

INCH

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for Outdoor writing people**



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6 3 2 2 8 1 6 5 3 1 1 0

Susitna IFS

1945.150

DURA *Rite*[®]
WATERPROOF

FIELD

N^o 653

Trib. Gaging

09/17 - 09/24

2014

Book 1 of 2

FA 151 D/s boundary logger 9/17/14

Level Loop & WSE

STA BS HI FS Eleva

Marker RTK BM 151.8	1.77		842.86
		844.63	
BM-1 rebar		6.44	838.19
WSE @ logger		7.35	837.28
Top Tube		9.07	835.56
Top Rod		6.66	837.97
(TP)			
Top Rod	6.57	844.54	837.97
Top Tube		9.01	835.53
WSE		7.33	837.21
Top Rod		6.36	838.18
RTK pt.		1.69	842.85
WSE (reshot)	844.54	7.27	837.27 OK
* unit may have shifted/settled btw surveys			
Tube after re-install		8.84	835.70
WSE after install		7.26	837.28
Rebar BM-1		6.36	838.18
RTK pin		1.69	842.85

(2)

FA-141 u/s logger 9/17/14

Crew: M. Gager
M. Tiedeman

Time In: 12:40
Out: 1:15

Equipment: Leica Runner 24
level

Photo Log:

- # 0140 before removal
- # 0141 after removal

Notes:

- o removed unit from water @ 12:59
- o removed survey pin and unit anchor pin
- o download unit GC camp

(3)

FA-144 v/s Control Survey

9/17/14

STA BS HI FS Eleva

RTK pin 1.26 766.29
X3427 767.55

BM-1 1.99 765.56

WSE @ logger 8.04 759.51

top logger tube 8.98 758.57

Rock 7.45 760.10

Rock 6.83 760.10

711.93

top tube 8.36 758.57

WSE 7.41 759.52

BM-1 1.37 765.56

RTK X3427 0.63 766.30

* removed unit # 6102023485 @ 12:59 pm

4

FA-144 v/s Logger Unit 9/17/14

Crew: M. Gayhan
M. Tiedemann

Time In: 1:20
Out: 2:10

Equipment: Leica Runner 24.
Level

Photo Log:

- # 0142 - looking across pin before removal
- 0143 - " " " after removal

Notes:

- control survey was a challenge due to wear on stadia rod
- reshot 1/2 loop & elevations checked ok
- unit # 0102022431
- unable to remove survey pins

5

FA-144 d/s Control Survey 9/17/14

STA BS HI FS Elevation

RTK pt XS 448 1.66 748.00 746.34 RM 140.8 RCL

Bm-1 2.51 → 745.49 nail

Top Tube 7.75 740.25

WSE 6.15 741.85 ✓

Roic 7.81 746.19

Roic (TP) 7.74 740.19

1 747.93

Top Tube 7.88 740.05

WSE 6.04 741.89 ✓

Bm-1 2.42 745.51

RTK pt 1.57 746.36

Reshot moved level

RTK 1.97 748.31 746.34

Bm-1 2.83 745.48

WSE 6.44 741.27 ✓

Tube 7.97 740.34

⑥ this shot is always questionable

FA-141 d/s Indian R. 9/17/14

Crew: M. Gagnon
M. Thiedemann

Time In: 2:25
Out: 2:45

Equipment: Leica Runner 24
Level

photo log:

0146 - looking @ logger w/ mat!

0147 - close up of logger removed from water

Notes: # 0102022356

* logger unit has been tampered with & removed from water sitting high & dry

* surveyor level loop & WSE

* removed logger & assembly

* unknown how long unit out of water

* unable to remove survey pins

⑦

FA-141 d/s Indian R. 9/17/14

Survey Control Pt.				
STA	BS	HI	FS	Eleva
TI marker XS494	1.37	717.14		715.77 RM 138.5
BM-1			0.49	716.65
WSE			5.73	711.91 @ location & logger
Rock (TP)			5.43	711.71 before removal
Rock	5.82			711.71
		717.53		
WSE			6.15	711.38
BM-1			0.88	716.50
TI marker			1.75	715.78 ✓ OK

8

FA-138 d/s Logger Unit

9/17/14

Crew: M. Esquin
M. Tiedemann

Time In: 3:00
Out: 3:48

Equip: Leica Runica 24
level

Photo Log:

#0148 - looking across pin prior to removal

0149 - looking across after removal

Comments:

- Unit # 2035589 @ 3:28 pm
removed from water

- appeared to be undisturbed

9

FA-138 Contour Study 9/17/14

<u>STA BS</u>			
BM-1	0.25		100.00
		100.25	
BM-2		8.50	91.75
Top Tube		11.30	88.95
WSE		9.84	90.41
Rock		9.39	90.86
Rock (TP)	10.03		90.86
		100.89	
WSE		10.49	90.40
BM-2		9.15	91.74
BM-1		0.90	99.99 ✓ OK

* all pin elevations ok
 * tube survey is correct
 * various locations of cut placement
 * unable to remove survey pins

(10)

Sep 17 Susitna Download
 2014
 Pressure Sensors

FA 151, 144, 141, 138

FA-144 d/s end Unit 2023485
 reading - 5506
 battery - 100%
 download @ ~ 5:15 pm
 Logger Time : 5:23 pm
 Computer Time : 5:24:04

FA-138 d/s end Unit 2035589
 readings - 5506, battery 100%
 Logger time = 5:26:00
 computer time = 5:26:20
 download time : 5:26:40

FA-144 d/s end Unit # 2022431
 readings - 5506, battery 100%
 Logger time : 5:30:00
 Computer time : 5:30:07, download @ 5:30

FA-141 d/s end Unit # 2022356
 reading - 5507, battery 100%
 Logger time = 5:32:00
 computer time : 5:32:24, download @ 5:33 pm
 v date removed from water 9/6 after 1 pm

(11)

Oshetna R. 09/18/14

Logger Download

Crew: M. Gagner
M. Tiedemann

Time	In: 11:20	SG
	Out: 12:15	1.70
		1.70

Equip: Leica Runner 24

Photos: 0158 - matt @ gage

0159 - matt w/ stuff / still well & heli

0160 - still plate

0161 - location of backup unit pre-removal

0162 - " " " after-removal

0163 - still well after removal of sensor

Comments:

Δ WSE does not = Δ in S.G.

trust WSE, suspect S.G. or S.W. wave

* backup unit pulled from water @ 12 pm covered

in situ (#2023213)

* main unit pulled from water @ 12:05, left stuff in situ

#(2022437)

(12)

Oshetna R. Central Survey
09/18/14

STA	BS	HI	FS	Eleva
BM-1	1.50			2172.11 ✓
		2173.61		
BM-2		0.42		2173.19 ✓
CP163			6.59	2167.02 ✓
backup Pin			10.10	2163.51
backup WSE			12.25	2161.36
Top Wood			9.94	2163.67 ✓
Top tube			10.04	2163.57 ✓
Top Staff			10.62	2162.99
WSE			12.24	2161.37
Rock			12.27	2161.34
TR				
Rock	12.5 ^B		2173.92	2161.3
WSE			12.56	2161.36 ✓
Top Staff			10.93	2162.99 ✓
Top Tube			10.36	2163.56 ✓
Top Wood			10.25	2163.67 ✓
CP163			6.90	2167.02 ✓
BM-2			0.74	2173.18 ✓
BM-1			1.82	2172.10 ✓

