	1.0000

Width:

0.0080	0.0144	0.0190	0.0197	0.0204
0.0211	0.0218	0.0225	0.0232	0.0239
0.0252	0.0271	0.0287	0.0305	0.0322
0.0339	0.0354	0.0367	0.0380	0.0393
0.0406	0.0418	0.0429	0.0441	0.0452
0.0464	0.0476	0.0488	0.0502	0.0518
0.0535	0.0555	0.0872	0.1520	0.2155
0.3213	0.4192	0.4607	0.5019	0.5305
0.5814	0.6022	0.6130	0.6380	0.6575
0.6974	0.7174	0.8295	0.9499	1.0000

Transect 6486.756

Area:

0.0003	0.0008	0.0015	0.0023	0.0032
0.0042	0.0052	0.0063	0.0075	0.0089
0.0105	0.0123	0.0143	0.0165	0.0189
0.0215	0.0242	0.0272	0.0302	0.0334
0.0367	0.0401	0.0436	0.0472	0.0510
0.0549	0.0590	0.0631	0.0674	0.0719
0.0764	0.0811	0.0859	0.0908	0.0960
0.1022	0.1188	0.1466	0.1853	0.2379
0.3008	0.3700	0.4411	0.5154	0.5914
0.6695	0.7493	0.8310	0.9147	1.0000

Hrad:

0.0667	0.1260	0.1501	0.2072	0.2588
0.3063	0.3507	0.3808	0.4076	0.4367
0.4534	0.4765	0.5069	0.5397	0.5713
0.6058	0.6461	0.6927	0.7386	0.7839
0.8297	0.8765	0.9225	0.9632	1.0038
1.0444	1.0844	1.1243	1.1646	1.2078
1.2496	1.2912	1.3325	1.3611	1.3830
1.3649	1.2184	1.0221	0.6137	0.5021
0.4361	0.4517	0.5323	0.5884	0.6565
0.7271	0.8015	0.8579	0.9327	1.0000

Width:

0.0048	0.0056	0.0091	0.0098	0.0105

0.0113	0.0120	0.0134	0.0152	0.0170
0.0196	0.0221	0.0243	0.0265	0.0289
0.0311	0.0330	0.0345	0.0359	0.0374
0.0388	0.0400	0.0413	0.0428	0.0444
0.0459	0.0475	0.0491	0.0506	0.0519
0.0534	0.0548	0.0562	0.0583	0.0609
0.1011	0.2700	0.3893	0.5113	0.6742
0.7811	0.8134	0.8364	0.8696	0.8943
0.9141	0.9278	0.9613	0.9730	1.0000

Transect 6564.455

Area:

0.0002	0.0009	0.0019	0.0031	0.0046
0.0062	0.0080	0.0099	0.0122	0.0149
0.0178	0.0211	0.0247	0.0287	0.0331
0.0379	0.0429	0.0482	0.0538	0.0598
0.0661	0.0726	0.0793	0.0863	0.0936
0.1011	0.1089	0.1171	0.1255	0.1343
0.1433	0.1526	0.1622	0.1719	0.1819
0.1921	0.2027	0.2141	0.2291	0.2570
0.3002	0.3516	0.4105	0.4747	0.5495
0.6315	0.7160	0.8046	0.9000	1.0000

Hrad:

0.0498	0.1059	0.1669	0.2218	0.2788
0.3345	0.3869	0.4371	0.4313	0.4788
0.5270	0.5612	0.5990	0.6293	0.6715
0.7206	0.7695	0.8192	0.8642	0.9095
0.9646	1.0196	1.0738	1.1254	1.1750
1.2244	1.2693	1.3137	1.3572	1.4004
1.4514	1.5069	1.5617	1.6159	1.6681
1.7141	1.7579	1.7844	1.7616	1.6167
0.6837	0.6785	0.6922	0.7493	0.7120
0.7717	0.8463	0.8812	0.9423	1.0000

Width:

0.0045	0.0082	0.0105	0.0128	0.0147
0.0163	0.0179	0.0195	0.0246	0.0270
0.0293	0.0328	0.0361	0.0402	0.0437
0.0465	0.0494	0.0522	0.0554	0.0585
0.0609	0.0632	0.0655	0.0680	0.0706
0.0732	0.0761	0.0790	0.0821	0.0851
0.0877	0.0898	0.0920	0.0941	0.0964
0.0991	0.1020	0.1167	0.1981	0.3605
0.4475	0.5408	0.5769	0.6471	0.7661
0.7917	0.8185	0.8842	0.9252	1.0000

Transect 6669.684

Area:

0.0001	0.0003	0.0005	0.0008	0.0011
0.0014	0.0018	0.0021	0.0026	0.0031
0.0036	0.0043	0.0051	0.0060	0.0072
0.0084	0.0097	0.0111	0.0125	0.0140
0.0156	0.0172	0.0188	0.0205	0.0222
0.0240	0.0258	0.0277	0.0297	0.0318
0.0347	0.0403	0.0507	0.0719	0.1008

0.1347	0.1731	0.2165	0.2667	0.3221
0.3835	0.4469	0.5117	0.5777	0.6445
0.7127	0.7824	0.8534	0.9255	1.0000

Hrad:

0.0421	0.0908	0.1459	0.1940	0.2373
0.2771	0.3145	0.3499	0.3608	0.3714
0.3853	0.3939	0.4071	0.4107	0.4207
0.4607	0.5095	0.5572	0.6042	0.6504
0.6972	0.7468	0.7932	0.8360	0.8784
0.9209	0.9629	0.9927	1.0176	1.0560
1.0594	0.9870	0.5710	0.4660	0.3221
0.3489	0.3897	0.3748	0.4149	0.4563
0.4725	0.5415	0.6076	0.6731	0.7406
0.7993	0.8587	0.9288	0.9826	1.0000

Width:

0.0019	0.0030	0.0034	0.0037	0.0040
0.0043	0.0047	0.0050	0.0059	0.0069
0.0081	0.0096	0.0111	0.0133	0.0155
0.0167	0.0174	0.0182	0.0189	0.0196
0.0203	0.0208	0.0215	0.0222	0.0229
0.0235	0.0242	0.0252	0.0264	0.0273
0.0563	0.0880	0.2079	0.3374	0.4060
0.4738	0.5231	0.6118	0.6870	0.7546
0.8138	0.8306	0.8518	0.8585	0.8722
0.8943	0.9117	0.9271	0.9424	1.0000

Transect 6676.99

Area:

0.0003	0.0007	0.0012	0.0016	0.0020
0.0026	0.0031	0.0037	0.0044	0.0051
0.0059	0.0068	0.0078	0.0089	0.0102
0.0117	0.0136	0.0156	0.0178	0.0203
0.0230	0.0259	0.0290	0.0322	0.0355
0.0389	0.0424	0.0467	0.0533	0.0612
0.0713	0.0836	0.0989	0.1198	0.1462
0.1766	0.2103	0.2485	0.2919	0.3413
0.3945	0.4512	0.5112	0.5745	0.6404
0.7069	0.7759	0.8474	0.9222	1.0000

Hrad:

0.0691	0.1342	0.1920	0.2443	0.2849
0.3236	0.3611	0.3931	0.4238	0.4552
0.4696	0.4884	0.4988	0.5251	0.5466
0.4735	0.5080	0.5362	0.5541	0.5777
0.6080	0.6484	0.6920	0.7431	0.7921
0.8398	0.8856	0.8956	0.7155	0.5856
0.5211	0.5135	0.4575	0.4237	0.4509
0.4766	0.5127	0.5142	0.5522	0.5688
0.5952	0.6325	0.6974	0.7515	0.7608
0.8299	0.8932	0.9649	0.9821	1.0000

Width:

0.0049	0.0051	0.0054	0.0056	0.0062
0.0067	0.0073	0.0080	0.0088	0.0096
0.0108	0.0121	0.0138	0.0151	0.0167
0.0227	0.0247	0.0270	0.0301	0.0331

0.0358	0.0379	0.0398	0.0411	0.0425
0.0440	0.0455	0.0721	0.0916	0.1145
0.1399	0.1663	0.2276	0.3066	0.3651
0.4074	0.4507	0.5191	0.5916	0.6563
0.6957	0.7463	0.7857	0.8288	0.8417
0.8605	0.8943	0.9285	0.9765	1.0000

Transect 6706.899

Area:

0.0003	0.0006	0.0009	0.0012	0.0016
0.0020	0.0025	0.0033	0.0040	0.0048
0.0057	0.0069	0.0081	0.0094	0.0108
0.0123	0.0139	0.0159	0.0182	0.0207
0.0235	0.0270	0.0315	0.0371	0.0444
0.0534	0.0657	0.0808	0.1001	0.1227
0.1493	0.1794	0.2115	0.2458	0.2846
0.3271	0.3709	0.4158	0.4610	0.5062
0.5515	0.5973	0.6447	0.6938	0.7435
0.7936	0.8444	0.8958	0.9478	1.0000

Hrad:

0.0492	0.0926	0.1314	0.1668	0.1922
0.1974	0.1808	0.2106	0.2404	0.2701
0.2887	0.2782	0.3123	0.3425	0.3721
0.4013	0.4075	0.4118	0.3743	0.4097
0.4348	0.4173	0.3597	0.3673	0.3863
0.3871	0.2906	0.3079	0.3240	0.3219
0.3376	0.3376	0.3682	0.3897	0.4138
0.4118	0.4558	0.4822	0.5342	0.5861
0.6349	0.6818	0.7067	0.7351	0.7834
0.8243	0.8676	0.9067	0.9499	1.0000

Width:

0.0055	0.0058	0.0062	0.0065	0.0072
0.0089	0.0129	0.0141	0.0152	0.0164
0.0192	0.0231	0.0243	0.0258	0.0272
0.0287	0.0351	0.0409	0.0468	0.0486
0.0604	0.0779	0.0954	0.1216	0.1521
0.2016	0.2657	0.3225	0.4045	0.4713
0.5508	0.6019	0.6273	0.6927	0.7777
0.8308	0.8493	0.8639	0.8643	0.8646
0.8695	0.8858	0.9246	0.9456	0.9560
0.9670	0.9737	0.9883	0.9979	1.0000

Transect 6710.332

Area:

0.0001	0.0002	0.0005	0.0008	0.0012
0.0016	0.0020	0.0025	0.0030	0.0036
0.0043	0.0050	0.0057	0.0065	0.0073
0.0082	0.0091	0.0100	0.0110	0.0121
0.0132	0.0144	0.0157	0.0169	0.0183
0.0198	0.0231	0.0328	0.0498	0.0715
0.0957	0.1228	0.1551	0.1901	0.2281
0.2693	0.3131	0.3595	0.4075	0.4559
0.5056	0.5559	0.6080	0.6622	0.7169
0.7722	0.8282	0.8850	0.9423	1.0000

Hrad:

0.0297	0.0669	0.0923	0.1225	0.1626
0.1995	0.2340	0.2604	0.2613	0.2932
0.3138	0.3481	0.3806	0.4093	0.4377
0.4671	0.4963	0.5250	0.5456	0.5439
0.5746	0.6052	0.6310	0.6519	0.6720
0.6612	0.5895	0.2491	0.1808	0.1814
0.2231	0.2629	0.2886	0.3228	0.3521
0.3843	0.4219	0.4525	0.4903	0.5457
0.5842	0.6374	0.6688	0.7029	0.7567
0.8031	0.8517	0.8961	0.9445	1.0000

Width:

0.0024	0.0034	0.0048	0.0062	0.0067
0.0071	0.0076	0.0084	0.0102	0.0109
0.0121	0.0126	0.0132	0.0139	0.0147
0.0153	0.0160	0.0166	0.0176	0.0195
0.0202	0.0209	0.0217	0.0228	0.0239
0.0329	0.0979	0.2417	0.3512	0.3960
0.4402	0.5152	0.5838	0.6284	0.6882
0.7414	0.7747	0.8288	0.8322	0.8460
0.8663	0.8808	0.9212	0.9436	0.9545
0.9657	0.9729	0.9879	0.9979	1.0000

Transect 6757.544

Area:

0.0001	0.0004	0.0008	0.0013	0.0019
0.0026	0.0033	0.0041	0.0049	0.0058
0.0069	0.0080	0.0094	0.0108	0.0123
0.0139	0.0155	0.0173	0.0191	0.0209
0.0228	0.0248	0.0268	0.0290	0.0312
0.0335	0.0359	0.0386	0.0438	0.0571
0.0772	0.1039	0.1332	0.1686	0.2088
0.2516	0.2967	0.3423	0.3897	0.4377
0.4875	0.5395	0.5935	0.6489	0.7052
0.7627	0.8212	0.8802	0.9398	1.0000

Hrad:

0.0314	0.0754	0.1149	0.1433	0.1640
0.2027	0.2389	0.2730	0.2971	0.3190
0.3333	0.3475	0.3701	0.3979	0.4300
0.4644	0.4981	0.5319	0.5650	0.5975
0.6290	0.6598	0.6905	0.7177	0.7418
0.7593	0.7623	0.7699	0.7166	0.5499
0.3037	0.2294	0.2586	0.2780	0.3116
0.3535	0.4004	0.4547	0.5016	0.5489
0.5908	0.6254	0.6733	0.7086	0.7583
0.8048	0.8566	0.9086	0.9598	1.0000

Width:

0.0041	0.0056	0.0067	0.0095	0.0106
0.0114	0.0121	0.0129	0.0143	0.0158
0.0180	0.0204	0.0225	0.0241	0.0255
0.0266	0.0276	0.0287	0.0297	0.0307
0.0318	0.0329	0.0340	0.0352	0.0367
0.0386	0.0416	0.0457	0.1482	0.2604
0.4050	0.4520	0.5227	0.6340	0.6763

0.7222	0.7428	0.7580	0.7783	0.7988
0.8293	0.8758	0.8898	0.9169	0.9310
0.9487	0.9592	0.9691	0.9792	1.0000

Transect 6821.096

Area:

0.0001	0.0002	0.0003	0.0005	0.0008
0.0012	0.0016	0.0021	0.0026	0.0032
0.0038	0.0045	0.0052	0.0059	0.0067
0.0076	0.0094	0.0131	0.0176	0.0238
0.0354	0.0539	0.0775	0.1029	0.1294
0.1580	0.1891	0.2211	0.2546	0.2899
0.3254	0.3608	0.3963	0.4318	0.4673
0.5028	0.5383	0.5738	0.6093	0.6448
0.6803	0.7158	0.7513	0.7868	0.8224
0.8579	0.8934	0.9289	0.9645	1.0000

Hrad:

0.0204	0.0389	0.0537	0.0609	0.0738
0.0935	0.1149	0.1355	0.1551	0.1749
0.1952	0.2158	0.2355	0.2541	0.2712
0.2859	0.2592	0.2185	0.1991	0.1766
0.1571	0.1196	0.1406	0.1655	0.1936
0.2132	0.2375	0.2687	0.2966	0.3263
0.3578	0.3900	0.4228	0.4560	0.4895
0.5231	0.5570	0.5909	0.6249	0.6590
0.6931	0.7273	0.7614	0.7955	0.8297
0.8638	0.8979	0.9320	0.9660	1.0000

Width:

0.0028	0.0037	0.0048	0.0068	0.0085
0.0113	0.0127	0.0141	0.0157	0.0170
0.0181	0.0191	0.0202	0.0215	0.0231
0.0258	0.0806	0.1155	0.1369	0.2479
0.3797	0.6386	0.6941	0.7362	0.7669
0.8638	0.8908	0.9177	0.9862	0.9985
0.9985	0.9986	0.9987	0.9988	0.9989
0.9989	0.9990	0.9991	0.9992	0.9992
0.9993	0.9994	0.9995	0.9995	0.9996
0.9997	0.9998	0.9998	0.9999	1.0000

Transect 6826.129

Area:

0.0002	0.0005	0.0008	0.0011	0.0014
0.0018	0.0022	0.0027	0.0032	0.0038
0.0045	0.0051	0.0059	0.0066	0.0075
0.0084	0.0102	0.0137	0.0182	0.0232
0.0309	0.0439	0.0647	0.0890	0.1150
0.1423	0.1710	0.2011	0.2350	0.2707
0.3071	0.3436	0.3800	0.4164	0.4529
0.4893	0.5258	0.5622	0.5987	0.6351
0.6716	0.7081	0.7445	0.7810	0.8175
0.8540	0.8905	0.9270	0.9635	1.0000

Hrad:

0.0281	0.0522	0.0730	0.0912	0.1102
0.1235	0.1379	0.1587	0.1796	0.2002

0.2211	0.2404	0.2593	0.2764	0.2948
0.3114	0.2951	0.2379	0.2170	0.2210
0.2136	0.1894	0.1542	0.1666	0.1916
0.2169	0.2444	0.2720	0.2847	0.3133
0.3443	0.3766	0.4097	0.4434	0.4774
0.5117	0.5462	0.5809	0.6156	0.6505
0.6854	0.7203	0.7553	0.7903	0.8253
0.8603	0.8952	0.9302	0.9651	1.0000

Width:

0.0067	0.0072	0.0078	0.0085	0.0094
0.0112	0.0128	0.0141	0.0157	0.0169
0.0179	0.0192	0.0205	0.0226	0.0235
0.0287	0.0699	0.1173	0.1265	0.1610
0.2586	0.4742	0.6373	0.6898	0.7252
0.7724	0.7968	0.8699	0.9626	0.9966
0.9977	0.9979	0.9980	0.9981	0.9982
0.9983	0.9985	0.9986	0.9987	0.9988
0.9989	0.9990	0.9992	0.9993	0.9994
0.9995	0.9996	0.9998	0.9999	1.0000

Transect 6853.017

Area:

0.0003	0.0006	0.0009	0.0013	0.0017
0.0022	0.0028	0.0035	0.0043	0.0051
0.0059	0.0069	0.0079	0.0090	0.0110
0.0170	0.0261	0.0364	0.0476	0.0605
0.0750	0.0911	0.1108	0.1338	0.1598
0.1870	0.2148	0.2443	0.2749	0.3069
0.3406	0.3753	0.4099	0.4446	0.4793
0.5140	0.5487	0.5834	0.6181	0.6528
0.6875	0.7222	0.7569	0.7916	0.8263
0.8611	0.8958	0.9305	0.9653	1.0000

Hrad:

0.0321	0.0589	0.0823	0.0979	0.1129
0.1259	0.1393	0.1565	0.1751	0.1920
0.2081	0.2254	0.2341	0.2487	0.2394
0.1713	0.0917	0.1217	0.1416	0.1595
0.1852	0.2007	0.2016	0.2033	0.2264
0.2479	0.2796	0.3069	0.3370	0.3666
0.3932	0.4223	0.4526	0.4836	0.5150
0.5468	0.5788	0.6109	0.6432	0.6756
0.7080	0.7405	0.7730	0.8055	0.8380
0.8705	0.9029	0.9353	0.9677	1.0000

Width:

0.0083	0.0091	0.0100	0.0118	0.0137
0.0161	0.0186	0.0205	0.0221	0.0239
0.0258	0.0275	0.0305	0.0328	0.1073
0.2234	0.2865	0.3068	0.3395	0.4010
0.4326	0.5199	0.6145	0.7077	0.7779
0.7894	0.8150	0.8704	0.9054	0.9353
0.9954	0.9979	0.9980	0.9982	0.9983
0.9984	0.9985	0.9986	0.9987	0.9988
0.9990	0.9991	0.9992	0.9993	0.9994
0.9995	0.9997	0.9998	0.9999	1.0000

Transect 6857.851

Area:

0.0001	0.0002	0.0005	0.0008	0.0012
0.0017	0.0023	0.0029	0.0037	0.0047
0.0056	0.0067	0.0078	0.0089	0.0101
0.0121	0.0159	0.0220	0.0326	0.0457
0.0599	0.0760	0.0951	0.1170	0.1403
0.1649	0.1910	0.2183	0.2475	0.2788
0.3112	0.3461	0.3824	0.4187	0.4550
0.4913	0.5276	0.5639	0.6002	0.6365
0.6728	0.7092	0.7455	0.7818	0.8182
0.8545	0.8909	0.9273	0.9636	1.0000

Hrad:

0.0250	0.0442	0.0582	0.0755	0.0872
0.1000	0.1190	0.1330	0.1437	0.1646
0.1870	0.2092	0.2309	0.2496	0.2636
0.2578	0.2242	0.1646	0.1026	0.1202
0.1517	0.1652	0.1679	0.1987	0.2138
0.2441	0.2733	0.2922	0.3189	0.3506
0.3816	0.4085	0.4378	0.4683	0.4998
0.5319	0.5644	0.5973	0.6304	0.6638
0.6972	0.7308	0.7644	0.7980	0.8317
0.8654	0.8991	0.9328	0.9664	1.0000

Width:

0.0034	0.0056	0.0074	0.0091	0.0120
0.0151	0.0173	0.0202	0.0241	0.0261
0.0277	0.0291	0.0305	0.0323	0.0349
0.0938	0.1233	0.2183	0.3228	0.3813
0.4009	0.4728	0.5766	0.6230	0.6609
0.6875	0.7396	0.7616	0.8396	0.8751
0.9077	0.9973	0.9974	0.9976	0.9977
0.9979	0.9980	0.9982	0.9983	0.9985
0.9986	0.9988	0.9989	0.9991	0.9992
0.9994	0.9995	0.9997	0.9998	1.0000

Transect 6917.282

Area:

0.0003	0.0007	0.0012	0.0019	0.0027
0.0038	0.0050	0.0063	0.0078	0.0094
0.0111	0.0129	0.0149	0.0170	0.0192
0.0216	0.0241	0.0269	0.0297	0.0327
0.0358	0.0391	0.0426	0.0484	0.0589
0.0762	0.0988	0.1242	0.1506	0.1780
0.2066	0.2362	0.2668	0.2978	0.3295
0.3616	0.3939	0.4265	0.4598	0.4937
0.5282	0.5630	0.5990	0.6376	0.6827
0.7395	0.8015	0.8654	0.9317	1.0000

Hrad:

0.0476	0.0934	0.1329	0.1694	0.1867
0.2133	0.2523	0.2922	0.3308	0.3659
0.4001	0.4338	0.4676	0.5014	0.5349
0.5675	0.5782	0.6149	0.6511	0.6861
0.7181	0.7488	0.7731	0.7353	0.5809

0.4210	0.2745	0.3324	0.3905	0.4383
0.4987	0.5412	0.6020	0.6584	0.7174
0.7805	0.8444	0.8988	0.9483	1.0019
1.0594	1.1149	1.1584	1.1851	1.2309
1.2544	1.2757	1.2482	1.2817	1.0000

Width:

0.0053	0.0070	0.0087	0.0104	0.0135
0.0165	0.0184	0.0201	0.0218	0.0236
0.0255	0.0275	0.0293	0.0312	0.0330
0.0349	0.0385	0.0402	0.0420	0.0438
0.0458	0.0479	0.0547	0.1195	0.1833
0.2937	0.3585	0.3724	0.3845	0.4050
0.4130	0.4355	0.4422	0.4514	0.4585
0.4623	0.4653	0.4732	0.4835	0.4914
0.4970	0.5046	0.5300	0.5773	0.7321
0.8766	0.9031	0.9294	0.9659	1.0000

Transect 7071.306

Area:

0.0004	0.0010	0.0018	0.0026	0.0035
0.0045	0.0056	0.0067	0.0080	0.0092
0.0108	0.0126	0.0146	0.0167	0.0188
0.0209	0.0232	0.0260	0.0301	0.0369
0.0469	0.0586	0.0720	0.0870	0.1039
0.1218	0.1408	0.1612	0.1834	0.2078
0.2352	0.2658	0.3011	0.3413	0.3824
0.4235	0.4646	0.5057	0.5468	0.5880
0.6291	0.6703	0.7115	0.7526	0.7938
0.8351	0.8763	0.9175	0.9587	1.0000

Hrad:

0.0283	0.0538	0.0803	0.1101	0.1384
0.1532	0.1819	0.2102	0.2372	0.2644
0.2842	0.2959	0.3010	0.3316	0.3627
0.3941	0.4221	0.4358	0.4335	0.4007
0.3639	0.3338	0.3331	0.3413	0.3566
0.3785	0.4023	0.4195	0.4347	0.4438
0.4660	0.4553	0.4771	0.4902	0.5204
0.5536	0.5890	0.6259	0.6639	0.7028
0.7424	0.7824	0.8229	0.8637	0.9048
0.9460	0.9874	1.0290	1.0706	1.0000

Width:

0.0105	0.0141	0.0163	0.0173	0.0183
0.0210	0.0224	0.0236	0.0248	0.0266
0.0342	0.0383	0.0409	0.0416	0.0423
0.0429	0.0520	0.0621	0.1051	0.1801
0.2155	0.2531	0.2841	0.3098	0.3481
0.3693	0.3900	0.4178	0.4641	0.5125
0.5749	0.6466	0.7687	0.8179	0.8181
0.8183	0.8186	0.8188	0.8190	0.8193
0.8195	0.8197	0.8200	0.8202	0.8204
0.8207	0.8209	0.8211	0.8214	1.0000

Transect 7083.163

Area:

0.0001	0.0002	0.0005	0.0008	0.0012
0.0017	0.0022	0.0029	0.0035	0.0043
0.0050	0.0059	0.0068	0.0078	0.0089
0.0103	0.0125	0.0187	0.0304	0.0449
0.0602	0.0769	0.0944	0.1127	0.1315
0.1515	0.1741	0.2000	0.2277	0.2585
0.2925	0.3283	0.3650	0.4022	0.4395
0.4768	0.5141	0.5514	0.5887	0.6261
0.6634	0.7008	0.7381	0.7755	0.8129
0.8503	0.8877	0.9251	0.9626	1.0000

Hrad:

0.0224	0.0442	0.0579	0.0732	0.0888
0.1081	0.1230	0.1481	0.1738	0.2020
0.2290	0.2534	0.2766	0.2976	0.3157
0.3279	0.3038	0.2257	0.1857	0.1859
0.2076	0.2238	0.2547	0.2861	0.3194
0.3443	0.3548	0.3640	0.3962	0.4239
0.4492	0.4766	0.5059	0.5093	0.5467
0.5850	0.6237	0.6629	0.7023	0.7420
0.7819	0.8219	0.8621	0.9023	0.9425
0.9829	1.0232	1.0636	1.1039	1.0000

Width:

0.0029	0.0040	0.0061	0.0086	0.0098
0.0111	0.0133	0.0148	0.0158	0.0168
0.0179	0.0196	0.0213	0.0235	0.0265
0.0351	0.0813	0.2183	0.3083	0.3319
0.3575	0.3834	0.4002	0.4133	0.4308
0.4693	0.5372	0.6049	0.6416	0.7364
0.7868	0.8056	0.8293	0.8326	0.8329
0.8331	0.8333	0.8336	0.8338	0.8341
0.8343	0.8346	0.8348	0.8351	0.8353
0.8355	0.8358	0.8360	0.8363	1.0000

Transect 7088.943

Area:

0.0002	0.0005	0.0008	0.0015	0.0025
0.0038	0.0056	0.0088	0.0129	0.0180
0.0238	0.0300	0.0362	0.0426	0.0494
0.0568	0.0664	0.0803	0.0990	0.1202
0.1418	0.1644	0.1874	0.2107	0.2346
0.2594	0.2864	0.3143	0.3428	0.3723
0.4026	0.4337	0.4651	0.4965	0.5279
0.5593	0.5908	0.6222	0.6536	0.6851
0.7165	0.7480	0.7795	0.8110	0.8424
0.8739	0.9054	0.9370	0.9685	1.0000

Hrad:

0.0274	0.0532	0.0697	0.0776	0.0904
0.1027	0.1098	0.1099	0.1219	0.1400
0.1615	0.1873	0.2222	0.2554	0.2874
0.3158	0.3323	0.3268	0.3196	0.3251
0.3414	0.3580	0.3827	0.4085	0.4353
0.4588	0.4637	0.4913	0.5110	0.5297
0.5507	0.5749	0.6076	0.6408	0.6743
0.7081	0.7422	0.7765	0.8109	0.8454

0.8801	0.9148	0.9496	0.9844	1.0193
1.0542	1.0892	1.1241	1.1590	1.0000

Width:

0.0067	0.0073	0.0126	0.0224	0.0296
0.0375	0.0729	0.0935	0.1246	0.1461
0.1619	0.1637	0.1651	0.1783	0.1841
0.2079	0.3067	0.4452	0.5515	0.5676
0.5856	0.6071	0.6129	0.6282	0.6438
0.6903	0.7333	0.7478	0.7673	0.7984
0.8158	0.8341	0.8343	0.8345	0.8347
0.8349	0.8351	0.8353	0.8355	0.8357
0.8359	0.8361	0.8363	0.8365	0.8367
0.8369	0.8371	0.8373	0.8375	1.0000

Transect 7106.395

Area:

0.0002	0.0005	0.0007	0.0010	0.0014
0.0017	0.0022	0.0027	0.0034	0.0040
0.0047	0.0054	0.0062	0.0070	0.0080
0.0090	0.0104	0.0151	0.0279	0.0430
0.0613	0.0837	0.1085	0.1351	0.1620
0.1894	0.2177	0.2472	0.2783	0.3109
0.3442	0.3784	0.4128	0.4472	0.4816
0.5160	0.5505	0.5850	0.6194	0.6540
0.6885	0.7230	0.7576	0.7922	0.8268
0.8614	0.8960	0.9307	0.9653	1.0000

Hrad:

0.0111	0.0207	0.0286	0.0330	0.0402
0.0461	0.0519	0.0611	0.0724	0.0847
0.0974	0.1087	0.1188	0.1303	0.1408
0.1490	0.1486	0.1225	0.0917	0.1002
0.1045	0.1202	0.1474	0.1711	0.2038
0.2346	0.2653	0.2977	0.3189	0.3485
0.3743	0.4008	0.4340	0.4673	0.5008
0.5343	0.5678	0.6013	0.6348	0.6683
0.7017	0.7351	0.7684	0.8017	0.8349
0.8681	0.9012	0.9342	0.9671	1.0000

Width:

0.0069	0.0072	0.0078	0.0095	0.0102
0.0112	0.0144	0.0174	0.0184	0.0191
0.0198	0.0214	0.0236	0.0256	0.0282
0.0332	0.0677	0.2571	0.4140	0.4599
0.5862	0.6915	0.7475	0.7711	0.7836
0.7962	0.8346	0.8685	0.9278	0.9434
0.9762	0.9909	0.9914	0.9920	0.9925
0.9930	0.9935	0.9940	0.9945	0.9950
0.9955	0.9960	0.9965	0.9970	0.9975
0.9980	0.9985	0.9990	0.9995	1.0000

Transect 7111.02

Area:

0.0000	0.0001	0.0003	0.0005	0.0008
0.0012	0.0016	0.0020	0.0025	0.0031
0.0037	0.0043	0.0050	0.0060	0.0083

0.0116	0.0153	0.0202	0.0313	0.0455
0.0634	0.0848	0.1101	0.1381	0.1665
0.1954	0.2258	0.2574	0.2899	0.3233
0.3571	0.3908	0.4246	0.4584	0.4922
0.5260	0.5598	0.5936	0.6275	0.6613
0.6951	0.7290	0.7628	0.7967	0.8306
0.8644	0.8983	0.9322	0.9661	1.0000

Hrad:

0.0061	0.0118	0.0192	0.0240	0.0316
0.0389	0.0458	0.0529	0.0602	0.0706
0.0824	0.0941	0.1062	0.1125	0.1141
0.1240	0.1476	0.1696	0.1520	0.1593
0.1515	0.1695	0.1693	0.2061	0.2436
0.2846	0.3116	0.3514	0.3879	0.4207
0.4622	0.5038	0.5454	0.5870	0.6285
0.6700	0.7114	0.7527	0.7940	0.8352
0.8763	0.9173	0.9582	0.9990	1.0397
1.0804	1.1209	1.1614	1.2018	1.0000

Width:

0.0017	0.0035	0.0046	0.0063	0.0075
0.0088	0.0101	0.0114	0.0126	0.0138
0.0151	0.0162	0.0172	0.0449	0.0691
0.0842	0.0957	0.1447	0.3083	0.3766
0.4782	0.5486	0.6616	0.6794	0.6883
0.6981	0.7476	0.7671	0.7888	0.8089
0.8091	0.8092	0.8094	0.8096	0.8098
0.8099	0.8101	0.8103	0.8105	0.8106
0.8108	0.8110	0.8112	0.8113	0.8115
0.8117	0.8118	0.8120	0.8122	1.0000

Transect 7127.958

Area:

0.0001	0.0004	0.0006	0.0010	0.0023
0.0040	0.0061	0.0090	0.0128	0.0173
0.0223	0.0281	0.0342	0.0404	0.0468
0.0533	0.0607	0.0701	0.0825	0.0996
0.1180	0.1393	0.1624	0.1879	0.2164
0.2455	0.2759	0.3069	0.3382	0.3695
0.4008	0.4322	0.4636	0.4950	0.5264
0.5578	0.5893	0.6208	0.6523	0.6838
0.7153	0.7469	0.7784	0.8100	0.8416
0.8733	0.9049	0.9366	0.9683	1.0000

Hrad:

0.0092	0.0205	0.0304	0.0356	0.0461
0.0767	0.1043	0.1189	0.1339	0.1664
0.2003	0.2206	0.2615	0.3059	0.3485
0.3908	0.4250	0.4457	0.4446	0.4247
0.4238	0.3517	0.3738	0.3393	0.3683
0.4021	0.4257	0.4618	0.4982	0.5350
0.5721	0.6094	0.6469	0.6845	0.7221
0.7596	0.7972	0.8348	0.8723	0.9098
0.9472	0.9845	1.0217	1.0589	1.0960
1.1330	1.1699	1.2068	1.2435	1.0000

Width:

0.0054	0.0059	0.0064	0.0197	0.0415
0.0476	0.0587	0.0870	0.1053	0.1177
0.1417	0.1503	0.1562	0.1596	0.1639
0.1690	0.2166	0.2622	0.4021	0.4443
0.4931	0.5776	0.6074	0.6960	0.7333
0.7498	0.7827	0.7881	0.7937	0.7942
0.7947	0.7952	0.7956	0.7961	0.7966
0.7971	0.7976	0.7981	0.7986	0.7991
0.7995	0.8000	0.8005	0.8010	0.8015
0.8020	0.8025	0.8030	0.8035	1.0000

Transect 7153.097

Area:

0.0001	0.0003	0.0005	0.0009	0.0019
0.0030	0.0043	0.0058	0.0078	0.0113
0.0165	0.0221	0.0280	0.0340	0.0402
0.0466	0.0532	0.0603	0.0691	0.0814
0.0979	0.1173	0.1414	0.1691	0.1983
0.2281	0.2588	0.2903	0.3223	0.3543
0.3864	0.4185	0.4507	0.4828	0.5150
0.5472	0.5794	0.6116	0.6439	0.6761
0.7084	0.7407	0.7731	0.8054	0.8378
0.8702	0.9026	0.9351	0.9675	1.0000

Hrad:

0.0077	0.0155	0.0215	0.0244	0.0385
0.0606	0.0836	0.1053	0.0916	0.0991
0.1133	0.1445	0.1765	0.2093	0.2429
0.2751	0.3038	0.3262	0.3387	0.3392
0.3185	0.3043	0.2844	0.2927	0.3069
0.3257	0.3404	0.3603	0.3869	0.4154
0.4442	0.4734	0.5027	0.5321	0.5616
0.5912	0.6207	0.6503	0.6798	0.7093
0.7387	0.7680	0.7973	0.8265	0.8557
0.8847	0.9137	0.9425	0.9713	1.0000

Width:

0.0042	0.0055	0.0074	0.0245	0.0328
0.0373	0.0421	0.0471	0.0843	0.1389
0.1696	0.1764	0.1830	0.1885	0.1933
0.1989	0.2099	0.2358	0.3056	0.4708
0.5460	0.6685	0.7959	0.8923	0.9060
0.9297	0.9580	0.9804	0.9867	0.9873
0.9879	0.9886	0.9892	0.9898	0.9905
0.9911	0.9917	0.9924	0.9930	0.9936
0.9943	0.9949	0.9956	0.9962	0.9968
0.9975	0.9981	0.9987	0.9994	1.0000

Transect 7156.184

Area:

0.0004	0.0007	0.0011	0.0016	0.0027
0.0040	0.0055	0.0072	0.0094	0.0123
0.0161	0.0200	0.0242	0.0285	0.0330
0.0377	0.0428	0.0490	0.0564	0.0659
0.0820	0.1036	0.1282	0.1552	0.1841
0.2157	0.2482	0.2806	0.3131	0.3456

0.3781	0.4107	0.4432	0.4758	0.5084
0.5411	0.5737	0.6064	0.6391	0.6718
0.7045	0.7373	0.7700	0.8028	0.8356
0.8685	0.9013	0.9342	0.9671	1.0000

Hrad:

0.0107	0.0201	0.0285	0.0343	0.0437
0.0619	0.0823	0.0962	0.1008	0.1094
0.1274	0.1570	0.1862	0.2166	0.2436
0.2739	0.2987	0.3143	0.3239	0.3258
0.2504	0.2294	0.1987	0.2173	0.2362
0.2543	0.2845	0.3155	0.3468	0.3784
0.4101	0.4418	0.4736	0.5053	0.5370
0.5686	0.6001	0.6316	0.6629	0.6941
0.7253	0.7563	0.7872	0.8180	0.8486
0.8791	0.9095	0.9398	0.9700	1.0000

Width:

0.0110	0.0114	0.0119	0.0261	0.0368
0.0429	0.0476	0.0572	0.0763	0.1044
0.1184	0.1238	0.1292	0.1334	0.1393
0.1472	0.1694	0.2075	0.2430	0.3811
0.5882	0.7221	0.7795	0.8538	0.9118
0.9851	0.9857	0.9864	0.9870	0.9876
0.9882	0.9888	0.9895	0.9901	0.9907
0.9913	0.9919	0.9926	0.9932	0.9938
0.9944	0.9950	0.9957	0.9963	0.9969
0.9975	0.9981	0.9988	0.9994	1.0000

Transect 7238.63
Area:

0.0004	0.0009	0.0014	0.0019	0.0024
0.0031	0.0038	0.0045	0.0052	0.0060
0.0069	0.0077	0.0086	0.0096	0.0106
0.0117	0.0129	0.0145	0.0174	0.0249
0.0381	0.0573	0.0793	0.1046	0.1345
0.1666	0.1999	0.2337	0.2678	0.3022
0.3368	0.3715	0.4063	0.4410	0.4758
0.5106	0.5454	0.5802	0.6151	0.6500
0.6849	0.7198	0.7548	0.7897	0.8247
0.8597	0.8948	0.9298	0.9649	1.0000

Hrad:

0.0146	0.0275	0.0390	0.0496	0.0591
0.0695	0.0813	0.0932	0.1051	0.1167
0.1280	0.1389	0.1487	0.1590	0.1687
0.1774	0.1854	0.1912	0.1854	0.1618
0.1530	0.1605	0.1966	0.2304	0.2551
0.2912	0.3285	0.3676	0.4071	0.4468
0.4871	0.5282	0.5692	0.6103	0.6512
0.6920	0.7325	0.7729	0.8131	0.8530
0.8927	0.9322	0.9714	1.0104	1.0491
1.0875	1.1258	1.1637	1.2014	1.0000

Width:

0.0104	0.0110	0.0115	0.0120	0.0138
0.0158	0.0165	0.0172	0.0179	0.0186
0.0195	0.0205	0.0220	0.0230	0.0244
0.0261	0.0327	0.0418	0.1083	0.2353
0.3619	0.4996	0.5253	0.6568	0.7312
0.7653	0.7827	0.7879	0.7961	0.8030
0.8064	0.8069	0.8074	0.8079	0.8084
0.8089	0.8094	0.8099	0.8104	0.8109
0.8114	0.8119	0.8124	0.8129	0.8134
0.8139	0.8144	0.8149	0.8154	1.0000

Transect 7246.49
Area:

0.0001	0.0004	0.0007	0.0012	0.0017
0.0024	0.0030	0.0038	0.0045	0.0053
0.0061	0.0070	0.0079	0.0089	0.0100
0.0111	0.0124	0.0144	0.0187	0.0259
0.0389	0.0569	0.0799	0.1070	0.1368
0.1681	0.2009	0.2341	0.2676	0.3013
0.3352	0.3691	0.4031	0.4378	0.4727
0.5077	0.5427	0.5777	0.6128	0.6479
0.6830	0.7181	0.7532	0.7884	0.8236
0.8588	0.8941	0.9294	0.9647	1.0000

Hrad:

0.0089	0.0167	0.0286	0.0379	0.0464
0.0560	0.0703	0.0853	0.0998	0.1138
0.1276	0.1412	0.1521	0.1641	0.1761
0.1873	0.1958	0.1966	0.1852	0.1778
0.1677	0.1878	0.2019	0.2256	0.2600
0.2977	0.3388	0.3818	0.4248	0.4690
0.5134	0.5578	0.6016	0.6390	0.6823
0.7255	0.7683	0.8109	0.8531	0.8951
0.9367	0.9780	1.0189	1.0595	1.0998
1.1397	1.1793	1.2186	1.2575	1.0000

Width:

0.0038	0.0075	0.0088	0.0107	0.0127
0.0145	0.0153	0.0159	0.0167	0.0175
0.0182	0.0188	0.0214	0.0226	0.0239
0.0263	0.0324	0.0756	0.1164	0.2232
0.3235	0.4515	0.5457	0.6337	0.6579
0.7032	0.7179	0.7220	0.7317	0.7338
0.7355	0.7372	0.7418	0.7583	0.7589
0.7594	0.7600	0.7605	0.7611	0.7616
0.7622	0.7627	0.7633	0.7638	0.7644
0.7649	0.7655	0.7660	0.7666	1.0000

Transect 7306.937
Area:

0.0002	0.0005	0.0008	0.0013	0.0019
0.0026	0.0034	0.0042	0.0051	0.0061
0.0074	0.0090	0.0107	0.0126	0.0150
0.0187	0.0230	0.0279	0.0340	0.0440
0.0601	0.0800	0.1029	0.1301	0.1596
0.1904	0.2216	0.2538	0.2875	0.3213
0.3552	0.3891	0.4230	0.4569	0.4908
0.5247	0.5586	0.5926	0.6265	0.6604
0.6944	0.7283	0.7622	0.7962	0.8302
0.8641	0.8981	0.9320	0.9660	1.0000

Hrad:

0.0081	0.0171	0.0246	0.0298	0.0359
0.0454	0.0545	0.0648	0.0751	0.0846
0.0918	0.0985	0.1053	0.1118	0.1164
0.1143	0.1151	0.1159	0.1118	0.1117
0.1176	0.1315	0.1474	0.1610	0.1805
0.2143	0.2491	0.2795	0.3082	0.3455
0.3829	0.4203	0.4577	0.4951	0.5324
0.5696	0.6067	0.6437	0.6807	0.7175
0.7543	0.7909	0.8274	0.8638	0.9001
0.9363	0.9723	1.0083	1.0441	1.0000

Width:

0.0071	0.0093	0.0114	0.0146	0.0175
0.0199	0.0221	0.0242	0.0260	0.0327
0.0385	0.0440	0.0494	0.0550	0.0883
0.1094	0.1234	0.1462	0.2049	0.3925
0.4914	0.5746	0.7029	0.7680	0.8376
0.8497	0.8603	0.8976	0.9277	0.9280
0.9281	0.9283	0.9284	0.9285	0.9287
0.9288	0.9289	0.9291	0.9292	0.9293
0.9295	0.9296	0.9297	0.9299	0.9300
0.9301	0.9303	0.9304	0.9305	1.0000

Transect 7309.586
Area:

0.0003	0.0007	0.0011	0.0015	0.0019
0.0024	0.0030	0.0036	0.0044	0.0053
0.0063	0.0077	0.0094	0.0113	0.0134
0.0164	0.0206	0.0253	0.0308	0.0373
0.0464	0.0618	0.0846	0.1119	0.1419
0.1740	0.2066	0.2395	0.2730	0.3075
0.3421	0.3767	0.4112	0.4458	0.4804
0.5150	0.5496	0.5842	0.6189	0.6535
0.6881	0.7227	0.7574	0.7920	0.8267
0.8613	0.8960	0.9306	0.9653	1.0000

Hrad:

0.0122	0.0215	0.0289	0.0352	0.0415
0.0482	0.0570	0.0662	0.0752	0.0847
0.0951	0.1025	0.1103	0.1192	0.1290
0.1274	0.1277	0.1305	0.1327	0.1348
0.1374	0.1138	0.1254	0.1465	0.1733
0.2082	0.2462	0.2828	0.3205	0.3546
0.3943	0.4341	0.4738	0.5134	0.5529
0.5922	0.6313	0.6703	0.7092	0.7478
0.7863	0.8246	0.8628	0.9007	0.9385
0.9761	1.0135	1.0508	1.0878	1.0000

Width:

0.0088	0.0094	0.0100	0.0107	0.0115
0.0148	0.0164	0.0183	0.0212	0.0247
0.0284	0.0414	0.0467	0.0518	0.0577
0.1003	0.1155	0.1304	0.1480	0.1918
0.2856	0.5228	0.6588	0.7437	0.8175
0.8439	0.8490	0.8625	0.8886	0.8974
0.8975	0.8976	0.8978	0.8979	0.8981
0.8982	0.8984	0.8985	0.8987	0.8988
0.8990	0.8991	0.8993	0.8994	0.8996
0.8997	0.8999	0.9000	0.9002	1.0000

Transect 7328.619
Area:

0.0006	0.0013	0.0020	0.0027	0.0034
0.0041	0.0049	0.0057	0.0065	0.0073
0.0081	0.0090	0.0099	0.0109	0.0119
0.0134	0.0152	0.0175	0.0200	0.0226
0.0253	0.0282	0.0312	0.0344	0.0377
0.0416	0.0477	0.0554	0.0664	0.0790
0.0929	0.1076	0.1228	0.1383	0.1547
0.1727	0.1945	0.2202	0.2571	0.3030
0.3597	0.4225	0.4901	0.5607	0.6323
0.7046	0.7776	0.8512	0.9254	1.0000

Hrad:

0.0248	0.0454	0.0629	0.0782	0.0916
0.1037	0.1146	0.1246	0.1338	0.1424
0.1505	0.1582	0.1623	0.1664	0.1714
0.1755	0.1769	0.1795	0.1941	0.2102
0.2273	0.2453	0.2627	0.2820	0.3029
0.3190	0.3214	0.3188	0.3115	0.3063
0.2915	0.3109	0.3346	0.3597	0.3854
0.4089	0.3991	0.4257	0.4386	0.4587
0.4647	0.4889	0.5347	0.5778	0.6464
0.7153	0.7862	0.8533	0.9305	1.0000

Width:

0.0086	0.0089	0.0092	0.0094	0.0097
0.0099	0.0102	0.0105	0.0107	0.0110
0.0113	0.0115	0.0125	0.0135	0.0158
0.0221	0.0269	0.0323	0.0338	0.0354
0.0372	0.0389	0.0412	0.0430	0.0444
0.0633	0.0899	0.1322	0.1582	0.1760
0.1908	0.1985	0.2039	0.2097	0.2277
0.2527	0.3196	0.3892	0.5432	0.6721
0.8048	0.8613	0.9253	0.9488	0.9551
0.9651	0.9743	0.9823	0.9870	1.0000

Transect 7333.219
Area:

0.0001	0.0004	0.0007	0.0010	0.0014
0.0024	0.0036	0.0049	0.0062	0.0075
0.0090	0.0104	0.0120	0.0137	0.0156
0.0177	0.0200	0.0224	0.0249	0.0275
0.0302	0.0330	0.0359	0.0391	0.0435
0.0495	0.0593	0.0724	0.0868	0.1018
0.1173	0.1334	0.1501	0.1672	0.1848
0.2030	0.2237	0.2482	0.2762	0.3098
0.3556	0.4143	0.4818	0.5523	0.6251
0.6989	0.7733	0.8482	0.9237	1.0000

Hrad:

0.0164	0.0347	0.0492	0.0606	0.0601

0.0510	0.0729	0.0939	0.1141	0.1336
0.1520	0.1695	0.1868	0.2057	0.2199
0.2387	0.2600	0.2827	0.3070	0.3320
0.3578	0.3852	0.4129	0.4372	0.4503
0.4403	0.4169	0.3327	0.3436	0.3631
0.3872	0.4093	0.4386	0.4701	0.5026
0.5367	0.5648	0.5390	0.5606	0.5876
0.5837	0.5822	0.6105	0.6471	0.6814
0.7422	0.8144	0.8873	0.9449	1.0000

Width:

0.0028	0.0033	0.0037	0.0049	0.0079
0.0153	0.0160	0.0166	0.0173	0.0180
0.0187	0.0196	0.0206	0.0227	0.0266
0.0285	0.0301	0.0316	0.0329	0.0343
0.0356	0.0366	0.0377	0.0496	0.0650
0.1030	0.1501	0.1797	0.1904	0.1970
0.2029	0.2123	0.2183	0.2237	0.2292
0.2491	0.2929	0.3426	0.3753	0.5085
0.6672	0.8289	0.8948	0.9219	0.9451
0.9562	0.9621	0.9694	0.9759	1.0000

Transect 7390.724

Area:

0.0002	0.0004	0.0007	0.0010	0.0013
0.0018	0.0025	0.0033	0.0041	0.0051
0.0061	0.0073	0.0088	0.0124	0.0166
0.0214	0.0275	0.0355	0.0443	0.0558
0.0723	0.0919	0.1123	0.1355	0.1616
0.1885	0.2163	0.2463	0.2777	0.3105
0.3441	0.3783	0.4128	0.4473	0.4818
0.5163	0.5508	0.5853	0.6198	0.6543
0.6889	0.7234	0.7580	0.7925	0.8271
0.8616	0.8962	0.9308	0.9654	1.0000

Hrad:

0.0234	0.0445	0.0617	0.0769	0.0863
0.0913	0.1144	0.1358	0.1564	0.1765
0.1960	0.2151	0.2228	0.1982	0.1980
0.2004	0.1905	0.1952	0.2199	0.2295
0.2383	0.2410	0.2668	0.2819	0.3066
0.3345	0.3634	0.3887	0.4165	0.4429
0.4733	0.5024	0.5353	0.5690	0.6034
0.6383	0.6735	0.7089	0.7446	0.7804
0.8162	0.8521	0.8881	0.9240	0.9600
0.9959	1.0317	1.0675	1.1033	1.0000

Width:

0.0052	0.0063	0.0074	0.0084	0.0102
0.0150	0.0180	0.0203	0.0226	0.0249
0.0273	0.0297	0.0649	0.1003	0.1100
0.1353	0.1744	0.2113	0.2428	0.3877
0.4382	0.5031	0.5375	0.6206	0.6659
0.6815	0.7133	0.7678	0.8033	0.8341
0.8464	0.8609	0.8611	0.8613	0.8615
0.8617	0.8618	0.8620	0.8622	0.8624
0.8626	0.8627	0.8629	0.8631	0.8633
0.8635	0.8637	0.8638	0.8640	1.0000

Transect 7413.256

Area:

0.0001	0.0003	0.0006	0.0009	0.0015
0.0022	0.0030	0.0038	0.0046	0.0055
0.0064	0.0074	0.0083	0.0093	0.0104
0.0115	0.0127	0.0139	0.0152	0.0167
0.0186	0.0214	0.0265	0.0364	0.0492
0.0637	0.0806	0.1006	0.1244	0.1501
0.1779	0.2072	0.2387	0.2720	0.3069
0.3431	0.3835	0.4292	0.4760	0.5229
0.5699	0.6169	0.6641	0.7113	0.7588
0.8065	0.8544	0.9026	0.9511	1.0000

Hrad:

0.0252	0.0530	0.0737	0.0769	0.0889
0.1123	0.1446	0.1798	0.2140	0.2473
0.2798	0.3115	0.3426	0.3728	0.4014
0.4290	0.4554	0.4808	0.5043	0.5209
0.5288	0.5155	0.4593	0.3709	0.3283
0.3233	0.3204	0.3184	0.3276	0.3509
0.3702	0.4004	0.4146	0.4448	0.4765
0.5099	0.5377	0.4697	0.5138	0.5586
0.6039	0.6492	0.6947	0.7399	0.7833
0.8273	0.8711	0.9159	0.9567	1.0000

Width:

0.0038	0.0047	0.0060	0.0091	0.0129
0.0152	0.0163	0.0169	0.0175	0.0182
0.0188	0.0194	0.0201	0.0208	0.0219
0.0230	0.0243	0.0256	0.0282	0.0353
0.0436	0.0730	0.1471	0.2361	0.2779
0.3161	0.3629	0.4593	0.5019	0.5391
0.5810	0.6207	0.6547	0.6973	0.7145
0.7751	0.8782	0.9488	0.9514	0.9532
0.9546	0.9562	0.9577	0.9601	0.9658
0.9705	0.9754	0.9787	0.9890	1.0000

Transect 7416.162

Area:

0.0006	0.0012	0.0019	0.0026	0.0033
0.0041	0.0049	0.0057	0.0065	0.0074
0.0084	0.0094	0.0104	0.0116	0.0129
0.0143	0.0157	0.0173	0.0190	0.0207
0.0225	0.0245	0.0267	0.0292	0.0321
0.0355	0.0399	0.0449	0.0517	0.0607
0.0758	0.0954	0.1183	0.1473	0.1824
0.2229	0.2685	0.3188	0.3719	0.4273
0.4838	0.5404	0.5972	0.6541	0.7112
0.7685	0.8260	0.8837	0.9416	1.0000

Hrad:

0.0165	0.0311	0.0443	0.0564	0.0675
0.0779	0.0874	0.0962	0.1046	0.1127
0.1198	0.1255	0.1306	0.1361	0.1453
0.1548	0.1683	0.1820	0.1959	0.2101
0.2245	0.2352	0.2458	0.2554	0.2635
0.2739	0.2744	0.2868	0.2903	0.2845
0.2697	0.2429	0.2568	0.2792	0.2864
0.3162	0.3274	0.3497	0.3912	0.4412
0.4839	0.5413	0.5993	0.6575	0.7153
0.7739	0.8322	0.8898	0.9474	1.0000

Width:

0.0105	0.0110	0.0115	0.0120	0.0125
0.0130	0.0135	0.0141	0.0148	0.0154
0.0162	0.0174	0.0188	0.0203	0.0225
0.0244	0.0258	0.0273	0.0287	0.0300
0.0315	0.0350	0.0390	0.0448	0.0527
0.0670	0.0783	0.0935	0.1300	0.1922
0.3028	0.3476	0.4326	0.5410	0.6424
0.7291	0.8093	0.8773	0.9152	0.9482
0.9537	0.9565	0.9590	0.9616	0.9657
0.9679	0.9708	0.9751	0.9793	1.0000

Transect 7506.531

Area:

0.0004	0.0009	0.0015	0.0021	0.0027
0.0034	0.0043	0.0053	0.0065	0.0078
0.0093	0.0111	0.0135	0.0163	0.0205
0.0284	0.0389	0.0567	0.0793	0.1029
0.1277	0.1539	0.1811	0.2094	0.2389
0.2686	0.2983	0.3281	0.3579	0.3879
0.4178	0.4479	0.4780	0.5082	0.5384
0.5687	0.5991	0.6296	0.6601	0.6906
0.7213	0.7520	0.7828	0.8136	0.8445
0.8755	0.9065	0.9376	0.9688	1.0000

Hrad:

0.0194	0.0351	0.0486	0.0603	0.0711
0.0811	0.0914	0.1054	0.1252	0.1459
0.1649	0.1877	0.1997	0.2206	0.2164
0.2333	0.2603	0.2662	0.2973	0.3543
0.4163	0.4803	0.5455	0.6079	0.6733
0.7418	0.8116	0.8821	0.9530	1.0240
1.0950	1.1659	1.2365	1.3069	1.3769
1.4466	1.5159	1.5848	1.6533	1.7214
1.7891	1.8563	1.9231	1.9895	2.0554
2.1209	2.1860	2.2507	2.3149	1.0000

Width:

0.0039	0.0044	0.0049	0.0054	0.0059
0.0065	0.0083	0.0095	0.0108	0.0121
0.0140	0.0173	0.0230	0.0262	0.0457
0.0761	0.1161	0.1879	0.1983	0.2065
0.2202	0.2305	0.2364	0.2503	0.2541
0.2547	0.2553	0.2558	0.2564	0.2570
0.2575	0.2581	0.2587	0.2592	0.2598
0.2604	0.2609	0.2615	0.2620	0.2626
0.2632	0.2637	0.2643	0.2649	0.2654
0.2660	0.2666	0.2671	0.2677	1.0000

Transect 7510.949

Area:

0.0001	0.0003	0.0006	0.0010	0.0016
0.0023	0.0031	0.0041	0.0051	0.0064
0.0079	0.0113	0.0156	0.0199	0.0252
0.0319	0.0414	0.0564	0.0773	0.1018
0.1274	0.1540	0.1817	0.2101	0.2399
0.2700	0.3001	0.3303	0.3605	0.3907
0.4209	0.4511	0.4814	0.5117	0.5421
0.5724	0.6028	0.6332	0.6636	0.6941
0.7246	0.7551	0.7856	0.8162	0.8467
0.8773	0.9080	0.9386	0.9693	1.0000

Hrad:

0.0133	0.0263	0.0370	0.0436	0.0453
0.0557	0.0678	0.0846	0.1029	0.1228
0.1372	0.1453	0.1850	0.2356	0.2735
0.3163	0.3506	0.3583	0.3536	0.4033
0.4629	0.5177	0.5859	0.6561	0.7220
0.7948	0.8692	0.9445	1.0202	1.0960
1.1719	1.2476	1.3231	1.3982	1.4730
1.5474	1.6214	1.6949	1.7680	1.8406
1.9127	1.9842	2.0553	2.1259	2.1960
2.2656	2.3347	2.4033	2.4714	1.0000

Width:

0.0016	0.0023	0.0032	0.0043	0.0057
0.0069	0.0079	0.0089	0.0101	0.0113
0.0198	0.0362	0.0384	0.0394	0.0542
0.0622	0.1042	0.1593	0.2140	0.2224
0.2316	0.2422	0.2512	0.2570	0.2677
0.2680	0.2682	0.2684	0.2686	0.2688
0.2691	0.2693	0.2695	0.2697	0.2699
0.2702	0.2704	0.2706	0.2708	0.2710
0.2713	0.2715	0.2717	0.2719	0.2721
0.2724	0.2726	0.2728	0.2730	1.0000

Transect 7560.665

Area:

0.0002	0.0007	0.0012	0.0018	0.0028
0.0040	0.0054	0.0071	0.0090	0.0110
0.0132	0.0156	0.0183	0.0222	0.0288
0.0361	0.0463	0.0588	0.0737	0.0919
0.1141	0.1412	0.1710	0.2011	0.2313
0.2616	0.2918	0.3222	0.3525	0.3829
0.4134	0.4439	0.4744	0.5050	0.5356
0.5662	0.5969	0.6277	0.6585	0.6893
0.7202	0.7511	0.7821	0.8131	0.8441
0.8752	0.9063	0.9375	0.9687	1.0000

Hrad:

0.0137	0.0291	0.0419	0.0445	0.0533
0.0690	0.0885	0.1103	0.1356	0.1639
0.1944	0.2258	0.2424	0.2495	0.2495
0.2925	0.3242	0.3571	0.3877	0.4215
0.3688	0.4312	0.4895	0.5585	0.6301
0.7030	0.7767	0.8506	0.9244	0.9981
1.0715	1.1444	1.2169	1.2889	1.3604

1.4313	1.5017	1.5715	1.6407	1.7094
1.7774	1.8450	1.9119	1.9783	2.0441
2.1093	2.1741	2.2382	2.3019	1.0000

Width:

0.0024	0.0030	0.0036	0.0054	0.0069
0.0081	0.0099	0.0114	0.0126	0.0137
0.0145	0.0154	0.0185	0.0377	0.0436
0.0555	0.0737	0.0879	0.1066	0.1210
0.1693	0.1820	0.1924	0.1927	0.1929
0.1932	0.1935	0.1937	0.1940	0.1943
0.1946	0.1948	0.1951	0.1954	0.1957
0.1959	0.1962	0.1965	0.1968	0.1970
0.1973	0.1976	0.1979	0.1981	0.1984
0.1987	0.1990	0.1992	0.1995	1.0000

Transect 7573.521

Area:

0.0004	0.0008	0.0014	0.0020	0.0027
0.0035	0.0046	0.0057	0.0071	0.0085
0.0101	0.0117	0.0140	0.0181	0.0233
0.0297	0.0388	0.0495	0.0623	0.0832
0.1062	0.1315	0.1607	0.1913	0.2220
0.2527	0.2834	0.3142	0.3450	0.3759
0.4067	0.4377	0.4686	0.4996	0.5306
0.5616	0.5927	0.6239	0.6550	0.6862
0.7174	0.7487	0.7800	0.8113	0.8427
0.8741	0.9055	0.9370	0.9685	1.0000

Hrad:

0.0082	0.0148	0.0200	0.0245	0.0276
0.0318	0.0390	0.0470	0.0556	0.0654
0.0755	0.0859	0.0857	0.0866	0.0986
0.1131	0.1248	0.1397	0.1443	0.1321
0.1569	0.1807	0.2036	0.2302	0.2588
0.2885	0.3188	0.3495	0.3803	0.4113
0.4422	0.4730	0.5038	0.5344	0.5649
0.5952	0.6253	0.6553	0.6851	0.7147
0.7441	0.7733	0.8023	0.8311	0.8597
0.8882	0.9164	0.9445	0.9723	1.0000

Width:

0.0133	0.0152	0.0176	0.0205	0.0252
0.0301	0.0347	0.0394	0.0441	0.0474
0.0513	0.0558	0.0996	0.1542	0.1750
0.2414	0.3258	0.3607	0.5424	0.7062
0.7463	0.8656	0.9703	0.9714	0.9725
0.9736	0.9747	0.9758	0.9769	0.9780
0.9791	0.9802	0.9813	0.9824	0.9835
0.9846	0.9857	0.9868	0.9879	0.9890
0.9901	0.9912	0.9923	0.9934	0.9945
0.9956	0.9967	0.9978	0.9989	1.0000

Transect 7598.352

Area:

0.0004	0.0008	0.0013	0.0019	0.0025
0.0032	0.0040	0.0049	0.0060	0.0071
0.0083	0.0107	0.0156	0.0219	0.0318
0.0458	0.0623	0.0821	0.1033	0.1249
0.1477	0.1730	0.2006	0.2297	0.2589
0.2881	0.3174	0.3467	0.3760	0.4054
0.4348	0.4642	0.4937	0.5232	0.5527
0.5823	0.6119	0.6416	0.6712	0.7010
0.7307	0.7605	0.7903	0.8202	0.8500
0.8800	0.9099	0.9399	0.9699	1.0000

Hrad:

0.0158	0.0292	0.0410	0.0524	0.0642
0.0788	0.0948	0.1119	0.1311	0.1538
0.1772	0.1547	0.1504	0.1712	0.1925
0.2102	0.2437	0.2782	0.3301	0.3853
0.4402	0.4923	0.5419	0.5912	0.6456
0.7021	0.7598	0.8184	0.8774	0.9367
0.9962	1.0556	1.1150	1.1742	1.2333
1.2921	1.3507	1.4091	1.4671	1.5249
1.5824	1.6396	1.6965	1.7531	1.8094
1.8653	1.9209	1.9762	2.0312	1.0000

Width:

0.0046	0.0052	0.0057	0.0063	0.0072
0.0084	0.0096	0.0110	0.0122	0.0128
0.0134	0.0420	0.0608	0.0833	0.1312
0.1694	0.2037	0.2303	0.2356	0.2451
0.2606	0.2998	0.3151	0.3219	0.3223
0.3227	0.3231	0.3235	0.3238	0.3242
0.3246	0.3250	0.3254	0.3257	0.3261
0.3265	0.3269	0.3273	0.3276	0.3280
0.3284	0.3288	0.3292	0.3296	0.3299
0.3303	0.3307	0.3311	0.3315	1.0000

Transect 7604.08

Area:

0.0001	0.0004	0.0007	0.0011	0.0016
0.0021	0.0028	0.0035	0.0043	0.0052
0.0064	0.0091	0.0134	0.0196	0.0281
0.0404	0.0558	0.0741	0.0950	0.1181
0.1441	0.1716	0.2001	0.2293	0.2586
0.2880	0.3173	0.3467	0.3761	0.4055
0.4350	0.4645	0.4940	0.5235	0.5531
0.5827	0.6123	0.6420	0.6717	0.7014
0.7311	0.7609	0.7907	0.8205	0.8503
0.8802	0.9101	0.9401	0.9700	1.0000

Hrad:

0.0105	0.0282	0.0510	0.0728	0.0944
0.1181	0.1434	0.1696	0.1966	0.2209
0.2005	0.1412	0.1488	0.1760	0.2023
0.2189	0.2298	0.2619	0.3012	0.3426
0.3801	0.4315	0.4830	0.5346	0.5898
0.6460	0.7029	0.7600	0.8174	0.8749
0.9323	0.9897	1.0470	1.1041	1.1611
1.2178	1.2744	1.3308	1.3869	1.4428
1.4985	1.5539	1.6090	1.6640	1.7186
1.7731	1.8272	1.8812	1.9348	1.0000

Width:

0.0023	0.0045	0.0051	0.0063	0.0078
0.0091	0.0102	0.0112	0.0122	0.0134
0.0245	0.0506	0.0819	0.0998	0.1510
0.2086	0.2437	0.3009	0.3257	0.3699
0.4000	0.4133	0.4289	0.4332	0.4336
0.4340	0.4344	0.4348	0.4352	0.4357
0.4361	0.4365	0.4369	0.4373	0.4377
0.4381	0.4385	0.4389	0.4394	0.4398
0.4402	0.4406	0.4410	0.4414	0.4418
0.4422	0.4426	0.4431	0.4435	1.0000

Transect 7641.424

Area:

0.0000	0.0001	0.0002	0.0004	0.0007
0.0010	0.0014	0.0019	0.0024	0.0034
0.0070	0.0142	0.0262	0.0409	0.0562
0.0736	0.0926	0.1119	0.1329	0.1551
0.1783	0.2033	0.2308	0.2590	0.2874
0.3158	0.3442	0.3727	0.4011	0.4296
0.4580	0.4865	0.5150	0.5434	0.5719
0.6004	0.6289	0.6574	0.6859	0.7144
0.7430	0.7715	0.8000	0.8286	0.8571
0.8857	0.9143	0.9428	0.9714	1.0000

Hrad:

0.0049	0.0088	0.0121	0.0153	0.0214
0.0298	0.0395	0.0496	0.0596	0.0630
0.0530	0.0507	0.0652	0.0868	0.1100
0.1250	0.1493	0.1736	0.1970	0.2190
0.2330	0.2550	0.2726	0.2839	0.3111
0.3386	0.3663	0.3941	0.4219	0.4498
0.4777	0.5056	0.5335	0.5614	0.5892
0.6170	0.6447	0.6724	0.7001	0.7276
0.7552	0.7826	0.8100	0.8374	0.8646
0.8919	0.9190	0.9461	0.9731	1.0000

Width:

0.0023	0.0034	0.0047	0.0082	0.0101
0.0127	0.0149	0.0172	0.0204	0.0802
0.1922	0.3128	0.5000	0.5244	0.5587
0.6468	0.6704	0.7037	0.7579	0.7969
0.8243	0.9337	0.9758	0.9938	0.9941
0.9943	0.9945	0.9948	0.9950	0.9952
0.9955	0.9957	0.9960	0.9962	0.9964
0.9967	0.9969	0.9971	0.9974	0.9976
0.9979	0.9981	0.9983	0.9986	0.9988
0.9990	0.9993	0.9995	0.9998	1.0000

Transect 130_HC

Area:

0.0004	0.0016	0.0036	0.0063	0.0099
0.0142	0.0194	0.0254	0.0323	0.0399
0.0482	0.0573	0.0672	0.0780	0.0896
0.1021	0.1154	0.1293	0.1442	0.1598
0.1761	0.1933	0.2113	0.2301	0.2497
0.2702	0.2914	0.3133	0.3362	0.3598
0.3842	0.4094	0.4354	0.4622	0.4898
0.5182	0.5474	0.5774	0.6082	0.6399
0.6723	0.7055	0.7395	0.7743	0.8099
0.8463	0.8836	0.9216	0.9604	1.0000

Hrad:

0.0233	0.0387	0.0618	0.0782	0.1016
0.1200	0.1389	0.1581	0.1775	0.2022
0.2215	0.2410	0.2605	0.2801	0.2964
0.3168	0.3371	0.3602	0.3799	0.3978
0.4196	0.4414	0.4580	0.4785	0.5003
0.5215	0.5394	0.5592	0.5811	0.5997
0.6182	0.6400	0.6618	0.6778	0.6989
0.7207	0.7413	0.7592	0.7796	0.8015
0.8194	0.8386	0.8604	0.8822	0.8975
0.9193	0.9411	0.9610	0.9789	1.0000

Width:

0.0177	0.0404	0.0576	0.0809	0.0975
0.1186	0.1396	0.1607	0.1818	0.1973
0.2176	0.2379	0.2582	0.2784	0.3021
0.3222	0.3422	0.3591	0.3795	0.4016
0.4198	0.4380	0.4614	0.4809	0.4992
0.5180	0.5401	0.5603	0.5785	0.6000
0.6214	0.6397	0.6579	0.6819	0.7008
0.7190	0.7385	0.7606	0.7801	0.7984
0.8205	0.8413	0.8595	0.8777	0.9024
0.9206	0.9389	0.9590	0.9811	1.0000

Transect 210_HC

Area:

0.0002	0.0009	0.0021	0.0037	0.0058
0.0082	0.0111	0.0144	0.0181	0.0222
0.0267	0.0316	0.0369	0.0427	0.0488
0.0554	0.0623	0.0697	0.0777	0.0871
0.0981	0.1107	0.1249	0.1406	0.1578
0.1767	0.1971	0.2191	0.2427	0.2678
0.2945	0.3227	0.3525	0.3831	0.4145
0.4466	0.4796	0.5133	0.5479	0.5832
0.6193	0.6562	0.6939	0.7324	0.7723
0.8141	0.8578	0.9033	0.9507	1.0000

Hrad:

0.0243	0.0487	0.0731	0.1003	0.1274
0.1541	0.1806	0.2068	0.2328	0.2588
0.2848	0.3107	0.3364	0.3623	0.3881
0.4137	0.4395	0.4653	0.4895	0.5065
0.5188	0.5288	0.5379	0.5470	0.5569
0.5677	0.5793	0.5921	0.6061	0.6208
0.6364	0.6529	0.6738	0.6987	0.7248
0.7515	0.7785	0.8060	0.8337	0.8615
0.8894	0.9173	0.9453	0.9700	0.9665
0.9672	0.9718	0.9789	0.9885	1.0000

Width:

0.0094	0.0188	0.0281	0.0365	0.0447
0.0529	0.0611	0.0693	0.0775	0.0857

0.0938	0.1020	0.1102	0.1184	0.1266
0.1348	0.1430	0.1512	0.1721	0.2033
0.2347	0.2659	0.2971	0.3285	0.3596
0.3909	0.4222	0.4534	0.4846	0.5158
0.5472	0.5784	0.6014	0.6172	0.6328
0.6484	0.6643	0.6798	0.6955	0.7112
0.7269	0.7426	0.7583	0.7761	0.8133
0.8508	0.8880	0.9255	0.9628	1.0000

Transect 260_HC

Area:

0.0003	0.0019	0.0046	0.0081	0.0131
0.0191	0.0279	0.0400	0.0536	0.0686
0.0852	0.1034	0.1230	0.1430	0.1634
0.1845	0.2066	0.2300	0.2539	0.2779
0.3019	0.3259	0.3499	0.3739	0.3979
0.4219	0.4459	0.4700	0.4940	0.5180
0.5421	0.5661	0.5902	0.6142	0.6383
0.6624	0.6865	0.7105	0.7346	0.7587
0.7828	0.8069	0.8310	0.8552	0.8793
0.9034	0.9276	0.9517	0.9758	1.0000

Hrad:

0.0126	0.0210	0.0388	0.0543	0.0605
0.0778	0.0863	0.0952	0.1071	0.1200
0.1330	0.1464	0.1587	0.1825	0.2049
0.2201	0.2370	0.2611	0.2846	0.3084
0.3324	0.3563	0.3803	0.4043	0.4282
0.4520	0.4758	0.4995	0.5231	0.5466
0.5701	0.5934	0.6167	0.6399	0.6630
0.6860	0.7090	0.7318	0.7546	0.7773
0.7999	0.8225	0.8449	0.8673	0.8896
0.9118	0.9340	0.9561	0.9781	1.0000

Width:

0.0293	0.0948	0.1262	0.1750	0.2316
0.2617	0.4684	0.5308	0.5924	0.6548
0.7207	0.7840	0.8259	0.8351	0.8493
0.8996	0.9286	0.9923	0.9925	0.9928
0.9930	0.9933	0.9935	0.9937	0.9940
0.9942	0.9945	0.9947	0.9949	0.9952
0.9954	0.9957	0.9959	0.9961	0.9964
0.9966	0.9969	0.9971	0.9973	0.9976
0.9978	0.9981	0.9983	0.9986	0.9988
0.9990	0.9993	0.9995	0.9998	1.0000

Transect 1426_HC

Area:

0.0016	0.0055	0.0111	0.0178	0.0250
0.0329	0.0413	0.0502	0.0595	0.0693
0.0793	0.0897	0.1006	0.1119	0.1234
0.1352	0.1479	0.1618	0.1762	0.1909
0.2059	0.2215	0.2376	0.2540	0.2710
0.2886	0.3085	0.3318	0.3575	0.3843
0.4121	0.4405	0.4694	0.4984	0.5276
0.5570	0.5865	0.6162	0.6462	0.6764

0.7067	0.7371	0.7680	0.7992	0.8307
0.8628	0.8962	0.9303	0.9649	1.0000

Hrad:

0.0190	0.0413	0.0627	0.0909	0.1159
0.1444	0.1698	0.1960	0.2220	0.2481
0.2724	0.3017	0.3206	0.3452	0.3752
0.4017	0.4164	0.4040	0.4276	0.4549
0.4775	0.4973	0.5169	0.5419	0.5627
0.5887	0.6012	0.5771	0.4919	0.5224
0.5496	0.5799	0.6101	0.6410	0.6717
0.6969	0.7287	0.7279	0.7583	0.7883
0.8206	0.8539	0.8863	0.9183	0.9500
0.9771	0.9703	0.9870	1.0119	1.0000

Width:

0.0831	0.1340	0.1809	0.1972	0.2181
0.2303	0.2456	0.2587	0.2708	0.2799
0.2919	0.2981	0.3147	0.3252	0.3300
0.3441	0.3810	0.4020	0.4137	0.4214
0.4330	0.4471	0.4615	0.4774	0.4846
0.5203	0.6142	0.7033	0.7446	0.7761
0.7983	0.8131	0.8225	0.8269	0.8307
0.8362	0.8385	0.8477	0.8531	0.8589
0.8619	0.8693	0.8821	0.8887	0.9002
0.9261	0.9584	0.9775	0.9871	1.0000

Transect 3010_HC

Area:

0.0004	0.0017	0.0036	0.0064	0.0100
0.0143	0.0194	0.0253	0.0321	0.0396
0.0479	0.0570	0.0669	0.0775	0.0890
0.1013	0.1143	0.1281	0.1427	0.1581
0.1743	0.1913	0.2091	0.2277	0.2470
0.2671	0.2880	0.3098	0.3323	0.3555
0.3796	0.4045	0.4301	0.4566	0.4838
0.5119	0.5410	0.5709	0.6018	0.6335
0.6662	0.6998	0.7343	0.7696	0.8059
0.8431	0.8812	0.9200	0.9596	1.0000

Hrad:

0.0209	0.0417	0.0625	0.0833	0.1030
0.1225	0.1441	0.1627	0.1835	0.2028
0.2225	0.2439	0.2650	0.2849	0.3061
0.3247	0.3458	0.3662	0.3868	0.4079
0.4266	0.4471	0.4676	0.4887	0.5098
0.5284	0.5482	0.5694	0.5905	0.6116
0.6301	0.6500	0.6711	0.6922	0.7133
0.7259	0.7449	0.7639	0.7832	0.8025
0.8159	0.8355	0.8552	0.8749	0.8936
0.9088	0.9292	0.9529	0.9765	1.0000

Width:

0.0210	0.0397	0.0583	0.0769	0.0967
0.1171	0.1349	0.1557	0.1749	0.1952
0.2152	0.2336	0.2523	0.2721	0.2908
0.3118	0.3305	0.3499	0.3690	0.3877
0.4087	0.4278	0.4472	0.4658	0.4845

0.5055	0.5254	0.5441	0.5627	0.5814
0.6025	0.6223	0.6410	0.6596	0.6783
0.7053	0.7264	0.7474	0.7684	0.7895
0.8165	0.8376	0.8586	0.8797	0.9019
0.9277	0.9483	0.9656	0.9828	1.0000

Transect 3630_HC

Area:

0.0002	0.0027	0.0090	0.0193	0.0319
0.0451	0.0590	0.0729	0.0874	0.1027
0.1188	0.1354	0.1524	0.1696	0.1873
0.2053	0.2236	0.2423	0.2612	0.2802
0.2995	0.3191	0.3390	0.3597	0.3805
0.4015	0.4227	0.4440	0.4654	0.4870
0.5086	0.5303	0.5523	0.5745	0.5974
0.6208	0.6447	0.6689	0.6938	0.7196
0.7460	0.7726	0.7999	0.8276	0.8555
0.8836	0.9119	0.9408	0.9702	1.0000

Hrad:

0.0111	0.0189	0.0402	0.0534	0.0743
0.0995	0.1284	0.1576	0.1831	0.1991
0.2210	0.2428	0.2703	0.2942	0.3164
0.3430	0.3653	0.3904	0.4165	0.4423
0.4686	0.4888	0.5141	0.5226	0.5507
0.5780	0.6014	0.6284	0.6551	0.6830
0.7104	0.7359	0.7552	0.7743	0.7825
0.7930	0.8101	0.8307	0.8385	0.8311
0.8515	0.8698	0.8774	0.8981	0.9227
0.9500	0.9661	0.9772	0.9931	1.0000

Width:

0.0255	0.1724	0.2684	0.3902	0.4296
0.4539	0.4595	0.4649	0.4923	0.5188
0.5379	0.5581	0.5641	0.5768	0.5921
0.5988	0.6124	0.6207	0.6273	0.6339
0.6394	0.6530	0.6695	0.6885	0.6912
0.6948	0.7029	0.7067	0.7105	0.7131
0.7159	0.7206	0.7312	0.7420	0.7634
0.7828	0.7958	0.8066	0.8427	0.8659
0.8761	0.8882	0.9116	0.9214	0.9272
0.9301	0.9470	0.9628	0.9770	1.0000

Transect 4365_HC

Area:

0.0033	0.0099	0.0185	0.0291	0.0413
0.0538	0.0668	0.0802	0.0939	0.1081
0.1226	0.1376	0.1530	0.1687	0.1849
0.2014	0.2184	0.2358	0.2535	0.2717
0.2902	0.3092	0.3285	0.3483	0.3684
0.3889	0.4098	0.4309	0.4523	0.4741
0.4962	0.5188	0.5417	0.5651	0.5888
0.6130	0.6377	0.6627	0.6882	0.7143
0.7409	0.7679	0.7955	0.8235	0.8519
0.8807	0.9099	0.9395	0.9695	1.0000

Hrad:

0.0184	0.0401	0.0589	0.0770	0.1023
0.1293	0.1556	0.1812	0.2063	0.2308
0.2549	0.2782	0.3015	0.3239	0.3465
0.3685	0.3903	0.4115	0.4329	0.4538
0.4743	0.4946	0.5148	0.5350	0.5554
0.5772	0.5990	0.6203	0.6419	0.6627
0.6812	0.6994	0.7170	0.7347	0.7528
0.7701	0.7869	0.8035	0.8209	0.8340
0.8500	0.8665	0.8774	0.8954	0.9129
0.9304	0.9478	0.9653	0.9828	1.0000

Width:

0.1816	0.2476	0.3145	0.3784	0.4034
0.4164	0.4294	0.4423	0.4554	0.4684
0.4812	0.4947	0.5074	0.5209	0.5336
0.5467	0.5596	0.5729	0.5857	0.5986
0.6119	0.6252	0.6382	0.6510	0.6635
0.6739	0.6841	0.6946	0.7047	0.7155
0.7284	0.7417	0.7555	0.7691	0.7823
0.7961	0.8104	0.8249	0.8410	0.8585
0.8746	0.8906	0.9066	0.9197	0.9332
0.9465	0.9600	0.9733	0.9865	1.0000

Transect 5620_HC

Area:

0.0000	0.0001	0.0003	0.0005	0.0010
0.0019	0.0035	0.0061	0.0097	0.0141
0.0192	0.0249	0.0312	0.0382	0.0458
0.0539	0.0625	0.0716	0.0810	0.0906
0.1007	0.1198	0.1398	0.1605	0.1820
0.2044	0.2277	0.2518	0.2768	0.3030
0.3321	0.3626	0.3938	0.4254	0.4576
0.4901	0.5232	0.5568	0.5909	0.6255
0.6604	0.6959	0.7320	0.7687	0.8060
0.8438	0.8821	0.9209	0.9602	1.0000

Hrad:

0.0220	0.0492	0.0592	0.0724	0.0771
0.0838	0.0911	0.0967	0.1109	0.1331
0.1580	0.1835	0.2024	0.2224	0.2491
0.2764	0.3035	0.3201	0.3432	0.3809
0.4126	0.4093	0.4144	0.4295	0.4477
0.3594	0.3870	0.4103	0.4377	0.4427
0.4442	0.4770	0.5090	0.5395	0.5657
0.5980	0.6295	0.6591	0.6889	0.7201
0.7506	0.7808	0.8102	0.8396	0.8647
0.8941	0.9220	0.9434	0.9725	1.0000

Width:

0.0015	0.0022	0.0053	0.0078	0.0177
0.0290	0.0521	0.0772	0.1016	0.1185
0.1331	0.1500	0.1674	0.1811	0.1955
0.2104	0.2205	0.2310	0.2385	0.2418
0.4680	0.4879	0.5077	0.5274	0.5488
0.5705	0.5932	0.6140	0.6342	0.6876
0.7549	0.7714	0.7857	0.7972	0.8086
0.8202	0.8332	0.8460	0.8576	0.8684

0.8797	0.8925	0.9111	0.9254	0.9386
0.9505	0.9639	0.9762	0.9874	1.0000

Transect 5675_HC

Area:

0.0006	0.0023	0.0050	0.0086	0.0124
0.0165	0.0208	0.0253	0.0302	0.0353
0.0407	0.0462	0.0519	0.0577	0.0637
0.0720	0.0854	0.1042	0.1239	0.1445
0.1661	0.1884	0.2114	0.2349	0.2593
0.2842	0.3097	0.3355	0.3617	0.3883
0.4153	0.4426	0.4702	0.4982	0.5267
0.5556	0.5849	0.6145	0.6444	0.6747
0.7054	0.7365	0.7681	0.8001	0.8324
0.8652	0.8985	0.9321	0.9659	1.0000

Hrad:

0.0160	0.0377	0.0533	0.0778	0.1091
0.1360	0.1616	0.1907	0.2042	0.2298
0.2565	0.2820	0.3091	0.3346	0.3485
0.3602	0.1585	0.1848	0.2098	0.2343
0.2584	0.2837	0.3108	0.3378	0.3590
0.3852	0.4125	0.4413	0.4695	0.4952
0.5225	0.5504	0.5784	0.6047	0.6284
0.6518	0.6777	0.7060	0.7339	0.7579
0.7852	0.8119	0.8244	0.8511	0.8763
0.8950	0.9186	0.9442	0.9722	1.0000

Width:

0.0375	0.0627	0.0945	0.1102	0.1175
0.1218	0.1288	0.1355	0.1486	0.1537
0.1595	0.1646	0.1678	0.1724	0.1910
0.2946	0.5387	0.5640	0.5906	0.6169
0.6426	0.6640	0.6801	0.7008	0.7223
0.7379	0.7508	0.7608	0.7704	0.7856
0.7948	0.8042	0.8129	0.8247	0.8381
0.8524	0.8631	0.8705	0.8815	0.8906
0.9035	0.9178	0.9318	0.9401	0.9514
0.9684	0.9782	0.9871	0.9936	1.0000

Transect 6690_HC

Area:

0.0001	0.0003	0.0007	0.0012	0.0019
0.0027	0.0037	0.0049	0.0061	0.0076
0.0092	0.0109	0.0128	0.0148	0.0170
0.0194	0.0218	0.0245	0.0273	0.0302
0.0333	0.0366	0.0400	0.0435	0.0497
0.0622	0.0767	0.0933	0.1121	0.1337
0.1581	0.1854	0.2156	0.2487	0.2846
0.3235	0.3653	0.4085	0.4522	0.4969
0.5426	0.5893	0.6371	0.6858	0.7356
0.7865	0.8383	0.8912	0.9451	1.0000

Hrad:

0.0277	0.0554	0.0845	0.1124	0.1406
0.1679	0.1953	0.2228	0.2504	0.2779
0.3055	0.3332	0.3608	0.3884	0.4161

0.4438	0.4714	0.4991	0.5268	0.5544
0.5821	0.6098	0.6375	0.6652	0.6471
0.5718	0.5295	0.5061	0.4947	0.4890
0.4886	0.4930	0.5005	0.5110	0.5241
0.5384	0.5479	0.5859	0.6203	0.6464
0.6748	0.7078	0.7414	0.7769	0.8126
0.8500	0.8876	0.9244	0.9629	1.0000

Width:

0.0028	0.0056	0.0083	0.0110	0.0136
0.0163	0.0191	0.0218	0.0245	0.0272
0.0300	0.0327	0.0354	0.0381	0.0409
0.0436	0.0463	0.0491	0.0518	0.0545
0.0572	0.0600	0.0627	0.0654	0.2063
0.2443	0.2800	0.3180	0.3636	0.4157
0.4674	0.5181	0.5701	0.6222	0.6739
0.7271	0.7744	0.7841	0.7963	0.8146
0.8338	0.8515	0.8704	0.8886	0.9077
0.9258	0.9439	0.9633	0.9808	1.0000

Transect 6840_HC

Area:

0.0014	0.0059	0.0131	0.0221	0.0318
0.0426	0.0548	0.0679	0.0817	0.0961
0.1114	0.1281	0.1456	0.1641	0.1837
0.2043	0.2262	0.2493	0.2727	0.2962
0.3196	0.3430	0.3665	0.3899	0.4134
0.4368	0.4603	0.4837	0.5072	0.5306
0.5541	0.5775	0.6010	0.6244	0.6479
0.6714	0.6948	0.7183	0.7418	0.7652
0.7887	0.8122	0.8356	0.8591	0.8826
0.9061	0.9296	0.9530	0.9765	1.0000

Hrad:

0.0128	0.0260	0.0398	0.0618	0.0833
0.1021	0.1170	0.1342	0.1534	0.1718
0.1891	0.2039	0.2202	0.2352	0.2508
0.2663	0.2790	0.2926	0.3158	0.3402
0.3647	0.3893	0.4139	0.4387	0.4634
0.4882	0.5130	0.5379	0.5627	0.5875
0.6123	0.6371	0.6618	0.6866	0.7113
0.7360	0.7607	0.7853	0.8100	0.8346
0.8591	0.8837	0.9082	0.9327	0.9571
0.9815	1.0059	1.0302	1.0545	1.0000

Width:

0.1166	0.2322	0.3397	0.3696	0.3960
0.4595	0.5057	0.5312	0.5562	0.5869
0.6342	0.6782	0.7100	0.7570	0.7953
0.8396	0.8967	0.9249	0.9272	0.9272
0.9273	0.9274	0.9274	0.9275	0.9276
0.9276	0.9277	0.9277	0.9278	0.9279
0.9279	0.9280	0.9281	0.9281	0.9282
0.9282	0.9283	0.9284	0.9284	0.9285
0.9286	0.9286	0.9287	0.9287	0.9288
0.9289	0.9289	0.9290	0.9291	1.0000

Transect 7095_HC

Area:

0.0000	0.0002	0.0006	0.0014	0.0034
0.0069	0.0119	0.0188	0.0273	0.0374
0.0491	0.0621	0.0765	0.0922	0.1092
0.1270	0.1448	0.1632	0.1831	0.2042
0.2267	0.2506	0.2758	0.3022	0.3290
0.3558	0.3825	0.4093	0.4361	0.4629
0.4897	0.5165	0.5433	0.5701	0.5969
0.6238	0.6506	0.6774	0.7043	0.7311
0.7580	0.7849	0.8117	0.8386	0.8655
0.8924	0.9193	0.9462	0.9731	1.0000

Hrad:

0.0154	0.0278	0.0365	0.0484	0.0377
0.0512	0.0637	0.0765	0.0905	0.1068
0.1233	0.1408	0.1579	0.1747	0.1914
0.2219	0.2528	0.2822	0.3091	0.3342
0.3578	0.3801	0.4015	0.4230	0.4472
0.4725	0.4986	0.5254	0.5528	0.5805
0.6086	0.6369	0.6655	0.6942	0.7231
0.7521	0.7813	0.8105	0.8398	0.8692
0.8986	0.9281	0.9576	0.9872	1.0168
1.0464	1.0761	1.1057	1.1354	1.0000

Width:

0.0026	0.0080	0.0206	0.0374	0.0914
0.1363	0.1927	0.2492	0.3038	0.3552
0.4012	0.4447	0.4883	0.5319	0.5753
0.5768	0.5781	0.6218	0.6656	0.7093
0.7528	0.7967	0.8400	0.8691	0.8693
0.8695	0.8697	0.8699	0.8701	0.8703
0.8704	0.8706	0.8708	0.8710	0.8712
0.8714	0.8716	0.8718	0.8720	0.8722
0.8724	0.8726	0.8728	0.8730	0.8732
0.8734	0.8736	0.8738	0.8740	1.0000

Transect 7190_HC

Area:

0.0015	0.0058	0.0115	0.0192	0.0288
0.0412	0.0556	0.0708	0.0892	0.1094
0.1305	0.1517	0.1731	0.1947	0.2164
0.2381	0.2600	0.2821	0.3044	0.3267
0.3490	0.3714	0.3937	0.4161	0.4385
0.4608	0.4832	0.5056	0.5280	0.5504
0.5728	0.5952	0.6177	0.6401	0.6625
0.6850	0.7074	0.7299	0.7524	0.7748
0.7973	0.8198	0.8423	0.8648	0.8873
0.9098	0.9324	0.9549	0.9775	1.0000

Hrad:

0.0185	0.0299	0.0477	0.0658	0.0776
0.0918	0.1091	0.1281	0.1415	0.1567
0.1740	0.1938	0.2144	0.2351	0.2565
0.2781	0.2984	0.3191	0.3400	0.3621
0.3842	0.4063	0.4284	0.4504	0.4725
0.4944	0.5163	0.5382	0.5600	0.5817

0.6033	0.6249	0.6464	0.6678	0.6892
0.7105	0.7317	0.7528	0.7738	0.7948
0.8156	0.8364	0.8572	0.8778	0.8984
0.9188	0.9392	0.9596	0.9798	1.0000

Width:

0.1211	0.2218	0.3053	0.3653	0.5002
0.6051	0.6534	0.7369	0.8705	0.9191
0.9391	0.9471	0.9521	0.9595	0.9625
0.9656	0.9763	0.9841	0.9900	0.9904
0.9907	0.9910	0.9913	0.9916	0.9920
0.9923	0.9926	0.9929	0.9933	0.9936
0.9939	0.9942	0.9945	0.9949	0.9952
0.9955	0.9958	0.9961	0.9965	0.9968
0.9971	0.9974	0.9978	0.9981	0.9984
0.9987	0.9990	0.9994	0.9997	1.0000

Transect 7319_HC

Area:

0.0001	0.0006	0.0013	0.0020	0.0029
0.0039	0.0049	0.0060	0.0072	0.0085
0.0099	0.0114	0.0129	0.0146	0.0163
0.0181	0.0199	0.0218	0.0237	0.0257
0.0282	0.0310	0.0345	0.0387	0.0446
0.0520	0.0603	0.0700	0.0841	0.1034
0.1249	0.1497	0.1776	0.2096	0.2483
0.2920	0.3372	0.3838	0.4324	0.4822
0.5328	0.5841	0.6356	0.6872	0.7390
0.7909	0.8429	0.8951	0.9475	1.0000

Hrad:

0.0171	0.0563	0.0950	0.1290	0.1604
0.1903	0.2214	0.2522	0.2813	0.3087
0.3329	0.3554	0.3835	0.4121	0.4437
0.4745	0.5056	0.5372	0.5682	0.5974
0.6151	0.6263	0.6254	0.5706	0.4843
0.3226	0.3639	0.3770	0.3604	0.3690
0.3902	0.4087	0.4248	0.3927	0.4067
0.4353	0.4667	0.5018	0.5380	0.5619
0.5669	0.6046	0.6554	0.7063	0.7566
0.8061	0.8563	0.9063	0.9556	1.0000

Width:

0.0068	0.0116	0.0133	0.0152	0.0171
0.0190	0.0206	0.0220	0.0236	0.0252
0.0270	0.0291	0.0306	0.0320	0.0330
0.0341	0.0352	0.0361	0.0370	0.0414
0.0503	0.0580	0.0710	0.0970	0.1261
0.1549	0.1649	0.2187	0.3281	0.3904
0.4433	0.4964	0.5624	0.6657	0.8133
0.8441	0.8691	0.9024	0.9352	0.9552
0.9648	0.9762	0.9781	0.9799	0.9826
0.9861	0.9886	0.9911	0.9943	1.0000

Transect 7460_HC

Area:

0.0009	0.0039	0.0105	0.0214	0.0355

0.0531	0.0719	0.0912	0.1110	0.1312
0.1516	0.1725	0.1939	0.2155	0.2371
0.2587	0.2803	0.3020	0.3236	0.3453
0.3670	0.3887	0.4103	0.4320	0.4538
0.4755	0.4972	0.5190	0.5407	0.5625
0.5843	0.6061	0.6279	0.6497	0.6715
0.6933	0.7151	0.7370	0.7589	0.7807
0.8026	0.8245	0.8464	0.8683	0.8902
0.9122	0.9341	0.9561	0.9780	1.0000

Hrad:

0.0303	0.0572	0.0804	0.1042	0.1414
0.1741	0.2302	0.2871	0.3441	0.4000
0.4558	0.5093	0.5628	0.6179	0.6734
0.7290	0.7848	0.8405	0.8961	0.9517
1.0071	1.0624	1.1176	1.1725	1.2273
1.2819	1.3363	1.3905	1.4445	1.4983
1.5519	1.6053	1.6584	1.7114	1.7642
1.8167	1.8691	1.9212	1.9731	2.0249
2.0764	2.1277	2.1788	2.2297	2.2805
2.3310	2.3813	2.4314	2.4813	1.0000

Width:

0.0310	0.0774	0.1507	0.2191	0.2613
0.3165	0.3243	0.3356	0.3407	0.3476
0.3517	0.3627	0.3687	0.3689	0.3691
0.3693	0.3694	0.3696	0.3698	0.3700
0.3701	0.3703	0.3705	0.3707	0.3709
0.3710	0.3712	0.3714	0.3716	0.3717
0.3719	0.3721	0.3723	0.3725	0.3726
0.3728	0.3730	0.3732	0.3733	0.3735
0.3737	0.3739	0.3740	0.3742	0.3744
0.3746	0.3748	0.3749	0.3751	1.0000

Transect 7580_HC
Area:

0.0008	0.0032	0.0082	0.0167	0.0278
0.0408	0.0557	0.0718	0.0882	0.1047
0.1222	0.1405	0.1610	0.1822	0.2045
0.2269	0.2493	0.2717	0.2942	0.3167
0.3392	0.3617	0.3842	0.4067	0.4293
0.4519	0.4745	0.4971	0.5198	0.5425
0.5651	0.5879	0.6106	0.6333	0.6561
0.6789	0.7017	0.7245	0.7474	0.7702
0.7931	0.8160	0.8390	0.8619	0.8849
0.9079	0.9309	0.9539	0.9769	1.0000

Hrad:

0.0396	0.0745	0.1021	0.1216	0.1671
0.2177	0.2675	0.3199	0.3870	0.4500
0.5109	0.5733	0.6278	0.6823	0.7349
0.7926	0.8520	0.9126	0.9740	1.0358
1.0980	1.1603	1.2227	1.2851	1.3474
1.4097	1.4718	1.5337	1.5955	1.6570
1.7184	1.7795	1.8404	1.9011	1.9614
2.0216	2.0815	2.1411	2.2005	2.2596
2.3184	2.3770	2.4353	2.4933	2.5511
2.6086	2.6658	2.7228	2.7795	1.0000

Width:

0.0218	0.0478	0.0933	0.1434	0.1736
0.2037	0.2270	0.2345	0.2362	0.2451
0.2540	0.2749	0.3009	0.3151	0.3218
0.3221	0.3224	0.3227	0.3230	0.3233
0.3235	0.3238	0.3241	0.3244	0.3247
0.3250	0.3253	0.3256	0.3258	0.3261
0.3264	0.3267	0.3270	0.3273	0.3276
0.3278	0.3281	0.3284	0.3287	0.3290
0.3293	0.3296	0.3298	0.3301	0.3304
0.3307	0.3310	0.3313	0.3316	1.0000

****

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	323.234	193.000
Evaporation Loss	0.000	0.000
Infiltration Loss	16.236	9.694
Surface Runoff	297.436	177.596
Final Surface Storage	9.562	5.710
Continuity Error (%)	-0.000	

****

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	297.435	2974.385
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.001	0.008
External Outflow	295.954	2959.567
Internal Outflow	0.000	0.000
Storage Losses	0.000	0.000
Initial Stored Volume	0.001	0.014
Final Stored Volume	1.437	14.366
Continuity Error (%)	0.016	

****
Highest Flow Instability Indexes
****

Link CJ3734.707 (18)
Link CJ3762.625 (15)
Link CJ3613.455 (13)
Link CJ3775.164 (10)
Link CJ3804.186 (6)

****
Routing Time Step Summary
****

Minimum Time Step : 5.00 sec
Average Time Step : 5.00 sec
Maximum Time Step : 5.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.30

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
Node_04	193.00	0.00	0.00	4.45	184.95	26.95	1.79	0.958
Node_05	193.00	0.00	0.00	12.34	174.68	436.66	26.01	0.905
Node_06	193.00	0.00	0.00	11.57	176.59	165.07	11.08	0.915
Node_07	193.00	0.00	0.00	2.55	186.82	174.80	11.09	0.968
Node_08	193.00	0.00	0.00	15.16	172.75	63.98	4.34	0.895
Node_09	193.00	0.00	0.00	9.95	174.42	503.60	24.04	0.904
Node_10	193.00	0.00	0.00	12.47	173.28	211.94	11.19	0.898
Node_11	193.00	0.00	0.00	9.77	177.74	496.17	28.81	0.921
Node_12	193.00	0.00	0.00	3.92	185.53	293.43	18.96	0.961
Node_14	193.00	0.00	0.00	3.17	185.96	44.92	2.92	0.964
Node_15	193.00	0.00	0.00	1.32	188.32	42.09	2.75	0.976
Node_16	193.00	0.00	0.00	1.78	187.24	25.68	1.69	0.970
Node_13	193.00	0.00	0.00	22.42	163.58	225.70	12.04	0.848
Node_02	193.00	0.00	0.00	2.14	187.54	74.42	4.73	0.972
Node_03	193.00	0.00	0.00	1.77	188.75	61.84	3.99	0.978
Node_01	193.00	0.00	0.00	1.33	189.22	127.11	8.28	0.980

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min
J114	JUNCTION	2.08	3.34	251.06	0 10:00
J154.6483	JUNCTION	1.66	2.89	251.12	0 10:00
J168.8194	JUNCTION	1.38	2.56	251.18	0 10:00
J236.8376	JUNCTION	1.69	2.68	251.61	0 10:00
J273.7271	JUNCTION	1.75	2.75	251.80	0 10:00
J367.2808	JUNCTION	1.60	2.62	252.20	0 10:00
J411.8737	JUNCTION	1.54	2.53	252.54	0 10:00
J463.252	JUNCTION	1.44	2.34	252.69	0 10:00
J517.84	JUNCTION	1.44	2.26	252.76	0 10:00
J625.0873	JUNCTION	1.27	2.08	253.16	0 10:00
J718.5652	JUNCTION	1.44	2.24	253.82	0 10:01
J818.7001	JUNCTION	1.12	1.76	254.36	0 10:02
J927.3901	JUNCTION	1.57	2.40	256.28	0 10:01
J1021.897	JUNCTION	1.68	2.66	257.04	0 10:01
J1177.635	JUNCTION	0.93	1.55	257.34	0 10:00
J1276.628	JUNCTION	0.88	1.46	258.95	0 10:00
J1386.646	JUNCTION	0.93	1.44	261.01	0 10:00
J1455.968	JUNCTION	1.38	2.12	261.90	0 10:00
J1549.464	JUNCTION	1.09	1.69	262.78	0 09:10
J1662.759	JUNCTION	1.44	2.08	263.21	0 09:10
J1779.22	JUNCTION	1.54	2.23	263.43	0 09:09
J1920.857	JUNCTION	1.68	2.35	263.62	0 09:08
J2059.866	JUNCTION	1.58	2.27	263.77	0 09:07
J2156.937	JUNCTION	1.58	2.28	264.08	0 09:05
J2277.683	JUNCTION	1.38	2.17	264.35	0 09:04
J2406.341	JUNCTION	1.91	2.86	265.15	0 09:03
J2509.792	JUNCTION	2.02	3.04	265.45	0 09:02
J2618.286	JUNCTION	1.86	2.96	265.92	0 09:01
J2707.776	JUNCTION	1.88	3.06	266.17	0 09:01
J2810.224	JUNCTION	2.28	3.55	266.37	0 09:00
J2922.176	JUNCTION	2.05	3.38	266.57	0 08:58
J2986.996	JUNCTION	2.15	3.51	266.64	0 08:57
J3000.11	JUNCTION	2.18	3.54	266.65	0 08:57
J3046.813	JUNCTION	2.11	3.44	266.65	0 08:57
J3187.848	JUNCTION	2.39	3.55	266.90	0 08:08
J3200.809	JUNCTION	2.35	3.51	266.90	0 08:09
J3358.095	JUNCTION	2.29	3.37	266.90	0 08:11
J3380.367	JUNCTION	2.11	3.18	266.90	0 08:11
J3509.864	JUNCTION	2.32	3.29	266.93	0 08:49
J3621.185	JUNCTION	2.24	3.14	266.95	0 08:50
J3734.707	JUNCTION	2.42	3.49	267.42	0 12:54
J3762.625	JUNCTION	2.23	3.27	267.42	0 12:54
J3775.164	JUNCTION	2.34	3.37	267.42	0 12:54
J3804.186	JUNCTION	2.23	3.25	267.42	0 12:54

J3957.179	JUNCTION	2.12	3.09	267.42	0	12:54
J4108.305	JUNCTION	2.07	3.00	267.43	0	12:54
J4263.057	JUNCTION	1.91	2.78	267.43	0	12:54
J4356.489	JUNCTION	1.97	2.83	267.43	0	12:54
J4405.269	JUNCTION	2.00	2.84	267.43	0	12:53
J4546.604	JUNCTION	1.76	2.55	267.43	0	12:53
J4692.952	JUNCTION	1.80	2.56	267.43	0	12:53
J4826.403	JUNCTION	1.46	2.19	267.43	0	12:53
J4968.21	JUNCTION	1.34	2.01	267.43	0	12:52
J5103.876	JUNCTION	1.44	2.08	267.44	0	12:49
J5276.091	JUNCTION	1.18	1.78	267.44	0	12:47
J5310.141	JUNCTION	1.11	1.69	267.45	0	12:33
J5374.119	JUNCTION	1.21	1.76	267.45	0	12:32
J5465.266	JUNCTION	1.29	1.80	267.45	0	12:29
J5595.644	JUNCTION	1.32	1.86	267.55	0	08:14
J5653.55	JUNCTION	1.25	1.88	267.68	0	08:08
J5665.793	JUNCTION	1.12	1.74	267.68	0	08:09
J5704.059	JUNCTION	1.22	1.85	267.69	0	08:09
J5880.376	JUNCTION	1.16	1.78	267.69	0	08:09
J5975.085	JUNCTION	1.06	1.67	267.70	0	08:08
J6062.64	JUNCTION	0.99	1.60	267.73	0	08:08
J6084.086	JUNCTION	1.03	1.64	267.74	0	08:08
J6116.845	JUNCTION	0.98	1.58	267.75	0	08:07
J6190.578	JUNCTION	0.95	1.81	268.20	0	08:04
J6335.876	JUNCTION	0.99	2.25	268.82	0	08:03
J6410.625	JUNCTION	0.90	2.24	268.98	0	08:02
J6486.756	JUNCTION	0.90	2.31	269.22	0	08:02
J6564.455	JUNCTION	1.06	2.53	269.39	0	08:01
J6676.99	JUNCTION	0.95	2.44	269.56	0	08:01
J6757.544	JUNCTION	0.99	2.51	269.72	0	08:00
J6857.851	JUNCTION	0.96	2.50	269.82	0	08:00
J6917.282	JUNCTION	0.91	2.45	269.86	0	08:01
J7071.306	JUNCTION	1.21	2.79	269.88	0	08:01
J7083.163	JUNCTION	0.64	2.07	269.89	0	08:01
J7111.02	JUNCTION	0.78	2.08	269.92	0	08:01
J7127.958	JUNCTION	0.76	2.06	269.92	0	08:01
J7246.49	JUNCTION	0.72	2.06	270.00	0	08:02
J7333.219	JUNCTION	0.61	1.91	270.04	0	08:02
J7390.724	JUNCTION	0.61	1.83	270.15	0	08:01
J7510.949	JUNCTION	0.77	1.88	270.22	0	08:01
J7560.665	JUNCTION	0.60	1.65	270.27	0	08:00
J7604.08	JUNCTION	0.60	1.62	270.30	0	08:00
J7641.424	JUNCTION	0.51	1.40	270.31	0	08:00
OF1	OUTFALL	1.49	2.38	249.77	0	10:00

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Node Inflow Summary
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Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr
J114	JUNCTION	0.000	86.001	0	10:00	0.000	2959.871
J154.6483	JUNCTION	1.691	86.002	0	10:00	25.682	2959.931
J168.8194	JUNCTION	0.000	85.135	0	10:01	0.000	2934.311
J236.8376	JUNCTION	0.000	85.129	0	10:01	0.000	2934.458
J273.7271	JUNCTION	0.000	85.127	0	10:00	0.000	2934.692
J367.2808	JUNCTION	0.000	85.128	0	10:00	0.000	2934.878
J411.8737	JUNCTION	0.000	85.128	0	10:00	0.000	2934.998
J463.252	JUNCTION	0.000	85.130	0	10:00	0.000	2935.164
J517.84	JUNCTION	17.717	85.134	0	10:00	312.713	2935.457
J625.0873	JUNCTION	0.000	73.437	0	10:02	0.000	2623.138
J718.5652	JUNCTION	0.000	73.431	0	10:02	0.000	2623.516
J818.7001	JUNCTION	0.000	73.432	0	10:01	0.000	2623.831
J927.3901	JUNCTION	0.000	73.433	0	10:01	0.000	2624.327
J1021.897	JUNCTION	0.000	73.435	0	10:00	0.000	2625.161
J1177.635	JUNCTION	0.000	73.437	0	10:00	0.000	2625.553
J1276.628	JUNCTION	0.000	73.438	0	10:00	0.000	2625.724
J1386.646	JUNCTION	0.000	73.438	0	10:00	0.000	2625.893
J1455.968	JUNCTION	18.958	73.439	0	10:00	293.431	2626.042
J1549.464	JUNCTION	0.000	63.712	0	09:10	0.000	2332.855
J1662.759	JUNCTION	0.000	63.712	0	09:09	0.000	2333.385
J1779.22	JUNCTION	0.000	63.718	0	09:08	0.000	2333.947
J1920.857	JUNCTION	0.000	63.738	0	09:06	0.000	2334.821
J2059.866	JUNCTION	0.000	63.762	0	09:04	0.000	2335.436
J2156.937	JUNCTION	0.000	63.770	0	09:03	0.000	2335.900
J2277.683	JUNCTION	0.000	63.773	0	09:03	0.000	2336.133
J2406.341	JUNCTION	0.000	63.774	0	09:02	0.000	2336.461
J2509.792	JUNCTION	0.000	63.779	0	09:01	0.000	2336.767
J2618.286	JUNCTION	0.000	63.782	0	09:00	0.000	2336.995
J2707.776	JUNCTION	0.000	63.786	0	09:00	0.000	2337.275
J2810.224	JUNCTION	0.000	63.842	0	08:56	0.000	2337.831
J2922.176	JUNCTION	0.000	63.938	0	08:54	0.000	2338.096
J2986.996	JUNCTION	0.000	64.009	0	08:53	0.000	2338.263
J3000.11	JUNCTION	0.000	64.059	0	08:52	0.000	2338.017
J3046.813	JUNCTION	0.000	65.178	0	08:18	0.000	2338.502
J3187.848	JUNCTION	64.042	65.127	0	08:17	1211.712	2348.546
J3200.809	JUNCTION	0.000	24.191	0	17:34	0.000	1139.231
J3358.095	JUNCTION	0.000	24.185	0	17:39	0.000	1129.581
J3380.367	JUNCTION	0.000	24.188	0	17:49	0.000	1126.985
J3509.864	JUNCTION	0.000	24.254	0	17:48	0.000	1127.178
J3621.185	JUNCTION	4.337	27.420	0	16:14	63.981	1128.885
J3734.707	JUNCTION	0.000	25.832	0	16:51	0.000	1063.882
J3762.625	JUNCTION	0.000	24.676	0	16:52	0.000	1063.786
J3775.164	JUNCTION	11.088	24.137	0	16:52	174.802	1083.367
J3804.186	JUNCTION	0.000	22.613	0	16:27	0.000	923.794
J3957.179	JUNCTION	0.000	21.316	0	16:28	0.000	911.962
J4108.305	JUNCTION	0.000	19.739	0	15:50	0.000	897.948
J4263.057	JUNCTION	0.000	19.819	0	08:53	0.000	890.670
J4356.489	JUNCTION	0.000	21.232	0	08:52	0.000	890.035
J4405.269	JUNCTION	11.082	23.151	0	08:52	165.067	892.192
J4546.604	JUNCTION	0.000	21.625	0	08:46	0.000	727.790
J4692.952	JUNCTION	0.000	26.964	0	08:37	0.000	725.765
J4826.403	JUNCTION	0.000	32.130	0	08:31	0.000	726.487
J4968.21	JUNCTION	0.000	35.473	0	08:27	0.000	726.264
J5103.876	JUNCTION	0.000	36.763	0	08:24	0.000	726.238
J5276.091	JUNCTION	0.000	37.317	0	08:22	0.000	726.184
J5310.141	JUNCTION	0.000	37.651	0	08:20	0.000	726.515
J5374.119	JUNCTION	0.000	38.810	0	08:14	0.000	727.090
J5465.266	JUNCTION	0.000	40.383	0	08:09	0.000	727.055
J5595.644	JUNCTION	0.000	40.713	0	08:06	0.000	726.495
J5653.55	JUNCTION	26.011	40.753	0	08:05	436.663	726.767
J5665.793	JUNCTION	0.000	18.484	0	08:15	0.000	290.416
J5704.059	JUNCTION	0.000	18.160	0	08:12	0.000	290.423
J5880.376	JUNCTION	0.000	17.967	0	08:10	0.000	290.476
J5975.085	JUNCTION	0.000	17.955	0	08:08	0.000	290.214
J6062.64	JUNCTION	0.000	17.999	0	08:06	0.000	289.944
J6084.086	JUNCTION	0.000	18.044	0	08:05	0.000	289.970
J6116.845	JUNCTION	0.000	18.103	0	08:04	0.000	289.989
J6190.578	JUNCTION	0.000	18.105	0	08:03	0.000	289.964
J6335.876	JUNCTION	0.000	18.117	0	08:02	0.000	289.957
J6410.625	JUNCTION	0.000	18.119	0	08:02	0.000	289.968
J6486.756	JUNCTION	0.000	18.121	0	08:01	0.000	289.970
J6564.455	JUNCTION	0.000	18.143	0	08:01	0.000	289.999
J6676.99	JUNCTION	0.000	18.158	0	08:00	0.000	290.011
J6757.544	JUNCTION	1.786	18.201	0	08:00	26.952	290.042
J6857.851	JUNCTION	3.988	16.490	0	08:00	61.841	263.259
J6917.282	JUNCTION	0.000	12.732	0	08:04	0.000	201.495
J7071.306	JUNCTION	0.000	12.696	0	08:00	0.000	201.511

J7083.163	JUNCTION	0.000	12.714	0	08:00	0.000	201.474
J7111.02	JUNCTION	4.726	12.749	0	08:00	74.421	201.542
J7127.958	JUNCTION	0.000	8.202	0	08:03	0.000	127.155
J7246.49	JUNCTION	0.000	8.152	0	08:02	0.000	127.117
J7333.219	JUNCTION	0.000	8.150	0	08:01	0.000	127.107
J7390.724	JUNCTION	0.000	8.179	0	08:01	0.000	127.126
J7510.949	JUNCTION	0.000	8.201	0	08:00	0.000	127.108
J7560.665	JUNCTION	0.000	8.216	0	09:00	0.000	127.110
J7604.08	JUNCTION	0.000	8.256	0	08:00	0.000	127.120
J7641.424	JUNCTION	8.277	8.277	0	09:00	127.108	127.108
OF1	OUTFALL	0.000	86.000	0	10:00	0.000	2959.562

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Node Surcharge Summary
****

No nodes were surcharged.

