COLORADO
Parks and Wildlife
Department of Natural Resources

Water Resources Section – Aquatic, Terrestrial, and Natural Resources Branch

January 6, 2021

Ms. Linda Bassi, Chief
Stream and Lake Protection Section
Colorado Water Conservation Board
1313 Sherman Street, Suite 721
Denver CO 80203

Subject: Instream Flow Recommendations for the North Fork Little Thompson River in Water Division 1, Larimer County to be presented at the January 2021 CWCB Meeting

Dear Ms. Bassi:

The information contained in and referred to in this letter forms the scientific and biological basis for an instream flow (ISF) recommendation on North Fork Little Thompson River in Water Division 1. The field investigations relating to this ISF recommendation were conducted by Colorado Parks and Wildlife (CPW) and Colorado Water Conservation Board (CWCB) personnel in 2019 and 2020 alongside representatives from Larimer County. Larimer County brought this stream candidate to CPW and is supportive of the proposed ISF reach. This stream reach was first presented to interested parties at the ISF Workshop in January 2017. It is the CPW staff's opinion that the information contained in this letter is sufficient for the CWCB's staff to recommend an ISF appropriation to the Board on the North Fork Little Thompson River and to specifically address the findings required in Rule 5(i) of the Instream Flow Program Rules.

CPW participates in the ISF Program and develops instream flow recommendations for the Board's consideration in an effort to address CPW's legislative declarations "… that the wildlife and their environment are to be protected, preserved, enhanced, and managed for the use, benefit, and enjoyment of the people of this state and its visitors … and that, to carry out such program and policy, there shall be a continuous operation of planning, acquisition, and development of wildlife habitats and facilities for wildlife-related opportunities" (See §33-1-101 (1) C.R.S.), and "… that the natural, scenic, scientific, and outdoor recreation areas … be protected, preserved, enhanced and managed for the use, benefit, and enjoyment of the people of this state and (its) visitors … and that, to carry out such program and policy, there shall be a continuous operation of acquisition, development, and management of … lands, waters, and facilities." (See §33-10-101 (1) C.R.S.).

In addition to these broad statutory guidelines, CPW's current strategic planning document (CPW Strategic Plan, 2015) explains current agency goals to, "[c]onserve wildlife and habitat to ensure healthy sustainable populations and ecosystems." In order to, "protect and enhance water resources for fish and wildlife populations," by pursuing, "partnerships and agreements to enhance instream flows, protect reservoir levels, and influence water management activities," and to, "[a]dvocate for water quality and quantities to conserve aquatic resources." In addition to the CPW strategic plan, the agency's fish and wildlife conservation activities are also directed by the State Wildlife Action Plan (2002, Revised 2015). The goals and priorities from these documents direct CPW to advocate for the preservation of the state's fish and wildlife resources and natural environment, and therefore link CPW's mission to the goals and priorities of CWCB's ISF/NLL Program.

Recommended Segments

CPW is proposing an ISF recommendation on the North Fork Little Thompson River from its confluence with Hells Canyon Creek (located at UTM 13T 473126 4465681) to the confluence with the Little Thompson River (UTM 13S 474370 4461361). The reach is approximately 3.75 miles in length. Seventy percent of the proposed reach is on lands under a conservation easement managed as part of Larimer County's Open Lands program. This recommendation is a continuation of efforts by CPW to work collaboratively with Larimer County to secure ISF protection for streams valuable to the County which are adjacent to properties under conservation easement.

Natural Environment and Biological Summary

North Fork Little Thompson River is a tributary of the Little Thompson River located west of Carter Lake Reservoir in the foothills northwest of Lyons. The hydrology in North Fork Little Thompson River is dominated by snowmelt runoff from lower elevation snow reserves. The creek typically peaks in early spring. Through the proposed reach, observed flow ceases in early to mid-summer as the water table recedes. Streamflow has been observed again in mid to late-summer and early-fall periods resulting from sporadic significant rainfall events. On average, North Fork Little Thompson River receives approximately 19 inches of precipitation a year.

The proposed reach of North Fork Little Thompson River supports a riparian zone that includes well-established cottonwood, narrow-leaf willow, and peachleaf willow. The upland contributing basin is comprised of ponderosa pine, mountain mahogany, and sage brush. North Fork Little Thompson River is a second to third order stream through the proposed reach. The channel is mainly single thread with substrate that ranges from sand to boulder with exposed bedrock in parts of the reach. The channel was significantly altered in the 2013 floods and bank degradation is evident. The proposed reach has a mixture of riffles, runs, glides, and pools, containing suitable fish habitat with large woody debris contributions. Large pools created by bedrock features and woody debris allow the resident fish reprieve during long periods of little to no streamflow from North Fork Little Thompson and its tributaries. In 2020, CPW conducted a fishery survey indicating the stream and its tributaries support rainbow trout, creek chub, and longnose sucker. Abundant riparian vegetation provides shading and cover, supporting thermal regime for cold-

water species as streamflow ceases. Macroinvertebrates were noted in the field in 2019 and 2020, including two species of caddisfly, mayfly, diptera, and black worms.

Initial Biological Flow Recommendation

Initial biological instream flow recommendations were developed using the R2Cross methodology (Espegren, 1996). R2Cross uses field data that has been collected in riffle habitat type. The field data collection includes a survey of stream channel geometry, a longitudinal slope of the water surface, and a streamflow measurement. This data is used by R2Cross to model three hydraulic parameters; average depth, average velocity, and percent wetted perimeter. Maintaining these hydraulic parameters at adequate levels across riffle habitat types will also maintain aquatic habitat in pools and runs for most life stages of fish. Flow recommendations are developed based on the flows that meet two of the three hydraulic criteria and three of the three hydraulic criteria as described in Nehring (1979) and Espergren (1996).

In 2019 and 2020, CPW, CWCB, and Larimer County collected three cross-sectional data sets on the North Fork Little Thompson River. The results of the R2Cross analysis are summarized below.

	Bankfull Top Width	**Date Measured**	**Q measured (cfs)**	**Accuracy Range 40 - 250%**	**Flow Meeting Two Criteria (cfs)**	**Flow Meeting Three Criteria (cfs)**
1	33 ft	5/29/2019	10.8	4.3 – 26.9	4.42	Out of range
2	34 ft	5/29/2019	11.6	4.6 – 29.0	Out of range	11.95
3	48 ft	4/28/2020	14.0	5.6 – 35.1	12.49	16.34
Averaged Cross Section Results					**8.5**	**14.2**

The initial biological recommendation is 14.2 cfs during the high flow period. The proposed reach of North Fork Little Thompson River has been observed to exhibit intermittent streamflow, but supports healthy riparian, fish, and macroinvertebrate communities. Therefore, CPW does not recommend a baseflow rate outside of the spring to early-summer period. The initial biological summer flow recommendation of 14.2 cfs maintains average velocities, depths, and at least 50 percent wetted perimeter of the stream channel.

Water Availability Analysis

In order to make a preliminary determination whether water is available for the R2Cross-based flow recommendations and to determine the appropriate seasonal transition dates, CPW examined basic hydrologic data and water rights information for the North Fork Little Thompson River basin. The North Fork Little Thompson River does not have any gage data other than the temporary gage installed by CWCB staff in 2017. In 2018, the gage was moved to a more stable location. 2018 was an exceptionally dry year, so in analyzing hydrology, CPW relied heavily on gage records from 2019 and 2020. Because of this limited period of record, CPW and CWCB staff also used the nearby DWR gage “Little Thompson River at Canyon Mouth near Berthoud” to determine appropriate seasonal transition dates.

CPW is not aware of any water rights in the proposed reach. Above the proposed reach, substantial transbasin imports are used by the Bureau of Reclamation at the Pole Hill Canal Power

Plant. Sporadically, this imported water is released down the North Fork Little Thompson River and then re-diverted above the proposed ISF reach at the Pole Hill Canal diversion dam structure. This operation is to bypass the power plant during power outages and times of routine maintenance. The Pole Hill Canal diversion dam structure has known cracks, allowing a small portion of this water to leak past the structure to the proposed reach of the North Fork Little Thompson River.

Biological Flow Recommendation

A detailed water availability analysis by the CWCB indicates the initial biological recommendation will need to be reduced for water availability. Based on the records at both the CWCB and DWR gages, the following flow rates are recommended to preserve the natural environment to a reasonable degree:

- Summer High Flow Recommendation: 5.0 cfs (April 25 through June 10)
    - Although this flow rate will not maintain velocities of 1 foot per second, it will provide adequate wetted perimeter and depth to support fish passage during the spring to early summer, enabling larger-bodied trout to move to pools for the remainder of the year. Because the stream supports trout approximately 6" and smaller, as well as smaller-bodied native species, average depth greater than approximately 0.2 feet should be sufficient in this case.
- Receding Limb Flow Recommendation: 2.0 cfs (June 11 through June 30)
    - This flow rate will allow protection during the receding limb of the hydrograph after the high flow period. This will allow fish to continue to move to larger pools as streamflow recedes after the snowmelt runoff. Average depths between 0.15 to 0.25 feet over the surveyed cross-sections will facilitate this migration for the resident fish populations.

Conclusion

The purpose of this letter is to formally transmit this ISF recommendation to CWCB for their Board's consideration. Based on CPW's opinion that there is a flow-dependent natural environment in North Fork Little Thompson River that can be preserved to a reasonable degree with an ISF water right in the recommended rates during the spring to early summer periods. Please refer to attachments which include; R2Cross field forms, R2Cross output, photographs, and a fishery assessment report completed by CPW in May 2020.

CPW personnel will be available at the January 2021 CWCB meeting to answer any questions that the Board might have regarding these flow recommendations. We appreciate your consideration.

Sincerely,

Katie Birch

Katie Birch
CPW Instream Flow Program Coordinator

Attachments (as stated)

North Fork of The Little Thompson River and Hells Canyon Creek Fish Assessment

Sample Date: 21 May 2020
CPW Personnel: Alex T. and Mark S.

Locations Sampled:

- **Site 1:** Lower Site North Fork Little Thompson River
  - 13T 474018.59 E, 4463765.40 N
- **Site 2:** Cabin Road Crossing North Fork Little Thompson River
  - 13T 472970.68 E, 4466186.95 N
- **Site 3:** Hells Canyon Creek
  - 13T 472724.08 E, 4465809.56 N

Fish Sampling and Habitat Observations

The lower site of the N. Fork Little Thompson river was sampled using a single LR-24 backpack shocking unit. A total of 6 Rainbow Trout were sampled at this site and ranged from 116mm - 164mm with an average of 138mm (**Table 1**). A total of 13 Creek Chub were also sampled at this location and ranged from 43mm - 185mm with an average of 92mm (**Table 1**). Discharge directly upstream of this sampling location was 1.8 CFS calculated using a Marsh Mcbirney Flow meter. Temperature measured at the site was 13.6°C, conductivity was 86.5µS and pH was 7.96. Comparatively this location had the most diverse fish habitat with a combination of riffles, runs and pools with large woody input. Diverse riparian vegetation provided mixed amounts of shade and was consistent along the stream corridor.

Site 2 was also sampled with a backpack electrofishing unit an no fish were detected at this location. Measured water temperature (18.3°C) was highest at site 2 and flows were visibly reduced when compared with site 1. The stream exhibited less variability in this stretch and consisted of longer run sections with a few medium sized pools. Riparian vegetation was not as dense along site 2 and fewer large trees were observed in the riparian zone.

North Fork of The Little Thompson River and Hells Canyon Creek Fish Assessment

Hells Canyon Creek is a tributary stream that confluences with the North Fork of the Little Thompson River downstream of site 2. Discharge was measured at 0.75 CFS on Hells Canyon Creek just upstream of the confluence. Temperature in Hells Creek was recorded as 16.7°C, conductivity was 281µS and pH was 7.98. This tributary was electrofished and both Rainbow Trout and Longnose Sucker were found in the creek upstream of the confluence. Rainbow Trout ranging from 5” to 7” were observed in the creek a half mile above the confluence. The creek quickly gained elevation up through Hells Canyon and the riparian/floodplain vegetation switched from cottonwood trees and willows to ponderosa pines trees. The stream substrate consisted of large cobbles and boulders with drops that channeled the water into a system of pools and runs with many large wood inputs. Further evaluation of natural barriers along this creek would be needed as a true natural barrier to fish passage was not observed in the section of this stream sampled.

Table 1. A table of mean, maximum and minimum sizes for fish captured at Site 1 on the North Fork of The Little Thompson River.

Site Number	Fish Species	Mean length (mm)	Maximum Length (mm)	Minimum Length (mm)
1	Rainbow Trout	138	164	116
1	Creek Chub	92	185	43

Population Estimations

Population estimations were calculated at Site #1 using a three-pass removal method. The population estimations were calculated using RStudio and the FSA package using the Leslie method with Ricker modification.

In Site 1 there was an estimated 107.2 Rainbow Trout per mile and 440.5 Creek Chub per mile of stream. These numbers would be subject to variation throughout the stream on the property due to differences in flow, temperature and quality/diversity of habitat.

North Fork of The Little Thompson River
and Hells Canyon Creek Fish Assessment

Site Pictures

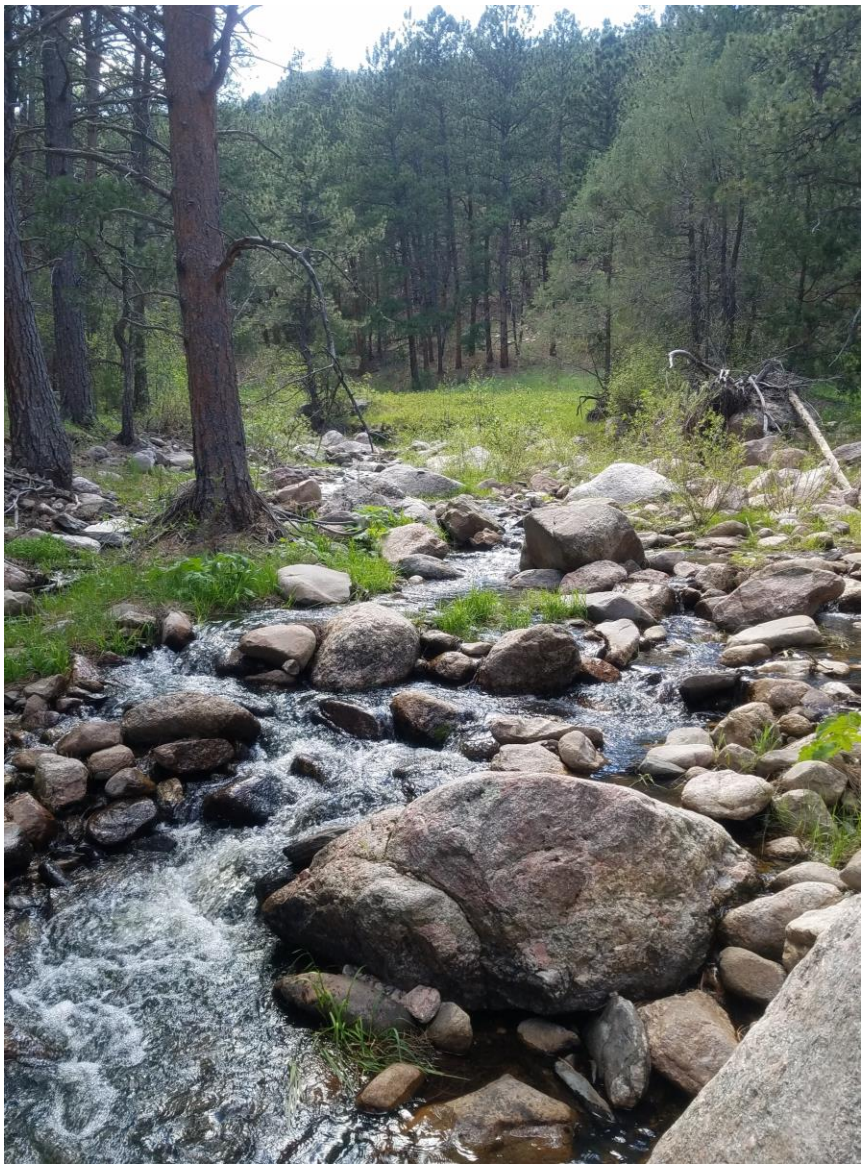
Site 1

Pool in rocky canyon above site 1

From left to right: Creek Chubb, Rainbow Trout and Longnose Sucker

North Fork of The Little Thompson River
and Hells Canyon Creek Fish Assessment

Site Pictures



Hells Canyon Creek

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: NF. Little Thompson					CROSS-SECTION NO.: 1	
CROSS-SECTION LOCATION: @ Pichock Ranch						
DATE: 5/29/19	OBSERVERS: Birch, Scheel, Reiner, Wiebe					
LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:	
COUNTY:	WATERSHED:	WATER DIVISION:	DOW WATER CODE:			
MAP(S): USGS:						
USFS:						

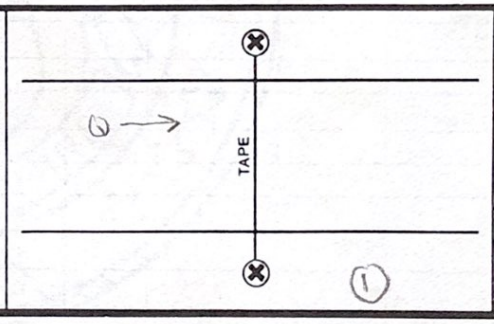
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES)/NO	METER TYPE: Marsh McB			
METER NUMBER:	DATE RATED:	CALIB/SPIN: _____ sec	TAPE WEIGHT: _____ lbs/foot	TAPE TENSION: _____ lbs
CHANNEL BED MATERIAL SIZE RANGE:	PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS:		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	~
⊗ Tape @ Stake RB	0.0	~
① WS @ Tape LB/RB	0.0	4.91 / 4.94
② WS Upstream		4.75
③ WS Downstream		4.97
SLOPE	0.22 / 72' = 0.0031	

SKETCH



LEGEND:
Stake ⊗
Station ①
Photo ①→
Direction of Flow ← →

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: _____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL
caddis																	

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

COMMENTS

murky water, recent precip.

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: N. Fork Little Thompson	CROSS-SECTION NO.:	DATE:	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME:

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	0		3.15								
	0.6		3.45								
	1.5		3.65								
	2.1		4.95								
GL	3.5		4.70								
	6.1		4.85								
WL	6.5		4.94	0					—		
	7.5		5.15	0.3					0.16		
	8.5		5.35	0.55					0.18		
	9.5		5.45	0.6					0.66		
	10.5		5.45	0.65					0.95		
	11.5		5.60	0.75					0.88		
	12.5		5.60	0.75					1.13		
	13.5		5.35	0.6					1.84		
	14.5		5.55	0.7					1.82		
	15.5		5.65	0.8					1.64		
	16.5		5.70	0.85					1.52		
	17.5		5.70	0.8					1.57		
	18.5		5.70	0.9					0.83		
	19.5		5.65	0.85					0.49		
	20.5		5.45	0.6					0.37		
	21.5		5.25	0.4					0.47		
	22.5		5.20	0.35					0.44		
	23.5		5.15	0.3					0.24		
	24.5		4.95	0.1					0.0		
	25.5		5.05	0.2					0.18		
	26.5		5.05	0.2					0.05		
WL	27.5		4.91	0.0					0.0		
	32.0		4.75								
	37.7		4.90								
GL	41.3		4.80								
	42.5		4.15								
	42.8		3.85								
	43.8		3.80								
TOTALS:											

End of Measurement	Time:	Gage Reading: _____ ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: North Fork Little Thompson					CROSS-SECTION NO.: 2
CROSS-SECTION LOCATION: upstream of gage					
DATE: 5/29/19	OBSERVERS: Birch, Scheel, Reiner, Wiebe, Zac (Larimer County)				
LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:
COUNTY:	WATERSHED:	WATER DIVISION:	DOW WATER CODE:		
MAP(S):	USGS:				
	USFS:				

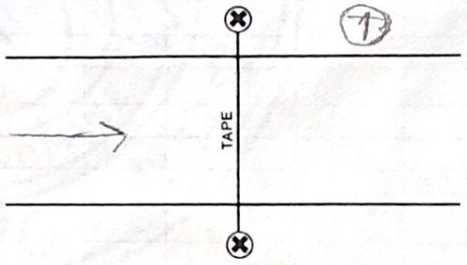
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO	METER TYPE: Marsh McB			
METER NUMBER:	DATE RATED:	CALIB/SPIN: _____ sec	TAPE WEIGHT: _____ lbs/foot	TAPE TENSION: _____ lbs
CHANNEL BED MATERIAL SIZE RANGE: Sand - boulder w/ Bed Rock ph	PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS:		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	~
⊗ Tape @ Stake RB	0.0	~
① WS @ Tape LB/RB	0.0	5.11 / 5.01
② WS Upstream	> 62 F	4.81
③ WS Downstream		5.33
SLOPE	0.52 / 62 = 0.0084	

SKETCH



LEGEND:
- Stake ⊗
- Station ①
- Photo ①→
- Direction of Flow ←→

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: _____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

COMMENTS

Hummingbird, warbler, caddisfly

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:	CROSS-SECTION NO.:	DATE:	SHEET ___ OF ___

BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME:

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	0		3.0								
GL	1.8		3.3								
	3.2		3.6								
	4.5		3.8								
	6		4.3								
WL	7		5.11	0							
	8		5.7	.4					1.34		
	9.5		5.7	.4					1.93		
	11		5.8	.5					1.72		
	12.5		5.7	.45					1.94		
	14		5.6	.4					1.6		
	15.5		5.4	.3					1.11		
	17		5.6	.4					1.56		
	18.5		5.6	.4					1.47		
	20		5.6	.5					1.6		
	21.5		5.5	.3					1		
	23		5.4	.3					1.53		
	24.5		5.3	.2					.89		
	26		5.4	.3					1.1		
	27.5		5.3	.25					1.38		
	29		5.3	.25					.43		
	30.5		5.2	.2					.29		
	32		5.1	.1					0.0		
WL	33.9		5.01	—							
	35.3		4.5	—							
GL	36.7		3.5	—							
	37.9		3.8	—							
S	39.5		2.3								
TOTALS:											

End of Measurement	Time:	Gage Reading: _____ ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: North Fork Little Thompson						CROSS-SECTION NO.: 3
CROSS-SECTION LOCATION: @ Pielock Ranch						
DATE: 4/28/20	OBSERVERS: Birch Gilbony					
LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:	
COUNTY: Larimer	WATERSHED: South Platte		WATER DIVISION: 1		DOW WATER CODE:	
MAP(S): USGS: UTM 13T 474090						
USFS: 4463619						

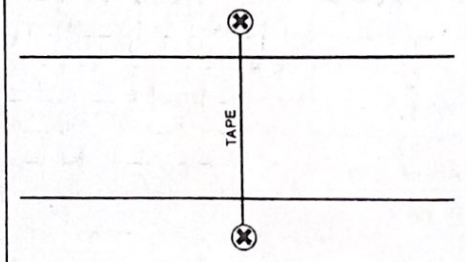
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES (NO)	METER TYPE: FlowTracker 2 by Fields-Summers in u/s glide			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE:	PHOTOGRAPHS TAKEN: (YES) NO KB	NUMBER OF PHOTOGRAPHS:		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	~
⊗ Tape @ Stake RB	0.0	~
① WS @ Tape LB/RB	0.0	5.37 / 5.40
② WS Upstream	5.17	43.5
③ WS Downstream	5.57	
SLOPE	0.4 / 43.5 = 0.0092	

SKETCH



LEGEND:
- Stake ⊗
- Station ①
- Photo ◇
- Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: ____ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL
caddisfly (2)																	
blackflies & diptera																	
mayfly																	

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

COMMENTS

Large cottonwoods & willows abundant (narrowleaf & pearchleaf)
Upland ponderosa/mountain mahagmy/sage
Multiple prairie falcon observed
Flow measured = 14.04 cfs

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: NF Little Thompson | CROSS-SECTION NO.: 3 | DATE: 4/28/20 | SHEET 2 OF 2

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: _____ ft | TIME: 11:48

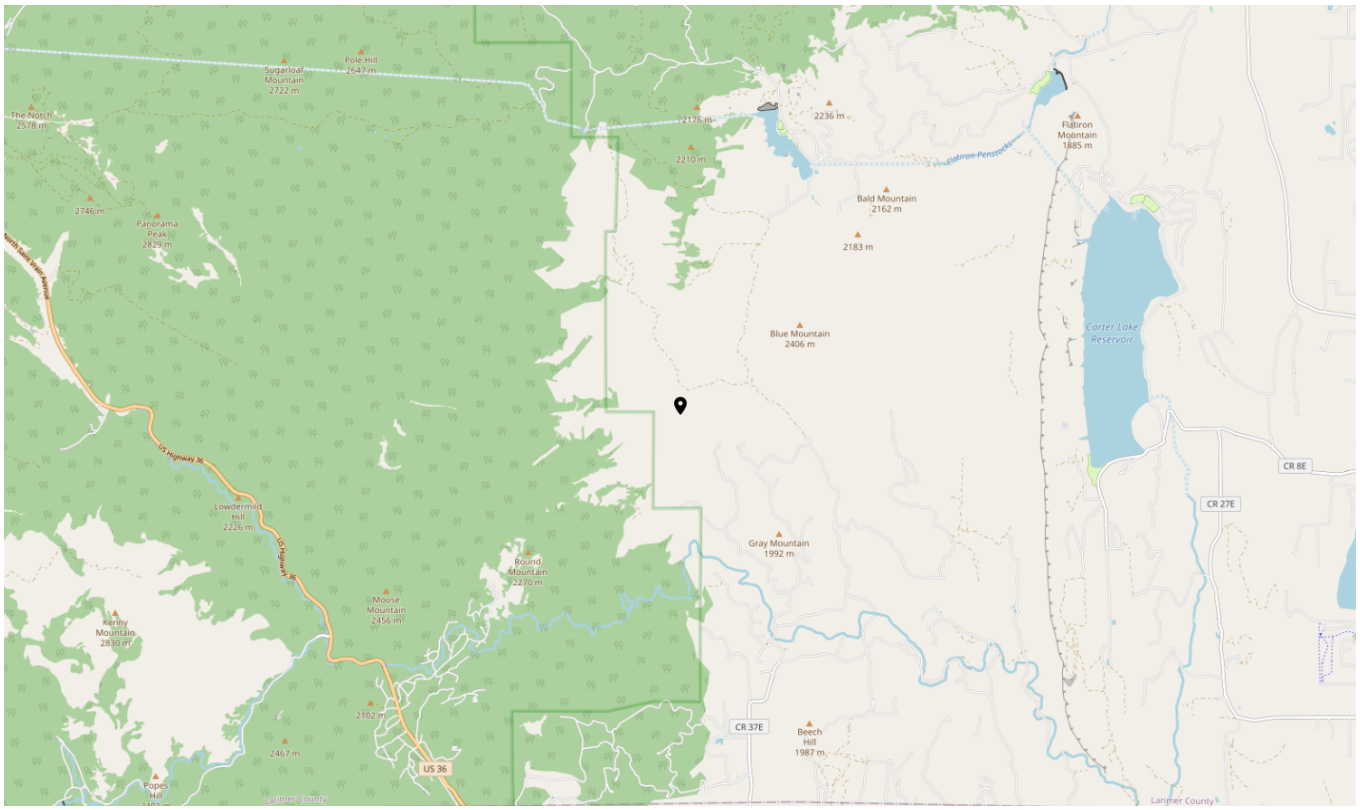
Features	Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
	S	0		4.55								
	BF	6.7		4.63								
		7.5		4.9								
	WS	13.6		5.37	Ø							
		14		5.7	0.33							
		15		5.85	0.5							
		16		5.95	0.6							
		17		5.91	0.55							
		18		5.9	0.55							
		20.5		5.85	0.5							
		22		5.78	0.45							
		23.5		5.75	0.45							
		25		5.71	0.45							
		26.5		5.85	0.55							
		28.5		5.7	0.4							
		29.5		5.73	0.38							
		31		5.85	0.6							
		32.5		5.8	0.55							
		34		5.9	0.55							
		35.5		5.85	0.53							
		37		5.85	0.5							
		38.5		5.74	0.3							
		40		5.78	0.4							
		41.5		5.6	0.25							
	WS	42		5.4	Ø							
		44.8		5.15								
		49.5		5.1								
		53.7		4.9								
	BF	55.3		4.7								
	S	56.2		4.5								
	TOTALS:											

End of Measurement | Time: 12:37 | Gage Reading: _____ ft | CALCULATIONS PERFORMED BY: | CALCULATIONS CHECKED BY:

R2Cross RESULTS

Stream Name: NF Little Thompson
Stream Locations: At Pielock Property
Fieldwork Date: 05/29/2019
Cross-section: 1
Observers: Birch, Scheel, Reiner, Wiebe, Z (Larimer County)
Coordinate System: UTM Zone 13
X (easting): 474067
Y (northing): 4463619
Date Processed: 10/06/2020
Slope: 0.0031
Computation method: Manning's n
R2Cross data filename: R2CrossData_NF-Little-Thompson-1 Q=10.75.xlsx
R2Cross version: 1.0.28

