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RAV FIELDBOOK
2014 - #2

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Project 8-14-14 - 8-28-14

FIELDBOOK #2

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8/14/14

UR 4.1 → PRM 220.7

BOTTOM TRANSDUCER = 0.9' BELOW WSE

PT 8 – TRB – Approx 10' FROM SHORE

PT 46 – TLB – Approx 10' FROM SHORE

VIEW U/S

8/14/14

VR 4.1

STA	ROD	UP	LO	%
REW	11.85			0
LEW	11.85	11.94	11.75	0
HWM	8.53	8.59	8.49	0
PT1	4.55	4.60	4.50	0
LEW-u/s	11.42	12.43	10.40	94
LEW-d/s	12.25	13.31	11.20	290

PHOTOS – View u/s TLB 1161
– View of TLB 1162
– View of TRB 1163
– View d/s TLB – 1164

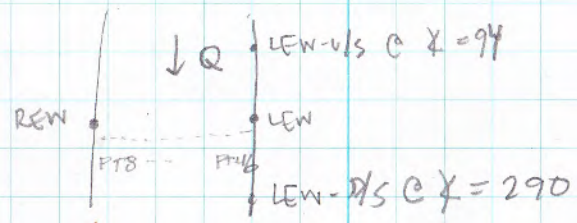
8/14/14

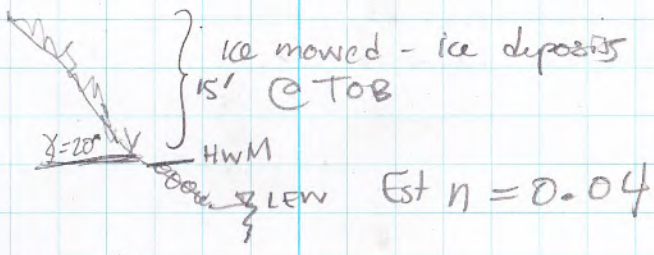
VR 4.1

PT 1 = ICE PUSH LEDGE

FROM PT 1 to start of dense veg is about 15' vertically @ 20° slope

BIRD'S EYE VIEW





TLB ↑

TRB = Bedrock Face

8/14/14

PT LB RB

49 BR - Gneiss
50 stable - both banks
51 BR-ozing
52 stable vegetated banks w/ well defined ice lines
Bedrock
Straight confined reach

53 BR TILL → Failing
54 TILL
55 OW BR
some erosional spots, mostly vegetated and stable
56 OW TCE veg'd BR / some till?
57 OW TCE OW TCE
↳ some erosion
58 OW TCE
ERODING
59 OW TCE STABLE OW? STABLE
60 BR OW TCE
61 BR ERODING OW
62 CHANGE IN LITHOLOGY
in terms of strength in material of rocks
OW TCE BR but something going on u/s

8/14/14

63 Just d/s of shear zone faulted bedrock — RB

64 LB - OW TCE

65 LB - BR - Gneiss
RB - Fan - Jay Ck

8/14/14
Photo Backups 1241 - 1251

8/15/14

↘ x4 - CK.

Presence of fan
Transporting material up to ~128mm
Quite a bit of sand
Range of gravels up to 128
Fan worked over by ice
↳ ice adding coarse fraction
Channel downcutting through fan deposits

Although active fan @ d/s end of Jay OK where defined small channel and head cut are - most of the fan material is deposited in floodplain u/s and causing sheet flooding @ the upstream end of CK. compared to Su.
Braiding occuring in sediment deposited in floodplain

Old channel completely filled in. sediment + LWD
episodic event
A lot of angular material
→ likely sourced from punky bedrock
observed from Susitna just d/s @ RKM 212

1254 - indication of transported material on fan
1259 - most indicative of transported sediment
1260 - ice shear to mature veg. line.
1261 - skew bar in channel - head cut @ top end
1262 - head cut - cohesive right bank material - not eroding
1263 - material in creek ⓒ
↳ fine to medium gravel load above head cut
~64 mm max
1264 - H_2O from floodplain
1265
1266
1267 - channel wide log jam → avulsed flow
1268 - gravel deposition in trees
HWM ~ 2' above ground
1269
1270