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Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq. Pcnt.	Avg. Flow CMS	Max. Flow CMS	Total Volume 10^6 ltr
OF1	99.79	34.329	86.000	2959.562
System	99.79	34.329	86.000	2959.562

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Link Flow Summary
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Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
CJ96.54452	CHANNEL	86.000	0	10:00	2.96	0.54	0.54
CJ154.6483	CHANNEL	86.001	0	10:00	1.17	0.01	0.26
CJ168.8194	CHANNEL	85.153	0	10:01	2.41	0.00	0.23
CJ228	CHANNEL	85.135	0	10:01	2.49	0.02	0.23
CJ273.7271	CHANNEL	85.129	0	10:01	2.59	0.01	0.25
CJ367.2808	CHANNEL	85.127	0	10:00	2.41	0.01	0.26
CJ411.8737	CHANNEL	85.128	0	10:00	2.81	0.01	0.26
CJ463.252	CHANNEL	85.128	0	10:00	1.58	0.01	0.25
CJ517.84	CHANNEL	85.130	0	10:00	1.29	0.01	0.24
CJ625.0873	CHANNEL	73.488	0	10:03	1.23	0.04	0.32
CJ718.5652	CHANNEL	73.437	0	10:02	1.54	0.03	0.25
CJ818.7001	CHANNEL	73.431	0	10:02	1.17	0.02	0.25
CJ927.3901	CHANNEL	73.432	0	10:01	1.69	0.04	0.22
CJ1021.897	CHANNEL	73.433	0	10:01	22.06	0.06	0.24
CJ1177.635	CHANNEL	73.435	0	10:00	1.36	0.01	0.18
CJ1276.628	CHANNEL	73.437	0	10:00	3.12	0.01	0.14
CJ1386.646	CHANNEL	73.438	0	10:00	2.67	0.02	0.16
CJ1455.968	CHANNEL	73.438	0	10:00	4.00	0.03	0.19
CJ1549.464	CHANNEL	63.711	0	09:10	2.26	0.01	0.21
CJ1662.759	CHANNEL	63.712	0	09:10	1.85	0.05	0.15
CJ1779.22	CHANNEL	63.712	0	09:09	1.18	0.03	0.15
CJ1920.857	CHANNEL	63.718	0	09:08	0.85	0.03	0.16
CJ2059.866	CHANNEL	63.738	0	09:06	0.76	0.02	0.18
CJ2156.937	CHANNEL	63.762	0	09:04	1.56	0.02	0.21
CJ2277.683	CHANNEL	63.770	0	09:03	1.86	0.04	0.27
CJ2406.341	CHANNEL	63.773	0	09:03	2.90	0.07	0.36
CJ2509.792	CHANNEL	63.774	0	09:02	2.03	0.08	0.49
CJ2618.286	CHANNEL	63.779	0	09:01	1.95	0.05	0.55
CJ2707.776	CHANNEL	63.782	0	09:00	1.64	0.23	0.65
CJ2810.224	CHANNEL	63.786	0	09:00	1.55	0.17	0.66
CJ2922.176	CHANNEL	63.842	0	08:56	1.43	0.56	0.93
CJ2986.996	CHANNEL	63.938	0	08:54	1.11	0.34	0.86
CJ3000.11	CHANNEL	64.009	0	08:53	1.04	0.06	0.68
CJ3046.813	CHANNEL	64.059	0	08:52	0.86	0.03	0.57
CJ3187.848	CHANNEL	65.178	0	08:18	1.88	0.14	0.73
CJ3200.809	CHANNEL	24.473	0	13:21	1.00	0.02	0.75
CJ3358.095	CHANNEL	24.191	0	17:34	1.13	0.02	0.74
CJ3380.367	CHANNEL	24.185	0	17:39	1.02	0.01	0.81
CJ3509.864	CHANNEL	24.188	0	17:49	1.84	0.02	0.58
CJ3613.455	CHANNEL	24.254	0	17:48	1.34	0.01	0.44
CJ3734.707	CHANNEL	27.375	0	16:14	1.62	1.65	1.00
CJ3762.625	CHANNEL	25.832	0	16:51	0.82	0.01	0.64
CJ3775.164	CHANNEL	24.676	0	16:52	1.07	0.01	0.61
CJ3804.186	CHANNEL	24.041	0	16:52	0.94	0.01	0.63
CJ3957.179	CHANNEL	22.613	0	16:27	0.73	0.02	0.62
CJ4108.305	CHANNEL	21.316	0	16:28	0.77	0.08	0.71
CJ4263.057	CHANNEL	19.739	0	15:50	0.65	0.03	0.63
CJ4347.811	CHANNEL	19.819	0	08:53	0.45	0.02	0.50
CJ4384.664	CHANNEL	21.232	0	08:52	0.67	0.17	0.75
CJ4546.604	CHANNEL	17.689	0	08:53	0.60	0.03	0.71
CJ4692.952	CHANNEL	21.625	0	08:46	0.62	0.15	0.75
CJ4826.403	CHANNEL	26.964	0	08:37	0.34	0.00	0.26
CJ4968.21	CHANNEL	32.130	0	08:31	3.84	0.04	0.63
CJ5103.876	CHANNEL	35.473	0	08:27	0.52	0.07	0.55
CJ5276.091	CHANNEL	36.763	0	08:24	0.36	0.01	0.35
CJ5310.141	CHANNEL	37.317	0	08:22	1.96	0.22	0.51
CJ5374.119	CHANNEL	37.651	0	08:20	0.92	0.01	0.29
CJ5465.266	CHANNEL	38.810	0	08:14	0.96	0.01	0.23
CJ5595.644	CHANNEL	40.383	0	08:09	0.62	0.20	0.67
CJ5653.55	CHANNEL	40.713	0	08:06	0.90	0.02	0.46
CJ5665.793	CHANNEL	18.612	0	08:15	0.25	0.00	0.46
CJ5704.059	CHANNEL	18.484	0	08:15	0.51	0.00	0.44
CJ5880.376	CHANNEL	18.160	0	08:12	0.30	0.01	0.41
CJ5975.085	CHANNEL	17.967	0	08:10	1.14	0.01	0.40
CJ6062.64	CHANNEL	17.955	0	08:08	0.89	0.02	0.42
CJ6084.086	CHANNEL	17.999	0	08:06	0.81	0.02	0.47
CJ6116.845	CHANNEL	18.044	0	08:05	0.64	0.02	0.50
CJ6190.578	CHANNEL	18.103	0	08:04	1.77	0.04	0.52
CJ6335.876	CHANNEL	18.105	0	08:03	1.75	0.13	0.57
CJ6410.625	CHANNEL	18.117	0	08:02	1.49	0.14	0.64
CJ6486.756	CHANNEL	18.119	0	08:02	1.65	0.09	0.59
CJ6564.455	CHANNEL	18.121	0	08:01	1.42	0.35	0.62
CJ6669.684	CHANNEL	18.143	0	08:01	1.18	0.03	0.61
CJ6757.544	CHANNEL	18.158	0	08:00	1.41	0.19	0.50
CJ6821.096	CHANNEL	16.464	0	08:02	0.99	0.00	0.33

CJ6917.282	CHANNEL	12.897	0	08:05	0.84	0.03	0.49
CJ7071.306	CHANNEL	12.732	0	08:04	0.37	0.00	0.33
CJ7083.163	CHANNEL	12.696	0	08:00	1.87	0.00	0.34
CJ7111.02	CHANNEL	12.714	0	08:00	11.36	0.00	0.29
CJ7127.958	CHANNEL	8.270	0	08:04	0.27	0.00	0.29
CJ7246.49	CHANNEL	8.202	0	08:03	0.78	0.00	0.29
CJ7306.937	CHANNEL	8.152	0	08:02	0.72	0.00	0.28
CJ7390.724	CHANNEL	8.150	0	08:01	1.31	0.00	0.28
CJ7510.949	CHANNEL	8.179	0	08:01	0.97	0.01	0.28
CJ7560.665	CHANNEL	8.201	0	08:00	1.14	0.00	0.28
CJ7604.08	CHANNEL	8.216	0	08:00	0.99	0.00	0.26
CJ7641.424	CHANNEL	8.256	0	08:00	1.07	0.00	0.25

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Avg. Froude Number	Avg. Flow Change
		--- Fraction of Time in Flow Class ----								
CJ96.54452	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.59	0.0001
CJ154.6483	1.00	0.00	0.05	0.00	0.95	0.00	0.00	0.00	0.28	0.0000
CJ168.8194	1.00	0.05	0.01	0.00	0.93	0.01	0.00	0.00	0.58	0.0000
CJ228	1.00	0.06	0.00	0.00	0.74	0.21	0.00	0.00	0.79	0.0000
CJ273.7271	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.64	0.0000
CJ367.2808	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.54	0.0000
CJ411.8737	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.75	0.0000
CJ463.252	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.55	0.0000
CJ517.84	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.44	0.0000
CJ625.0873	1.00	0.05	0.02	0.00	0.93	0.00	0.00	0.00	0.32	0.0000
CJ718.5652	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.40	0.0000
CJ818.7001	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.35	0.0000
CJ927.3901	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.41	0.0000
CJ1021.897	1.00	0.05	0.00	0.00	0.94	0.00	0.00	0.00	0.42	0.0000
CJ1177.635	1.00	0.05	0.00	0.00	0.94	0.01	0.00	0.00	0.30	0.0000
CJ1276.628	1.00	0.05	0.00	0.00	0.31	0.65	0.00	0.00	0.96	0.0000
CJ1386.646	1.00	0.05	0.00	0.00	0.70	0.25	0.00	0.00	0.95	0.0000
CJ1455.968	1.00	0.05	0.00	0.00	0.26	0.69	0.00	0.00	1.03	0.0000
CJ1549.464	1.00	0.05	0.04	0.00	0.91	0.00	0.00	0.00	0.66	0.0000
CJ1662.759	1.00	0.09	0.00	0.00	0.91	0.00	0.00	0.00	0.49	0.0000
CJ1779.22	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.26	0.0000
CJ1920.857	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.24	0.0000
CJ2059.866	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.22	0.0000
CJ2156.937	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.38	0.0000
CJ2277.683	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.33	0.0000
CJ2406.341	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.64	0.0000
CJ2509.792	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.39	0.0000
CJ2618.286	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.49	0.0000
CJ2707.776	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.37	0.0000
CJ2810.224	1.00	0.06	0.01	0.00	0.94	0.00	0.00	0.00	0.30	0.0000
CJ2922.176	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.31	0.0001
CJ2986.996	1.00	0.05	0.00	0.00	0.94	0.00	0.00	0.00	0.23	0.0000
CJ3000.11	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.23	0.0000
CJ3046.813	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.01	0.20	0.0000
CJ3187.848	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.46	0.0000
CJ3200.809	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.18	0.0000
CJ3358.095	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.20	0.0000
CJ3380.367	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.21	0.0000
CJ3509.864	1.00	0.05	0.01	0.00	0.95	0.00	0.00	0.00	0.36	0.0000
CJ3613.455	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.24	0.0000
CJ3734.707	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.27	0.0192
CJ3762.625	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.17	0.0000
CJ3775.164	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.18	0.0000
CJ3804.186	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.12	0.0000
CJ3957.179	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.11	0.0000
CJ4108.305	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.12	0.0000
CJ4263.057	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.11	0.0000
CJ4347.811	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.08	0.0000
CJ4384.664	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.11	0.0000
CJ4546.604	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.07	0.0000
CJ4692.952	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.09	0.0000
CJ4826.403	1.00	0.05	0.03	0.00	0.92	0.00	0.00	0.00	0.04	0.0000
CJ4968.21	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.12	0.0000
CJ5103.876	1.00	0.07	0.01	0.00	0.92	0.00	0.00	0.00	0.08	0.0000
CJ5276.091	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.05	0.0000
CJ5310.141	1.00	0.06	0.00	0.00	0.93	0.01	0.00	0.00	0.22	0.0000
CJ5374.119	1.00	0.05	0.01	0.00	0.94	0.00	0.00	0.00	0.13	0.0000
CJ5465.266	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.14	0.0000
CJ5595.644	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.16	0.0000
CJ5653.55	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.26	0.0000
CJ5665.793	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.07	0.0000
CJ5704.059	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.05	0.0000
CJ5880.376	1.00	0.05	0.01	0.00	0.95	0.00	0.00	0.00	0.02	0.0000
CJ5975.085	1.00	0.05	0.01	0.00	0.94	0.00	0.00	0.00	0.07	0.0000
CJ6062.64	1.00	0.06	0.01	0.00	0.93	0.00	0.00	0.00	0.10	0.0000
CJ6084.086	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.16	0.0000
CJ6116.845	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.16	0.0000
CJ6190.578	1.00	0.06	0.00	0.00	0.87	0.06	0.00	0.00	0.36	0.0000
CJ6335.876	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.26	0.0000
CJ6410.625	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.20	0.0000
CJ6486.756	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.31	0.0000
CJ6564.455	1.00	0.05	0.00	0.00	0.94	0.00	0.00	0.00	0.27	0.0001
CJ6669.684	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.23	0.0000
CJ6757.544	1.00	0.05	0.00	0.00	0.71	0.00	0.00	0.25	0.28	0.0000
CJ6821.096	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.18	0.0000
CJ6917.282	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.18	0.0000
CJ7071.306	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.05	0.0000
CJ7083.163	1.00	0.05	0.00	0.00	0.94	0.01	0.00	0.00	0.15	0.0000
CJ7111.02	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.46	0.0000
CJ7127.958	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.04	0.0000
CJ7246.49	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.11	0.0000
CJ7306.937	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.14	0.0000
CJ7390.724	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.33	0.0000
CJ7510.949	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.25	0.0000
CJ7560.665	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.18	0.0000
CJ7604.08	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.26	0.0000
CJ7641.424	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.36	0.0000

```
  *************************
  Conduit Surcharge Summary
  *************************

  ---------------------------------------------------------------------
-----
                                                           Hours
Hours
                         --------- Hours Full --------   Above Full
Capacity
  Conduit                Both Ends  Upstream  Dnstream   Normal Flow
Limited
  ---------------------------------------------------------------------
-----
  CJ3734.707                  7.01      7.01      7.65      10.33
5.61

  Analysis begun on:  Thu Mar 20 14:20:18 2014
  Analysis ended on:  Thu Mar 20 14:20:25 2014
  Total elapsed time: 00:00:07
```

Appendix N
Structure Photo Inventory Record

Structure 1: Jennings Creek at Victoria Rail Trail

HecRas #: 130
Upstream Invert Elevation: 248.024 m
Downstream Invert Elevation: 247.875 m

Span: 2.50 m
Rise: 1.95 m

Culvert Type/Shape: Box (Rectangular)
Material: Steel
Bottom Material: Same as Top and Sides

Downstream Facing Upstream

Looking inside downstream end of culvert

Upstream Facing Downstream

Structure 2: Jennings Creek at Old Rail Line

HecRas #: 210
Upstream Invert Elev: 248.48 m
Downstream Invert Elev: 248.4 m

Span: 2.50 m
Rise: 2.30 m

Culvert Type/Shape: Arch; 1-90 degree headwall
Material: Corrugated metal
Bottom Material: Same as top and Sides

Downstream facing upstream

Upstream facing downstream

Looking inside upstream end of culvert

Structure 3: Jennings Creek at William Street North

HecRas #: 260
Upstream Invert Elev: 247.63 m
Downstream Invert Elev: 247.51 m

Diameter: 3.90 m

Culvert Type/Shape: Circular
Material: Corrugated Metal Pipe Culvert
Scale: Projected from fill
Bottom Material: Same as Top and Sides

Downstream facing upstream

Upstream Facing Downstream

Structure 4: Jennings Creek at Angeline Street North

HecRas #: 1426
Upstream Invert Elevation: 259.423 m
Downstream Invert Elevation: 259.486 m

Span: 4.31 m
Rise: 2.84 m

Culvert Type/Shape: Box (Rectangular)
Material: Concrete
Bottom Material: Same as Top and Sides

Looking inside downstream end of culvert

Downstream facing upstream

Upstream facing downstream

Structure 5: Ops #1 Drain at *at Lindsay Airport and Hwy 35*

HecRas #: 3010
Upstream Invert Elevation #1: 262.98m
Downstream Invert Elevation #1: 263.168 m

Upstream Invert Elevation #2: 263.17m
Downstream Invert Elevation #2: 263.18m

Span: 3.7 m
Rise: 1.75 m

Culvert Type/Shape: Ellipse
Material: Helical Galvanized Steel
Bottom Material: Counter Sunk

Downstream Facing Upstream

Upstream Facing Downstream

Double culvert upstream looking downstream

Structure 6: Ops #1 Drain at 3125 Hwy 35

HecRas #: 3630

Upstream Invert Elevation: 263.799m
Downstream Invert Elevation: 263.811m

Diameter: 2.7 m

Culvert Type/Shape: Circular
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides

Upstream Facing Downstream

Downstream Facing Upstream

Structure 7: Ops #1 Drain at Colborne Street West and Hwy 35

HecRas #: 4365
Upstream Invert Elevation #1: 264.54m
Downstream Invert Elevation #1:
264.472 m
Upstream Invert Elevation #2: 264.51m
Downstream Invert Elevation #2:
264.44m
Diameter: 1.6 m
Culvert Type/Shape: Pipe Arch
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Bottom


Downstream Facing Upstream

Upstream Facing Downstream

Structure 8: Ops #1 Drain at Hwy 7 and Admiral Inn

HecRas #: 5620
Upstream Invert Elev: 265.94 m
Downstream Invert Elev: 265.937 m

Rise: 1.58
Span: 2.25

Culvert Type/Shape: Pipe Arch
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides


Upstream facing downstream


Downstream facing upstream

Structure 9: Ops #1 Drain at Dewdrop Inn Road and Admiral Inn

HecRas #: 5675
Upstream Invert Elevation: 265.956m
Downstream Invert Elevation: 265.975m

Diameter: 2.0 m

Culvert Type/Shape: Circular
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides

Downstream Facing Upstream

Upstream Facing Downstream

Structure 11: Ops #1 Drain at Hwy 7 near Armada and Pickseed Factory

HecRas #: 6690

Upstream Invert Elev: 267.205 m
Downstream Invert Elev: 267.146 m

Diameter: 1.13 m

Culvert Type/Shape: Pipe Arch
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides

Downstream Facing Upstream

Upstream Facing Downstream

Looking inside upstream end of culvert

Structure 12: Ops #1 Drain at Greenfield Road beside TSC

HecRas #: 6840
Upstream Invert Elev: 267.34 m
Downstream Invert Elev: 267.42 m

Diameter: 0.99 m

Culvert Type/Shape: Pipe Arch
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides

Downstream Facing Upstream

Looking inside upstream end of culvert

Upstream Facing Downstream

Structure 13: Ops #1 Drain at Moose Lodge Parking Lot

HecRas #: 7095
Upstream Invert Elev: 267.898 m
Downstream Invert Elev: 267.827 m

Diameter: 0.9

Culvert Type/Shape: Circular
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides

Upstream facing downstream

Downstream facing upstream

Structure 14: Ops #1 Drain at Moose Road

HecRas #: 7190
Upstream Invert Elev: 267.759 m
Downstream Invert Elev: 267.919 m
Diameter: 1.14 m
Culvert Type/Shape: Pipe Arch
Material: Corrugated Galvanized Steel and Concrete
Bottom Material: Same as Top and Sides

Downstream Facing Upstream

Upstream Close up of Culvert

Upstream Facing Downstream

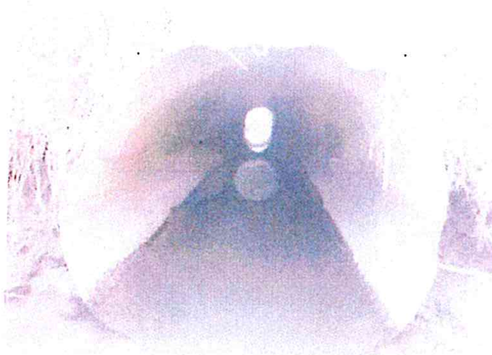
Structure 15: Ops #1 Drain behind Medigas Building on Moose Road

HecRas #:7319
Upstream Invert Elev: 267.949 m
Downstream Invert Elev: 267.84 m

Diameter: 1.3 m

Culvert Type/Shape: Circular
Material: Corrugated Galvanized Steel
Bottom Material: Same as Top and Sides

Downstream facing upstream



Looking inside upstream end of culvert

Upstream facing upstream

Structure 16: Ops #1 Drain under Lindsay Mall Parking Lot

HecRas #: 7460
Upstream Invert Elev: 268.423 m
Downstream Invert Elev: 268.39 m

Diameter: 1.34 m

Culvert Type/Shape: Circular
Material: Galvanized Steel and Concrete
Bottom Material: Counter Sunk

Upstream Facing Downstream

Downstream Facing Upstream

Structure 17: Ops #1 Drain beside Rexall in the Lindsay Mall

HecRas #: 7580

Upstream Invert Elev: 268.2 m
Downstream Invert Elev: 268.196 m

Diameter: 1.62 m

Culvert Type/Shape: Pipe Arch
Material: Corrugated Galvanized Steel
Bottom Material: Counter Sunk

Downstream Facing Upstream

Upstream Facing Downstream

Appendix O
Hydraulic Sensitivity Analyses & Results

HEC RAS Sensitivity Analyses

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Delta
7641.424	Regulatory Flows	120-man	23.01	271.57	-0.03
7641.424	Regulatory Flows	80-man	23.01	271.54	0
7641.424	Regulatory Flows	100yr ST	23.01	271.54	0
7641.424	Regulatory Flows	peer revie\	23.01	271.54	
7604.08	Regulatory Flows	120-man	23.01	271.57	-0.03
7604.08	Regulatory Flows	80-man	23.01	271.54	0
7604.08	Regulatory Flows	100yr ST	23.01	271.54	0
7604.08	Regulatory Flows	peer revie\	23.01	271.54	
7598.352	Regulatory Flows	120-man	23.01	271.57	-0.03
7598.352	Regulatory Flows	80-man	23.01	271.54	0
7598.352	Regulatory Flows	100yr ST	23.01	271.54	0
7598.352	Regulatory Flows	peer revie\	23.01	271.54	
7580	Mall Entrance			Culvert	
7573.521	Regulatory Flows	120-man	23.01	271.56	-0.02
7573.521	Regulatory Flows	80-man	23.01	271.54	0
7573.521	Regulatory Flows	100yr ST	23.01	271.54	0
7573.521	Regulatory Flows	peer revie\	23.01	271.54	
7560.665	Regulatory Flows	120-man	23.01	271.55	-0.02
7560.665	Regulatory Flows	80-man	23.01	271.54	-0.01
7560.665	Regulatory Flows	100yr ST	23.01	271.53	0
7560.665	Regulatory Flows	peer revie\	23.01	271.53	
7510.949	Regulatory Flows	120-man	19.15	271.55	-0.01
7510.949	Regulatory Flows	80-man	19.15	271.54	0
7510.949	Regulatory Flows	100yr ST	19.15	271.54	0
7510.949	Regulatory Flows	peer revie\	19.15	271.54	
7506.531	Regulatory Flows	120-man	19.15	271.55	-0.01
7506.531	Regulatory Flows	80-man	19.15	271.54	0
7506.531	Regulatory Flows	100yr ST	19.15	271.54	0
7506.531	Regulatory Flows	peer revie\	19.15	271.54	
7460	Commerce Rd			Culvert	
7416.162	Regulatory Flows	120-man	19.15	271.54	0
7416.162	Regulatory Flows	80-man	19.15	271.54	0
7416.162	Regulatory Flows	100yr ST	19.15	271.54	0
7416.162	Regulatory Flows	peer revie\	19.15	271.54	
7413.256	Regulatory Flows	120-man	19.15	271.54	0
7413.256	Regulatory Flows	80-man	19.15	271.54	0
7413.256	Regulatory Flows	100yr ST	19.15	271.54	0
7413.256	Regulatory Flows	peer revie\	19.15	271.54	
7390.724	Regulatory Flows	120-man	19.15	271.54	-0.01
7390.724	Regulatory Flows	80-man	19.15	271.54	-0.01
7390.724	Regulatory Flows	100yr ST	19.15	271.53	0
7390.724	Regulatory Flows	peer revie\	19.15	271.53	
7333.219	Regulatory Flows	120-man	19.15	271.54	-0.01
7333.219	Regulatory Flows	80-man	19.15	271.53	0
7333.219	Regulatory Flows	100yr ST	19.15	271.53	0
7333.219	Regulatory Flows	peer revie\	19.15	271.53	
7328.619	Regulatory Flows	120-man	17.78	271.54	-0.01
7328.619	Regulatory Flows	80-man	17.78	271.53	0
7328.619	Regulatory Flows	100yr ST	17.78	271.53	0
7328.619	Regulatory Flows	peer revie\	17.78	271.53	
7319	Former train tra			Culvert	
7309.586	Regulatory Flows	120-man	17.78	271.53	0
7309.586	Regulatory Flows	80-man	17.78	271.53	0
7309.586	Regulatory Flows	100yr ST	17.78	271.53	0
7309.586	Regulatory Flows	peer revie\	17.78	271.53	
7306.937	Regulatory Flows	120-man	17.78	271.53	0
7306.937	Regulatory Flows	80-man	17.78	271.53	0
7306.937	Regulatory Flows	100yr ST	17.78	271.53	0
7306.937	Regulatory Flows	peer revie\	17.78	271.53	
7246.49	Regulatory Flows	120-man	16.2	271.53	0
7246.49	Regulatory Flows	80-man	16.2	271.53	0
7246.49	Regulatory Flows	100yr ST	16.2	271.53	0
7246.49	Regulatory Flows	peer revie\	16.2	271.53	
7238.63	Regulatory Flows	120-man	16.2	271.53	0
7238.63	Regulatory Flows	80-man	16.2	271.53	0
7238.63	Regulatory Flows	100yr ST	16.2	271.53	0
7238.63	Regulatory Flows	peer revie\	16.2	271.53	
7190	McLachlin Rd			Culvert	
7156.184	Regulatory Flows	120-man	16.2	271.53	0
7156.184	Regulatory Flows	80-man	16.2	271.52	0.01
7156.184	Regulatory Flows	100yr ST	16.2	271.53	0
7156.184	Regulatory Flows	peer revie\	16.2	271.53	
7153.097	Regulatory Flows	120-man	16.2	271.53	0
7153.097	Regulatory Flows	80-man	16.2	271.52	0.01
7153.097	Regulatory Flows	100yr ST	16.2	271.53	0
7153.097	Regulatory Flows	peer revie\	16.2	271.53	
7127.958	Regulatory Flows	120-man	16.2	271.53	0
7127.958	Regulatory Flows	80-man	16.2	271.52	0.01
7127.958	Regulatory Flows	100yr ST	16.2	271.53	0
7127.958	Regulatory Flows	peer revie\	16.2	271.53	
7111.02	Regulatory Flows	120-man	22.24	271.53	0
7111.02	Regulatory Flows	80-man	22.24	271.52	0.01
7111.02	Regulatory Flows	100yr ST	22.24	271.53	0
7111.02	Regulatory Flows	peer revie\	22.24	271.53	
7106.395	Regulatory Flows	120-man	22.24	271.53	0
7106.395	Regulatory Flows	80-man	22.24	271.52	0.01
7106.395	Regulatory Flows	100yr ST	22.24	271.53	0

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Delta
7106.395	Regulatory Flows	peer reviev	22.24	271.53	
7095	Ball Field			Culvert	
7088.943	Regulatory Flows	120-man	22.24	271.53	-0.01
7088.943	Regulatory Flows	80-man	22.24	271.52	0
7088.943	Regulatory Flows	100yr ST	22.24	271.52	0
7088.943	Regulatory Flows	peer reviev	22.24	271.52	
7083.163	Regulatory Flows	120-man	22.24	271.53	-0.01
7083.163	Regulatory Flows	80-man	22.24	271.52	0
7083.163	Regulatory Flows	100yr ST	22.24	271.52	0
7083.163	Regulatory Flows	peer reviev	22.24	271.52	
7071.306	Regulatory Flows	120-man	22.24	271.52	0
7071.306	Regulatory Flows	80-man	22.24	271.52	0
7071.306	Regulatory Flows	100yr ST	22.24	271.52	0
7071.306	Regulatory Flows	peer reviev	22.24	271.52	
6917.282	Regulatory Flows	120-man	22.24	271.52	0
6917.282	Regulatory Flows	80-man	22.24	271.52	0
6917.282	Regulatory Flows	100yr ST	22.24	271.52	0
6917.282	Regulatory Flows	peer reviev	22.24	271.52	
6857.851	Regulatory Flows	120-man	22.24	271.52	0
6857.851	Regulatory Flows	80-man	22.24	271.52	0
6857.851	Regulatory Flows	100yr ST	22.24	271.52	0
6857.851	Regulatory Flows	peer reviev	22.24	271.52	
6853.017	Regulatory Flows	120-man	19.34	271.52	0
6853.017	Regulatory Flows	80-man	19.34	271.52	0
6853.017	Regulatory Flows	100yr ST	19.34	271.52	0
6853.017	Regulatory Flows	peer reviev	19.34	271.52	
6840	Greenfield			Culvert	
6826.129	Regulatory Flows	120-man	19.34	271.52	0
6826.129	Regulatory Flows	80-man	19.34	271.52	0
6826.129	Regulatory Flows	100yr ST	19.34	271.52	0
6826.129	Regulatory Flows	peer reviev	19.34	271.52	
6821.096	Regulatory Flows	120-man	19.34	271.52	0
6821.096	Regulatory Flows	80-man	19.34	271.52	0
6821.096	Regulatory Flows	100yr ST	19.34	271.52	0
6821.096	Regulatory Flows	peer reviev	19.34	271.52	
6757.544	Regulatory Flows	120-man	26.22	271.52	0
6757.544	Regulatory Flows	80-man	26.22	271.52	0
6757.544	Regulatory Flows	100yr ST	26.22	271.52	0
6757.544	Regulatory Flows	peer reviev	26.22	271.52	
6710.332	Regulatory Flows	120-man	26.22	271.52	0
6710.332	Regulatory Flows	80-man	26.22	271.52	0
6710.332	Regulatory Flows	100yr ST	26.22	271.52	0
6710.332	Regulatory Flows	peer reviev	26.22	271.52	
6706.899	Regulatory Flows	120-man	26.22	271.52	0
6706.899	Regulatory Flows	80-man	26.22	271.52	0
6706.899	Regulatory Flows	100yr ST	26.22	271.52	0
6706.899	Regulatory Flows	peer reviev	26.22	271.52	
6690	Hwy 7			Culvert	
6676.99	Regulatory Flows	120-man	26.22	269.93	0
6676.99	Regulatory Flows	80-man	26.22	269.93	0
6676.99	Regulatory Flows	100yr ST	26.22	269.93	0
6676.99	Regulatory Flows	peer reviev	26.22	269.93	
6669.684	Regulatory Flows	120-man	26.22	269.98	-1.4
6669.684	Regulatory Flows	80-man	26.22	268.57	0.01
6669.684	Regulatory Flows	100yr ST	26.22	268.58	0
6669.684	Regulatory Flows	peer reviev	26.22	268.58	
6564.455	Regulatory Flows	120-man	26.22	269.83	-0.14
6564.455	Regulatory Flows	80-man	26.22	269.51	0.18
6564.455	Regulatory Flows	100yr ST	26.22	269.69	0
6564.455	Regulatory Flows	peer reviev	26.22	269.69	
6486.756	Regulatory Flows	120-man	26.22	269.53	-0.14
6486.756	Regulatory Flows	80-man	26.22	269.22	0.17
6486.756	Regulatory Flows	100yr ST	26.22	269.39	0
6486.756	Regulatory Flows	peer reviev	26.22	269.39	
6410.625	Regulatory Flows	120-man	26.22	269.23	-0.12
6410.625	Regulatory Flows	80-man	26.22	269	0.11
6410.625	Regulatory Flows	100yr ST	26.22	269.11	0
6410.625	Regulatory Flows	peer reviev	26.22	269.11	
6335.876	Regulatory Flows	120-man	26.22	268.79	0
6335.876	Regulatory Flows	80-man	26.22	268.79	0
6335.876	Regulatory Flows	100yr ST	26.22	268.79	0
6335.876	Regulatory Flows	peer reviev	26.22	268.79	
6190.578	Regulatory Flows	120-man	25.05	268.44	-0.01
6190.578	Regulatory Flows	80-man	25.05	268.42	0.01
6190.578	Regulatory Flows	100yr ST	25.05	268.43	0
6190.578	Regulatory Flows	peer reviev	25.05	268.43	
6116.845	Regulatory Flows	120-man	25.05	268.43	0
6116.845	Regulatory Flows	80-man	25.05	268.43	0
6116.845	Regulatory Flows	100yr ST	25.05	268.43	0
6116.845	Regulatory Flows	peer reviev	25.05	268.43	
6084.086	Regulatory Flows	120-man	25.05	268.43	0
6084.086	Regulatory Flows	80-man	25.05	268.43	0
6084.086	Regulatory Flows	100yr ST	25.05	268.43	0
6084.086	Regulatory Flows	peer reviev	25.05	268.43	
6062.64	Regulatory Flows	120-man	25.05	268.43	0
6062.64	Regulatory Flows	80-man	25.05	268.43	0
6062.64	Regulatory Flows	100yr ST	25.05	268.43	0
6062.64	Regulatory Flows	peer reviev	25.05	268.43	

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Delta
5975.085	Regulatory Flows	120-man	25.05	268.43	0
5975.085	Regulatory Flows	80-man	25.05	268.43	0
5975.085	Regulatory Flows	100yr ST	25.05	268.43	0
5975.085	Regulatory Flows	peer reviev	25.05	268.43	
5880.376	Regulatory Flows	120-man	20.42	268.43	0
5880.376	Regulatory Flows	80-man	20.42	268.43	0
5880.376	Regulatory Flows	100yr ST	20.42	268.43	0
5880.376	Regulatory Flows	peer reviev	20.42	268.43	
5704.059	Regulatory Flows	120-man	20.42	268.43	0
5704.059	Regulatory Flows	80-man	20.42	268.42	0.01
5704.059	Regulatory Flows	100yr ST	20.42	268.43	0
5704.059	Regulatory Flows	peer reviev	20.42	268.43	
5690.101	Regulatory Flows	120-man	20.42	268.43	0
5690.101	Regulatory Flows	80-man	20.42	268.42	0.01
5690.101	Regulatory Flows	100yr ST	20.42	268.43	0
5690.101	Regulatory Flows	peer reviev	20.42	268.43	
5675	Dew Drop Inn			Culvert	
5665.793	Regulatory Flows	120-man	20.42	268.43	-0.01
5665.793	Regulatory Flows	80-man	20.42	268.42	0
5665.793	Regulatory Flows	100yr ST	20.42	268.42	0
5665.793	Regulatory Flows	peer reviev	20.42	268.42	
5653.55	Regulatory Flows	120-man	40.27	268.43	-0.01
5653.55	Regulatory Flows	80-man	40.27	268.42	0
5653.55	Regulatory Flows	100yr ST	40.27	268.42	0
5653.55	Regulatory Flows	peer reviev	40.27	268.42	
5646.039	Regulatory Flows	120-man	40.27	268.42	0
5646.039	Regulatory Flows	80-man	40.27	268.42	0
5646.039	Regulatory Flows	100yr ST	40.27	268.42	0
5646.039	Regulatory Flows	peer reviev	40.27	268.42	
5620	Hwy 7			Culvert	
5604.418	Regulatory Flows	120-man	40.27	268.08	-0.01
5604.418	Regulatory Flows	80-man	40.27	268.06	0.01
5604.418	Regulatory Flows	100yr ST	40.27	268.07	0
5604.418	Regulatory Flows	peer reviev	40.27	268.07	
5595.644	Regulatory Flows	120-man	40.27	268.08	-0.01
5595.644	Regulatory Flows	80-man	40.27	268.06	0.01
5595.644	Regulatory Flows	100yr ST	40.27	268.07	0
5595.644	Regulatory Flows	peer reviev	40.27	268.07	
5465.266	Regulatory Flows	120-man	38.27	268.08	-0.01
5465.266	Regulatory Flows	80-man	38.27	268.06	0.01
5465.266	Regulatory Flows	100yr ST	38.27	268.07	0
5465.266	Regulatory Flows	peer reviev	38.27	268.07	
5374.119	Regulatory Flows	120-man	38.27	268.08	-0.01
5374.119	Regulatory Flows	80-man	38.27	268.06	0.01
5374.119	Regulatory Flows	100yr ST	38.27	268.07	0
5374.119	Regulatory Flows	peer reviev	38.27	268.07	
5310.141	Regulatory Flows	120-man	38.27	268.01	-0.01
5310.141	Regulatory Flows	80-man	38.27	268	0
5310.141	Regulatory Flows	100yr ST	38.27	268	0
5310.141	Regulatory Flows	peer reviev	38.27	268	
5276.091	Regulatory Flows	120-man	38.27	268.04	0
5276.091	Regulatory Flows	80-man	38.27	268.03	0.01
5276.091	Regulatory Flows	100yr ST	38.27	268.04	0
5276.091	Regulatory Flows	peer reviev	38.27	268.04	
5103.876	Regulatory Flows	120-man	38.27	268.04	-0.01
5103.876	Regulatory Flows	80-man	38.27	268.03	0
5103.876	Regulatory Flows	100yr ST	38.27	268.03	0
5103.876	Regulatory Flows	peer reviev	38.27	268.03	
4968.21	Regulatory Flows	120-man	28.98	268.04	-0.01
4968.21	Regulatory Flows	80-man	28.98	268.03	0
4968.21	Regulatory Flows	100yr ST	28.98	268.03	0
4968.21	Regulatory Flows	peer reviev	28.98	268.03	
4826.403	Regulatory Flows	120-man	28.98	268.04	-0.01
4826.403	Regulatory Flows	80-man	28.98	268.03	0
4826.403	Regulatory Flows	100yr ST	28.98	268.03	0
4826.403	Regulatory Flows	peer reviev	28.98	268.03	
4692.952	Regulatory Flows	120-man	28.98	268.04	-0.01
4692.952	Regulatory Flows	80-man	28.98	268.03	0
4692.952	Regulatory Flows	100yr ST	28.98	268.03	0
4692.952	Regulatory Flows	peer reviev	28.98	268.03	
4546.604	Regulatory Flows	120-man	28.98	268.03	0
4546.604	Regulatory Flows	80-man	28.98	268.03	0
4546.604	Regulatory Flows	100yr ST	28.98	268.03	0
4546.604	Regulatory Flows	peer reviev	28.98	268.03	
4405.269	Regulatory Flows	120-man	28.98	268.03	0
4405.269	Regulatory Flows	80-man	28.98	268.03	0
4405.269	Regulatory Flows	100yr ST	28.98	268.03	0
4405.269	Regulatory Flows	peer reviev	28.98	268.03	
4384.664	Regulatory Flows	120-man	28.98	268.03	0
4384.664	Regulatory Flows	80-man	28.98	268.03	0
4384.664	Regulatory Flows	100yr ST	28.98	268.03	0
4384.664	Regulatory Flows	peer reviev	28.98	268.03	
4380.968	Regulatory Flows	120-man	27.61	268.03	0
4380.968	Regulatory Flows	80-man	27.61	268.03	0
4380.968	Regulatory Flows	100yr ST	27.61	268.03	0
4380.968	Regulatory Flows	peer reviev	27.61	268.03	
4365	Colborne St			Culvert	
4356.489	Regulatory Flows	120-man	27.61	268.03	0
4356.489	Regulatory Flows	80-man	27.61	268.03	0

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Delta
4356.489	Regulatory Flows	100yr ST	27.61	268.03	0
4356.489	Regulatory Flows	peer reviev	27.61	268.03	
4347.811	Regulatory Flows	120-man	27.61	268.03	0
4347.811	Regulatory Flows	80-man	27.61	268.03	0
4347.811	Regulatory Flows	100yr ST	27.61	268.03	0
4347.811	Regulatory Flows	peer reviev	27.61	268.03	
4263.057	Regulatory Flows	120-man	27.61	268.03	0
4263.057	Regulatory Flows	80-man	27.61	268.03	0
4263.057	Regulatory Flows	100yr ST	27.61	268.03	0
4263.057	Regulatory Flows	peer reviev	27.61	268.03	
4108.305	Regulatory Flows	120-man	27.61	268.03	0
4108.305	Regulatory Flows	80-man	27.61	268.03	0
4108.305	Regulatory Flows	100yr ST	27.61	268.03	0
4108.305	Regulatory Flows	peer reviev	27.61	268.03	
3957.179	Regulatory Flows	120-man	24.1	268.03	0
3957.179	Regulatory Flows	80-man	24.1	268.03	0
3957.179	Regulatory Flows	100yr ST	24.1	268.03	0
3957.179	Regulatory Flows	peer reviev	24.1	268.03	
3804.186	Regulatory Flows	120-man	24.1	268.03	0
3804.186	Regulatory Flows	80-man	24.1	268.03	0
3804.186	Regulatory Flows	100yr ST	24.1	268.03	0
3804.186	Regulatory Flows	peer reviev	24.1	268.03	
3775.164	Regulatory Flows	120-man	24.1	268.03	0
3775.164	Regulatory Flows	80-man	24.1	268.03	0
3775.164	Regulatory Flows	100yr ST	24.1	268.03	0
3775.164	Regulatory Flows	peer reviev	24.1	268.03	
3762.625	Regulatory Flows	120-man	24.1	268.03	0
3762.625	Regulatory Flows	80-man	24.1	268.03	0
3762.625	Regulatory Flows	100yr ST	24.1	268.03	0
3762.625	Regulatory Flows	peer reviev	24.1	268.03	
3640.294	Regulatory Flows	120-man	24.1	268.03	-0.01
3640.294	Regulatory Flows	80-man	24.1	268.02	0
3640.294	Regulatory Flows	100yr ST	24.1	268.02	0
3640.294	Regulatory Flows	peer reviev	24.1	268.02	
3630	Private Laneway			Culvert	
3621.185	Regulatory Flows	120-man	24.1	268.03	-0.01
3621.185	Regulatory Flows	80-man	24.1	268.02	0
3621.185	Regulatory Flows	100yr ST	24.1	268.02	0
3621.185	Regulatory Flows	peer reviev	24.1	268.02	
3613.455	Regulatory Flows	120-man	24.1	268.03	-0.01
3613.455	Regulatory Flows	80-man	24.1	268.02	0
3613.455	Regulatory Flows	100yr ST	24.1	268.02	0
3613.455	Regulatory Flows	peer reviev	24.1	268.02	
3509.864	Regulatory Flows	120-man	24.02	268.02	0
3509.864	Regulatory Flows	80-man	24.02	268.02	0
3509.864	Regulatory Flows	100yr ST	24.02	268.02	0
3509.864	Regulatory Flows	peer reviev	24.02	268.02	
3380.367	Regulatory Flows	120-man	24.02	268.02	0
3380.367	Regulatory Flows	80-man	24.02	268.02	0
3380.367	Regulatory Flows	100yr ST	24.02	268.02	0
3380.367	Regulatory Flows	peer reviev	24.02	268.02	
3358.095	Regulatory Flows	120-man	24.02	268.02	0
3358.095	Regulatory Flows	80-man	24.02	268.02	0
3358.095	Regulatory Flows	100yr ST	24.02	268.02	0
3358.095	Regulatory Flows	peer reviev	24.02	268.02	
3200.809	Regulatory Flows	120-man	24.02	268.02	0
3200.809	Regulatory Flows	80-man	24.02	268.02	0
3200.809	Regulatory Flows	100yr ST	24.02	268.02	0
3200.809	Regulatory Flows	peer reviev	24.02	268.02	
3187.848	Regulatory Flows	120-man	63.24	268.02	0
3187.848	Regulatory Flows	80-man	63.24	268.02	0
3187.848	Regulatory Flows	100yr ST	63.24	268.02	0
3187.848	Regulatory Flows	peer reviev	63.24	268.02	
3046.813	Regulatory Flows	120-man	63.24	268.02	-0.01
3046.813	Regulatory Flows	80-man	63.24	268.02	-0.01
3046.813	Regulatory Flows	100yr ST	63.24	268.01	0
3046.813	Regulatory Flows	peer reviev	63.24	268.01	
3035.535	Regulatory Flows	120-man	63.24	268.02	-0.01
3035.535	Regulatory Flows	80-man	63.24	268.02	-0.01
3035.535	Regulatory Flows	100yr ST	63.24	268.01	0
3035.535	Regulatory Flows	peer reviev	63.24	268.01	
3010	Hwy 35			Culvert	
3000.11	Regulatory Flows	120-man	63.24	266.91	-0.13
3000.11	Regulatory Flows	80-man	63.24	266.62	0.16
3000.11	Regulatory Flows	100yr ST	63.24	266.78	0
3000.11	Regulatory Flows	peer reviev	63.24	266.78	
2986.996	Regulatory Flows	120-man	63.24	266.9	-0.13
2986.996	Regulatory Flows	80-man	63.24	266.6	0.17
2986.996	Regulatory Flows	100yr ST	63.24	266.77	0
2986.996	Regulatory Flows	peer reviev	63.24	266.77	
2922.176	Regulatory Flows	120-man	63.16	266.81	-0.18
2922.176	Regulatory Flows	80-man	63.16	266.44	0.19
2922.176	Regulatory Flows	100yr ST	63.16	266.63	0
2922.176	Regulatory Flows	peer reviev	63.16	266.63	
2810.224	Regulatory Flows	120-man	63.16	266.72	-0.16
2810.224	Regulatory Flows	80-man	63.16	266.4	0.16
2810.224	Regulatory Flows	100yr ST	63.16	266.56	0
2810.224	Regulatory Flows	peer reviev	63.16	266.56	
2707.776	Regulatory Flows	120-man	63.16	266.65	-0.16

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Delta
2707.776	Regulatory Flows	80-man	63.16	266.33	0.16
2707.776	Regulatory Flows	100yr ST	63.16	266.49	0
2707.776	Regulatory Flows	peer reviev	63.16	266.49	
2618.286	Regulatory Flows	120-man	63.16	266.56	-0.17
2618.286	Regulatory Flows	80-man	63.16	266.24	0.15
2618.286	Regulatory Flows	100yr ST	63.16	266.39	0
2618.286	Regulatory Flows	peer reviev	63.16	266.39	
2509.792	Regulatory Flows	120-man	63.16	266.42	-0.12
2509.792	Regulatory Flows	80-man	63.16	266.18	0.12
2509.792	Regulatory Flows	100yr ST	63.16	266.3	0
2509.792	Regulatory Flows	peer reviev	63.16	266.3	
2406.341	Regulatory Flows	120-man	63.16	266.35	-0.11
2406.341	Regulatory Flows	80-man	63.16	266.13	0.11
2406.341	Regulatory Flows	100yr ST	63.16	266.24	0
2406.341	Regulatory Flows	peer reviev	63.16	266.24	
2277.683	Regulatory Flows	120-man	63.16	266.29	-0.09
2277.683	Regulatory Flows	80-man	63.16	266.11	0.09
2277.683	Regulatory Flows	100yr ST	63.16	266.2	0
2277.683	Regulatory Flows	peer reviev	63.16	266.2	
2156.937	Regulatory Flows	120-man	63.16	266.29	-0.08
2156.937	Regulatory Flows	80-man	63.16	266.13	0.08
2156.937	Regulatory Flows	100yr ST	63.16	266.21	0
2156.937	Regulatory Flows	peer reviev	63.16	266.21	
2059.866	Regulatory Flows	120-man	63.16	266.03	-0.01
2059.866	Regulatory Flows	80-man	63.16	266.01	0.01
2059.866	Regulatory Flows	100yr ST	63.16	266.02	0
2059.866	Regulatory Flows	peer reviev	63.16	266.02	
1920.857	Regulatory Flows	120-man	63.16	266.02	-0.01
1920.857	Regulatory Flows	80-man	63.16	266.01	0
1920.857	Regulatory Flows	100yr ST	63.16	266.01	0
1920.857	Regulatory Flows	peer reviev	63.16	266.01	
1779.22	Regulatory Flows	120-man	63.16	266.01	-0.01
1779.22	Regulatory Flows	80-man	63.16	266	0
1779.22	Regulatory Flows	100yr ST	63.16	266	0
1779.22	Regulatory Flows	peer reviev	63.16	266	
1662.759	Regulatory Flows	120-man	63.16	266	0
1662.759	Regulatory Flows	80-man	63.16	265.99	0.01
1662.759	Regulatory Flows	100yr ST	63.16	266	0
1662.759	Regulatory Flows	peer reviev	63.16	266	
1549.464	Regulatory Flows	120-man	63.16	266	-0.01
1549.464	Regulatory Flows	80-man	63.16	265.99	0
1549.464	Regulatory Flows	100yr ST	63.16	265.99	0
1549.464	Regulatory Flows	peer reviev	63.16	265.99	
1455.968	Regulatory Flows	120-man	72.99	265.99	0
1455.968	Regulatory Flows	80-man	72.99	265.99	0
1455.968	Regulatory Flows	100yr ST	72.99	265.99	0
1455.968	Regulatory Flows	peer reviev	72.99	265.99	
1448.974	Regulatory Flows	120-man	72.99	265.99	0
1448.974	Regulatory Flows	80-man	72.99	265.99	0
1448.974	Regulatory Flows	100yr ST	72.99	265.99	0
1448.974	Regulatory Flows	peer reviev	72.99	265.99	
1426	Angeline St N			Culvert	
1407.546	Regulatory Flows	120-man	72.99	262.54	0
1407.546	Regulatory Flows	80-man	72.99	262.54	0
1407.546	Regulatory Flows	100yr ST	72.99	262.54	0
1407.546	Regulatory Flows	peer reviev	72.99	262.54	
1386.646	Regulatory Flows	120-man	72.99	260.69	-0.01
1386.646	Regulatory Flows	80-man	72.99	260.66	0.02
1386.646	Regulatory Flows	100yr ST	72.99	260.68	0
1386.646	Regulatory Flows	peer reviev	72.99	260.68	
1276.628	Regulatory Flows	120-man	72.99	259.28	-0.04
1276.628	Regulatory Flows	80-man	72.99	259	0.24
1276.628	Regulatory Flows	100yr ST	72.99	259.24	0
1276.628	Regulatory Flows	peer reviev	72.99	259.24	
1177.635	Regulatory Flows	120-man	72.99	258.09	-0.18
1177.635	Regulatory Flows	80-man	72.99	257.73	0.18
1177.635	Regulatory Flows	100yr ST	72.99	257.91	0
1177.635	Regulatory Flows	peer reviev	72.99	257.91	
1021.897	Regulatory Flows	120-man	72.99	257.18	-0.16
1021.897	Regulatory Flows	80-man	72.99	256.75	0.27
1021.897	Regulatory Flows	100yr ST	72.99	257.02	0
1021.897	Regulatory Flows	peer reviev	72.99	257.02	
927.3901	Regulatory Flows	120-man	72.99	255.72	-0.22
927.3901	Regulatory Flows	80-man	72.99	255.49	0.01
927.3901	Regulatory Flows	100yr ST	72.99	255.5	0
927.3901	Regulatory Flows	peer reviev	72.99	255.5	
818.7001	Regulatory Flows	120-man	72.99	254.83	-0.14
818.7001	Regulatory Flows	80-man	72.99	254.55	0.14
818.7001	Regulatory Flows	100yr ST	72.99	254.69	0
818.7001	Regulatory Flows	peer reviev	72.99	254.69	
718.5652	Regulatory Flows	120-man	72.99	254.5	-0.07
718.5652	Regulatory Flows	80-man	72.99	254.37	0.06
718.5652	Regulatory Flows	100yr ST	72.99	254.43	0
718.5652	Regulatory Flows	peer reviev	72.99	254.43	
625.0873	Regulatory Flows	120-man	72.99	254.36	-0.01
625.0873	Regulatory Flows	80-man	72.99	254.34	0.01
625.0873	Regulatory Flows	100yr ST	72.99	254.35	0
625.0873	Regulatory Flows	peer reviev	72.99	254.35	
517.84	Regulatory Flows	120-man	72.99	254.39	-0.01
517.84	Regulatory Flows	80-man	72.99	254.37	0.01

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Delta
517.84	Regulatory Flows	100yr ST	72.99	254.38	0
517.84	Regulatory Flows	peer reviev	72.99	254.38	
463.252	Regulatory Flows	120-man	72.99	254.38	-0.01
463.252	Regulatory Flows	80-man	72.99	254.36	0.01
463.252	Regulatory Flows	100yr ST	72.99	254.37	0
463.252	Regulatory Flows	peer reviev	72.99	254.37	
411.8737	Regulatory Flows	120-man	72.99	254.36	-0.01
411.8737	Regulatory Flows	80-man	72.99	254.35	0
411.8737	Regulatory Flows	100yr ST	72.99	254.35	0
411.8737	Regulatory Flows	peer reviev	72.99	254.35	
367.2808	Regulatory Flows	120-man	72.99	254.35	0
367.2808	Regulatory Flows	80-man	72.99	254.35	0
367.2808	Regulatory Flows	100yr ST	72.99	254.35	0
367.2808	Regulatory Flows	peer reviev	72.99	254.35	
273.7271	Regulatory Flows	120-man	84.46	254.35	0
273.7271	Regulatory Flows	80-man	84.46	254.35	0
273.7271	Regulatory Flows	100yr ST	84.46	254.35	0
273.7271	Regulatory Flows	peer reviev	84.46	254.35	
267	Regulatory Flows	120-man	84.46	254.35	0
267	Regulatory Flows	80-man	84.46	254.35	0
267	Regulatory Flows	100yr ST	84.46	254.35	0
267	Regulatory Flows	peer reviev	84.46	254.35	
260	William St		Culvert		
240.5027	Regulatory Flows	120-man	84.46	254.34	0
240.5027	Regulatory Flows	80-man	84.46	254.34	0
240.5027	Regulatory Flows	100yr ST	84.46	254.34	0
240.5027	Regulatory Flows	peer reviev	84.46	254.34	
236.8376	Regulatory Flows	120-man	84.46	254.33	0
236.8376	Regulatory Flows	80-man	84.46	254.33	0
236.8376	Regulatory Flows	100yr ST	84.46	254.33	0
236.8376	Regulatory Flows	peer reviev	84.46	254.33	
228	Regulatory Flows	120-man	84.46	254.33	0
228	Regulatory Flows	80-man	84.46	254.33	0
228	Regulatory Flows	100yr ST	84.46	254.33	0
228	Regulatory Flows	peer reviev	84.46	254.33	
220	Regulatory Flows	120-man	84.46	254.33	0
220	Regulatory Flows	80-man	84.46	254.33	0
220	Regulatory Flows	100yr ST	84.46	254.33	0
220	Regulatory Flows	peer reviev	84.46	254.33	
210	Rail Trail		Culvert		
175	Regulatory Flows	120-man	84.46	254.29	0
175	Regulatory Flows	80-man	84.46	254.28	0.01
175	Regulatory Flows	100yr ST	84.46	254.29	0
175	Regulatory Flows	peer reviev	84.46	254.29	
168.8194	Regulatory Flows	120-man	84.46	254.29	0
168.8194	Regulatory Flows	80-man	84.46	254.29	0
168.8194	Regulatory Flows	100yr ST	84.46	254.29	0
168.8194	Regulatory Flows	peer reviev	84.46	254.29	
154.6483	Regulatory Flows	120-man	85.24	254.28	0
154.6483	Regulatory Flows	80-man	85.24	254.28	0
154.6483	Regulatory Flows	100yr ST	85.24	254.28	0
154.6483	Regulatory Flows	peer reviev	85.24	254.28	
144.1	Regulatory Flows	120-man	85.24	254.28	0
144.1	Regulatory Flows	80-man	85.24	254.28	0
144.1	Regulatory Flows	100yr ST	85.24	254.28	0
144.1	Regulatory Flows	peer reviev	85.24	254.28	
130	Outlet		Culvert		
121	Regulatory Flows	120-man	85.24	250.93	0
121	Regulatory Flows	80-man	85.24	250.93	0
121	Regulatory Flows	100yr ST	85.24	250.93	0
121	Regulatory Flows	peer reviev	85.24	250.93	
114	Regulatory Flows	120-man	85.24	249.96	-0.14
114	Regulatory Flows	80-man	85.24	249.66	0.16
114	Regulatory Flows	100yr ST	85.24	249.82	0
114	Regulatory Flows	peer reviev	85.24	249.82	
96.54452	Regulatory Flows	120-man	85.24	249.9	-0.13
96.54452	Regulatory Flows	80-man	85.24	249.62	0.15
96.54452	Regulatory Flows	100yr ST	85.24	249.77	0
96.54452	Regulatory Flows	peer reviev	85.24	249.77	
0	Regulatory Flows	120-man	85.24	248.77	0
0	Regulatory Flows	80-man	85.24	248.77	0
0	Regulatory Flows	100yr ST	85.24	248.77	0
0	Regulatory Flows	peer reviev	85.24	248.77	

Max	0.27
Min	-1.4
all changes > 0	42
changes > 0.03	20
changes > 0.1	17
changes > 0.2	2
all changes < 0	64
changes < -0.03	22
changes < - 0.1	18
changes < -0.2	2

Appendix P
HEC RAS Flow Inputs

Flow Comparison for 100-year and Regional Storms for Existing Conditions

From KRCA PCSWMM Model

Catchment ID	100-year Chi. Storm Q_p (m^3/s) 6-hour	12-hour
1	17.27	20.67
2	5.17	5.97
3	1.99	2.55
4	1.86	2.33
5	13.73	15.20
6	5.57	6.31
7	3.73	4.16
8	3.01	3.41
9	4.23	4.72
10	3.59	3.98
11	7.69	8.57
12	9.47	10.44
13	2.93	3.27
14	3.79	4.76
15	3.73	4.68
16	2.82	3.74

100-year Storm Q_p (m^3/s) 6-hour SCS	6-hour AES
14.11	6.71
5.29	2.99
2.24	1.38
2.08	1.13
15.91	12.49
6.83	4.24
4.64	3.96
3.58	2.18
5.72	6.30
4.66	4.34
10.18	9.49
10.70	8.14
3.91	3.88
4.01	2.20
3.97	2.02
2.71	1.29

Timmins Storm Q_p (m^3/s) CN* (II)	CN* (III)
8.05	8.24
4.35	4.55
2.93	3.51
1.63	1.74
23.35	25.82
8.76	10.47
7.85	9.20
3.85	4.28
14.47	20.31
8.80	10.57
19.80	24.25
15.24	16.81
8.58	11.27
2.82	2.87
2.61	2.72
1.62	1.68

Comparing PCSWMM and VO_2 Peaks

Catchment ID	100-year 6-hour SCS Q_p (m^3/s) PCSWMM	VO_2	*% Diff*
1	14.11	11.05	*78%*
2	5.29	6.18	*117%*
3	2.24	1.42	*63%*
4	2.08	1.16	*56%*
5	15.91	13.90	*87%*
6	6.83	4.59	*67%*
7	4.64	2.98	*64%*
8	3.58	1.87	*52%*
9	5.72	6.35	*111%*
10	4.66	4.05	*87%*
11	10.18	8.96	*88%*
12	10.70	8.25	*77%*
13	3.91	3.67	*94%*
14	4.01	4.34	*108%*
15	3.97	2.41	*61%*
16	2.71	1.51	*56%*
		Average =	*79%*
		Max =	*117%*
		Min =	*52%*

Timmins CN (III) Q_p (m^3/s) PCSWMM	VO_2	*% Diff*
8.24	7.89	*96%*
4.55	4.66	*102%*
3.51	2.51	*71%*
1.74	1.43	*82%*
25.82	19.54	*76%*
10.47	7.70	*74%*
9.20	5.83	*63%*
4.28	2.83	*66%*
20.31	16.07	*79%*
10.57	7.74	*73%*
24.25	17.68	*73%*
16.81	11.90	*71%*
11.27	8.27	*73%*
2.87	2.86	*100%*
2.72	2.43	*89%*
1.68	1.51	*90%*
	Average =	*80%*
	Max =	*102%*
	Min =	*63%*

Comparing Aecom and KRCA Peaks

100-year SCS Storm Q_p (m^3/s) Aecom VO2	KRCA VO2		PCSWMM
17.72	7.89		14.11
15.48	4.66		5.29
3.00	2.51		2.24
N/A	1.43		2.08
18.90	19.54		15.91
4.43	7.70		6.83
11.63	5.83		4.64
3.79	2.83		3.58
22.00	16.07		5.72
N/A	7.74		4.66
17.98	17.68		10.18
12.90	11.90		10.70
N/A	8.27		3.91
12.82	2.86		4.01
	2.43		3.97
	1.51		2.71

Catchment ID	100yr Chicago Storm Q_p (m^3/s) PCSWMM	VO_2	*% Diff*
1	20.67	19.06	*92%*
2	5.97	10.84	*182%*
3	2.55	1.33	*52%*
4	2.33	1.17	*50%*
5	15.20	13.19	*87%*
6	6.31	4.34	*69%*
7	4.16	2.73	*66%*
8	3.41	1.76	*51%*
9	4.72	5.69	*121%*
10	3.98	3.71	*93%*
11	8.57	8.22	*96%*
12	10.44	7.78	*75%*
13	3.27	3.33	*102%*
14	4.76	7.47	*157%*
15	4.68	2.51	*54%*
16	3.74	1.61	*43%*
		Average =	*87%*
		Max =	*182%*
		Min =	*43%*

Comparing 100-year and Regional Peak Flows for Existing Conditions

Aecom (2010) Extran Routed Flows vs KRCA PCSWMM Routed Flow

Node	Flow from critical storm in m^3/s	
	Aecom 6hr SCS	KRCA 12hr Chicago
Start of System	N/A	19.24
Commerce Rd culvert	N/A	16.26
former train track culvert	N/A	15.41
McLachlin Rd Culvert	N/A	14.11
Ballfield Culvert	11.8	18.24
Greenfield Rd culvert	N/A	16.27
Hwy 7 Culvert	12.8	19.26
W of Hwy 7 at 90-degree bend in Drain	13.7	17.14
North of 90-degree bend	25.2	13.12
between Dew Drop Inn Rd & Hwy 7	25.6	24.78
D/S of Hwy 7	26.0	23.77
North of Hwy 7 past 90-degree bend	24.0	19.17
Colborne St Culvert	20.6	12.97
D/S of Colborne St	19.4	11.58
D/S of private driveway	21.9	12.92
U/S of Airport	31.0	27.24
D/S of Hwy 35 (near airport)	47.4	27.19
Angeline St Culvert	55.2	33.93
D/S of Angeline St	60.4	38.85
William St culvert	N/A	39.23

Node	Flow from Timmins Storm in m^3/s		
	Aecom (2010)	KRCA	
	CN (III)	CN* (III)	CN * (II)
Start of system	N/A	8.22	8.03
Commerce Rd culvert	N/A	8.12	7.92
former train track culvert	N/A	8.08	7.87
McLachlin Rd Culvert	N/A	8.10	7.89
Ballfield Culvert	9.9	12.43	12.00
Greenfield Rd culvert	N/A	12.49	12.04
Hwy 7 Culvert	12.0	17.29	16.19
W of Hwy 7 at 90-degree bend in Drain	14.1	17.24	16.14
North of 90-degree bend	28.6	17.11	15.85
between Dew Drop Inn Rd & Hwy 7	30.1	39.13	35.52
D/S of Hwy 7	30.9	37.24	33.94
North of Hwy 7 past 90-degree bend	30.8	29.09	27.10
Colborne St Culvert	28.7	27.85	27.58
D/S of Colborne St	30.7	22.86	22.83
D/S of private driveway	35.6	24.07	24.01
U/S of Airport	58.6	61.08	51.25
D/S of Hwy 35 (near airport)	74.7	60.56	50.96
Angeline St Culvert	105.0	69.33	58.28
D/S of Angeline St	95.9	80.16	67.94
William St culvert	N/A	80.94	68.67

Flow file for HEC-RAS

Existing Conditions (PCSWMM)

Start of System	19.24	*100yr*
Commerce Rd culvert	16.26	*100yr*
former train track culvert	15.41	*100yr*
McLachlin Rd Culvert	14.11	*100yr*
Ballfield Culvert	18.24	*100yr*
Greenfield Rd culvert	16.27	*100yr*
Hwy 7 Culvert	19.26	*100yr*
W of Hwy 7 at 90-degree bend in Drain	17.24	*Timmins*
North of 90-degree bend	17.11	*Timmins*
between Dew Drop Inn Rd & Hwy 7	39.13	*Timmins*
D/S of Hwy 7	37.24	*Timmins*
North of Hwy 7 past 90-degree bend	29.09	*Timmins*
Colborne St Culvert	27.85	*Timmins*
D/S of Colborne St	22.86	*Timmins*
D/S of private driveway	24.07	*Timmins*
U/S of Airport	61.08	*Timmins*
D/S of Hwy 35 (near airport)	60.56	*Timmins*
Angeline St Culvert	69.33	*Timmins*
D/S of Angeline St	80.16	*Timmins*
William St culvert	80.94	*Timmins*

Flow Comparison for 100-year and Regional Storms for Future Conditions

From KRCA PCSWMM Model

Catchment ID	100-year Chicago Storm Q_p (m^3/s) Existing	100-year Chicago Storm Q_p (m^3/s) Future		Timmins CN III Q_p (m^3/s) Existing	Timmins CN III Q_p (m^3/s) Future	
1	20.7	24.4	118%	8.2	8.3	100%
2	6.0	7.9	132%	4.6	4.7	104%
3	2.6	8.5	335%	3.5	4.0	114%
4	2.3	4.2	180%	1.7	1.8	103%
5	15.2	16.8	111%	25.8	26.0	101%
6	6.3	13.2	209%	10.5	11.1	106%
7	4.2	18.1	434%	9.2	11.1	121%
8	3.4	3.9	115%	4.3	4.3	101%
9	4.7	12.0	253%	20.3	24.0	118%
10	4.0	5.8	145%	10.6	11.2	106%
11	8.6	27.8	324%	24.3	28.8	119%
12	10.4	32.7	313%	16.8	19.0	113%
13	3.3	4.6	141%	11.3	12.0	107%
14	4.8	5.7	120%	2.9	2.9	102%
15	4.7	8.7	185%	2.7	2.8	101%
16	3.7	5.4	144%	1.7	1.7	101%

Comparing PCSWMM and VO_2 Peaks

Timmins CN (III) Q_p (m^3/s) PCSWMM	Timmins CN (III) Q_p (m^3/s) VO_2	*% Diff*
8.3	8.0	*96%*
4.7	4.7	*99%*
4.0	3.9	*98%*
1.8	1.7	*97%*
26.0	19.7	*76%*
11.1	8.3	*75%*
11.1	11.0	*99%*
4.3	3.4	*79%*
24.0	17.9	*74%*
11.2	8.0	*71%*
28.8	30.9	*107%*
19.0	18.3	*97%*
12.0	8.8	*73%*
2.9	2.9	*98%*
2.8	2.7	*97%*
1.7	1.6	*96%*
	Average =	*90%*
	Max =	*107%*
	Min =	*71%*

Comparing 100-year and Regional Peak Flows for Future Conditions

Aecom (2010) Extran Routed Flows vs KRCA PCSWMM Routed Flow

Node	100-year Flow in m^3/s Aecom Future 6hr SCS Storm	KRCA 12 hr Chicago Existing	KRCA 12 hr Chicago Future
Start of System	N/A	19.24	23.01
Commerce Rd culvert	N/A	16.26	19.15
former train track culvert	N/A	15.41	17.78
McLachlin Rd Culvert	N/A	14.11	16.20
Ballfield Culvert	11.8	18.24	22.24
Greenfield Rd culvert	N/A	16.27	19.34
Hwy 7 Culvert	12.8	19.26	26.22
W of Hwy 7 at 90-degree bend in Drain	13.7	17.14	25.05
North of 90-degree bend	25.2	13.12	20.42
between Dew Drop Inn Rd & Hwy 7	25.6	24.78	33.48
D/S of Hwy 7	26	23.77	32.03
North of Hwy 7 past 90-degree bend	24	19.17	24.37
Colborne St Culvert	20.6	12.97	16.71
D/S of Colborne St	19.4	11.58	15.70
D/S of private driveway	21.9	12.92	17.43
U/S of Airport	31	27.24	43.20
D/S of Hwy 35 (near airport)	47.4	27.19	41.24
Angeline St Culvert	55.2	33.93	54.49
D/S of Angeline St	60.4	38.85	61.92
William St culvert	N/A	39.23	62.60

Node	Flow from Timmins Storm in m^3/s Aecom (2010) CN (III)	KRCA CN*(III) Existing	KRCA CN*(III) Future
Start of System	N/A	8.22	8.26
Commerce Rd culvert		8.12	8.18
former train track culvert		8.08	8.15
McLachlin Rd Culvert		8.10	8.20
Ballfield Culvert	9.6	12.43	12.71
Greenfield Rd culvert		12.49	12.90
Hwy 7 Culvert	9.8	17.29	18.16
W of Hwy 7 at 90-degree bend in Drain	12.0	17.24	18.10
North of 90-degree bend	14.0	17.11	18.16
between Dew Drop Inn Rd & Hwy 7	28.5	39.13	40.71
D/S of Hwy 7	30.0	37.24	38.81
North of Hwy 7 past 90-degree bend	25.7	29.09	32.13
Colborne St Culvert	30.6	27.85	21.23
D/S of Colborne St	32.7	22.86	22.61
D/S of private driveway	34.3	24.07	24.19
U/S of Airport	39.2	61.08	65.18
D/S of Hwy 35 (near airport)	62.7	60.56	63.84
Angeline St Culvert	78.7	69.33	73.44
D/S of Angeline St	109.0	80.16	85.13
William St culvert	111.0	80.94	86.00

Flow file for HEC-RAS	*Existing*	*Future*	
Start of System	19.24	23.01	*100year*
Commerce Rd culvert	16.26	19.15	*100year*
former train track culvert	15.41	17.78	*100year*
McLachlin Rd Culvert	14.11	16.20	*100year*
Ballfield Culvert	18.24	22.24	*100year*
Greenfield Rd culvert	16.27	19.34	*100year*
Hwy 7 Culvert	19.26	26.22	*100year*
W of Hwy 7 at 90-degree bend in Drain	17.24	25.05	*100year*
North of 90-degree bend	17.11	20.42	*100year*
between Dew Drop Inn Rd & Hwy 7	39.13	40.71	*Timmins*
D/S of Hwy 7	37.24	38.81	*Timmins*
North of Hwy 7 past 90-degree bend	29.09	32.13	*Timmins*
Colborne St Culvert	27.85	21.23	*Timmins*
D/S of Colborne St	22.86	22.61	*Timmins*
D/S of private driveway	24.07	24.19	*Timmins*
U/S of Airport	61.08	65.18	*Timmins*
D/S of Hwy 35 (near airport)	60.56	63.84	*Timmins*
Angeline St Culvert	69.33	73.44	*Timmins*
D/S of Angeline St	80.16	85.13	*Timmins*
William St culvert	80.94	86.00	*Timmins*

PCSWMM Input Flows - 100yr   Flow peak

		Catchment 2	Catchment 3	Catchment 4	Catchment 5	Catchment 6	Catchments 7-8	Catchments 9-11	Catchment 12	Catchment 13-15
Peak Flows	***24.43***	***7.86***	***8.54***	***4.20***	***16.83***	***13.16***	***21.74***	***43.35***	***32.69***	***18.92***
Catchment 1										
Time	**Q**	**Q**	**Q**	**Q**	**Q**	**Q**	**Q**	**Q**	**Q**	**Q**
12:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:20:00 AM	0.004	0.001	0.001	0.001	0.004	0.004	0.003	0.006	0.003	0.004
1:30:00 AM	0.025	0.004	0.005	0.004	0.018	0.017	0.012	0.032	0.018	0.021
1:40:00 AM	0.055	0.009	0.011	0.009	0.031	0.029	0.024	0.068	0.042	0.042
1:50:00 AM	0.091	0.015	0.020	0.014	0.040	0.038	0.040	0.108	0.074	0.064
2:00:00 AM	0.127	0.023	0.030	0.019	0.047	0.044	0.059	0.150	0.111	0.084
2:10:00 AM	0.165	0.033	0.042	0.024	0.052	0.049	0.081	0.195	0.153	0.102
2:20:00 AM	0.202	0.043	0.055	0.028	0.058	0.054	0.106	0.243	0.199	0.120
2:30:00 AM	0.239	0.056	0.071	0.033	0.064	0.060	0.134	0.295	0.250	0.137
2:40:00 AM	0.279	0.070	0.087	0.037	0.071	0.066	0.166	0.353	0.306	0.157
2:50:00 AM	0.322	0.086	0.107	0.043	0.079	0.074	0.202	0.419	0.369	0.179
3:00:00 AM	0.374	0.106	0.129	0.049	0.091	0.085	0.244	0.496	0.443	0.205
3:10:00 AM	0.438	0.129	0.157	0.057	0.106	0.099	0.296	0.592	0.532	0.239
3:20:00 AM	0.523	0.159	0.192	0.068	0.126	0.118	0.363	0.716	0.647	0.286
3:30:00 AM	0.645	0.200	0.240	0.084	0.158	0.148	0.454	0.891	0.805	0.381
3:40:00 AM	0.840	0.262	0.314	0.110	0.209	0.195	0.593	1.162	1.047	0.553
3:50:00 AM	1.200	0.370	0.442	0.158	0.306	0.286	0.837	1.652	1.479	0.865
4:00:00 AM	2.186	0.632	0.743	0.279	0.546	0.511	1.441	2.815	2.500	1.612
4:10:00 AM	7.888	2.094	2.423	1.131	2.571	2.385	5.123	9.884	8.558	5.509
4:20:00 AM	24.433	7.856	8.544	4.200	15.558	13.156	21.740	43.347	32.693	18.920
4:30:00 AM	12.739	6.840	6.400	2.563	16.829	11.377	19.413	41.849	26.413	12.789
4:40:00 AM	7.313	5.167	4.349	1.609	16.443	9.070	15.047	38.372	19.213	9.820
4:50:00 AM	4.780	3.891	3.058	1.098	15.227	7.124	11.582	35.132	14.221	8.194
5:00:00 AM	3.425	2.995	2.252	0.801	13.761	5.649	9.072	32.184	10.867	7.130
5:10:00 AM	2.615	2.365	1.729	0.615	12.311	4.558	7.263	29.500	8.562	6.346
5:20:00 AM	2.090	1.913	1.374	0.492	10.980	3.746	5.939	27.064	6.928	5.726
5:30:00 AM	1.727	1.581	1.123	0.405	9.798	3.133	4.949	24.862	5.734	5.211
5:40:00 AM	1.465	1.331	0.940	0.342	8.765	2.663	4.193	22.877	4.838	4.773
5:50:00 AM	1.268	1.139	0.803	0.295	7.868	2.296	3.605	21.092	4.150	4.392
6:00:00 AM	1.115	0.988	0.696	0.258	7.091	2.005	3.140	19.487	3.611	4.058
6:10:00 AM	0.994	0.867	0.612	0.229	6.417	1.770	2.766	18.044	3.179	3.762
6:20:00 AM	0.895	0.770	0.545	0.205	5.832	1.578	2.460	16.746	2.829	3.498
6:30:00 AM	0.814	0.689	0.490	0.186	5.321	1.419	2.208	15.575	2.541	3.262
6:40:00 AM	0.746	0.622	0.444	0.170	4.875	1.286	1.997	14.519	2.301	3.048
6:50:00 AM	0.688	0.566	0.405	0.156	4.483	1.173	1.818	13.564	2.098	2.856
7:00:00 AM	0.639	0.518	0.373	0.144	4.137	1.077	1.666	12.698	1.926	2.682
7:10:00 AM	0.596	0.477	0.345	0.134	3.832	0.994	1.535	11.912	1.777	2.523
7:20:00 AM	0.558	0.442	0.321	0.125	3.560	0.922	1.422	11.196	1.648	2.378
7:30:00 AM	0.525	0.411	0.299	0.118	3.317	0.859	1.322	10.543	1.536	2.246
7:40:00 AM	0.495	0.383	0.281	0.111	3.100	0.804	1.235	9.947	1.437	2.125
7:50:00 AM	0.469	0.359	0.264	0.105	2.905	0.755	1.158	9.401	1.349	2.014
8:00:00 AM	0.446	0.338	0.249	0.099	2.730	0.711	1.089	8.899	1.271	1.912
8:10:00 AM	0.424	0.319	0.236	0.094	2.571	0.672	1.028	8.438	1.202	1.818
8:20:00 AM	0.405	0.302	0.224	0.090	2.427	0.637	0.973	8.014	1.139	1.731
8:30:00 AM	0.387	0.286	0.214	0.086	2.296	0.605	0.923	7.621	1.082	1.650
8:40:00 AM	0.371	0.272	0.204	0.082	2.176	0.577	0.878	7.259	1.031	1.576
8:50:00 AM	0.356	0.260	0.195	0.079	2.067	0.550	0.837	6.923	0.984	1.506
9:00:00 AM	0.342	0.248	0.187	0.076	1.966	0.526	0.799	6.611	0.941	1.442
9:10:00 AM	0.330	0.237	0.179	0.073	1.874	0.504	0.765	6.321	0.901	1.382
9:20:00 AM	0.318	0.227	0.172	0.070	1.789	0.484	0.733	6.051	0.865	1.326
9:30:00 AM	0.307	0.218	0.166	0.068	1.711	0.465	0.704	5.800	0.832	1.273
9:40:00 AM	0.297	0.210	0.160	0.065	1.638	0.448	0.677	5.565	0.801	1.224
9:50:00 AM	0.288	0.202	0.154	0.063	1.571	0.432	0.652	5.345	0.772	1.178
10:00:00 AM	0.279	0.195	0.149	0.061	1.508	0.417	0.629	5.139	0.745	1.135
10:10:00 AM	0.270	0.189	0.144	0.059	1.450	0.403	0.607	4.946	0.721	1.095
10:20:00 AM	0.263	0.182	0.140	0.058	1.396	0.390	0.587	4.764	0.697	1.057
10:30:00 AM	0.255	0.176	0.136	0.056	1.345	0.378	0.568	4.594	0.675	1.021
10:40:00 AM	0.248	0.171	0.132	0.054	1.297	0.366	0.550	4.433	0.655	0.987
10:50:00 AM	0.242	0.166	0.128	0.053	1.253	0.356	0.534	4.282	0.636	0.955
11:00:00 AM	0.235	0.161	0.124	0.051	1.211	0.345	0.518	4.140	0.618	0.924
11:10:00 AM	0.230	0.156	0.121	0.050	1.172	0.336	0.504	4.005	0.601	0.896
11:20:00 AM	0.224	0.152	0.118	0.049	1.135	0.327	0.490	3.877	0.584	0.869
11:30:00 AM	0.219	0.148	0.115	0.048	1.100	0.318	0.477	3.757	0.569	0.843
11:40:00 AM	0.214	0.144	0.112	0.047	1.067	0.310	0.464	3.642	0.555	0.819
11:50:00 AM	0.209	0.141	0.109	0.046	1.036	0.303	0.452	3.534	0.541	0.796
12:00:00 PM	0.204	0.137	0.107	0.045	1.007	0.295	0.441	3.431	0.528	0.774
12:10:00 PM	0.154	0.121	0.091	0.035	0.916	0.249	0.386	3.189	0.456	0.698
12:20:00 PM	0.119	0.107	0.078	0.028	0.841	0.214	0.341	2.978	0.398	0.637
12:30:00 PM	0.094	0.095	0.067	0.023	0.775	0.187	0.303	2.788	0.350	0.587
12:40:00 PM	0.076	0.085	0.059	0.019	0.717	0.165	0.270	2.618	0.309	0.543
12:50:00 PM	0.063	0.076	0.051	0.016	0.665	0.146	0.242	2.462	0.275	0.505
1:00:00 PM	0.052	0.069	0.045	0.014	0.618	0.130	0.218	2.320	0.246	0.471
1:10:00 PM	0.044	0.062	0.040	0.012	0.575	0.116	0.197	2.190	0.221	0.441
1:20:00 PM	0.037	0.057	0.036	0.010	0.537	0.104	0.179	2.070	0.199	0.413
1:30:00 PM	0.032	0.052	0.032	0.009	0.501	0.093	0.163	1.959	0.180	0.388
1:40:00 PM	0.028	0.047	0.029	0.008	0.469	0.084	0.149	1.856	0.164	0.365
1:50:00 PM	0.024	0.044	0.026	0.007	0.439	0.076	0.136	1.761	0.149	0.344
2:00:00 PM	0.021	0.040	0.024	0.006	0.412	0.069	0.125	1.672	0.136	0.324
2:10:00 PM	0.019	0.037	0.022	0.005	0.386	0.062	0.115	1.589	0.125	0.306
2:20:00 PM	0.017	0.034	0.020	0.005	0.363	0.057	0.105	1.512	0.115	0.289
2:30:00 PM	0.015	0.032	0.018	0.004	0.342	0.052	0.097	1.440	0.106	0.273
2:40:00 PM	0.013	0.029	0.017	0.004	0.322	0.047	0.090	1.372	0.098	0.259
2:50:00 PM	0.012	0.027	0.015	0.003	0.303	0.043	0.083	1.309	0.090	0.245
3:00:00 PM	0.011	0.025	0.014	0.003	0.286	0.039	0.077	1.249	0.084	0.232
3:10:00 PM	0.010	0.024	0.013	0.003	0.270	0.036	0.072	1.193	0.078	0.221
3:20:00 PM	0.009	0.022	0.012	0.003	0.255	0.032	0.067	1.141	0.072	0.209
3:30:00 PM	0.008	0.021	0.011	0.002	0.241	0.030	0.062	1.091	0.067	0.199
3:40:00 PM	0.007	0.020	0.011	0.002	0.228	0.027	0.058	1.044	0.063	0.189
3:50:00 PM	0.007	0.018	0.010	0.002	0.215	0.025	0.054	1.000	0.058	0.180
4:00:00 PM	0.006	0.017	0.009	0.002	0.204	0.022	0.050	0.958	0.055	0.171
4:10:00 PM	0.006	0.016	0.009	0.002	0.193	0.020	0.047	0.918	0.051	0.162

PCSWMM Input Flows - 100yr **Flow peak**

	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 5	Catchment 6	Catchments 7-8	Catchments 9-11	Catchment 12	Catchment 13-15
Peak Flows	*24.43*	*7.86*	*8.54*	*4.20*	*16.83*	*13.16*	*21.74*	*43.35*	*32.69*	*18.92*
4:20:00 PM	0.005	0.015	0.008	0.001	0.183	0.019	0.044	0.880	0.048	0.155
4:30:00 PM	0.005	0.014	0.008	0.001	0.174	0.017	0.041	0.845	0.045	0.147
4:40:00 PM	0.004	0.014	0.007	0.001	0.165	0.015	0.039	0.811	0.042	0.140
4:50:00 PM	0.004	0.013	0.007	0.001	0.156	0.014	0.036	0.779	0.039	0.133
5:00:00 PM	0.004	0.012	0.006	0.001	0.148	0.013	0.034	0.748	0.037	0.127
5:10:00 PM	0.004	0.012	0.006	0.001	0.141	0.011	0.032	0.719	0.035	0.121
5:20:00 PM	0.003	0.011	0.006	0.001	0.134	0.010	0.030	0.692	0.033	0.115
5:30:00 PM	0.003	0.010	0.005	0.001	0.127	0.009	0.028	0.665	0.031	0.110
5:40:00 PM	0.003	0.010	0.005	0.001	0.121	0.008	0.027	0.640	0.029	0.105
5:50:00 PM	0.003	0.009	0.005	0.001	0.115	0.007	0.025	0.616	0.027	0.100
6:00:00 PM	0.003	0.009	0.004	0.000	0.109	0.006	0.024	0.593	0.026	0.095
6:10:00 PM	0.003	0.008	0.004	0.000	0.104	0.006	0.022	0.572	0.024	0.091
6:20:00 PM	0.002	0.008	0.004	0.000	0.099	0.005	0.021	0.551	0.023	0.086
6:30:00 PM	0.002	0.008	0.004	0.000	0.094	0.004	0.020	0.531	0.022	0.082
6:40:00 PM	0.002	0.007	0.004	0.000	0.089	0.004	0.019	0.512	0.020	0.078
6:50:00 PM	0.002	0.007	0.003	0.000	0.085	0.003	0.018	0.494	0.019	0.075
7:00:00 PM	0.002	0.007	0.003	0.000	0.080	0.003	0.017	0.476	0.018	0.071
7:10:00 PM	0.002	0.006	0.003	0.000	0.076	0.002	0.016	0.459	0.017	0.068
7:20:00 PM	0.002	0.006	0.003	0.000	0.073	0.002	0.015	0.443	0.016	0.065
7:30:00 PM	0.002	0.006	0.003	0.000	0.069	0.001	0.014	0.428	0.015	0.061
7:40:00 PM	0.002	0.006	0.003	0.000	0.066	0.001	0.013	0.413	0.015	0.058
7:50:00 PM	0.002	0.005	0.003	0.000	0.062	0.001	0.013	0.399	0.014	0.056
8:00:00 PM	0.001	0.005	0.003	0.000	0.059	0.000	0.012	0.385	0.013	0.053
8:10:00 PM	0.001	0.005	0.002	0.000	0.056	0.000	0.012	0.372	0.012	0.050
8:20:00 PM	0.001	0.005	0.002	0.000	0.053	0.000	0.011	0.359	0.012	0.048
8:30:00 PM	0.001	0.004	0.002	0.000	0.051	0.000	0.011	0.347	0.011	0.045
8:40:00 PM	0.001	0.004	0.002	0.000	0.048	0.000	0.010	0.336	0.010	0.043
8:50:00 PM	0.001	0.004	0.002	0.000	0.046	0.000	0.010	0.324	0.010	0.041
9:00:00 PM	0.001	0.004	0.002	0.000	0.043	0.000	0.009	0.314	0.009	0.039
9:10:00 PM	0.001	0.004	0.002	0.000	0.041	0.000	0.009	0.303	0.009	0.037
9:20:00 PM	0.001	0.004	0.002	0.000	0.039	0.000	0.009	0.293	0.008	0.035
9:30:00 PM	0.001	0.003	0.002	0.000	0.037	0.000	0.008	0.284	0.008	0.033
9:40:00 PM	0.001	0.003	0.002	0.000	0.035	0.000	0.008	0.274	0.007	0.031
9:50:00 PM	0.001	0.003	0.002	0.000	0.033	0.000	0.008	0.265	0.007	0.029
10:00:00 PM	0.001	0.003	0.002	0.000	0.031	0.000	0.007	0.257	0.007	0.028
10:10:00 PM	0.001	0.003	0.002	0.000	0.029	0.000	0.007	0.248	0.006	0.026
10:20:00 PM	0.001	0.003	0.002	0.000	0.027	0.000	0.007	0.240	0.006	0.025
10:30:00 PM	0.001	0.003	0.002	0.000	0.026	0.000	0.006	0.232	0.005	0.023
10:40:00 PM	0.001	0.003	0.001	0.000	0.024	0.000	0.006	0.225	0.005	0.022
10:50:00 PM	0.001	0.003	0.001	0.000	0.023	0.000	0.006	0.217	0.005	0.020
11:00:00 PM	0.001	0.002	0.001	0.000	0.021	0.000	0.006	0.210	0.005	0.019
11:10:00 PM	0.001	0.002	0.001	0.000	0.020	0.000	0.005	0.204	0.004	0.018
11:20:00 PM	0.001	0.002	0.001	0.000	0.019	0.000	0.005	0.197	0.004	0.017
11:30:00 PM	0.001	0.002	0.001	0.000	0.017	0.000	0.005	0.191	0.004	0.016
11:40:00 PM	0.001	0.002	0.001	0.000	0.016	0.000	0.005	0.185	0.004	0.014
11:50:00 PM	0.001	0.002	0.001	0.000	0.015	0.000	0.005	0.179	0.003	0.013
12:00:00 AM	0.001	0.002	0.001	0.000	0.014	0.000	0.004	0.173	0.003	0.012
12:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PCSWMM Input Flows - 100yr   Flow peak

Peak Flows	*24.43*	*7.86*	*8.54*	*4.20*	*16.83*	*13.16*	*21.74*	*43.35*	*32.69*	*18.92*
Catchment 1		**Catchment 2**	**Catchment 3**	**Catchment 4**	**Catchment 5**	**Catchment 6**	**Catchments 7-8**	**Catchments 9-11**	**Catchment 12**	**Catchment 13-15**
8:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:00:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:10:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:20:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:30:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:40:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11:50:00 PM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Catchment 16

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Catchment 16
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PCSWMM Input Flows - 100yr Flow peak

	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 5	Catchment 6	Catchments 7-8	Catchments 9-11	Catchment 12	Catchment 13-15	Catchment 16
Peak Flows	*8.28*	*4.73*	*3.99*	*1.79*	*26.01*	*11.08*	*15.42*	*64.04*	*18.96*	*17.72*	*1.69*
Time	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
12:10:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:20:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:30:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:40:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12:50:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1:10:00 AM	0.142	0.020	0.027	0.024	0.113	0.107	0.072	0.186	0.102	0.122	0.051
1:20:00 AM	0.843	0.141	0.185	0.128	0.367	0.344	0.369	1.000	0.690	0.591	0.156
1:30:00 AM	1.448	0.302	0.387	0.203	0.420	0.393	0.738	1.728	1.397	0.889	0.193
1:40:00 AM	1.963	0.487	0.585	0.247	0.428	0.400	1.147	2.288	2.044	1.187	0.329
1:50:00 AM	2.402	0.690	0.794	0.315	0.526	0.492	1.607	2.885	2.745	1.458	0.450
2:00:00 AM	2.645	0.885	0.975	0.390	0.866	0.792	2.129	3.715	3.429	1.679	0.520
2:10:00 AM	3.175	1.165	1.236	0.527	1.635	1.424	2.972	5.377	4.528	2.219	0.653
2:20:00 AM	3.409	1.400	1.420	0.617	2.515	2.040	3.750	7.134	5.448	2.636	0.700
2:30:00 AM	3.508	1.588	1.541	0.674	3.502	2.619	4.428	9.011	6.185	3.023	0.719
2:40:00 AM	3.550	1.731	1.618	0.710	4.536	3.122	4.991	10.978	6.758	3.411	0.727
2:50:00 AM	3.570	1.839	1.667	0.732	5.565	3.534	5.442	12.989	7.193	3.809	0.730
3:00:00 AM	3.579	1.918	1.697	0.747	6.548	3.859	5.796	14.996	7.519	4.214	0.732
3:10:00 AM	2.742	1.714	1.444	0.598	6.534	3.435	5.236	14.922	6.615	3.813	0.534
3:20:00 AM	2.414	1.580	1.297	0.533	6.662	3.243	4.884	15.218	6.069	3.760	0.478
3:30:00 AM	2.273	1.489	1.207	0.501	6.795	3.125	4.648	15.637	5.724	3.818	0.457
3:40:00 AM	2.210	1.426	1.152	0.484	6.916	3.046	4.488	16.095	5.501	3.918	0.448
3:50:00 AM	2.181	1.382	1.116	0.475	7.024	2.994	4.379	16.557	5.354	4.034	0.444
4:00:00 AM	2.167	1.351	1.093	0.470	7.121	2.959	4.303	17.004	5.256	4.153	0.442
4:10:00 AM	1.270	1.047	0.791	0.299	6.065	2.178	3.335	14.918	3.957	3.325	0.226
4:20:00 AM	0.874	0.843	0.607	0.216	5.334	1.739	2.694	13.432	3.128	2.881	0.153
4:30:00 AM	0.671	0.699	0.489	0.170	4.758	1.444	2.244	12.266	2.568	2.587	0.120
4:40:00 AM	0.557	0.595	0.409	0.141	4.288	1.235	1.916	11.310	2.173	2.370	0.102
4:50:00 AM	0.488	0.517	0.353	0.123	3.898	1.080	1.672	10.508	1.887	2.200	0.091
5:00:00 AM	0.445	0.458	0.312	0.110	3.571	0.963	1.485	9.822	1.673	2.062	0.085
5:10:00 AM	0.674	0.493	0.363	0.150	3.662	1.102	1.605	10.035	1.860	2.241	0.149
5:20:00 AM	0.834	0.522	0.403	0.178	3.706	1.187	1.698	10.186	2.010	2.364	0.182
5:30:00 AM	0.935	0.545	0.434	0.197	3.730	1.244	1.773	10.294	2.129	2.443	0.199
5:40:00 AM	0.996	0.564	0.458	0.209	3.748	1.286	1.833	10.374	2.221	2.496	0.209
5:50:00 AM	1.031	0.579	0.475	0.217	3.762	1.320	1.882	10.436	2.293	2.534	0.214
6:00:00 AM	1.051	0.591	0.488	0.222	3.775	1.347	1.920	10.485	2.347	2.562	0.217
6:10:00 AM	2.329	0.941	0.865	0.457	5.239	2.365	3.076	13.764	3.928	3.896	0.535
6:20:00 AM	3.045	1.246	1.165	0.604	6.387	3.048	4.058	16.562	5.242	4.801	0.656
6:30:00 AM	3.368	1.490	1.376	0.684	7.403	3.565	4.839	18.983	6.227	5.450	0.704
6:40:00 AM	3.504	1.674	1.518	0.726	8.310	3.955	5.430	21.105	6.926	5.968	0.723
6:50:00 AM	3.559	1.809	1.606	0.749	9.106	4.242	5.864	22.975	7.410	6.406	0.730
7:00:00 AM	3.582	1.905	1.662	0.762	9.794	4.448	6.177	24.630	7.740	6.790	0.733
7:10:00 AM	6.708	2.909	2.686	1.356	14.132	7.174	9.485	34.482	12.156	10.444	1.456
7:20:00 AM	7.819	3.641	3.318	1.613	17.499	8.763	11.854	42.478	15.119	12.651	1.628
7:30:00 AM	8.148	4.125	3.665	1.716	20.342	9.796	13.425	49.224	16.924	14.283	1.674
7:40:00 AM	8.242	4.429	3.847	1.759	22.677	10.445	14.422	54.973	17.984	15.622	1.686
7:50:00 AM	8.269	4.614	3.940	1.778	24.545	10.842	15.042	59.876	18.600	16.754	1.690
8:00:00 AM	8.277	4.726	3.988	1.786	26.011	11.082	15.425	64.042	18.958	17.717	1.691
8:10:00 AM	5.050	3.886	2.896	1.165	22.443	8.269	12.009	57.043	14.326	14.668	0.958
8:20:00 AM	4.124	3.103	2.382	0.953	20.266	6.990	10.138	52.779	11.952	13.363	0.809
8:30:00 AM	3.802	2.755	2.114	0.864	18.683	6.255	9.024	49.735	10.621	12.576	0.762
8:40:00 AM	3.680	2.539	1.965	0.823	17.495	5.804	8.330	47.425	9.833	12.028	0.745
8:50:00 AM	3.632	2.401	1.880	0.802	16.589	5.519	7.885	45.614	9.349	11.615	0.739
9:00:00 AM	3.613	2.310	1.831	0.792	15.893	5.335	7.593	44.165	9.045	11.293	0.737
9:10:00 AM	4.052	2.392	1.946	0.871	15.982	5.607	7.869	44.418	9.475	11.569	0.841
9:20:00 AM	4.220	2.446	2.013	0.906	15.987	5.739	8.045	44.491	9.739	11.662	0.868
9:30:00 AM	4.283	2.482	2.053	0.922	15.985	5.821	8.160	44.499	9.900	11.696	0.877
9:40:00 AM	4.307	2.506	2.075	0.929	15.984	5.875	8.235	44.482	9.999	11.709	0.881
9:50:00 AM	4.315	2.522	2.088	0.933	15.985	5.912	8.284	44.455	10.060	11.714	0.882
10:00:00 AM	4.319	2.532	2.096	0.934	15.986	5.936	8.317	44.427	10.098	11.717	0.882
10:10:00 AM	3.009	2.115	1.667	0.685	14.126	4.783	6.931	40.158	8.253	10.141	0.576
10:20:00 AM	2.529	1.851	1.431	0.580	12.881	4.189	6.074	37.119	7.164	9.263	0.494
10:30:00 AM	2.328	1.678	1.292	0.529	11.935	3.817	5.511	34.766	6.485	8.662	0.464
10:40:00 AM	2.238	1.560	1.207	0.503	11.195	3.570	5.130	32.879	6.045	8.210	0.451
10:50:00 AM	2.197	1.479	1.153	0.488	10.607	3.400	4.866	31.334	5.752	7.853	0.446
11:00:00 AM	2.178	1.422	1.119	0.480	10.137	3.283	4.681	30.053	5.553	7.562	0.443
11:10:00 AM	2.364	1.441	1.159	0.512	10.029	3.371	4.749	29.598	5.682	7.556	0.489
11:20:00 AM	2.450	1.455	1.184	0.528	9.912	3.410	4.793	29.156	5.767	7.498	0.504
11:30:00 AM	2.489	1.465	1.200	0.537	9.811	3.435	4.824	28.754	5.823	7.427	0.510
11:40:00 AM	2.506	1.472	1.211	0.541	9.728	3.452	4.845	28.395	5.859	7.358	0.513
11:50:00 AM	2.514	1.477	1.217	0.543	9.660	3.464	4.859	28.079	5.883	7.295	0.514
12:00:00 PM	2.518	1.481	1.222	0.545	9.604	3.473	4.869	27.801	5.899	7.239	0.514
12:10:00 PM	1.939	1.304	1.039	0.436	8.764	2.971	4.279	25.748	5.114	6.502	0.375
12:20:00 PM	1.686	1.182	0.926	0.382	8.171	2.690	3.881	24.188	4.603	6.048	0.330
12:30:00 PM	1.566	1.096	0.854	0.354	7.703	2.503	3.601	22.930	4.258	5.721	0.312
12:40:00 PM	1.505	1.033	0.807	0.338	7.322	2.370	3.398	21.886	4.019	5.467	0.303
12:50:00 PM	1.474	0.988	0.775	0.328	7.009	2.275	3.250	21.006	3.851	5.261	0.299
1:00:00 PM	1.458	0.954	0.753	0.322	6.749	2.205	3.141	20.256	3.730	5.090	0.296
1:10:00 PM	0.815	0.730	0.534	0.198	5.618	1.584	2.392	17.522	2.762	4.164	0.141
1:20:00 PM	0.509	0.573	0.395	0.134	4.795	1.217	1.880	15.403	2.119	3.554	0.083
1:30:00 PM	0.343	0.460	0.303	0.096	4.141	0.964	1.511	13.676	1.670	3.097	0.054
1:40:00 PM	0.244	0.376	0.238	0.071	3.609	0.781	1.236	12.232	1.346	2.734	0.038
1:50:00 PM	0.181	0.312	0.191	0.055	3.168	0.643	1.027	11.007	1.104	2.435	0.027
2:00:00 PM	0.139	0.262	0.156	0.044	2.800	0.537	0.865	9.956	0.920	2.184	0.021
2:10:00 PM	0.109	0.223	0.130	0.035	2.489	0.454	0.737	9.045	0.776	1.971	0.016
2:20:00 PM	0.087	0.191	0.109	0.029	2.224	0.388	0.633	8.251	0.662	1.786	0.013
2:30:00 PM	0.071	0.166	0.093	0.024	1.996	0.335	0.549	7.553	0.570	1.626	0.011
2:40:00 PM	0.059	0.145	0.080	0.020	1.800	0.291	0.480	6.936	0.495	1.485	0.009
2:50:00 PM	0.050	0.127	0.069	0.017	1.630	0.254	0.422	6.389	0.434	1.361	0.007
3:00:00 PM	0.042	0.113	0.060	0.015	1.481	0.224	0.374	5.902	0.382	1.252	0.006
3:10:00 PM	0.036	0.100	0.053	0.013	1.350	0.198	0.333	5.465	0.339	1.154	0.005
3:20:00 PM	0.031	0.090	0.047	0.011	1.235	0.177	0.298	5.073	0.302	1.067	0.005
3:30:00 PM	0.027	0.081	0.042	0.010	1.133	0.158	0.268	4.719	0.271	0.988	0.004
3:40:00 PM	0.024	0.073	0.037	0.009	1.043	0.142	0.242	4.399	0.244	0.917	0.003
3:50:00 PM	0.021	0.066	0.034	0.008	0.962	0.128	0.219	4.109	0.220	0.853	0.003
4:00:00 PM	0.019	0.060	0.030	0.007	0.889	0.116	0.199	3.845	0.200	0.796	0.003
4:10:00 PM	0.017	0.055	0.027	0.006	0.824	0.105	0.182	3.604	0.182	0.743	0.002

PCSWMM Input Flows - 100yr **Flow peak**

	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 5	Catchment 6	Catchments 7-8	Catchments 9-11	Catchment 12	Catchment 13-15	Catchment 16
Peak Flows	*8.28*	*4.73*	*3.99*	*1.79*	*26.01*	*11.08*	*15.42*	*64.04*	*18.96*	*17.72*	*1.69*
4:20:00 PM	0.015	0.050	0.025	0.006	0.765	0.096	0.166	3.384	0.166	0.695	0.002
4:30:00 PM	0.014	0.046	0.023	0.005	0.712	0.087	0.153	3.182	0.152	0.651	0.002
4:40:00 PM	0.012	0.042	0.021	0.005	0.663	0.080	0.140	2.997	0.140	0.611	0.002
4:50:00 PM	0.011	0.039	0.019	0.004	0.619	0.073	0.130	2.826	0.129	0.574	0.002
5:00:00 PM	0.010	0.036	0.018	0.004	0.579	0.067	0.120	2.668	0.119	0.540	0.001
5:10:00 PM	0.009	0.034	0.016	0.004	0.543	0.062	0.111	2.523	0.110	0.508	0.001
5:20:00 PM	0.009	0.031	0.015	0.003	0.509	0.057	0.103	2.388	0.103	0.479	0.001
5:30:00 PM	0.008	0.029	0.014	0.003	0.479	0.053	0.096	2.263	0.095	0.452	0.001
5:40:00 PM	0.007	0.027	0.013	0.003	0.450	0.049	0.089	2.147	0.089	0.428	0.001
5:50:00 PM	0.007	0.025	0.012	0.003	0.424	0.046	0.083	2.039	0.083	0.405	0.001
6:00:00 PM	0.006	0.024	0.011	0.002	0.400	0.042	0.078	1.939	0.078	0.383	0.001
6:10:00 PM	0.006	0.022	0.011	0.002	0.378	0.039	0.073	1.845	0.073	0.363	0.001
6:20:00 PM	0.005	0.021	0.010	0.002	0.357	0.037	0.068	1.757	0.068	0.344	0.001
6:30:00 PM	0.005	0.020	0.009	0.002	0.338	0.034	0.064	1.675	0.064	0.327	0.001
6:40:00 PM	0.005	0.019	0.009	0.002	0.320	0.032	0.060	1.598	0.060	0.311	0.001
6:50:00 PM	0.004	0.018	0.008	0.002	0.304	0.030	0.057	1.526	0.057	0.295	0.001
7:00:00 PM	0.004	0.017	0.008	0.002	0.288	0.028	0.054	1.458	0.053	0.281	0.001
7:10:00 PM	0.004	0.016	0.007	0.001	0.274	0.026	0.051	1.395	0.050	0.268	0.001
7:20:00 PM	0.004	0.015	0.007	0.001	0.260	0.025	0.048	1.335	0.048	0.255	0.001
7:30:00 PM	0.003	0.014	0.006	0.001	0.248	0.023	0.045	1.279	0.045	0.243	0.000
7:40:00 PM	0.003	0.013	0.006	0.001	0.236	0.022	0.043	1.225	0.043	0.232	0.000
7:50:00 PM	0.003	0.013	0.006	0.001	0.225	0.020	0.040	1.175	0.041	0.222	0.000
8:00:00 PM	0.003	0.012	0.005	0.001	0.215	0.019	0.038	1.128	0.038	0.212	0.000
8:10:00 PM	0.003	0.012	0.005	0.001	0.205	0.018	0.036	1.083	0.037	0.202	0.000
8:20:00 PM	0.003	0.011	0.005	0.001	0.196	0.017	0.035	1.040	0.035	0.193	0.000
8:30:00 PM	0.002	0.010	0.005	0.001	0.187	0.016	0.033	1.000	0.033	0.185	0.000
8:40:00 PM	0.002	0.010	0.004	0.001	0.179	0.015	0.031	0.962	0.031	0.177	0.000
8:50:00 PM	0.002	0.010	0.004	0.001	0.171	0.014	0.030	0.926	0.030	0.169	0.000
9:00:00 PM	0.002	0.009	0.004	0.001	0.164	0.013	0.028	0.891	0.029	0.162	0.000
9:10:00 PM	0.002	0.009	0.004	0.001	0.157	0.012	0.027	0.859	0.027	0.155	0.000
9:20:00 PM	0.002	0.008	0.004	0.001	0.150	0.012	0.026	0.828	0.026	0.149	0.000
9:30:00 PM	0.002	0.008	0.004	0.001	0.144	0.011	0.024	0.798	0.025	0.143	0.000
9:40:00 PM	0.002	0.008	0.003	0.001	0.138	0.010	0.023	0.770	0.024	0.137	0.000
9:50:00 PM	0.002	0.007	0.003	0.001	0.133	0.010	0.022	0.743	0.023	0.132	0.000
10:00:00 PM	0.002	0.007	0.003	0.001	0.127	0.009	0.021	0.717	0.022	0.126	0.000
10:10:00 PM	0.001	0.007	0.003	0.000	0.122	0.009	0.020	0.693	0.021	0.121	0.000
10:20:00 PM	0.001	0.007	0.003	0.000	0.117	0.008	0.019	0.670	0.020	0.116	0.000
10:30:00 PM	0.001	0.006	0.003	0.000	0.113	0.008	0.019	0.647	0.019	0.112	0.000
10:40:00 PM	0.001	0.006	0.003	0.000	0.109	0.007	0.018	0.626	0.018	0.107	0.000
10:50:00 PM	0.001	0.006	0.003	0.000	0.104	0.007	0.017	0.606	0.018	0.103	0.000
11:00:00 PM	0.001	0.006	0.002	0.000	0.100	0.006	0.016	0.586	0.017	0.099	0.000
11:10:00 PM	0.001	0.005	0.002	0.000	0.097	0.006	0.016	0.568	0.016	0.095	0.000
11:20:00 PM	0.001	0.005	0.002	0.000	0.093	0.006	0.015	0.550	0.016	0.092	0.000
11:30:00 PM	0.001	0.005	0.002	0.000	0.090	0.005	0.014	0.532	0.015	0.088	0.000
11:40:00 PM	0.001	0.005	0.002	0.000	0.086	0.005	0.014	0.516	0.015	0.085	0.000
11:50:00 PM	0.001	0.005	0.002	0.000	0.083	0.005	0.013	0.500	0.014	0.082	0.000
12:00:00 AM	0.001	0.005	0.002	0.000	0.080	0.004	0.013	0.485	0.013	0.078	0.000
12:10:00 AM	0.001	0.004	0.002	0.000	0.077	0.004	0.012	0.470	0.013	0.076	0.000
12:20:00 AM	0.001	0.004	0.002	0.000	0.075	0.004	0.012	0.456	0.012	0.073	0.000
12:30:00 AM	0.001	0.004	0.002	0.000	0.072	0.003	0.011	0.443	0.012	0.070	0.000
12:40:00 AM	0.001	0.004	0.002	0.000	0.069	0.003	0.011	0.430	0.012	0.067	0.000
12:50:00 AM	0.001	0.004	0.002	0.000	0.067	0.003	0.010	0.418	0.011	0.065	0.000
1:00:00 AM	0.001	0.004	0.002	0.000	0.065	0.003	0.010	0.406	0.011	0.062	0.000
1:10:00 AM	0.001	0.004	0.002	0.000	0.062	0.003	0.010	0.394	0.010	0.060	0.000
1:20:00 AM	0.001	0.003	0.001	0.000	0.060	0.002	0.009	0.383	0.010	0.058	0.000
1:30:00 AM	0.001	0.003	0.001	0.000	0.058	0.002	0.009	0.372	0.010	0.056	0.000
1:40:00 AM	0.001	0.003	0.001	0.000	0.056	0.002	0.009	0.362	0.009	0.054	0.000
1:50:00 AM	0.001	0.003	0.001	0.000	0.054	0.002	0.008	0.352	0.009	0.052	0.000
2:00:00 AM	0.001	0.003	0.001	0.000	0.052	0.002	0.008	0.342	0.009	0.050	0.000
2:10:00 AM	0.001	0.003	0.001	0.000	0.051	0.002	0.008	0.333	0.008	0.048	0.000
2:20:00 AM	0.001	0.003	0.001	0.000	0.049	0.001	0.007	0.324	0.008	0.046	0.000
2:30:00 AM	0.001	0.003	0.001	0.000	0.047	0.001	0.007	0.315	0.008	0.044	0.000
2:40:00 AM	0.001	0.003	0.001	0.000	0.046	0.001	0.007	0.307	0.008	0.043	0.000
2:50:00 AM	0.001	0.003	0.001	0.000	0.044	0.001	0.007	0.299	0.007	0.041	0.000
3:00:00 AM	0.000	0.003	0.001	0.000	0.043	0.001	0.007	0.291	0.007	0.039	0.000
3:10:00 AM	0.000	0.002	0.001	0.000	0.041	0.001	0.006	0.284	0.007	0.038	0.000
3:20:00 AM	0.000	0.002	0.001	0.000	0.040	0.001	0.006	0.276	0.007	0.036	0.000
3:30:00 AM	0.000	0.002	0.001	0.000	0.039	0.001	0.006	0.269	0.006	0.035	0.000
3:40:00 AM	0.000	0.002	0.001	0.000	0.037	0.000	0.006	0.262	0.006	0.034	0.000
3:50:00 AM	0.000	0.002	0.001	0.000	0.036	0.000	0.006	0.256	0.006	0.032	0.000
4:00:00 AM	0.000	0.002	0.001	0.000	0.035	0.000	0.006	0.249	0.006	0.031	0.000
4:10:00 AM	0.000	0.002	0.001	0.000	0.034	0.000	0.005	0.243	0.006	0.030	0.000
4:20:00 AM	0.000	0.002	0.001	0.000	0.033	0.000	0.005	0.237	0.005	0.029	0.000
4:30:00 AM	0.000	0.002	0.001	0.000	0.032	0.000	0.005	0.231	0.005	0.028	0.000
4:40:00 AM	0.000	0.002	0.001	0.000	0.031	0.000	0.005	0.226	0.005	0.026	0.000
4:50:00 AM	0.000	0.002	0.001	0.000	0.030	0.000	0.005	0.220	0.005	0.025	0.000
5:00:00 AM	0.000	0.002	0.001	0.000	0.029	0.000	0.005	0.215	0.005	0.024	0.000
5:10:00 AM	0.000	0.002	0.001	0.000	0.028	0.000	0.005	0.210	0.005	0.023	0.000
5:20:00 AM	0.000	0.002	0.001	0.000	0.027	0.000	0.004	0.205	0.004	0.022	0.000
5:30:00 AM	0.000	0.002	0.001	0.000	0.026	0.000	0.004	0.200	0.004	0.022	0.000
5:40:00 AM	0.000	0.002	0.001	0.000	0.025	0.000	0.004	0.195	0.004	0.021	0.000
5:50:00 AM	0.000	0.002	0.001	0.000	0.024	0.000	0.004	0.190	0.004	0.020	0.000
6:00:00 AM	0.000	0.002	0.001	0.000	0.023	0.000	0.004	0.186	0.004	0.019	0.000
6:10:00 AM	0.000	0.002	0.001	0.000	0.023	0.000	0.004	0.182	0.004	0.018	0.000
6:20:00 AM	0.000	0.002	0.001	0.000	0.022	0.000	0.004	0.177	0.004	0.017	0.000
6:30:00 AM	0.000	0.001	0.001	0.000	0.021	0.000	0.004	0.173	0.004	0.016	0.000
6:40:00 AM	0.000	0.001	0.001	0.000	0.020	0.000	0.004	0.169	0.003	0.016	0.000
6:50:00 AM	0.000	0.001	0.001	0.000	0.020	0.000	0.004	0.165	0.003	0.015	0.000
7:00:00 AM	0.000	0.001	0.001	0.000	0.019	0.000	0.003	0.162	0.003	0.014	0.000
7:10:00 AM	0.000	0.001	0.001	0.000	0.018	0.000	0.003	0.158	0.003	0.014	0.000
7:20:00 AM	0.000	0.001	0.001	0.000	0.018	0.000	0.003	0.154	0.003	0.013	0.000
7:30:00 AM	0.000	0.001	0.001	0.000	0.017	0.000	0.003	0.151	0.003	0.012	0.000
7:40:00 AM	0.000	0.001	0.001	0.000	0.017	0.000	0.003	0.147	0.003	0.012	0.000
7:50:00 AM	0.000	0.001	0.001	0.000	0.016	0.000	0.003	0.144	0.003	0.011	0.000
8:00:00 AM	0.000	0.001	0.001	0.000	0.015	0.000	0.003	0.141	0.003	0.011	0.000
8:10:00 AM	0.000	0.001	0.001	0.000	0.015	0.000	0.003	0.138	0.003	0.010	0.000
8:20:00 AM	0.000	0.001	0.001	0.000	0.014	0.000	0.003	0.135	0.003	0.009	0.000
8:30:00 AM	0.000	0.001	0.000	0.000	0.014	0.000	0.003	0.132	0.002	0.009	0.000

PCSWMM Input Flows - 100yr   Flow peak

	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 5	Catchment 6	Catchments 7-8	Catchments 9-11	Catchment 12	Catchment 13-15	Catchment 16
Peak Flows	*8.28*	*4.73*	*3.99*	*1.79*	*26.01*	*11.08*	*15.42*	*64.04*	*18.96*	*17.72*	*1.69*
8:40:00 AM	0.000	0.001	0.000	0.000	0.013	0.000	0.003	0.129	0.002	0.008	0.000
8:50:00 AM	0.000	0.001	0.000	0.000	0.013	0.000	0.003	0.126	0.002	0.008	0.000
9:00:00 AM	0.000	0.001	0.000	0.000	0.012	0.000	0.003	0.123	0.002	0.008	0.000
9:10:00 AM	0.000	0.001	0.000	0.000	0.012	0.000	0.003	0.121	0.002	0.007	0.000
9:20:00 AM	0.000	0.001	0.000	0.000	0.011	0.000	0.003	0.118	0.002	0.007	0.000
9:30:00 AM	0.000	0.001	0.000	0.000	0.011	0.000	0.002	0.115	0.002	0.006	0.000
9:40:00 AM	0.000	0.001	0.000	0.000	0.011	0.000	0.002	0.113	0.002	0.006	0.000
9:50:00 AM	0.000	0.001	0.000	0.000	0.010	0.000	0.002	0.110	0.002	0.005	0.000
10:00:00 AM	0.000	0.001	0.000	0.000	0.010	0.000	0.002	0.108	0.002	0.005	0.000
10:10:00 AM	0.000	0.001	0.000	0.000	0.009	0.000	0.002	0.106	0.002	0.005	0.000
10:20:00 AM	0.000	0.001	0.000	0.000	0.009	0.000	0.002	0.104	0.002	0.004	0.000
10:30:00 AM	0.000	0.001	0.000	0.000	0.009	0.000	0.002	0.101	0.002	0.004	0.000
10:40:00 AM	0.000	0.001	0.000	0.000	0.008	0.000	0.002	0.099	0.002	0.004	0.000
10:50:00 AM	0.000	0.001	0.000	0.000	0.008	0.000	0.002	0.097	0.002	0.003	0.000
11:00:00 AM	0.000	0.001	0.000	0.000	0.008	0.000	0.002	0.095	0.001	0.003	0.000
11:10:00 AM	0.000	0.001	0.000	0.000	0.007	0.000	0.002	0.093	0.001	0.003	0.000
11:20:00 AM	0.000	0.001	0.000	0.000	0.007	0.000	0.002	0.091	0.001	0.003	0.000
11:30:00 AM	0.000	0.001	0.000	0.000	0.007	0.000	0.002	0.089	0.001	0.002	0.000
11:40:00 AM	0.000	0.001	0.000	0.000	0.006	0.000	0.002	0.087	0.001	0.002	0.000
11:50:00 AM	0.000	0.001	0.000	0.000	0.006	0.000	0.002	0.085	0.001	0.002	0.000
12:00:00 PM	0.000	0.001	0.000	0.000	0.006	0.000	0.002	0.084	0.001	0.002	0.000
12:10:00 PM	0.000	0.001	0.000	0.000	0.006	0.000	0.002	0.082	0.001	0.001	0.000
12:20:00 PM	0.000	0.001	0.000	0.000	0.005	0.000	0.002	0.080	0.001	0.001	0.000
12:30:00 PM	0.000	0.001	0.000	0.000	0.005	0.000	0.002	0.078	0.001	0.001	0.000
12:40:00 PM	0.000	0.001	0.000	0.000	0.005	0.000	0.002	0.077	0.001	0.001	0.000
12:50:00 PM	0.000	0.001	0.000	0.000	0.005	0.000	0.002	0.075	0.001	0.001	0.000
1:00:00 PM	0.000	0.001	0.000	0.000	0.004	0.000	0.002	0.074	0.001	0.001	0.000
1:10:00 PM	0.000	0.001	0.000	0.000	0.004	0.000	0.002	0.072	0.001	0.000	0.000
1:20:00 PM	0.000	0.001	0.000	0.000	0.004	0.000	0.001	0.071	0.001	0.000	0.000
1:30:00 PM	0.000	0.001	0.000	0.000	0.004	0.000	0.001	0.069	0.001	0.000	0.000
1:40:00 PM	0.000	0.001	0.000	0.000	0.003	0.000	0.001	0.068	0.001	0.000	0.000
1:50:00 PM	0.000	0.001	0.000	0.000	0.003	0.000	0.001	0.066	0.001	0.000	0.000
2:00:00 PM	0.000	0.001	0.000	0.000	0.003	0.000	0.001	0.065	0.001	0.000	0.000
2:10:00 PM	0.000	0.001	0.000	0.000	0.003	0.000	0.001	0.064	0.001	0.000	0.000
2:20:00 PM	0.000	0.001	0.000	0.000	0.003	0.000	0.001	0.062	0.001	0.000	0.000
2:30:00 PM	0.000	0.001	0.000	0.000	0.002	0.000	0.001	0.061	0.001	0.000	0.000
2:40:00 PM	0.000	0.001	0.000	0.000	0.002	0.000	0.001	0.060	0.001	0.000	0.000
2:50:00 PM	0.000	0.001	0.000	0.000	0.002	0.000	0.001	0.059	0.001	0.000	0.000
3:00:00 PM	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.057	0.001	0.000	0.000
3:10:00 PM	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.056	0.001	0.000	0.000
3:20:00 PM	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.055	0.001	0.000	0.000
3:30:00 PM	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.054	0.001	0.000	0.000
3:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.053	0.001	0.000	0.000
3:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.052	0.001	0.000	0.000
4:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.052	0.001	0.000	0.000
4:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.051	0.001	0.000	0.000
4:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.051	0.001	0.000	0.000
4:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.050	0.001	0.000	0.000
4:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.049	0.001	0.000	0.000
4:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.049	0.001	0.000	0.000
5:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.048	0.001	0.000	0.000
5:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.048	0.001	0.000	0.000
5:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.047	0.001	0.000	0.000
5:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.047	0.001	0.000	0.000
5:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.046	0.001	0.000	0.000
5:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.046	0.001	0.000	0.000
6:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.045	0.001	0.000	0.000
6:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.045	0.001	0.000	0.000
6:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.044	0.000	0.000	0.000
6:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.044	0.000	0.000	0.000
6:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.043	0.000	0.000	0.000
6:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.043	0.000	0.000	0.000
7:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.042	0.000	0.000	0.000
7:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.042	0.000	0.000	0.000
7:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.041	0.000	0.000	0.000
7:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.041	0.000	0.000	0.000
7:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.041	0.000	0.000	0.000
7:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.040	0.000	0.000	0.000
8:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.040	0.000	0.000	0.000
8:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.039	0.000	0.000	0.000
8:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.039	0.000	0.000	0.000
8:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.038	0.000	0.000	0.000
8:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.038	0.000	0.000	0.000
8:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.038	0.000	0.000	0.000
9:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.037	0.000	0.000	0.000
9:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.037	0.000	0.000	0.000
9:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.037	0.000	0.000	0.000
9:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.036	0.000	0.000	0.000
9:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.036	0.000	0.000	0.000
9:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.035	0.000	0.000	0.000
10:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.035	0.000	0.000	0.000
10:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.035	0.000	0.000	0.000
10:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.034	0.000	0.000	0.000
10:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.034	0.000	0.000	0.000
10:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.034	0.000	0.000	0.000
10:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.033	0.000	0.000	0.000
11:00:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.033	0.000	0.000	0.000
11:10:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.033	0.000	0.000	0.000
11:20:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.032	0.000	0.000	0.000
11:30:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.032	0.000	0.000	0.000
11:40:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.032	0.000	0.000	0.000
11:50:00 PM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.032	0.000	0.000	0.000
12:00:00 AM	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.031	0.000	0.000	0.000

Appendix Q
HEC-RAS Model Output

Static HEC-RAS Output for Regulatory Flows
Peer reviewed base model plan (Regulatory future flows)

River Sta	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)	
7641.424	23.01	268.91	271.54	270.35	271.54	0.000002	0.06	259.1	279.09	0.01
7604.08	23.01	268.68	271.54		271.54	0.000006	0.11	161.85	193.14	0.02
7598.352	23.01	268.6	271.54	270.35	271.54	0.000008	0.13	129.91	144.43	0.02
7580 Mall Entrance	Culvert									
7573.521	23.01	268.63	271.54	270.52	271.54	0.000042	0.28	74.3	114.83	0.06
7560.665	23.01	268.62	271.53		271.54	0.000058	0.33	63.75	90.53	0.06
7510.949	19.15	268.34	271.54		271.54	0.000007	0.11	119.98	123.82	0.02
7506.531	19.15	268.42	271.54	270.44	271.54	0.000009	0.13	109.31	119.68	0.02
7460 Commerce Rd	Culvert									
7416.162	19.15	268.39	271.54	270.34	271.54	0.000007	0.12	145.71	175.61	0.02
7413.256	19.15	268.31	271.54		271.54	0.000009	0.15	209.34	182.74	0.03
7390.724	19.15	268.32	271.53		271.54	0.000039	0.28	114.96	152.91	0.05
7333.219	19.15	268.13	271.53		271.53	0.000021	0.21	116.7	211.97	0.04
7328.619	17.78	267.94	271.53	270.49	271.53	0.00003	0.21	93.93	156.01	0.04
7319 Former train tra	Culvert									
7309.586	17.78	267.84	271.53	270.12	271.53	0.000018	0.19	105.01	143.05	0.03
7306.937	17.78	268.02	271.53		271.53	0.000007	0.14	167.1	223.96	0.02
7246.49	16.2	267.94	271.53		271.53	0.000005	0.12	167.39	246.75	0.02
7238.63	16.2	267.76	271.53	269.31	271.53	0.000003	0.09	205.19	278.72	0.01
7190 McLachlin Rd	Culvert									
7156.184	16.2	267.91	271.53	269.45	271.53	0.000001	0.05	282.96	317.74	0.01
7153.097	16.2	267.95	271.53		271.53	0.000001	0.04	344.72	347.26	0.01
7127.958	16.2	267.86	271.53		271.53	0	0.03	459.3	399.64	0
7111.02	22.24	267.8	271.53		271.53	0.000002	0.06	355.98	374.85	0.01
7106.395	22.24	267.75	271.53	269.57	271.53	0.000001	0.06	367.59	367.85	0.01
7095 Ball Field	Culvert									
7088.943	22.24	267.82	271.52	269.35	271.53	0.000001	0.06	509.71	448.28	0.01
7083.163	22.24	267.82	271.52		271.52	0.000009	0.15	259.73	322.16	0.03
7071.306	22.24	267.09	271.52		271.52	0.000006	0.14	255.64	242.44	0.02
6917.282	22.24	267.41	271.52		271.52	0.000007	0.15	257.46	297.21	0.03
6857.851	22.24	267.32	271.52		271.52	0.000007	0.13	263.34	239.75	0.03
6853.017	19.34	267.34	271.52	269.26	271.52	0.000003	0.11	310.77	273.94	0.02
6840 Greenfield	Culvert									
6826.129	19.34	267.4	271.52	269.02	271.52	0.000002	0.09	446.46	497.06	0.01
6821.096	19.34	267.36	271.52		271.52	0.000002	0.08	491.33	525.8	0.01
6757.544	26.22	267.21	271.52		271.52	0.000003	0.12	477.33	476	0.02
6710.332	26.22	267.19	271.52		271.52	0.000002	0.08	548.86	503.05	0.02

Static HEC-RAS Output for Regulatory Flows

Peer reviewed base model plan (Regulatory future flows)

River Sta	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)	
6706.899	26.22	267.21	271.52	269.96	271.52	0.000002	0.08	569.73	425.74	0.01
6690 Hwy 7	Culvert									
6676.99	26.22	267.12	269.93	269.93	271.33	0.009251	5.24	5.01	93.63	1
6669.684	26.22	267.24	268.58	269.13	270.71	0.129565	6.48	4.05	7.35	2.79
6564.455	26.22	266.86	269.69	268.89	269.79	0.001393	1.77	25.42	63.78	0.36
6486.756	26.22	266.91	269.39		269.6	0.004186	2.03	12.9	9.67	0.56
6410.625	26.22	266.74	269.11		269.3	0.00358	1.94	14.13	23.74	0.52
6335.876	26.22	266.57	268.79	268.79	268.98	0.00549	2.12	17.53	50.43	0.62
6190.578	25.05	266.39	268.43	268.21	268.45	0.000997	0.81	48.35	127	0.27
6116.845	25.05	266.17	268.43		268.43	0.000016	0.11	275.83	394.63	0.03
6084.086	25.05	266.1	268.43		268.43	0.000022	0.14	211.39	259.24	0.04
6062.64	25.05	266.13	268.43		268.43	0.000021	0.19	200.66	219.51	0.04
5975.085	25.05	266.03	268.43		268.43	0.000016	0.17	224.77	230.31	0.04
5880.376	20.42	265.91	268.43		268.43	0.000003	0.09	370.99	331.88	0.02
5704.059	20.42	265.84	268.43		268.43	0.000001	0.06	571.36	538.18	0.01
5690.101	20.42	265.6	268.43	266.7	268.43	0.000002	0.08	507.57	530.49	0.01
5675 Dew Drop Inn	Culvert									
5665.793	20.42	265.94	268.42	267.19	268.42	0.000006	0.12	287.11	375.83	0.02
5653.55	40.27	265.81	268.42		268.42	0.000031	0.27	268.8	381.14	0.06
5646.039	40.27	265.92	268.42	267.71	268.42	0.000058	0.38	205.41	377.03	0.08
5620 Hwy 7	Culvert									
5604.418	40.27	265.76	268.07	267.53	268.07	0.000099	0.45	187.66	379.36	0.1
5595.644	40.27	265.69	268.07		268.07	0.000031	0.23	291.25	431.96	0.05
5465.266	38.27	265.65	268.07		268.07	0.00001	0.14	523.24	583.15	0.03
5374.119	38.27	265.69	268.07		268.07	0.000008	0.12	551.04	595.46	0.03
5310.141	38.27	265.76	268		268.06	0.00073	1.22	39.04	29.04	0.27
5276.091	38.27	265.66	268.04		268.04	0.000028	0.25	294.35	248.47	0.05
5103.876	38.27	265.36	268.03		268.03	0.00002	0.22	463.72	372.86	0.05
4968.21	28.98	265.42	268.03		268.03	0.000008	0.12	609.84	479.9	0.03
4826.403	28.98	265.24	268.03		268.03	0.000003	0.08	755	611.25	0.02
4692.952	28.98	264.87	268.03		268.03	0.000005	0.12	809.39	617.74	0.02
4546.604	28.98	264.88	268.03		268.03	0.000014	0.19	530.4	422.47	0.04
4405.269	28.98	264.59	268.03		268.03	0.000021	0.27	478.06	408.78	0.05
4384.664	28.98	264.51	268.03		268.03	0.000014	0.23	560.72	406.24	0.04
4380.968	27.61	264.51	268.03	265.82	268.03	0.000012	0.19	541.48	389.65	0.03
4365 Colborne St	Culvert									
4356.489	27.61	264.44	268.03	265.79	268.03	0.000013	0.21	534.02	443.63	0.04

Static HEC-RAS Output for Regulatory Flows

Peer reviewed base model plan (Regulatory future flows)

River Sta	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)	
4347.811	27.61	264.77	268.03		268.03	0.000014	0.22	508.83	412.18	0.04
4263.057	27.61	264.65	268.03		268.03	0.000001	0.05	1210.53	813.65	0.01
4108.305	27.61	264.43	268.03		268.03	0	0.04	1383.66	919.9	0.01
3957.179	24.1	264.33	268.03		268.03	0	0.03	1182.39	834.44	0.01
3804.186	24.1	264.17	268.03		268.03	0.000006	0.14	289.77	224.35	0.02
3775.164	24.1	264.05	268.03		268.03	0.000004	0.12	349.65	267.17	0.02
3762.625	24.1	264.15	268.03		268.03	0.000003	0.09	379.35	280.21	0.01
3640.294	24.1	263.77	268.02	265.83	268.02	0.000028	0.33	144.82	126.76	0.05
3630 Private Lanewa	Culvert									
3621.185	24.1	263.81	268.02	265.61	268.02	0.000004	0.12	338.85	242.55	0.02
3613.455	24.1	263.84	268.02		268.02	0.000006	0.15	303.51	247.2	0.02
3509.864	24.02	263.64	268.02		268.02	0.000002	0.09	346.02	396.68	0.01
3380.367	24.02	263.72	268.02		268.02	0.000001	0.05	735.86	633.09	0.01
3358.095	24.02	263.53	268.02		268.02	0	0.05	916.08	821.41	0.01
3200.809	24.02	263.39	268.02		268.02	0.000001	0.08	732.05	769.32	0.01
3187.848	63.24	263.35	268.02		268.02	0.000019	0.29	456.43	513.37	0.04
3046.813	63.24	263.94	268.01		268.02	0.000014	0.27	330.45	203.44	0.04
3035.535	63.24	263.39	268.01	265.29	268.02	0.000007	0.2	409.74	209.21	0.03
3010 Hwy 35	Culvert									
3000.11	63.24	263.11	266.78	265.28	266.81	0.000258	0.93	149.57	288.5	0.16
2986.996	63.24	263.13	266.77		266.8	0.000234	0.98	144.94	280.13	0.17
2922.176	63.16	263.19	266.63		266.76	0.000996	1.88	54.96	134.35	0.34
2810.224	63.16	262.82	266.56		266.66	0.000675	1.69	58.83	58.65	0.29
2707.776	63.16	263.11	266.49		266.59	0.000857	1.79	59.32	55.17	0.31
2618.286	63.16	262.96	266.39		266.49	0.001166	2	54.31	73.85	0.35
2509.792	63.16	262.41	266.3		266.38	0.000841	1.74	57.72	59.79	0.29
2406.341	63.16	262.29	266.24		266.3	0.000575	1.54	72.45	70.99	0.26
2277.683	63.16	262.18	266.2		266.25	0.000261	1.13	80.98	34.9	0.18
2156.937	63.16	261.8	266.21		266.22	0.000099	0.72	185.73	69.37	0.11
2059.866	63.16	261.5	266.02		266.02	0.00004	0.46	271.9	90.78	0.07
1920.857	63.16	261.27	266.01		266.02	0.000033	0.41	257.89	81.25	0.06
1779.22	63.16	261.2	266		266.01	0.000052	0.55	185.63	55.07	0.08
1662.759	63.16	261.13	266		266.01	0.000046	0.51	153.52	48.89	0.08
1549.464	63.16	261.09	265.99		266	0.000037	0.47	187.13	72.97	0.07
1455.968	72.99	259.78	265.99		266	0.000037	0.55	246.61	77.85	0.07
1448.974	72.99	259.42	265.99	261.99	266	0.000026	0.47	250.65	87.45	0.06
1426 Angeline St N	Culvert									

Static HEC-RAS Output for Regulatory Flows

Peer reviewed base model plan (Regulatory future flows)

River Sta	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)	
1407.546	72.99	259.51	262.54	262.54	264.06	0.008292	5.45	13.38	36.98	1
1386.646	72.99	259.57	260.68	261.29	263.09	0.108878	8.58	17.63	27.5	2.85
1276.628	72.99	257.49	259.24	259.28	259.92	0.010305	4.02	29.86	26.08	1
1177.635	72.99	255.79	257.91	257.29	258.13	0.003372	2.52	54.67	35.75	0.58
1021.897	72.99	254.38	257.02	256.61	257.4	0.006533	3.98	46.98	28.83	0.81
927.3901	72.99	253.88	255.5	255.49	255.92	0.066835	3.38	28.04	31.84	0.89
818.7001	72.99	252.6	254.69		254.85	0.003444	2.62	68.17	62.35	0.59
718.5652	72.99	251.58	254.43		254.57	0.002273	2.54	84.93	65.74	0.5
625.0873	72.99	251.08	254.35		254.42	0.000985	1.94	125.3	100.52	0.35
517.84	72.99	250.5	254.38		254.38	0.000051	0.48	331.88	242.6	0.08
463.252	72.99	250.35	254.37		254.38	0.000139	0.79	219.48	186.84	0.13
411.8737	72.99	250.01	254.35		254.37	0.000173	0.95	171.79	131.81	0.15
367.2808	72.99	249.58	254.35		254.36	0.000101	0.76	199.56	130.05	0.11
273.7271	84.46	249.05	254.35		254.36	0.000067	0.65	254.63	123.19	0.09
267	84.46	249.05	254.35	252.6	254.35	0.000061	0.64	277.13	141.47	0.09
260 William St	Culvert									
240.5027	84.46	248.93	254.34	251.57	254.35	0.000086	0.76	259.75	170.43	0.11
236.8376	84.46	248.9	254.33		254.35	0.000107	0.86	241.49	160.86	0.12
228	84.46	248.8	254.33		254.34	0.000127	0.92	261.93	157.02	0.13
220	84.46	248.48	254.33	252.21	254.34	0.000099	0.8	268.58	150.26	0.11
210 Rail Trail	Culvert									
175	84.46	248.4	254.29	252.76	254.32	0.001146	0.86	127.23	113.71	0.12
168.8194	84.46	248.6	254.29		254.3	0.000083	0.78	181.66	113.22	0.11
154.6483	85.24	248.2	254.28		254.3	0.000095	0.88	263.5	117.14	0.12
144.1	85.24	248.02	254.28	251.86	254.29	0.000048	0.62	349.15	142.77	0.08
130 Outlet	Culvert									
121	85.24	247.6	250.93	250.93	252.58	0.008103	5.7	14.97	77.35	1
114	85.24	247.7	249.82	249.17	249.93	0.003081	2.4	96.58	67.59	0.56
96.54452	85.24	247.39	249.77		249.88	0.003129	2.68	101.77	71.96	0.58
0	85.24	246.54	248.77	248.77	249.27	0.013043	3.32	33.35	35.55	1.01

HEC-RAS Output for Static Models - comparing existing and future flood elevations
Existing vs Future Land Use Conditions

River Station	Regulatory Existing	Regulatory Future	
7641.424	271.56	271.54	0.02
7604.08	271.55	271.54	0.01
7598.352	271.55	271.54	0.01
7580 Mall Entrance			
7573.521	271.54	271.54	0.00
7560.665	271.54	271.53	0.01
7510.949	271.54	271.54	0.00
7506.531	271.54	271.54	0.00
7460 Commerce Rd			
7416.162	271.53	271.54	-0.01
7413.256	271.53	271.54	-0.01
7390.724	271.52	271.53	-0.01
7333.219	271.52	271.53	-0.01
7328.619	271.52	271.53	-0.01
7319 Former train tra			
7309.586	271.52	271.53	-0.01
7306.937	271.52	271.53	-0.01
7246.49	271.52	271.53	-0.01
7238.63	271.52	271.53	-0.01
7190 McLachlin Rd			
7156.184	271.51	271.53	-0.02
7153.097	271.51	271.53	-0.02
7127.958	271.51	271.53	-0.02
7111.02	271.51	271.53	-0.02
7106.395	271.51	271.53	-0.02
7095 Ball Field			
7088.943	271.50	271.52	-0.02
7083.163	271.50	271.52	-0.02
7071.306	271.50	271.52	-0.02
6917.282	271.50	271.52	-0.02
6857.851	271.50	271.52	-0.02
6853.017	271.50	271.52	-0.02
6840 Greenfield			
6826.129	271.50	271.52	-0.02
6821.096	271.50	271.52	-0.02
6757.544	271.50	271.52	-0.02
6710.332	271.50	271.52	-0.02
6706.899	271.50	271.52	-0.02
6690 Hwy 7			
6676.99	269.46	269.93	-0.47
6669.684	269.63	268.58	1.05
6564.455	269.44	269.69	-0.25
6486.756	269.23	269.39	-0.16
6410.625	269.05	269.11	-0.06
6335.876	268.34	268.79	-0.45
6190.578	268.42	268.43	-0.01
6116.845	268.42	268.43	-0.01
6084.086	268.42	268.43	-0.01
6062.64	268.42	268.43	-0.01
5975.085	268.42	268.43	-0.01
5880.376	268.42	268.43	-0.01
5704.059	268.42	268.43	-0.01
5690.101	268.42	268.43	-0.01
5675 Dew Drop Inn			
5665.793	268.42	268.42	0.00
5653.55	268.42	268.42	0.00
5646.039	268.41	268.42	-0.01
5620 Hwy 7			
5604.418	268.05	268.07	-0.02
5595.644	268.05	268.07	-0.02
5465.266	268.05	268.07	-0.02
5374.119	268.05	268.07	-0.02
5310.141	267.98	268.00	-0.02
5276.091	268.02	268.04	-0.02
5103.876	268.01	268.03	-0.02
4968.21	268.01	268.03	-0.02
4826.403	268.01	268.03	-0.02
4692.952	268.01	268.03	-0.02
4546.604	268.01	268.03	-0.02
4405.269	268.01	268.03	-0.02
4384.664	268.01	268.03	-0.02
4380.968	268.01	268.03	-0.02

River Station	Regulatory Existing	Regulatory Future	
4365 Colborne St			
4356.489	268.01	268.03	-0.02
4347.811	268.01	268.03	-0.02
4263.057	268.01	268.03	-0.02
4108.305	268.01	268.03	-0.02
3957.179	268.01	268.03	-0.02
3804.186	268.01	268.03	-0.02
3775.164	268.01	268.03	-0.02
3762.625	268.01	268.03	-0.02
3640.294	268.00	268.02	-0.02
3630 Private Laneway			
3621.185	268.00	268.02	-0.02
3613.455	268.00	268.02	-0.02
3509.864	268.00	268.02	-0.02
3380.367	268.00	268.02	-0.02
3358.095	268.00	268.02	-0.02
3200.809	268.00	268.02	-0.02
3187.848	268.00	268.02	-0.02
3046.813	267.99	268.01	-0.02
3035.535	267.99	268.01	-0.02
3010 Hwy 35			
3000.11	266.73	266.78	-0.05
2986.996	266.72	266.77	-0.05
2922.176	266.58	266.63	-0.05
2810.224	266.51	266.56	-0.05
2707.776	266.44	266.49	-0.05
2618.286	266.33	266.39	-0.06
2509.792	266.24	266.30	-0.06
2406.341	266.17	266.24	-0.07
2277.683	266.14	266.20	-0.06
2156.937	266.15	266.21	-0.06
2059.866	265.96	266.02	-0.06
1920.857	265.96	266.01	-0.05
1779.22	265.95	266.00	-0.05
1662.759	265.94	266.00	-0.06
1549.464	265.94	265.99	-0.05
1455.968	265.94	265.99	-0.05
1448.974	265.94	265.99	-0.05
1426 Angeline St N			
1407.546	262.45	262.54	-0.09
1386.646	260.66	260.68	-0.02
1276.628	259.20	259.24	-0.04
1177.635	257.85	257.91	-0.06
1021.897	256.97	257.02	-0.05
927.3901	255.47	255.50	-0.03
818.7001	254.65	254.69	-0.04
718.5652	254.40	254.43	-0.03
625.0873	254.31	254.35	-0.04
517.84	254.34	254.38	-0.04
463.252	254.33	254.37	-0.04
411.8737	254.32	254.35	-0.03
367.2808	254.32	254.35	-0.03
273.7271	254.31	254.35	-0.04
267	254.31	254.35	-0.04
260 William St			
240.5027	254.31	254.34	-0.03
236.8376	254.31	254.33	-0.02
228	254.30	254.33	-0.03
220	254.30	254.33	-0.03
210 Rail Trail			
175	254.26	254.29	-0.03
168.8194	254.26	254.29	-0.03
154.6483	254.26	254.28	-0.02
144.1	254.26	254.28	-0.02
130 Outlet			
121	250.82	250.93	-0.11
114	249.77	249.82	-0.05
96.54452	249.72	249.77	-0.05
0	248.74	248.77	-0.03

average = -0.03
minimum = -0.45
maximum = 0.01

\\192.168.2.3\Shared\Jessica\KRCA\Reports Working\Final hydraulics report\Excel\output.xls
Sheet: Static Output Comparisons

Comparing Static and Dynamic HEC-RAS Output

River Station	Static Water Surface elevation (m)			Dynamic Water Surface elevation (m)					
	100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future			
7641.424	271.54	271.49	271.54	271.39	271.41	271.41	-0.15	-0.08	-0.13
7604.08	271.54	271.49	271.54	271.39	271.41	271.41	-0.15	-0.08	-0.13
7598.352	271.54	271.49	271.54	271.39	271.41	271.41	-0.15	-0.08	-0.13
7580 Mall Entrance									
7573.521	271.54	271.48	271.54	271.39	271.40	271.40	-0.15	-0.08	-0.14
7560.665	271.53	271.48	271.53	271.39	271.40	271.40	-0.14	-0.08	-0.13
7510.949	271.54	271.48	271.54	271.39	271.40	271.40	-0.15	-0.08	-0.14
7506.531	271.54	271.48	271.54	271.39	271.40	271.40	-0.15	-0.08	-0.14
7460 Commerce Rd									
7416.162	271.54	271.48	271.54	271.39	271.39	271.39	-0.15	-0.09	-0.15
7413.256	271.54	271.48	271.54	271.39	271.39	271.39	-0.15	-0.09	-0.15
7390.724	271.53	271.48	271.53	271.39	271.39	271.39	-0.14	-0.09	-0.14
7333.219	271.53	271.48	271.53	271.39	271.39	271.39	-0.14	-0.09	-0.14
7328.619	271.53	271.48	271.53	271.39	271.39	271.39	-0.14	-0.09	-0.14
7319 Former train tra									
7309.586	271.53	271.47	271.53	271.03	271.07	271.07	-0.5	-0.4	-0.46
7306.937	271.53	271.47	271.53	271.03	271.07	271.07	-0.5	-0.4	-0.46
7246.49	271.53	271.47	271.53	271.03	271.07	271.07	-0.5	-0.4	-0.46
7238.63	271.53	271.47	271.53	271.03	271.07	271.07	-0.5	-0.4	-0.46
7190 McLachlin Rd									
7156.184	271.53	271.47	271.53	270.90	271.07	271.07	-0.63	-0.4	-0.46
7153.097	271.53	271.47	271.53	270.90	271.07	271.07	-0.63	-0.4	-0.46
7127.958	271.53	271.47	271.53	270.90	271.07	271.07	-0.63	-0.4	-0.46
7111.02	271.53	271.47	271.53	270.90	271.07	271.07	-0.63	-0.4	-0.46
7106.395	271.53	271.47	271.53	270.90	271.07	271.07	-0.63	-0.4	-0.46
7095 Ball Field									
7088.943	271.52	271.47	271.52	270.89	271.07	271.07	-0.63	-0.4	-0.45
7083.163	271.52	271.47	271.52	270.89	271.07	271.07	-0.63	-0.4	-0.45
7071.306	271.52	271.47	271.52	270.89	271.07	271.07	-0.63	-0.4	-0.45
6917.282	271.52	271.47	271.52	270.89	271.07	271.07	-0.63	-0.4	-0.45
6857.851	271.52	271.47	271.52	270.89	271.07	271.07	-0.63	-0.4	-0.45
6853.017	271.52	271.47	271.52	270.89	271.07	271.07	-0.63	-0.4	-0.45
6840 Greenfield									
6826.129	271.52	271.47	271.52	270.40	271.06	271.06	-1.12	-0.41	-0.46
6821.096	271.52	271.47	271.52	270.40	271.06	271.06	-1.12	-0.41	-0.46
6757.544	271.52	271.47	271.52	270.40	271.06	271.06	-1.12	-0.41	-0.46
6710.332	271.52	271.47	271.52	270.40	271.06	271.06	-1.12	-0.41	-0.46
6706.899	271.52	271.47	271.52	270.39	271.06	271.06	-1.13	-0.41	-0.46
6690 Hwy 7									
6676.99	269.93	269.42	269.93	268.63	268.71	268.71	-1.3	-0.71	-1.22
6669.684	268.58	269.57	268.58	268.75	268.87	268.87	0.17	-0.7	0.29
6564.455	269.69	269.37	269.69	268.57	268.72	268.72	-1.12	-0.65	-0.97
6486.756	269.39	269.16	269.39	268.42	268.61	268.61	-0.97	-0.55	-0.78
6410.625	269.11	268.98	269.11	268.33	268.54	268.54	-0.78	-0.44	-0.57
6335.876	268.79	268.39	268.79	268.22	268.47	268.47	-0.57	0.08	-0.32
6190.578	268.42	268.43	268.43	268.02	268.40	268.40	-0.4	-0.03	-0.03
6116.845	268.42	268.43	268.43	267.93	268.40	268.40	-0.49	-0.03	-0.03
6084.086	268.42	268.43	268.43	267.93	268.40	268.40	-0.49	-0.03	-0.03
6062.64	268.41	268.43	268.43	267.93	268.40	268.40	-0.48	-0.03	-0.03
5975.085	268.41	268.43	268.43	267.93	268.40	268.40	-0.48	-0.03	-0.03
5880.376	268.41	268.43	268.43	267.93	268.40	268.40	-0.48	-0.03	-0.03
5704.059	268.41	268.43	268.43	267.93	268.40	268.40	-0.48	-0.03	-0.03
5690.101	268.41	268.42	268.43	267.92	268.40	268.40	-0.49	-0.02	-0.03
5675 Dew Drop Inn									
5665.793	268.41	268.42	268.42	267.53	268.39	268.39	-0.88	-0.03	-0.03
5653.55	268.41	268.42	268.42	267.55	268.39	268.39	-0.86	-0.03	-0.03
5646.039	268.37	268.42	268.42	267.52	268.38	268.38	-0.85	-0.04	-0.04
5620 Hwy 7									
5604.418	267.84	268.07	268.07	267.12	267.67	267.67	-0.72	-0.4	-0.4
5595.644	267.92	268.07	268.07	267.14	267.68	267.68	-0.78	-0.39	-0.39
5465.266	267.92	268.07	268.07	267.05	267.68	267.68	-0.87	-0.39	-0.39
5374.119	267.91	268.07	268.07	267.02	267.68	267.68	-0.89	-0.39	-0.39
5310.141	267.85	268.00	268.00	266.97	267.68	267.68	-0.88	-0.32	-0.32
5276.091	267.88	268.04	268.04	266.95	267.67	267.67	-0.93	-0.37	-0.37
5103.876	267.88	268.03	268.03	266.93	267.67	267.67	-0.95	-0.36	-0.36
4968.21	267.88	268.03	268.03	266.91	267.67	267.67	-0.97	-0.36	-0.36
4826.403	267.88	268.03	268.03	266.90	267.67	267.67	-0.98	-0.36	-0.36
4692.952	267.88	268.03	268.03	266.89	267.67	267.67	-0.99	-0.36	-0.36
4546.604	267.88	268.03	268.03	266.88	267.67	267.67	-1	-0.36	-0.36
4405.269	267.88	268.03	268.03	266.87	267.67	267.67	-1.01	-0.36	-0.36
4384.664	267.87	268.03	268.03	266.87	267.67	267.67	-1	-0.36	-0.36
4380.968	267.87	268.03	268.03	266.86	267.67	267.67	-1.01	-0.36	-0.36
4365 Colborne St									
4356.489	267.87	268.03	268.03	266.71	267.41	267.41	-1.16	-0.62	-0.62
4347.811	267.87	268.03	268.03	266.71	267.41	267.41	-1.16	-0.62	-0.62
4263.057	267.87	268.03	268.03	266.71	267.41	267.41	-1.16	-0.62	-0.62
4108.305	267.87	268.03	268.03	266.71	267.41	267.41	-1.16	-0.62	-0.62
3957.179	267.87	268.03	268.03	266.71	267.41	267.41	-1.16	-0.62	-0.62
3804.186	267.87	268.03	268.03	266.70	267.41	267.41	-1.17	-0.62	-0.62
3775.164	267.87	268.03	268.03	266.69	267.41	267.41	-1.18	-0.62	-0.62
3762.625	267.87	268.03	268.03	266.70	267.41	267.41	-1.17	-0.62	-0.62
3640.294	267.87	268.02	268.02	266.67	267.40	267.40	-1.2	-0.62	-0.62