LOCATION



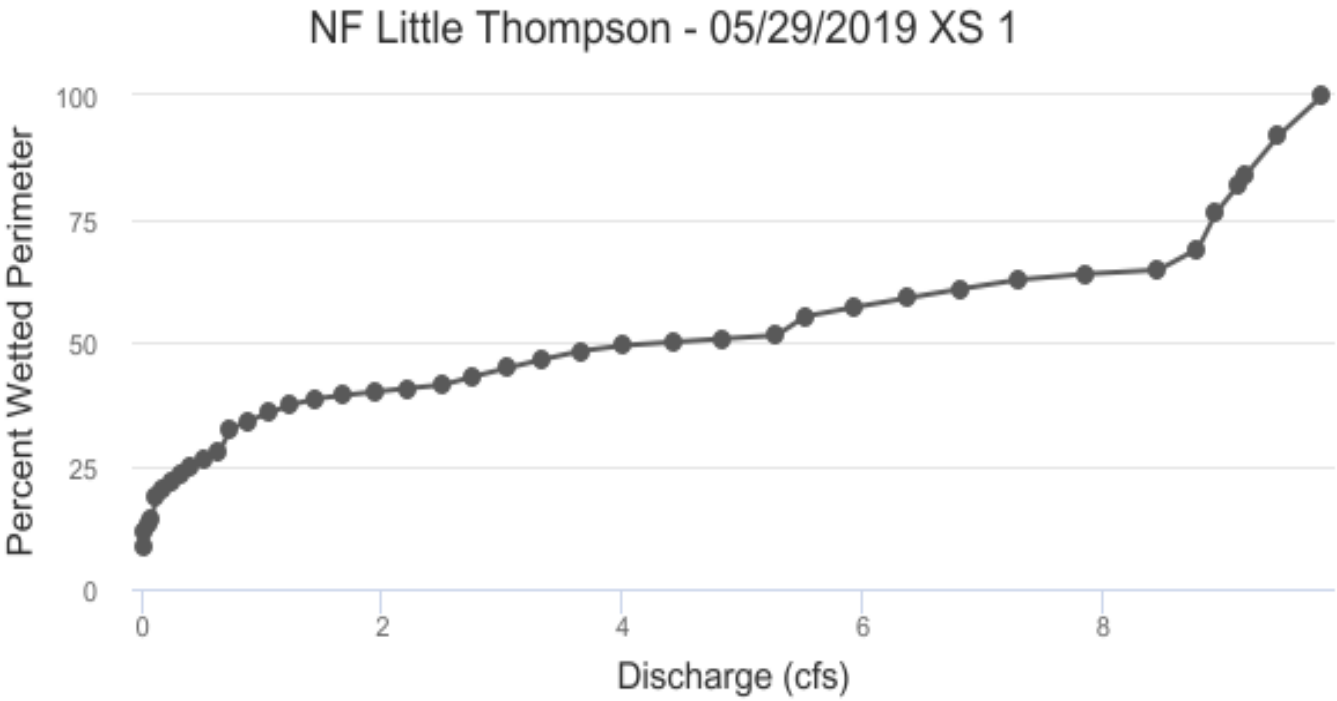
ANALYSIS RESULTS

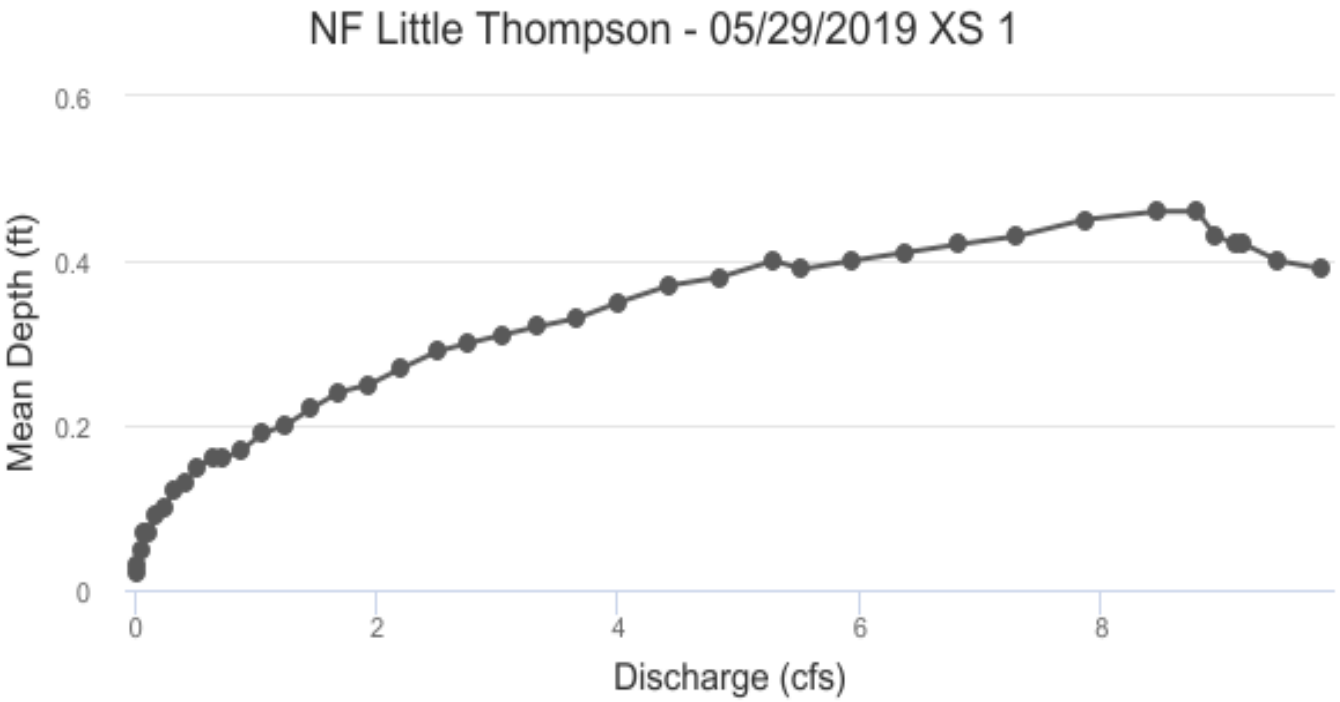
Habitat Criteria Results

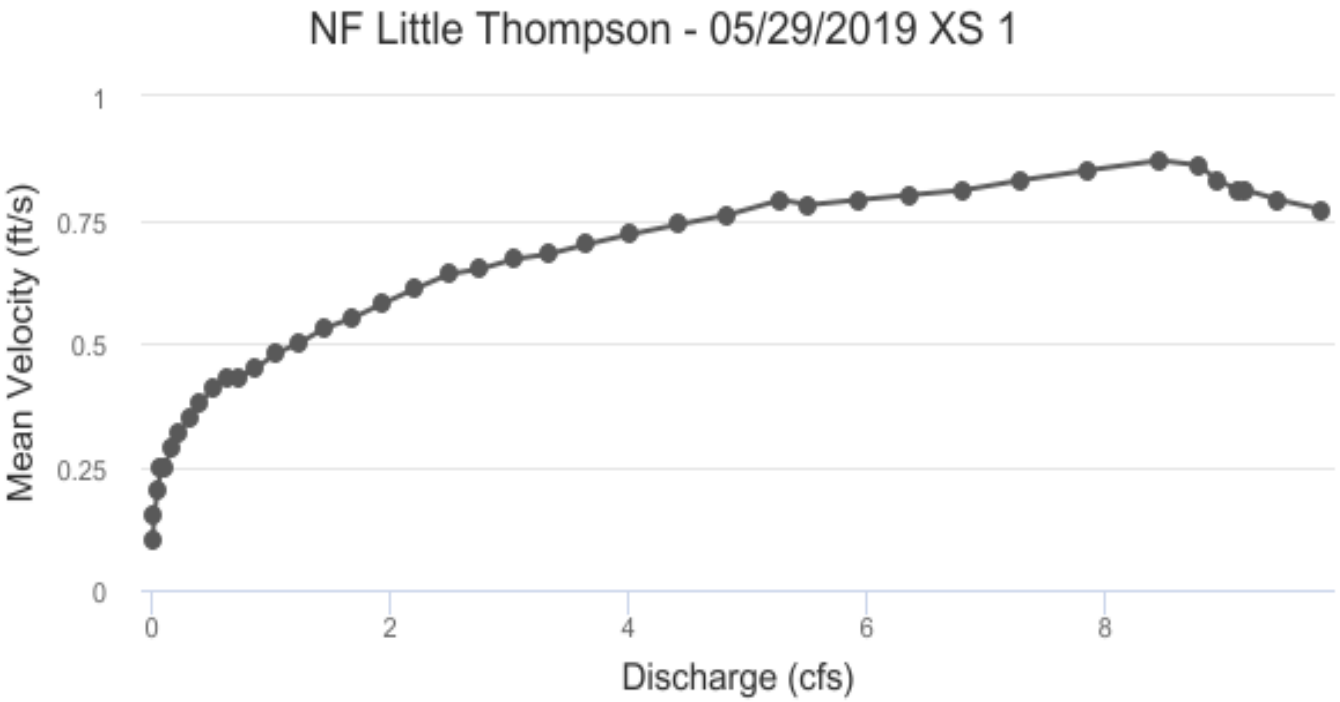
Bankfull top width (ft) = 32.76

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft) **	0.33	3.49
Percent Wetted Perimeter (%)	50.0	4.42
Mean Velocity (ft/s)	NA	NA

**Values highlighted in yellow indicate that the discharge is less than 40% of measured Q or greater than 250% of measured Q.




NF Little Thompson - 05/29/2019 XS 1
Mean Depth (ft)
0.6
0.4
0.2
0
0
2
4
6
8
Discharge (cfs)


NF Little Thompson - 05/29/2019 XS 1
Mean Velocity (ft/s)
1
0.75
0.5
0.25
0
0
2
4
6
8
Discharge (cfs)

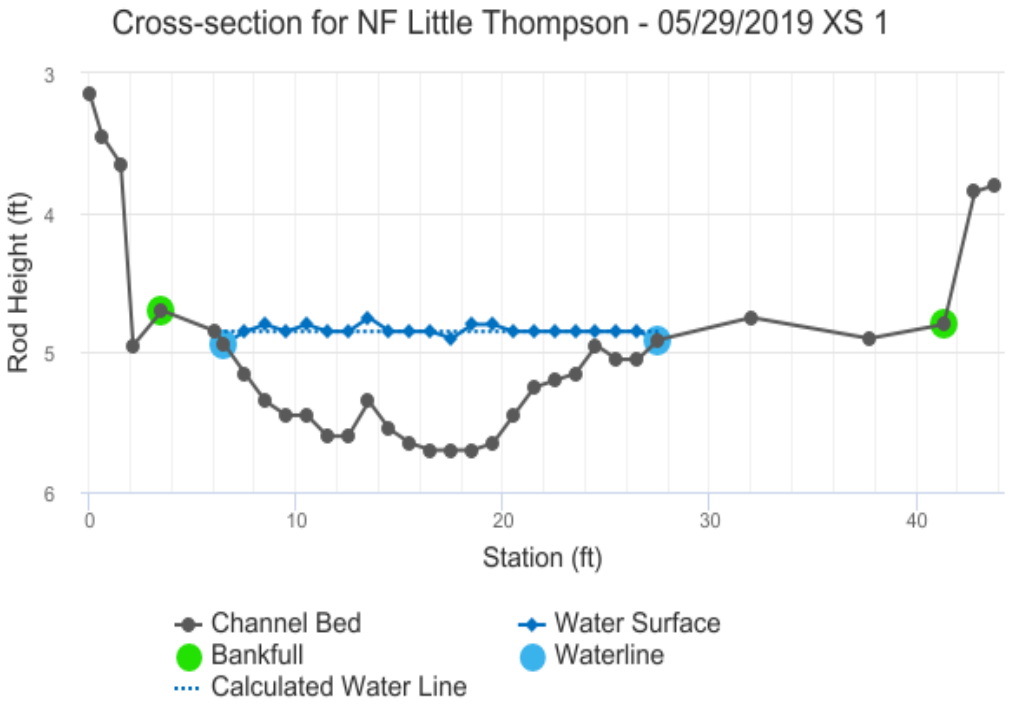
STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (SQ ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	4.8	32.76	0.39	0.9	12.72	32.97	100.00%	0.39	0.77	9.83
	4.82	30.07	0.4	0.88	12.02	30.28	91.84%	0.4	0.79	9.46
	4.84	27.38	0.42	0.85	11.37	27.59	83.68%	0.41	0.81	9.18
Waterline	4.85	26.72	0.42	0.85	11.22	26.93	81.67%	0.42	0.81	9.12
	4.87	24.92	0.43	0.83	10.78	25.12	76.21%	0.43	0.83	8.94
	4.89	22.52	0.46	0.81	10.25	22.72	68.92%	0.45	0.86	8.79
	4.91	21.1	0.46	0.79	9.76	21.3	64.61%	0.46	0.87	8.46
	4.93	20.84	0.45	0.77	9.29	21.03	63.80%	0.44	0.85	7.86
	4.96	20.46	0.43	0.74	8.83	20.65	62.64%	0.43	0.83	7.3
	4.98	19.86	0.42	0.72	8.37	20.04	60.78%	0.42	0.81	6.82
	5.0	19.25	0.41	0.7	7.93	19.43	58.92%	0.41	0.8	6.37
	5.03	18.65	0.4	0.68	7.51	18.81	57.06%	0.4	0.79	5.93
	5.05	18.04	0.39	0.65	7.09	18.2	55.21%	0.39	0.78	5.52
	5.07	16.78	0.4	0.63	6.71	16.93	51.36%	0.4	0.79	5.28
	5.09	16.56	0.38	0.61	6.34	16.71	50.68%	0.38	0.76	4.84
	5.12	16.34	0.37	0.58	5.97	16.48	50.00%	0.36	0.74	4.42
	5.14	16.12	0.35	0.56	5.6	16.26	49.32%	0.34	0.72	4.01
	5.16	15.75	0.33	0.54	5.24	15.88	48.18%	0.33	0.7	3.65
	5.18	15.19	0.32	0.52	4.89	15.32	46.47%	0.32	0.68	3.33
	5.21	14.62	0.31	0.49	4.56	14.75	44.75%	0.31	0.67	3.04
	5.23	14.06	0.3	0.47	4.24	14.19	43.04%	0.3	0.65	2.76
	5.25	13.5	0.29	0.45	3.92	13.62	41.32%	0.29	0.64	2.5
	5.27	13.28	0.27	0.43	3.62	13.39	40.63%	0.27	0.61	2.21
	5.29	13.05	0.25	0.41	3.33	13.16	39.93%	0.25	0.58	1.94
	5.32	12.82	0.24	0.38	3.04	12.94	39.23%	0.23	0.55	1.68

	5.34	12.6	0.22	0.36	2.75	12.71	38.54%	0.22	0.53	1.45
	5.36	12.2	0.2	0.34	2.47	12.3	37.31%	0.2	0.5	1.24
	5.38	11.66	0.19	0.32	2.2	11.75	35.64%	0.19	0.48	1.05
	5.41	11.12	0.17	0.29	1.95	11.2	33.98%	0.17	0.45	0.88
	5.43	10.58	0.16	0.27	1.7	10.65	32.32%	0.16	0.43	0.73
	5.45	9.05	0.16	0.25	1.47	9.11	27.64%	0.16	0.43	0.64
	5.47	8.58	0.15	0.23	1.27	8.64	26.21%	0.15	0.41	0.52
	5.5	8.12	0.13	0.2	1.09	8.17	24.77%	0.13	0.38	0.41
	5.52	7.65	0.12	0.18	0.91	7.69	23.33%	0.12	0.35	0.32
	5.54	7.19	0.1	0.16	0.74	7.22	21.90%	0.1	0.32	0.24
	5.57	6.65	0.09	0.14	0.59	6.67	20.23%	0.09	0.29	0.17
	5.59	6.07	0.07	0.11	0.44	6.09	18.46%	0.07	0.25	0.11
	5.61	4.6	0.07	0.09	0.32	4.61	13.98%	0.07	0.25	0.08
	5.63	4.26	0.05	0.07	0.22	4.27	12.94%	0.05	0.2	0.05
	5.66	3.8	0.03	0.04	0.13	3.8	11.53%	0.03	0.15	0.02
	5.68	2.9	0.02	0.02	0.06	2.9	8.80%	0.02	0.1	0.01

MODEL SUMMARY

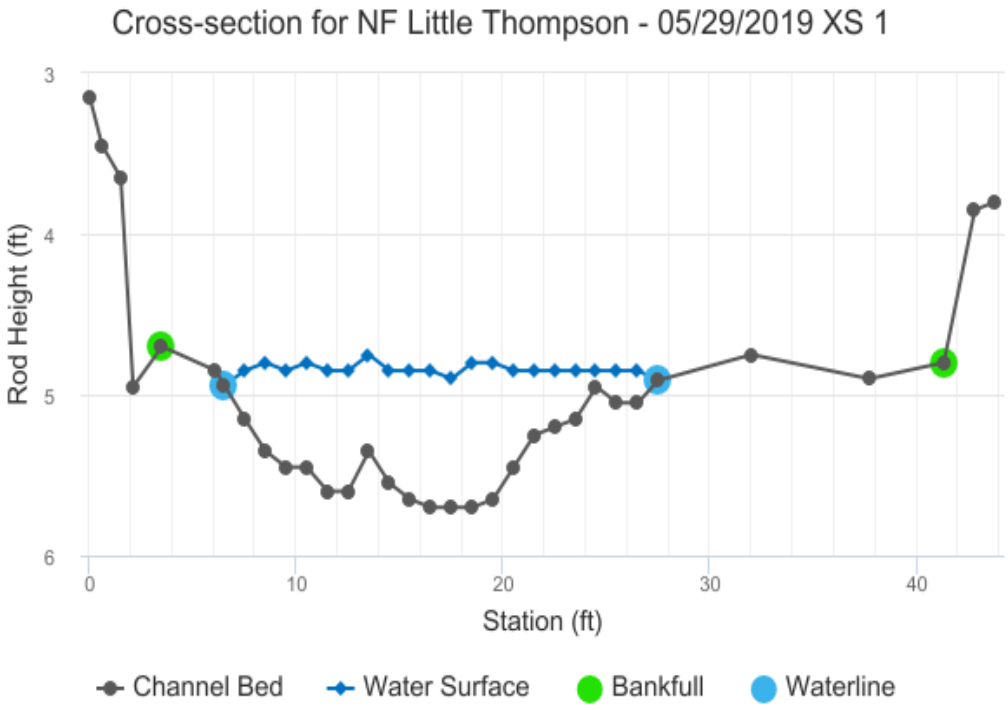
Measured Flow (Qm) =	10.75
Calculated Flow (Qc) =	9.12
(Qm-Qc)/Qm * 100 =	15.14%
Measured Waterline (WLm) =	4.92
Calculated Waterline (WLc) =	4.85
(WLm-WLc)/WLm * 100 =	1.51%
Max Measured Depth (Dm) =	0.9
Max Calculated Depth (Dc) =	0.85
(Dm-Dc)/Dm * 100 =	5.62%
Mean Velocity =	0.81
Manning's n =	0.056
0.4 * Qm =	4.3
2.5 * Qm =	26.88



FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	3.15		
	0.6	3.45		
	1.5	3.65		
	2.1	4.95		
Bankfull	3.5	4.7		
	6.1	4.85		
Waterline	6.5	4.94	0	0
	7.5	5.15	0.3	0.16
	8.5	5.35	0.55	0.18
	9.5	5.45	0.6	0.66
	10.5	5.45	0.65	0.95
	11.5	5.6	0.75	0.88
	12.5	5.6	0.75	1.13
	13.5	5.35	0.6	1.84
	14.5	5.55	0.7	1.82
	15.5	5.65	0.8	1.64
	16.5	5.7	0.85	1.52
	17.5	5.7	0.8	1.57
	18.5	5.7	0.9	0.83
	19.5	5.65	0.85	0.49
	20.5	5.45	0.6	0.37
	21.5	5.25	0.4	0.47
	22.5	5.2	0.35	0.44
	23.5	5.15	0.3	0.24
	24.5	4.95	0.1	0
	25.5	5.05	0.2	0.18
	26.5	5.05	0.2	0.05
Waterline	27.5	4.91	0	0
	32	4.75		
	37.7	4.9		

Bankfull	41.3	4.8
	42.8	3.85
	43.8	3.8



COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (SQ ft)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1.02	0.3	0.3	0.05	0.45
1.02	0.55	0.55	0.1	0.92
1	0.6	0.6	0.4	3.68
1	0.65	0.65	0.62	5.74
1.01	0.75	0.75	0.66	6.14
1	0.75	0.75	0.85	7.88
1.03	0.6	0.6	1.1	10.27
1.02	0.7	0.7	1.27	11.85
1	0.8	0.8	1.31	12.2
1	0.85	0.85	1.29	12.02
1	0.8	0.8	1.26	11.68
1	0.9	0.9	0.75	6.95
1	0.85	0.85	0.42	3.87
1.02	0.6	0.6	0.22	2.06
1.02	0.4	0.4	0.19	1.75
1	0.35	0.35	0.15	1.43
1	0.3	0.3	0.07	0.67
1.02	0.1	0.1	0	0
1	0.2	0.2	0.04	0.33
1	0.2	0.2	0.01	0.09
1.01	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

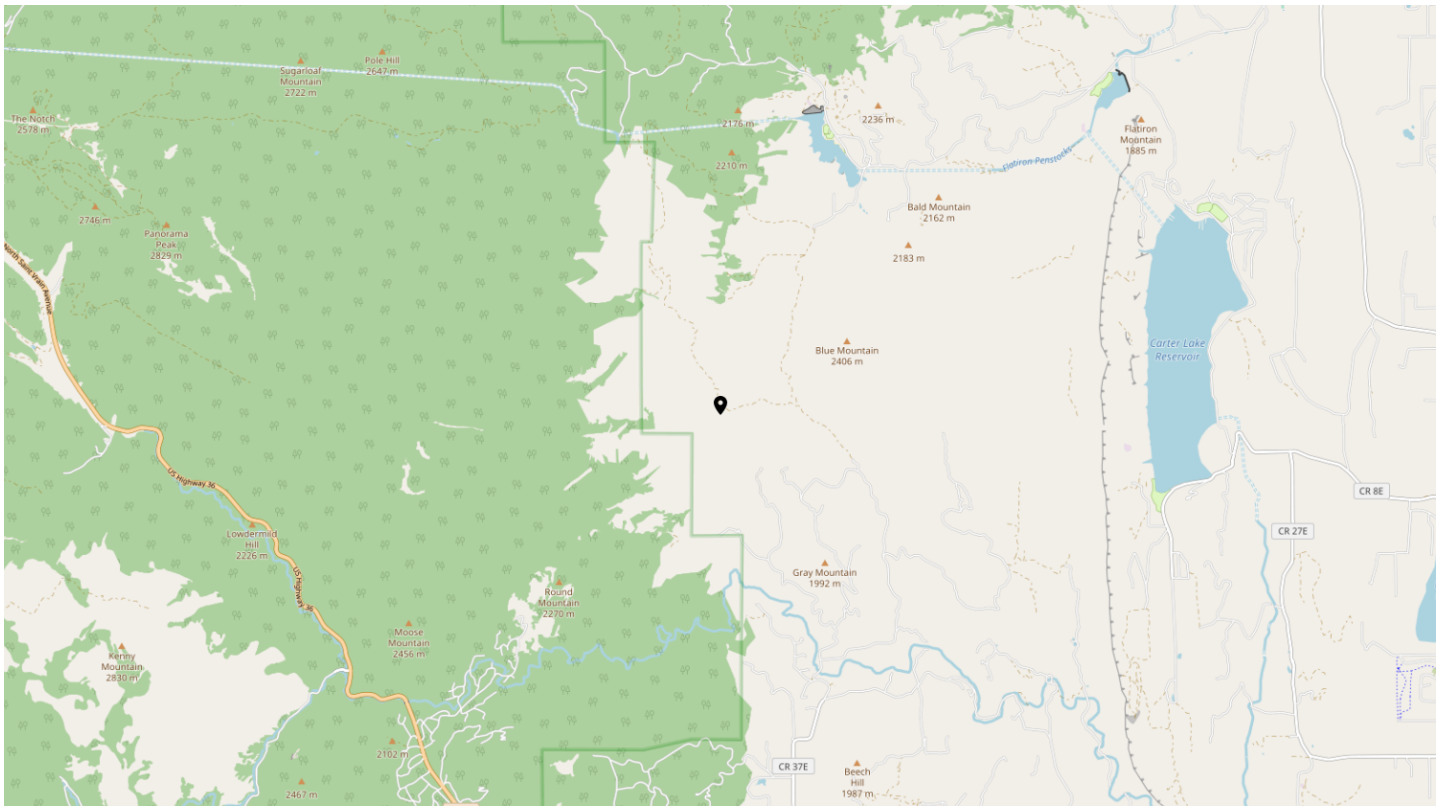
DISCLAIMER

"The Colorado Water Conservation Board makes no representations about the use of the software contained in the R2Cross platform for any purpose besides that for which it was designed. To the maximum extent permitted by applicable law, all information, modeling results, and software are provided “as is” without warranty or condition of any kind, including all implied warranties or conditions of merchantability, or fitness for a particular purpose. The user assumes all responsibility for the accuracy and suitability of this program for a specific application. In no event shall the Colorado Water Conservation Board or any state agency, official or employee be liable for any direct, indirect, punitive, incidental, special, consequential damages or any damages whatsoever including, without limitation, damages for loss of use, data, profits, or savings arising from the implementation, reliance on, or use of or inability to use the R2Cross platform.