(13)

DURA
WATERPROOF Note

Oshetun R. Control Survey
09/18/14

STA	BS	HI	FS	Eleva
CP163	3.57			2167.02
		2170.11		
Top Staff			7.12	2162.99 ✓
WSEI			8.75	2161.36 ✓

(14)

Kosina Cr. 09/18/14

Pressure Sensor Removal

Crew: M. Gagner

M. Tideman

Time In: 12:40 ^{5.6}
Out: 1:40
1.66 (± 0.05)

Photo Log: # 8164 Matt on rock @ staff

#0165 close up of Kosina staff plate

0167 backup unit pre-removal

0168 " " after-removal

0169 baralogger pre-removal, 0170 after removal

Comments:

backup unit # removed @ 1:15 pm

main unit # 2633884 removed @ 1:20 pm

both units in good working order

left staff plate and still well in place

removed baralogger # at 1:18 pm

(15)

Kosina Cr. Control Survey

09/18/14

STA	BS	HI	FS	Elev
BM-2	1.86			1911.21
		1913.07		
BM-1			1.64	1911.43 ✓
CP162			4.88	1908.19
Top Tube			4.77	1908.30
Top wood			5.63	1907.44
Top staff			6.32	1906.75
WSE			7.99	1905.08
Rock			6.72	1906.35
				(16)
Rock	7.25	1913.60		1906.35
WSE			8.51	1905.09 ✓
Top staff			6.84	1906.76 ✓
Top wood			6.15	1907.45 ✓
Top Tube			5.30	1908.30 ✓
CP162			5.41	1908.19 ✓
BM-1			2.17	1911.43 ✓
BM-2			2.39	1911.21 ✓
back up WSE			8.47	
				(16)

Portage Cr. 09/18/14

ICIRWG 2014-001

Logger Download

Crew: Mr. Gagner
M. Tiekeman

Time In: 2:30 $\frac{S.I.}{1.82 (\pm .05)}$
Out: 3:30 1.82 NC

Photo Log:

- 0173 staff/well & backup unit pre-download
- 0174 close up of staff plate
- 0175 staff/well/backup unit post-download

Comments:

backup unit #2033865, battery Good
downloaded @ 2:57 pm, comp. time = 2:58
Cogen time = 2:59:23, 9424 points logged
restart at 3:15 am time sync w/ computer
main unit #2033864, battery Good, 9425 points
downloaded @ 3:08 pm, comp. time = 3:12 pm
unit time = 3:11:31, stopped unit,
future start 3:30 pm, synced time

(17)

Portage Cr. Control Survey

09/18/14

STA 135 HI FS Eleva

BM-1 3.55 103.55 100.00 bedrock

BM-2 3.15 100.40 wood stake

BM-3 4.75 98.80 backup unit pin

Top Tube 5.49 98.06

Top board 5.88 97.67

Top staff 6.56 96.99

WSE 8.08 95.47

backup Tube 9.35 94.20

Rock 8.00 95.53

(18)

Rock 8.17 103.72 95.55

WSE 8.26 95.46

Top staff 6.73 96.99

Top wood 6.07 97.65

Top Tube 5.66 98.06

BM-3 4.93 98.79

BM-2 3.33 100.39

BM-1 3.73 99.99

Δ WSE = 0.04

Δ staff = 0.03

(18)

In office Download 9/18/14

• Kosina Creek Barlogger

Unit # 2023124 ~100% Battery

9622 readings

Downloaded and saved data

Data logger time: 4:24:00 PM

Computer time: 4:26:55 PM

↳ re-launch unit as Portage

Creek Barlogger

Future start 5:15:00 PM

Synched time

• Kosina Levellogger ~100% Battery

Unit # 2033884

9623 readings

Data logger time = 4:33:45

computer " = 4:33:20

Downloaded and saved data

stopped logging & synchronized time

• Oshetna Levellogger ~100% battery

Unit # 2022437, 9627 readings

Logger time = 4:33:30, computer = 4:35:37

stopped logging, save data

(19)

Portage Cr. Bar Logger

09/18/14

- returned to Portage Cr.
@ 6:05 pm & swapped
out bar logger

removed - 2023129 @ 6:05 pm

installed - 2023124 @ 6:10 pm

Office Download 09/18/14

o Oshetna backup # 2033904
o 9634 readings, battery ~100%
logger time = 6:30:20
compute time = 6:31:22
downloaded & saved the data
stopped logging

o Kosina Cr. backup 2033893
9631 readings, battery ~100%
logger time = 6:36:48, compute = 6:37:00
stopped logger, downloaded & saved data

o Portage Cr. bar logger # 2023129
9439 readings, battery ~100%
logger time = 6:40:30, comp time = 6:40:46
stopped logger, downloaded & saved

(20)

Fog Cr. Gage Site

09/19/2014

CIRWG # 2014-001

Crew: M. Guyon

M. Tiedeman

S.G.

Time In: 9:00:00 1.37 (± 0.05)

Out: 12:45 1.37 NK

Photos: # 0181 Matt @ staff gage

- 0182 staff plate w/ bank erosion
- 0183 - staff plate close up (1.37)
- 0184 - BM-1 log now across Fog Cr.
- 0185 - main unit & backup pre-removal
- 0194 - " " post-removal
- 0195 - 0198 misc. held photos

Comments:

- backup unit pulled from water @ 10:35 pm
- both backup & new main unit appear to have moved btw sampling
- BM-1 tree now suspended across river
- New main unit pulled from water @ 10:40 pm

* Discharge = 303.4 cfs

(21)

Fog Cr. Control Survey

09/19/14

STA	BS	HI	FS	Eleva
Bm-2	4.68			99.49
		104.17		
Bm-3			3.76	100.41
Top wood			5.25	98.92
Top plate			5.93	98.24 ✓
WSE (staff)			7.89	96.28
backup WSE			8.06	96.11
new main WSE			8.23	95.94 (July 30)
Rock			5.01	99.16
TP				
Rock	5.53			99.16
		104.19		
new unit WSE			8.25	95.94
backup WSE			8.11	96.08
staff WSE			7.87	96.32
Top staff			5.95	98.24 ✓
Top wood			5.26	98.93 ✓
Bm-3			3.78	100.41 ✓
Bm-2			4.71	99.48 ✓

(22)

Fog Cr. Logger Download

9/19/14

* Backup Unit # 2022426, bat. ~100%
9599 readings

QC1 review appears that unit has moved/floated to new location

comp. time = 10:44:00

Logger time = 10:44:04

stopped logger, synched time, and set to relaunch @ 11:00:00

- moved unit d/s to new location

~ 5' d/s of Q-TR line (see map)

* New Main Unit # 2023495

battery ~ 100%, readings 4895

comp. time = 11:01:00

Logger time = 11:01:37

stopped logger, saved data, synched with computer, set to relaunch @ 11:30

- moved d/s to new location

~ 45' up of Q-TR line (see map)

(23)