8/15

1271

1272

1273 Previous channel now ~~old~~ filled-in

1275 view d/s — prev. chan bed >5' below height of where pic taken

1276 flows moving over the paved surface. would take long time if armored layer downcut @ all

Larger sediment (gravels) depos. in filled in channel but now perched above sheet flow and ck. not able to transport them

Very unstable

8/15

	LB	RB	
3	TCE	BR	LB - eroding
		↳ metaseds	
		ice erosion along base of colluvium	
4	TCE	TCE	cantilever RB
		↓	LB eroding
		shifts into BR on bend	
8	TCE	TILL · LANDSLIDE	ended take
9		LANDSLIDE	
10		BR - transition to punky	
11		OLD. LANDSLIDE	
12		LANDSLIDE TILL OVER BR	
13		BR - more stable	
14		colluvial failure over BR	
15		shear zone? BR	
17	TCE	BR	
18	BR	BR alluvium on	
36	BR	BR - STRATH	
37	old fan	BR - STRATH	
39		BR - submarine basalts	
40	[illegible]	side channel 2.5-3' above WSE	
		ice scouring downside of channel	

8/15

Line 39 - ice paring down RB
40 - " " "

	LB	RB
41 -	BR	BR

very low BR @ end of SC near 203.5

UNT 203.4 - providing fine
• material up to 90 mm

	LB	RB
42 -	15. FLOOR	outwash / till on BR

→ moving through large sed storage zone

→ inset from BR

	LB	RB
43	BR	OW TCE
44	BR	BR
45	BR	TILL or OW over BR
46	TCE 15.	BR
	Eroding	

8/15/14

Kosina Ck. Recon

Very stable → split channel u/s
Granite dominated
Plane-bed channel
well defined floodplain
boulders > 1 m ∅
Does not appear to produce much sediment
Very high transport capacity
Some gravel d/s of mouth on RL
River looks like its incised down into its fan
→ Some fan in Susitna that is armored by boulder
Boulders @ mouth of Ck and BR on RR provide enough constriction for backwater and sediment storage zone u/s.
Presence of brown algae

Immediate d/s of Kosina on RR, mass failures in bedrock and hillslope

Very large boulders in MC off the mouth of Kosina Ck.

Gravels downstream of Kosina confluence on Susitna left-are largely NOT granite — indicating they're likely not sourced from Kosina

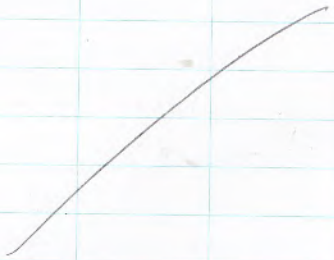
→ very stable
Side channel d/s Kosina on Susitna RL — wide, equal width course, vegetating on banks has steeper gradient
Some fine to medium gravels have been transported in but they are NOT granite, more granodiorite, indicating gravels are not sourced from Kosina Ck.
Head of SC is 2.5-3' from WSE → slopes up ~15' like broad crested weir then drops down to MC d/s.
Transport capacity pretty low due to channel width — bleed flow not sediment

8/15/14

UR 5.1 PRM 207.0

PT	D
19	1.4
20	2.0
21	1.2
	1.8
	2.6
	3.3
	3.8
	4.8
	4.7
	5.0
	5.3
	5.9
	6.2
	6.3
	7.3
	7.4

PT	D



BUSTED WATER PUMP IN MOTOR
COULD NOT FINISH XSEC

PT 19 12' FROM REW 14.35

8/15/14

PRM 207.0

STA	ROD
LEW	14.54
ICE @ LINE	2.60

> 11.94' HEIGHT DIFFERENCE BETWEEN ICE LINE AND WATER SURFACE

ICE LINE CONSISTANT THROUGHOUT REACH → sheared veg large boulders @ start of mature vegetation line