River Station	Static Water Surface elevation (m)			Dynamic Water Surface elevation (m)					
	100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future			
3630 Private Laneway									
3621.185	267.87	268.02	268.02	266.64	267.41	267.41	-1.23	-0.61	-0.61
3613.455	267.87	268.02	268.02	266.64	267.41	267.41	-1.23	-0.61	-0.61
3509.864	267.87	268.02	268.02	266.64	267.40	267.40	-1.23	-0.62	-0.62
3380.367	267.87	268.02	268.02	266.64	267.40	267.40	-1.23	-0.62	-0.62
3358.095	267.87	268.02	268.02	266.64	267.40	267.40	-1.23	-0.62	-0.62
3200.809	267.87	268.02	268.02	266.63	267.40	267.40	-1.24	-0.62	-0.62
3187.848	267.87	268.02	268.02	266.62	267.40	267.40	-1.25	-0.62	-0.62
3046.813	267.87	268.01	268.01	266.57	267.40	267.40	-1.3	-0.61	-0.61
3035.535	267.87	268.01	268.01	266.54	267.37	267.37	-1.33	-0.64	-0.64
3010 Hwy 35									
3000.11	266.08	266.78	266.78	265.48	265.75	265.75	-0.6	-1.03	-1.03
2986.996	266.10	266.77	266.77	265.53	265.82	265.82	-0.57	-0.95	-0.95
2922.176	265.99	266.63	266.63	265.45	265.74	265.74	-0.54	-0.89	-0.89
2810.224	265.93	266.56	266.56	265.38	265.68	265.68	-0.55	-0.88	-0.88
2707.776	265.79	266.49	266.49	265.27	265.58	265.58	-0.52	-0.91	-0.91
2618.286	265.53	266.39	266.39	264.87	265.37	265.37	-0.66	-1.02	-1.02
2509.792	265.45	266.30	266.30	264.70	265.30	265.30	-0.75	-1	-1
2406.341	265.31	266.24	266.24	264.58	265.21	265.21	-0.73	-1.03	-1.03
2277.683	265.29	266.20	266.20	264.54	265.18	265.18	-0.75	-1.02	-1.02
2156.937	265.29	266.21	266.21	264.53	265.18	265.18	-0.76	-1.03	-1.03
2059.866	265.05	266.02	266.02	263.23	263.38	263.38	-1.82	-2.64	-2.64
1920.857	265.05	266.01	266.01	263.16	263.28	263.28	-1.89	-2.73	-2.73
1779.22	265.04	266.00	266.00	263.10	263.17	263.17	-1.94	-2.83	-2.83
1662.759	265.03	266.00	266.00	263.06	263.07	263.07	-1.97	-2.93	-2.93
1549.464	265.03	265.99	265.99	262.34	262.84	262.84	-2.69	-3.15	-3.15
1455.968	265.02	265.99	265.99	262.12	262.76	262.76	-2.9	-3.23	-3.23
1448.974	264.77	265.99	265.99	262.02	262.64	262.64	-2.75	-3.35	-3.35
1426 Angeline St N									
1407.546	261.23	262.54	262.54	260.40	260.40	260.40	-0.83	-2.14	-2.14
1397.09*				260.79	260.94	260.94			
1386.646	260.73	260.68	260.68	260.70	260.83	260.83	-0.03	0.15	0.15
1368.31*				260.56	260.61	260.61			
1349.97*				260.16	260.57	260.57			
1331.63*				259.61	259.65	259.65			
1313.30*				259.36	259.61	259.61			
1294.96*				258.80	258.84	258.84			
1276.628	259.01	259.24	259.24	258.39	258.93	258.93	-0.62	-0.31	-0.31
1256.82*				258.28	258.20	258.28			
1237.03*				257.72	258.08	258.08			
1217.23*				257.43	257.44	257.44			
1197.43*				257.04	257.23	257.23			
1177.635	257.59	257.91	257.91	256.97	257.20	257.20	-0.62	-0.71	-0.71
1158.16*				256.87	257.11	257.11			
1138.7*				256.78	257.02	257.02			
1119.23*				256.68	256.92	256.92			
1099.76*				256.57	256.82	256.82			
1080.29*				256.45	256.69	256.69			
1060.83*				256.27	256.48	256.48			
1041.36*				256.17	256.41	256.41			
1021.897	256.76	257.02	257.02	256.09	256.31	256.31	-0.67	-0.71	-0.71
1002.99*				256.01	256.24	256.24			
984.094*				255.88	256.10	256.10			
965.192*				255.73	255.95	255.95			
946.291*				255.57	255.77	255.77			
927.3901	255.26	255.50	255.50	255.34	255.53	255.53	0.08	0.03	0.03
909.275*				255.12	255.30	255.30			
891.160*				254.92	255.09	255.09			
873.045*				254.67	254.87	254.87			
854.930*				254.40	254.70	254.70			
836.815*				254.16	254.61	254.61			
818.7001	254.52	254.69	254.69	254.02	254.56	254.56	-0.5	-0.13	-0.13
802.010*				253.95	254.55	254.55			
785.321*				253.76	254.52	254.52			
768.632*				253.55	254.49	254.49			
751.943*				253.36	254.48	254.48			
735.254*				253.31	254.47	254.47			
718.5652	254.35	254.43	254.43	253.29	254.46	254.46	-1.06	0.03	0.03
699.869*				253.26	254.45	254.45			
681.174*				253.25	254.44	254.44			
662.478*				253.23	254.44	254.44			
643.782*				253.23	254.43	254.43			
625.0873	254.30	254.35	254.35	253.22	254.43	254.43	-1.08	0.08	0.08
607.212*				253.22	254.43	254.43			
589.338*				253.22	254.43	254.43			
571.463*				253.22	254.43	254.43			
553.589*				253.22	254.43	254.43			
535.714*				253.22	254.43	254.43			
517.84	254.32	254.38	254.38	253.22	254.43	254.43	-1.1	0.05	0.05
499.644*				253.21	254.43	254.43			
481.448*				253.21	254.43	254.43			
463.252	254.31	254.37	254.37	253.21	254.43	254.43	-1.1	0.06	0.06
446.125*				253.20	254.42	254.42			
428.999*				253.19	254.42	254.42			
411.8737	254.30	254.35	254.35	253.19	254.42	254.42	-1.11	0.07	0.07

River Station	Static Water Surface elevation (m)			Dynamic Water Surface elevation (m)					
	100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future			
397.009*				253.19	254.42	254.42			
382.145*				253.19	254.42	254.42			
367.2808	254.30	254.35	254.35	253.19	254.42	254.42	-1.11	0.07	0.07
348.570*				253.19	254.42	254.42			
329.859*				253.19	254.42	254.42			
311.148*				253.19	254.42	254.42			
292.437*				253.19	254.42	254.42			
273.7271	254.30	254.35	254.35	253.19	254.42	254.42	-1.11	0.07	0.07
267	254.30	254.35	254.35	253.19	254.42	254.42	-1.11	0.07	0.07
260 William St									
240.5027	254.29	254.34	254.34	253.18	254.41	254.41	-1.11	0.07	0.07
236.8376	254.29	254.33	254.33	253.18	254.41	254.41	-1.11	0.08	0.08
228	254.29	254.33	254.33	253.18	254.41	254.41	-1.11	0.08	0.08
220	254.29	254.33	254.33	253.18	254.41	254.41	-1.11	0.08	0.08
210 Rail Trail									
175	254.27	254.29	254.29	253.13	254.36	254.36	-1.14	0.07	0.07
168.8194	254.27	254.29	254.29	253.14	254.37	254.37	-1.13	0.08	0.08
154.6483	254.27	254.28	254.28	253.14	254.37	254.37	-1.13	0.09	0.09
144.1	254.27	254.28	254.28	253.08	254.25	254.25	-1.19	-0.03	-0.03
130 Outlet									
121	250.31	250.93	250.93	248.45	248.55	248.55	-1.86	-2.38	-2.38
114	249.56	249.82	249.82	248.98	249.43	249.43	-0.58	-0.39	-0.39
96.54452	249.50	249.77	249.77	248.93	249.38	249.38	-0.57	-0.39	-0.39
77.2356*				248.61	249.08	249.08			
57.9267*				248.58	248.88	248.88			
38.6178*				248.51	248.82	248.82			
19.3089*				248.43	248.73	248.73			
0	248.58	248.77	248.77	248.25	248.54	248.54	-0.33	-0.23	-0.23
						average =	-0.87	-0.52	-0.54
						minimum =	-2.90	-3.35	-3.35
						maximum =	0.17	0.15	0.29

Comparing 100-year Static and Dynamic Peak Flows and Flood Elevations

	Static		Dynamic	
River Station	Peak Flow (m^3/s)	W.S. Elev (m)	Q Total (m3/s)	W.S. Elev (m)
7641.424	23.01	271.54	6.05	271.39
7604.08	23.01	271.54	6.04	271.39
7598.352	23.01	271.54	6.04	271.39
7580 Mall Entrance				
7573.521	23.01	271.54	6.04	271.39
7560.665	23.01	271.53	6.03	271.39
7510.949	19.15	271.54	6.00	271.39
7506.531	19.15	271.54	6.00	271.39
7460 Commerce Rd				
7416.162	19.15	271.54	6.00	271.39
7413.256	19.15	271.54	5.99	271.39
7390.724	19.15	271.53	5.95	271.39
7333.219	19.15	271.53	5.79	271.39
7328.619	17.78	271.53	5.79	271.39
7319 Former train tra				
7309.586	17.78	271.53	5.95	271.03
7306.937	17.78	271.53	5.93	271.03
7246.49	16.20	271.53	5.35	271.03
7238.63	16.20	271.53	5.27	271.03
7190 McLachlin Rd				
7156.184	16.20	271.53	3.18	270.9
7153.097	16.20	271.53	3.17	270.9
7127.958	16.20	271.53	3.13	270.9
7111.02	22.24	271.53	3.11	270.9
7106.395	22.24	271.53	5.02	270.9
7095 Ball Field				
7088.943	22.24	271.52	5.02	270.89
7083.163	22.24	271.52	5.01	270.89
7071.306	22.24	271.52	5.00	270.89
6917.282	22.24	271.52	4.91	270.89
6857.851	22.24	271.52	4.88	270.89
6853.017	19.34	271.52	6.25	270.89
6840 Greenfield				
6826.129	19.34	271.52	4.53	270.4
6821.096	19.34	271.52	4.53	270.4
6757.544	26.22	271.52	4.50	270.4
6710.332	26.22	271.52	4.48	270.4
6706.899	26.22	271.52	5.47	270.39
6690 Hwy 7				
6676.99	26.22	269.93	5.47	268.63
6669.684	26.22	268.58	5.47	268.75
6564.455	26.22	269.69	5.46	268.57
6486.756	26.22	269.39	5.45	268.42
6410.625	26.22	269.11	5.43	268.33
6335.876	26.22	268.79	5.42	268.22
6190.578	25.05	268.42	5.38	268.02
6116.845	25.05	268.42	5.35	267.93
6084.086	25.05	268.42	5.35	267.93
6062.64	25.05	268.41	5.34	267.93
5975.085	25.05	268.41	5.33	267.93
5880.376	20.42	268.41	5.32	267.93
5704.059	20.42	268.41	5.29	267.93
5690.101	20.42	268.41	8.85	267.92
5675 Dew Drop Inn				
5665.793	20.42	268.41	8.85	267.53
5653.55	33.48	268.41	8.85	267.55
5646.039	33.48	268.37	8.85	267.52
5620 Hwy 7				
5604.418	33.48	267.84	8.72	267.12
5595.644	33.48	267.92	8.77	267.14
5465.266	32.03	267.92	8.58	267.05
5374.119	32.03	267.91	8.53	267.02
5310.141	32.03	267.85	8.44	266.97
5276.091	32.03	267.88	8.42	266.95
5103.876	32.03	267.88	8.38	266.93

Static			Dynamic	
River Station	Peak Flow (m^3/s)	W.S. Elev (m)	Q Total (m3/s)	W.S. Elev (m)
4968.21	24.37	267.88	8.35	266.91
4826.403	24.37	267.88	8.35	266.9
4692.952	24.37	267.88	8.34	266.89
4546.604	24.37	267.88	8.30	266.88
4405.269	24.37	267.88	8.30	266.87
4384.664	24.37	267.87	8.30	266.87
4380.968	16.71	267.87	9.26	266.86
4365 Colborne St				
4356.489	16.71	267.87	6.18	266.71
4347.811	16.71	267.87	6.18	266.71
4263.057	16.71	267.87	6.17	266.71
4108.305	16.71	267.87	6.69	266.71
3957.179	15.70	267.87	7.20	266.71
3804.186	15.70	267.87	6.90	266.7
3775.164	15.70	267.87	6.70	266.69
3762.625	15.70	267.87	7.02	266.7
3640.294	15.70	267.87	4.70	266.67
3630 Private Laneway				
3621.185	15.70	267.87	1.13	266.64
3613.455	15.70	267.87	1.13	266.64
3509.864	17.43	267.87	1.12	266.64
3380.367	17.43	267.87	1.10	266.64
3358.095	17.43	267.87	2.59	266.64
3200.809	17.43	267.87	14.27	266.63
3187.848	43.20	267.87	15.17	266.62
3046.813	43.20	267.87	25.99	266.57
3035.535	43.20	267.87	25.98	266.54
3010 Hwy 35				
3000.11	43.20	266.08	25.98	265.48
2986.996	43.20	266.1	25.98	265.53
2922.176	41.24	265.99	25.97	265.45
2810.224	41.24	265.93	25.97	265.38
2707.776	41.24	265.79	25.97	265.27
2618.286	41.24	265.53	25.21	264.87
2509.792	41.24	265.45	23.43	264.7
2406.341	41.24	265.31	21.01	264.58
2277.683	41.24	265.29	20.80	264.54
2156.937	41.24	265.29	20.60	264.53
2059.866	41.24	265.05	20.16	263.23
1920.857	41.24	265.05	18.70	263.16
1779.22	41.24	265.04	18.69	263.1
1662.759	41.24	265.03	19.04	263.06
1549.464	41.24	265.03	17.94	262.34
1455.968	54.49	265.02	25.99	262.12
1448.974	54.49	264.77	25.96	262.02
1426 Angeline St N				
1407.546	54.49	261.23	9.91	260.4
			25.96	260.79
1386.646	54.49	260.73	25.96	260.7
			25.93	260.56
			24.80	260.16
			24.45	259.61
			23.85	259.36
			26.35	258.8
1276.628	54.49	259.01	24.74	258.39
			25.13	258.28
			25.11	257.72
			24.97	257.43
			26.37	257.04
1177.635	54.49	257.59	26.27	256.97
			26.15	256.87
			26.03	256.78
			25.91	256.68
			25.80	256.57
			25.69	256.45
			25.44	256.27
			25.42	256.17

	Static		Dynamic	
River Station	Peak Flow (m^3/s)	W.S. Elev (m)	Q Total (m3/s)	W.S. Elev (m)
1021.897	54.49	256.76	25.38	256.09
			25.34	256.01
			25.28	255.88
			25.12	255.73
			25.11	255.57
927.3901	54.49	255.26	25.09	255.34
			25.08	255.12
			25.05	254.92
			25.03	254.67
			25.00	254.4
			24.76	254.16
818.7001	54.49	254.52	24.75	254.02
			24.74	253.95
			24.72	253.76
			24.70	253.55
			23.47	253.36
			18.28	253.31
718.5652	54.49	254.35	18.27	253.29
			18.25	253.26
			16.89	253.25
			16.88	253.23
			16.87	253.23
625.0873	54.49	254.3	16.86	253.22
			16.84	253.22
			16.82	253.22
			16.80	253.22
			16.77	253.22
			16.74	253.22
517.84	54.49	254.32	16.71	253.22
			24.33	253.21
			24.30	253.21
463.252	54.49	254.31	24.28	253.21
			24.26	253.2
			24.23	253.19
411.8737	54.49	254.3	24.21	253.19
			24.20	253.19
			24.18	253.19
367.2808	54.49	254.3	24.16	253.19
			24.12	253.19
			24.08	253.19
			24.03	253.19
			23.99	253.19
273.7271	61.92	254.3	23.94	253.19
267	61.92	254.3	23.93	253.19
260 William S	Culvert			
240.5027	61.92	254.29	23.93	253.18
236.8376	61.92	254.29	23.92	253.18
228	61.92	254.29	23.90	253.18
220	61.92	254.29	23.89	253.18
210 Rail Trail	Culvert			
175	61.92	254.27	23.89	253.13
168.8194	61.92	254.27	23.88	253.14
154.6483	62.60	254.27	23.86	253.14
144.1	62.60	254.27	24.82	253.08
130 Outlet	Culvert			
121	62.60	250.31	24.79	248.45
114	62.60	249.56	24.82	248.98
96.54452	62.60	249.5	24.81	248.93
			24.81	248.61
			24.81	248.58
			24.80	248.51
			24.80	248.43
0	62.60	248.58	24.80	248.25

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Sheet: 100yr Sta vs Dyn Q&WSEL

Comparing Timmins Static and Dynamic Peak Flows and Flood Elevations

	Static		Dynamic		
River Station	Peak Flow (m^3/s)	W.S. Elev (m)	Q Total (m3/s)	W.S. Elev (m)	
7641.424	8.26	271.49	8.27	271.41	0.08
7604.08	8.26	271.49	7.79	271.41	0.08
7598.352	8.26	271.49	7.74	271.41	0.08
7580 Mall Entrance					
7573.521	8.26	271.48	7.74	271.4	0.08
7560.665	8.26	271.48	7.7	271.4	0.08
7510.949	8.17	271.48	7.54	271.4	0.08
7506.531	8.17	271.48	7.52	271.4	0.08
7460 Commerce Rd					
7416.162	8.17	271.48	7.52	271.39	0.09
7413.256	8.17	271.48	7.52	271.39	0.09
7390.724	8.17	271.48	7.48	271.39	0.09
7333.219	8.17	271.48	7.29	271.39	0.09
7328.619	8.14	271.48	7.29	271.39	0.09
7319 Former train tra					
7309.586	8.14	271.47	2.78	271.07	0.4
7306.937	8.14	271.47	2.78	271.07	0.4
7246.49	8.2	271.47	2.78	271.07	0.4
7238.63	8.2	271.47	2.78	271.07	0.4
7190 McLachlin Rd					
7156.184	8.2	271.47	2.78	271.07	0.4
7153.097	8.2	271.47	2.78	271.07	0.4
7127.958	8.2	271.47	2.77	271.07	0.4
7111.02	12.7	271.47	2.76	271.07	0.4
7106.395	12.7	271.47	4.43	271.07	0.4
7095 Ball Field					
7088.943	12.7	271.47	4.21	271.07	0.4
7083.163	12.7	271.47	4.21	271.07	0.4
7071.306	12.7	271.47	4.21	271.07	0.4
6917.282	12.7	271.47	4.19	271.07	0.4
6857.851	12.7	271.47	4.18	271.07	0.4
6853.017	12.88	271.47	5.43	271.07	0.4
6840 Greenfield					
6826.129	12.88	271.47	5.43	271.06	0.41
6821.096	12.88	271.47	5.42	271.06	0.41
6757.544	18.14	271.47	5.35	271.06	0.41
6710.332	18.14	271.47	5.31	271.06	0.41
6706.899	18.14	271.47	6.31	271.06	0.41
6690 Hwy 7					
6676.99	18.14	269.42	6.3	268.71	0.71
6669.684	18.14	269.57	6.3	268.87	0.7
6564.455	18.14	269.37	6.3	268.72	0.65
6486.756	18.14	269.16	6.3	268.61	0.55
6410.625	18.14	268.98	6.3	268.54	0.44
6335.876	18.14	268.39	6.3	268.47	-0.08
6190.578	18.09	268.43	6.28	268.4	0.03
6116.845	18.09	268.43	6.24	268.4	0.03
6084.086	18.09	268.43	6.23	268.4	0.03
6062.64	18.09	268.43	6.23	268.4	0.03
5975.085	18.09	268.43	6.3	268.4	0.03
5880.376	18.15	268.43	6.3	268.4	0.03
5704.059	18.15	268.43	6.29	268.4	0.03
5690.101	18.15	268.42	18.7	268.4	0.02
5675 Dew Drop Inn					
5665.793	18.15	268.42	18.7	268.39	0.03
5653.55	40.27	268.42	18.7	268.39	0.03
5646.039	40.27	268.42	18.69	268.38	0.04
5620 Hwy 7					
5604.418	40.27	268.07	11.23	267.67	0.4
5595.644	40.27	268.07	11.3	267.68	0.39
5465.266	38.27	268.07	11.29	267.68	0.39
5374.119	38.27	268.07	11.28	267.68	0.39
5310.141	38.27	268	11.23	267.68	0.32
5276.091	38.27	268.04	11.23	267.67	0.37
5103.876	38.27	268.03	11.22	267.67	0.36
4968.21	28.98	268.03	11.21	267.67	0.36

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Sheet: Timmins Sta vs Dyn Q&WSEL

Static			Dynamic		
River Station	Peak Flow (m^3/s)	W.S. Elev (m)	Q Total (m3/s)	W.S. Elev (m)	
4826.403	28.98	268.03	11.2	267.67	0.36
4692.952	28.98	268.03	11.19	267.67	0.36
4546.604	28.98	268.03	11.18	267.67	0.36
4405.269	28.98	268.03	11.18	267.67	0.36
4384.664	28.98	268.03	11.05	267.67	0.36
4380.968	27.61	268.03	12.05	267.67	0.36
4365 Colborne St					
4356.489	27.61	268.03	9.14	267.41	0.62
4347.811	27.61	268.03	9.14	267.41	0.62
4263.057	27.61	268.03	9.11	267.41	0.62
4108.305	27.61	268.03	10.01	267.41	0.62
3957.179	24.1	268.03	10.9	267.41	0.62
3804.186	24.1	268.03	11.84	267.41	0.62
3775.164	24.1	268.03	12.02	267.41	0.62
3762.625	24.1	268.03	12.02	267.41	0.62
3640.294	24.1	268.02	12.01	267.4	0.62
3630 Private Laneway					
3621.185	24.1	268.02	12.01	267.41	0.61
3613.455	24.1	268.02	12.01	267.41	0.61
3509.864	24.02	268.02	12	267.4	0.62
3380.367	24.02	268.02	11.98	267.4	0.62
3358.095	24.02	268.02	13.2	267.4	0.62
3200.809	24.02	268.02	23.01	267.4	0.62
3187.848	63.24	268.02	23.71	267.4	0.62
3046.813	63.24	268.01	32.18	267.4	0.61
3035.535	63.24	268.01	32.18	267.37	0.64
3010 Hwy 35					
3000.11	63.24	266.78	31.87	265.75	1.03
2986.996	63.24	266.77	31.92	265.82	0.95
2922.176	63.16	266.63	31.87	265.74	0.89
2810.224	63.16	266.56	31.83	265.68	0.88
2707.776	63.16	266.49	31.79	265.58	0.91
2618.286	63.16	266.39	31.46	265.37	1.02
2509.792	63.16	266.3	31.31	265.3	1
2406.341	63.16	266.24	31.09	265.21	1.03
2277.683	63.16	266.2	31.04	265.18	1.02
2156.937	63.16	266.21	31.04	265.18	1.03
2059.866	63.16	266.02	30.89	263.38	2.64
1920.857	63.16	266.01	29.21	263.28	2.73
1779.22	63.16	266	28.88	263.17	2.83
1662.759	63.16	266	24.51	263.07	2.93
1549.464	63.16	265.99	30.76	262.84	3.15
1455.968	72.99	265.99	35.78	262.76	3.23
1448.974	72.99	265.99	35.75	262.64	3.35
1426 Angeline St N					
1407.546	72.99	262.54	9.11	260.4	2.14
			35.74	260.94	
1386.646	72.99	260.68	35.73	260.83	-0.15
			35.58	260.61	
			35.57	260.57	
			28.03	259.65	
			32.58	259.61	
			35.61	258.84	
1276.628	72.99	259.24	35.6	258.93	0.31
			27.91	258.2	
			35.15	258.08	
			35.55	257.44	
			35.56	257.23	
1177.635	72.99	257.91	35.56	257.2	0.71
			35.55	257.11	
			35.55	257.02	
			35.54	256.92	
			35.54	256.82	
			35.53	256.69	
			35.53	256.48	
			35.52	256.41	
1021.897	72.99	257.02	35.51	256.31	0.71
			35.5	256.24	

Static			Dynamic		
River Station	Peak Flow (m^3/s)	W.S. Elev (m)	Q Total (m3/s)	W.S. Elev (m)	
			35.49	256.1	
			35.49	255.95	
			35.48	255.77	
927.3901	72.99	255.5	35.47	255.53	-0.03
			35.46	255.3	
			35.45	255.09	
			35.3	254.87	
			35.3	254.7	
			35.29	254.61	
818.7001	72.99	254.69	35.27	254.56	0.13
			35.26	254.55	
			35.24	254.52	
			35.22	254.49	
			35.2	254.48	
			35.17	254.47	
718.5652	72.99	254.43	34.93	254.46	-0.03
			34.93	254.45	
			34.93	254.44	
			34.93	254.44	
			34.92	254.43	
625.0873	72.99	254.35	34.92	254.43	-0.08
			34.92	254.43	
			34.91	254.43	
			34.91	254.43	
			34.91	254.43	
			34.9	254.43	
517.84	72.99	254.38	34.89	254.43	-0.05
			48.9	254.43	
			48.89	254.43	
463.252	72.99	254.37	48.88	254.43	-0.06
			48.88	254.42	
			48.87	254.42	
411.8737	72.99	254.35	48.86	254.42	-0.07
			48.86	254.42	
			48.85	254.42	
367.2808	72.99	254.35	48.85	254.42	-0.07
			48.84	254.42	
			48.84	254.42	
			48.83	254.42	
			48.82	254.42	
273.7271	84.46	254.35	48.82	254.42	-0.07
267	84.46	254.35	48.81	254.42	-0.07
260 William St					
240.5027	84.46	254.34	48.81	254.41	-0.07
236.8376	84.46	254.33	48.81	254.41	-0.08
228	84.46	254.33	48.81	254.41	-0.08
220	84.46	254.33	48.81	254.41	-0.08
210 Rail Trail					
175	84.46	254.29	48.81	254.36	-0.07
168.8194	84.46	254.29	48.81	254.37	-0.08
154.6483	85.24	254.28	48.8	254.37	-0.09
144.1	85.24	254.28	35.31	254.25	0.03
130 Outlet					
121	85.24	250.93	48.02	248.55	2.38
114	85.24	249.82	49.8	249.43	0.39
96.54452	85.24	249.77	49.77	249.38	0.39
			49.72	249.08	
			49.68	248.88	
			49.67	248.82	
			49.66	248.73	
0	85.24	248.77	49.64	248.54	0.23

minimum = -0.15
maximum = 3.35
average = 0.52

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Sheet: Timmins Sta vs Dyn Q&WSEL

HEC-RAS Output for Static Models

Comparing flood elevations when levees are added on Hwy 35 & Woods of Jennings Ck

River Station		Water Surface elevation (m)			Water Surface elevation - with Fill (m)		
		100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future
	7641.424	271.54	271.49	271.54	271.58	271.49	271.58
	7604.08	271.54	271.49	271.54	271.58	271.49	271.58
	7598.352	271.54	271.49	271.54	271.58	271.49	271.58
7580	Mall Entrance						
	7573.521	271.54	271.48	271.54	271.58	271.48	271.58
	7560.665	271.53	271.48	271.53	271.57	271.48	271.57
	7510.949	271.54	271.48	271.54	271.58	271.48	271.58
	7506.531	271.54	271.48	271.54	271.57	271.48	271.57
7460	Commerce Rd						
	7416.162	271.54	271.48	271.54	271.57	271.48	271.57
	7413.256	271.54	271.48	271.54	271.57	271.48	271.57
	7390.724	271.53	271.48	271.53	271.57	271.48	271.57
	7333.219	271.53	271.48	271.53	271.56	271.48	271.56
	7328.619	271.53	271.48	271.53	271.56	271.48	271.56
7319	Former train tra						
	7309.586	271.53	271.47	271.53	271.56	271.48	271.56
	7306.937	271.53	271.47	271.53	271.56	271.48	271.56
	7246.49	271.53	271.47	271.53	271.56	271.47	271.56
	7238.63	271.53	271.47	271.53	271.56	271.47	271.56
7190	McLachlin Rd						
	7156.184	271.53	271.47	271.53	271.56	271.47	271.56
	7153.097	271.53	271.47	271.53	271.56	271.47	271.56
	7127.958	271.53	271.47	271.53	271.56	271.47	271.56
	7111.02	271.53	271.47	271.53	271.56	271.47	271.56
	7106.395	271.53	271.47	271.53	271.56	271.47	271.56
7095	Ball Field						
	7088.943	271.52	271.47	271.52	271.56	271.47	271.56
	7083.163	271.52	271.47	271.52	271.55	271.47	271.55
	7071.306	271.52	271.47	271.52	271.55	271.47	271.55
	6917.282	271.52	271.47	271.52	271.55	271.47	271.55
	6857.851	271.52	271.47	271.52	271.55	271.47	271.55
	6853.017	271.52	271.47	271.52	271.55	271.47	271.55
6840	Greenfield						
	6826.129	271.52	271.47	271.52	271.54	271.47	271.54
	6821.096	271.52	271.47	271.52	271.54	271.47	271.54
	6757.544	271.52	271.47	271.52	271.54	271.47	271.54
	6710.332	271.52	271.47	271.52	271.54	271.47	271.54
	6706.899	271.52	271.47	271.52	271.54	271.47	271.54
6690	Hwy 7						
	6676.99	269.93	269.42	269.93	269.97	269.42	269.97
	6669.684	268.58	269.57	269.57	268.58	269.57	269.57
	6564.455	269.69	269.37	269.69	269.71	269.37	269.71
	6486.756	269.39	269.16	269.39	269.41	269.16	269.41
	6410.625	269.11	268.98	269.11	269.12	268.98	269.12
	6335.876	268.79	268.39	268.79	268.79	268.39	268.79
	6190.578	268.42	268.43	268.43	268.42	268.43	268.43
	6116.845	268.42	268.43	268.43	268.42	268.43	268.43
	6084.086	268.42	268.43	268.43	268.42	268.43	268.43
	6062.64	268.41	268.43	268.43	268.41	268.43	268.43
	5975.085	268.41	268.42	268.42	268.41	268.43	268.43
	5880.376	268.41	268.42	268.42	268.41	268.43	268.43
	5704.059	268.41	268.42	268.42	268.41	268.43	268.43
	5690.101	268.41	268.42	268.42	268.41	268.43	268.43
5675	Dew Drop Inn						
	5665.793	268.41	268.42	268.42	268.41	268.43	268.43
	5653.55	268.41	268.42	268.42	268.41	268.43	268.43
	5646.039	268.37	268.42	268.42	268.37	268.42	268.42
5620	Hwy 7						
	5604.418	267.84	268.07	268.07	267.85	268.09	268.09
	5595.644	267.92	268.07	268.07	267.93	268.09	268.09
	5465.266	267.92	268.07	268.07	267.92	268.09	268.09
	5374.119	267.91	268.07	268.07	267.92	268.08	268.08
	5310.141	267.85	268.00	268.00	267.86	268.02	268.02
	5276.091	267.88	268.04	268.04	267.89	268.05	268.05
	5103.876	267.88	268.03	268.03	267.89	268.05	268.05
	4968.21	267.88	268.03	268.03	267.89	268.05	268.05
	4826.403	267.88	268.03	268.03	267.89	268.05	268.05
	4692.952	267.88	268.03	268.03	267.89	268.05	268.05
	4546.604	267.88	268.03	268.03	267.89	268.05	268.05
	4405.269	267.88	268.03	268.03	267.88	268.04	268.04

River Station	Water Surface elevation (m)			Water Surface elevation - with Fill (m)		
	100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future
4384.664	267.87	268.03	268.03	267.88	268.04	268.04
4380.968	267.87	268.03	268.03	267.88	268.04	268.04
4365 Colborne St						
4356.489	267.87	268.03	268.03	267.88	268.04	268.04
4347.811	267.87	268.03	268.03	267.88	268.04	268.04
4263.057	267.87	268.03	268.03	267.88	268.04	268.04
4108.305	267.87	268.03	268.03	267.88	268.04	268.04
3957.179	267.87	268.03	268.03	267.88	268.04	268.04
3804.186	267.87	268.03	268.03	267.88	268.04	268.04
3775.164	267.87	268.03	268.03	267.88	268.04	268.04
3762.625	267.87	268.03	268.03	267.88	268.04	268.04
3640.294	267.87	268.02	268.02	267.87	268.04	268.04
3630 Private Laneway						
3621.185	267.87	268.02	268.02	267.88	268.03	268.03
3613.455	267.87	268.02	268.02	267.88	268.03	268.03
3509.864	267.87	268.02	268.02	267.87	268.03	268.03
3380.367	267.87	268.02	268.02	267.87	268.03	268.03
3358.095	267.87	268.02	268.02	267.87	268.03	268.03
3200.809	267.87	268.02	268.02	267.87	268.03	268.03
3187.848	267.87	268.02	268.02	267.87	268.03	268.03
3046.813	267.87	268.01	268.01	267.87	268.03	268.03
3035.535	267.87	268.01	268.01	267.87	268.03	268.03
3010 Hwy 35						
3000.11	266.08	266.78	266.78	266.08	266.79	266.79
2986.996	266.10	266.77	266.77	266.10	266.78	266.78
2922.176	265.99	266.63	266.63	265.99	266.64	266.64
2810.224	265.93	266.56	266.56	265.92	266.57	266.57
2707.776	265.79	266.49	266.49	265.79	266.50	266.50
2618.286	265.53	266.39	266.39	265.53	266.40	266.40
2509.792	265.45	266.30	266.30	265.44	266.31	266.31
2406.341	265.31	266.24	266.24	265.30	266.25	266.25
2277.683	265.29	266.20	266.20	265.28	266.20	266.20
2156.937	265.29	266.21	266.21	265.28	266.22	266.22
2059.866	265.05	266.02	266.02	265.05	266.02	266.02
1920.857	265.05	266.01	266.01	265.04	266.02	266.02
1779.22	265.04	266.00	266.00	265.03	266.01	266.01
1662.759	265.03	266.00	266.00	265.02	266.00	266.00
1549.464	265.03	265.99	265.99	265.02	266.00	266.00
1455.968	265.02	265.99	265.99	265.01	265.99	265.99
1448.974	264.77	265.99	265.99	264.76	265.99	265.99
1426 Angeline St N						0.00
1407.546	261.23	262.54	262.54	261.23	262.56	262.56
1386.646	260.73	260.68	260.73	260.73	260.68	260.73
1276.628	259.01	259.24	259.24	259.01	259.25	259.25
1177.635	257.59	257.91	257.91	257.58	257.92	257.92
1021.897	256.76	257.02	257.02	256.76	257.02	257.02
927.3901	255.26	255.50	255.50	255.26	255.51	255.51
818.7001	254.52	254.69	254.69	254.52	254.71	254.71
718.5652	254.35	254.43	254.43	254.35	254.44	254.44
625.0873	254.30	254.35	254.35	254.30	254.36	254.36
517.84	254.32	254.38	254.38	254.32	254.39	254.39
463.252	254.31	254.37	254.37	254.31	254.38	254.38
411.8737	254.30	254.35	254.35	254.30	254.36	254.36
367.2808	254.30	254.35	254.35	254.30	254.36	254.36
273.7271	254.30	254.35	254.35	254.30	254.36	254.36
267	254.30	254.35	254.35	254.30	254.36	254.36
260 William St						
240.5027	254.29	254.34	254.34	254.29	254.35	254.35
236.8376	254.29	254.33	254.33	254.29	254.34	254.34
228	254.29	254.33	254.33	254.29	254.34	254.34
220	254.29	254.33	254.33	254.29	254.34	254.34
210 Rail Trail						
175	254.27	254.29	254.29	254.27	254.30	254.30
168.8194	254.27	254.29	254.29	254.27	254.30	254.30
154.6483	254.27	254.28	254.28	254.27	254.30	254.30
144.1	254.27	254.28	254.28	254.27	254.30	254.30
130 Outlet						
121	250.31	250.93	250.93	250.31	250.95	250.95
114	249.56	249.82	249.82	249.56	249.83	249.83
96.54452	249.50	249.77	249.77	249.50	249.78	249.78
0	248.58	248.77	248.77	248.58	248.77	248.77

HEC-RAS Output for Dynamic Models

Comparing flood elevations when levees are added on Hwy 35 & Woods of Jennings Ck

River Station		Water Surface elevation - No Fill (m)			Water Surface elevation - with Fill (m)		
		100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future
	7641.424	271.39	271.41	271.41	271.40	271.40	271.40
	7604.08	271.39	271.41	271.41	271.40	271.40	271.40
	7598.352	271.39	271.41	271.41	271.40	271.40	271.40
7580	Mall Entran	Culvert			Culvert	Culvert	Culvert
	7573.521	271.39	271.40	271.40	271.40	271.40	271.40
	7560.665	271.39	271.40	271.40	271.40	271.40	271.40
	7510.949	271.39	271.40	271.40	271.40	271.40	271.40
	7506.531	271.39	271.40	271.40	271.40	271.40	271.40
7460	Commerce	Culvert			Culvert	Culvert	Culvert
	7416.162	271.39	271.39	271.39	271.40	271.39	271.40
	7413.256	271.39	271.39	271.39	271.40	271.39	271.40
	7390.724	271.39	271.39	271.39	271.40	271.39	271.40
	7333.219	271.39	271.39	271.39	271.39	271.39	271.39
	7328.619	271.39	271.39	271.39	271.39	271.39	271.39
7319	Former trai	Culvert			Culvert	Culvert	Culvert
	7309.586	271.03	271.07	271.07	271.03	271.10	271.10
	7306.937	271.03	271.07	271.07	271.03	271.10	271.10
	7246.49	271.03	271.07	271.07	271.02	271.10	271.10
	7238.63	271.03	271.07	271.07	271.02	271.10	271.10
7190	McLachlin	Culvert			Culvert	Culvert	Culvert
	7156.184	270.90	271.07	271.07	270.89	271.09	271.09
	7153.097	270.90	271.07	271.07	270.89	271.09	271.09
	7127.958	270.90	271.07	271.07	270.89	271.09	271.09
	7111.02	270.90	271.07	271.07	270.89	271.09	271.09
	7106.395	270.90	271.07	271.07	270.89	271.09	271.09
7095	Ball Field	Culvert			Culvert	Culvert	Culvert
	7088.943	270.89	271.07	271.07	270.88	271.09	271.09
	7083.163	270.89	271.07	271.07	270.88	271.09	271.09
	7071.306	270.89	271.07	271.07	270.88	271.09	271.09
	6917.282	270.89	271.07	271.07	270.88	271.09	271.09
	6857.851	270.89	271.07	271.07	270.88	271.09	271.09
	6853.017	270.89	271.07	271.07	270.88	271.09	271.09
6840	Greenfield	Culvert			Culvert	Culvert	Culvert
	6826.129	270.40	271.06	271.06	270.52	271.09	271.09
	6821.096	270.40	271.06	271.06	270.52	271.09	271.09
	6757.544	270.40	271.06	271.06	270.52	271.09	271.09
	6710.332	270.40	271.06	271.06	270.52	271.09	271.09
	6706.899	270.39	271.06	271.06	270.52	271.09	271.09
6690	Hwy 7	Culvert			Culvert	Culvert	Culvert
	6676.99	268.63	268.71	268.71	268.64	268.71	268.71
	6669.684	268.75	268.87	268.87	268.76	268.87	268.87
	6564.455	268.57	268.72	268.72	268.59	268.72	268.72
	6486.756	268.42	268.61	268.61	268.44	268.61	268.61
	6410.625	268.33	268.54	268.54	268.35	268.55	268.55
	6335.876	268.22	268.47	268.47	268.24	268.48	268.48
	6190.578	268.02	268.40	268.40	268.04	268.41	268.41
	6116.845	267.93	268.40	268.40	267.95	268.40	268.40
	6084.086	267.93	268.40	268.40	267.95	268.40	268.40
	6062.64	267.93	268.40	268.40	267.95	268.40	268.40
	5975.085	267.93	268.40	268.40	267.95	268.40	268.40
	5880.376	267.93	268.40	268.40	267.95	268.40	268.40
	5704.059	267.93	268.40	268.40	267.95	268.40	268.40
	5690.101	267.92	268.40	268.40	267.95	268.40	268.40
5675	Dew Drop I	Culvert			Culvert	Culvert	Culvert
	5665.793	267.53	268.39	268.39	267.54	268.40	268.40
	5653.55	267.55	268.39	268.39	267.57	268.40	268.40
	5646.039	267.52	268.38	268.38	267.54	268.39	268.39
5620	Hwy 7	Culvert			Culvert	Culvert	Culvert
	5604.418	267.12	267.67	267.67	267.15	267.74	267.74
	5595.644	267.14	267.68	267.68	267.18	267.75	267.75
	5465.266	267.05	267.68	267.68	267.12	267.75	267.75
	5374.119	267.02	267.68	267.68	267.10	267.75	267.75
	5310.141	266.97	267.68	267.68	267.07	267.74	267.74
	5276.091	266.95	267.67	267.67	267.05	267.74	267.74
	5103.876	266.93	267.67	267.67	267.04	267.74	267.74
	4968.21	266.91	267.67	267.67	267.04	267.74	267.74
	4826.403	266.90	267.67	267.67	267.03	267.74	267.74

HEC-RAS Output for Dynamic Models

Comparing flood elevations when levees are added on Hwy 35 & Woods of Jennings Ck

River Station	Water Surface elevation - No Fill (m)			Water Surface elevation - with Fill (m)		
	100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future
4692.952	266.89	267.67	267.67	267.03	267.74	267.74
4546.604	266.88	267.67	267.67	267.03	267.74	267.74
4405.269	266.87	267.67	267.67	267.02	267.74	267.74
4384.664	266.87	267.67	267.67	267.02	267.74	267.74
4380.968	266.86	267.67	267.67	267.02	267.74	267.74
4365 Colborne S	Culvert			Culvert	Culvert	Culvert
4356.489	266.71	267.41	267.41	266.89	267.73	267.73
4347.811	266.71	267.41	267.41	266.89	267.73	267.73
4263.057	266.71	267.41	267.41	266.89	267.73	267.73
4108.305	266.71	267.41	267.41	266.89	267.72	267.72
3957.179	266.71	267.41	267.41	266.88	267.72	267.72
3804.186	266.70	267.41	267.41	266.88	267.72	267.72
3775.164	266.69	267.41	267.41	266.88	267.72	267.72
3762.625	266.70	267.41	267.41	266.88	267.72	267.72
3640.294	266.67	267.40	267.40	266.87	267.72	267.72
3630 Private Lar	Culvert			Culvert	Culvert	Culvert
3621.185	266.64	267.41	267.41	266.84	267.72	267.72
3613.455	266.64	267.41	267.41	266.84	267.72	267.72
3509.864	266.64	267.40	267.40	266.84	267.72	267.72
3380.367	266.64	267.40	267.40	266.84	267.72	267.72
3358.095	266.64	267.40	267.40	266.84	267.72	267.72
3200.809	266.63	267.40	267.40	266.83	267.72	267.72
3187.848	266.62	267.40	267.40	266.83	267.72	267.72
3046.813	266.57	267.40	267.40	266.81	267.71	267.71
3035.535	266.54	267.37	267.37	266.77	267.71	267.71
3010 Hwy 35	Culvert			Culvert	Culvert	Culvert
3000.11	265.48	265.75	265.75	265.54	265.84	265.84
2986.996	265.53	265.82	265.82	265.61	265.92	265.92
2922.176	265.45	265.74	265.74	265.52	265.83	265.83
2810.224	265.38	265.68	265.68	265.45	265.78	265.78
2707.776	265.27	265.58	265.58	265.33	265.67	265.67
2618.286	264.87	265.37	265.37	264.95	265.46	265.46
2509.792	264.70	265.30	265.30	264.81	265.39	265.39
2406.341	264.58	265.21	265.21	264.70	265.29	265.29
2277.683	264.54	265.18	265.18	264.66	265.27	265.27
2156.937	264.53	265.18	265.18	264.66	265.26	265.26
2059.866	263.23	263.38	263.38	263.25	263.44	263.44
1920.857	263.16	263.28	263.28	263.17	263.34	263.34
1779.22	263.10	263.17	263.17	263.10	263.22	263.22
1662.759	263.06	263.07	263.07	263.06	263.12	263.12
1549.464	262.34	262.84	262.84	262.34	262.88	262.88
1455.968	262.12	262.76	262.76	262.13	262.82	262.82
1448.974	262.02	262.64	262.64	262.04	262.70	262.70
1426 Angeline S	Culvert			Culvert	Culvert	Culvert
1407.546	260.40	260.40	260.40	260.40	260.40	260.40
1397.09*	260.79	260.94	260.94	260.80	260.97	260.97
1386.646	260.70	260.83	260.83	260.74	260.90	260.90
1368.31*	260.56	260.61	260.61	260.52	260.64	260.64
1349.97*	260.16	260.57	260.57	260.16	260.60	260.60
1331.63*	259.61	259.65	259.65	259.68	259.65	259.68
1313.30*	259.36	259.61	259.61	259.51	259.67	259.67
1294.96*	258.80	258.84	258.84	258.80	258.84	258.84
1276.628	258.39	258.93	258.93	258.45	258.92	258.92
1256.82*	258.28	258.20	258.28	258.27	258.17	258.27
1237.03*	257.72	258.08	258.08	257.74	258.12	258.12
1217.23*	257.43	257.44	257.44	257.44	257.44	257.44
1197.43*	257.04	257.23	257.23	257.04	257.25	257.25
1177.635	256.97	257.20	257.20	256.98	257.22	257.22
1158.16*	256.87	257.11	257.11	256.88	257.13	257.13
1138.7*	256.78	257.02	257.02	256.79	257.04	257.04
1119.23*	256.68	256.92	256.92	256.69	256.95	256.95
1099.76*	256.57	256.82	256.82	256.59	256.84	256.84
1080.29*	256.45	256.69	256.69	256.46	256.71	256.71
1060.83*	256.27	256.48	256.48	256.28	256.50	256.50
1041.36*	256.17	256.41	256.41	256.18	256.43	256.43
1021.897	256.09	256.31	256.31	256.11	256.34	256.34
1002.99*	256.01	256.24	256.24	256.03	256.26	256.26

HEC-RAS Output for Dynamic Models

Comparing flood elevations when levees are added on Hwy 35 & Woods of Jennings Ck

River Station	Water Surface elevation - No Fill (m)			Water Surface elevation - with Fill (m)		
	100yr Future	Timmins Future	Regulatory Future	100yr Future	Timmins Future	Regulatory Future
984.094*	255.88	256.10	256.10	255.90	256.12	256.12
965.192*	255.73	255.95	255.95	255.75	255.97	255.97
946.291*	255.57	255.77	255.77	255.59	255.79	255.79
927.3901	255.34	255.53	255.53	255.36	255.56	255.56
909.275*	255.12	255.30	255.30	255.13	255.32	255.32
891.160*	254.92	255.09	255.09	254.93	255.11	255.11
873.045*	254.67	254.87	254.87	254.68	254.89	254.89
854.930*	254.40	254.70	254.70	254.41	254.72	254.72
836.815*	254.16	254.61	254.61	254.18	254.63	254.63
818.7001	254.02	254.56	254.56	254.04	254.59	254.59
802.010*	253.95	254.55	254.55	253.97	254.57	254.57
785.321*	253.76	254.52	254.52	253.77	254.54	254.54
768.632*	253.55	254.49	254.49	253.57	254.52	254.52
751.943*	253.36	254.48	254.48	253.40	254.50	254.50
735.254*	253.31	254.47	254.47	253.36	254.49	254.49
718.5652	253.29	254.46	254.46	253.33	254.48	254.48
699.869*	253.26	254.45	254.45	253.32	254.47	254.47
681.174*	253.25	254.44	254.44	253.30	254.46	254.46
662.478*	253.23	254.44	254.44	253.29	254.46	254.46
643.782*	253.23	254.43	254.43	253.29	254.45	254.45
625.0873	253.22	254.43	254.43	253.28	254.45	254.45
607.212*	253.22	254.43	254.43	253.28	254.45	254.45
589.338*	253.22	254.43	254.43	253.28	254.45	254.45
571.463*	253.22	254.43	254.43	253.28	254.45	254.45
553.589*	253.22	254.43	254.43	253.28	254.45	254.45
535.714*	253.22	254.43	254.43	253.28	254.45	254.45
517.84	253.22	254.43	254.43	253.28	254.45	254.45
499.644*	253.21	254.43	254.43	253.27	254.45	254.45
481.448*	253.21	254.43	254.43	253.27	254.44	254.44
463.252	253.21	254.43	254.43	253.27	254.44	254.44
446.125*	253.20	254.42	254.42	253.26	254.44	254.44
428.999*	253.19	254.42	254.42	253.26	254.44	254.44
411.8737	253.19	254.42	254.42	253.25	254.44	254.44
397.009*	253.19	254.42	254.42	253.25	254.44	254.44
382.145*	253.19	254.42	254.42	253.25	254.44	254.44
367.2808	253.19	254.42	254.42	253.25	254.44	254.44
348.570*	253.19	254.42	254.42	253.25	254.44	254.44
329.859*	253.19	254.42	254.42	253.25	254.44	254.44
311.148*	253.19	254.42	254.42	253.25	254.44	254.44
292.437*	253.19	254.42	254.42	253.25	254.44	254.44
273.7271	253.19	254.42	254.42	253.25	254.44	254.44
267	253.19	254.42	254.42	253.25	254.44	254.44
260 William St	Culvert			Culvert	Culvert	Culvert
240.5027	253.18	254.41	254.41	253.25	254.43	254.43
236.8376	253.18	254.41	254.41	253.25	254.43	254.43
228	253.18	254.41	254.41	253.25	254.43	254.43
220	253.18	254.41	254.41	253.24	254.42	254.42
210 Rail Trail	Culvert			Culvert	Culvert	Culvert
175	253.13	254.36	254.36	253.19	254.38	254.38
168.8194	253.14	254.37	254.37	253.20	254.38	254.38
154.6483	253.14	254.37	254.37	253.20	254.38	254.38
144.1	253.08	254.25	254.25	253.15	254.26	254.26
130 Outlet	Culvert			Culvert	Culvert	Culvert
121	248.45	248.55	248.55	248.47	248.56	248.56
114	248.98	249.43	249.43	248.99	249.47	249.47
96.54452	248.93	249.38	249.38	248.93	249.43	249.43
77.2356*	248.61	249.08	249.08	248.61	249.14	249.14
57.9267*	248.58	248.88	248.88	248.58	248.91	248.91
38.6178*	248.51	248.82	248.82	248.52	248.85	248.85
19.3089*	248.43	248.73	248.73	248.44	248.76	248.76
0	248.25	248.54	248.54	248.25	248.57	248.57

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Sheet: Dynamic with filling

Comparing overbank Velocities

Peer reviewed base model vs. 2-zone Plans

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	
7641.424	Regulatory Flows	2Zone	23.01	271.58	0.06	0.09	0.08	-0.04
7641.424	Regional Flows f	Peer base	23.01	271.54	0.06	0.09	0.08	
7604.08	Regulatory Flows	2Zone	23.01	271.58	0.1	0.14	0.14	-0.04
7604.08	Regional Flows f	Peer base	23.01	271.54	0.11	0.14	0.14	
7598.352	Regulatory Flows	2Zone	23.01	271.58	0.12	0.18	0.16	-0.04
7598.352	Regional Flows f	Peer base	23.01	271.54	0.13	0.19	0.17	
7580 Mall Entrance								
7573.521	Regulatory Flows	2Zone	23.01	271.58	0.26	0.32	0.28	-0.04
7573.521	Regional Flows f	Peer base	23.01	271.54	0.28	0.33	0.3	
7560.665	Regulatory Flows	2Zone	23.01	271.57	0.3	0.39	0.31	-0.04
7560.665	Regional Flows f	Peer base	23.01	271.53	0.33	0.41	0.33	
7510.949	Regulatory Flows	2Zone	19.28	271.58	0.11	0.17	0.14	-0.04
7510.949	Regional Flows f	Peer base	19.15	271.54	0.11	0.18	0.15	
7506.531	Regulatory Flows	2Zone	19.28	271.57	0.13	0.17	0.18	-0.03
7506.531	Regional Flows f	Peer base	19.15	271.54	0.13	0.17	0.19	
7460 Commerce Rd								
7416.162	Regulatory Flows	2Zone	19.28	271.57	0.11	0.14	0.07	-0.03
7416.162	Regional Flows f	Peer base	19.15	271.54	0.12	0.14	0.07	
7413.256	Regulatory Flows	2Zone	19.28	271.57	0.14	0.09	0.08	-0.03
7413.256	Regional Flows f	Peer base	19.15	271.54	0.15	0.09	0.08	
7390.724	Regulatory Flows	2Zone	19.28	271.57	0.27	0.11	0.18	-0.04
7390.724	Regional Flows f	Peer base	19.15	271.53	0.28	0.12	0.19	
7333.219	Regulatory Flows	2Zone	19.28	271.56	0.2	0.16	0.15	-0.03
7333.219	Regional Flows f	Peer base	19.15	271.53	0.21	0.16	0.16	
7328.619	Regulatory Flows	2Zone	17.9	271.56	0.2	0.19	0.17	-0.03
7328.619	Regional Flows f	Peer base	17.78	271.53	0.21	0.19	0.18	
7319 Former train tra								
7309.586	Regulatory Flows	2Zone	17.9	271.56	0.18	0.19	0.12	-0.03
7309.586	Regional Flows f	Peer base	17.78	271.53	0.19	0.19	0.12	
7306.937	Regulatory Flows	2Zone	17.9	271.56	0.13	0.11	0.07	-0.03
7306.937	Regional Flows f	Peer base	17.78	271.53	0.14	0.12	0.08	
7246.49	Regulatory Flows	2Zone	16.2	271.56	0.11	0.11	0.04	-0.03
7246.49	Regional Flows f	Peer base	16.2	271.53	0.12	0.11	0.04	
7238.63	Regulatory Flows	2Zone	16.2	271.56	0.08	0.09	0.03	-0.03
7238.63	Regional Flows f	Peer base	16.2	271.53	0.09	0.09	0.03	
7190 McLachlin Rd								
7156.184	Regulatory Flows	2Zone	16.2	271.56	0.05	0.06	0.04	-0.03
7156.184	Regional Flows f	Peer base	16.2	271.53	0.05	0.07	0.04	
7153.097	Regulatory Flows	2Zone	16.2	271.56	0.04	0.06	0.02	-0.03
7153.097	Regional Flows f	Peer base	16.2	271.53	0.04	0.06	0.02	
7127.958	Regulatory Flows	2Zone	16.2	271.56	0.03	0.04	0.02	-0.03
7127.958	Regional Flows f	Peer base	16.2	271.53	0.03	0.04	0.02	
7111.02	Regulatory Flows	2Zone	22.23	271.56	0.06	0.07	0.05	-0.03
7111.02	Regional Flows f	Peer base	22.24	271.53	0.06	0.07	0.05	
7106.395	Regulatory Flows	2Zone	22.23	271.56	0.06	0.07	0.05	-0.03
7106.395	Regional Flows f	Peer base	22.24	271.53	0.06	0.07	0.05	
7095 Ball Field								
7088.943	Regulatory Flows	2Zone	22.23	271.56	0.06	0.05	0.03	-0.04
7088.943	Regional Flows f	Peer base	22.24	271.52	0.06	0.05	0.03	
7083.163	Regulatory Flows	2Zone	22.23	271.55	0.14	0.07	0.08	-0.03
7083.163	Regional Flows f	Peer base	22.24	271.52	0.15	0.07	0.08	
7071.306	Regulatory Flows	2Zone	22.23	271.55	0.14	0.04	0.08	-0.03
7071.306	Regional Flows f	Peer base	22.24	271.52	0.14	0.04	0.08	
6917.282	Regulatory Flows	2Zone	22.23	271.55	0.14	0.06	0.09	-0.03
6917.282	Regional Flows f	Peer base	22.24	271.52	0.15	0.06	0.1	

Comparing overbank Velocities

Peer reviewed base model vs. 2-zone Plans

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	
6857.851	Regulatory Flows	2Zone	22.23	271.55	0.13	0.06	0.08	-0.03
6857.851	Regional Flows f	Peer base	22.24	271.52	0.13	0.07	0.08	
6853.017	Regulatory Flows	2Zone	19.62	271.55	0.11	0.04	0.06	-0.03
6853.017	Regional Flows f	Peer base	19.34	271.52	0.11	0.05	0.07	
6840 Greenfield								
6826.129	Regulatory Flows	2Zone	19.62	271.54	0.08	0.04	0.05	-0.02
6826.129	Regional Flows f	Peer base	19.34	271.52	0.09	0.04	0.05	
6821.096	Regulatory Flows	2Zone	19.62	271.54	0.08	0.04	0.04	-0.02
6821.096	Regional Flows f	Peer base	19.34	271.52	0.08	0.04	0.04	
6757.544	Regulatory Flows	2Zone	26.74	271.54	0.12	0.05	0.05	-0.02
6757.544	Regional Flows f	Peer base	26.22	271.52	0.12	0.05	0.05	
6710.332	Regulatory Flows	2Zone	26.74	271.54	0.08	0.05	0.04	-0.02
6710.332	Regional Flows f	Peer base	26.22	271.52	0.08	0.05	0.04	
6706.899	Regulatory Flows	2Zone	26.74	271.54	0.09	0.05	0.04	-0.02
6706.899	Regional Flows f	Peer base	26.22	271.52	0.08	0.05	0.04	
6690 Hwy 7								
6676.99	Regulatory Flows	2Zone	26.74	269.97	5.27			-0.04
6676.99	Regional Flows f	Peer base	26.22	269.93	5.24			
6669.684	Regulatory Flows	2Zone	26.74	268.58	6.54			0
6669.684	Regional Flows f	Peer base	26.22	268.58	6.48			
6564.455	Regulatory Flows	2Zone	26.74	269.71	1.75	0.57	1.06	-0.02
6564.455	Regional Flows f	Peer base	26.22	269.69	1.77	0.59	1.06	
6486.756	Regulatory Flows	2Zone	26.74	269.41	2.06			-0.02
6486.756	Regional Flows f	Peer base	26.22	269.39	2.03			
6410.625	Regulatory Flows	2Zone	26.74	269.12	1.97		0.29	-0.01
6410.625	Regional Flows f	Peer base	26.22	269.11	1.94		0.28	
6335.876	Regulatory Flows	2Zone	26.74	268.79	2.13		0.69	0
6335.876	Regional Flows f	Peer base	26.22	268.79	2.12		0.68	
6190.578	Regulatory Flows	2Zone	25.31	268.44	0.81	0.47	0.29	-0.01
6190.578	Regional Flows f	Peer base	25.05	268.43	0.81	0.47	0.28	
6116.845	Regulatory Flows	2Zone	25.31	268.43	0.11	0.09	0.03	0
6116.845	Regional Flows f	Peer base	25.05	268.43	0.11	0.09	0.03	
6084.086	Regulatory Flows	2Zone	25.31	268.43	0.14	0.12		0
6084.086	Regional Flows f	Peer base	25.05	268.43	0.14	0.12		
6062.64	Regulatory Flows	2Zone	25.31	268.43	0.2	0.12	0.12	0
6062.64	Regional Flows f	Peer base	25.05	268.43	0.19	0.12	0.11	
5975.085	Regulatory Flows	2Zone	25.31	268.43	0.17	0.11	0.1	0
5975.085	Regional Flows f	Peer base	25.05	268.43	0.17	0.11	0.1	
5880.376	Regulatory Flows	2Zone	20.58	268.43	0.09	0.06	0.04	0
5880.376	Regional Flows f	Peer base	20.42	268.43	0.09	0.06	0.04	
5704.059	Regulatory Flows	2Zone	20.58	268.43	0.06	0.04	0.04	0
5704.059	Regional Flows f	Peer base	20.42	268.43	0.06	0.04	0.04	
5690.101	Regulatory Flows	2Zone	20.58	268.43	0.08	0.04	0.04	0
5690.101	Regional Flows f	Peer base	20.42	268.43	0.08	0.04	0.04	
5675 Dew Drop Inn								
5665.793	Regulatory Flows	2Zone	20.58	268.43	0.12	0.06	0.07	-0.01
5665.793	Regional Flows f	Peer base	20.42	268.42	0.12	0.06	0.07	
5653.55	Regulatory Flows	2Zone	40.69	268.43	0.28	0.16	0.14	-0.01
5653.55	Regional Flows f	Peer base	40.27	268.42	0.27	0.15	0.14	
5646.039	Regulatory Flows	2Zone	40.69	268.42	0.38	0.22	0.12	0
5646.039	Regional Flows f	Peer base	40.27	268.42	0.38	0.22	0.12	
5620 Hwy 7								
5604.418	Regulatory Flows	2Zone	40.69	268.09	0.44	0.18	0.19	-0.02
5604.418	Regional Flows f	Peer base	40.27	268.07	0.45	0.19	0.2	

Comparing overbank Velocities

Peer reviewed base model vs. 2-zone Plans

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	
5595.644	Regulatory Flows	2Zone	40.69	268.09	0.23	0.14	0.1	-0.02
5595.644	Regional Flows f	Peer base	40.27	268.07	0.23	0.14	0.11	
5465.266	Regulatory Flows	2Zone	38.79	268.09	0.14	0.05	0.08	-0.02
5465.266	Regional Flows f	Peer base	38.27	268.07	0.14	0.05	0.08	
5374.119	Regulatory Flows	2Zone	38.79	268.08	0.11	0.05	0.07	-0.01
5374.119	Regional Flows f	Peer base	38.27	268.07	0.12	0.05	0.07	
5310.141	Regulatory Flows	2Zone	38.79	268.02	1.23	0.52	0.71	-0.02
5310.141	Regional Flows f	Peer base	38.27	268	1.22	0.52	0.71	
5276.091	Regulatory Flows	2Zone	38.79	268.05	0.26	0.12	0.14	-0.01
5276.091	Regional Flows f	Peer base	38.27	268.04	0.25	0.12	0.14	
5103.876	Regulatory Flows	2Zone	38.79	268.05	0.22	0.05	0.14	-0.02
5103.876	Regional Flows f	Peer base	38.27	268.03	0.22	0.05	0.14	
4968.21	Regulatory Flows	2Zone	31.75	268.05	0.13	0.04	0.07	-0.02
4968.21	Regional Flows f	Peer base	28.98	268.03	0.12	0.03	0.06	
4826.403	Regulatory Flows	2Zone	31.75	268.05	0.09	0.04	0.04	-0.02
4826.403	Regional Flows f	Peer base	28.98	268.03	0.08	0.04	0.03	
4692.952	Regulatory Flows	2Zone	31.75	268.05	0.13	0.03	0.07	-0.02
4692.952	Regional Flows f	Peer base	28.98	268.03	0.12	0.03	0.07	
4546.604	Regulatory Flows	2Zone	31.75	268.05	0.22	0.05	0.14	-0.02
4546.604	Regional Flows f	Peer base	28.98	268.03	0.19	0.04	0.11	
4405.269	Regulatory Flows	2Zone	31.75	268.04	0.29	0.05	0.16	-0.01
4405.269	Regional Flows f	Peer base	28.98	268.03	0.27	0.05	0.15	
4384.664	Regulatory Flows	2Zone	31.75	268.04	0.25	0.05	0.11	-0.01
4384.664	Regional Flows f	Peer base	28.98	268.03	0.23	0.05	0.1	
4380.968	Regulatory Flows	2Zone	21.57	268.04	0.15	0.03	0.05	-0.01
4380.968	Regional Flows f	Peer base	27.61	268.03	0.19	0.04	0.06	
4365 Colborne St								
4356.489	Regulatory Flows	2Zone	21.57	268.04	0.16	0.03	0.06	-0.01
4356.489	Regional Flows f	Peer base	27.61	268.03	0.21	0.04	0.07	
4347.811	Regulatory Flows	2Zone	21.57	268.04	0.17	0.03	0.1	-0.01
4347.811	Regional Flows f	Peer base	27.61	268.03	0.22	0.04	0.12	
4263.057	Regulatory Flows	2Zone	21.57	268.04	0.19	0.04	0.09	-0.01
4263.057	Regional Flows f	Peer base	27.61	268.03	0.05	0.01	0.03	
4108.305	Regulatory Flows	2Zone	21.57	268.04	0.23	0.05	0.14	-0.01
4108.305	Regional Flows f	Peer base	27.61	268.03	0.04	0.01	0.02	
3957.179	Regulatory Flows	2Zone	13.61	268.04	0.1	0.05	0.04	-0.01
3957.179	Regional Flows f	Peer base	24.1	268.03	0.03	0.02	0.02	
3804.186	Regulatory Flows	2Zone	13.61	268.04	0.08	0.04	0.05	-0.01
3804.186	Regional Flows f	Peer base	24.1	268.03	0.14	0.08	0.09	
3775.164	Regulatory Flows	2Zone	13.61	268.04	0.06	0.04	0.05	-0.01
3775.164	Regional Flows f	Peer base	24.1	268.03	0.12	0.07	0.08	
3762.625	Regulatory Flows	2Zone	13.61	268.04	0.05	0.03	0.05	-0.01
3762.625	Regional Flows f	Peer base	24.1	268.03	0.09	0.06	0.08	
3640.294	Regulatory Flows	2Zone	13.61	268.04	0.18	0.08	0.08	-0.02
3640.294	Regional Flows f	Peer base	24.1	268.02	0.33	0.15	0.14	
3630 Private Laneway								
3621.185	Regulatory Flows	2Zone	13.61	268.03	0.07	0.03	0.04	-0.01
3621.185	Regional Flows f	Peer base	24.1	268.02	0.12	0.06	0.07	
3613.455	Regulatory Flows	2Zone	13.61	268.03	0.08	0.04	0.04	-0.01
3613.455	Regional Flows f	Peer base	24.1	268.02	0.15	0.08	0.08	
3509.864	Regulatory Flows	2Zone	19.14	268.03	0.07	0.03	0.08	-0.01
3509.864	Regional Flows f	Peer base	24.02	268.02	0.09	0.04	0.11	
3380.367	Regulatory Flows	2Zone	19.14	268.03	0.04	0.02	0.05	-0.01
3380.367	Regional Flows f	Peer base	24.02	268.02	0.05	0.03	0.07	
3358.095	Regulatory Flows	2Zone	19.14	268.03	0.04	0.02	0.03	-0.01
3358.095	Regional Flows f	Peer base	24.02	268.02	0.05	0.02	0.04	

Comparing overbank Velocities
Peer reviewed base model vs. 2-zone Plans

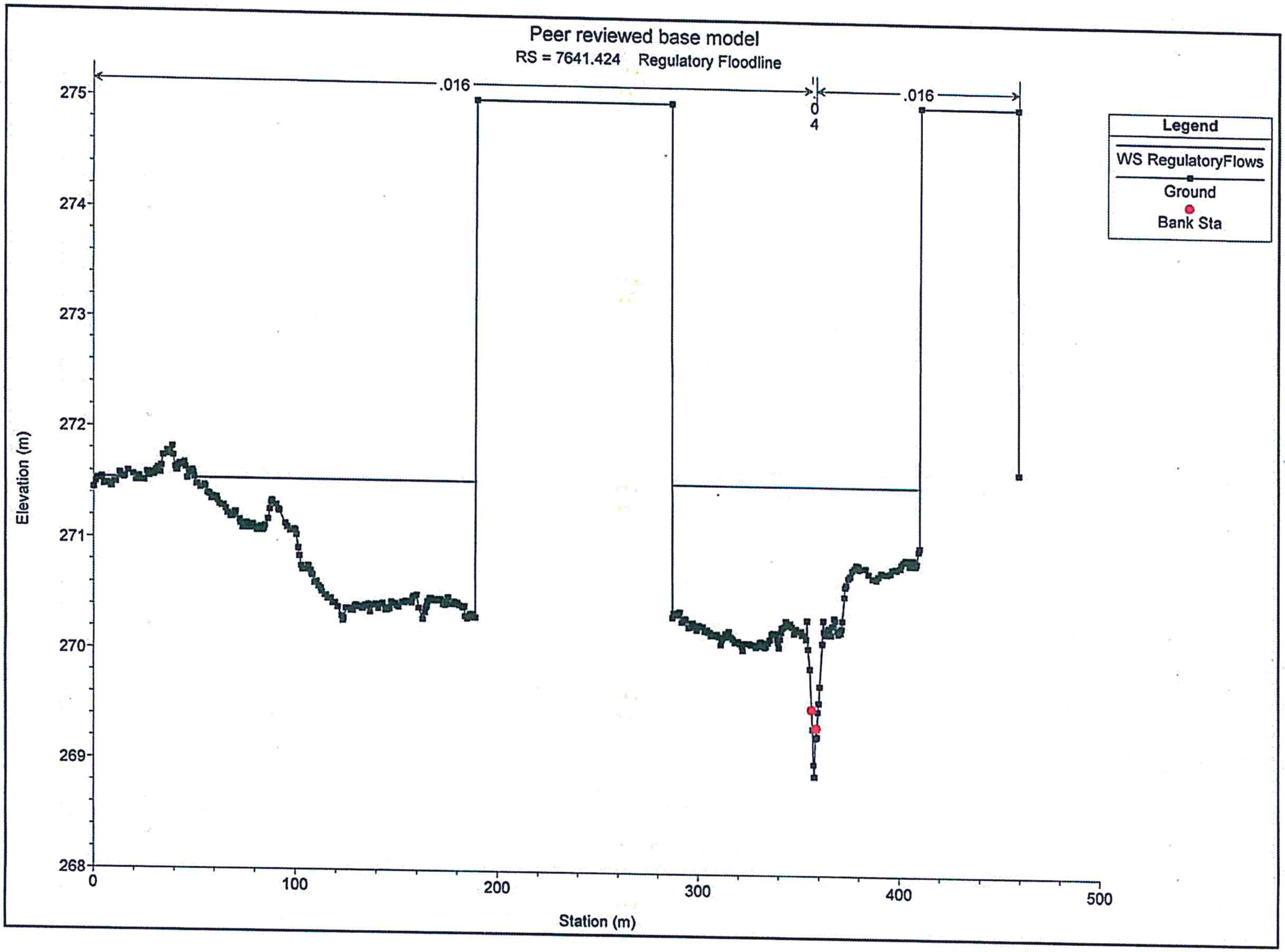
River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	
3200.809	Regulatory Flows	2Zone	19.14	268.03	0.06	0.03	0.02	-0.01
3200.809	Regional Flows f	Peer base	24.02	268.02	0.08	0.03	0.03	
3187.848	Regulatory Flows	2Zone	65.38	268.03	0.29	0.13	0.14	-0.01
3187.848	Regional Flows f	Peer base	63.24	268.02	0.29	0.13	0.14	
3046.813	Regulatory Flows	2Zone	65.38	268.03	0.28	0.28	0.15	-0.02
3046.813	Regional Flows f	Peer base	63.24	268.01	0.27	0.27	0.15	
3035.535	Regulatory Flows	2Zone	65.38	268.03	0.21	0.24	0.12	-0.02
3035.535	Regional Flows f	Peer base	63.24	268.01	0.2	0.23	0.11	
3010 Hwy 35								
3000.11	Regulatory Flows	2Zone	65.38	266.79	0.94	0.22	0.27	-0.01
3000.11	Regional Flows f	Peer base	63.24	266.78	0.93	0.22	0.27	
2986.996	Regulatory Flows	2Zone	65.38	266.78	0.99	0.28	0.25	-0.01
2986.996	Regional Flows f	Peer base	63.24	266.77	0.98	0.27	0.25	
2922.176	Regulatory Flows	2Zone	64.02	266.64	1.88	0.52	0.51	-0.01
2922.176	Regional Flows f	Peer base	63.16	266.63	1.88	0.53	0.52	
2810.224	Regulatory Flows	2Zone	64.02	266.57	1.69	0.48	0.73	-0.01
2810.224	Regional Flows f	Peer base	63.16	266.56	1.69	0.48	0.73	
2707.776	Regulatory Flows	2Zone	64.02	266.5	1.79	0.71	0.76	-0.01
2707.776	Regional Flows f	Peer base	63.16	266.49	1.79	0.71	0.75	
2618.286	Regulatory Flows	2Zone	64.02	266.4	2	0.93	0.96	-0.01
2618.286	Regional Flows f	Peer base	63.16	266.39	2	0.94	0.96	
2509.792	Regulatory Flows	2Zone	64.02	266.31	1.77	0.69	1.07	-0.01
2509.792	Regional Flows f	Peer base	63.16	266.3	1.74	0.72	1.05	
2406.341	Regulatory Flows	2Zone	64.02	266.25	1.54	0.62	0.65	-0.01
2406.341	Regional Flows f	Peer base	63.16	266.24	1.54	0.61	0.64	
2277.683	Regulatory Flows	2Zone	64.02	266.2	1.14	0.26	0.26	0
2277.683	Regional Flows f	Peer base	63.16	266.2	1.13	0.26	0.26	
2156.937	Regulatory Flows	2Zone	64.02	266.22	0.72	0.51	0.19	-0.01
2156.937	Regional Flows f	Peer base	63.16	266.21	0.72	0.51	0.19	
2059.866	Regulatory Flows	2Zone	64.02	266.02	0.46	0.33	0.13	0
2059.866	Regional Flows f	Peer base	63.16	266.02	0.46	0.33	0.13	
1920.857	Regulatory Flows	2Zone	64.02	266.02	0.42	0.34	0.12	-0.01
1920.857	Regional Flows f	Peer base	63.16	266.01	0.41	0.34	0.12	
1779.22	Regulatory Flows	2Zone	64.02	266.01	0.56	0.44	0.16	-0.01
1779.22	Regional Flows f	Peer base	63.16	266	0.55	0.43	0.15	
1662.759	Regulatory Flows	2Zone	64.02	266	0.52	0.35	0.41	0
1662.759	Regional Flows f	Peer base	63.16	266	0.51	0.34	0.4	
1549.464	Regulatory Flows	2Zone	64.02	266	0.47	0.29	0.32	-0.01
1549.464	Regional Flows f	Peer base	63.16	265.99	0.47	0.29	0.32	
1455.968	Regulatory Flows	2Zone	73.45	265.99	0.55	0.3	0.2	0
1455.968	Regional Flows f	Peer base	72.99	265.99	0.55	0.3	0.2	
1448.974	Regulatory Flows	2Zone	73.45	265.99	0.47	0.32	0.16	0
1448.974	Regional Flows f	Peer base	72.99	265.99	0.47	0.32	0.16	
1426 Angeline St N								
1407.546	Regulatory Flows	2Zone	73.45	262.56	5.46			-0.02
1407.546	Regional Flows f	Peer base	72.99	262.54	5.45			
1386.646	Regulatory Flows	2Zone	73.45	260.68	8.61	2.17	2.36	0
1386.646	Regional Flows f	Peer base	72.99	260.68	8.58	2.16	2.35	
1276.628	Regulatory Flows	2Zone	73.45	259.25	4.03	0.64	0.97	-0.01
1276.628	Regional Flows f	Peer base	72.99	259.24	4.02	0.63	0.97	
1177.635	Regulatory Flows	2Zone	73.45	257.92	2.53	0.5	0.75	-0.01
1177.635	Regional Flows f	Peer base	72.99	257.91	2.52	0.5	0.75	
1021.897	Regulatory Flows	2Zone	73.45	257.02	3.99	0.97	1.11	0
1021.897	Regional Flows f	Peer base	72.99	257.02	3.98	0.96	1.1	
927.3901	Regulatory Flows	2Zone	73.45	255.51	3.39	2.22	1.38	-0.01

Comparing overbank Velocities
Peer reviewed base model vs. 2-zone Plans

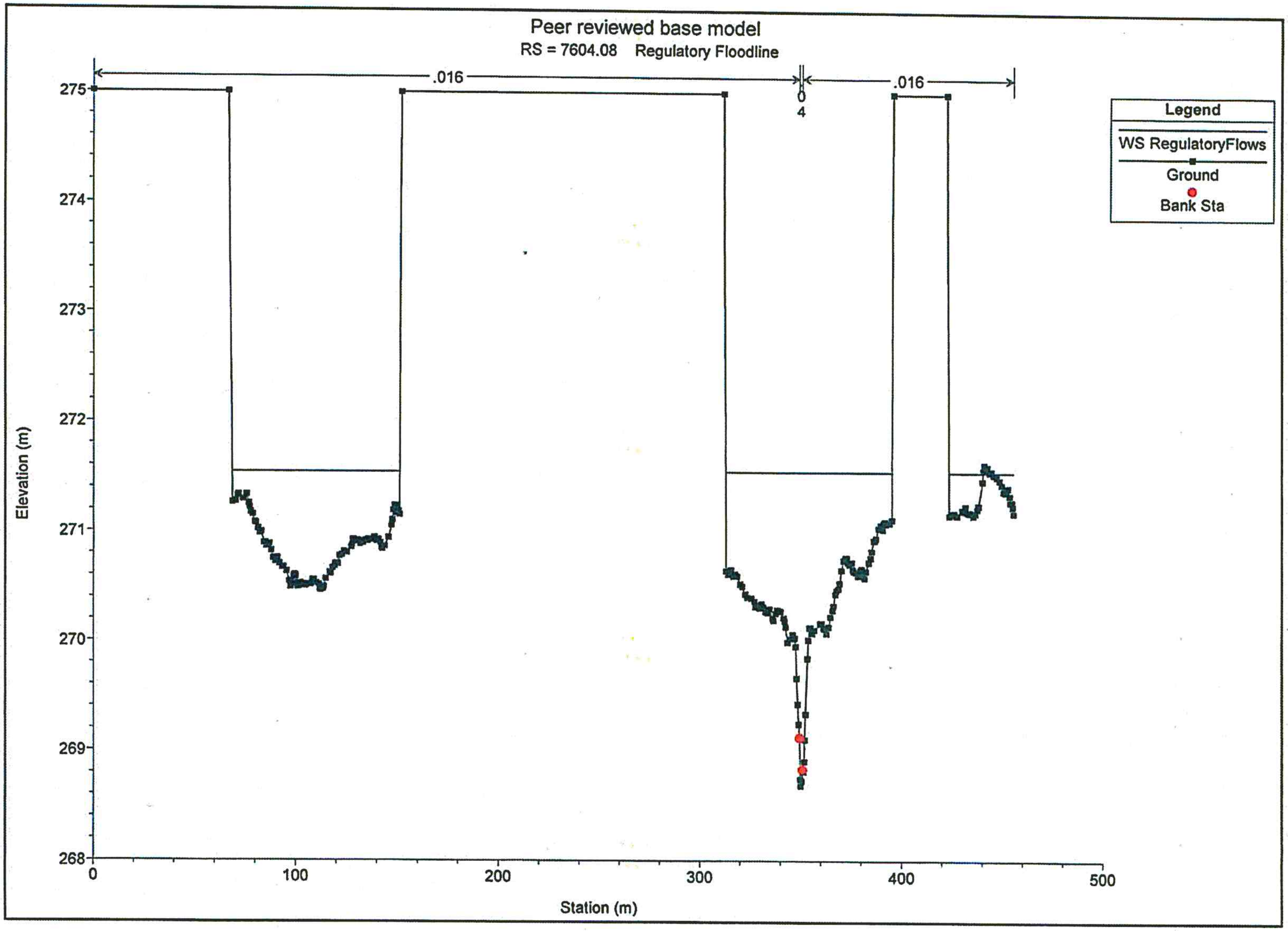
River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	
927.3901	Regional Flows f	Peer base	72.99	255.5	3.38	2.21	1.37	
818.7001	Regulatory Flows	2Zone	73.45	254.71	2.62	1.65	0.68	-0.02
818.7001	Regional Flows f	Peer base	72.99	254.69	2.62	1.65	0.67	
718.5652	Regulatory Flows	2Zone	73.45	254.44	2.54	0.65	0.52	-0.01
718.5652	Regional Flows f	Peer base	72.99	254.43	2.54	0.65	0.5	
625.0873	Regulatory Flows	2Zone	73.45	254.36	1.93	0.41	0.43	-0.01
625.0873	Regional Flows f	Peer base	72.99	254.35	1.94	0.41	0.43	
517.84	Regulatory Flows	2Zone	73.45	254.39	0.48	0.41	0.15	-0.01
517.84	Regional Flows f	Peer base	72.99	254.38	0.48	0.4	0.14	
463.252	Regulatory Flows	2Zone	73.45	254.38	0.78	0.56	0.24	-0.01
463.252	Regional Flows f	Peer base	72.99	254.37	0.79	0.56	0.24	
411.8737	Regulatory Flows	2Zone	73.45	254.36	0.95	0.71	0.28	-0.01
411.8737	Regional Flows f	Peer base	72.99	254.35	0.95	0.72	0.28	
367.2808	Regulatory Flows	2Zone	73.45	254.36	0.76	0.56	0.23	-0.01
367.2808	Regional Flows f	Peer base	72.99	254.35	0.76	0.56	0.23	
273.7271	Regulatory Flows	2Zone	85.15	254.36	0.65	0.41	0.26	-0.01
273.7271	Regional Flows f	Peer base	84.46	254.35	0.65	0.41	0.26	
267	Regulatory Flows	2Zone	85.15	254.36	0.64	0.37	0.25	-0.01
267	Regional Flows f	Peer base	84.46	254.35	0.64	0.37	0.25	
260 William St								
240.5027	Regulatory Flows	2Zone	85.15	254.35	0.76	0.19	0.35	-0.01
240.5027	Regional Flows f	Peer base	84.46	254.34	0.76	0.19	0.35	
236.8376	Regulatory Flows	2Zone	85.15	254.34	0.86	0.2	0.39	-0.01
236.8376	Regional Flows f	Peer base	84.46	254.33	0.86	0.2	0.39	
228	Regulatory Flows	2Zone	85.15	254.34	0.92	0.17	0.28	-0.01
228	Regional Flows f	Peer base	84.46	254.33	0.92	0.17	0.28	
220	Regulatory Flows	2Zone	85.15	254.34	0.8	0.1	0.29	-0.01
220	Regional Flows f	Peer base	84.46	254.33	0.8	0.1	0.28	
210 Rail Trail								
175	Regulatory Flows	2Zone	85.15	254.3	0.85	1.04	0.36	-0.01
175	Regional Flows f	Peer base	84.46	254.29	0.86	1.04	0.36	
168.8194	Regulatory Flows	2Zone	85.15	254.3	0.79	0.54	0.33	-0.01
168.8194	Regional Flows f	Peer base	84.46	254.29	0.78	0.55	0.33	
154.6483	Regulatory Flows	2Zone	86.02	254.3	0.88	0.39	0.16	-0.02
154.6483	Regional Flows f	Peer base	85.24	254.28	0.88	0.39	0.16	
144.1	Regulatory Flows	2Zone	86.02	254.3	0.63	0.27	0.11	-0.02
144.1	Regional Flows f	Peer base	85.24	254.28	0.62	0.27	0.11	
130 Outlet								
121	Regulatory Flows	2Zone	86.02	250.95	5.71			-0.02
121	Regional Flows f	Peer base	85.24	250.93	5.7			
114	Regulatory Flows	2Zone	86.02	249.83	2.41	0.7	0.47	-0.01
114	Regional Flows f	Peer base	85.24	249.82	2.4	0.69	0.47	
95.54452	Regulatory Flows	2Zone	86.02	249.78	2.69	0.7	0.48	-0.01
95.54452	Regional Flows f	Peer base	85.24	249.77	2.68	0.69	0.48	
0	Regulatory Flows	2Zone	86.02	248.77	3.33	0.94	0.65	0
0	Regional Flows f	Peer base	85.24	248.77	3.32	0.94	0.65	

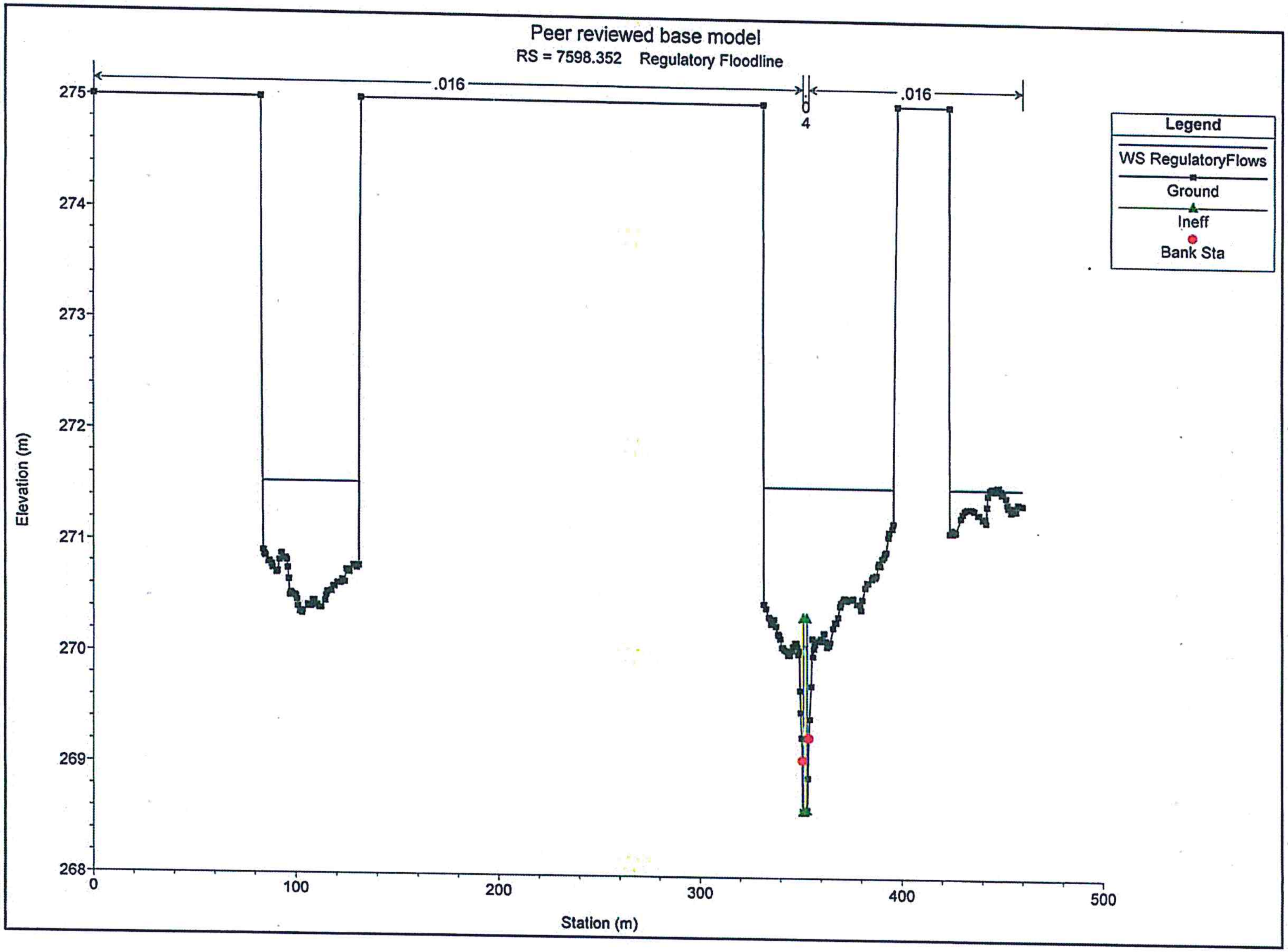
minimum = -0.04
maximum = 0
average = -0.02

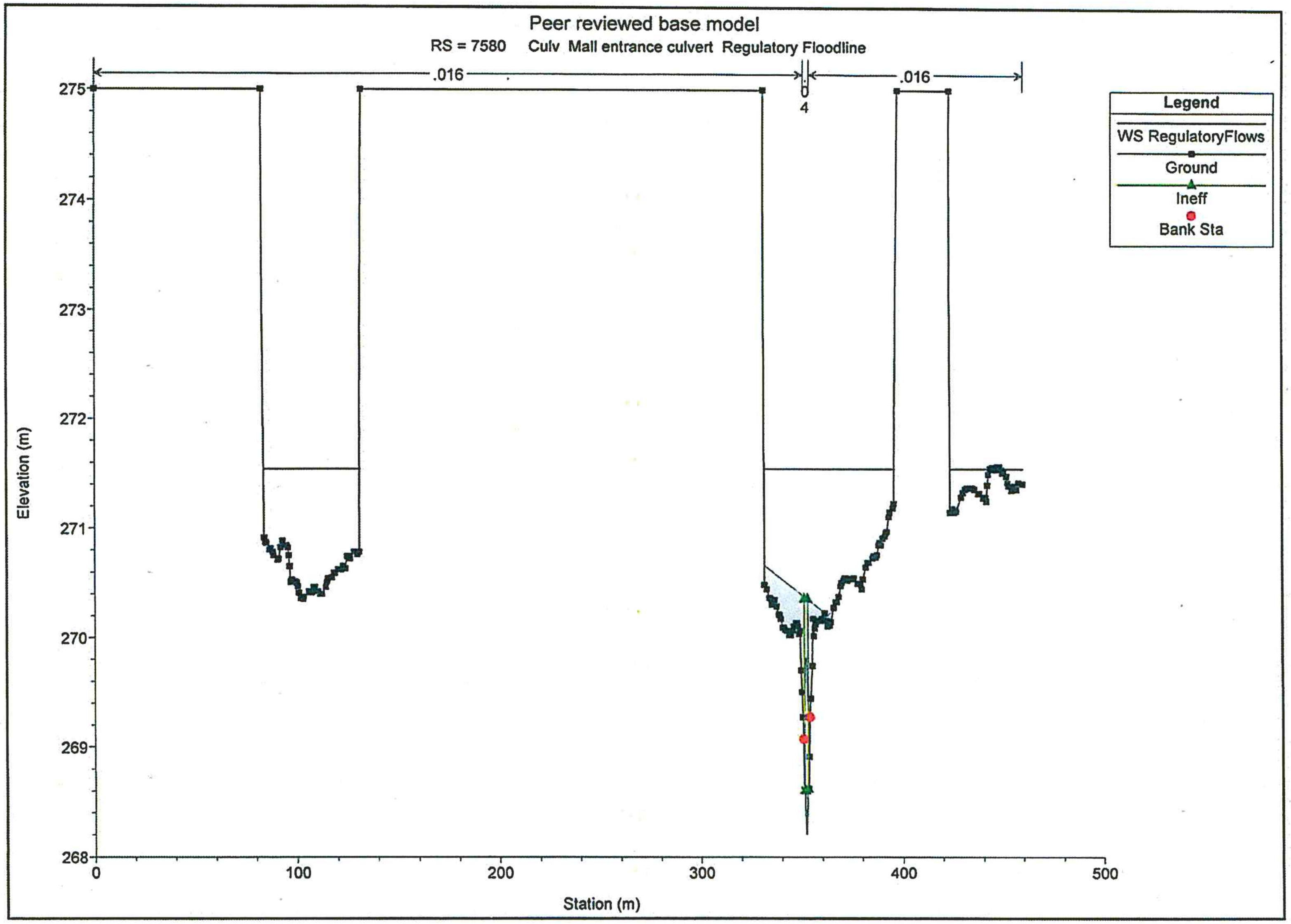
\\192.168.2.3\Shared\Jessica\KRCA\Reports Working\Final hydraulics report\Excel\output.xls
Sheet: Filling Velocity comparison

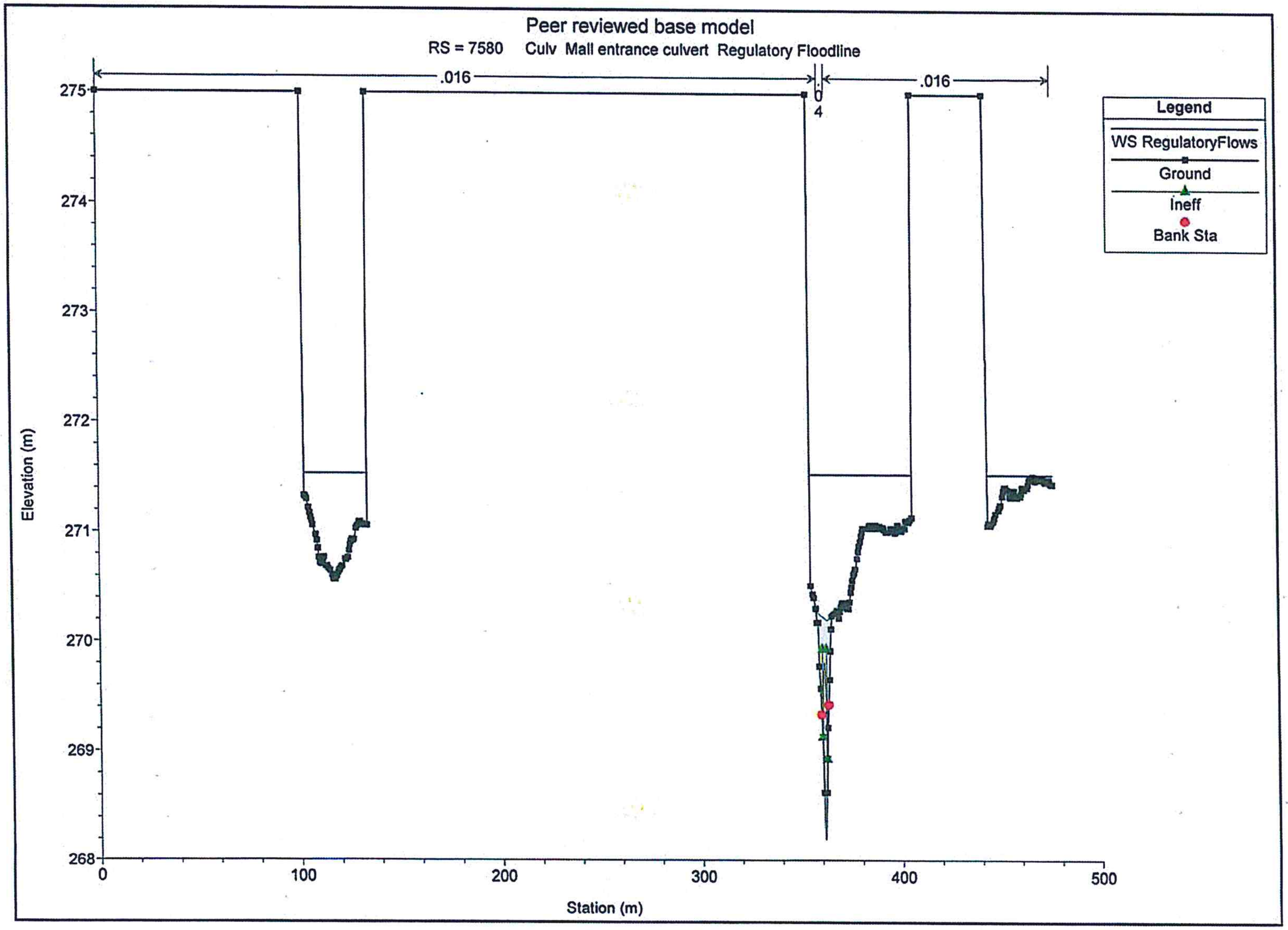


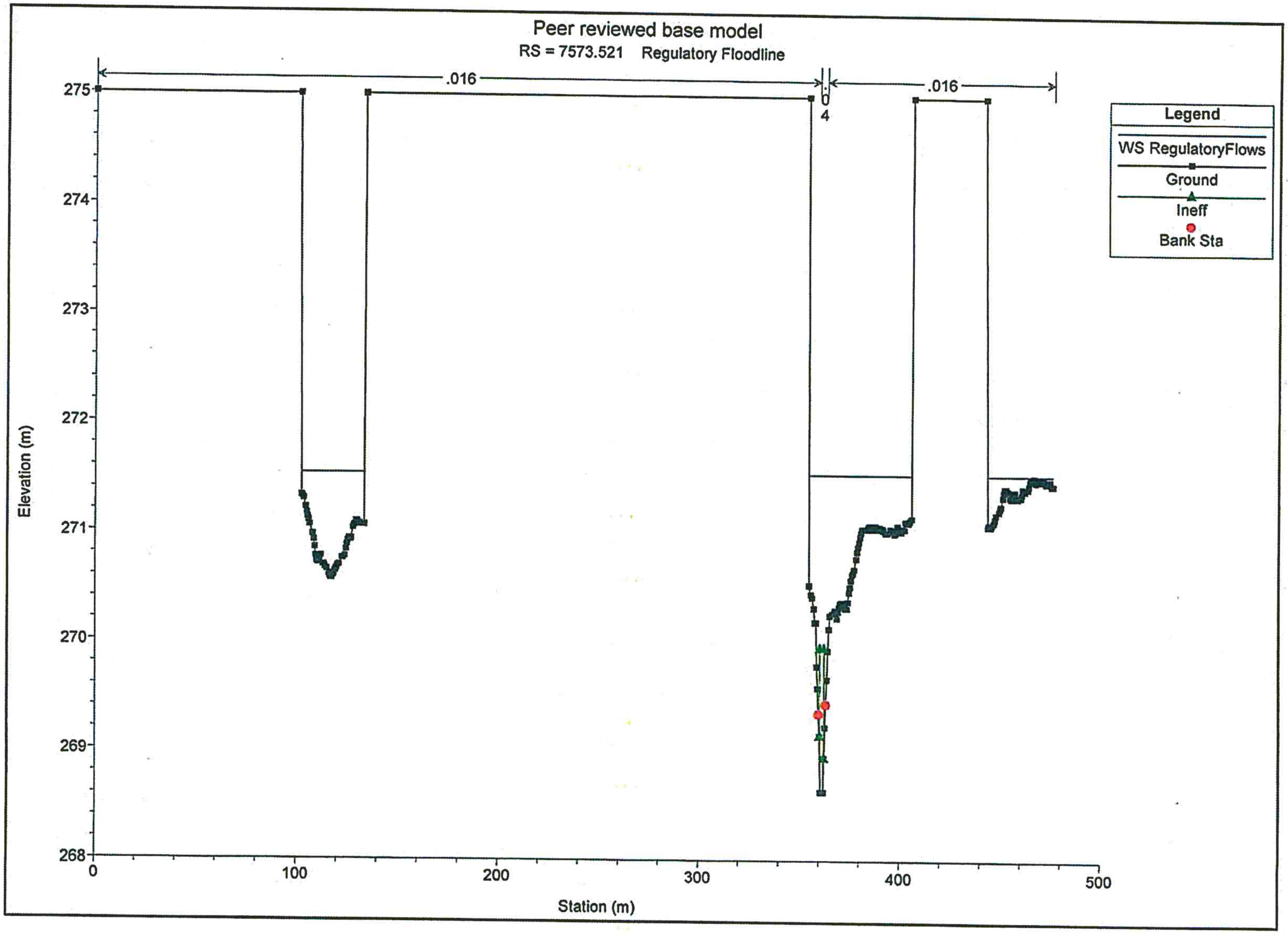
Peer reviewed base model
RS = 7641.424 Regulatory Floodline
.016
.016
=
0
4
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
0
100
200
300
400
500
Station (m)


Peer reviewed base model
RS = 7604.08 Regulatory Floodline
.016
0
4
.016
Legend
WS RegulatoryFlows
Ground
Bank Sta
275
274
273
272
271
270
269
268
Elevation (m)
0
100
200
300
400
500
Station (m)

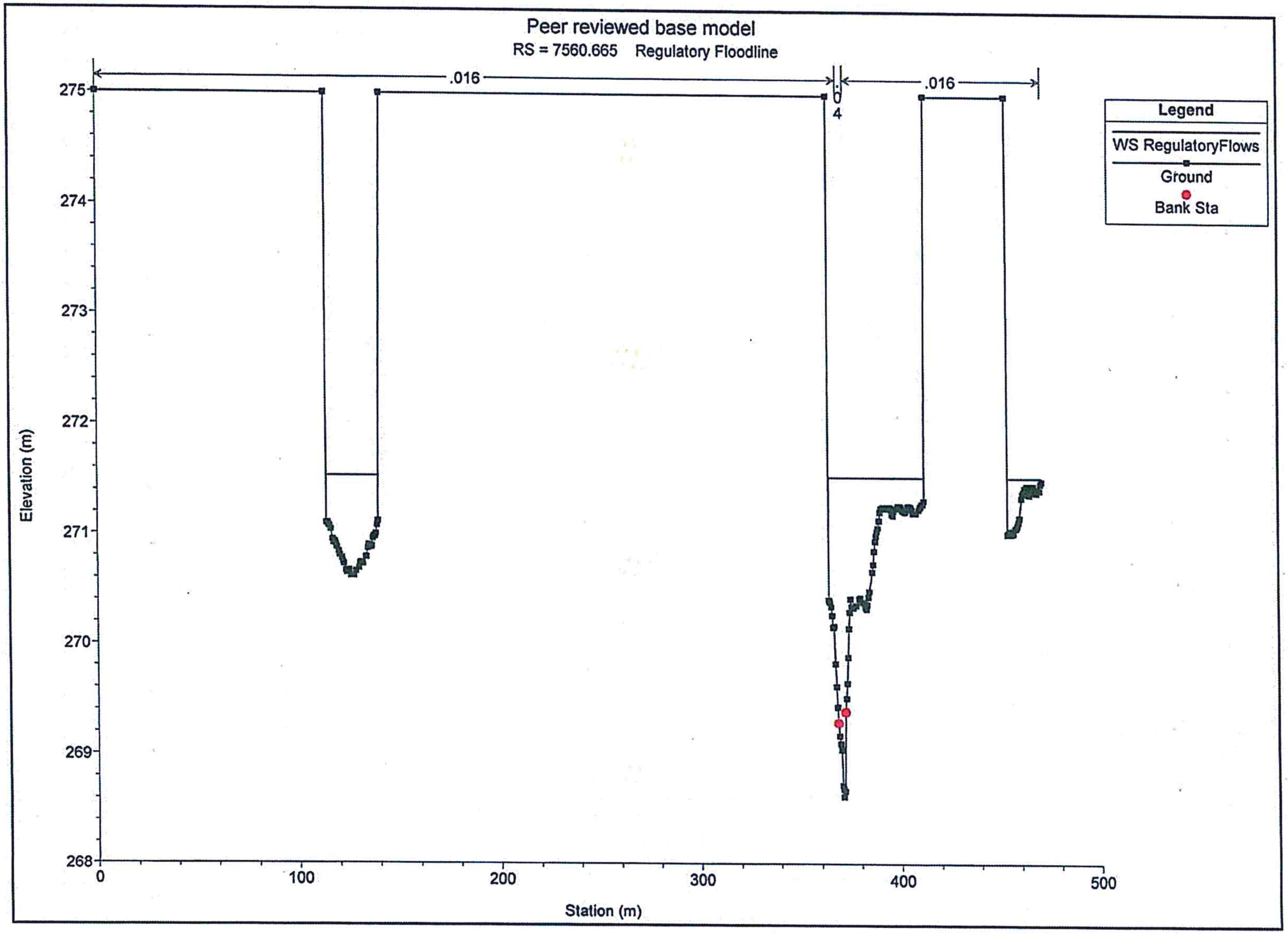

Peer reviewed base model
RS = 7598.352 Regulatory Floodline
.016
.04
.016
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
Station (m)
0
100
200
300
400
500

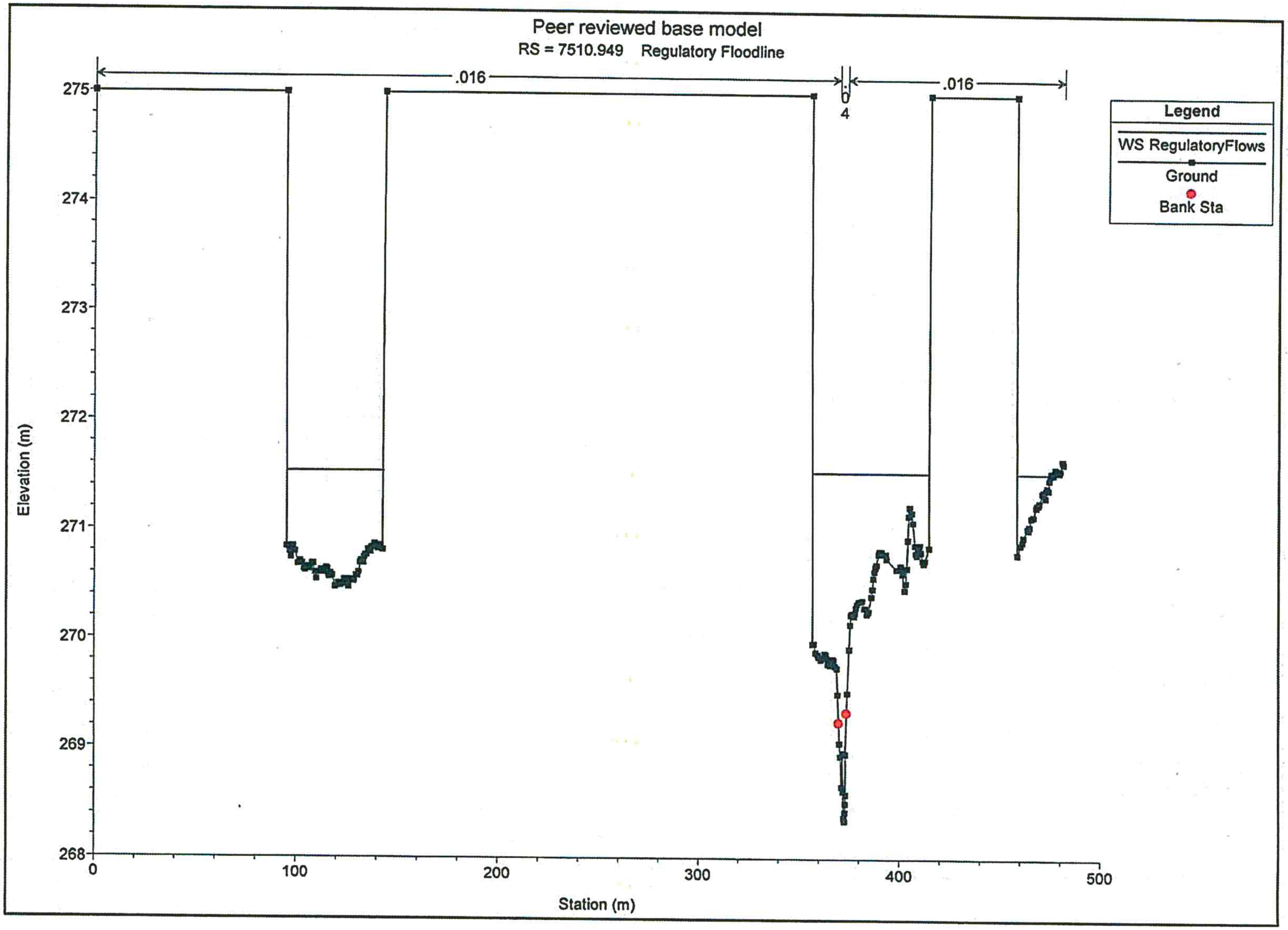

Peer reviewed base model
RS = 7580 Culv Mall entrance culvert Regulatory Floodline
.016
.016
0
4
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
0
100
200
300
400
500
Station (m)


Peer reviewed base model
RS = 7580 Culv Mall entrance culvert Regulatory Floodline
.016
.04
.016
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
Station (m)
0
100
200
300
400
500

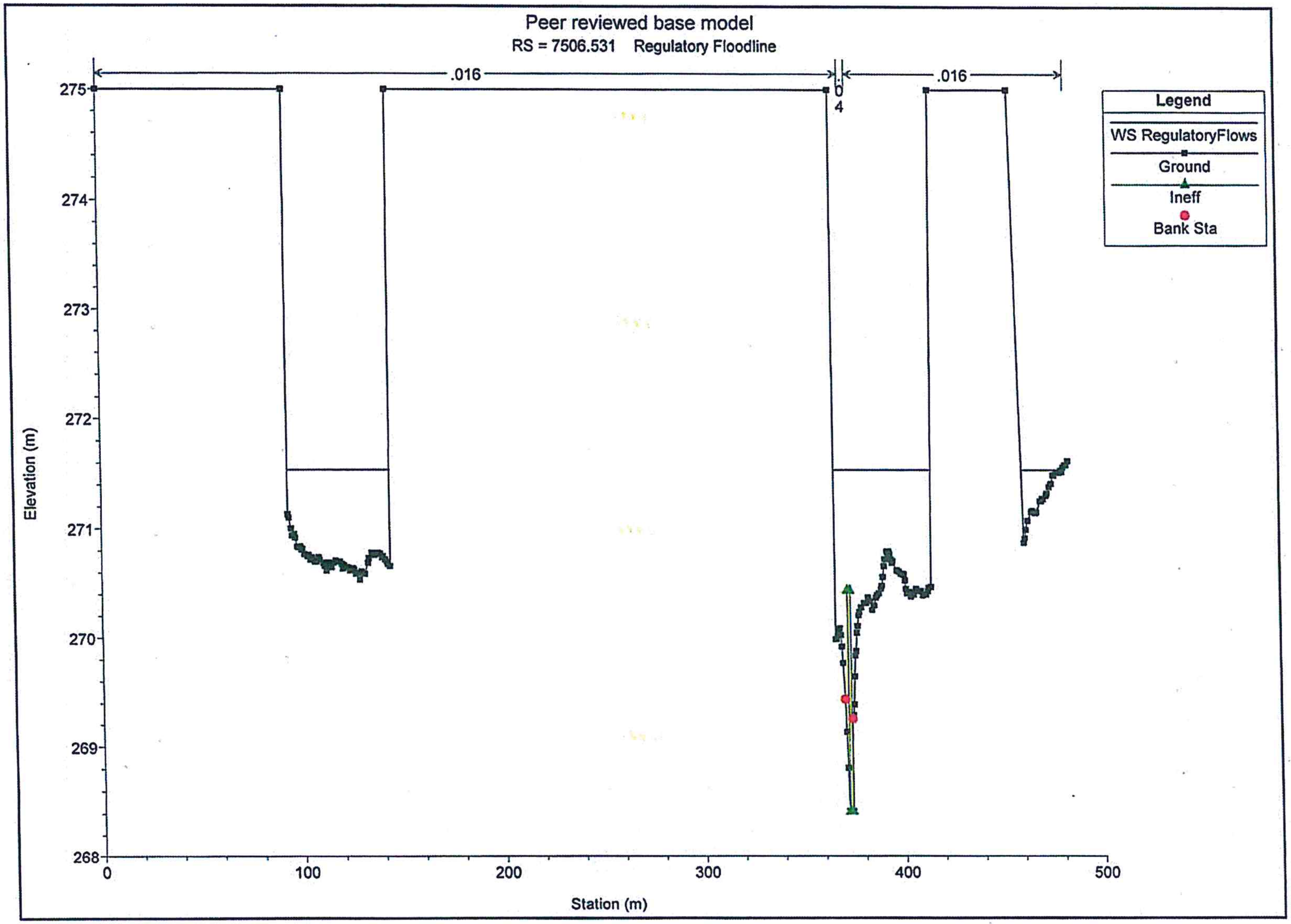


Peer reviewed base model
RS = 7573.521 Regulatory Floodline
.016
0.04
.016
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
0
100
200
300
400
500
Station (m)

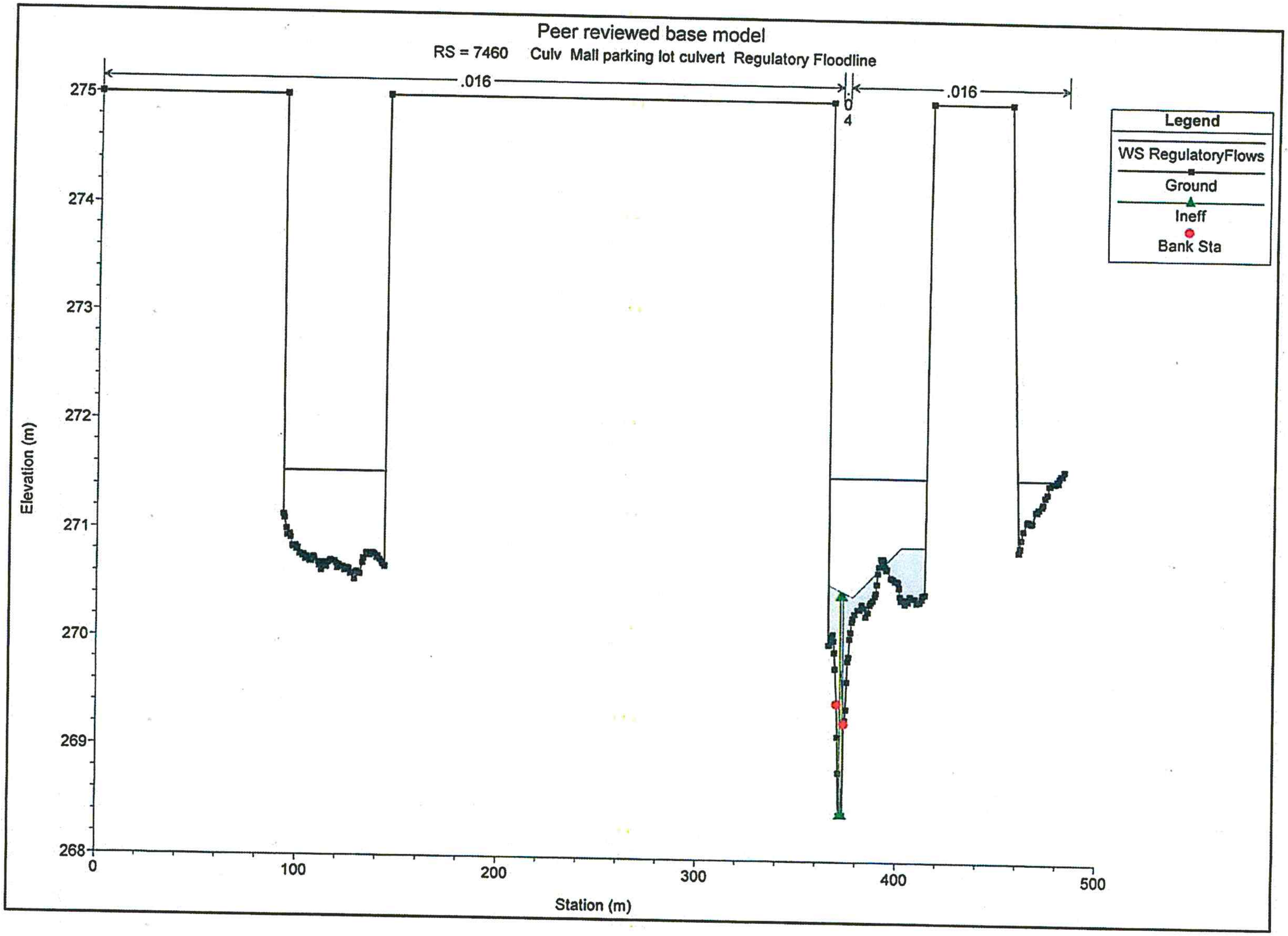

Peer reviewed base model
RS = 7560.665 Regulatory Floodline
.016
.016
0
4
Legend
WS RegulatoryFlows
Ground
Bank Sta
275
274
273
272
271
270
269
268
Elevation (m)
0
100
200
300
400
500
Station (m)



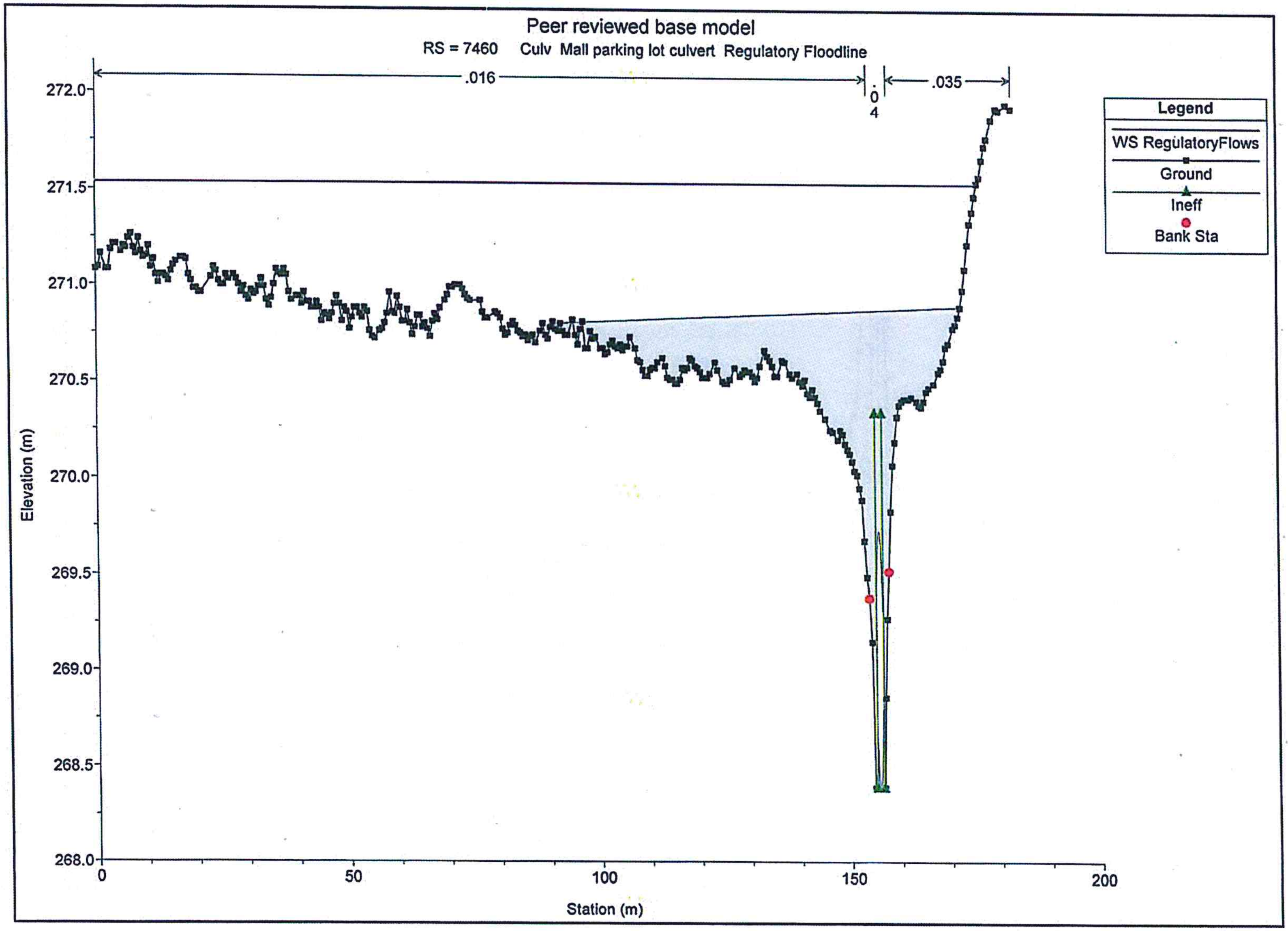
Peer reviewed base model
RS = 7510.949 Regulatory Floodline
.016
.04
.016
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
0
100
200
300
400
500
Station (m)



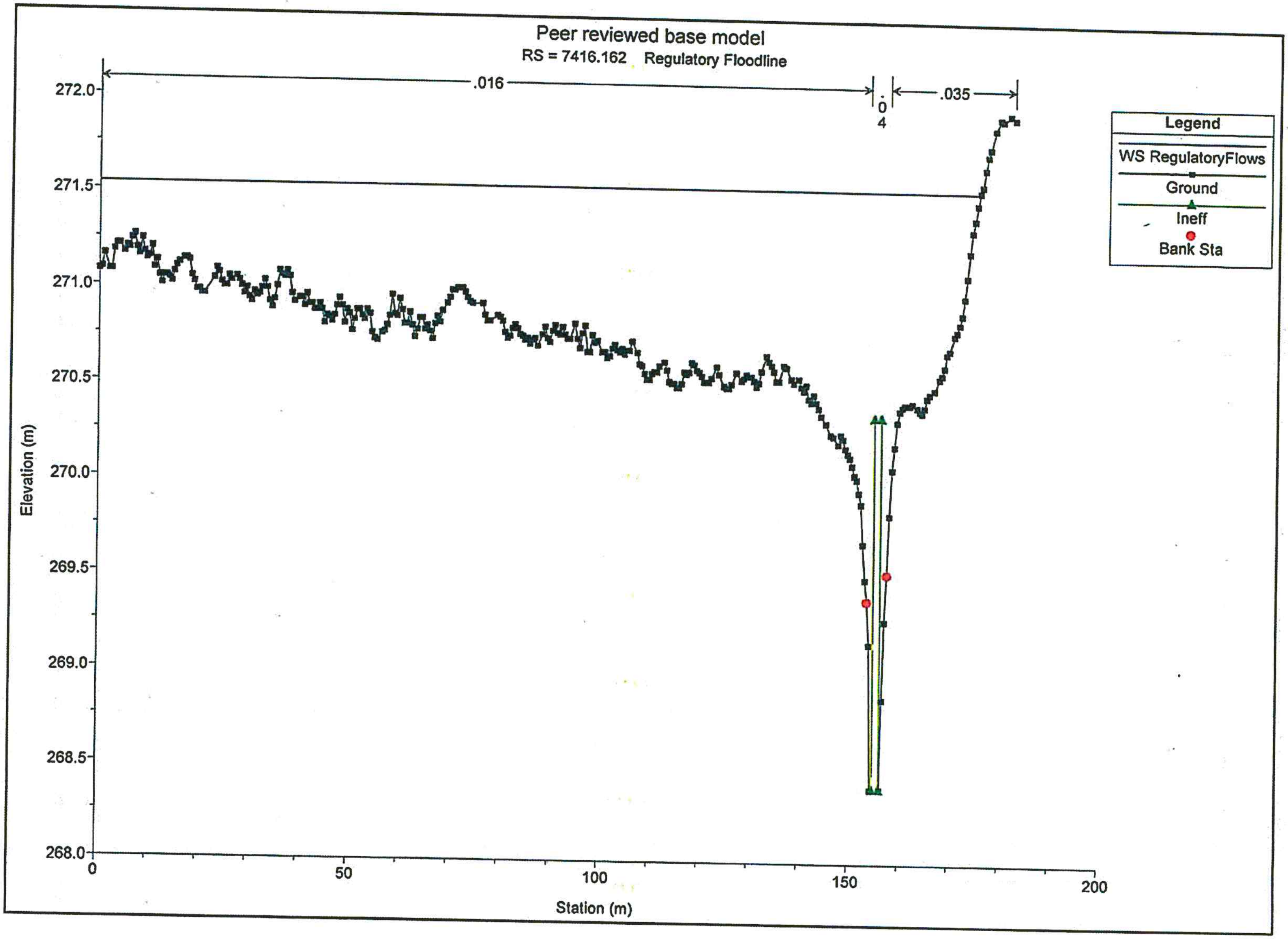
Peer reviewed base model
RS = 7506.531 Regulatory Floodline
.016
.04
.016
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
0
100
200
300
400
500
Station (m)

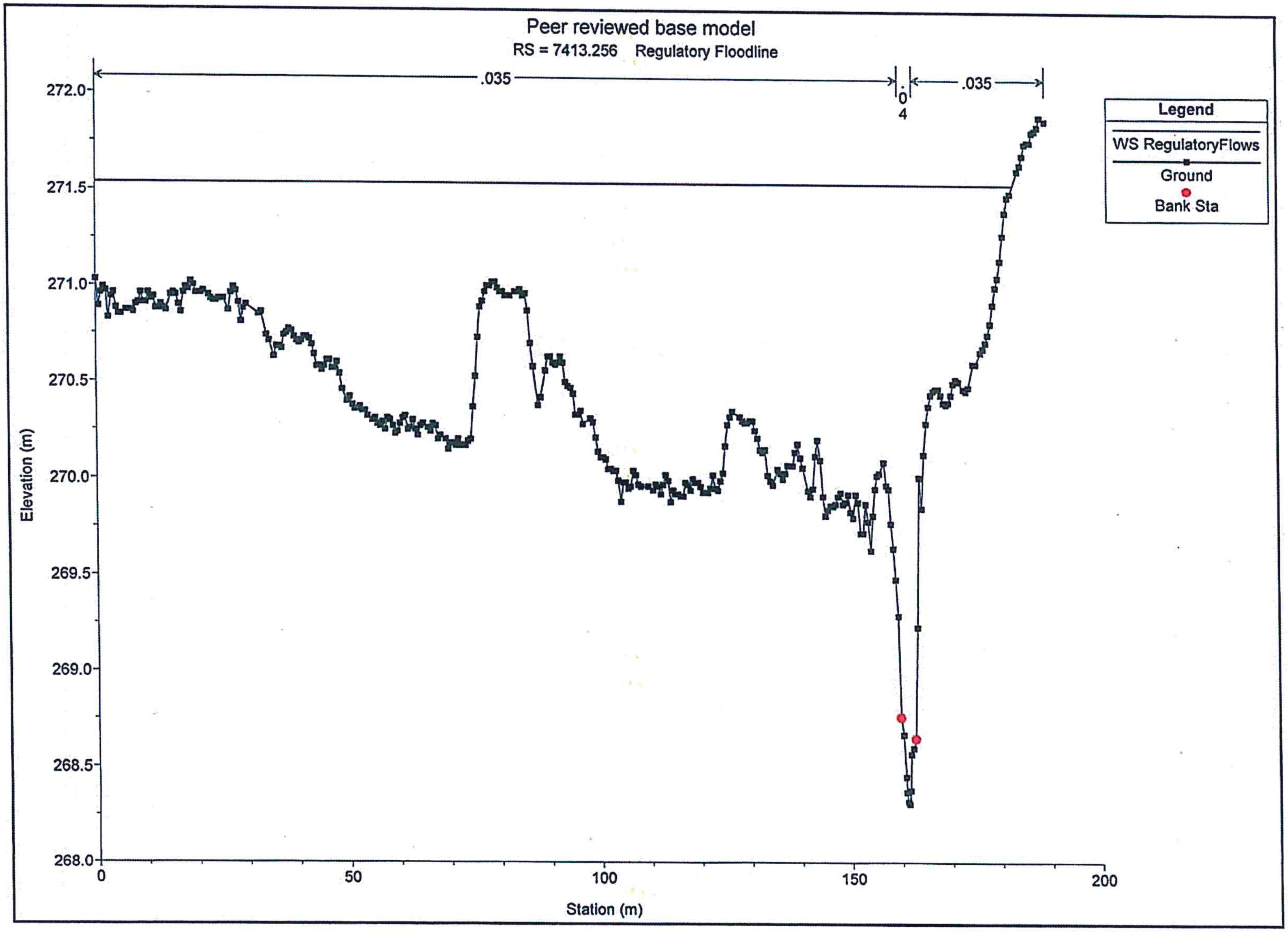


Peer reviewed base model
RS = 7460 Culv Mall parking lot culvert Regulatory Floodline
.016
.016
0
4
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
Station (m)
0
100
200
300
400
500