Fog Creek Central Survey

09/19/2014

* moved both loggers to new location

STA	BS	HI	FS	Elev
BM-2	3.76	103.25		99.49
main unit pin			5.70	97.55
main unit (WSE)			7.43	95.82
Tube			8.67	94.58
backup WSE			7.78	95.47 ^{nom} Q-TR
Tube			8.38	95.12
Q-TR WSE			7.76	95.49

- Photos:
- 0186 - location of main unit
 - 0187 - location of backup unit
 - 0188 - Q-TR RT → LT
 - 0189 - " looking up/s RT bank
 - 0190 - " " LT bank
 - 0192 - " " LT → RT Q-TR
 - 0193 - " d/s Matt on Q-TR
 - 0191 - looking up/s → d/s

(24)

Tusena Cr. Download

09/19/14

Crew: M. Gagner
M. Todemann

Time In: 1:30 ^{5.6}
Out: 2:30 1.48 (±.03)
1.47

- Photo Log: 0199 - matt at gage
- 0200 Tusena Cr staff gage (1.48')
 - 0201 BM-1 tree pre-baralogger install
 - 0202 " " post- " "
 - 0203 matt @ staff after reinstall
 - 0204 - helo photo

Comments:

- * site appears in good working order
- downloaded main & backup unit and relaunched both units
- install baralogger on BM-1 tree (see photos)

(25)

Tsusera Cr. Control Survey

09/19/14

STA	BS	HI	FS	Elev
Bm-1	3.84			99.98 ✓
		103.82		
Bm-2			5.88	97.94 ✓
Bm-3			8.25	95.57
Top Tube (stillwell)			10.98	92.84
Top wood			11.52	92.30
Top staff			12.17	91.65
WSE (main unit)			14.02	89.80
WSE (backup unit)			13.99	89.83
backup tube			15.05	88.77
Rock			14.09	89.78
Rock (TR)	13.50			89.78
		103.28		
backup tube			14.51	88.77 ✓
backup WSE			13.44	89.84 ✓
main unit WSE			13.49	89.79 ✓
Top staff plate			11.63	91.65 ✓
Top wood "			10.97	92.31 ✓
Top stillwell			10.43	92.85 ✓
Bm-3			7.69	95.59 ✓
Bm-2			5.34	97.94 ✓
Bm-1			3.30	99.98 ✓

(26)

Tsusera Cr. Download

9/19/14

* Baraloga # 2023129
 Launch @ 10 am today
 will be installed @ 2 pm
 before installation downloaded
 17 pts, continued logging

Backup Unit # 2033877 pulled from
 water @ 2:05 pm
 # Readings: 9613, battery ~ 100%
 Computer time: 2:10:00
 Logger time: 2:10:45
 stopped logger, downloaded & saved
 data, set future start for
 2:15 pm, synchronized clocks

Main Unit # 2033902 pulled from water
 @ 2:14 pm
 # Readings: 9614, battery ~ 100%
 Computer time: 2:30:00
 Logger time: 2:22:41
 stopped logging, downloaded & saved
 set future start for 2:30 pm
 synchronized clocks to computer

(27)

Unnamed Trib 173 Q-measurement

09/19/14

Crew: M. Gagner
M. Tiedemann

Equipment: FlowTraker

Photo Log:

0205 - QTR Rt → Lt

206 " u/s → d/s

207 " Lt → Rt

0208 " d/s → u/s

0209-0212 held photos in flight

Time: In: 2:55 pm
Out: 3:30 pm

Discharge Measurement = 13.4 cfs

(28)

Trib. 144.6 Q-measurement

09/19/14

Crew: M. Gagner
M. Tiedemann

Equipment: FlowTraker

Time In: 3:50
Out: 4:25

Photo Log:

0213 looking Rt → Lt across QTR

0214 " u/s → d/s

0215 " d/s → u/s

0216 " Lt → Rt across QTR

Discharge = 20.8 cfs

(29)

GOLD CREEK 9/20/14

M. CASNER
M. TIEDERMAN

Time SG
IN 0900 1.91 ± 0.04
OUT 1003 1.90/1.89 ± 0.04
Q-MMT (end) 1045

Control Survey

STA	BS	HI	FS	ELEV	NOTE
BMI	4.39	104.39		100.00	
BMI2			5.65	98.74	
BMI3			5.71	98.68	
Top Tube			8.76	95.63	
Top Wood			9.48	94.91	
Top Staff			10.15	94.24	
WSE			11.65	92.74	
Backup Tube			12.89	91.50	
Rock			16.87	93.52	
(TP)					
Rock	11.01	104.53			
Tube Backup			13.11	91.42	MISSING POINT
WSE			11.79	92.74	✓
Top Staff			10.31	94.22	✓
Wood			9.64	94.89	✓
Tube			8.93	95.61	✓

(30)

GOLD CREEK 9/20/14

STA	BS	HI	FS	ELEV
BMI3		104.53	5.86	98.67 ✓
BMI2			5.80	98.73 ✓
BMI1			4.54	99.99 ✓

Comments

- Backup unit was moved, OS
a 3-4" is unstable

→ Relevel @ 0919

→ Unit # 2033907

→ Battery = 100%

→ 9502 readings

Computer time: 0925 Logger time: 09:24:53

Stopped, downloaded, time synced
and relaunched with 0945
start time.

- Main unit # 2033874

→ relevel @ 0932

9503 readings Battery = 100%

Computer time: 9:41:00 Logger time: 9:42:20

Stopped, downloaded, time synced and
relaunched @ 1000

- Recovery main and backup WSE

(31)

GOLD CRK 9/20/14

Unit re-install surveys

STA	BS	HI	FS	ELEV	NOTE
BUM	4.53	104.53		100.00	
Backup I/S			12.87	91.66	
WSE SG			11.73	92.80	SG = 1.90
Backup WSE			11.70	92.83	or 1.89
WSE SG			11.73	92.80	✓

Q-mnt \Rightarrow LWP = 72.6' \quad LEW = 63.2'
 REW = 25.0'

Q = 143.54 cfs

Photo log

0229 - SG @ arrival

0230 - SG + backup (inval O/S)

0231 - Q-TR L \rightarrow R

0232 - Q-TR Looking U/S

0233 - Q-TR Looking D/S

(32)

Indian R. Logger Download

9/20/14

Crew: M. Gagner
 M. Tiedemann

Time In 1:20 / ^{5.6} 2:31'
 Out 3:30 / assume no change

Equipment: Flowtrac
 Leica Runner 29

Photo Log:

0237 - looking RT \rightarrow LT across
 Indian near staff gage

0238 - close up of staff plate (2.31')

0239 - backup & main unit location
 after moving backup unit

0240 - Q-TR looking RT \rightarrow LT

0241 - " Matt measuring Q

(33)

Indian R. Control Survey

09/20/14

STA	BS	HI	FS	Eleva
BM-1	1.41			777.07
		778.48		
BM-2		1.49		776.99 ✓
BM-3		2.40		776.08
Top tube		3.66		774.82
Top wood		4.15		774.33
top staff		4.82		773.66 leaning
SG WSE		5.85		772.63
Backup WSE		5.84		772.64
Inclin XS (TTBM)		3.77		774.71
		(IP)		↓
Inclin XS	3.71	778.42		774.71
Backup WSE		5.25		—
SG WSE		5.79		772.63 ✓
Top staff plate		4.75		773.67 ✓ leaning
Top Wood		4.10		774.32 ✓
Top tube		3.60		774.82 ✓
BM3		2.35		776.07 ✓
BM2		1.44		776.98 ✓
BM1		1.35		777.07 ✓
Backup WSE		5.75		772.67
Backup tube		7.58		770.81
QTR-REW WSE		5.95		771.47

