APPENDIX A – HYDROMODIFICATION SITE CROSS-SECTIONS, BANKS, AND PHOTOGRAPHS

Figures in Appendix A

PURPOSE AND MEASUREMENT PROTOCOL

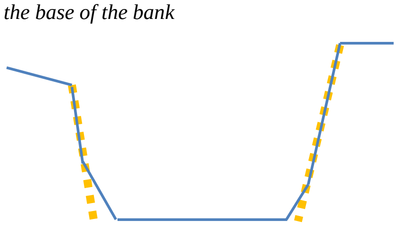
These data were used in the development of a “screening tool” which estimates a first-order risk classification of a channel’s susceptibility to adversely responding to the effects of hydromodification in southern California. In particular, these data were used to develop the section of the screening tool focused on assessing bank stability at the time of the field assessment based on measurements.

Since the screening tool is intended to err on the side of overestimating risk, the precautionary principles were used where field indicators were unclear. That is:

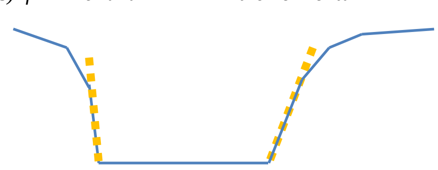
- where the stability of a bank was uncertain, we erred on the side of classifying as unstable;
- where an unstable angle was uncertain, the smaller angle was used; and
- where an unstable height was uncertain, the smaller height was used.
-

Banks were measured in vein of capturing the angle and height most representative for purposes of mass wasting based on failure theory presented by Osman and Thorne (1988). Special cases are outlined below:

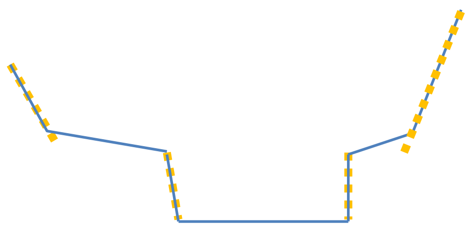
<u>Slumping</u> (concave) – *project the steeper angle above the slump to the base of the bank*



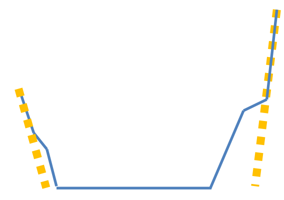
<u>Convex breaks</u> (top of bank) – *in the case of multiple break points, the top of bank may be extended to the adjacent break slope(s) if > ~ 10^0 and < ~ 1 m in the horizontal*



<u>Convex separations</u> > ~1 m – *non-planar banks separated by a slope < ~ 30^0 (~ angle of repose of sand) and greater than ~ 1 m in the horizontal may be treated as separate banks*



<u>Convex separations</u> < ~1 m – *non-planar banks separated by a slope less than ~ 1 m in the horizontal should be treated as one bank, using the most representative angle for the pre-failure slope (similar to the slumped scenario)*



The 1-m horizontal discriminator was selected based on the fact that observable failure blocks (i.e., still relatively intact) were typically well less than 1 m.

<u>Incised</u> – non-planar banks with a single break due to incision – *if the higher bank is unstable, use it's angle and the total height (left bank below). If the higher bank is stable and the lower bank is unstable (right bank below), use the lower bank height and angle (a slight extension to account for the failure block width less than 1 m may be used). If neither is unstable, use best judgment as to which scenario best represents current stability with respect to mass-wasting potential.*

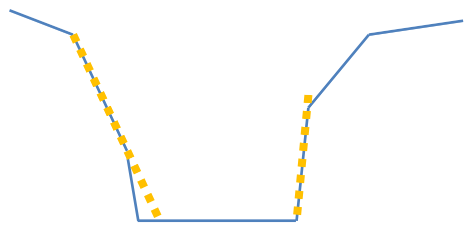


Table A.1 presents the layout key and Table A.2 presents the bank-stability key for the cross sections, banks, and photographs of surveyed hydromodification sites.

Table A.1 – Layout key

Unique ID (Stream_Cross Section) **Surveyed by (Organization), Month-Year**

Note(s)/Site History:

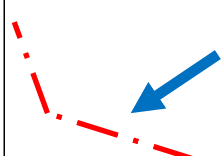
Left Bank (LB) Stability rating **Right Bank (RB)** Stability rating

Photograph(s)

Close-up view with object for scale if available

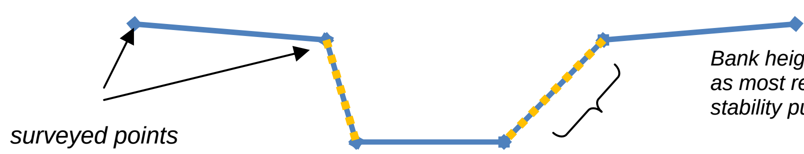
Photograph(s)

Dashed-dot red line represents approximate location of cross section, bent at bank location. Solid blue arrow indicates flow direction



Surveyed Cross Section (looking downstream)

Grid provided for individual horizontal to vertical scale



Bank height and projected angle used as most representative for mass wasting stability purposes

Table A.2 – Bank-stability key

STABLE	no visible bank failure
U-MW-C	unstable, mass wasting, in moderately- or well-consolidated banks
U-MW-PC	unstable, mass wasting, in poorly-consolidated banks
U-FLUVIAL	failure primarily due to fluvial forces (e.g., submerged shear stress, bend erosion, etc.)
U-MW-UC	mass wasting evident but in unconsolidated banks (e.g., old bed of braided channel)
U-FAILED	geometry post-mass failure (i.e., nearing angle of repose for unconsolidated material)
S-CONSTR	stable banks, but constructed/ graded and should not be included in analyses
S-CONFND	stable banks, but confined by hillslope

Santiago_A Stillwater Sciences, Sept-2007

Note(s):

LB U-MW-C

RB S-CONSTR

Near Santiago_A looking downstream

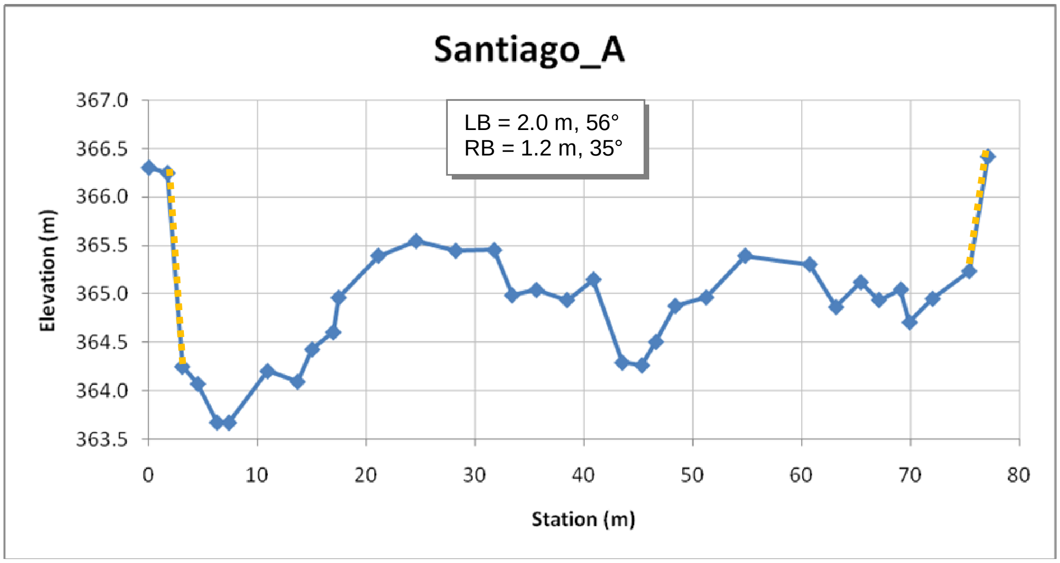


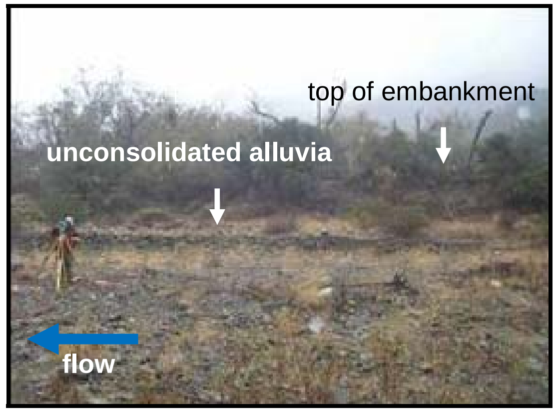
Figure A.1 – Santiago_A

Santiago_B Stillwater Sciences, Sept-2007

Note(s): *Flood control embankment constructed on right bank (date unknown)*

LB S-CONFND

RB S-CONSTR (upper) and U-MW-UC (lower)



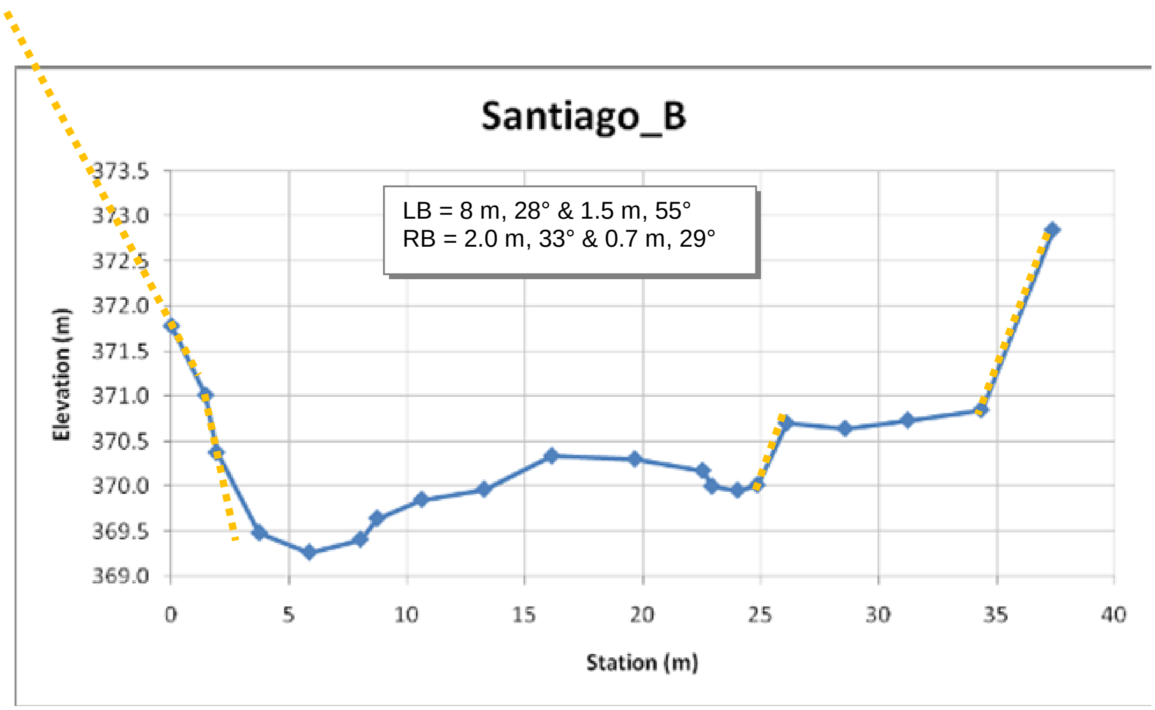
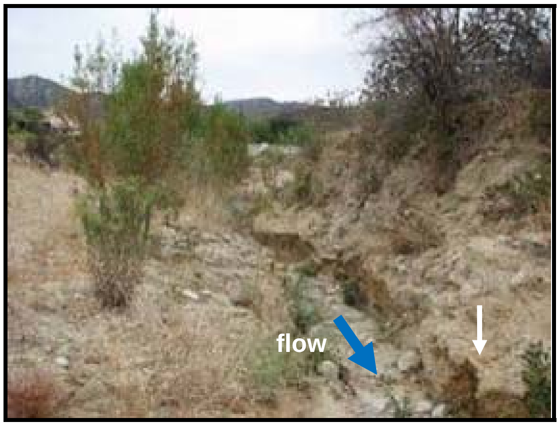


Figure A.2 – Santiago_B

Hasley1_A Stillwater Sciences, Oct-2007

Note(s): Site was graded and realigned/partially channelized during development circa 2002.

LB U-MW-PC RB U-MW-PC



Near Hasley1_A looking upstream

Near Hasley1_A looking downstream

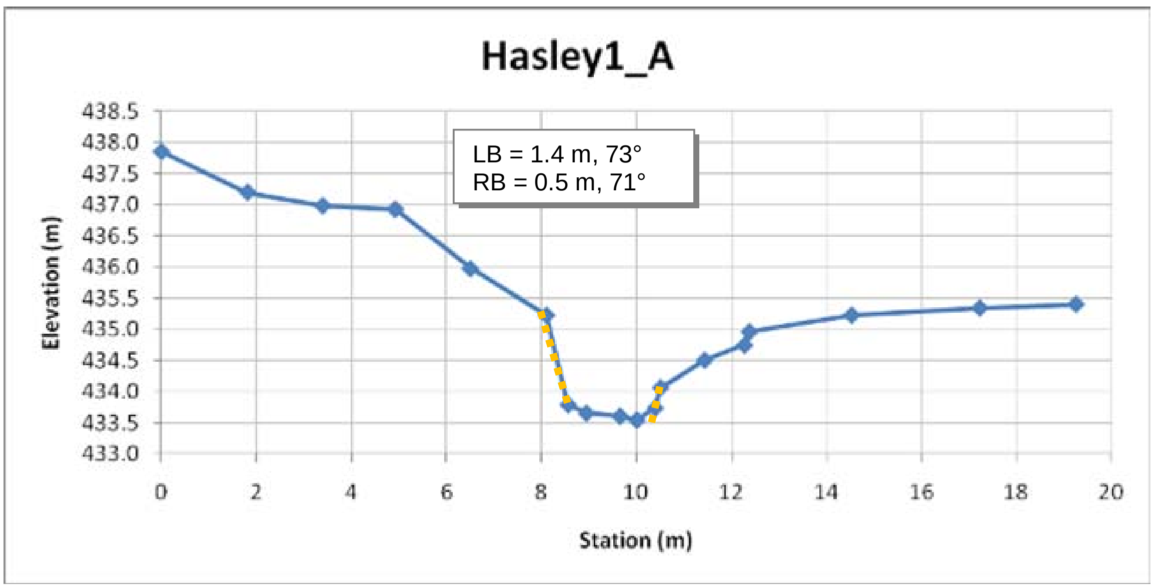


Figure A.3 – Hasley1_A

Hasley1_B Stillwater Sciences, Oct-2007

Note(s): Site was graded and realigned/partially channelized during development circa 2002.

LB U-MW-PC RB U-MW-PC

Near Hasley1_B

Near Hasley1_B

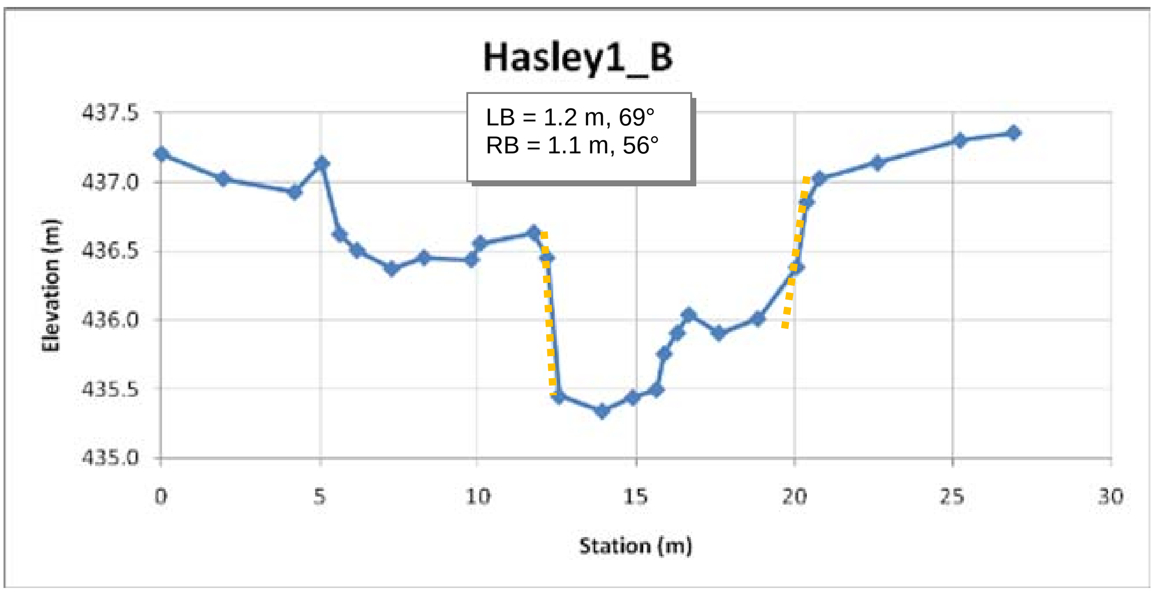


Figure A.4 – Hasley1_B

Hasley1_TRIB Stillwater Sciences, Oct-2007

Note(s): *Right bank is unconsolidated fill (i.e., built up higher than original floodplain for lot creation)*

LB STABLE RB S-CONSTR

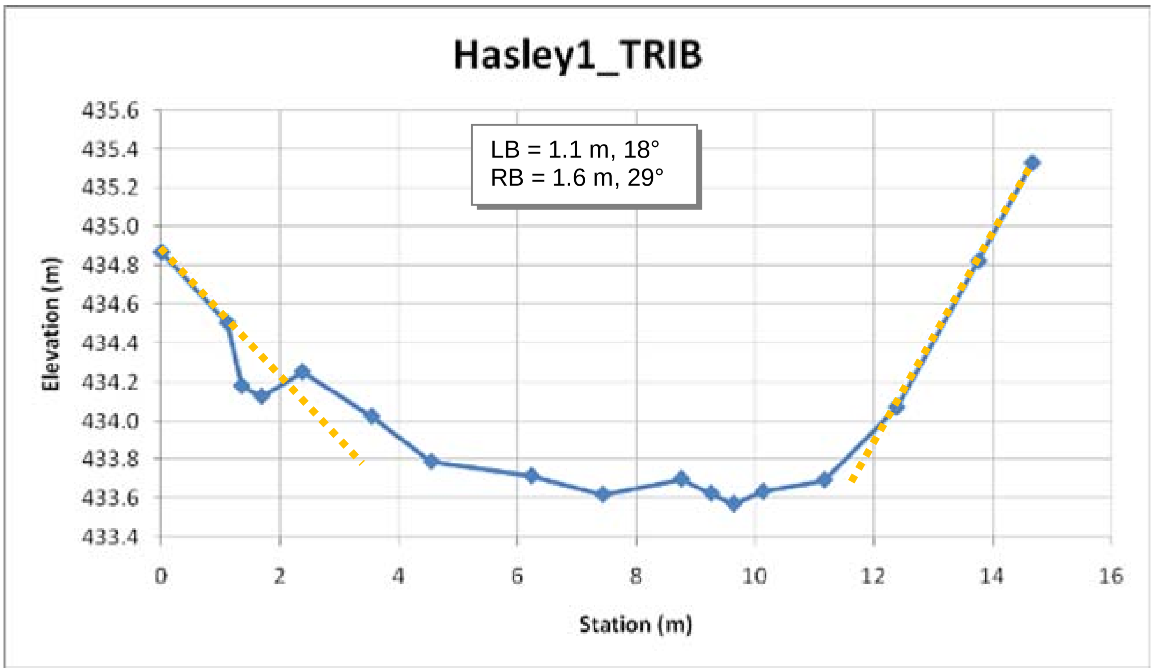


Figure A.5 – Hasley1_TRIB

Hasley2_A Stillwater Sciences, Oct-2007

Note(s):

LB U-FAILED RB U-MW-PC

Near Hasley2_A (survey captured geometry of a recently failed bank (<30^0 vs. pictured >75^0))

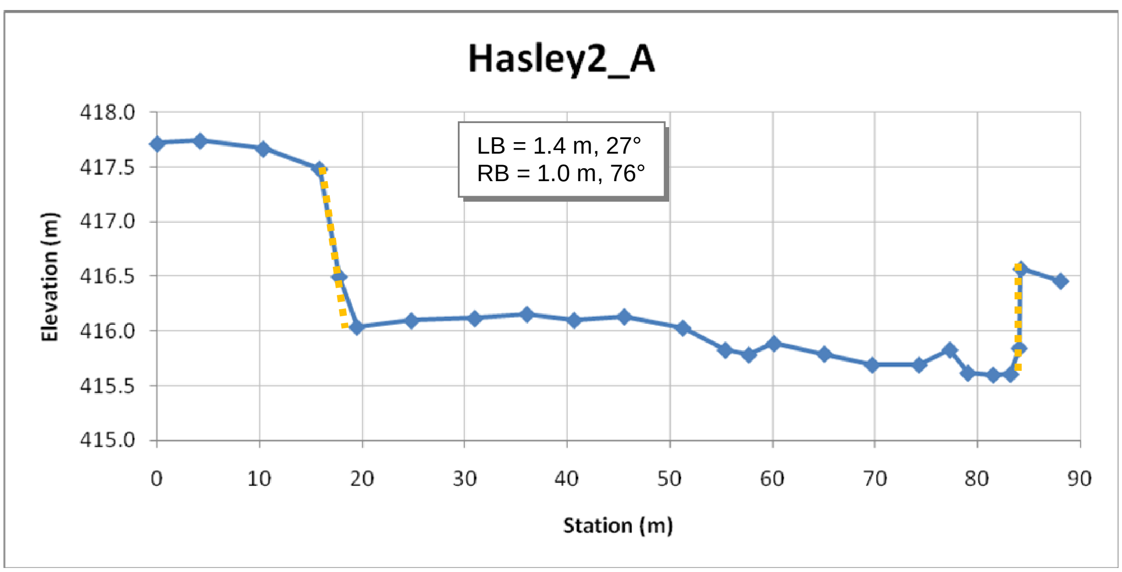


Figure A.6 – Hasley2_A

Hasley2_B Stillwater Sciences, Oct-2007

Note(s):

LB U-MW-C

RB STABLE-PC

Rilling evident, but no mass wasting, possibly graded

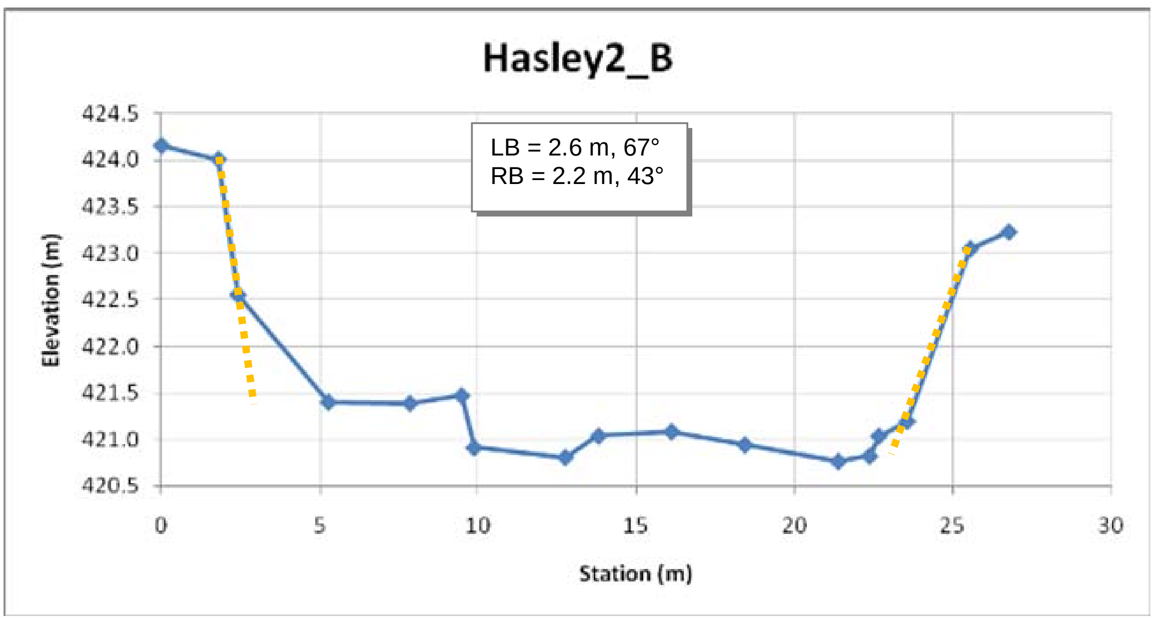
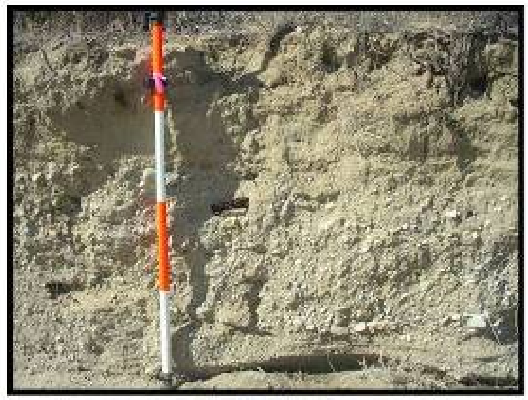


Figure A.7 – Hasley2_B

Hasley2_TRIB Stillwater Sciences, Oct-2007

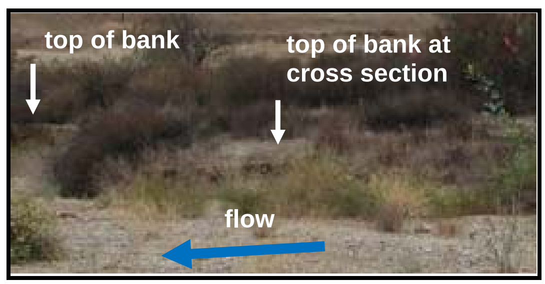
Note(s):

LB U-MW-PC RB U-MW-PC



Near Hasley2_TRIB, 6-in ruler for scale (just downstream, ~1.5x taller, similar composition)

Near Hasley2_TRIB (just downstream, ~2x taller similar composition)