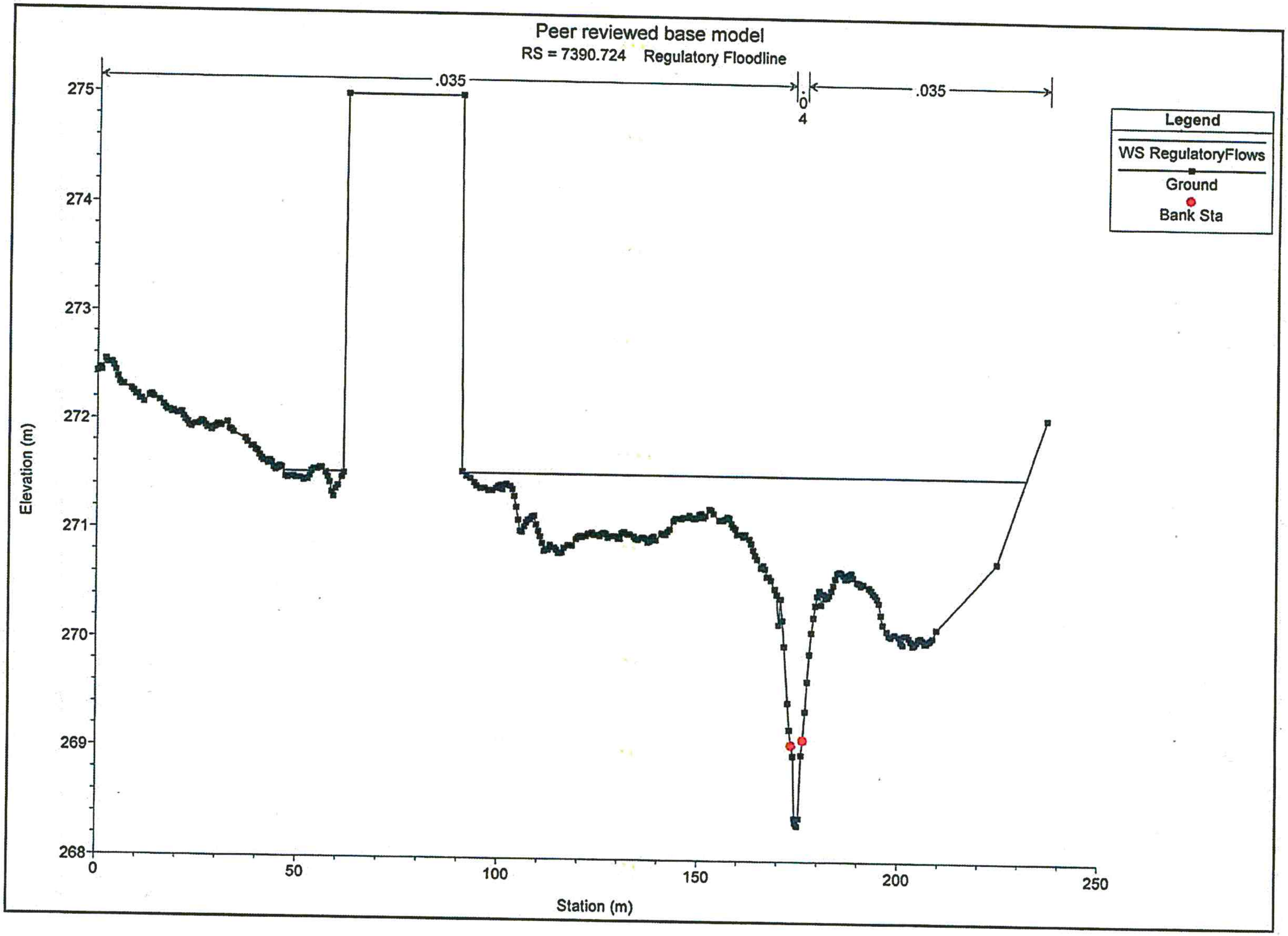


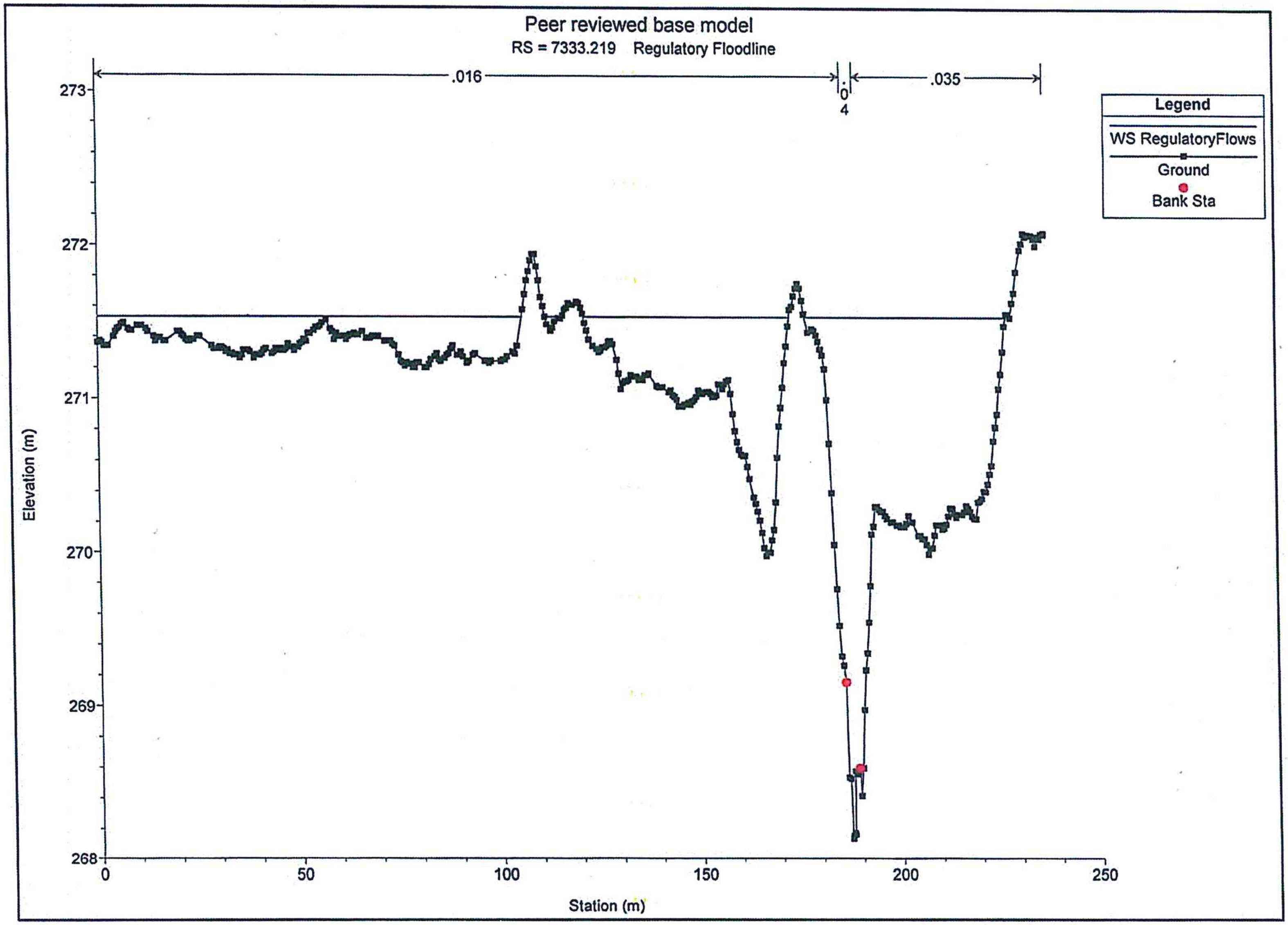
Peer reviewed base model
RS = 7460 Culv Mall parking lot culvert Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
272.0
271.5
271.0
270.5
270.0
269.5
269.0
268.5
268.0
0
50
100
150
200
Station (m)


Peer reviewed base model
RS = 7416.162 Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
272.0
271.5
271.0
270.5
270.0
269.5
269.0
268.5
268.0
Station (m)
0
50
100
150
200

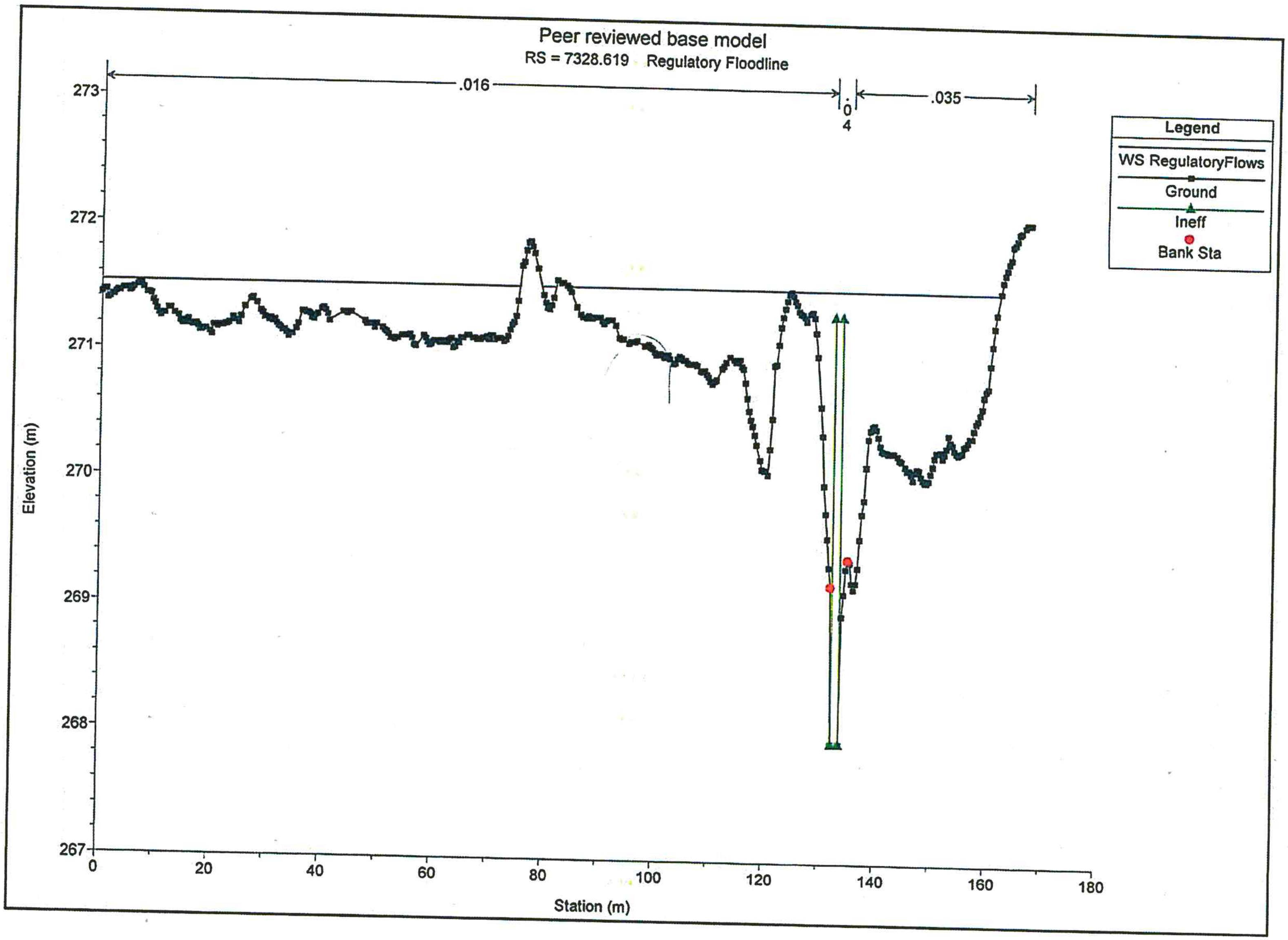


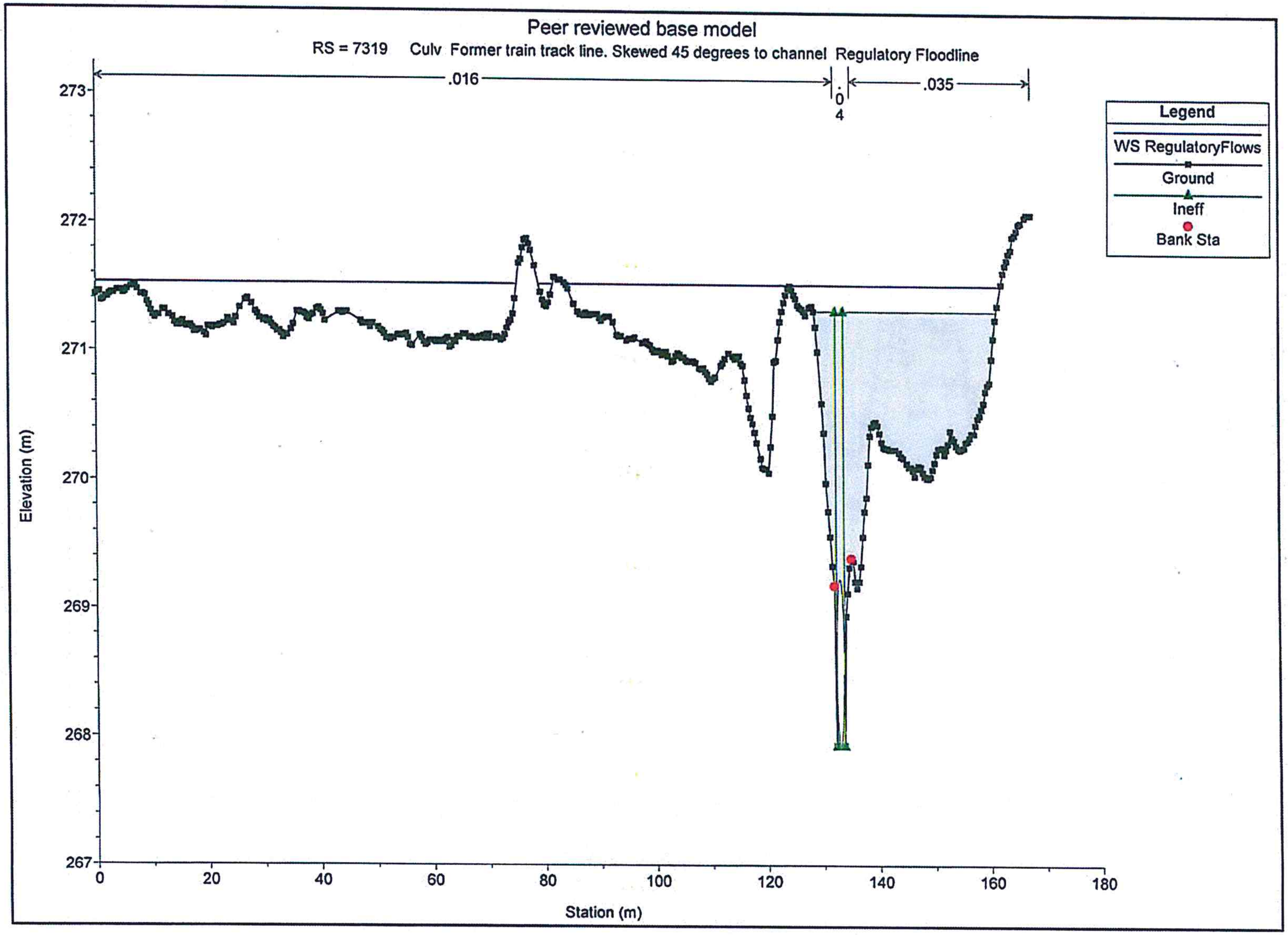
Peer reviewed base model
RS = 7413.256 Regulatory Floodline
.035
.04
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
272.0
271.5
271.0
270.5
270.0
269.5
269.0
268.5
268.0
0
50
100
150
200
Station (m)


Peer reviewed base model
RS = 7390.724 Regulatory Floodline
.035
.04
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
275
274
273
272
271
270
269
268
Elevation (m)
0
50
100
150
200
250
Station (m)

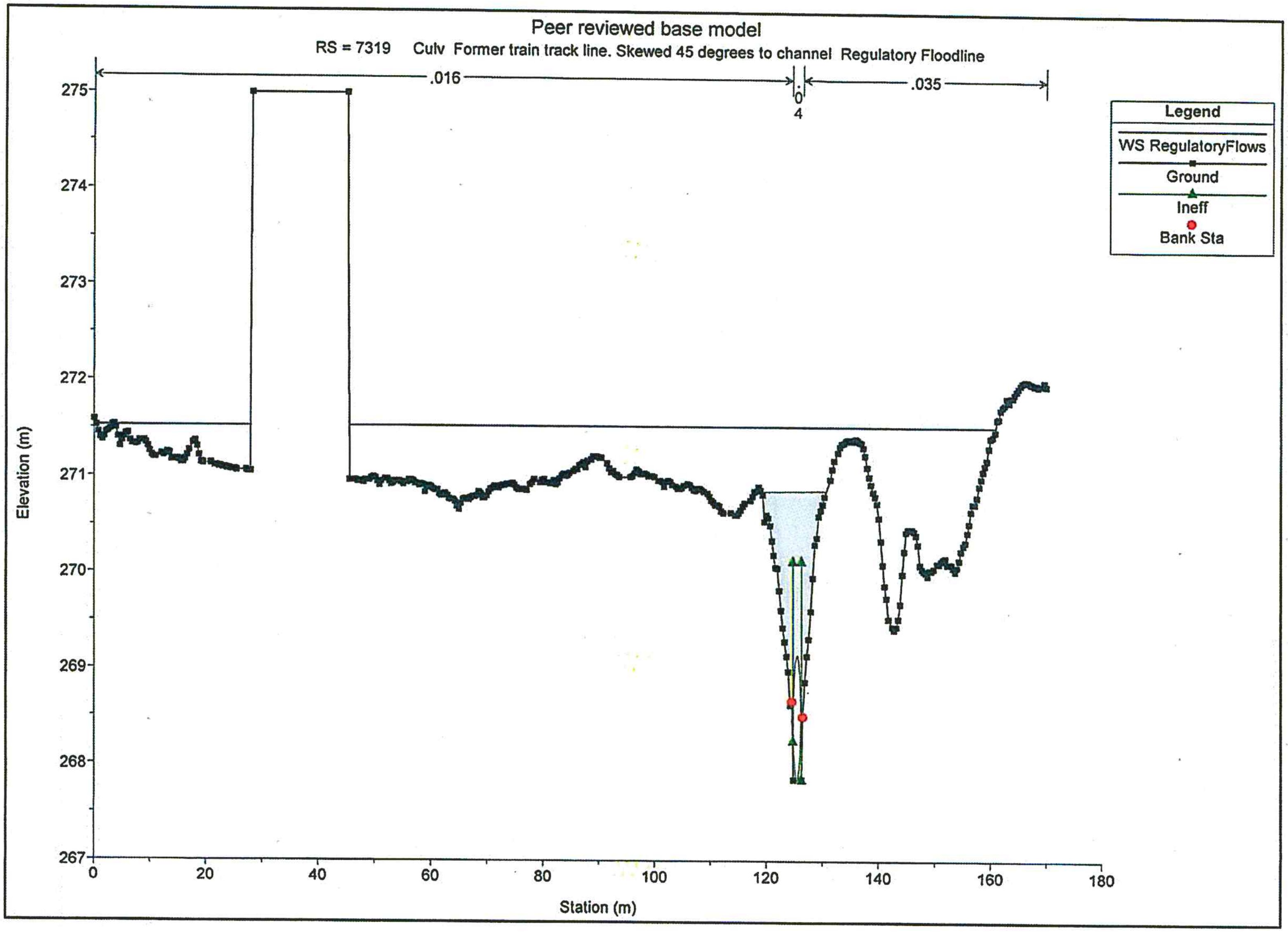


Peer reviewed base model
RS = 7333.219 Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
273
272
271
270
269
268
Elevation (m)
0
50
100
150
200
250
Station (m)

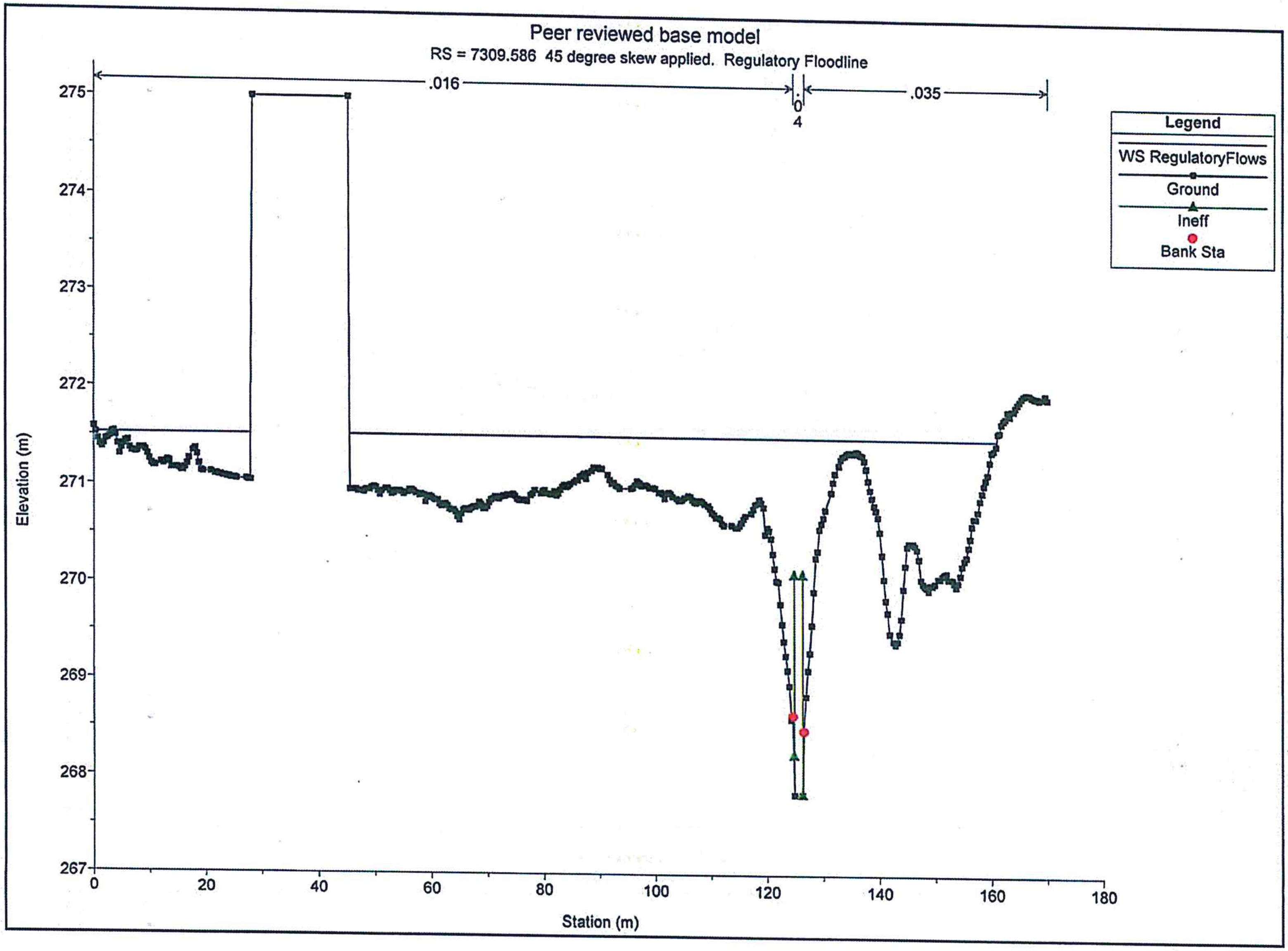

Peer reviewed base model
RS = 7328.619 Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
273
272
271
270
269
268
267
0
20
40
60
80
100
120
140
160
180
Station (m)



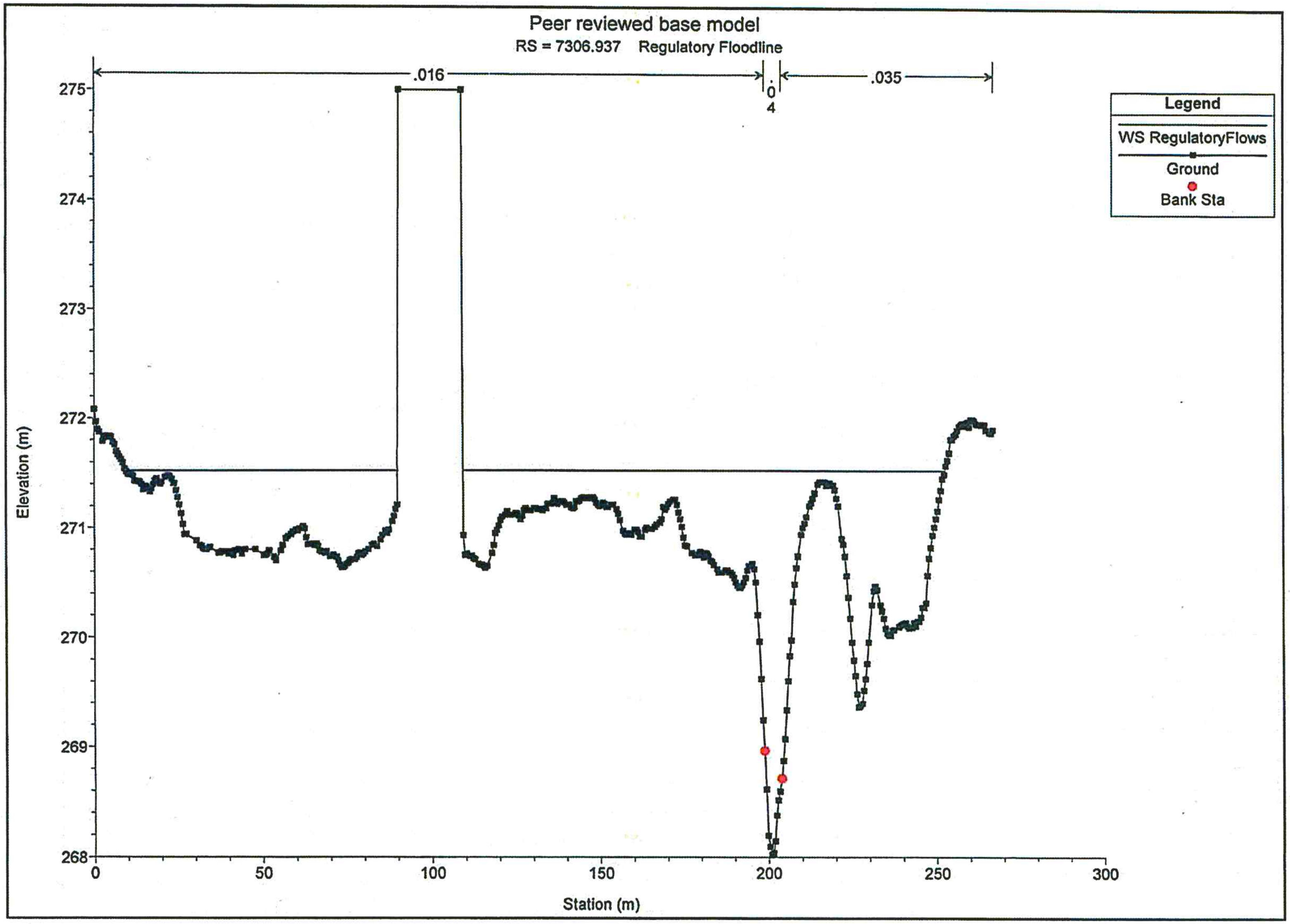
Peer reviewed base model
RS = 7319 Culv Former train track line. Skewed 45 degrees to channel Regulatory Floodline
.016
.0
4
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
273
272
271
270
269
268
267
Station (m)
0
20
40
60
80
100
120
140
160
180



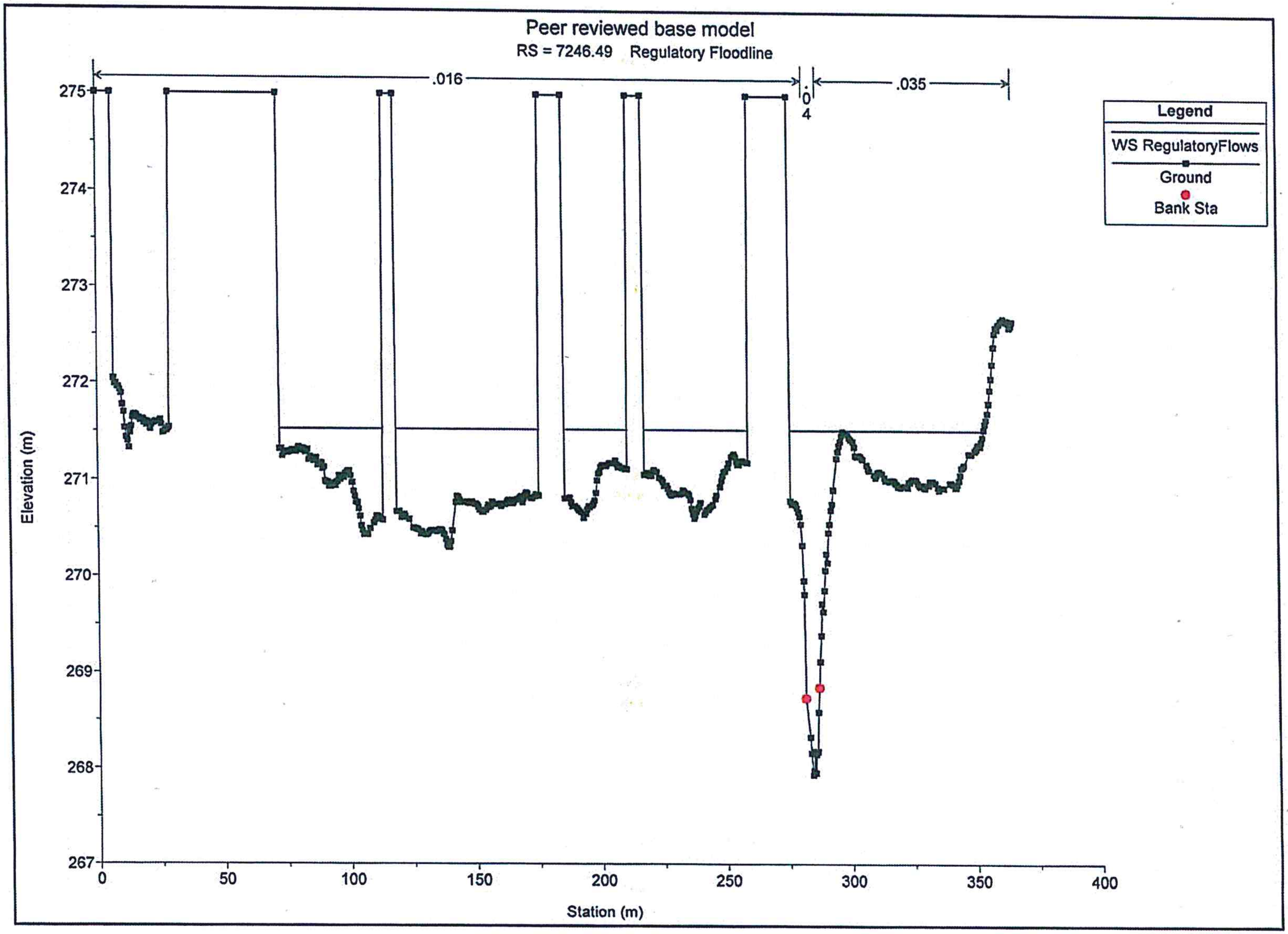
Peer reviewed base model
RS = 7319 Culv Former train track line. Skewed 45 degrees to channel Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
Station (m)
0
20
40
60
80
100
120
140
160
180



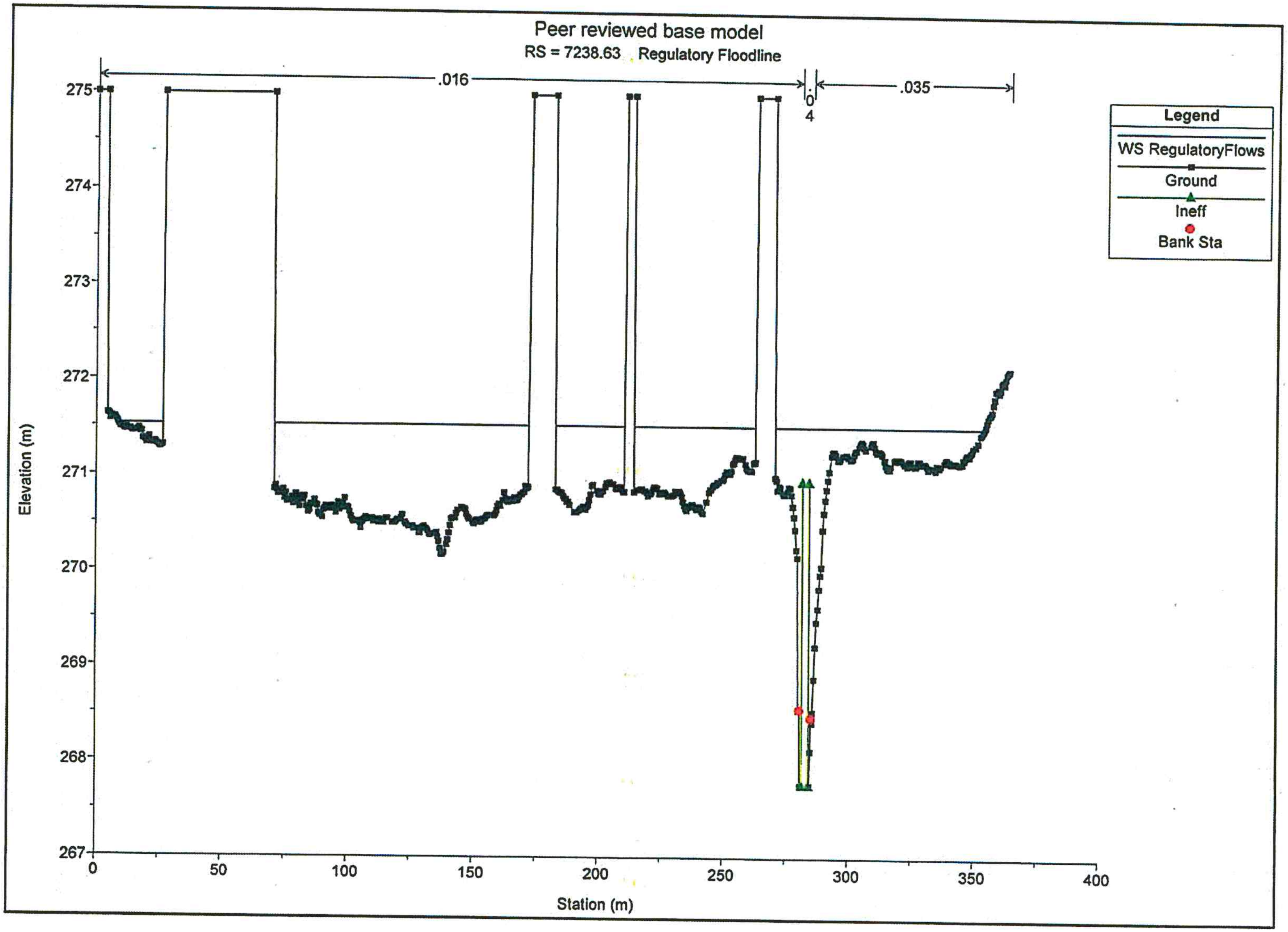
Peer reviewed base model
RS = 7309.586 45 degree skew applied. Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
275
274
273
272
271
270
269
268
267
Elevation (m)
0
20
40
60
80
100
120
140
160
180
Station (m)

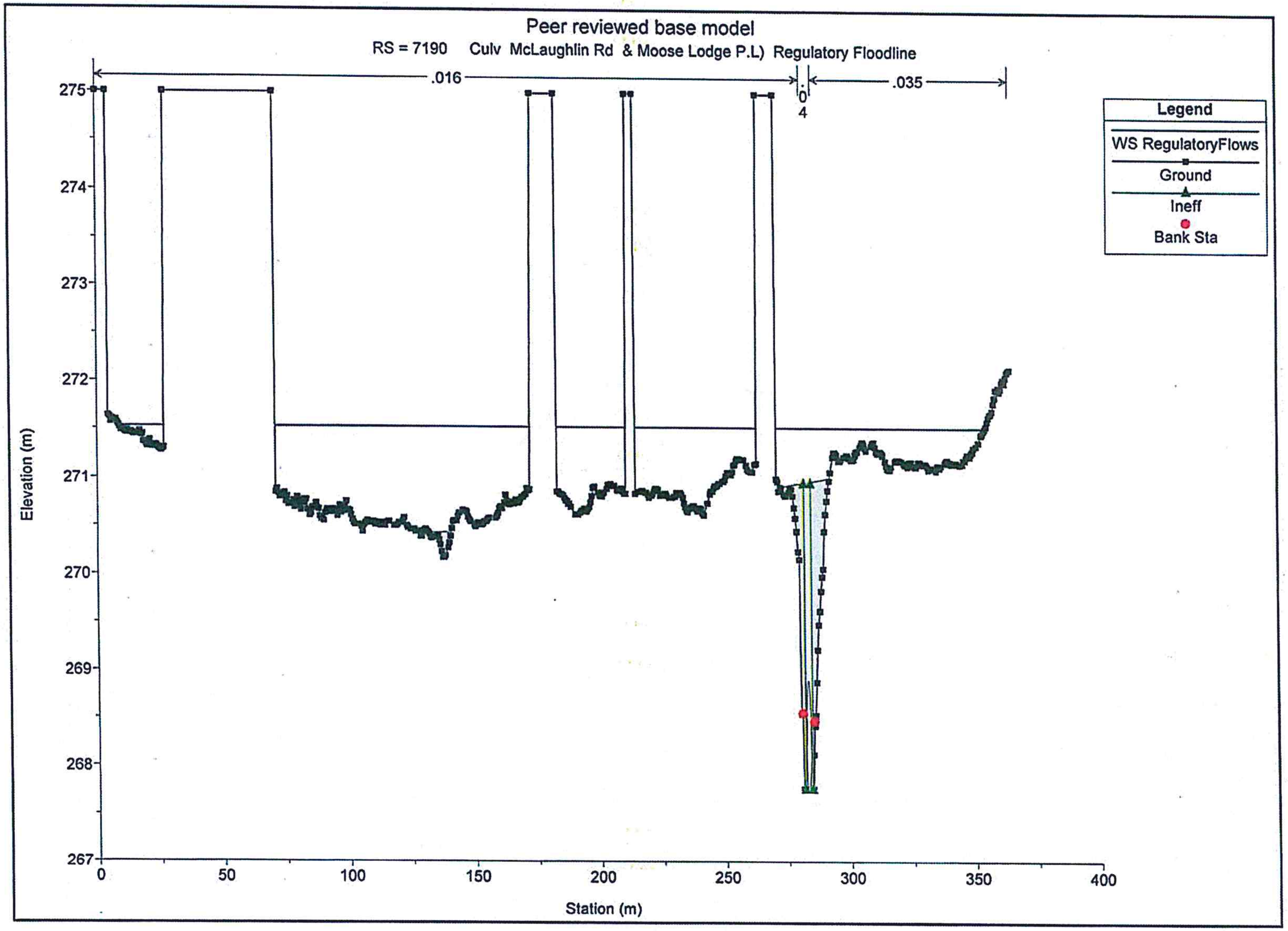


Peer reviewed base model
RS = 7306.937 Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
0
50
100
150
200
250
300
Station (m)

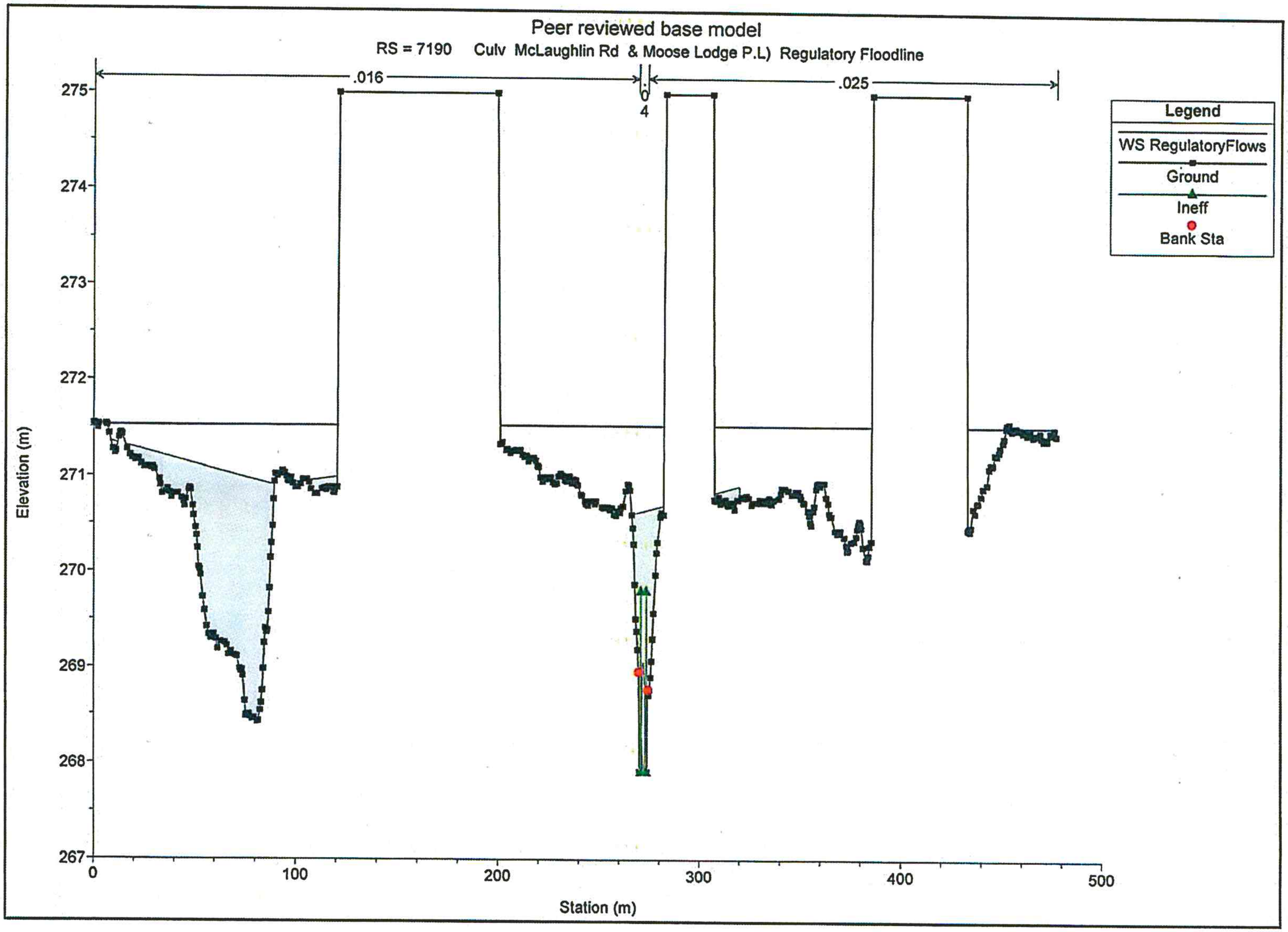


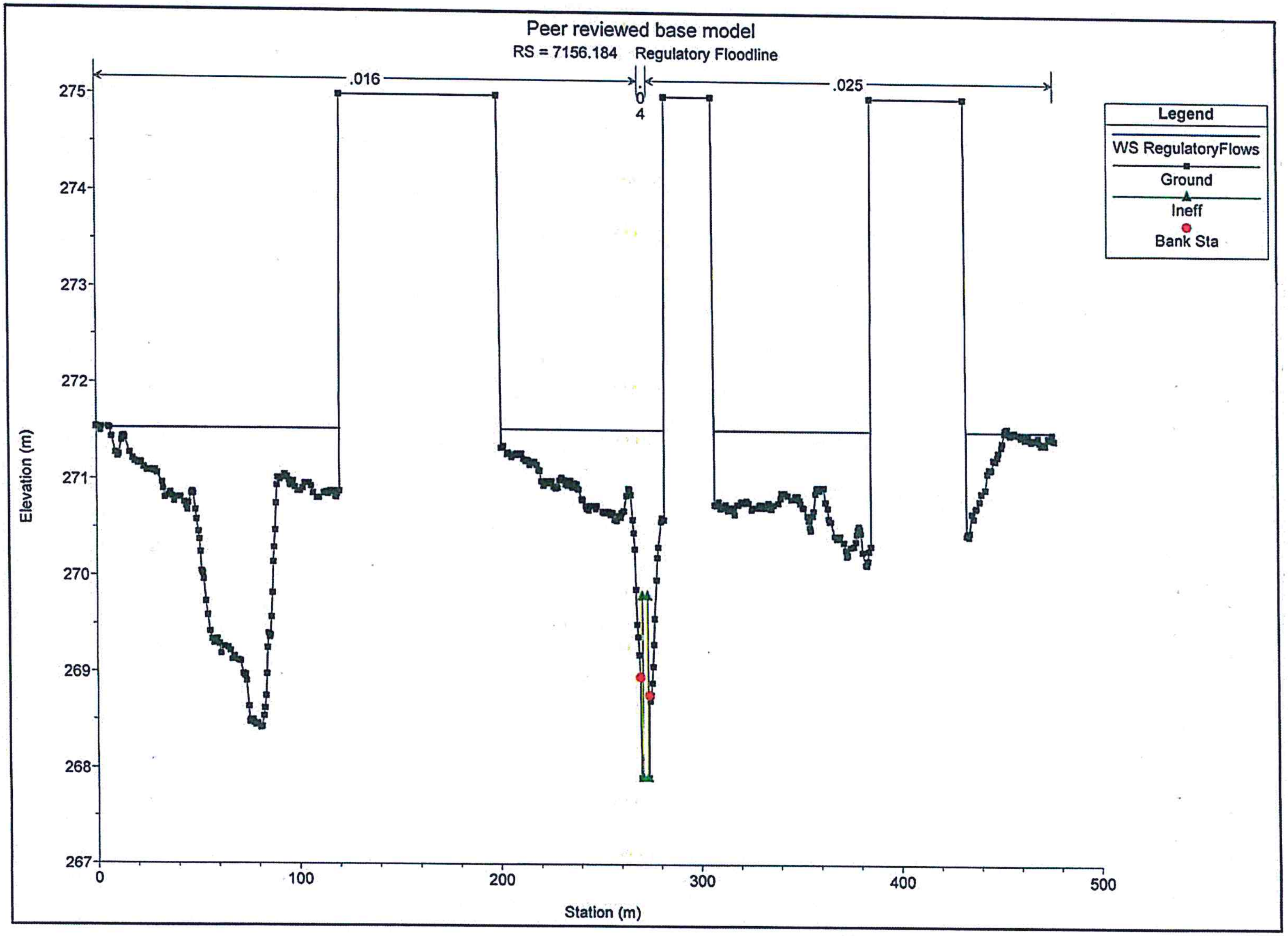
Peer reviewed base model
RS = 7246.49 Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
50
100
150
200
250
300
350
400
Station (m)

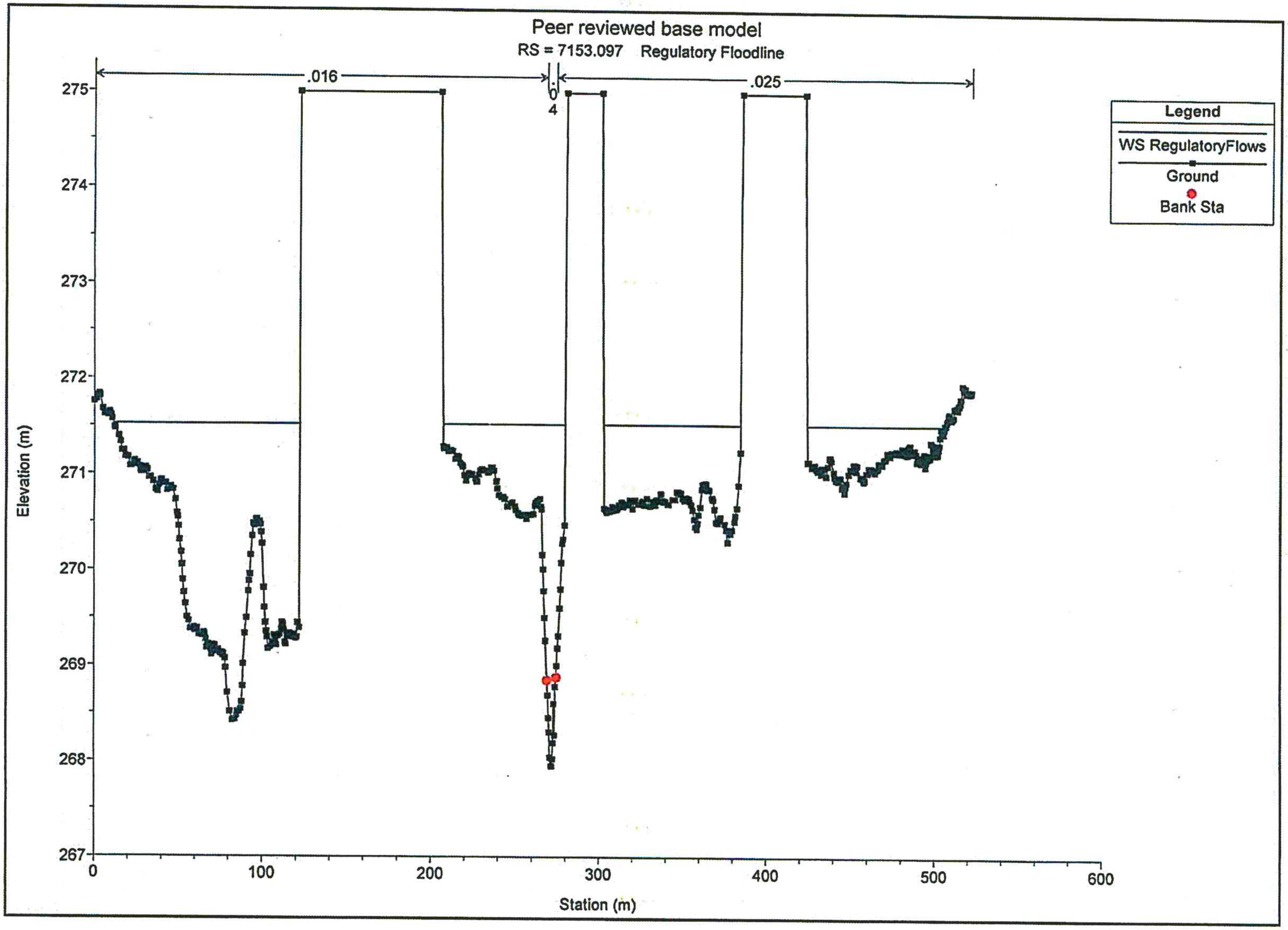

Peer reviewed base model
RS = 7238.63 Regulatory Floodline
.016
.0
4
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
275
274
273
272
271
270
269
268
267
Elevation (m)
0
50
100
150
200
250
300
350
400
Station (m)



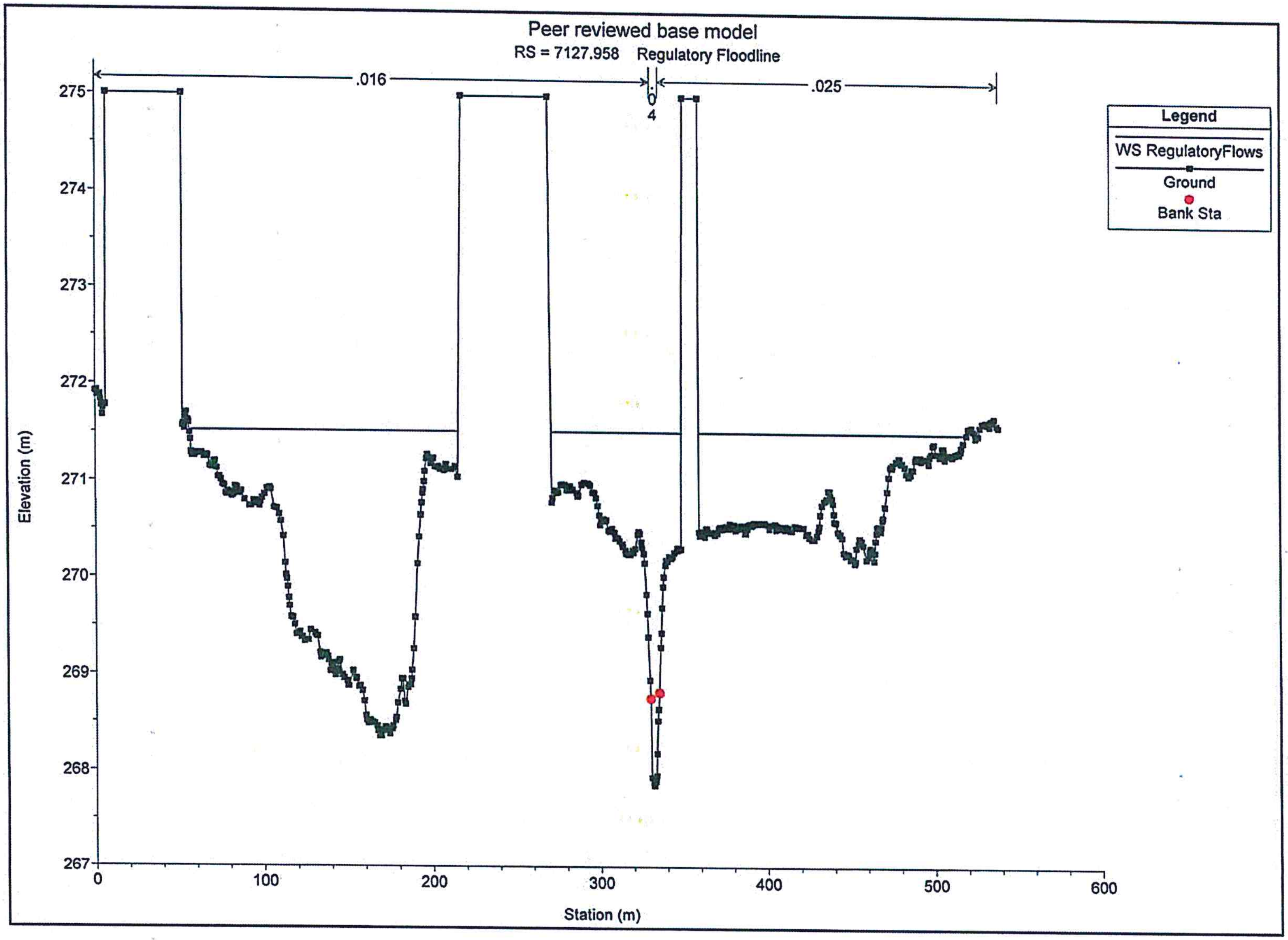
Peer reviewed base model
RS = 7190 Culv McLaughlin Rd & Moose Lodge P.L) Regulatory Floodline
.016
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
50
100
150
200
250
300
350
400
Station (m)

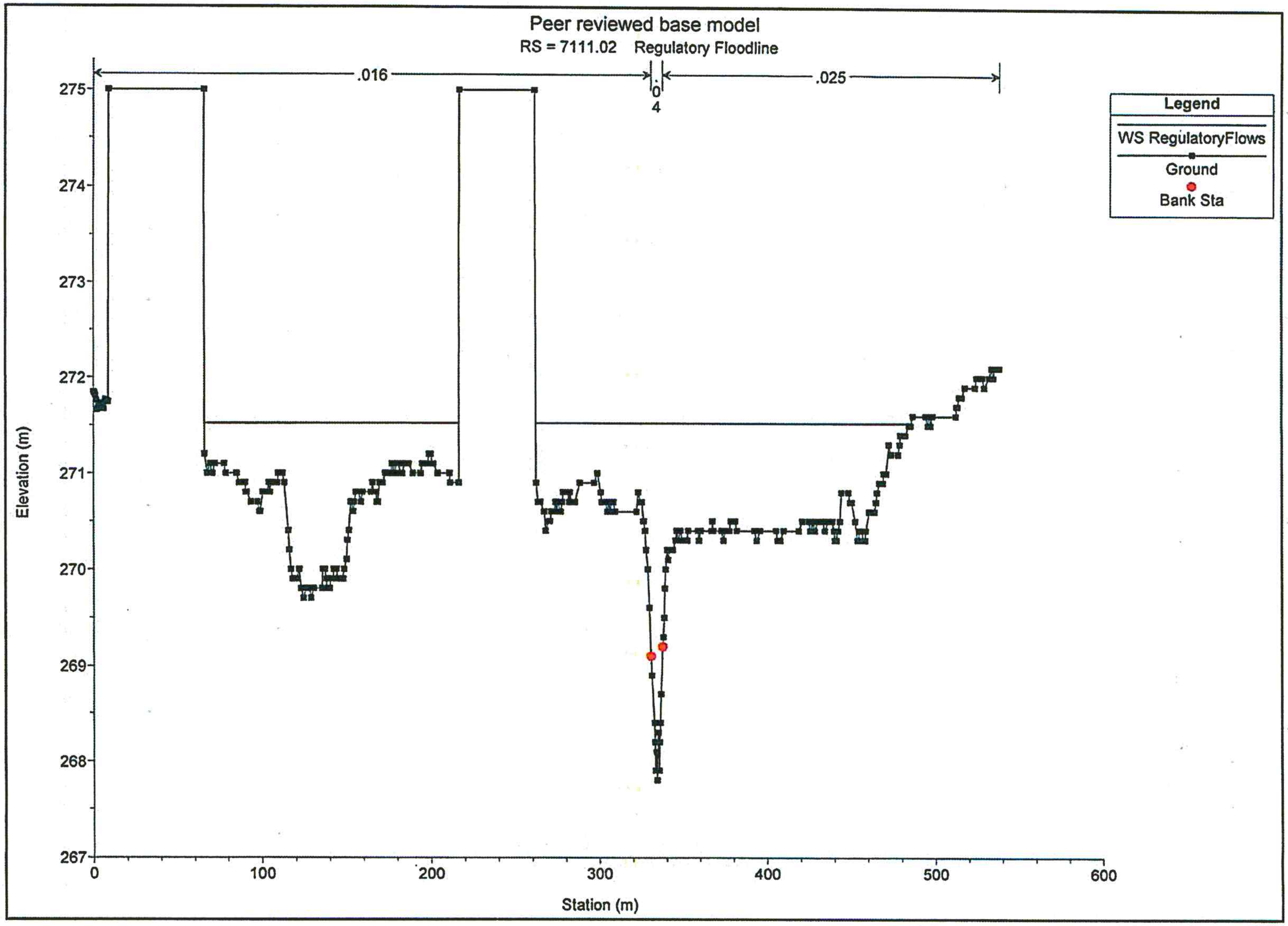

Peer reviewed base model
RS = 7190 Culv McLaughlin Rd & Moose Lodge P.L) Regulatory Floodline
.016
0.04
.025
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
Station (m)
0
100
200
300
400
500


Peer reviewed base model
RS = 7156.184 Regulatory Floodline
.016
.04
.025
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
Station (m)
0
100
200
300
400
500

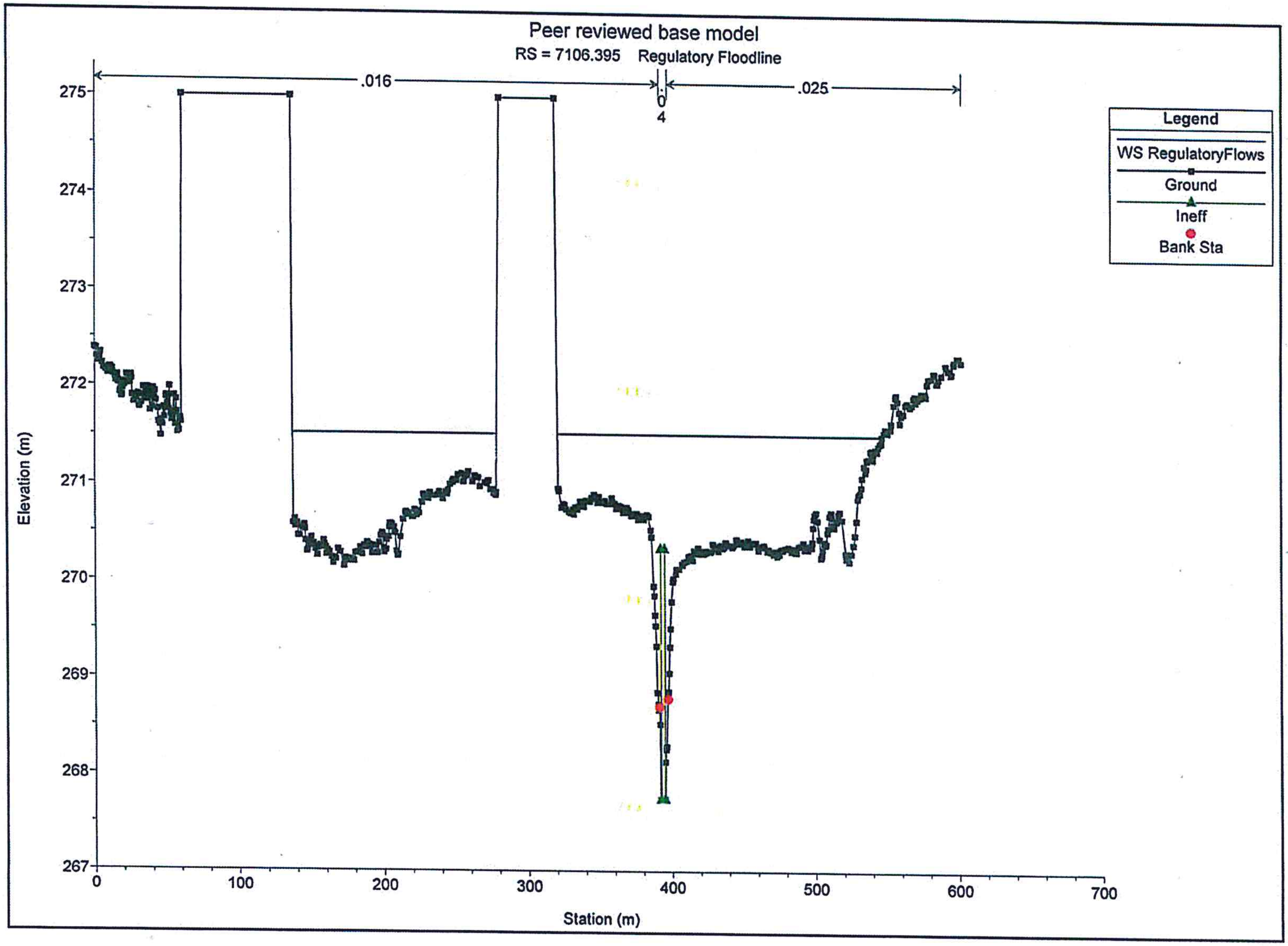


Peer reviewed base model
RS = 7153.097 Regulatory Floodline
.016
.04
.025
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
100
200
300
400
500
600
Station (m)

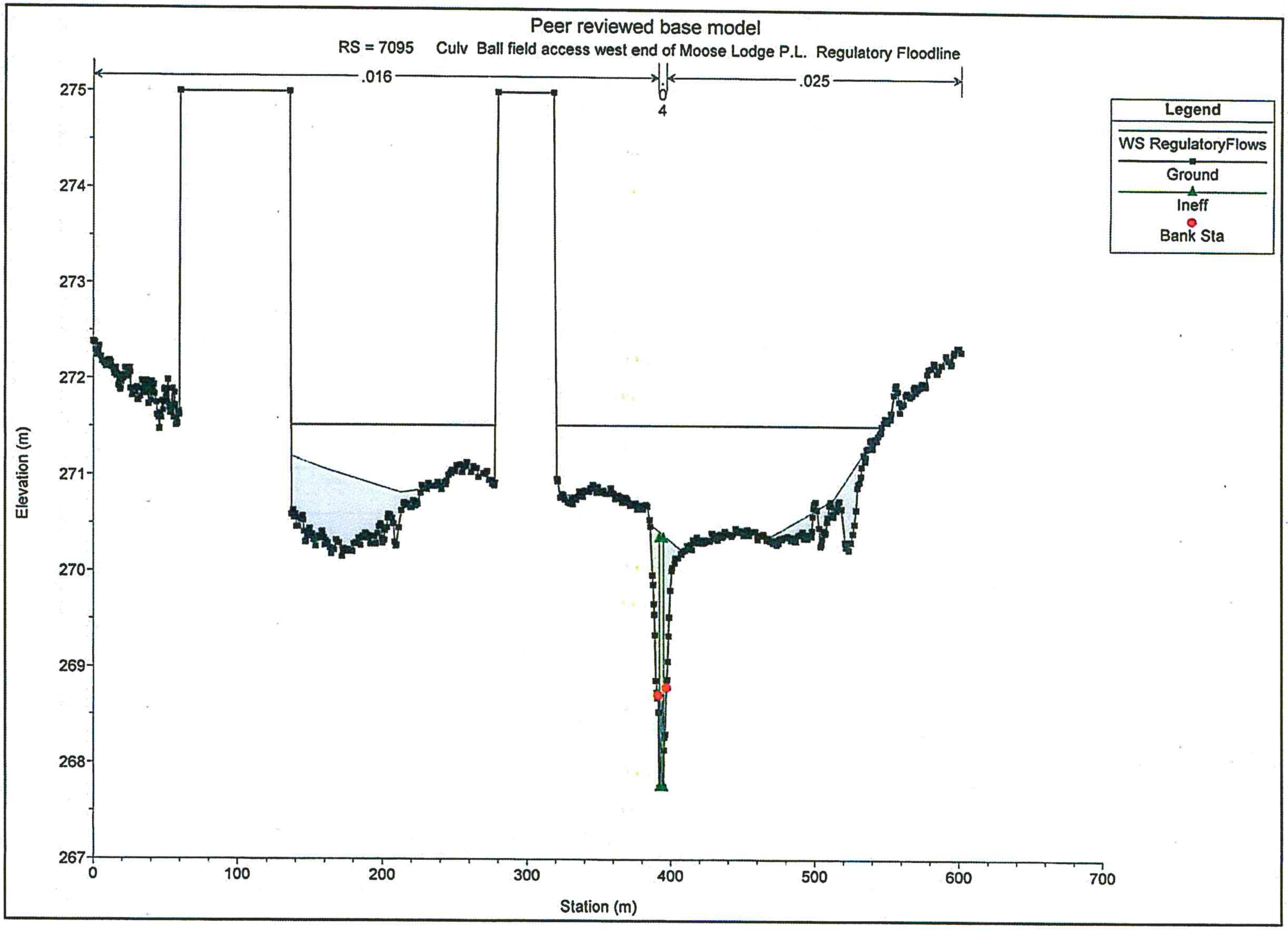

Peer reviewed base model
RS = 7127.958 Regulatory Floodline
.016
.04
.025
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
100
200
300
400
500
600
Station (m)

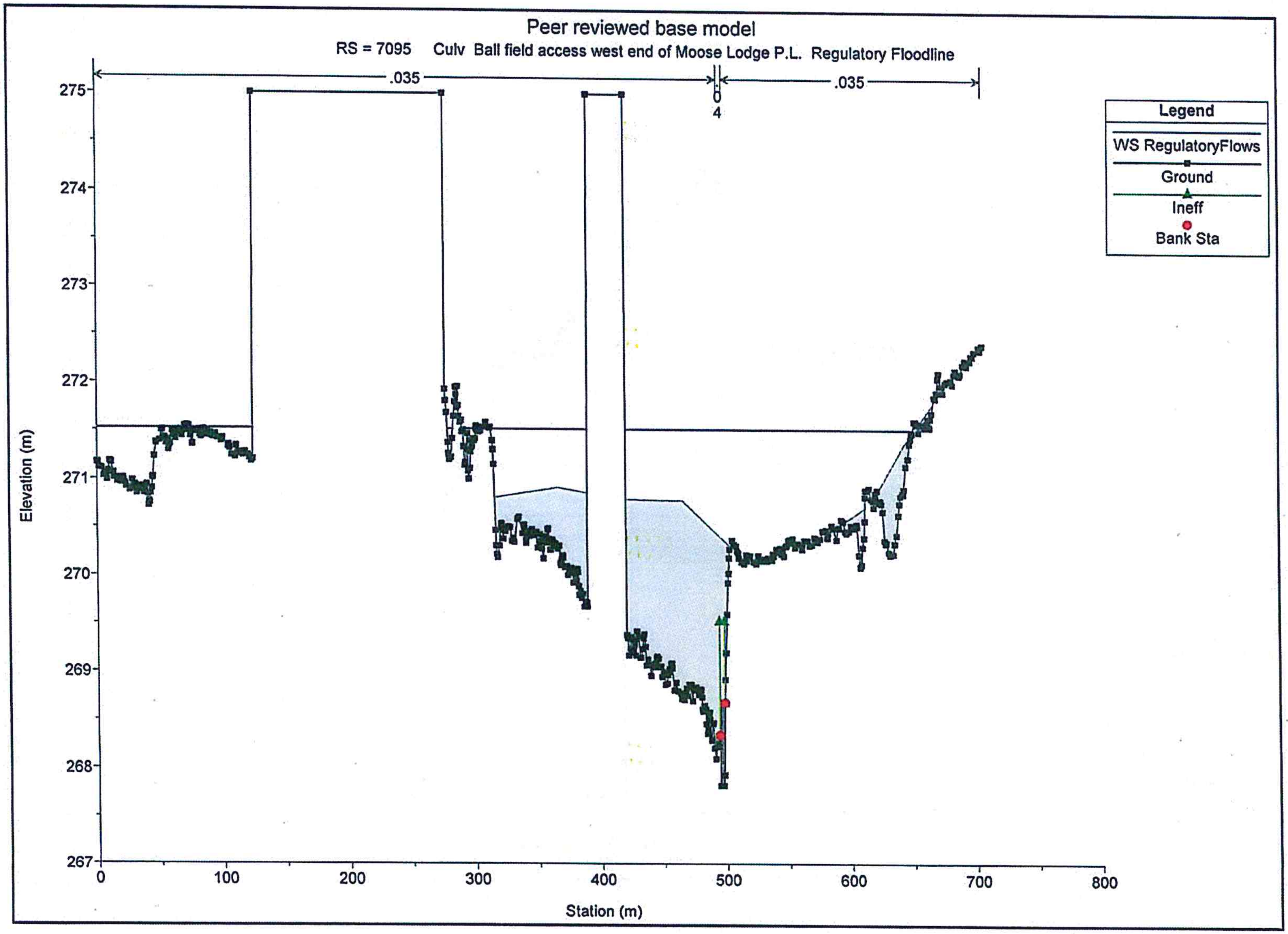


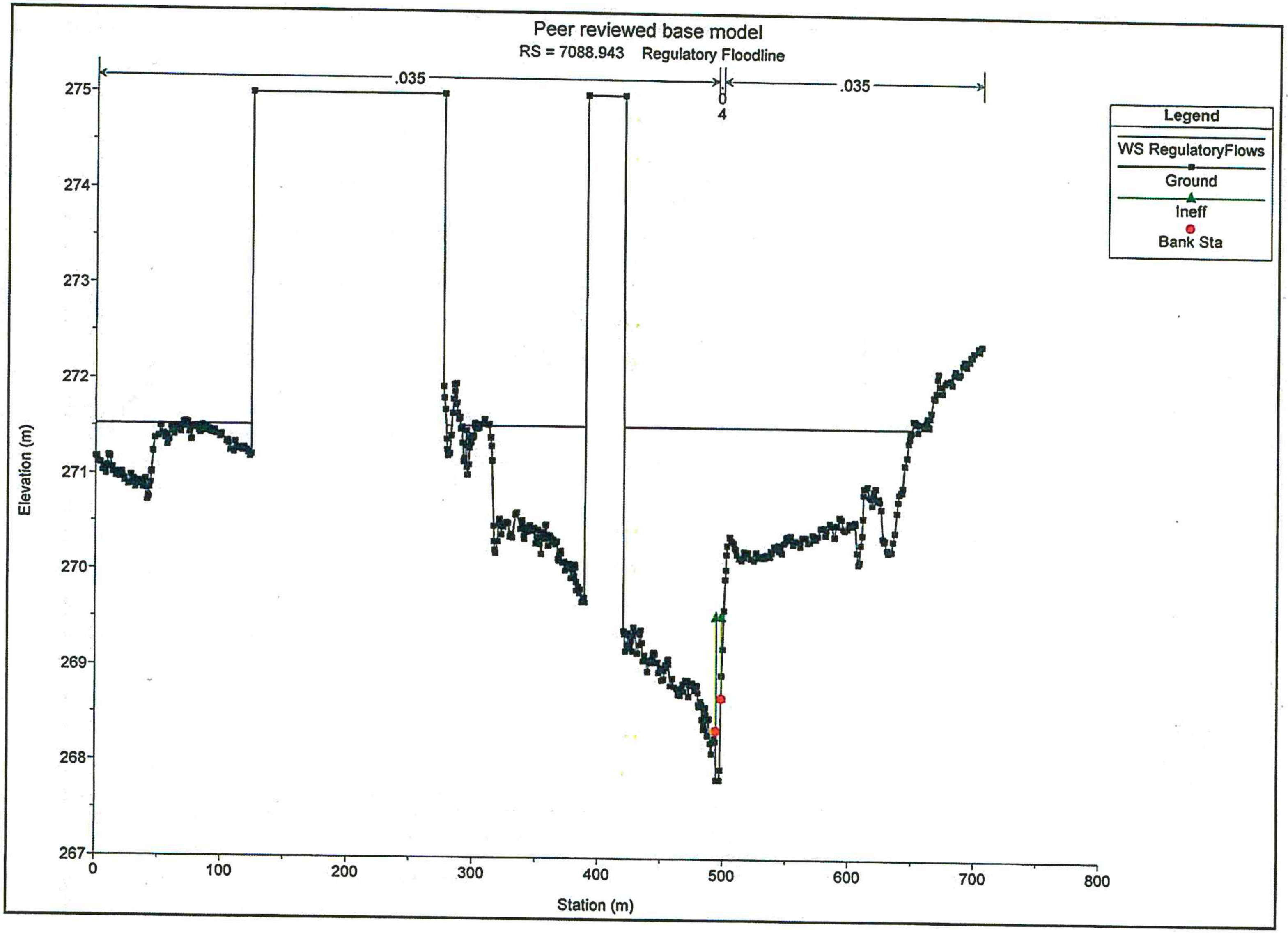
Peer reviewed base model
RS = 7111.02 Regulatory Floodline
.016
.04
.025
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
100
200
300
400
500
600
Station (m)



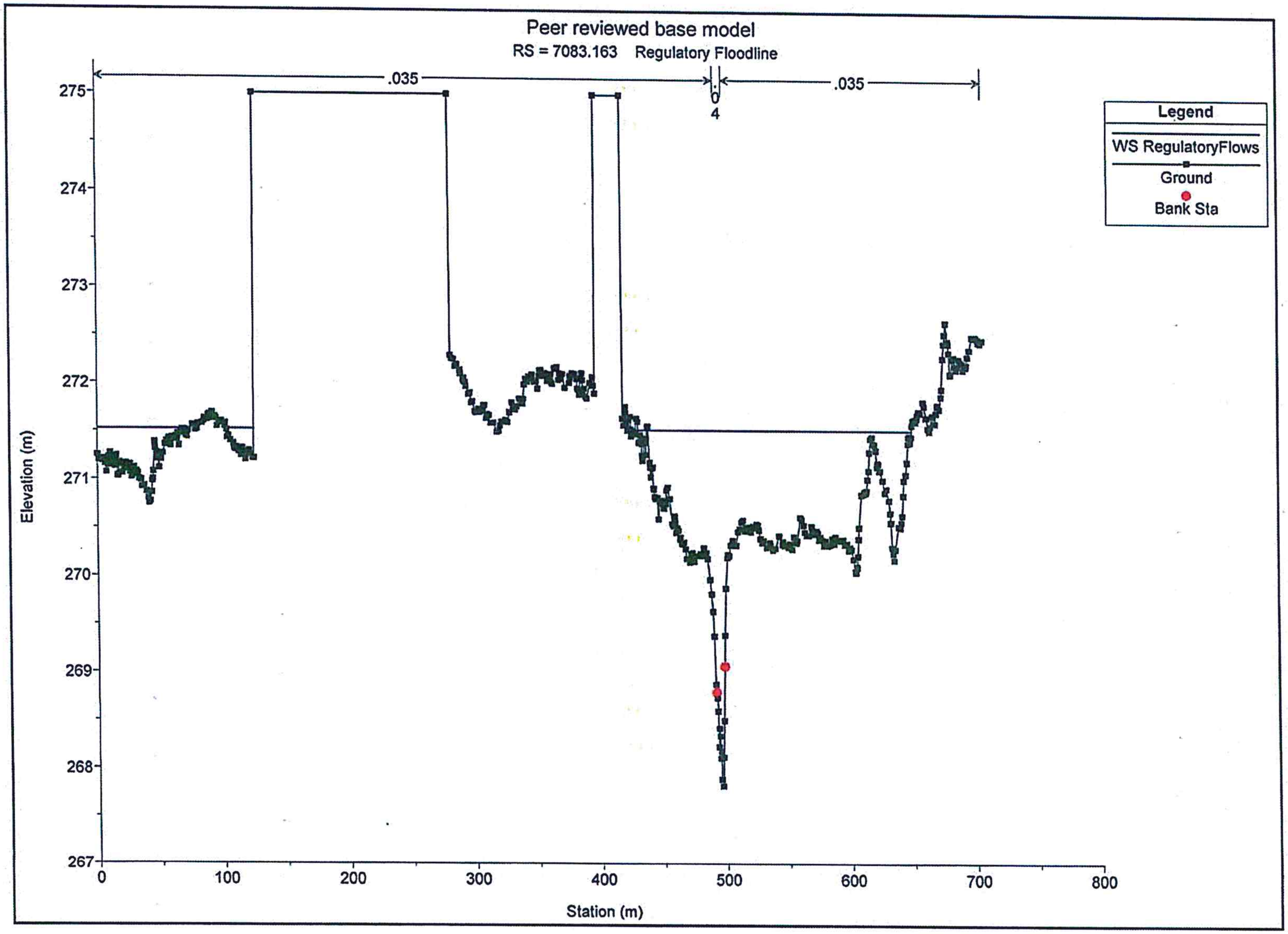
Peer reviewed base model
RS = 7106.395 Regulatory Floodline
.016
.04
.025
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
100
200
300
400
500
600
700
Station (m)


Peer reviewed base model
RS = 7095 Culv Ball field access west end of Moose Lodge P.L. Regulatory Floodline
.016
.025
0
4
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
Station (m)
0
100
200
300
400
500
600
700

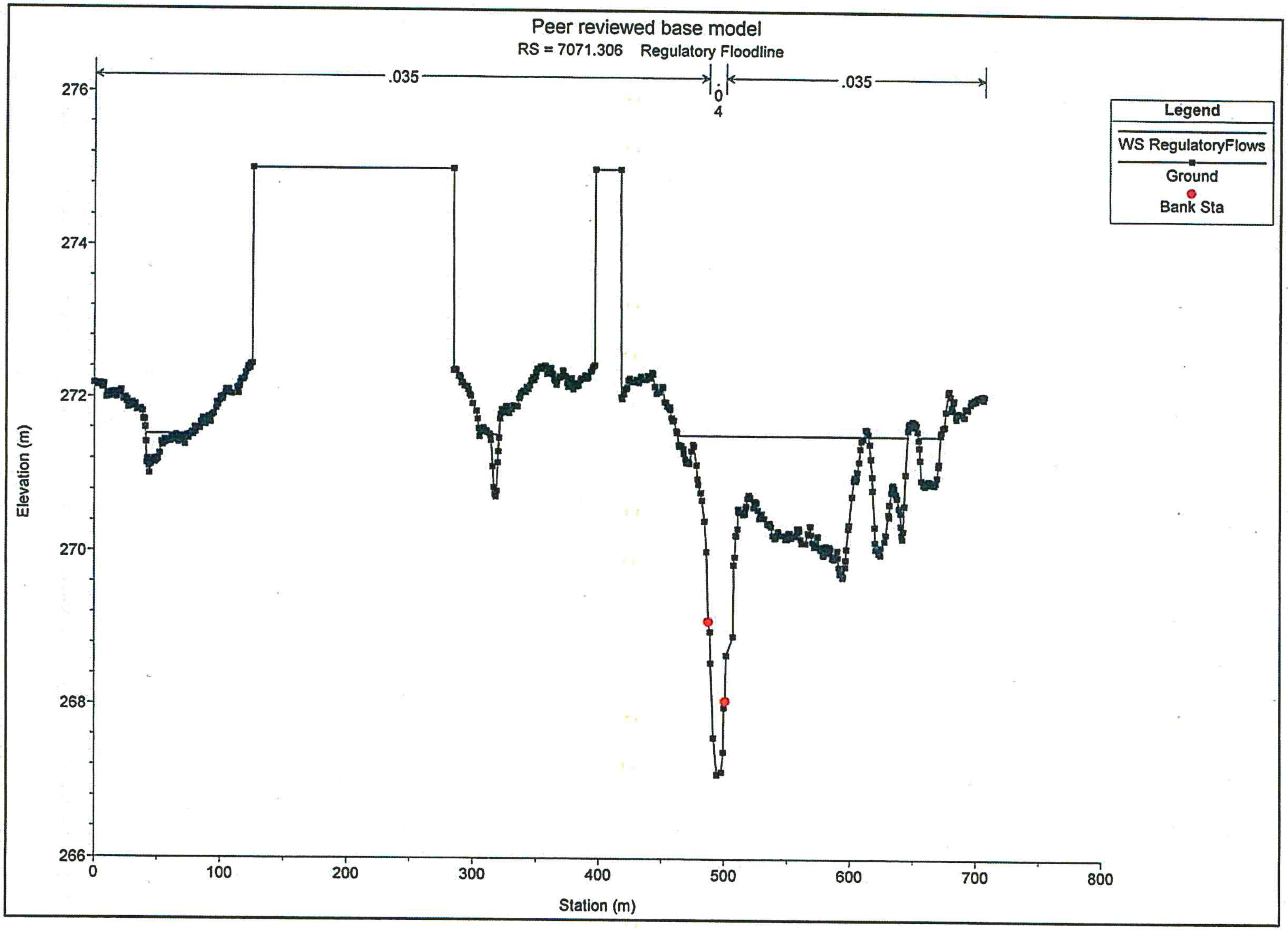

Peer reviewed base model
RS = 7095 Culv Ball field access west end of Moose Lodge P.L. Regulatory Floodline
.035
0
4
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
100
200
300
400
500
600
700
800
Station (m)



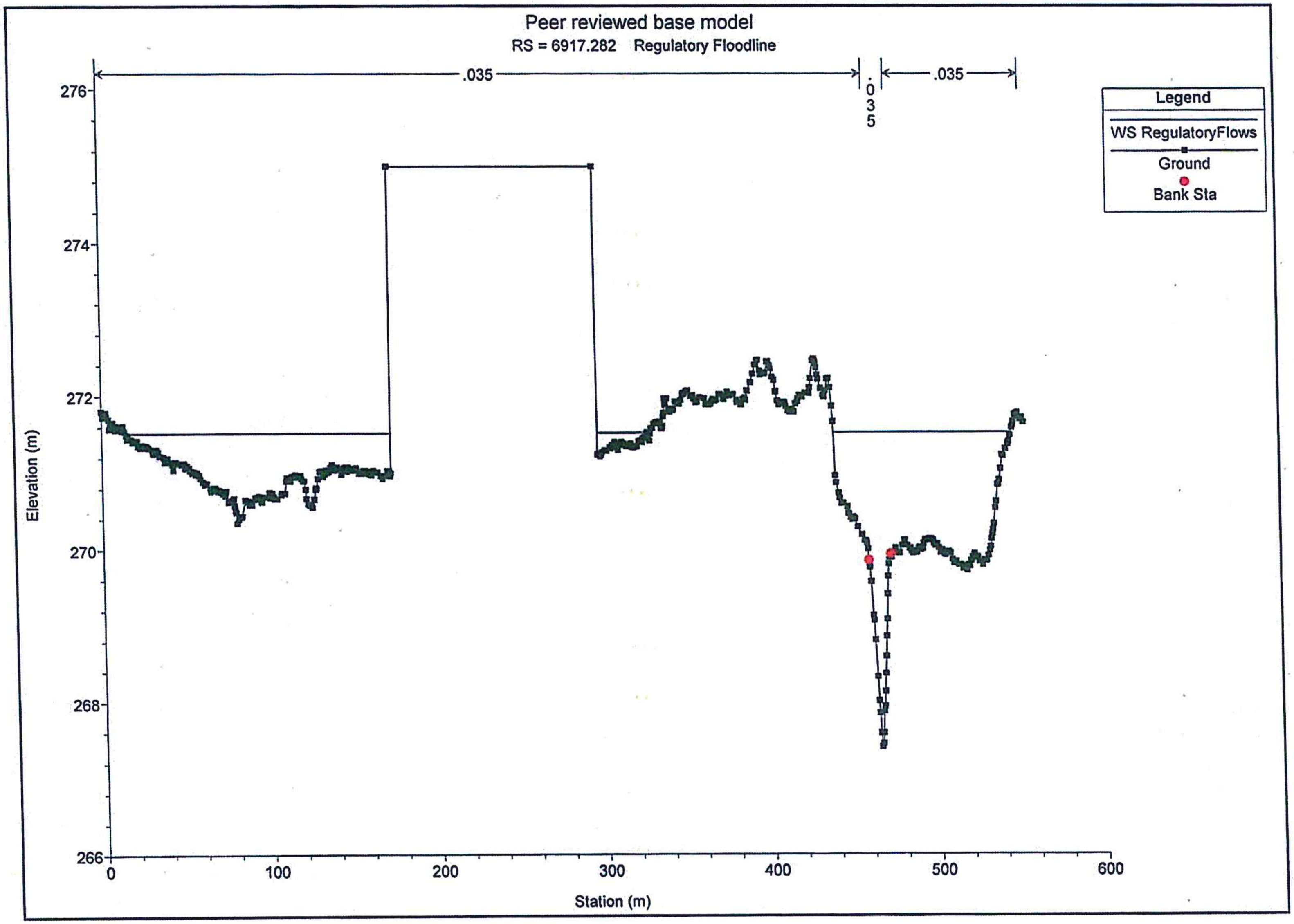
Peer reviewed base model
RS = 7088.943 Regulatory Floodline
.035
0
4
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
Station (m)
0
100
200
300
400
500
600
700
800



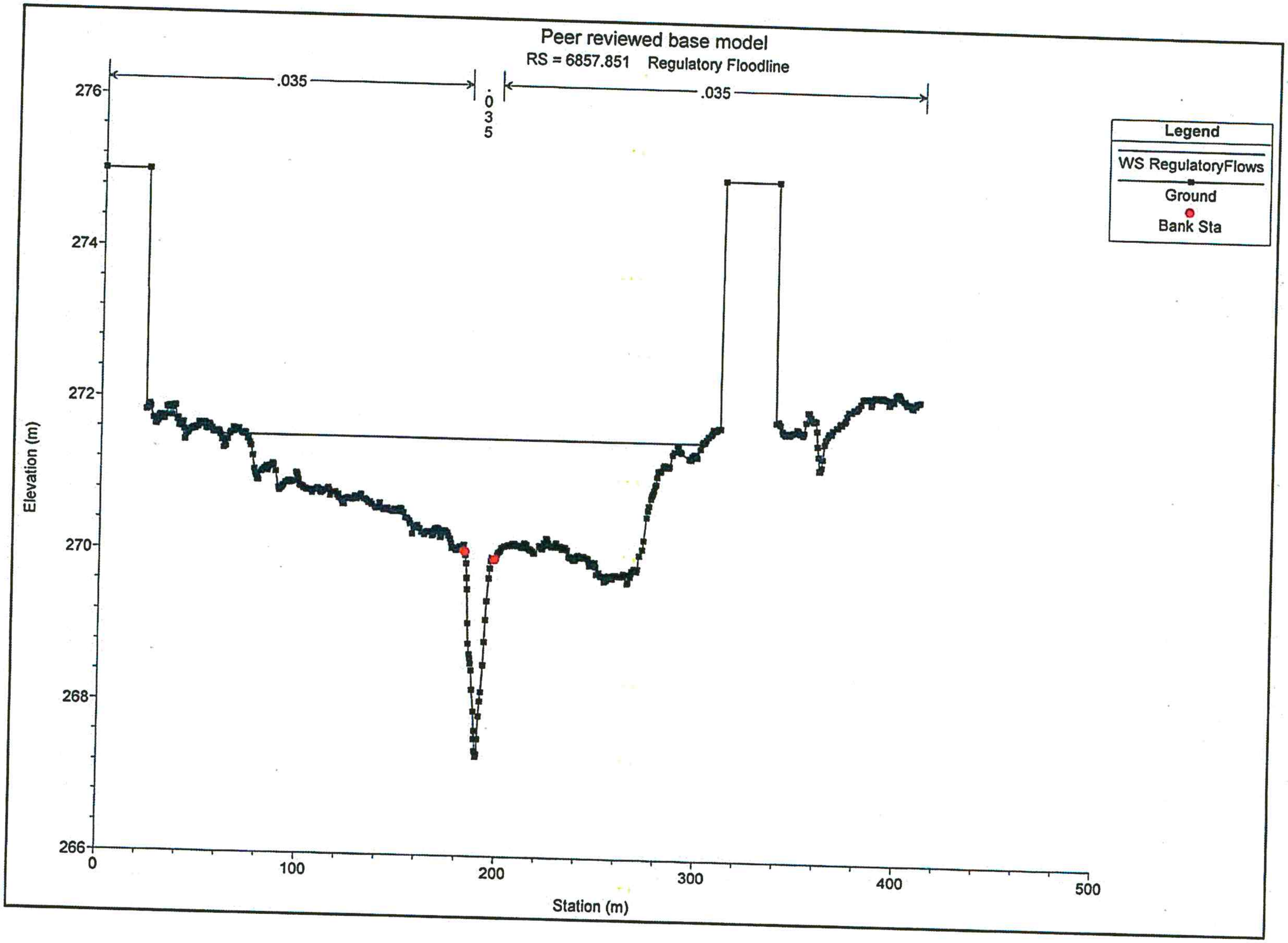
Peer reviewed base model
RS = 7083.163 Regulatory Floodline
.035
0
4
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
275
274
273
272
271
270
269
268
267
0
100
200
300
400
500
600
700
800
Station (m)

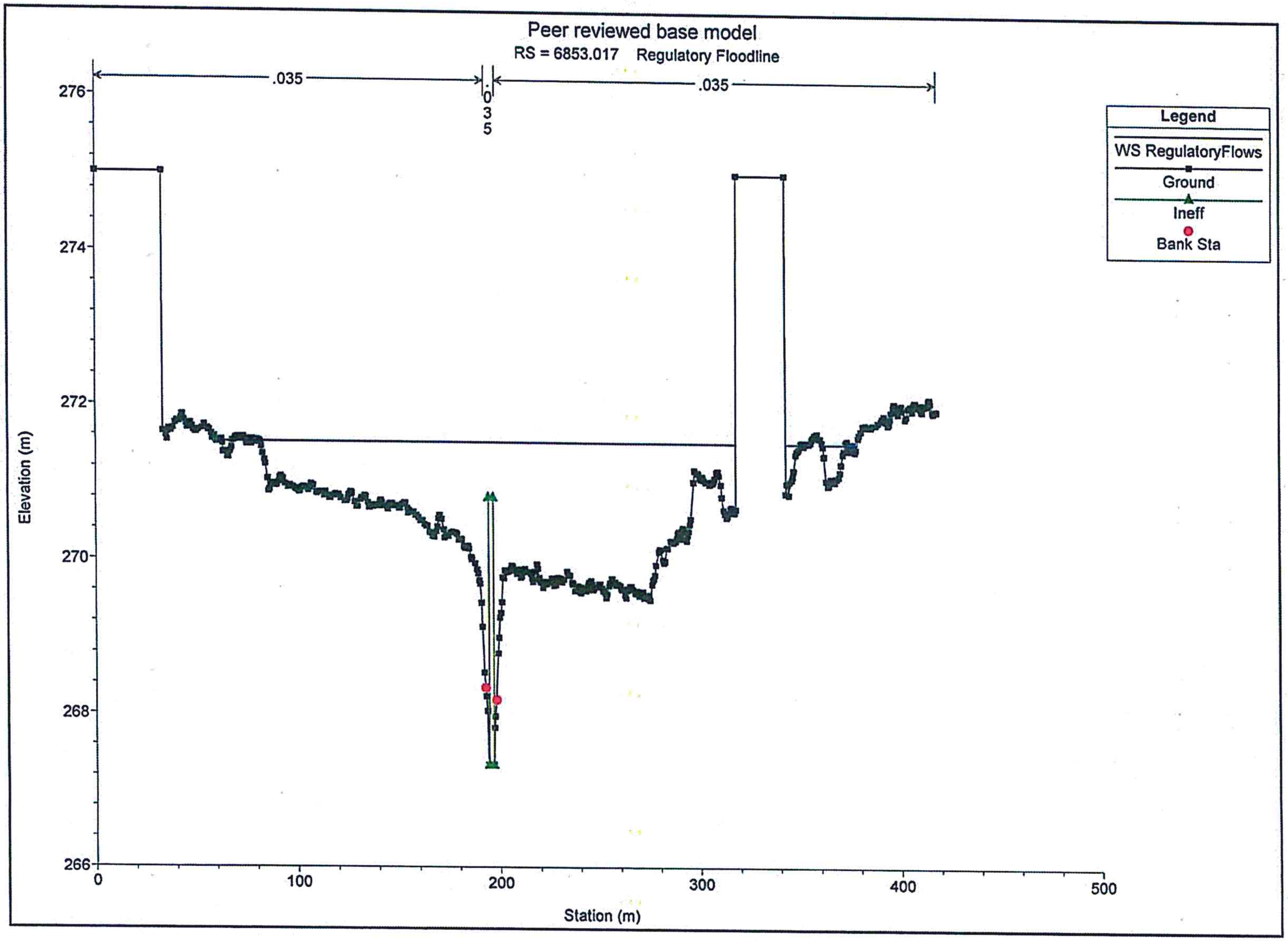


Peer reviewed base model
RS = 7071.306 Regulatory Floodline
.035
.04
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
600
700
800
Station (m)

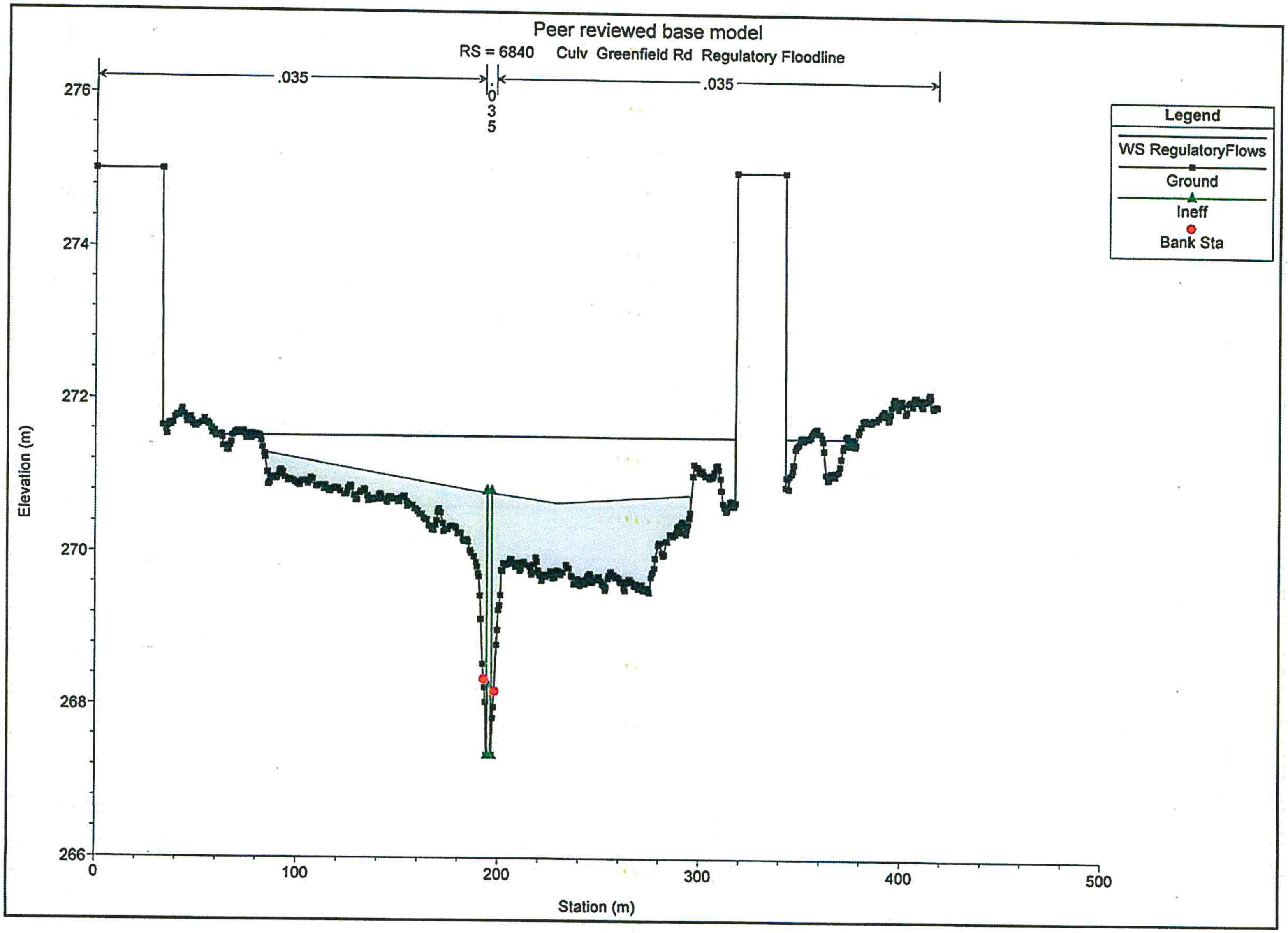


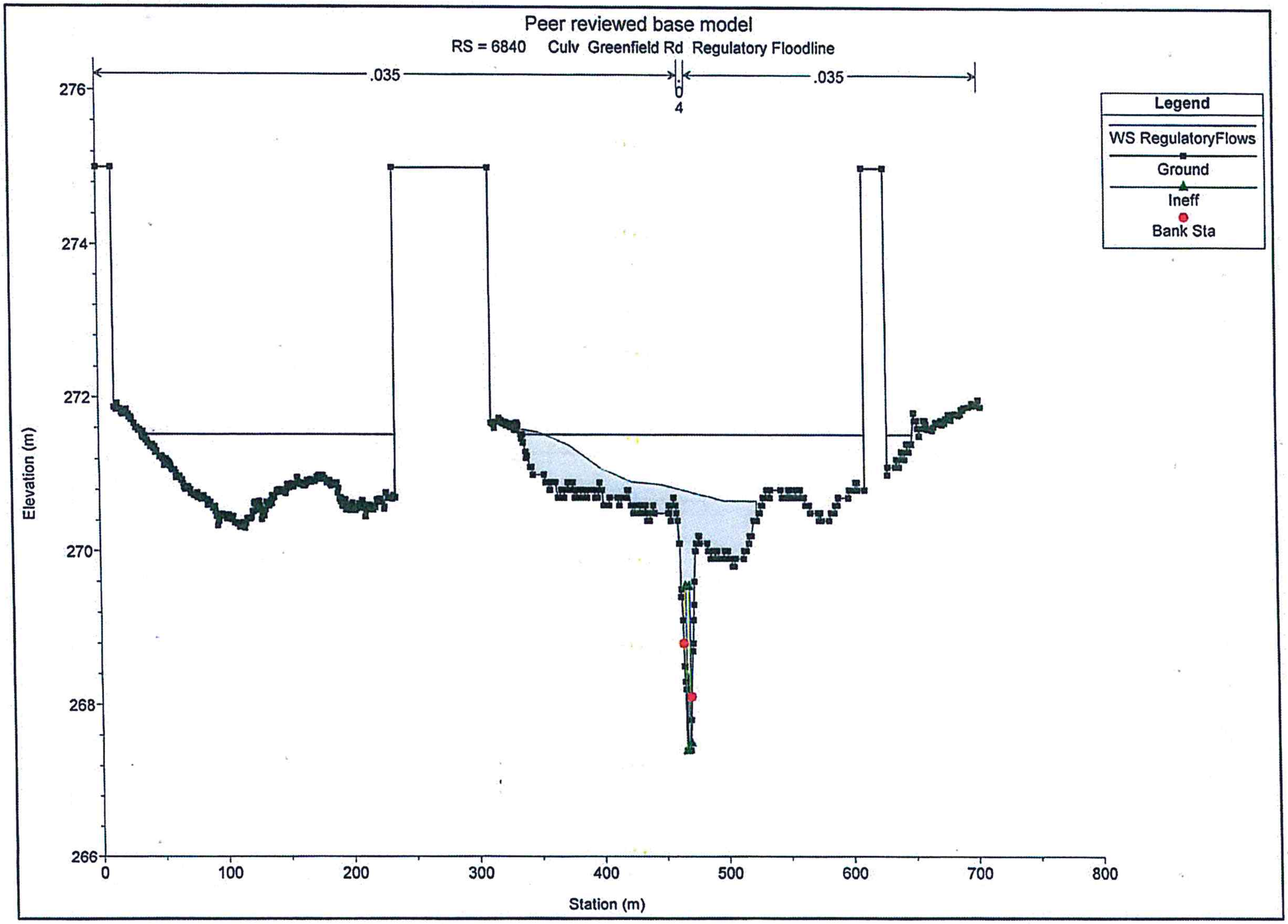
Peer reviewed base model
RS = 6917.282 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
600
Station (m)

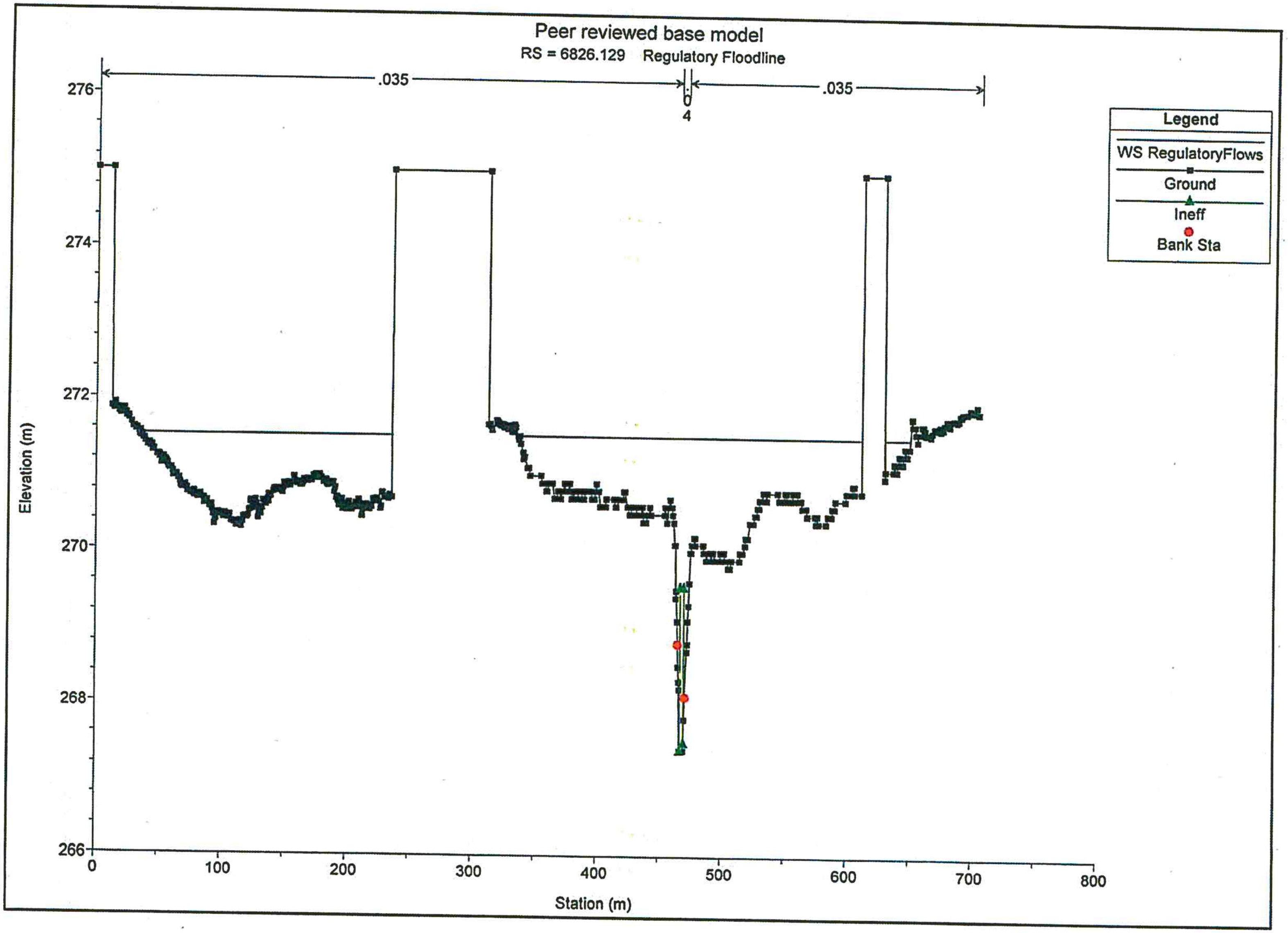

Peer reviewed base model
RS = 6857.851 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
Station (m)
0
100
200
300
400
500

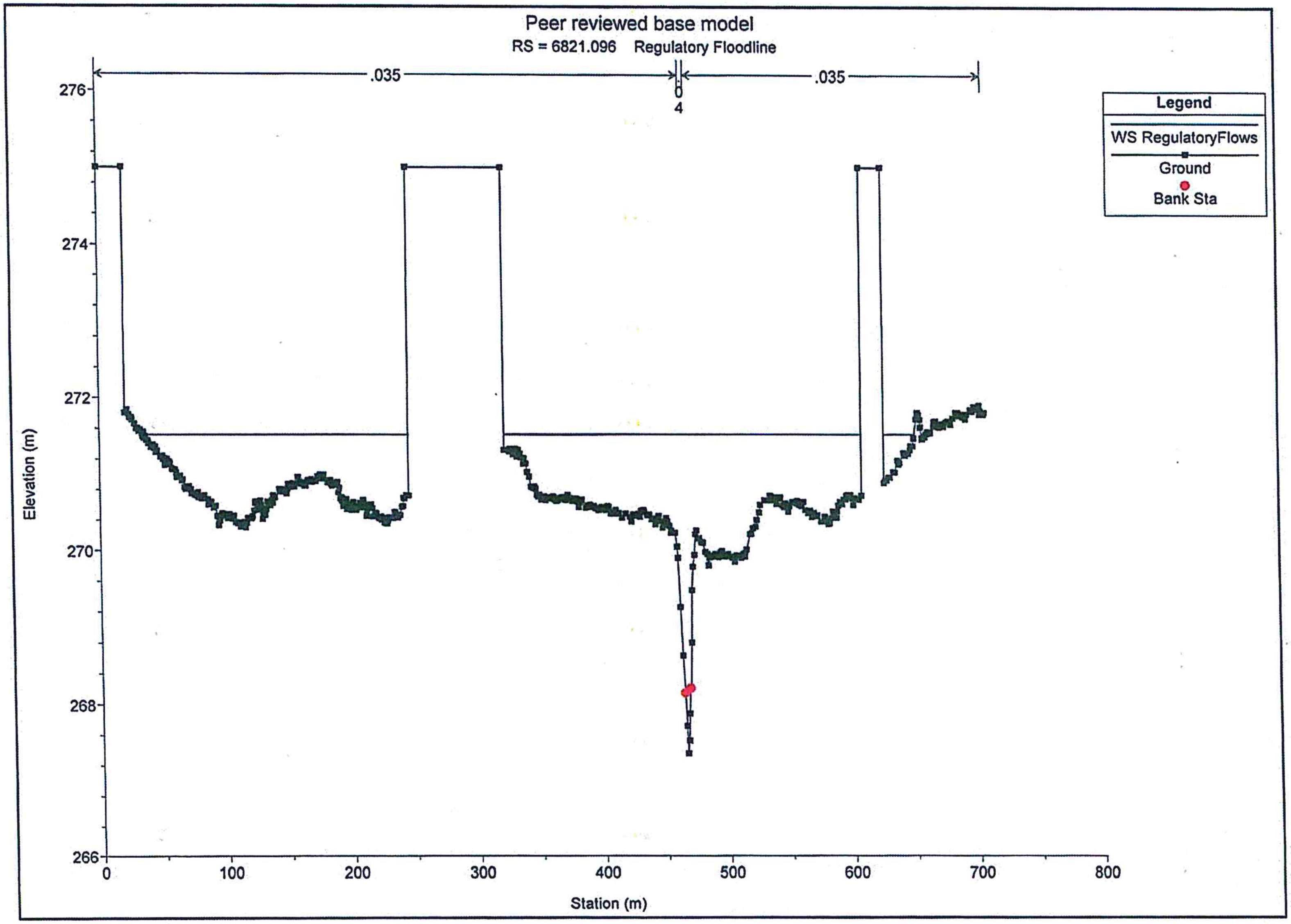


Peer reviewed base model
RS = 6853.017 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
276
274
272
270
268
266
Elevation (m)
0
100
200
300
400
500
Station (m)

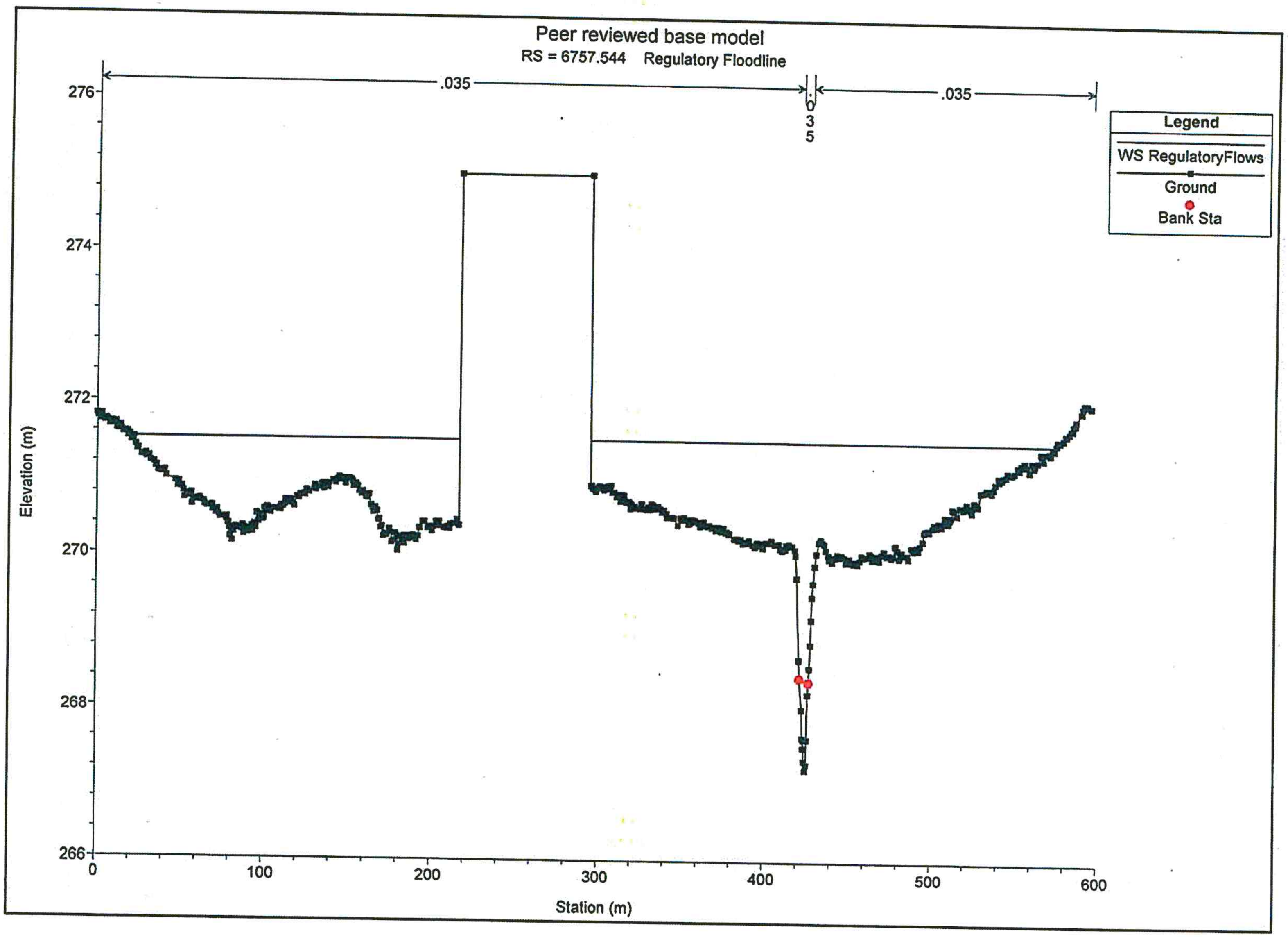

Peer reviewed base model
RS = 6840 Culv Greenfield Rd Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
Station (m)

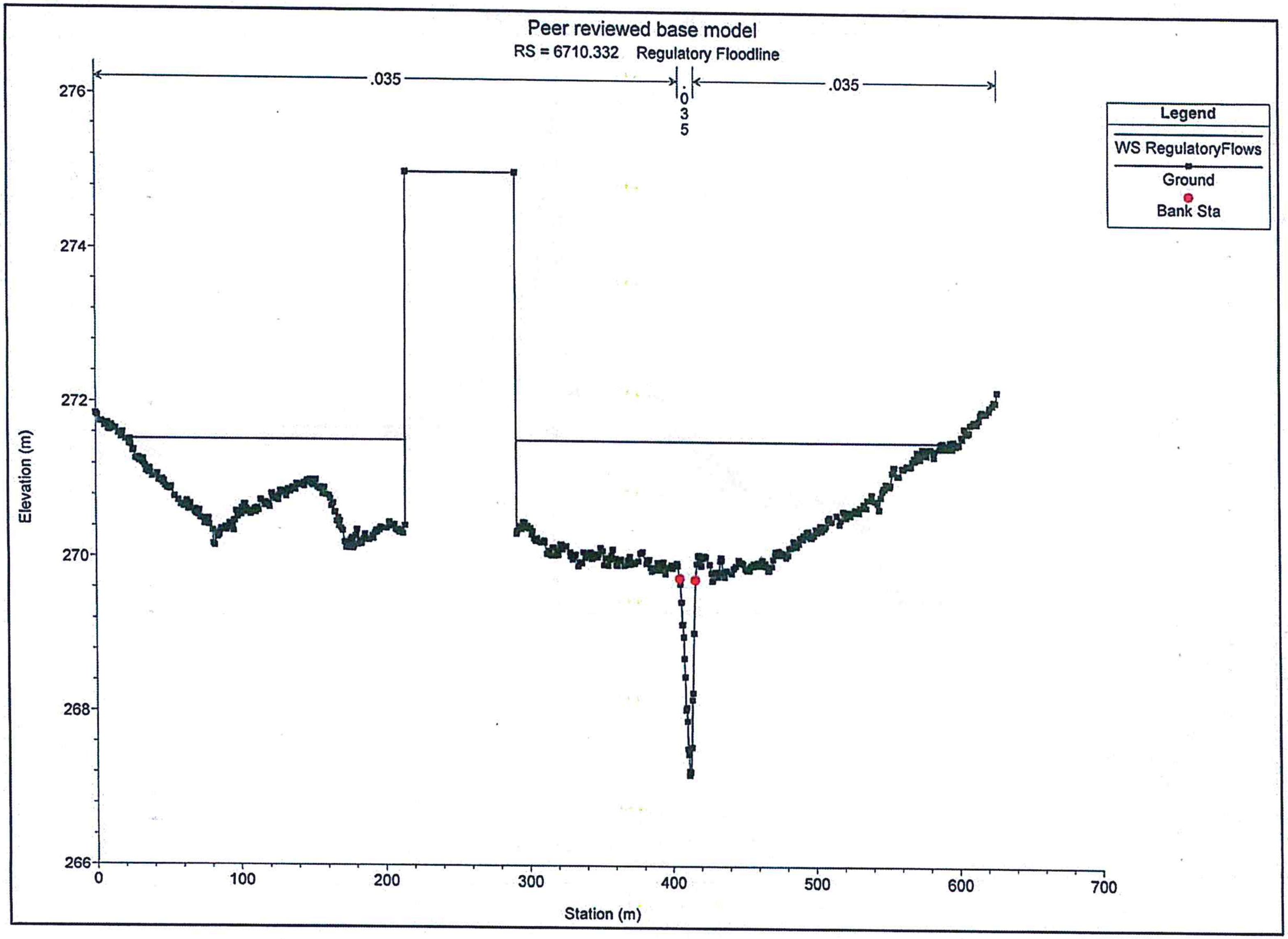

Peer reviewed base model
RS = 6840 Culv Greenfield Rd Regulatory Floodline
.035
.04
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
276
274
272
270
268
266
Station (m)
0
100
200
300
400
500
600
700
800


Peer reviewed base model
RS = 6826.129 Regulatory Floodline
.035
.035
0
4
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
600
700
800
Station (m)

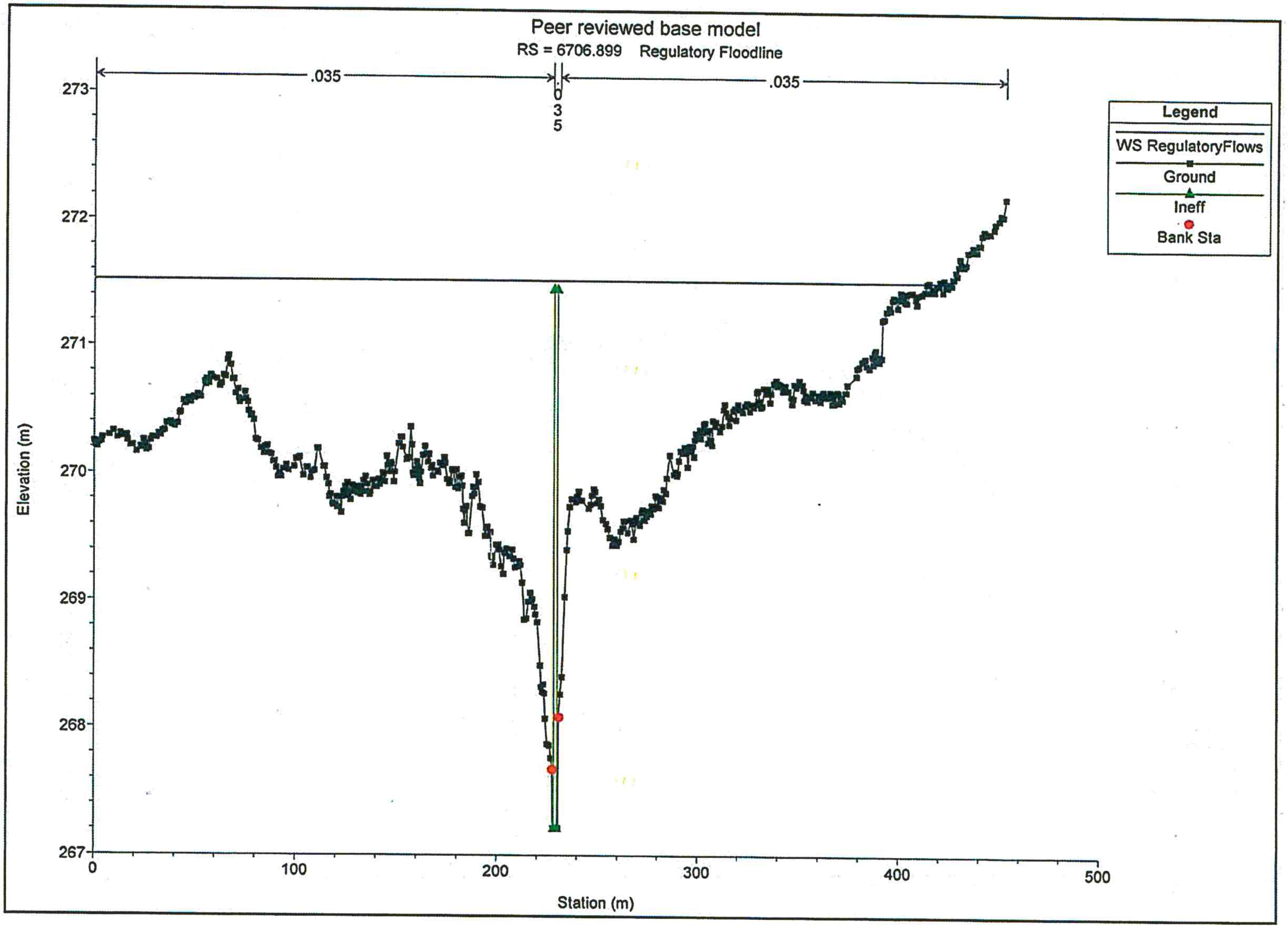


Peer reviewed base model
RS = 6821.096 Regulatory Floodline
.035
0
4
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
Station (m)
0
100
200
300
400
500
600
700
800

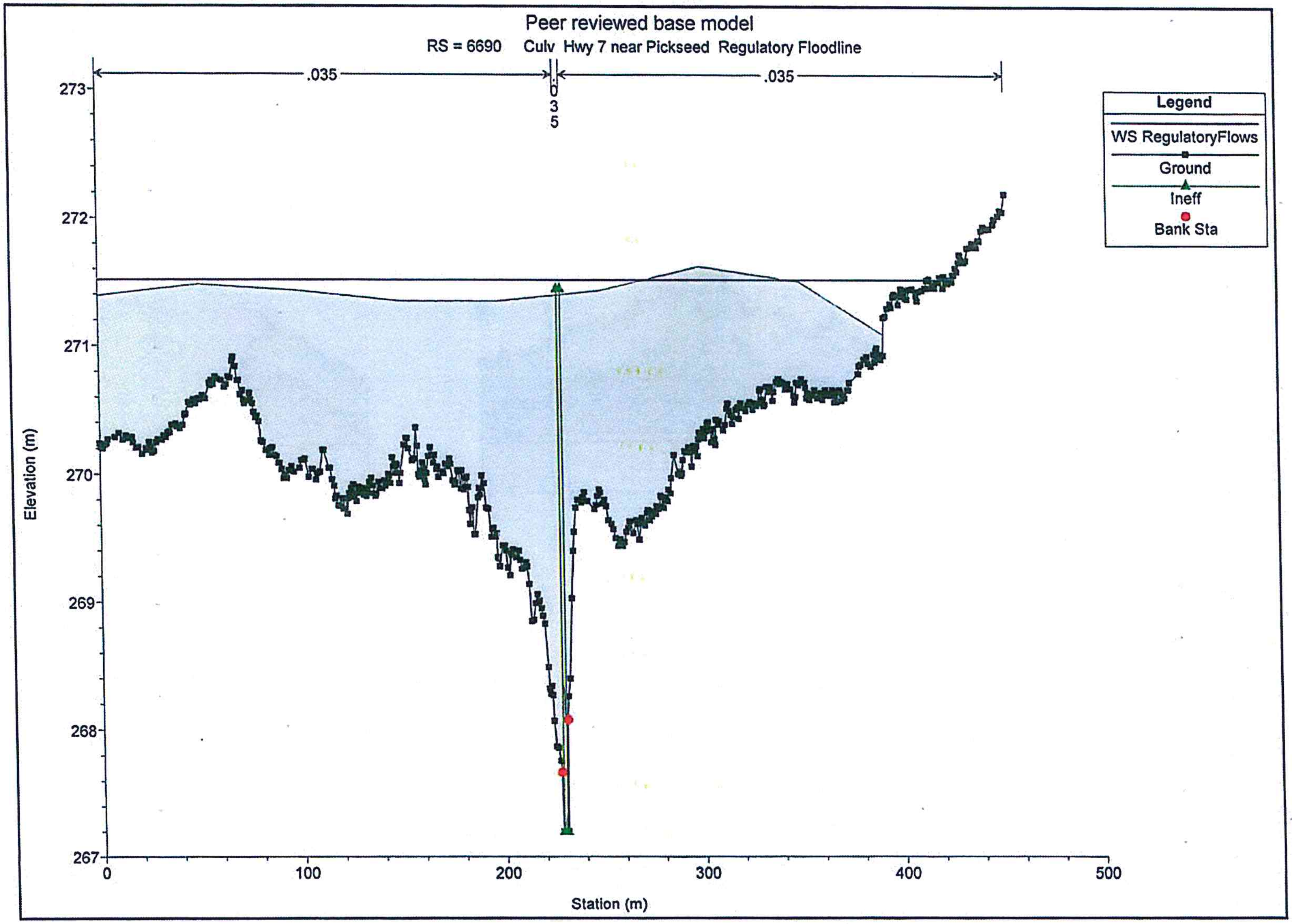

Peer reviewed base model
RS = 6757.544 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
Station (m)
0
100
200
300
400
500
600



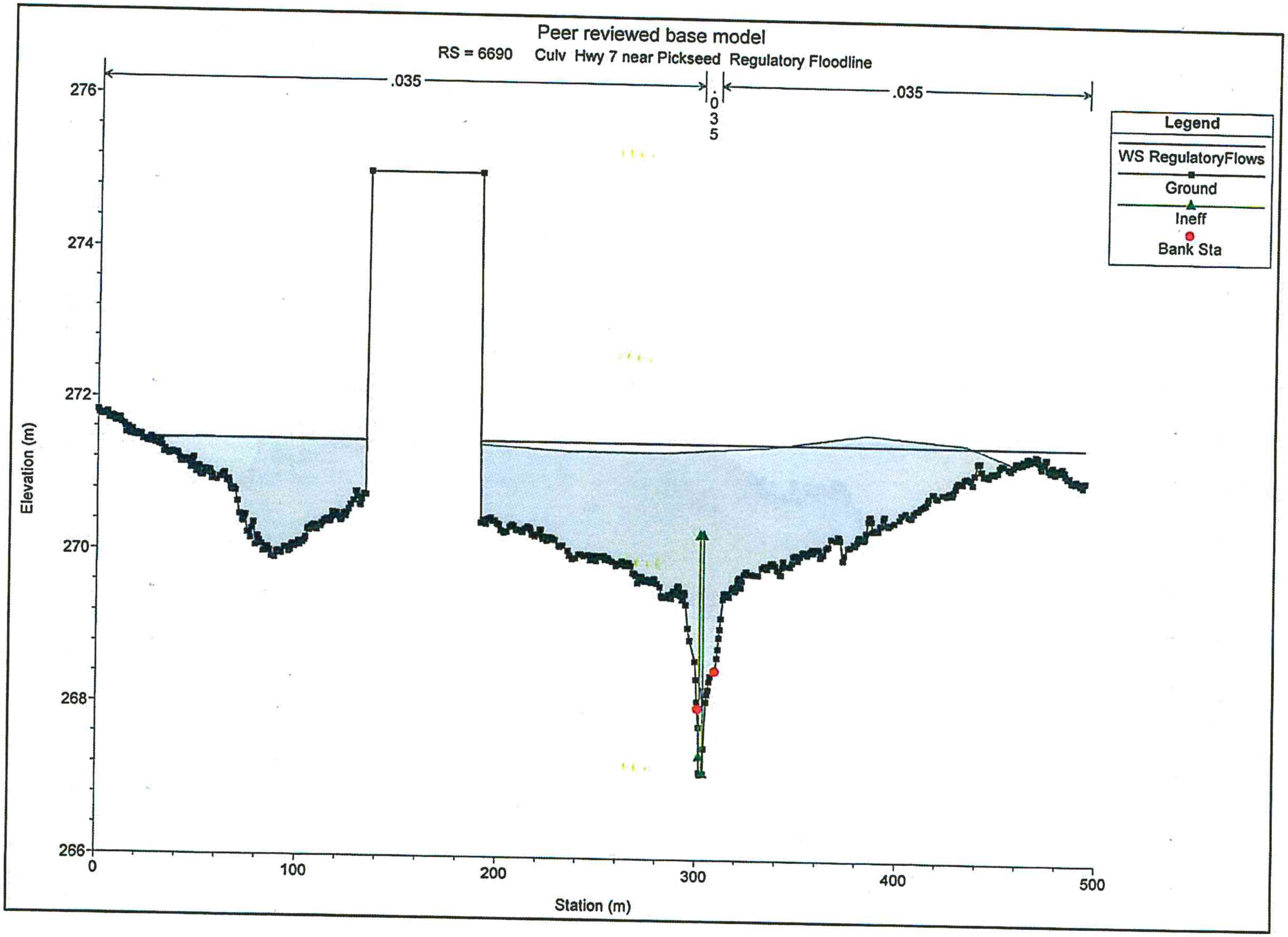
Peer reviewed base model
RS = 6710.332 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
Station (m)
0
100
200
300
400
500
600
700

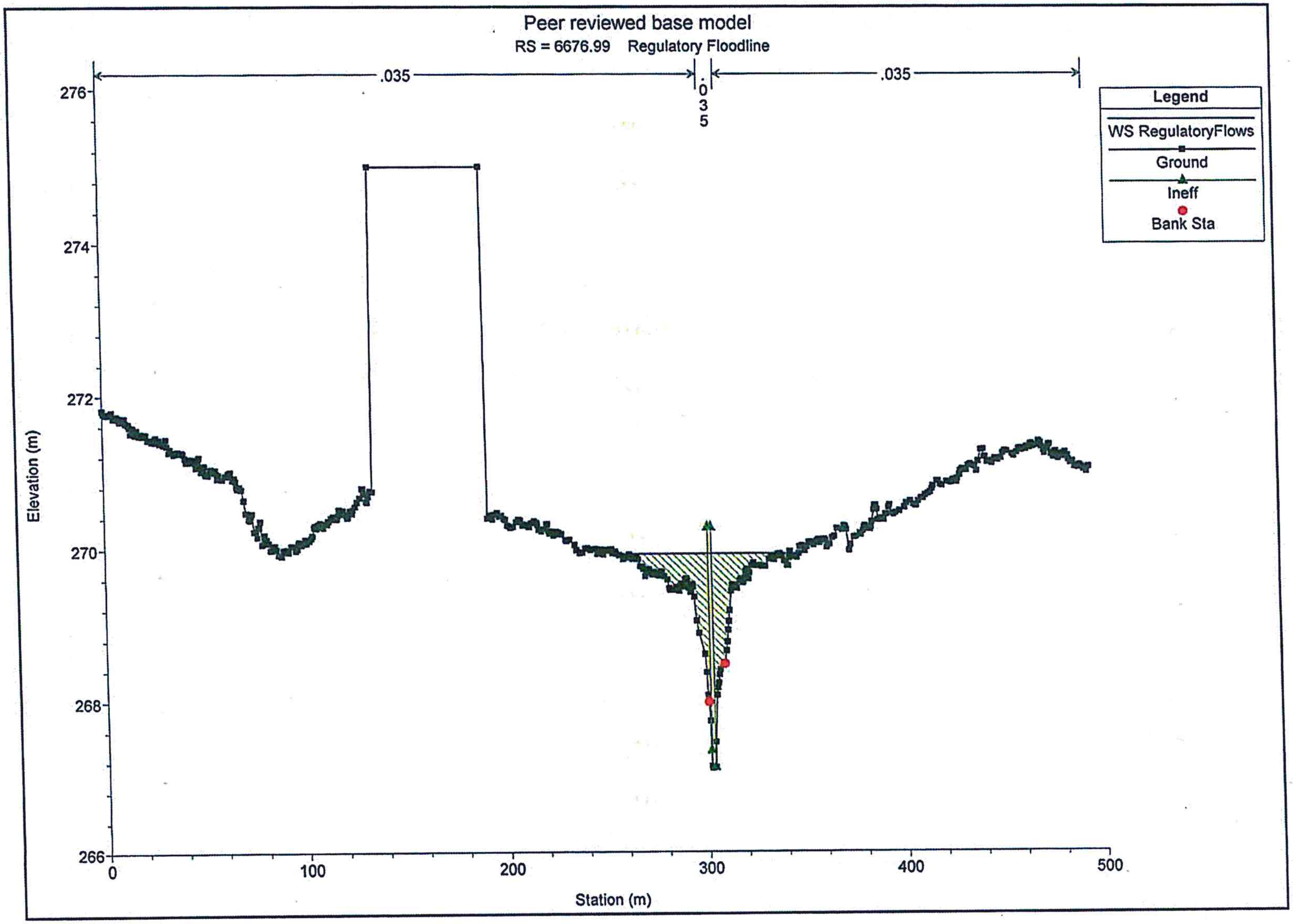


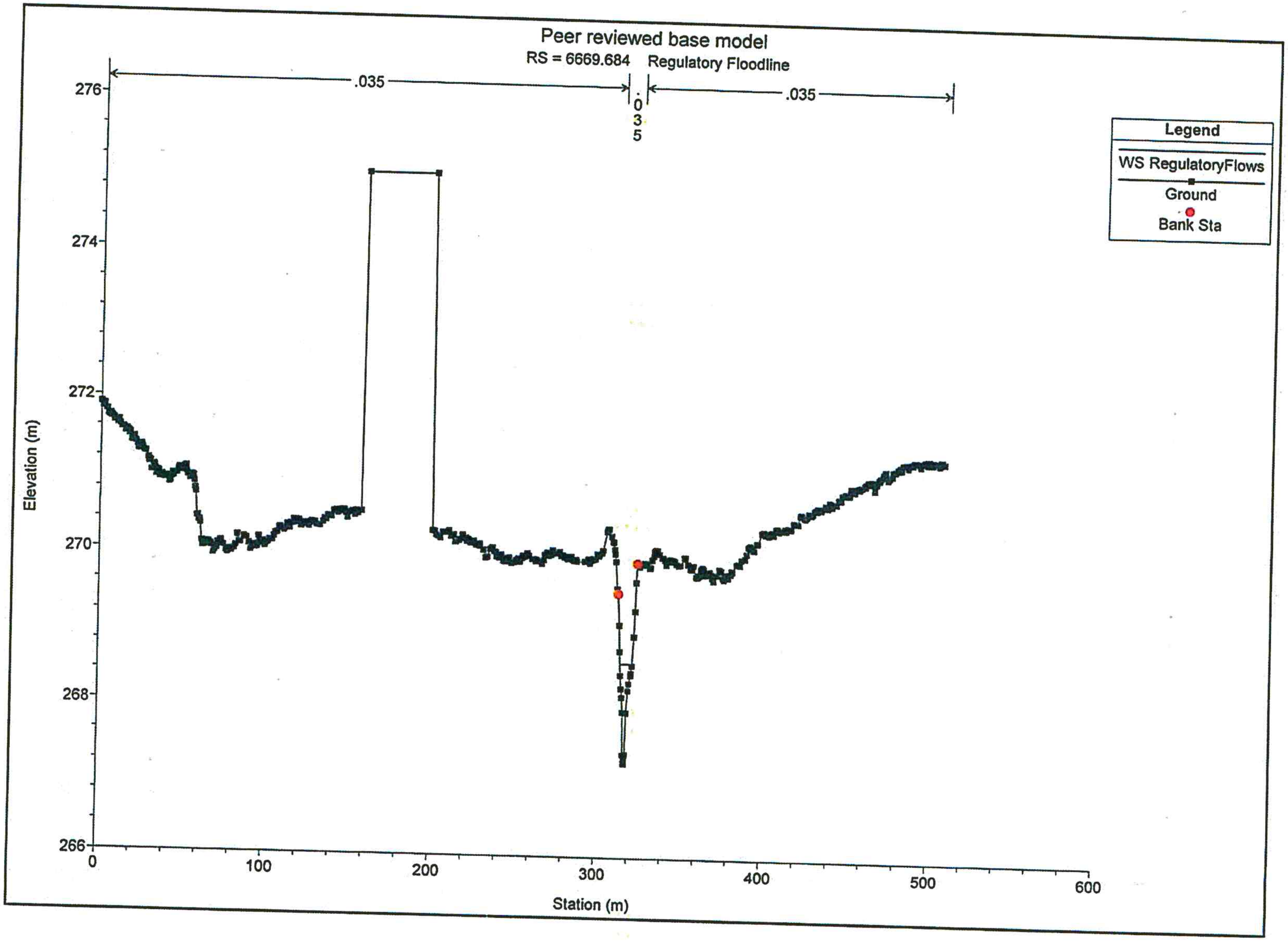
Peer reviewed base model
RS = 6706.899 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
273
272
271
270
269
268
267
Station (m)
0
100
200
300
400
500