(39)

After
from start,
10' DLS

Indian R. Logger Info

9/20/14

Main
Unit # 2033906
Battery: ~100%
Readings: 9498
Computer Time: 13:58
Logger Time: 13:58:45
Stopped, time synced, future start @ 14:30

Backup unit # 2033875 battery = 100%
Readings: 9499
Computer time: 14:07:00 → Accidentally
Logger time: 14:07:02 → synced with real
Stopped, downloaded, time synced, future start @ 14:30
→ unit ultimately wired, found
vertically hanging. Bad data

Q-munt: impossible / unsafe to fully
wade. Take as many munts on
each side of trail way as possible.
→ @ STA 25', depths should be 3.6'
→ MGT took munts up to STA 33.0'
+ MRCs take munts from 25' to REW

(35)

INDIAN RIVER... 9/21/14

→ Q will need to be calc'd outside of Flautmeter to account for unmeasured cells/areas, however
Flautmeter Q = 601.02 cfs

→ Consider adding "synthetic" cell between MGT to MEG handoff, by using depth profile from June mount

(36)

FA128 Upstream 9/21/14

Mat Tiedeman, Allan Ferge, Patricia

~~Time IN / OUT~~
Time 0950 / 1030

iPhoto Log

246 - Fallen cottonwood

247 - " "

284 - " "

285 - Fallen BMJ and covered logger pin

286 - Project datum BMJ

251 - Location of re-install

252 - New BMJ

Leaving cottonwood has fallen, including BMJ. Survey existing WSE, download unit and reattach.

- All shots on BMJ level.

Logger # 2036293 S&G readings

100% battery Computer time: 10:11:00

Logger time: 10:12:30 AM

Stopped, time synced, re launched

@ 10:15

- Unclear if fallen log affected hydro rails and WSE

(37)

FA 128 Upstream

STA	BS	HI	FS	ELEV	NOTE
X5693	4.30	590.11		585.81	

BMI BMI			8.70	581.41	Bad shot leaning
--------------------	--	--	------	--------	------------------

WSE logger			10.67	579.44	
------------	--	--	-------	--------	--

Top tube			X		buried
----------	--	--	---	--	--------

Rock			10.16	579.95	
------	--	--	-------	--------	--

Rock	10.21	590.16			
------	-------	--------	--	--	--

WSE			10.76	579.40?	
-----	--	--	-------	---------	--

Top tube			X		buried
----------	--	--	---	--	--------

BMI			8.80	581.36	Bad shot
-----	--	--	------	--------	----------

X5-693			4.34	585.82	✓
--------	--	--	------	--------	---

Reinstall

WSE			10.73		
-----	--	--	-------	--	--

BMI2 (new)			7.54		
------------	--	--	------	--	--

(38)

FA 128 Downstream 9/21/14

Time	IN	OUT	Same crew
	1045	1130	

- Site looks good but area was silted in significantly

- Logger completely buried in ~3' of silt. Unable to extract after 20+ min attempting to dig out

Photo log -

253 - ✓ logger location

254 - ✓ V/S silt bar

(39)

FA128 D/S				9/21/14
STA	BS	HI	FS	ELEV NOTE
BM2492	1.12	101.12		100.00
BMI			2.70	98.42
WSE			8.85	92.27
Rock			8.74	92.38
				↓
Rock	8.78	101.16		92.38
WSE			8.90	92.26 ✓
BMI			2.74	98.42 ✓
BM2492			1.16	100.00 ✓

(40)

SKULL CRK			9/21/14
	TW	INT	OTHER*
Time	11:50	1:30	12:30
SG	1.75 ± 0.1	1.02 ± 0.1	1.63 ± 0.1*
	Very "sunny"		
- Upon arrival and inspection, down stream back up unit moved, last "good" reading for it @ 11:50. But still appears as if it had moved previously.			
* @ 12:30 noticed very different SG reading w/o person in water. Stepped back in water (like usual) SG reading, and SG = 1.74!			
- Presence of person in water affects SG reading greatly @ this flow. With this observation $ASG \approx WSE$ ✓			
Q = 48.34 cfs LWP = 39.2'			
LWP Flaggung says 39.1'			

(41)

SKULL Control Survey 9/21/14

STA	BS	HT	TS	ELEV	NOTE
BMI	3.10	1001.93		598.83	
BMZ			5.52	596.36	mis-calc 42 ✓
Top Tree			5.19	596.74	
Top Wood			6.17	595.76	
Top Staff			6.80	595.13	
WSE			8.54	593.39	surgy
Backup WSE			8.49	593.44	tough sheet
Rock			7.90	594.03	
				↓	
Rock	7.71	1001.74		594.03	
Backup WSE			8.28	593.46	
WSE			8.28	593.46	surgy
Top Staff			6.61	595.13	✓
Top Wood			5.92	595.72	✓
Top Wx			4.99	596.75	✓
BMZ			5.32	596.42	X? ✓
BMI			8.92	598.82	X ✓
			2		
BMI			2.90	598.84	✓
BMZ			5.31	596.43	! ✓
QTR - Wx			8.57	593.17	

From today to 6/11/14 inst. ΔSG = 1.75 - 1.18

ΔWSE = 593.43 - 593.61 = +0.42 = +0.57
 46 (12) = 0.45 * ?

SKULL CREEK 9/21/14

Remarks... Main unit @ 1314
 Backup unit @ 1318
 Barlogger @ 1322

Removed loggers, flagging, stakes, etc

Photo logs 255 - SG annual (affected by NGT in stream presence)
 256 - Barlogger
 257 - Still well
 258 - SG, correct reading
 259 - Still well
 260 - Still well location post remove
 261 - Barlogger location post remove
 262 - Q-TR L-TR

UNNAMED 115.6 9/21/14

Time IN: 1425 OUT: 1445

Q = 0.41 cfs with FlowTracker

Photo log: 0263 - Creek
0264 - Q - TR

FA 115 DOWNSTREAM

Time IN: 1455 OUT: 1530

Logger # 0102034764 removed @ 1525

STA	BS	HI	FS	EL
XS-875	3.37	463.90		460.53

BMI Logger pin 4.61 459.29

Logger WSE 6.45 457.45

Top tube? 7.64 456.86 tough shot

Rock 5.53 458.37

TP

Rock 5.35 463.72 458.37

WSE 6.25 457.47 ✓

BMI 4.43 459.29 ✓

XS-875 3.19 460.53 ✓

(44)

FA 115 Downstream 9/21/14

Photo log: 0265 - Logger location
and pin

GASH CREEK 9/21/14

Time IN: 1550 OUT: 1620

FlowTracker U-mount
Q = 9.2 cfs

Photo log: 0266 - Outlet and pool
0267 - Creek below pool
0268 - Q TR R-7L

(45)