Downstream photograph

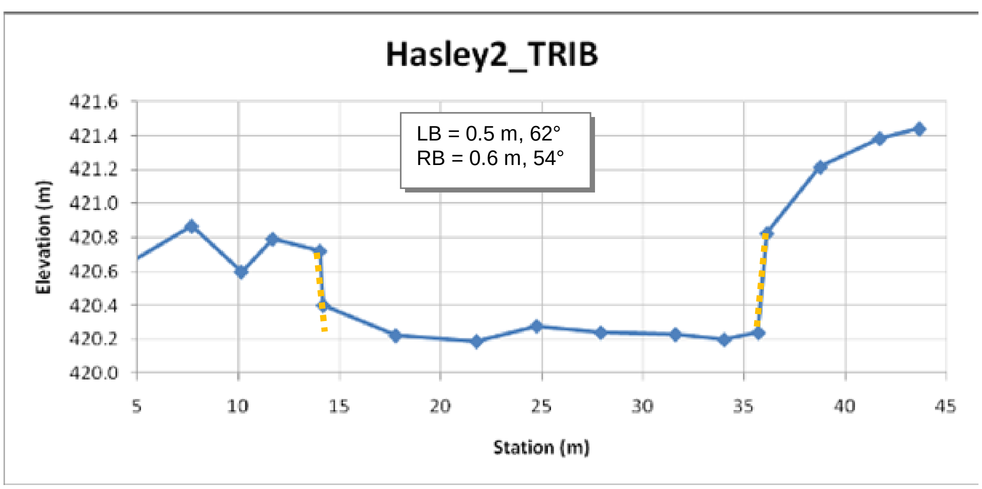


Figure A.8 – Hasley2_TRIB

Hicks_A CSU, Jan-2008

Note(s):

LB STABLE-PC (upper) U-MW-UC (lower) RB STABLE-PC (upper) STABLE-UC (lower)

Unconsolidated bed of pre-incised channel

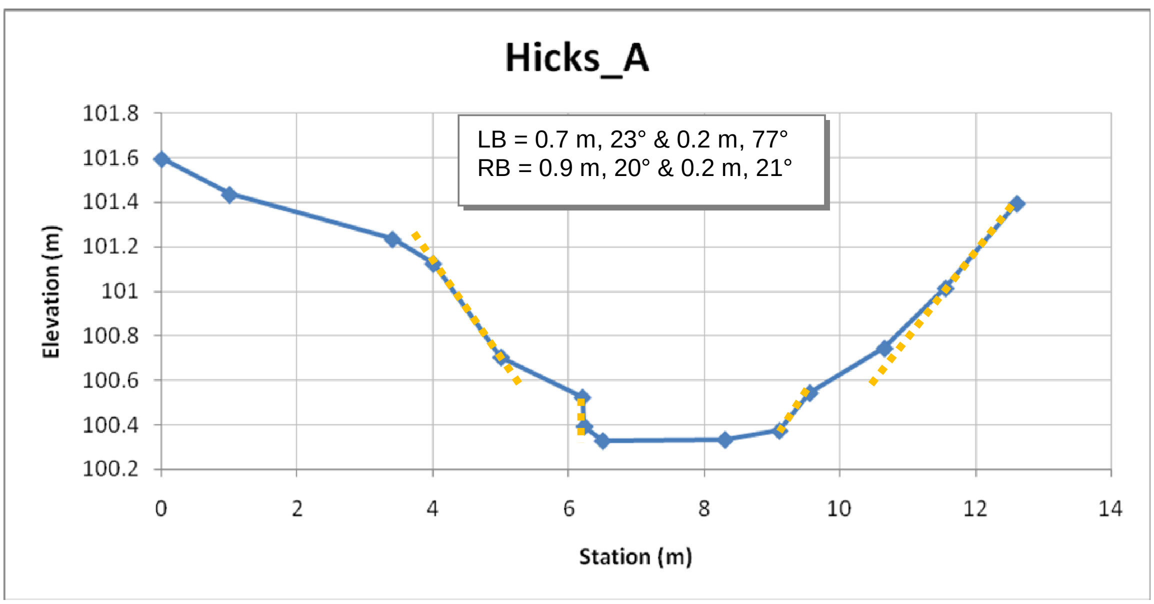
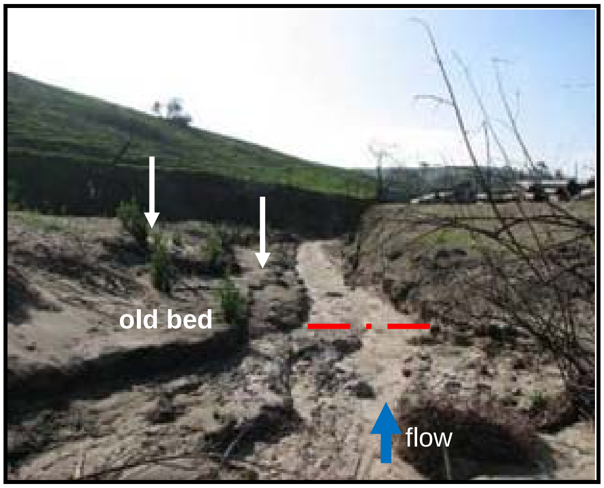


Figure A.9 – Hicks_A

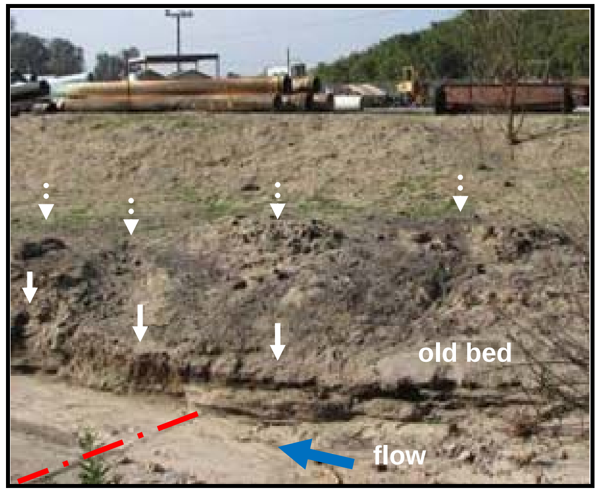
Hicks_B CSU/SCCWRP, Jan-2008

Note(s):

LB	U-FAILED (upper) and U-FAILED (lower)	RB	U-MW-PC



Fluvial activity across failed surfaces makes it difficult to re-project pre-failure geometry



Historic MW (dotted arrows) converges with recent MW (solid arrows) just downstream of survey. Just upstream of cross section, MW through pre-incised bed

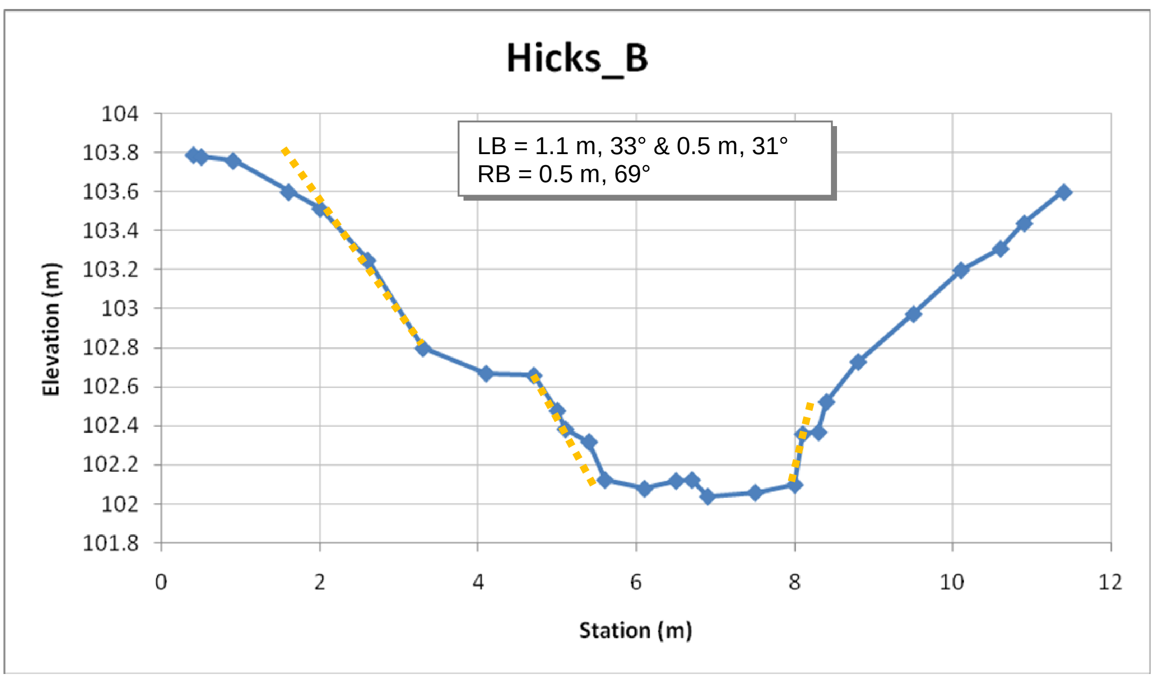
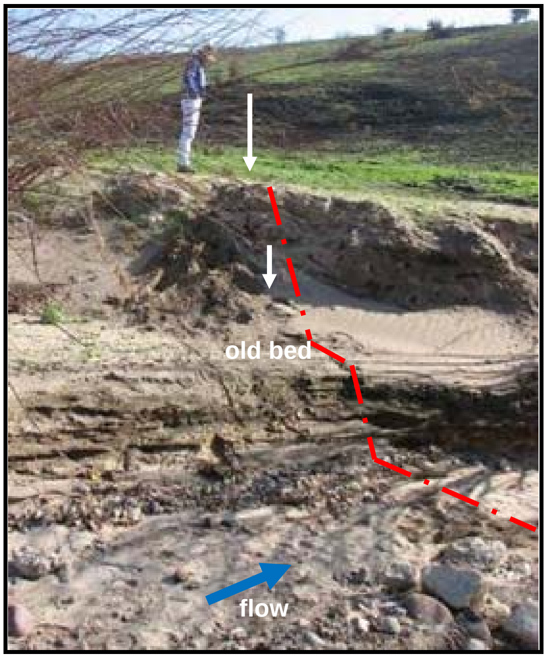


Figure A.10 – Hicks_B

Hicks_C CSU/SCCWRP, Jan-2008

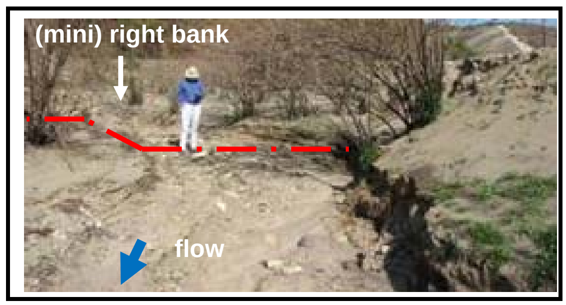
Note(s):

LB	U-MW-PC (upper) and U-MW-PC (lower)	RB	STABLE-UC



Fluvial erosion is significant (bend), but mass wasting is ubiquitous

Looking upstream



Looking upstream

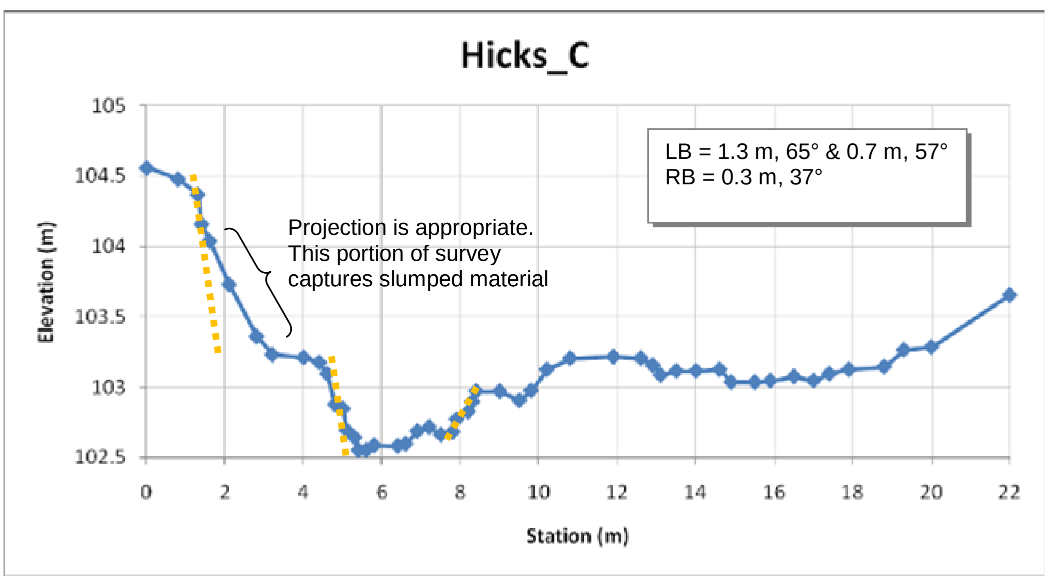


Figure A.11 – Hicks_C

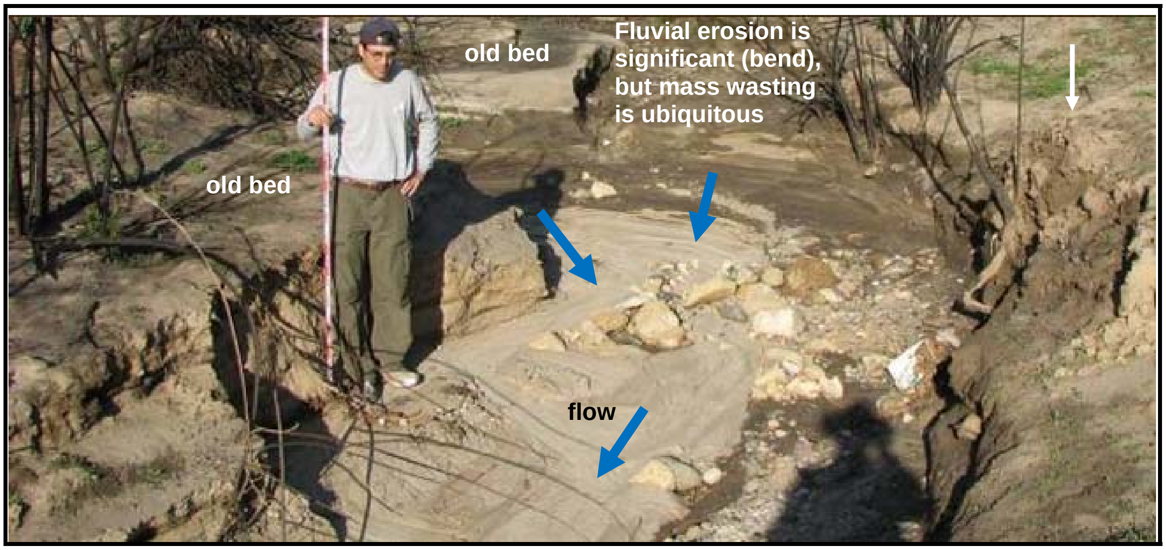
Hicks_D

Stillwater Sciences, Oct-2007
CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-PC

RB U-MW-PC



Looking upstream

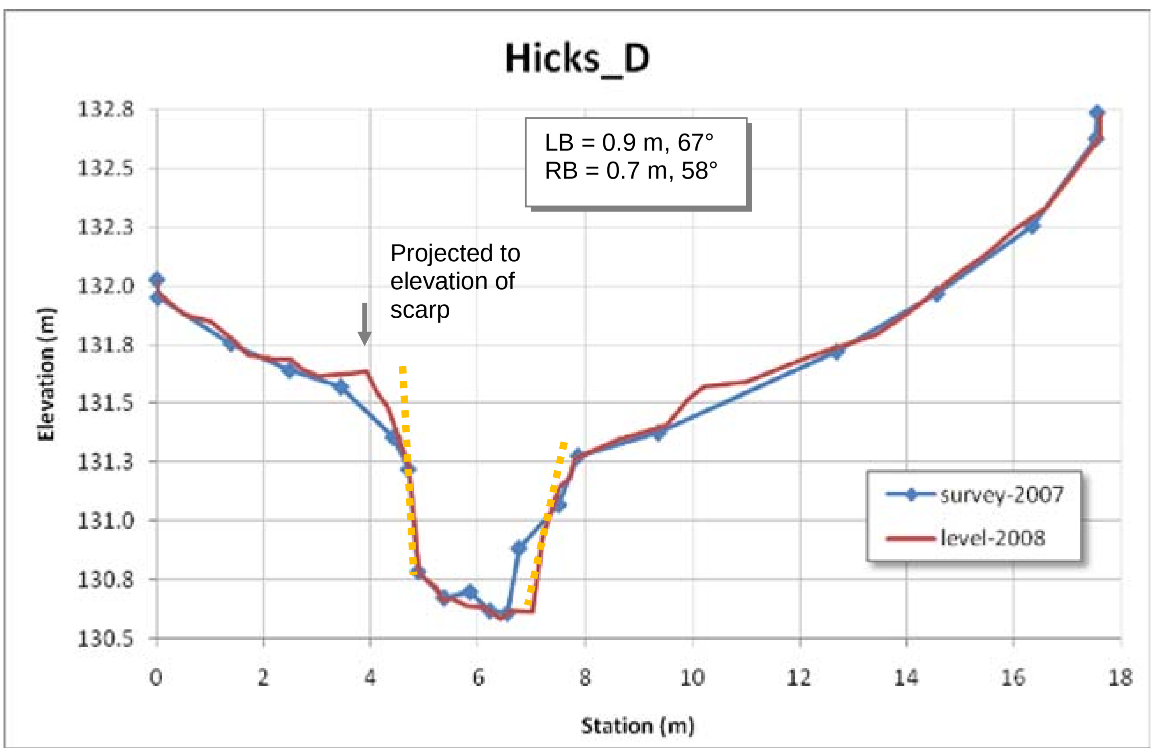


Figure A.12 – Hicks_D

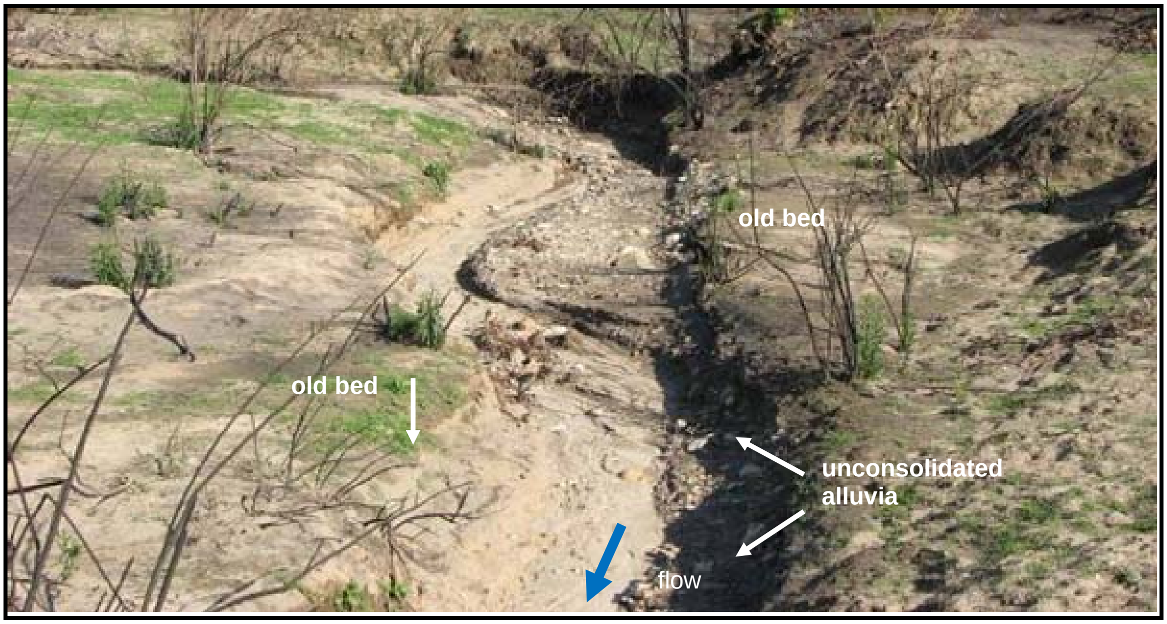
Hicks_E

Stillwater Sciences, Oct-2007
CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-PC

RB U-MW-PC



Looking upstream

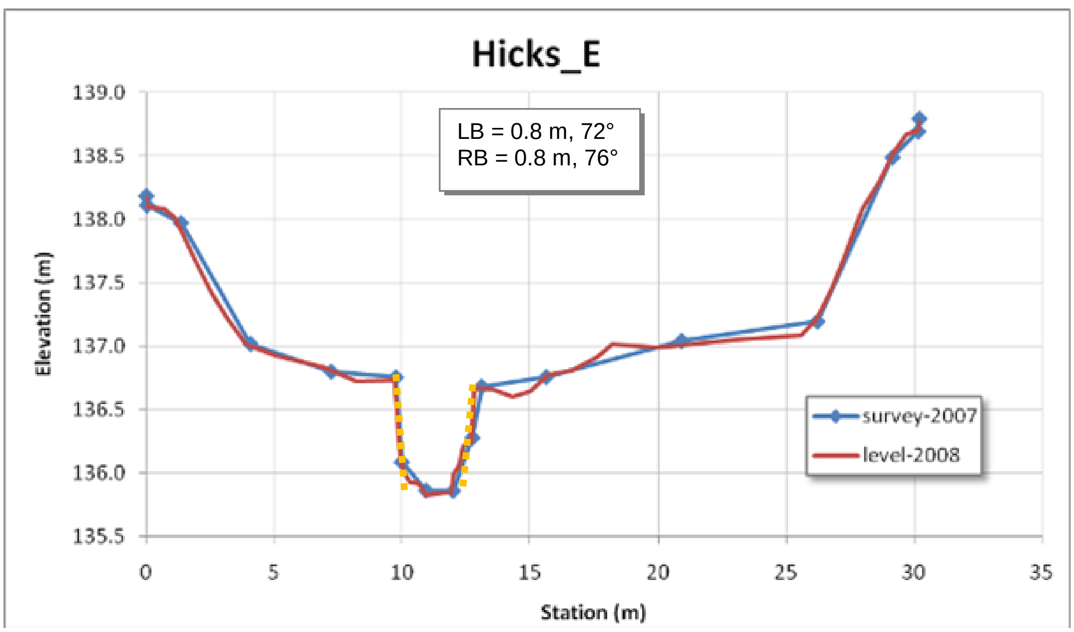
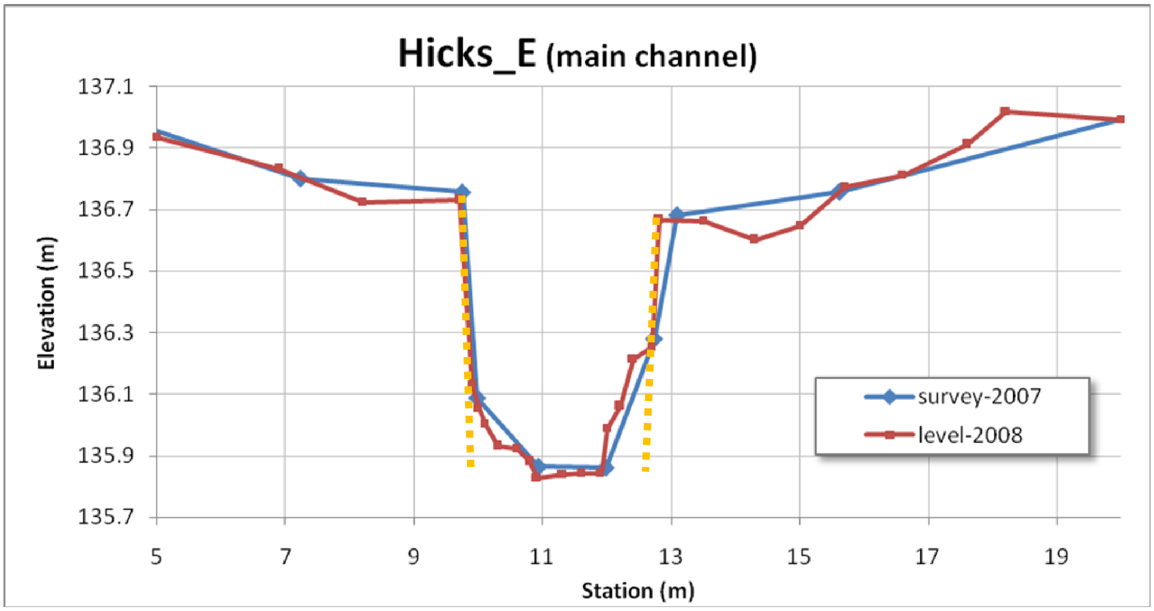


Figure A.13 – Hicks_E



The purpose of presenting this detailed figure is to eximplify the differences between surveys. The CSU/SCCWRP 2008 level survey had many more shots, resulting in more precise geometry. In cases, bank angles were significantly different (76° vs. 48° for the right bank of Hicks_E), despite a relatively constant cross section between survey dates.

To Stillwater's credit, they were surveying many cross sections through dense shapparal (pre-fire). The CSU/SCCWRP surveys were post-fire, which made their collection much easier despite having less precise equipment.

The scarp in the pre-fire (2007) photograph of the right bank below is consistent with the post-fire (2008) photograph on the previous page.