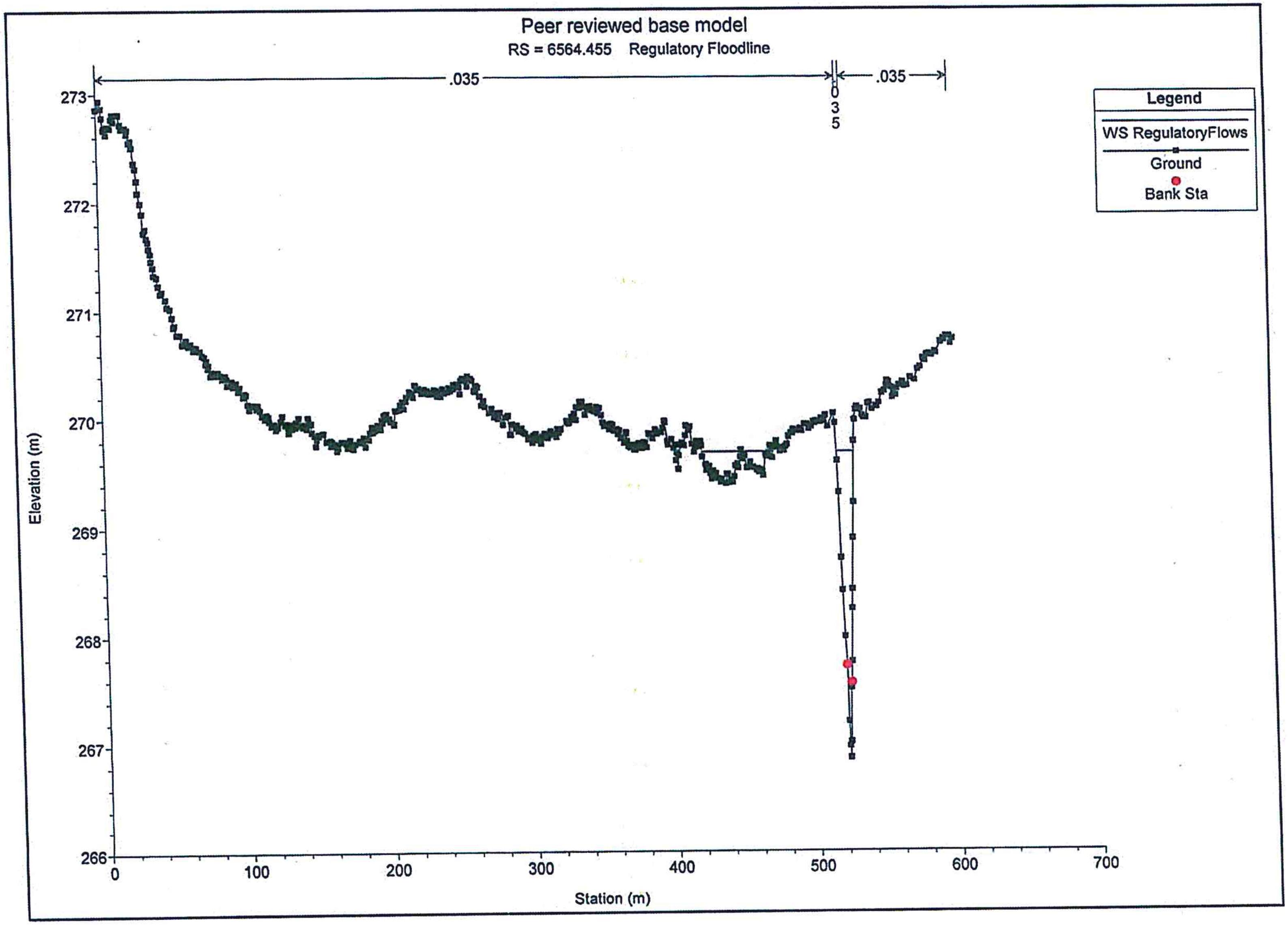


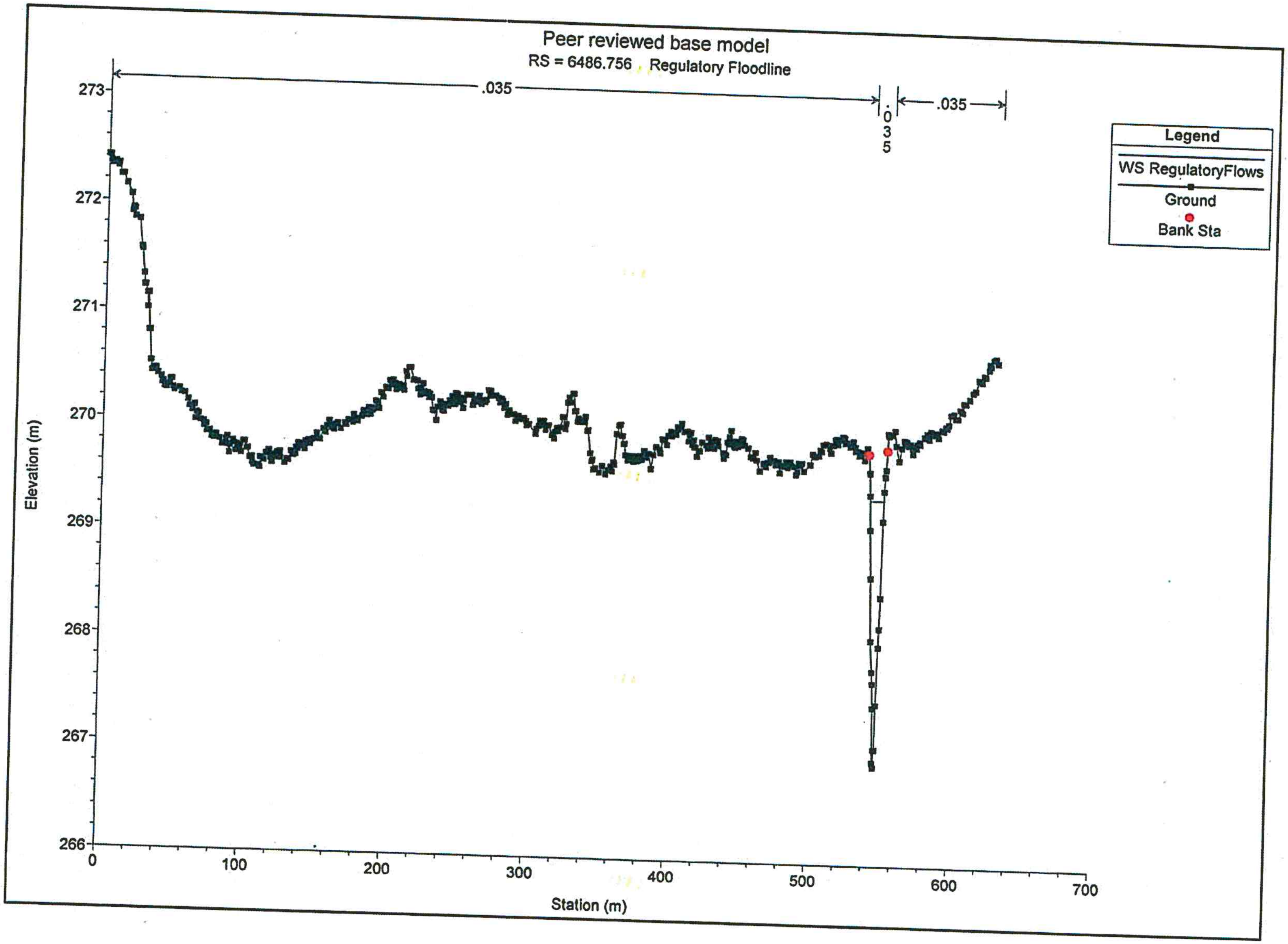
Peer reviewed base model
RS = 6690 Culv Hwy 7 near Pickseed Regulatory Floodline
.035
0
3
5
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
273
272
271
270
269
268
267
Station (m)
0
100
200
300
400
500


Peer reviewed base model
RS = 6690 Culv Hwy 7 near Pickseed Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
Station (m)

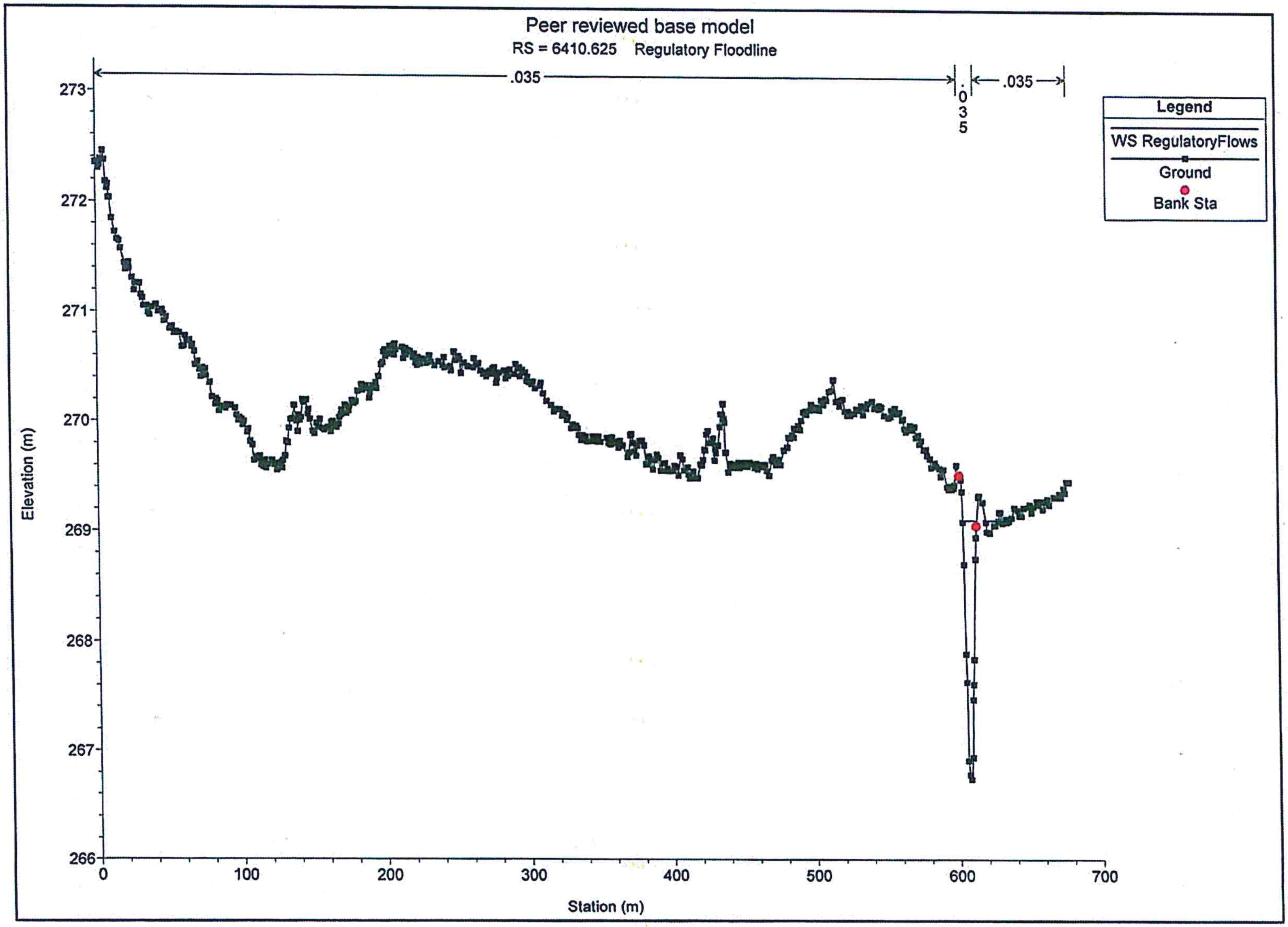

Peer reviewed base model
RS = 6676.99 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
Station (m)


Peer reviewed base model
RS = 6669.684 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
0
100
200
300
400
500
600
Station (m)

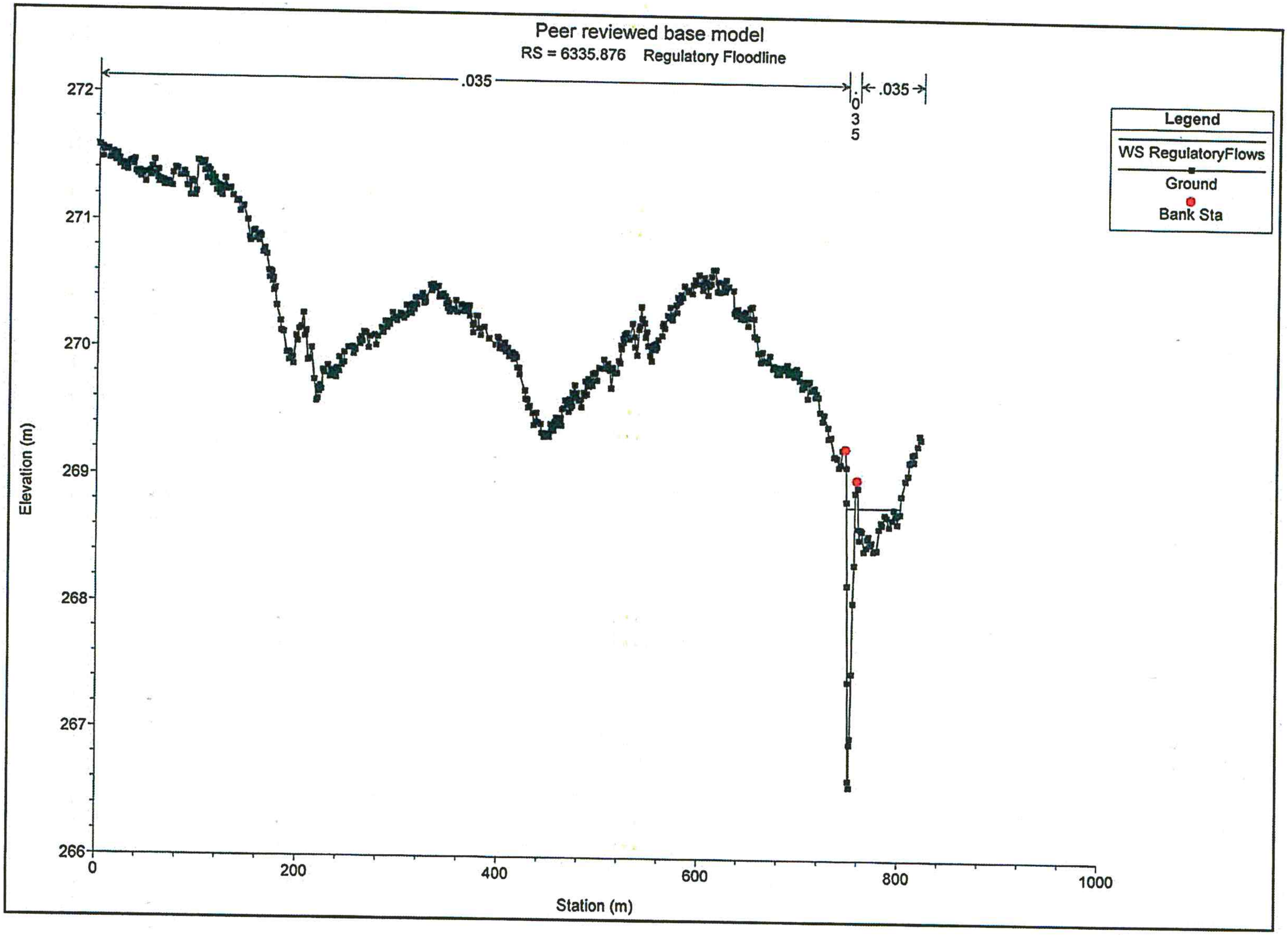

Peer reviewed base model
RS = 6564.455 Regulatory Floodline
.035
0
3
5
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
273
272
271
270
269
268
267
266
Elevation (m)
0
100
200
300
400
500
600
700
Station (m)



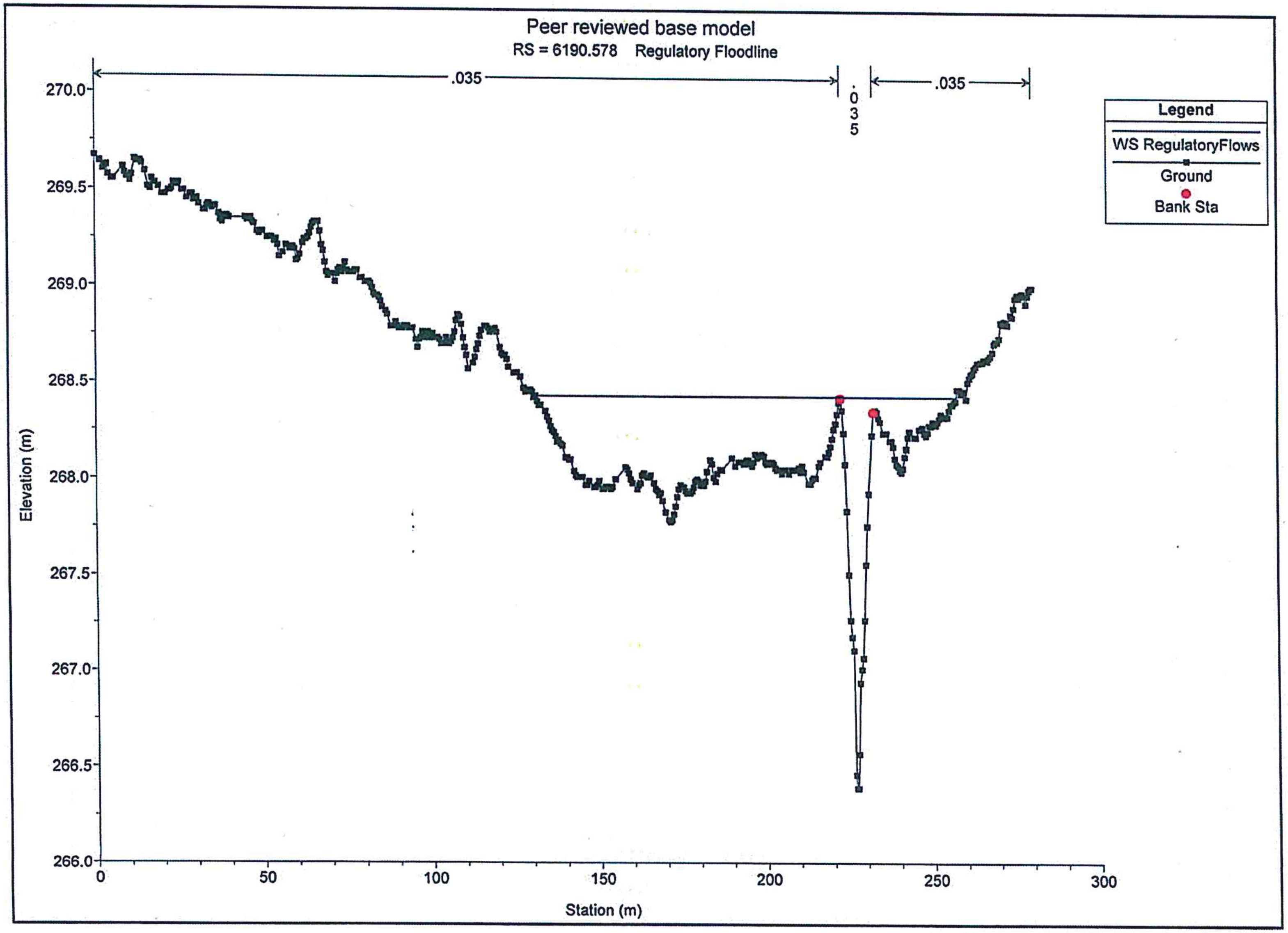
Peer reviewed base model
RS = 6486.756 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
273
272
271
270
269
268
267
266
0
100
200
300
400
500
600
700



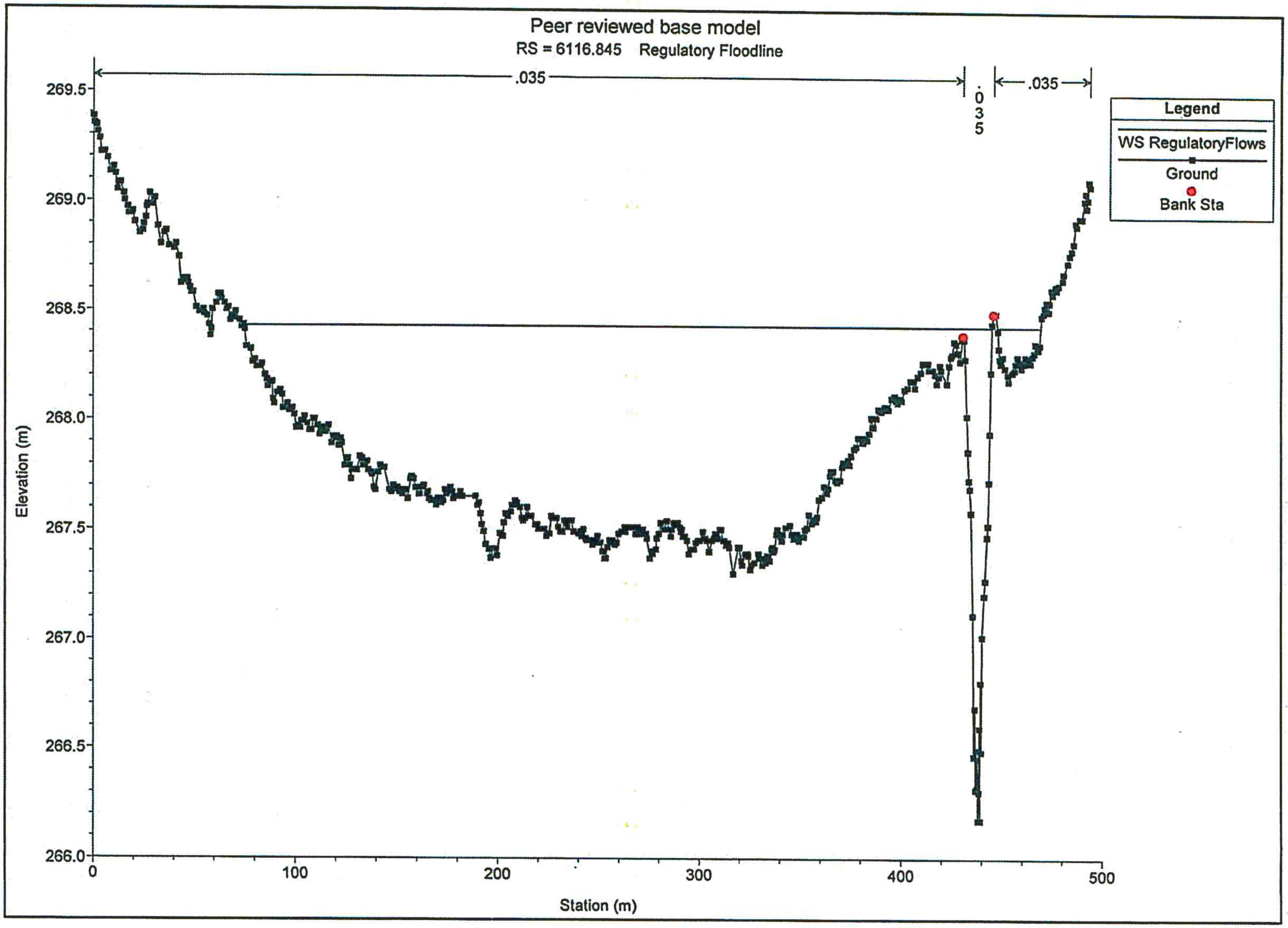
Peer reviewed base model
RS = 6410.625 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
273
272
271
270
269
268
267
266
0
100
200
300
400
500
600
700
Station (m)

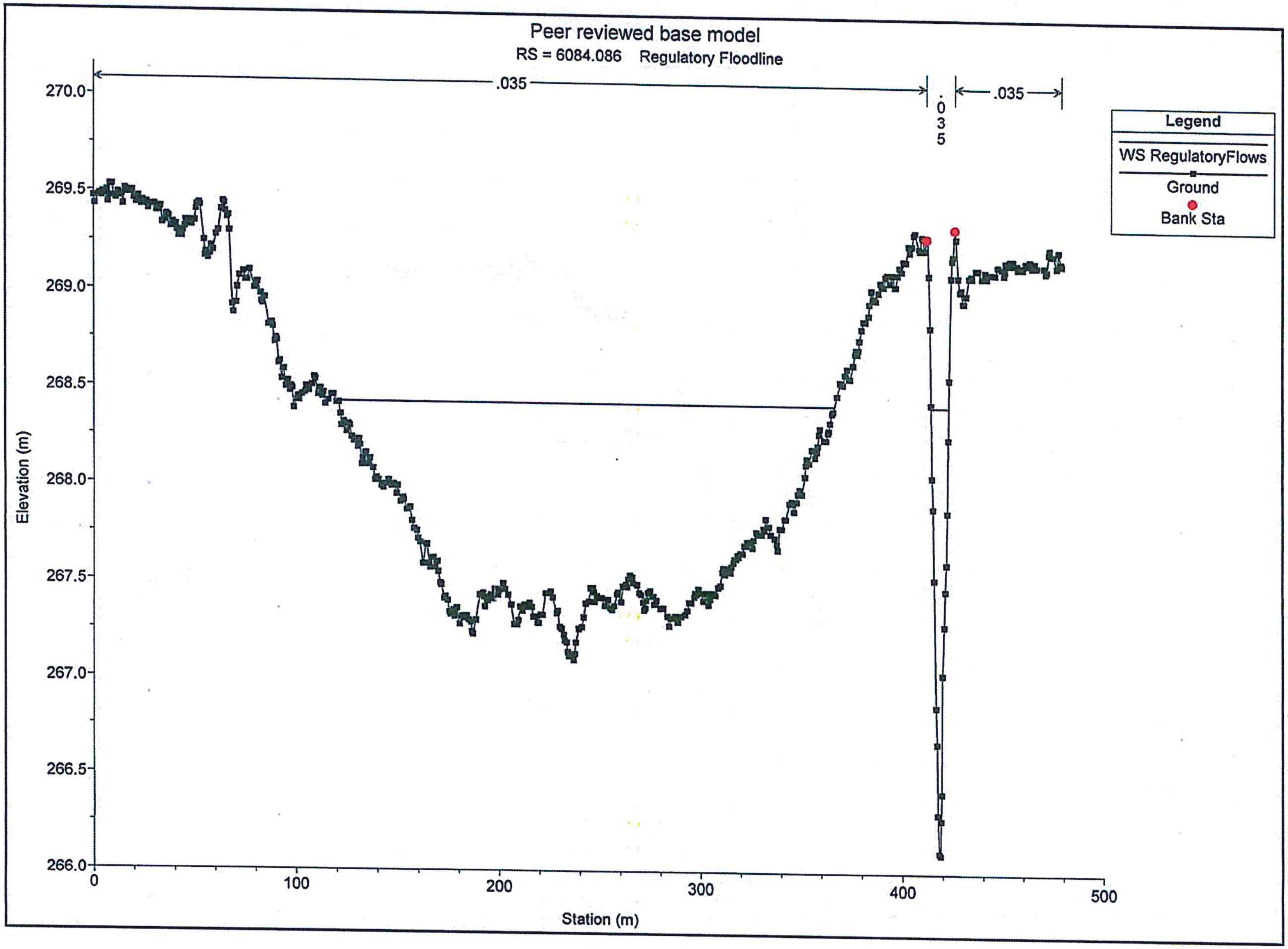


Peer reviewed base model
RS = 6335.876 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
272
271
270
269
268
267
266
0
200
400
600
800
1000
Station (m)

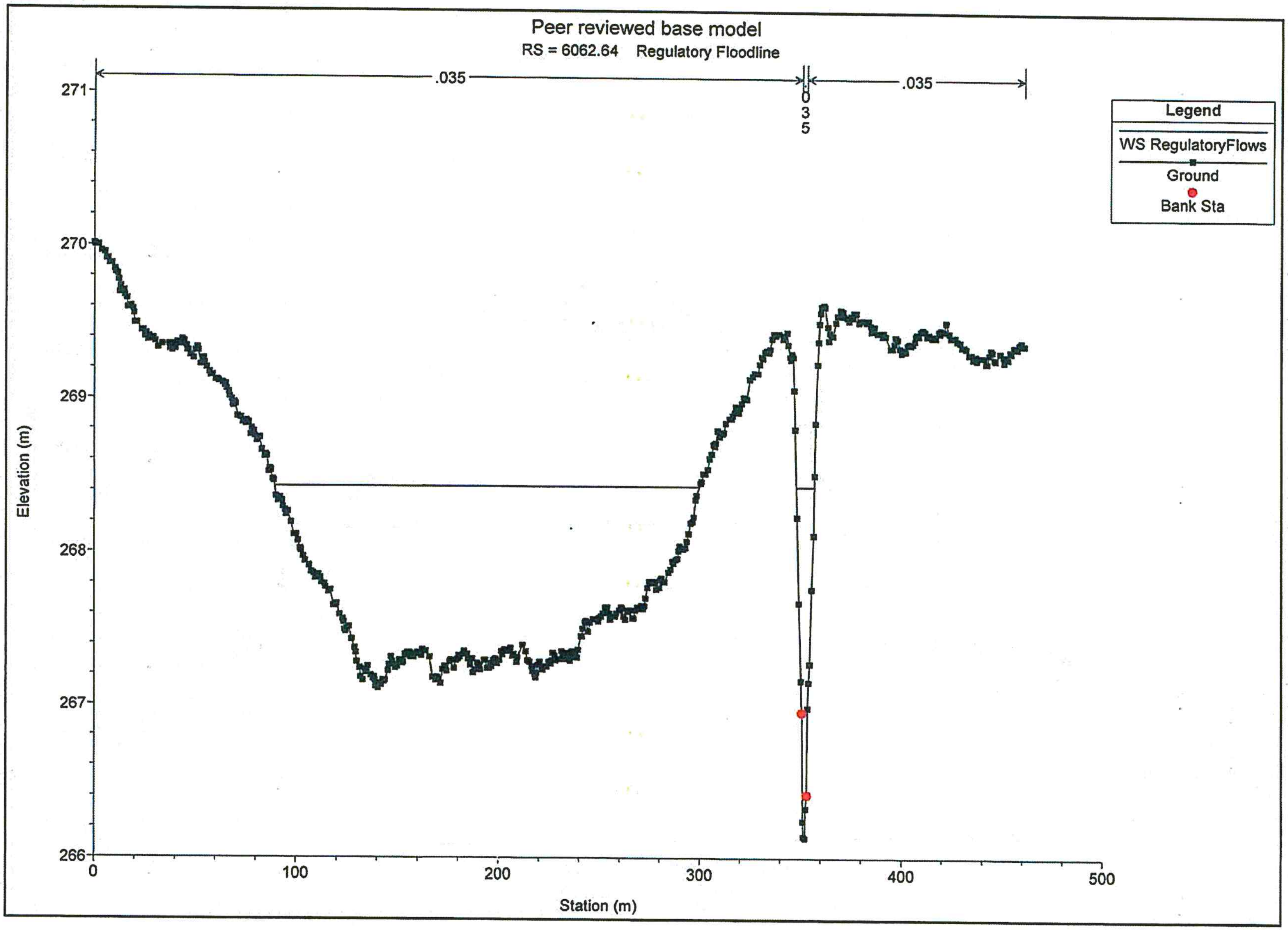


Peer reviewed base model
RS = 6190.578 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270.0
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
0
50
100
150
200
250
300
Station (m)

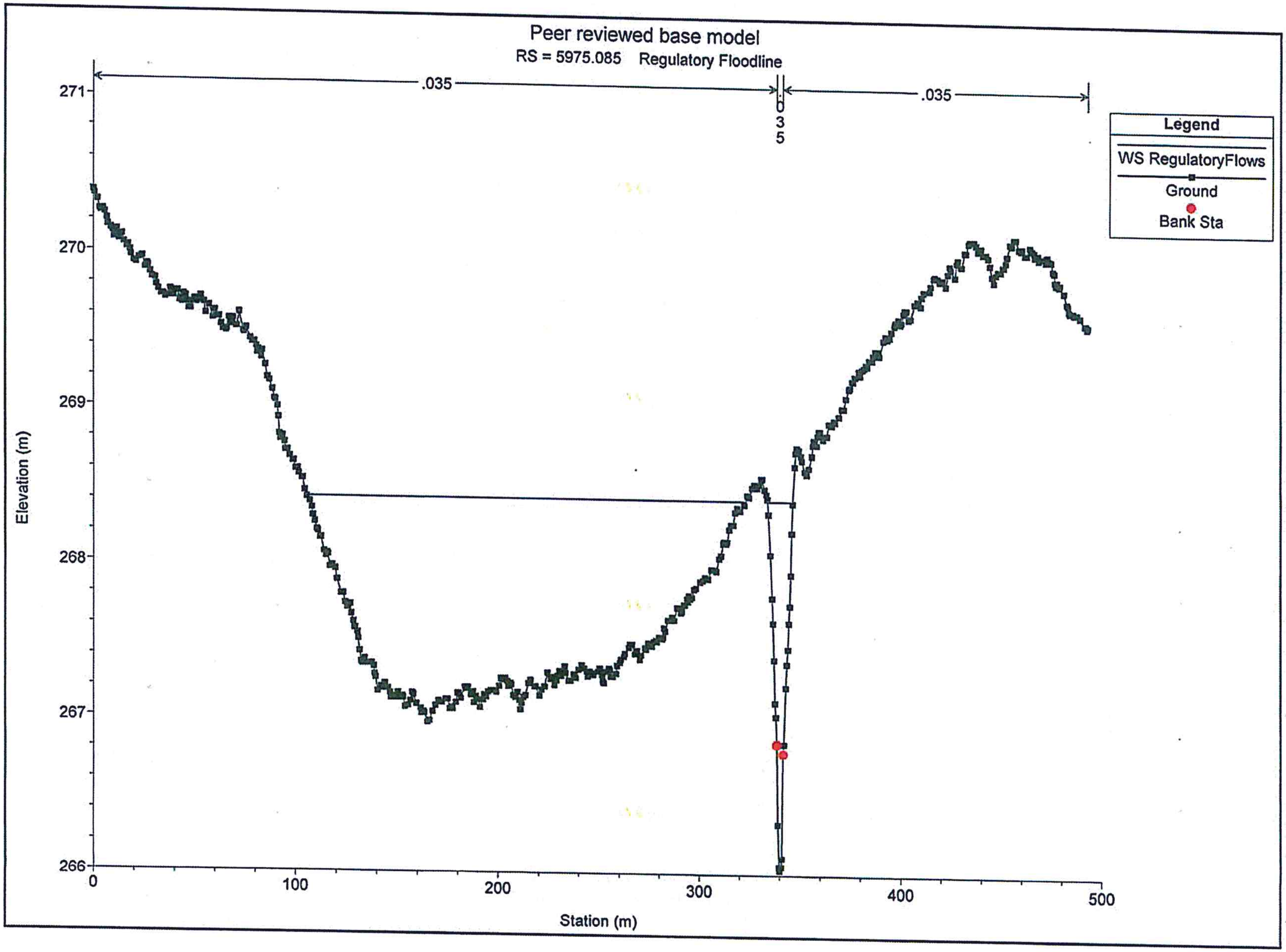

Peer reviewed base model
RS = 6116.845 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
0
100
200
300
400
500
Station (m)

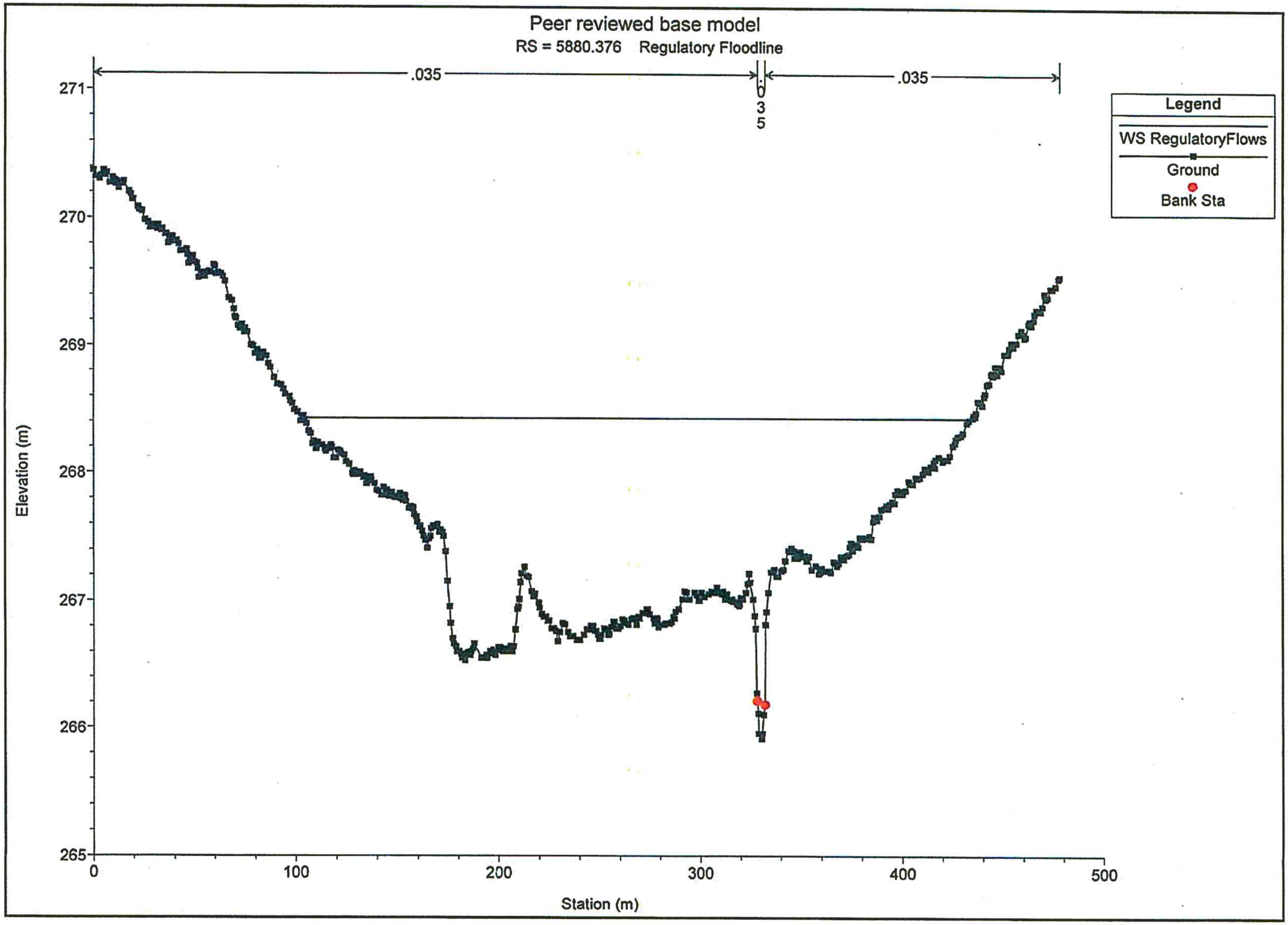


Peer reviewed base model
RS = 6084.086 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270.0
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
Station (m)
0
100
200
300
400
500

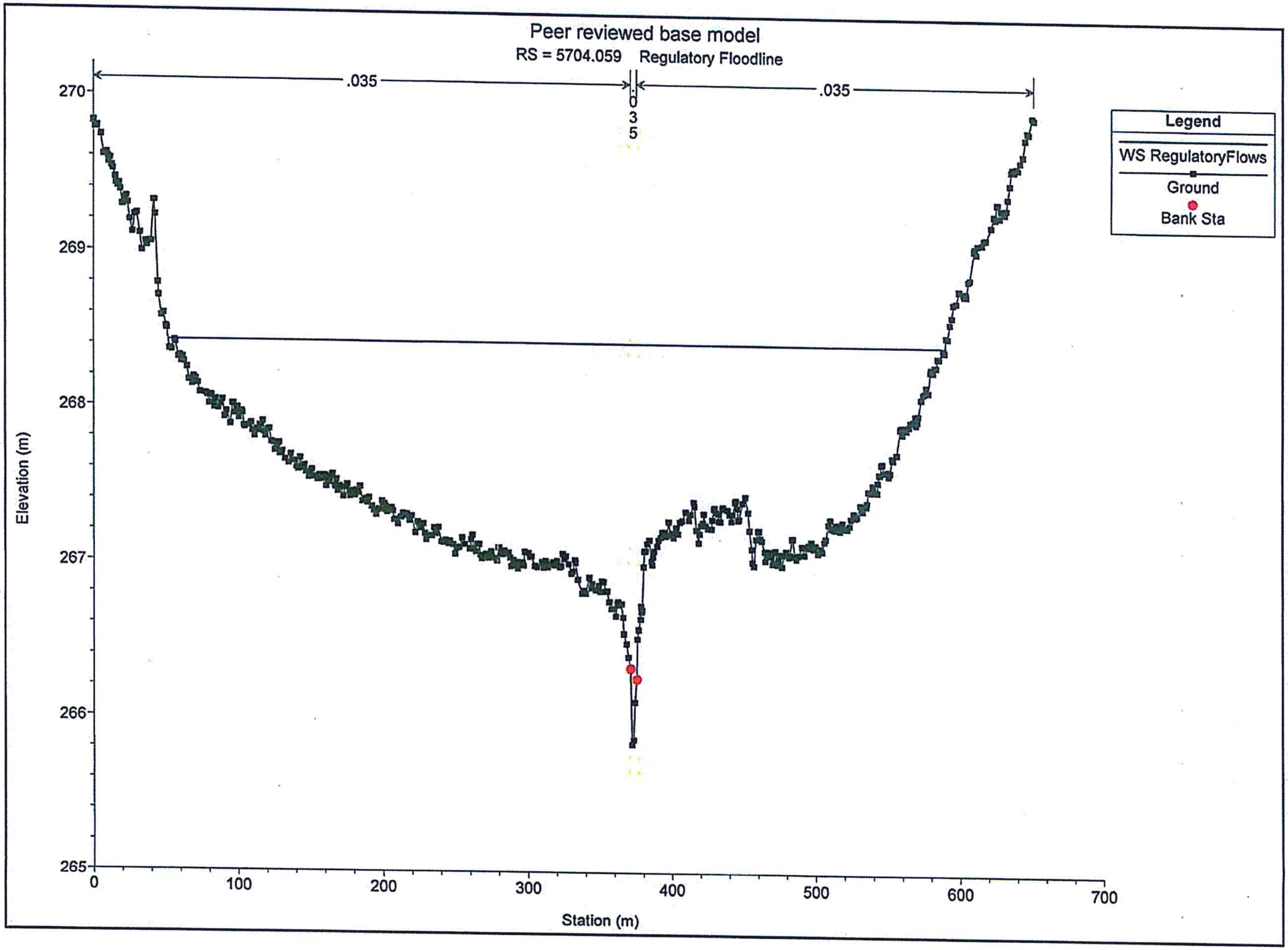


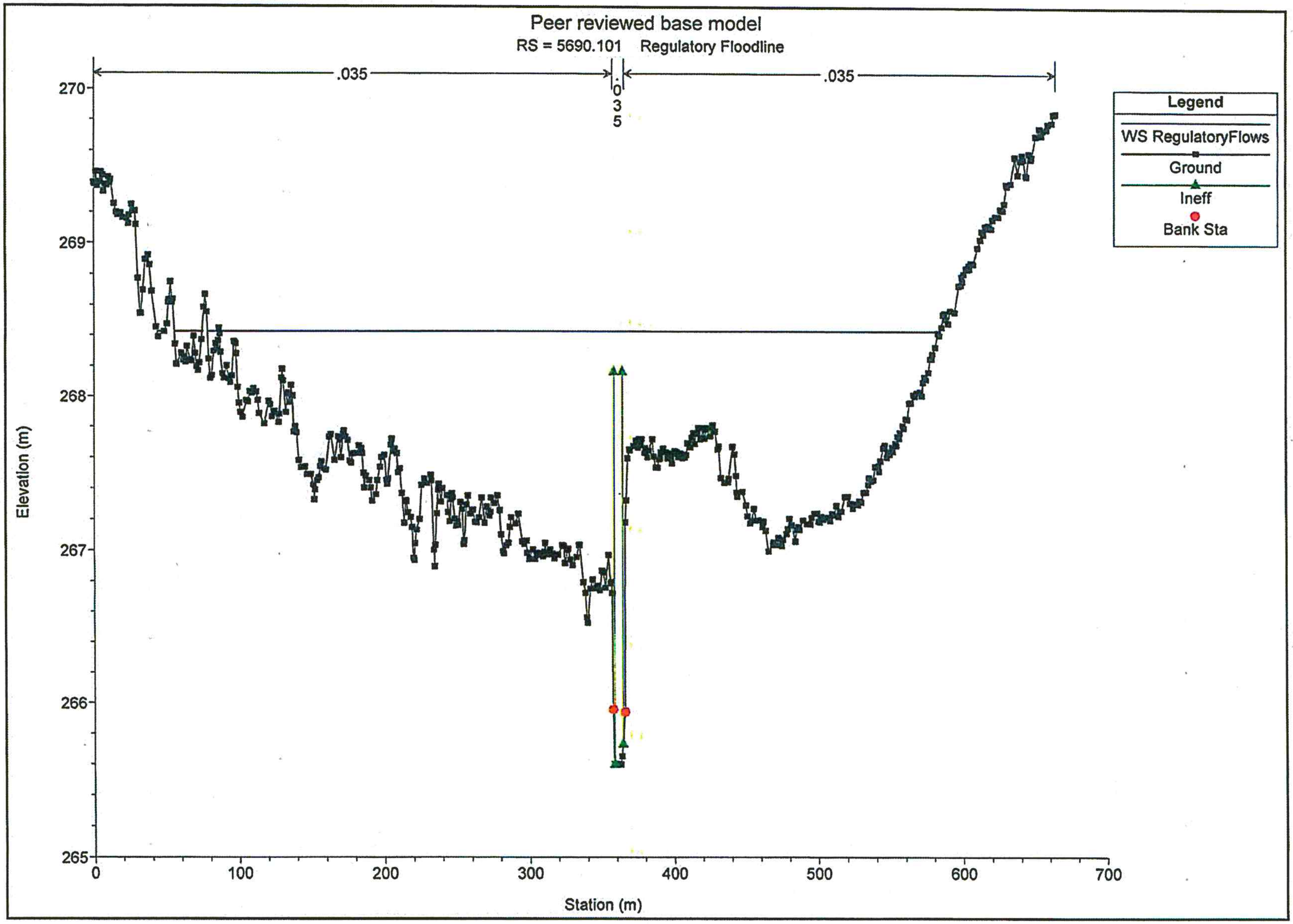
Peer reviewed base model
RS = 6062.64 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
271
270
269
268
267
266
0
100
200
300
400
500

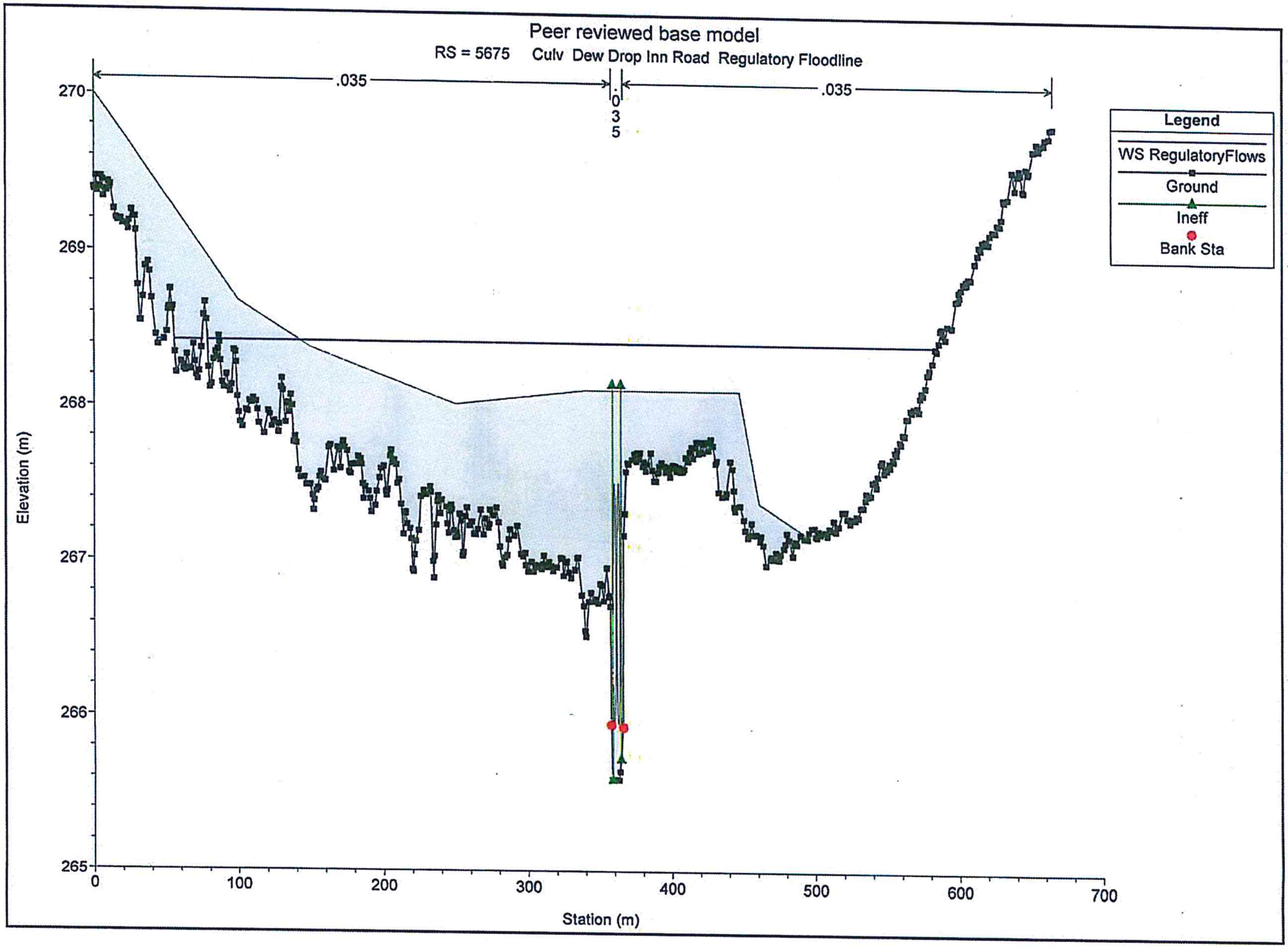

Peer reviewed base model
RS = 5975.085 Regulatory Floodline
.035
.035
0
3
5
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
271
270
269
268
267
266
0
100
200
300
400
500
Station (m)



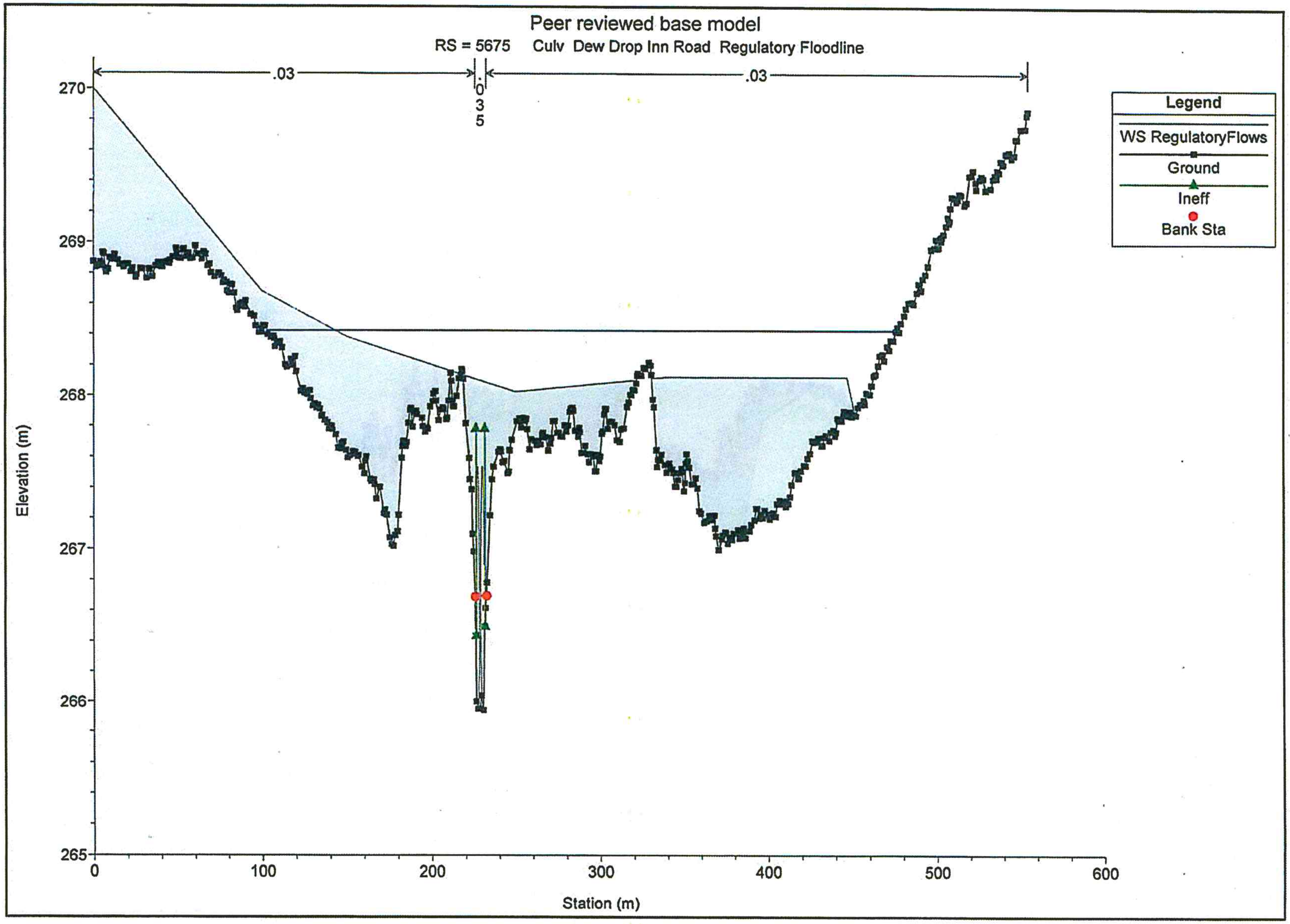
Peer reviewed base model
RS = 5880.376 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
271
270
269
268
267
266
265
0
100
200
300
400
500

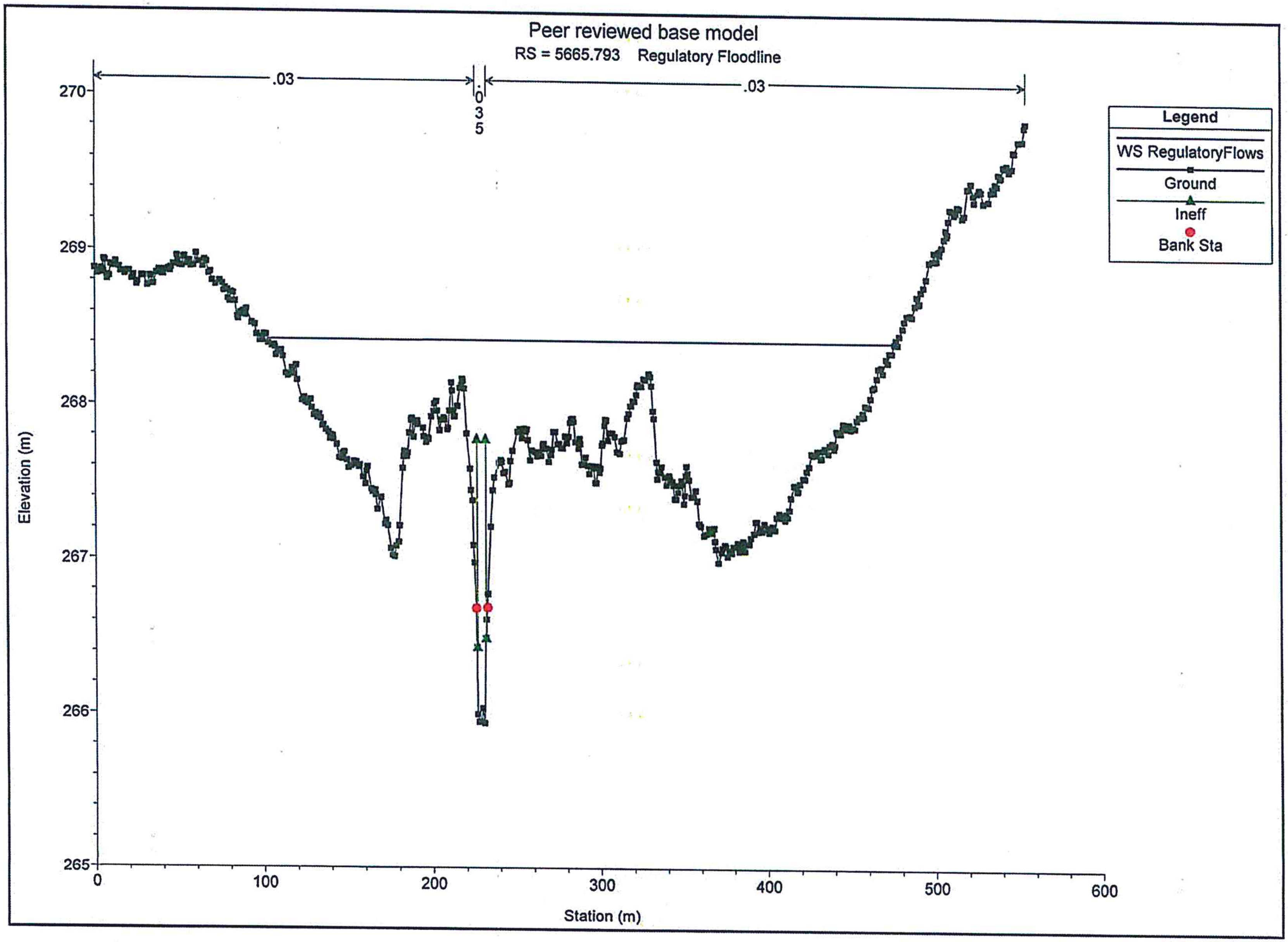

Peer reviewed base model
RS = 5704.059 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
0
100
200
300
400
500
600
700
Station (m)


Peer reviewed base model
RS = 5690.101 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
270
269
268
267
266
265
Station (m)
0
100
200
300
400
500
600
700

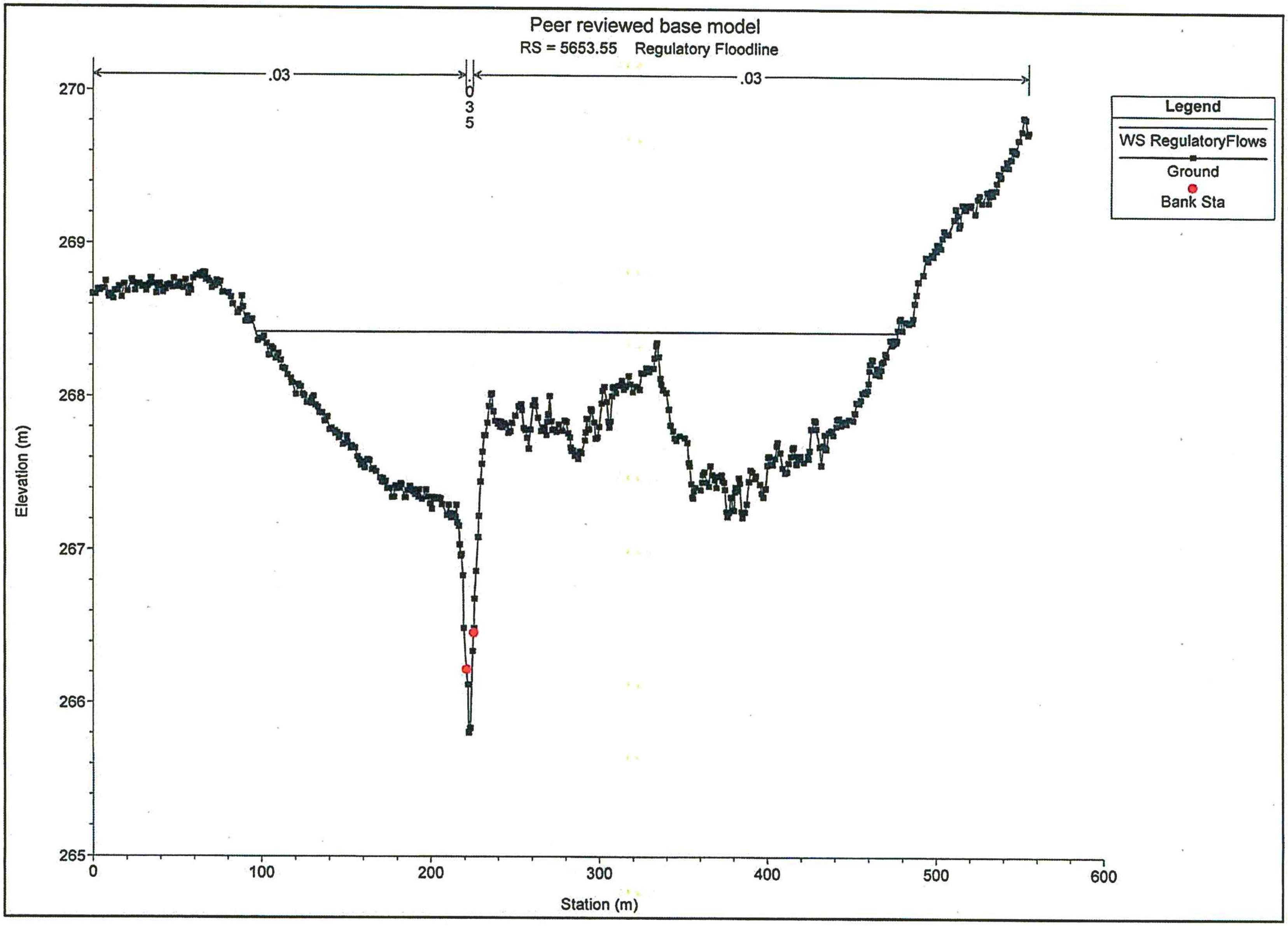


Peer reviewed base model
RS = 5675 Culv Dew Drop Inn Road Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
270
269
268
267
266
265
0
100
200
300
400
500
600
700
Station (m)

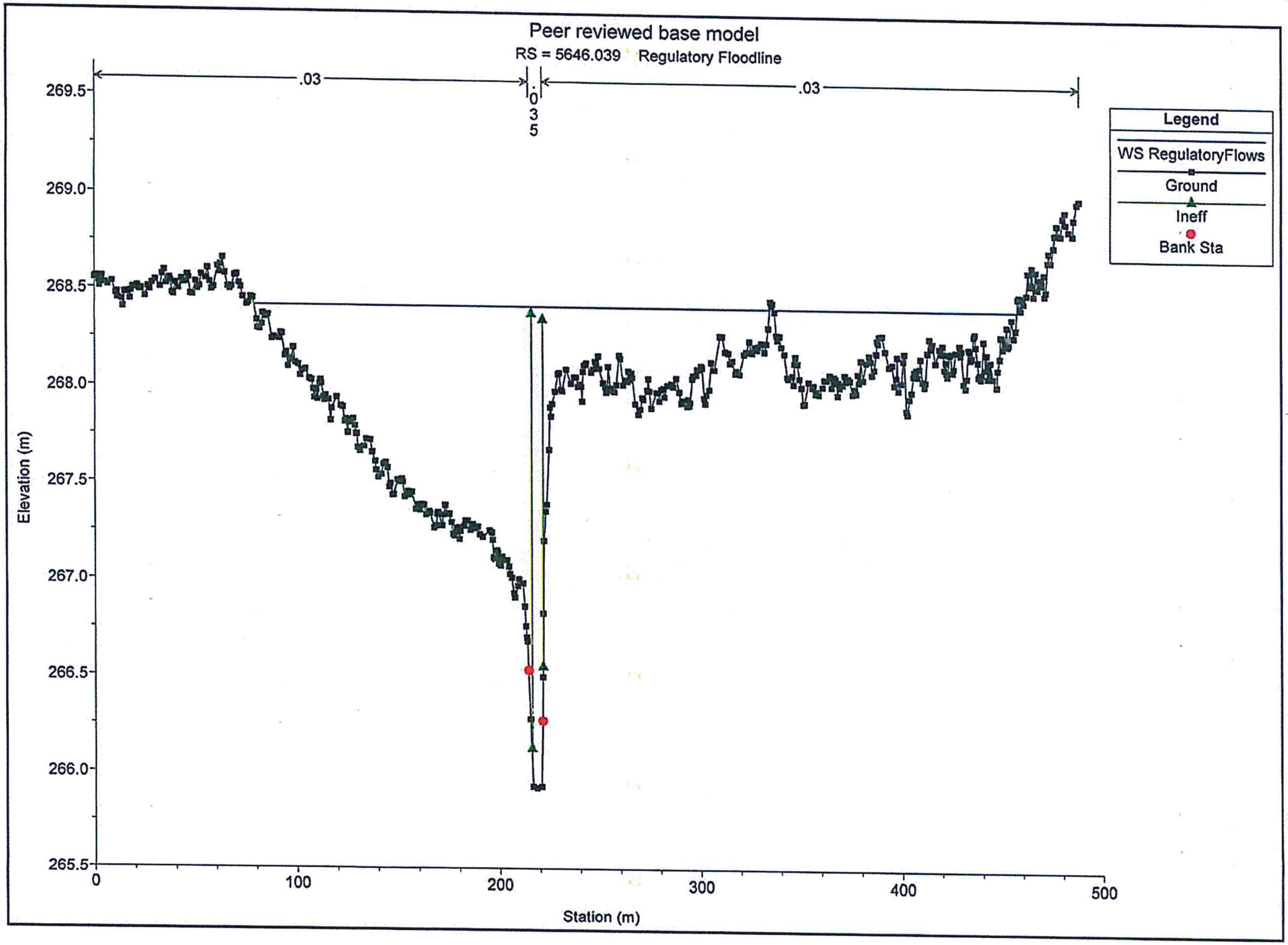

Peer reviewed base model
RS = 5675 Culv Dew Drop Inn Road Regulatory Floodline
.03
.035
.03
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
270
269
268
267
266
265
0
100
200
300
400
500
600
Station (m)



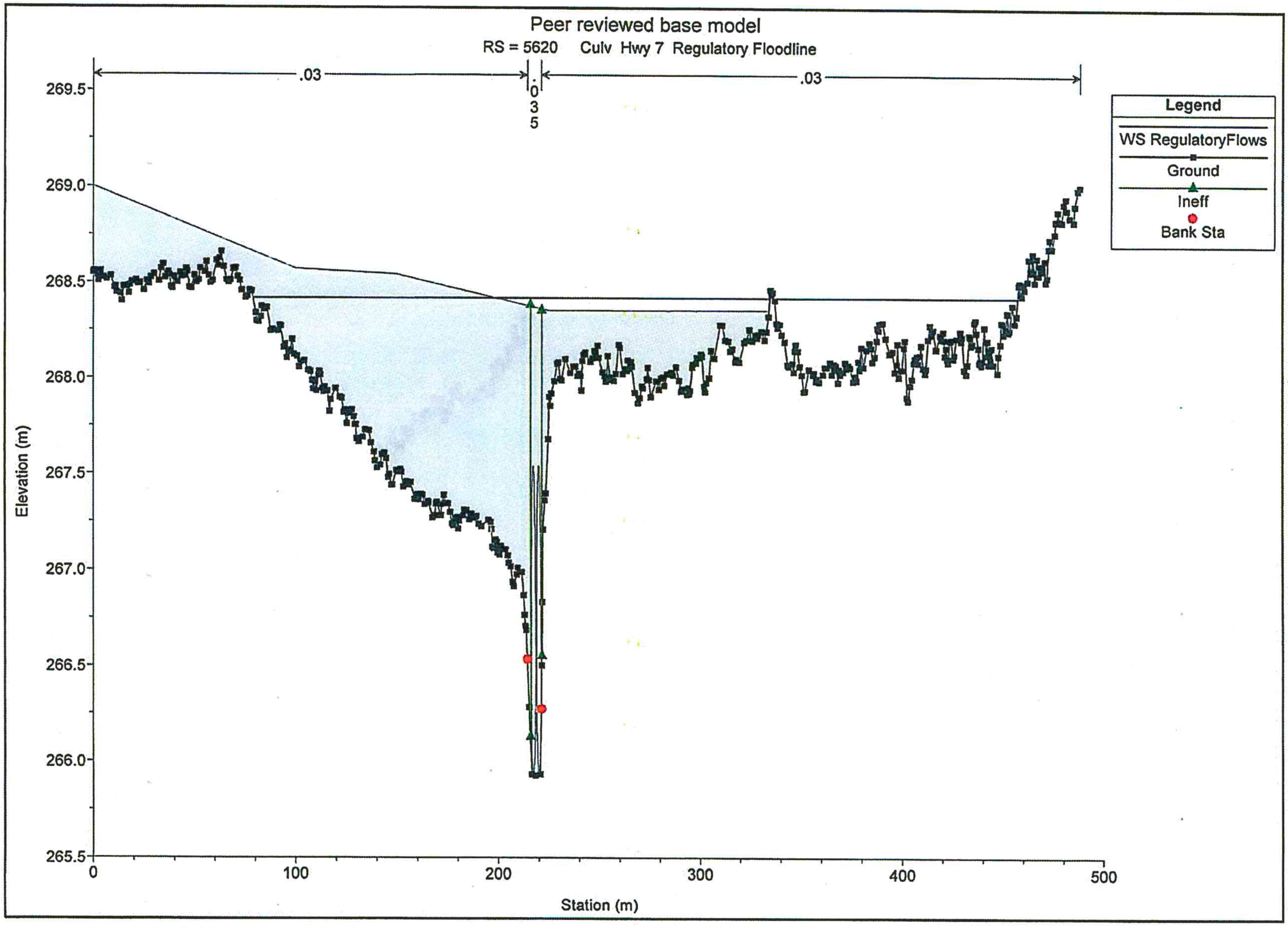
Peer reviewed base model
RS = 5665.793 Regulatory Floodline
.03
.035
.03
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
270
269
268
267
266
265
Station (m)
0
100
200
300
400
500
600



Peer reviewed base model
RS = 5653.55 Regulatory Floodline
.03
0.035
.03
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
0
100
200
300
400
500
600
Station (m)



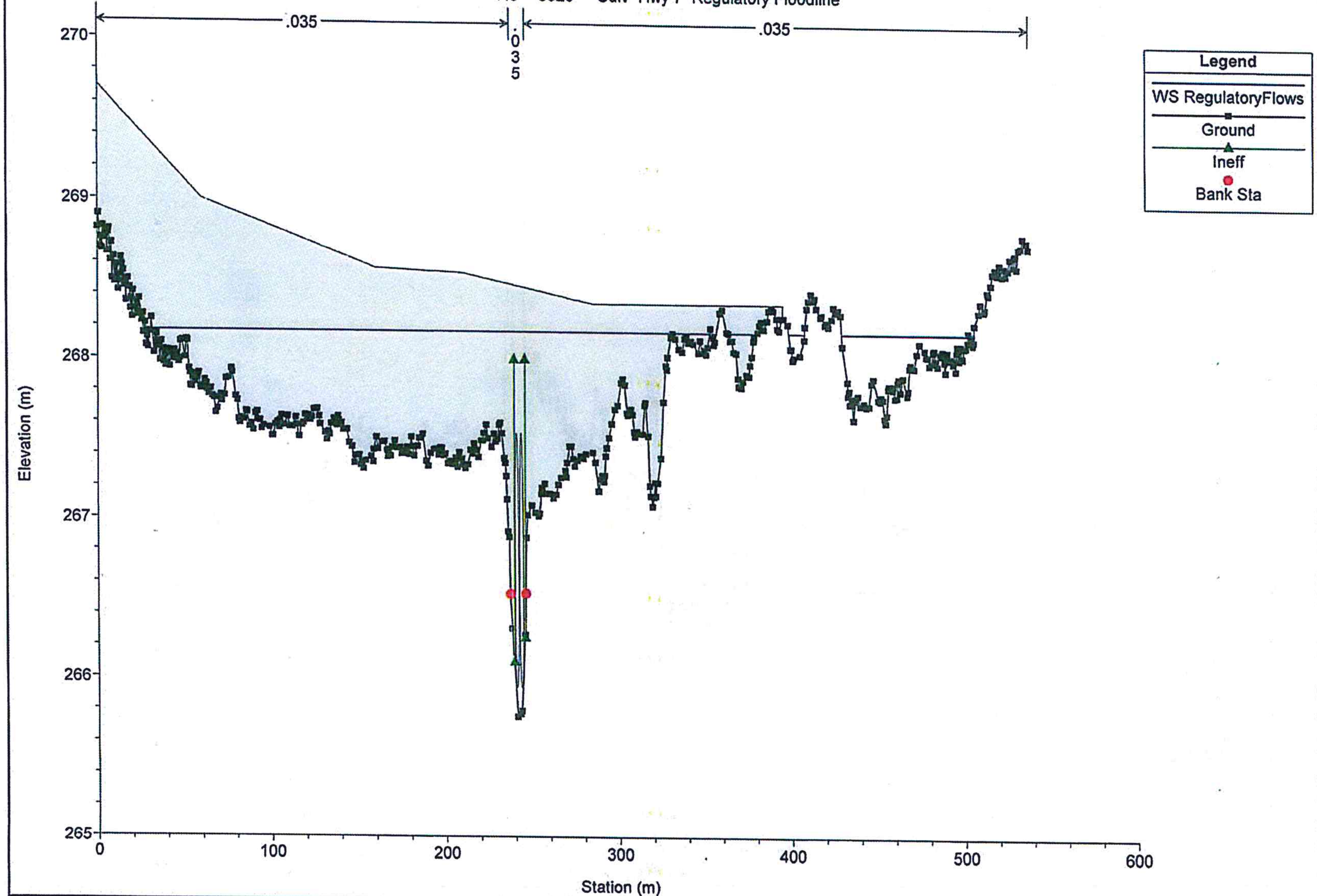
Peer reviewed base model
RS = 5646.039 Regulatory Floodline
.03
.035
.03
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
265.5
0
100
200
300
400
500
Station (m)

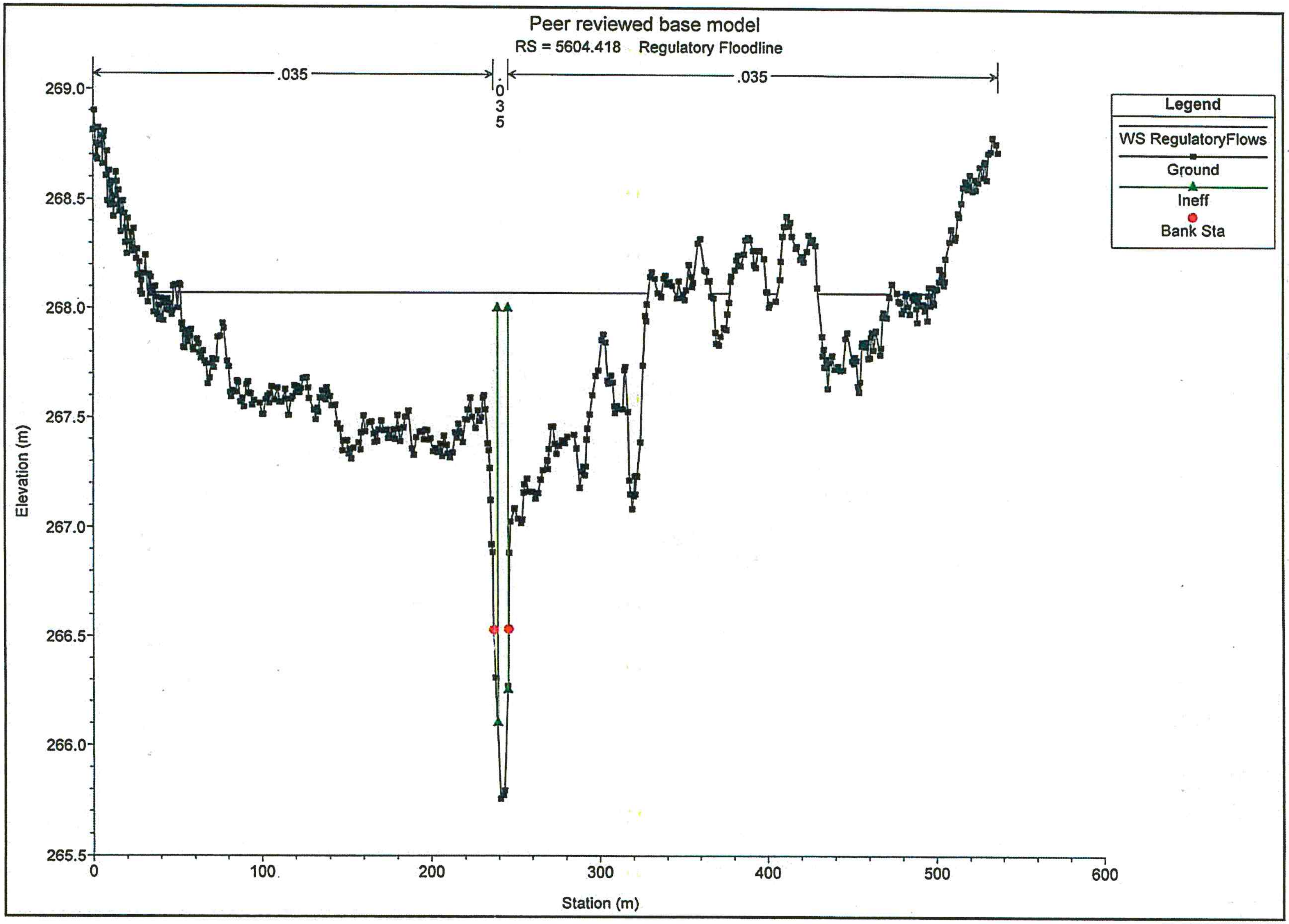


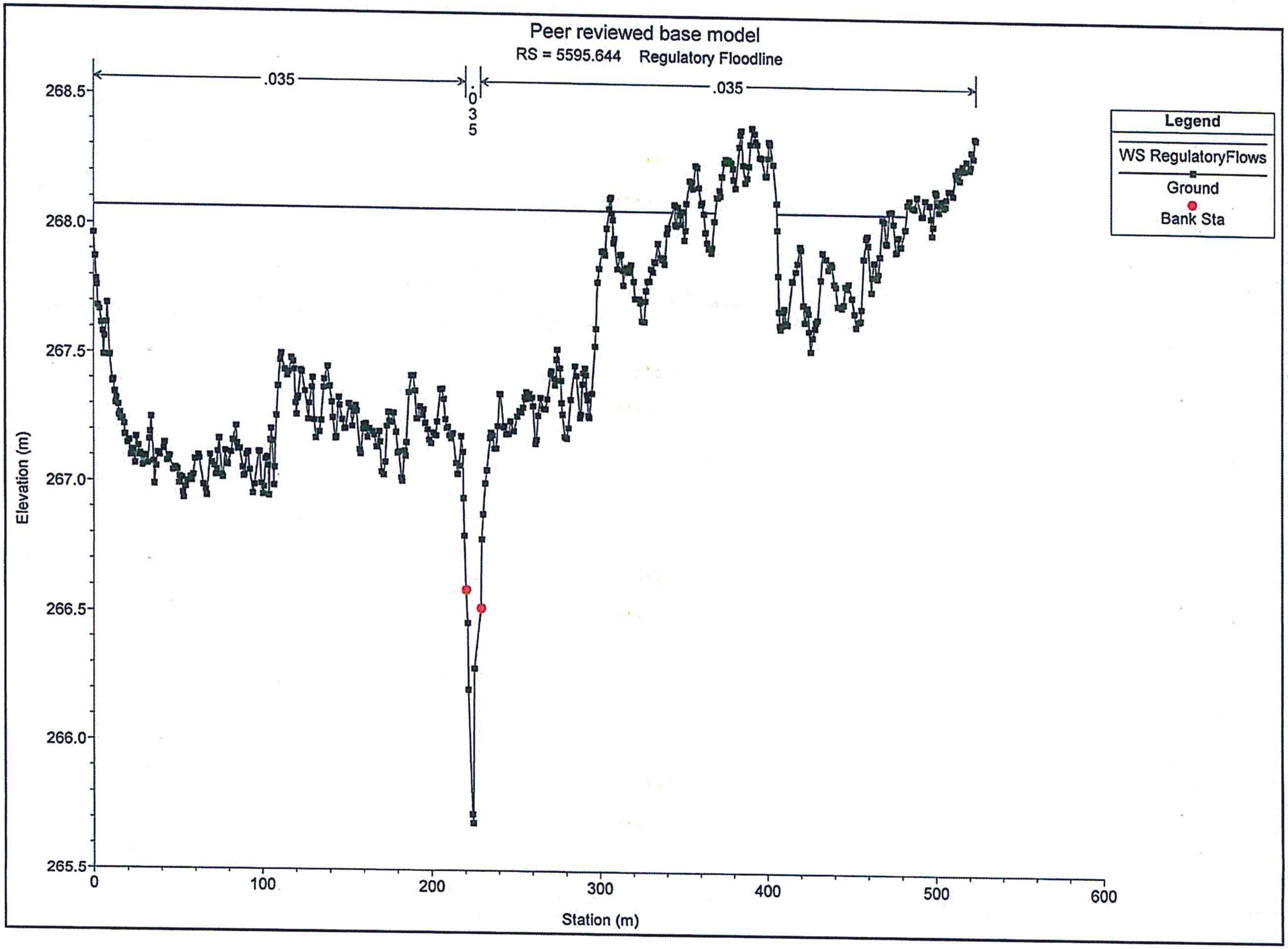
Peer reviewed base model
RS = 5620 Culv Hwy 7 Regulatory Floodline
.03
.035
.03
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
265.5
0
100
200
300
400
500
Station (m)

Peer reviewed base model

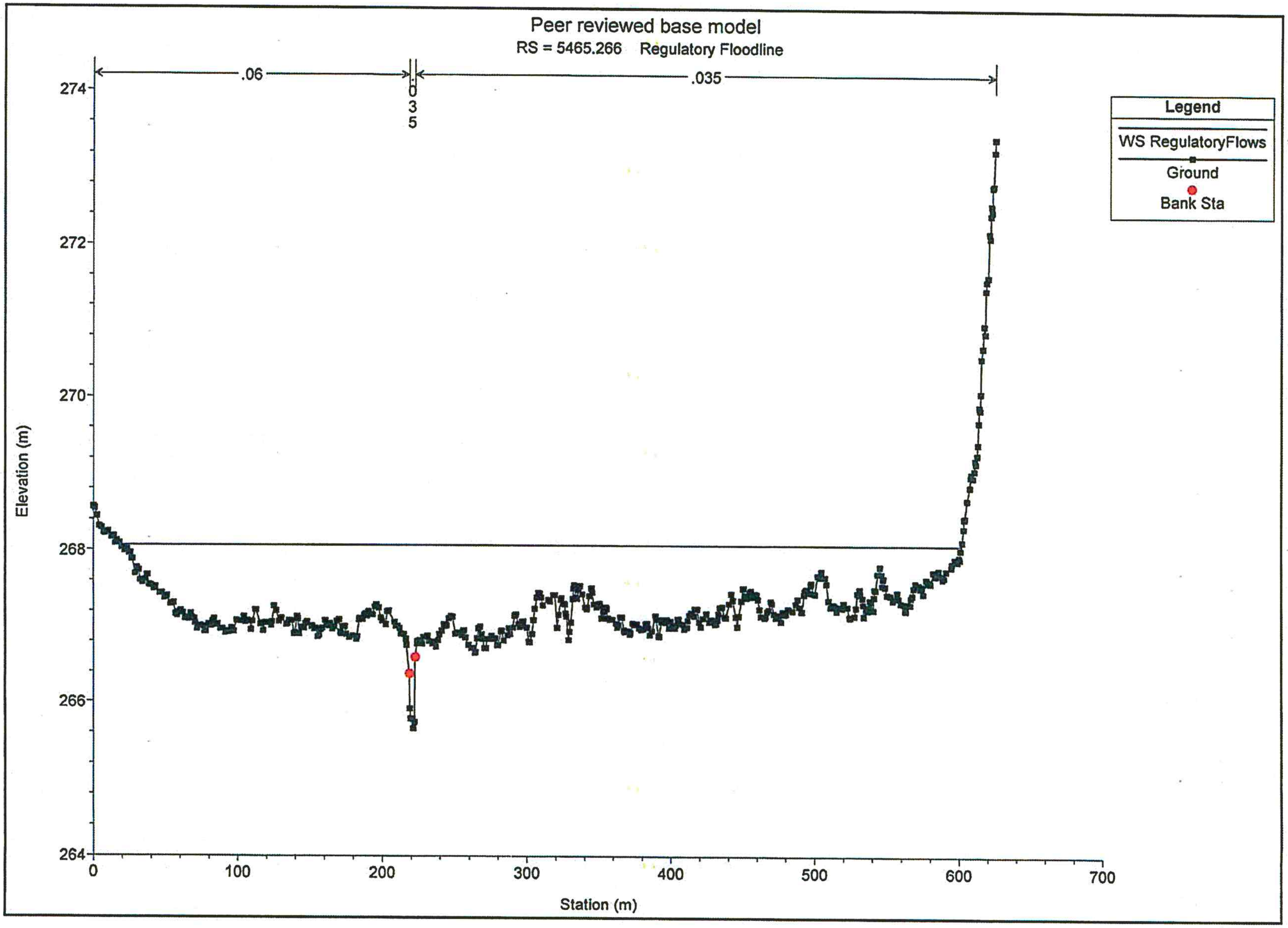
RS = 5620 Culv Hwy 7 Regulatory Floodline



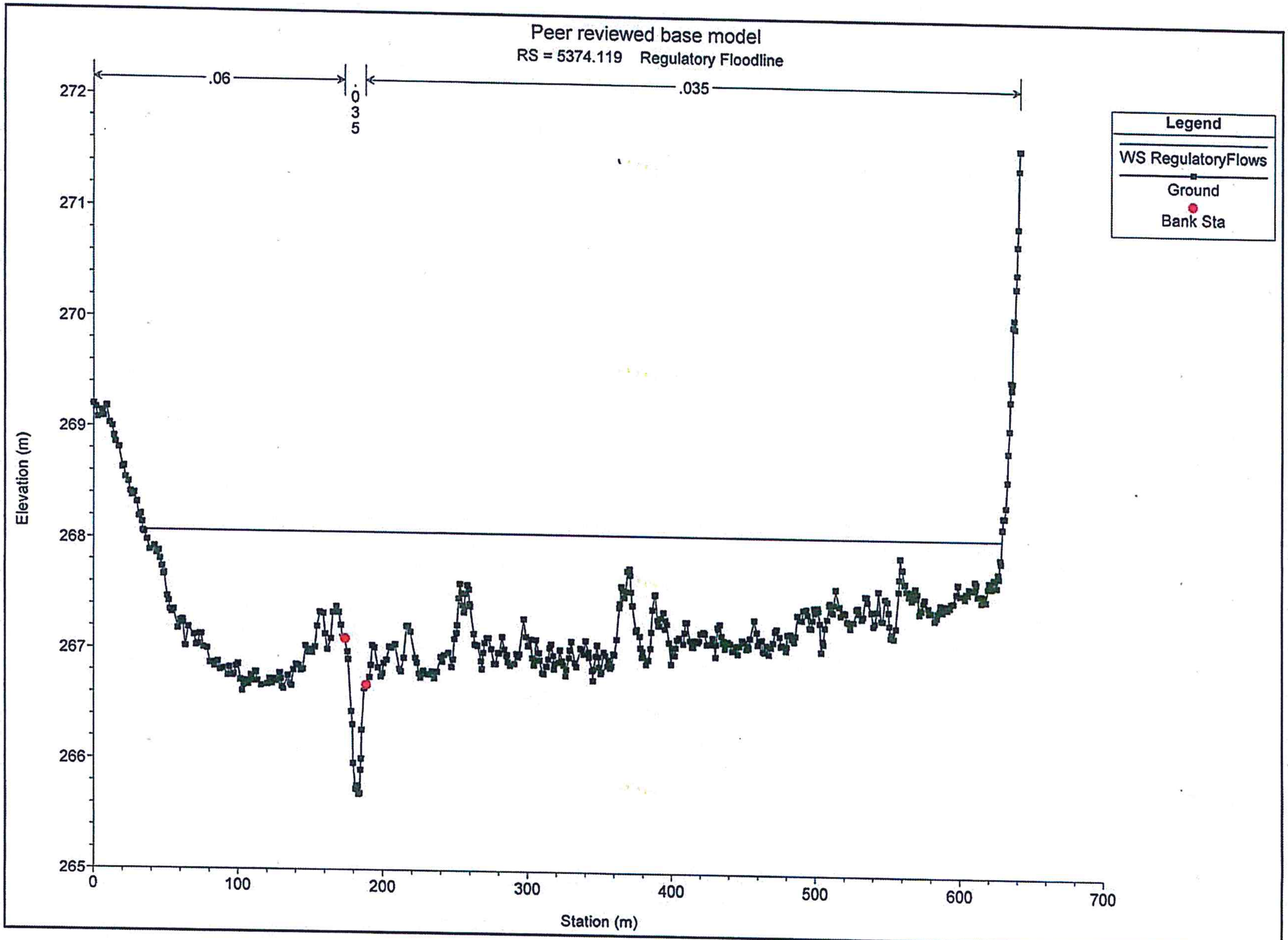

Peer reviewed base model
RS = 5604.418 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
269.0
268.5
268.0
267.5
267.0
266.5
266.0
265.5
Elevation (m)
0
100
200
300
400
500
600
Station (m)

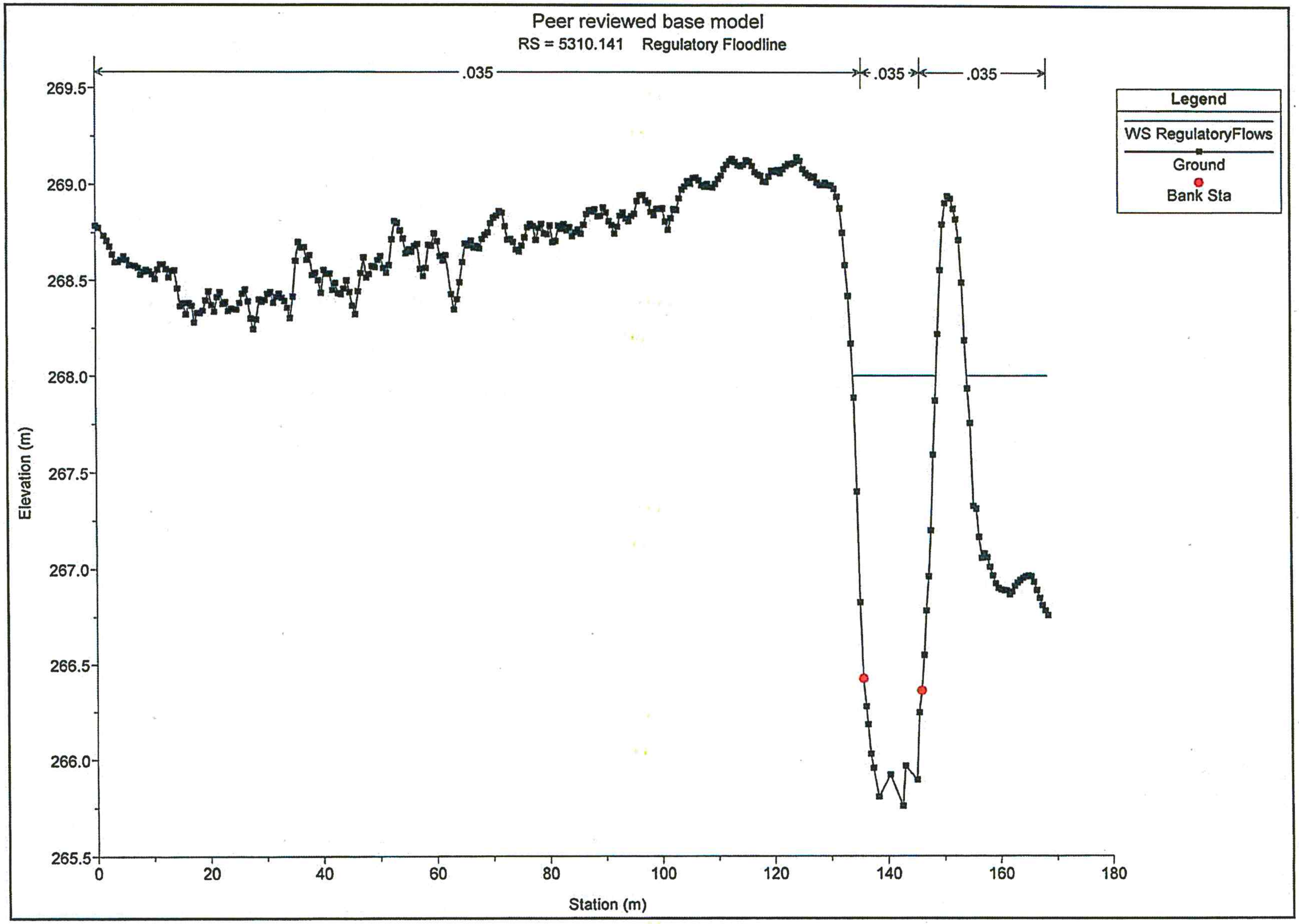


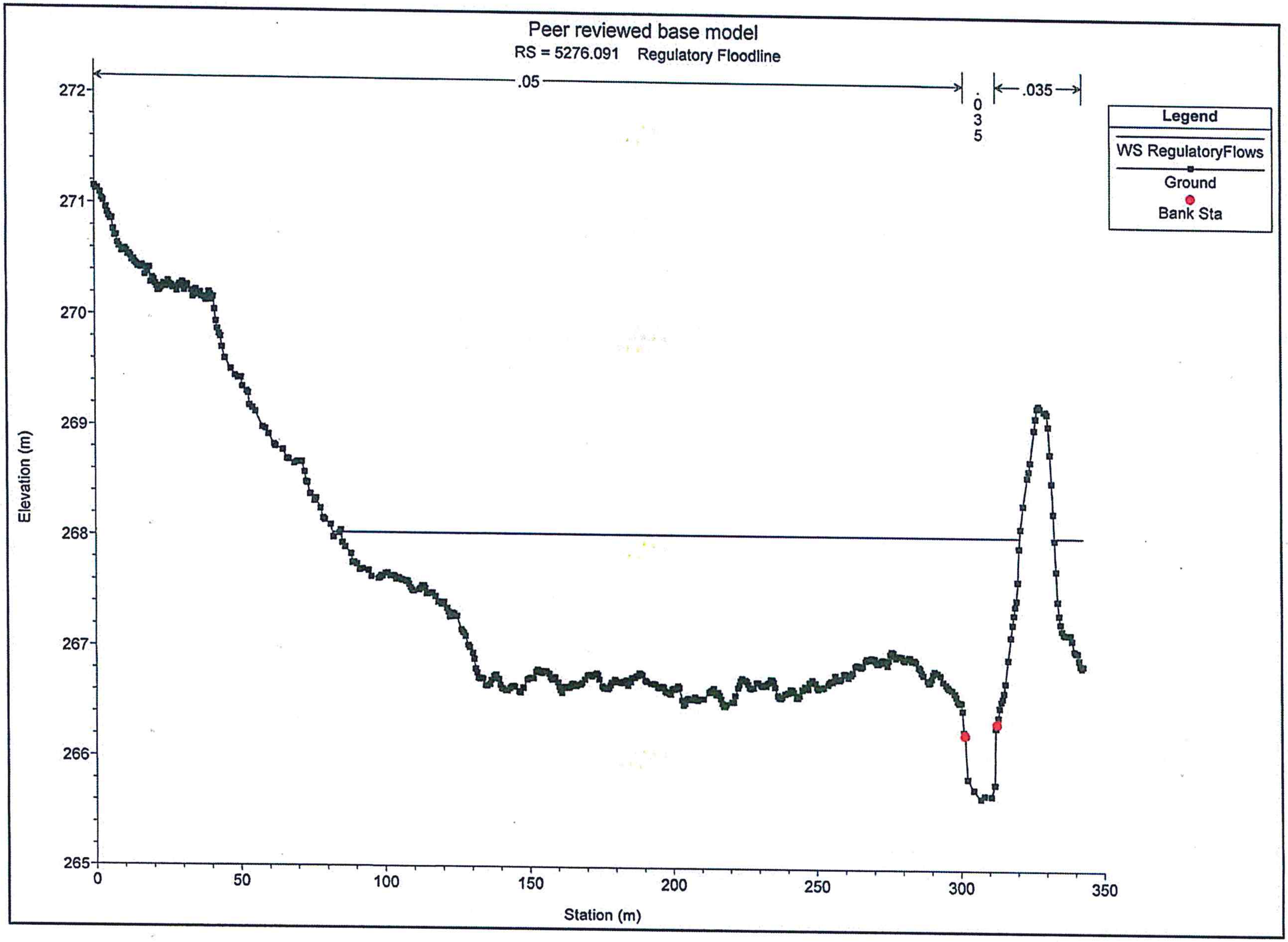
Peer reviewed base model
RS = 5595.644 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
268.5
268.0
267.5
267.0
266.5
266.0
265.5
0
100
200
300
400
500
600
Station (m)



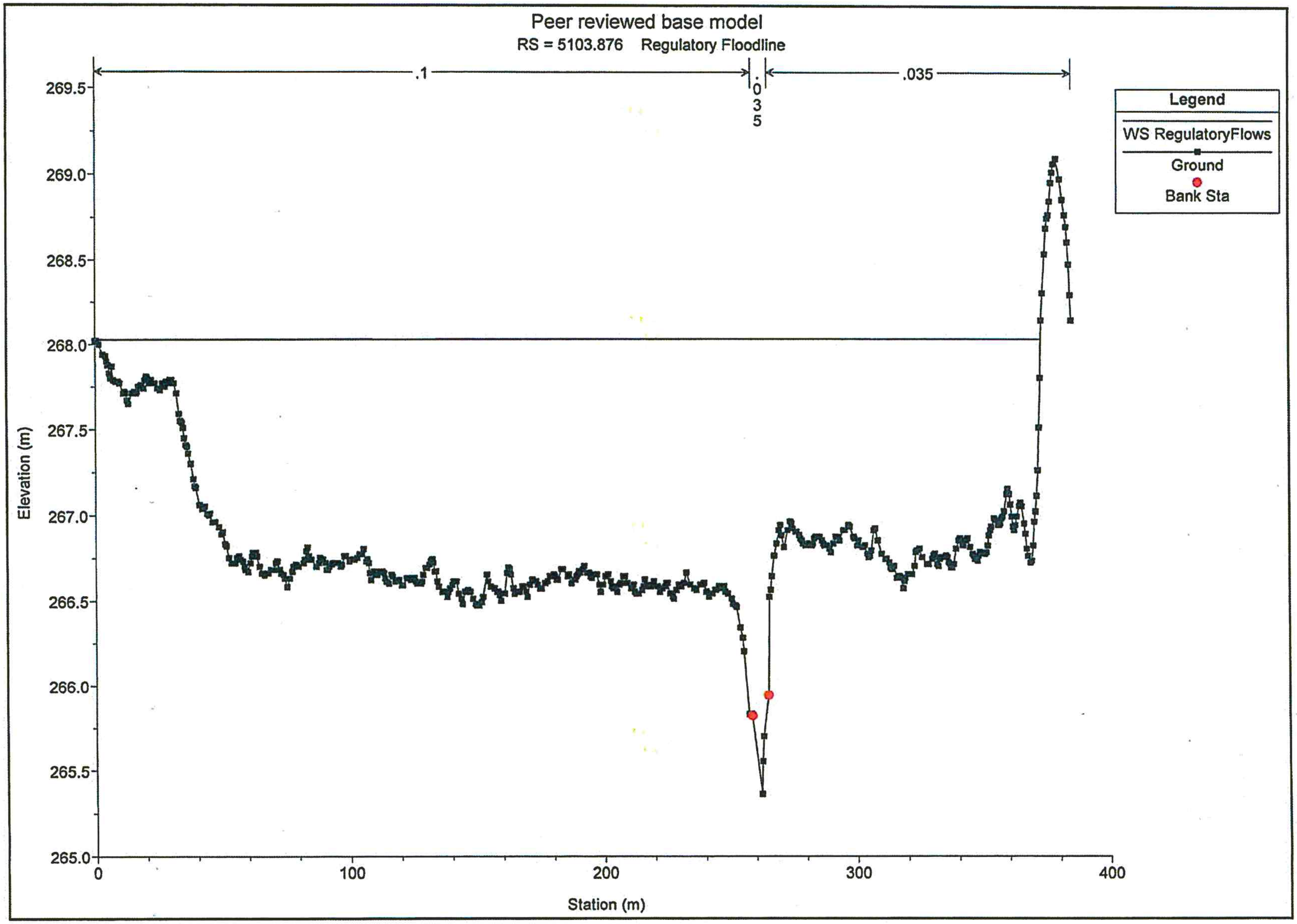
Peer reviewed base model
RS = 5465.266 Regulatory Floodline
.06
.035
0
3
5
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
274
272
270
268
266
264
0
100
200
300
400
500
600
700
Station (m)

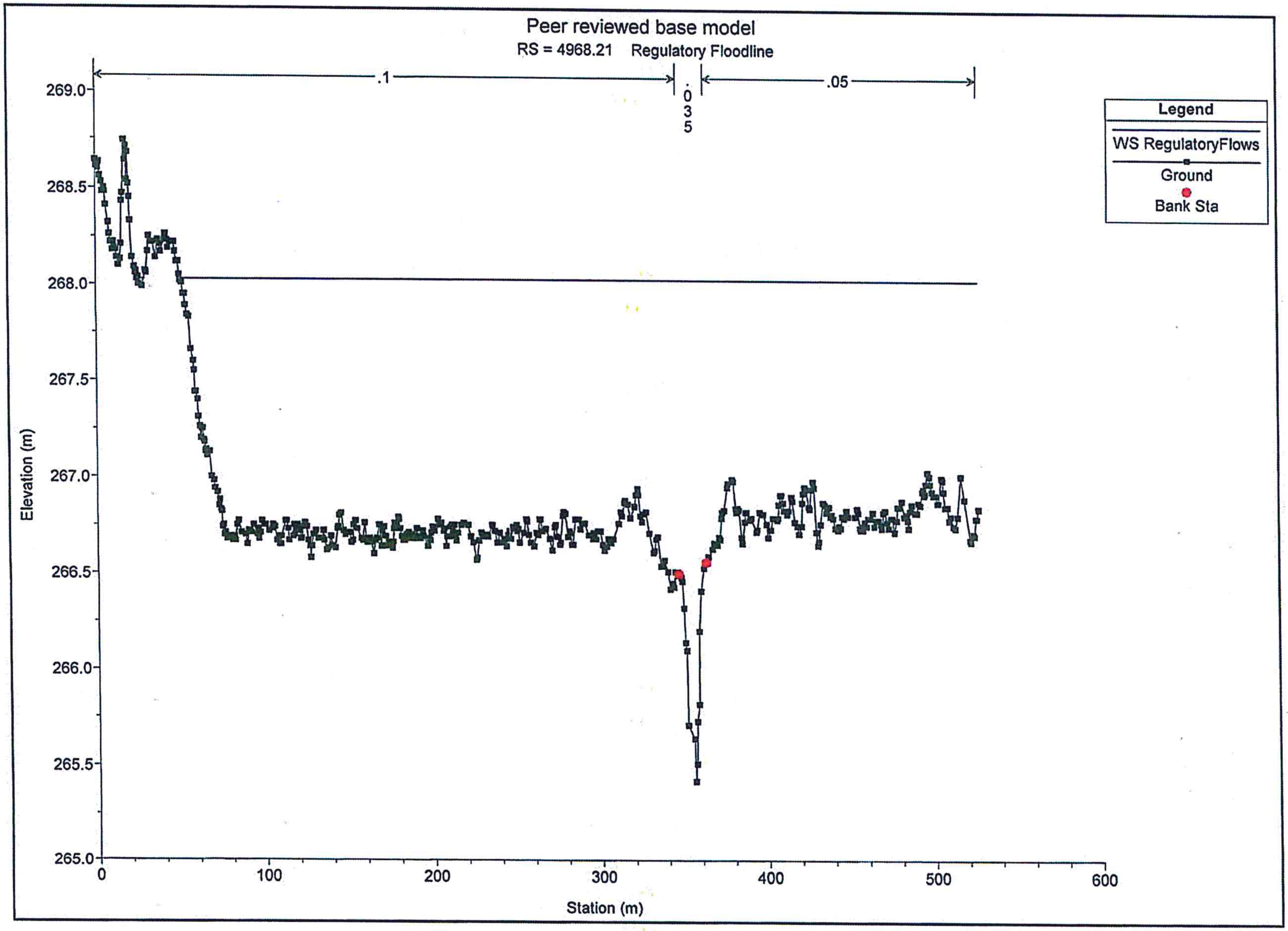

Peer reviewed base model
RS = 5374.119 Regulatory Floodline
.06
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
272
271
270
269
268
267
266
265
0
100
200
300
400
500
600
700
Station (m)

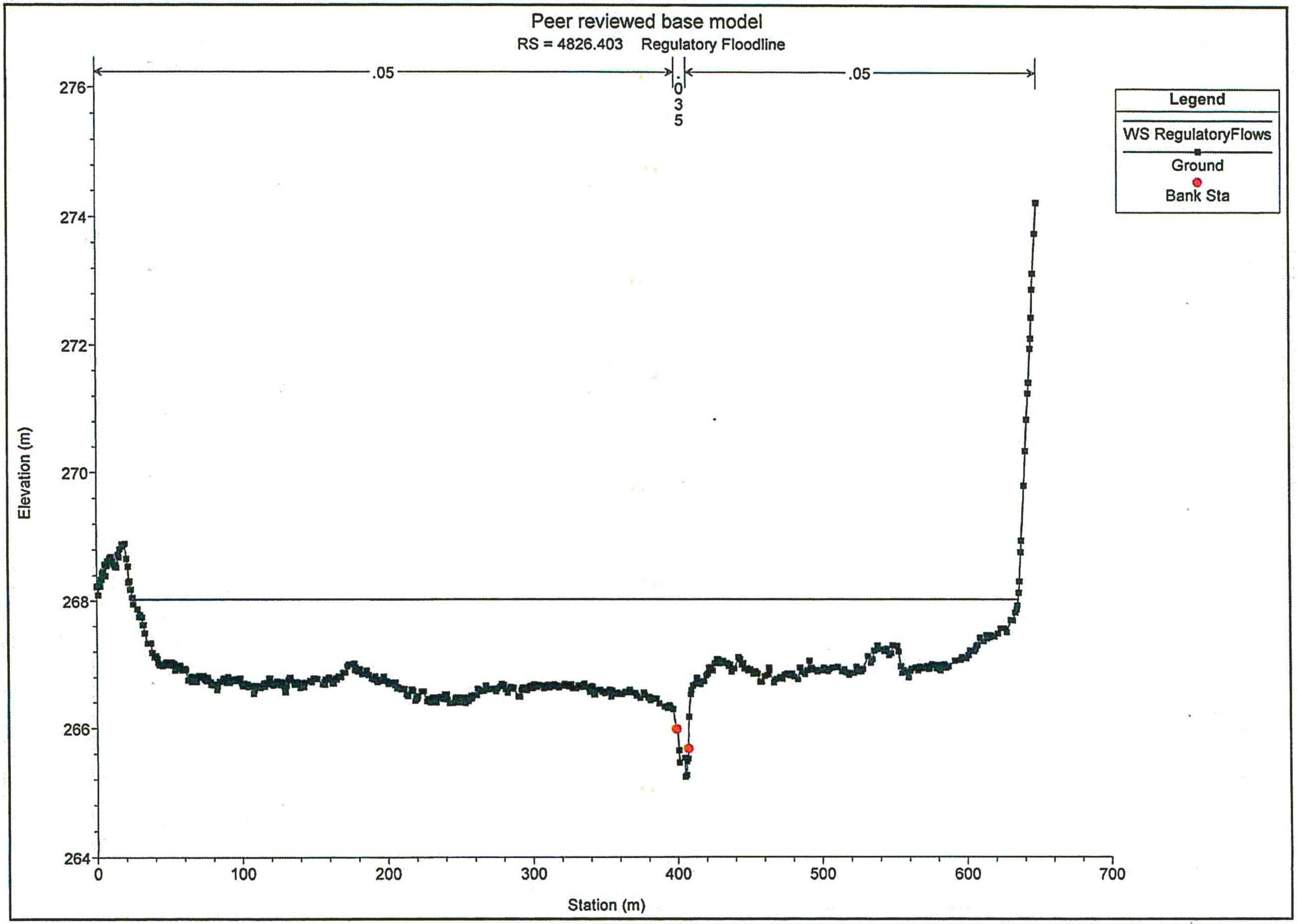

Peer reviewed base model
RS = 5310.141 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
265.5
0
20
40
60
80
100
120
140
160
180
Station (m)

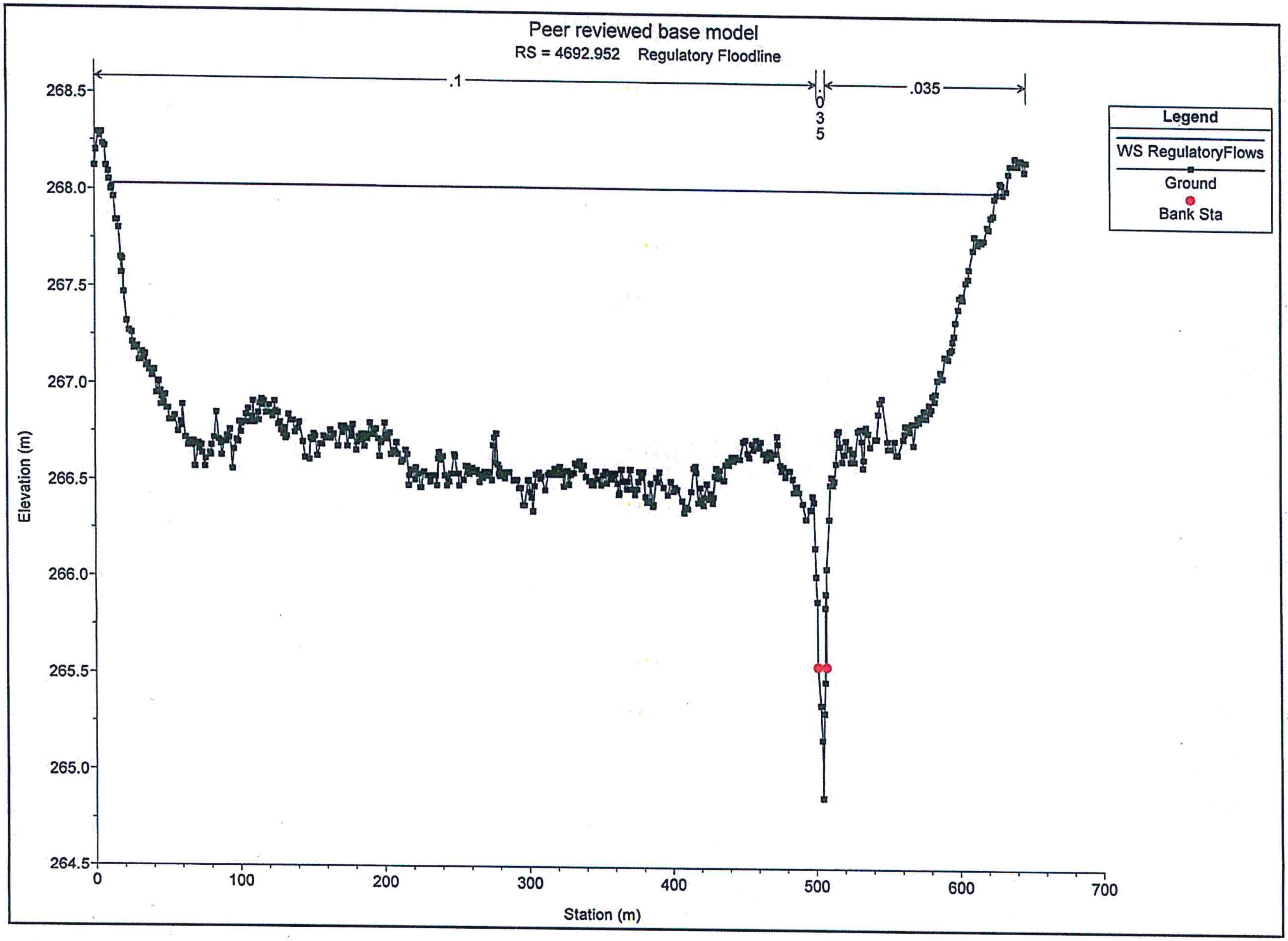


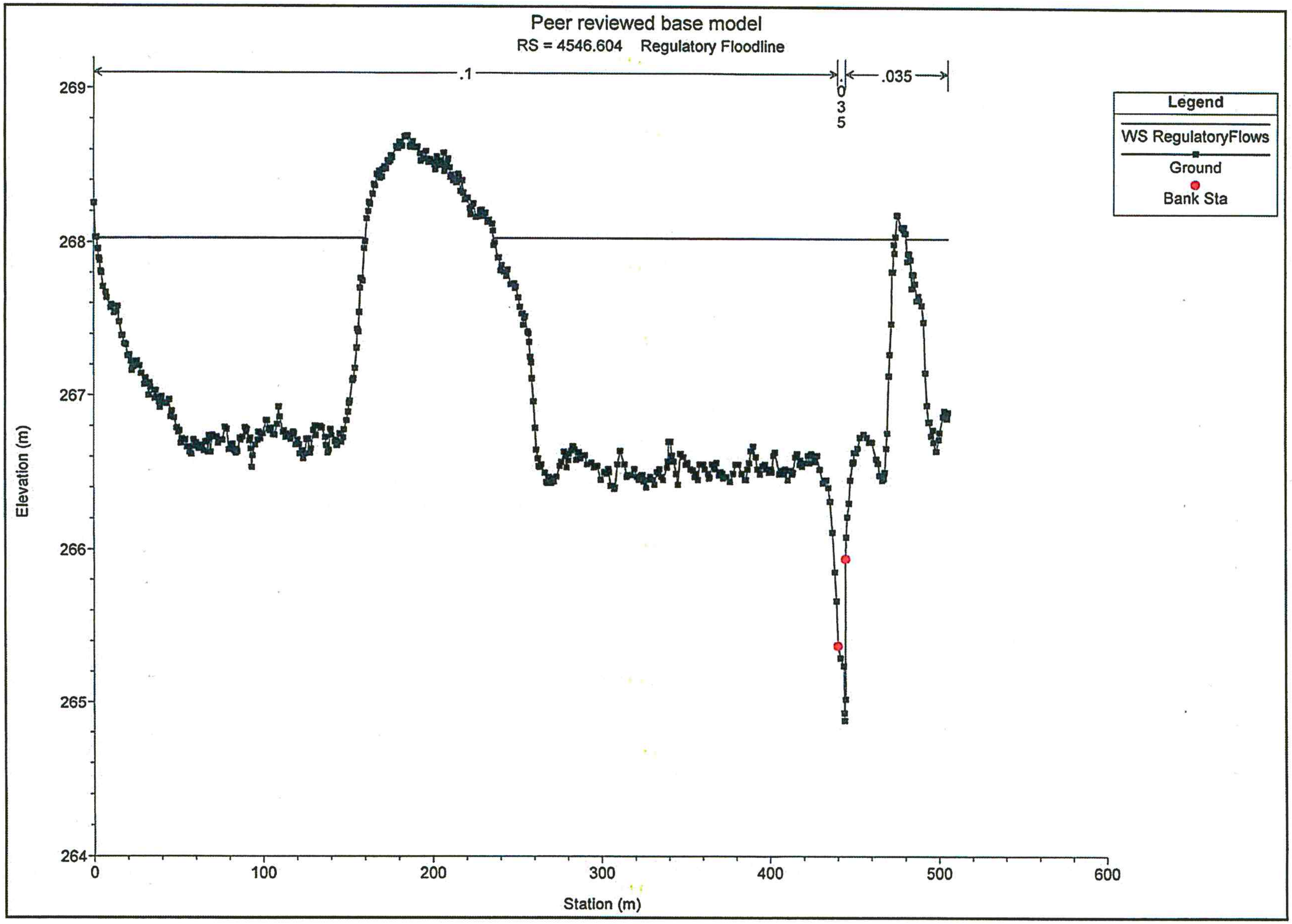
Peer reviewed base model
RS = 5276.091 Regulatory Floodline
.05
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
272
271
270
269
268
267
266
265
0
50
100
150
200
250
300
350

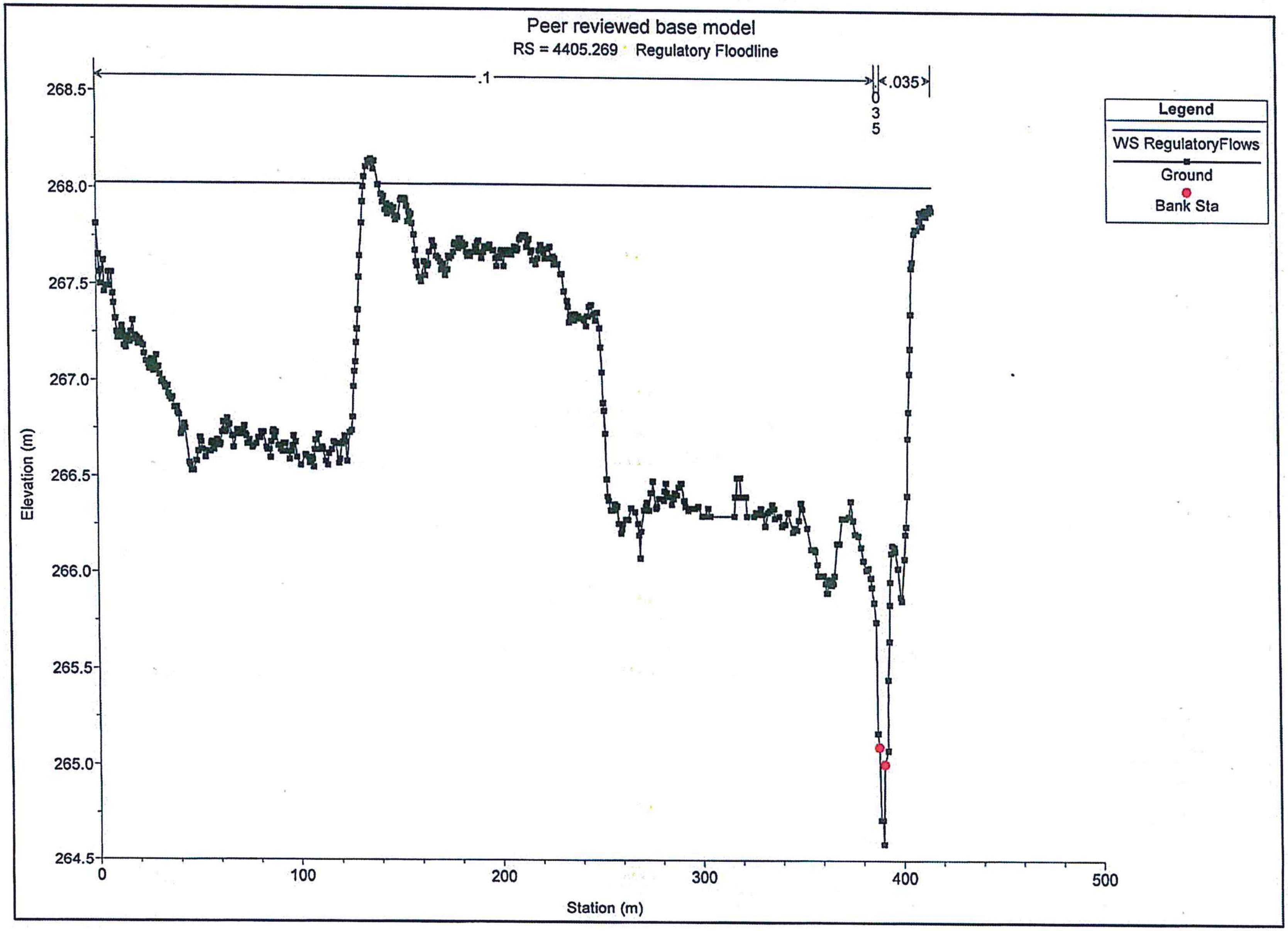

Peer reviewed base model
RS = 5103.876 Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269.5
269.0
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
Station (m)
0
100
200
300
400


Peer reviewed base model
RS = 4968.21 Regulatory Floodline
.1
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269.0
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
0
100
200
300
400
500
600
Station (m)

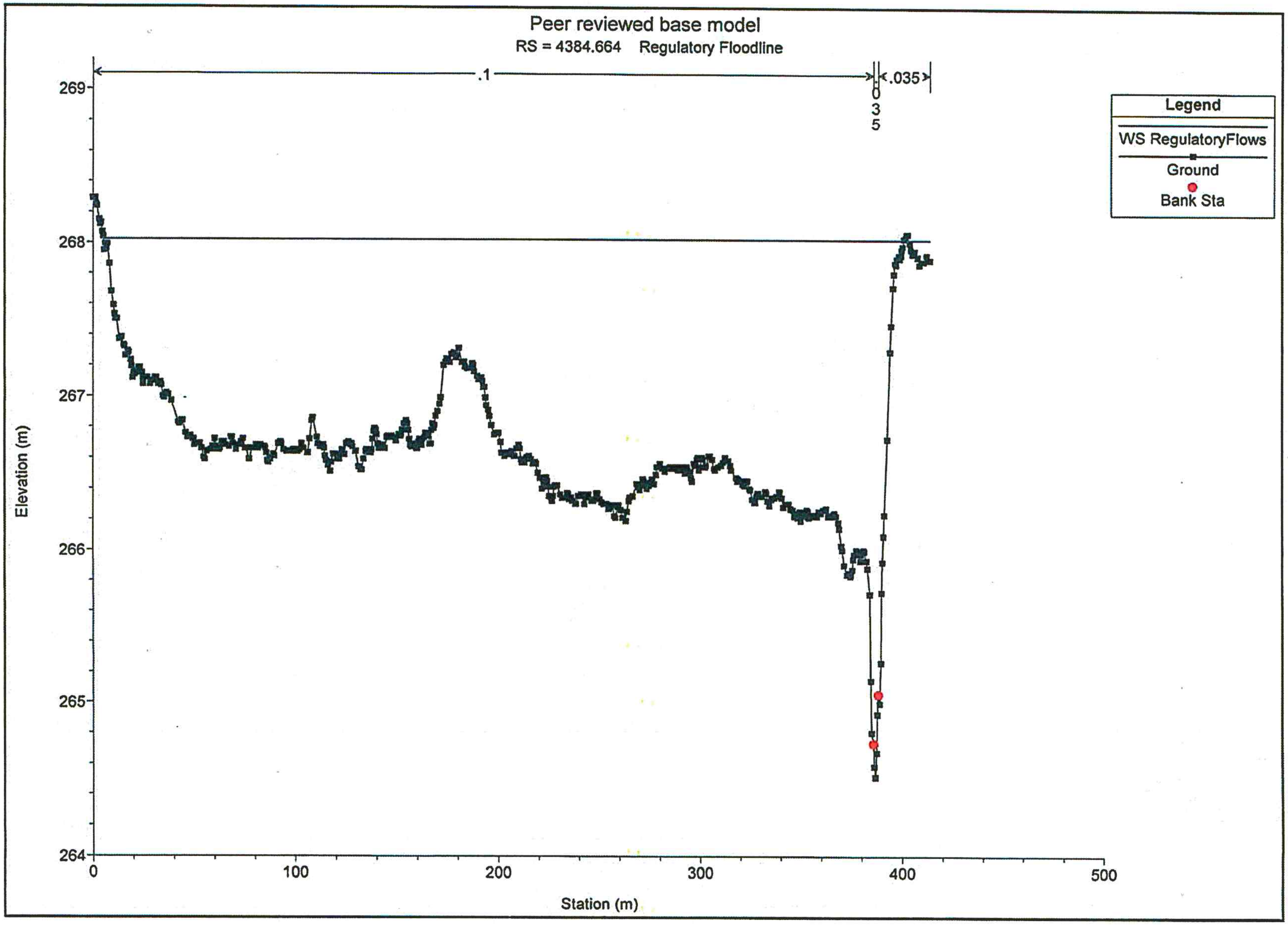

Peer reviewed base model
RS = 4826.403 Regulatory Floodline
.05
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
264
Station (m)
0
100
200
300
400
500
600
700

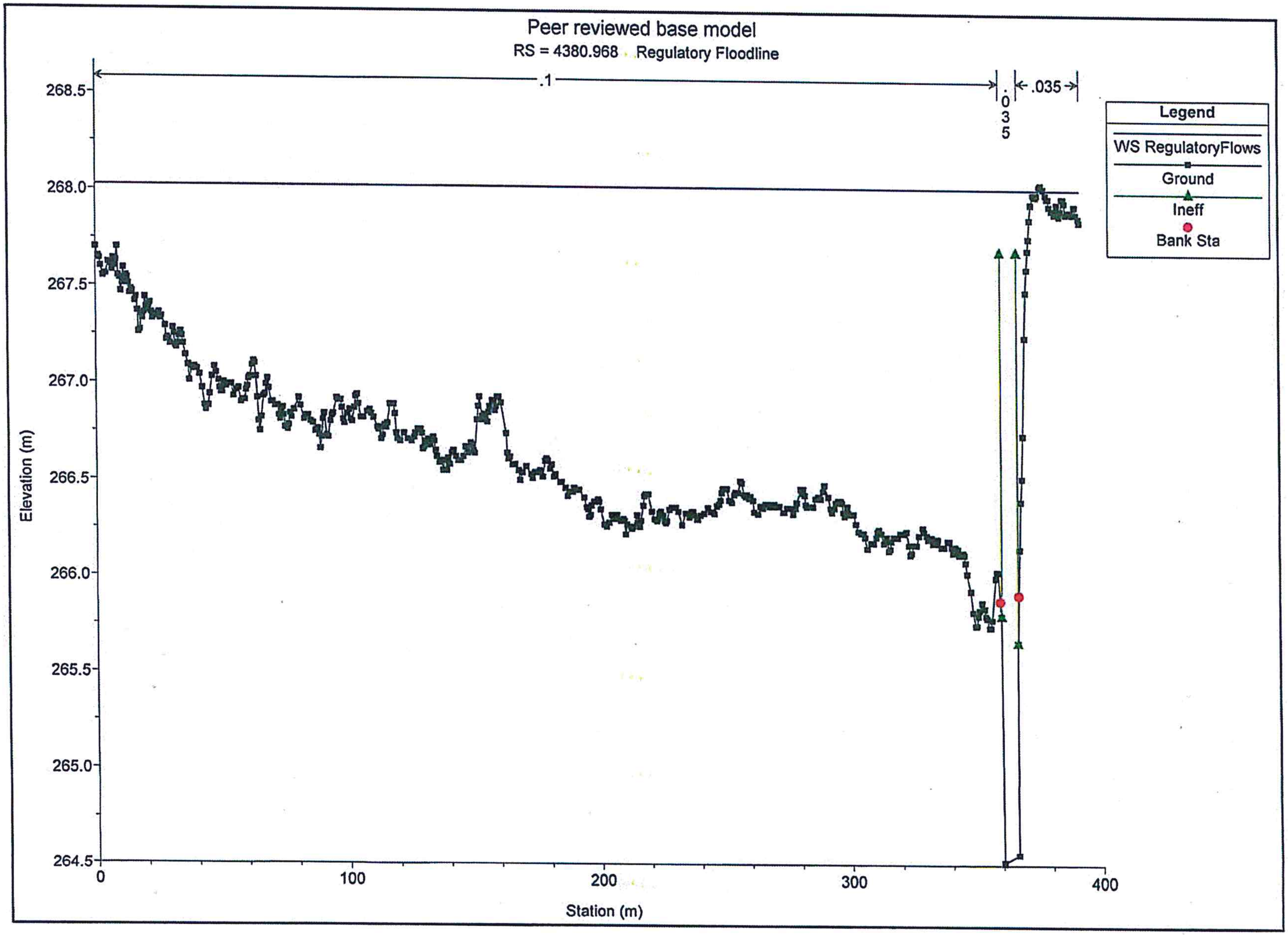

Peer reviewed base model
RS = 4692.952 Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
264.5
0
100
200
300
400
500
600
700
Station (m)