8/15

	LHS	RHS
47	BR	LANDSLIDE MAT HUMMOCKY SCARP ON HILLSLOPE
48	BR	~~HILLOW~~ ~~OVER BR~~ ? HILLSLOPE OR COLLUVIUM FAILURE
49	BR	BR
50	BR	ACTIVE LANDSLIDE LND JUST D/S
51	BR	HILLSLOPE - DW OVER
52	BR	BR - weathered Gneiss and vegetated ↓ vegetated + intermittent erosion
53	OLD FANSURF	BR
54	BR	FAN SURF

→ started line @ end of slide Pan

START OF DAY 8/16/14

WATANA CK

mostly fine gravel

Transported material ≥ 90 mm in Fan

Presence of relatively large fan
↳ pretty good sediment producer
Turbid water – Likely sourced from mudstones in watershed

Transported material in mid-channel bars up Watana Ck up to 128 mm

Fan extends ~200' out into Susitna

Not much ice effects observed on fan

Bedrock control on E side fan

transported
Ice deposited material - angular bedrock likely from local bedrock source @ mouth approx. 200' away

Willows on bank (aid in the upstream direction of Watana Ck (ice)

Material in bed up to 180 mm

~~With defn~~ Banks are vegetated, active surface

WATANA CK PHOTOS.

1402 - view up to Watana Ck mouth
1403 - " "
1404 - mud stones on fan surface
1405 - Lignite on fan surface
1406 - fan profile
1407 - view u/s
1408 - view d/s TRB
1409 - view d/s to mouth
1410 - lobes of gravel in mouth
1411 - material on gravel lobe
1412 - " "
1413 - view u/s @ mouth
1414 - angular material ice transported up creek
1415 - view to BR outcrop - source of angular material
1416 - bank profile up creek @ angular deposit
1417 - view u/s to mid channel bar
1418 - Bedrock breaking off outcrop
1419/1420 - view u/s
1421 - view u/s @ TRB
1422 - view d/s skew shoal
1423 - material on skew shoal

1424 – angular deposit on fan inland
1425 – view up Sustina TR.B – trib entering from left of photo
ltwM along debris cone
1426 – mudstone degrading

8/16/14

PT/LINE	LB	RB	
1 & 2	WQ sample sites @ Watana Ck & u/s marathon SV		
3.	Bank strat site (S1)		
4	mudstone?		
5	Surface Samp/site. (S2)		
6	BR – colluvial failure over top		
7	TILL w/ failures throughout		
8	BR	~~BR~~ <u>OUTWASH</u> – heavily mineralized Fe-cement; {shallow planar slides	
9	BR	Eros. OW → FAN → OW	
10	BR	OW → inset from BR	
11	BR	BR	
12	FAN	BR	
13	(veg) BR	(veg) BR	
14	BR	BR	
17	BR	FAN	
20	BR	FAN	
21	TLC	FAN	
22	~~BR~~	BR →	Very course bar u/s of contraction lag deposit

8/16/14

Deadman Ck.

2m +

Huge boulders at toe of bank – derived from old fan → lag deposit

→ ice paved

Fan surface ~~somewhat~~ eroding but boulders @ toe maintaining constriction

Presence of fan, big enough to hold itself against bedrock constriction on other side

Very steep lower profile held up by very large boulders – lag boulders from Deadman Ck.

Equiwidth – plane bed

Steep profile

~~Not a lot of~~

Low sediment load

High transport capacity

Very stable

Established banks

Huge boulders throughout chan

↳ 2m +

8/16/14

Deadman Ck.