Figure A.13 (continued) – Hicks_E

Hicks_F CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-PC RB U-MW-PC

Looking downstream

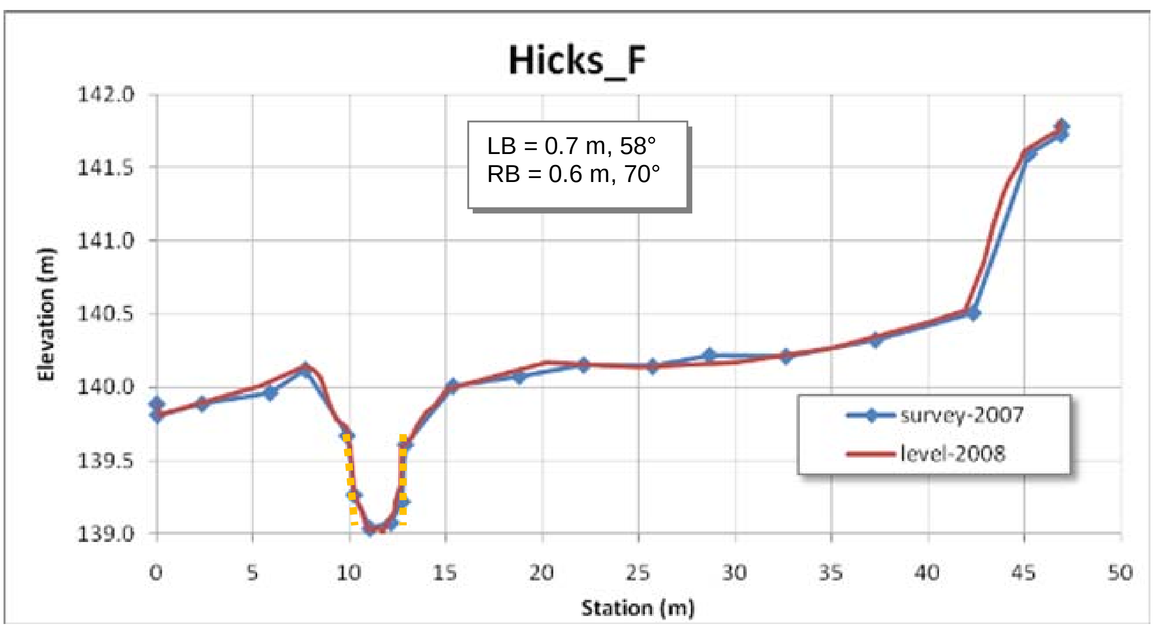


Figure A.14 – Hicks_F

Agua_Hedi_A Stillwater Sciences, Oct-2007

Note(s):

LB STABLE RB U-MW-C

Looking upstream

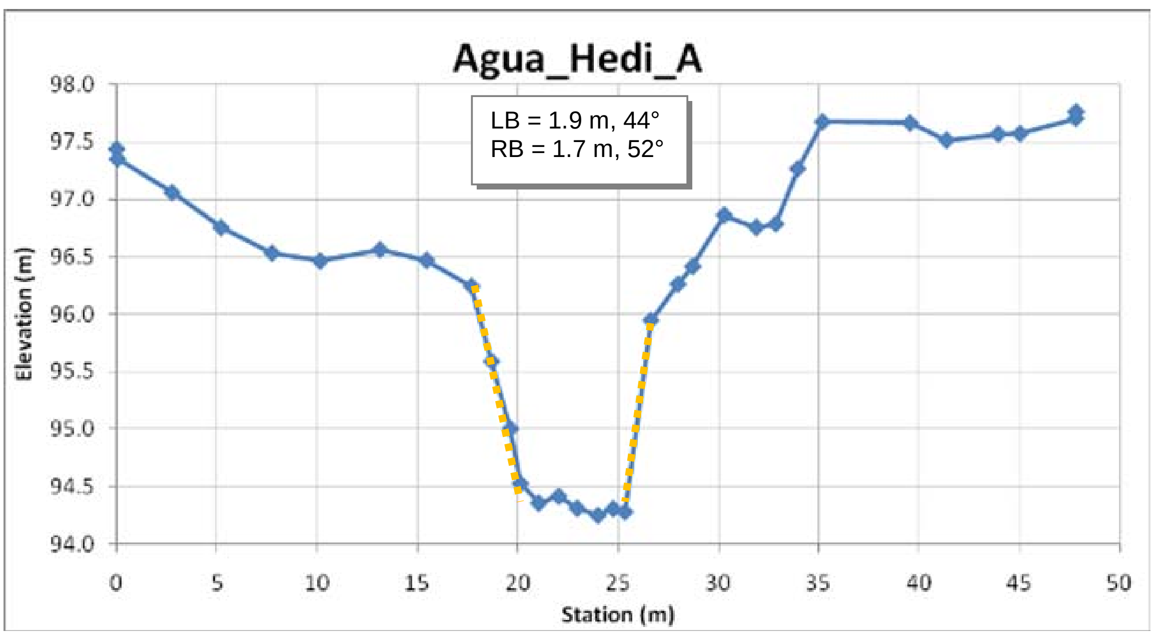


Figure A.15 – Agua_Hedi_A

Agua_Hedi_B Stillwater Sciences, Oct-2007

Note(s):

LB U-MW-C RB U-MW-C (upper) U-FLUVIAL (lower)

Upper portion

Lower portion

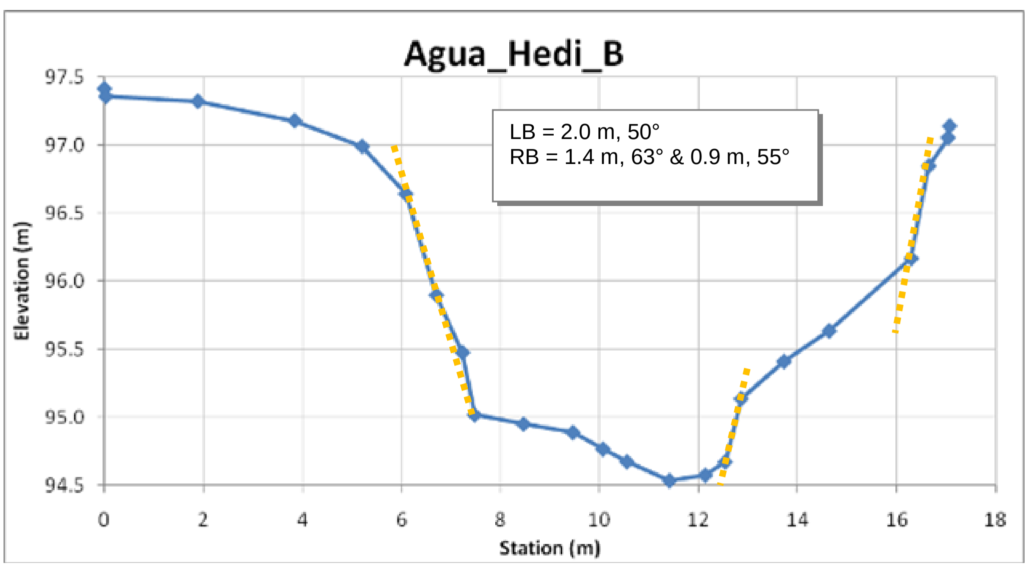


Figure A.16 – Agua_Hedi_B

Agua_Hedi_C Stillwater Sciences, Oct-2007

Note(s):

LB U-MW-C

Looking downstream

RB U-MW-C (upper) and U-MW-C (lower)

Looking upstream

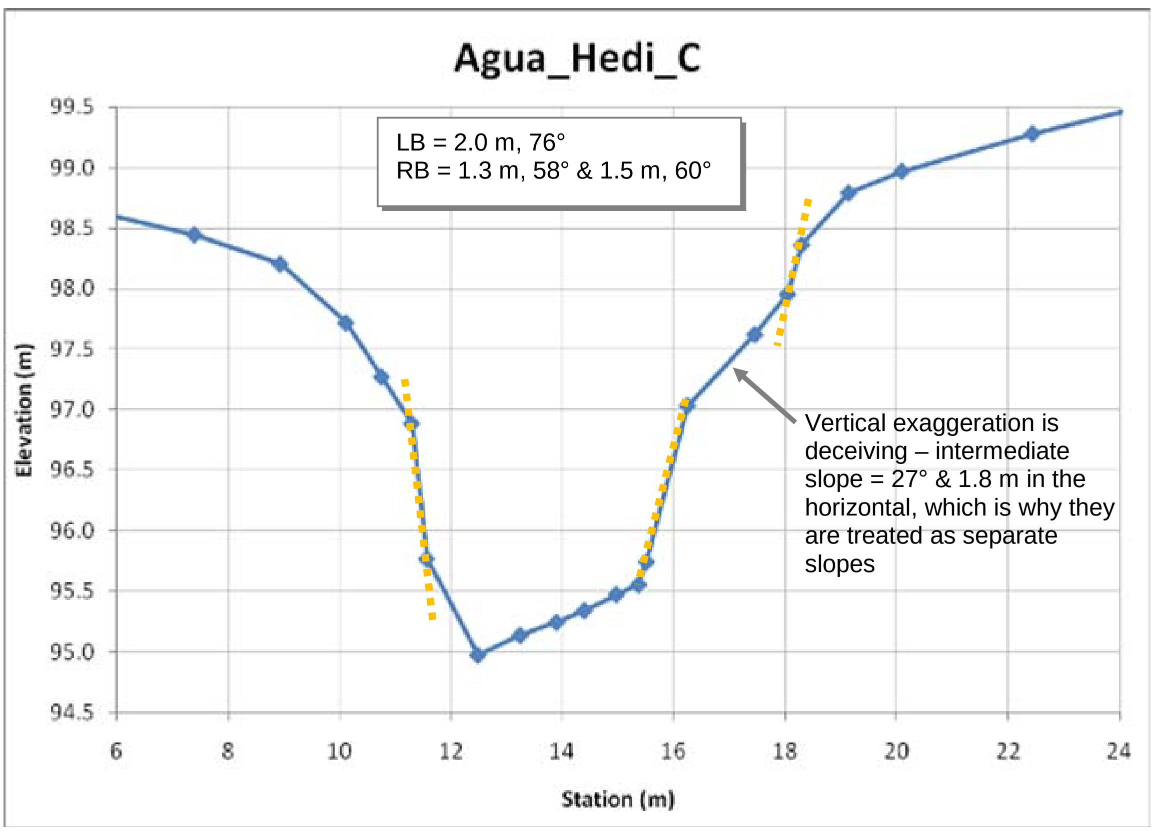


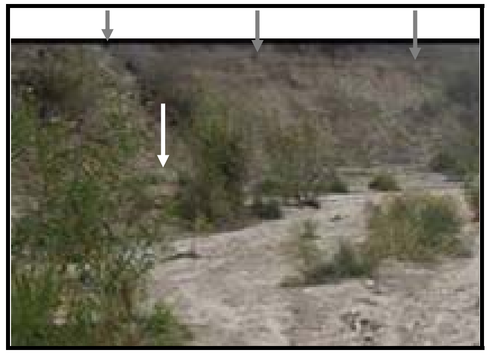
Figure A.17 – Agua_Hedi_C

Dry_A Stillwater Sciences, Oct-2007

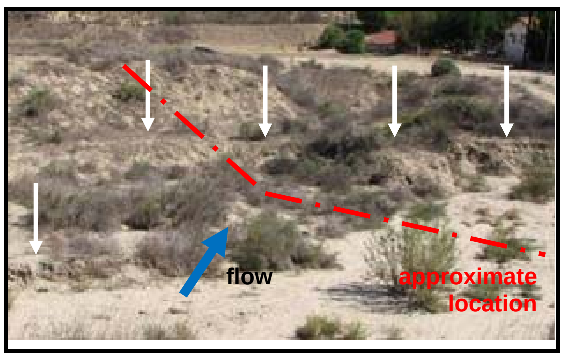
Note(s):

LB STABLE (upper) and U-FAILED (lower) RB U-MW-C (upper) and U-MW-C (lower)

Looking downstream



Looking upstream



Looking downstream

Looking upstream

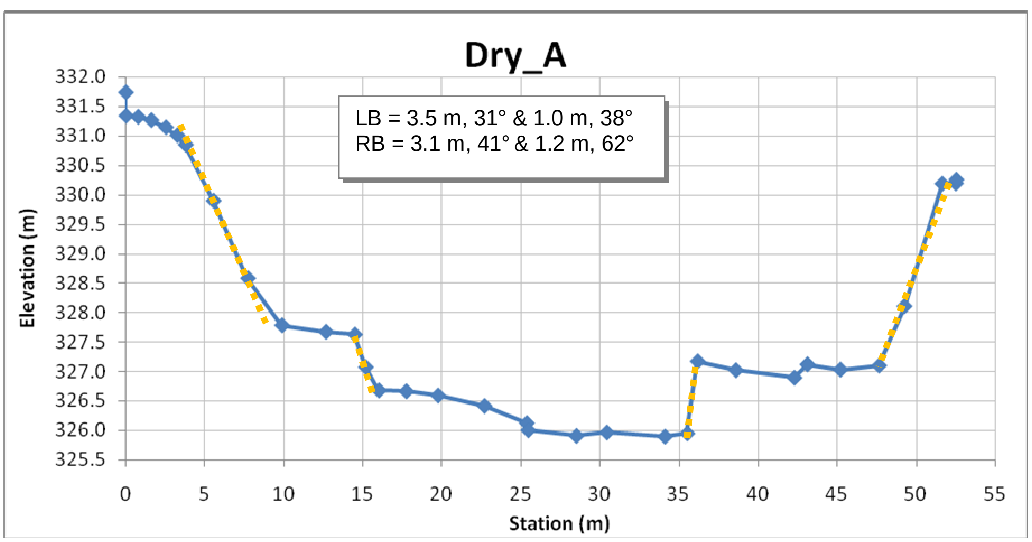


Figure A.18 – Dry_A

Dry_B Stillwater Sciences, Oct-2007

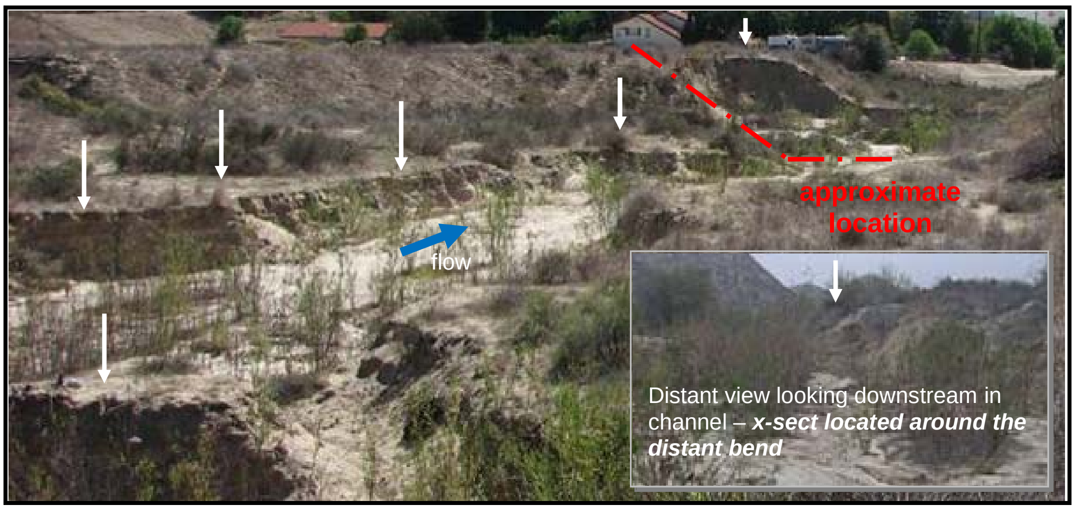
Note(s):

LB STABLE (upper) and U-FAILED (lower)

RB STABLE (upper) and U-MW-C (lower)

Looking downstream

Looking upstream



Distant view looking downstream

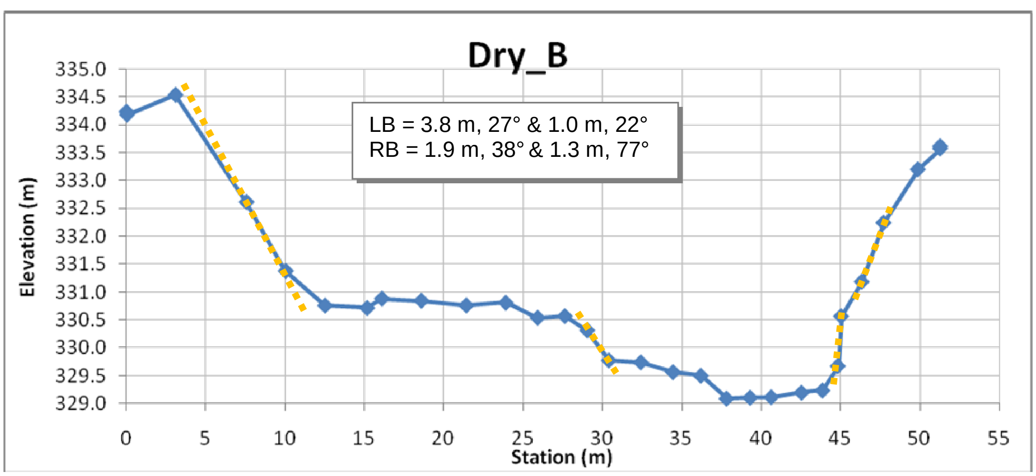
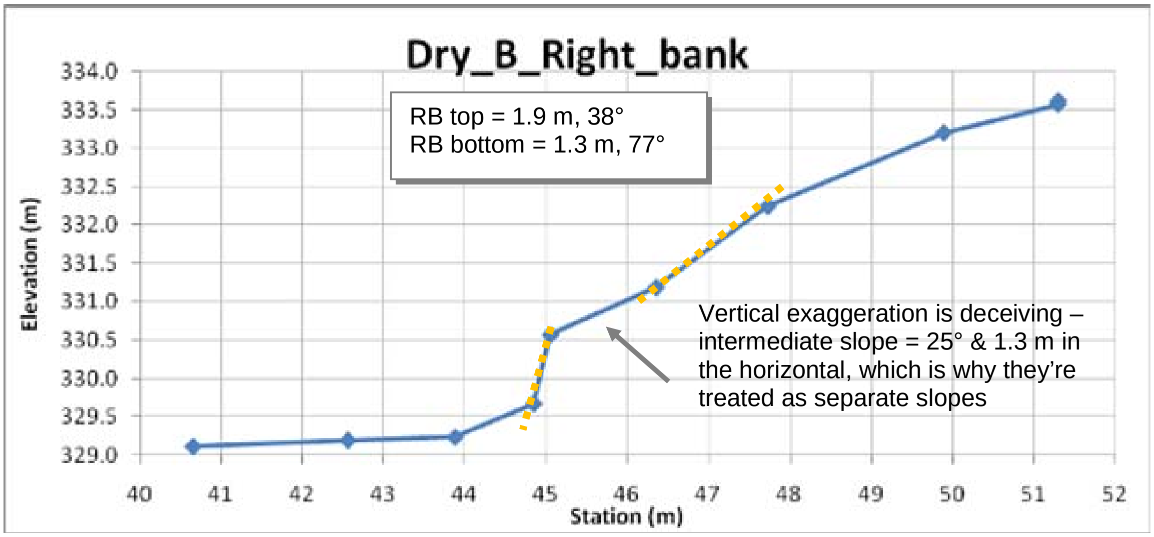


Figure A.19 – Dry_B



With such a wide cross-section, this view is intended to more easily delineate the various bank slopes and break points.

Figure A.19 (continued) – Dry_B

Dry_C Stillwater Sciences, Oct-2007

Note(s):

LB STABLE RB U-MW-C

Looking downstream

Looking upstream

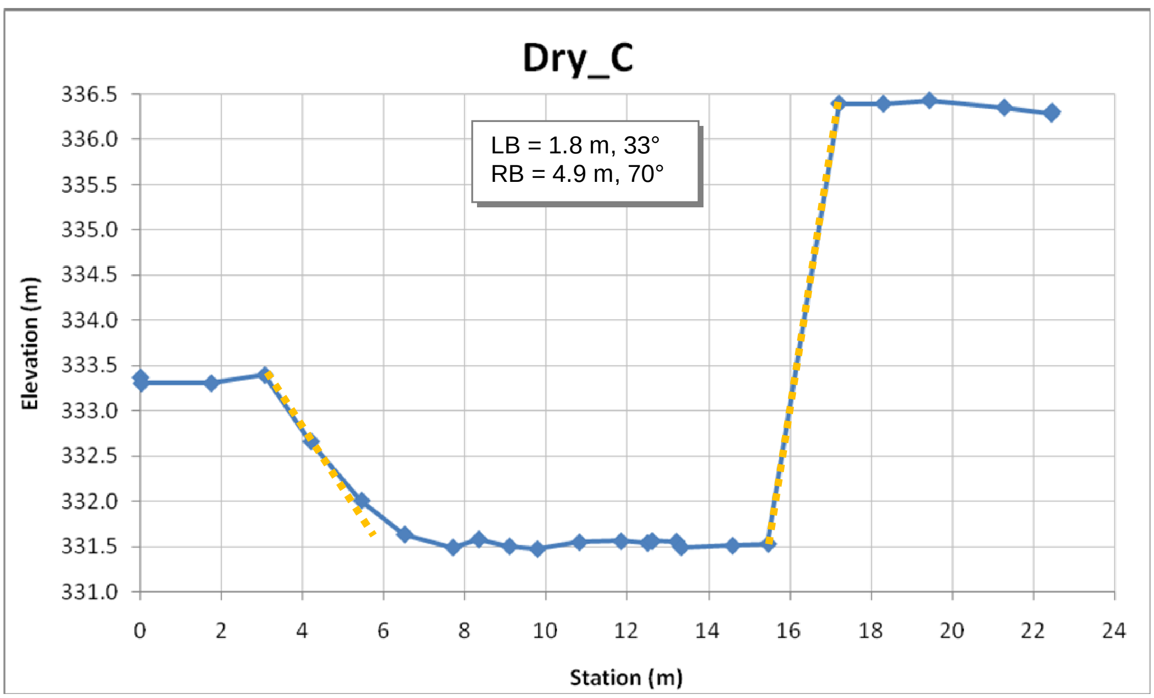


Figure A.20 – Dry_C

Hovnanian_A Stillwater Sciences, Oct-2007

Note(s):

LB STABLE

RB STABLE

Looking upstream

Looking downstream

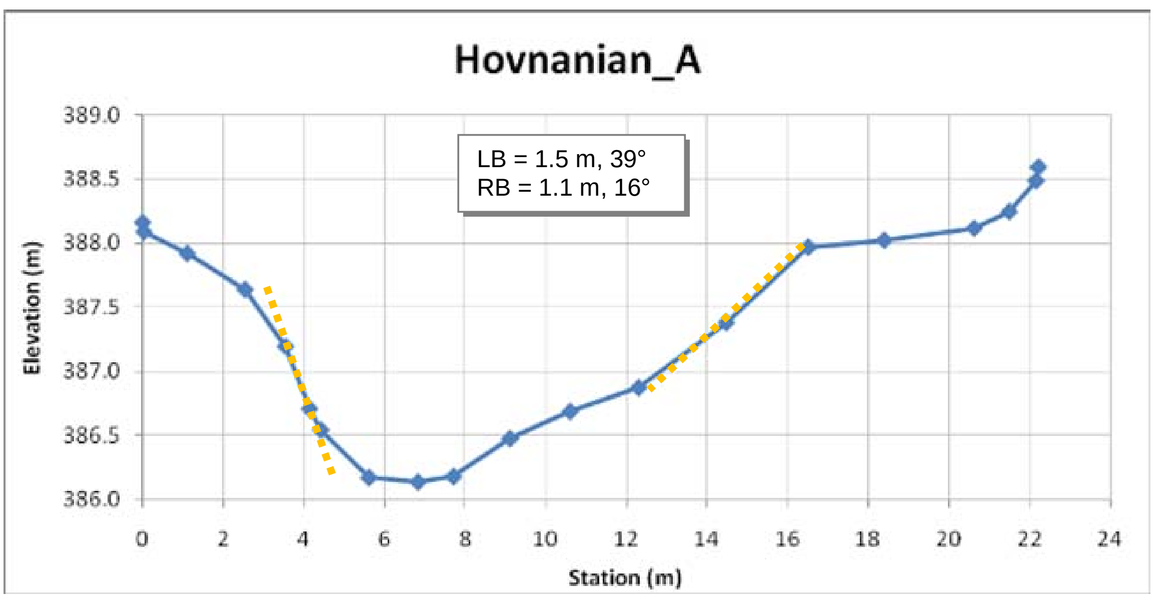


Figure A.21 – Hovnanian_A

Hovnanian_B Stillwater Sciences, Oct-2007

Note(s):

LB STABLE

RB STABLE

Looking upstream

Looking downstream

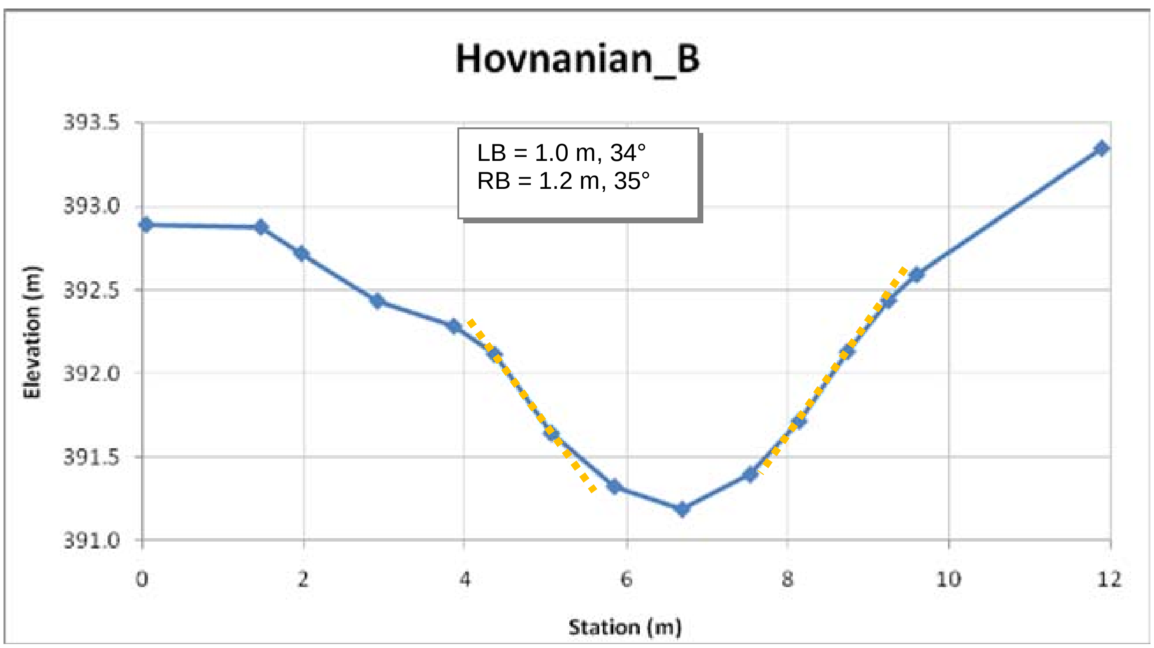


Figure A.22 – Hovnanian_B

Santimeta_A (San Timetao) Stillwater Sciences, Oct-2007

Note(s):

LB U-MW-C

RB U-MW-C (upper) and U-MW-C (lower)

