

Mattamy Homes Limited

**Mattamy Homes – Richmond
Infill Impact on Jock River**

draft for discussion

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1. Introduction

Mattamy Homes Limited is proposing a 131.5ha development located within the Jock River Reach Two Subwatershed, within the City of Ottawa and the community of Richmond, Ontario. The area of development is generally identified in **Figure 1**. The Rideau Valley Conservation Authority (RVCA) has issued a letter of permission under Ont. Reg. 174/06 (March 3, 2009) permitting Mattamy Homes to undertake the following work on their lands south of Ottawa Street:

- The removal of fill associated with the construction of a berm already on the property
- The establishment of a new berm closer to the municipal road and farther away from the river
- The reinstatement of land area at the existing/"original" berm site
- The placement of fill between the new berm and Ottawa Street to match existing surrounding grades

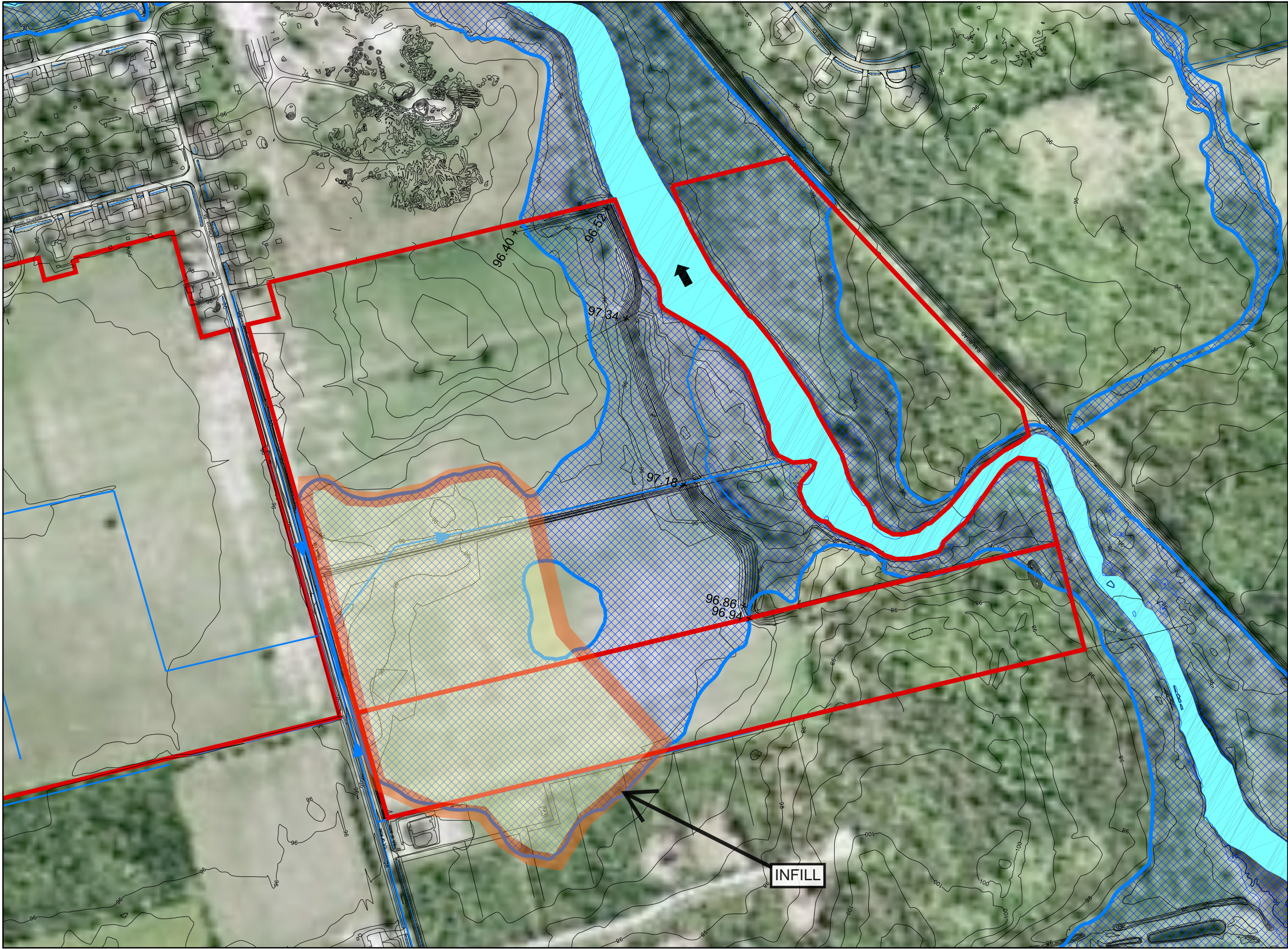
The works will remove the existing berm and relocate it to the approved 2005 location. It will also remove the flapgate and culvert from the drainage easement. The berm will also extend parallel along both sides of the drainage easement north up to Ottawa Street. The permission letter also includes the placement of fill between the new berm and Ottawa Street to a maximum level of 96.5 (**Figure 2**). The infill is in an area of the Jock River that experiences less than 0.3m of flooding during the 100 year event.