SLASH CREEK 9/21/14

FlowTracker Q-mount

Time IN: 11:30 AT: 16:45

Q = 0.35 cfs

Photo log: 0209 - Q-TR L-TR
0270 - Q-TR Looking D/S

(46)

9/21/14 In Office Download
of Loggers

• Skull Main unit # 2022433

9539 readings 100% battery

Logger time: 7:24:08 PM

Computer time: 7:25:55 PM

Downloaded, saved, stopped

• Skull Backup unit # 2033863

9539 readings 100% battery

Logger time: 7:29:05 PM

Computer time: 7:30:20 PM

Downloaded, saved, stopped

→ Data doesn't look as good
as main unit

• Skull Barologger unit # 2023122

9540 readings 100% battery

Logger time: 7:38:20 PM

Computer time: 7:37:40 PM

Downloaded, saved, stopped

• Falls Downstream unit # 2034764

5899 readings 100% battery

(47)

9/21/14 office downloaded

Logger time: 7:42:05

Computer time: 7:43:15

Downloaded, saved, stopped

(48)

TRAPPER CREEK 9/22/14

	<u>TW</u>	<u>OUT</u>
Time	1005	1240
SG	2.22'	2.22'

Crew: M. Tiedemann, Allan Farge,
Dustin Horton

Q-TR LWP = 0.7'
RWP = 43.5'

RWP was surveyed, but not a stable
Stake

Q = 124.7 cfs!

In office download, Unit # 2022421
9438 Logs, Download from water @ 1247

Logger time: 4:26:40 PM

Computer time: 4:28:05 PM

Stopped, downloaded, saved file

(49)

TRAPPER CREEK 9/22/14

STA	BS	HI	FS	ELEV	NOTE
BUM2	3.14	313.28		310.14	(310.41)
Top tube			4.75	308.53	(308.5)
Top wood			5.41	307.87	(308.14)
Top staff			6.14	307.14	(307.41) slanted
WSE			7.21	306.07	(306.34)
Q-TIP Backup WSE			7.28	306.00	(306.27)
BMI (1.43)		(313.55)	1.43	311.85	(312.12) ⁵
Stamp			1.37	311.91	(312.18)
Ⓟ				↓	
Stamp	1.31	313.22		311.91	(312.12)
BMI			1.38	311.89	(312.11)
Q-TIP Backup WSE			7.26	305.96	(306.23)
WSE			7.19	306.03	(306.30)
Top staff			6.12	307.10	(307.37)
Top wood			5.38	307.84	(308.11)
Top tube			4.72	308.50	(308.77)
BMI2			3.38	309.84	(310.11)
12+ 27349 (Q-RWP)			5.76	307.46	(307.73) ^{Not super stable}

Not lining up with BMI2 as starting point. Re-survey with BMI1 = 312.12' (page 52)

50

TRAPPER CREEK 9/22/14

Backup unit downloaded
unit # 2033897 100% data
9431 readings
removed from water @ 1242

Loggertune: 4:32:00 PM

Computer time: 4:33:53 PM

Stopped, downloaded, saved file

51

STA	BS	HI	FS	EL	NOTE
BMI	1.74	313.86		312.12	
BMI			3.22	310.64	
Top tube			4.54	309.32	
Top wood			5.21	308.65	
Top staff			5.92	307.94	
WSE			7.02	306.84	
Q-TR WSE			7.09	306.77	

STA	BS	HI	FS	EL	NOTE
BMI	1.22	101.22		100.00	
TI-TC12R		4.90	5.90	95.32	96.32
Q-TR WSE			7.10	94.12	
WSE			7.07	94.15	
Top tube			4.54	96.68	
Top wood			5.21	96.01	
Top staff			5.92	95.30	
BMI			3.22	98.00	
D/S Power Post (#27346)			4.99	96.13	
				↓	
D/S Power Post	4.85	101.08		96.23	
BMI			3.08	98.00	✓
Staff			5.78	95.30	✓
Wood			5.07	96.01	✓
Tube			4.41	96.67	✓
WSE			4.89	94.19	✓

(52)

STA	BS	HI	FS	EL
Q-TR WSE			6.97	94.11 ✓
TI-TC12R			4.76	96.31 ✓
BMI			1.02	100 ✓

	SG	WSE	
6/16/14	1.34	93.33	93.33
9/22/14	2.22	94.17	94.19
	+ 0.88	+ 0.84	+ 0.86 ✓

Backup removed @ 1242
 Mini still well removed @ 1247

Auto Log:

- 278 - SG @ annual
- 279 - Q-TR R → L
- 280 - Q-TR Leaking @ R → L (still well)
- 281 - Q-TR Leaking @ R → L
- 282 - site after still well removed

(53)

SU @ TRAPPER 9/22/14

	IN	OUT
Time	1315	1400
SG	2.17'	2.15'

Control Survey

STA	BS	HI	FS	EL	NOTE
BMI	4.07	313.55		309.48	
BMI2			4.69	308.86	
Top tube			7.80	305.75	
Top wood			8.66	304.89	
Top staff			9.33	304.22	
WSE			10.52	303.03	
Wood			8.81	304.74	
IP				↓	
Wood	8.75	313.49		304.74	
WSE			10.47	303.02 ✓	
Staff			9.27	304.22 ✓	
Wood			8.58	304.91 ✓	
Tube			7.75	305.74 ✓	
BMI2			4.64	308.85 ✓	
BMI			4.01	309.48 ✓	

	SG	WSE
10/10/14	2.02	302.88
9/22/14	2.17	303.02/03

$\Delta = +0.15$ (54) $\Delta = +0.14$ / 0.15

SUE TRAPPER 9/22/14

Removal still well @ 1342

In office download unit # 2033899
9427 readings

Logger time: 4:38:00 PM
Computer time: 4:39:45 PM
Stopped, downloaded and saved

Photo log:

- 283 - Still well @ annual
- 284 - Still well
- 285 - Still well location post-removal

(55)

SUC BIRCH 9/22/14

	IN	OUT
Time	1410	1440
SG	2.15'	No charge

Control Survey

STA	BS	HI	FS	EL	NOTE
BMI	4.13	298.76		294.63	
BMI			4.80	293.96	
Top tube			6.44	292.32	
Top wood			7.11	291.65	
Top staff			7.80	290.96	
WSE			8.98	289.78	
Branch			8.59	290.17	
				↓	
	8.43	298.60		290.17	
WSE			8.79	289.81 ✓	
Staff			7.65	290.95 ✓	
Wood			6.95	291.65 ✓	
Tube			6.28	292.32 ✓	
BMI			4.64	293.96 ✓	
BMI			3.96	294.64 ✓	

Still well removed @ 1432

(56)

SUC Birch 9/22/14

In office download unit # 2033894
 9427 readings 100% batt
 Logger time: 4:43:26 PM
 Computer time: 4:45:39 PM
 Stopped, downloaded and saved

Photo log:

- 286 - Still well and MT Foraker
- 287 - Still well @ arrival
- 288 - Still well
- 289 - Still well post - remove

(57)