Looking upstream

Looking downstream

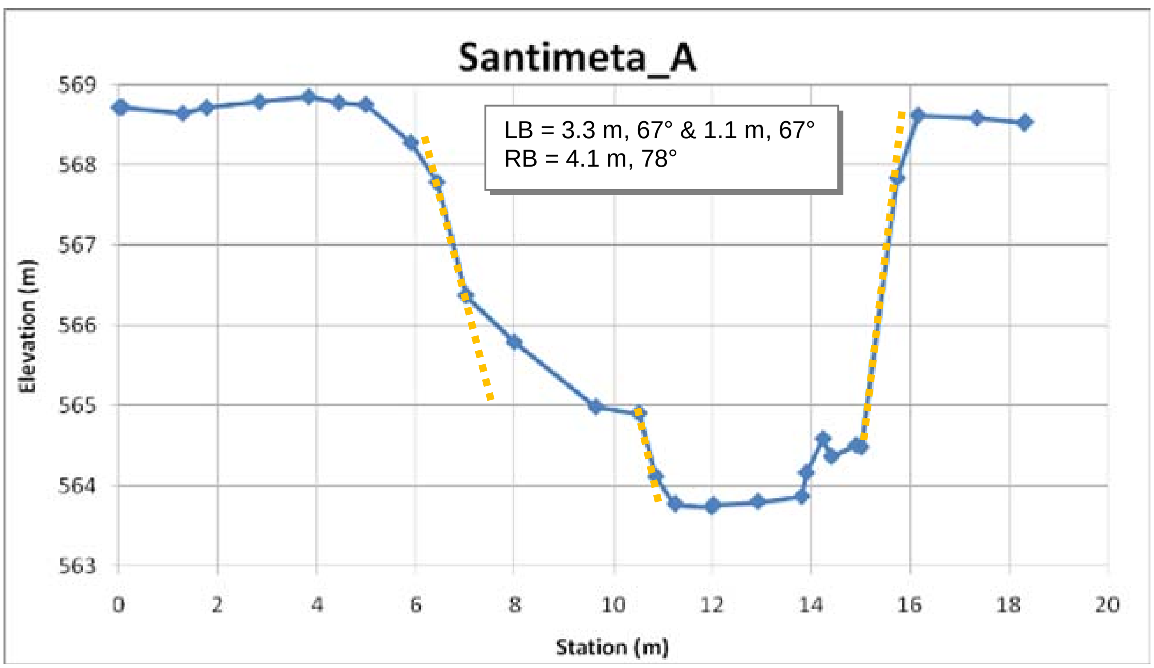


Figure A.23 – Santimeta_A (San Timetao)

Santimeta_B (San Timetao) Stillwater Sciences, Oct-2007

Note(s):

LB U-MW-C RB U-MW-C

Looking upstream

Looking downstream

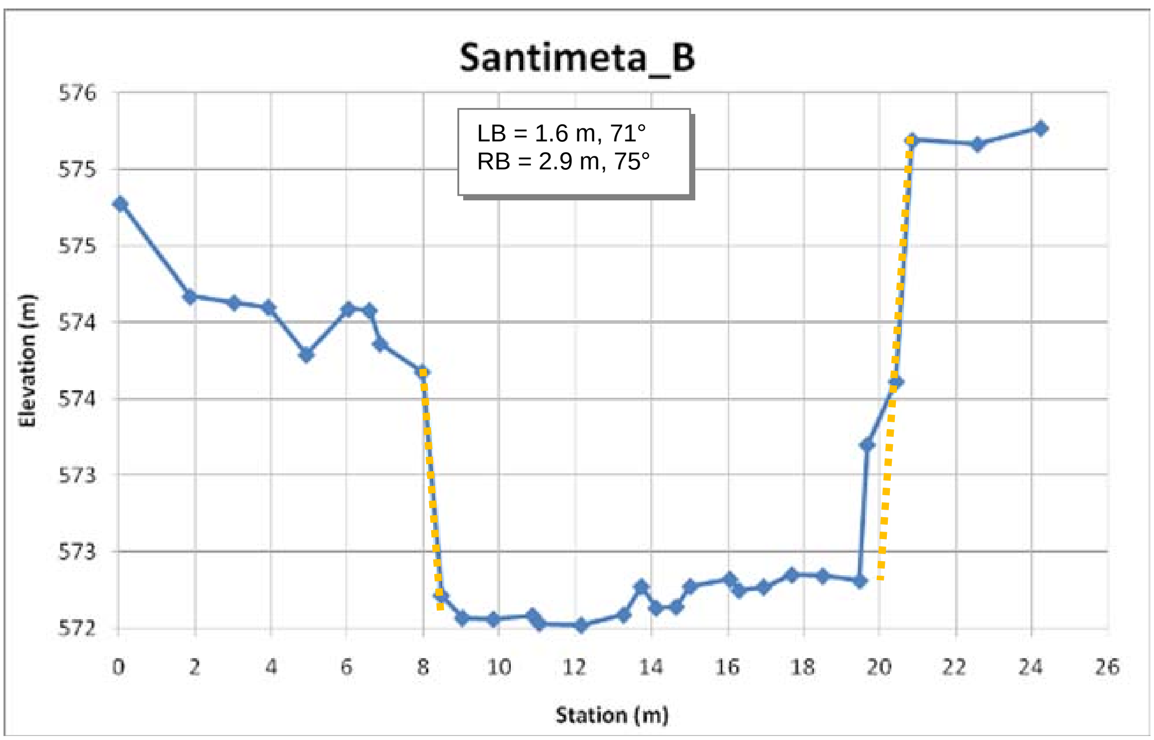


Figure A.24 – Santimeta_B (San Timetao)

Santimeta_C (San Timetao) Stillwater Sciences, Oct-2007

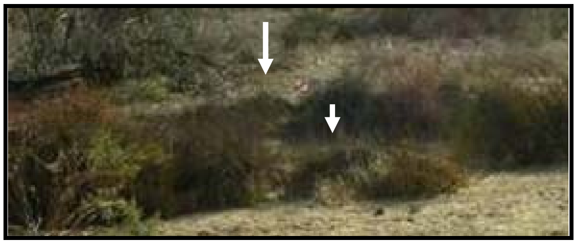
Note(s):

LB U-MW-C

RB U-MW-C

Looking upstream

Looking downstream



View of left bank

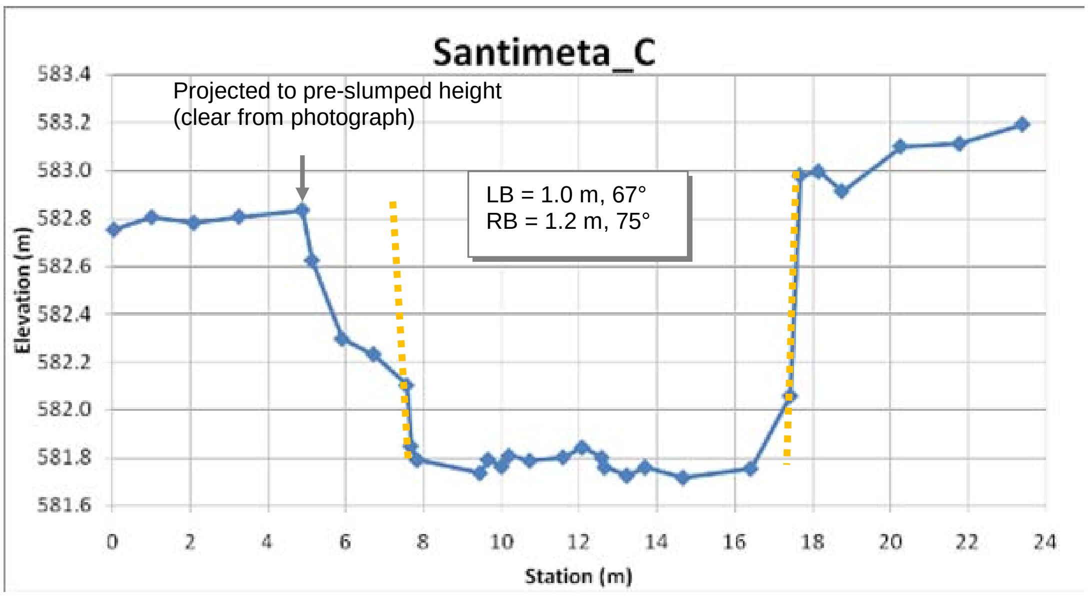


Figure A.25 – Santimeta_C (San Timetao)

Ltl_Cedar_A (Little Cedar) Stillwater Sciences, Oct-2007

Note(s):

LB U-MW-PC

RB U-MW-PC

Looking upstream

Looking downstream

Incising through poorly consolidated alluvia downstream of bridge (forced confinement)

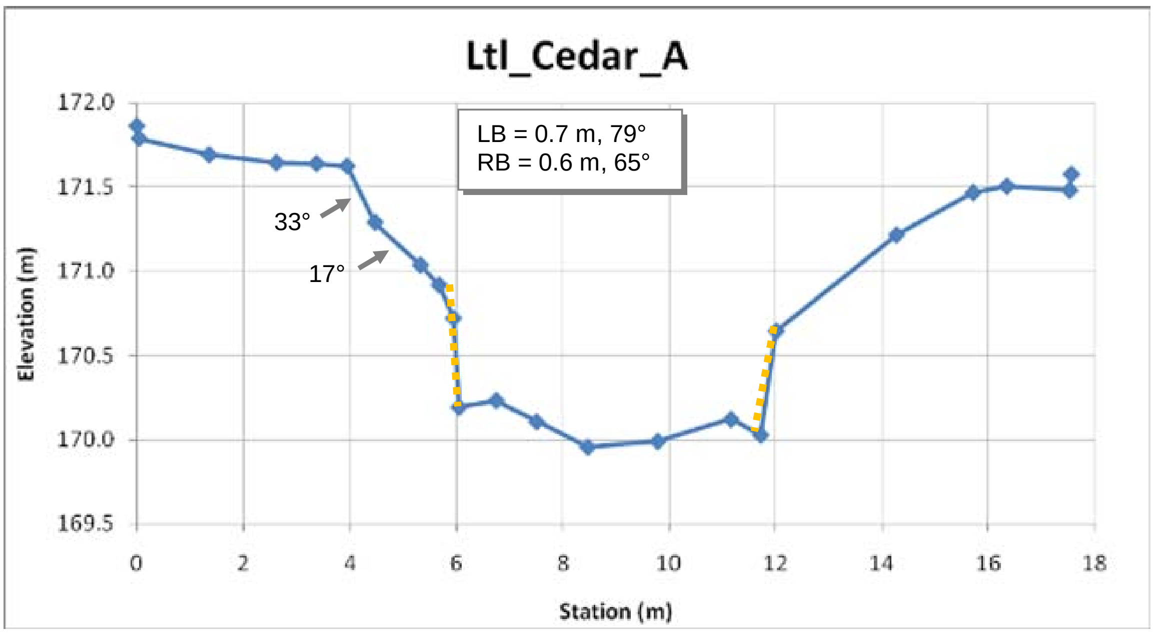


Figure A.26 – Ltl_Cedar_A (Little Cedar)

Ltl_Cedar_B (Little Cedar) Stillwater Sciences, Oct-2007

Note(s):

LB STABLE-UC

RB U-FAILED (lower) and STABLE (upper)

Looking downstream, w/ distant view of downstream left bank and near view of right bank

Looking upstream

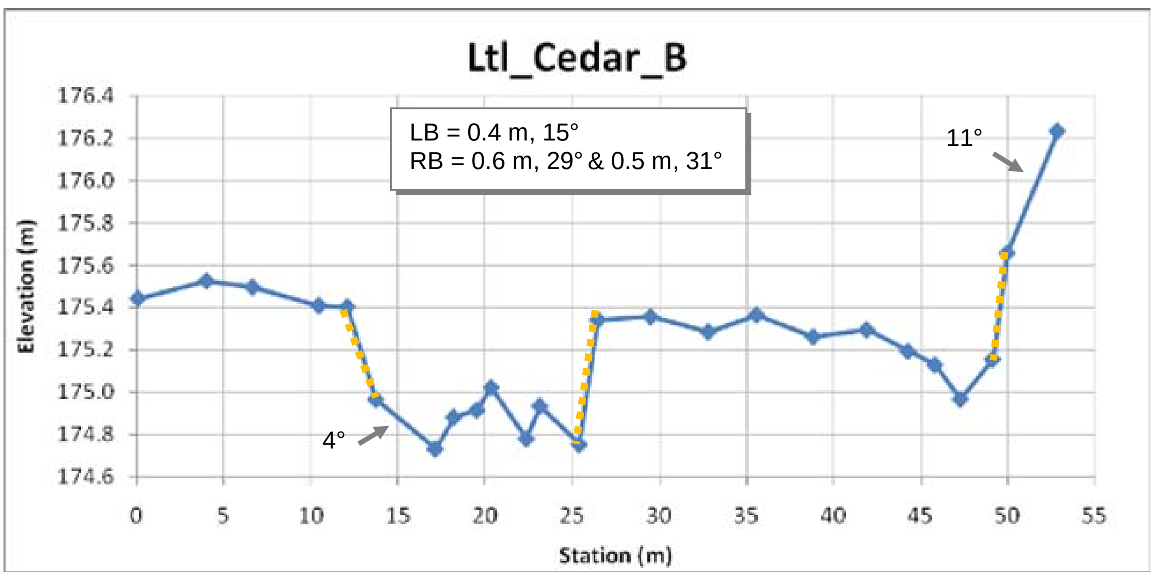


Figure A.27 – Ltl_Cedar_B (Little Cedar)

Proctor_A Stillwater Sciences, Oct-2007

Note(s):

LB U-FAILED RB U-MW-UC (lower) and STABLE (upper)

Looking upstream

Looking downstream

View from downstream section looking upstream toward Proctor_A

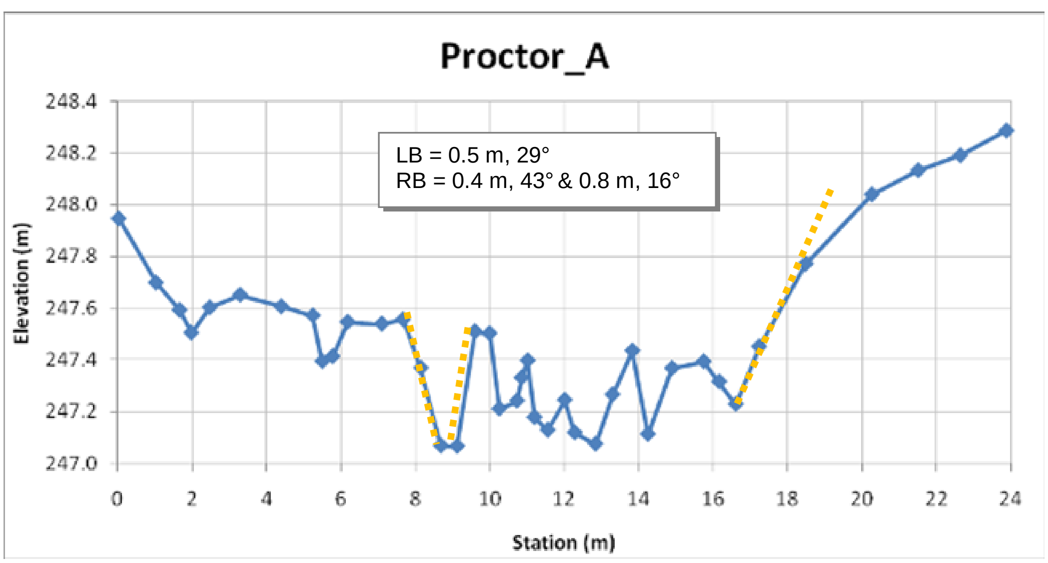


Figure A.28 – Proctor_A

Note(s):

LB STABLE (upper) and U-MW-UC (lower) RB STABLE (upper) and U-MW-UC (lower)

Looking upstream

Looking downstream

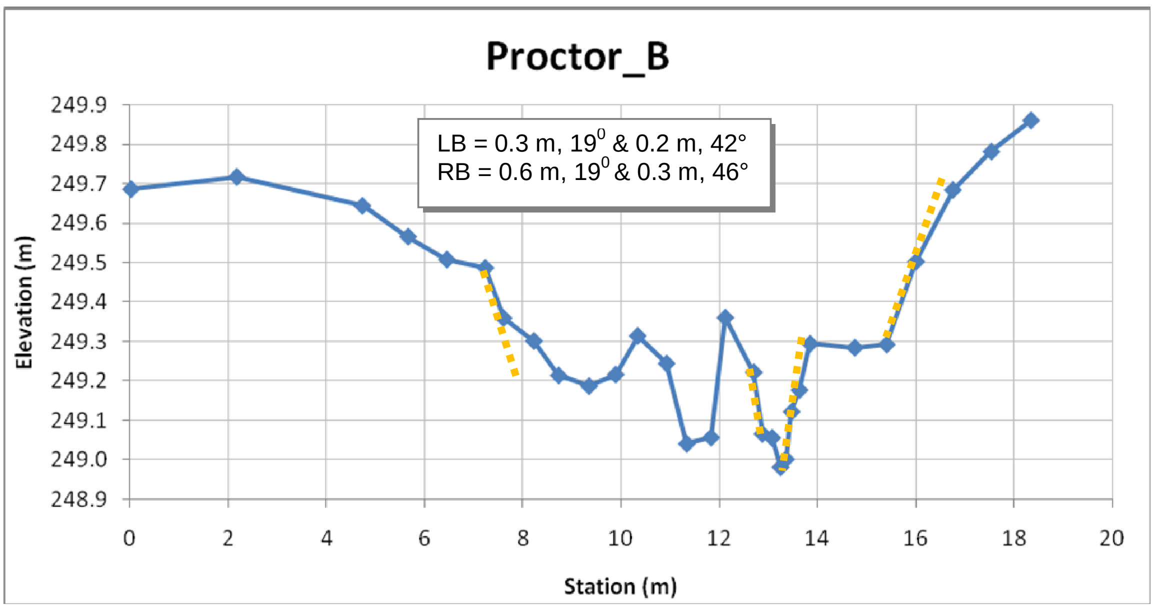


Figure A.29 – Proctor_B

Proctor_TRIB Stillwater Sciences, Oct-2007

Note(s):

LB STABLE (upper) and U-FAILED (lower) RB STABLE (upper) and U-FAILED (lower)

Looking upstream

Looking downstream

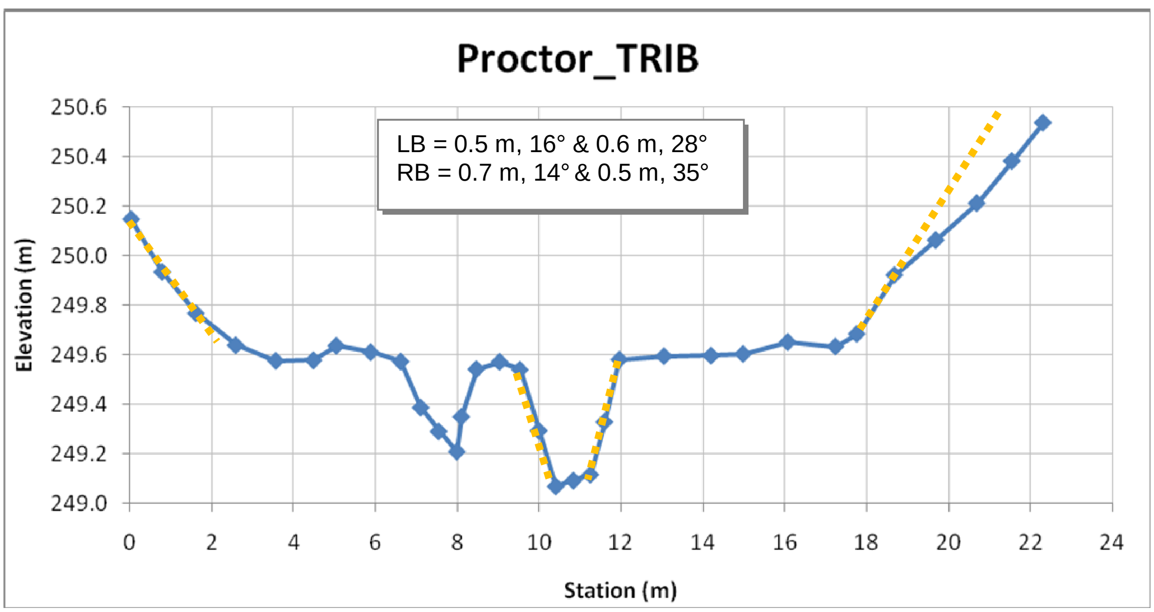


Figure A.30 – Proctor_TRIB

Perris_1_A Riverside County, Oct-2007

Note(s):

LB STABLE-PC RB STABLE-PC

Looking upstream near location of Perris_1_A

This portion of Perris_1 was graded (date unknown) to redirect flow to a single culvert at the bottom of the reach

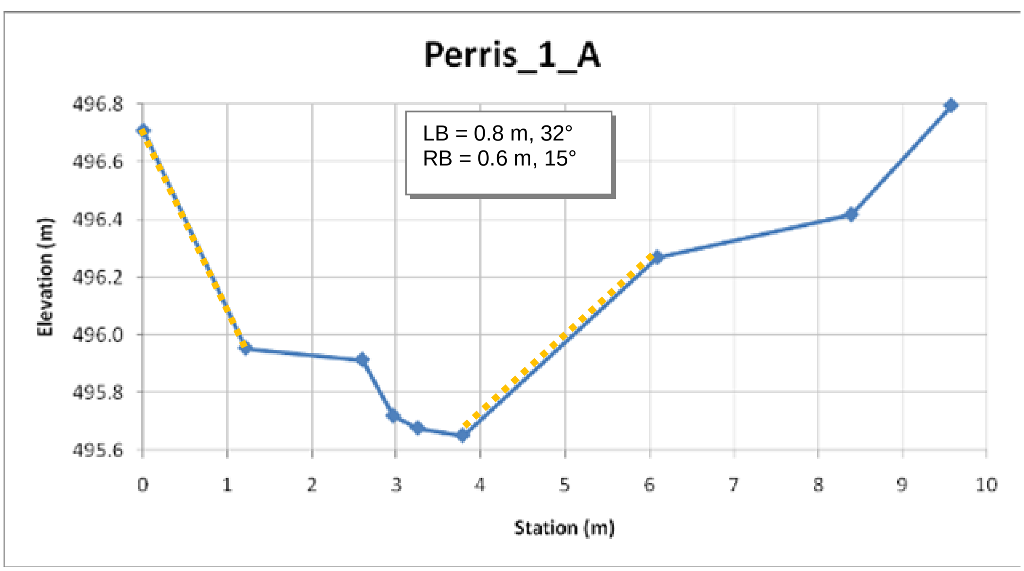


Figure A.31 – Perris_1_A

Perris_1_B Riverside County, Oct-2007

Note(s):

LB STABLE-PC RB U-MW-PC

Looking upstream near location of Perris_1_B

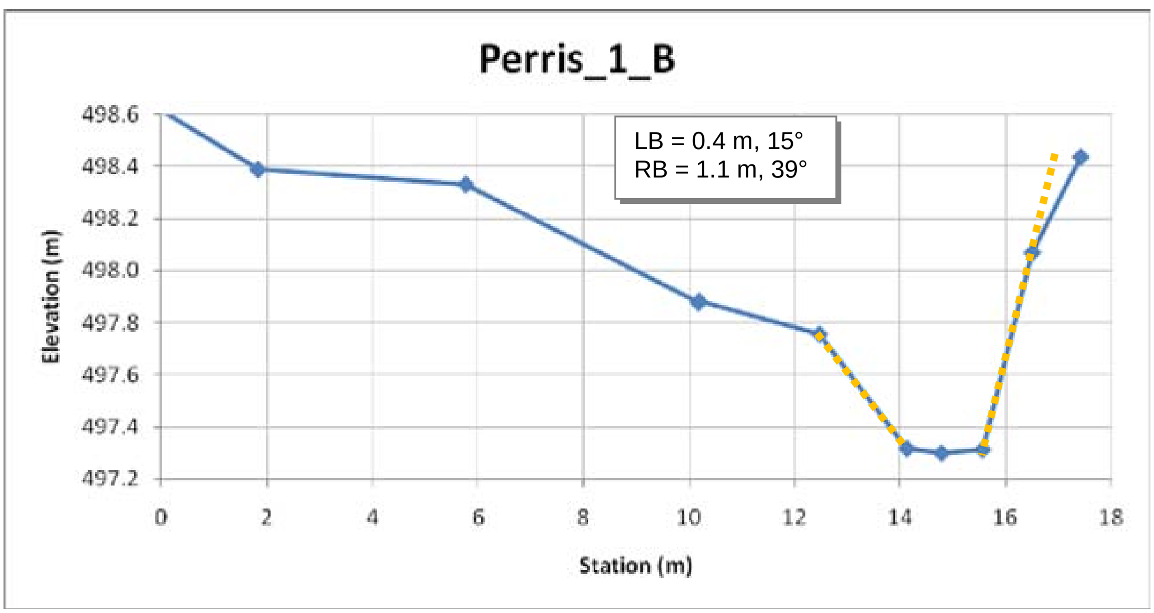


Figure A.32 – Perris_1_B

Perris_1_C Riverside County, Oct-2007

Note(s):

LB	U-MW-PC (upper) and U-MW-PC (lower)	RB	U-MW-PC

Looking upstream near location of Perris_1_C

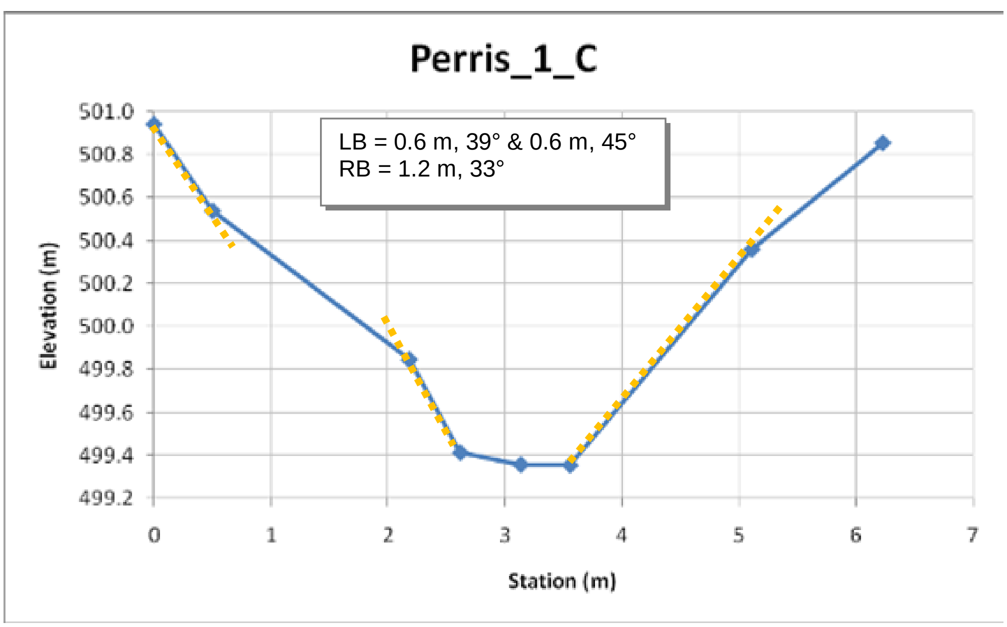


Figure A.33 – Perris_1_C

Perris_2_A Riverside County, Oct-2007

Note(s):