Most of the erosion @ mouth ice driven

Very coarse sand mixed in with boulders on fan

8/22/14

LINE	LB	RB
1	OFP	MFP-E1
2	TCE	OFP-E1 TLB & TRB
3	MFP	OCH TO CHU
4	TCE	TCE
5	MFP	
6	TCE-E2	
7	TCE-E2	TCE
8	OFP	TCE
~~9~~ 8	MFP	TCE
9	TCE-E2	OFP
10	BR behind RR	MFP
11	MOR	TCE → some E
12		old chan
13	TCE	OW + E
14	TCE	"
15	TCE	MOR
16	TCE-E1/2	MOR
17	~~TCE~~ OW	Lo TCE Inset from MOR
18	RR	OFP
19	BR	TCE - some E
20	MOR	TCE - 1 to 2
21	MOR	MFP
22	MOR	TCE
23	MOR	TCE
24		BR - granodiorite (?)

8/22

LINE

~~LINE~~ 2 → TCE cuts behind MFP surf
(Corn)

LINE 13 → RB island not TLB

14 - start of reach w/ large log deposits

16 - TCE E is 1 to 2

18 - MOR inset from RR
19 - TII " "
(MOR)

20 - island is MFP

23 - both is. VB
larger is. YFP/MFP veg on margin

8/22/14

	RB ~~LB~~	LB ~~RB~~	conc.
25	TCE	MOR	some E on TCE
26	TCE	TCE?	
27	OW TCE		
28	OW TCE		
29	BR	OFP	
30	TCE	TCE OFP?	
31	OFP	BR	
32	TCE	TCE inset from BR	
33	BR-GD	TCE RR " "	
34	BR	~~OFP~~ TCE	
35	TCE	BR-GD	
36	OW TCE	"	
37	~~TCE~~	"	
38	MFP	"	
39		IS-YFP-E-1	
40	TCE-E2	TCE-E-2	
41	BR-KF	TCE	
42	BR-KF	TCE SRR	
43	MKFP	MFP	
44	FAN		
45	BR		
46	OW TCE	TCE-E2	
47	BR	TCE	

25 - MFP island
26 - RB-E-1 to 2
28 - RB-E-3 - FOR 1/2 of line
29 - BR - KAHIKTNK
33 - islands are range of surfaces → VB to MFP
34 - TCE-E-2
35 - TCE-E-2
37 - side chan complex on RB all ~~TCE~~ TCEs in back of MC
38 active FP
42 - low elevation / active ~~FB~~ shallow mass failures on collumn (RB) periodically
44 - coarse - high

8/26/14

PT 1 — S1 A, B

LINE 2-3 - LB ERODING TILL

LINE 4 - RB ERODING O/W - LOTS OF FINES MAYBE SOME GLACIO LACUSTRINE

Iron staining, slumping ~~&~~ sand

PT 5 → S2 A, B, C

LINE 6 - RB ERODING O/W

LINE 7 - RB - Intermittant O/W Erosion extends down RB into constriction above Sunshine Bridge

POOL 4 — Building mid-channel gravel bar (near) PRM 89

Sand w/ small gravels

2" silt ← equisetum sat root

h=2.5' fine sand ← largest layer

fine silt layer

medium sand

LINE 8 ~ RB - Intermittant O/W EROSION ON LB Just above Bridge some E on ~~TILL or of~~ MATERIAL

LINE 9 - RB - ERODING TILL Intermittant large slump failures

LINE 10 - RB ERODING O/W

LINE 11 - S3 A, B, C

LINE 12-13 - Intermittant O/W E

PT 14 - S4 A & B

Spruce on surface ⌀ 1.4'

~ 180 yrs. old

LINE 15 - RB - Intermittant through LINE 16 O/W E

PT 17 - S5 A, B, C

LINE 18 - RB - O/W E TILL O/W?

LINE 19 - RB - Intermitt. ~~E/W~~ E

LINE 20 - LB - O/W E (Line 3 part)

LINE 21 - LB - LOW O/W E

8/27/14

LINE 1 - LB - O/W E
LINE 2 - RB - TILE Intermittent
PT 3 - S1 A, B, C
PT 4 - rough ~~WS~~ bank height from WSE
MFP (older) ~ 4.5' above WSE
First ice dings observed in LR
no fresh sand dep. observed
→ Seems to be lower surface than expected for age of vegs on it
PHOTOS: 0070 - old ice ding?
0071 - d/s view
0072 + U/S view
0073 - recent ice ding?