The RVCA permission letter states that the fill for the berm and the associated filling behind the berm up to Ottawa Street is not expected to have a negative impact on the control of flooding. The permit letter states that the regulatory mapping for Ontario Regulation 174/06 is reviewed once a year and amendments introduced as required. Once the fill works area complete satisfactory to the RVCA, the RVCA has agreed to pursue an amendment to the regulatory mapping to reflect the changes to the 1:100 floodplain contemplated in the approval. In support, AECOM has undertaken an analysis on the impact of Mattamy's floodplain infilling on the Regulatory Floodline of the Jock River.

2. Existing Floodplain

The existing floodplain is illustrated in **Figure 1** and Regulatory flood levels, for existing floodplain conditions at selected cross sections, are provided in **Table 1** (exist - 2004). A study reach, in which to consider the cumulative effects of floodplain infill, has been identified in **Figure 1** between XS19930 and XS 22026. It represents a homogeneous reach of the Jock River, both in floodplain characteristic (topography creates a relatively narrow floodplain with isolated pockets of low depth flooding in extreme conditions) and slope (relatively mild gradient compared with downstream). The only significant areas of potential floodplain infill are the area under consideration by Mattamy and a golf course upstream.

This existing flood level data is extracted from HEC-RAS analysis as reported in *Hydraulics Report – Jock River Flood Risk Mapping (PSR Group 2004)*. Minor modifications were made to the cross sections at the infill area (XS21097 and XS20686) and at the golf course (XS22026) by the addition of "ineffective flow" areas that more realistically reflect conveyance in the reach, as well as an adjustment to the golf course cross section that more realistically reflects the local topography. The existing cross section representations and subsequent modifications to more accurately reflect existing conditions, are provided





MATTAMY LANDS

Jock River

100 Year Floodplain

X 96.86

Spot Elevations

1			
No.	DATE	BY	ISSUES / REVISIONS

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Mattamy Homes

PROJECT:

Jock River Floodplain

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FIGURE 2

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DESIGNED BY:	APPROVED BY:	DRAWING No.
SCALE: <div>N.T.S</div>	DATE: <div>JANUARY 2009</div>	

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in **Figure 3a** and **Figure 3b**, respectively. The revised flood level data is summarized in **Table 1** (exist – 2009). There is a minor increase in water level (10mm) when the three cross sections are upgraded but this does not translate to an increase in the Regulatory flood level which is reported to the nearest 100mm.

3. Proposed Floodplain

The permit letter identifies an infill area on Mattamy's lands, as shown in **Figure 2**. This has been reflected in a revised HEC-RAS model of the Jock River at this location, using "levees" to represent the limit of infill. Typical revised cross-sections are illustrated in **Figure 4**. As well, the potential for cumulative effects was assessed by assuming the golf course may be infilled in the future. The flood level data for the infill condition is summarised in Table 1 (-INFILL-). There is no increase in water levels due to the infilling at Mattamy and the golf course.

4. Conclusions and Recommendations

It is concluded that, for the reach in question, there is no cumulative impact on flood levels due to potential infilling within this reach.