R2Cross RESULTS

Stream Name: NF Little Thompson
Stream Locations: At Pielock Property
Fieldwork Date: 05/29/2019
Cross-section: 2
Observers: Birch, Scheel, Reiner, Wiebe, Z (Larimer County)
Coordinate System: UTM Zone 13
X (easting): 474054
Y (northing): 4463961
Date Processed: 10/06/2020
Slope: 0.0084
Computation method: Manning's n
R2Cross data filename: R2CrossData_NF-Little-Thompson-2.xlsx
R2Cross version: 1.0.28

LOCATION



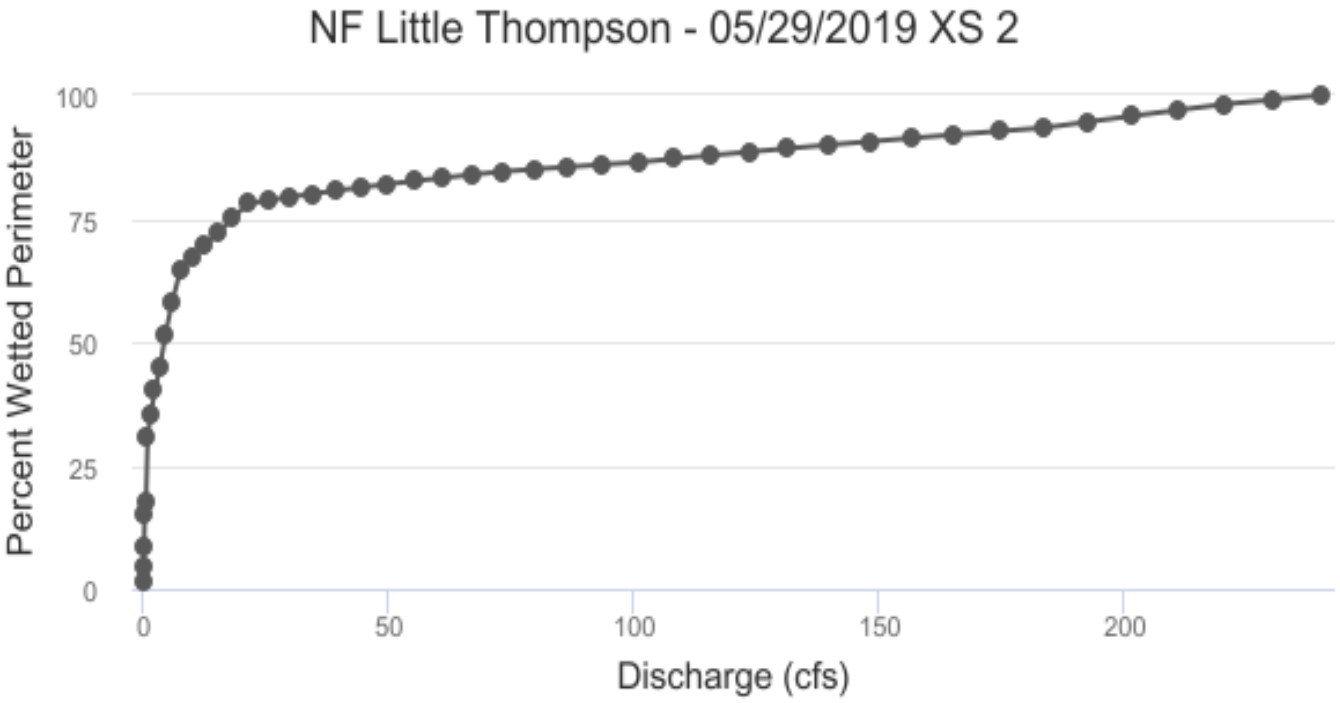
ANALYSIS RESULTS

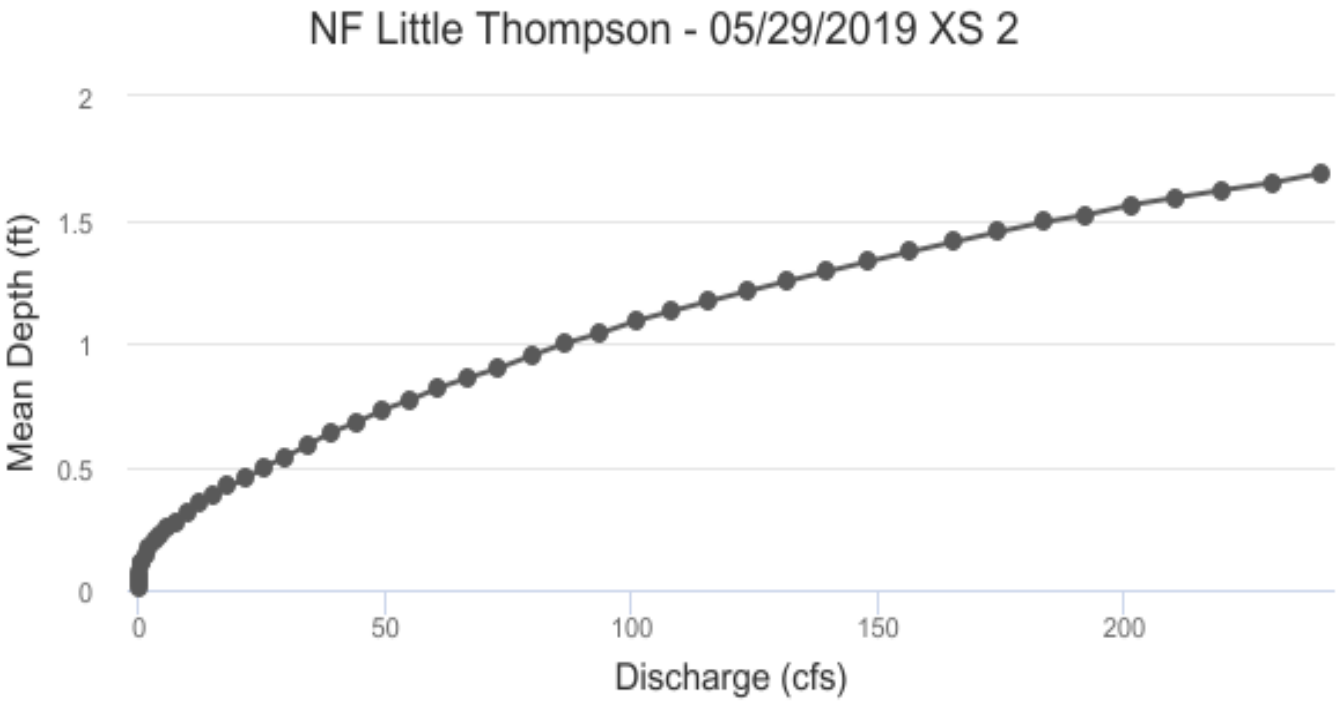
Habitat Criteria Results

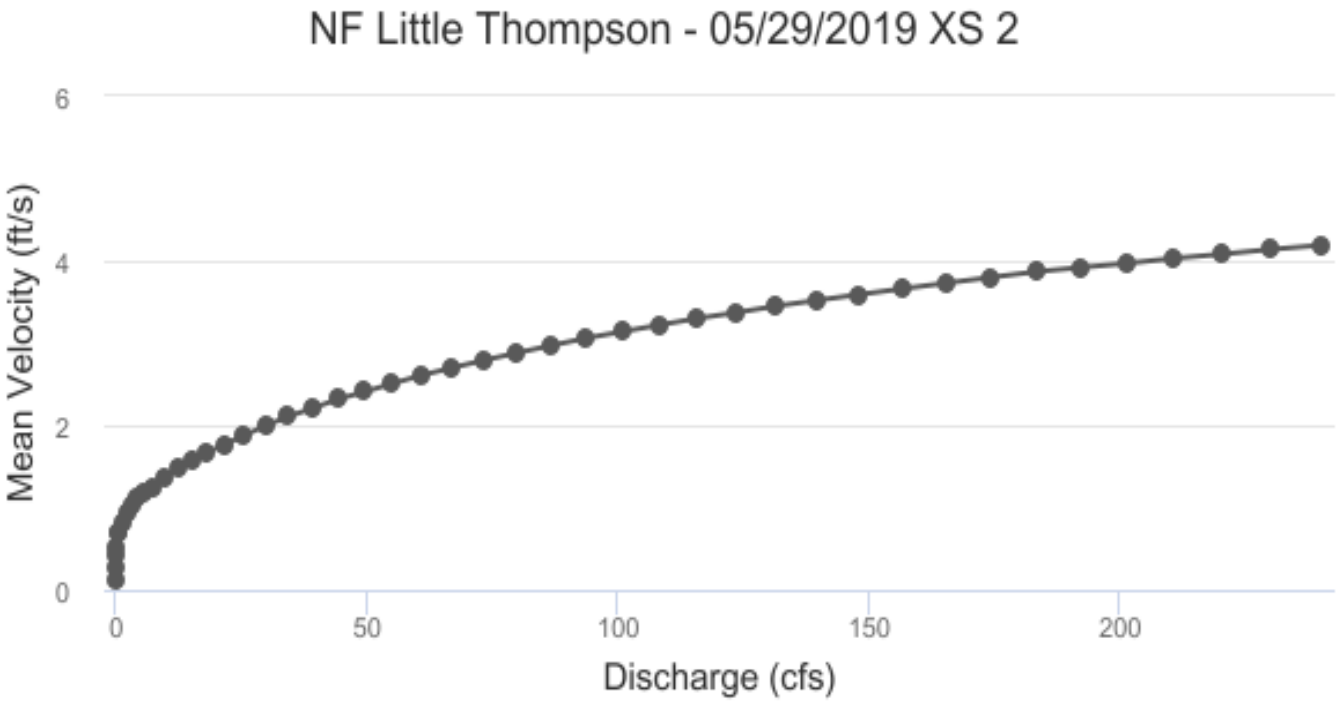
Bankfull top width (ft) = 33.97

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.34	11.95
Percent Wetted Perimeter (%) **	50.0	4.17
Mean Velocity (ft/s) **	1.0	2.91

**Values highlighted in yellow indicate that the discharge is less than 40% of measured Q or greater than 250% of measured Q.




NF Little Thompson - 05/29/2019 XS 2
Mean Depth (ft)
2
1.5
1
0.5
0
0
50
100
150
200
Discharge (cfs)


NF Little Thompson - 05/29/2019 XS 2
Mean Velocity (ft/s)
6
4
2
0
0
50
100
150
200
Discharge (cfs)

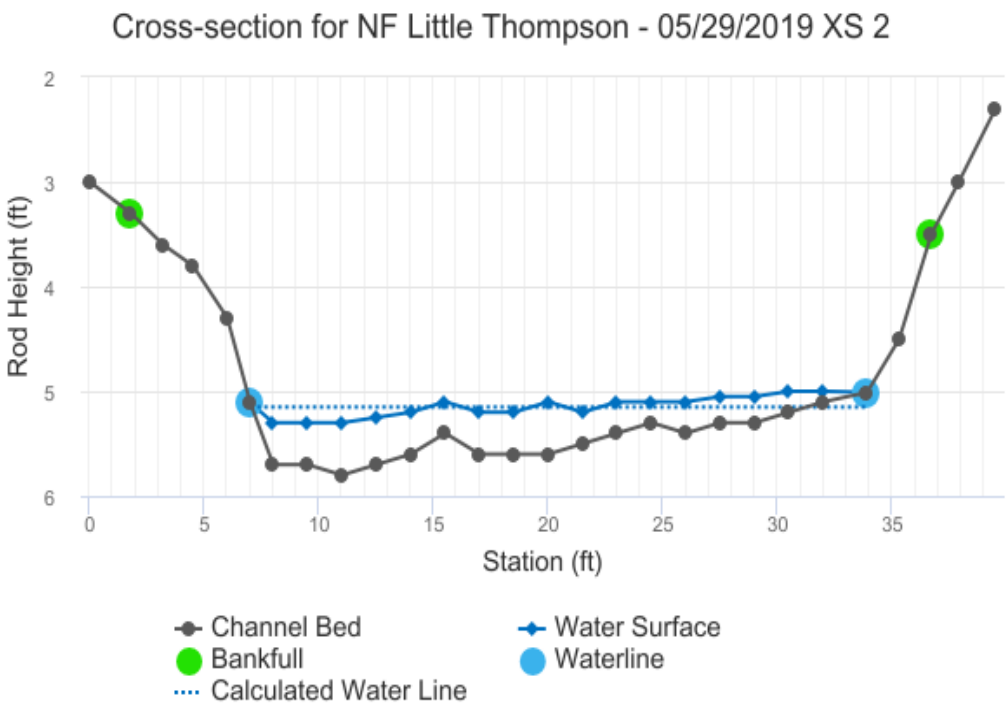
STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (SQ ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	3.5	33.97	1.69	2.3	57.33	34.99	100.00%	1.64	4.19	240.35
	3.55	33.67	1.65	2.25	55.67	34.67	99.09%	1.61	4.14	230.25
	3.6	33.37	1.62	2.2	53.99	34.35	98.16%	1.57	4.08	220.18
	3.65	32.97	1.59	2.15	52.33	33.94	96.98%	1.54	4.03	210.73
	3.7	32.58	1.56	2.1	50.69	33.52	95.79%	1.51	3.97	201.49
	3.75	32.18	1.52	2.05	49.08	33.11	94.61%	1.48	3.92	192.47
	3.8	31.78	1.49	2.0	47.48	32.69	93.41%	1.45	3.87	183.68
	3.85	31.56	1.45	1.95	45.89	32.45	92.72%	1.41	3.8	174.45
	3.9	31.34	1.41	1.9	44.32	32.2	92.02%	1.38	3.73	165.43
	3.95	31.12	1.37	1.85	42.76	31.96	91.32%	1.34	3.66	156.62
	4.0	30.9	1.33	1.8	41.21	31.71	90.62%	1.3	3.59	148.03
	4.05	30.68	1.29	1.75	39.67	31.47	89.93%	1.26	3.52	139.64
	4.1	30.46	1.25	1.7	38.14	31.22	89.23%	1.22	3.45	131.47
	4.15	30.24	1.21	1.65	36.62	30.98	88.53%	1.18	3.37	123.51
	4.2	30.02	1.17	1.6	35.11	30.74	87.83%	1.14	3.3	115.77
	4.25	29.8	1.13	1.55	33.62	30.49	87.14%	1.1	3.22	108.24
	4.3	29.58	1.09	1.5	32.13	30.25	86.43%	1.06	3.14	100.93
	4.35	29.45	1.04	1.45	30.66	30.08	85.96%	1.02	3.06	93.67
	4.4	29.32	1.0	1.4	29.19	29.92	85.49%	0.98	2.97	86.63
	4.45	29.19	0.95	1.35	27.73	29.75	85.02%	0.93	2.88	79.81
	4.5	29.06	0.9	1.3	26.27	29.59	84.55%	0.89	2.79	73.21
	4.55	28.86	0.86	1.25	24.82	29.36	83.90%	0.85	2.7	66.95
	4.6	28.66	0.82	1.2	23.38	29.13	83.26%	0.8	2.61	60.93
	4.65	28.46	0.77	1.15	21.96	28.91	82.61%	0.76	2.51	55.14
	4.7	28.26	0.73	1.1	20.54	28.68	81.97%	0.72	2.41	49.59

	4.75	28.06	0.68	1.05	19.13	28.46	81.32%	0.67	2.32	44.29
	4.8	27.86	0.64	1.0	17.73	28.23	80.68%	0.63	2.21	39.23
	4.85	27.66	0.59	0.95	16.34	28.01	80.03%	0.58	2.11	34.43
	4.9	27.46	0.54	0.9	14.97	27.78	79.39%	0.54	2.0	29.89
	4.95	27.27	0.5	0.85	13.6	27.56	78.75%	0.49	1.88	25.62
	5.0	27.07	0.45	0.8	12.24	27.33	78.10%	0.45	1.77	21.61
	5.05	26.15	0.42	0.75	10.91	26.39	75.42%	0.41	1.67	18.25
	5.1	25.03	0.38	0.7	9.63	25.25	72.16%	0.38	1.59	15.27
Waterline	5.15	24.2	0.35	0.65	8.4	24.4	69.74%	0.34	1.48	12.43
	5.2	23.36	0.31	0.6	7.21	23.55	67.31%	0.31	1.37	9.87
	5.25	22.53	0.27	0.55	6.06	22.7	64.88%	0.27	1.25	7.58
	5.3	20.22	0.25	0.5	4.95	20.38	58.24%	0.24	1.17	5.82
	5.35	17.88	0.22	0.45	4.0	18.03	51.51%	0.22	1.11	4.42
	5.4	15.53	0.2	0.4	3.16	15.66	44.75%	0.2	1.04	3.29
	5.45	13.95	0.17	0.35	2.43	14.05	40.16%	0.17	0.94	2.27
	5.5	12.37	0.14	0.3	1.77	12.45	35.57%	0.14	0.82	1.45
	5.55	10.78	0.11	0.25	1.19	10.84	30.98%	0.11	0.69	0.82
	5.6	6.18	0.11	0.2	0.69	6.22	17.78%	0.11	0.7	0.48
	5.65	5.35	0.07	0.15	0.4	5.37	15.35%	0.07	0.53	0.21
	5.7	3.03	0.05	0.1	0.15	3.03	8.66%	0.05	0.41	0.06
	5.75	1.53	0.03	0.05	0.04	1.53	4.37%	0.03	0.26	0.01
	5.79	0.45	0.01	0.01	0.0	0.45	1.29%	0.01	0.12	0.0

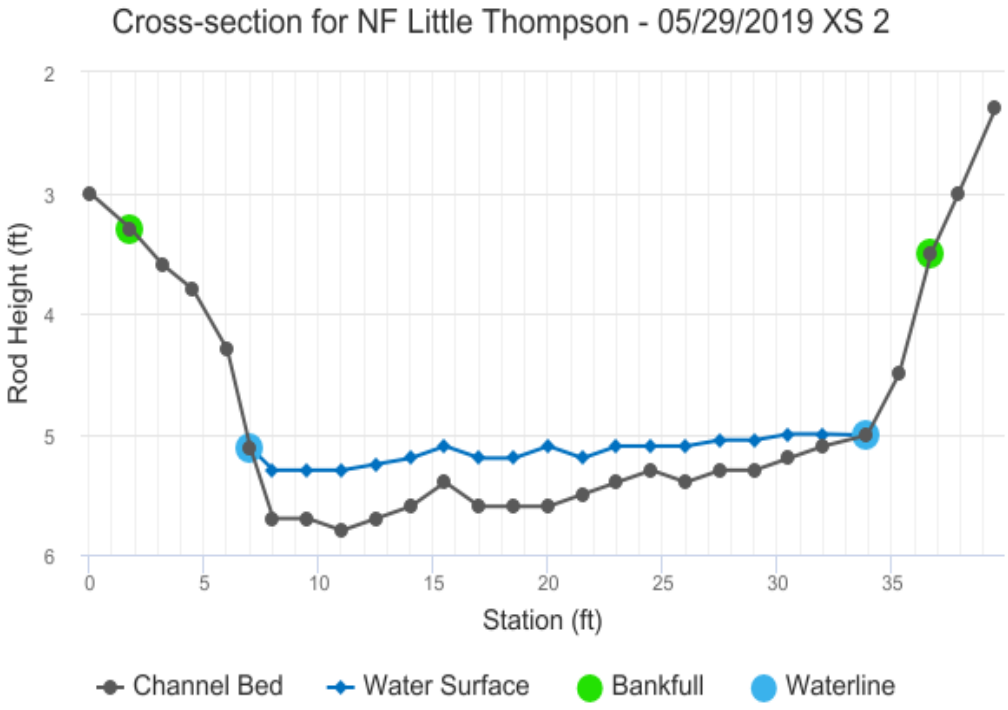
MODEL SUMMARY

Measured Flow (Qm) =	11.59
Calculated Flow (Qc) =	12.43
(Qm-Qc)/Qm * 100 =	-7.30%
Measured Waterline (WLm) =	5.06
Calculated Waterline (WLc) =	5.15
(WLm-WLc)/WLm * 100 =	-1.76%
Max Measured Depth (Dm) =	0.5
Max Calculated Depth (Dc) =	0.65
(Dm-Dc)/Dm * 100 =	-30.17%
Mean Velocity =	1.48
Manning's n =	0.045
0.4 * Qm =	4.64
2.5 * Qm =	28.97



FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	3		
Bankfull	1.8	3.3		
	3.2	3.6		
	4.5	3.8		
	6	4.3		
Waterline	7	5.11	0	0
	8	5.7	0.4	1.34
	9.5	5.7	0.4	1.93
	11	5.8	0.5	1.72
	12.5	5.7	0.45	1.94
	14	5.6	0.4	1.6
	15.5	5.4	0.3	1.11
	17	5.6	0.4	1.56
	18.5	5.6	0.4	1.47
	20	5.6	0.5	1.6
	21.5	5.5	0.3	1
	23	5.4	0.3	1.53
	24.5	5.3	0.2	0.89
	26	5.4	0.3	1.1
	27.5	5.3	0.25	1.38
	29	5.3	0.25	0.43
	30.5	5.2	0.2	0.29
	32	5.1	0.1	0.1
Waterline	33.9	5.01	0	0
	35.3	4.5		
Bankfull	36.7	3.5		
	37.9	3		
	39.5	2.3		


Cross-section for NF Little Thompson - 05/29/2019 XS 2
Rod Height (ft)
2
3
4
5
6
0
5
10
15
20
25
30
35
Station (ft)
Channel Bed
Water Surface
Bankfull
Waterline

COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (SQ ft)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1.16	0.4	0.5	0.67	5.78
1.5	0.4	0.6	1.16	9.99
1.5	0.5	0.75	1.29	11.13
1.5	0.45	0.68	1.31	11.3
1.5	0.4	0.6	0.96	8.28
1.51	0.3	0.45	0.5	4.31
1.51	0.4	0.6	0.94	8.08
1.5	0.4	0.6	0.88	7.61
1.5	0.5	0.75	1.2	10.36
1.5	0.3	0.45	0.45	3.88
1.5	0.3	0.45	0.69	5.94
1.5	0.2	0.3	0.27	2.3
1.5	0.3	0.45	0.49	4.27
1.5	0.25	0.38	0.52	4.47
1.5	0.25	0.38	0.16	1.39
1.5	0.2	0.3	0.09	0.75
1.5	0.1	0.17	0.02	0.15
1.9	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

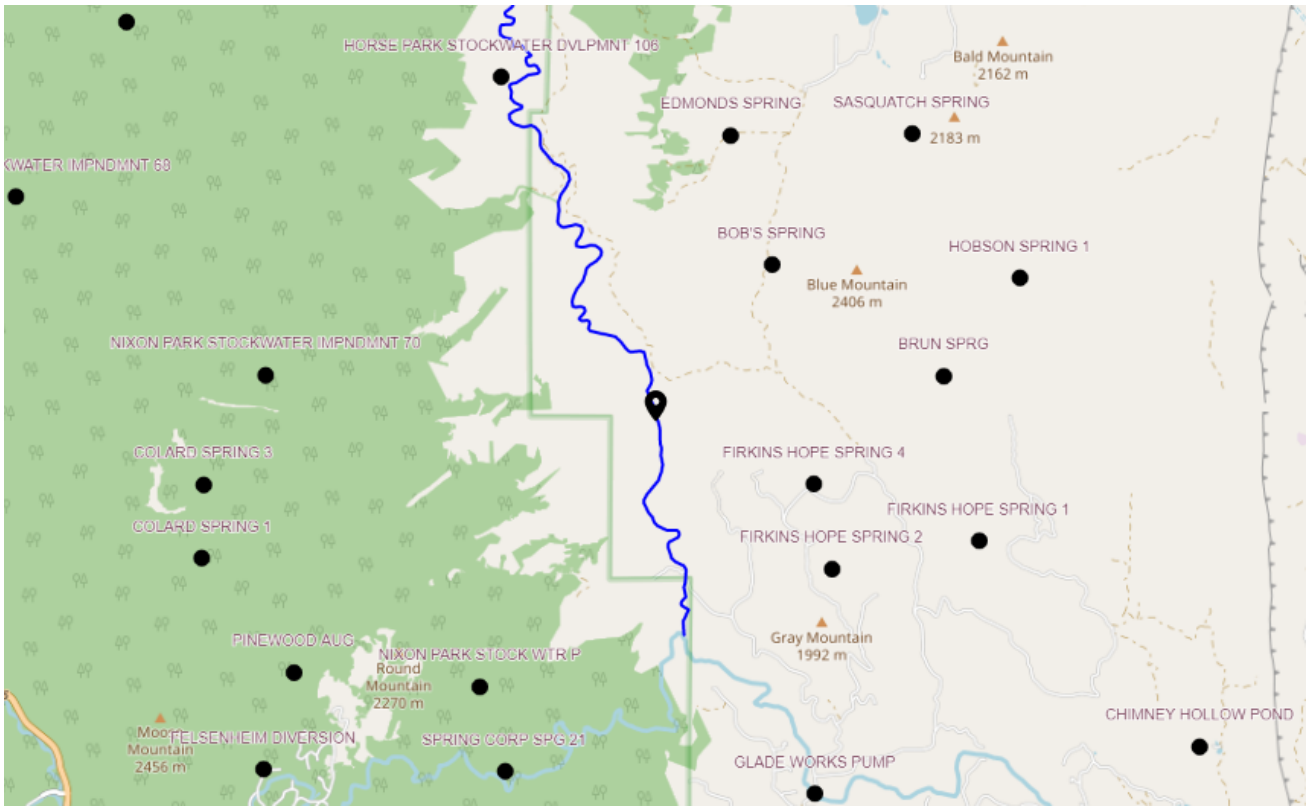
DISCLAIMER

"The Colorado Water Conservation Board makes no representations about the use of the software contained in the R2Cross platform for any purpose besides that for which it was designed. To the maximum extent permitted by applicable law, all information, modeling results, and software are provided “as is” without warranty or condition of any kind, including all implied warranties or conditions of merchantability, or fitness for a particular purpose. The user assumes all responsibility for the accuracy and suitability of this program for a specific application. In no event shall the Colorado Water Conservation Board or any state agency, official or employee be liable for any direct, indirect, punitive, incidental, special, consequential damages or any damages whatsoever including, without limitation, damages for loss of use, data, profits, or savings arising from the implementation, reliance on, or use of or inability to use the R2Cross platform.

R2Cross RESULTS

Stream Name: North Fork Little Thompson River
Stream Locations: At Pielock Property
Fieldwork Date: 04/28/2020
Cross-section: 3
Observers: Birch Gilboy Fields-Summers
Coordinate System: UTM Zone 13
X (easting): 474090
Y (northing): 4463619
Date Processed: 12/29/2020
Slope: 0.0092
Computation method: Manning's n
R2Cross data filename: R2CrossData_NF-Little-Thompson-3_04-28-2020_Q=14.04.xlsx
R2Cross version: 1.1.17

LOCATION



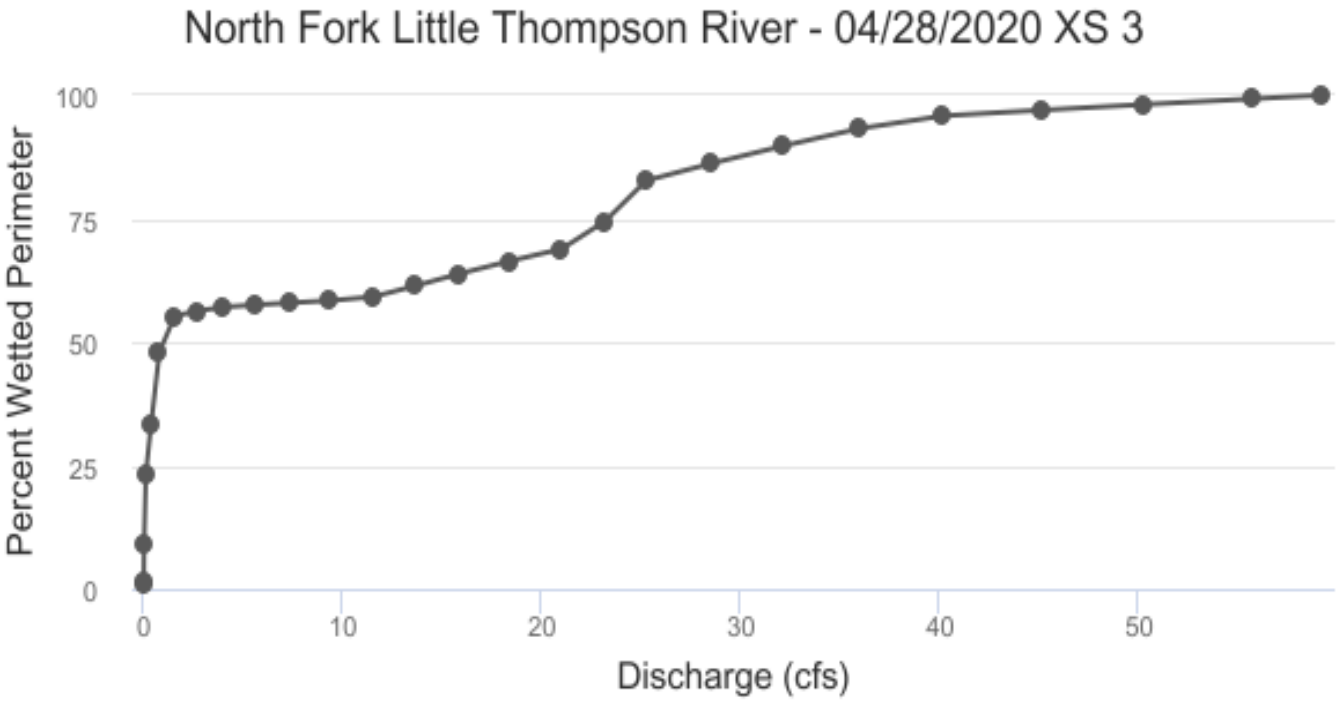
ANALYSIS RESULTS

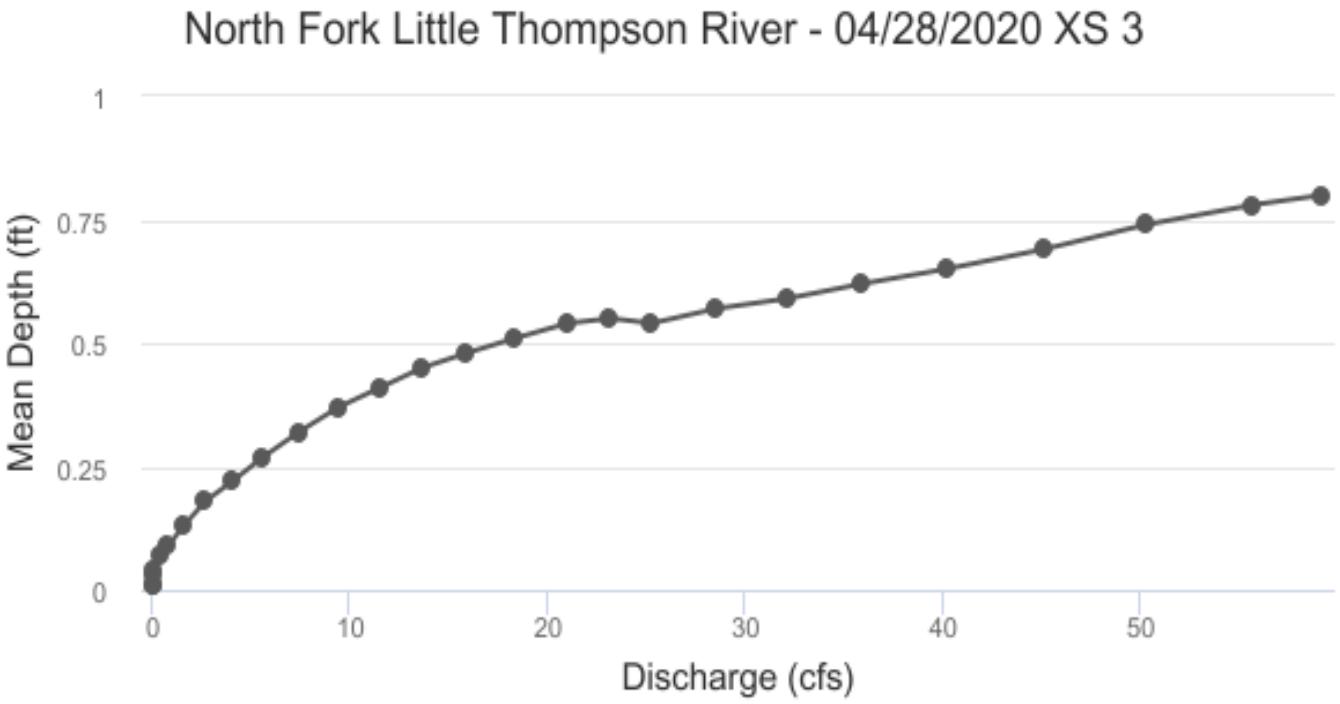
Habitat Criteria Results

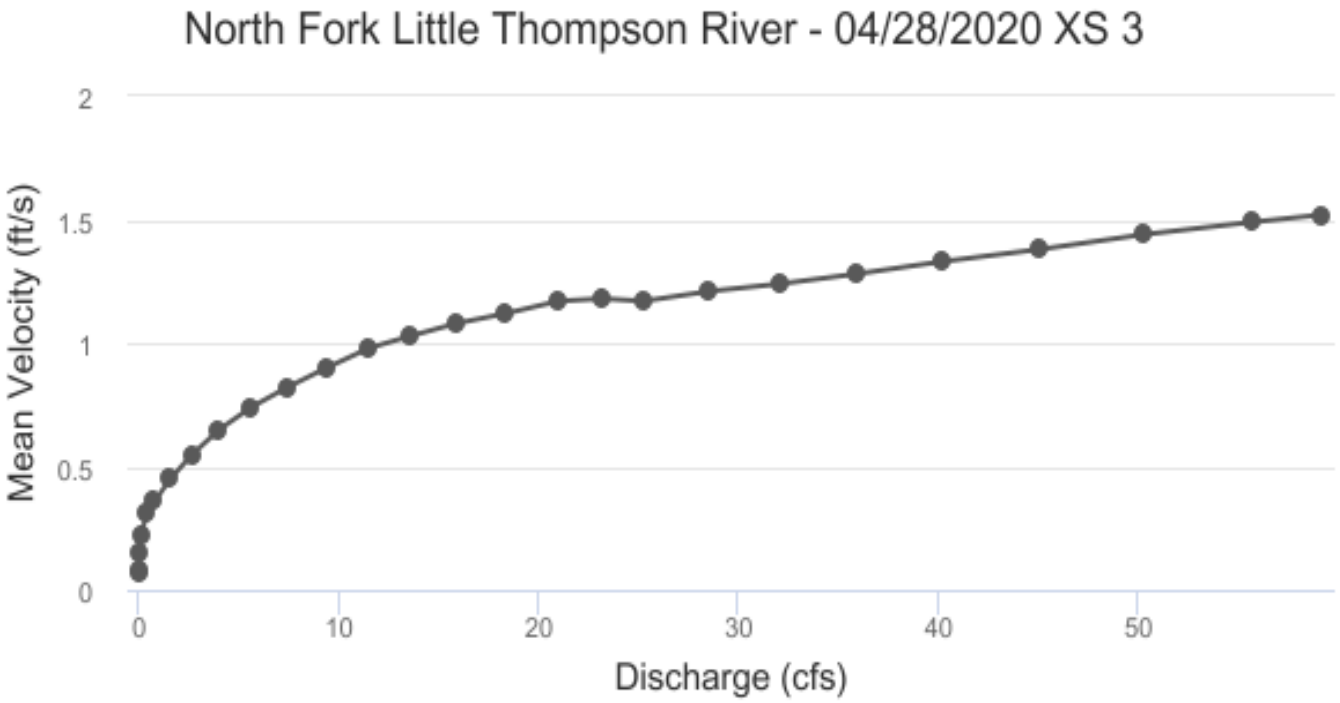
Bankfull top width (ft) = 48.39

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.48	16.34
Percent Wetted Perimeter (%) **	54.2	1.45
Mean Velocity (ft/s)	1.0	12.49

**Values highlighted in yellow indicate that the discharge is less than 40% of measured Q or greater than 250% of measured Q.