PT 5 - Older, VFP surface
~ 3' above WSE
P0074 - 0075
deep channel off bank ~7.5' dep

PT 6 - S2 A, B, C
LINE 7 - LB O/W - E
PT 8 - S3
PT 9 - S4

8/27/14
PT 10

S5 BANK 8/27/14 1430 TRM 51.2

FROM TOP ↓

	thickness	type
S5A	0.4'	recent fine sand
	0.3	f. silty sand some roots
	0.3	clean fine sand - no roots
S5B	1.5	f. silty sand extensive Fe stain
	0.1	silt
	0.6	f. silty sand Fe staining
	0.1	organics - presence of clay
	0.3	f. silty sand - Fe stain
S5-C	0.4	fine to med. sand
	0.4	med. sand
		GRAVEL CORE

8/28/14 / Light Rain

BANK SAMPLING LR-3 & LR-2
PRM 55-22

PT1 S1 A,B,C - PRM 52.0 (BANK)
PT2 S2 - Surface Samp - PRM 50.5
PT3 S3-A,B,C - PRM 47.5 (BANK)

PHOTOS OF GRAVEL IN SIDE CHAN COMPLEX @ HEADS OF BARS NEAR S3
P 219
P 227-228

LINE 4 LB - DELTA DEPOSITS - ERODING
SAND @ TOP
CLAY @ BOTTOM

LINE 5 LB - " SANDS, TILL MIX - ERODING

LINE 6 LB - PEET ISLAND - ERODING

LINE 7 RB - O/W - ERODING
COBBLE ARMOR @ TOE

LINE 8 LB - TILL w/ O/W - ERODING
CLAY @ TOE

LINE 9 LB - TILL - INTERMITTANT EROSION

LINE 10 LB - GLACIOLACUSTRINE CLAYS } ERODING
↳ SAND OVERTOP
↳ DELTA

LINE 11 LB - LANDSLIDES ON CLAYS

LINE 12 LB - OLD SLUMP BLOCK THAT HAS VEG'D

LINE 13 LB - INTERMITTANT SLIDES IN CLAY

LR-4

trans to MFP YFP @ 40 LB
38 RB w/ dying ALDER

OFP @ 38.5 RB
36 RB ✓

? TCE 33.5 → 33 RB

MFP @ 37 LB ✓

VB @ 37 RB

LR-5

OFP 29.5 RB

trans to MFP YFP 29 IS. RB ✓

MFP 28.5 RB → 28
blw 27-28 RB ✓

trans to OFP

TCE 724 RB

8/28/14

PROB.

LWE14 RB BEDROCK - GRANODIORITE

LINE15 RB O/W OR GLACIAL DEP - SOME E

LB BR - VOLCANIC

PT16 - S4 - SURFACE - PRM 27.8

LINE 17 RB - CLAY/SAND - MASS FAILURES, LACUSTRINE

PT18 - S5, A, B, C - PRM 22.4 (BANK)

NOTE: At mid chan bar @ PRM 22.0
NO gravels were observed @ head of bar

At mid chan bar @ PRM 24.2
NO gravs obs @ head of bar

PT 19 - S6, A, B, C

@ PRM 27 GRAVELS ON MIDCHAN BAR

PT20 S7 - SURFACE - PRM 27.0

PT21 - S8 A, B, C - BANK PRM 27.3

SUSITNA STATION - VOLCANIC DEBRIS FLOW - LAHAR

ABOVE SU STA. ON RB. O/W OR TILL

PT22 - S9 A, B, C - BANK PRM 29.0

PT23 - S10 A, B, C - BANK PRM 35.8

8/28/14

MFP 23 LB ✓

YFP 22-22.5 RB ✓

S9 → PRM 29.0

BAR @ BANK SAMPLE HAS GRAVELS