Table 1: Jock River Flood Levels

River Sta	Profile	Plan	Q Total (m3/s)	W.S. Elev (m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)
22026	100 year	exist - 2004	156	97.51	1	279	254
22026	100 year	exist - 2009	156	97.51	0.9	322	376
22026	100 year	-INFILL-	156	97.51	0.9	322	376
21728	100 year	exist - 2004	156	97.24	1.7	155	166
21728	100 year	exist - 2009	156	97.24	1.7	155	166
21728	100 year	-INFILL-	156	97.24	1.7	155	166
21537	100 year	exist - 2004	156	96.49	2.9	72	91
21537	100 year	exist - 2009	156	96.49	2.9	72	92
21537	100 year	-INFILL-	156	96.49	2.9	72	92
21359	100 year	exist - 2004	161.8	96.72	0.8	210	156
21359	100 year	exist - 2009	161.7	96.73	0.8	210	156
21359	100 year	-INFILL-	161.7	96.73	0.8	210	156
21178	100 year	exist - 2004	161.8	96.38	2.2	99	97
21178	100 year	exist - 2009	161.7	96.39	2.2	100	97
21178	100 year	-INFILL-	161.7	96.39	2.2	100	97
21097	100 year	exist - 2004	161.8	96.36	0.6	321	607
21097	100 year	exist - 2009	161.7	96.37	0.6	295	485
21097	100 year	-INFILL-	161.7	96.37	0.6	295	485
20686	100 year	exist - 2004	161.8	96.25	0.7	431	841
20686	100 year	exist - 2009	161.7	96.25	0.7	306	438
20686	100 year	-INFILL-	161.7	96.25	0.7	306	438
20408	100 year	exist - 2004	161.8	96.16	0.8	281	325
20408	100 year	exist - 2009	161.7	96.16	0.8	281	325
20408	100 year	-INFILL-	161.7	96.16	0.8	281	325
20275	100 year	exist - 2004	161.8	96.09	1	184	145
20275	100 year	exist - 2009	161.7	96.09	1	184	145
20275	100 year	-INFILL-	161.7	96.09	1	184	145
19930	100 year	exist - 2004	161.8	95.63	2.1	104	137
19930	100 year	exist - 2009	161.7	95.63	2.1	104	137
19930	100 year	-INFILL-	161.7	95.63	2.1	104	137

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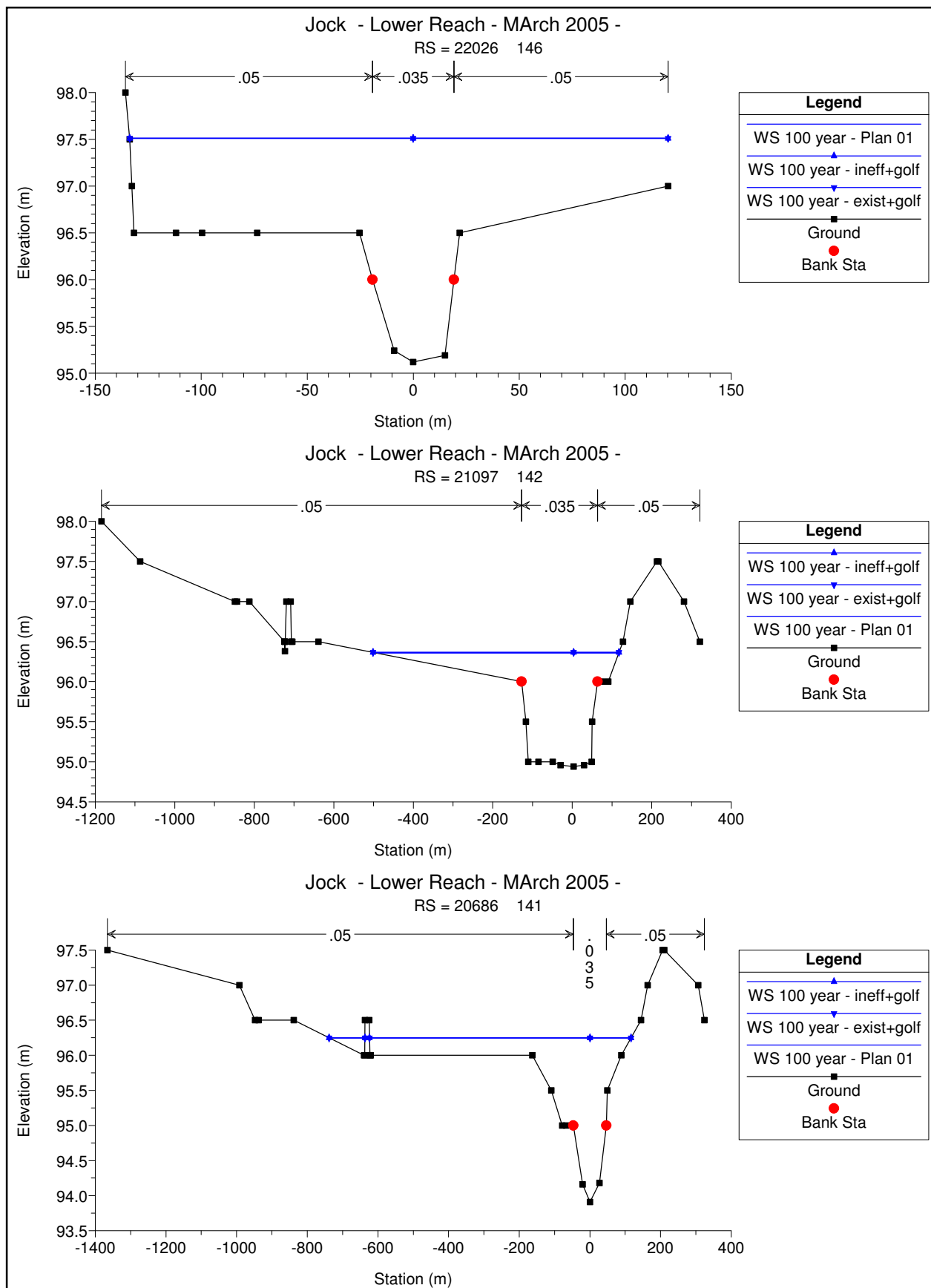