9/23/14 FA128 Downstream

M. Dickman M. Cragner

Time IN | OUT
0950 | 1125

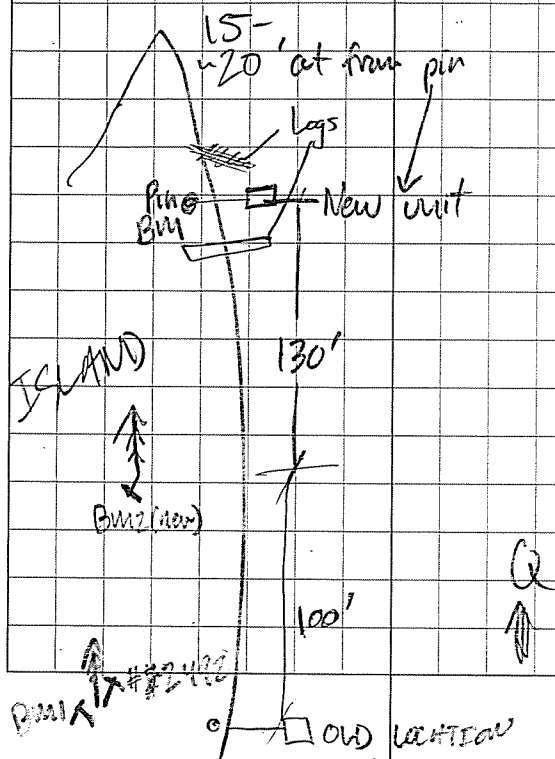
- Unit extracted from silt @ 1025.
- Unit came out clean (no rust), suspect it was silted in relatively quickly
- Download unit, and relocate downstream with less risk of siltation

STA	BS	HI	FS	EL
STA 2492	1.09	101.08		100.00
BMI			2.67	98.41
WSE			8.96	92.12
Rock			8.63	92.45
				↓
Rock (TP)	9.43	101.88		92.45
BMI2 (new)			3.52	98.36
				↓
BMI2	3.18	101.54		98.36
Rock (TP)			9.10	92.44
Rock	8.41	100.85		92.44
BMI			2.44	98.41
2492			0.86	99.99
WSE			8.74	92.11

9/23/14 FA128 D/S

- Unit # 2036121 100% battery
- Downloaded, saved, COSS logs
- Computer time: 10:34 AM
- Logger time: 10:34:11 AM
- Stopped, time synced, reloaded for 11 AM

MAP



FA128 9/23/14 New logger Survey

STA	BS	HI	FS	EL
Top tube			11.75	90.05
WSE			9.85	91.95
PIN BM			4.16	97.64
Bm2	3.44	101.80		98.30

New logger GPS Point #358
installed ~ 1050 AM

Photo log:

- 295 - New location pre-install
- 296 - New location Mike clearing
- 297 - New location post-install

FA113 DIS PT 9/23/14

STA	BS	HI	FS	EL
M. Tiedeman	M. Gagner			
Time IN:	1230			OUT: 1255
Control Survey				
X5-879	4.04	454.36		450.32
Bm1			2.48	451.88
WSE longer			11.12	443.24
Tube longer			11.51	442.85
Rock			10.95	443.41
(P)				
Lab	1080	454.21		443.41
Tube			11.35	442.86 ✓
WSE			10.98	443.23 ✓
Bm1			2.33	451.88 ✓
X5-879		34.89		449.72 450.32 ✓

Pulled logger from water @ 1248

Photo 298 - location post-removal
Unit # 2036295, Reading 6084, bat. 100%
Log time 5:56:00
Collection time: 5:56:44, stop logging, saved
and returned to Redmond

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of
2

FA 104 - Upstream 9/23/14

Time IN: 1400 OUT: 1420

M. Tiedemann M. Gagner

Control Survey

STA	BS	HI	FS	EL	NOTE
BMI	3.74	103.74		100.00	
BMI			1.84	101.90	
Top tube			7.02	96.72	
WSE			5.74	98.00	
Rock			5.27	98.47	
(TP)				↓	
Rock	4.99	103.46	10	98.47	
WSE			5.46	98.00	✓
Top tube			6.745	96.71	✓
BMI			1.56	101.90	✓
BMI			3.46	100.00	✓

Unit removed @ 1417

Unit # 2036281, 6084 readings

100% bat, log time: 5:51:00

comp time: 5:51:48

stopped, downloaded & saved, return to Redmond

(2)

FA 104 Downstream 9/23/14

Time IN: 1425 OUT:

M. Tiedemann M. Gagner

Control Survey

STA	BS	HI	FS	EL	NOTE
BMI	1.40	101.40		100.00	
BMI			4.65	96.75	RTK #45443
Logger pin			7.81	93.59	#45442
WSE			13.21	88.19	
Rock			12.51	88.89	
(TP)				↓	
Rock	12.05	100.94		88.89	
WSE			12.75	88.19	✓
Logger pin			7.34	93.60	✓
BMI			4.19	96.75	✓
BMI			0.94	100.00	✓

Unit found at of water on bank, human interference?

Unit: 302 - Logger out of water on bank

303 - " " " and chains

Unit # 2036302, 6085 readings, bat, 100%

Log time: 6:05:00 stopped, downloaded

comp. time: 6:06:09 & returned to Redmond

(2)

DURA

WHISKERS CRK 9/23/14

	Time	SG	M. Tiedeman
IN	1520	1.83'	W. Gagner
OUT	1635	1.83'	

STA BS HI FS EL

BMI 2.04 380.05 378.01

Top tube 5.26 374.79

Top wood 5.69 374.36

Top staff 6.38 373.67

WSE 7.88 372.17

Backup WSE 7.88 372.17

Backup tube 10.20 369.85

BWZ 3.42 376.63

woops turned an BMZ

(FD)

BWZ 3.33 374.96 376.63

Backup tube 10.10 369.86 ✓

Backup WSE 7.79 372.17 ✓

WSE 7.79 372.17 ✓

Top staff 6.28 373.68 ✓

Top wood 5.60 374.36 ✓

Top tube 5.17 374.79 ✓

BMI 1.95 378.01 ✓

Q-TR WSE 7.83 372.13

(4)

Whiskers Creek 9/23/14

From 9/14 to today

ΔSG = 1.83 - 1.40 = +0.43 ✓

ΔWSE = 372.17 - 371.74 = +0.43 ✓

Set RWP = 0 and LWP = 31.5 as done before.

Flow Tracker Q-mant ⇒ Q = 18.75 cfs

Backup unit pulled @ 1601 (kept logging)
 Backup logger pulled @ 1605 (kept logging)
 Still well removed @ 1625 (" ")

Photo log: 304 - SG @ arrival
 305 - " " "

306 - Q-TR looking N/S

307 - Q-TR L → R

308 - Q-TR looking N/S

309 - Backup logger location post-removal

310 - Still well SG before removal

311 - Still well location post removal

(5)

Whiskers Cr. 09/23/14
Data Download

Main Unit # 2033872

Readings - 10,186

Log time: 6:01:00

Comp. time 6:01:06

Battery 100%

Stopped, downloaded, and returned
to Redmond, WA.

Backup Unit # 2033871

Readings - 10,188

Log time: 6:19:30

Comp. time: 6:19:26

Battery: 100%

Stopped, downloaded, and returned
to Redmond, WA.