LB STABLE-PC RB STABLE-PC

Looking upstream near location of Perris_2_A

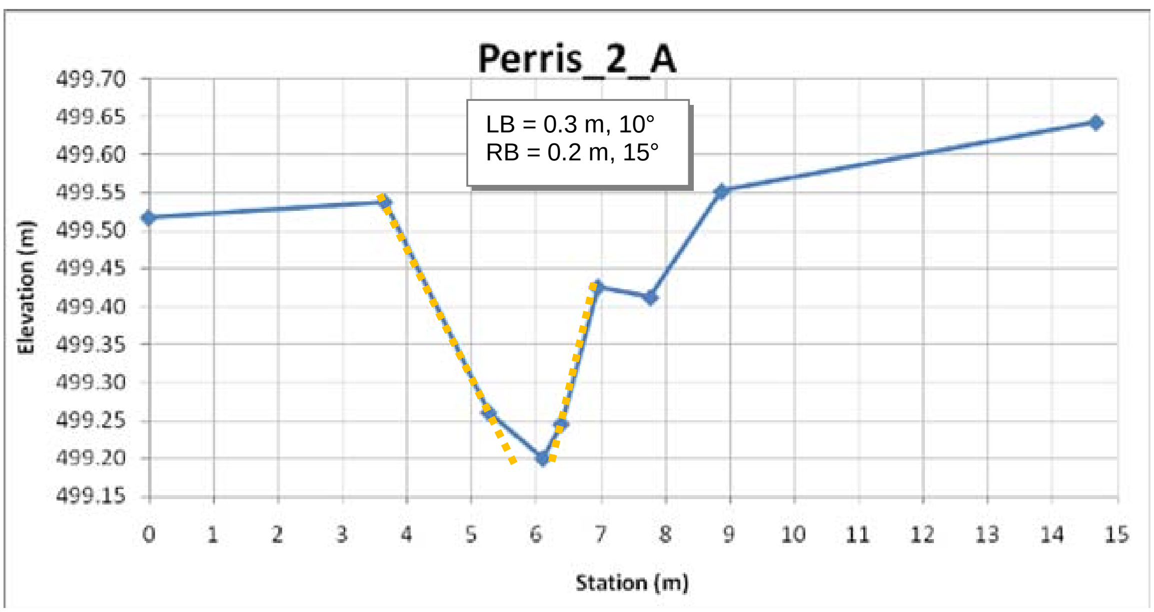
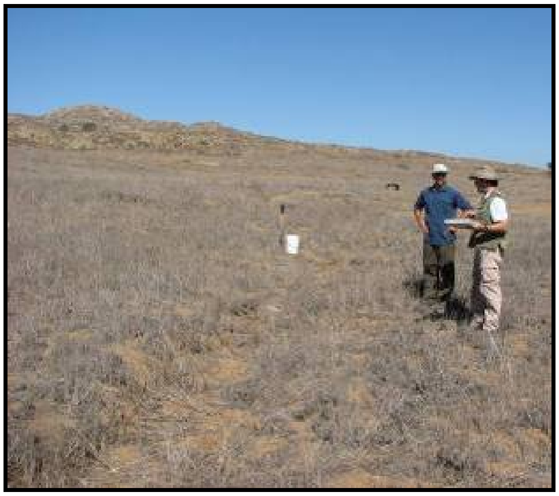


Figure A.34 – Perris_2_A

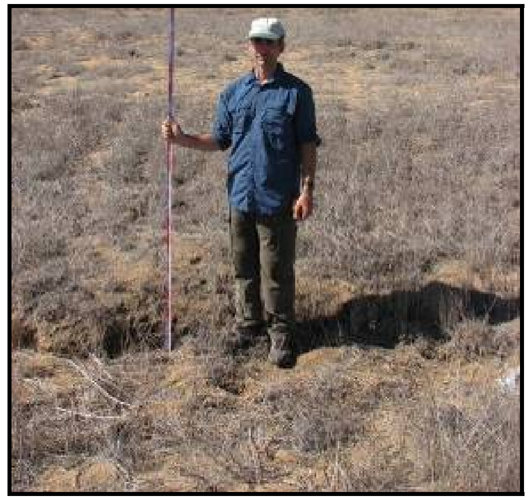
Perris_2_B Riverside County, Oct-2007

Note(s):

LB STABLE-PC RB U-MW-PC



Looking upstream near location of Perris_2_B



View of right bank near location of Perris_1_C

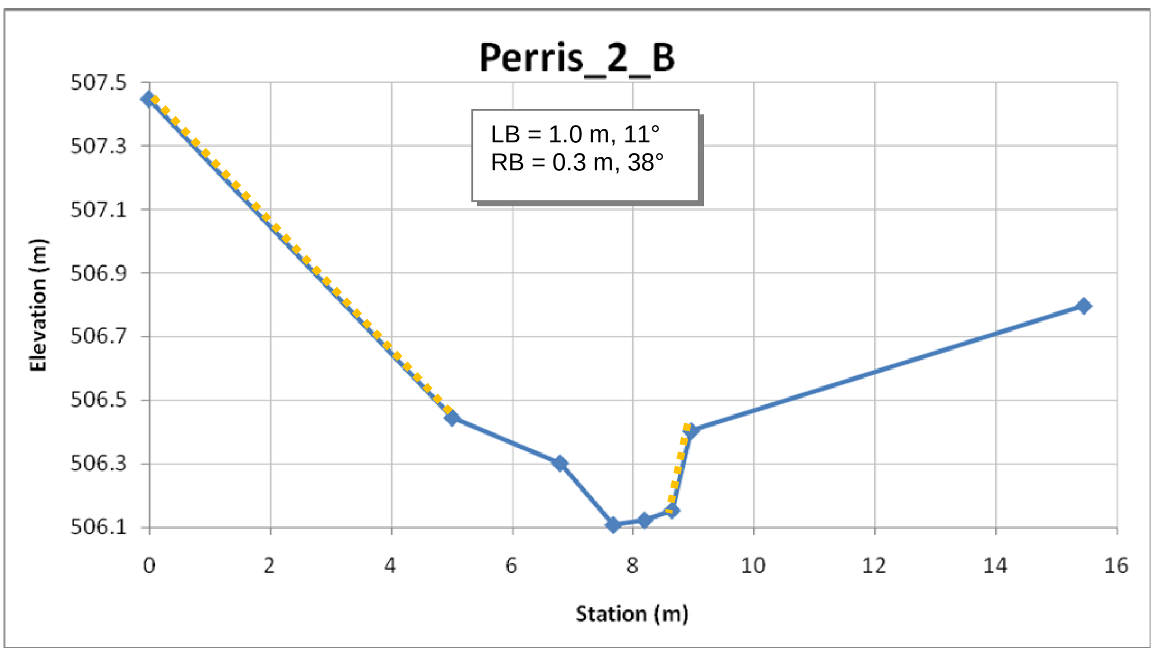


Figure A.35 – Perris_2_B

Perris_3_A Riverside County, Oct-2007

Note(s):

LB STABLE-UC RB STABLE-PC

Looking upstream near location of Perris_3_A

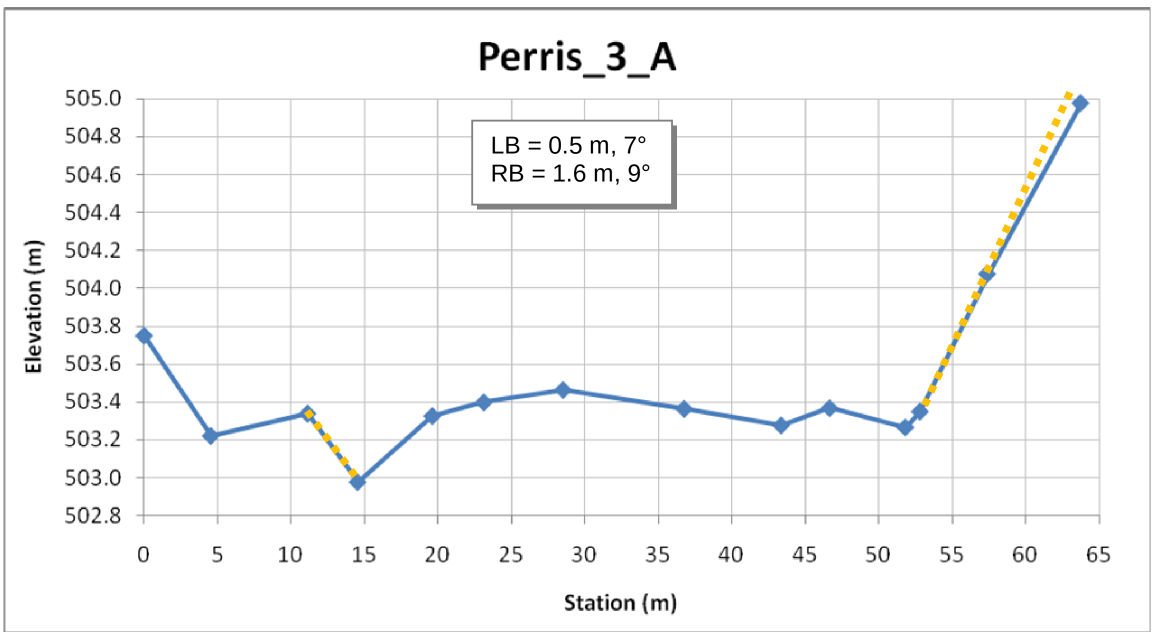


Figure A.36 – Perris_3_A

Perris_3_B Riverside County, Oct-2007

Note(s):

LB STABLE-UC

RB STABLE-UC (lower) and STABLE-PC (upper)

Looking upstream near location of Perris_3_B

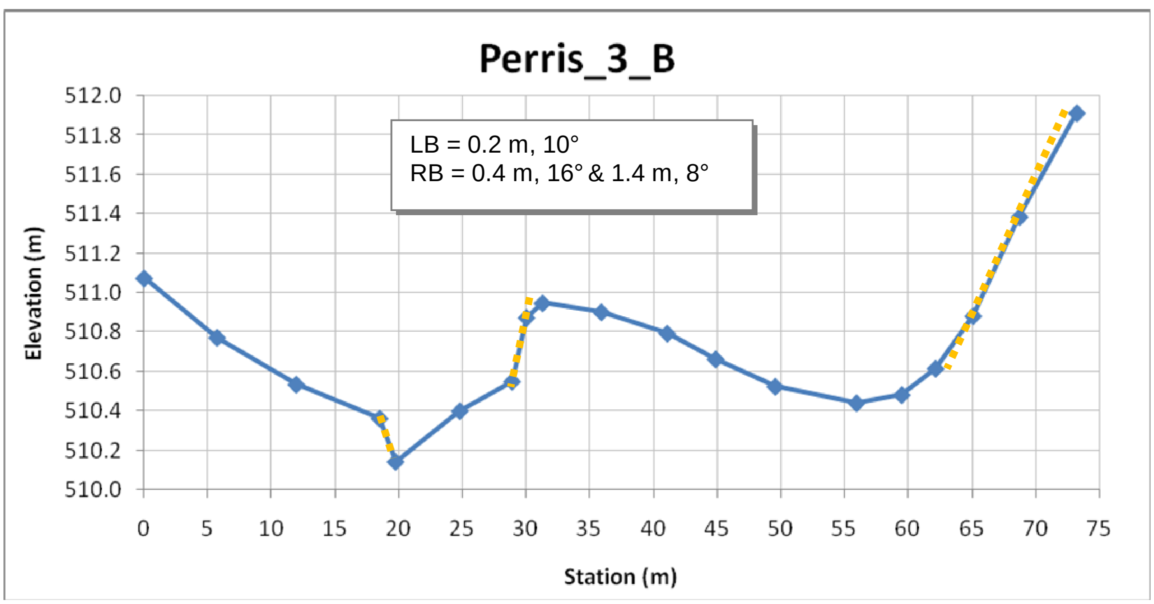
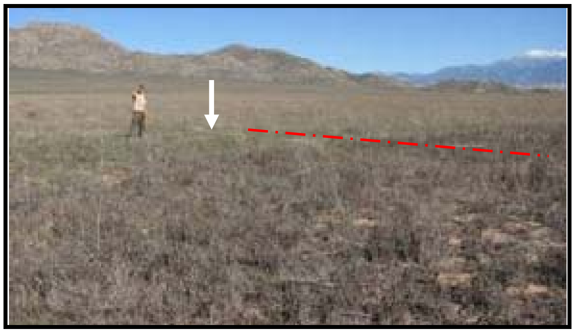


Figure A.37 – Perris_3_B

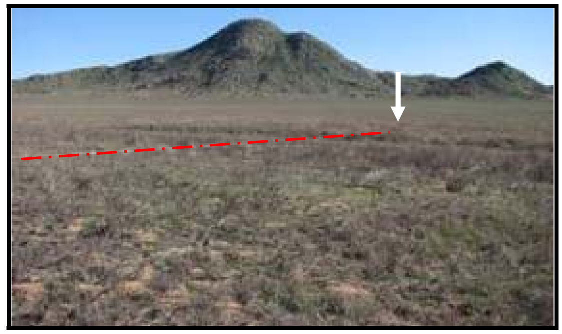
Note(s):

LB STABLE-PC

RB STABLE-PC



Looking upstream (including right bank) of AltPerris_A



Looking upstream (including left bank) of AltPerris_A

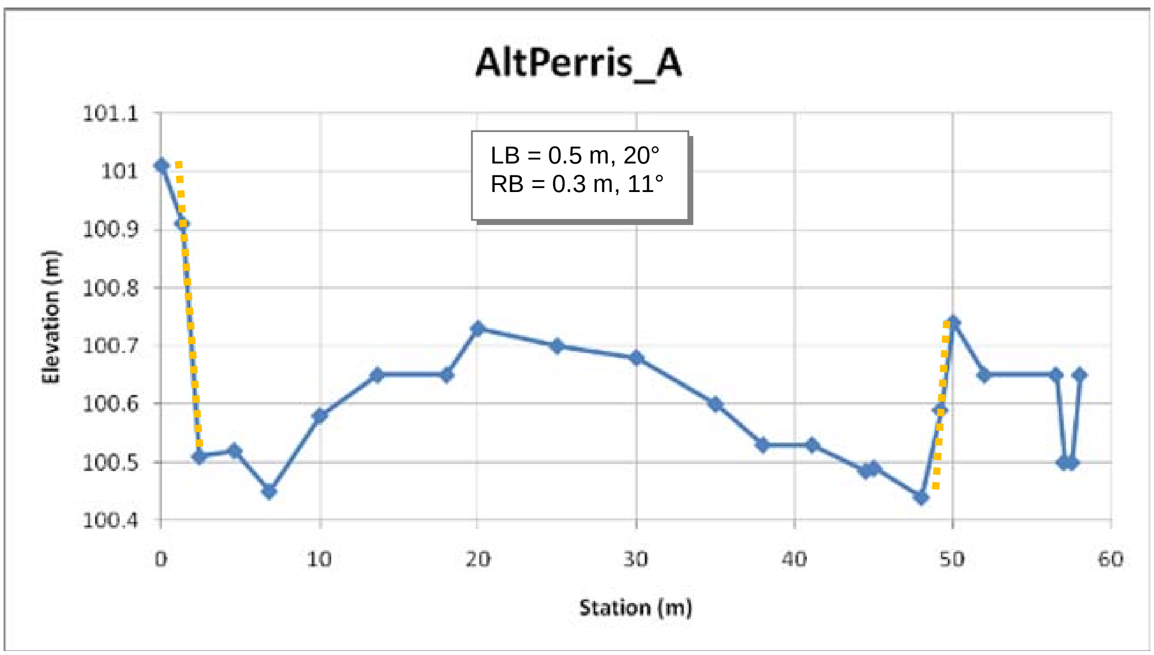


Figure A.38 – AltPerris_A

AltPerris_B CSU, Jan-2008

Note(s):

LB STABLE-PC RB STABLE-PC

Looking downstream at AltPerris_B

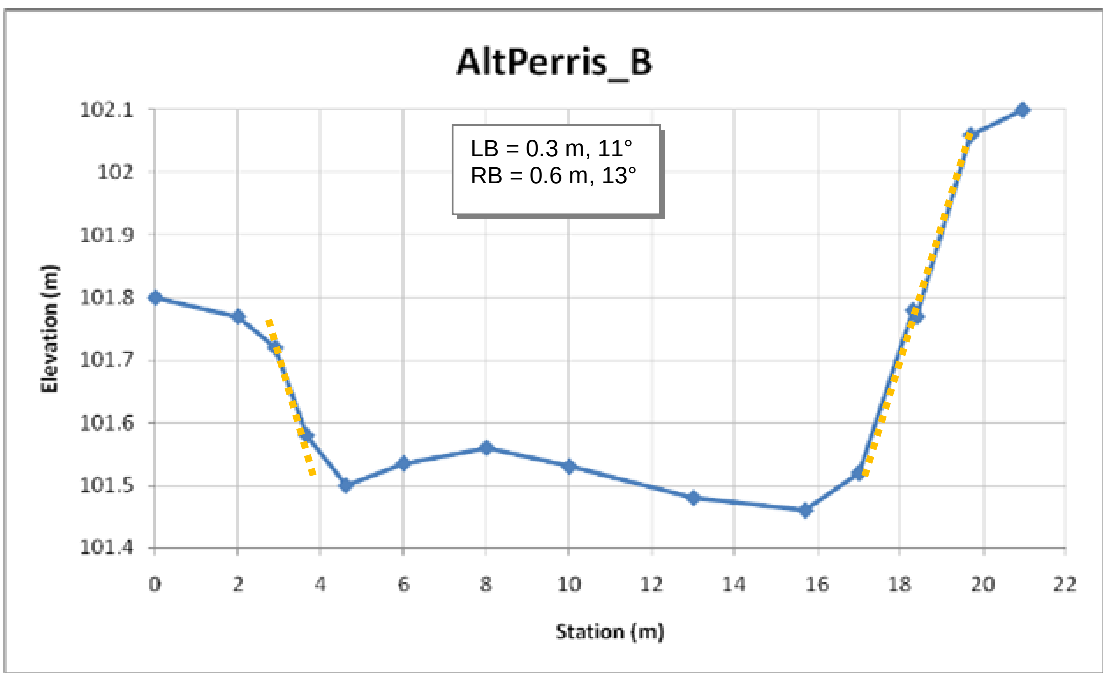


Figure A.39 – AltPerris_B

AltPerris_C CSU, Jan-2008

Note(s):

LB STABLE-PC RB STABLE-PC

Looking upstream at AltPerris_C

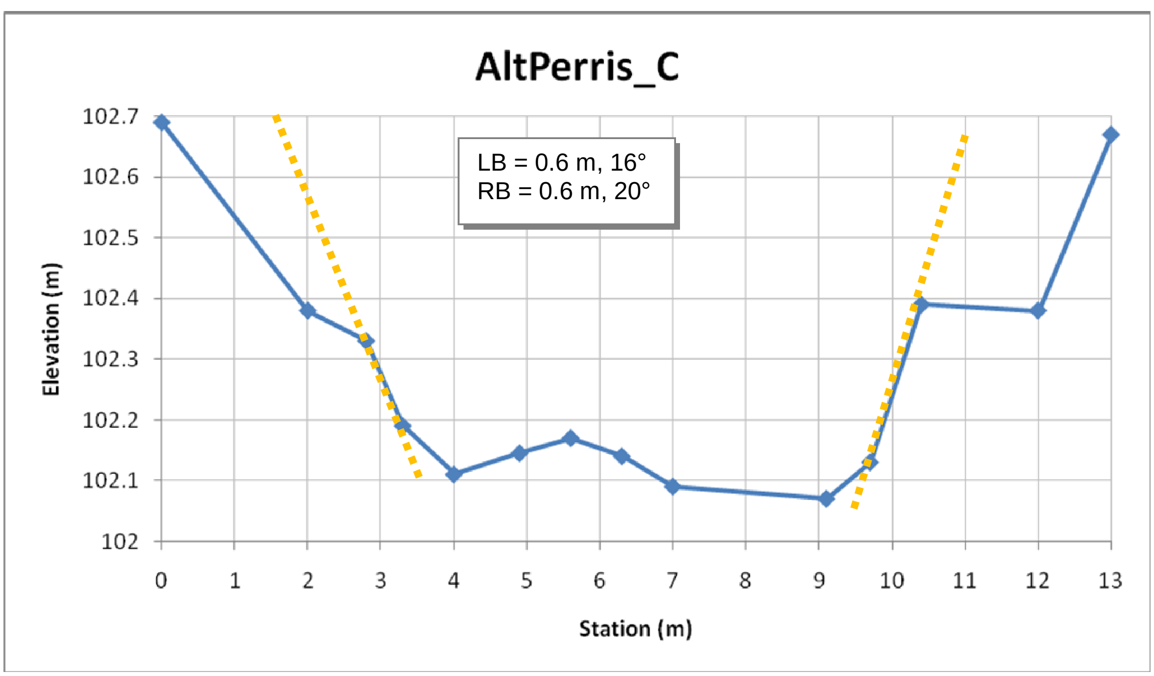


Figure A.40 – AltPerris_C

Dulzura_A CSU, Jan-2008

Note(s):

LB STABLE-PC

RB STABLE-UC (lower) and STABLE-PC (upper)

Looking upstream at Dulzura_A

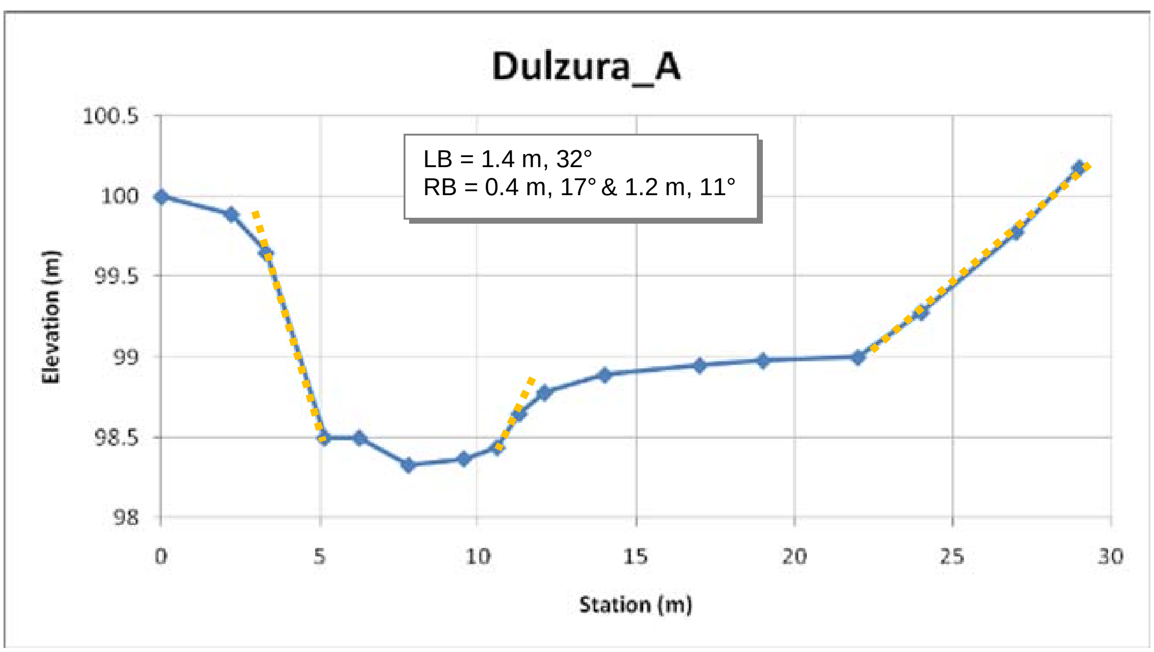


Figure A.41 – Dulzura_A

Dulzura_B CSU, Jan-2008

Note(s):

LB U-FAILED

Looking downstream at left bank of Dulzura_B

RB U-MW-PC

Looking downstream at right bank of Dulzura_B

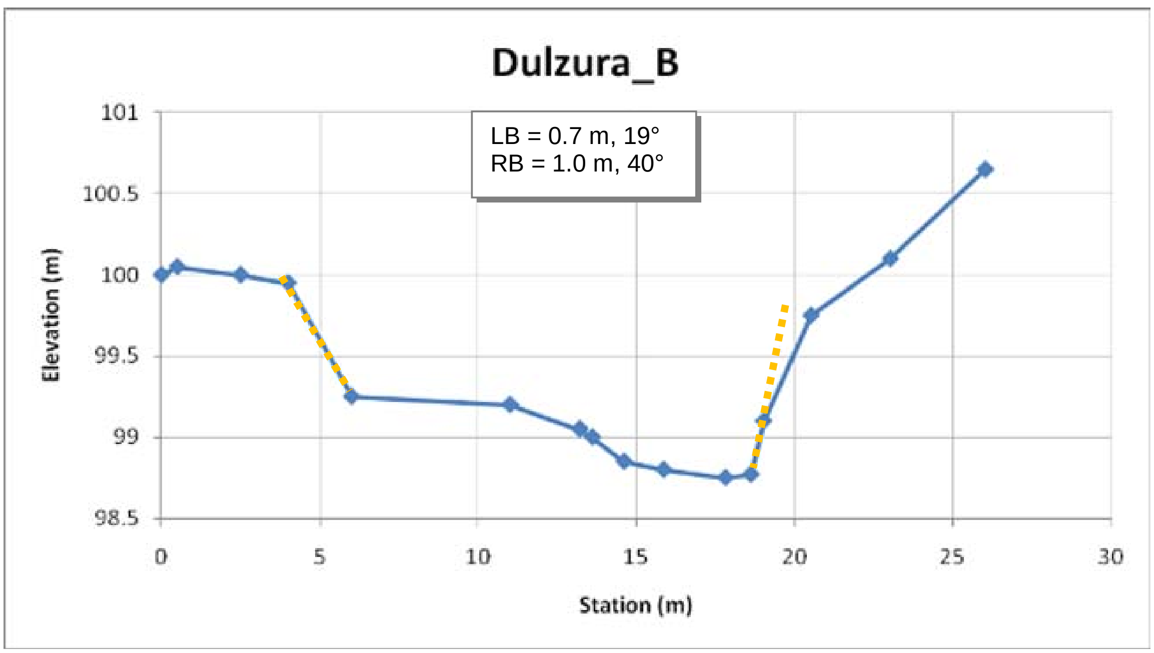


Figure A.42 – Dulzura_B

Acton_A CSU/SCCWRP, Jan-2008

Note(s):