FIGURE 3A
Existing Cross Sections

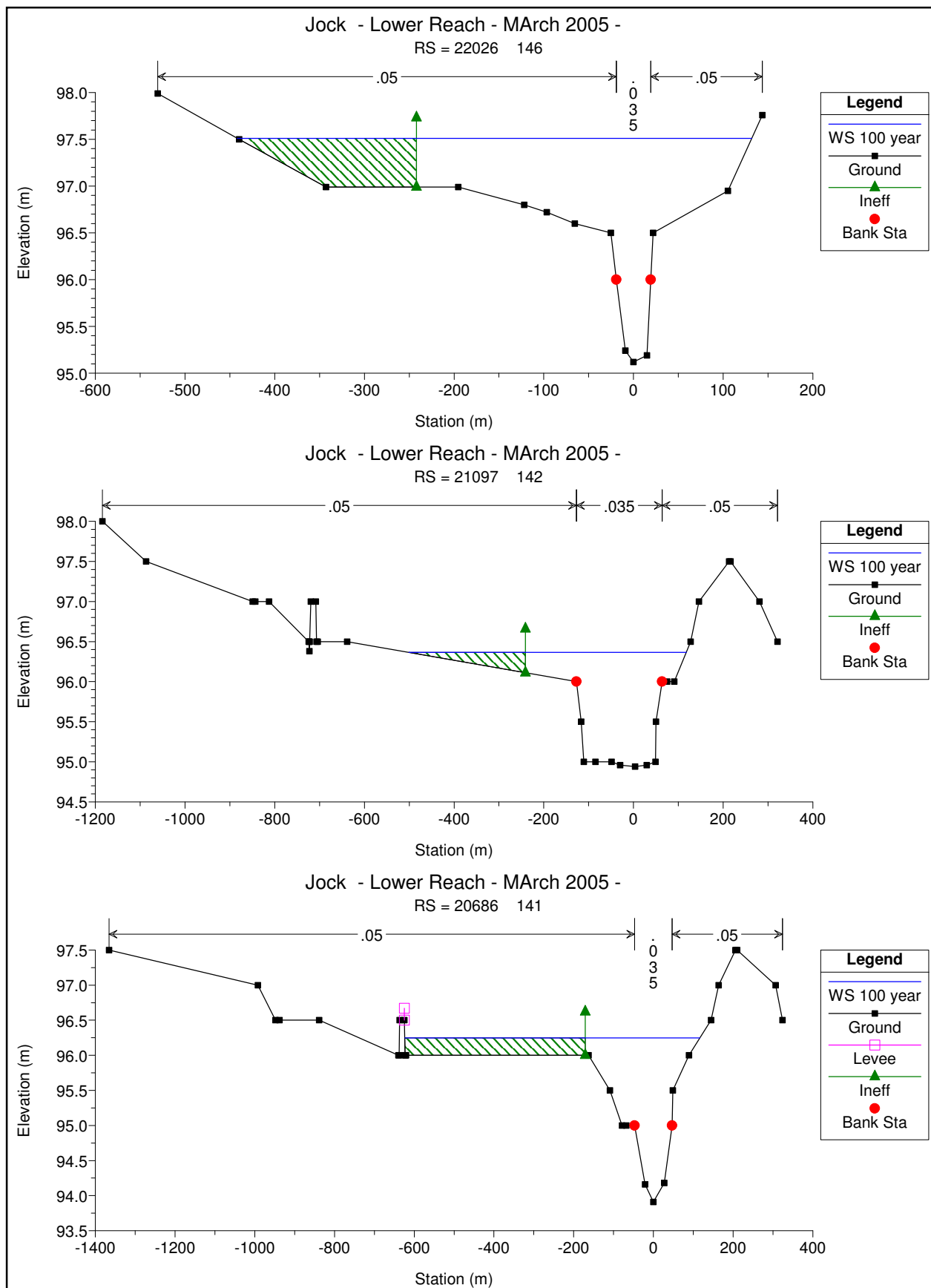


FIGURE 3B