6

SHEEP CREEK SLUGH 9/24/14

M. Tademan, M. Gagnon

	IN	OUT
Time:	0945	1015
SG	1.63'	1.63'

- Site looks good

- Unit # 2023470 100% battery

Downloaded 9405 logs, saved

Computer time: 10:11 AM

Logger time: 10:12:24 AM

Relaunched @ 1030 AM and
reinstalled

- Site left to log over winter

Photo log: 318- SG @ arrival

319- Site overview

7

SHEEP CREEK SLUGH 9/24/14

	Control	Survey			
STA	BS	HI	FS	EL	NOTE
Bm1	6.58	106.58		100.00	
Bm2			4.04	102.54	
Top tube			9.32	97.26	
Top wood			9.70	96.88	
Top staff			10.38	96.20	
WSE			12.08	94.50	
Steel fence post			10.12	96.46	
Ⓢ				↓	
Steel post	9.89	106.35		96.46	
WSE			11.85	94.50 ✓	
Staff			10.16	96.19 ✓	
Wood			9.48	96.87 ✓	
Tube			9.09	97.26 ✓	
Bm1			6.35	100.00 ✓	
Bm2			3.81	102.54 ✓	

From 6/18/14 to today

$$\Delta WSE = 95.09 - 94.50 = 0.59$$

$$\Delta SG = 2.25 - 1.63 = 0.62$$

WSE after install 11.85 94.50 ✓

⑧

CSO @ CASWELL CREEK 9/24/14

	IN	OUT
Time	11:10	12:05
SG	0.89'	0.88'

- Site generally very de-watered but SG in small hole, looks relatively good!

- Site looks relatively undisturbed by survey indicates shift upward of +0.15-0.27' but its consistent. Suspect movement of Bm1

- Unit rained @ 11:44 AM, was found with slug of frozen silt on Chemi (see photo). Unknow how it affected pressure loggings

- Unit # 2023479 100% battery

Downloaded 9412 Logs → saved

Computer time: 11:52 AM Sync'd

Logger time: 11:53:26 AM time

Relaunched, future start for 12:00 noon

⑨

SU@ Caswell Creek 9/24/14

	Control	Survey		
STA	BS	HR	FS	EL
BM1	4.78	104.78		100.00
BM2			4.98	99.80
Top tube			4.78	100.00
Top wood			5.44	99.34
Top staff			6.12	98.66
WSE			8.56	96.22
Log			6.90	97.88
Log (P)				
Log	7.05	104.93		97.88
WSE			8.70	96.73 ✓
Staff			6.27	98.66 ✓
Wood			5.59	99.34 ✓
Tube			4.94	99.99 ✓
BM2			5.12	99.81 ✓
BM1			4.92	100.01 ✓
WSE after re-install			8.74	96.19
			@ 1200 noon	
Photos: 320-SG	321-SG site	looking	US	
322- U/S of SG	323- O/S of SG			
324- Slug of frozen silt on logger chain				
325- tube servicing gage				
326- SG @ end	327- overall site			

Caswell Creek 9/24/14

	IN	OUT	Q-mnt
Time	1245	1500	with Fluorimeter
SS	2.94'	2.94'	Q=30.9'

- Walked downstream to investigate source of (still present) beaver dam.
- Found beaver dam ~ 1/4 mile D/S causing significant and very wide back up. Boggy conditions for almost the entire width of meadow.
- Shallow water surface slope downstream of beaver dam, slow velocity, etc → indicates likelihood of another beaver dam D/S
- Does not appear to be good location to re-install U/S of current site
- Investigated site U/S of culvert, large grate, which would cause significant backup if jammed with woody debris. Not a good site either

(11)

CASWELL CREEK 9/24/14

Control survey - existing site

STA	BS	HR	IS	EL
BM1	5.99	105.99		100.00
BM2			7.89	98.10
BM3			8.59	97.40
Top tube			6.52	99.47
Top wood			7.62	98.37
Top staff			8.29	97.70
WSE			8.67	97.32
Backup tube			11.45	94.54
Backup WSE			8.67	97.32
Fence post			7.90	98.09
TP				↓
Fence post	8.08	106.17		98.09
Backup WSE			8.85	97.32 ✓
Backup tube			11.61	94.56 ✓
WSE			8.84	97.33 ✓
Staff			8.46	97.71 ✓
Wood			7.80	98.37 ✓
Tube			6.71	99.46 ✓
BM3			X	X
BM2			8.05	98.12 ✓
BM1			6.17	100.00 ✓
Q-TR WSE			8.84	97.33 ✓
From 7/31/14				
ΔWSE = 97.32 - 96.93 = 0.39' (12)				
ΔSG = 2.94 - 2.57 = 0.37'				

Water nearby
to pin-dot
trust
high side

CASWELL CREEK 9/24/14

- Site not conducive to long-term monitoring. Survey as is, and will leave staking well and loggers. However, recommend conversion to spot mount site

- Backup unit #2033889 removed @ 2:06 PM
100% battery 9705 logs
Computer time: 14:18 Logger time: 14:17:28
Future start @ 1430 reinstalled @ 1429

- Main unit #2033896 removed @ 2:11 PM
100% battery 9706 logs
Computer time = 14:23 Logger time = 14:24:12
Future start @ 1430 reinstalled @ 1431

Photos: 328-29 → Marsh created by beaver dam
330-333 - Beaver dam and vicinity
334-335 - Culvert looking US, note grate
336 - SG @ 1435
337 - Q-TR looking US
338 - Q-TR looking DS
339 - Looking DS toward backwater marsh

(B)

BIRCH CREEK

9/24/14

	IN	OUT		
Time	1600	1715		
SG	1.97	1.97		
Control Survey				
STA	BS	HI	FS	EL
BUM1	3.51	309.92		306.41
BUM2			3.50	306.42
Top kbr			2.54	307.38
Top wood			3.43	306.49
Top staff			4.10	305.82
WSE			5.47	304.45
Backup brk			7.01	302.91 <small>unit advertised</small>
Backup WSE			5.43	304.49
Rock			6.65	303.27
Rock ⁽¹⁴⁾	6.62	309.89		303.27
Backup WSE			5.44	304.45
Backup brk			6.98	302.91 ✓
WSE			5.43	304.46 ✓
Top staff			4.07	305.82 ✓
Top wood			3.40	306.49 ✓
Top kbr			2.51	307.38 ✓
BUM2			3.47	306.42 ✓
BUM1			3.48	306.41 ✓
Q-TR WSE			5.46	304.43

(14)

BIRCH CREEK 9/24/14

- Backup unit found flipped over.
Surveyed brk elevation

- From 6/17/14 to today
 $\Delta SG = 1.97 - 1.90 = 0.07$
 $\Delta WSE = 304.45 - 304.37 = 0.08$ ✓

FluxTracker Q-Unit = 43.34 cts
 → Fits well on rating curve

- Backup unit removed before 1630

- Main unit removed @ 1505
 - Decommissioned site, removed
 still well and loggers

Main Unit # 2023213

9520 Readings, battery 100%

Log Time: 6:01:00 Comp. Time: 6:00:53
 Stopped, downloaded, saved, returned to WA.