R2Cross RESULTS: North Fork Little Thompson River - 04/28/2020 XS 3, Analysis Method: [Manning's n]

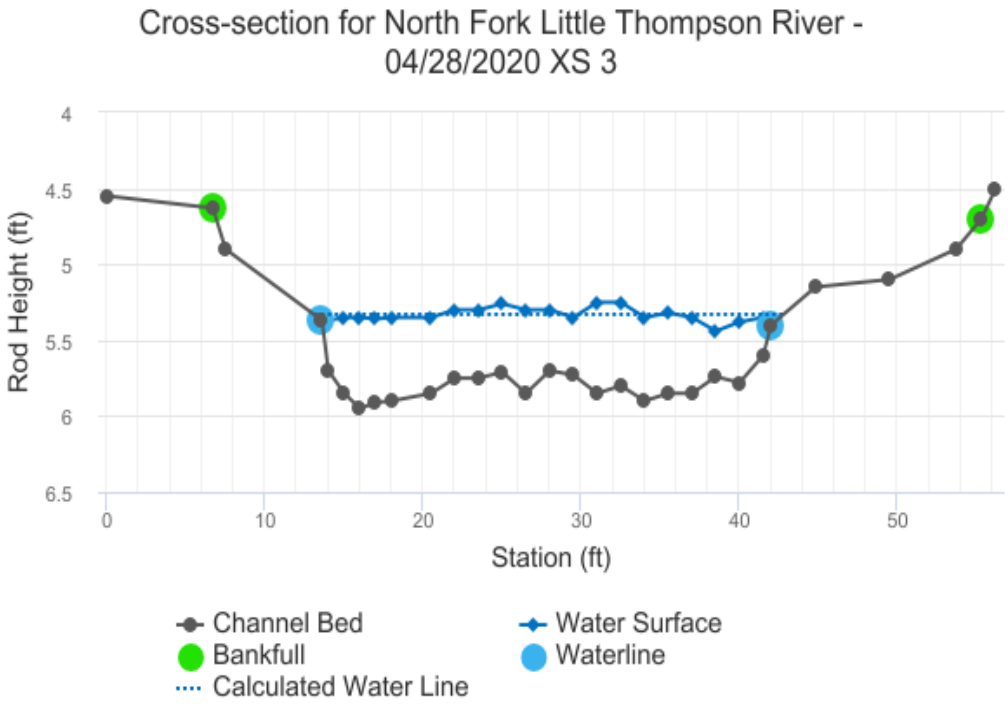
STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (SQ ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	4.7	48.39	0.8	1.25	38.9	48.69	100.00%	0.8	1.52	59.23
	4.73	48.05	0.78	1.22	37.38	48.34	99.27%	0.77	1.49	55.69
	4.78	47.5	0.74	1.17	34.99	47.78	98.13%	0.73	1.44	50.28
	4.83	46.95	0.69	1.12	32.63	47.22	96.98%	0.69	1.38	45.1
	4.88	46.4	0.65	1.07	30.29	46.66	95.83%	0.65	1.33	40.17
	4.93	45.13	0.62	1.02	28.0	45.38	93.20%	0.62	1.28	35.89
	4.98	43.43	0.59	0.97	25.78	43.68	89.70%	0.59	1.24	32.09
	5.03	41.73	0.57	0.92	23.66	41.97	86.21%	0.56	1.21	28.55
	5.08	40.03	0.54	0.87	21.61	40.27	82.71%	0.54	1.17	25.24
	5.13	36.03	0.55	0.82	19.69	36.27	74.48%	0.54	1.18	23.17
	5.18	33.29	0.54	0.77	17.98	33.53	68.86%	0.54	1.17	20.99
	5.23	32.08	0.51	0.72	16.35	32.31	66.37%	0.51	1.12	18.35
	5.28	30.87	0.48	0.67	14.77	31.1	63.88%	0.47	1.08	15.9
Waterline	5.33	29.67	0.45	0.62	13.26	29.89	61.38%	0.44	1.03	13.64
	5.38	28.59	0.41	0.57	11.8	28.81	59.16%	0.41	0.98	11.52
	5.43	28.25	0.37	0.52	10.39	28.44	58.40%	0.37	0.9	9.39
	5.48	28.06	0.32	0.47	8.98	28.22	57.96%	0.32	0.82	7.4
	5.53	27.88	0.27	0.42	7.58	28.01	57.53%	0.27	0.74	5.61
	5.58	27.69	0.22	0.37	6.19	27.8	57.09%	0.22	0.65	4.02
	5.63	27.32	0.18	0.32	4.81	27.4	56.28%	0.18	0.55	2.67
	5.68	26.84	0.13	0.27	3.46	26.91	55.26%	0.13	0.45	1.56
	5.73	23.32	0.09	0.22	2.17	23.37	47.99%	0.09	0.36	0.79
	5.78	16.19	0.07	0.17	1.2	16.22	33.31%	0.07	0.31	0.37
	5.83	11.34	0.04	0.12	0.49	11.36	23.33%	0.04	0.22	0.11
	5.88	4.44	0.03	0.07	0.11	4.44	9.12%	0.03	0.15	0.02

	5.93	0.65	0.01	0.02	0.01	0.65	1.33%	0.01	0.08	0.0
	5.93	0.52	0.01	0.01	0.0	0.53	1.08%	0.01	0.07	0.0

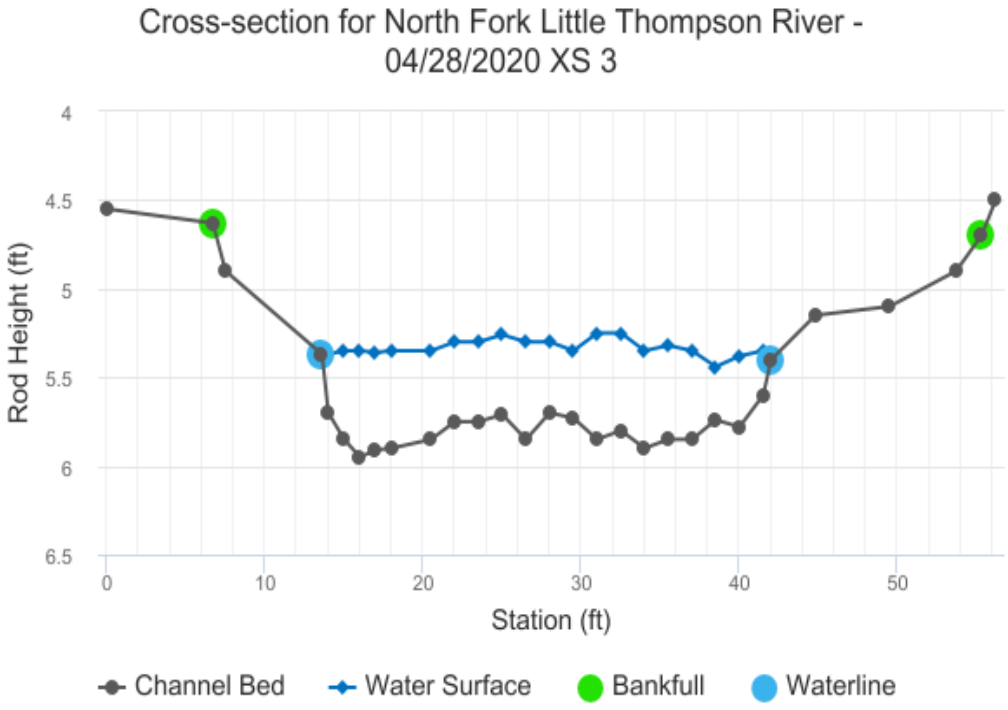
MODEL SUMMARY

Measured Flow (Qm) =	14.04
Calculated Flow (Qc) =	13.64
(Qm-Qc)/Qm * 100 =	2.85%
Measured Waterline (WLm) =	5.38
Calculated Waterline (WLc) =	5.33
(WLm-WLc)/WLm * 100 =	0.99%
Max Measured Depth (Dm) =	0.6
Max Calculated Depth (Dc) =	0.62
(Dm-Dc)/Dm * 100 =	-3.07%
Mean Velocity =	1.03
Manning's n =	0.081
0.4 * Qm =	5.62
2.5 * Qm =	35.1



FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	4.55		
Bankfull	6.7	4.63		
	7.5	4.9		
Waterline	13.6	5.37	0	
	14	5.7	0.33	
	15	5.85	0.5	
	16	5.95	0.6	
	17	5.91	0.55	
	18	5.9	0.55	
	20.5	5.85	0.5	
	22	5.75	0.45	
	23.5	5.75	0.45	
	25	5.71	0.45	
	26.5	5.85	0.55	
	28	5.7	0.4	
	29.5	5.73	0.38	
	31	5.85	0.6	
	32.5	5.8	0.55	
	34	5.9	0.55	
	35.5	5.85	0.53	
	37	5.85	0.5	
	38.5	5.74	0.3	
	40	5.78	0.4	
	41.5	5.6	0.25	
Waterline	42	5.4	0	
	44.8	5.15		
	49.5	5.1		
	53.7	4.9		
Bankfull	55.3	4.7		
	56.2	4.5		



R2Cross RESULTS: North Fork Little Thompson River - 04/28/2020 XS 3, Analysis Method: [Manning's n]

COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (SQ ft)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.52	0.33	0.23	0.24	1.74
1.01	0.5	0.5	0.53	3.77
1	0.6	0.6	0.64	4.53
1	0.55	0.55	0.58	4.15
1	0.55	0.96	1.02	7.26
2.5	0.5	1	1.06	7.54
1.5	0.45	0.68	0.71	5.09
1.5	0.45	0.68	0.71	5.09
1.5	0.45	0.68	0.71	5.09
1.51	0.55	0.82	0.87	6.22
1.51	0.4	0.6	0.64	4.53
1.5	0.38	0.57	0.6	4.3
1.5	0.6	0.9	0.95	6.79
1.5	0.55	0.82	0.87	6.22
1.5	0.55	0.82	0.87	6.22
1.5	0.53	0.8	0.84	6
1.5	0.5	0.75	0.79	5.66
1.5	0.3	0.45	0.48	3.39
1.5	0.4	0.6	0.64	4.53
1.51	0.25	0.25	0.26	1.89
0.54	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

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COLORADO
Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 718
Denver, CO 80203

North Fork Little Thompson CWCB Temporary Streamgages

North Fork Little Thompson at Van Cleve bridge near lower terminus

Location: 13N 474278 4462322

Active Time: pressure transducer 7/27/2017-3/16/2018; staff plate 7/27/2017-5/17/2018

Equipment: Onset Hobo MX2001 water level logger, staff gage

Description: The streamgage consists of a data logger and pressure transducer protected in a 2 inch PVC pipe, secured to the bank with a t-pot fence post. The pressure transducer measured water level and temperature on 15 minute intervals. A co-located staff gage was used as a secondary water level measurement device. This location did not provide a good hydraulic control and was impacted by accumulation of leaf debris in the fall and winter. Therefore the gage location was moved upstream.

COLORADO
Colorado Water
Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 718
Denver, CO 80203

North Fork Little Thompson River CWCB Temporary Streamgages

North Fork Little Thompson on Pieloch Ranch

Location: 13N 474043 4463749

Active Time: 3/22/2018

Equipment: Onset Hobo MX2001 water level logger, staff gage

Description: The streamgage consists of a data logger and pressure transducer protected in a 2 inch PVC pipe, secured to the bank with a t-pot fence post. The pressure transducer measured water level and temperature on 15 minute intervals in a large pool formed by stable boulders serving as a control. A co-located staff gage was used as a secondary water level measurement device.

Discharge Measurment Field Visit Data Report *(Filters: Name begins with North Fork Little Thompson River; Division = 1;)*

Div	Name	CWCB Case Number	Segment ID	Meas. Date	UTM	Location	Flow Amount (cfs)	Meas #	Rating	Station ID
1	North Fork Little Thompson River		18/1/A-002	07/27/2017	UTMx: 474296 UTMy: 4462325	North Fork Little Thompson River at Vancleve Bridge	0.05	1	Poor (>8%)	NFLTATVB
1	North Fork Little Thompson River		18/1/A-002	08/07/2017	UTMx: 474296 UTMy: 4462325	North Fork Little Thompson River at Vancleve Bridge	2	2	Poor (>8%)	NFLTATVB
1	North Fork Little Thompson River		18/1/A-002	09/13/2017	UTMx: 474296 UTMy: 4462325	North Fork Little Thompson River at Vancleve Bridge	0.01	3	Poor (>8%)	NFLTATVB
1	North Fork Little Thompson River		18/1/A-002	09/29/2017	UTMx: 474276 UTMy: 4462317	North Fork Little Thompson River at Vancleve Bridge	0.53	4	Poor (>8%)	NFLTAVCB
1	North Fork Little Thompson River		18/1/A-002	10/18/2017	UTMx: 474278 UTMy: 4462322	North Fork Little Thompson River at Vancleve Bridge	0.63	5	Fair (<=8%)	NFLTAVCB
1	North Fork Little Thompson River		18/1/A-002	12/06/2017	UTMx: 474278 UTMy: 4462321	North Fork Little Thompson River at Van Cleve Bridge	0.17	6	Poor(>8%)	NFLTATVB
1	North Fork Little Thompson River		18/1/A-002	03/02/2018	UTMx: 474278 UTMy: 4462322	Original gage location	0.12	7	P	NFLT Temp Gage 1
1	North Fork Little Thompson River		18/1/A-002	03/16/2018	UTMx: 474043 UTMy: 4463749	North Fork Little Thompson at Vancleve bridge temp gage near LT	0.15	9	Poor(>8%)	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	03/16/2018	UTMx: 474001 UTMy: 4462769	North Fork Little Thompson, upstream boundary of Vancleve property near LT	0.16	8	Poor(>8%)	North Fork Little Thompson
1	North Fork Little Thompson River		18/1/A-002	03/22/2018	UTMx: 474043 UTMy: 4463749	North Fork Little Thompson Jonjak property	0.17	10	Fair(8%)	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	04/23/2018	UTMx: 474043 UTMy: 4463749	North Fork Little Thompson temp gage - Pieloch Ranch	0.43	11	Fair(8%)	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	04/30/2018	UTMx: 474289 UTMy: 4462324	North Fork Little Thompson at Van Cleve bridge near LT	2.78	12	Poor(>8%)	430
1	North Fork Little Thompson River		18/1/A-002	04/15/2019	UTMx: 474043 UTMy: 4463749	North Fork Little Thompson - Peiloch Ranch	0.76	13	Fair(8%)	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	05/29/2019	UTMx: 474278 UTMy: 4462322	North Fork Little Thompson River on Peiloch Ranch	11.17	14		NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	07/15/2019	UTMx: 474278 UTMy: 4462322	North Fork Little Thompson 50ft upstream of temp gage	3.38	15	F	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	09/19/2019	UTMx: 474278 UTMy: 4462322	North Fork Little Thompson 50ft upstream of gage	0.06	16	P	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	04/28/2020	UTMx: 474278 UTMy: 4462322	Nflt 60ft downstream of gage; same as 1st meas today	14.26	18	G	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	04/28/2020	UTMx: 474278 UTMy: 4462322	North Fork Little Thompson R. 60ft downstream of gage	14.04	17	G	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	05/13/2020	UTMx: 474278 UTMy: 4462322	Nflt 60ft downstream of gage; same as 1st meas today	2.82	19	G	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	05/13/2020	UTMx: 474278 UTMy: 4462322	Nflt 60ft downstream of gage; same as 1st meas today	4.92	20	G	NFKLTTD1
1	North Fork Little Thompson River		18/1/A-002	05/19/2020	UTMx: 474278 UTMy: 4462322	North Fork Little THompson River on Peiloch Ranch	2.82	21	G	

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information

File Name	NFLTATVB.001.WAD
Start Date and Time	2017/07/27 15:06:13

Site Details

Site Name	NF LITL T AT VANCLV
Operator(s)	BRIAN EPSTEIN

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.8%	2.0%
Velocity	2.0%	14.1%
Width	0.3%	0.3%
Method	4.0%	-
# Stations	7.8%	-
Overall	**9.1%**	**14.3%**

Summary

Averaging Int.	40	# Stations	7
Start Edge	REW	Total Width	0.518
Mean SNR	19.0 dB	Total Area	0.029
Mean Temp	22.78 °C	Mean Depth	0.056
Disch. Equation	Mid-Section	Mean Velocity	0.0448
		Total Discharge	**0.0013**

Measurement Results

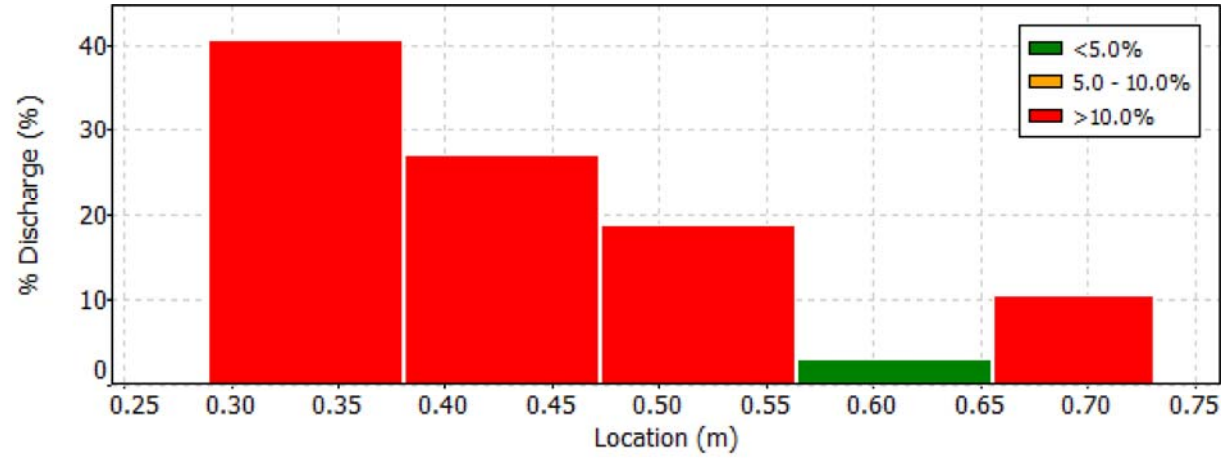
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:06	0.24	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:06	0.34	0.6	0.061	0.6	0.024	0.0954	1.00	0.0954	0.006	0.0005	40.7
2	15:07	0.43	0.6	0.067	0.6	0.027	0.0577	1.00	0.0577	0.006	0.0004	27.1
3	15:08	0.52	0.6	0.070	0.6	0.028	0.0383	1.00	0.0383	0.006	0.0002	18.8
4	*15:09*	*0.61*	*0.6*	*0.070*	*0.6*	*0.028*	*0.0062*	*1.00*	*0.0062*	*0.006*	*0.0000*	*3.0*
5	*15:11*	*0.70*	*0.6*	*0.061*	*0.6*	*0.024*	*-0.0294*	*-1.00*	*0.0294*	*0.005*	*0.0001*	*10.4*
6	15:11	0.76	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

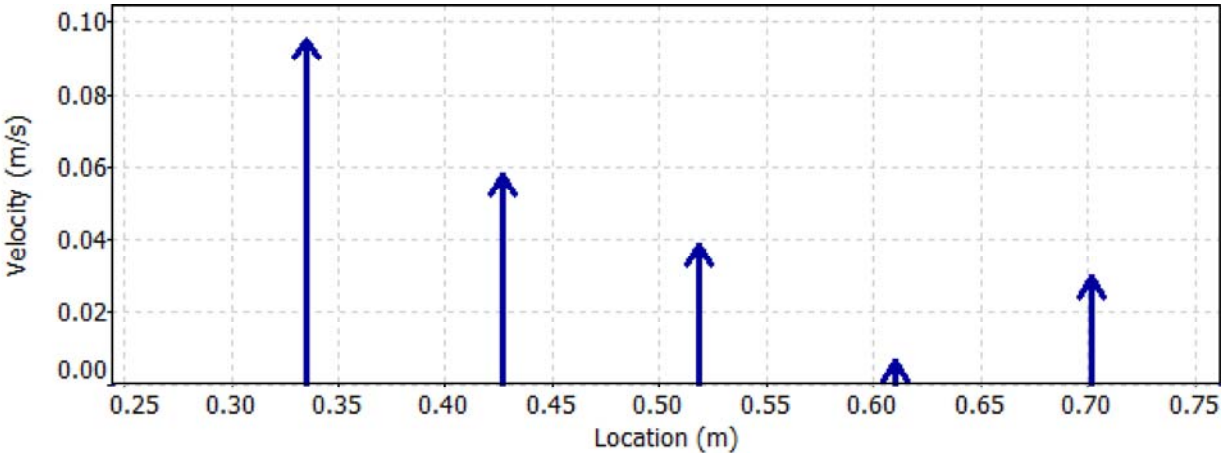
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

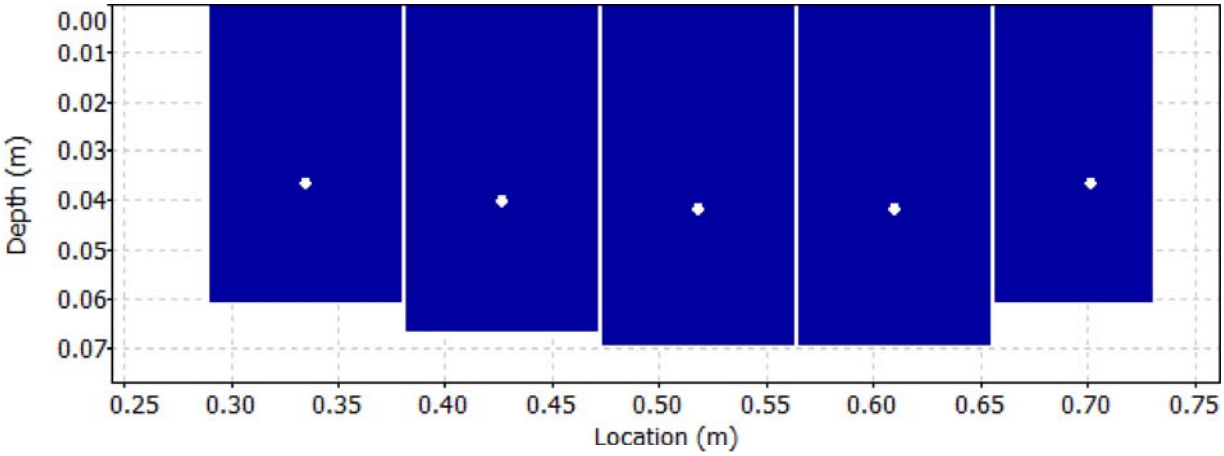
Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.001.WAD	Site Name	NF LITL T AT VANCLV
Start Date and Time	2017/07/27 15:06:13	Operator(s)	BRIAN EPSTEIN







Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.001.WAD	Site Name	NF LITL T AT VANCLV
Start Date and Time	2017/07/27 15:06:13	Operator(s)	BRIAN EPSTEIN

Quality Control

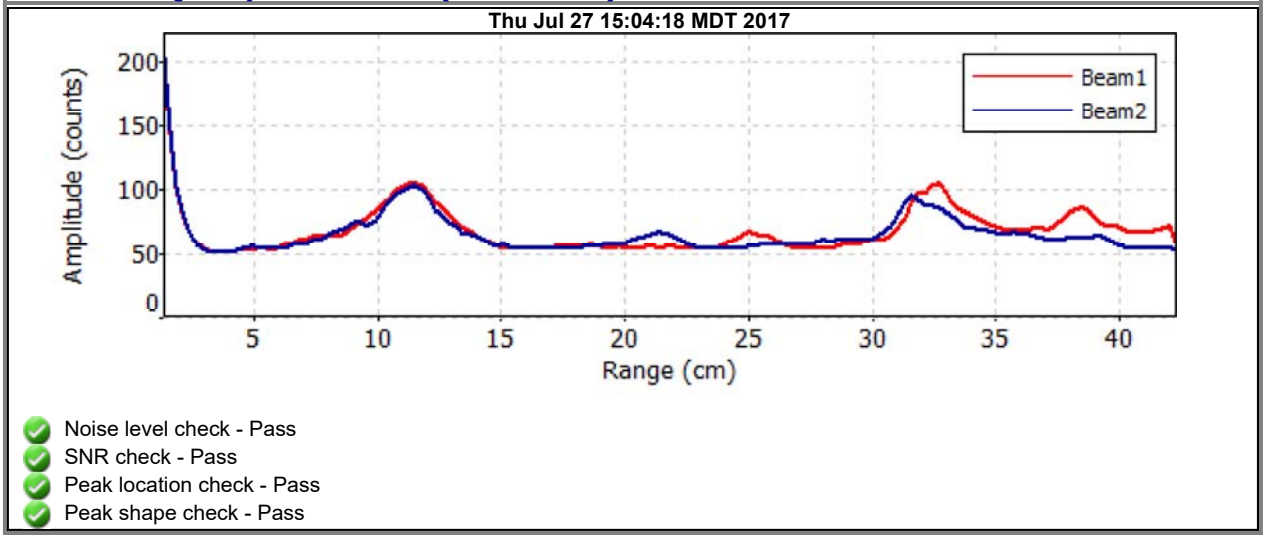
St	Loc	%Dep	Message
4	0.61	0.6	High SNR variation during measurement: 4.7,5.2
5	0.70	0.6	High angle: -179