Existing Cross Sections -
Modified

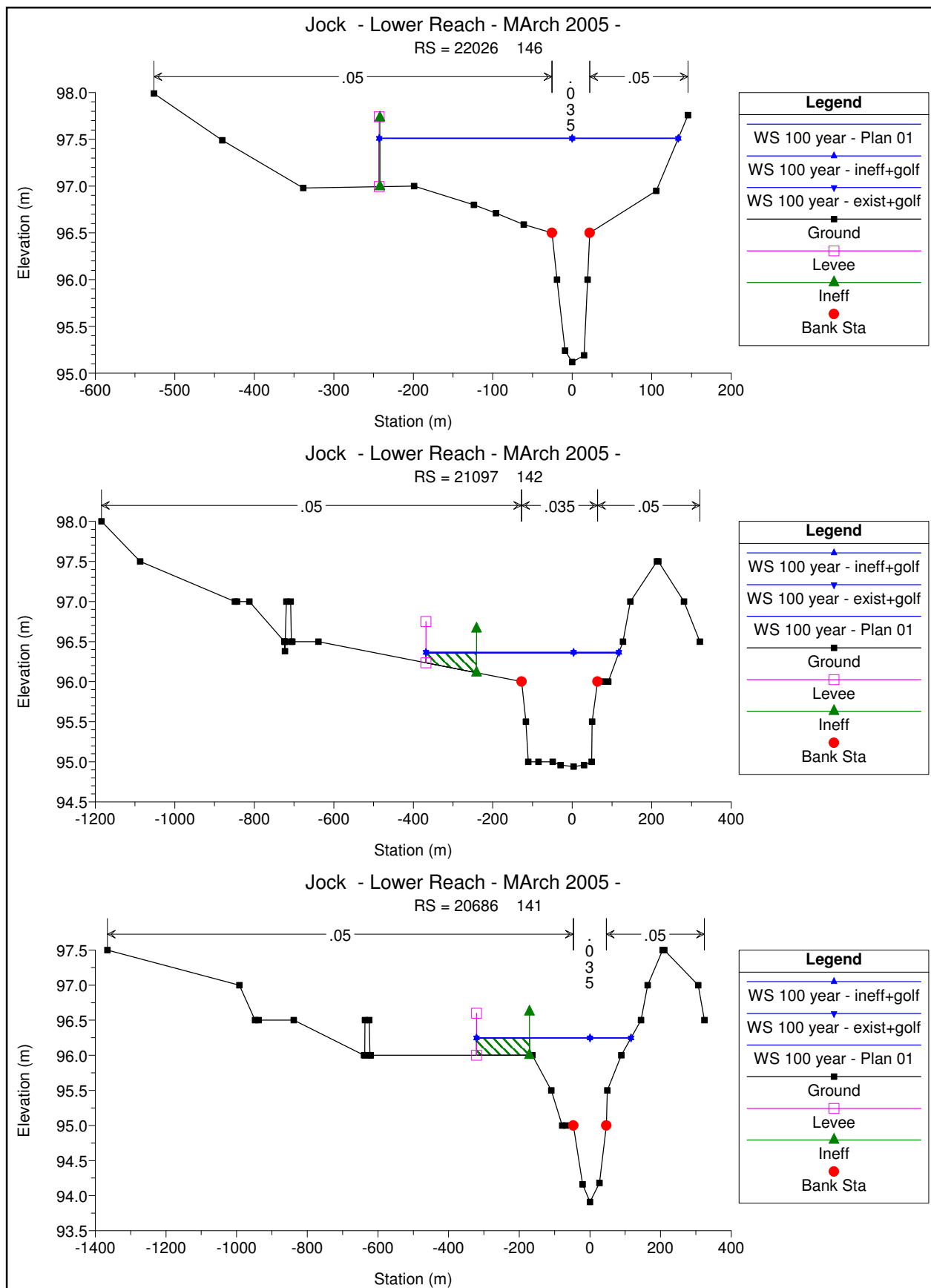


FIGURE 4
Infill Cross Sections