LB STABLE-PC RB STABLE-PC

Looking downstream at Acton_A

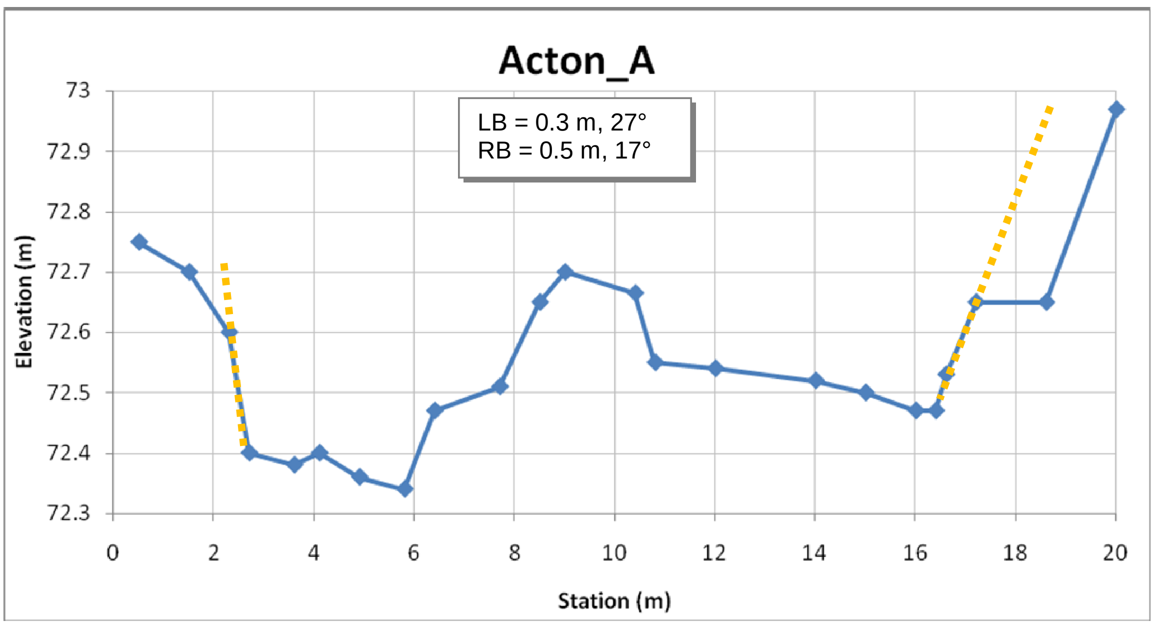


Figure A.43 – Acton_A

Acton_B CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-PC RB U-MW-PC

Looking upstream at Acton_B

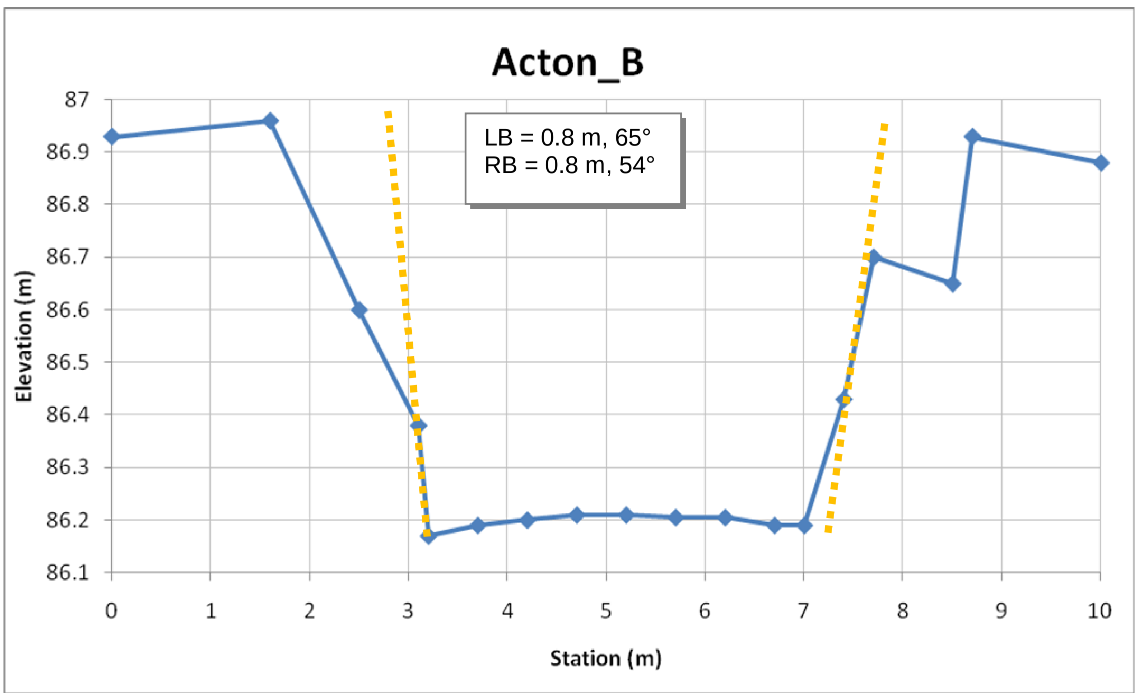


Figure A.44 – Acton_B

Note(s):

LB U-MW-C (upper) and U-MW-PC (lower) RB U-MW-C

Looking downstream at Acton_C

Lower left bank appears to be at edge of old channel bank and bed. It's not fully unconsolidated, but not nearly as consolidated as the outer banks.

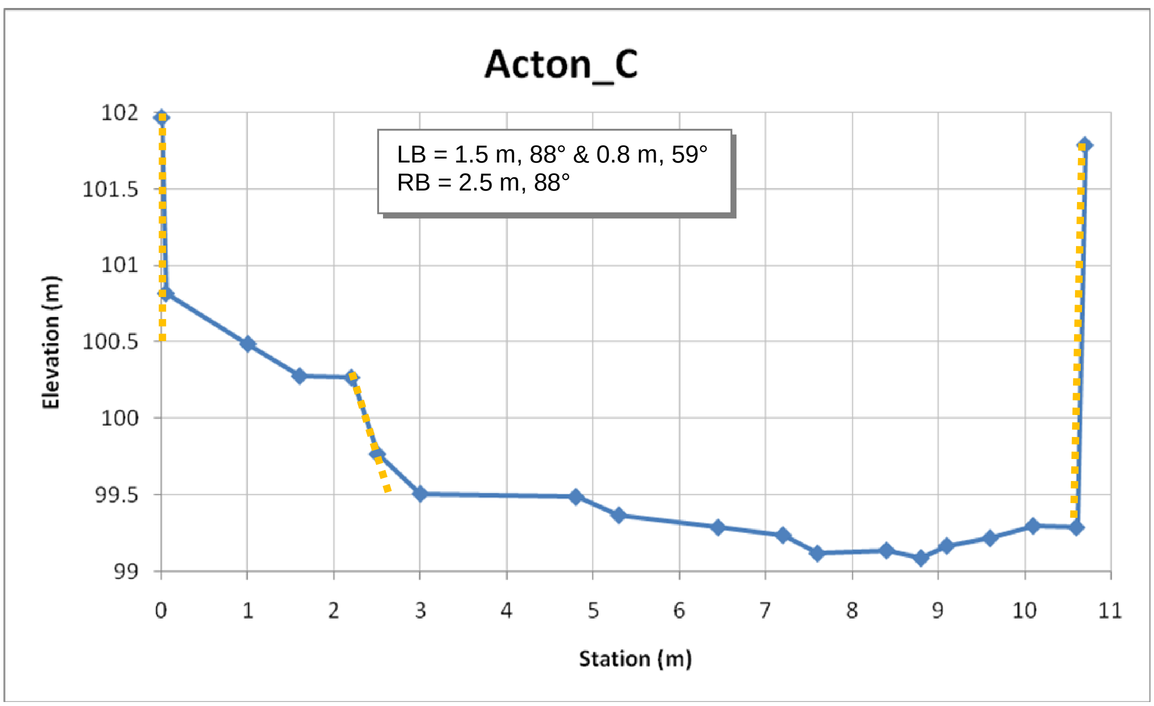


Figure A.45 – Acton_C

Acton_D CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB U-MW-C

Looking upstream at Acton_D

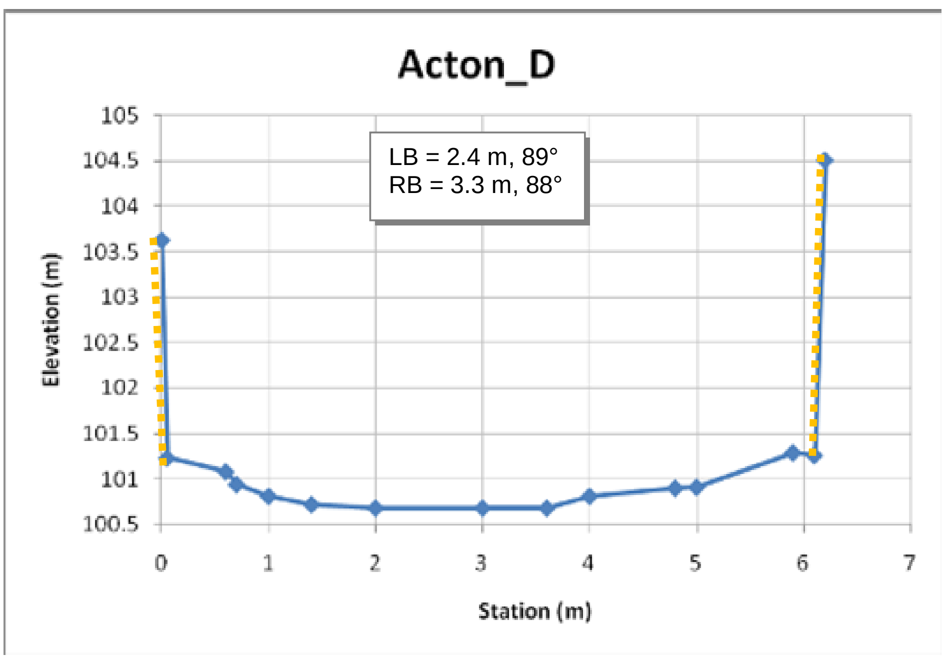


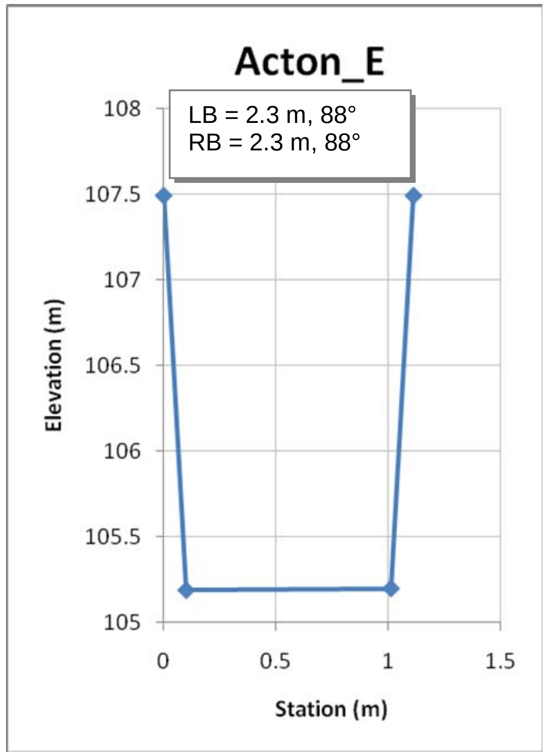
Figure A.46 – Acton_D

Acton_E CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB U-MW-C

Looking upstream and down into Acton_E



Cross-section was taped, not surveyed due to hazard risk

Figure A.47 – Acton_E

Note(s):

LB S-CONSTR RB S-CONSTR

Looking downstream near Borrego_A

Cross section was drawn from aerials and photographs – not surveyed

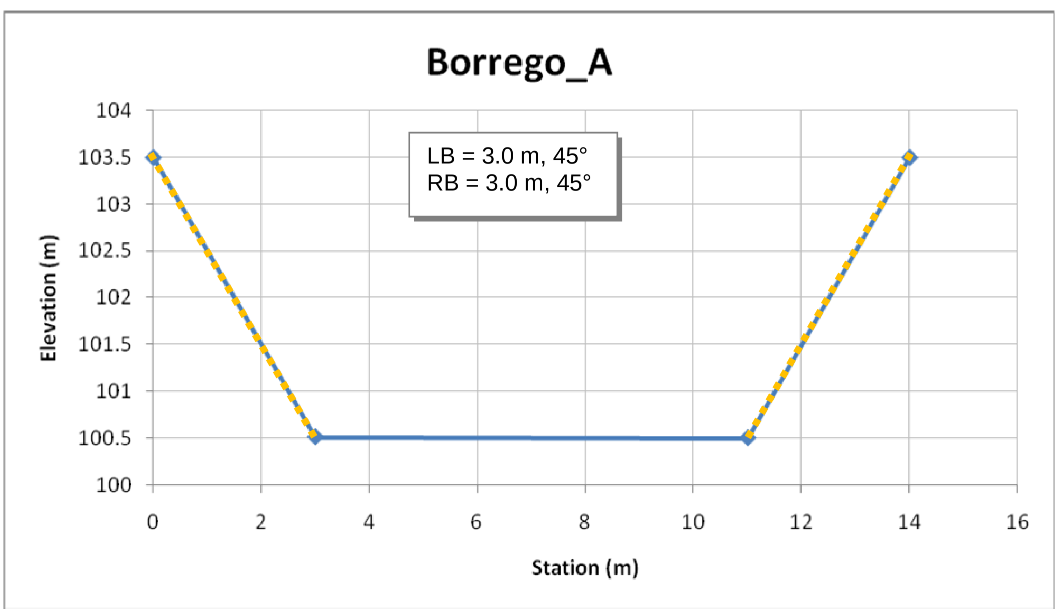


Figure A.48 – Borrego_A

Borrego_B CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB U-MW-C

Lleft bank of Borrego_B

Looking upstream at right bank of Borrego_B

Looking from left to right bank of Borrego_B

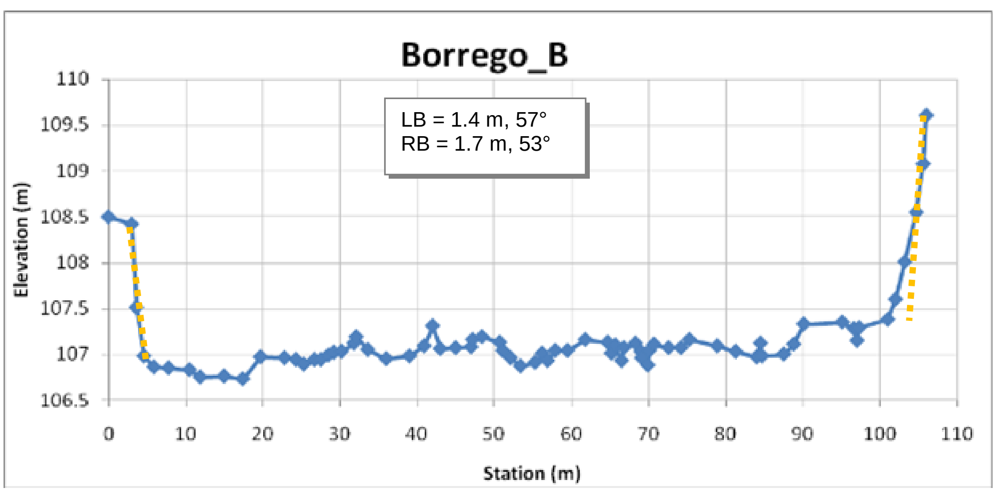


Figure A.49 – Borrego_B

Note(s):

LB U-MW-C RB U-MW-C

Looking downstream at left bank of Borrego_C

Looking downstream at right bank of Borrego_C

Looking downstream at Borrego_C

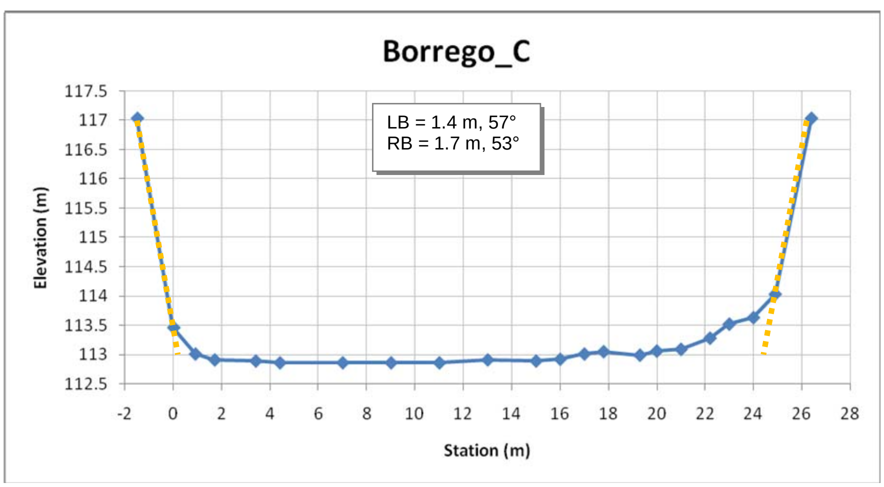


Figure A.50 – Borrego_C

Borrego_D CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB U-MW-C

Looking downstream at Borrego_D

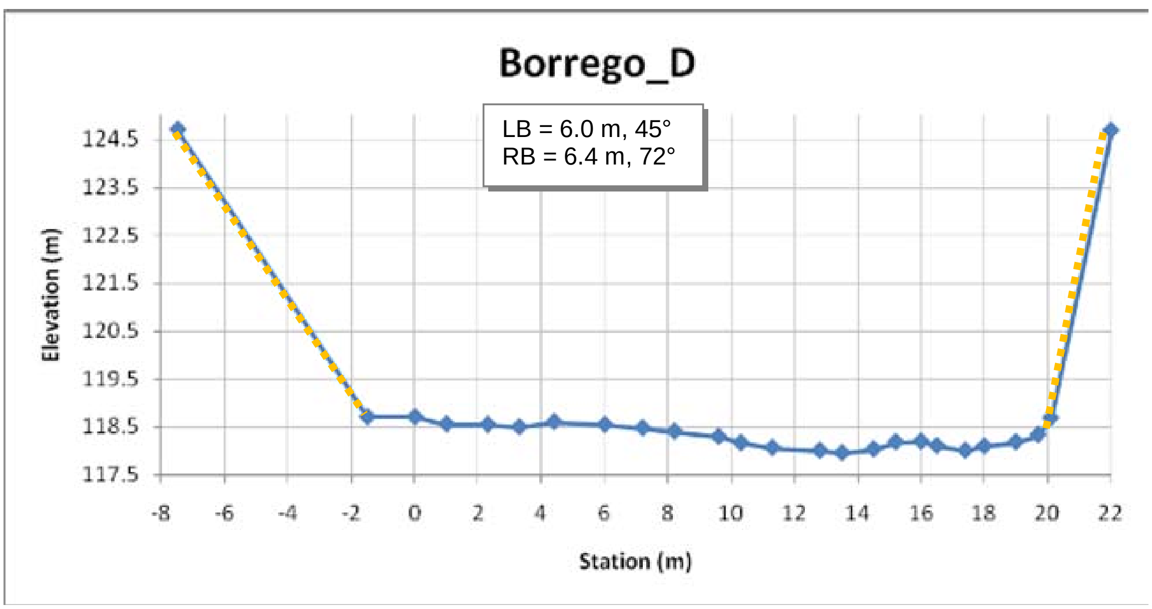


Figure A.51 – Borrego_D

Borrego_E CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C (upper) and U-MW-PC (lower) RB U-FAILED (upper) and U-MW-PC (lower)

Incised section is classified as PC (poorly consolidated) instead of UC (unconsolidated) because, although they are a part of a historic bed, tree locations indicate that the tops of these banks have been at that elevation for 20+ yrs, which is considerably different from the way we've been applying the UC rating.

Looking upstream at Borrego_E

Looking downstream at Borrego_E

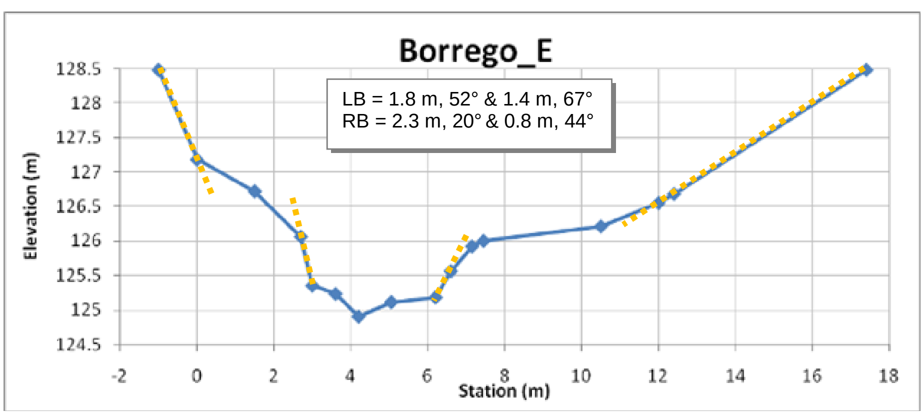


Figure A.52 – Borrego_E

Note(s):

LB U-MW-UC (left) and STABLE-UC (right)

RB U-MW-UC (left) and STABLE-UC (right)

Looking downstream at left bank of right main channel of Topanga_A

Looking upstream the right main channel toward Topanga_A (left main channel hidden by vegetated island)

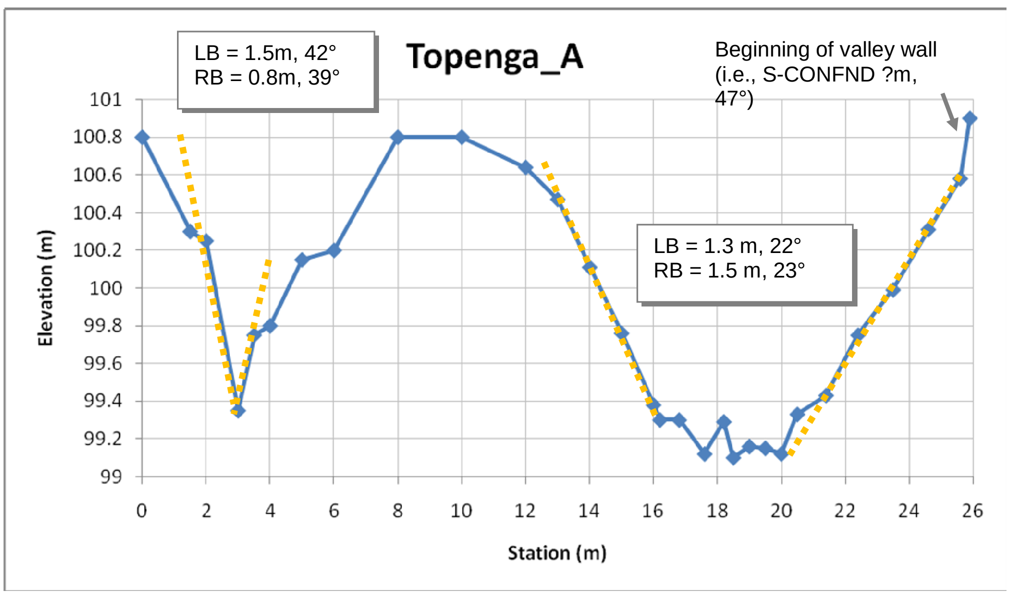


Figure A.53 – Topanga_A

Topanga_B CSU/SCCWRP, Jan-2008

Note(s):

LB U-CONFND RB STABLE-UC

Looking upstream at base of left bank of Topanga_B

Looking upstream toward Topanga_B with view of right bank

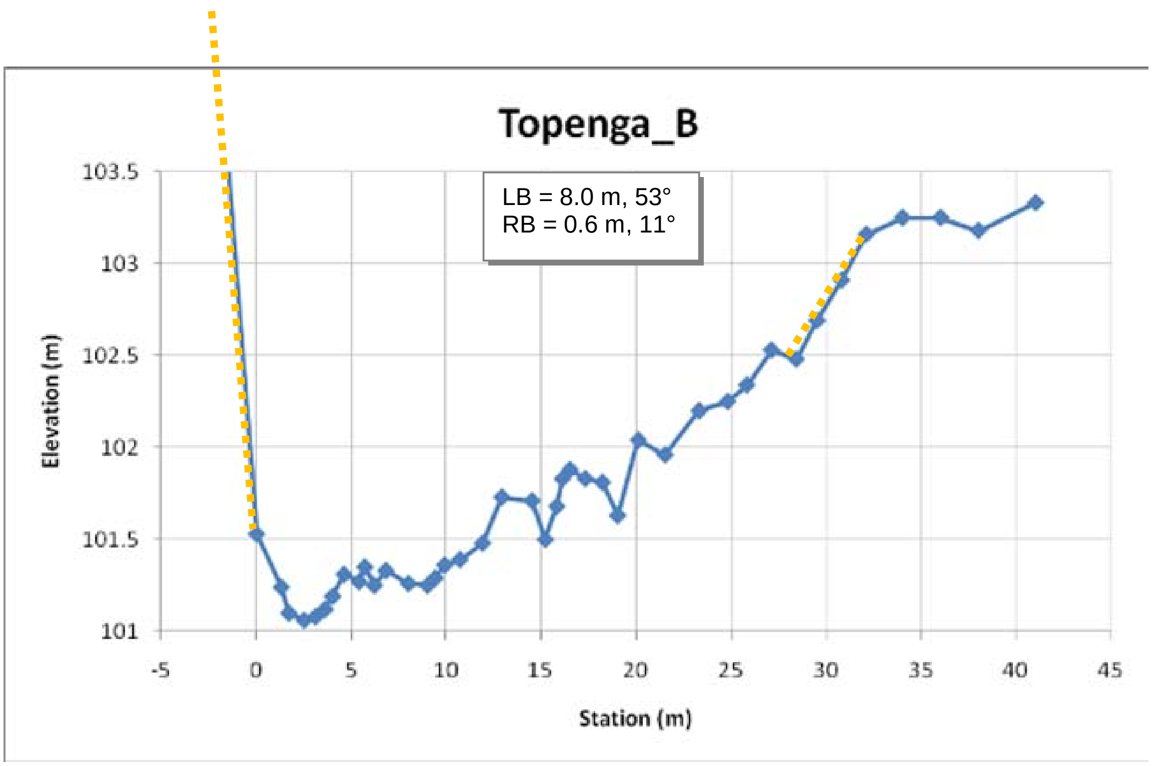
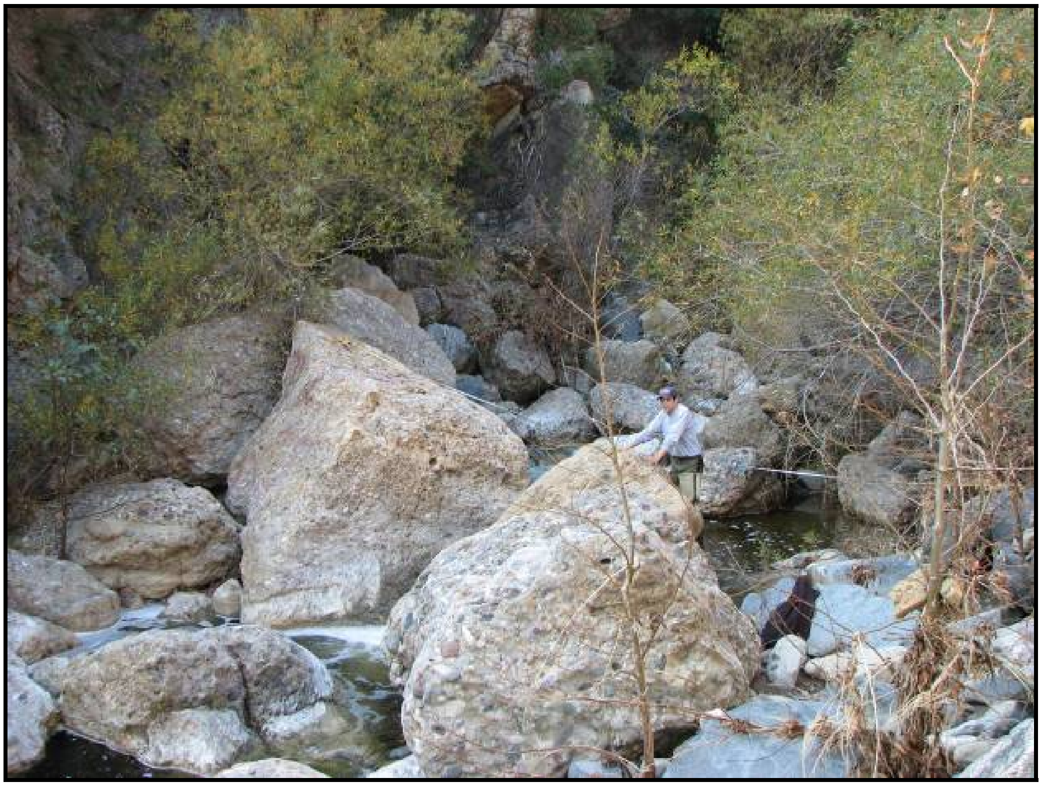