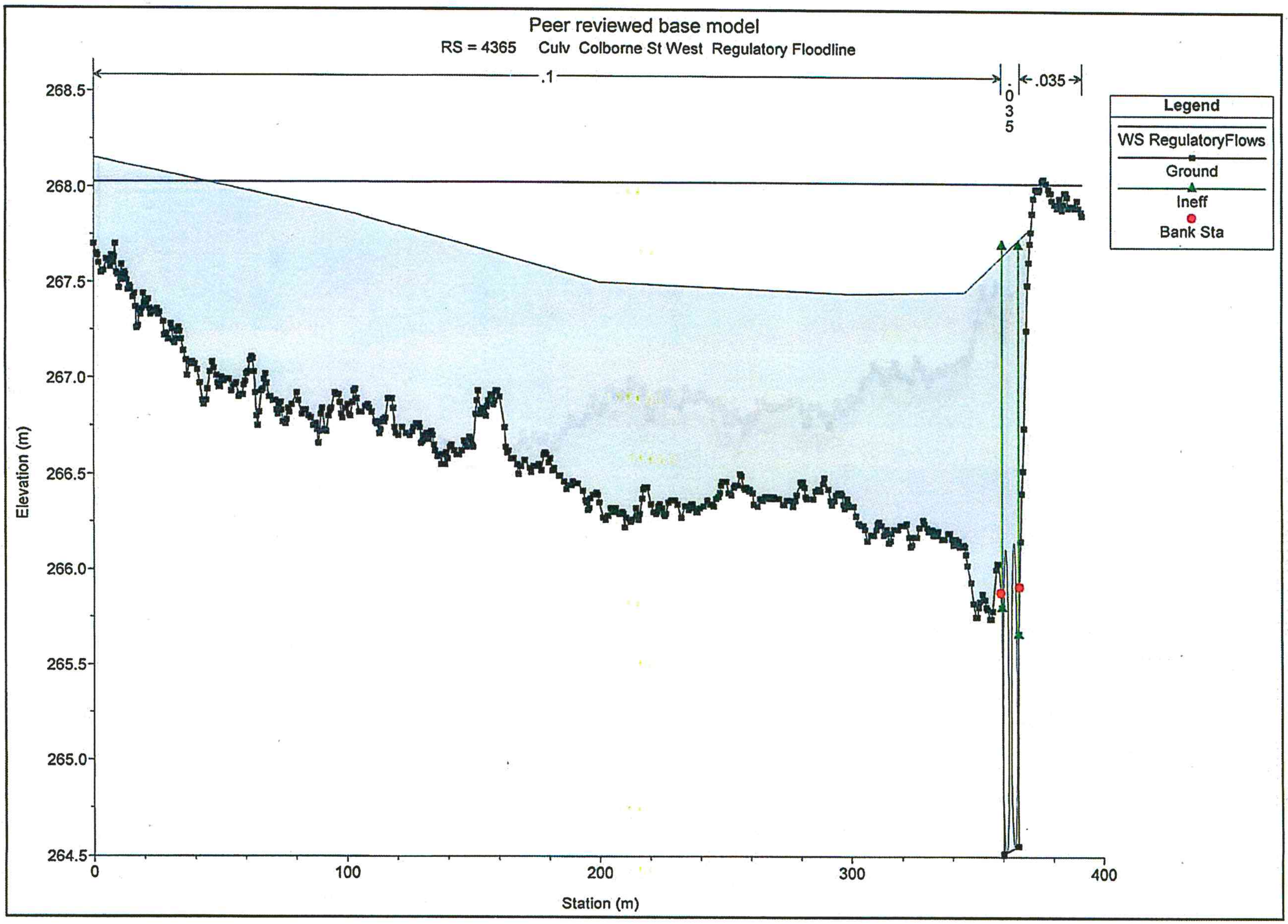

Peer reviewed base model
RS = 4546.604   Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
0
100
200
300
400
500
600
Station (m)



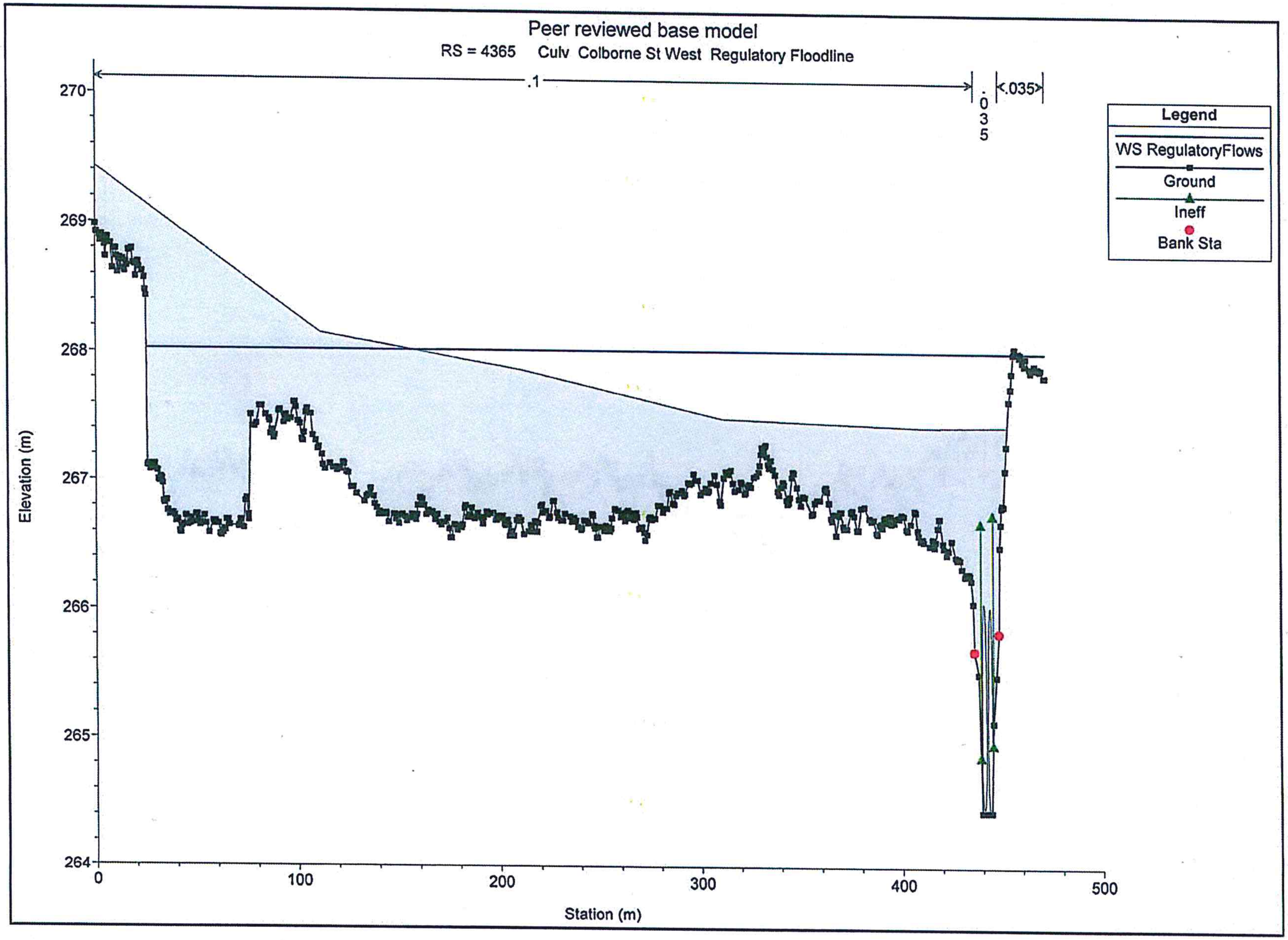
Peer reviewed base model
RS = 4405.269 Regulatory Floodline
.1
0
3
5
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
264.5
0
100
200
300
400
500
Station (m)


Peer reviewed base model
RS = 4384.664 Regulatory Floodline
.1
.035
0
3
5
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
0
100
200
300
400
500
Station (m)

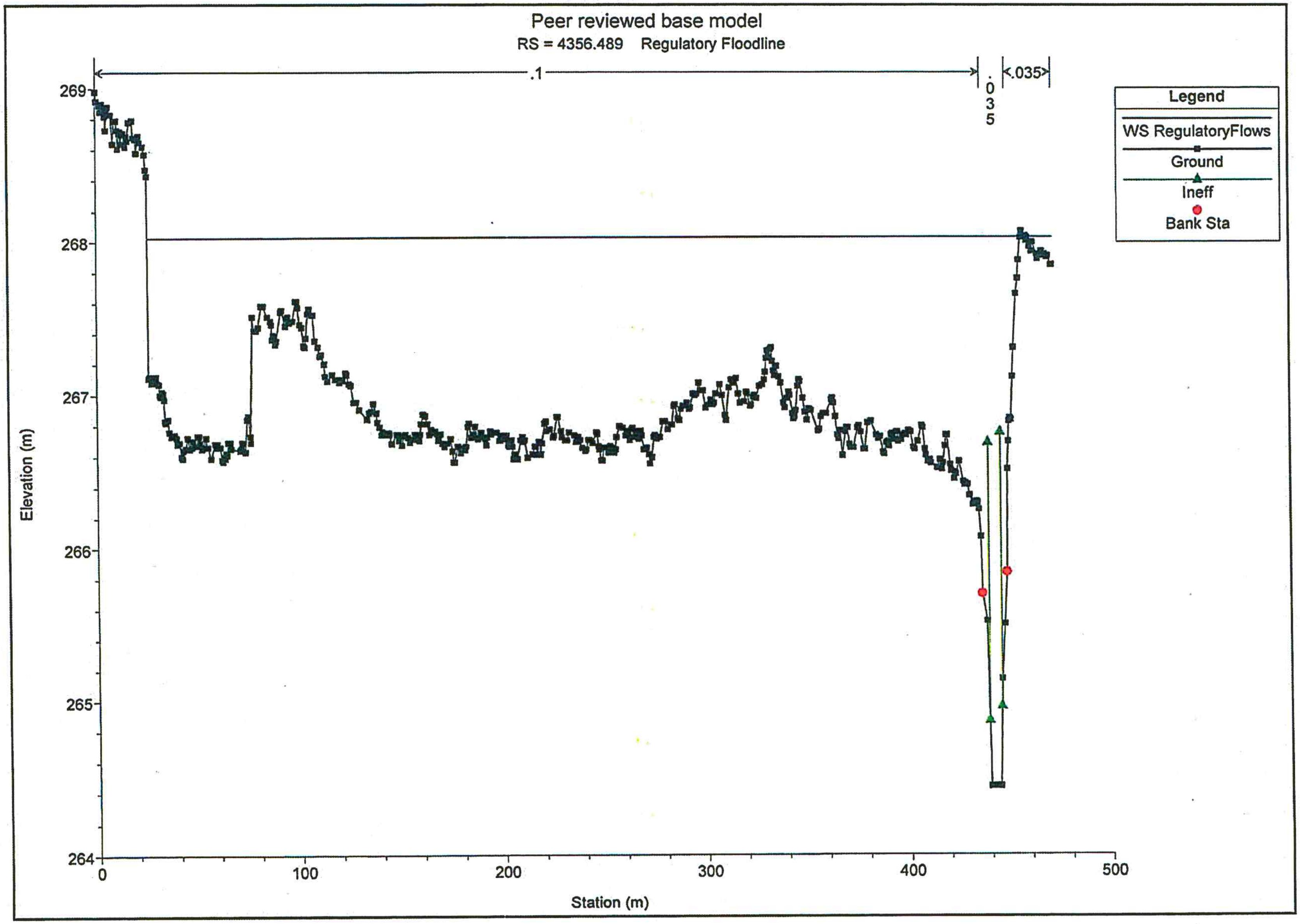

Peer reviewed base model
RS = 4380.968 Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
264.5
Station (m)
0
100
200
300
400

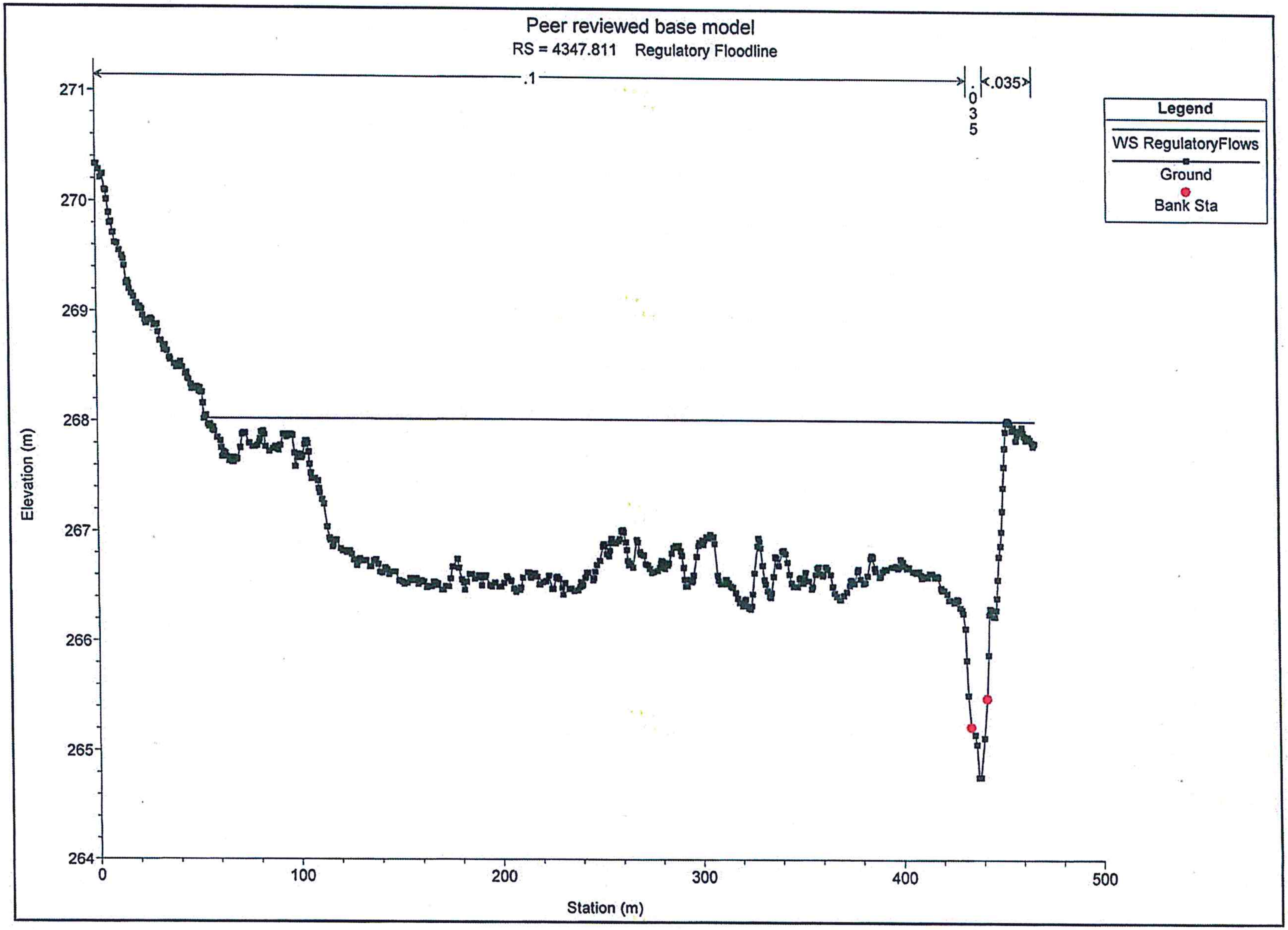


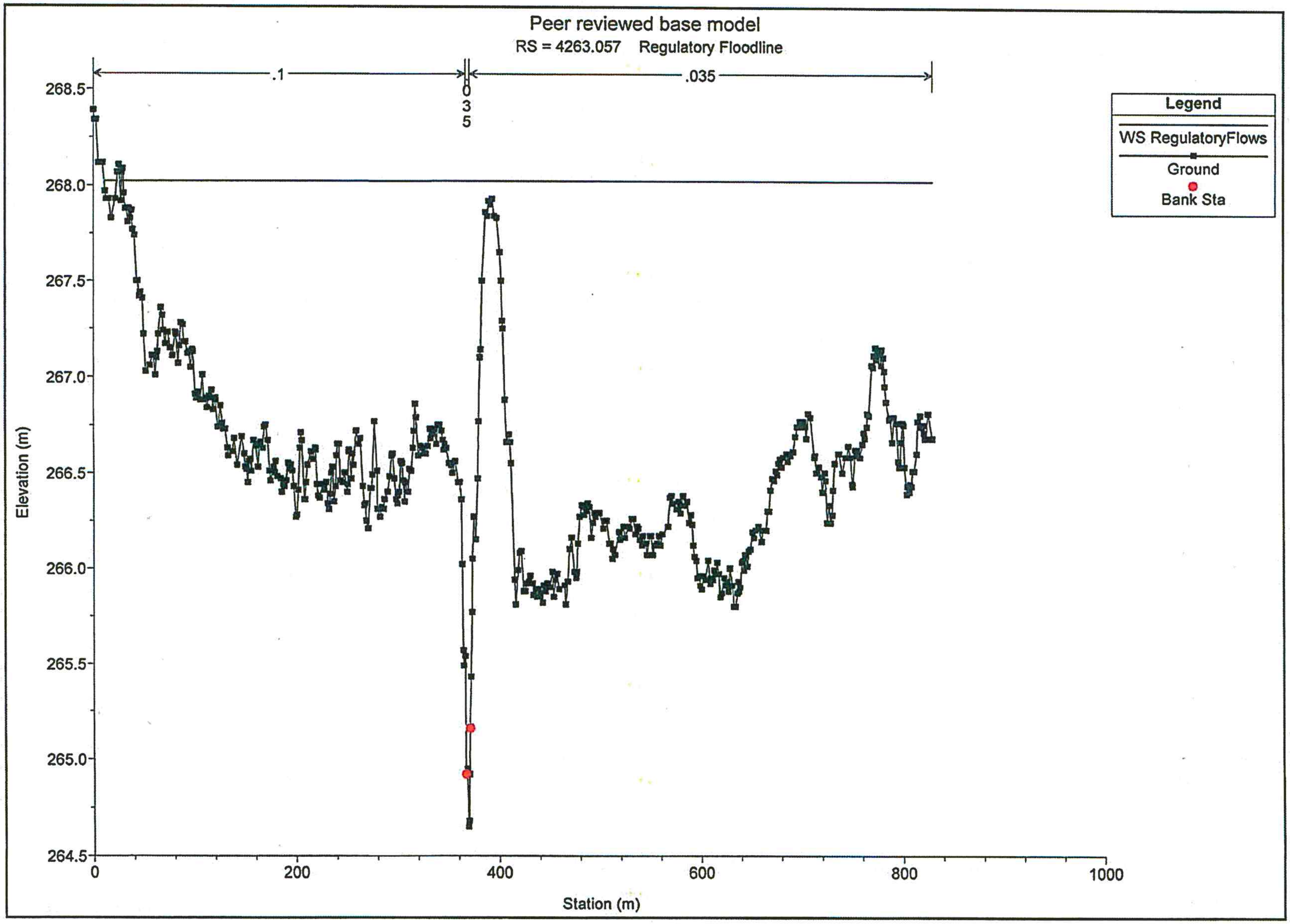
Peer reviewed base model
RS = 4365 Culv Colborne St West Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
264.5
Station (m)
0
100
200
300
400



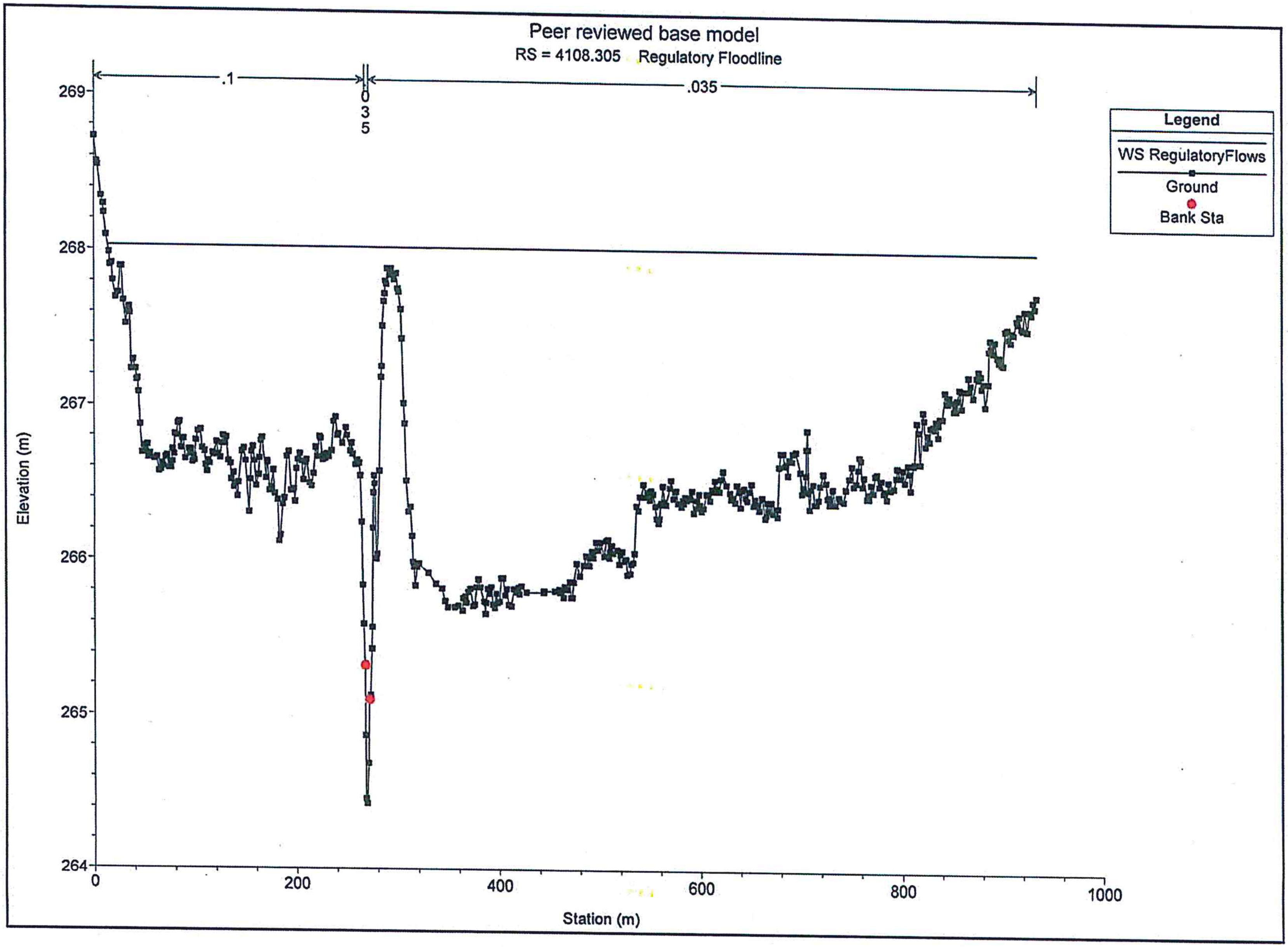
Peer reviewed base model
RS = 4365 Culv Colborne St West Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
0
100
200
300
400
500
Station (m)

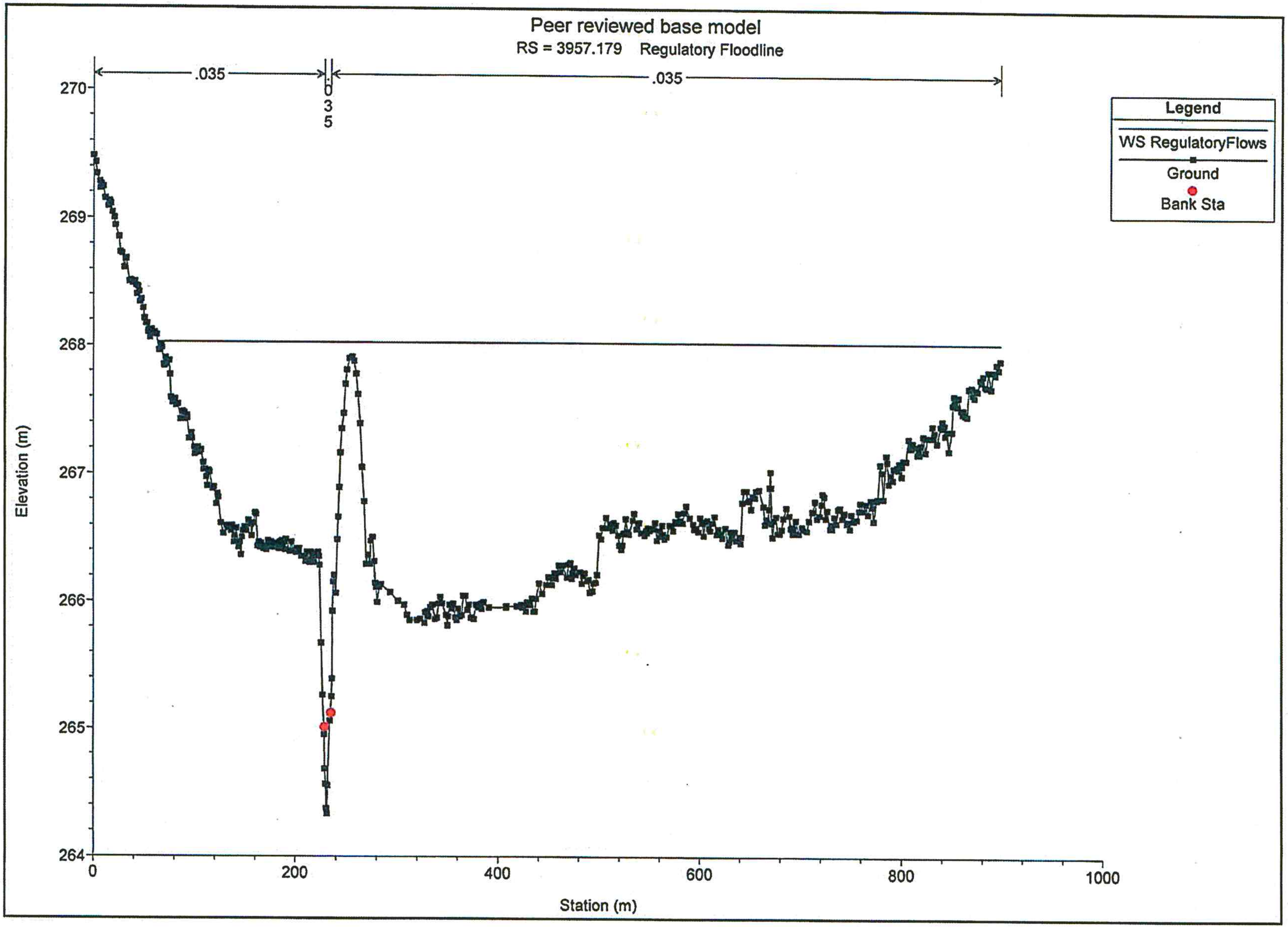

Peer reviewed base model
RS = 4356.489 Regulatory Floodline
.1
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
269
268
267
266
265
264
0
100
200
300
400
500
Station (m)


Peer reviewed base model
RS = 4347.811 Regulatory Floodline
.1
.035
<.035>
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
271
270
269
268
267
266
265
264
0
100
200
300
400
500
Station (m)



Peer reviewed base model
RS = 4263.057 Regulatory Floodline
.1
0
3
5
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
268.5
268.0
267.5
267.0
266.5
266.0
265.5
265.0
264.5
Elevation (m)
0
200
400
600
800
1000
Station (m)

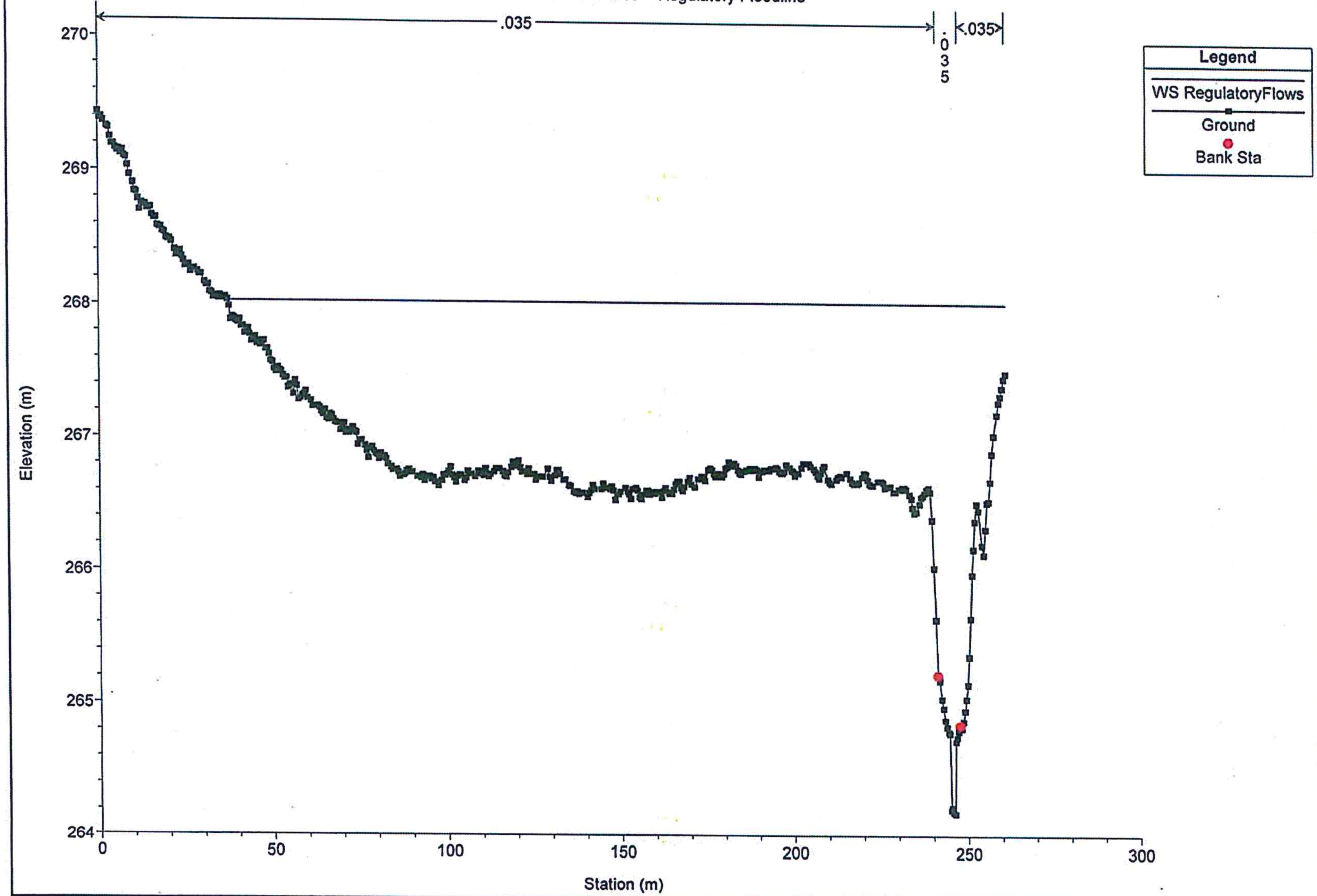

Peer reviewed base model
RS = 4108.305 Regulatory Floodline
.1
.035
0
3
5
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
Station (m)
0
200
400
600
800
1000

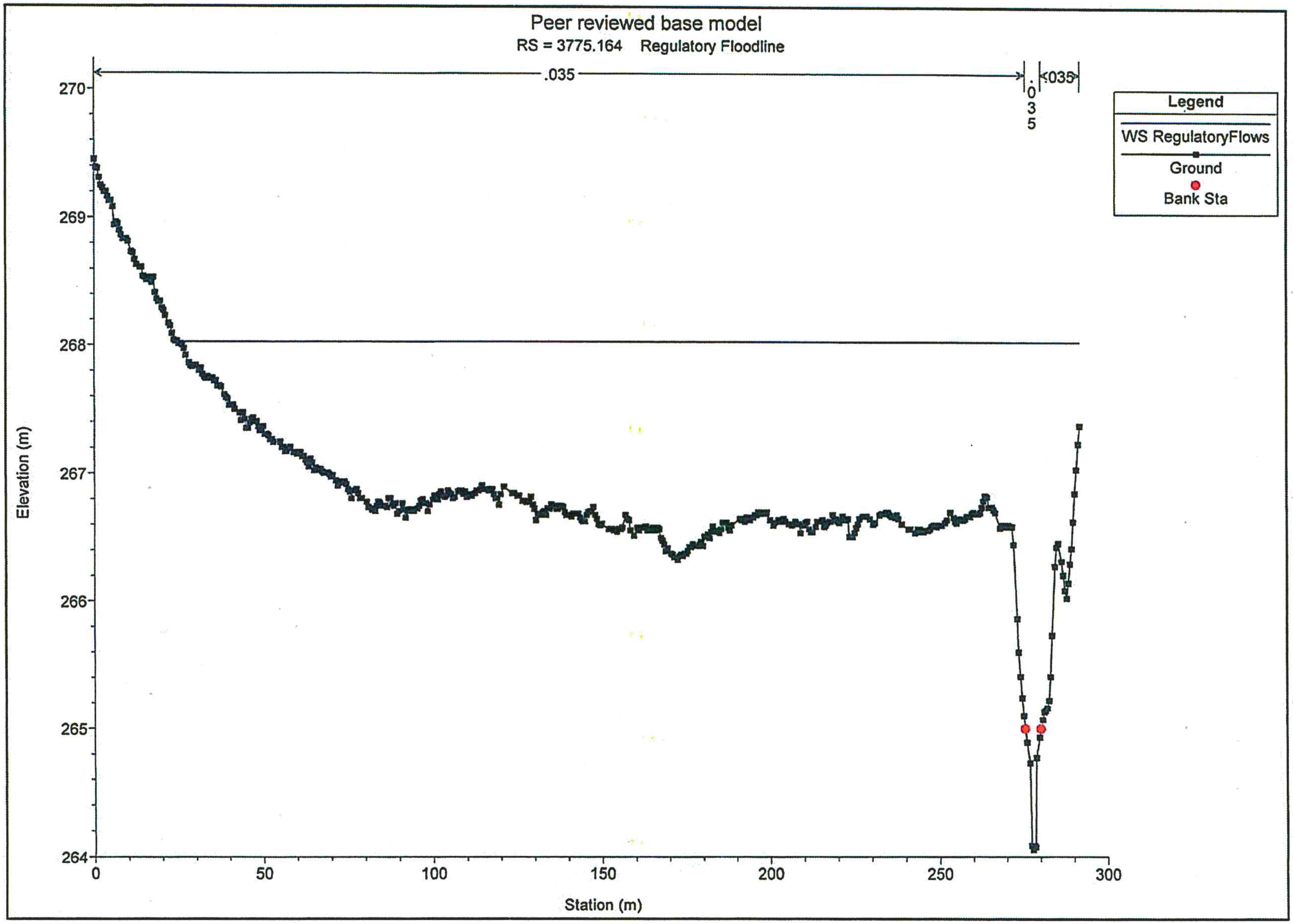


Peer reviewed base model
RS = 3957.179 Regulatory Floodline
.035
0
3
5
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
0
200
400
600
800
1000
Station (m)

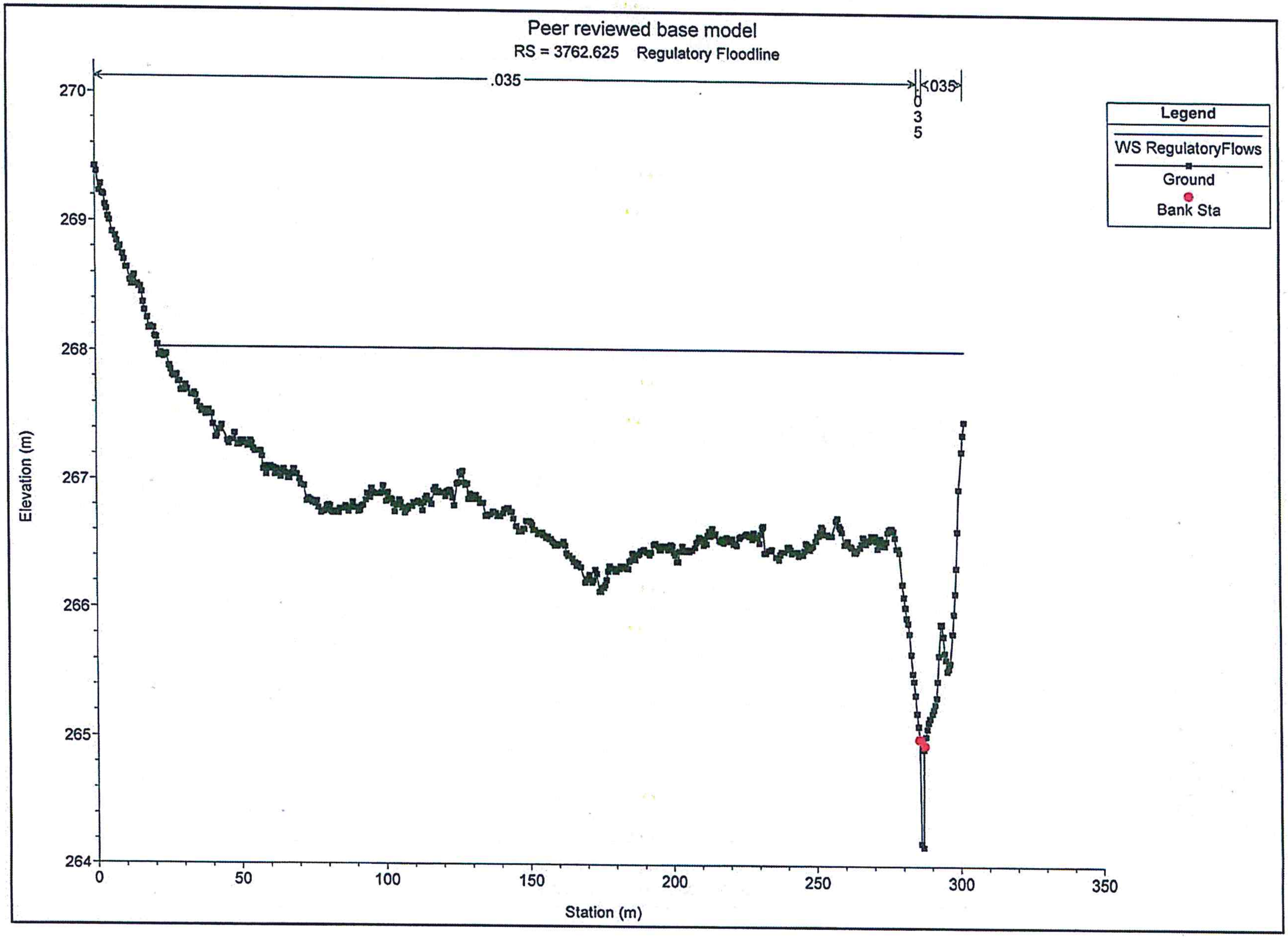
Peer reviewed base model

RS = 3804.186 Regulatory Floodline

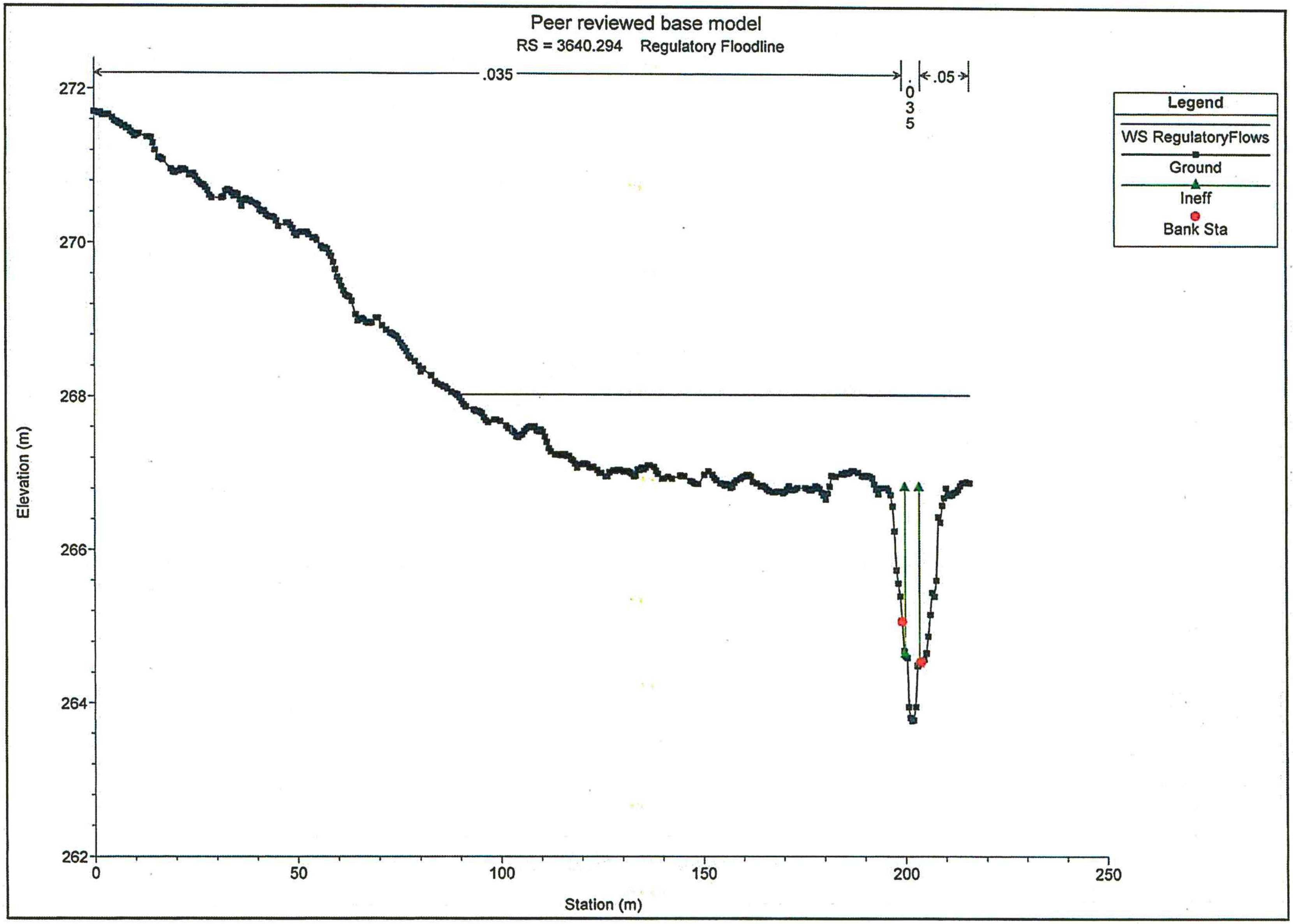


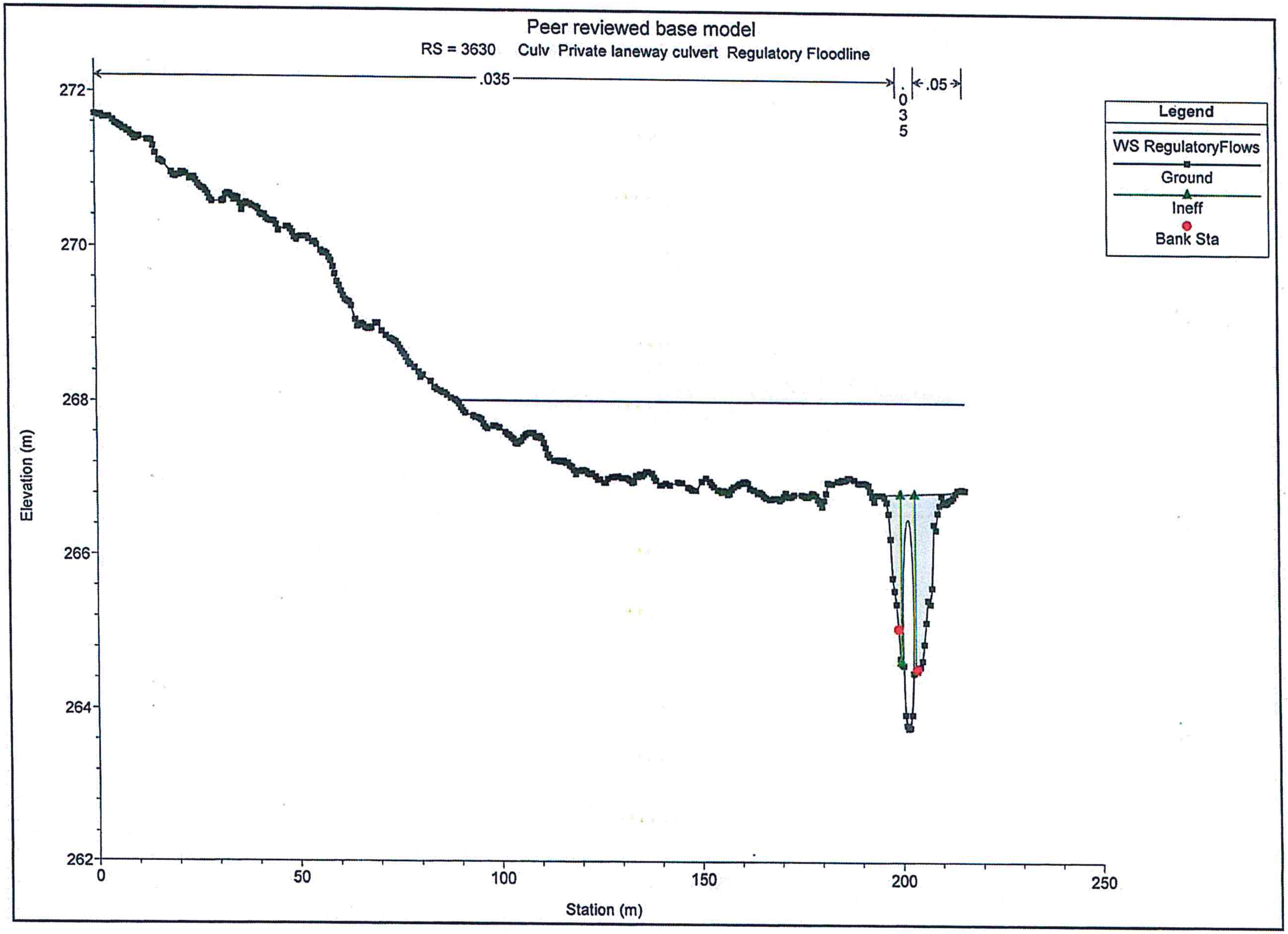


Peer reviewed base model
RS = 3775.164 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
0
50
100
150
200
250
300
Station (m)

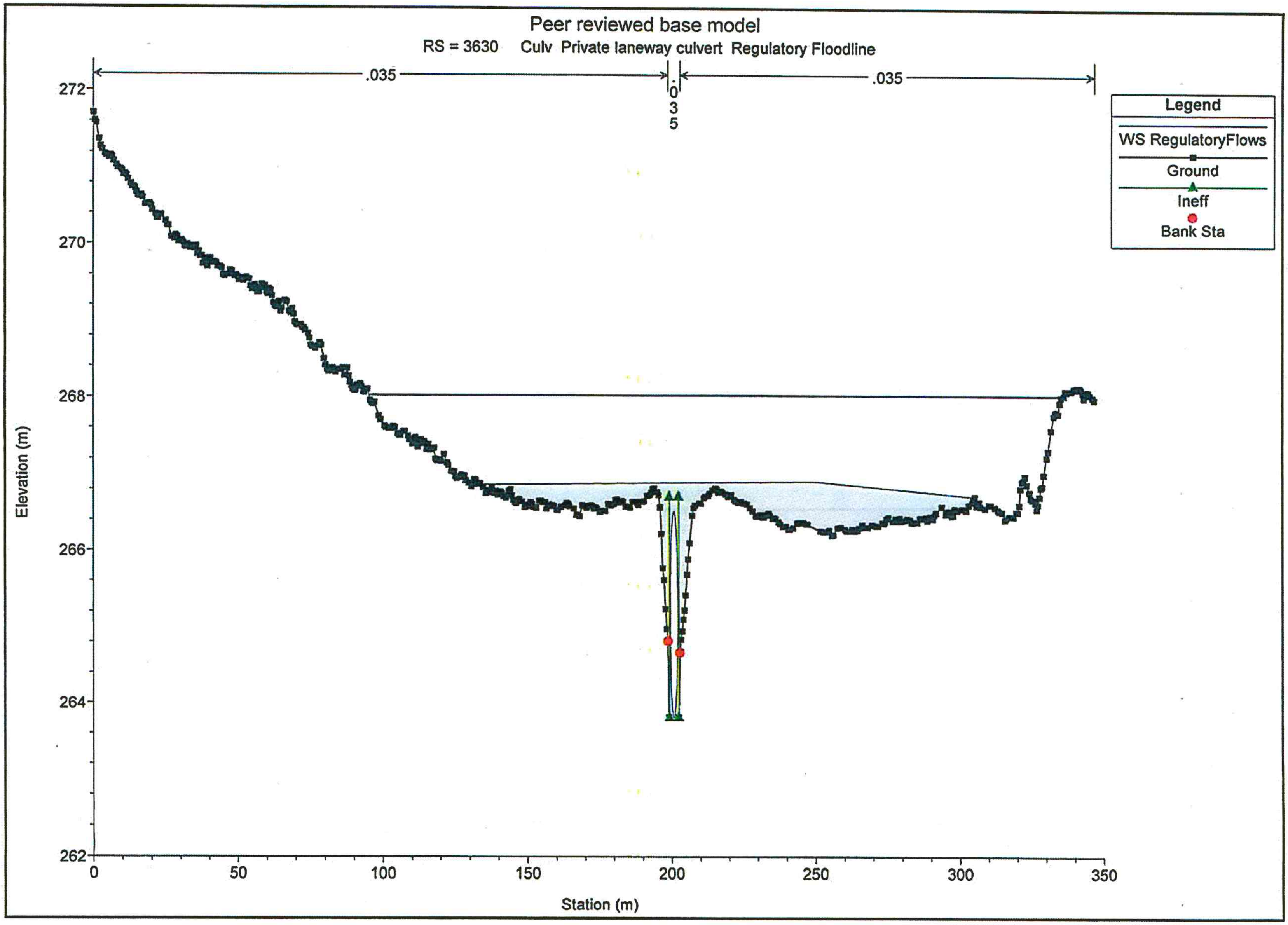


Peer reviewed base model
RS = 3762.625 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
0
50
100
150
200
250
300
350
Station (m)

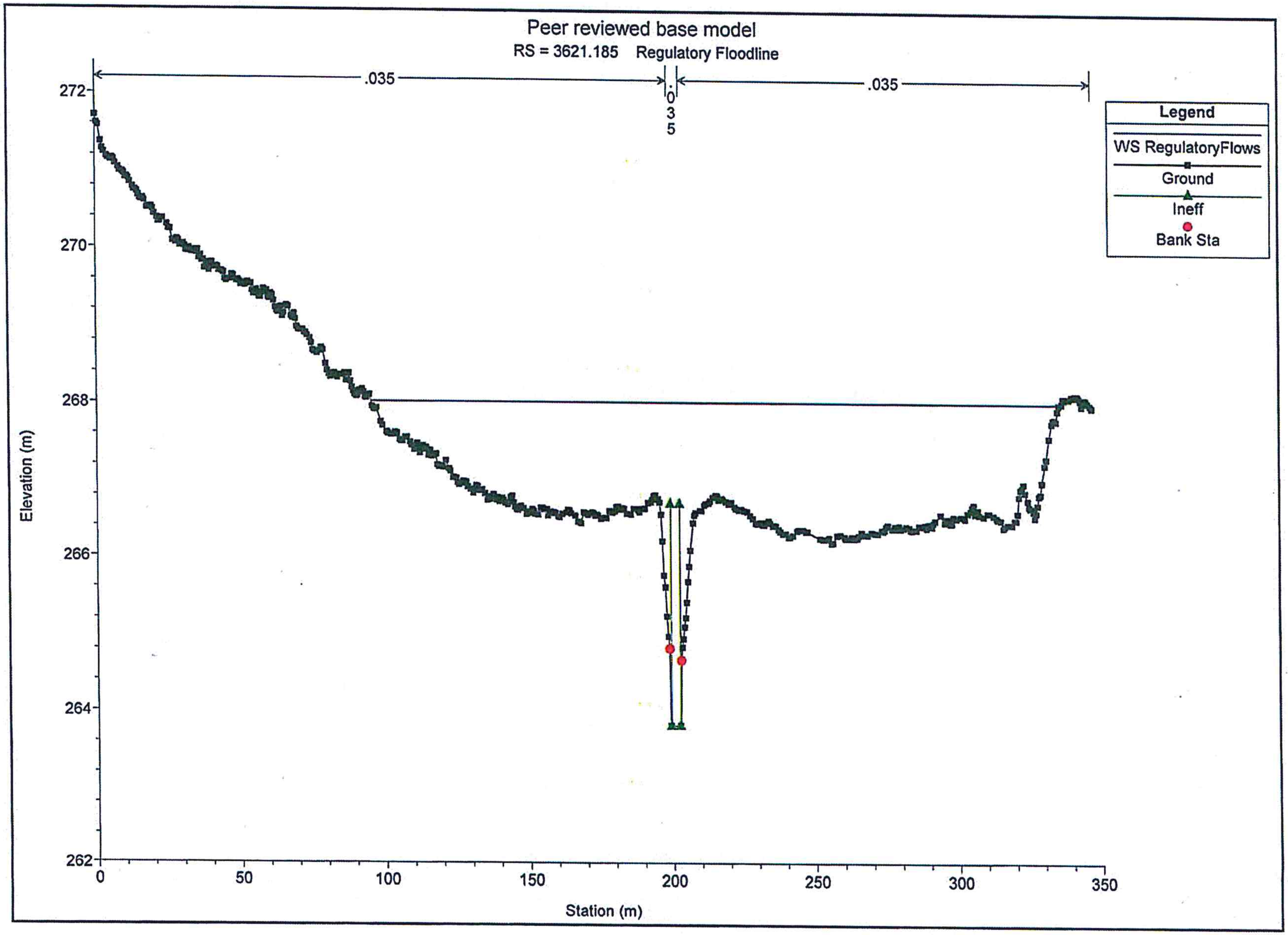

Peer reviewed base model
RS = 3640.294 Regulatory Floodline
.035
.035
.05
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
272
270
268
266
264
262
0
50
100
150
200
250
Station (m)



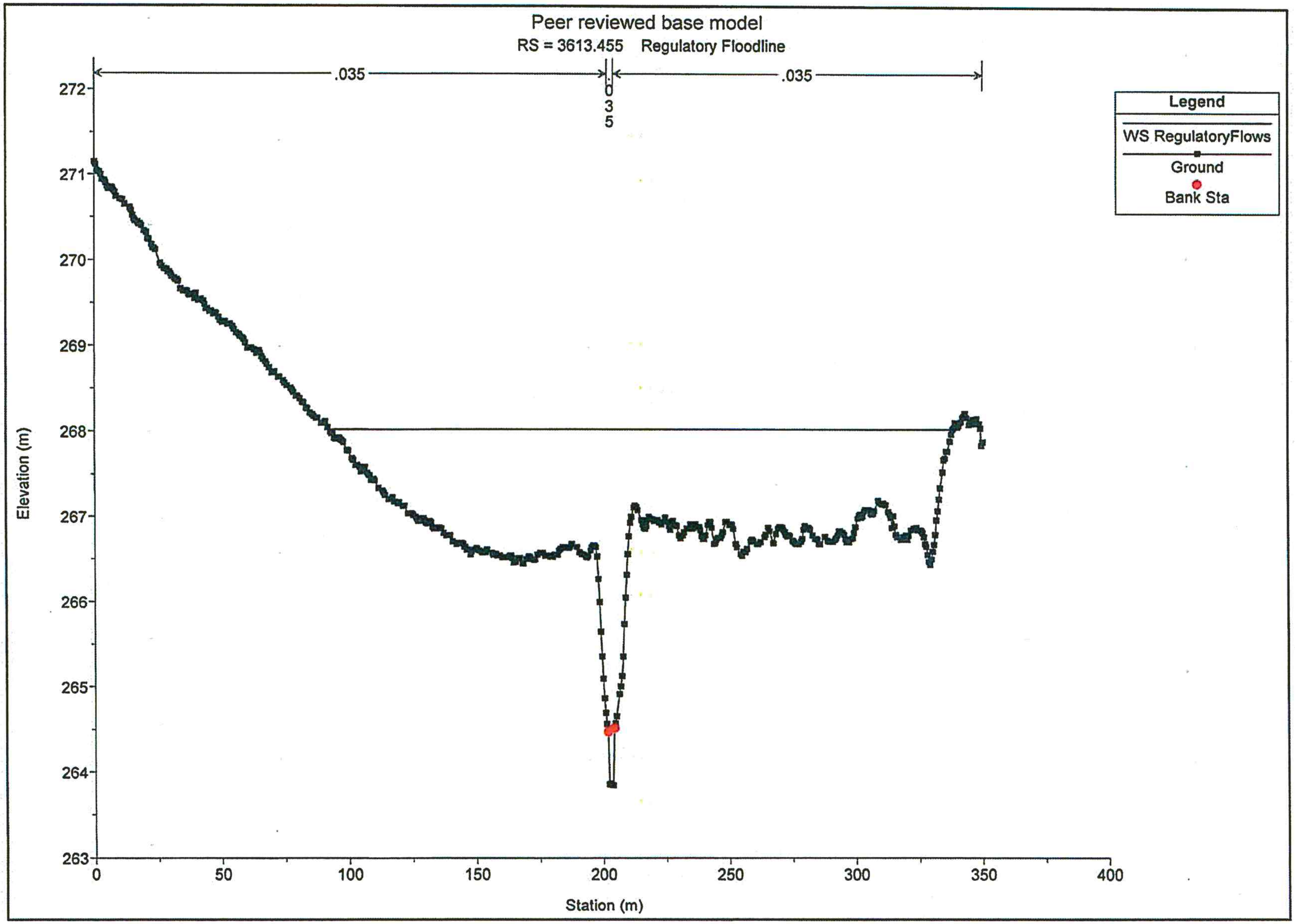
Peer reviewed base model
RS = 3630 Culv Private laneway culvert Regulatory Floodline
.035
.035
.05
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
272
270
268
266
264
262
0
50
100
150
200
250
Station (m)

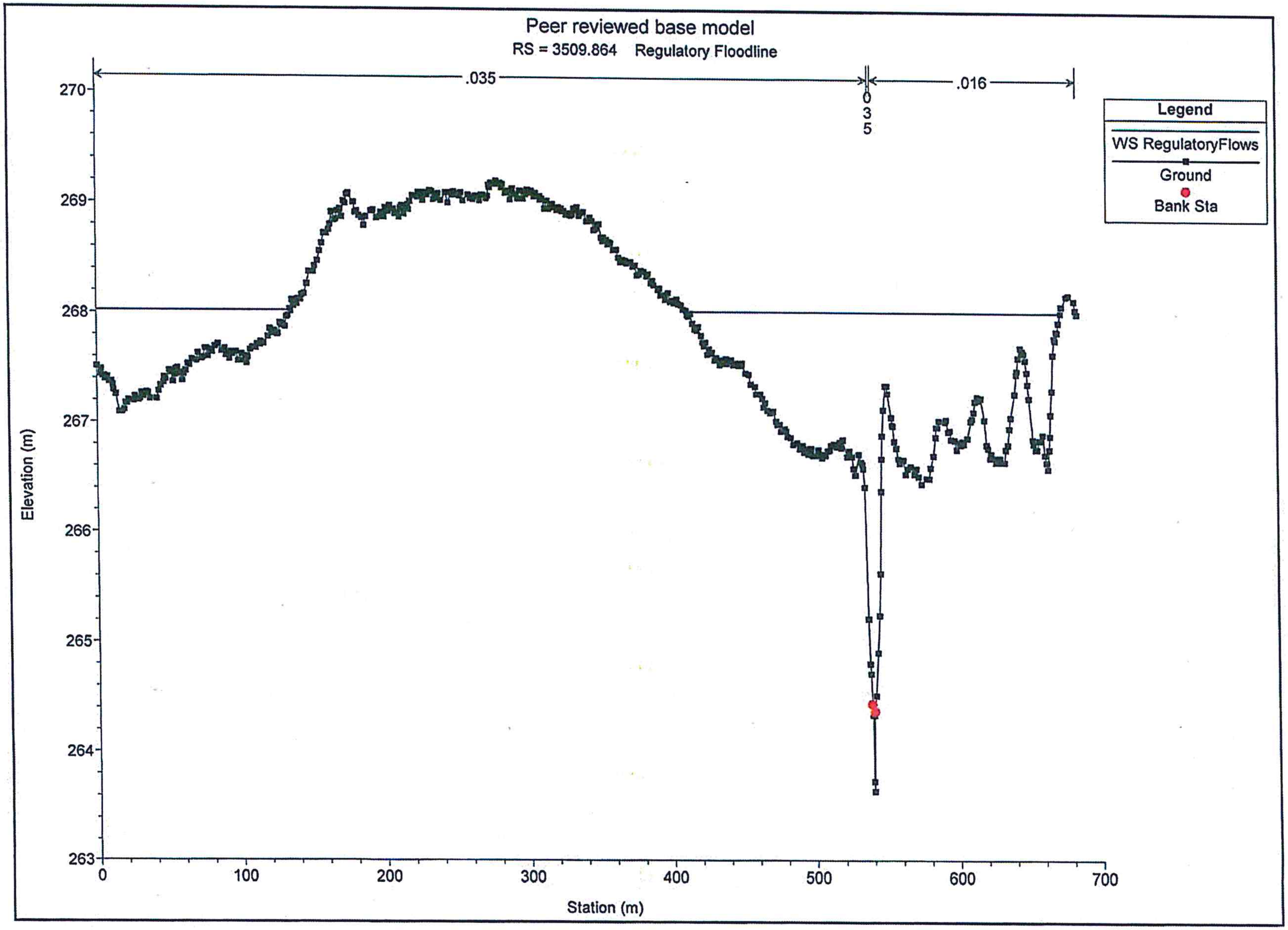


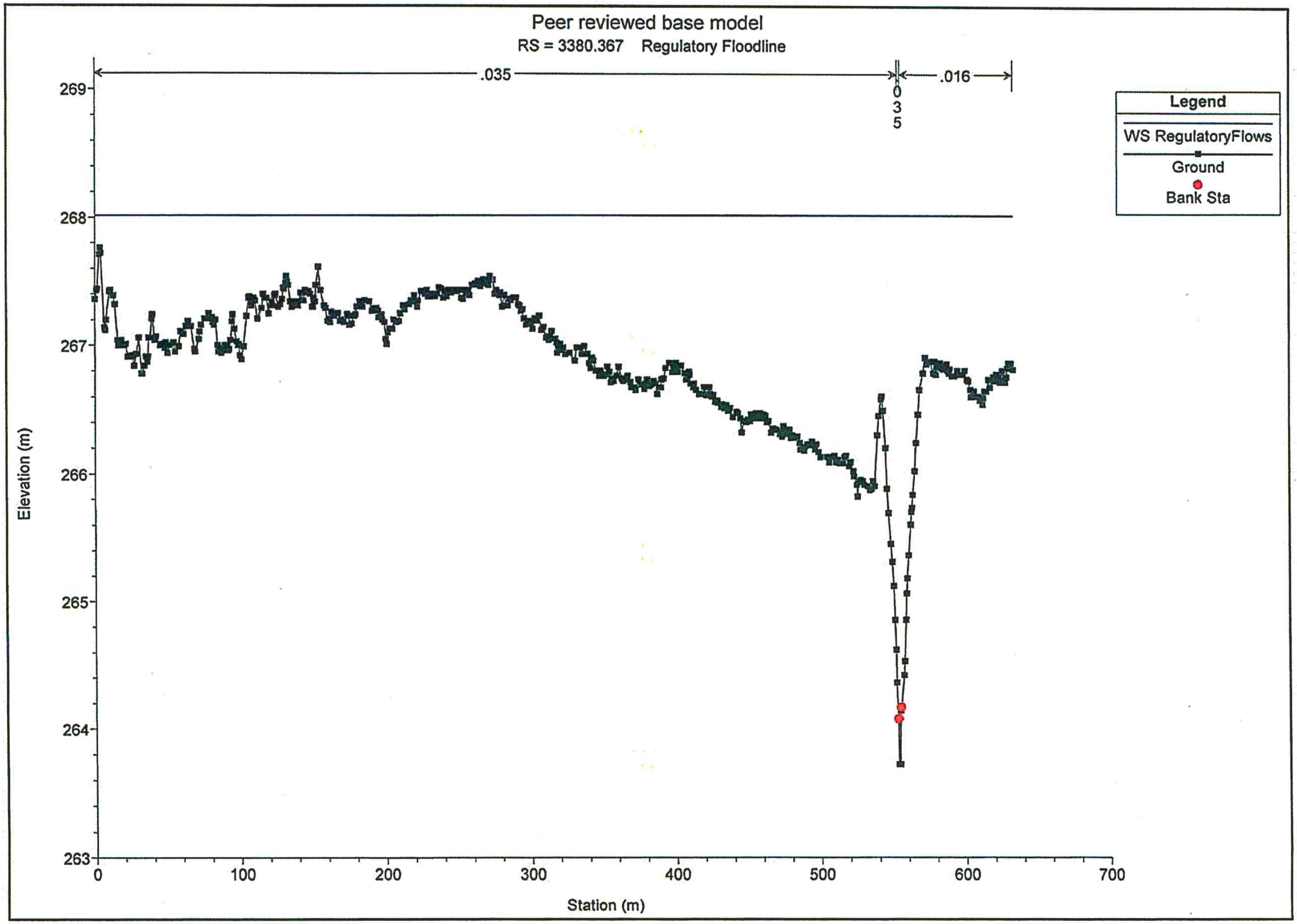
Peer reviewed base model
RS = 3630 Culv Private laneway culvert Regulatory Floodline
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
272
270
268
266
264
262
0
50
100
150
200
250
300
350
Station (m)



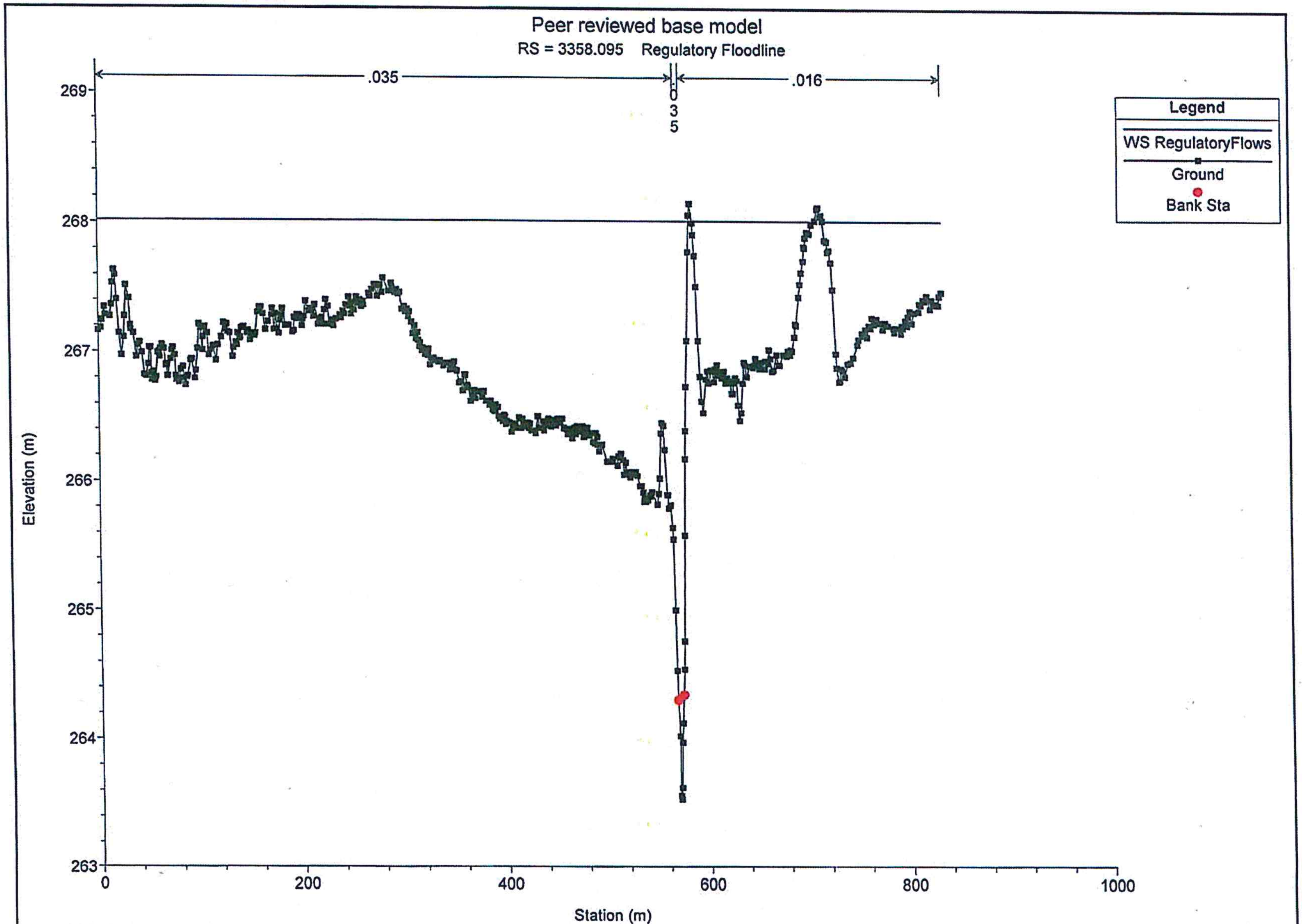
Peer reviewed base model
RS = 3621.185 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
272
270
268
266
264
262
0
50
100
150
200
250
300
350
Station (m)


Peer reviewed base model
RS = 3613.455 Regulatory Floodline
.035
.035
0
3
5
Elevation (m)
272
271
270
269
268
267
266
265
264
263
Station (m)
0
50
100
150
200
250
300
350
400
Legend
WS RegulatoryFlows
Ground
Bank Sta

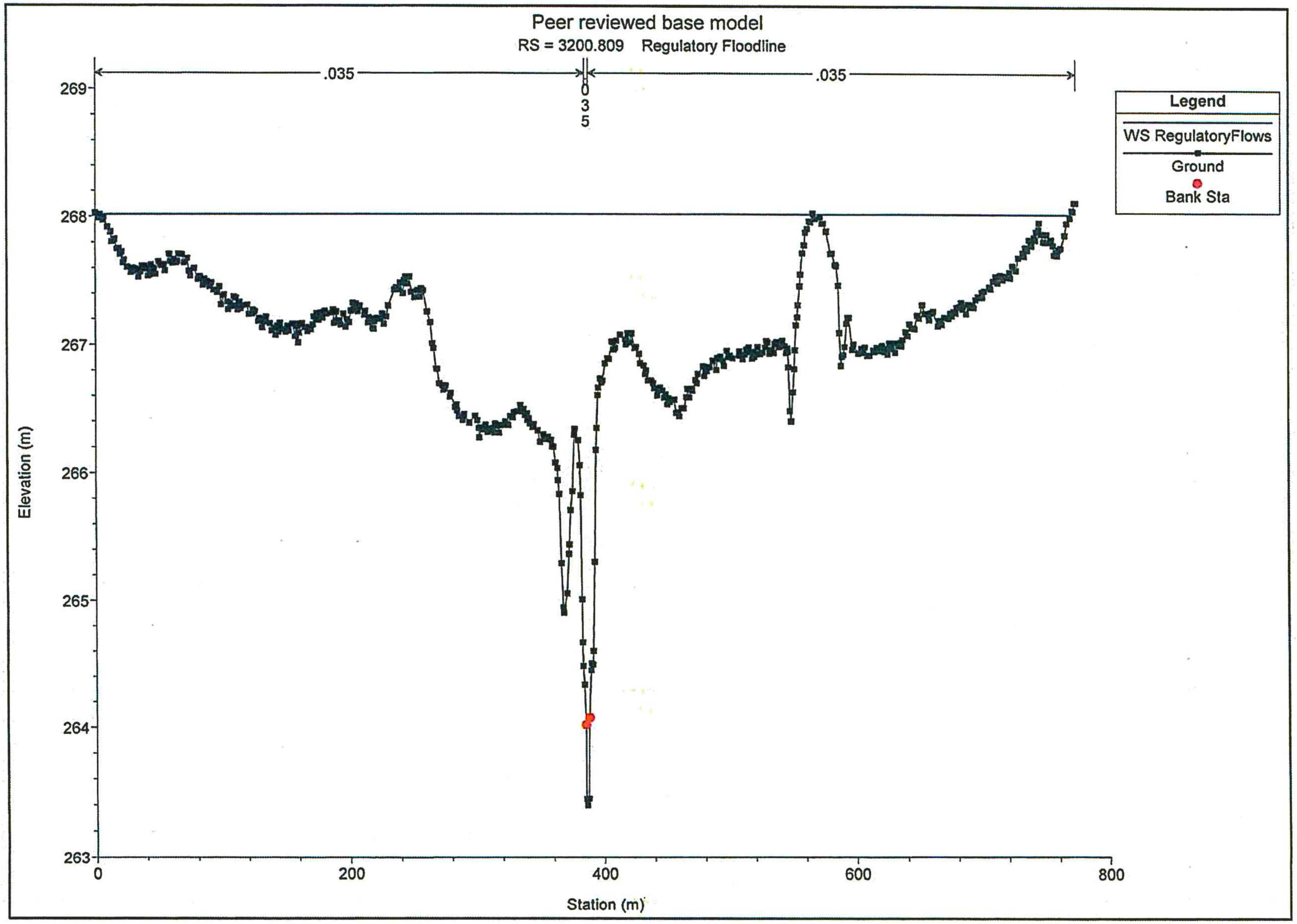

Peer reviewed base model
RS = 3509.864 Regulatory Floodline
.035
0
3
5
.016
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
263
0
100
200
300
400
500
600
700
Station (m)



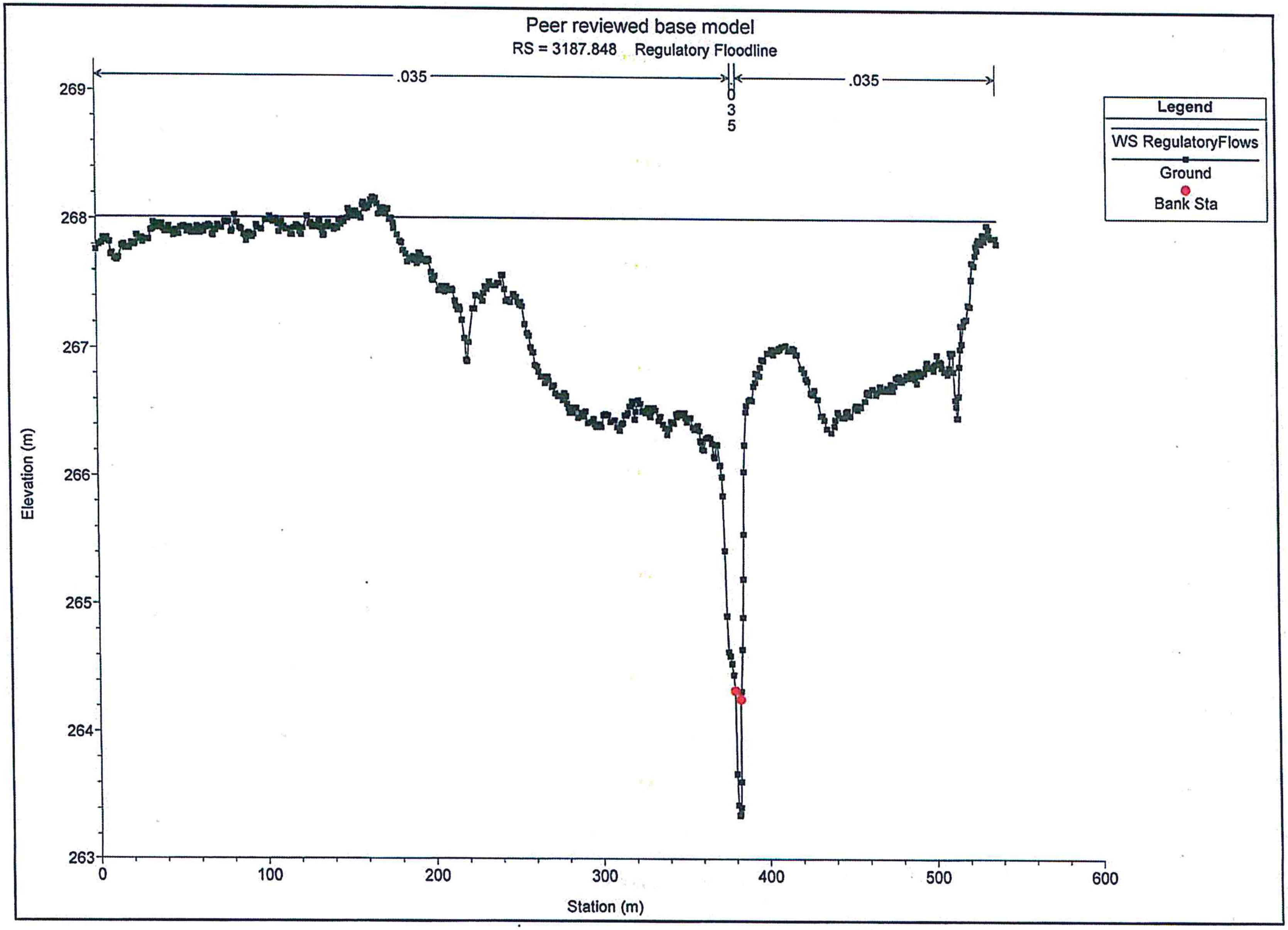
Peer reviewed base model
RS = 3380.367 Regulatory Floodline
.035
0
3
5
.016
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
0
100
200
300
400
500
600
700
Station (m)



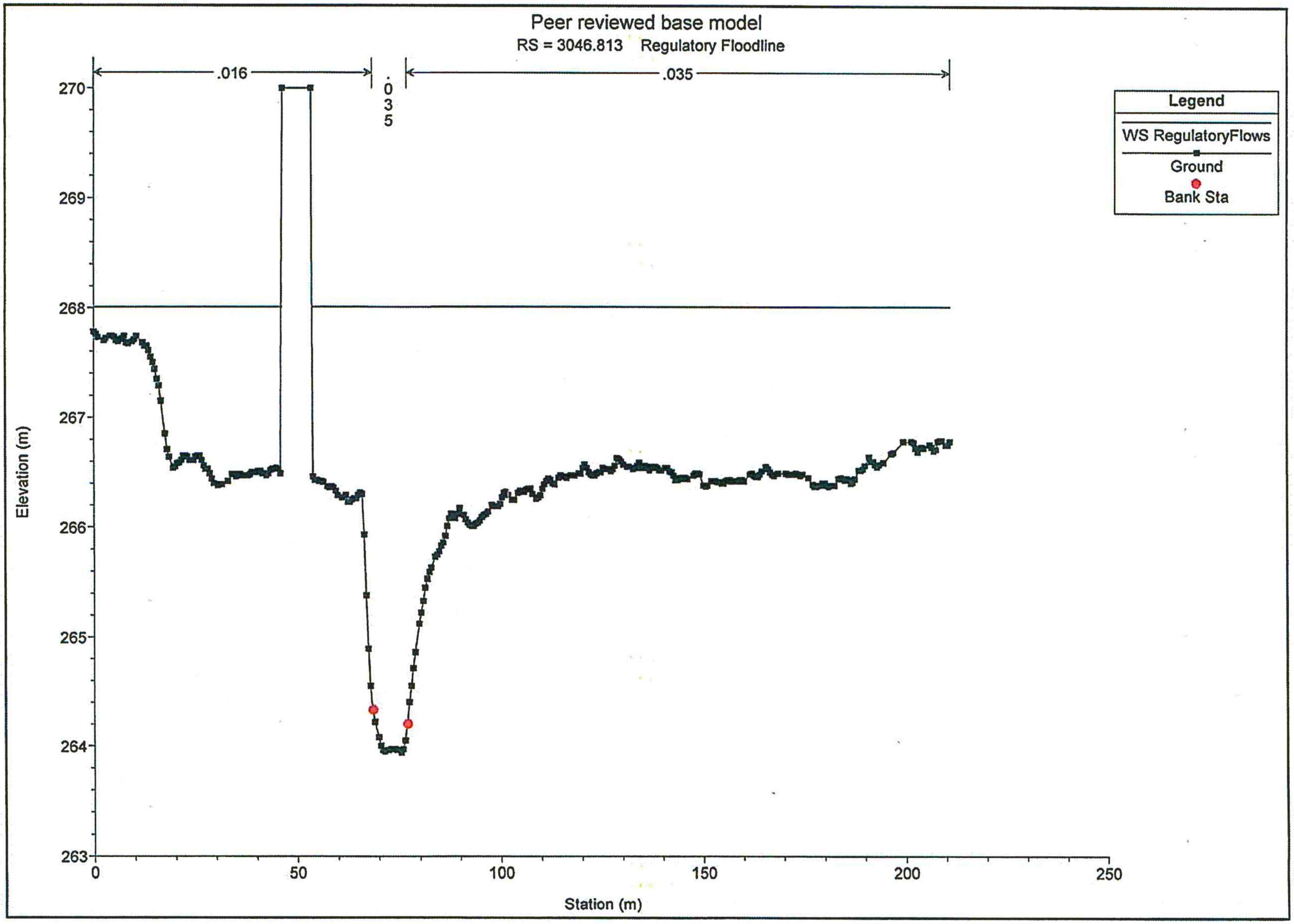
Peer reviewed base model
RS = 3358.095 Regulatory Floodline
.035
.016
0
3
5
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
Station (m)
0
200
400
600
800
1000



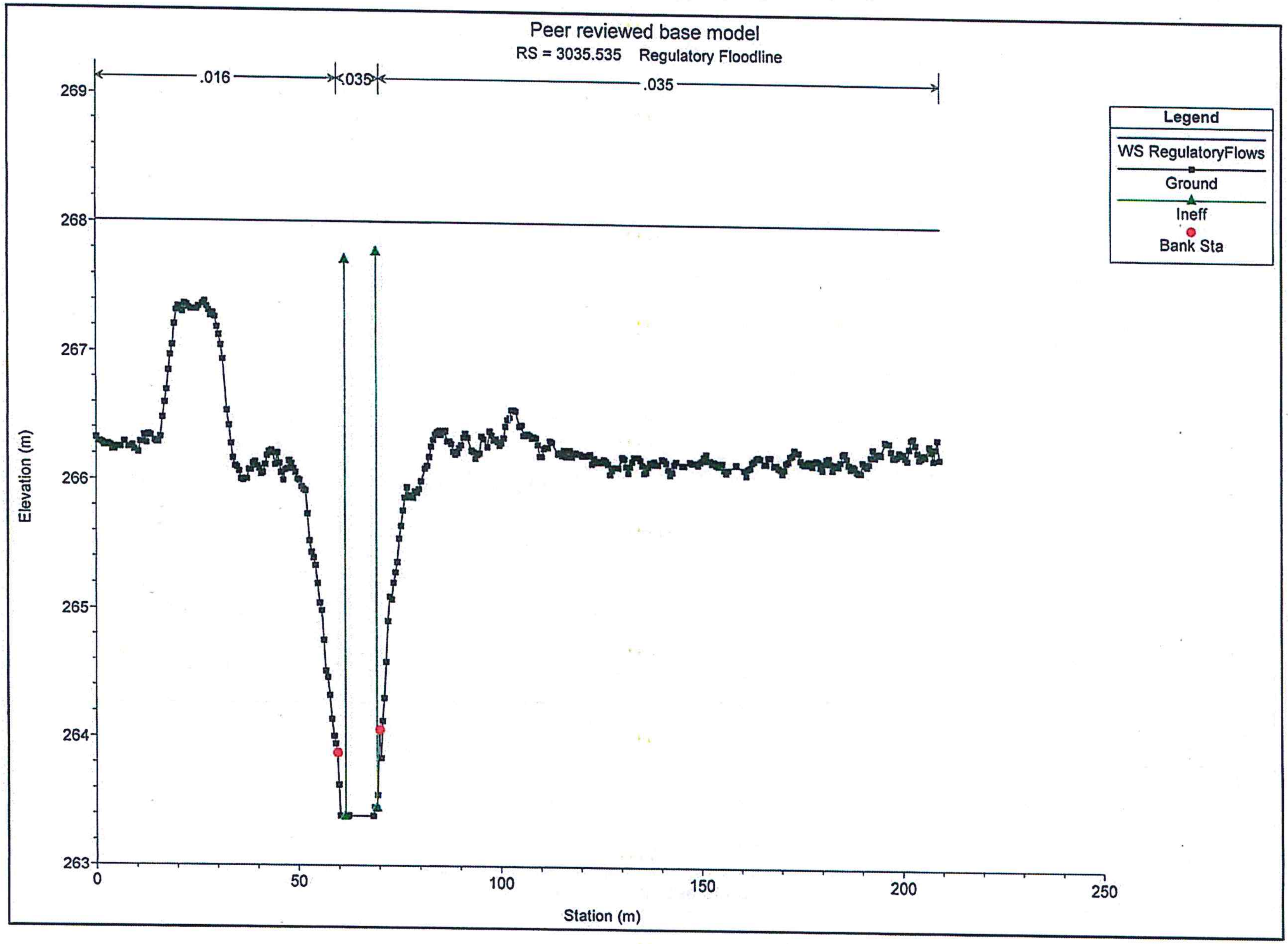
Peer reviewed base model
RS = 3200.809 Regulatory Floodline
.035
0
3
5
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
0
200
400
600
800
Station (m)

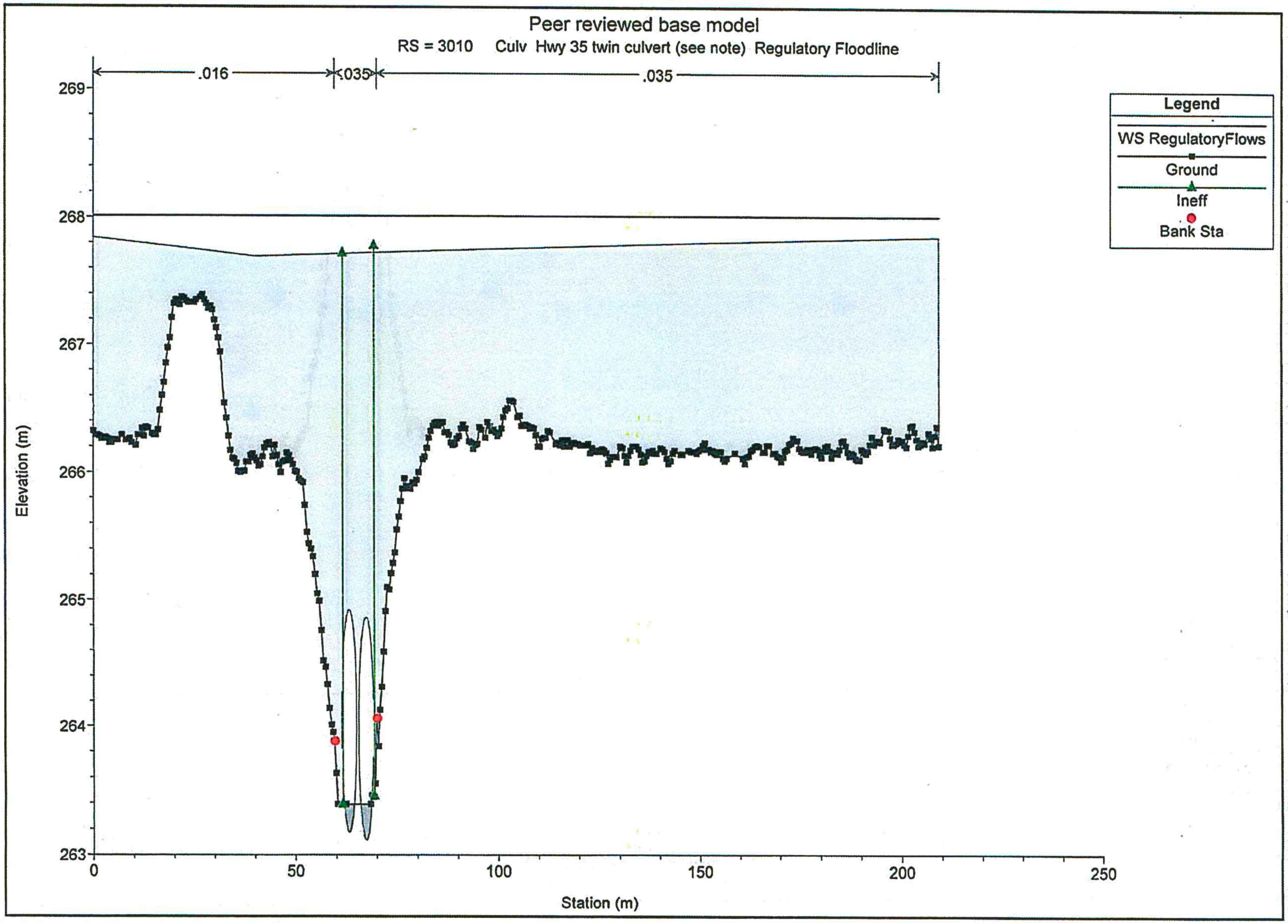


Peer reviewed base model
RS = 3187.848 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
Station (m)
0
100
200
300
400
500
600

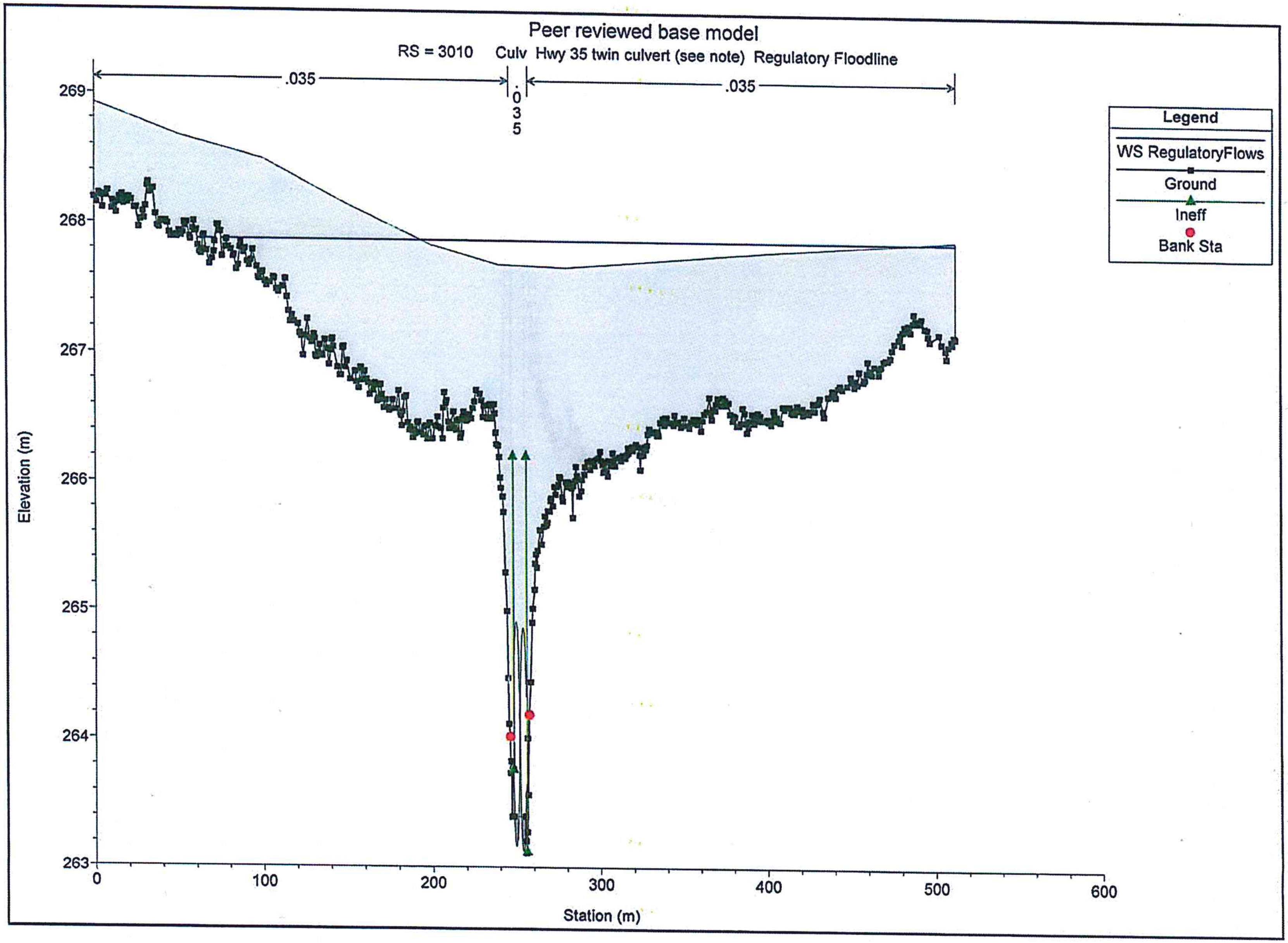


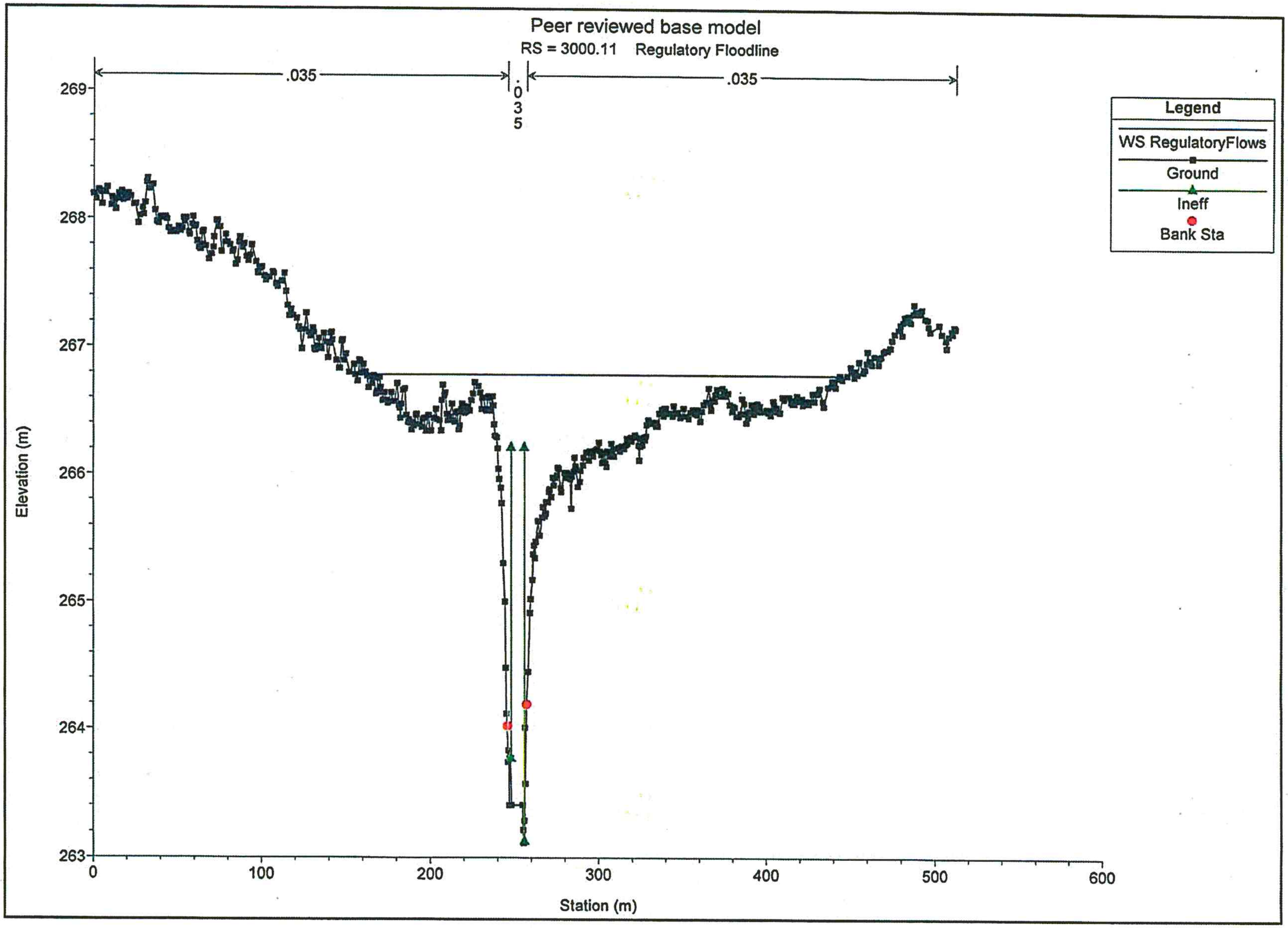
Peer reviewed base model
RS = 3046.813 Regulatory Floodline
.016
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
263
0
50
100
150
200
250
Station (m)


Peer reviewed base model
RS = 3035.535 Regulatory Floodline
.016
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
0
50
100
150
200
250
Station (m)



Peer reviewed base model
RS = 3010 Culv Hwy 35 twin culvert (see note) Regulatory Floodline
.016
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
Station (m)
0
50
100
150
200
250

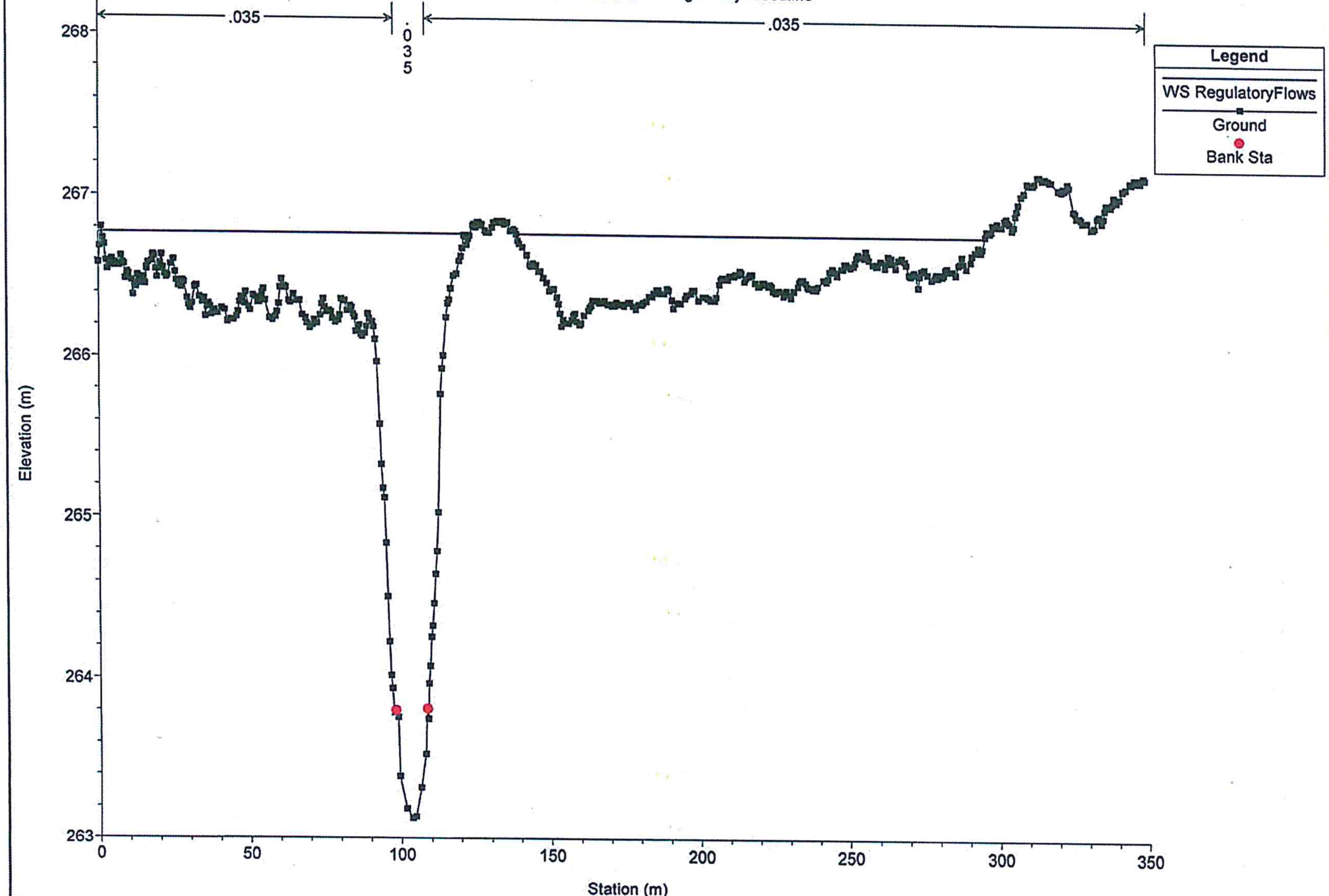

Peer reviewed base model
RS = 3010 Culv Hwy 35 twin culvert (see note) Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
263
264
265
266
267
268
269
0
100
200
300
400
500
600

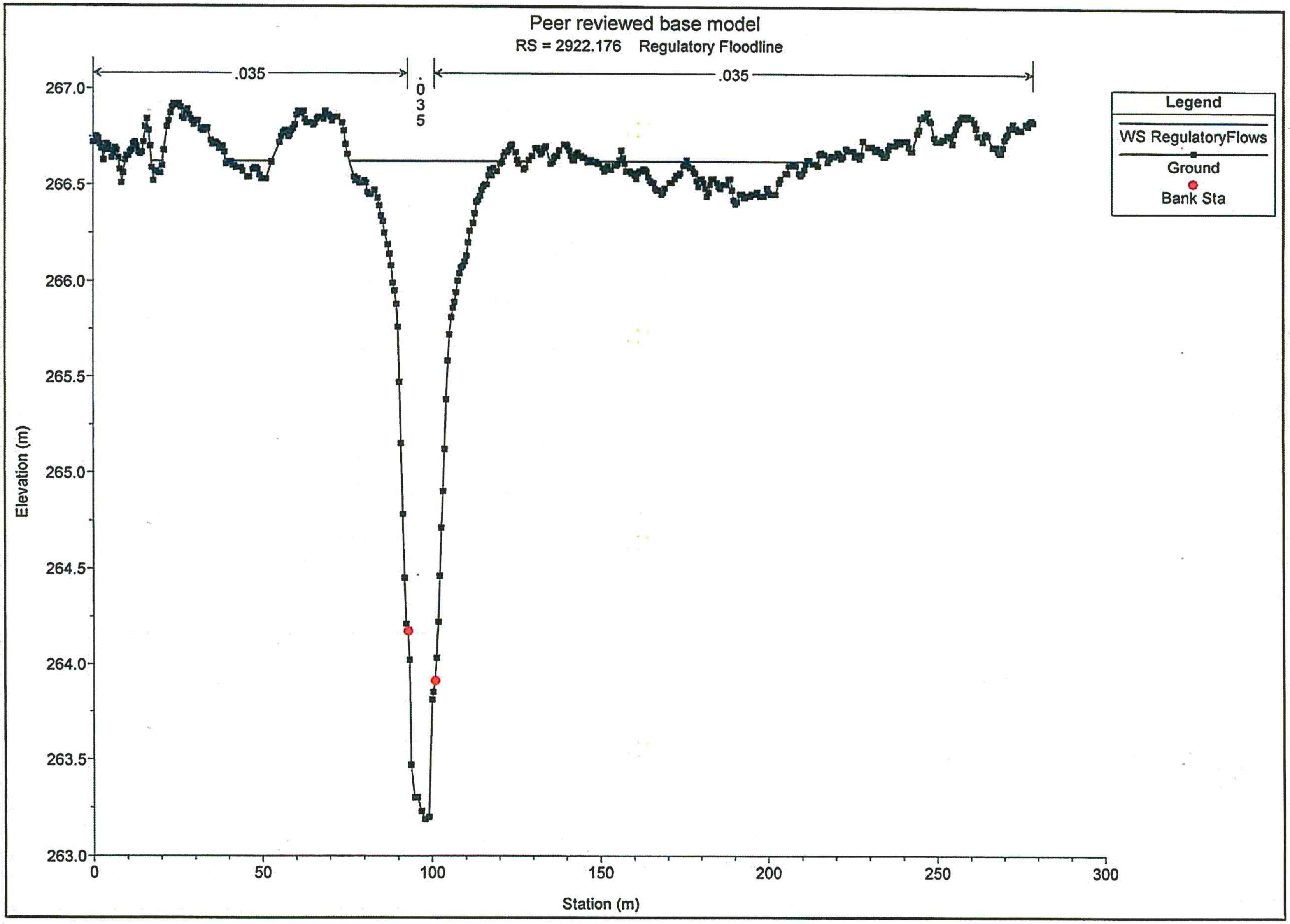


Peer reviewed base model
RS = 3000.11 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
0
100
200
300
400
500
600
Station (m)

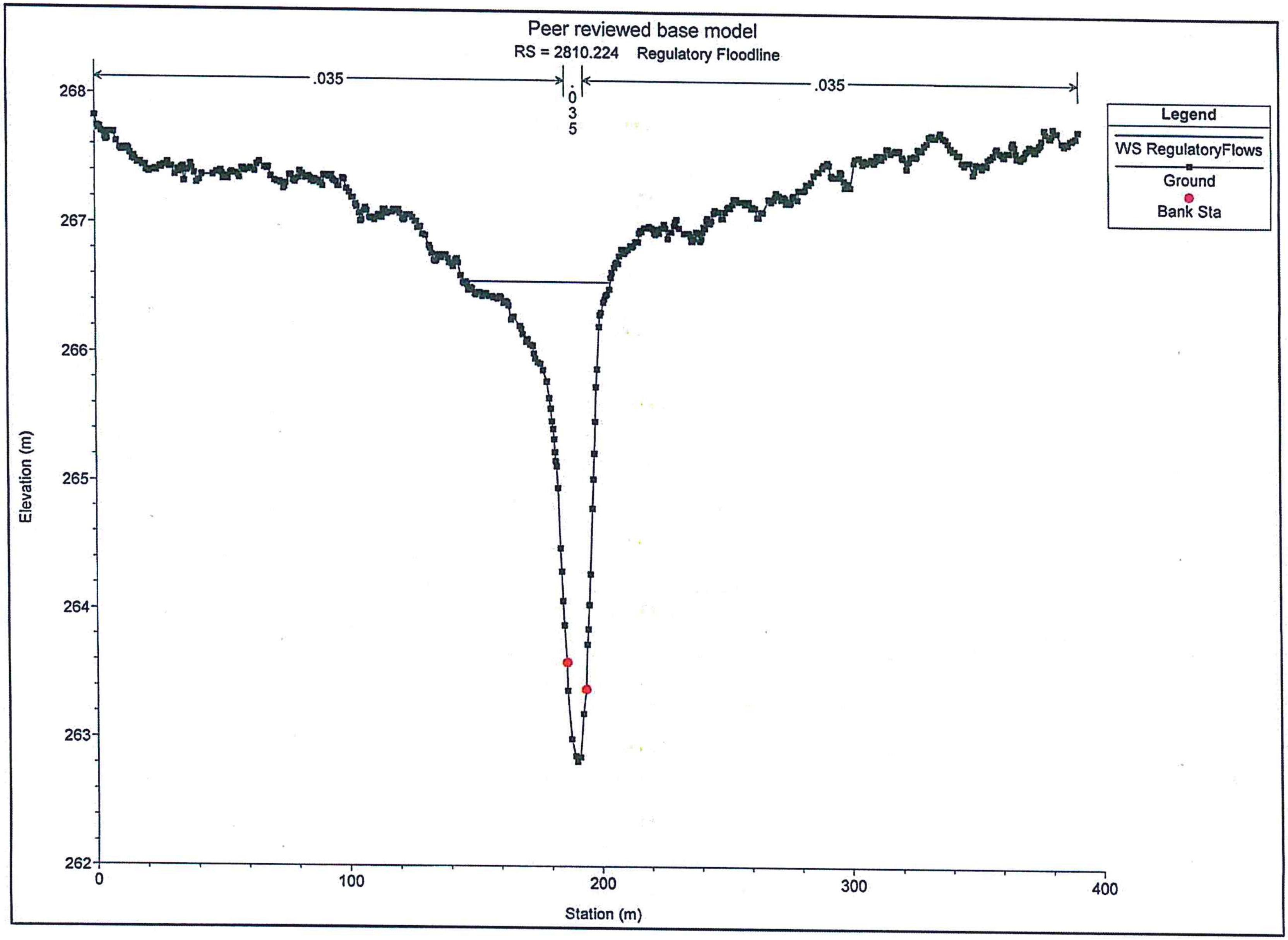
Peer reviewed base model

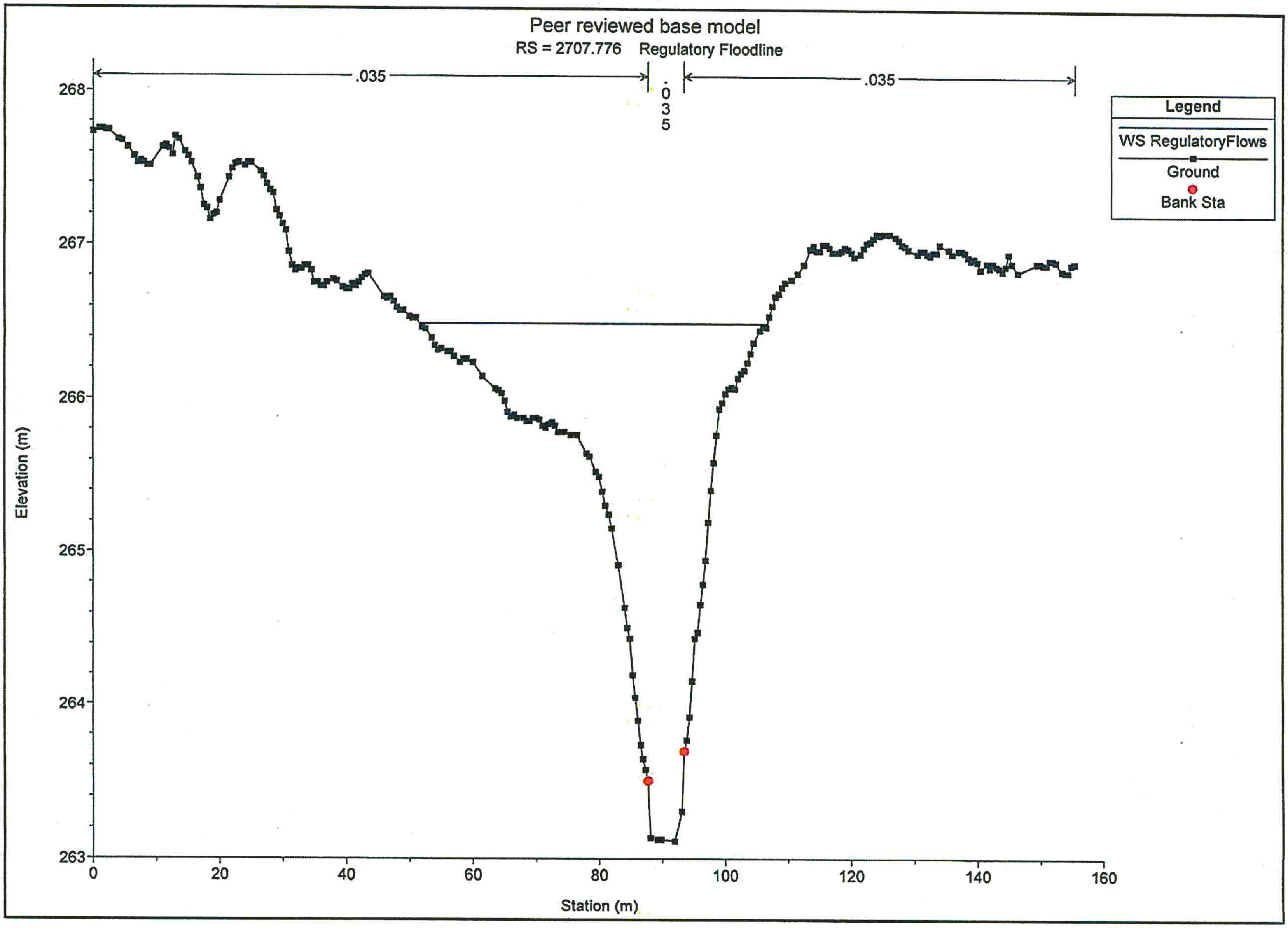
RS = 2986.996 Regulatory Floodline

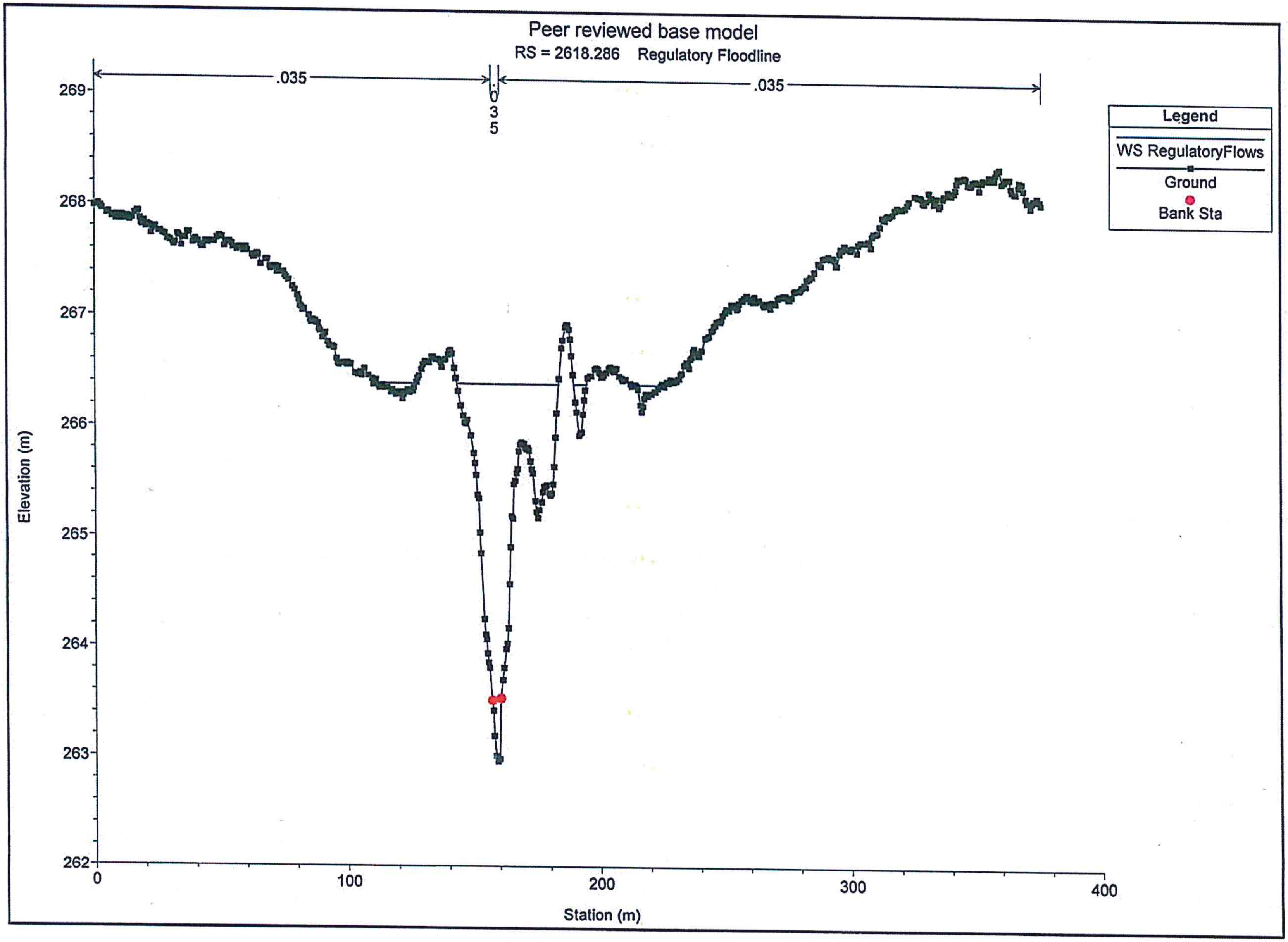




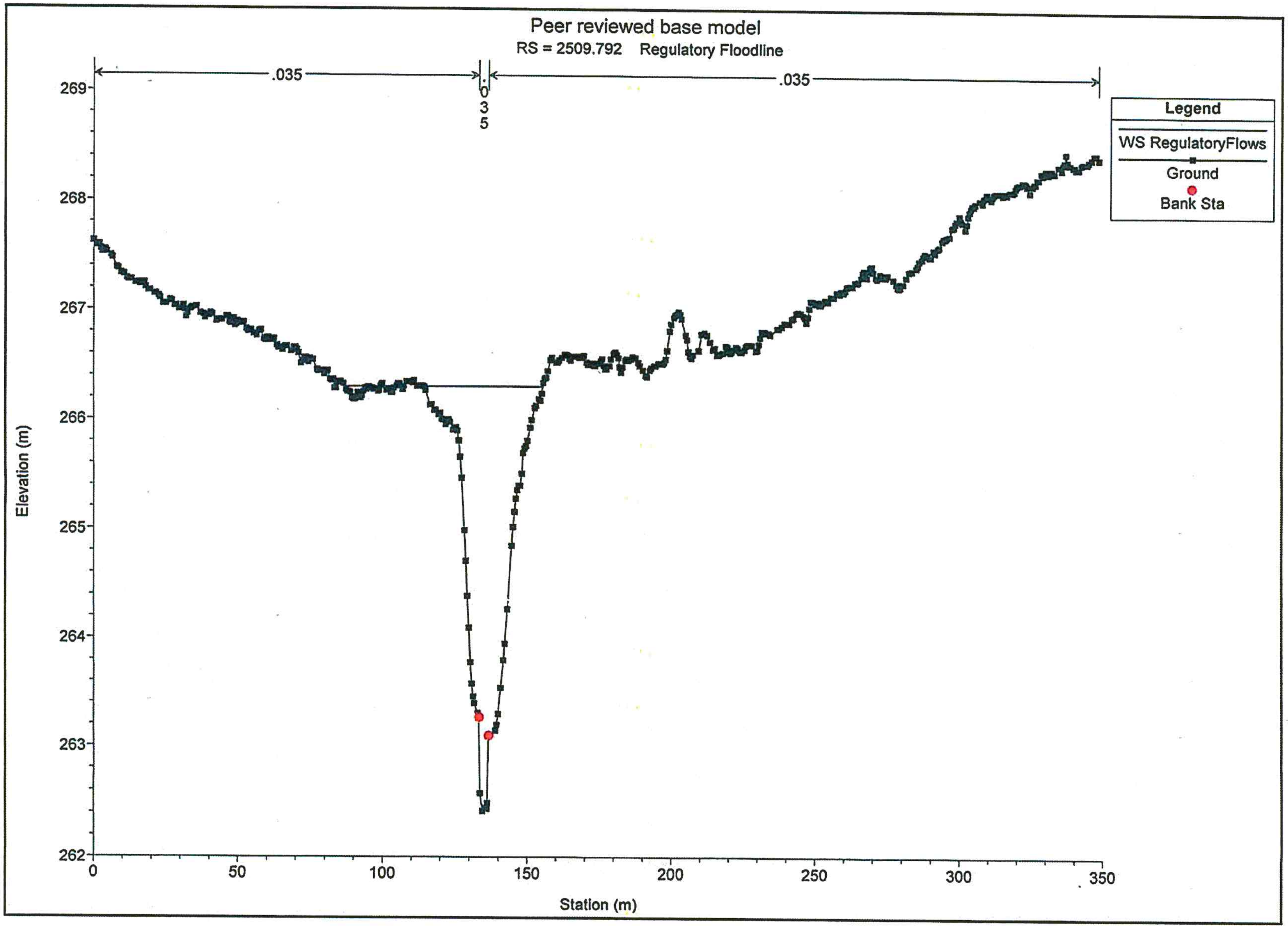
Peer reviewed base model
RS = 2922.176 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
267.0
266.5
266.0
265.5
265.0
264.5
264.0
263.5
263.0
Elevation (m)
0
50
100
150
200
250
300
Station (m)

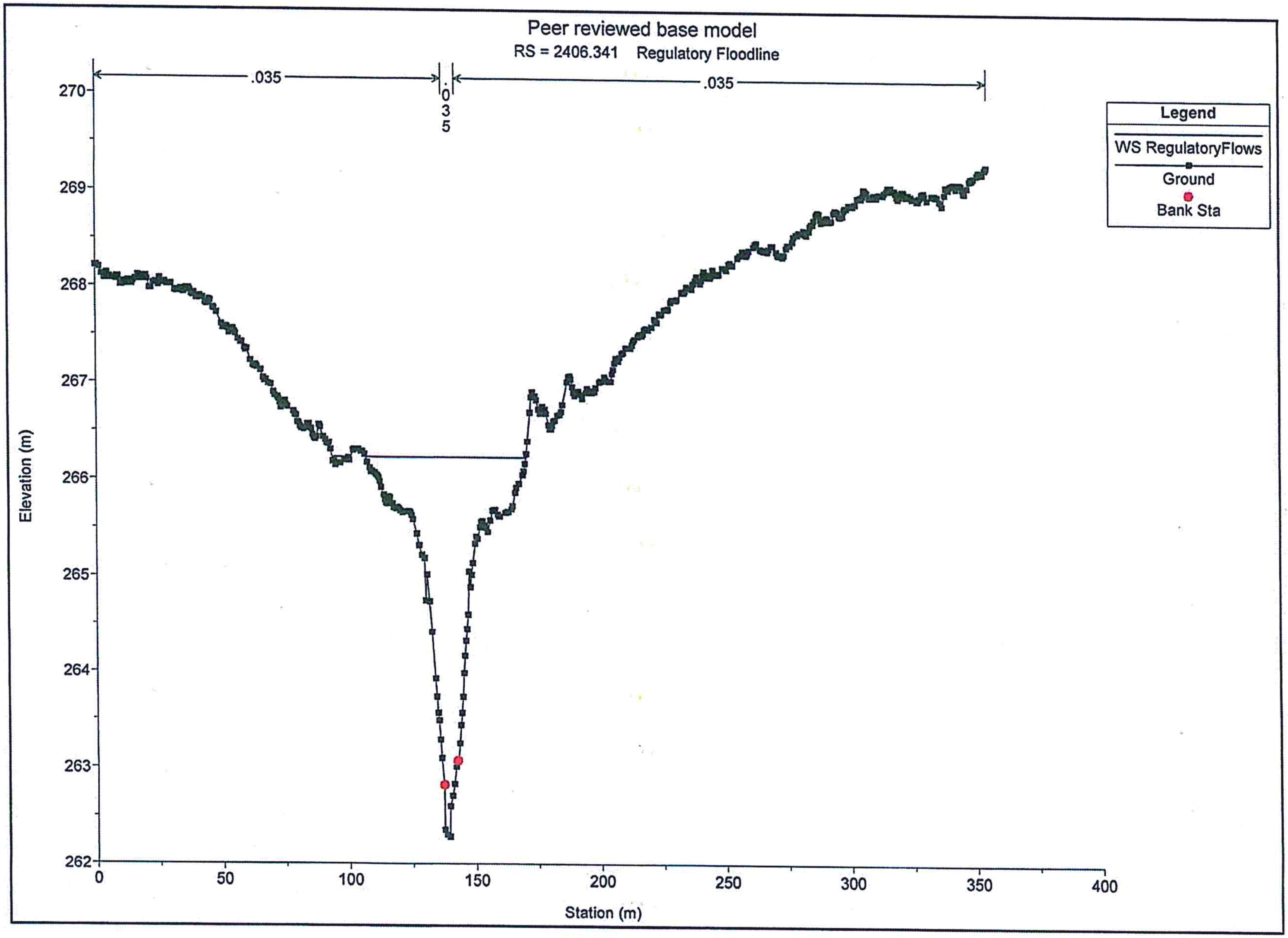

Peer reviewed base model
RS = 2810.224 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
268
267
266
265
264
263
262
Station (m)
0
100
200
300
400

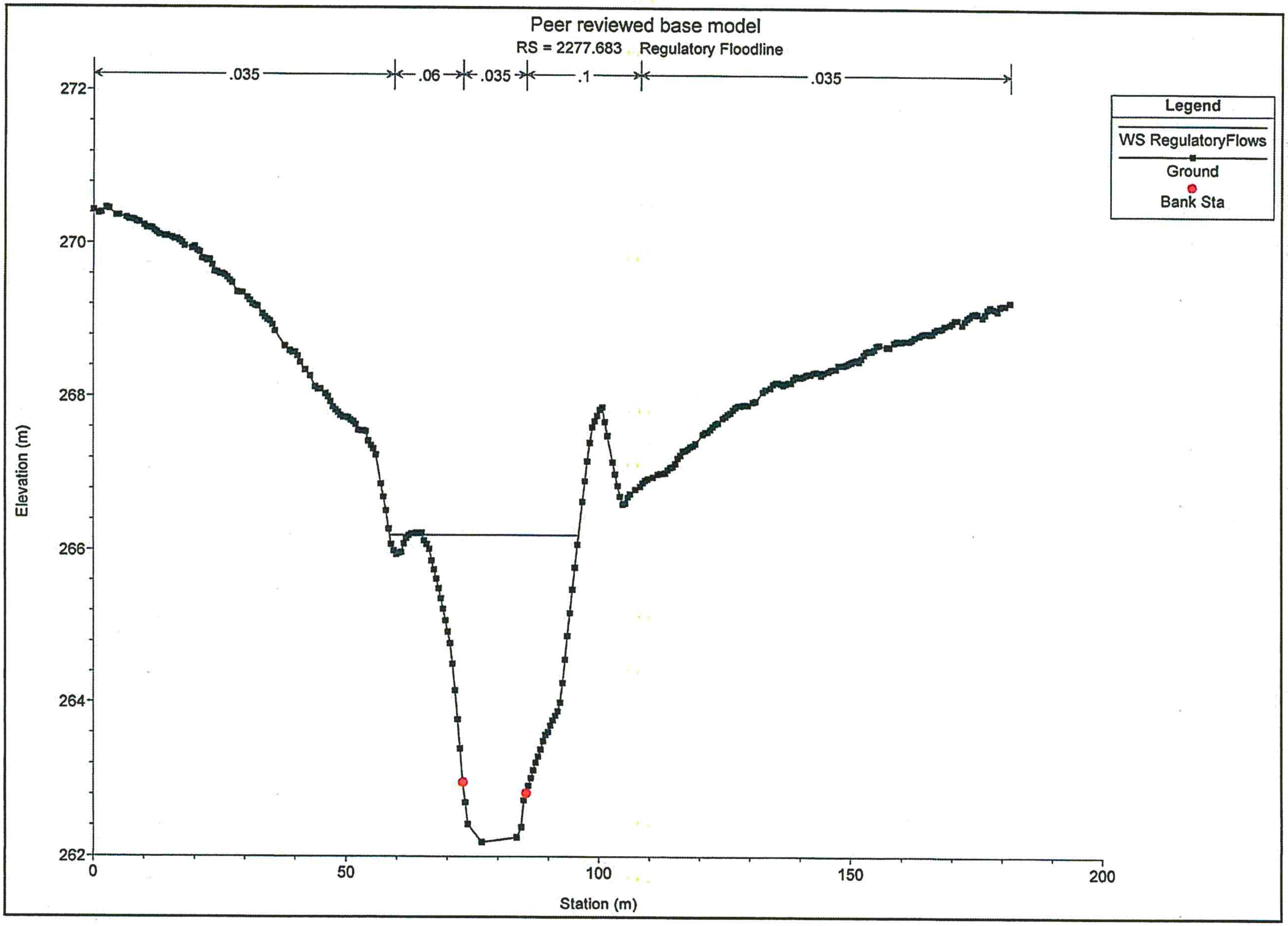

Peer reviewed base model
RS = 2707.776 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
268
267
266
265
264
263
0
20
40
60
80
100
120
140
160