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.001.WAD	Site Name	NF LITL T AT VANCLV
Start Date and Time	2017/07/27 15:06:13	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information

File Name	NFLTATVB.002.WAD
Start Date and Time	2017/08/07 12:01:10

Site Details

Site Name	NF LTL THMP AT VANCV
Operator(s)	BRIAN EPSTEIN

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.9%	0.0%
Velocity	0.6%	0.0%
Width	0.3%	0.3%
Method	4.4%	-
# Stations	12.2%	-
Overall	**13.0%**	**1.0%**

Summary

Averaging Int.	40	# Stations	5
Start Edge	LEW	Total Width	0.366
Mean SNR	24.7 dB	Total Area	0.021
Mean Temp	15.37 °C	Mean Depth	0.057
Disch. Equation	Mid-Section	Mean Velocity	0.1498
		Total Discharge	**0.0031**

Measurement Results

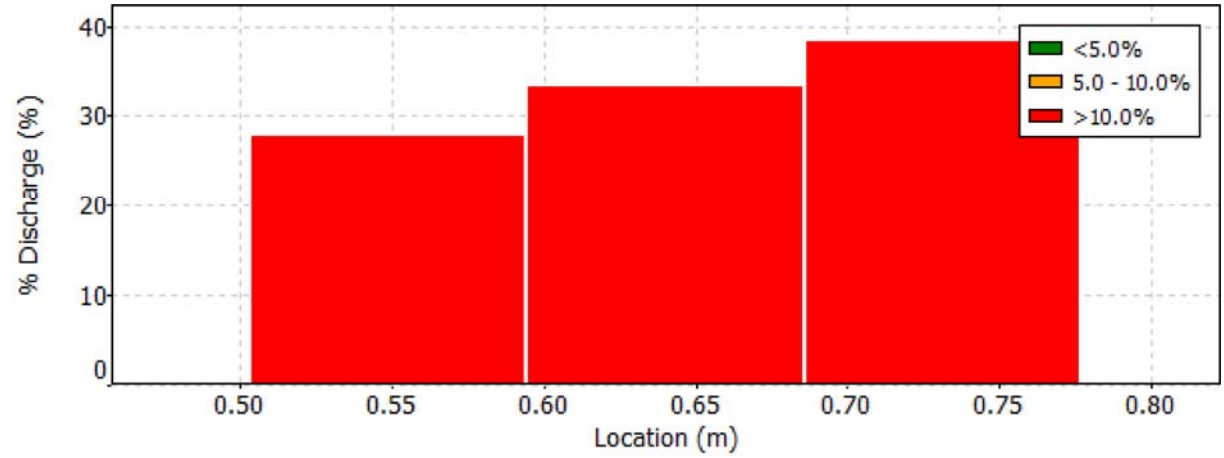
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:01	0.46	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:01	0.55	0.6	0.061	0.6	0.024	0.1568	1.00	0.1568	0.006	0.0009	27.9
2	12:02	0.64	0.6	0.085	0.6	0.034	0.1343	1.00	0.1343	0.008	0.0010	33.4
3	*12:05*	*0.73*	*0.6*	*0.082*	*0.6*	*0.033*	*-0.1608*	*-1.00*	*0.1608*	*0.008*	*0.0012*	*38.6*
4	12:05	0.82	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

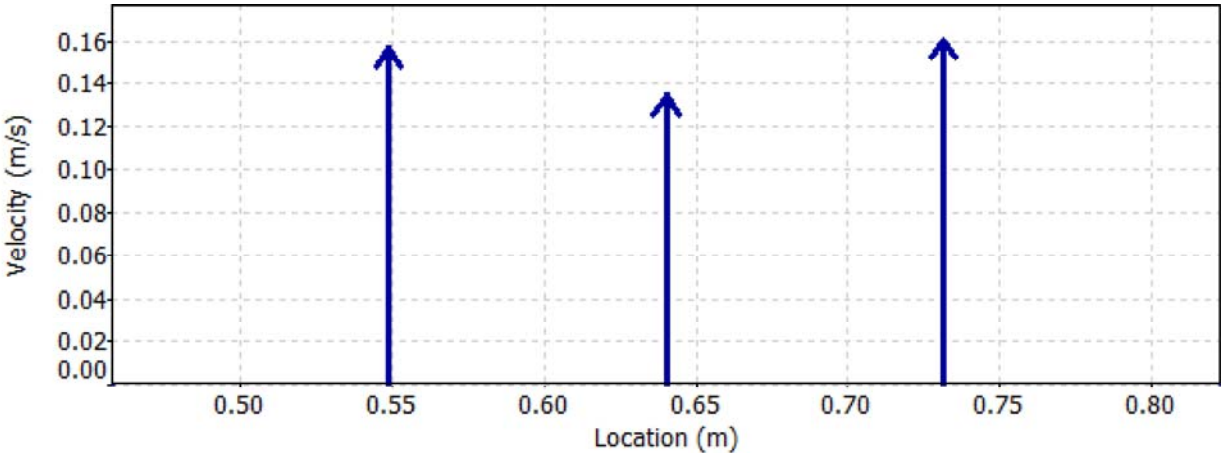
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

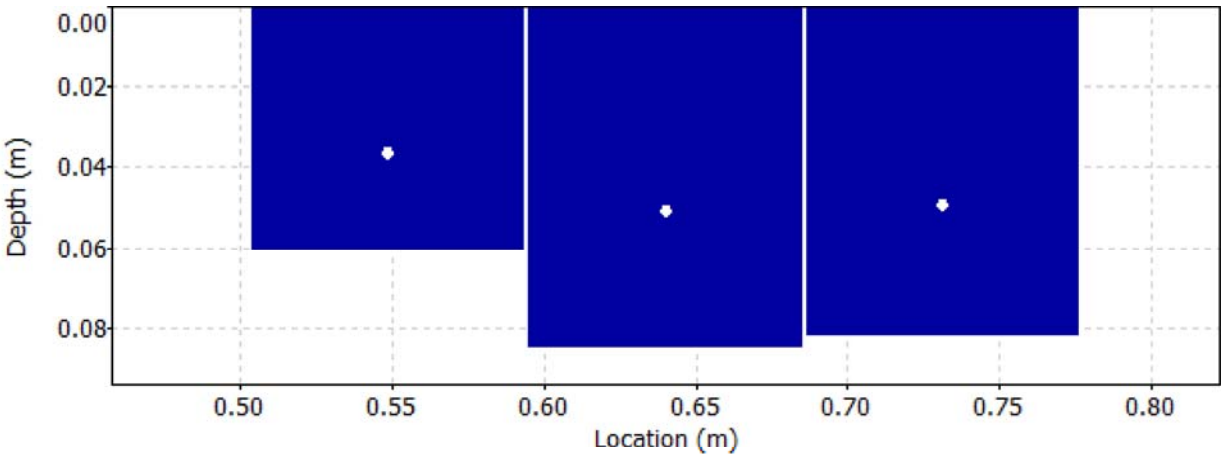
Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.002.WAD	Site Name	NF LTL THMP AT VANCV
Start Date and Time	2017/08/07 12:01:10	Operator(s)	BRIAN EPSTEIN







Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information	
File Name	NFLTATVB.002.WAD
Start Date and Time	2017/08/07 12:01:10

Site Details	
Site Name	NF LTL THMP AT VANCV
Operator(s)	BRIAN EPSTEIN

Quality Control

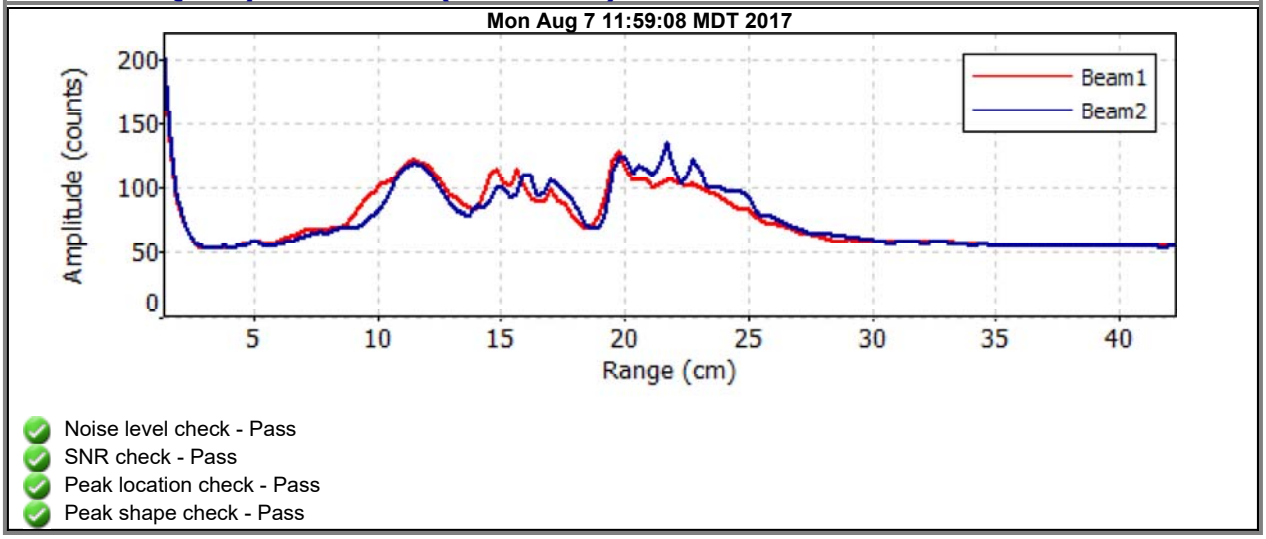
St	Loc	%Dep	Message
3	0.73	0.6	High angle: -177
		0.6	Boundary QC is Poor; possible boundary interference

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.002.WAD	Site Name	NF LTL THMP AT VANCV
Start Date and Time	2017/08/07 12:01:10	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information

File Name	NFLTATVB.004.WAD
Start Date and Time	2017/09/13 13:16:19

Site Details

Site Name	NF LTL T AT VANCLEVE
Operator(s)	BRIAN EPSTEIN

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	1.0%	0.0%
Velocity	6.1%	0.0%
Width	0.3%	0.3%
Method	5.0%	-
# Stations	12.2%	-
Overall	**14.6%**	**1.0%**

Summary

Averaging Int.	40	# Stations	5
Start Edge	REW	Total Width	0.381
Mean SNR	16.0 dB	Total Area	0.019
Mean Temp	21.03 °C	Mean Depth	0.051
Disch. Equation	Mid-Section	Mean Velocity	0.0076
		Total Discharge	**0.0001**

Measurement Results

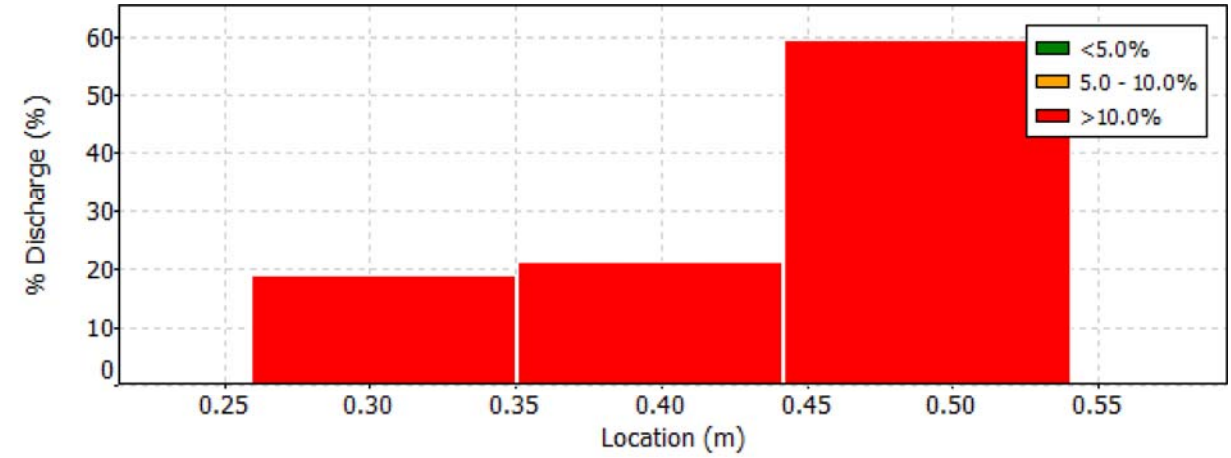
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:16	0.21	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:16	0.30	0.6	0.061	0.6	0.024	0.0049	1.00	0.0049	0.006	0.0000	18.7
2	13:17	0.40	0.6	0.061	0.6	0.024	0.0056	1.00	0.0056	0.006	0.0000	21.4
3	*13:18*	*0.49*	*0.6*	*0.082*	*0.6*	*0.033*	*0.0107*	*1.00*	*0.0107*	*0.008*	*0.0001*	*59.9*
4	13:18	0.59	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

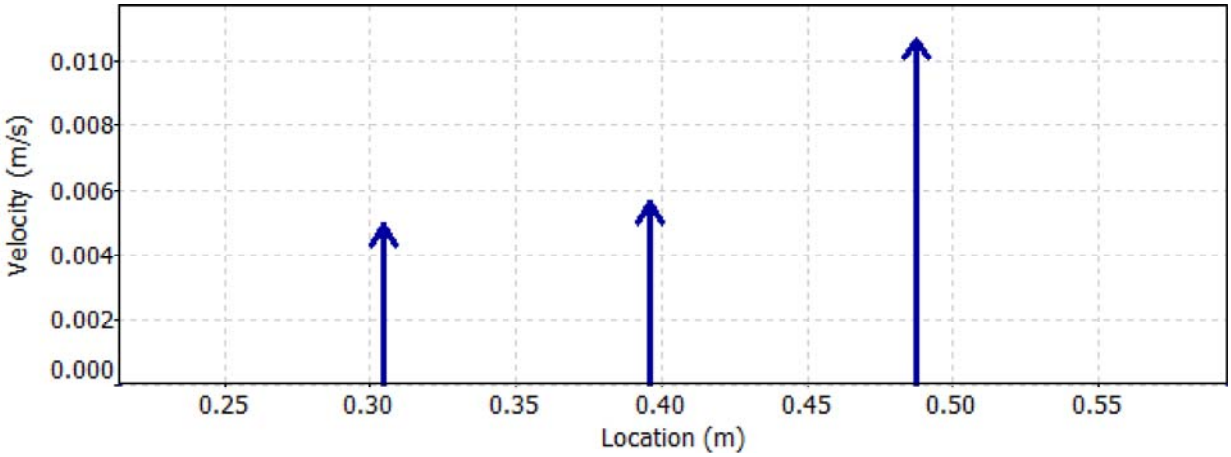
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

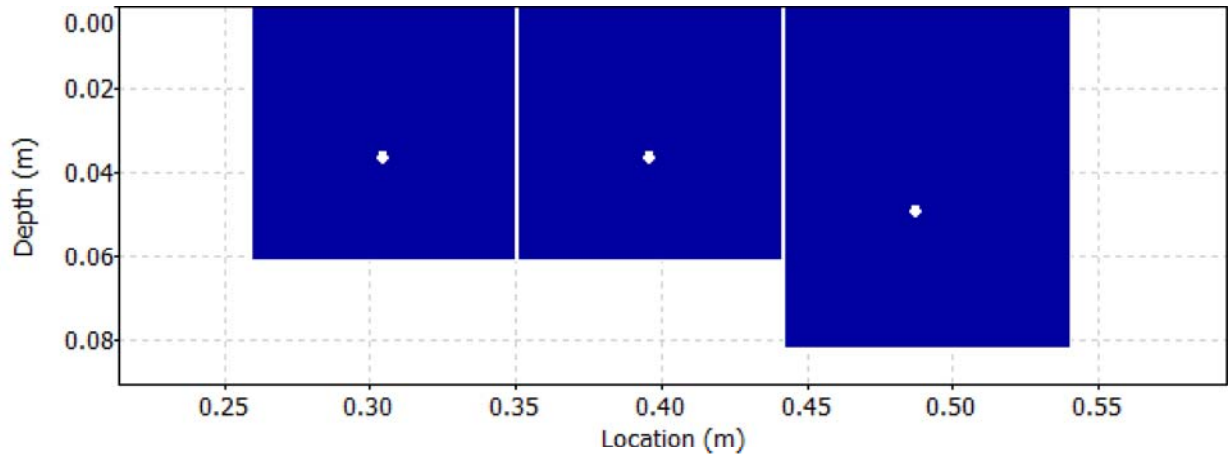
Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.004.WAD	Site Name	NF LTL T AT VANCLEVE
Start Date and Time	2017/09/13 13:16:19	Operator(s)	BRIAN EPSTEIN







Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.004.WAD	Site Name	NF LTL T AT VANCLEVE
Start Date and Time	2017/09/13 13:16:19	Operator(s)	BRIAN EPSTEIN

Quality Control

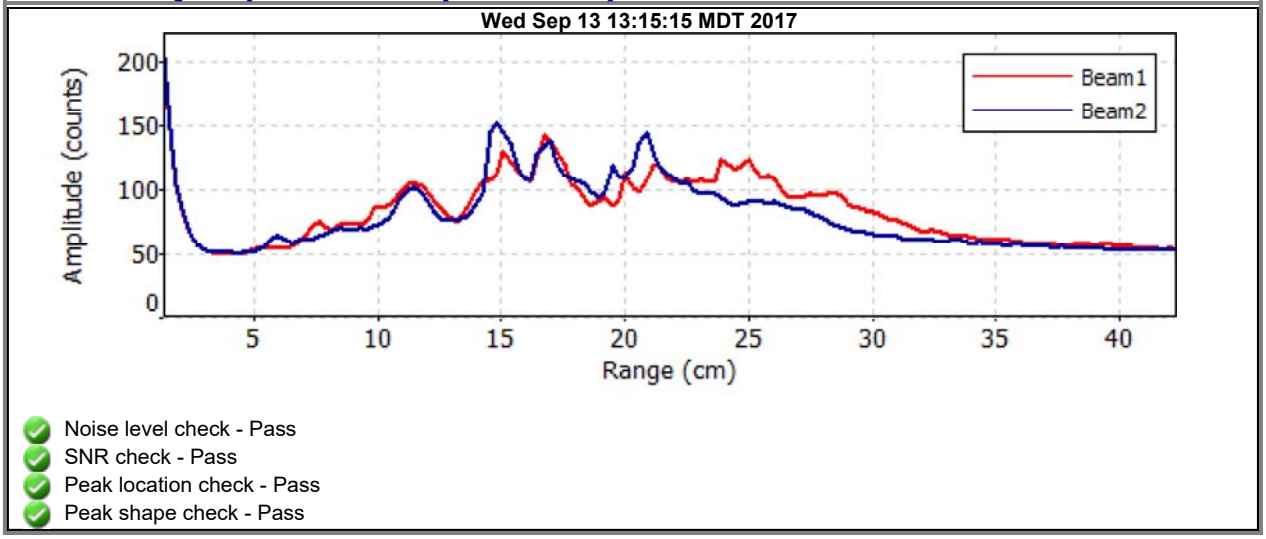
St	Loc	%Dep	Message
3	0.49	0.6	Boundary QC is Poor; possible boundary interference

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.004.WAD	Site Name	NF LTL T AT VANCLEVE
Start Date and Time	2017/09/13 13:16:19	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information

File Name	NFLTAVCB.010.WAD
Start Date and Time	2017/09/29 10:54:01

Site Details

Site Name	NF LITTLE THOMPSON
Operator(s)	JEL

System Information

Sensor Type	FlowTracker
Serial #	P2354
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.8%
Velocity	1.3%	17.0%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.0%	-
Overall	**3.3%**	**17.3%**

Summary

Averaging Int.	40	# Stations	25
Start Edge	LEW	Total Width	2.926
Mean SNR	19.2 dB	Total Area	0.202
Mean Temp	12.06 °C	Mean Depth	0.069
Disch. Equation	Mid-Section	Mean Velocity	0.0749
		Total Discharge	**0.0151**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Fri Sep 29 11:21:41 MDT 2017	3.962	0.396		

Measurement Results

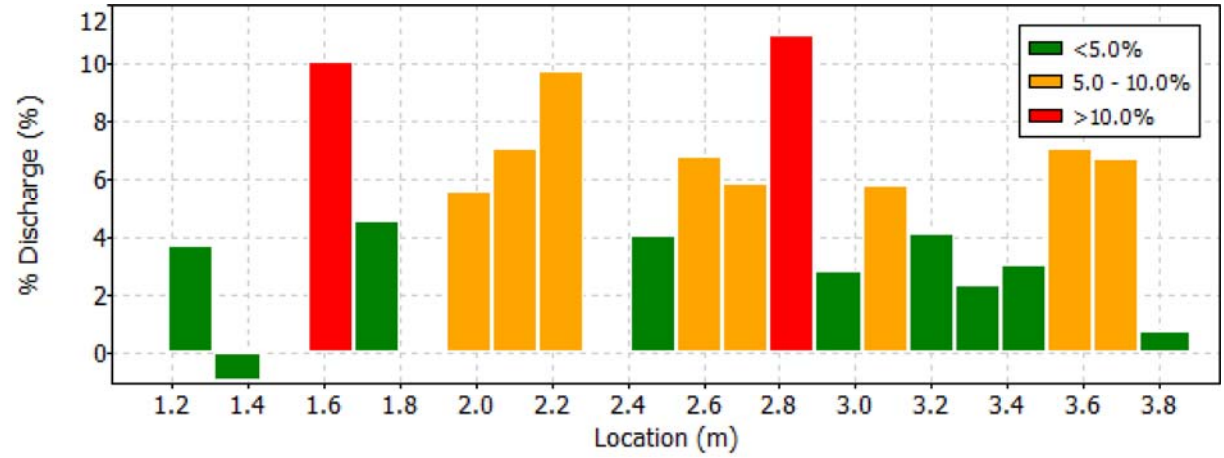
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:54	1.04	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:54*	*1.13*	*0.6*	*0.061*	*0.6*	*0.024*	*0.0005*	*1.00*	*0.0005*	*0.007*	*0.0000*	*0.0*
2	10:55	1.25	0.6	0.061	0.6	0.024	0.0750	1.00	0.0750	0.007	0.0006	3.7
3	10:56	1.37	0.6	0.076	0.6	0.030	-0.0161	1.00	-0.0161	0.009	-0.0001	-1.0
4	*10:58*	*1.49*	*0.6*	*0.061*	*0.6*	*0.024*	*0.0000*	*1.00*	*0.0000*	*0.007*	*0.0000*	*0.0*
5	*10:59*	*1.62*	*0.6*	*0.061*	*0.6*	*0.024*	*0.2050*	*1.00*	*0.2050*	*0.007*	*0.0015*	*10.1*
6	*11:00*	*1.74*	*0.6*	*0.061*	*0.6*	*0.024*	*0.0919*	*1.00*	*0.0919*	*0.007*	*0.0007*	*4.5*
7	*11:02*	*1.86*	*0.6*	*0.061*	*0.6*	*0.024*	*-0.0002*	*1.00*	*-0.0002*	*0.007*	*0.0000*	*0.0*
8	11:03	1.98	0.6	0.067	0.6	0.027	0.1035	1.00	0.1035	0.008	0.0008	5.6
9	11:04	2.10	0.6	0.061	0.6	0.024	0.1433	1.00	0.1433	0.007	0.0011	7.1
10	11:05	2.22	0.6	0.061	0.6	0.024	0.1981	1.00	0.1981	0.007	0.0015	9.7
11	11:06	2.35	0.6	0.046	0.6	0.018	0.0015	1.00	0.0015	0.006	0.0000	0.1
12	*11:07*	*2.47*	*0.6*	*0.046*	*0.6*	*0.018*	*0.1099*	*1.00*	*0.1099*	*0.006*	*0.0006*	*4.1*
13	*11:08*	*2.59*	*0.6*	*0.076*	*0.6*	*0.030*	*0.1102*	*1.00*	*0.1102*	*0.009*	*0.0010*	*6.8*
14	*11:09*	*2.71*	*0.6*	*0.070*	*0.6*	*0.028*	*0.1035*	*1.00*	*0.1035*	*0.009*	*0.0009*	*5.9*
15	*11:11*	*2.83*	*0.6*	*0.091*	*0.6*	*0.037*	*0.1485*	*1.00*	*0.1485*	*0.011*	*0.0017*	*10.9*
16	11:13	2.96	0.6	0.091	0.6	0.037	0.0379	1.00	0.0379	0.011	0.0004	2.8
17	11:14	3.08	0.6	0.076	0.6	0.030	0.0941	1.00	0.0941	0.009	0.0009	5.8
18	11:15	3.20	0.6	0.082	0.6	0.033	0.0624	1.00	0.0624	0.010	0.0006	4.1
19	*11:16*	*3.32*	*0.6*	*0.076*	*0.6*	*0.030*	*0.0378*	*1.00*	*0.0378*	*0.009*	*0.0004*	*2.3*
20	*11:17*	*3.44*	*0.6*	*0.091*	*0.6*	*0.037*	*0.0412*	*1.00*	*0.0412*	*0.011*	*0.0005*	*3.0*
21	11:18	3.57	0.6	0.091	0.6	0.037	0.0955	1.00	0.0955	0.011	0.0011	7.0
22	11:19	3.69	0.6	0.091	0.6	0.037	0.0911	1.00	0.0911	0.011	0.0010	6.7
23	11:20	3.81	0.6	0.091	0.6	0.037	0.0093	1.00	0.0093	0.013	0.0001	0.8
24	11:20	3.96	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

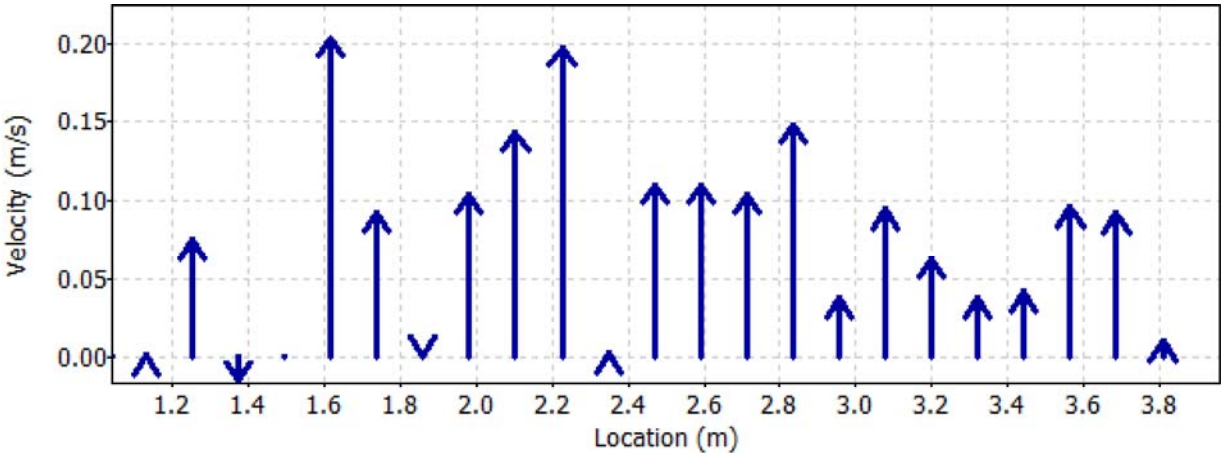
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

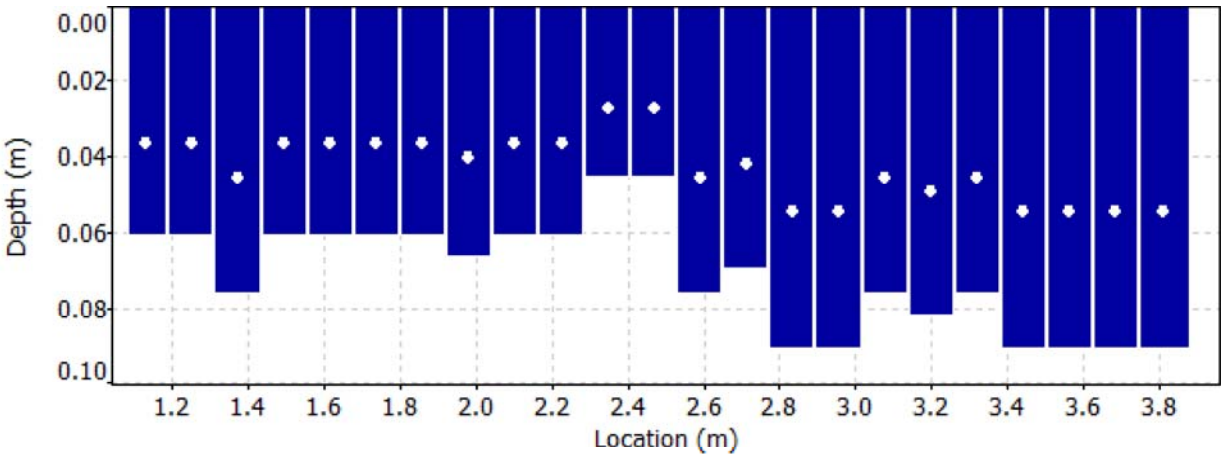
Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information		Site Details	
File Name	NFLTAVCB.010.WAD	Site Name	NF LITTLE THOMPSON
Start Date and Time	2017/09/29 10:54:01	Operator(s)	JEL







Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information

File Name	NFLTAVCB.010.WAD
Start Date and Time	2017/09/29 10:54:01

Site Details

Site Name	NF LITTLE THOMPSON
Operator(s)	JEL

Quality Control

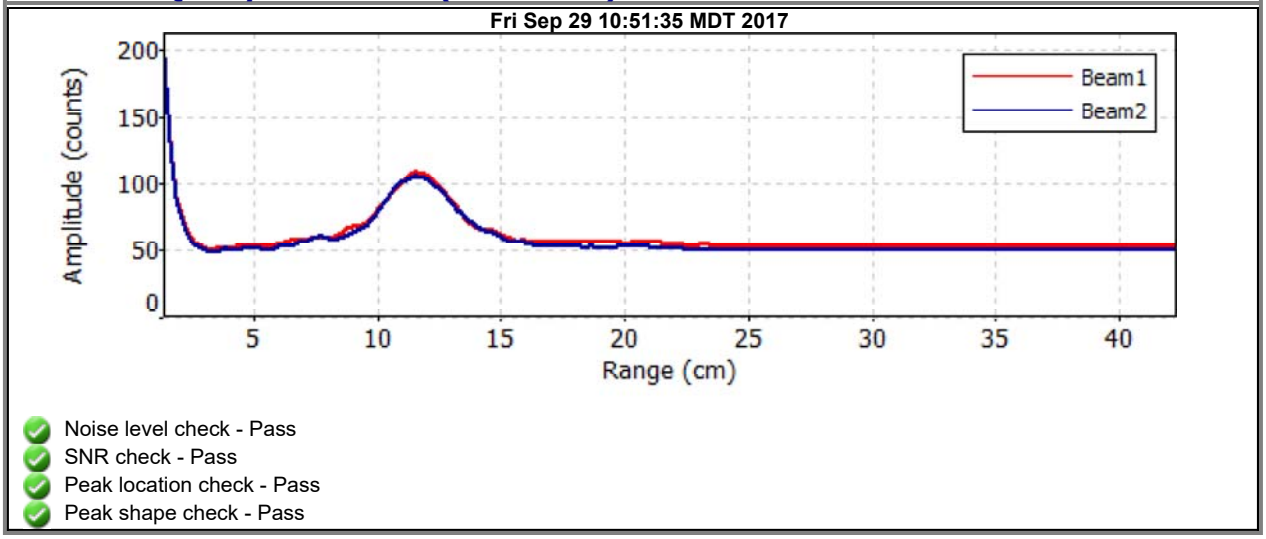
St	Loc	%Dep	Message
1	1.13	0.6	High differences in beam SNR: 28.3,48.5
		0.6	SNR (38.4) is different from typical SNR (19.2)
		0.6	Boundary QC is Fair; possible boundary interference
4	1.49	0.6	SNR (68.8) is different from typical SNR (19.2)
		0.6	High standard error: 0.000
5	1.62	0.6	High angle: -20
6	1.74	0.6	High angle: -29
7	1.86	0.6	High differences in beam SNR: 54.6,26.6
		0.6	SNR (40.6) is different from typical SNR (19.2)
12	2.47	0.6	Boundary QC is Poor; possible boundary interference
13	2.59	0.6	High angle: -20
14	2.71	0.6	High angle: -21
15	2.83	0.6	High angle: -24
19	3.32	0.6	High angle: -26
20	3.44	0.6	High angle: -23

Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information		Site Details	
File Name	NFLTAVCB.010.WAD	Site Name	NF LITTLE THOMPSON
Start Date and Time	2017/09/29 10:54:01	Operator(s)	JEL

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information

File Name	NFLTAVCB.011.WAD
Start Date and Time	2017/10/18 13:57:06

Site Details

Site Name	NFK L THOMPSON A VCB
Operator(s)	JEL

System Information

Sensor Type	FlowTracker
Serial #	P2354
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.9%
Velocity	1.0%	10.5%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	1.6%	-
Overall	**2.8%**	**10.9%**

Summary

Averaging Int.	40	# Stations	32
Start Edge	LEW	Total Width	2.865
Mean SNR	18.8 dB	Total Area	0.186
Mean Temp	13.88 °C	Mean Depth	0.065
Disch. Equation	Mid-Section	Mean Velocity	0.0955
		Total Discharge	**0.0177**

Supplemental Data (Gauge Height Change = 0.000m)

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Wed Oct 18 13:54:10 MDT 2017	0.000	0.445		
2	Wed Oct 18 14:33:02 MDT 2017	3.536	0.445		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:57	0.67	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:57*	*0.76*	*0.6*	*0.064*	*0.6*	*0.026*	*-0.0022*	*1.00*	*-0.0022*	*0.006*	*0.0000*	*-0.1*
2	*13:58*	*0.85*	*0.6*	*0.064*	*0.6*	*0.026*	*-0.0044*	*1.00*	*-0.0044*	*0.006*	*0.0000*	*-0.1*
3	13:59	0.94	0.6	0.046	0.6	0.018	-0.0033	1.00	-0.0033	0.004	0.0000	-0.1
4	14:00	1.04	0.6	0.076	0.6	0.030	0.0161	1.00	0.0161	0.007	0.0001	0.6
5	*14:01*	*1.13*	*0.6*	*0.085*	*0.6*	*0.034*	*0.0387*	*1.00*	*0.0387*	*0.008*	*0.0003*	*1.7*
6	*14:02*	*1.22*	*0.6*	*0.085*	*0.6*	*0.034*	*0.0410*	*1.00*	*0.0410*	*0.008*	*0.0003*	*1.8*
7	14:03	1.31	0.6	0.061	0.6	0.024	0.0900	1.00	0.0900	0.006	0.0005	2.8
8	14:04	1.40	0.6	0.061	0.6	0.024	0.1674	1.00	0.1674	0.006	0.0009	5.3
9	14:06	1.49	0.6	0.046	0.6	0.018	0.1092	1.00	0.1092	0.004	0.0005	2.6
10	*14:07*	*1.58*	*0.6*	*0.061*	*0.6*	*0.024*	*0.0781*	*1.00*	*0.0781*	*0.006*	*0.0004*	*2.5*
11	14:08	1.68	0.6	0.061	0.6	0.024	0.0896	1.00	0.0896	0.006	0.0005	2.8
12	14:09	1.77	0.6	0.061	0.6	0.024	0.0727	1.00	0.0727	0.006	0.0004	2.3
13	14:10	1.86	0.6	0.076	0.6	0.030	0.0695	1.00	0.0695	0.007	0.0005	2.7
14	*14:11*	*1.95*	*0.6*	*0.067*	*0.6*	*0.027*	*0.0630*	*1.00*	*0.0630*	*0.006*	*0.0004*	*2.2*
15	14:13	2.04	0.6	0.073	0.6	0.029	0.0857	1.00	0.0857	0.007	0.0006	3.2
16	*14:14*	*2.13*	*0.6*	*0.067*	*0.6*	*0.027*	*0.0721*	*1.00*	*0.0721*	*0.006*	*0.0004*	*2.5*
17	*14:15*	*2.22*	*0.6*	*0.064*	*0.6*	*0.026*	*0.0465*	*1.00*	*0.0465*	*0.006*	*0.0003*	*1.5*
18	14:17	2.32	0.6	0.064	0.6	0.026	0.0864	1.00	0.0864	0.006	0.0005	2.8
19	14:18	2.41	0.6	0.064	0.6	0.026	0.0982	1.00	0.0982	0.006	0.0006	3.2
20	14:19	2.50	0.6	0.073	0.6	0.029	0.1312	1.00	0.1312	0.007	0.0009	4.9
21	14:20	2.59	0.6	0.061	0.6	0.024	0.1343	1.00	0.1343	0.006	0.0007	4.2
22	*14:21*	*2.68*	*0.6*	*0.076*	*0.6*	*0.030*	*0.0455*	*1.00*	*0.0455*	*0.007*	*0.0003*	*1.8*
23	14:22	2.77	0.6	0.064	0.6	0.026	0.1360	1.00	0.1360	0.006	0.0008	4.5
24	14:23	2.86	0.6	0.061	0.6	0.024	0.2559	1.00	0.2559	0.006	0.0014	8.0
25	*14:24*	*2.96*	*0.6*	*0.061*	*0.6*	*0.024*	*0.2413*	*1.00*	*0.2413*	*0.006*	*0.0013*	*7.6*
26	*14:25*	*3.05*	*0.6*	*0.091*	*0.6*	*0.037*	*0.0034*	*1.00*	*0.0034*	*0.008*	*0.0000*	*0.2*
27	14:26	3.14	0.6	0.091	0.6	0.037	0.2388	1.00	0.2388	0.008	0.0020	11.2
28	14:28	3.23	0.6	0.091	0.6	0.037	0.1849	1.00	0.1849	0.008	0.0015	8.7
29	14:29	3.32	0.6	0.061	0.6	0.024	0.0976	1.00	0.0976	0.006	0.0005	3.1
30	14:30	3.41	0.6	0.046	0.6	0.018	0.1966	1.00	0.1966	0.005	0.0010	5.4
31	14:30	3.54	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

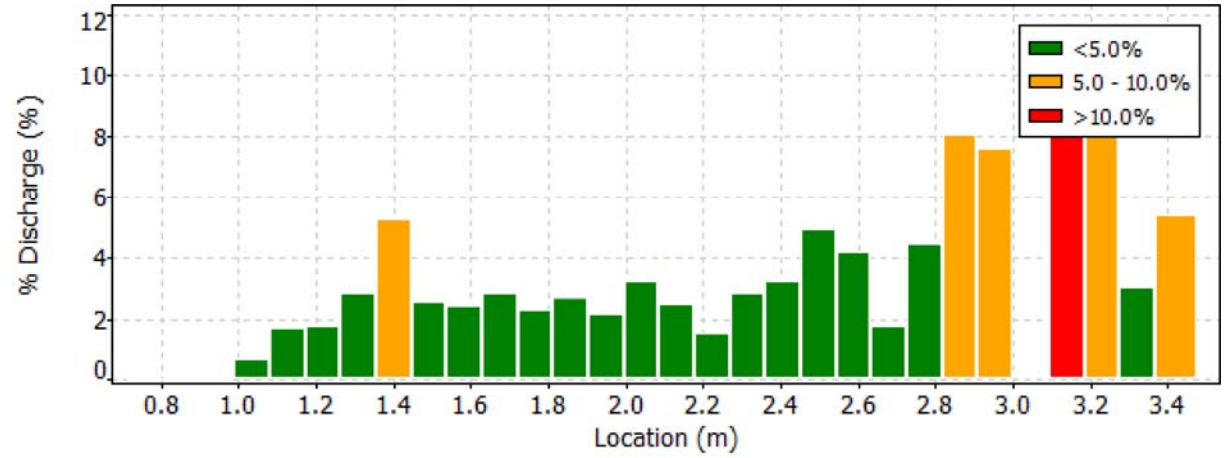
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

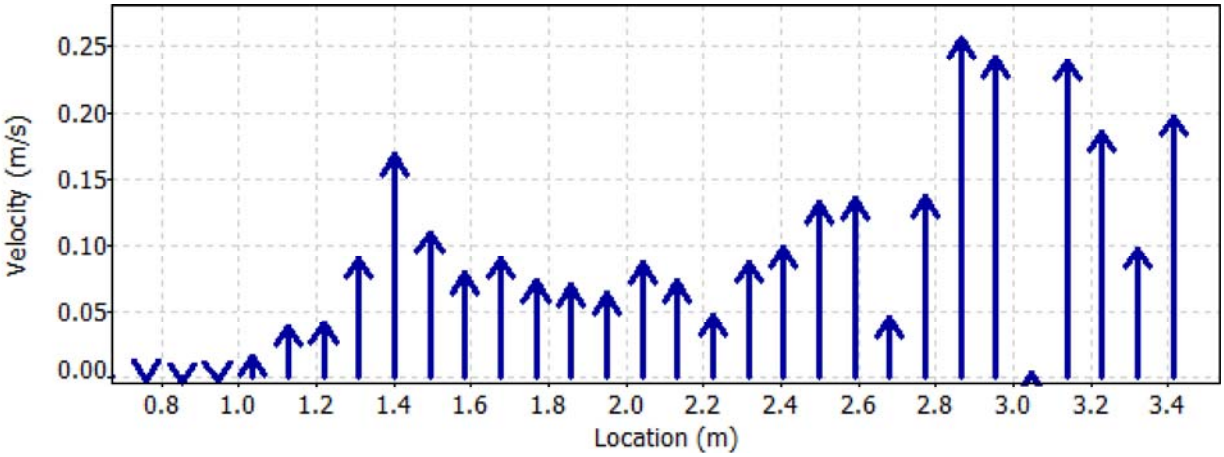
Discharge Measurement Summary

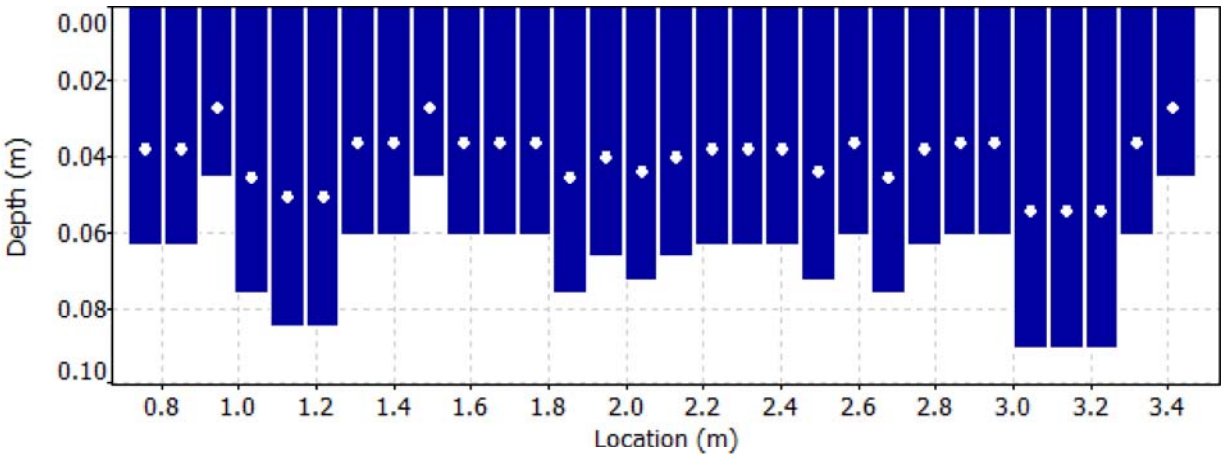
Date Generated: Tue Dec 12 2017

File Information	
File Name	NFLTAVCB.011.WAD
Start Date and Time	2017/10/18 13:57:06

Site Details	
Site Name	NFK L THOMPSON A VCB
Operator(s)	JEL







Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information

File Name	NFLTAVCB.011.WAD
Start Date and Time	2017/10/18 13:57:06

Site Details

Site Name	NFK L THOMPSON A VCB
Operator(s)	JEL

Quality Control

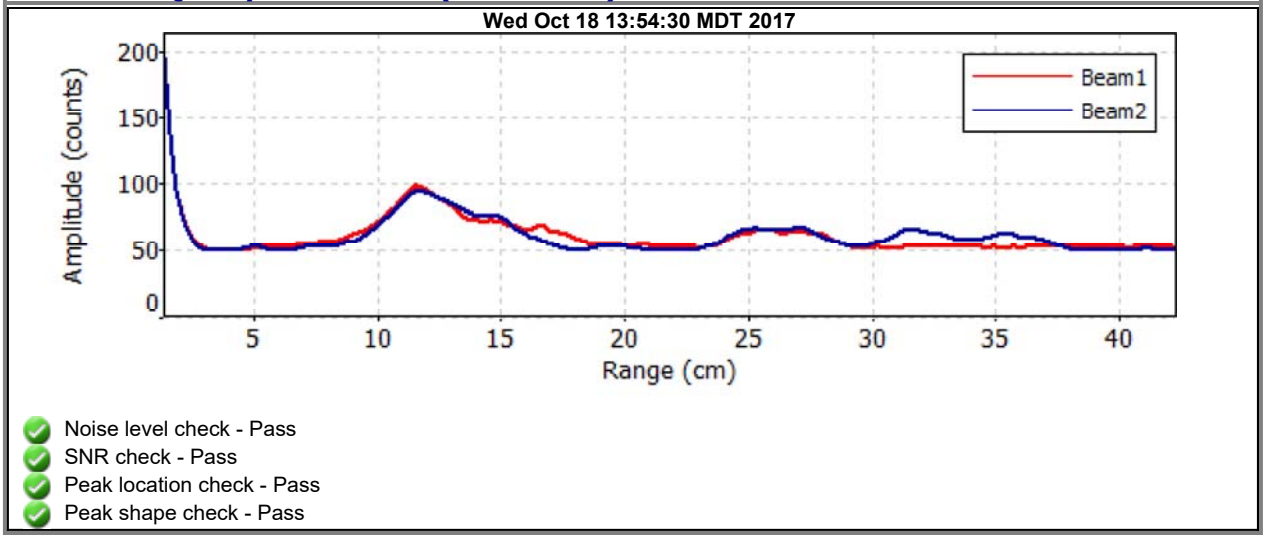
St	Loc	%Dep	Message
1	0.76	0.6	SNR (35.9) is different from typical SNR (18.8)
2	0.85	0.6	SNR (31.4) is different from typical SNR (18.8)
5	1.13	0.6	High angle: -25
6	1.22	0.6	High angle: -27
10	1.58	0.6	High angle: -20
14	1.95	0.6	High SNR variation during measurement: 4.3,5.2
16	2.13	0.6	High angle: -24
17	2.22	0.6	High angle: -26
22	2.68	0.6	High angle: -23
		0.6	Boundary QC is Good; possible boundary interference
25	2.96	0.6	Boundary QC is Good; possible boundary interference
26	3.05	0.6	SNR (39.1) is different from typical SNR (18.8)

Discharge Measurement Summary

Date Generated: Tue Dec 12 2017

File Information		Site Details	
File Name	NFLTAVCB.011.WAD	Site Name	NFK L THOMPSON A VCB
Start Date and Time	2017/10/18 13:57:06	Operator(s)	JEL

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information

File Name	NFLTATVB.005.WAD
Start Date and Time	2017/12/06 14:38:41

Site Details

Site Name	N FK L THOMPSON VCB
Operator(s)	JACK LANDERS

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	4.8%
Velocity	5.3%	14.9%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	1.9%	-
Overall	**6.1%**	**15.7%**

Summary

Averaging Int.	40	# Stations	27
Start Edge	LEW	Total Width	2.377
Mean SNR	6.9 dB	Total Area	0.099
Mean Temp	3.63 °C	Mean Depth	0.042
Disch. Equation	Mid-Section	Mean Velocity	0.0496
		Total Discharge	**0.0049**

Measurement Results

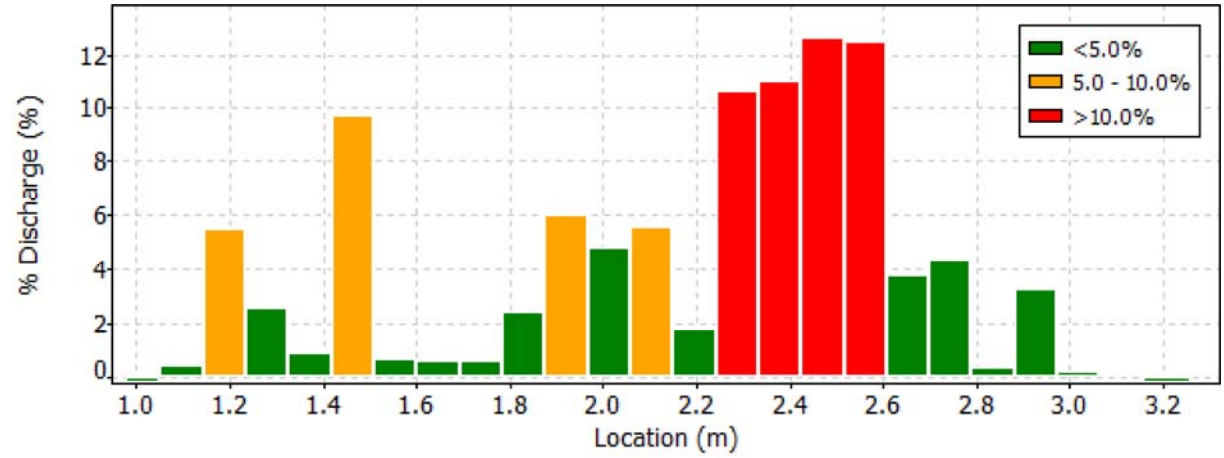
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:38	0.94	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*14:38*	*1.01*	*0.6*	*0.031*	*0.6*	*0.012*	*-0.0049*	*1.00*	*-0.0049*	*0.002*	*0.0000*	*-0.2*
2	14:40	1.10	0.6	0.046	0.6	0.018	0.0055	1.00	0.0055	0.004	0.0000	0.5
3	*14:42*	*1.19*	*0.6*	*0.055*	*0.6*	*0.022*	*0.0538*	*1.00*	*0.0538*	*0.005*	*0.0003*	*5.5*
4	*14:43*	*1.28*	*0.6*	*0.046*	*0.6*	*0.018*	*0.0300*	*1.00*	*0.0300*	*0.004*	*0.0001*	*2.6*
5	*14:44*	*1.37*	*0.6*	*0.046*	*0.6*	*0.018*	*0.0101*	*1.00*	*0.0101*	*0.004*	*0.0000*	*0.9*
6	*14:45*	*1.46*	*0.6*	*0.046*	*0.6*	*0.018*	*0.1140*	*1.00*	*0.1140*	*0.004*	*0.0005*	*9.7*
7	*14:47*	*1.55*	*0.6*	*0.037*	*0.6*	*0.015*	*0.0093*	*1.00*	*0.0093*	*0.003*	*0.0000*	*0.6*
8	14:48	1.65	0.6	0.031	0.6	0.012	0.0103	1.00	0.0103	0.003	0.0000	0.6
9	14:49	1.74	0.6	0.031	0.6	0.012	0.0104	1.00	0.0104	0.003	0.0000	0.6
10	*14:50*	*1.83*	*0.6*	*0.055*	*0.6*	*0.022*	*0.0241*	*1.00*	*0.0241*	*0.005*	*0.0001*	*2.5*
11	14:51	1.92	0.6	0.031	0.6	0.012	0.1053	1.00	0.1053	0.003	0.0003	6.0
12	14:52	2.01	0.6	0.031	0.6	0.012	0.0844	1.00	0.0844	0.003	0.0002	4.8
13	14:53	2.10	0.6	0.031	0.6	0.012	0.0975	1.00	0.0975	0.003	0.0003	5.6
14	*14:54*	*2.20*	*0.6*	*0.046*	*0.6*	*0.018*	*0.0210*	*1.00*	*0.0210*	*0.004*	*0.0001*	*1.8*
15	*14:55*	*2.29*	*0.6*	*0.055*	*0.6*	*0.022*	*0.1038*	*1.00*	*0.1038*	*0.005*	*0.0005*	*10.7*
16	14:56	2.38	0.6	0.055	0.6	0.022	0.1075	1.00	0.1075	0.005	0.0005	11.0
17	14:57	2.47	0.6	0.046	0.6	0.018	0.1475	1.00	0.1475	0.004	0.0006	12.6
18	14:58	2.56	0.6	0.046	0.6	0.018	0.1459	1.00	0.1459	0.004	0.0006	12.5
19	*14:59*	*2.65*	*0.6*	*0.046*	*0.6*	*0.018*	*0.0442*	*1.00*	*0.0442*	*0.004*	*0.0002*	*3.8*
20	*15:00*	*2.74*	*0.6*	*0.055*	*0.6*	*0.022*	*0.0425*	*1.00*	*0.0425*	*0.005*	*0.0002*	*4.4*
21	*15:01*	*2.84*	*0.6*	*0.031*	*0.6*	*0.012*	*0.0060*	*1.00*	*0.0060*	*0.003*	*0.0000*	*0.3*
22	*15:02*	*2.93*	*0.6*	*0.031*	*0.6*	*0.012*	*0.0578*	*1.00*	*0.0578*	*0.003*	*0.0002*	*3.3*
23	*15:03*	*3.02*	*0.6*	*0.055*	*0.6*	*0.022*	*0.0022*	*1.00*	*0.0022*	*0.005*	*0.0000*	*0.2*
24	15:04	3.11	0.6	0.055	0.6	0.022	0.0008	1.00	0.0008	0.005	0.0000	0.1
25	*15:05*	*3.20*	*0.6*	*0.046*	*0.6*	*0.018*	*-0.0025*	*1.00*	*-0.0025*	*0.005*	*0.0000*	*-0.2*
26	15:05	3.32	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

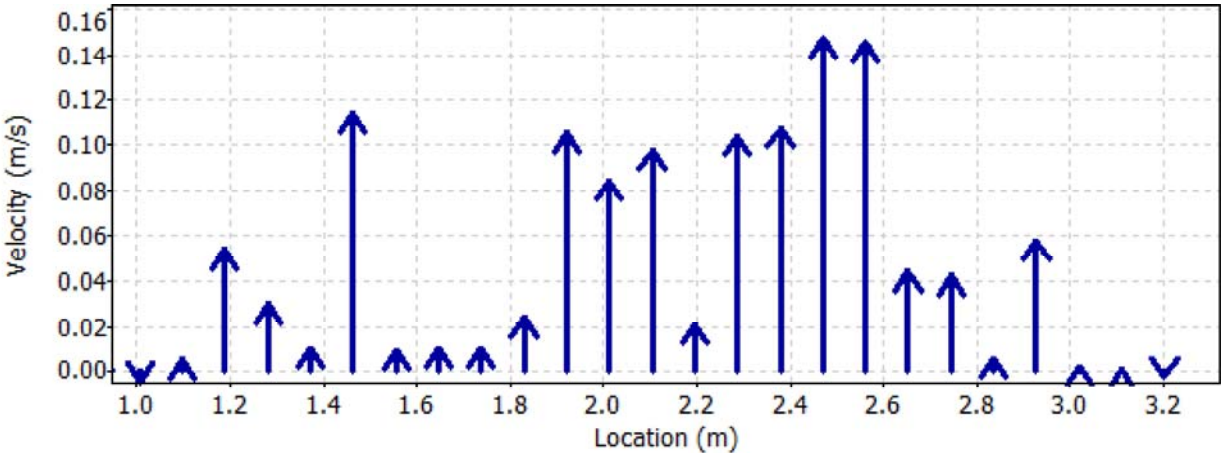
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

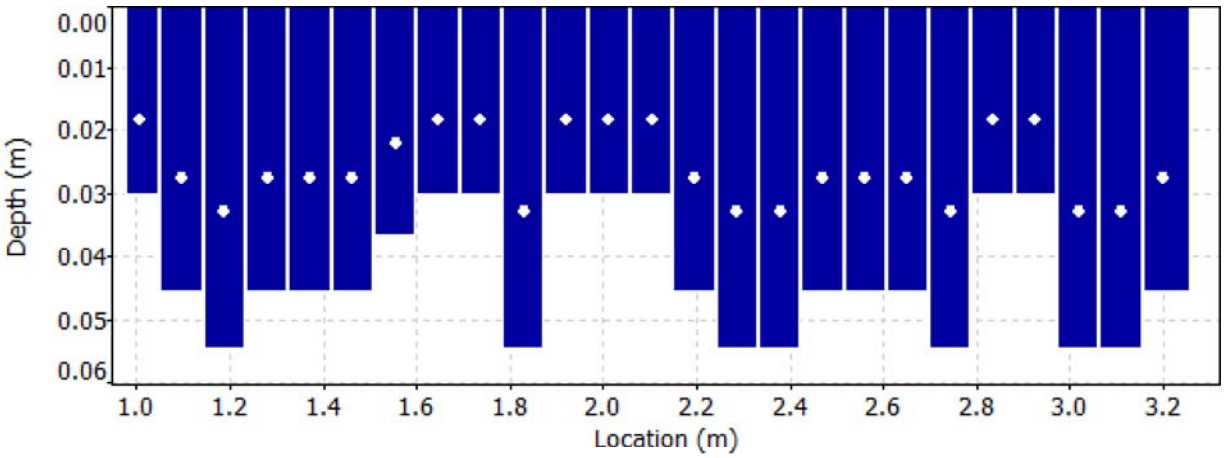
Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.005.WAD	Site Name	N FK L THOMPSON VCB
Start Date and Time	2017/12/06 14:38:41	Operator(s)	JACK LANDERS







Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.005.WAD	Site Name	N FK L THOMPSON VCB
Start Date and Time	2017/12/06 14:38:41	Operator(s)	JACK LANDERS

Quality Control

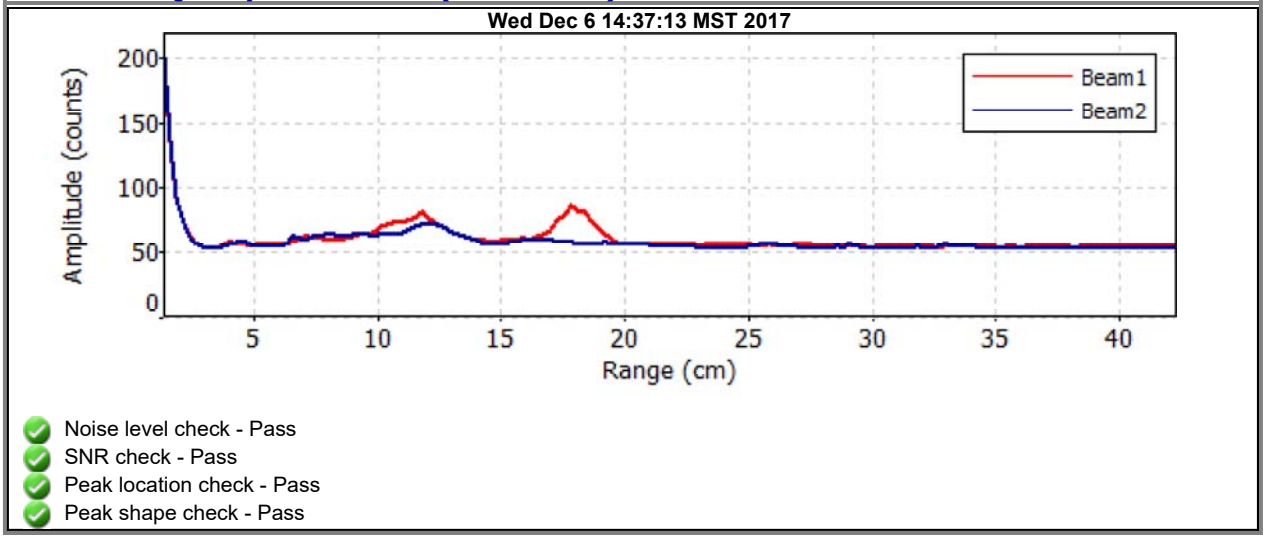
St	Loc	%Dep	Message
1	1.01	0.6	SNR (19.3) is different from typical SNR (6.9)
		0.6	High SNR variation during measurement: 4.3,6.9
		0.6	Boundary QC is Fair; possible boundary interference
3	1.19	0.6	High number of spikes: 8
		0.6	High angle: -23
		0.6	Low SNR: 2.1,2.1
4	1.28	0.6	Low SNR: 3.8,3.8
		0.6	Boundary QC is Good; possible boundary interference
5	1.37	0.6	Boundary QC is Good; possible boundary interference
6	1.46	0.6	Low SNR: 19.7,1.2
		0.6	High differences in beam SNR: 19.7,1.2
		0.6	High standard error: 0.048
		0.6	Boundary QC is Good; possible boundary interference
7	1.55	0.6	Boundary QC is Poor; possible boundary interference
10	1.83	0.6	High number of spikes: 7
		0.6	High angle: -21
		0.6	Low SNR: 3.8,3.4
14	2.20	0.6	High angle: 20
		0.6	High SNR variation during measurement: 5.2,5.6
		0.6	Boundary QC is Poor; possible boundary interference
15	2.29	0.6	Low SNR: 4.3,3.8
19	2.65	0.6	High number of spikes: 7
		0.6	Boundary QC is Good; possible boundary interference
20	2.74	0.6	Boundary QC is Fair; possible boundary interference
21	2.84	0.6	High number of spikes: 5
22	2.93	0.6	Boundary QC is Good; possible boundary interference
23	3.02	0.6	Boundary QC is Fair; possible boundary interference
25	3.20	0.6	High number of spikes: 11
		0.6	Low SNR: 2.1,3.0
		0.6	Boundary QC is Good; possible boundary interference

Discharge Measurement Summary

Date Generated: Mon Dec 18 2017

File Information		Site Details	
File Name	NFLTATVB.005.WAD	Site Name	N FK L THOMPSON VCB
Start Date and Time	2017/12/06 14:38:41	Operator(s)	JACK LANDERS

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Site name	North Fork Little Thompson River
Site number	001
Operator(s)	Jack Landers
File name	20180302_North Fork Little Thompson River.ft
Comment	

Start time	3/2/2018 2:07 PM
End time	3/2/2018 2:38 PM
Start location latitude	40.311
Start location longitude	-105.303
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
16	40	0.121

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
8.400	0.072	8.423

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
21.907	0.093	0.047

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
9.850	0.150	0.240

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.7%	43.9%
Velocity	3.0%	52.1%
Width	0.2%	0.2%
Method	3.5%	
# Stations	3.1%	
Overall	**5.7%**	**68.1%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

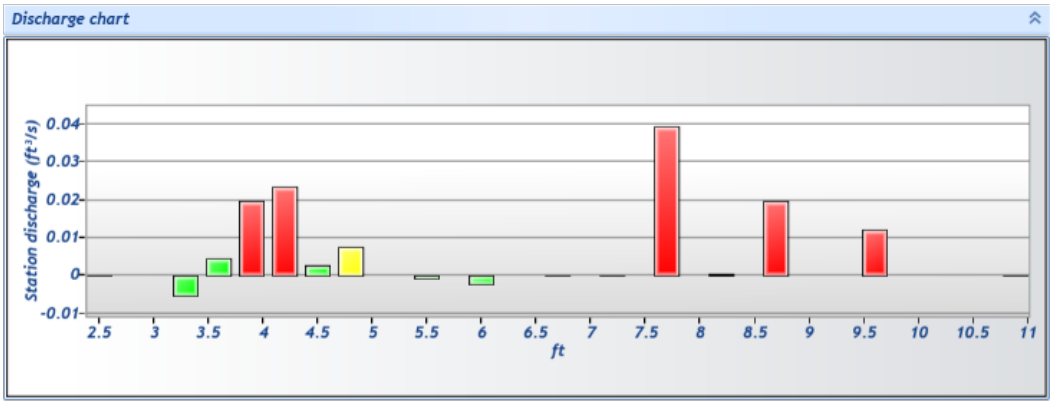
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

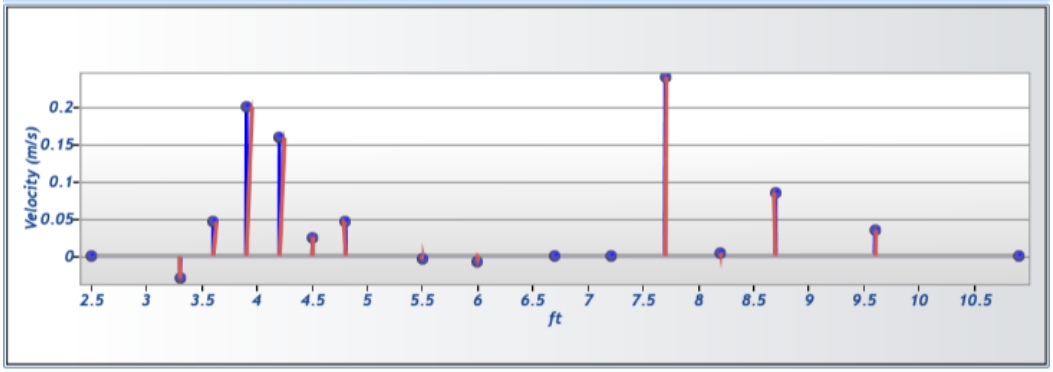
Site name	North Fork Little Thompson River
Site number	001
Operator(s)	Jack Landers
File name	20180302_North Fork Little Thompson River.ft
Comment	

Station Warning Settings		
Station discharge OK	Station discharge < 5.000%	
Station discharge caution	5.000% >= Station discharge < 10.000%	
Station discharge warning	Station discharge >= 10.000%	

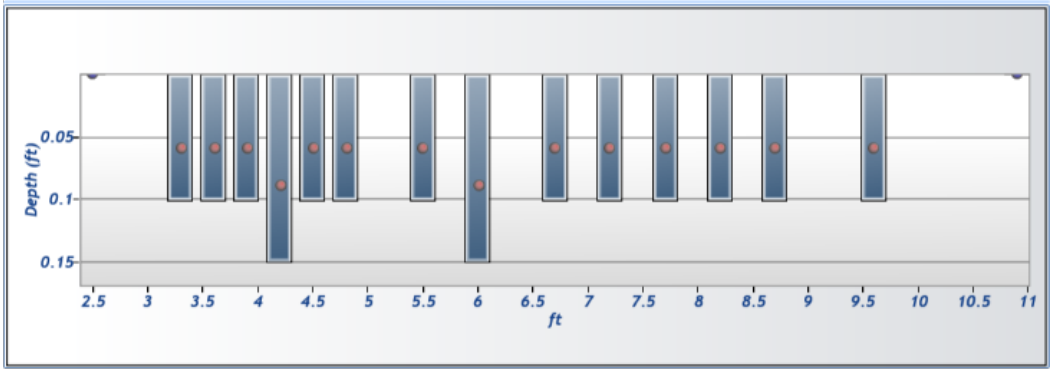
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	North Fork Little Thompson River
Site number	001
Operator(s)	Jack Landers
File name	20180302_North Fork Little Thompson River.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	2:07 PM	2.500	None	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	✓
1	2:08 PM	3.300	0.6	0.100	0.600	0.060	80	-0.029	1.000	-0.029	0.005	-0.005	-4.343	✓
2	2:14 PM	3.600	0.6	0.100	0.600	0.060	80	0.046	1.000	0.046	0.003	0.005	3.750	✓
3	2:16 PM	3.900	0.6	0.100	0.600	0.060	80	0.201	1.000	0.201	0.003	0.020	16.258	✓
4	2:17 PM	4.200	0.6	0.150	0.600	0.090	80	0.159	1.000	0.159	0.004	0.024	19.382	✓
5	2:19 PM	4.500	0.6	0.100	0.600	0.060	80	0.026	1.000	0.026	0.003	0.003	2.074	✓
6	2:20 PM	4.800	0.6	0.100	0.600	0.060	62	0.047	1.000	0.047	0.005	0.008	6.338	✓
7	2:21 PM	5.500	0.6	0.100	0.600	0.060	80	-0.004	1.000	-0.004	0.006	-0.001	-0.711	✓
8	2:23 PM	6.000	0.6	0.150	0.600	0.090	37	-0.008	1.000	-0.008	0.008	-0.002	-1.898	✓
9	2:25 PM	6.700	0.6	0.100	0.600	0.060	80	0.000	1.000	0.000	0.006	0.000	0.027	✓
10	2:26 PM	7.200	0.6	0.100	0.600	0.060	80	0.000	1.000	0.000	0.005	0.000	0.026	✓
11	2:27 PM	7.700	0.6	0.100	0.600	0.060	80	0.240	1.000	0.240	0.005	0.039	32.497	✓
12	2:30 PM	8.200	0.6	0.100	0.600	0.060	80	0.003	1.000	0.003	0.005	0.000	0.406	✓
13	2:32 PM	8.700	0.6	0.100	0.600	0.060	80	0.085	1.000	0.085	0.007	0.020	16.109	✓
14	2:33 PM	9.600	0.6	0.100	0.600	0.060	80	0.034	1.000	0.034	0.010	0.012	10.085	✓
15	2:38 PM	10.900	None	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	North Fork Little Thompson River
Site number	001
Operator(s)	Jack Landers
File name	20180302_North Fork Little Thompson River.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	2:08 PM	3.300	0.6	0.100	0.600	0.060	Boundary Interference,Velocity Angle > QC
2	2:14 PM	3.600	0.6	0.100	0.600	0.060	Boundary Interference,Velocity Angle > QC
3	2:16 PM	3.900	0.6	0.100	0.600	0.060	Stn Spacing > QC,Boundary Interference,Standard Error > QC,High Stn % Discharge
4	2:17 PM	4.200	0.6	0.150	0.600	0.090	High % Spikes,High Stn % Discharge
5	2:19 PM	4.500	0.6	0.100	0.600	0.060	Velocity Angle > QC
6	2:20 PM	4.800	0.6	0.100	0.600	0.060	Boundary Interference,Velocity Angle > QC
10	2:26 PM	7.200	0.6	0.100	0.600	0.060	Boundary Interference
11	2:27 PM	7.700	0.6	0.100	0.600	0.060	High Stn % Discharge
13	2:32 PM	8.700	0.6	0.100	0.600	0.060	Boundary Interference,Standard Error > QC,High Stn % Discharge
14	2:33 PM	9.600	0.6	0.100	0.600	0.060	High Stn % Discharge

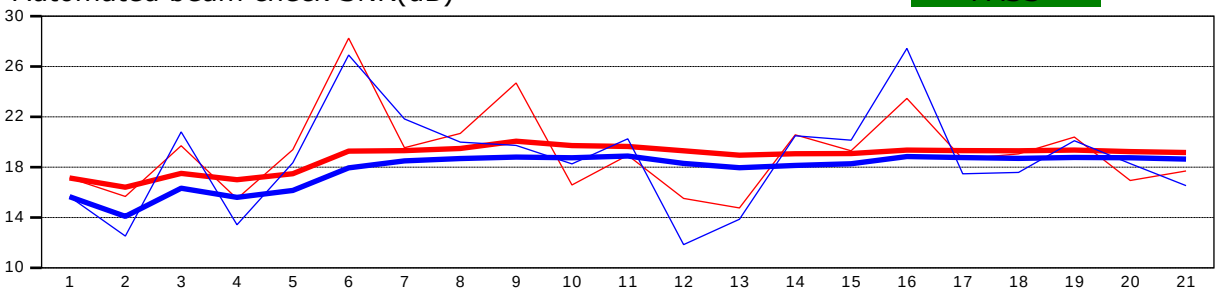
Discharge Measurement Summary

Site name	North Fork Little Thompson River
Site number	001
Operator(s)	Jack Landers
File name	20180302_North Fork Little Thompson River.ft
Comment	

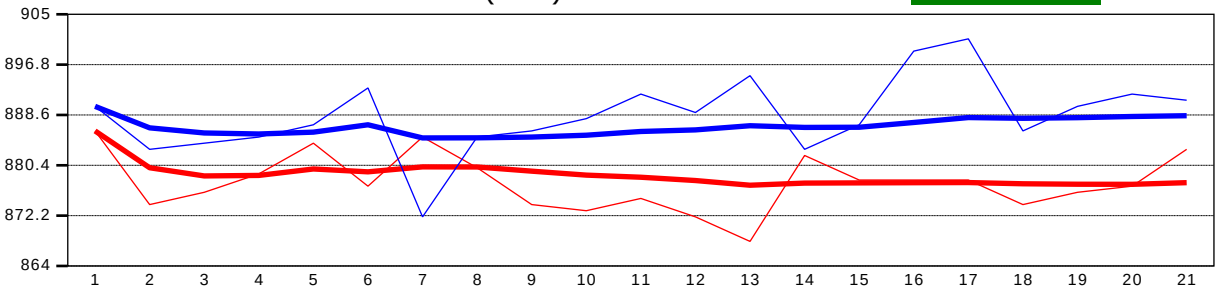
Beam 1	
Beam 2	

Automated beam check Start time 3/2/2018 2:06:50 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

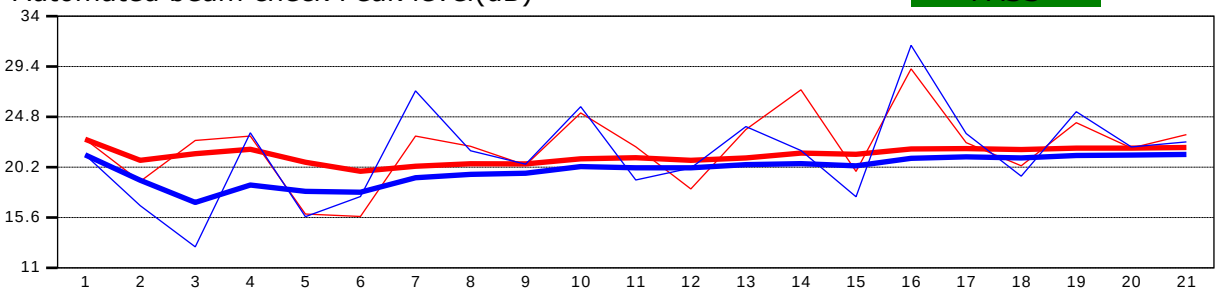
Discharge Measurement Summary

Site name	North Fork Little Thompson River
Site number	001
Operator(s)	Jack Landers
File name	20180302_North Fork Little Thompson River.ft
Comment	

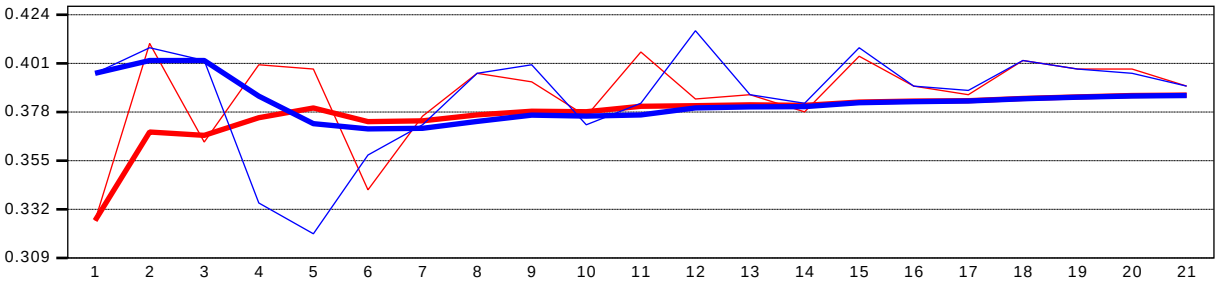
Beam 1	
Beam 2	

Automated beam check Start time 3/2/2018 2:06:50 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

File Information

File name	20180316_North Fork Little Thompson River.ft
Start date and time	3/16/2018 11:14 AM
Calculations engine	FlowTracker2
Data collection mode	Discharge

Discharge Summary

Start time	3/16/2018 11:15:50 AM	End time	3/16/2018 11:45:21 AM
# Stations	23	Avg interval	40
Mean depth	0.246 ft		
Mean velocity	0.0920 ft/s	Total width	7.000 ft
Mean SNR	19 dB	Total area	1.7200 ft²
Mean temp	43.407 °F	Total discharge	0.1583 ft³/s

System Information

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

Site Details

Site name	North Fork Little Thompson River
Site number	02
Operator(s)	Jack Landers
Comment	Spot meas

Discharge Uncertainty

Category	ISO	IVE
Accuracy	1.0 %	1.0 %
Depth	0.4 %	10.9 %
Velocity	2.1 %	13.8 %
Width	0.1 %	0.1 %
Method	2.2 %	
# Stations	2.2 %	
Overall	3.9 %	17.7 %

Discharge Settings

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Measured

Station Warning Settings

Station discharge caution	5.00	%
Station discharge warning	10.00	%
Maximum depth change	50.00	%
Maximum spacing change	100.00	%

Summary overview

No changes were made to this file
Quality control warnings

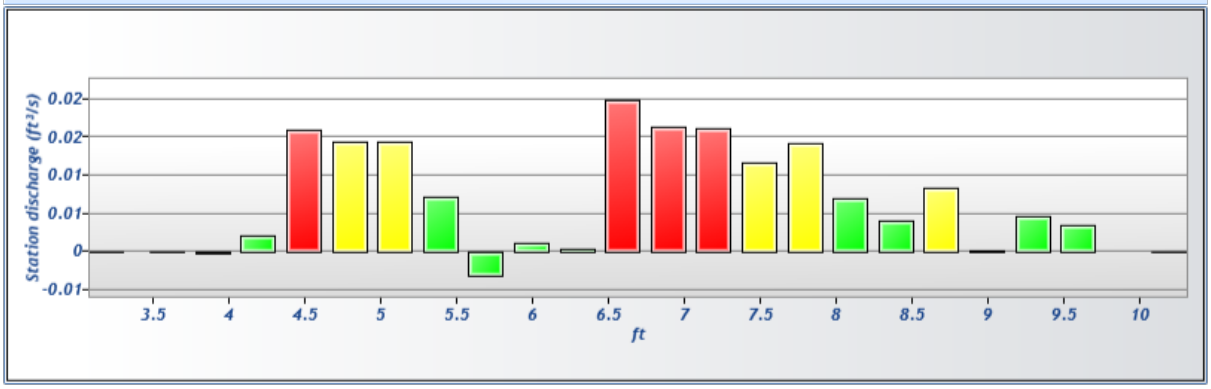
Data Collection Settings

Salinity	0.000	PSS-78
Temperature		°F
Sound speed		ft/s
Mounting correction	0.00	%

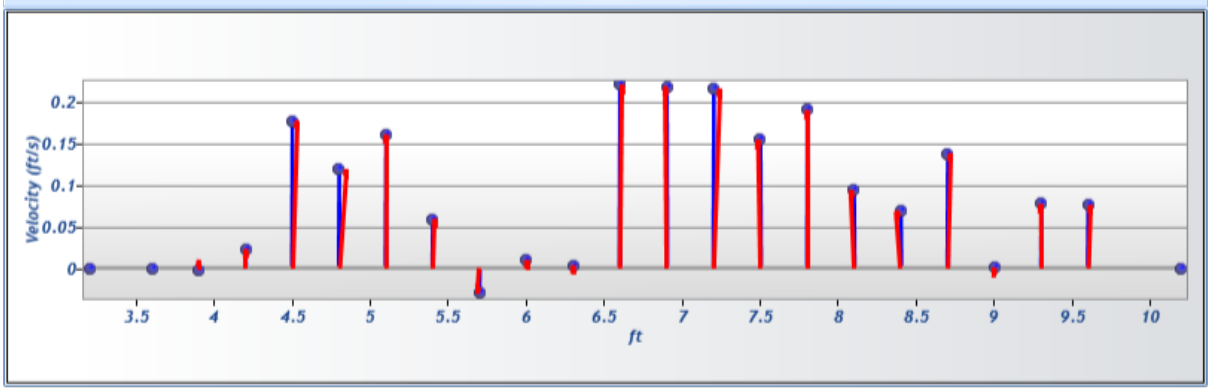
Quality Control Settings

SNR threshold	10	dB
Standard error threshold	0.0328	ft/s
Spike threshold	10.00	%
Maximum velocity angle	20.0	deg
Maximum tilt angle	5.0	deg

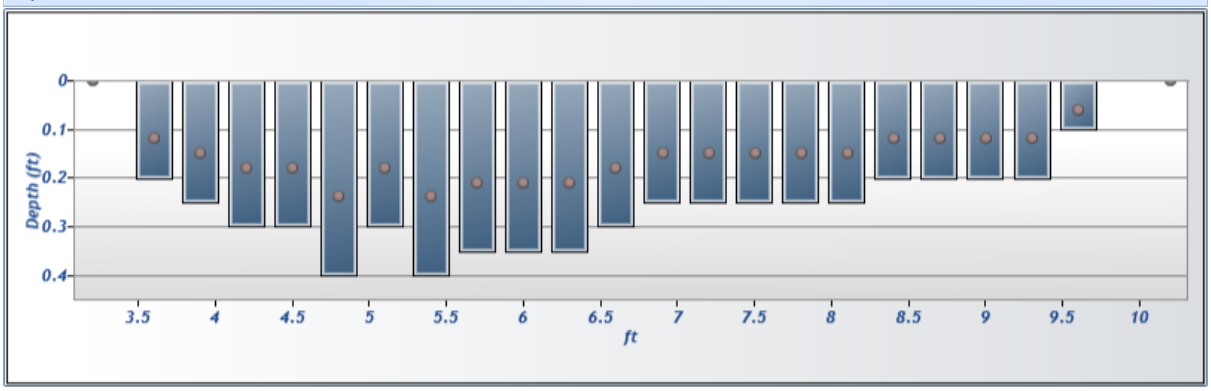
Discharge chart



Velocity chart



Depth chart



Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	11:15 AM	3.200	None	0.000	0.0000	0.000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	✓
1	11:16 AM	3.600	0.6	0.200	0.6000	0.120	80	-0.0004	1.0000	-0.0004	0.0700	0.0000	-0.02	✓
2	11:18 AM	3.900	0.6	0.250	0.6000	0.150	80	-0.0018	1.0000	-0.0018	0.0750	-0.0001	-0.08	✓
3	11:19 AM	4.200	0.6	0.300	0.6000	0.180	80	0.0228	1.0000	0.0228	0.0900	0.0020	1.29	✓
4	11:20 AM	4.500	0.6	0.300	0.6000	0.180	80	0.1772	1.0000	0.1772	0.0900	0.0160	10.08	✓
5	11:22 AM	4.800	0.6	0.400	0.6000	0.240	80	0.1194	1.0000	0.1194	0.1200	0.0143	9.05	✓
6	11:24 AM	5.100	0.6	0.300	0.6000	0.180	80	0.1608	1.0000	0.1608	0.0900	0.0145	9.14	✓
7	11:25 AM	5.400	0.6	0.400	0.6000	0.240	80	0.0591	1.0000	0.0591	0.1200	0.0071	4.48	✓
8	11:27 AM	5.700	0.6	0.350	0.6000	0.210	80	-0.0295	1.0000	-0.0295	0.1050	-0.0031	-1.96	✓
9	11:28 AM	6.000	0.6	0.350	0.6000	0.210	80	0.0100	1.0000	0.0100	0.1050	0.0010	0.66	✓
10	11:30 AM	6.300	0.6	0.350	0.6000	0.210	80	0.0037	1.0000	0.0037	0.1050	0.0004	0.25	✓
11	11:31 AM	6.600	0.6	0.300	0.6000	0.180	80	0.2212	1.0000	0.2212	0.0900	0.0199	12.58	✓
12	11:32 AM	6.900	0.6	0.250	0.6000	0.150	80	0.2188	1.0000	0.2188	0.0750	0.0164	10.37	✓
13	11:33 AM	7.200	0.6	0.250	0.6000	0.150	80	0.2164	1.0000	0.2164	0.0750	0.0162	10.25	✓
14	11:35 AM	7.500	0.6	0.250	0.6000	0.150	80	0.1554	1.0000	0.1554	0.0750	0.0117	7.36	✓
15	11:36 AM	7.800	0.6	0.250	0.6000	0.150	80	0.1905	1.0000	0.1905	0.0750	0.0143	9.03	✓
16	11:38 AM	8.100	0.6	0.250	0.6000	0.150	80	0.0944	1.0000	0.0944	0.0750	0.0071	4.47	✓
17	11:39 AM	8.400	0.6	0.200	0.6000	0.120	80	0.0691	1.0000	0.0691	0.0600	0.0041	2.62	✓
18	11:40 AM	8.700	0.6	0.200	0.6000	0.120	80	0.1380	1.0000	0.1380	0.0600	0.0083	5.23	✓
19	11:41 AM	9.000	0.6	0.200	0.6000	0.120	80	0.0016	1.0000	0.0016	0.0600	0.0001	0.06	✓
20	11:42 AM	9.300	0.6	0.200	0.6000	0.120	80	0.0779	1.0000	0.0779	0.0600	0.0047	2.95	✓
21	11:44 AM	9.600	0.6	0.100	0.6000	0.060	80	0.0769	1.0000	0.0769	0.0450	0.0035	2.19	✓
22	11:45 AM	10.200	None	0.000	0.0000	0.000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	✓