Figure A.54 – Topanga_B

Topanga_C CSU/SCCWRP, Jan-2008

Note(s):

LB U-CONFND RB U-CONFND



Looking from left to right bank of Topanga_C

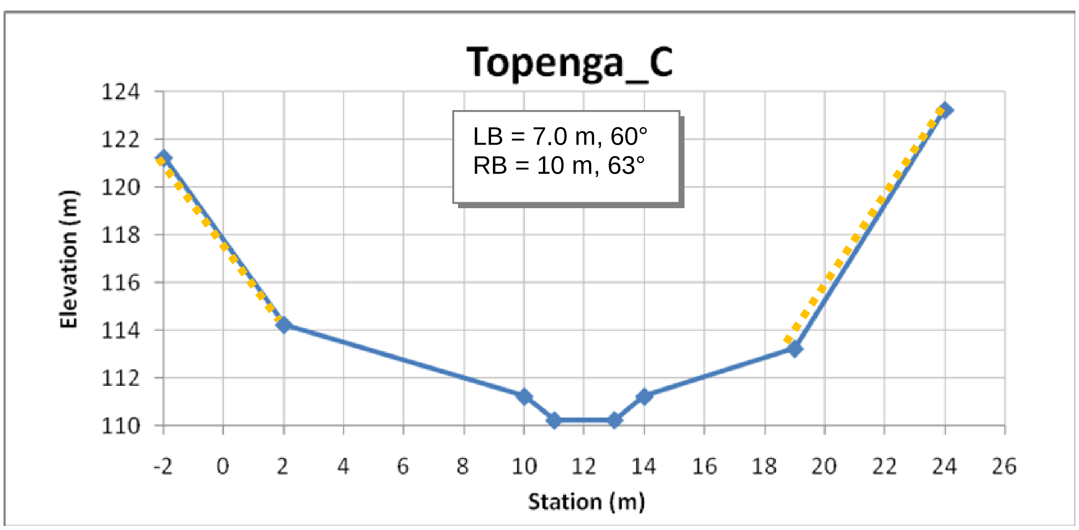


Figure A.55 – Topanga_C

Challengr_A (Challenger Park) CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C

RB STABLE

Looking downstream at Challengr_A with view of left bank

Looking upstream toward Challengr_A with view of right bank

Close up of left bank

Although fluvial is a factor (downstream of a bend, along with scouring at tree), MW is extensive upstream and to a small extent downstream

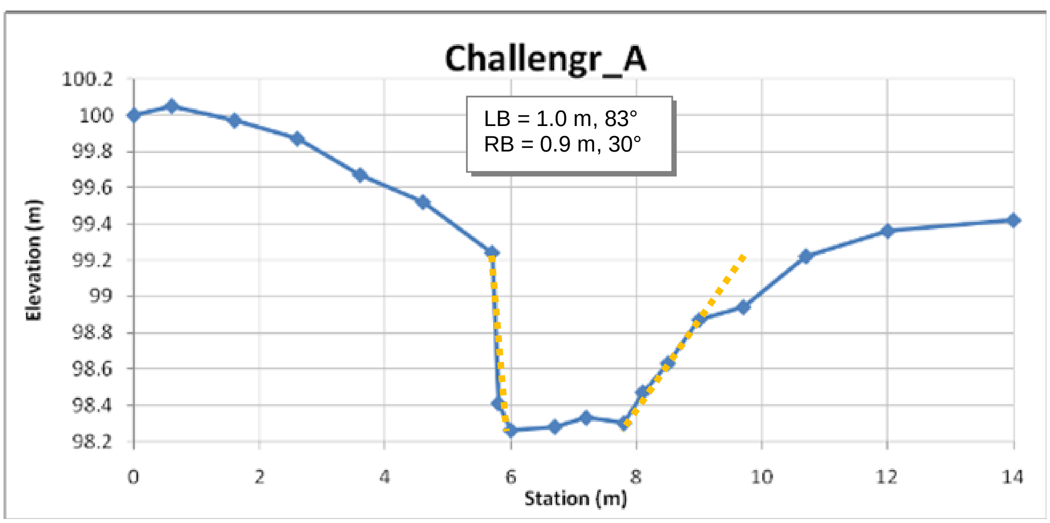


Figure A.56 – Challengr_A (Challenger Park)

Challengr_B (Challenger Park) CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-UC RB U-MW-UC

Looking upstream at Challengr_B – incision w/ MW through poorly consolidated alluvia (old bed), with beginnings of MW of original left bank (white arrows)

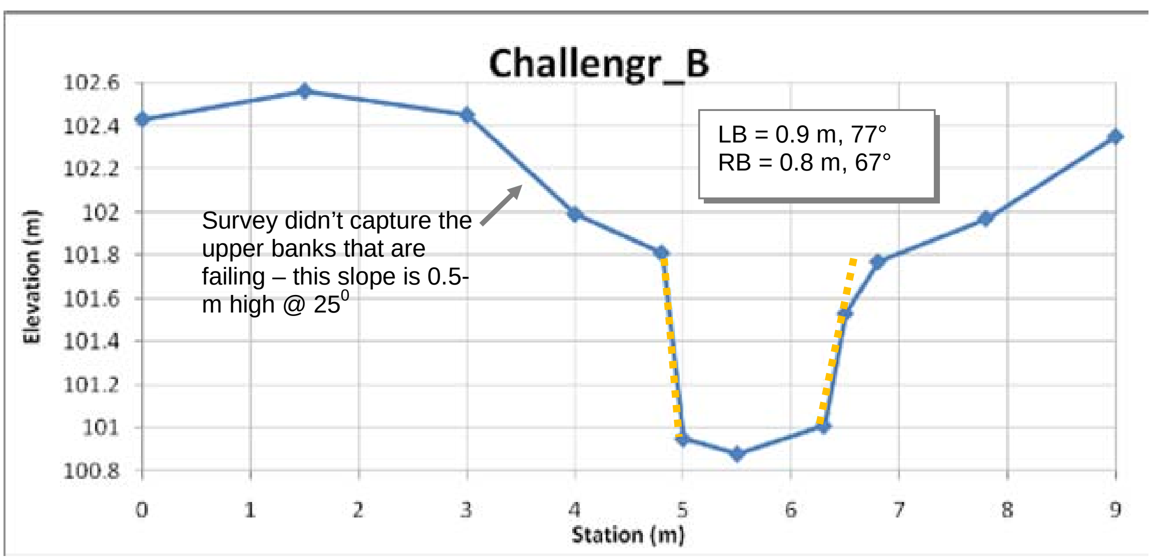


Figure A.57 – Challengr_B (Challenger Park)

Challengr_C (Challenger Park) CSU/SCCWRP, Jan-2008

Note(s):

LB STABLE

RB STABLE

Looking upstream at Challengr_C with view of left bank

Looking downstream at Challengr_C with view of right bank – MW evident just upstream

View of right bank of Challengr_C – slight MW upstream, but not at surveyed section

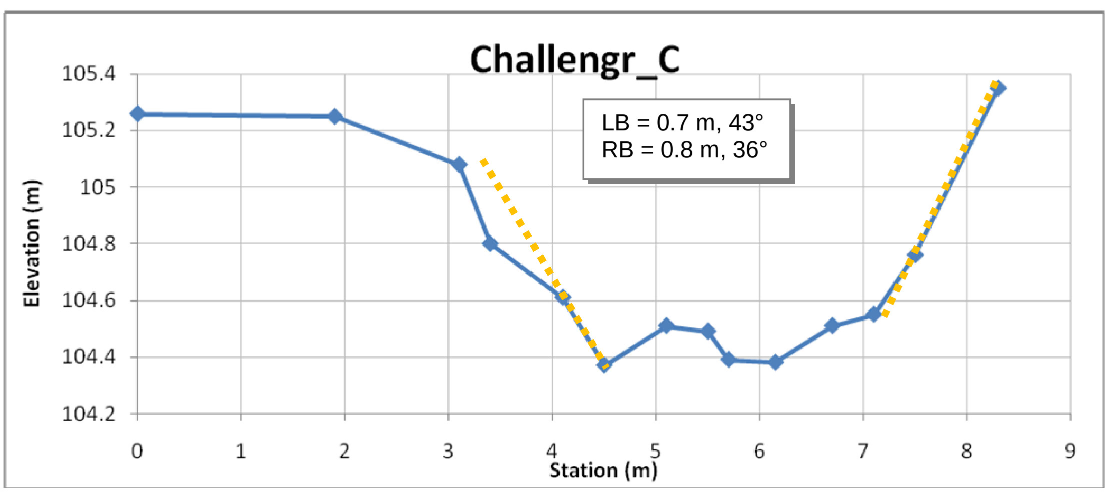


Figure A.58 – Challengr_C (Challenger Park)

McGonigle_A CSU/SCCWRP, Jan-2008

Note(s):

LB STABLE-UC RB STABLE-UC

Looking downstream at McGonigle_A (main channel) MW through unconsolidated alluvia

No photograph looking far left – thick vegetation (hydrophilic trees and shrubs) through the 'island', after which the valley floor is poorly maintained as a grassed access road

Looking toward far right bank of McGonigle_A

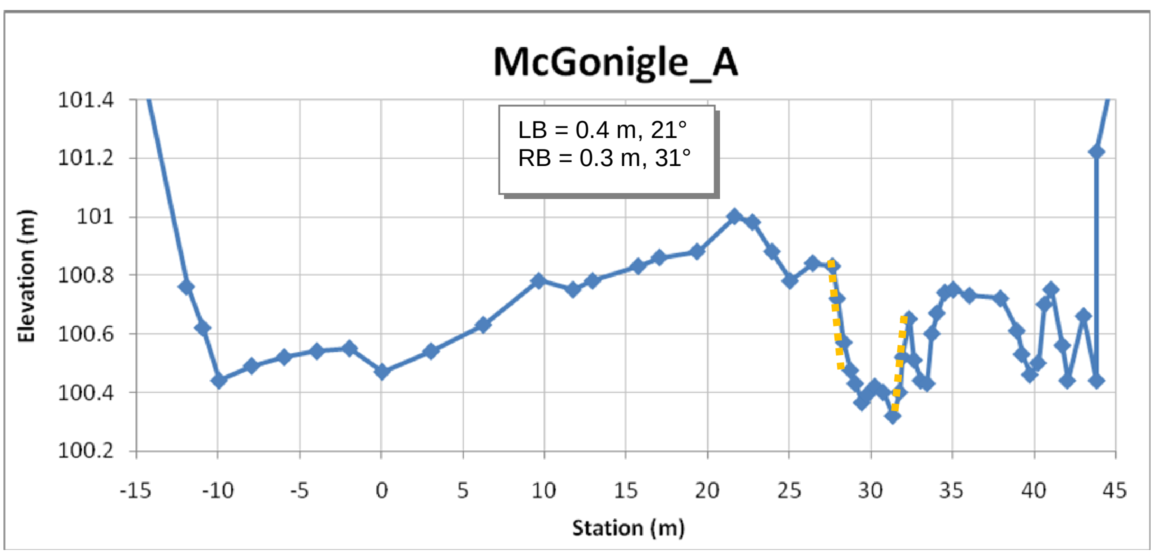


Figure A.59 – McGonigle_A

SanJuan_A CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-UC RB U-MW-C

Representative of left bank of main channel of SanJuan_A – MW of unconsolidated alluvia

Looking downstream at SanJuan_A with view of far right bank

View of far left valley wall – not captured by the survey

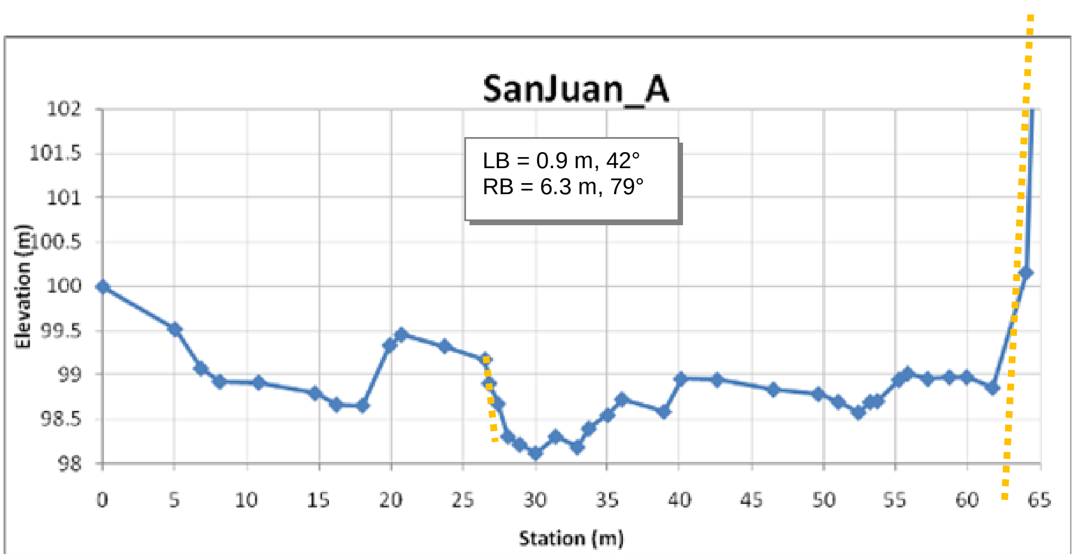


Figure A.60 – SanJuan_A

SanJuan_B CSU/SCCWRP, Jan-2008

Note(s):

LB STABLE-UC RB S-CONFND

Looking upstream at left bank of SanJuan_B

Looking downstream at right bank of SanJuan_B

Although slight MW is evident in the photo of the left bank (left), it is just downstream of the surveyed cross-section, and not representative of the shot geometry. Similarly, the right bank photo (above) shows slight MW through unconsolidated alluvia upstream of the surveyed cross-section, which is itself stable.

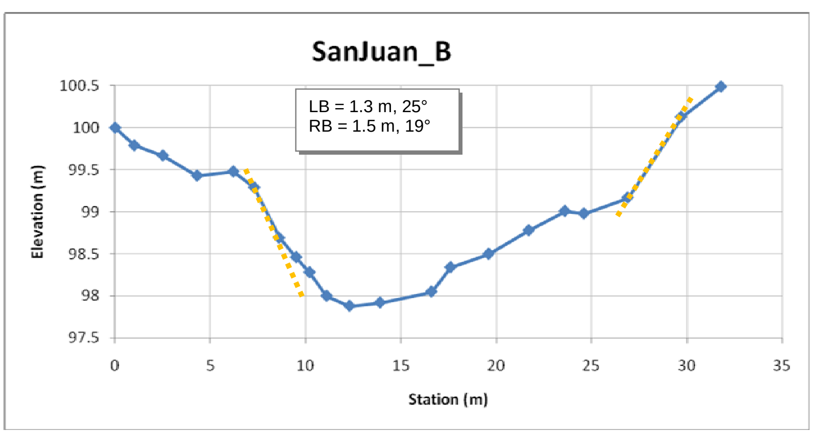


Figure A.61 – SanJuan_B

Pigeon_A (Pigeon Pass) CSU, Jan-2008

Note(s):

LB U-MW-PC RB U-MW-UC

Looking upstream at Pigeon_A – site was graded during development in the 1980's. Left bank does not appear to be fill (inset) – seems poorly to moderately consolidated. Right bank composed of more alluvial material (unconsolidated)

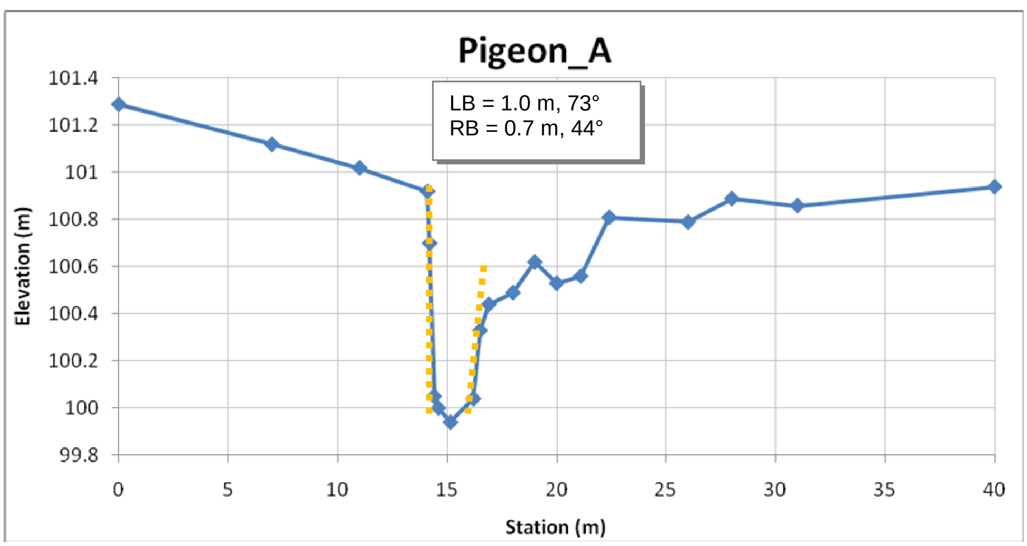


Figure A.62 – Pigeon_A (Pigeon Pass)

Pigeon_B (Pigeon Pass) CSU, Jan-2008

Note(s):

LB U-MW-PC RB STABLE-UC

Looking from right to left bank of Pigeon_B

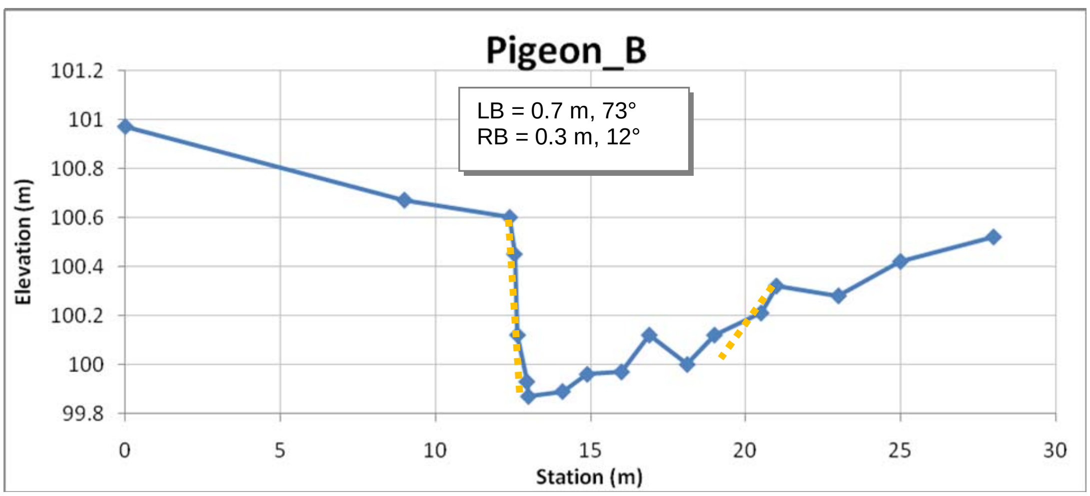


Figure A.63 – Pigeon_B (Pigeon Pass)

Pigeon_C (Pigeon Pass) CSU, Jan-2008

Note(s):

LB U-MW-PC

RB U-MW-PC

View of left bank of Pigeon_C

Just downstream of Pigeon_C – MW evident both banks

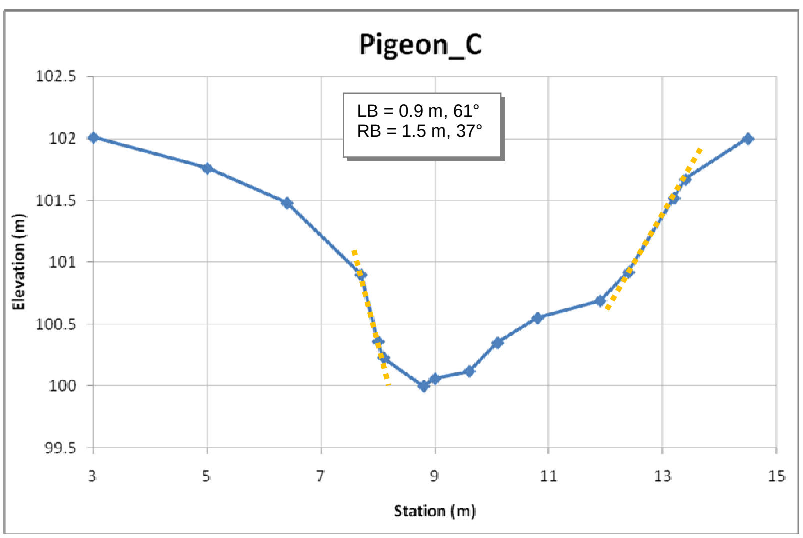


Figure A.64 – Pigeon_C (Pigeon Pass)

Stewart_A CSU, Jan-2008

Note(s):

LB STABLE-UC RB S-CONFND and S-CONFND

Looking downstream with view of left bank of Stewart_A

Looking downstream with view of right bank of Stewart_A – survey captured geometry of boulder embedded in bank (rather than unconsolidated MW just up and downstream

MW in unconsolidated right bank (left) just upstream from cross-section. ~ 2 m @ 70°

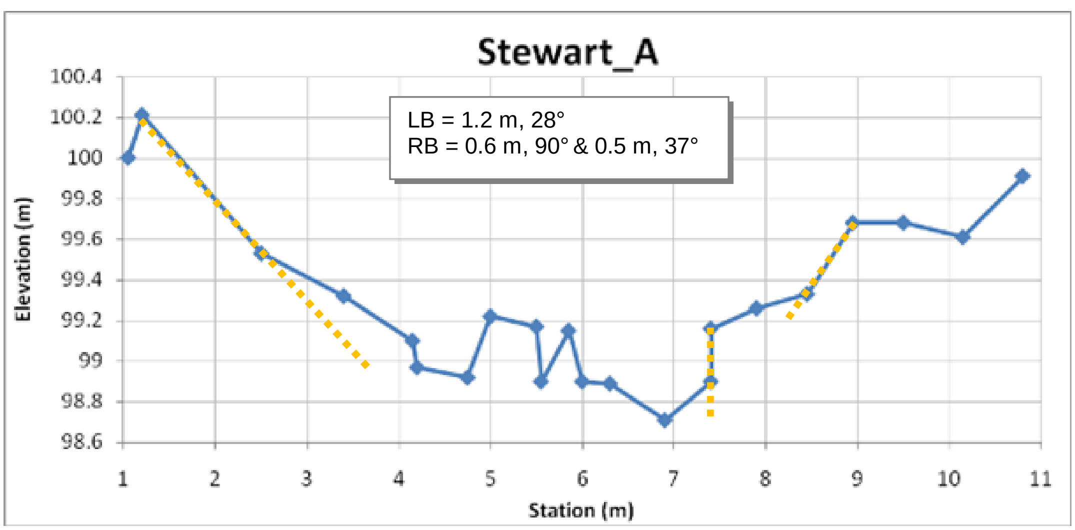


Figure A.65 – Stewart_A

Santiagbd_A (Santiago at Tucker Bird Santuary) CSU, Jan-2008

Note(s):

LB	U-CONFND (upper) and U-MW-UC (lower)	RB	STABLE (upper) and U-MW-UC (lower)

Looking upstream with view of left bank (valley wall) of Santiagbd_A

Right bank of Santiagbd_A

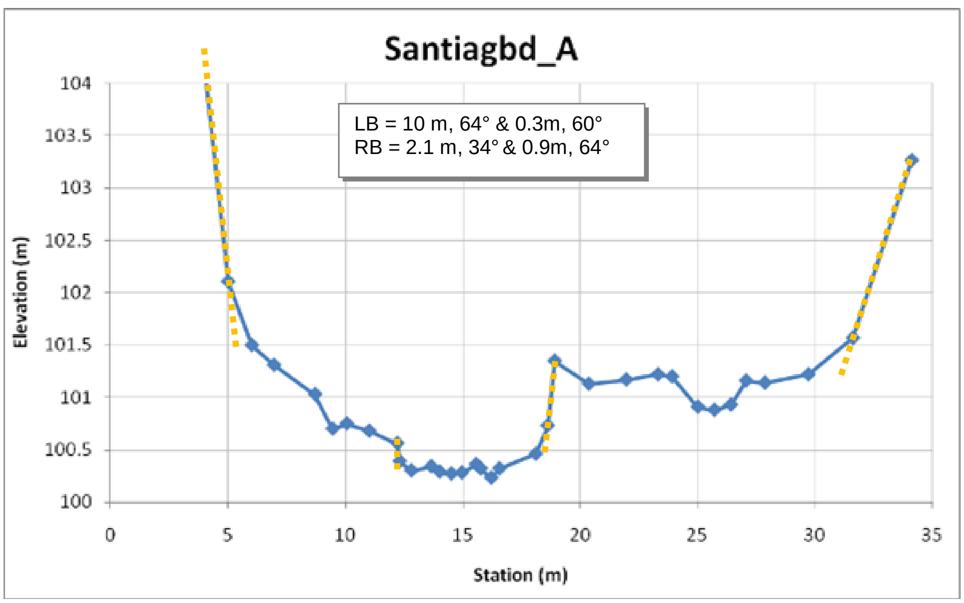


Figure A.66 – Santiagbd_A (Santiago at Tucker Bird Santuary)