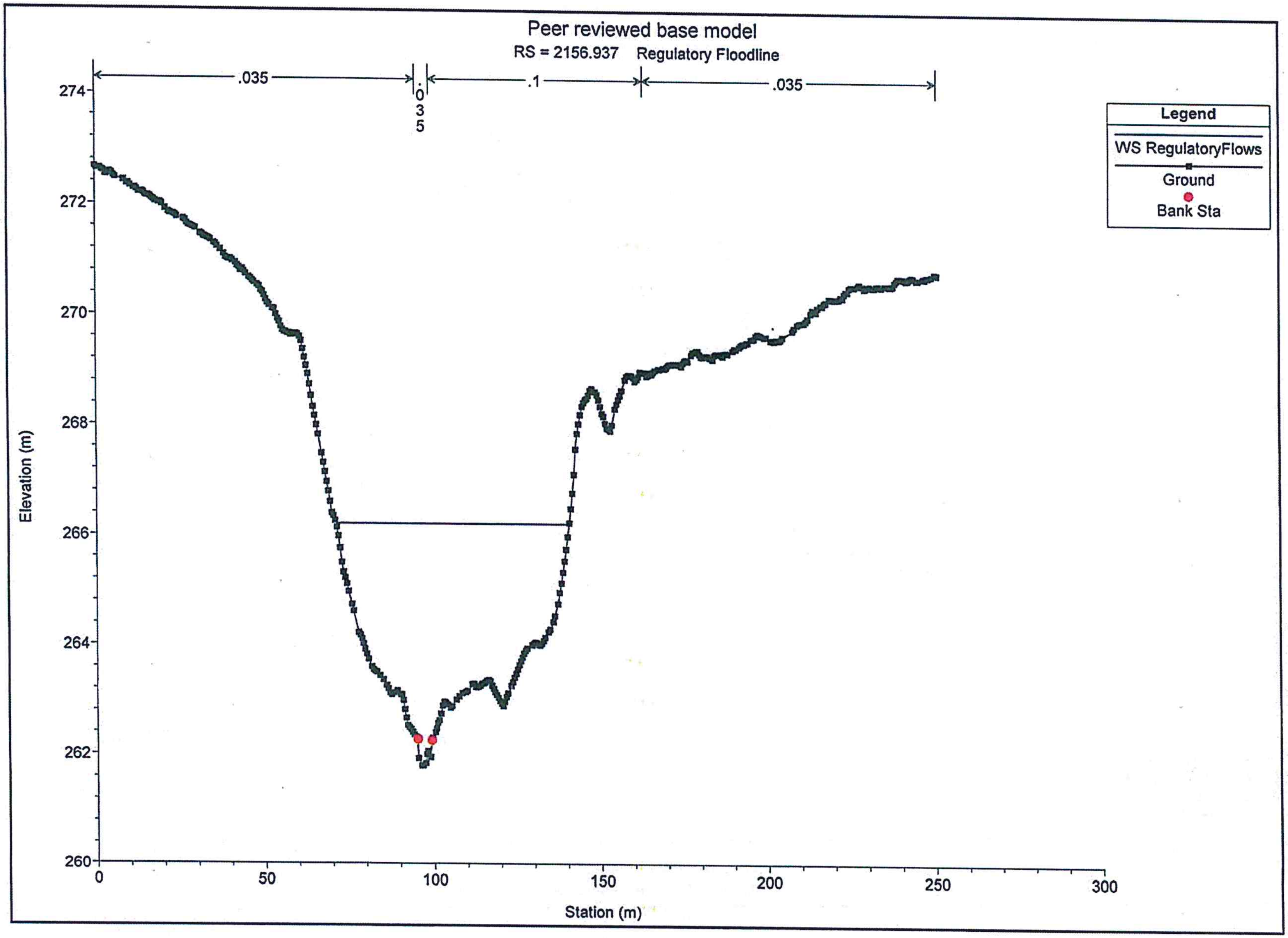


Peer reviewed base model
RS = 2618.286 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
269
268
267
266
265
264
263
262
0
100
200
300
400

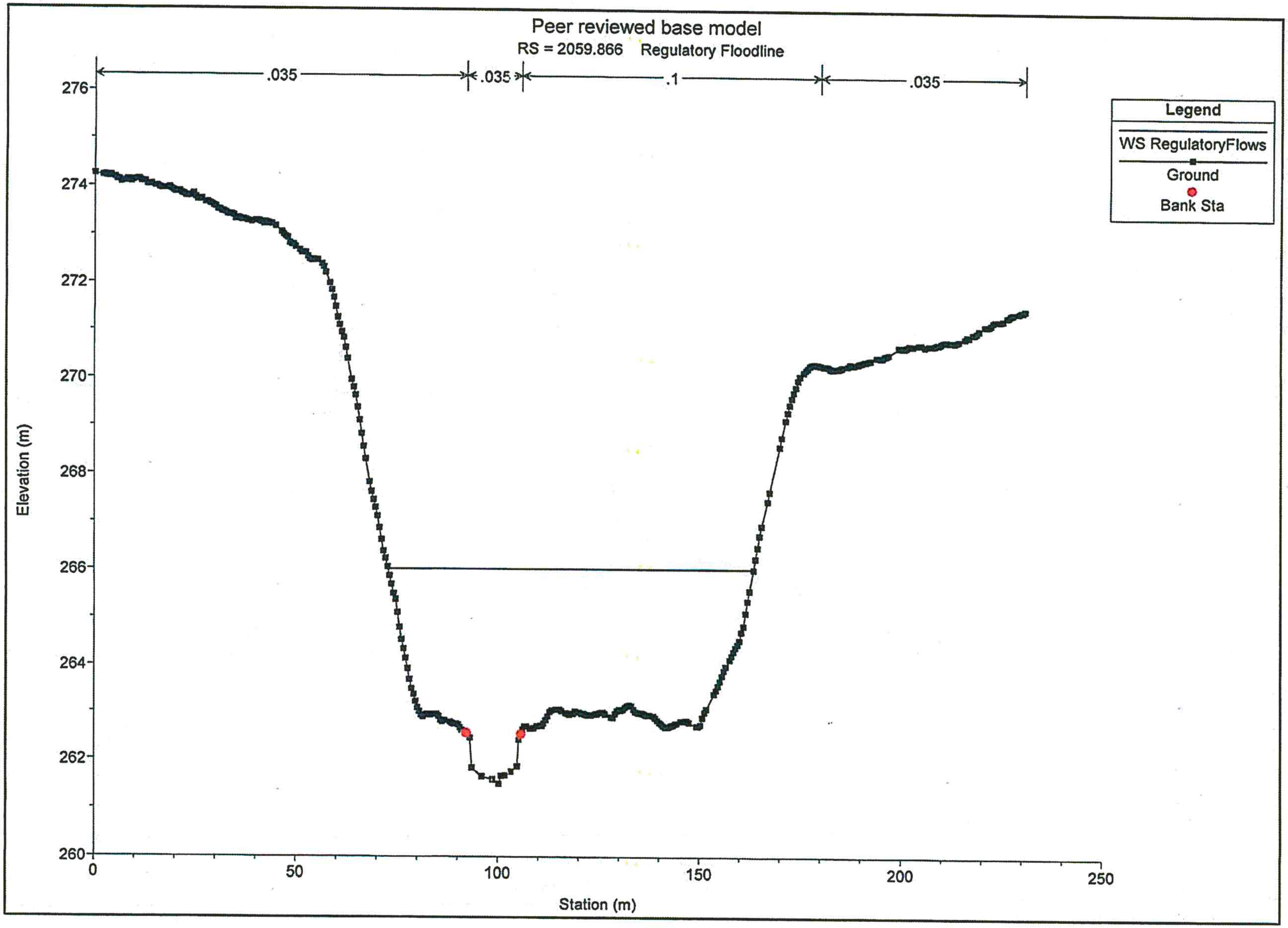

Peer reviewed base model
RS = 2509.792 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
269
268
267
266
265
264
263
262
0
50
100
150
200
250
300
350
Station (m)

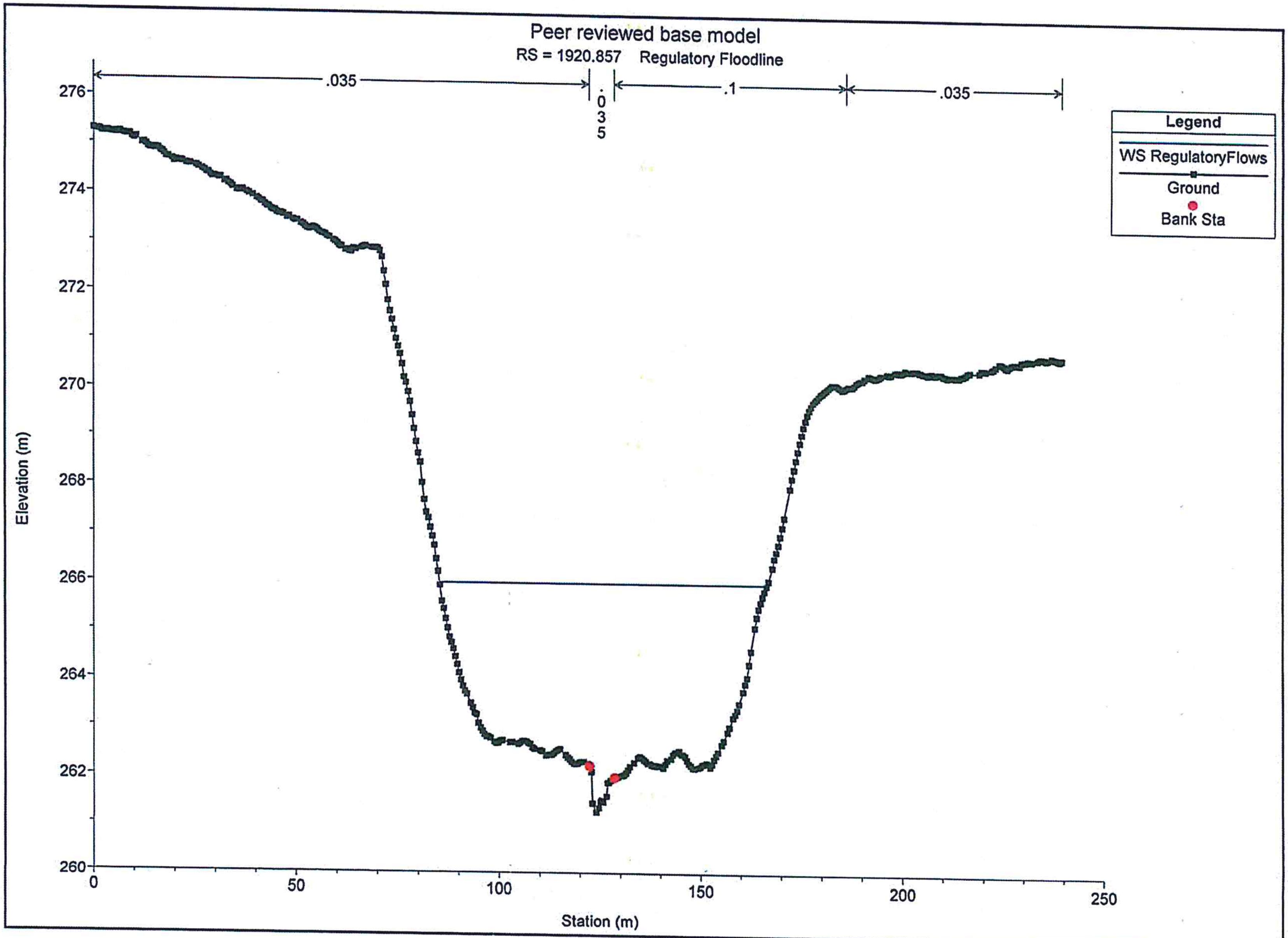

Peer reviewed base model
RS = 2406.341 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
269
268
267
266
265
264
263
262
Station (m)
0
50
100
150
200
250
300
350
400

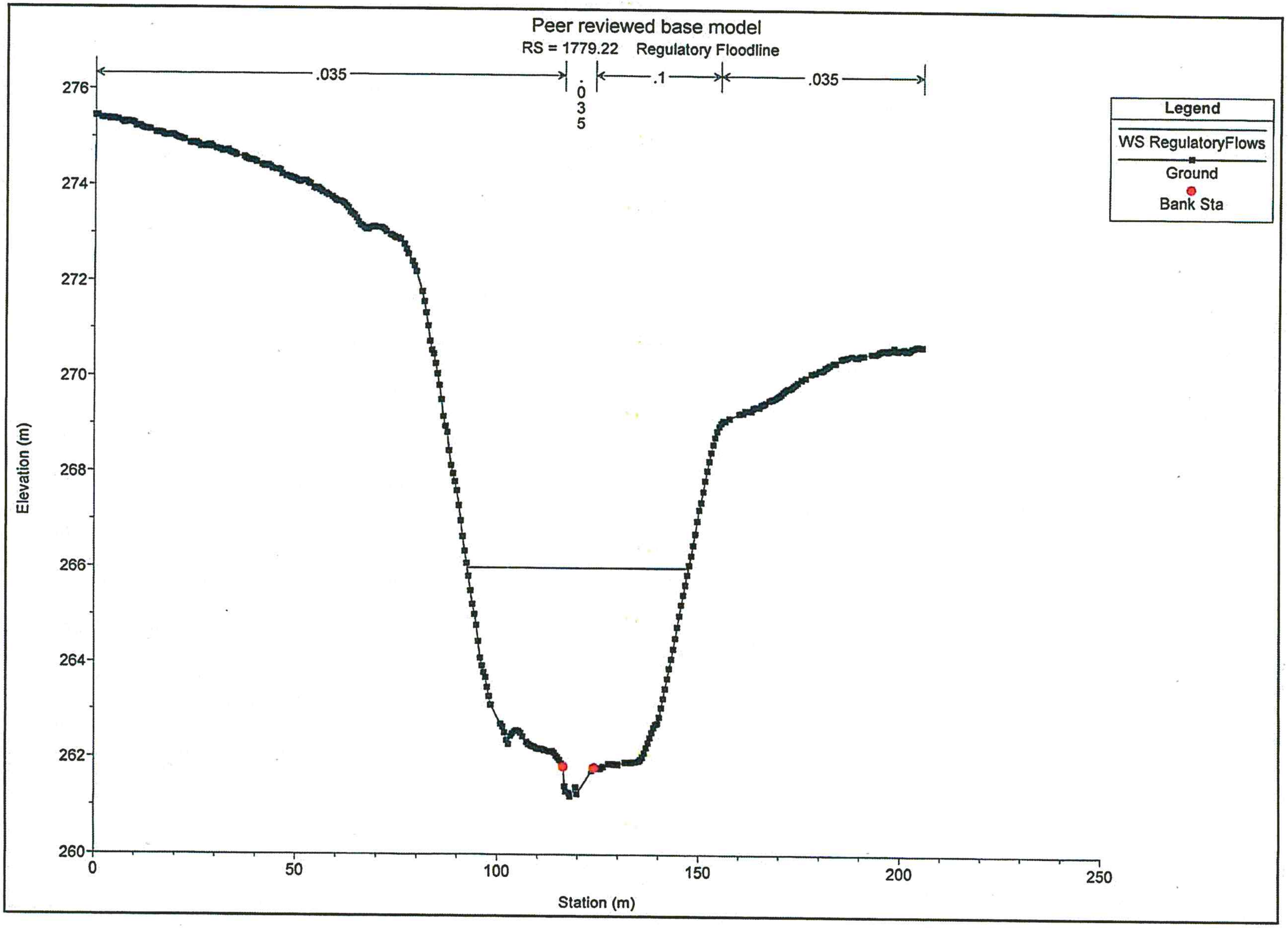

Peer reviewed base model
RS = 2277.683 Regulatory Floodline
.035
.06
.035
.1
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
272
270
268
266
264
262
0
50
100
150
200
Station (m)

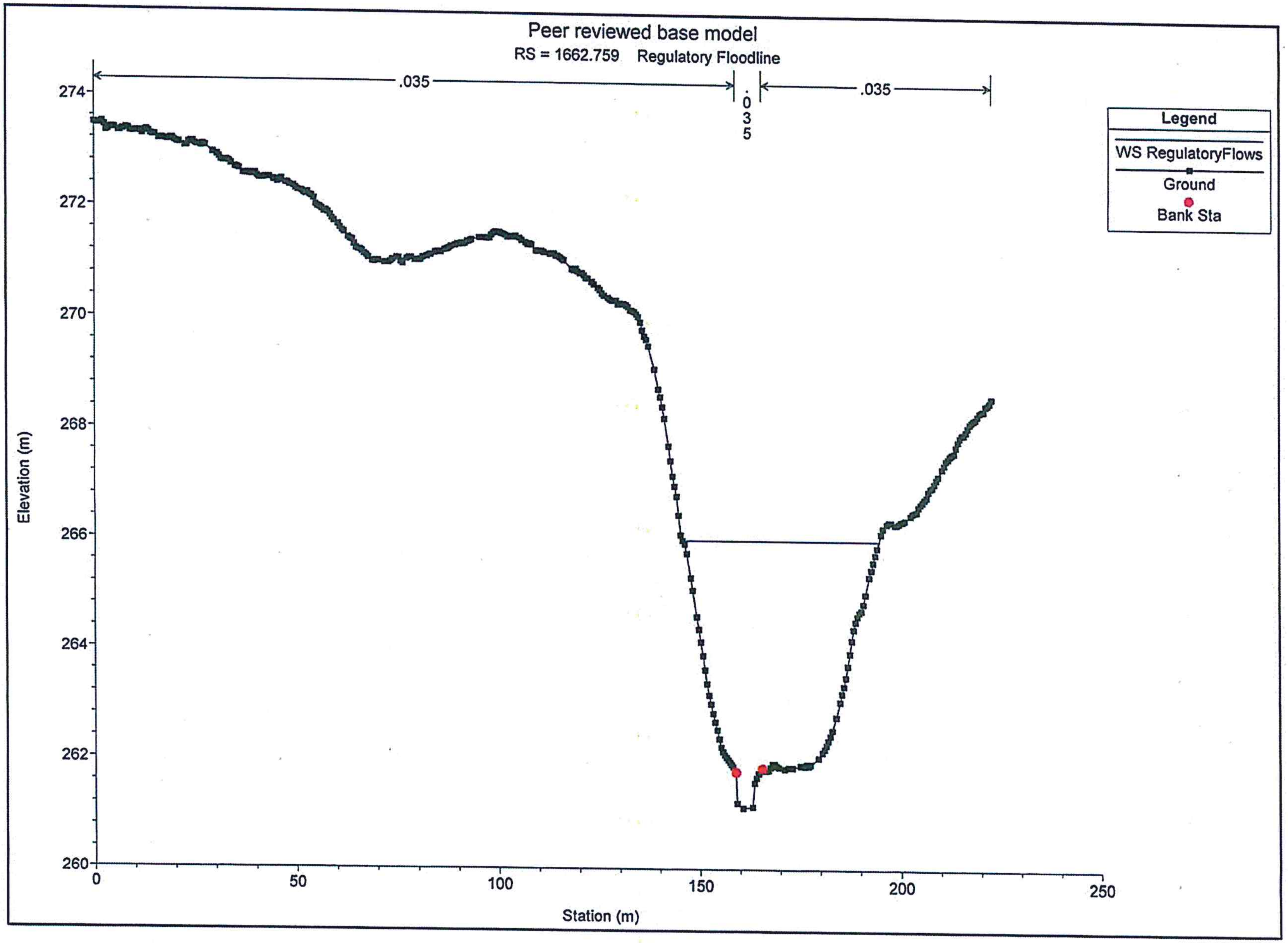


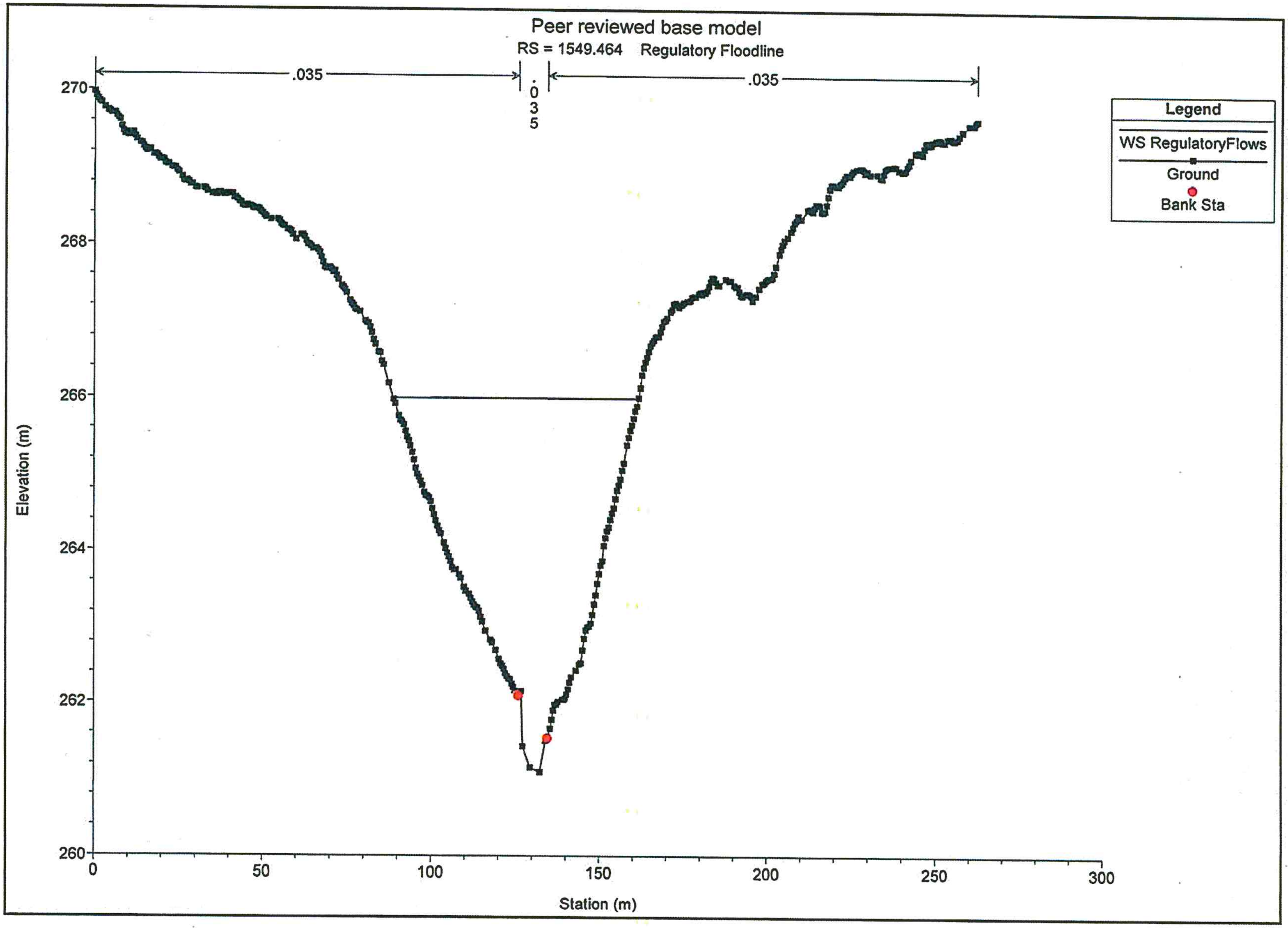
Peer reviewed base model
RS = 2156.937 Regulatory Floodline
.035
.035
.1
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
274
272
270
268
266
264
262
260
0
50
100
150
200
250
300
Station (m)

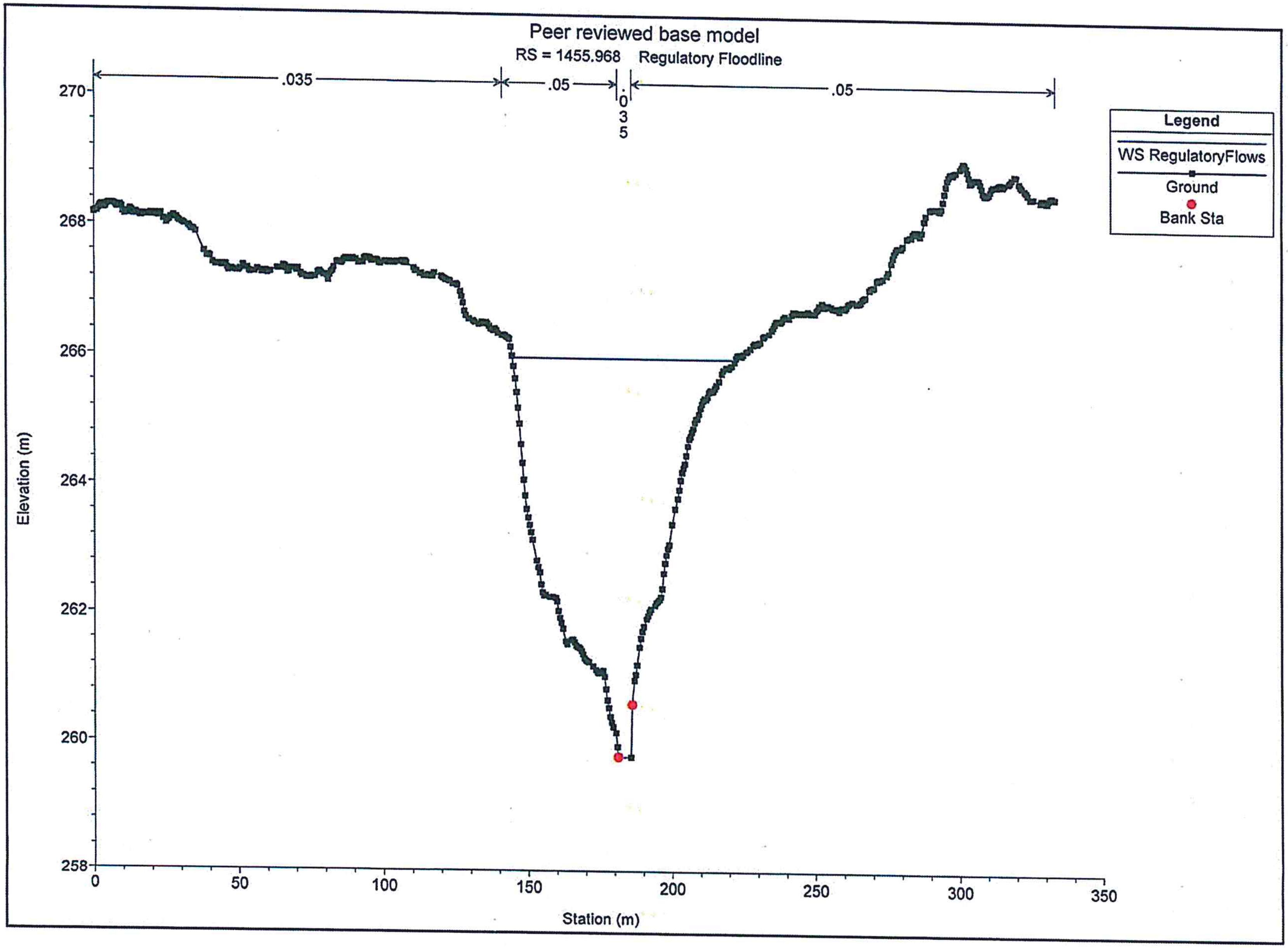

Peer reviewed base model
RS = 2059.866 Regulatory Floodline
.035
.035
.1
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
264
262
260
0
50
100
150
200
250
Station (m)

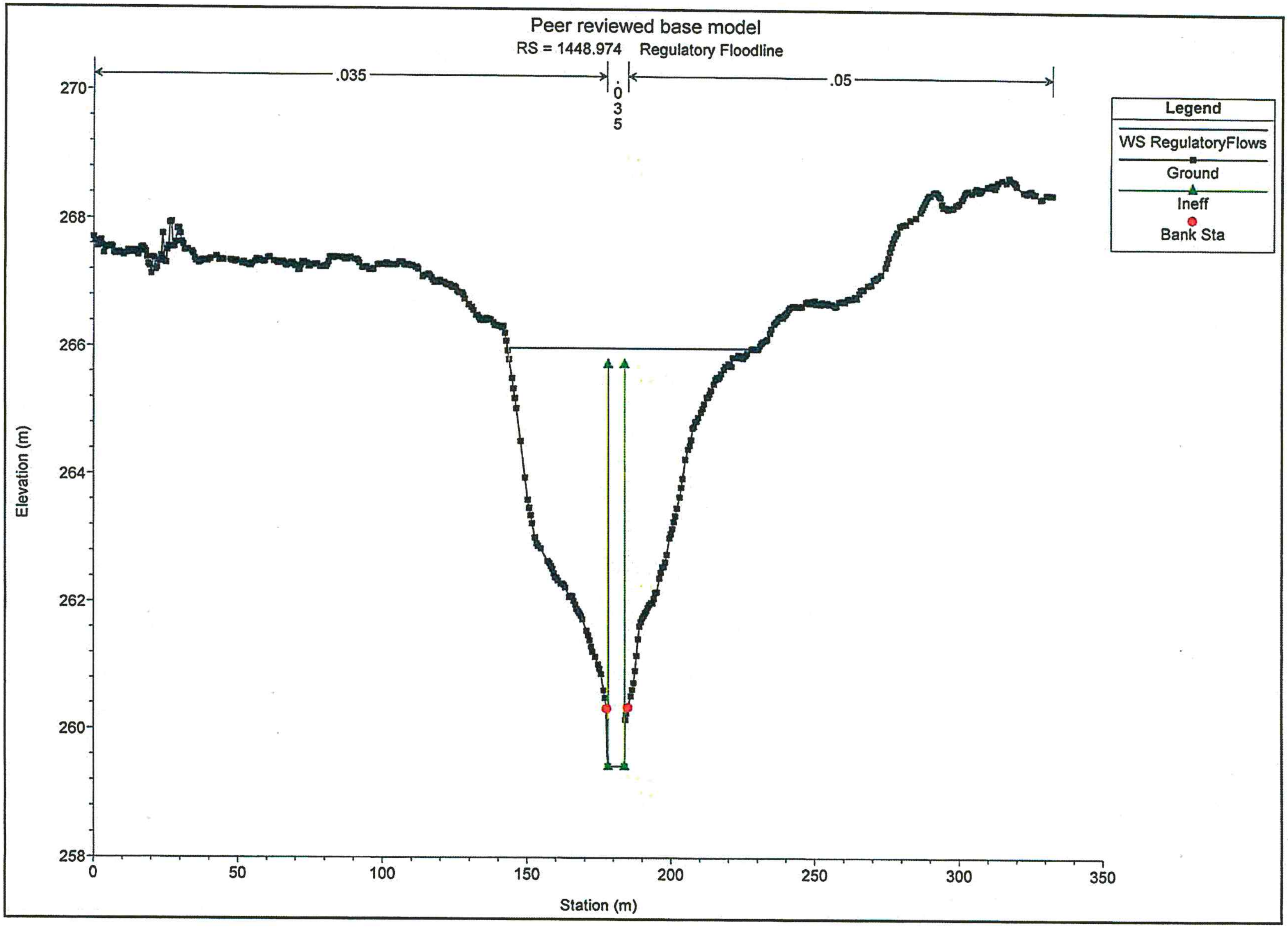

Peer reviewed base model
RS = 1920.857 Regulatory Floodline
.035
.035
.1
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
264
262
260
0
50
100
150
200
250
Station (m)


Peer reviewed base model
RS = 1779.22 Regulatory Floodline
.035
.035
.1
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
276
274
272
270
268
266
264
262
260
0
50
100
150
200
250
Station (m)


Peer reviewed base model
RS = 1662.759 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
274
272
270
268
266
264
262
260
0
50
100
150
200
250
Station (m)

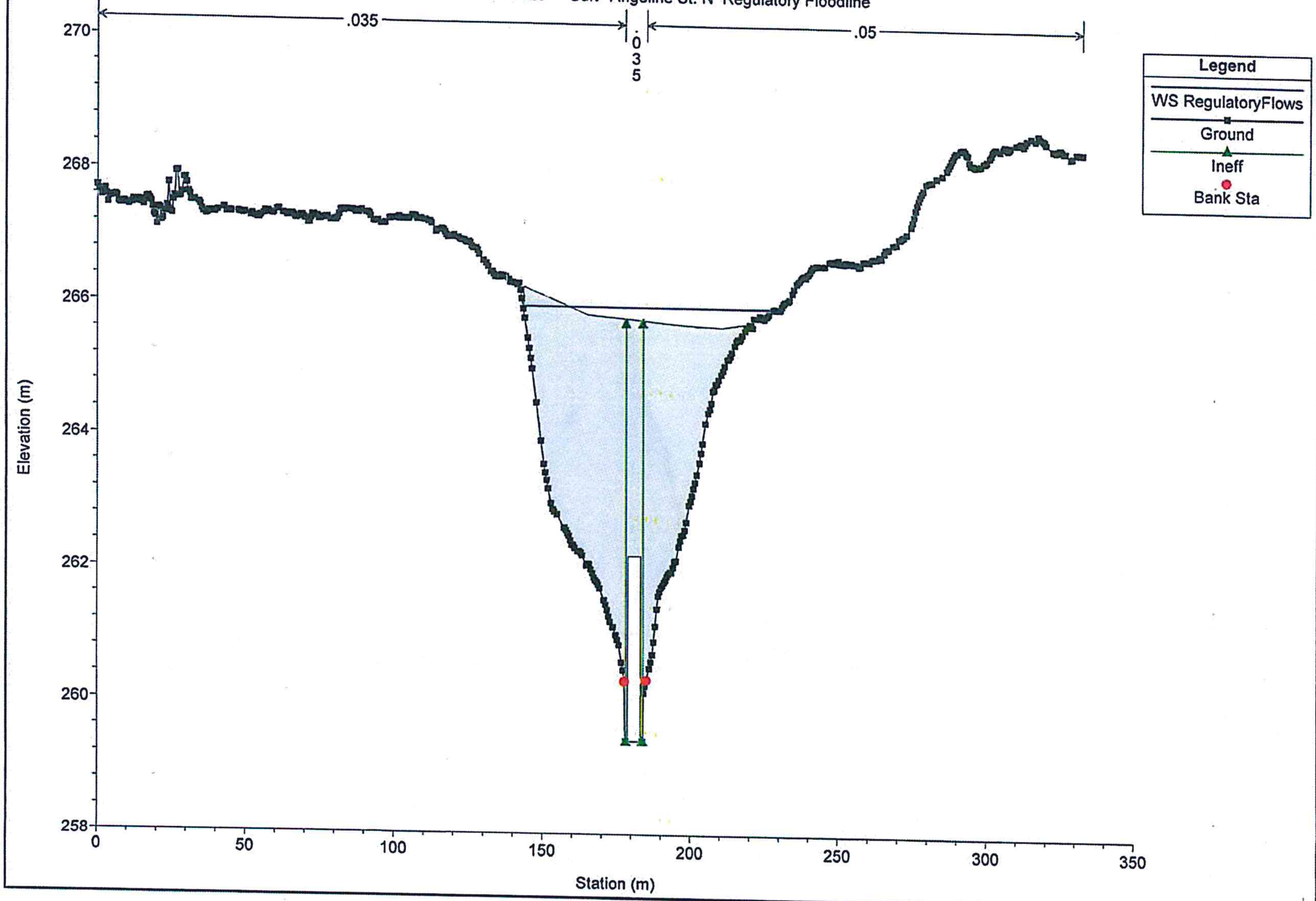

Peer reviewed base model
RS = 1549.464 Regulatory Floodline
.035
.035
.035
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
268
266
264
262
260
0
50
100
150
200
250
300
Station (m)

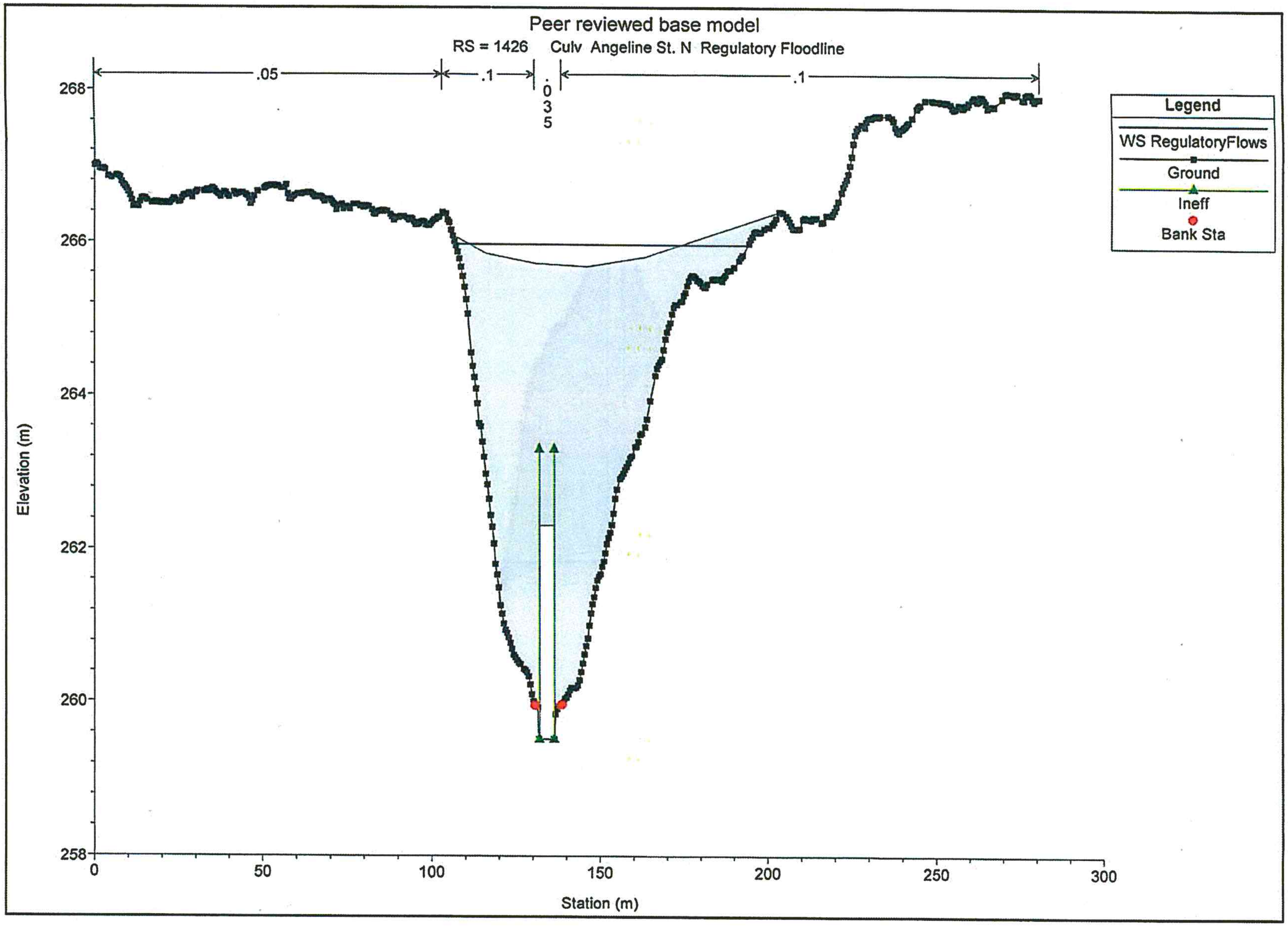

Peer reviewed base model
RS = 1455.968 Regulatory Floodline
.035
.05
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
268
266
264
262
260
258
Station (m)
0
50
100
150
200
250
300
350


Peer reviewed base model
RS = 1448.974 Regulatory Floodline
.035
.035
.05
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
270
268
266
264
262
260
258
0
50
100
150
200
250
300
350
Station (m)

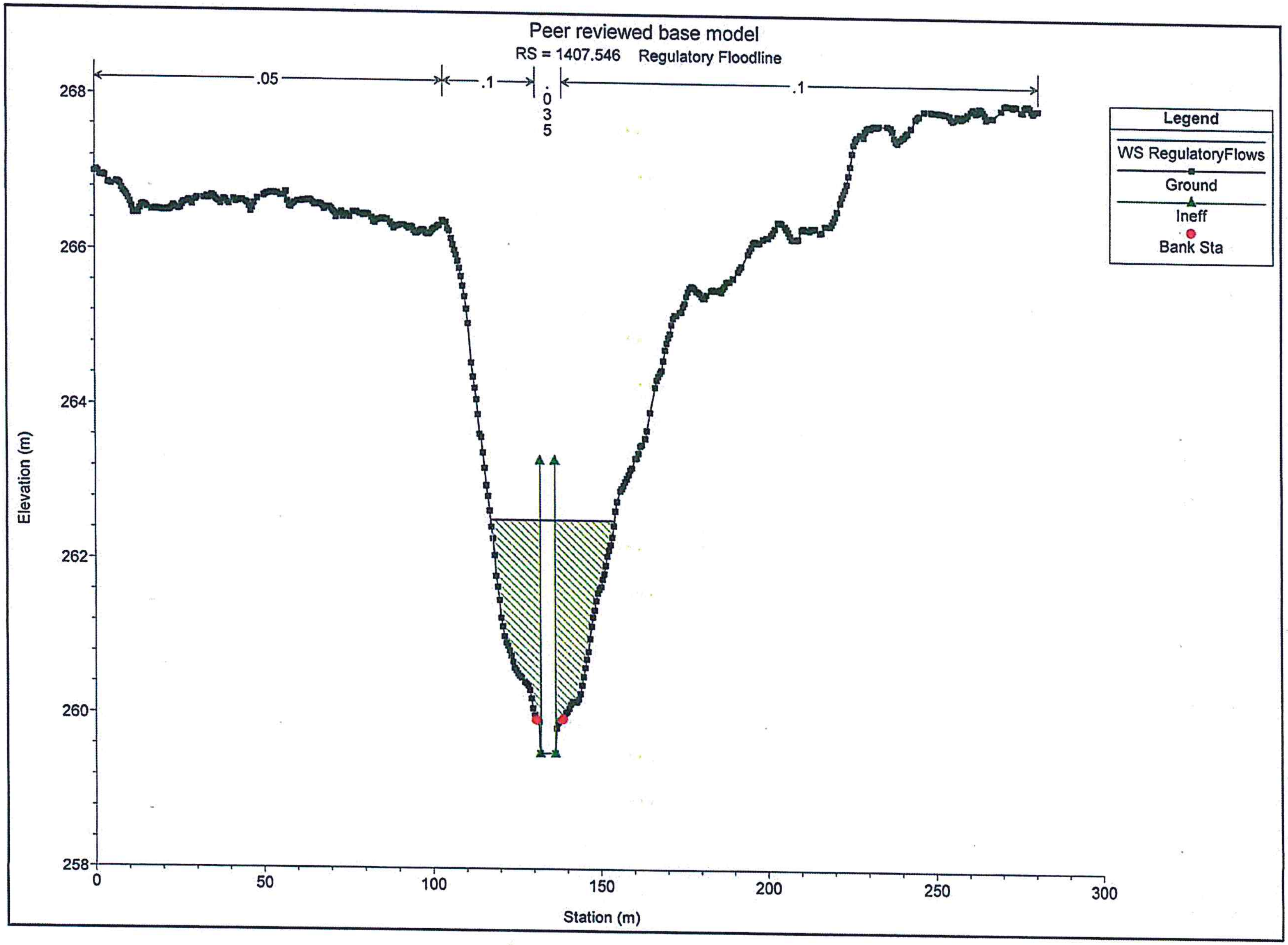
Peer reviewed base model

RS = 1426 Culv Angeline St. N Regulatory Floodline

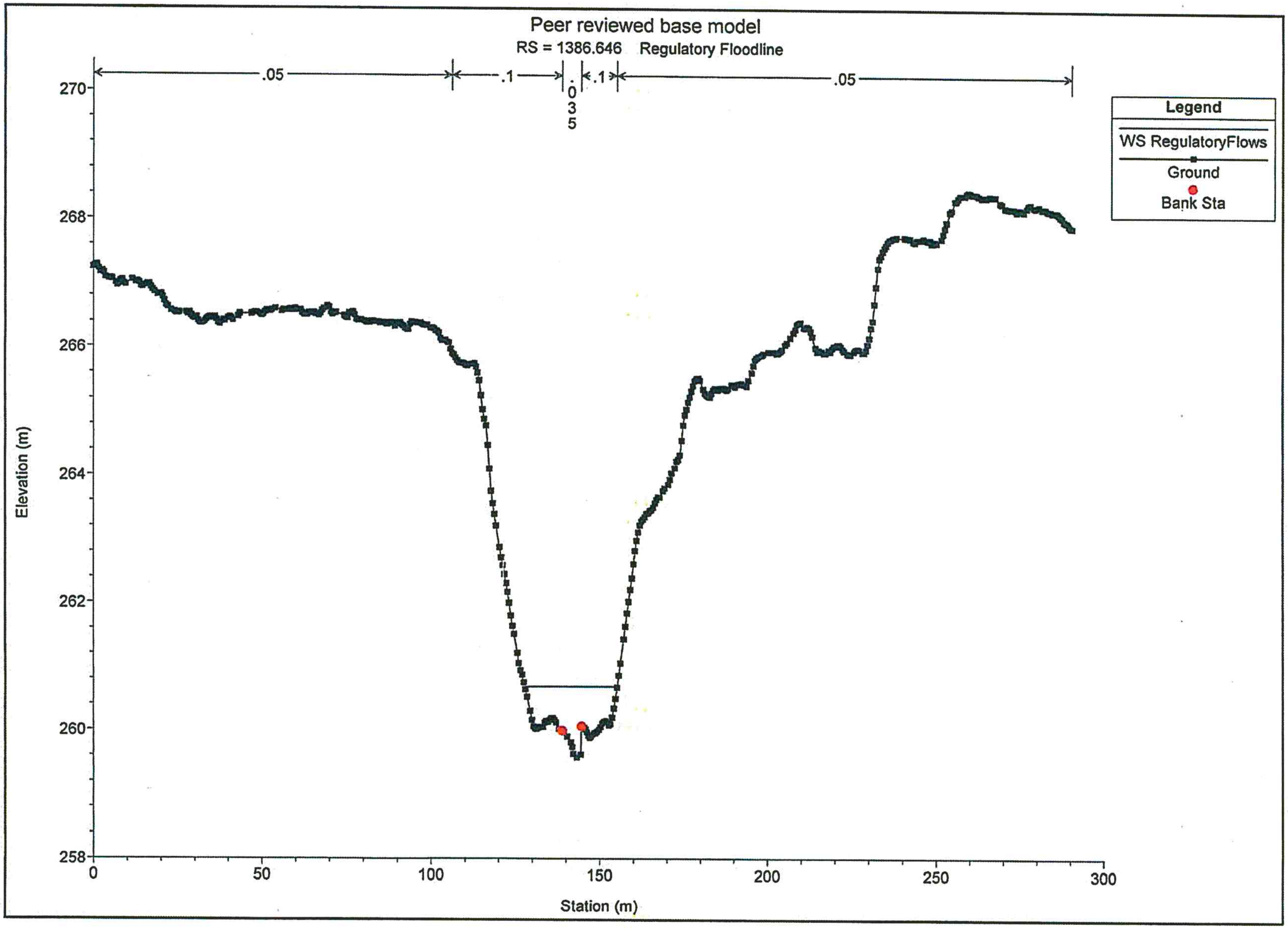


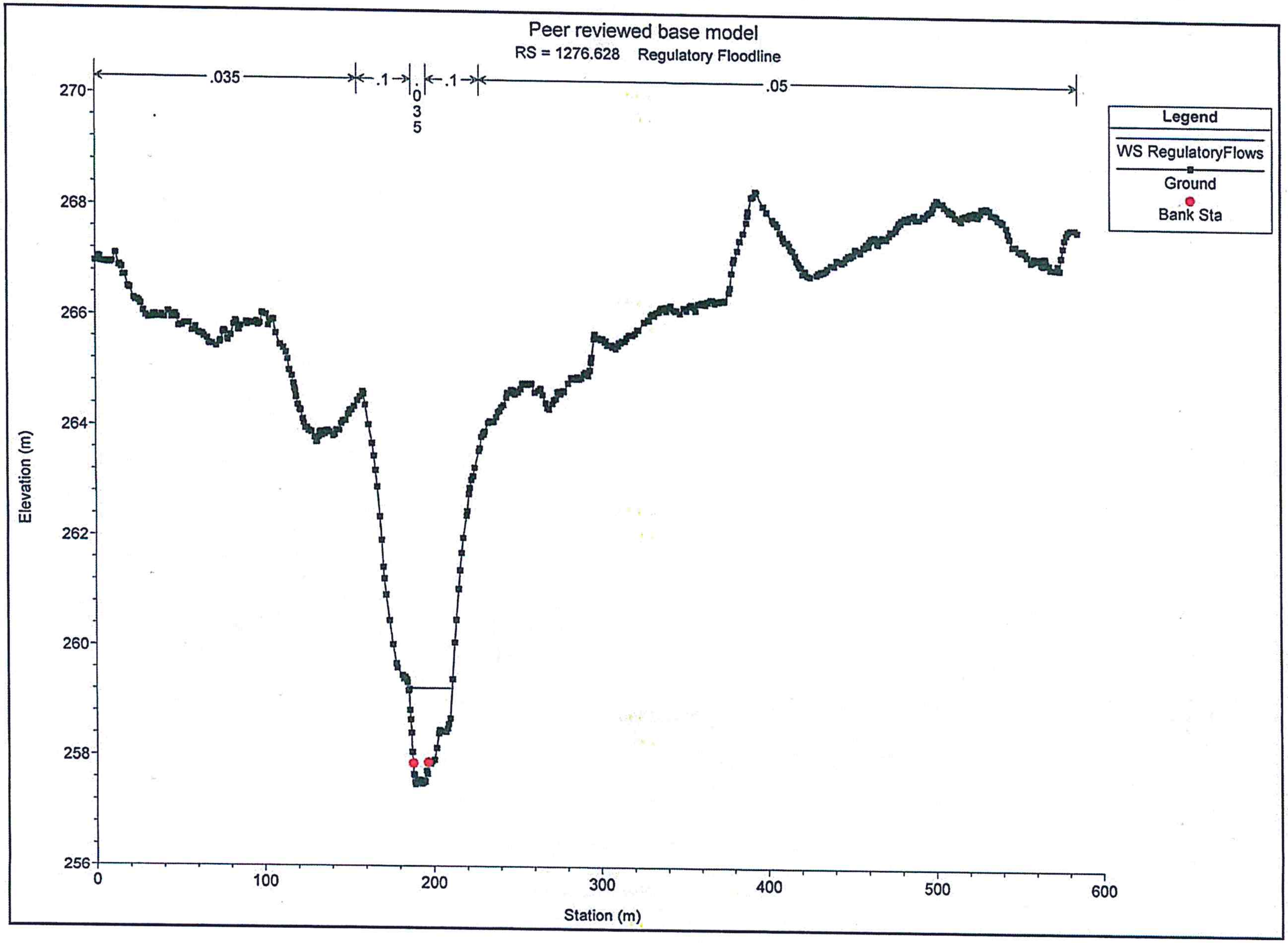


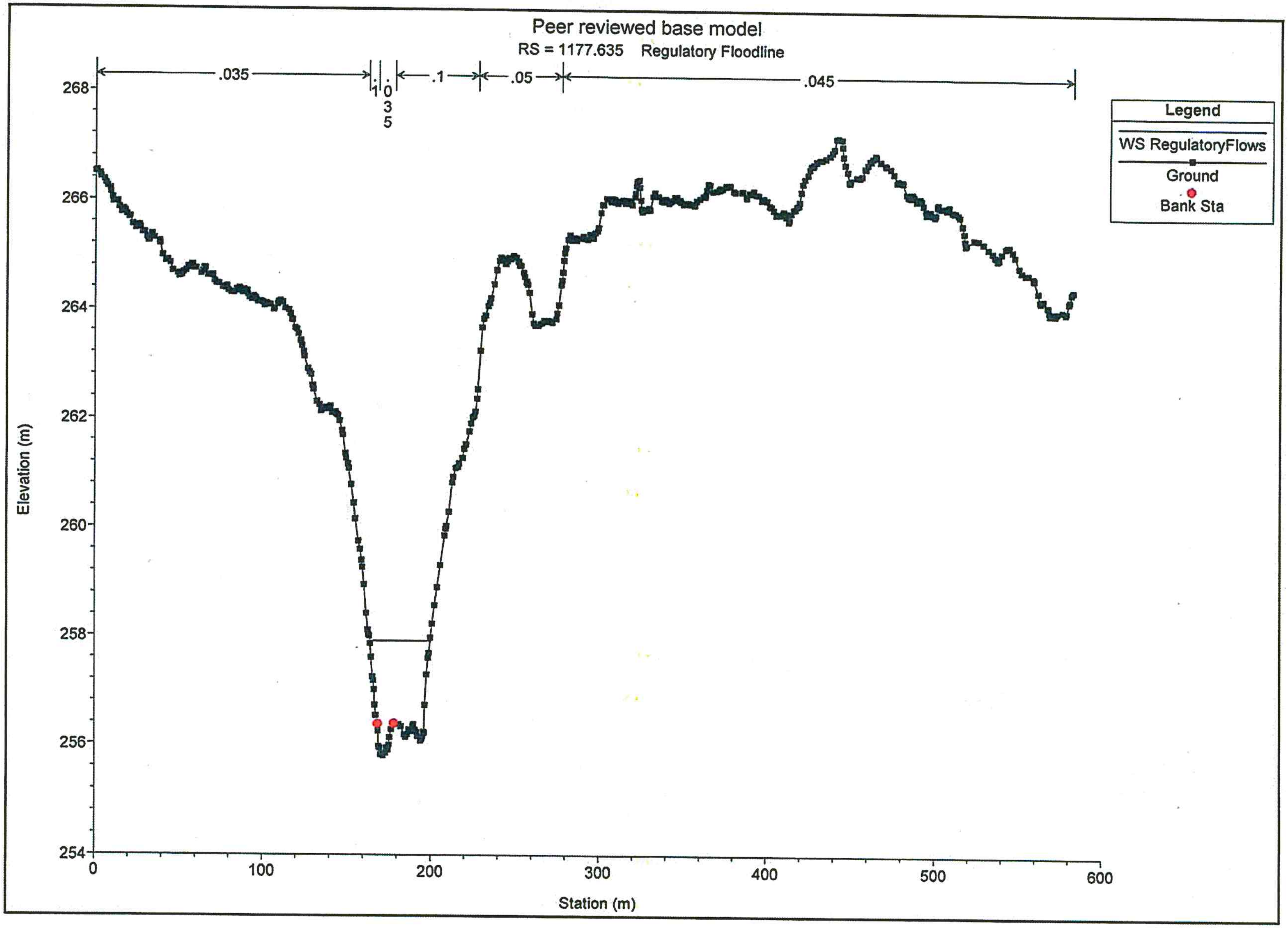
Peer reviewed base model
RS = 1426 Culv Angeline St. N Regulatory Floodline
.05
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
268
266
264
262
260
258
0
50
100
150
200
250
300
Station (m)

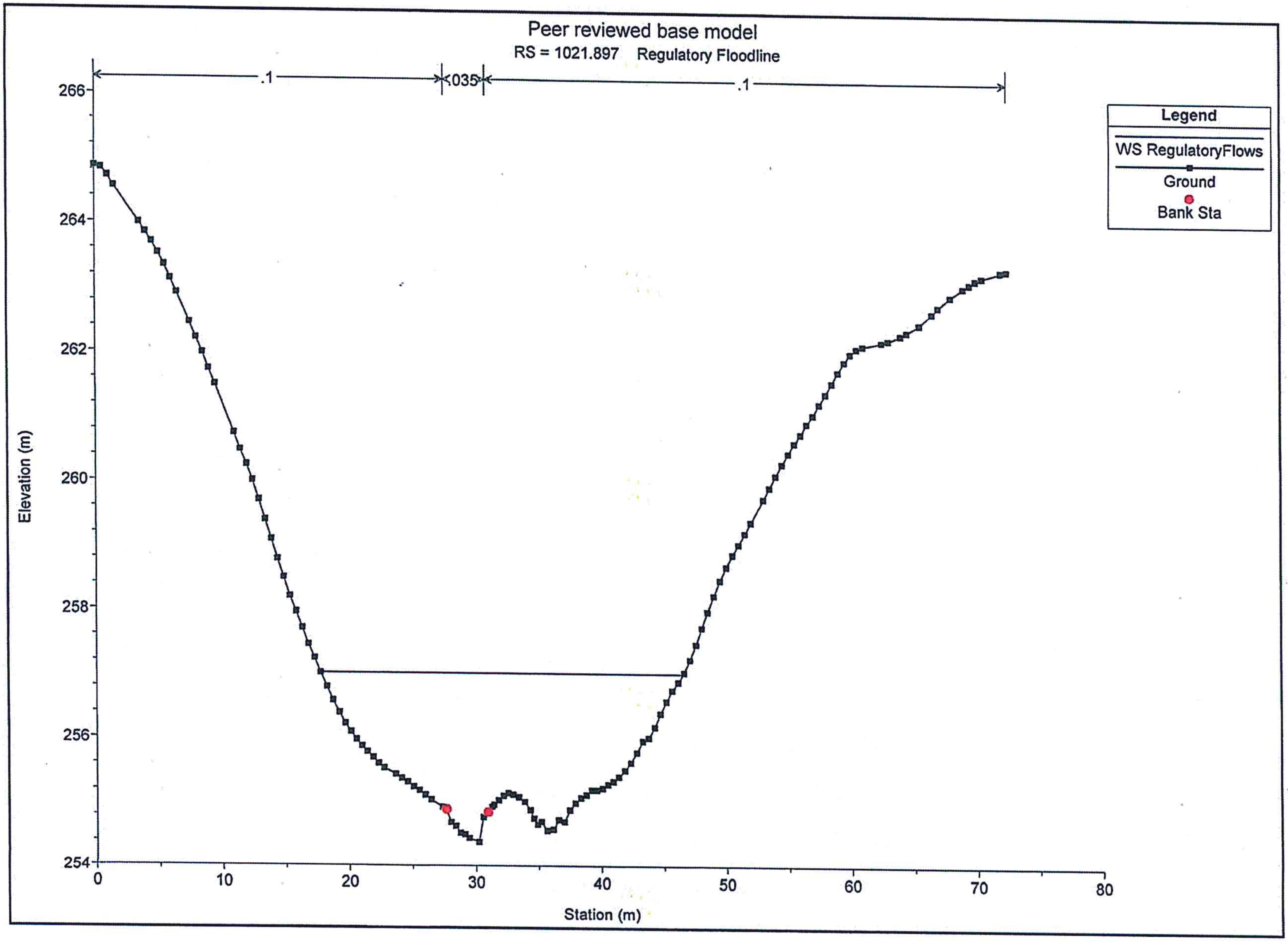


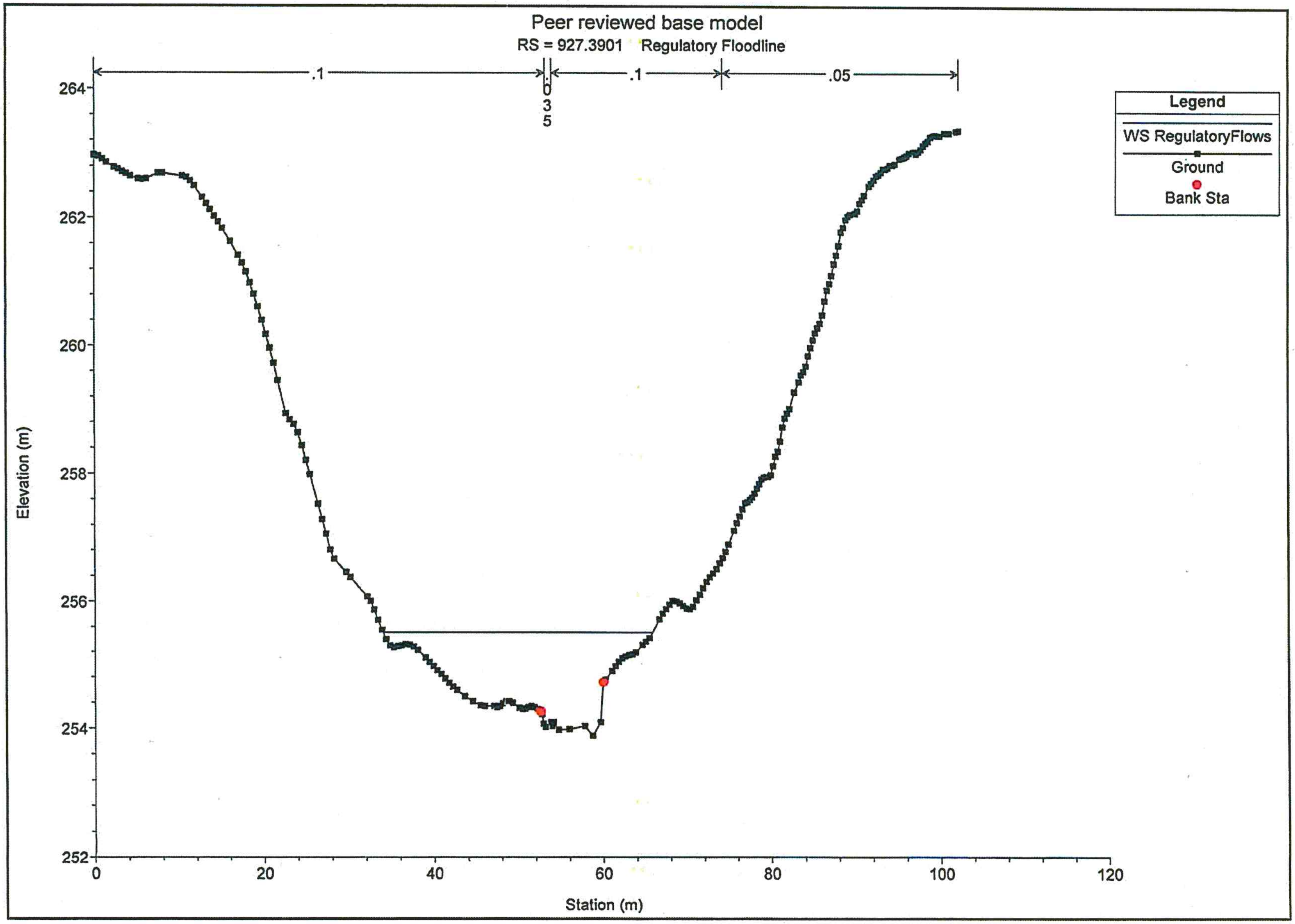
Peer reviewed base model
RS = 1407.546 Regulatory Floodline
.05
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
268
266
264
262
260
258
Elevation (m)
0
50
100
150
200
250
300
Station (m)

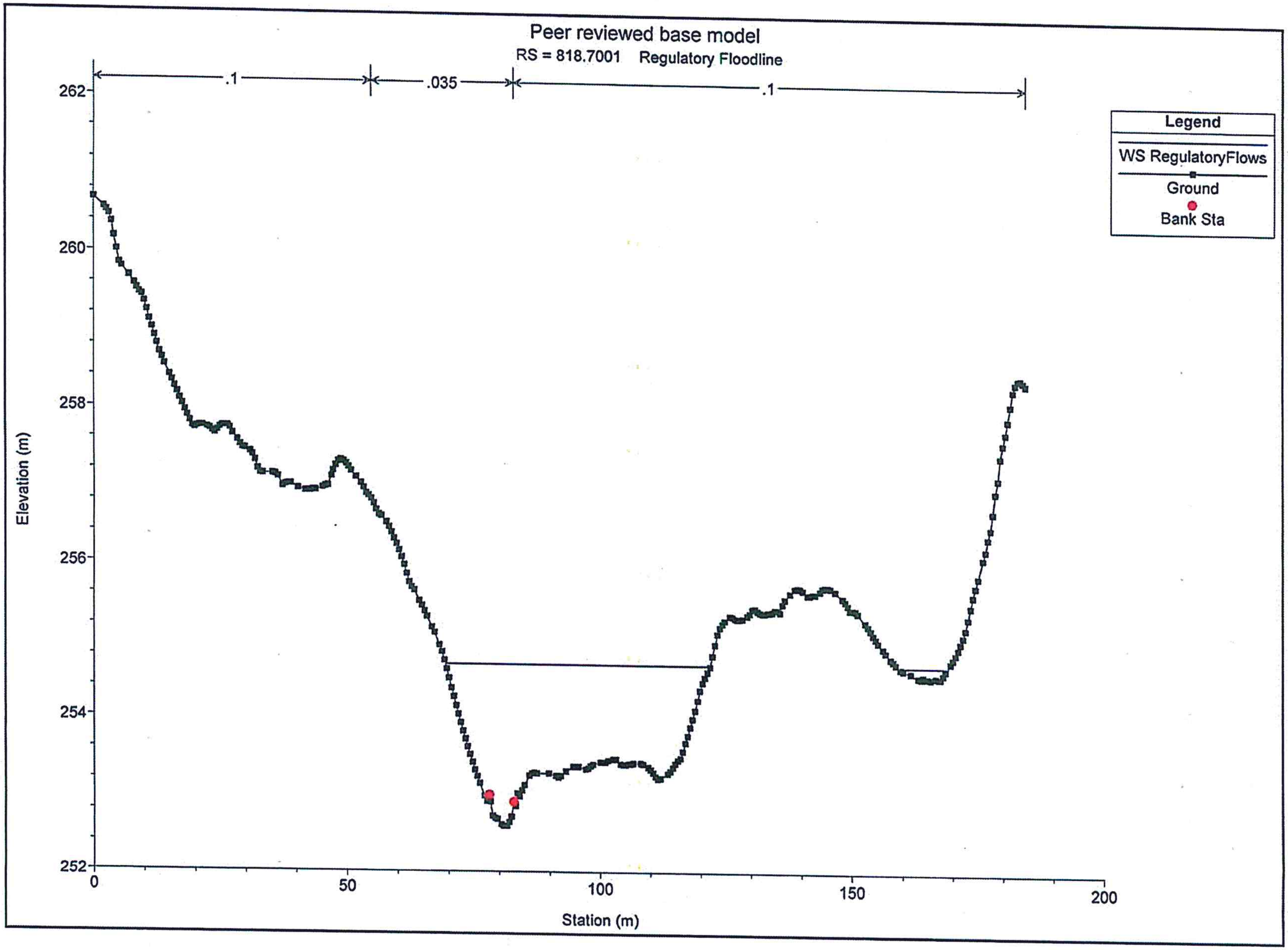

Peer reviewed base model
RS = 1386.646 Regulatory Floodline
.05
.1
.035
.1
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
268
266
264
262
260
258
0
50
100
150
200
250
300
Station (m)


Peer reviewed base model
RS = 1276.628 Regulatory Floodline
.035
.1
.035
.1
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
270
268
266
264
262
260
258
256
0
100
200
300
400
500
600
Station (m)

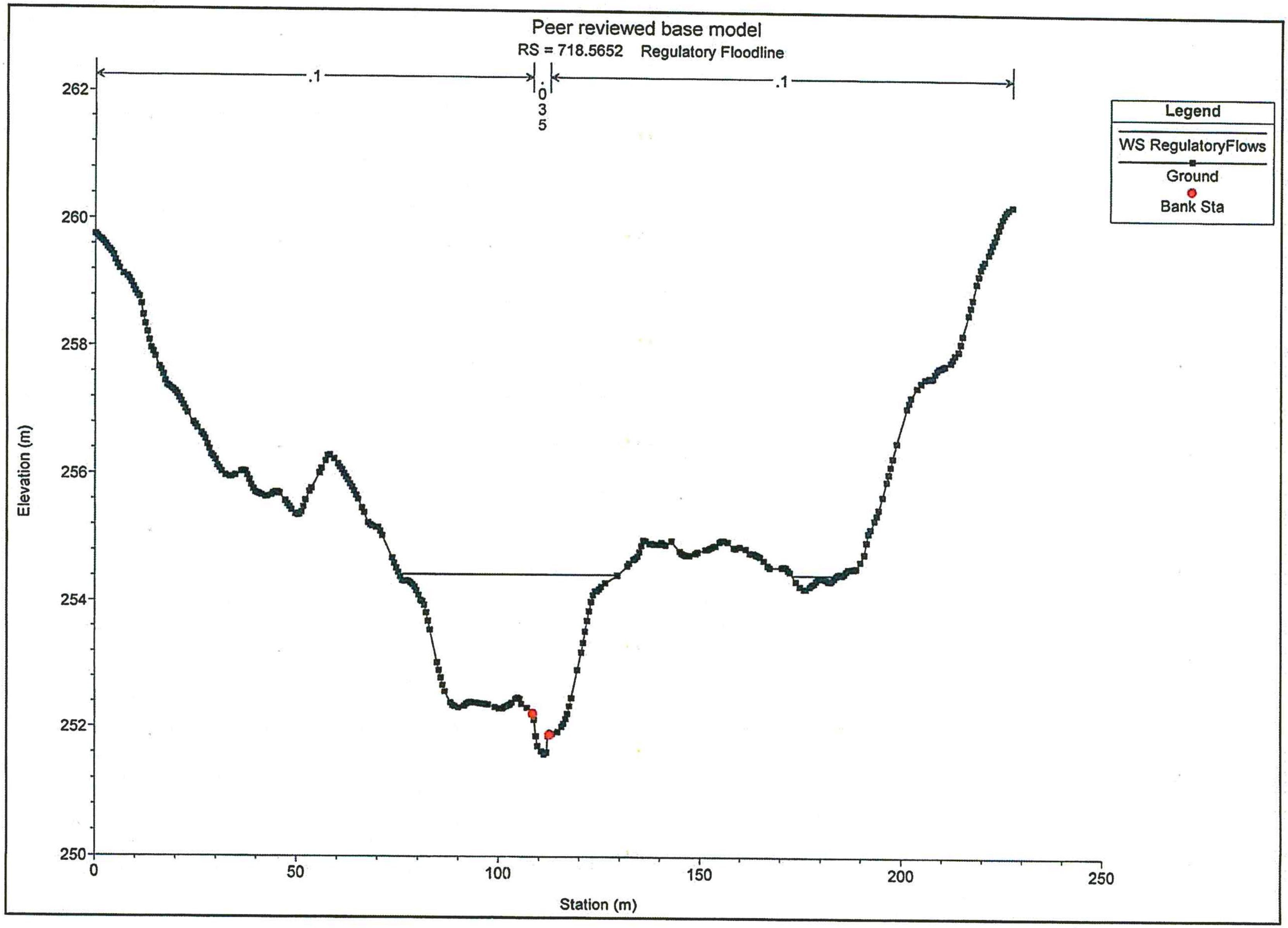

Peer reviewed base model
RS = 1177.635 Regulatory Floodline
.035
.1
.05
.045
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
Station (m)
268
266
264
262
260
258
256
254
0
100
200
300
400
500
600


Peer reviewed base model
RS = 1021.897 Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
266
264
262
260
258
256
254
0
10
20
30
40
50
60
70
80
Station (m)

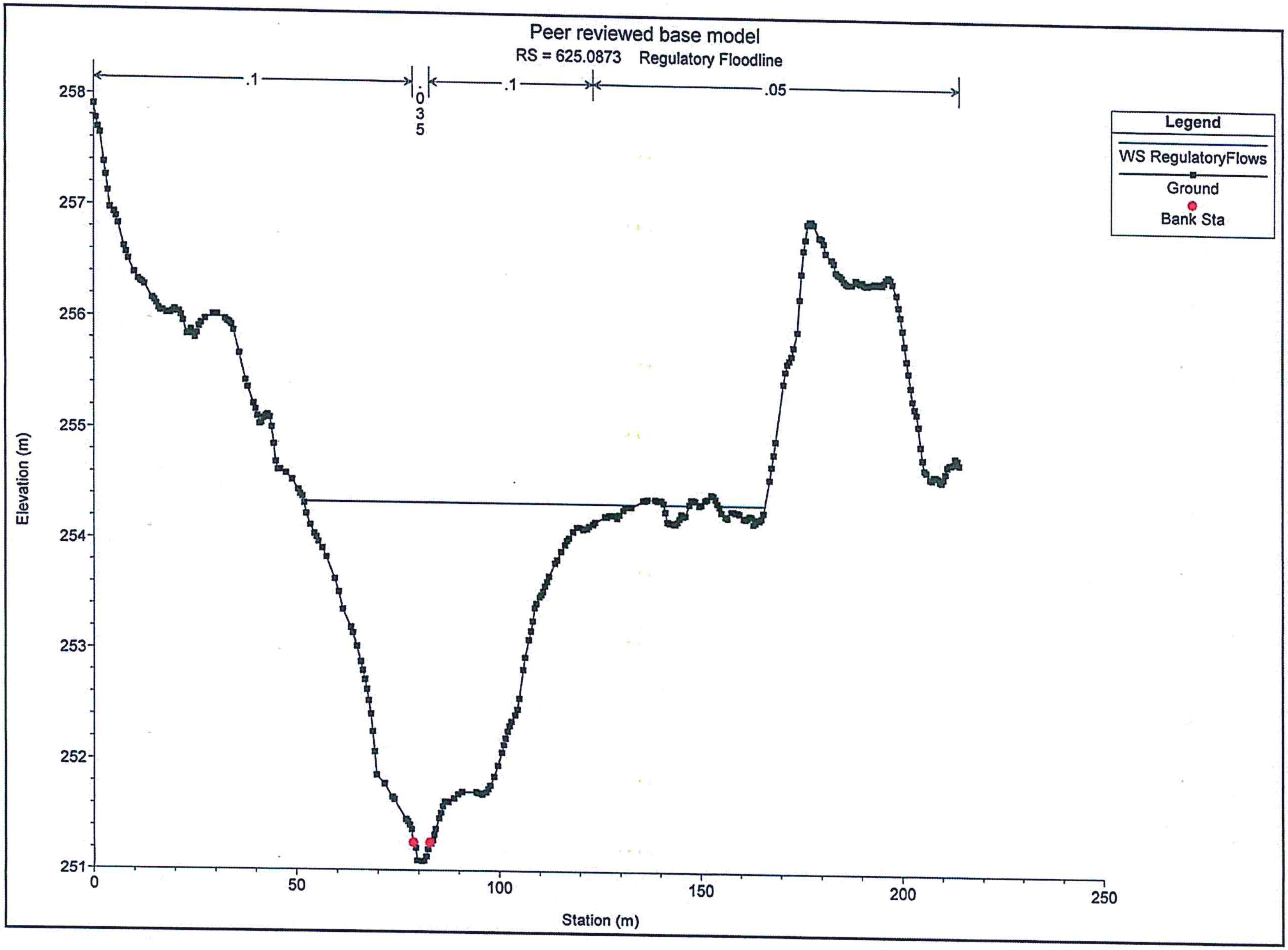

Peer reviewed base model
RS = 927.3901 Regulatory Floodline
.1
.035
.1
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
264
262
260
258
256
254
252
Station (m)
0
20
40
60
80
100
120

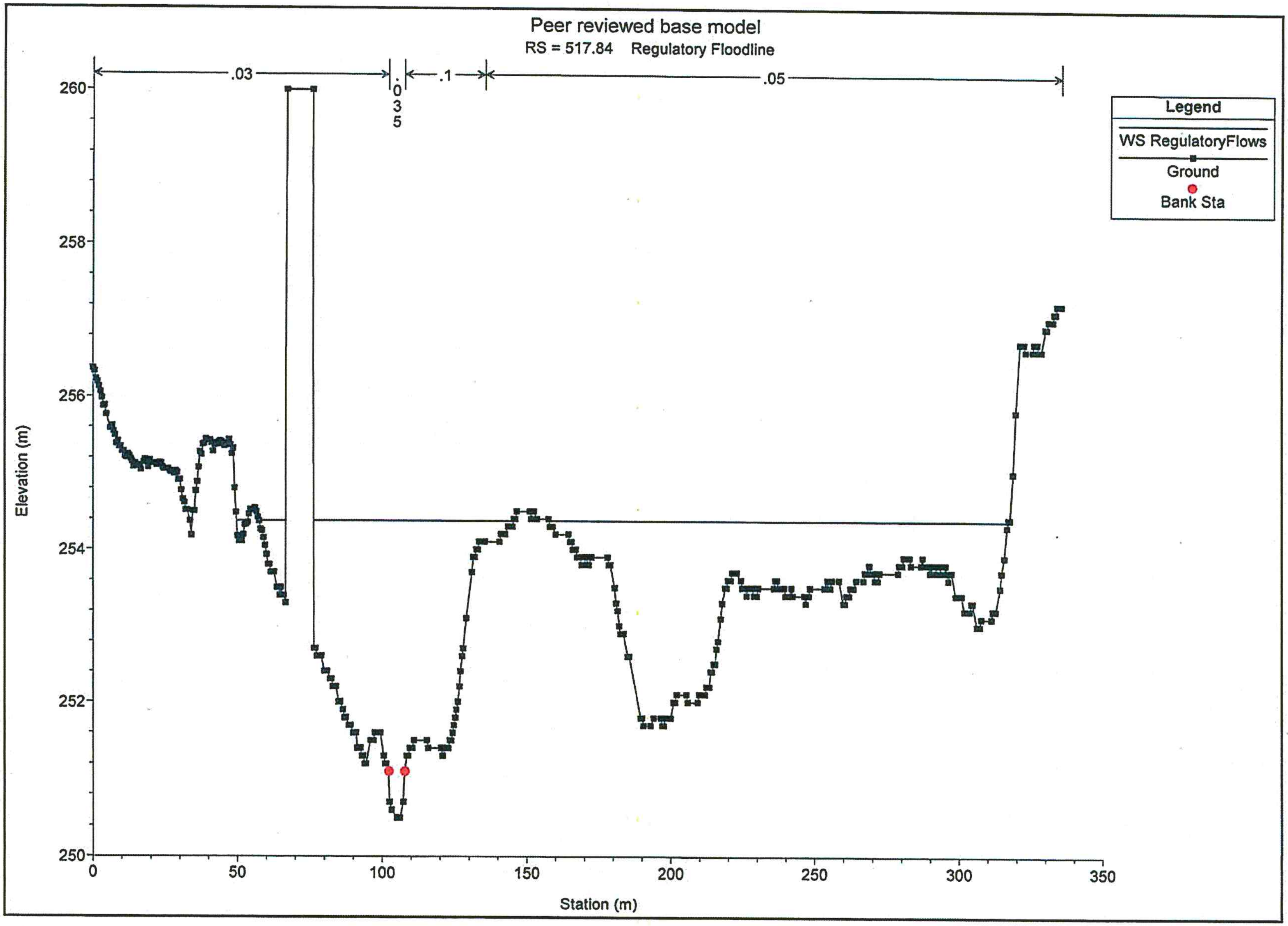


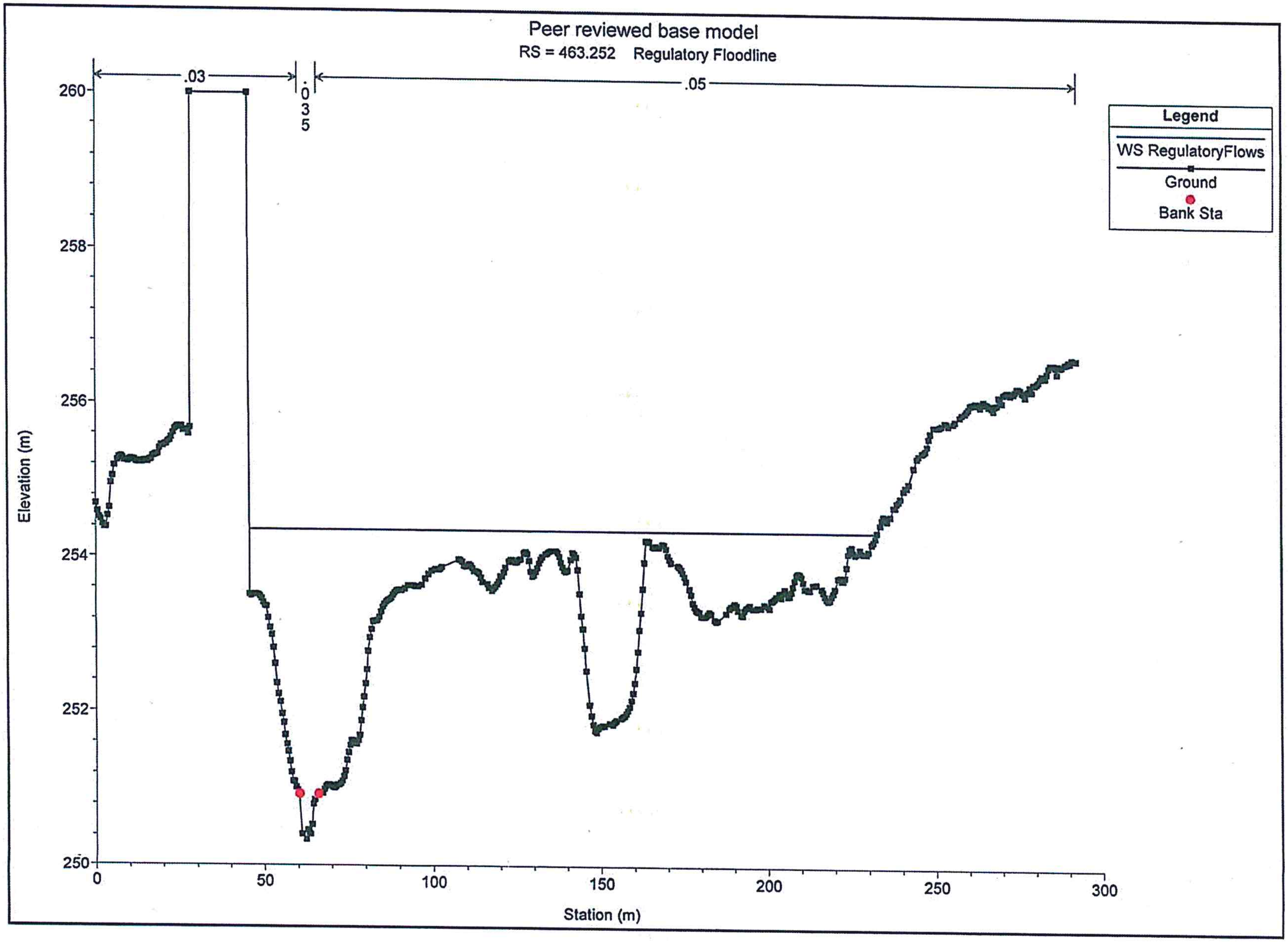
Peer reviewed base model
RS = 818.7001 Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
262
260
258
256
254
252
0
50
100
150
200
Station (m)



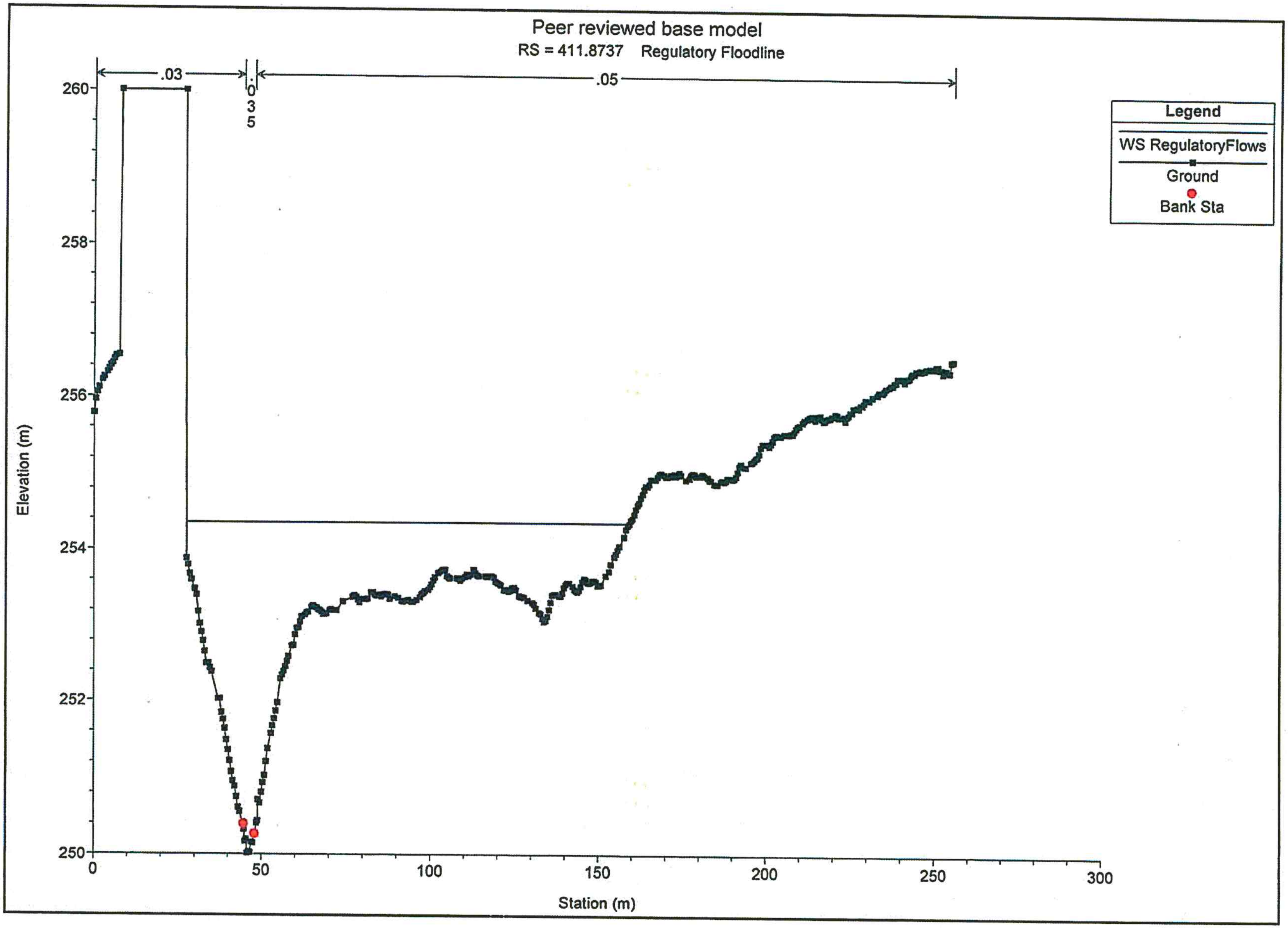
Peer reviewed base model
RS = 718.5652 Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
262
260
258
256
254
252
250
0
50
100
150
200
250
Station (m)

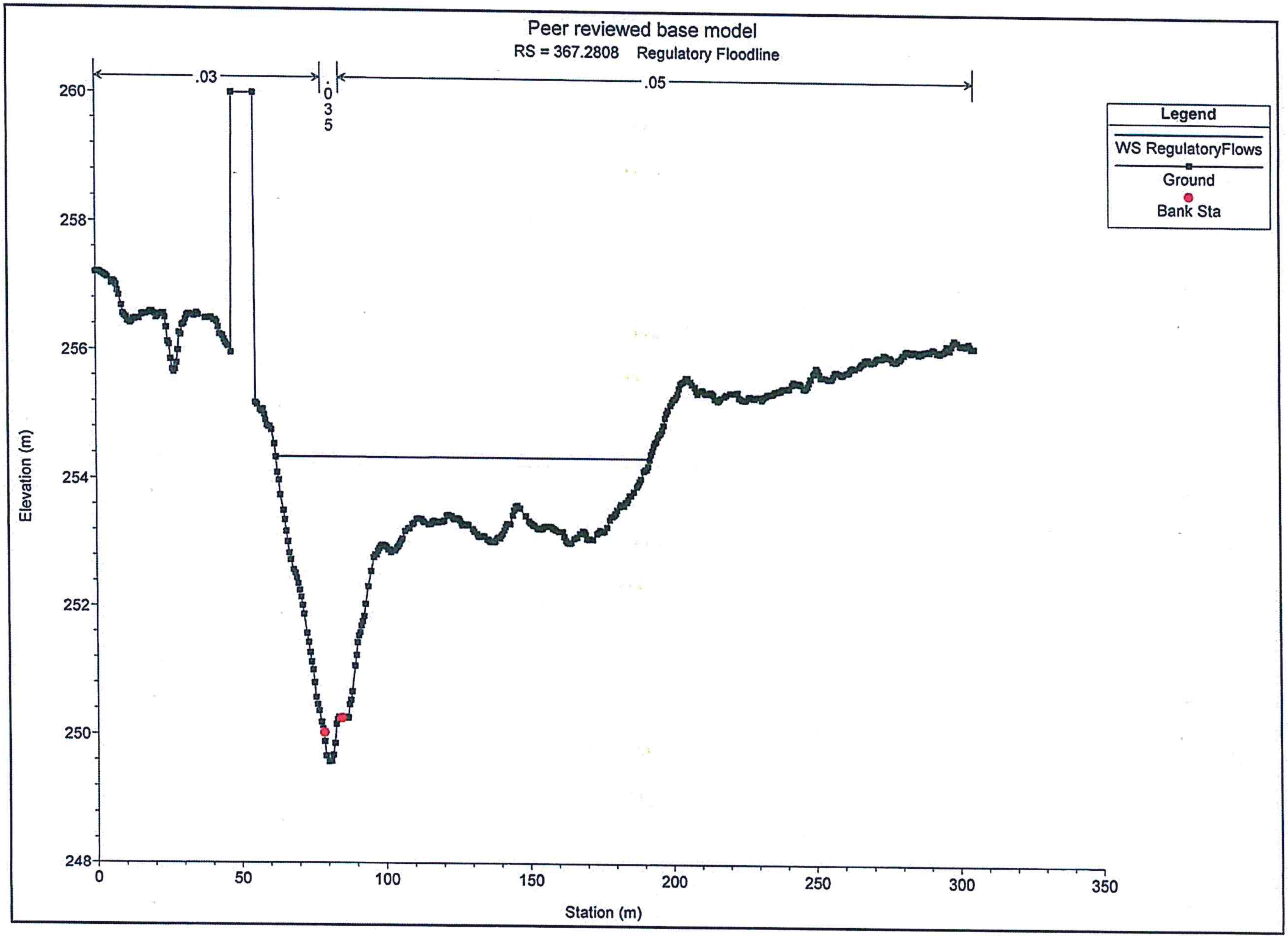

Peer reviewed base model
RS = 625.0873 Regulatory Floodline
.1
.035
.1
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
258
257
256
255
254
253
252
251
0
50
100
150
200
250
Station (m)


Peer reviewed base model
RS = 517.84 Regulatory Floodline
.03
.035
.1
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
260
258
256
254
252
250
Station (m)
0
50
100
150
200
250
300
350

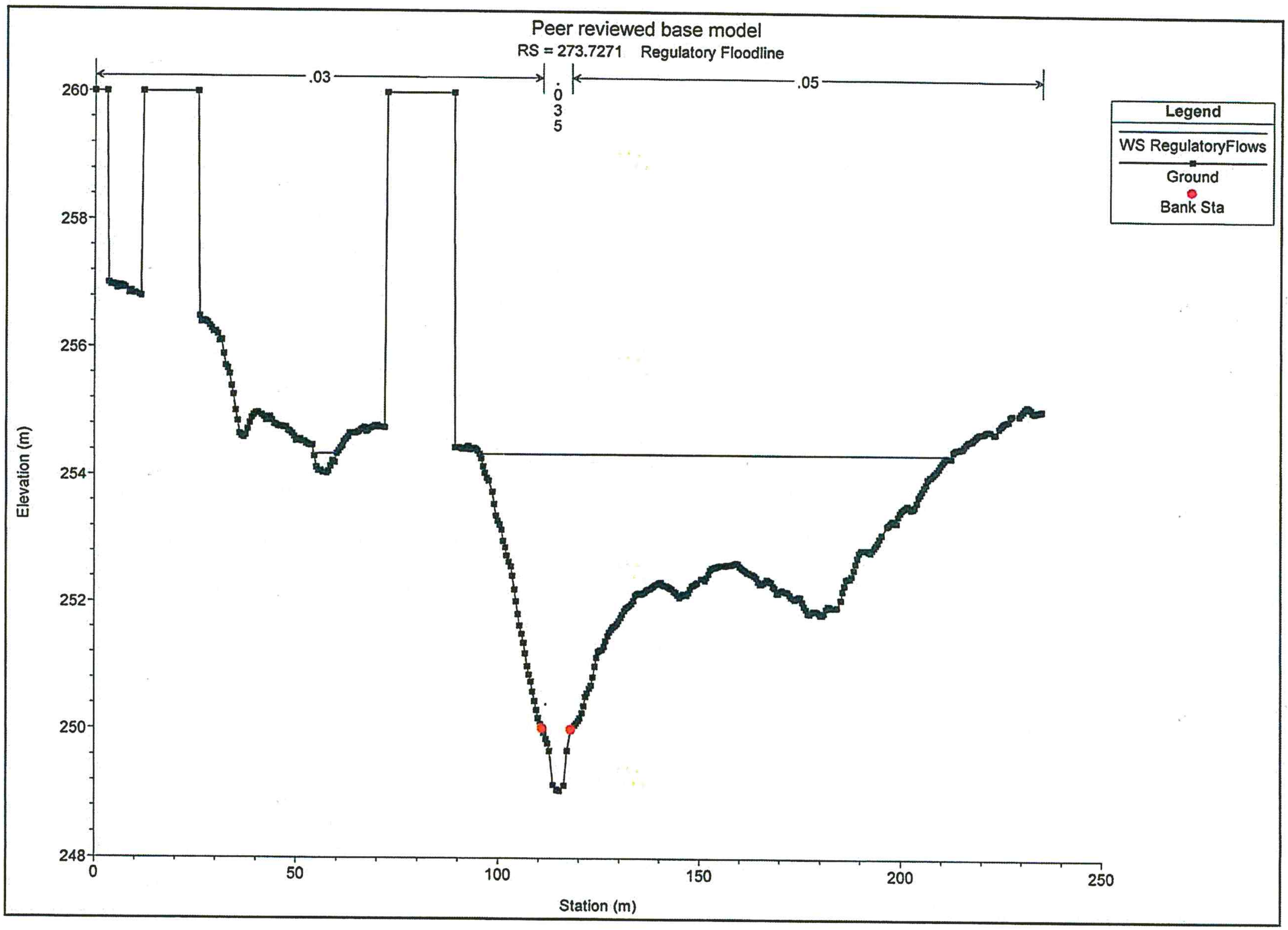


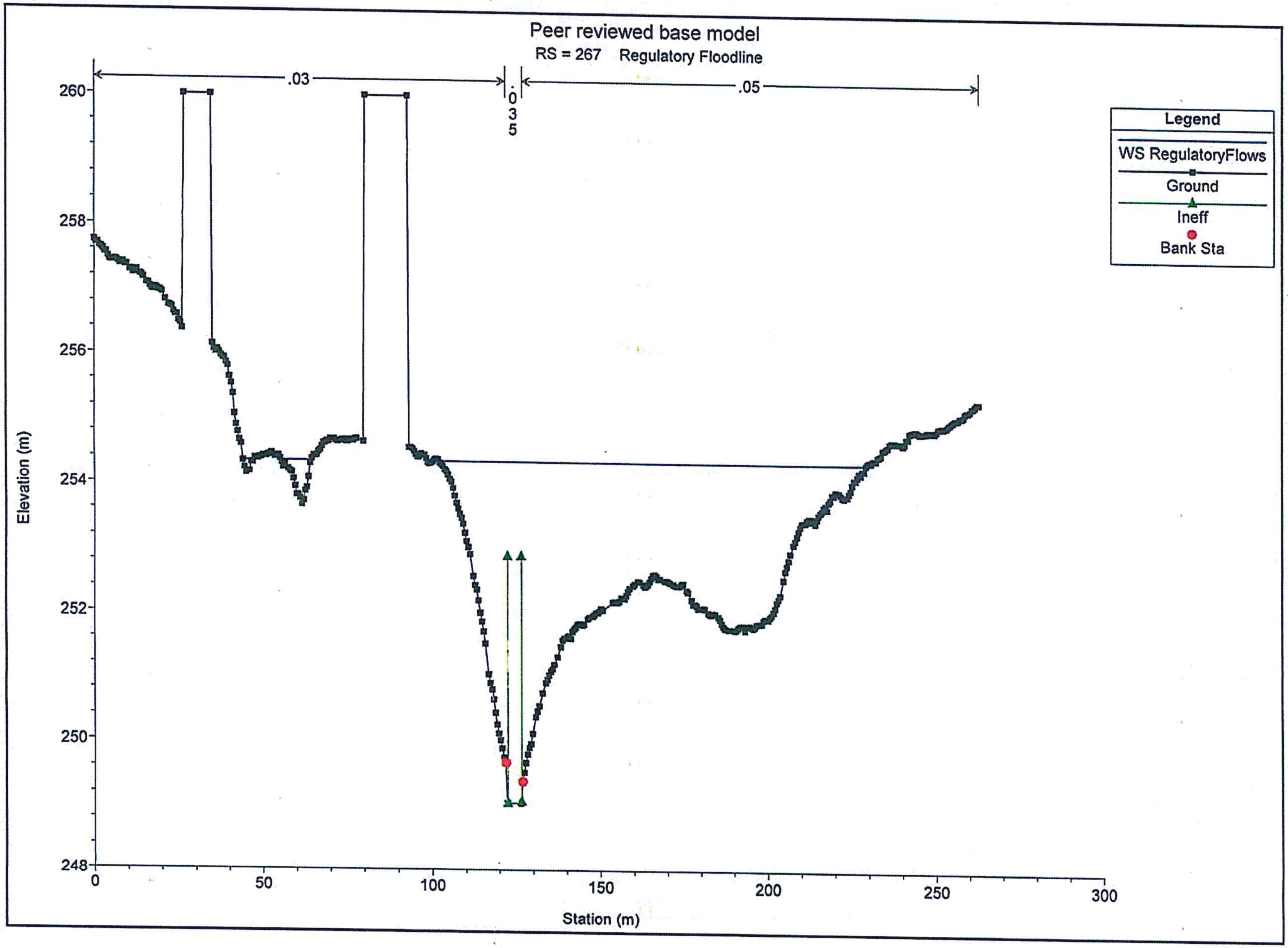
Peer reviewed base model
RS = 463.252 Regulatory Floodline
.03
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
260
258
256
254
252
250
0
50
100
150
200
250
300
Station (m)

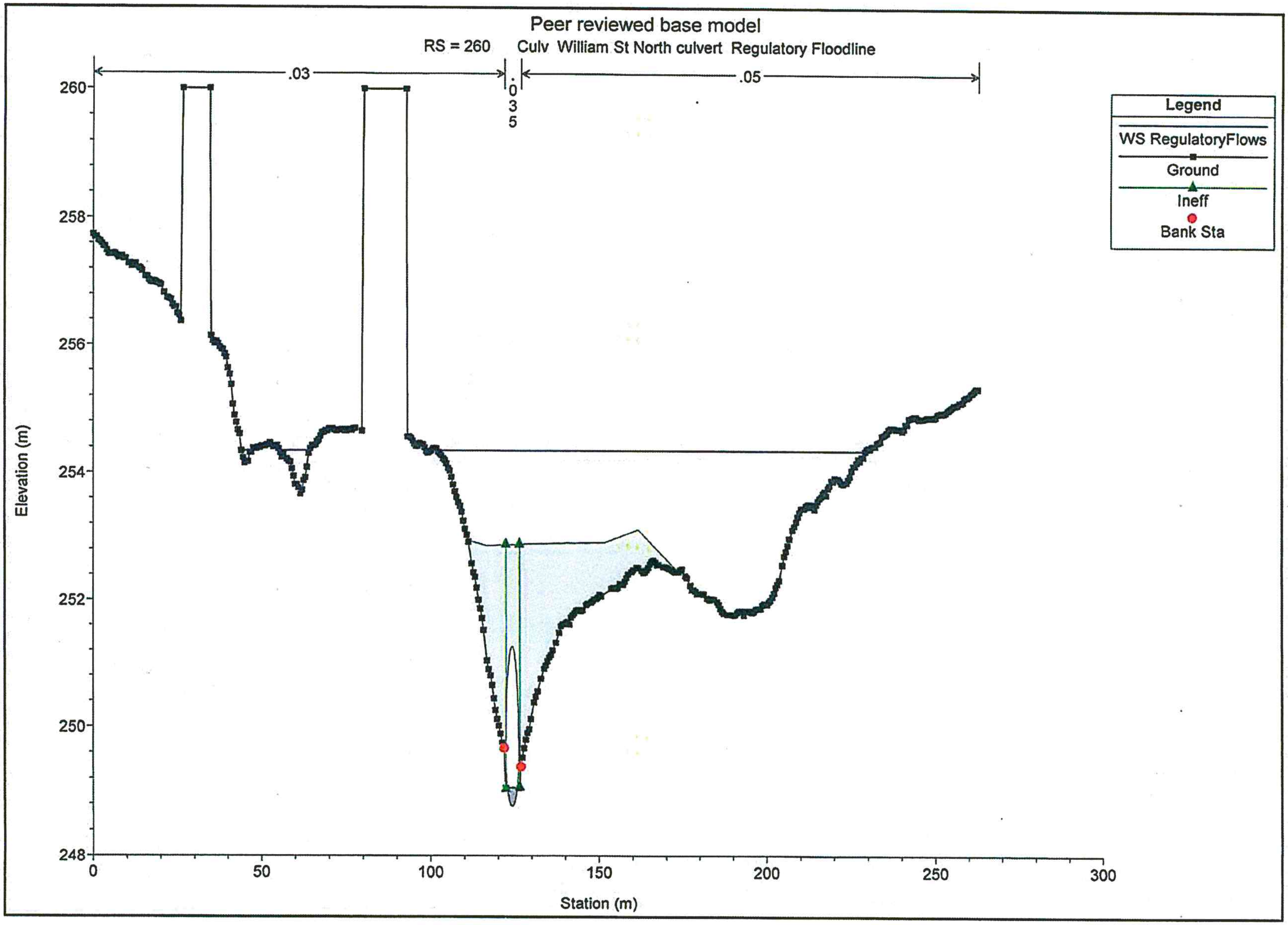

Peer reviewed base model
RS = 411.8737 Regulatory Floodline
.03
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
260
258
256
254
252
250
0
50
100
150
200
250
300
Station (m)



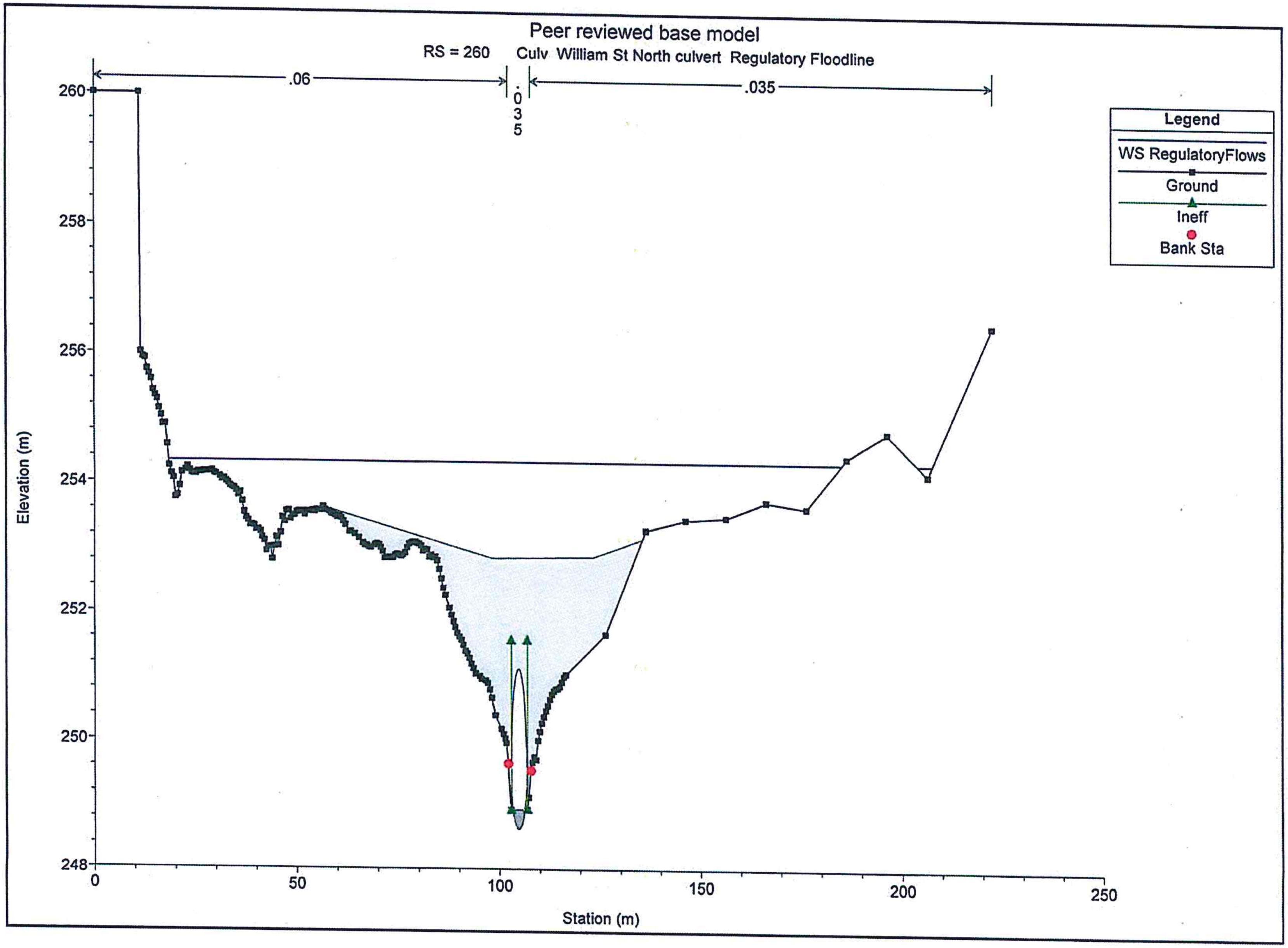
Peer reviewed base model
RS = 367.2808 Regulatory Floodline
.03
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
300
350
Station (m)


Peer reviewed base model
RS = 273.7271 Regulatory Floodline
.03
.035
.05
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
Station (m)


Peer reviewed base model
RS = 267 Regulatory Floodline
.03
.035
.05
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
300



Peer reviewed base model
RS = 260 Culv William St North culvert Regulatory Floodline
.03
.035
.05
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
300
Station (m)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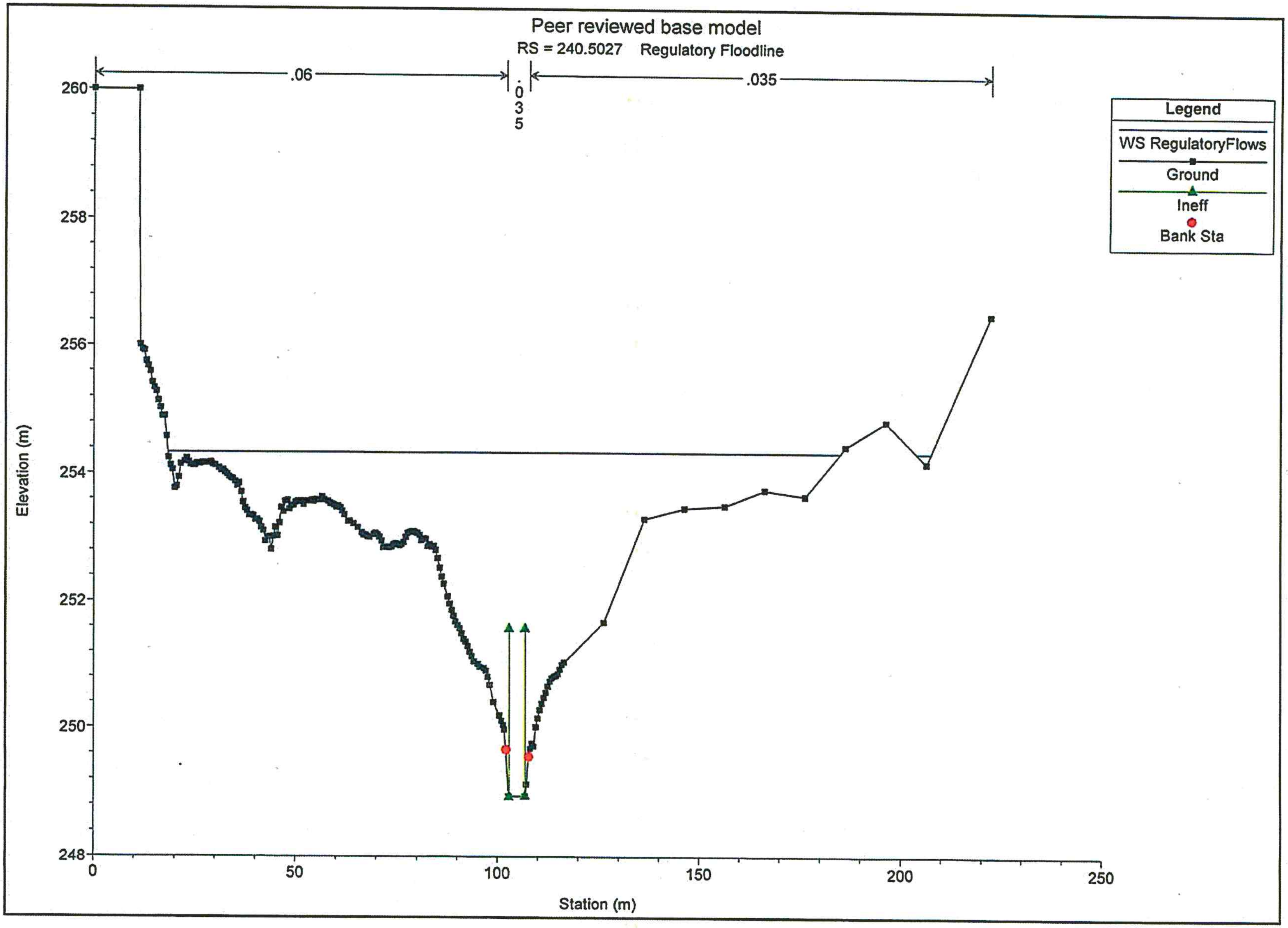
.06
.035
.035
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
Station (m)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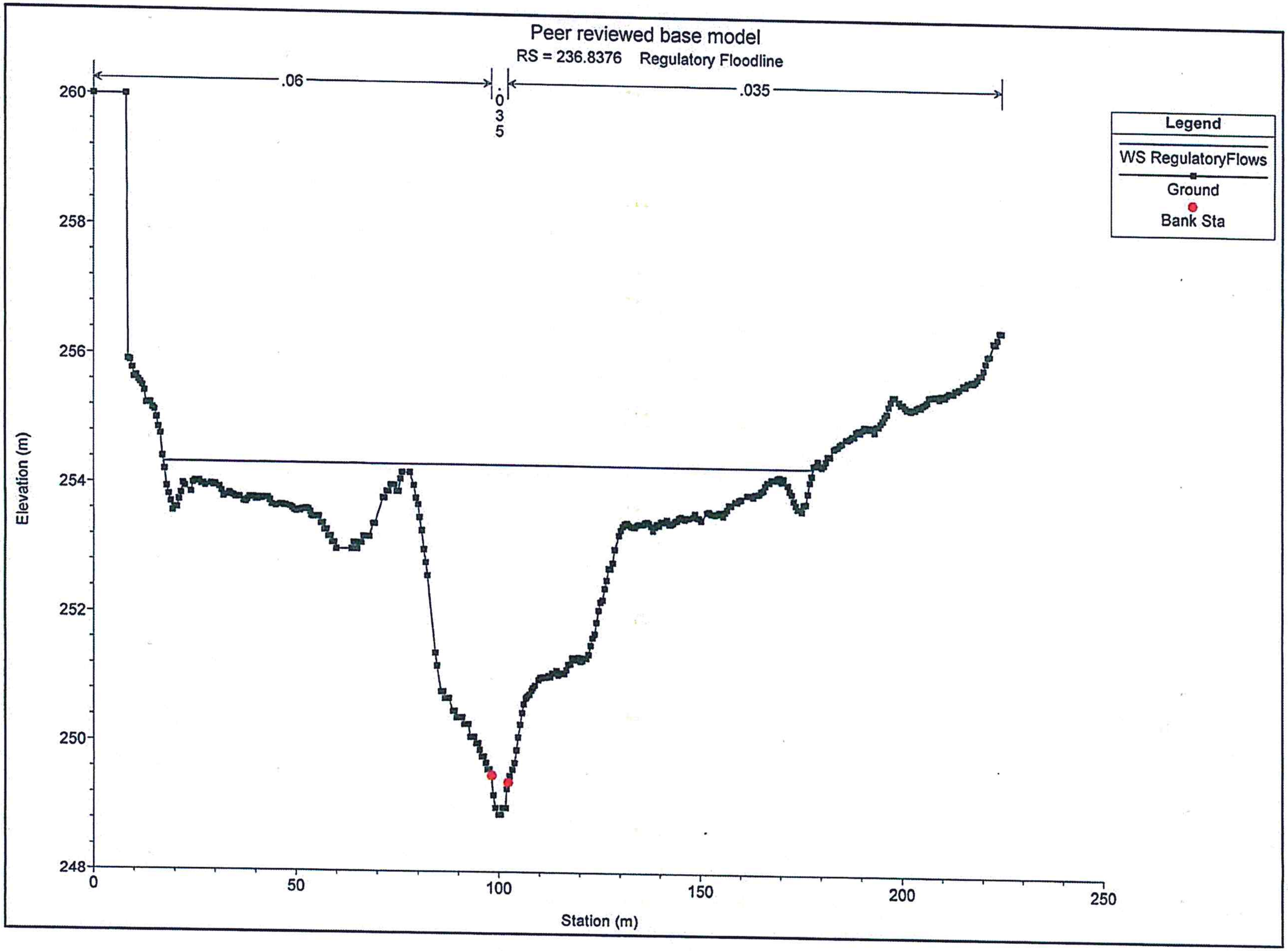
200
250
Station (m)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250
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Station (m)
0
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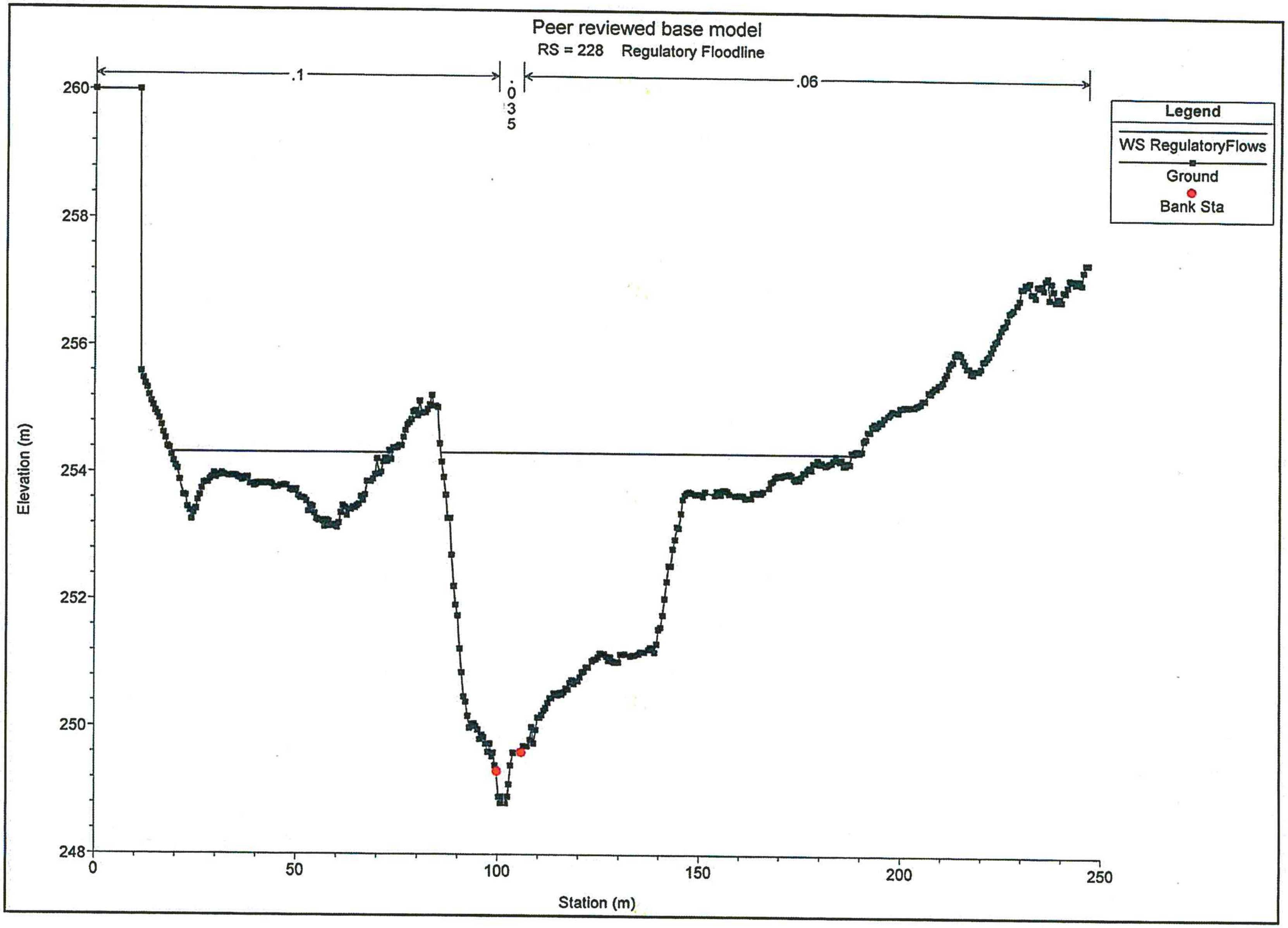
100
150
200
250



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.1
.035
.06
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Ground
Bank Sta
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Station (m)
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150
200
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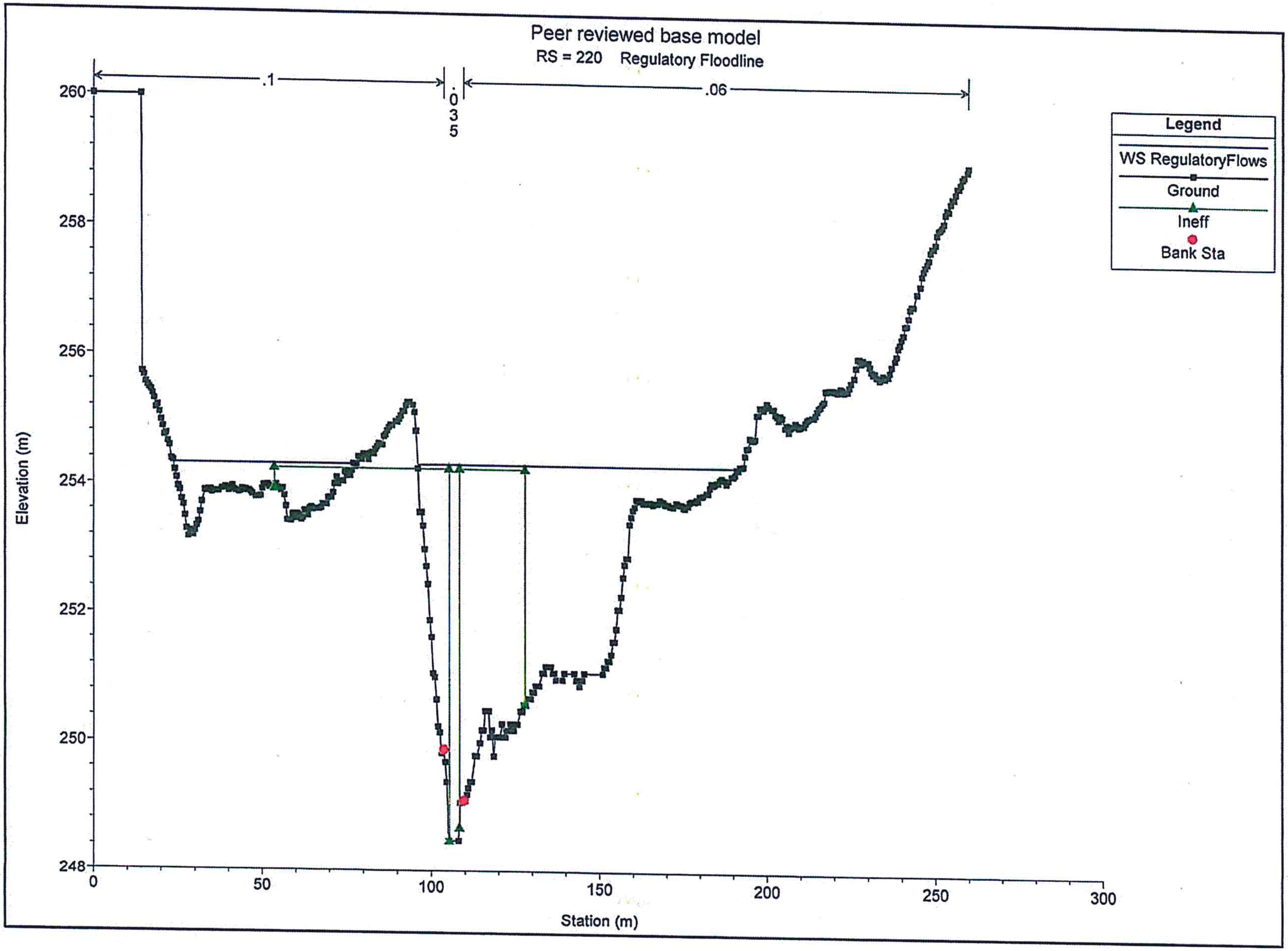

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.035
.06
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Ground
Ineff
Bank Sta
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258
256
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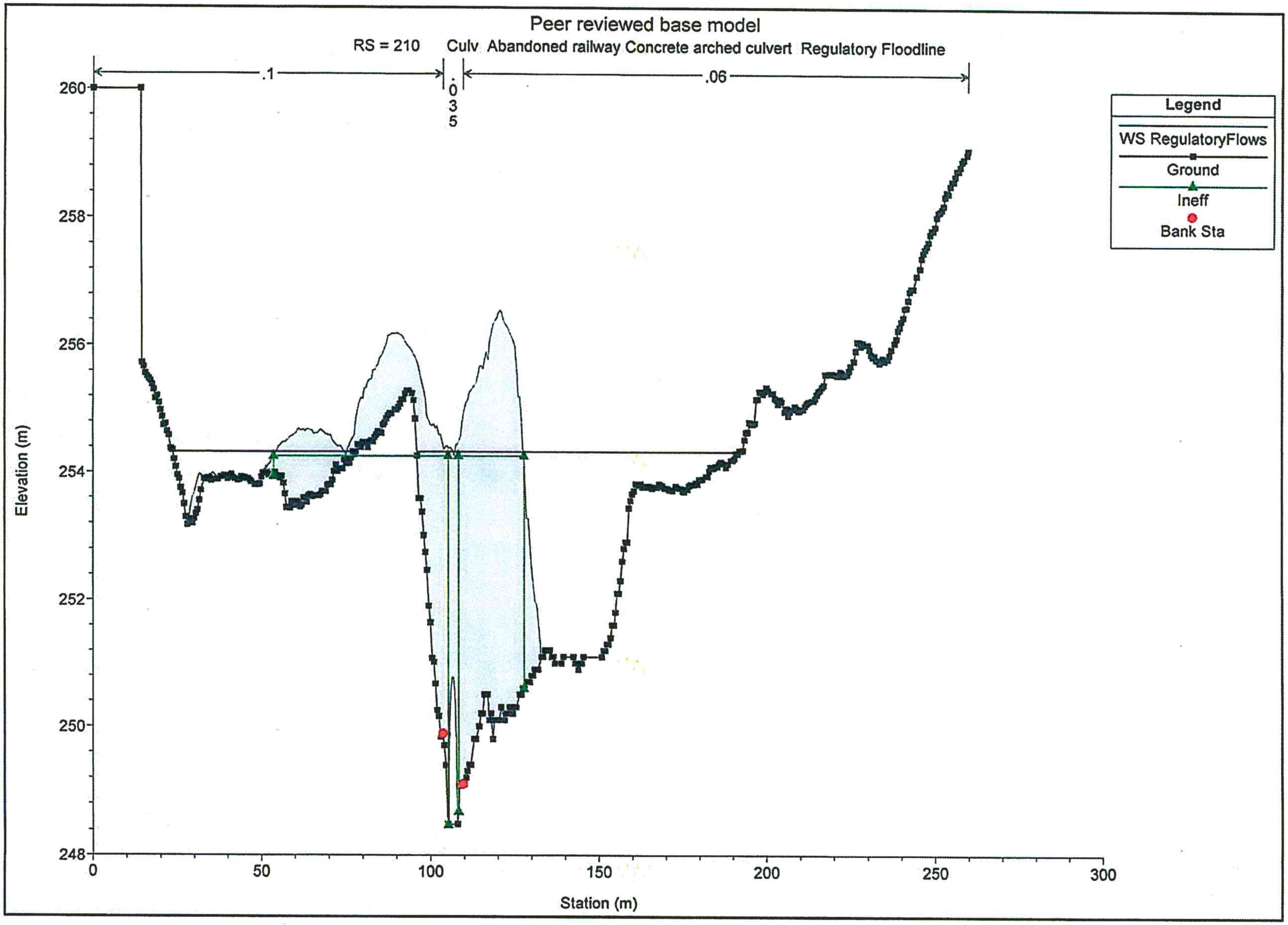
252
250
248
0
50
100
150
200
250
300
Station (m)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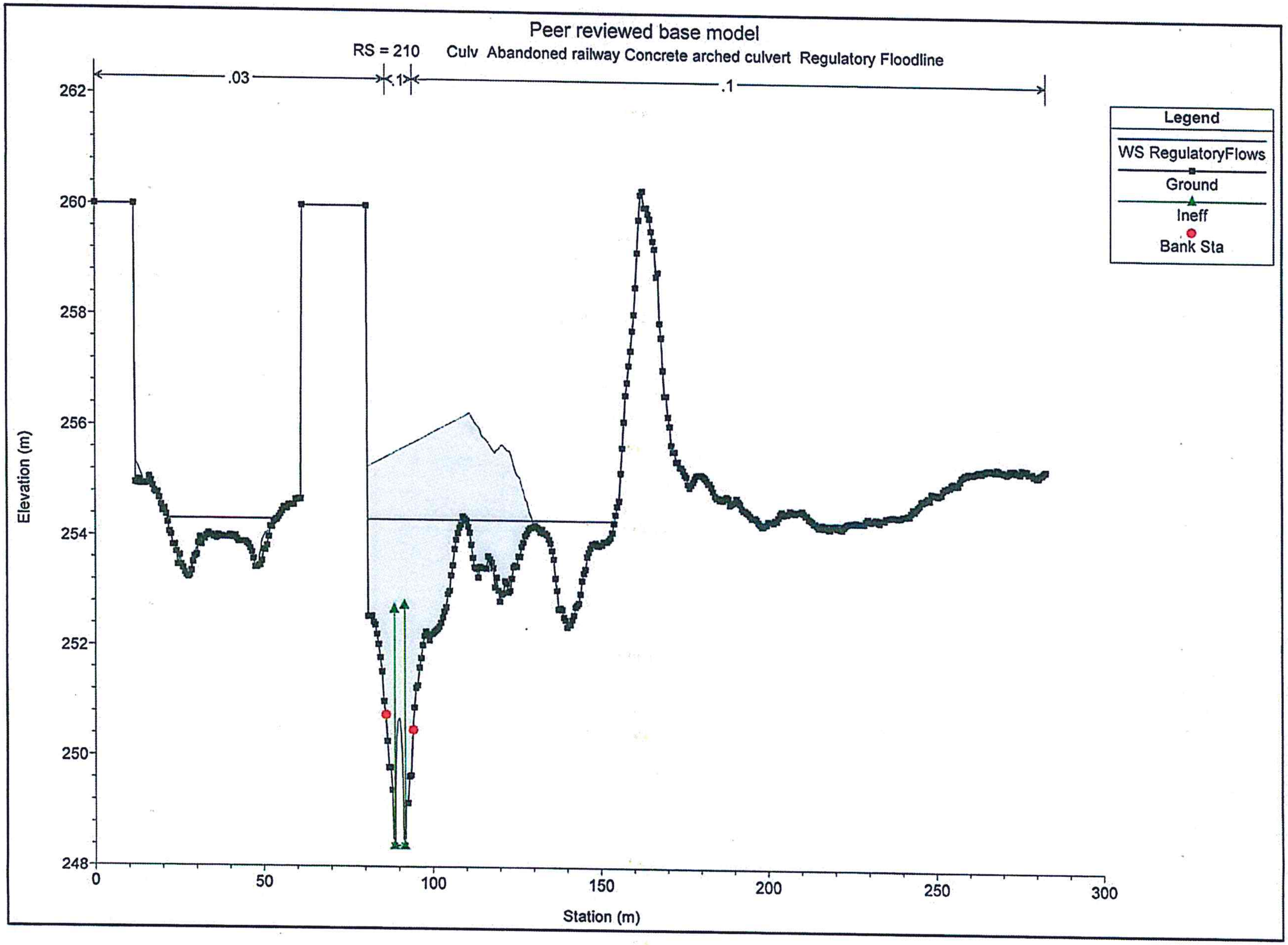
.1
.035
.06
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
300



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.03
.1
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
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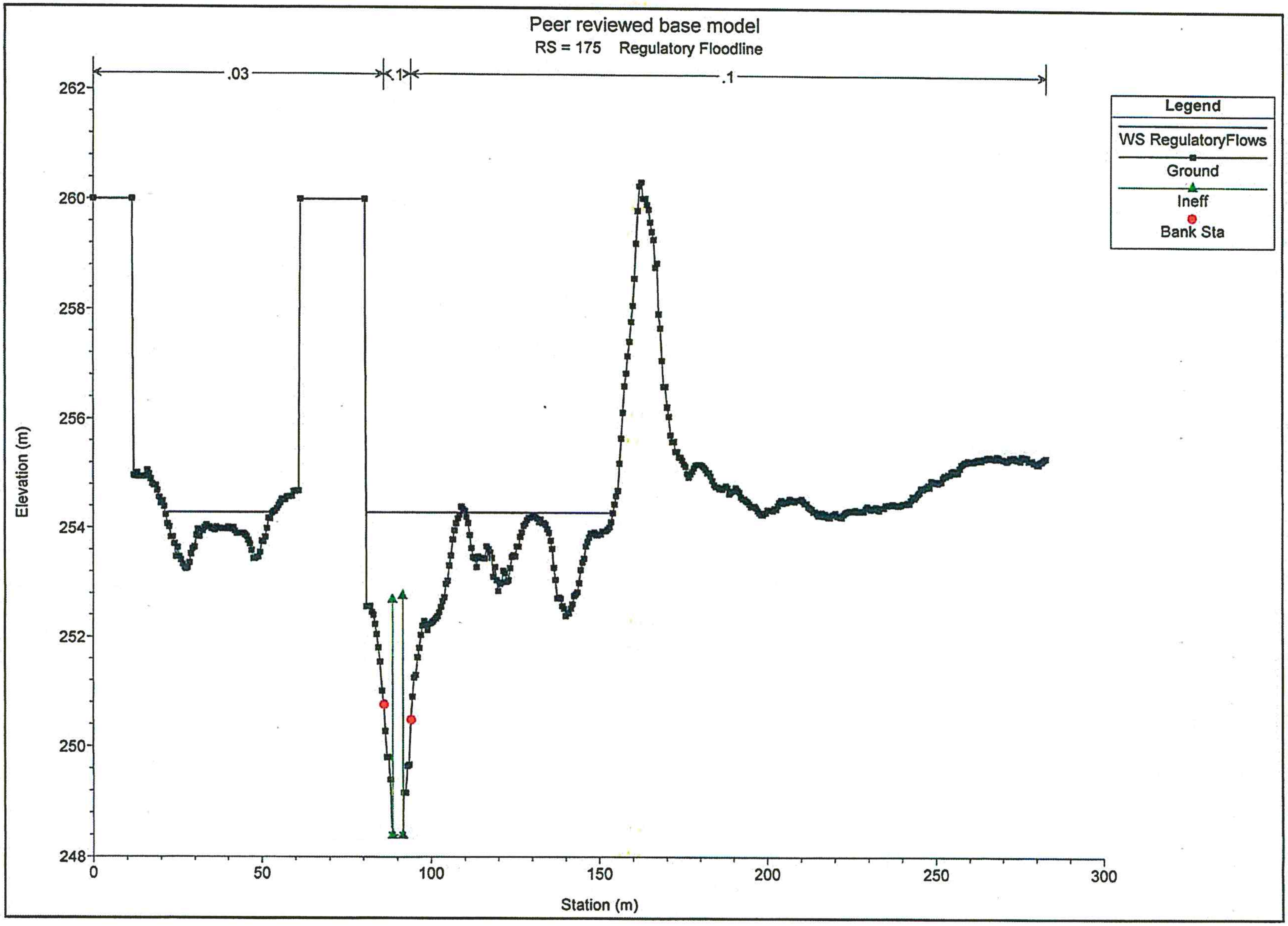
260
258
256
254
252
250
248
0
50
100
150
200
250
300
Station (m)