Backup # 2023487

9521 Readings, battery 100%

Log time 6:04:30 Comp. time 6:05:31
 Stopped, downloaded, saved, return to WA

(15)

BIRCH CREEK 9/24/14

- Photo log = 0341 - SG @ arrival
 342 - overturned backup
 343 - " " location
 344 - Q-TR looking U/S
 345 - Q-TR looking D/S
 346 - " " " (right)
 347 - " " " (left)
 348 - " " "
 349 - Site after SG removal

SHEEP CREEK 9/24/14

Visited site briefly. Many
 fishermen, decided to go
 upstream Birch instead and
 do Sheep on 9/25/14 AM

Photo = 340 = SG @ 1530
 SG = 1.78

(6)

SHEEP CREEK 9/25/14

	IN	OUT
Time	0910	1130
SG	1.75'	1.74'

- Backup tube may have shifted
- Experienced cartilage cake in middle of level-loop. Surprisingly still closed just fine
- FlowTrak Q-mount Q=317.5 cfs
 → RWP should = 1.0', but tape is broken @ end and we had RWP=2.0'

- Backup unit removed @ 1035
 Unit # 2033821 100% battery
 Downloaded 9787 logs. Saved, stopped
 Computer time: 1039 AM
 Logger time: 10:40:11 AM
 Future start for 10:45 AM. In water @ 1044

- Main unit # 2023480 removed @ 1052 AM
 Downloaded 9788 logs, saved, stopped
 Logger time: 10:54:52 Computer time: 1057 AM
 Future start @ 11:15 AM, In water:

(17)

SHEEP CREEK		Control	Survey	9/25/14	
STA	BS	HI	FS	EL	
Bm1	5.23	105.23		100.00	
Bm2			4.08	101.15	
Bm3			9.19	96.04	
Backup WSE			11.68	93.55	
Backup tube			14.22	91.01	
Top Wood			9.39	95.84	
Top staff			10.07	95.16	
WSE Staff			11.67	93.56	
Top main tube		12.82	13.82	91.11	92.41
Main WSE			11.67	93.56	
ADEG RM#1			9.62	95.61	High point
Rock (P)			10.86	94.37	
Rock (P)	10.62	104.99		94.37	
ADEG RM#1			9.37	95.62	EARTH QUAKE
Main tube			12.57	92.42	✓
Main tube WSE			11.43	93.56	✓
Staff WSE			11.45	93.54	✓
Top staff plank			9.84	95.15	✓
Top wood			9.15	95.84	✓
Bm2			3.84	101.15	✓
Bm1			4.99	100.00	✓
Bm3			8.96	96.03	✓
Backup WSE			11.47	93.52	✓
Backup tube			13.98	91.01	✓

(19)

Sheep Creek		9/25/14			
STA	BS	HI	FS	EL	
- From 7/31/14 to today					
$\Delta WSE = 93.63 - 93.56 = 0.7$					
$\Delta SG = 1.72 - 1.75/74 = -0.4$					
STA	BS	HI	FS	EL	
Bm1		104.99	4.99		
- after re-install					
Backup WSE			11.44	93.55	✓
Backup tube			14.09	90.9	
Bm3			8.95	96.04	✓
Top staff plank			9.84	95.15	✓
Staff WSE			11.42	93.57	✓ same as main unit
Main tube			13.00	91.99	
ADEG RM#1			9.38	95.61	✓
Photo log: 359 - Q-TR R → L					
360 - " " Looking D/S					
361 - SG					
362 - SG and main unit deployed					
363 - Backup unit					

(19)

SU e DESHKA 9/25/15

	IN	OUT	Mr. Tadenam
Time	1245	1330	M. Cognor
SG	-0.60	-0.60	

Control Survey

STA	BS	HI	FS	EL
BM1	3.96	81.79		77.83
BM2			5.16	76.63
Top tube			8.85	72.94
Top wood			9.00	72.79
Top staff			9.68	72.11
WSE			12.59	69.20
Force post			9.59	72.20
Force post	9.29	81.49		72.20
WSE			12.29	69.20 ✓
Top staff			9.37	72.12 ✓
Top wood			8.70	72.79 ✓
Top tube			8.55	72.94 ✓
BM2			4.86	76.63 ✓
BM1			3.66	77.83 ✓

From 7/21/14 to today

$$\Delta SG = 1.02 - (-0.60) = 1.62 \text{ down}$$

$$\Delta WSE = 69.79 - 69.20 = 0.59 \text{ down}$$

(20)

SUC DESHKA 9/25/14

- Logger was hung high and dry. Between June and July visit, well got silted in and when redeployed in the still well the logger had to be hung higher - Now it appears the silt has been washed out and logger hung dry.

- Unit # 2023493 downloaded 9614 logs

Computer time = 15:25

Levittagger time = 15:25:34

Demmed @ 1315, in air

Stopped and returned to Redmond office

Photo log: 364 - SG

365 - SG with stadia rod @ bottom of river

366 - SG with stadia rod lined

up so that 1' SG = 2' stadia rod

367 - after removal

(20)

DESHKA RIVER 9/25/14

Time IN = 1350 OUT =

Control Survey

STA	BS	HT	FS	EL
TTDGR	3.81	86.79		82.98
BM3			0.79	86.00
BM4			0.02	86.77
Backup WSE			9.32	77.47
Main unit WSE			9.32	77.47
Main unit tube			11.28	75.51
Rock ^(D)			8.62	78.17
Rock	8.67	86.84		78.17 ²
Main unit WSE			9.36	77.48 ✓
Main unit tube			11.34	75.50 ✓
BM3			0.83	86.01 ✓
BM4			0.06	86.78 ✓
Backup WSE			9.37	77.47 ✓
TTDGR			3.86	82.98 ✓
Q-TR WSE			9.35	77.49 ✓
— After relaunch				
Backup WSE			9.38	77.46
Backup tube			N/A	
Main unit WSE			9.37	77.47
Main unit tube			11.29	77.55

(D)

DESHKA RIVER 9/25/14

- WSE/depth high. Too deep to work. Will use jetboat to do flow measurement. For safety will do fewer stations. From C/AQC experience, velocities across channel are very consistent.

$$Q = 1145.44 \text{ cfs}!!!$$

- Main unit removed @ 1425 PM
 # 2023483 100% battery
 Downloaded 9616 logs. Sync'd time
 Computer time: 14:50
 Logger time: 14:50:32
 Future start for 1500, in water 1456

Backup unit # 2022436 100% batt
 removed @ 1459
 Downloaded 9617 logs.
 Computer time = 1504
 Logger time = 15:04:07
 Future start 1515, sync'd time

(B)

DESHKA RIVER 9/25/14

- Barologger unit # 2022079
Downloaded 9007 logs @ 1512
Speed time sync'd
Computer time = 1516
Logger time = 15:17:24
Future start @ 1530

Photo log: ³⁶⁸ Q-XS Locky upstream
369 Q-XS - R-L
370 - Mike with fluvimeter from
boat
371 - " " Locky US
372 - Backup unit
373 - Main unit
374 - Location of barologger and
main unit

(24)

9/30/14 In OFFICE Download
of Whistlers Creek
BAROLOGGER

Unit # 2034351 100% Battery
Ran from site @ 9/23/14 @ 1605.
Kept logger Taltrectra area
barometric pressure and
temp until 9/25/14 in the PM.
Unit stopped 9/30/14 @ 1426

Logger time: 1:27:30 PM
Computer time: 1:27:18 PM

10840 readings, downloaded, saved

(25)