Santiagbd_B (Santiago at Tucker Bird Santuary) CSU, Jan-2008

Note(s):

LB U-CONFND (upper) and STABLE-UC (lower) RB STABLE (upper) and U-MW-UC (lower)

Looking downstream with view of the left bank (valley wall) of Santiagbd_B

Looking downstream with view of right bank of Santiagbd_B

Looking upstream with view of the right bank of Santiagbd_B

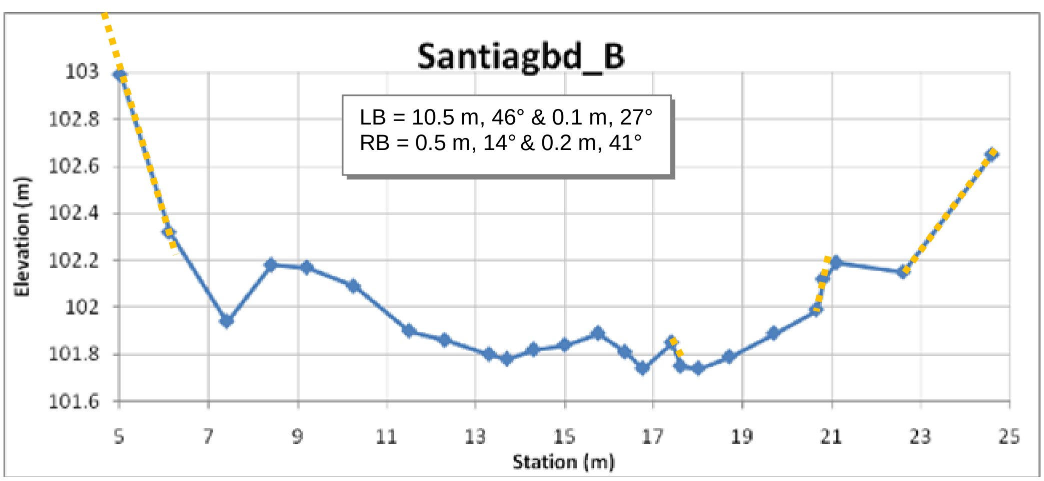


Figure A.67 – Santiagbd_B (Santiago at Tucker Bird Santuary)

Santiagnl_A (Santiago at natural-loading site) CSU/SCCWRP, Jan-2008

Note(s):

LB	U-CONFND (upper) and U-MW-UC (lower)	RB	STABLE

Looking downstream at Santiagnl_A

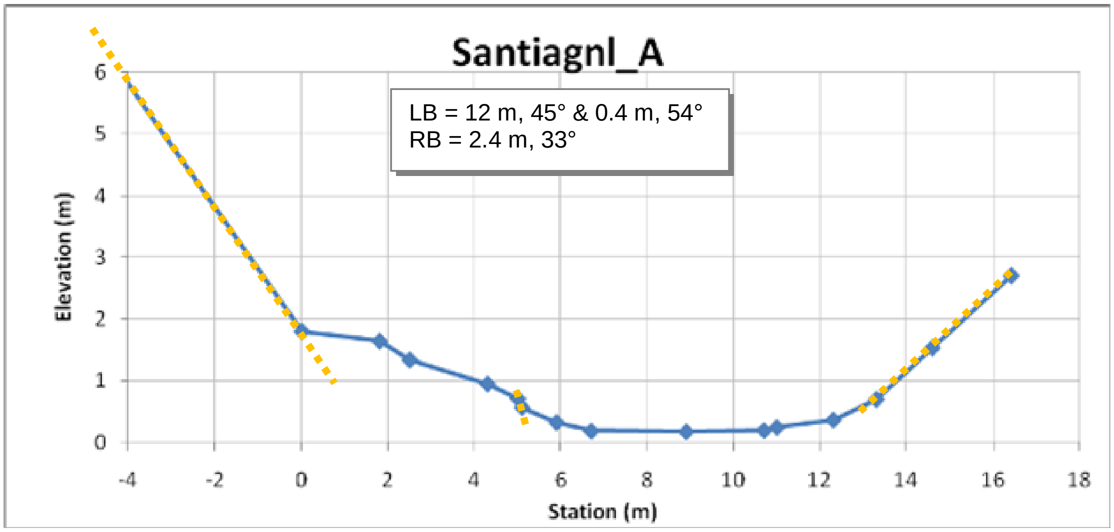


Figure A.68 – Santiagnl_A (Santiago at Natural-loading site)

Santiagnl_B (Santiago at natural-loading site)   CSU/SCCWRP, Jan-2008

Note(s):

LB   U-MW-UC   RB   STABLE (upper) and STABLE (lower)

Looking downstream at Santiagnl_B with view of left bank

Looking upstream at Santiagnl_B

Although not at one of the cross-sections, the purpose of the close-up bank photo (left) is to show how unstable the unconsolidated alluvia are

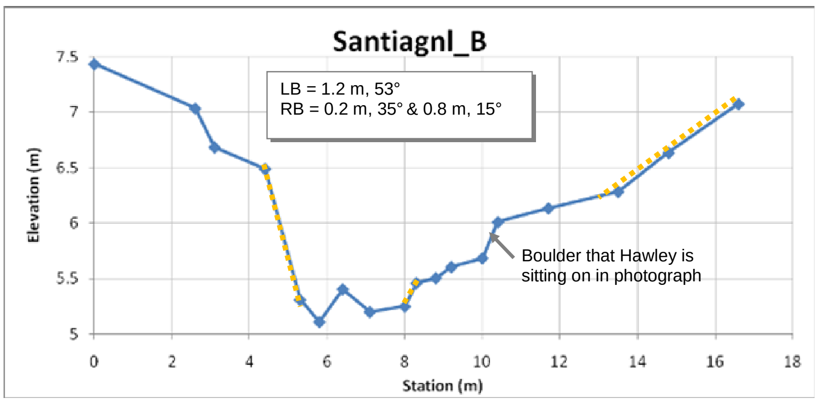


Figure A.69 – Santiagnl_B (Santiago at natural-loading site)

Silverado_A CSU/SCCWRP, Jan-2008

Note(s):

LB STABLE RB STABLE

Looking upstream at Silverado_A with view of left bank

Looking at right bank of Silverado_A

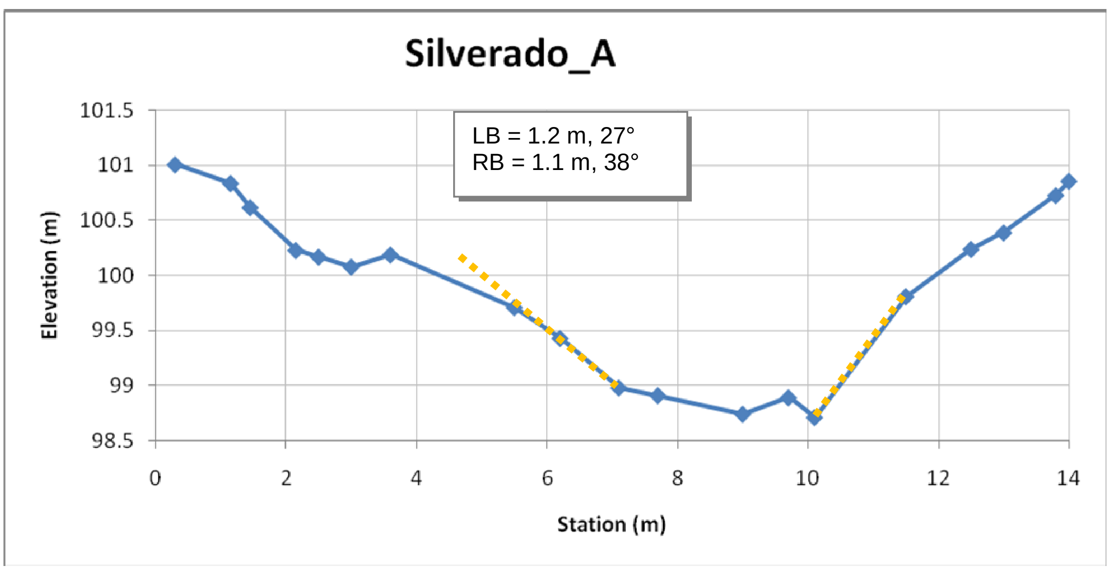


Figure A.70 – Silverado_A

Silverado_B CSU/SCCWRP, Jan-2008

Note(s):

LB S-CONFND (upper) and STABLE (lower) RB S-CONFND

Looking from right to left bank (valley wall) of Silverado_B

Looking upstream at Silverado_B

Looking downstream at Silverado_B

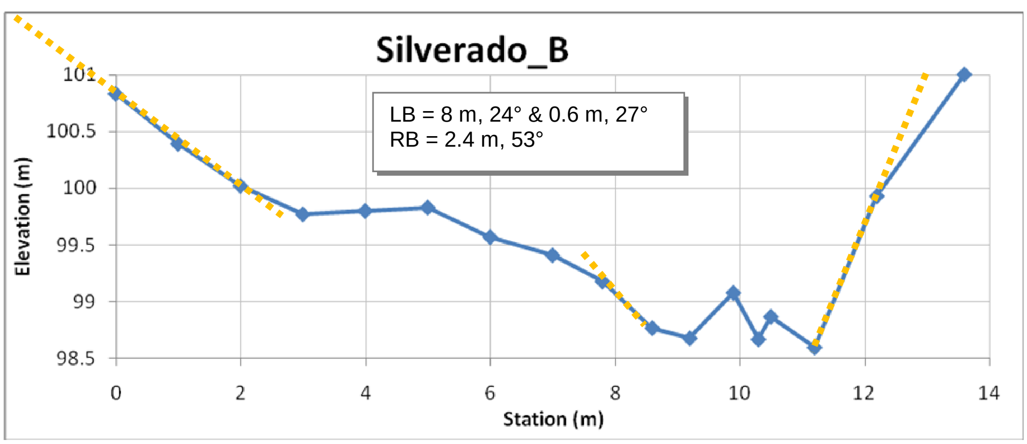


Figure A.71 – Silverado_B

Escondido_A CSU/SCCWRP, Jan-2008

Note(s):

LB	S-CONFND (upper) and STABLE-UC (lower)	RB	S-CONFND (upper) and S-CONFND (lower)

Looking downstream at Escondido_A

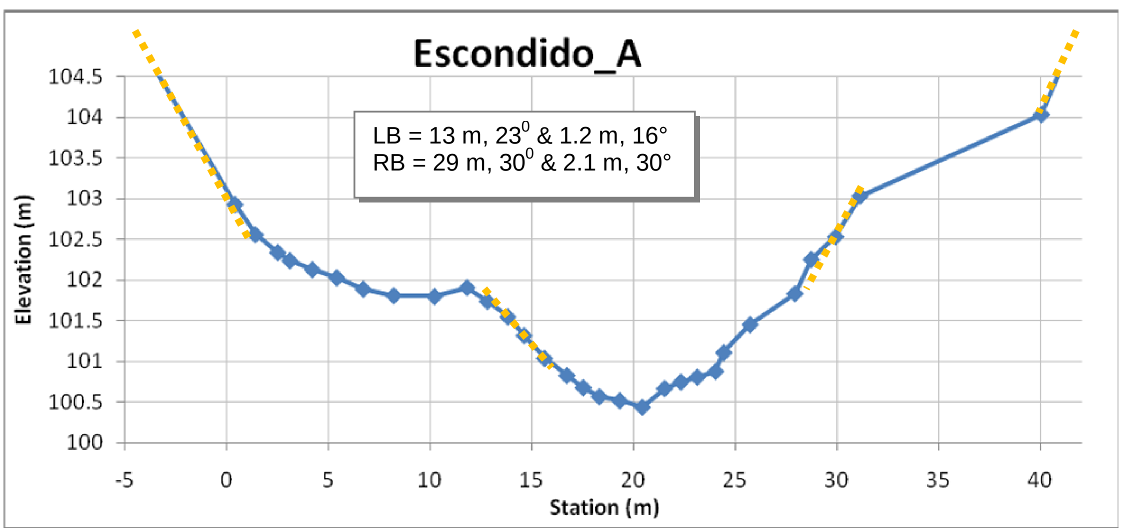


Figure A.72 – Escondido_A

Note(s):

LB S-CONFND (upper) and U-MW-UC (lower)

RB S-CONFND (upper) and STABLE-UC (lower)

Looking upstream at left bank of Escondido_B

Looking downstream right channel of Escondido_B

Looking from left bank upstream toward middle island of Escondido_B

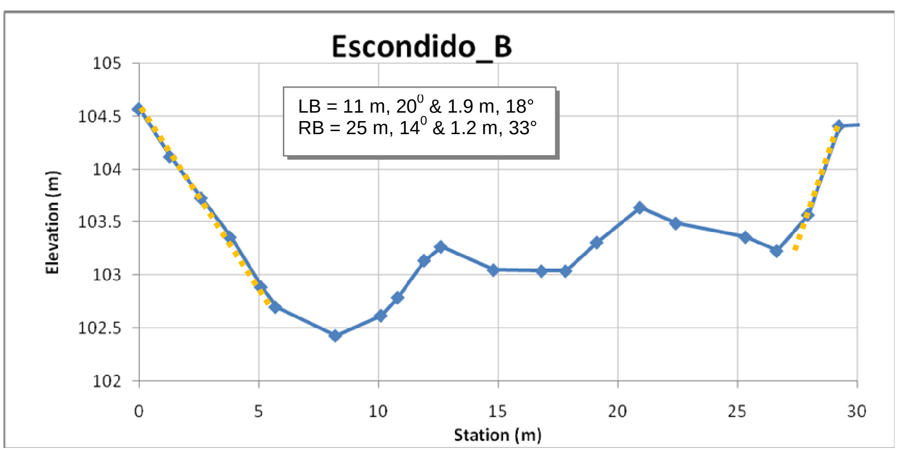


Figure A.73 – Escondido_B

SanAntoni_A (San Antonio) CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-UC RB STABLE-UC

Looking from right bank of SanAntoni_A at knickpoint just upstream from SanAntoni_B

Looking upstream from near SanAntoni_A, toward left bank of SanAntoni_B

These sites are literally less than 30-m apart. Therefore, the outer banks are only counted once (see SanAntoni_B next page). Only the within the additional incision within the main channel are counted for SanAntoni_A.

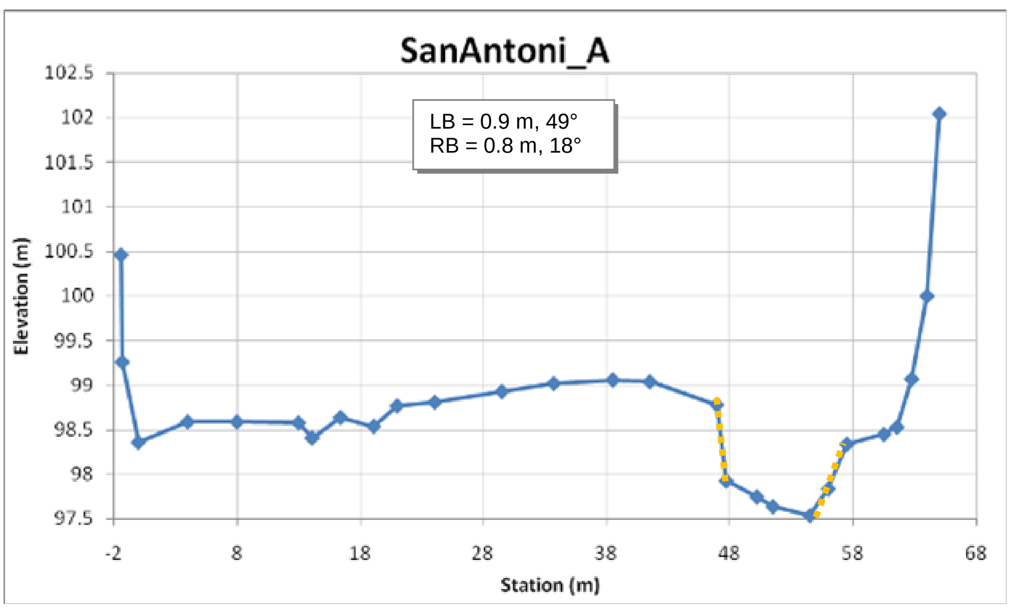


Figure A.74 – SanAntoni_A (San Antonio)

SanAntoni_B (San Antonio) CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-PC (upper) and STABLE-UC (lower)

RB U-MW-PC (upper) and STABLE-UC (lower)

Looking at left bank of SanAntoni_B

Looking downstream of SanAntoni_B

Although banks are composed of mixed alluvia, they seem to have at least a small degree of consolidation (i.e., poorly consolidated). They stand at angles well over the angle of repose. Furthermore, their height and location indicate that they were formed from deposition quite some time ago (i.e., 50+yrs). I've been using the UC (unconsolidated) label on material that literally just a few years ago was deposited/ a part of the channel bed.

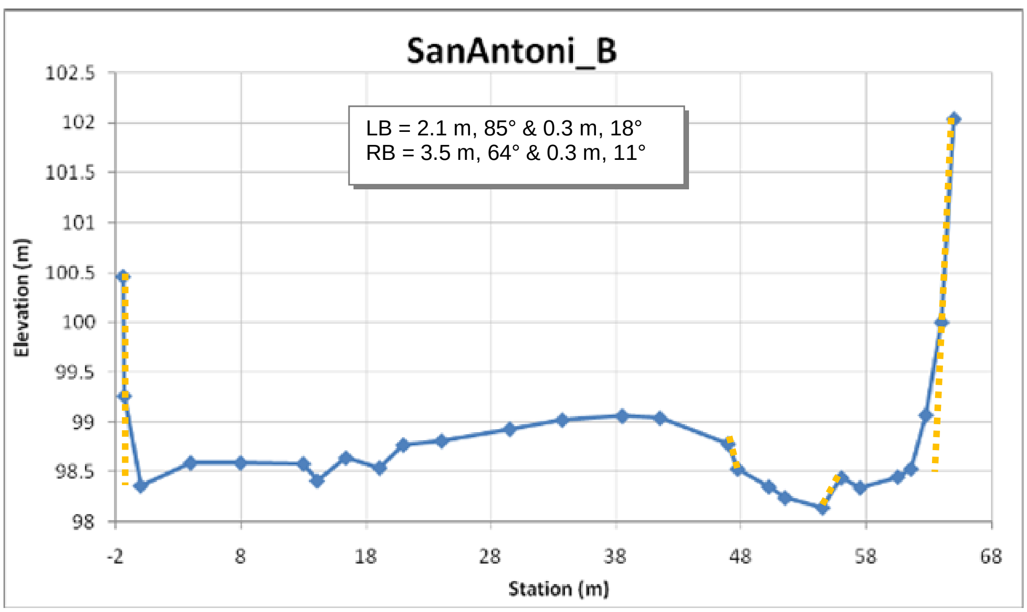


Figure A.75 – SanAntoni_B (San Antonio)

Alt_RC2_A (unnamed headwater in Riverside County) CSU, Jan-2008

Note(s):

LB STABLE RB STABLE

Looking upstream at Alt_RC2_A

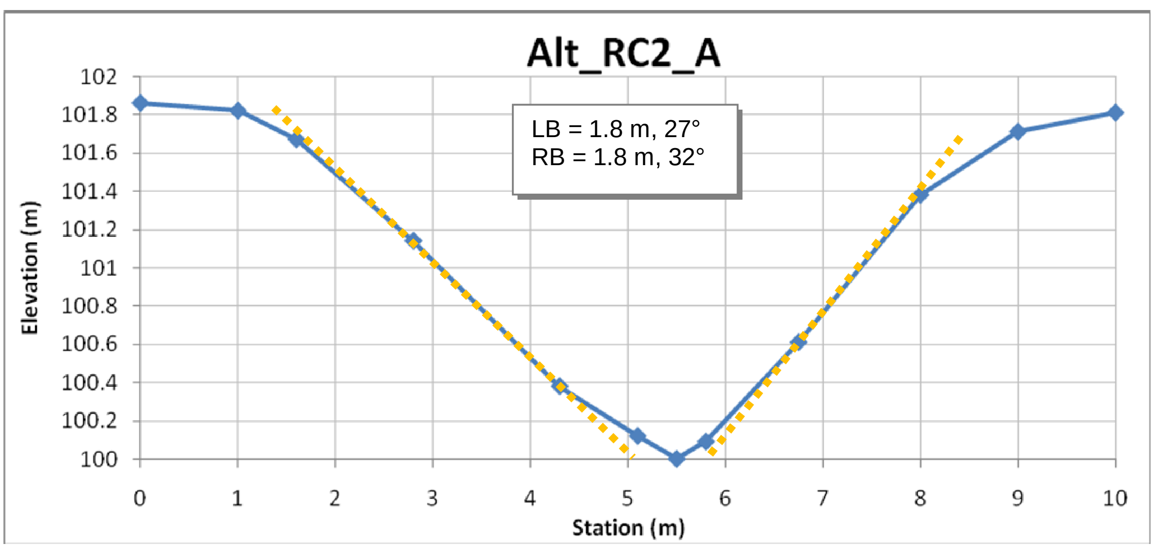


Figure A.76 – Alt_RC2_A (unnamed headwater in Riverside County)

Yucaipa_A CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB S-CONSTR

Looking at left bank of Yucaipa_A

Looking upstream at right bank of Yucaipa_A

Looking upstream at Yucaipa_A

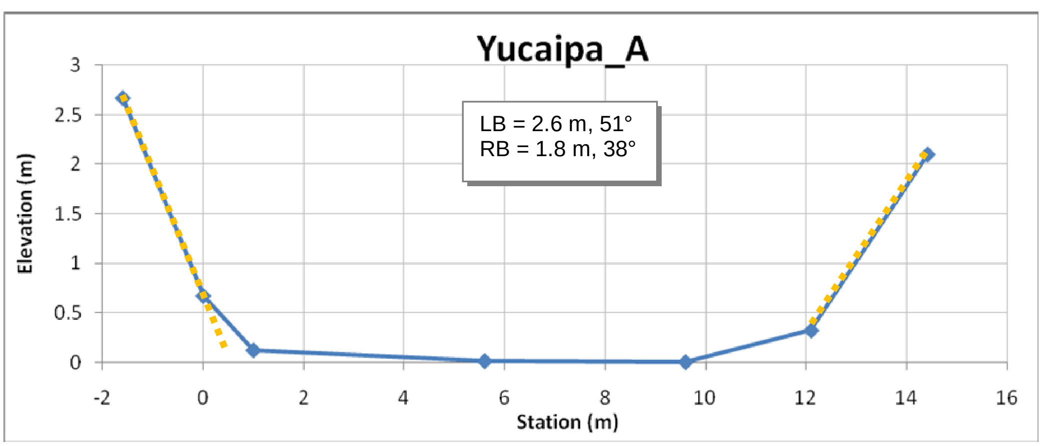


Figure A.77 – Yucaipa_A

Yucaipa_B CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB U-MW-C

Looking upstream at left bank of Yucaipa_B

Looking at upstream toward right bank of Yucaipa_B

Looking downstream at Yucaipa_B

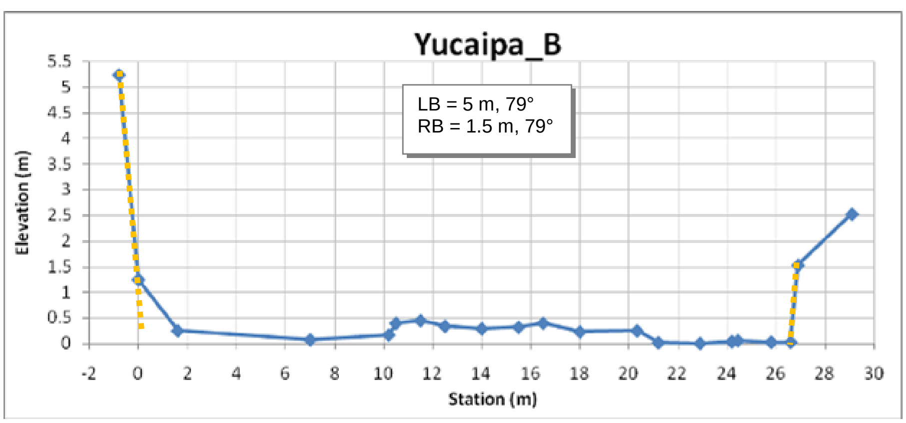


Figure A.78 – Yucaipa_B

OakGlenn_A CSU/SCCWRP, Jan-2008

Note(s):

LB U-MW-C RB U-MW-C

Looking upstream at OakGlenn_A

Looking downstream at OakGlenn_A

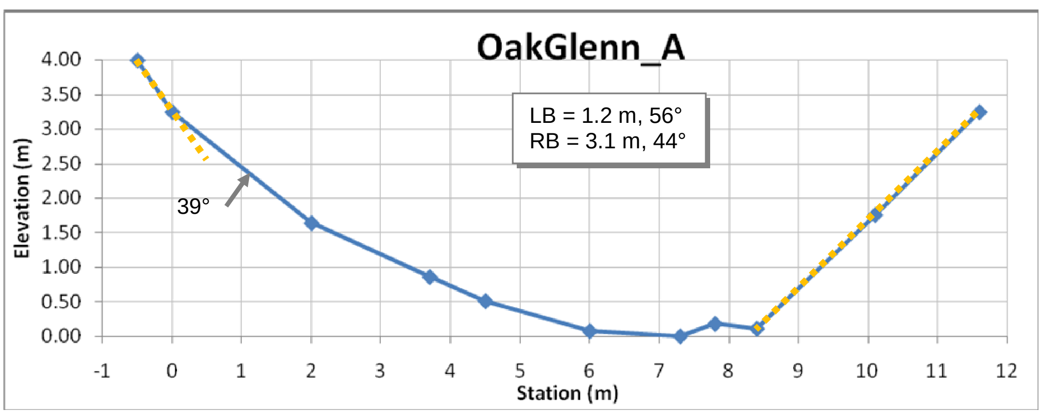


Figure A.79 – OakGlenn_A