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.03
.1
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
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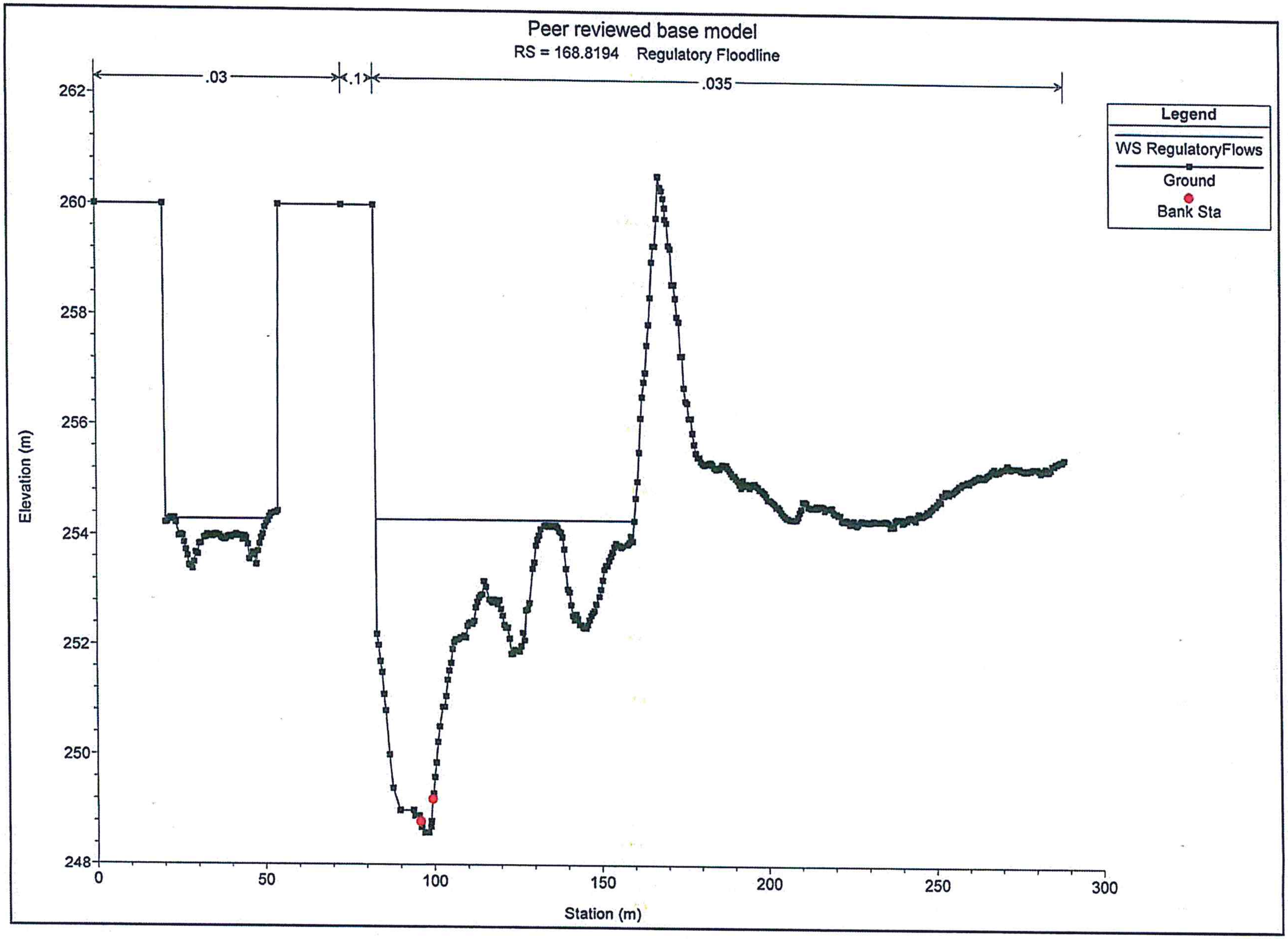
260
258
256
254
252
250
248
0
50
100
150
200
250
300
Station (m)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.1
.035
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Ground
Bank Sta
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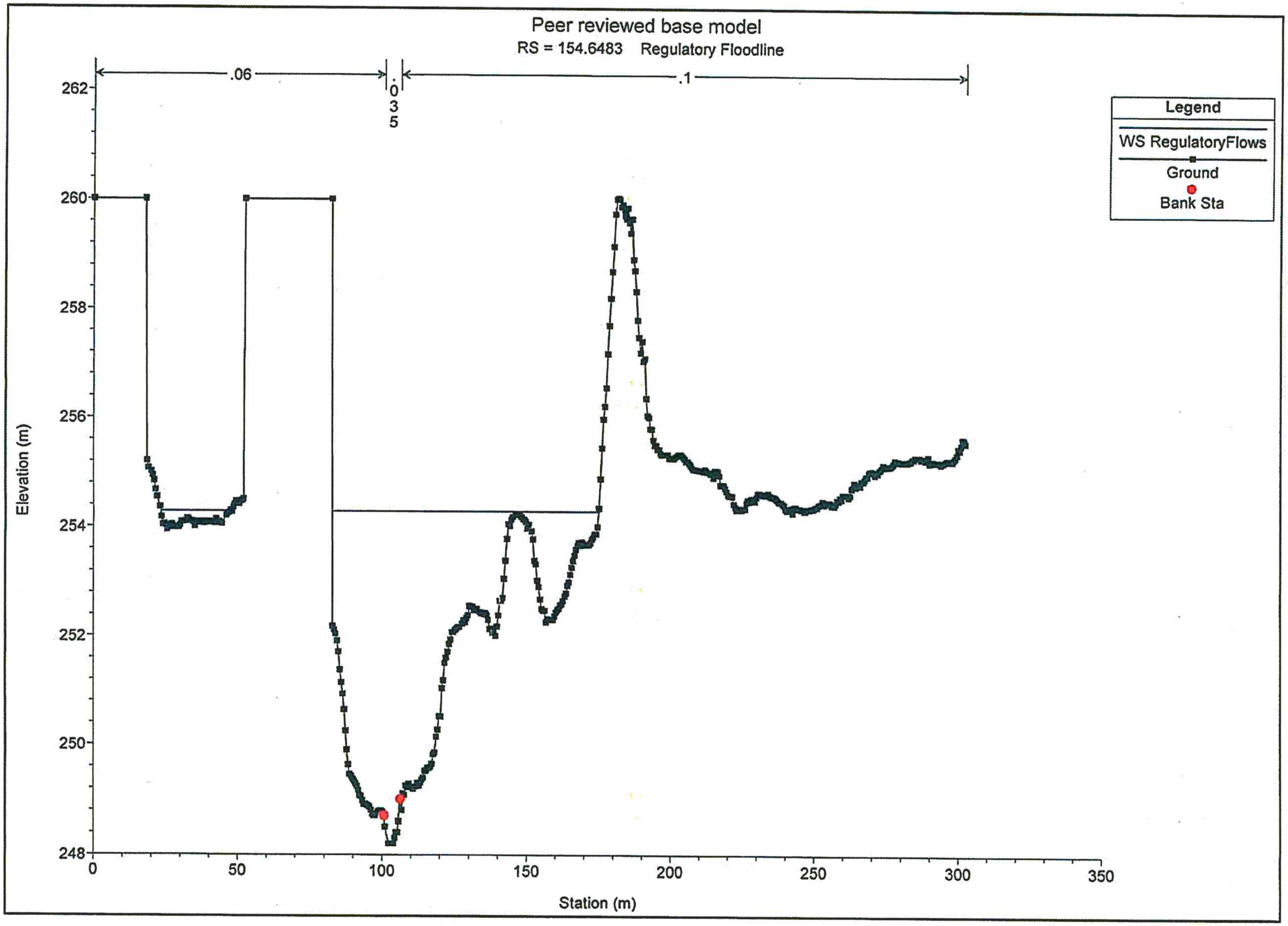
200
250
300
Station (m)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.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
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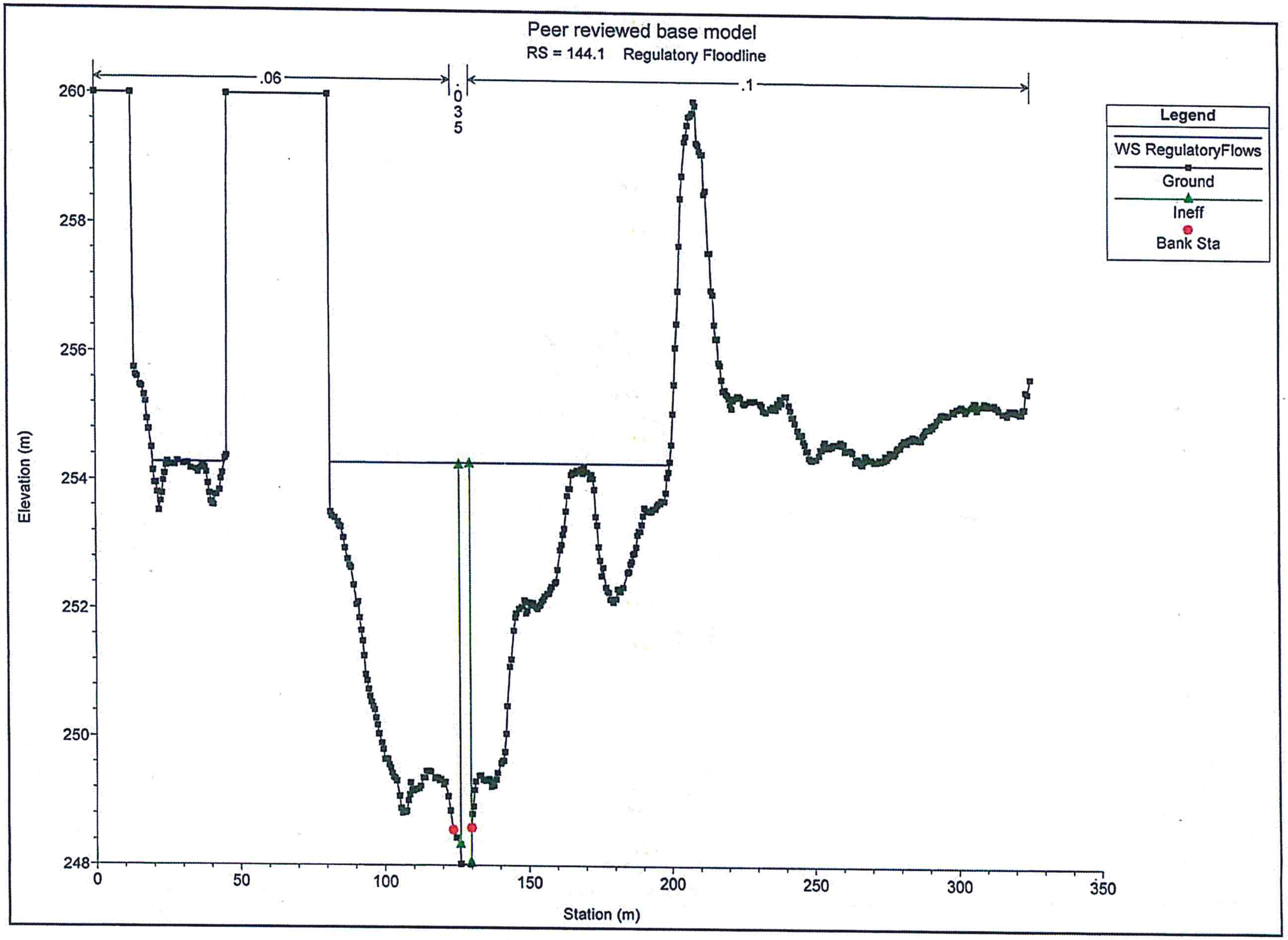
256
254
252
250
248
0
50
100
150
200
250
300
350
Station (m)



Peer reviewed base model
RS = 144.1 Regulatory Floodline
.06
.035
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
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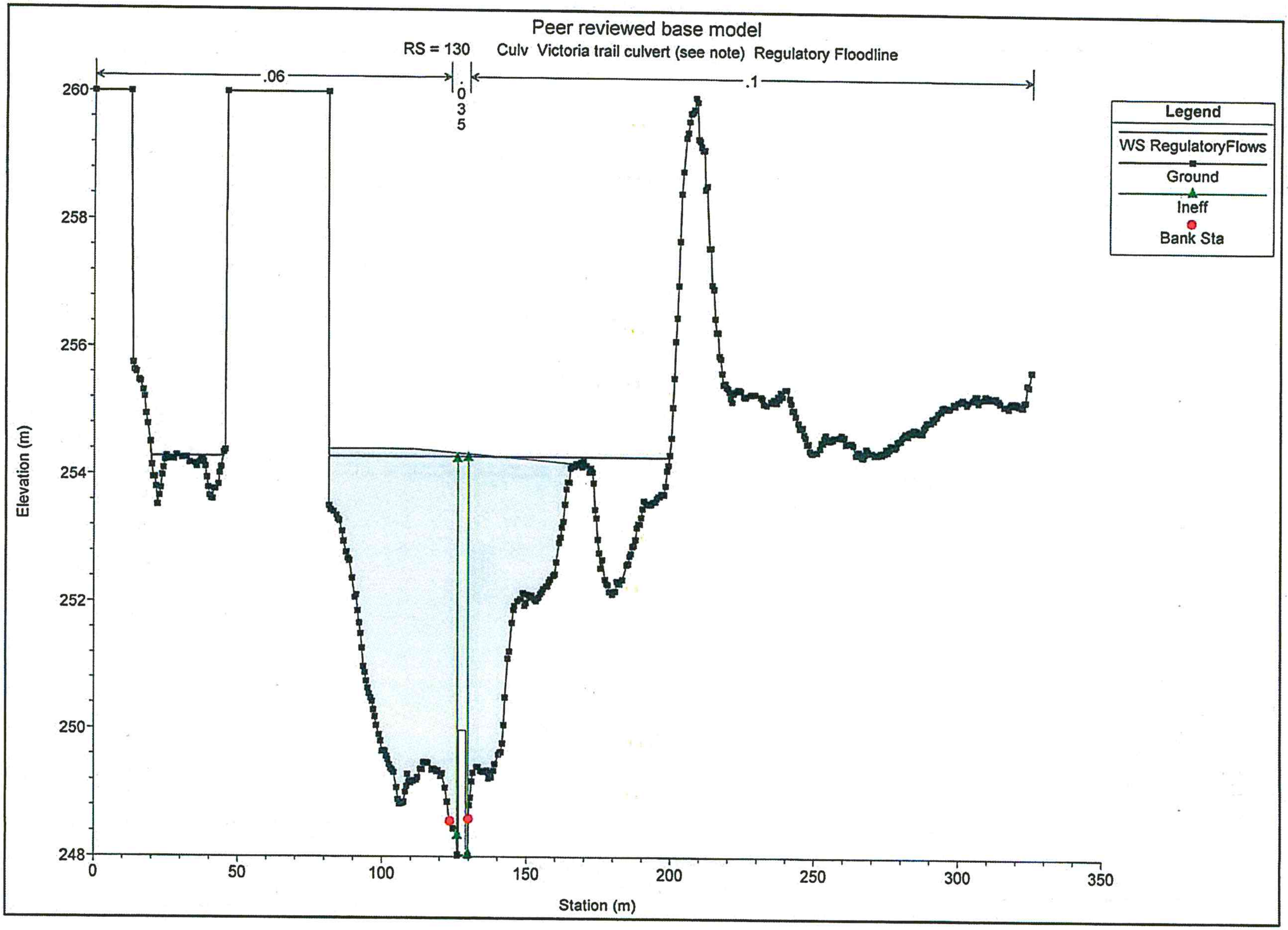
256
254
252
250
248
0
50
100
150
200
250
300
350
Station (m)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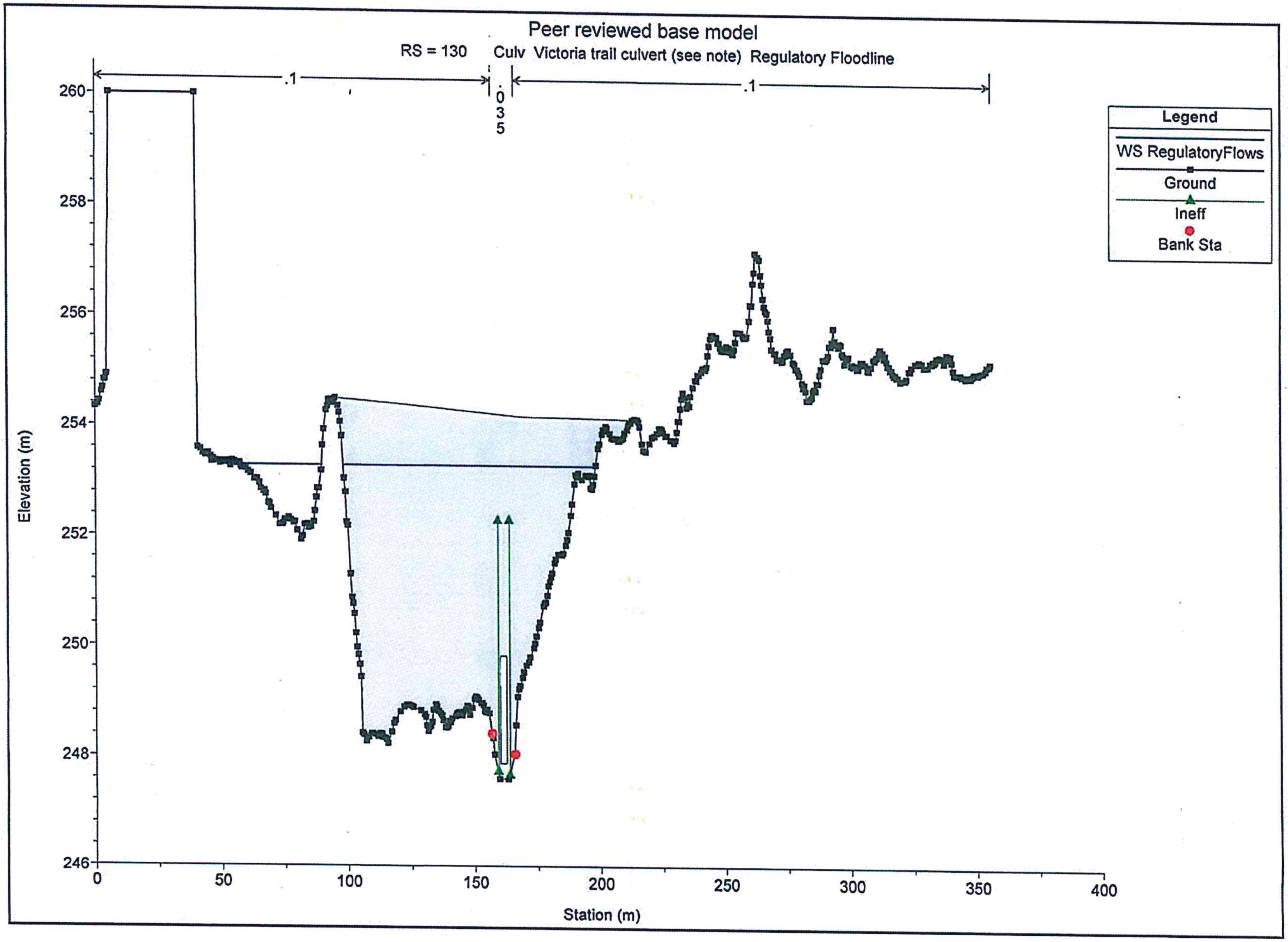
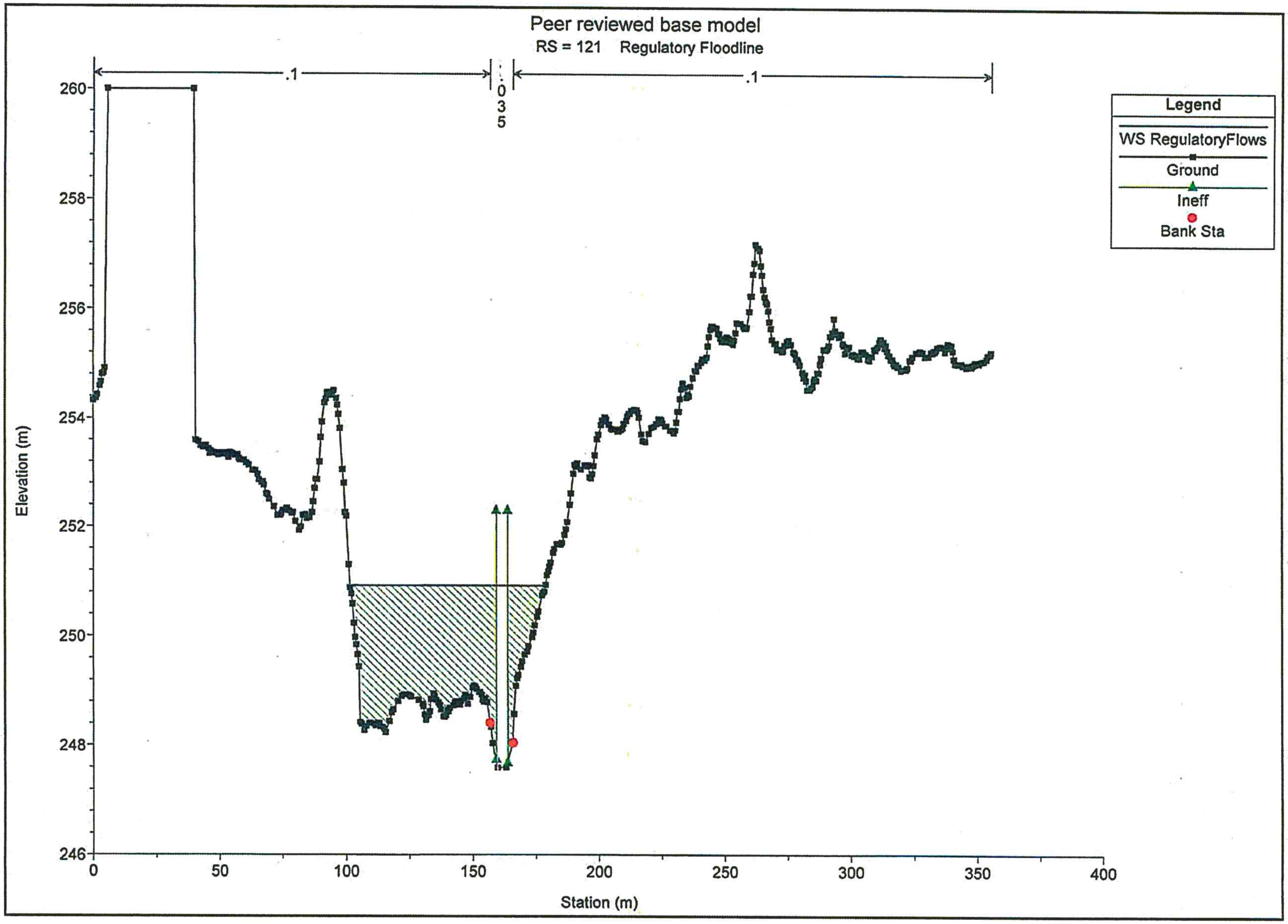
RS = 130 Culv Victoria trail culvert (see note) Regulatory Floodline
.06
.035
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
260
258
256
254
252
250
248
0
50
100
150
200
250
300
350
Station (m)



Peer reviewed base model
RS = 130 Culv Victoria trail culvert (see note) Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
260
258
256
254
252
250
248
246
0
50
100
150
200
250
300
350
400
Station (m)



Peer reviewed base model
RS = 121 Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Ineff
Bank Sta
Elevation (m)
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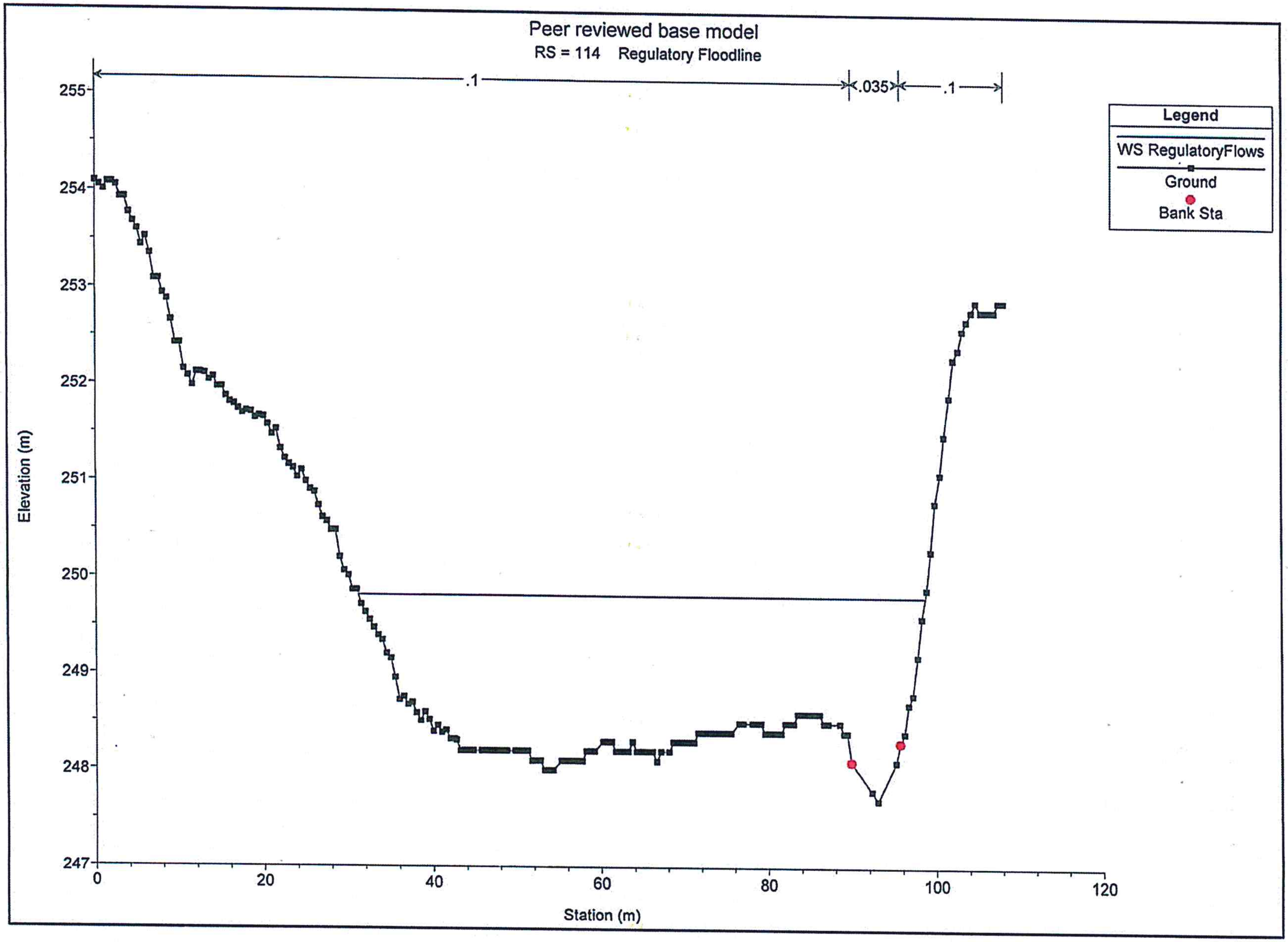
258
256
254
252
250
248
246
0
50
100
150
200
250
300
350
400
Station (m)



Peer reviewed base model
RS = 114 Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
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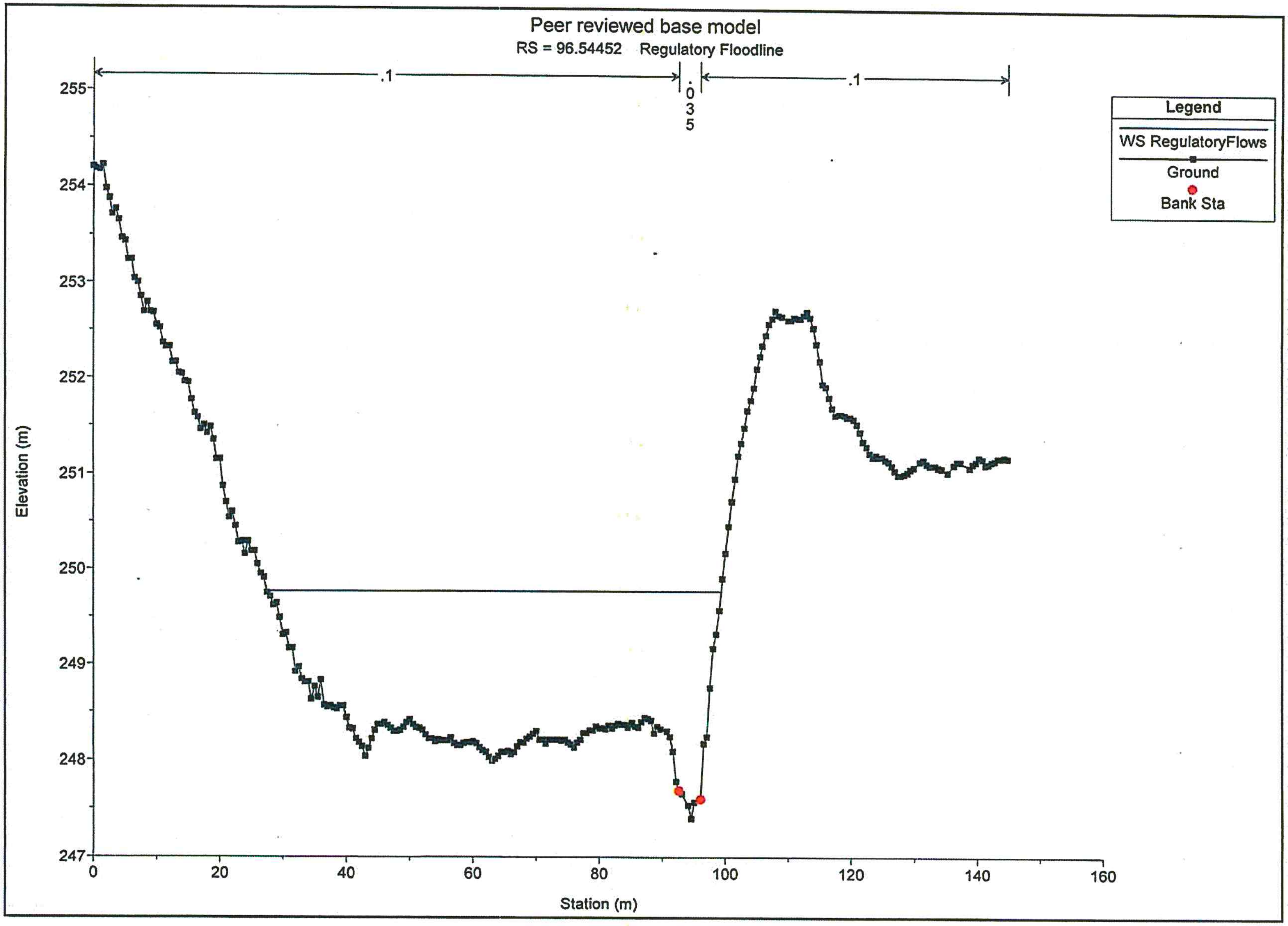
254
253
252
251
250
249
248
247
0
20
40
60
80
100
120
Station (m)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.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
Elevation (m)
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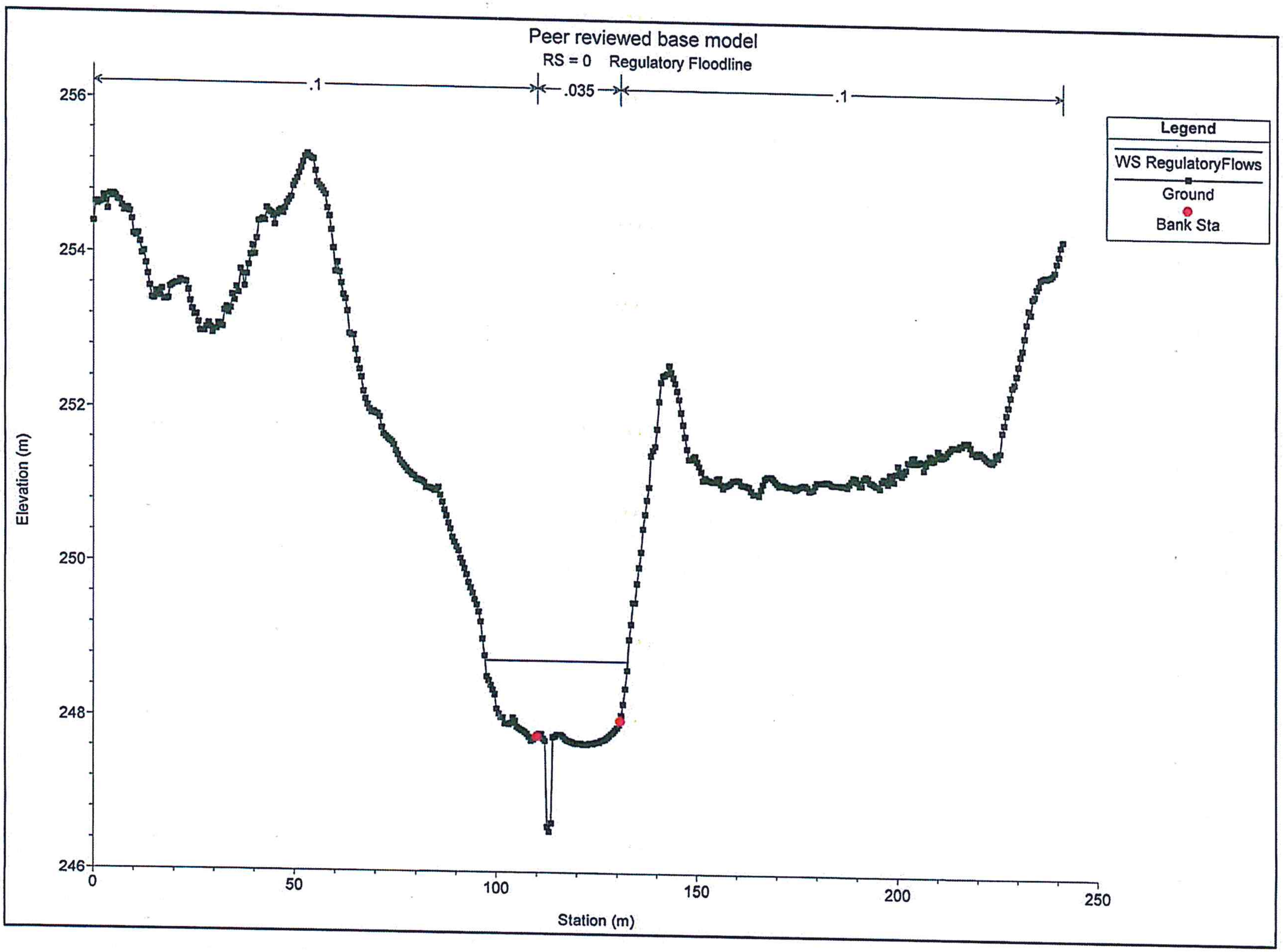
254
253
252
251
250
249
248
247
0
20
40
60
80
100
120
140
160
Station (m)


Peer reviewed base model
RS = 0 Regulatory Floodline
.1
.035
.1
Legend
WS RegulatoryFlows
Ground
Bank Sta
256
254
252
250
248
246
Elevation (m)
0
50
100
150
200
250
Station (m)

Appendix R
1988 MNR Flood Plain Planning & Implementation Guidelines
Appendices B and D

APPENDIX "D"

Floodproofing in Ontario

Index	Page

FLOODPROOFING IN ONTARIO

INTRODUCTION

Floodproofing is defined as a combination of structural changes and/or adjustments incorporated into the basic design and/or construction or alteration of individual buildings, structures or properties subject to flooding so as to reduce or eliminate flood damages. It is acknowledged that this term is somewhat misleading, since total protection from flood damage cannot always be assured. However, if applied effectively, floodproofing can play a significant role in comprehensive flood plain management.

Floodproofing is generally most appropriate in situations where moderate flooding with low velocity and short duration is experienced and where traditional structural flood protection, such as dams and channels are not considered to be feasible. Although measures can be applied to both existing and new developments, it is usually impractical, expensive and extremely difficult to floodproof existing buildings.

Since floodproofing is best incorporated into the initial planning and design stages, new development has the greatest potential for permanent structural adjustment. In general, floodproofing can be applied most economically and effectively in the design of new buildings in developing areas. It can also be applied to infilling situations and proposed additions in developed areas. However, as well as providing adequate flood protection, new development within developed areas will have to take into account special considerations such as the aesthetic blend with neighbouring properties.

NOTE: Certain information/data in this appendix was obtained or generated by MacLaren Plansearch Inc.

TYPES OF FLOODPROOFING

All floodproofing measures can be described as active or passive and providing wet or dry protection.

Active vs Passive

Active floodproofing requires some action, i.e. closing water tight doors or sandbagging for the measure to be effective. Advance flood warning is almost always required in order to make the flood protection operational.

Passive floodproofing measures are defined as those that are in place and do not require flood warning or any other action to put the flood protection into effect. These include construction of development at or above the regulatory flood level, or the use of continuous berms or floodwalls.

Dry vs Wet Protection

The object of dry floodproofing is to keep a development and its contents completely dry. Such can be carried out by elevating the development above the level of the regulatory flood or by designing walls to be watertight and installing watertight doors and seals to withstand the forces of flood waters. The benefit of elevated floodproofing is that it is passive and advance warning of an impending flood is not required. Temporary watertight closures, on the other hand, are considered to be active floodproofing usually requiring advance warning for operation.

Wet floodproofing is undertaken in expectation of possible flooding. Its use is generally limited to certain specific non-residential/non-habitable structures (e.g. arena, stadium, parking garage), but many of the techniques of wet floodproofing can be used with certain dry floodproofing approaches. The intent of wet floodproofing is to maintain structural integrity by avoiding external unbalanced forces from acting on buildings during and after a flood, to reduce flood damage to contents, and to reduce the cost of post flood clean up. As such, wet floodproofing requires that the interior space below the level of the regulatory flood remain unfinished, be non-habitable, and be free of service units and panels, thereby ensuring minimal damage. Also, this space must not be used for storage of immovable or hazardous materials that are buoyant, flammable, explosive or toxic. Furthermore, access ways into and from a wet floodproofed building must allow for safe pedestrian movement.

For new development, dry floodproofing above the level of the regulatory flood can generally be economically and easily achieved in the design and early construction phase. However, dry floodproofing of structures which will have portions below the level of the regulatory flood will require additional special design attention so that the structure will resist all loads including hydrostatic pressures.

TECHNICAL CONSIDERATIONS

Once flood waters enter a development, the risk of loss of life and flood damage will be determined by the location of the habitable portion of the buildings. The habitable portion of a structure is defined as living space intended for use by the occupant with the key concern being overnight occupancy. This includes buildings used for residential, commercial, recreational, and institutional purposes. In considering appropriate floodproofing measures, the habitable portion of the building should be designed to eliminate or minimize the risk of flood damage and loss of life.

As a rule, damages increase rapidly with the depth of flooding. Major structural damage occurs when a structure is weakened, totally collapses or is displaced. Damage to contents, such as finishes, trimwork, furniture, appliances, equipment and storage materials, also represents a substantial portion of the total loss. In addition, it is difficult to assign a dollar value to compensate for human suffering caused by a flood.

Thus, protection to at least the level of the regulatory flood is significant in reducing human suffering and property damage. In selecting between wet or dry flood protection, consideration must be given to the type of development, need for floodproofing and cost effectiveness. Further, selection of active or passive measures will depend on location of the habitable portion of the development below or above the level of the regulatory flood, local flood warning, and accessways.

As well, all mechanical and electrical systems should be designed and installed so that the heating, lighting, ventilation, air conditioning and other systems are not vulnerable to flood damage during the regulatory flood. Where flooding could interrupt key power supplies, it may be necessary to provide stand-by or backup systems, with power and controls located above the level of the regulatory flood.

In order to determine the most appropriate floodproofing measure, the full extent of the flood hazard must be evaluated. This section outlines technical considerations which can assist in determining the most suitable floodproofing measure.

(1) Flooding as a Threat to Life

Hazard to life is linked to the frequency of flooding, and to depth of flood waters and the velocity of flow in the flood plain. Depth increases buoyancy and velocity increases instability, so that each of depth and velocity should be studied independently or as a combined function.

(a) Depth

Any person in the midst of a flooded area will be acted upon by a buoyant force equal to the weight of water displaced by that person. The volume of displaced water and this force increases with depth until neutral equilibrium is reached and the person begins to float.

Average adults and teenage children remain stable when standing in flood depths up to about 1.37 m (4.5 ft.). The average school child 6 - 10 years old would float at about 1.1 m (3.5 ft.), although smaller, younger children in this range would be unstable at a depth of about 0.98 m (3.2 ft.).

Hence, in terms of depth and individuals who could be present in the flood plain during a flood:

- depths in excess of about 0.99 m (3.2 ft.) would be sufficient to float young school children

- a depth of about 1.37 m (4.5 ft.) is the threshold of stability for teenage children and most adults.

(b) Velocity

Moving water in the flood plain exerts a lateral force resulting from momentum thrust of the flood flow. This force acts to displace objects in a downstream direction. The shear force of friction of a person on the wet surface of the flood plain resists this force. However, even relatively low velocities of flow in the flood plain can pose possible flood hazards.

The force exerted by various flow velocities can be developed for different age and size groups, but because its effect is tied to depth, a better appreciation of velocity effects can be gained by looking at both depth and velocity in combination.

(c) Combination of Depth and Velocity

As a guide for personnel involved in stream flow/depth monitoring, the "3 x 3 rule" was developed in the U.S. The rule suggests that field staff would be at risk if the product (multiple) of the velocity and the depth exceeded 0.8 m2/s (9 ft. 2/s).

The Water Survey of Canada has the same rule of thumb and the Hydrometric Field Manual (1981) states, "a general rule of thumb which has been used in the past is arrived at through the product of the depth and velocity. Generally speaking, if the bed is firm and provides good footing, the product of these two factors should be slightly less than 1 m2/s, or roughly 9 ft.2/s".

It should be noted that this rule of thumb applies to trained professionals (usually men) whose regular work accustoms them to the dynamic forces of river flows, buoyant forces from partial submergence and recognition of potential hazards, e.g. rocks, depressions, etc. They also enter the stream with equipment which will assist them in maintaining stability, e.g. tag line, wading rod, strap-on cleats for greater stability.

It is considered highly unlikely that such equipment would be available to most occupants of floodproofed buildings in the flood plain. It seems equally unlikely that these occupants would have the same level of experience as water survey staff in dealing with high depths, current speeds, unsteady footing, or cold weather/water conditions.

As a result, it is likely that a 3 x 3 product (1 m2/s or 9 ft.2/s) represents an upper limit for adult male occupants in the flood plain and that it would be reasonable to consider something lower as being more representative of a safe upper limit for most flood plain occupants.

As noted earlier, any person on foot during a flood may be subject to a number of forces in the flood plain. Excluding impact by ice and/or other debris, these forces include:

- an upward buoyant force, equal to the weight of the fluid displaced
- a lateral force exerted by the moving water (linear momentum)
- unbalanced hydrostatic forces

Resisting these forces are:

- the shear force of friction acting through the weight of the person standing on a wet surface in the flood plain.

Figure 16 provides a graphical representation of depth and velocity hazards in the flood plain to show the limits of stability. Unit weights of 976,1464 and 1952 kg/m2 (200, 300 and 400 lb/ft2) are used. Adults of average size would fall into the range between 976 - 1952 kg/m2 (200 - 400 lb/ft2) but young children would more appropriately fall into a range of 732 - 1464 kg/m2 (150 - 300 lb/ft2). Only 7% of Ontario's population is within the 6 - 10 year age range, i.e. young children (Statistics Canada, 1981).

The coefficient of friction between foot apparel and wet grass, gravel bare soils, pavements or other wet surfaces under flood conditions is not well known. A standard table of friction coefficients suggests that friction factors in the order of 0.3 to 0.6 could be characteristic of the ratio of the force to body weight required to initiate movement over unlubricated, dry surfaces. It is assumed that a lower friction factor range would be representative of the same state for a person standing on wet grass or pavement under flood conditions. The sensitivity of the stability calculation to friction factors of 0.15 and 0.3 is shown on Figure 16.

Any flood plain situation giving velocity and depth conditions lower than the appropriate curve for that individual is one where that person would be in a stable condition in the flood plain. Conditions of velocity or depth exceeding the appropriate stability curve would be unstable conditions for the same individual.

It is also appropriate to note that this analysis is based on a person standing still in the flood plain. Once a person begins to move to install floodproofing measures or leave the flood-prone area, stability is reduced further.

Figure 17 presents the same chart with overlays of different "product rules" (products of depth x velocity in m and m/s (ft. and ft./s). The 3 x 3, 3 x 2 and 2 x 2 rules are shown on the figure with the use of 0.3 friction factor to represent wet conditions. The cross hatched area defines a region of depth and velocity combinations which are stable, low risk combinations for most individuals likely to be present in the flood plain during a flood.

The 3 x 3 line encloses a large area of depth and velocity conditions which would lead to instability for most individuals. The 3 x 2 line represents a general average, but it too encompasses areas of instability for many individuals.

FLOOD PLAIN STABILITY CHART FOR HUMANS

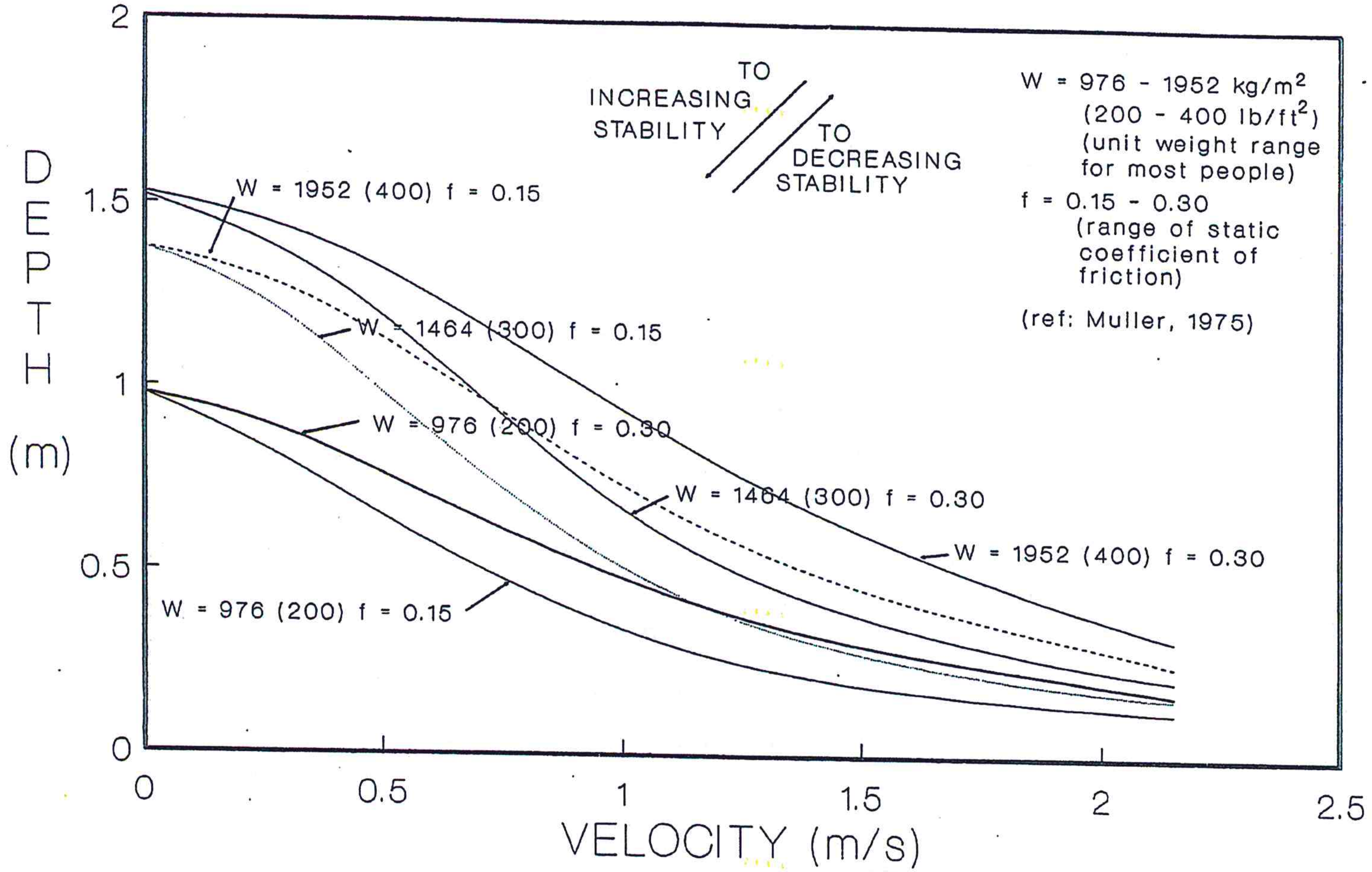


FIGURE 16

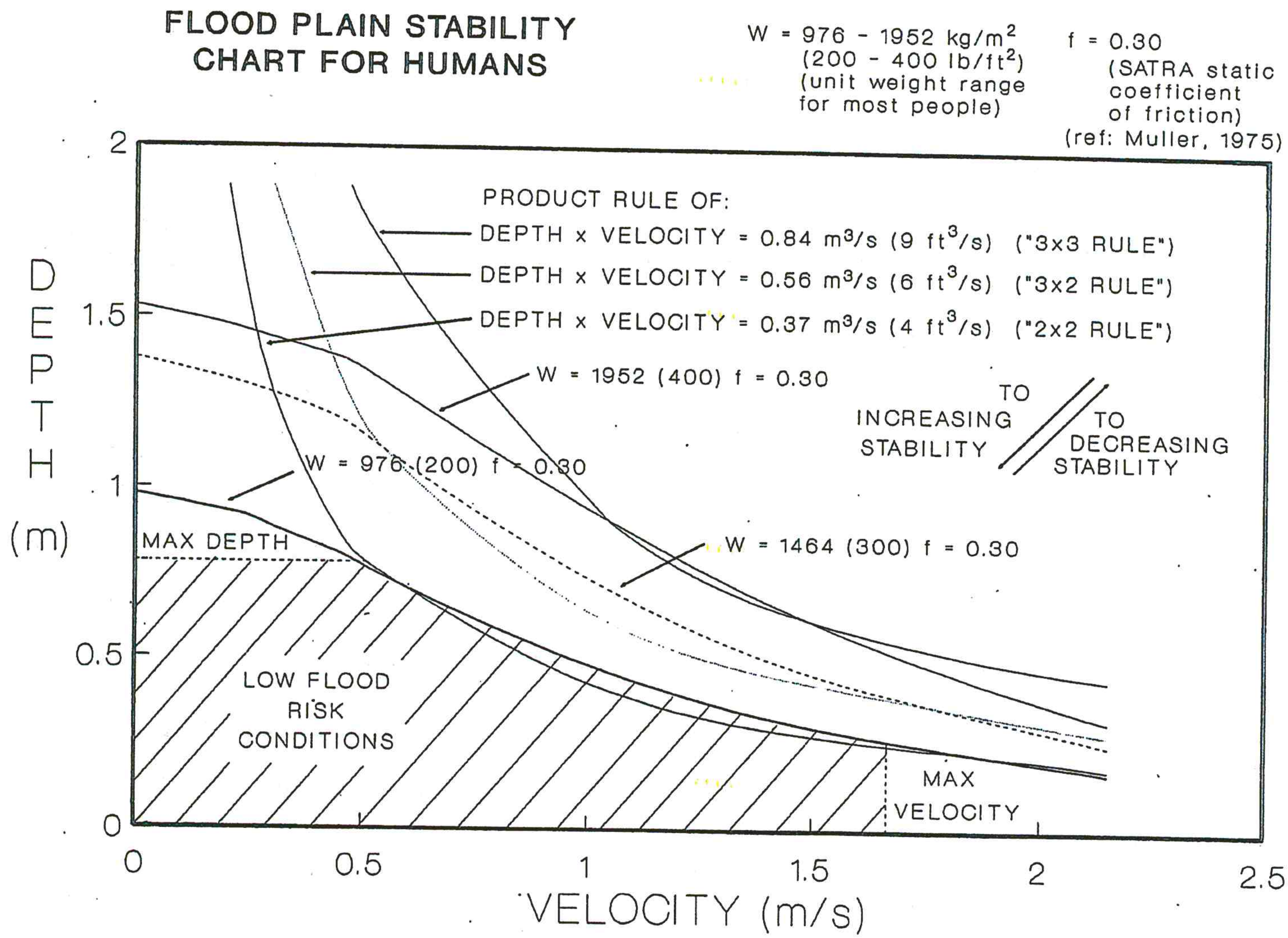

FLOOD PLAIN STABILITY
CHART FOR HUMANS
W = 976 - 1952 kg/m²
(200 - 400 lb/ft²)
(unit weight range
for most people)
f = 0.30
(SATRA static
coefficient
of friction)
(ref: Muller, 1975)
PRODUCT RULE OF:
DEPTH x VELOCITY = 0.84 m³/s (9 ft³/s) ("3x3 RULE")
DEPTH x VELOCITY = 0.56 m³/s (6 ft³/s) ("3x2 RULE")
DEPTH x VELOCITY = 0.37 m³/s (4 ft³/s) ("2x2 RULE")
W = 1952 (400) f = 0.30
W = 976 (200) f = 0.30
W = 1464 (300) f = 0.30
TO
INCREASING
STABILITY
TO
DECREASING
STABILITY
MAX DEPTH
LOW FLOOD
RISK
CONDITIONS
MAX
VELOCITY
DEPTH
(m)
2
1.5
1
0.5
0
0
0.5
1
1.5
2
2.5
VELOCITY (m/s)

FIGURE 17

The 2 x 2 line excludes most of the unstable conditions for most individuals and would appear adequate at first glance. However, the 2 x 2 rule also has limitations as shown on the graph. At low velocity but depths greater than 0.9 - 1.2 m (3 - 4 ft.), most individuals would become buoyant. Similarly in areas where flood plain depths may be less than 0.3 m (1 ft.) but where velocities exceed 1.5 - 1.8 m/s (5 - 6 ft./s) (encountered on roadways or bridge crossings, for example), stability conditions would be exceeded and some individuals would be swept off their feet.

Although no product rule exactly defines this region, a reasonable approximation of the low risk area can be made with a product rule that includes some constraints on the domain of depth and velocity. For example, a product depth and velocity less than or equal to 0.4 m2/s (4 ft.2/s) defines the low risk area providing that depth does not exceed 0.8 m (2.6 ft.) and that the velocity does not exceed 1.7 m/s (5.5 ft./s). These two constraints are marked by bold dashed lines in Figure D-2. By contrast, in a situation where the depth and velocity are 1.1 m (3.5 ft.) and 0.3 m/s (1 ft./s) respectively, the product is less than 0.4 m2/s (4 ft.2/s) but the depth limit is exceeded. Hence, these conditions define a high risk area for some individuals.

It is evident that this approximate classification is somewhat conservative; but until further research is undertaken, it provides a reasonable factor of safety for all individuals - young and old - who may be present in the flood plain.

(2) <u>Duration of Flood</u>

The duration of a flood or the length of time a river overflows its banks, reaches its crest and recedes to within its banks depends on the efficiency of the river to transport the flood waters. Since the size of the watershed, time of concentration and duration of a flood affects the type of impact and pressure on the development, floodproofing measures must be designed to withstand these forces for the required period of time.

(3) Rate of Rise and Fall

The rate of rise and fall of a flood to and from its crest can affect the type and extent of floodproofing. For example, where the rise and fall are very sudden, there may not be time to implement active floodproofing measures, such as watertight seals and doors and thus these approaches would be deemed unacceptable. The rate should also be considered in investigations of slope stability for certain types of soils where a quick drawdown of flood waters may pose problems.

(4) Flood Warning System

The availability of advance warning can play an important role in determining the most appropriate measure. Where active floodproofing procedures are contemplated, lead time for implementation of appropriate protective measures and devices must be related to the amount of advance warning.

(5) Structural Integrity

When buildings and structures are surrounded by flood waters, they cause unbalanced pressures and loadings on all wetted surfaces, which increase rapidly with depth. Unbalanced pressures can cause structural and sub-structural damages which can completely collapse or displace the development. In order to design the most appropriate floodproofing measures, it is important to determine the effect of stresses on the proposed building.

The stresses imposed on a building are due to hydrostatic, hydrodynamic and impact loadings, depending on its location. Hydrostatic loads are developed by water that is either still or moving at a low velocity. These loads may be defined as acting vertically downward (i.e., on floors), or vertically upward (i.e., uplift), or laterally when acting horizontally on walls. Hydrodynamic loads result from the flow of water against or around a structure at moderate or higher velocities. These loads are directly dependent on the velocity of flow, and can also adversely affect the floodproofing measures by causing erosion and scour. Impact loads are caused by water-borne objects, debris and ice. Their effects become greater and more crucial as the velocity and weight of objects increase. Impact loads are difficult to predict and define accurately. However, a reasonable allowance can be made with the knowledge of the conditions of the site.

(a) Superstructures (Above Ground)

Hydrostatic Loading Effects

Until the mid-1970s, it was assumed that standard design and construction practices - without modification - would be adequate to ensure that floodproofing by closures and seals could be conducted to moderate depth/hydrostatic loading without threatening the structural integrity of the above ground/superstructure of most buildings. However, various research by the U.S. Corps of Engineers over the years, has suggested otherwise.

Studies on structures of conventional design have determined that:

- brick veneer, frame structures (such as a typical home) would resist hydrostatic loading up to about 0.8 m (2.5 ft.) without damage

- concrete block structures with limited or no reinforcement (such as the small warehouse building) displayed similar resistance characteristics and would not be damaged by hydrostatic loadings up to 0.8 m (2.5 ft.). Above this at 0.9 and 1.2 m (3 and 4 ft.) depths deflection and cracking became significant

- solid brick structures responded in a similar manner. Tests with these also included end and side walls and walls with and without door openings. Walls with ceiling joists (with and without door openings) were found adequate to resist loadings to about 0.8 m (2.5 ft.). Walls with ceiling joists proved much stronger, but failed explosively when 2 x 4 supports were snapped.

- poured concrete walls were not tested, but from experience with other structural designs it was presumed that conventional design techniques would prove adequate against hydrostatic loads to at least 0.9 m (3 ft.).

Therefore, 0.8 m (2.5 ft.) would appear to be the upper limit of effective flood depth (static plus equivalent hydrodynamic head) which can be resisted by conventionally designed structures without affecting structural integrity.

Studies on structural integrity during flood conditions have also given an appreciation of the permeability of conventional structures, in that:

- brick structures of conventional design begin to leak almost immediately and badly, when in contact with flood waters;

- concrete block structures of conventional design also leak badly at a rate that exceeds that of brick structures.

Tests also conducted to determine if materials or surface coatings would enhance water tightness found:

- no clear sealants (e.g. epoxy) were completely effective

- no asphaltic material was completely effective

- embedded roofing felts with polyethylene sheeting laid between a second brick course were found effective - but exceptionally stringent quality control of workmanship was required (particularly at joints)

- flood shields/bulkheads also presented difficulties and were for the most part ineffective unless designed especially with gaskets smooth surfaces and locking bolts

- certain thick, non-tear materials can be used as external "wrappings" to effectively seal buildings against infiltration. These are very special materials and fall into the category of "active" measures vs "passive", permanent measures.

In summary then:

- conventional designs are not water resistant/waterproof for even low depths of flooding

- new structures should be designed from scratch for complete water tightness (or if not completely water tight must incorporate an internal system to collect and remove water seepage)

- new structures using conventional designs can be made water tight (without re-design) but the only proven approach so far uses external "wrapping".

Erosion

Flow velocities which will cause erosion of grass covered slopes or erosion around foundations are difficult to determine. Factors such as type of cover, slope and soil conditions must be taken into account. For most common situations, the range lies between 0.8 m/s and 1.2 m/s (2.5 ft./s and 4 ft./s) for easily eroded soils and 1.1 m/s to 1.5 m/s (3.5 ft./s to 5 ft./s) for more erosion resistant soils.

Impact Loading and Debris Accumulation

This aspect of structural integrity has not been studies in the field because it is practically impossible to establish velocity/depth limits associated with loadings caused by debris accumulation and the impact of floating objects on the flood plain. The nature of debris accumulations and size and shape of floatables simply varies too significantly.

Ice, debris and other floating materials can result in significant impact lading on buildings within the flood plain or increase the loads on buildings as a result of blockage. Although these loads are difficult to estimate a reasonable allowance must be made in design. Sites where the potential for such lading is high should simply be avoided or buildings should be designed/landscaped to intercept/deflect materials before the building is affected.

In cases where floodproofing is achieved by elevation on columns or piles, the clearing space between the columns or piles should measure perpendicular to the general direction of flood flow and should be adequately designed to minimize possible debris blockage. The open space created below the level of the regulatory flood should remain essentially free of more buoyant or hazardous materials.

(b) Substructures/Basements (Below Ground)

Based on normal (conventional) struction methods, any hydrostatic head in excess of 0.2 m (0.7 ft.) may result in damage to basement floors (i.e. the upward force of groundwater on the basement floor).

Even where the basement of a single storey brick or masonry structure has been structurally reinforced and/or made watertight, structural integrity or buoyancy may pose problems when groundwater (saturated soil) levels are 1.2 - 1.5 m (4 - 5 ft.) above the level of the basement floor. Much depends on the duration of the flooding, type of soil and the presence/effectiveness of the drainage system.

(6) Vehicular Access

Little or no information exists in the literature regarding ingress/egress criteria for vehicles.

The question of safety for the passage of vehicles can be subdivided into:

- flood depth and velocity considerations affecting egress of private vehicles from floodproofed areas

- flood depth and velocity affecting access of private and emergency vehicles to floodproofed areas.

(a) Private Vehicles

In general, water contact is one critical issue in terms of its effect on the ignition/electrical system and the exhaust system. In the former, the distributor and/or spark plugs are the main items of concern and those which are typical problem areas for most motorists.

Private vehicles come in all shapes and sizes and it is practically impossible to identify a "typical" vehicle for assessing the elevation of key electrical components from the road surface. It appears likely that a depth of about 0.4 m - 0.6 m (1.5 - 2 ft.) would be sufficient to reach the distributor or plugs of most private vehicles. They would fail to start at this depth and hence vehicular egress will be halted. Cars may start at lower depths but then "splash" from driving on wet pavement or from the radiator fan would become a concern.

The issue of the exhaust system and the effect that flooding can play on engine back pressures/expulsion of exhaust gases appears to be the controlling factor. Difficulty would probably be experienced in starting most vehicles if the vehicle is standing in water at a depth that covers the muffler. The vehicle may start and continue to run if it is quickly removed from the water but if it remains at that depth, there is a strong possibility that it will fail soon after.

Again, it is practically impossible to generalize this depth but for most family automobiles something in the range of about 0.3 m - 0.4 m (1 - 1.5 ft.) would be the maximum depth of flooding before potential egress problems would result.

A hazard diagram such as Figure D-2 may also be derived to evaluate the significance of flood velocity (and depth) on vehicles. Such a diagram would indicate that a "typical" North American car would not be significantly affected by velocities up to about 4.5 m/s (15 ft./s) or more at flood depths at less then 0.3 m (1 ft.). At running board depth or slightly above 0.3 m (1 ft.) the maximum velocity for stability drops to about 3 m/s (10 ft./s) and at about 0.4 m (1.5 ft.) depth an average vehicle may be displaced by velocities as low as 0.3 - 0.6 m/s (1 - 2 ft./s), with smaller vehicles becoming buoyant.

(b) Emergency Vehicles

Emergency vehicles operate under the same constraints relating to the electrical/exhaust system. Most police vehicles and ambulances would be limited by exhaust considerations, although emergency vans are better equipped to avoid splash problems since the key electrical components are higher above the road surface.

Diesel fire vehicles with top exhausts appear best suited for flood conditions. Their road clearance is high and it is suggested that 0.9 m - 1.2 m (3 - 4 ft.) of flood depth would not present a problem. These vehicles are about 10 times heavier than most automobiles and hence are resistant to displacement by higher velocity flood flows. Operations at velocities in excess of 4.5 m (15 ft./s) would probably not pose a problem when these vehicles are moving over a good/non-eroding base.

(7) Portable or Mobile Buildings and Structures

A portable or mobile building is one that is not permanently tied or anchored to a foundation and can be transported by means of a hauler. Portable or mobile buildings can be located on individual sites or in a park or subdivision. They can be used for temporary purposes, such as for construction crews or as full-time residences/seasonal homes with overnight occupancy.

When located in flood plains, portable or mobile buildings are highly susceptible to flood damage. Since they are not affixed to a permanent foundation, flood waters may easily sweep such buildings off their sites. Without advance warning, residents can be entrapped in the building. In addition, portable or mobile buildings can increase the flood hazard as they collide with other structures or block bridge openings or culverts. Despite this, portable or mobile buildings often are located in flood plains because:

- flood plain land acquisition costs may be lower;
- swamp conditions and higher water table which prevail in flood plain areas may preclude construction of permanent homes with basements; and
- potential recreational access by locating close to the water's edge.

Ideally, portable or mobile buildings should not be located in the flood plain. However, when located in the flood fringe, they should be properly floodproofed to the regulatory flood level, in order to prevent flotation, collapse and lateral movement. Due to the inherent hazard of remaining in a mobile building during a flood, contingency plans indicating escape routes and alternative vehicular accessways should be prepared.

Where the portable or mobile building is on site temporarily, it may not be feasible to meet all the requirements for floodproofing. In such cases, temporary location of portable and mobile buildings in the flood fringe may be considered where the time frame is very short and sufficient flood warning would allow the structure to be hauled away in advance of the flood.

(8) Floodproofing Complexity

The complexity of floodproofing techniques (and to a degree the cost) is best related to depth and type of floodproofing considered.

(a) Closures and Seals

It appears that external walls can be floodproofed by closures and seals to a flood depth of about 0.8 m (2.5 ft.). Beyond this depth, structural integrity is threatened and special reinforcing or revised designs (with poured concrete walls for example) are required.

Dry floodproofing to this depth can be completed with the use of impervious external "wrappings". These contingency wrappings are anchored beneath the ground surface along the foundation and rolled upward and hung into place along the walls of buildings prior to flooding. Equivalent dry floodproofing using internal sealants, doubled walls, etc. with flood shields at openings is more complex, expensive and uncertain as to effectiveness.

Basements can be closed and sealed to levels of about 1.2 - 1.5 m (4 - 5 ft.) above the floor slab with poured concrete designs employing additional reinforcement and special attention to monolithic construction. Beyond this level, the procedure becomes complicated as buoyancy/uplift must be addressed through anchors and/or added wall and slab thickness.

Overall, closures and seals is fraught with possible problems and is considerably more complicated than other floodproofing approaches.

(b) Elevated Structures

Structures on Fill

Elevation floodproofing on fill is generally considered for slab on grade construction. It is not a complex procedure and conventional building techniques are employed once the pad is down. The principal concern is fill compaction which must usually be done in 0.2 - 0.3 m (0.5 - 1 ft.) lifts. Beyond 0.6 - 0.9 m (2 - 3 ft.), however, pad sizes increase, compaction requirements become more important and an engineer or soils consultant should be employed for design review and inspection. Increased elevation may also lead to requirements for pad sizes in excess of lot size and, hence, additional requirements for erosion protection, etc.

Houses with conventional basements can also be placed in fill to elevate the first floor to a level about 2.1 - 2.4 m (7 - 8 ft.) above grade (i.e. the basement is founded on grade and the basement walls are surrounded by fill). At 1.2 - 1.5 m (4 - 5 ft.) above grade, the procedure is complicated by the need for wall and slab reinforcement, and anchors to prevent buoyancy.

Elevation on Columns, Piles, Piers and Extended Foundation Walls

Elevated structures using these techniques must be designed with consideration for debris loading, orientation of supports, effective submergence on foundation soil conditions and anchorage, bracing and connection details, availability of mechanical equipment, etc. In most instances, an engineer should be consulted to ensure that the possible effects of flooding are considered in the design. There are more factors to consider than conventional house construction on fill and, hence, these approaches could be considered more complex.

The majority of elevated buildings use posts for support (steel or timber). Installation becomes more complex at lengths in the range of 3.6 - 4.8 m (12 - 16 ft.) since machinery is needed for installation. A range of 3 - 3.6 m (10 - 12 ft.) seems typical for most homes which use extended posts.

Mechanically-driven piles are reported to be the best solution if severe erosion is anticipated. Pile driving equipment and skilled operators are at a premium and, because of the initial expense, this technique may be too complex/unnecessary for flood depths less than 1.5 - 1.8 m (5 - 6 ft.).

Piers/columns are generally constructed with brick, concrete block or poured concrete. The common elevation range for each of these approaches is as follows, beyond which increasing complexity is assumed:

- 0.4 - 1.8 m (1.5 - 6 ft.) for brick piers
- 0.4 - 2.4 m (1.5 - 8 ft.) for reinforced concrete masonry piers
- 0.4 - 3.6 m (1.5 - 12 ft.) (or more) for poured in place, reinforced concrete piers

Extended foundation walls make a relatively simple and effective foundation for elevated structures but again must be designed with consideration for loads and pressures anticipated in the flood plain.

Berms and Floodwalls

Berms (or levees) and floodwalls used for floodproofing are low structures built around single homes or individual industrial complexes. Proper design is more complex since material and construction practices must be closely monitored, they must be regularly maintained (in the case of berms), and they usually require adequate pumping facilities to handle interior drainage and seepage. Both berms and floodwalls usually have some opening for access and consideration must be given to closure.

In many instances, berms and floodwalls should be designed by qualified professional engineers.

Intentionally Flooding a Building (Wet Floodproofing)

Intentionally flooding a building for the purpose of balancing internal and external pressures so as to maintain structural integrity is in itself not complex. To ensure minimal damage and quick clean up, a number of conditions have been placed on the use of wet floodproofing by agencies such as Canada Mortgage and Housing Corporation. Requirements include:

- at least two openable windows located on opposite sides of the building
- tops of window sills to be not less than 150 mm below grade (to allow flood water into the basement)
- basements to remain unfurnished and contain non-habitable space only
- mechanical and electrical equipment, heating units and duct work to be located above the regulatory flood level
- sump pump required
- etc.

While wet floodproofing may be designed and provided for in a building, there is no guarantee over time that the requirements will be maintained. In particular, it is difficult to control the "finishing off" of basements which would then result in damages when wet floodproofing measures were put into effect. Therefore, while wet floodproofing may appear desirable initially, the ability to ensure the principles and requirements of wet floodproofing are maintained in the future must also be considered.

Appendix S
Peer Review Comments

Christie Peacock

From: Bryon Keene [BKeene@quinteconservation.ca]
Sent: November-03-13 2:05 PM
To: 'pbuckley@kawarthaconservation.com'; 'cpeacock@grca.on.ca'
Cc: 'pwaring@kawarthaconservation.com'; 'jmueller@grca.on.ca'
Subject: Re: Ops #1 Drain and Jennings Creek Draft Hydraulic Report
Attachments: Review of Hydrology of OPS.docx

Hi
Please find my preliminary comments on hydrology.
Bryon

From: Paul Buckley [mailto:pbuckley@kawarthaconservation.com]
Sent: Friday, November 01, 2013 11:11 AM Eastern Standard Time
To: Bryon Keene; cpeacock@grca.on.ca <cpeacock@grca.on.ca>
Cc: pwaring@kawarthaconservation.com <pwaring@kawarthaconservation.com>; jmueller@grca.on.ca <jmueller@grca.on.ca>
Subject: Ops #1 Drain and Jennings Creek Draft Hydraulic Report

Just a quick note that the Draft Hydraulic Report has been formatted, printed, and will be picked up by Purolator Monday am to be shipped down to Bryon.

Paul Buckley
GIS/Survey Technician
KAWARTHA CONSERVATION
277 Kenrei Road
Lindsay, ON K9V 4R1

Tel: 705.328.2271 ext. 237
Fax: 705.328.2286

Review of Hydrology of OPS #1 Junction Creek – Notes

Summary of Peer Review Comments - Hydrology

The peer review directions received from KRCA peer review committee were used to direct the hydrologic review by Quinte Conservation staff, Bryon Keene, P.Eng.

Generally, the hydrologic report was well presented and documented. It is evident that KRCA expended great effort to collect and confirm the input parameters for the modelling work. The model inputs and parameters were fully explained and presented in appendices and supporting Excel sheets. The directions from the peer review committee were included and explanations were provided on how the model setup adhered to peer review committee directions. With a few exceptions (precipitation and swm) Quinte Conservation reviewer agrees with the appropriateness of the data and sensitivity analysis used to highlight parameters where more attention is deserved.

Quinte Conservation has identified two areas where more explanation or investigation could help with the defensibility of the hydrologic model. The precipitation values, while adhering to the direction of the peer review committee could be seen as underestimating the potential outflows. This is tempered with the conservative approaches taken by modellers to select parameters and develop flows in other areas. SWM peak flow reductions were ignored on the direction of the peer review committee. There was not enough information available on the existing facilities and their locations to determine if large amounts of storage exists that could introduce a lag effect leading to superimposition of peak flows.

These are discussed later. The following section contains observations and comments on the document.

Storage due to backwater effects from undersized culverts was listed as an explanation for using the dynamic wave model. Areas where undersized culverts were identified and therefore relied upon for the peak flow reduction should be identified and protected from future 'culvert improvements'.

Peer review notes and comments

Precipitation

Precipitation from Lindsay station was used per peer review committee instructions. Appendix L describes hydrology modeling assumptions. Precipitation using the Peterborough station 2012 curves was found to be between 2-6% higher when compared to the Lindsay station. Quinte Conservation reviewed the 2012 Peterborough Curves (1971-2006) total depths (mm) and compared to the previous (1971-2002). The table below shows the differences between those data.

	2	5	10	25	50	100
5 min	0.0%	-1.0%	-0.8%	-1.4%	-1.3%	-1.8%
10 min	0.0%	-1.4%	-1.2%	-1.5%	-1.8%	-1.7%
15 min	0.0%	-0.5%	-1.4%	-1.2%	-1.4%	-1.6%
30 min	0.0%	-0.8%	-1.1%	-0.9%	-1.4%	-1.2%
1 h	-0.5%	-1.0%	-1.1%	-1.2%	-1.1%	-1.1%

2 h	0.0%	-0.3%	-0.4%	-0.5%	-0.5%	-0.4%
6 h	0.3%	1.2%	1.5%	1.8%	2.0%	2.2%
12 h	1.1%	2.1%	2.5%	2.8%	3.0%	3.1%
24 h	1.9%	3.7%	4.4%	5.0%	5.5%	5.7%

The longer duration storms showed an increase in total depth of up to 6% (100 yr 24hr). The 6hr and 12hr depths increased 2% and 3%. This may be a climate change effect or it may be simply cycles in the climate captured by the additional 4 years of data. It is possible that the Lindsay station could have seen similar changes in precipitation had the station not been discontinued.

	Lindsay			Peterborough 1971-2006			% Change		
Return Period (yr)	6-hour (mm)	12-hour (mm)	24-hour (mm)	6-hour (mm)	12-hour (mm)	24-hour (mm)	6-hour (mm)	12-hour (mm)	24-hour (mm)
2	36.6	39.8	43.6	38.7	44.4	49	5.7%	11.6%	12.4%
5	50.8	53.2	56.4	52.4	58.9	65	3.1%	10.7%	15.2%
10	60.2	62.2	64.8	61.5	68.5	75.6	2.2%	10.1%	16.7%
25	72.1	73.4	75.4	72.9	80.6	88.9	1.1%	9.8%	17.9%
50	80.9	81.8	83.3	81.4	89.5	98.9	0.6%	9.4%	18.7%
100	89.7	90.1	91.2	89.9	98.4	108.7	0.2%	9.2%	19.2%

Quinte Conservation reviewed the 1971-2006 Peterborough Airport curves and compared total depths to the Lindsay station and found Peterborough data exceeded Lindsay in total depths for the 6hr to 24hr duration. Depths for the 12hr vary ranging from 12% to 9% higher (2yr to 100yr respectively). KRCA developed new a, b, c parameters to correct precipitation results to more closely match the Lindsay total depths (column 3 in chart above). The chart below is taken from KRCA and shows the 12hr total precipitation depths using the old and new a, b, and c values.

Return Period Storm	Rainfall Volumes (mm)					Compared to Measured	
	Measured	Using CKL a, b, c	% Diff	Using new a, b, c	% Diff	Using Peterborough 1971-2006	% Diff
2	39.8	44.3	111%	39.6	99%	44.4	112%
5	53.2	62.5	117%	52.7	99%	58.9	111%
10	62.2	75	121%	61.9	100%	68.5	110%
25	73.4	90.6	123%	72.7	99%	80.6	110%
50	81.8	100.4	123%	81.7	100%	89.5	109%
100	90.1	114.3	127%	89.7	100%	98.4	109%

In each case the corrected values (column 5) is slightly lower in precipitation depth than column 3 whereas the Peterborough values are higher than the Lindsay measured values.

It is recommended that the study team develop an opinion on climate change and if precipitation increases would be considered in future scenarios or if SWM techniques would be specified to mitigate potential climate change impacts.

Timmins

No aerial reduction for the Timmins per peer review committee instructions.

Catchment Discritization

Modellers used GIS to delineate catchments and supplemented with site surveys. Some portions of the watersheds and flow paths were manually generated. Manual discretization and digitization of watersheds is acceptable and can provide improved results.

Impervious Cover

Digitization of impervious surfaces reduced the %imperviousness to as low as 66% of AECOM values. Comment: This phenomenon has been noted by Quinte Conservation in a similar investigation in Belleville. Much like the high sensitivity to CN for rural subcatchments, models are typically sensitive to imperviousness in urban subcatchments. The municipal standards are used for minor storm pipe sizing. Zoning would restrict development beyond a specified imperviousness, but using a derived impervious cover determined with GIS estimation techniques may underestimate eventual imperviousness. This impact is overcome in future conditions as an impervious cover was agreed upon by the peer review committee based upon municipal zoning restrictions.

Lumped catchments

Report states "Kawartha Conservation amalgamated Aecom's catchments 10, 11, 12, 13, and 14 into one large catchment (labeled catchment 5)." It is expected that the lumping of these catchments will have the effect of dampening the peak flow of the larger catchment. This is evident in the Table 0.6 node at the Dew Drop Inn. The KRCA model features a reduction in catchments from 32 to 16. Some discussion about the effects of lumping catchments could be included.

CN

CN values were determined appropriately.

SWM facilities

SWM facilities were not included in the hydrology per peer review committee instructions. This is generally a conservative approach. SWM facilities provide both peak flow reduction and peak delay. No indication was provided on the storage volumes of the existing facilities. The developed areas appear to be located primarily in the basins 1, 2, 3, 4 (upper watershed) and 12, 14, 15 and 16 (lower watershed). The lag effect in the upper portion of the watershed would typically work to reduce the peak experienced in the lower reaches. However, a lag in the lower portion with significant storage could lead to superimposed peaks. Future scenario, basins 11 and 12 (49.4 cms and 36.1 cms respectively) have much higher peak outflows than other catchments (4.5 cms to 27.4 cms). Consider the impact of

SWM lag effect if storage is included in the lower urban reaches. Perhaps this could be included in the sensitivity analysis and further consider testing a future scenario where development includes SWM to see if the effect is significant or not. If future development uses traditional SWM design constraints of post-to-pre peak control the lag effect could be noticeable.

Section 6.1 – use of specific site development plans and swm. Agree with KRCA's use of generalized development approach. Using detailed swm plans and site development plans is not recommended. Have experienced floodline mapping projects in the past where detailed development plans were included in the development of the floodline mapping products. The development plans fell through and the mapping products had to be changed. It is 'better' to use generalized plans.

Sensitivity Analysis

Hydrologic elements were varied and found to have sensitivities ranging from very sensitive to not sensitive. These are in order of decreasing sensitivity; CN, catchment width, Manning's n, and Initial abstraction.

Storm distribution.

Agree with the selection of the 30% AES Southern Ontario distribution.

Recommendations

It is suggested that some elaboration or reconsideration of the following be provided in the final report:

1) Review the decision to maintain the older precipitation statistics considering the Peterborough Airport records show a 3%increase in 12hr total depth from earlier Peterborough IDF and 10% higher total depths as compared to the values used in the study.
2) Consider the impacts of SWM lag. Will the committee be developing recommendations for the municipality to direct future development with respect to siting and sizing of facilities? This would be an important follow up study to ensure future floodlines can be maintained.
3) Test or discuss the muting effects of lumping the catchments.

Christie Peacock

From: Bryon Keene [BKeene@quinteconservation.ca]
Sent: November-27-13 1:37 PM
To: pwaring@kawarthaconservation.com
Cc: 'Christie Peacock'; mpeacock@grca.on.ca
Subject: RE: Peer Review Comments
Attachments: Final Stage 2 Peer Review of Hydrology of Ops - Jennings Creek 2013 Nov 26.docx

Peter,
Attached are my hydrologic study comments.
Bryon

Bryon Keene, P.Eng.
Water Resources Manager
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RR#2, 2061 Old Hwy #2
Belleville, Ontario, K8N 4Z2
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From: Peter Waring [mailto:pwaring@kawarthaconservation.com]
Sent: Thursday, November 21, 2013 10:46 AM
To: Bryon Keene
Cc: 'Christie Peacock'; mpeacock@grca.on.ca
Subject: RE: Peer Review Comments
Importance: High

Hi Bryon,

Thank you! I will forward the questions along to Christie Peacock for her response so that you can finalize your comments accordingly.

Also Bryon could you give me a timeline when we can expect your formal comments on the hydrologic report. I recall you provided some preliminary comments earlier. We are reluctant to do any additional modeling (dynamic modeling comparisons) until we have addressed your comments on both the hydrologic and hydraulic model reports submitted to date.....Appreciated ..thx.

Regards,

Peter Waring
Kawartha Conservation
Manager of Planning and Regulations
277 Kenrei Road
Lindsay, ON K9V 4R1

(705) 328-2271 Ext. 213

From: Bryon Keene [mailto:BKeene@quinteconservation.ca]
Sent: Thursday, November 21, 2013 8:56 AM
To: 'pwaring@kawarthaconservation.com'
Cc: 'cpeacock@grca.on.ca'; 'mpeacock@grca.on.ca'
Subject: Re: Peer Review Comments

Hi Peter. I completed my hydraulic review. No significant concerns. Some questions I would like to ask:
1). There are several cross sections where a depression beside the channel is separated by high ground. I presume a levy was specifically not selected in these locations because flood waters would have access through low areas that are either upstream or downstream of the section. Is this correct?
2). You will be regulating the 'extended sections' plan?
3). The location where you tested dyking out a large portion of floodplain along the highway. This area would have provided some storage and peak attenuation. Was this reflected back in the hydrology model and by how much would the dynamic routing change due to this loss of storage?
4). In the report changes in flood elevation are considered minor, but in the lower reaches Flood elevations drop by a metre compared to previous studies. Is this due in large part to the reduced flow used or is this more explained by imprpvements in the GR records?
5). The report states overbank n values are between 0.035 and 0.1, but at times 0.016 is used. The report should just discuss why the lower values were necessary.

I will formalize my review later tonight and if you could answer any of these questions my comments will reflect them.

Thanks

Bryon

From: Peter Waring [mailto:pwaring@kawarthaconservation.com]
Sent: Wednesday, November 20, 2013 12:50 PM Eastern Standard Time
To: Bryon Keene
Cc: 'Christie Peacock' <cpeacock@grca.on.ca>; mpeacock@grca.on.ca <mpeacock@grca.on.ca>
Subject: RE: Peer Review Comments

Hi Bryon ,

That's terrific ...much appreciated.

I think the Technical Committee meeting Nov 25th may end up getting rescheduled.

That said I would like to get a sense from you whether or not you have significant concerns that may require face to face with the Technical Committee. If they are relatively minor then I think we would just take time to address them in –house and schedule a Technical Committee meeting accordingly.

Please advise...thx

Peter Waring
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OPS #1 DRAIN JENNINGS CREEK – HYDROLOGY REPORT PHASE TWO PEER REVIEW

The review comments presented here are in the format requested by the peer review committee for the phase two review. These comments incorporate previous preliminary comments issued by Quinte Conservation peer reviewer, Bryon Keene, P.Eng.

Model Parameters (phase two review)

1. **Are the model parameters fully explained and is the model sufficiently developed and understood?**

Response

Model parameters are presented in section 3 of the report. These include: catchment delineation, estimation of total imperviousness, area, channel length, overland flow length, channel slope and catchment slope, time of concentration and time of peak, Curve Numbers, catchment shape and initial abstraction parameters. Each of the parameters were explained in the report and basic methodologies were provided in the text or within the appendices.

Many of the parameters were developed with the assistance of GIS mapping layers residing with Kawartha Conservation. These permitted detailed development of the hydrologic parameters and good documentation of the calculations included in the appendices. Land use and soils layers were also consulted by Kawartha Conservation and the development of the appropriate curve numbers was well explained.

Digitization of impervious surfaces reduced the %imperviousness to as low as 66% of AECOM values. Comment: This phenomenon has been noted by Quinte Conservation in a similar investigation in Belleville. Much like the high sensitivity to CN for rural subcatchments, models are typically sensitive to imperviousness in urban subcatchments. The municipal standards are used for minor storm pipe sizing. Zoning would restrict development beyond a specified imperviousness, but using a derived impervious cover determined with GIS estimation techniques may underestimate eventual imperviousness. This impact is overcome in future conditions as an impervious cover was agreed upon by the peer review committee based upon municipal zoning restrictions.

Report states "Kawartha Conservation amalgamated Aecom's catchments 10, 11, 12, 13, and 14 into one large catchment (labeled catchment 5)." It is expected that the lumping of these catchments will have the effect of dampening the peak flow of the larger catchment. This is evident in the Table 0.6 node at the Dew Drop Inn. The KRCA model features a reduction in catchments from 32 to 16. Some discussion about the effects of lumping catchments could be included in the final report.

2. **Are the underlying assumptions fully explained?**

Response

The study team provided adequate explanation of model assumptions.

3. Has the appropriate data been used for model construction, calibration & validation?

Response

Model Calibration and Validation was not performed due to a lack of stream gauging data. Instead, sensitivity analyses were performed on basin parameters. No sensitivity analysis was performed on the precipitation input data. My comments on precipitation are provided below.

Precipitation

Precipitation from Lindsay station was used per peer review committee instructions. Appendix L describes hydrology modeling assumptions. Precipitation using the Peterborough station 2012 curves was found to be between 2-6% higher when compared to the Lindsay station. Quinte Conservation reviewed the 2012 Peterborough Curves (1971-2006) total depths (mm) and compared to the previous (1971-2002). The table below shows the differences between those data.

	2	5	10	25	50	100
5 min	0.0%	-1.0%	-0.8%	-1.4%	-1.3%	-1.8%
10 min	0.0%	-1.4%	-1.2%	-1.5%	-1.8%	-1.7%
15 min	0.0%	-0.5%	-1.4%	-1.2%	-1.4%	-1.6%
30 min	0.0%	-0.8%	-1.1%	-0.9%	-1.4%	-1.2%
1 h	-0.5%	-1.0%	-1.1%	-1.2%	-1.1%	-1.1%
2 h	0.0%	-0.3%	-0.4%	-0.5%	-0.5%	-0.4%
6 h	0.3%	1.2%	1.5%	1.8%	2.0%	2.2%
12 h	1.1%	2.1%	2.5%	2.8%	3.0%	3.1%
24 h	1.9%	3.7%	4.4%	5.0%	5.5%	5.7%

The longer duration storms showed an increase in total depth of up to 6% (100 yr 24hr). The 6hr and 12hr depths increased 2% and 3%. This may be a climate change effect or it may be simply cycles in the climate captured by the additional 4 years of data. It is possible that the Lindsay station could have seen similar changes in precipitation had the station not been discontinued. It is important to also note that the published IDF curves are not absolute values but are statistically derived and have associated confidence intervals.

	Lindsay			Peterborough 1971-2006			% Change		
Return Period (yr)	6-hour (mm)	12-hour (mm)	24-hour (mm)	6-hour (mm)	12-hour (mm)	24-hour (mm)	6-hour (mm)	12-hour (mm)	24-hour (mm)
2	36.6	39.8	43.6	38.7	44.4	49	5.7%	11.6%	12.4%
5	50.8	53.2	56.4	52.4	58.9	65	3.1%	10.7%	15.2%

10	60.2	62.2	64.8	61.5	68.5	75.6	2.2%	10.1%	16.7%
25	72.1	73.4	75.4	72.9	80.6	88.9	1.1%	9.8%	17.9%
50	80.9	81.8	83.3	81.4	89.5	98.9	0.6%	9.4%	18.7%
100	89.7	90.1	91.2	89.9	98.4	108.7	0.2%	9.2%	19.2%

Quinte Conservation reviewed the 1971-2006 Peterborough Airport curves and compared total depths to the Lindsay station and found Peterborough data exceeded Lindsay in total depths for the 6hr to 24hr duration. Depths for the 12hr vary ranging from 12% to 9% higher (2yr to 100yr respectively). KRCA developed new a, b, c parameters to correct precipitation results to more closely match the Lindsay total depths (column 3 in chart above). The chart below is taken from KRCA and shows the 12hr total precipitation depths using the old and new a, b, and c values.

	Rainfall Volumes (mm)					Compared to Measured	
Return Period Storm	Measured	Using CKL a, b, c	% Diff	Using new a, b, c	% Diff	Using Peterborough 1971-2006	% Diff
2	39.8	44.3	111%	39.6	99%	44.4	112%
5	53.2	62.5	117%	52.7	99%	58.9	111%
10	62.2	75	121%	61.9	100%	68.5	110%
25	73.4	90.6	123%	72.7	99%	80.6	110%
50	81.8	100.4	123%	81.7	100%	89.5	109%
100	90.1	114.3	127%	89.7	100%	98.4	109%

In each case the corrected values (column 5) is slightly lower in precipitation depth than column 3 whereas the Peterborough values are higher than the Lindsay measured values.

It is recommended that the study team develop an opinion on climate change and if precipitation increases would be considered in future scenarios or if SWM techniques would be specified to mitigate potential climate change impacts.

Timmins

No aerial reduction for the Timmins was performed according to the peer review committee instructions. This is approach is reasonable.

4. Can the model be easily changed/updated to account for new information?

Response

The model can be easily updated. For example, new precipitation curves can be readily reviewed, changed land use can be extracted from GIS and new CN values derived (outside the model environment) may be replaced and the model rerun. This model can be maintained by Kawartha Conservation and used to test all development proposals. In particular the concern with lag effect can be tested at nodes of interest and recommendations can be made regarding the effectiveness of SWM associated with development

5. Are the model parameters correct and the best available?

Response

I reviewed all model parameters in the report and appendices. The sources of the parameters were referenced by Kawartha Conservation and in my opinion they used the best available information to develop them. Extensive field investigations were performed by Kawartha Conservation to determine extents of drainage boundaries and any uncertainties were handled with conservatism. Computer generated drainage boundaries were corrected by hand in some places to account for observed connections that the LiDAR field pickup could not capture. This method is acceptable. It is my opinion that the process followed by Kawartha Conservation to determine model parameters was the best available.

Outputs (phase two review)

1. Did the modelers follow the approved methodologies and where not are appropriate explanations provided?

Response

The report contains sufficient documentation to discern the direction of the peer review committee on how the modelling was to be carried out. The report writers explained in each case how the direction was followed. Variations during the modelling process were presented to the peer review committee. In this way all modelling simulations were transparent and approved.

2. Does the model produce outputs that are directly useful to decision makers or must the results be interpreted by experts before use in decision making?

Response

Yes, model outputs were in the form of flows and nodes. This information is provided to the hydraulic model. Nodes were selected to provide both points of comparison to previous studies and important control point data for the hydraulic model.

3. Do the hydrology outputs provide information required to:

a) assess flood plain management issues?

Response

Yes, the node selection is the most critical to develop appropriate and useful outflows. Nodes are placed on all control points of interest.

b) explain the specific high flow water regime in the locale?

Response

The peer review committee has determined that the dynamic wave flood routing will be used as this will explain the high water flow regime more appropriately in Ops Drain #1 and Jennings Creek. This question is outside of my purview. However, the flows investigated are well documented and the selection of the critical flow for use in the next modelling phase is well supported.

c) compare current and possible future flow and flood scenarios i.e. aid in making decisions on protection of citizens?

Response

Both scenarios were well investigated and documented.

4. Does the model correctly track flow paths from headwaters to outlets or hydrologically sensitive areas?

Response

The report details significant effort to identify all contributions to the hydrologic system and confirm the flow paths. Any uncertainties were handled with conservative approach. This is well reported and appears well represented.

5. Does the model correctly assess local hydrologic conditions and cumulative impacts?

Response

Storage due to backwater effects from undersized culverts was listed as an explanation for using the dynamic wave model (section 4.1). Section 4.1 later describes that culverts were removed from the modelling to allow attenuation to be determined solely from the dynamic wave channel routing. Final report should clarify that the dynamic wave model was selected due largely to system wide storage resulting from vast shallow overland and channel flow. Since the culvert storage was removed from the modelling these should not be described as the reason for selection of the dynamic wave modelling routines. If undersized culverts were identified, and therefore relied upon for the peak flow reduction, these should be identified and protected from future 'culvert improvements'.

Cumulative impacts from development would be reasonably represented in future scenario. SWM storage was investigated, but not modelled upon the direction of the peer review committee. This is generally a conservative approach. SWM facilities provide both peak flow reduction and peak delay. No indication was provided on the storage volumes of the existing facilities. The developed areas appear to be located primarily in the basins 1, 2, 3, 4 (upper watershed) and 12, 14, 15 and 16 (lower watershed). The lag effect in the upper portion of the watershed would typically work to reduce the peak experienced in the lower reaches. However, a lag in the lower portion with significant storage could lead to superimposed peaks. Future scenario, basins 11 and 12 (49.4 cms and 36.1 cms respectively) have much higher peak outflows than other catchments (4.5 cms to 27.4 cms). Consider the impact of SWM lag effect if storage is included in the lower urban reaches. Perhaps this could be included in the sensitivity analysis and further consider testing a future scenario where development includes SWM to see if the effect is significant or not. If future development uses traditional SWM design constraints of post-to-pre peak control the lag effect could be noticeable. It is understood also that the Regional storm is the governing storm in the lower reaches where SWM would be employed. SWM does not intend to provide quantity control for the Regional event, so this quick check could be tested to see if the 100 year event becomes more critical than the Regional.

Section 6.1 – use of specific site development plans and swm. Agree with KRCA's use of generalized development approach. Using detailed swm plans and site development plans is not recommended. QC has experienced floodline mapping projects in the past where detailed development plans were included in the development of the floodline mapping products. The development plans fell through and the mapping products had to be changed. It is 'better' to use generalized plans.

Application of hydrology study results (phase two review)

1. **Can the study be used as a scientifically defensible tool to support water management decisions (examples: flood plain mapping, flood plain policies)?**

Response

Yes, the model and study provide sufficient detail for both developers and regulators to test and understand future development proposals, their impacts and potential mitigation measures. The model should be maintained by the conservation authority for such a purpose.

2. **How difficult is it to maintain and improve the modeling "tool" (i.e. responsive to changing conditions/adaptive management)?**

Response

The conservation authority should be well equipped to generate alternate scenarios based upon changing conditions such as land use or site imperviousness. GIS or hand calculation methods are rather simple means to develop revised parameters and these can be easily entered into the model.

3. **Does this model output predict flows in the same way as past studies? If not, how can this be explained?**

Response

By design, the model output is different than previous studies in how it develops the outflows. It would be expected that further down the system the flows resulting from dynamic routing would be lower than those from the kinematic method. This bears out in the study results.

Limitations & Recommendations (phase two review)

1. **What are the limitations to using the results and or the underlying model(s)?**

Response

The study does not investigate the impact of potential climate change scenarios on the future condition. Further, since it uses precipitation values from a retired meteorological station recent climate variation was not included. If climate change predictions bear out and critical flows increase (again, Timmins storm is an historic storm and the portions governed by the Timmins event would not change) then flood plain products based on the study may underestimate flood risk.

This does not mean that Kawartha Conservation needs to prepare and investigate a climate change scenario at this time, but that those relying on the flood risk mapping should be aware of this limitation. Perhaps this may lead regulators to be vigilant in the maintenance of adequate setbacks from the flood risk area as a means of a buffer. Clearly, it would be more difficult in the future to learn that flood risk area is increased due to climate change once development is established.

2. **If necessary, what additional work or changes should be undertaken? Why?**

Response

The selection of the precipitation event was peer reviewed during phase 1 and is outside of my purview for phase 2 peer review. Nevertheless, it is recommended that the sensitivity analysis test 10% higher precipitation for the return period storms based on earlier comments on both selection of meteorological station and climate change impacts. The sensitivity analysis could lead to study team recommendations for adequate setbacks.

References

U.S. Army Corps of Engineers, Hydrologic Engineering Center, Introduction and Application of Kinematic Wave Routing Techniques Using HEC-1, 1993

U.S. Geological Survey, Basic Concepts of Kinematic-Wave Models, 1984

Christie Peacock

From: Bryon Keene [BKeene@quinteconservation.ca]
Sent: January-16-14 3:27 PM
To: pwaring@kawarthaconservation.com
Cc: 'Christie Peacock'; jmueller@kawarthaconservation.com; pbuckley@kawarthaconservation.com; 'Christina Sisson'; mpeacock@grca.on.ca; 'Mark Majchrowski'
Subject: RE:

Hi Peter,
You have tested an obvious potential objection to your floodline analysis that was undertaken using older precipitation data and found that floodlines based on another nearby station are essentially unchanged. This is an important answer. Based on the strength of this analysis I would have no objection to using the Lindsay station.

I would suggest the conservation authority and municipality, when implementing the flood risk mapping in the area upstream of Hwy 7 that showed a slight increase with the Peterborough precip data, maintain a firm setback.

Bryon

Bryon Keene, P.Eng.
Water Resources Manager
Quinte Conservation
RR#2, 2061 Old Hwy #2
Belleville, Ontario, K8N 4Z2
Phone: (613) 968-3434 x 113
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bkeene@quinteconservation.ca
www.quinteconservation.ca

From: Peter Waring [mailto:pwaring@kawarthaconservation.com]
Sent: Thursday, January 16, 2014 10:06 AM
To: Bryon Keene
Cc: 'Christie Peacock'; jmueller@kawarthaconservation.com; pbuckley@kawarthaconservation.com; 'Christina Sisson'; mpeacock@grca.on.ca; 'Mark Majchrowski'
Subject:
Importance: High

Hi Bryon,

I am hoping you can assist us. Staff have undertaken 2 precipitation analyses to help address the concern you identified in the hydrology peer review. We would very much appreciate it if you could review these analyses...... they are short .... and comment on the staff recommendation.

We are also wondering if you felt there is merit in comparing the effects using regional IDF curves for R9 generated by Environment Canada, "Methodologies to Improve Rainfall Intensity- Duration –Frequency (IDF) Estimates: A Southern Ontario Pilot Study Report".

We hope you can turn this around for us in a day or two. Please respond directly to Christie Peacock.

As always Bryon, very much appreciated.....thank you.

Regards,

Peter Waring
Kawartha Conservation
Manager of Planning and Regulations
277 Kenrei Road
Lindsay, ON K9V 4R1

(705) 328-2271 Ext. 213

Christie Peacock

From: Bryon Keene [BKeene@quinteconservation.ca]
Sent: December-03-13 8:16 AM
To: 'Christie Peacock' (cpeacock@grca.on.ca)
Subject: FW: Kawartha Hydraulic Review

Attachments: Kawartha Hydraulic Review 2013 November 28.docx

Kawartha
draulic Review 201

Hi Christie,
Sorry I did not copy this to everyone.
Bryon

-----Original Message-----
From: Bryon Keene
Sent: Thursday, November 28, 2013 10:09 PM
To: 'pwaring@kawarthaconservation.com'
Subject: Fw: Kawartha Hydraulic Review

Hi Peter. I was able to complete the hydraulic model form of review in 2 hours. So the hydraulic review is 14 hours.
I will cap my review to your budget and not charge beyond that.

Bryon

----- Original Message -----
From: Bryon Keene [mailto:bryonkeene@gmail.com]
Sent: Thursday, November 28, 2013 10:02 PM Eastern Standard Time
To: Bryon Keene
Subject: Re: Kawartha Hydraulic Review

On 11/28/13, Bryon Keene <BKeene@quinteconservation.ca> wrote:
>
>

4.5 Statement of Peer Review Work - Hydraulics

Model Parameters (phase two review)

1. **Are the model parameters fully explained and is the model sufficiently developed and understood?**

   Response

   Yes, the draft hydraulic report is well documented and the model parameters are clearly explained.

2. **Are the underlying assumptions fully explained?**

   Response

   Yes, all modelling assumptions are well documented, if not in this report, they are fully documented within the HEC-RAS manuals.

3. **Has a sensitivity analysis been undertaken correctly and fully explained?**

   Response

   Yes, common sensitivity analysis includes varying Manning's n in channel and overbank areas. This was completed here. Further, a sensitivity analysis was completed on an uncertain catchment area (catchment 13). The starting surface water elevation was also tested for impact and found to have little beyond the lower reach of the Creek.

4. **Has the appropriate data been used for model construction, calibration & validation?**

   Response

   A well-documented data acquisition exercise was undertaken by Kawartha Conservation to obtain the most accurate ground surface elevations and culvert crossing information. I compared a sampling of the surveyed culverts to the HEC-RAS model and found these to be accurately transposed. Even the culvert obstructions were well modelled. Flows were provided from the hydrologic report and are considered the best available information. There are no flow records for this creek system and therefore calibration and validation could not be performed.

5. **Can the model be easily changed/updated to account for new information?**

   Response

   HEC-RAS is easily modified to account for new information. The exception is GR records that are quite dense in this model (sourced from Geo-RAS). Should creek sections be changed with significant filling there would be a little more effort required to modify sections with GIS support.

6. **Are the model parameters correct and the best available?**

Response

No, the model contained errors in the application of ineffective flow areas at culvert crossings. The effect of these would be most noticed on lower flows (that have yet to be analysed). A detailed review of each culvert is appended to this form and was supplied to Kawartha Conservation earlier. This would not have a profound effect on the 100 year and Regional event scenarios.

Outputs (phase two review)

1. **Did the modelers follow the approved methodologies and where not are appropriate explanations provided?**

Response

Yes, the model follows approved methodologies.

2. **Does the model produce outputs that are directly useful to decision makers or must the results be interpreted by experts before use in decision making?**

Response

Yes, model results are easily interpreted and are useful to make decisions.

3. **Do the hydraulics outputs provide information required to:**
   a. **assess flood plain management issues?**

   Response

   Yes, there is sufficient detail within HEC-RAS output to understand general issues within each reach. This allows the managers to determine where trouble areas are and even test how these can be overcome.

   b. **explain the specific flooding regime in the locale?**

   Response

   HEC-RAS, within the limitation of a 1D model, can provide average conditions within each section for channel, left and right overbank areas. Spills are not well assessed. But, a manager will be able to determine the basis flooding regime knowing the depths and average velocities.

   c. **compare current and possible future flood scenarios i.e. aid in making decisions on protection of citizens?**

   Response

   Yes, this model is quite effective for testing various scenarios and the output is readily interpretable.

4. **Does the model correctly track flood depths in hydraulically sensitive areas?**

Response

With the exception of some issues discussed earlier with the ineffective flow areas the model is otherwise correct and can reveal anticipated flood depths with reasonable accuracy.

5. **Does the model correctly assess local hydraulic conditions and cumulative impacts?**

Response

Yes.

Application of hydraulics Study Results (phase two review)

1. **Can the study be used as a scientifically defensible tool to support water management decisions (examples: flood plain mapping, flood plain policies)?**

Response

Yes, the HEC-RAS platform is industry standard. The model developed for Jennings Creek is defensible (again, with corrections made).

2. **How difficult is it to maintain and improve the modeling "tool" (i.e. responsive to changing conditions/adaptive management)?**

Response

It is rather straight forward to maintain this model. Its popularity and its constant development by the Hydrologic Engineering Center make it a strong platform to be useful for the foreseeable future.

3. **Does this model output predict flood depths in the same way as past studies? If not, has this been explained?**

Response

A significant difference between this model and all predecessors is the vastly improved GR records coming from the dense LiDAR coverage. Previous models of Jennings Creek did employ HEC-RAS and calculation methods are the same. WSELs resulting from the study are comparable in upper reaches to previous models, but noticeably lower in the lower reaches. The explanation for differences has been provided in the report.

Limitations & Recommendations (phase two review)

1. **What are the limitations to using the results and or the underlying model(s)?**

Response

The draft model results should not yet be used until the corrections have been made.

2. If necessary, what additional work or changes should be undertaken? Why?

Response

Aside from the corrections suggested earlier, I believe no further model changes are warranted.

Quinte CONSERVATION

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www.quinteconservation.ca

2014 January 24

Kawartha Conservation
277 Kenrei Road
Lindsay, ON K9V 4R1

Attention: Peter Waring,
Manager of Planning and Regulations

Dear Peter,

Re: Ops#1/Jennings Creek Floodplain Mapping Peer Review of Hydrology and Hydraulic Modelling

I have completed my review of the revised static hydraulic model that was prepared by Kawartha Conservation (January 2014) in support of the proposed flood risk mapping for Ops#1/Jennings Creek. The revised model contains revisions to the bridge ineffective flow areas that I requested. In my opinion, the static HEC-RAS model would meet the industry standard for use in determining the potential water surface elevations on Jennings Creek that would result from the given flow conditions.

Further, the precipitation inputs used to develop the dynamic runoff hydrologic model have been tested by Kawartha Conservation using a sensitivity analysis approach of adjusting the subcatchment outflows by + or – 10% and they found that the water surface elevations are minimally affected. This means that the older Lindsay precipitation station values are suitable for use for the flood risk mapping purposes. It also means that if precipitation values were to increase by up to 10% the flood risk mapping product would still substantially delineate the area of flood risk.

I did not undertake a review of the dynamic HEC-RAS model as this was not provided for review and it was decided by the peer review committee that the dynamic model would not be suitable for flood risk mapping purposes.

I have no outstanding concerns with either the hydrologic or hydraulic modelling developed for the flood risk mapping exercise.

Quinte Conservation

Bryon Keene, P.Eng.
Water Resources Manager

T:\Technical\Floodplain Mapping\Kawartha\Kawartha Jennings Creek Peer Review 2014 Jan 24.docx

PEER REVIEW SERVICES FOR TERMS OF REFERENCE OF HYDROLOGIC AND HYDRAULIC ASSESSMENTS, FINAL REPORT

Prepared for:

Kawartha Region Conservation Authority
277 Kenrei Road,
Lindsay, Ontario
K9V 4R1

Prepared by:

GRECK AND ASSOCIATES LIMITED
WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

57 Mill St. N, Unit 306
Brampton, Ontario
L6X 1S9

August 2013

Project: 237

Hydraulic Modelling Parameter Selection
Standard Parameters

Many other important aspects to model setup not included in this document. E.g. cross section location, spacing and procedures for creating (manual vs computer tools), setting ineffective areas etc..
Hec ras model should be geo referenced

1.0 HEC-RAS

The HEC-RAS standard parameters are shown in Tables 1.1, 1.2, 1.3, and 1.4.

Table 1.1 Manning Roughness Coefficients

Overbank	
Woods	0.080
Meadows	0.055
Lined Canals	
Cement	0.011
Gunite	0.016
Wood	0.013
Concrete	0.013
Rubble/Cement	0.020
Asphalt	0.015
Corrugated Metal	0.024
"Structural Plate Corrugated Steel Pipe"	0.034
Armour Stone	0.025
Gabions	0.025
Unlined Canals	
Earth	0.029
Rock	0.037
Natural Channels	
Gravel	0.035
Earth	0.050

Note TRCA has simplified this list to a few types based on future assumption of land uses.

Table 1.2 Expansion and Contraction Coefficients

Natural sections	0.1 contraction 0.3 expansion
abrupt changes (i.e. road/rail crossings)	0.3 contraction 0.5 expansion

Table 1.3 Weir Coefficient

Weir coefficient	1.3 (varies with depth of flow)

Table 1.4 HEC-RAS Option Summary

Output Options	
Critical Always Calculated	No
Conveyance Calculations	
At breaks in Manning N Value	Yes
Between every coordinate point	No
Friction Slope Methods	
Average conveyance	No
Average Friction Slope	No
Geometric Mean Friction Slope	No
Harmonic Mean Friction Slope	No
Program Selects appropriate method	Yes
Calculation Tolerances	
Water Surface	0.003
Critical Depth	0.003
Maximum Iterations	40
Maximum Difference Tolerance	0.1
Flow Tolerance Factor	0.001
Critical Depth	
Multiple Critical Depth Search	Yes
Parabolic Method	No
Cross Sections	
Maximum Points on Cross Section	500
Bridges Coding Procedures	
Culvert	Yes
Bridge	Yes
Momentum Equation	
-Adding Friction Component	Yes
-Add Weight Component	Yes
Momentum Class B Defaults	
-Inside U/S End	Yes
-Inside D/S End	No

Pressure Flow Criteria	
-U/S Energy Grade Line	Yes
-U/S Water Surface Elevation	No

Bridges/Culverts	
Deck/Roadway	
-Maximum Allowance	95%
-Submergence Broad Crested Weir	Yes
-Submergence Ogee Crested Weir	No

Low Flow	
-Energy (Standard Step)	Yes
-Momentum	Yes
-Yarnell	Yes
-Highest Energy Answer	Yes

High Flow Methods	
-Energy Only (Standard Step)	
-Pressure and/or weir	
Submerge Inlet Cd	Blank
Submerge Inlet and Outlet	0.8
Maximum Low Chord	Blank

Flow Regime	
Subcritical	No
Supecritical	No
Mixed	Yes

Additional Standard Parameters

Duplicate list?

Manning Roughness Coefficients

Overbank	Woods	0.080
	Meadows	0.055
	Lawns	0.045
Channel	Natural	0.035
	Grass	0.030
	Natural Rock	0.030
	Armour Stone	0.025
	Concrete	0.013
	Articulated Block i.e. Terrafix	0.020
	Gabions	0.025

Appendix T
List of Hydrology and Hydraulic Model Files

Model Files used in Ops Drain Study

PCSWMM
Ops Chicago 100yr (12hr): existing land use, 100yr 12-hour Chicago storm
This is the base model. All other scenarios are modifications of this.

Ops Chicago 2yr: existing land use, 2yr 12-hour Chicago storm
Ops Chicago 5yr: existing land use, 5yr 12-hour Chicago storm
Ops Chicago 100yr (4hr): existing land use, 100yr 4-hour Chicago storm
Ops Chicago 100yr (6hr): existing land use, 100yr 6-hour Chicago storm

Ops AES 100yr (6hr): existing land use, 100yr 6-hr AES storm
Ops AES 100yr (12hr): existing land use, 100yr 12-hr AES storm

Ops SCS 100yr (6hr): existing land use, 100yr 6-hour SCS storm
Ops SCS 100yr (12hr): existing land use, 100yr 12-hour SCS storm

Ops with Aecom 100yr 6hr SCS storm: existing land use, using Aecom's 100yr 6-hour SCS storm hyetograph
Ops SCS 100yr (6hr) Aecom intensity & storm: existing land use BUT using Aecom's % impervious, using Aecom's 100yr 6-hour SCS storm hyetograph

Timmins AMC (II): existing land use, Timmins storm
Timmins AMC (III): existing land use with CN changed to reflect AMC(III), Timmins storm

Existing100yrVO2: conduits only, using VO2 runoff hydrographs for existing land use, 100yr Chicago storm
Existing Timmins VO2: conduits only, using VO2 runoff hydrographs for existing land use, Timmins storm

Future 2yr 12hr: future land use, 2yr 12-hr Chicago storm
Future 5yr 12hrs: future land use, 5yr 12-hr Chicago storm
Future Ops 10yr 12hrs: future land use, 10yr 12-hr Chicago storm
Future Ops 25yr 12hrs: future land use, 25yr 12-hr Chicago storm
Future Ops 50yr 12hrs: future land use, 50yr 12-hr Chicago storm
Future Timmins CNIII: future land use with CN modified to reflect AMC(III), Timmins storm

Future100yrVO2: conduits only, using VO2 runoff hydrographs for future land use, 100yr Chicago storm
FutureTimminsVO2: conduits only, using VO2 runoff hydrographs for future land use using CN AMC(III), Timmins storm

Sensitivity analyses:
Ops Chicago 100yr (12hr) 80% manning: existing land use, 100yr 12-hour Chicago storm, manning n reduced by 20%
Ops Chicago 100yr (12hr) 120% manning: existing land use, 100yr 12-hour Chicago storm, manning n increased by 20%
Ops Chicago 100yr (12hr) 150% width: existing land use, 100yr 12-hour Chicago storm, catchment width increased 50%
Ops Chicago 100yr (12hr) with 50% width decrease: existing land use, 100yr 12-hour Chicago storm, catchment width decreased 50%
Ops Chicago 100yr (12hr) Ia increase: existing land use, 100yr 12-hour Chicago storm, initial abstraction increased
Ops Chicago 100yr (12hr) Ia decrease: existing land use, 100yr 12-hour Chicago storm, initial abstraction decreased
Ops Chicago 100yr (12hr) increased CN: existing land use, 100yr 12-hour Chicago storm, CN increased
Ops Chicago 100yr (12hr) reduced CN: existing land use, 100yr 12-hour Chicago storm, CN reduced
Ops Chicago 100yr (12hr) subarea routing impervious: existing land use, 100yr 12-hour Chicago storm, pervious subcatchment drains onto impervious subcatchment

100-yr 12-hour Chicago Storm for future land use conditions and ppt volumes increased by 10 %
100-yr 12-hour Chicago Storm for future land use conditions and ppt volumes decreased by 10 %

Future Timmins Two Zone: Timmins Storm for future land use conditions with levees Hwy 35 and Woods of Jennings Creek

\\192.168.2.3\Shared\Jessica\KRCA\Reports Working\Final consolidated report\Word\Hydrology\Model Files used in Ops Drain Study.docx

Future100yrTwo Zone: Chicago Storm (Chicago_12hr) for future land use conditions with levees Hwy 35 and Woods of Jennings Creek
Ops Chicago 50yr (12hr): Base model with 50-yr 12-hour Chicago Storm
Ops Chicago 25yr (12hr): Base model with 25-yr 12-hour Chicago Storm
Ops Chicago 10 yr (12hr): Base model with 10-yr 12-hour Chicago Storm
Ops Chicago 5 yr (12hr): Base model with 5-yr 12-hour Chicago Storm
Ops Chicago 2 yr (12hr): Base model with 2-yr 12-hour Chicago Storm

HEC-RAS Model Files used in Ops Drain Study

The following is a list of the HEC-RAS plans, which are made up of unique geometry and flow files.

<u>STATIC</u> <u>Plan Files</u>

1. ExistingMaster: This is the initial plan. Cross-sections cut from Ops DEM. Uses existing 2-100year and Timmins flows from Aecom report.
   This is the base model. All other scenarios are modifications of this.

2. Existing Conditions (Aecom): Cross-sections truncated to 500 points. Uses existing 2-100year and Timmins flows from Aecom report.

3. Future Land Use: Cross-sections truncated to 500 points. Using 100-year future, Timmins future, and Regulatory existing flows from PCSWMM.

4. Ex-modified: cross-sections extended to eliminate false vertical extensions. Using 100-year future, Timmins future, and Regulatory existing flows from PCSWMM. This was the final version of the model for the October draft report.

5. Extended geometry: Some cross-sections extended to eliminate false vertical extensions. Cross-sections at Hwy 35 truncated at the highway. Using 100-year future, Timmins future, and Regulatory existing flows from PCSWMM.

6. Peer reviewed base model: Incorporated all suggestions from the peer review of the October. Updated flows from the final hydrology report (future 100-year, future Timmins, existing Regulatory).

7. AlleventStorms: Peer reviewed base model. Updated flows from the final hydrology report (future 2-100-year, future Timmins, existing Regulatory).

Sensitivity analyses:

8. 120-modified-manning: peer reviewed base geometry altered by increasing manning`s n by 20%. Updated flows from the final hydrology report (future 100-year, future Timmins, existing Regulatory)

9. 80-modified-manning: peer reviewed base geometry altered by decreasing manning`s n by 20%. Updated flows from the final hydrology report (future 100-year, future Timmins, existing Regulatory).

10. 100yr Sturgeon: peer reviewed base geometry altered by setting outlet condition to the 100-year lake level for Sturgeon Lake. Updated flows from the final hydrology report (future 100-year, future Timmins, existing Regulatory).

11. Peer reviewed 10%: peer reviewed base geometry. 100-year flows extracted from the PCSWMM model where rainfall volumes were increased by 10%.

12. Peer reviewed <10%: peer reviewed base geometry. 100-year flows extracted from the PCSWMM model where rainfall volumes were decreased by 10%.

13. PtboIDFCHI100yr: peer reviewed base geometry. 100-year flows extracted from the PCSWMM model where 100-year Peterborough IDF rain data was used.

Two-zone analyses:

14. Two zone: peer-reviewed base geometry file altered by introducing levees at Hwy 35 and near the outlet of Jennings Creek to see the effects of filling lands. Future conditions flow files from PCSWMM model with levees.

Infrastructure Improvements:

15. Two-zone with Rail Trail alt culv: two-zone geometry file altered by manipulating the final two culverts on Jennings Creek to see impact on flood line of infrastructure upgrades. Increased last culvert to 3.4mx6m; increased width of private culvert to 2.5m x 6m. Future conditions flow files from PCSWMM model with levees.

16. Two-zone with del Rail Trail culv: two-zone geometry file altered by manipulating the final two culverts on Jennings Creek to see impact on flood line of infrastructure upgrades. Increased last culvert to 3.4mx6m; deleted private culvert and embankment. Future conditions flow files from PCSWMM model with levees.

17. Two-zone with final culvs alt: two-zone geometry file altered by manipulating the final three culverts on Jennings Creek to see impact on flood line of infrastructure upgrades. Increased last culvert to 3.4mx6m; deleted private culvert and embankment; increased William St culvert to 3.75m x 3.75m. Future conditions flow files from PCSWMM model with levees.

18. Two-zone with wider outlet: two-zone geometry file altered by manipulating the final three culverts on Jennings Creek to see impact on flood line of infrastructure upgrades. Increased last culvert to 7.5mx6m; deleted private culvert and embankment; increased William St culvert to 3.75m x 3.75m. Future conditions flow files from PCSWMM model with levees.

19. Two-zone with changed outlets: two-zone geometry file altered by manipulating the final culvert on Jennings Creek to see impact on flood line of infrastructure upgrades. Increased last culvert to 7.5mx6m. Future conditions flow files from PCSWMM model with levees.

20. AllstormsCulHwy7removed: Peer reviewed base model altered by removing the most upstream Hwy 7 culvert to see the impact on floodlines. Updated flows from the final hydrology report (future 2-100-year, future Timmins, existing Regulatory).

21. AllStormIncCul: Peer reviewed base model altered by increasing the dimensions of the most upstream Hwy 7 culvert to see the impact on floodlines. Updated flows from the final hydrology report (future 2-100-year, future Timmins, existing Regulatory).

DYNAMIC Plan Files

1. Unsteady-constant 100yr: The static model from the October draft report was imported to the dynamic scenario. For model stability, interpolated sections were added at 10m intervals downstream of Angeline St. Flow file consists of PCSWMM hydrographs from the future conditions 100-year Chicago storm model. For the outlet boundary, normal depth was based on 0.1% slope.

2. Unsteady-constant Timmins: The static model from the October draft report was imported to the dynamic scenario. For model stability, interpolated sections were added at 10m intervals downstream of Angeline St. Flow file consists of PCSWMM hydrographs from the future conditions Timmins storm model. For the outlet boundary, normal depth was based on 0.1% slope.

3. Peer-review-interp-20m 100yr: The peer-reviewed geometry file from the static model was imported to the dynamic scenario. For model stability, interpolated sections were added at 20m intervals downstream of Angeline St. Flow file consists of PCSWMM hydrographs from the future conditions 100-year Chicago storm model. For the outlet boundary, normal depth was based on 1% slope.
   This is the base model. All other scenarios are modifications of this.

4. Peer-review-interp-20m Timmins: The peer-reviewed geometry file from the static model was imported to the dynamic scenario. For model stability, interpolated sections were added at 20m intervals downstream of Angeline St. Flow file consists of PCSWMM hydrographs from the future conditions Timmins storm model. For the outlet boundary, normal depth was based on 1% slope.

5. Master dynamic-filled 100yr: The base model was modified by adding levees to Hwy 35 and the outlet of Jennings Creek to see the impact of filling the lands. Flow file consists of PCSWMM hydrographs from the future conditions 100-year Chicago storm model. For the outlet boundary, normal depth was based on 1% slope.

6. Master dynamic-filled Timmins: The base model was modified by adding levees to Hwy 35 and the outlet of Jennings Creek to see the impact of filling the lands. Flow file consists of PCSWMM hydrographs from the future conditions Timmins storm model. For the outlet boundary, normal depth was based on 1% slope.

7. Master dyn-filled-Timmins-alt Jen-culv: The base model was modified by adding levees to Hwy 35 and the outlet of Jennings Creek to see the impact of filling the lands; the culverts at the outlet to Jennings Creek were altered to see the effect on floodline. Flow file consists of PCSWMM hydrographs from the future conditions Timmins storm model. For the outlet boundary, normal depth was based on 1% slope.

2013 Ops/Jennings Static HEC-RAS Models

Plan	Plan Filename	Short ID	Geometry	Geometry filename	Flow	Flow Filename	Flow Type
ExistingMaster	FloodlineMappingCKL_KRCA.p04	ExMaster	ExistingMaster	FloodlineMappingCKL_KRCA.g04	Existing TSH2010 *(from Aecom 2010 report)*	FloodlineMappingCKL_KRCA.f01	subcritical
Existing Conditions (Aecom)	FloodlineMappingCKL_KRCA.p11	Existing (Ae)	existingTruncated *existingMaster geometry truncated to 500 points/XC*	FloodlineMappingCKL_KRCA.g07	Existing TSH2010 *(from Aecom 2010 report)*	FloodlineMappingCKL_KRCA.f01	subcritical
Future land use	FloodlineMappingCKL_KRCA.p03	Future	existingTruncated *existingMaster geometry truncated to 500 points/XC*	FloodlineMappingCKL_KRCA.g07	Future KRCA 2013 *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f04	subcritical
Ex-modified	FloodlineMappingCKL_KRCA.p02	Ex-mod	ex-extended *some X/Cs extended to contain Regional flow*	FloodlineMappingCKL_KRCA.g02	Future KRCA 2013 *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f04	subcritical
Extended geometry	FloodlineMappingCKL_KRCA.p12	Extended	existing-extended	FloodlineMappingCKL_KRCA.g01	Future KRCA 2013 *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f04	subcritical
Peer reviewed base model	FloodlineMappingCKL_KRCA.p17	Peer reviewed	Peer reviewed base geometry *ex-modified altered as per peer review comments*	FloodlineMappingCKL_KRCA.g13	Future KRCA 2013 *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f04	mixed
AlleventStorms	FloodlineMappingCKL_KRCA.p05	AllStorms	Peer reviewed base geometry *ex-modified altered as per peer review comments*	FloodlineMappingCKL_KRCA.g13	AlleventStorms *Future KRCA 2013 flow file modified to include 2-50year future flows*	FloodlineMappingCKL_KRCA.f15	mixed
120-modified manning	FloodlineMappingCKL_KRCA.p06	120-man	120-manning *Peer reviewed with 20% increase in manning's n*	FloodlineMappingCKL_KRCA.g03	Future KRCA 2013 *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f04	mixed
80-modified manning	FloodlineMappingCKL_KRCA.p07	80-man	80-manning *Peer reviewed with 20% decrease in manning's n*	FloodlineMappingCKL_KRCA.g05	Future KRCA 2013 *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f04	mixed
100yr Sturgeon	FloodlineMappingCKL_KRCA.p08	100yr ST	Peer reviewed base geometry *ex-modified altered as per peer review comments*	FloodlineMappingCKL_KRCA.g13	100yr Sturgeon Lake *Future KRCA 2013 with a starting WSEL of 100 yr Sturgeon Lake level*	FloodlineMappingCKL_KRCA.f09	mixed
Peer reviewed 10 %	FloodlineMappingCKL_KRCA.p24	Peer rev 10%	Peer reviewed base geometry *ex-modified altered as per peer review comments*	FloodlineMappingCKL_KRCA.g13	Future KRCA 2013 10 % *future conditions flows plus 10 %*	FloodlineMappingCKL_KRCA.f12	mixed
Peer reviewed <10 %	FloodlineMappingCKL_KRCA.p25	Peer rev <10%	Peer reviewed base geometry *ex-modified altered as per peer review comments*	FloodlineMappingCKL_KRCA.g13	Future KRCA 2013 <10% *future conditions flows plus 10 %*	FloodlineMappingCKL_KRCA.f13	mixed
PtboIDFCHI100yr	FloodlineMappingCKL_KRCA.p01	Ptbo	Peer reviewed base geometry *ex-modified altered as per peer review comments*	FloodlineMappingCKL_KRCA.g13	FuturePtboIDF *using Peterborough AES gauge data*	FloodlineMappingCKL_KRCA.f14	mixed
Two-zone	FloodlineMappingCKL_KRCA.p09	2Zone	Two-zone *peer review geometry altered with levees for to remove lands east of Hwy 35 & Woods of Jennings Ck*	FloodlineMappingCKL_KRCA.g06	Future KRCA TwoZone *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f11	mixed
Two-zone with Rail Trail alt culv	FloodlineMappingCKL_KRCA.p10	last 2 culvs alt	Two-zone with alt Rail Trail culvert	FloodlineMappingCKL_KRCA.g09	Future KRCA TwoZone *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f11	mixed
Two-zone with del Rail Trail culv	FloodlineMappingCKL_KRCA.p19	del priv culv	Two-zone with del Rail Trail culvert	FloodlineMappingCKL_KRCA.g12	Future KRCA TwoZone *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f11	mixed
Two-zone with final culvs alt	FloodlineMappingCKL_KRCA.p16	last 3 culvs alt	Two-zone with alt outlets	FloodlineMappingCKL_KRCA.g08	Future KRCA TwoZone *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f11	mixed
Two-zone with wider outlet	FloodlineMappingCKL_KRCA.p20	wider outlet	Two-zone with wider outlets	FloodlineMappingCKL_KRCA.g14	Future KRCA TwoZone *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f11	mixed
Two-zone with changed outlets	FloodlineMappingCKL_KRCA.p21	changed outlets	Two-zone with changed outlets	FloodlineMappingCKL_KRCA.g16	Future KRCA TwoZone *future conditions flows 100yr & Regional*	FloodlineMappingCKL_KRCA.f11	mixed
AllstormsCulHwy7removed	FloodlineMappingCKL_KRCA.p13	remCulHwy7	Reviewed base geometry no Hwy 7 culvert *Hwy 7 culvert removed at pclkseed*	FloodlineMappingCKL_KRCA.g22	AlleventStorms *Future KRCA 2013 flow file modified to include 2-50year future flows*	FloodlineMappingCKL_KRCA.f15	mixed
AllstormIncCul	FloodlineMappingCKL_KRCA.p18	Increased Cul	Peer rev base geometry increased cul *Peer reviewed base geometry modified by increasing Hwy 7 culvert*	FloodlineMappingCKL_KRCA.g23	AlleventStorms *Future KRCA 2013 flow file modified to include 2-50year future flows*	FloodlineMappingCKL_KRCA.f15	mixed

2013 Ops/Jennings Dynamic HEC-RAS Models

Plan	Plan Filename	Short ID	Geometry	Geometry filename	Flow	Flow Filename	Flow Type
Unsteady-constant 100yr	Ops-Unsteady.p02	initial try 100	ex-extended-unsteady-interpolated *ex-extended geometry (from draft hydraulic report) with 10m interpolated sections on Jennings Ck*	Ops-Unsteady.g05	Unsteady-initial-constant 100yr *future conditions 100yr with initial constant flow of 1cms, normal depth 0.1% slope*	Ops-Unsteady.u22	dynamic
Unsteady-constant Timmins	Ops-Unsteady.p03	initial try Tim	ex-extended-unsteady-interpolated *ex-extended geometry (from draft hydraulic report) with 10m interpolated sections on Jennings Ck*	Ops-Unsteady.g05	Unsteady-initial-constant Timmins *future conditions Timmins with initial constant flow of 1cms, normal depth 0.1% slope*	Ops-Unsteady.u23	dynamic
peer-review-interp-20m 100yr	Ops-Unsteady.p05	peer-20m 100yr	Peer-review-interp20m *peer review geometry with 20m interpolated sections on Jennings Ck*	Ops-Unsteady.g01	Unsteady-initial-constant 100yr-1 *future conditions 100-year with initial constant flow of 1cms, normal depth 1% slope*	Ops-Unsteady.u24	dynamic
peer-review-interp-20m Timmins	Ops-Unsteady.p04	peer-20m Tim	Peer-review-interp20m *peer review geometry with 20m interpolated sections on Jennings Ck*	Ops-Unsteady.g01	Unsteady-initial-constant Timmins-1 *future conditions Timmins with initial constant flow of 1cms, normal depth 1% slope*	Ops-Unsteady.u25	dynamic
master dynamic-filled-100	Ops-Unsteady.p35	master fill 100	dynamic master filled *peer review geometry; 20m interpolated sections; levees @ Hwy 35 & Woods of Jennings Ck*	Ops-Unsteady.g15	Unsteady-initial-constant 100yr-1 *future conditions 100-year with initial constant flow of 1cms, normal depth 1% slope*	Ops-Unsteady.u24	dynamic
master dynamic-filled-Timmins	Ops-Unsteady.p36	master fill Tim	dynamic master filled *peer review geometry; 20m interpolated sections; levees @ Hwy 35 & Woods of Jennings Ck*	Ops-Unsteady.g15	Unsteady-initial-constant Timmins-1 *future conditions Timmins with initial constant flow of 1cms, normal depth 1% slope*	Ops-Unsteady.u25	dynamic
master dyn-filled-Timmins-alt Jen culv	Ops-Unsteady.p37	alt Jen culv	dynamic master filled alt Jen culverts *peer review geometry; 20m interpolated sections; levees @ Hwy 35 & Woods of Jennings Ck; last culvert upsized*	Ops-Unsteady.g17	Unsteady-initial-constant Timmins-1 *future conditions Timmins with initial constant flow of 1cms, normal depth 1% slope*	Ops-Unsteady.u25	dynamic