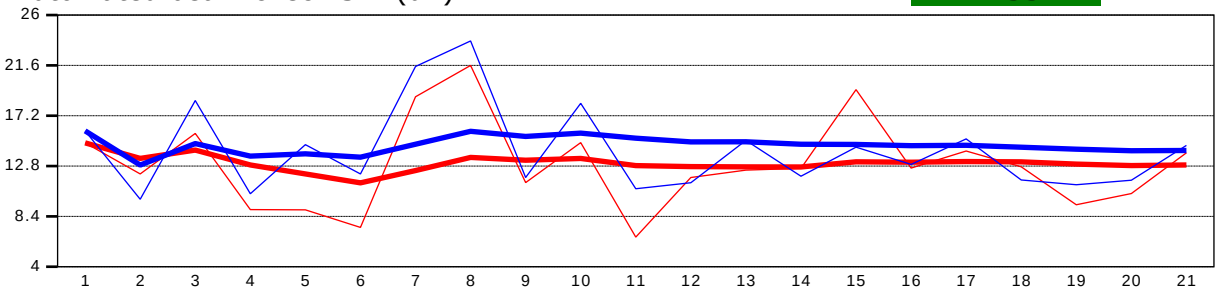
Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings	
1	11:16 AM	3.600	0.6	0.200	0.6000	0.120	Boundary Interference,SNR Threshold Variation,Standard Error > QC	
2	11:18 AM	3.900	0.6	0.250	0.6000	0.150	Boundary Interference,Beam SNRs Not Similar	
3	11:19 AM	4.200	0.6	0.300	0.6000	0.180	Boundary Interference	
4	11:20 AM	4.500	0.6	0.300	0.6000	0.180	Boundary Interference,High Stn % Discharge	
7	11:25 AM	5.400	0.6	0.400	0.6000	0.240	Large SNR Variation	
10	11:30 AM	6.300	0.6	0.350	0.6000	0.210	SNR Threshold Variation	
11	11:31 AM	6.600	0.6	0.300	0.6000	0.180	High Stn % Discharge	
12	11:32 AM	6.900	0.6	0.250	0.6000	0.150	High Stn % Discharge	
13	11:33 AM	7.200	0.6	0.250	0.6000	0.150	Boundary Interference,High Stn % Discharge	
17	11:39 AM	8.400	0.6	0.200	0.6000	0.120	Velocity Angle > QC	
19	11:41 AM	9.000	0.6	0.200	0.6000	0.120	SNR Threshold Variation	
21	11:44 AM	9.600	0.6	0.100	0.6000	0.060	Boundary Interference	

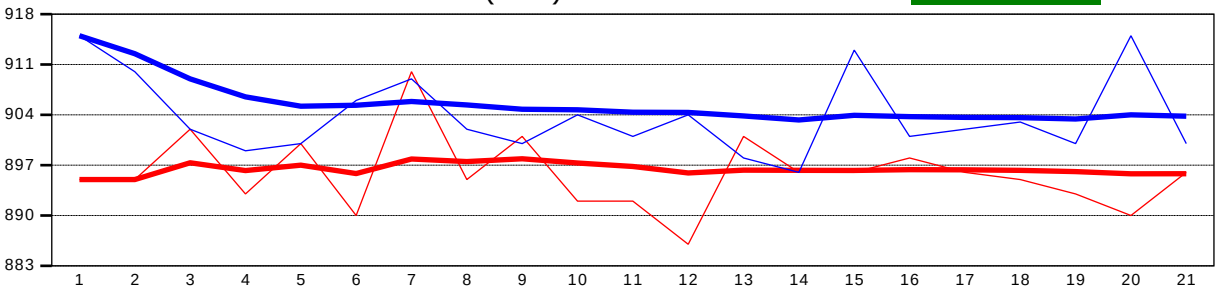
3/19/2018 12:46:56 PM

Automated beam check Start time 3/16/2018 11:15:26 AM

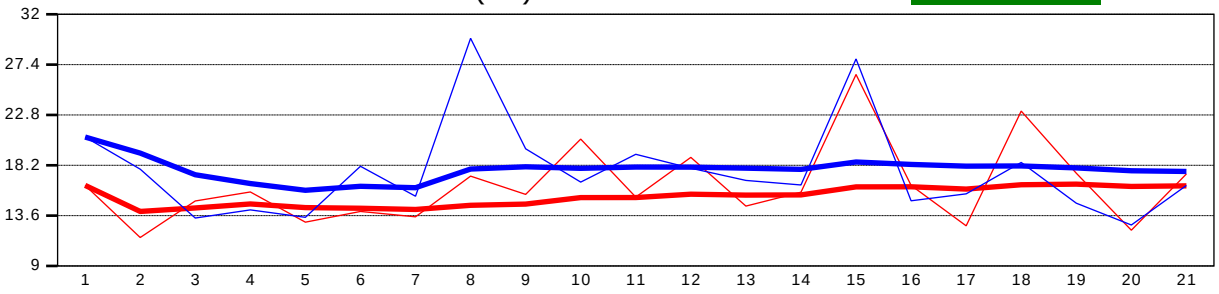
Automated beam check SNR(dB) PASS



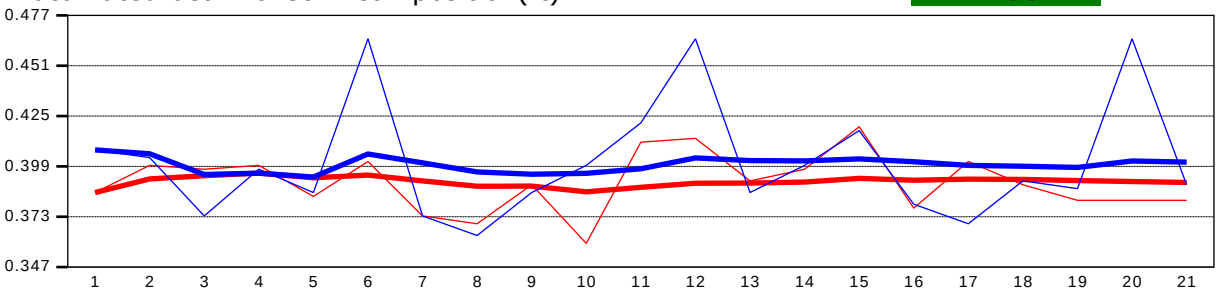
Automated beam check Noise level(cnts) PASS



Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

File Information

File name	20180316_North Fork Little Thompson River_2.ft
Start date and time	3/16/2018 12:19 PM
Calculations engine	FlowTracker2
Data collection mode	Discharge

Discharge Summary

Start time	3/16/2018 12:21:47 PM	End time	3/16/2018 12:50:19 PM
# Stations	23	Avg interval	40
Mean depth	0.287 ft		
Mean velocity	0.0494 ft/s	Total width	10.800 ft
Mean SNR	19 dB	Total area	3.1000 ft²
Mean temp	47.326 °F	Total discharge	0.1532 ft³/s

System Information

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

Site Details

Site name	North Fork Little Thompson River
Site number	0316
Operator(s)	Jack Landers
Comment	Temp gage

Discharge Uncertainty

Category	ISO	IVE
Accuracy	1.0 %	1.0 %
Depth	0.4 %	8.2 %
Velocity	0.9 %	12.4 %
Width	0.1 %	0.1 %
Method	2.0 %	
# Stations	2.2 %	
Overall	3.2 %	14.9 %

Discharge Settings

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Measured

Station Warning Settings

Station discharge caution	5.00	%
Station discharge warning	10.00	%
Maximum depth change	50.00	%
Maximum spacing change	100.00	%

Summary overview

No changes were made to this file
Quality control warnings

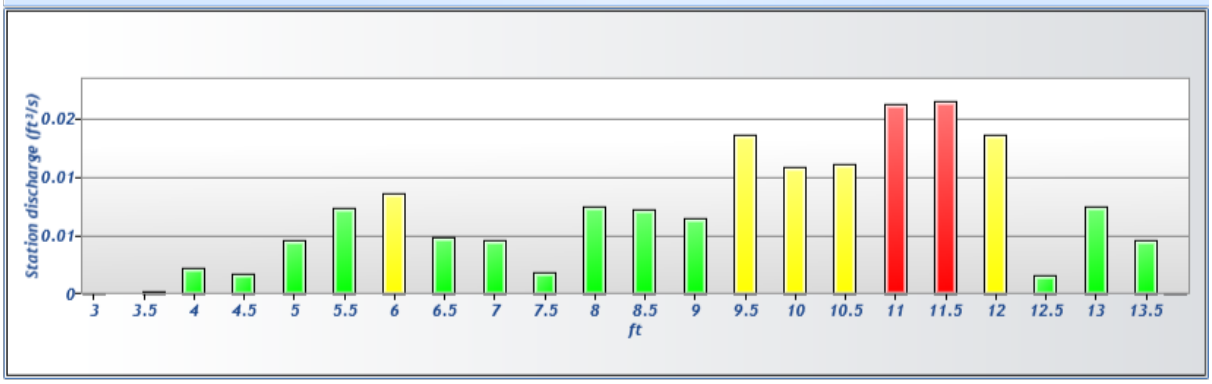
Data Collection Settings

Salinity	0.000	PSS-78
Temperature		°F
Sound speed		ft/s
Mounting correction	0.00	%

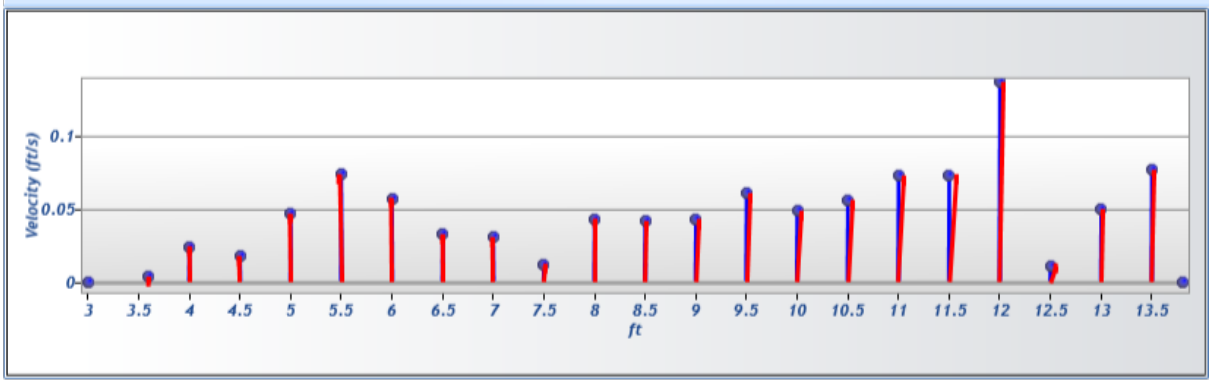
Quality Control Settings

SNR threshold	10	dB
Standard error threshold	0.0328	ft/s
Spike threshold	10.00	%
Maximum velocity angle	20.0	deg
Maximum tilt angle	5.0	deg

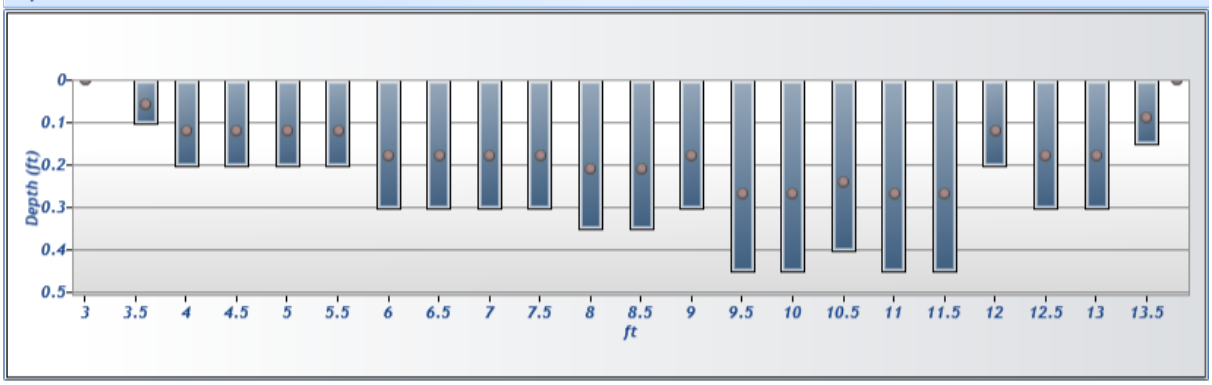
Discharge chart



Velocity chart



Depth chart



Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	12:21 PM	3.000	None	0.000	0.0000	0.000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	✓
1	12:21 PM	3.600	0.6	0.100	0.6000	0.060	80	0.0038	1.0000	0.0038	0.0500	0.0002	0.12	✓
2	12:24 PM	4.000	0.6	0.200	0.6000	0.120	80	0.0243	1.0000	0.0243	0.0900	0.0022	1.43	✓
3	12:25 PM	4.500	0.6	0.200	0.6000	0.120	80	0.0180	1.0000	0.0180	0.1000	0.0018	1.17	✓
4	12:26 PM	5.000	0.6	0.200	0.6000	0.120	80	0.0465	1.0000	0.0465	0.1000	0.0046	3.03	✓
5	12:27 PM	5.500	0.6	0.200	0.6000	0.120	80	0.0734	1.0000	0.0734	0.1000	0.0073	4.79	✓
6	12:29 PM	6.000	0.6	0.300	0.6000	0.180	80	0.0573	1.0000	0.0573	0.1500	0.0086	5.61	✓
7	12:30 PM	6.500	0.6	0.300	0.6000	0.180	80	0.0326	1.0000	0.0326	0.1500	0.0049	3.19	✓
8	12:31 PM	7.000	0.6	0.300	0.6000	0.180	80	0.0306	1.0000	0.0306	0.1500	0.0046	2.99	✓
9	12:32 PM	7.500	0.6	0.300	0.6000	0.180	80	0.0125	1.0000	0.0125	0.1500	0.0019	1.23	✓
10	12:34 PM	8.000	0.6	0.350	0.6000	0.210	80	0.0432	1.0000	0.0432	0.1750	0.0076	4.93	✓
11	12:35 PM	8.500	0.6	0.350	0.6000	0.210	80	0.0416	1.0000	0.0416	0.1750	0.0073	4.75	✓
12	12:37 PM	9.000	0.6	0.300	0.6000	0.180	80	0.0430	1.0000	0.0430	0.1500	0.0065	4.21	✓
13	12:38 PM	9.500	0.6	0.450	0.6000	0.270	80	0.0605	1.0000	0.0605	0.2250	0.0136	8.89	✓
14	12:39 PM	10.000	0.6	0.450	0.6000	0.270	80	0.0484	1.0000	0.0484	0.2250	0.0109	7.11	✓
15	12:41 PM	10.500	0.6	0.400	0.6000	0.240	80	0.0559	1.0000	0.0559	0.2000	0.0112	7.30	✓
16	12:42 PM	11.000	0.6	0.450	0.6000	0.270	73	0.0724	1.0000	0.0724	0.2250	0.0163	10.64	✓
17	12:43 PM	11.500	0.6	0.450	0.6000	0.270	80	0.0732	1.0000	0.0732	0.2250	0.0165	10.75	✓
18	12:44 PM	12.000	0.6	0.200	0.6000	0.120	80	0.1359	1.0000	0.1359	0.1000	0.0136	8.87	✓
19	12:46 PM	12.500	0.6	0.300	0.6000	0.180	80	0.0111	1.0000	0.0111	0.1500	0.0017	1.09	✓
20	12:47 PM	13.000	0.6	0.300	0.6000	0.180	80	0.0498	1.0000	0.0498	0.1500	0.0075	4.88	✓
21	12:48 PM	13.500	0.6	0.150	0.6000	0.090	80	0.0765	1.0000	0.0765	0.0600	0.0046	3.00	✓
22	12:50 PM	13.800	None	0.000	0.0000	0.000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	✓

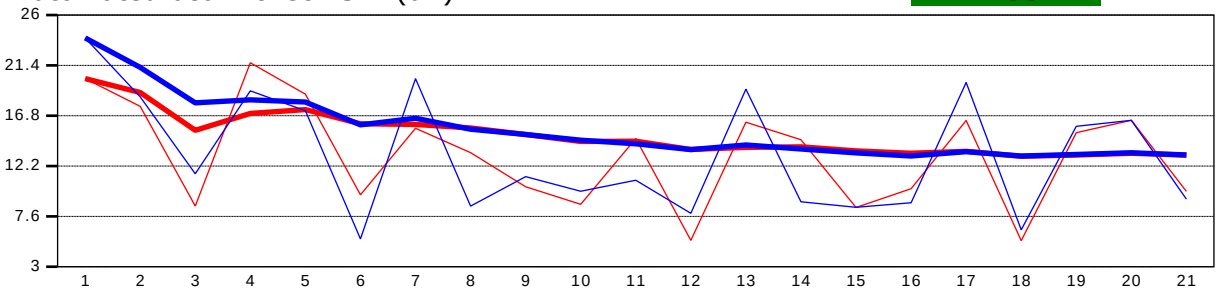
Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings	
1	12:21 PM	3.600	0.6	0.100	0.6000	0.060	SNR Threshold Variation	
2	12:24 PM	4.000	0.6	0.200	0.6000	0.120	Large SNR Variation	
3	12:25 PM	4.500	0.6	0.200	0.6000	0.120	Boundary Interference	
4	12:26 PM	5.000	0.6	0.200	0.6000	0.120	Boundary Interference	
8	12:31 PM	7.000	0.6	0.300	0.6000	0.180	Boundary Interference	
9	12:32 PM	7.500	0.6	0.300	0.6000	0.180	Large SNR Variation	
11	12:35 PM	8.500	0.6	0.350	0.6000	0.210	Boundary Interference	
16	12:42 PM	11.000	0.6	0.450	0.6000	0.270	Velocity Angle > QC,High Stn % Discharge	
17	12:43 PM	11.500	0.6	0.450	0.6000	0.270	Velocity Angle > QC,High Stn % Discharge	

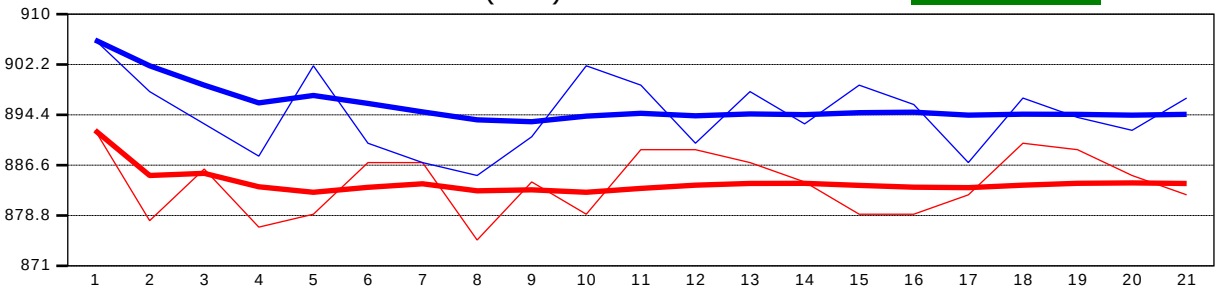
3/19/2018 12:48:29 PM

Automated beam check Start time 3/16/2018 12:19:41 PM

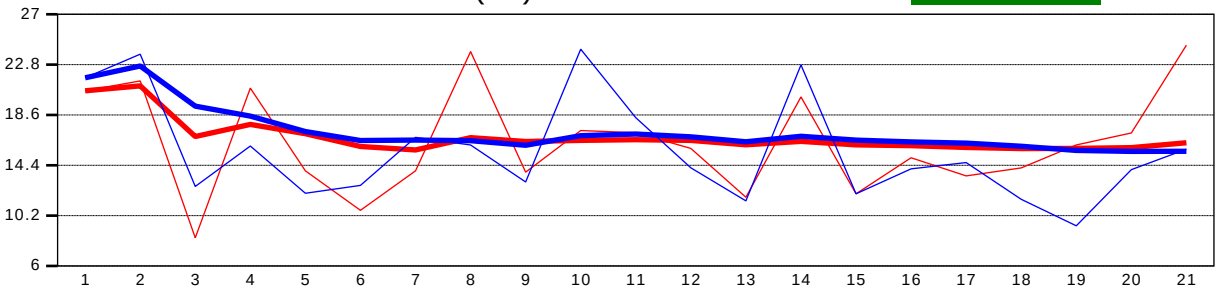
Automated beam check SNR(dB) PASS



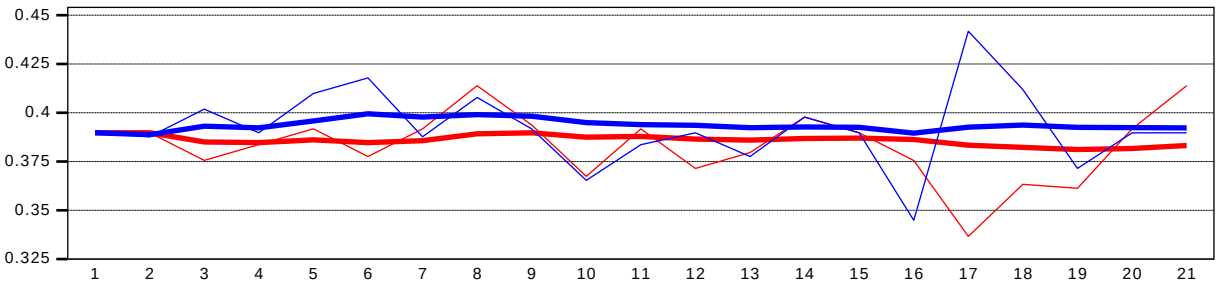
Automated beam check Noise level(cnts) PASS



Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

File Information

File name	20180322_N Fk Little Thompson - D1.ft
Start date and time	3/22/2018 1:33 PM
Calculations engine	FlowTracker2
Data collection mode	Discharge

Discharge Summary

Start time	3/22/2018 1:34:11 PM	End time	3/22/2018 1:51:21 PM
# Stations	14	Avg interval	40
Mean depth	0.598 ft		
Mean velocity	0.0687 ft/s	Total width	4.200 ft
Mean SNR	28 dB	Total area	2.5100 ft²
Mean temp	46.441 °F	Total discharge	0.1725 ft³/s

System Information

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

Site Details

Site name	N Fk Little Thompson - D1
Site number	0322
Operator(s)	Jack Landers
Comment	Temp gage

Discharge Uncertainty

Category	ISO	IVE
Accuracy	1.0 %	1.0 %
Depth	0.6 %	7.1 %
Velocity	8.8 %	15.3 %
Width	0.2 %	0.2 %
Method	2.8 %	
# Stations	3.6 %	
Overall	10.0 %	16.9 %

Discharge Settings

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Station Warning Settings

Station discharge caution	5.00	%
Station discharge warning	10.00	%
Maximum depth change	50.00	%
Maximum spacing change	100.00	%

Summary overview

No changes were made to this file
Quality control warnings

Data Collection Settings

Salinity	0.000	PSS-78
Temperature		°F
Sound speed		ft/s
Mounting correction	0.00	%

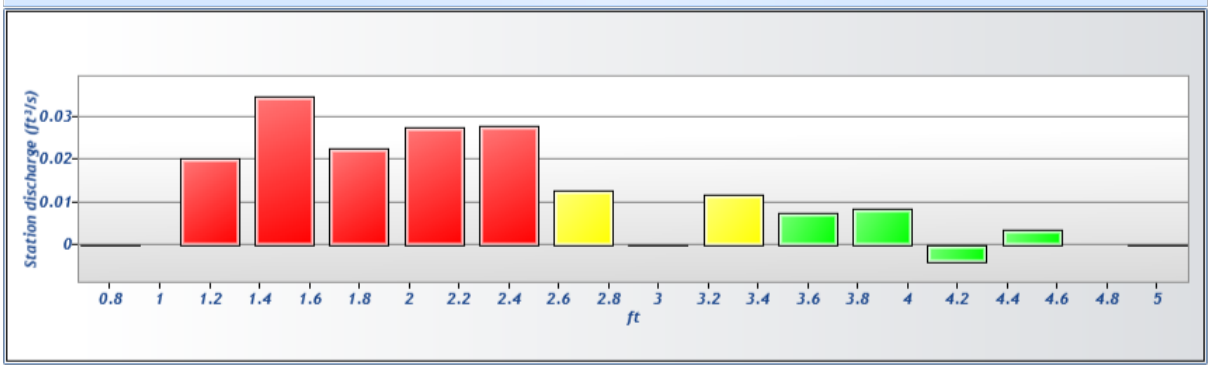
Quality Control Settings

SNR threshold	10	dB
Standard error threshold	0.0328	ft/s
Spike threshold	10.00	%
Maximum velocity angle	20.0	deg
Maximum tilt angle	5.0	deg

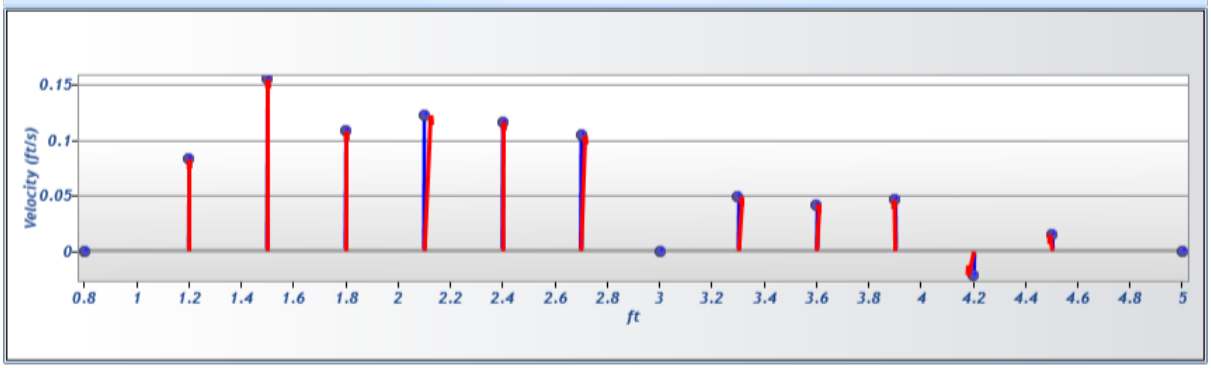
Supplemental data summary

Gauge height time	*Gauge height (ft)*	*Rated discharge (ft³/s)*	*Temperature (°F)*	*Salinity (PSS-78)*	*Gauge height comments*
3/22/2018 1:51:41 PM	0.470				

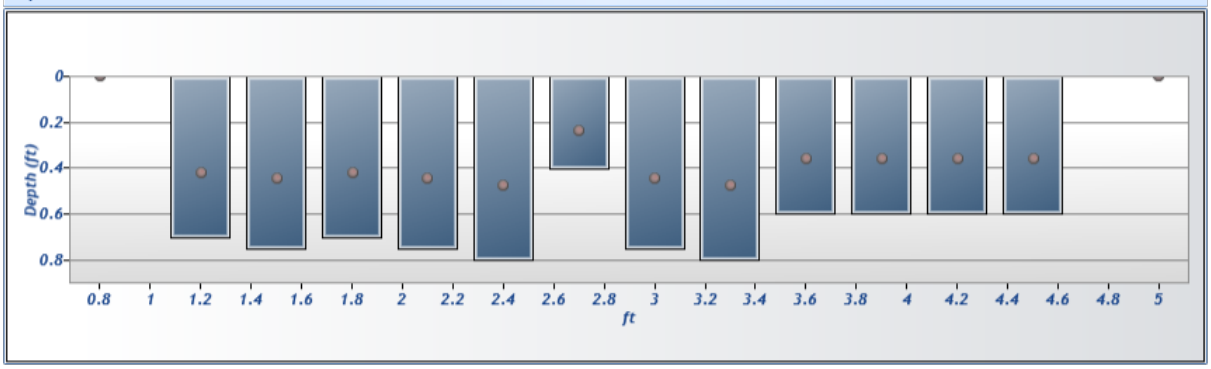
Discharge chart



Velocity chart



Depth chart



Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft^2)	Flow (ft^3/s)	%Q	
0	1:34 PM	0.800	None	0.000	0.0000	0.000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	✓
1	1:34 PM	1.200	0.6	0.700	0.6000	0.420	80	0.0824	1.0000	0.0824	0.2450	0.0202	11.71	✓
2	1:36 PM	1.500	0.6	0.750	0.6000	0.450	80	0.1548	1.0000	0.1548	0.2250	0.0348	20.20	✓
3	1:37 PM	1.800	0.6	0.700	0.6000	0.420	80	0.1079	1.0000	0.1079	0.2100	0.0227	13.14	✓
4	1:39 PM	2.100	0.6	0.750	0.6000	0.450	80	0.1220	1.0000	0.1220	0.2250	0.0274	15.91	✓
5	1:40 PM	2.400	0.6	0.800	0.6000	0.480	80	0.1158	1.0000	0.1158	0.2400	0.0278	16.12	✓
6	1:41 PM	2.700	0.6	0.400	0.6000	0.240	80	0.1044	1.0000	0.1044	0.1200	0.0125	7.26	✓
7	1:43 PM	3.000	0.6	0.750	0.6000	0.450	80	-0.0001	1.0000	-0.0001	0.2250	0.0000	-0.01	✓
8	1:44 PM	3.300	0.6	0.800	0.6000	0.480	80	0.0484	1.0000	0.0484	0.2400	0.0116	6.73	✓
9	1:46 PM	3.600	0.6	0.600	0.6000	0.360	80	0.0418	1.0000	0.0418	0.1800	0.0075	4.37	✓
10	1:47 PM	3.900	0.6	0.600	0.6000	0.360	80	0.0460	1.0000	0.0460	0.1800	0.0083	4.80	✓
11	1:48 PM	4.200	0.6	0.600	0.6000	0.360	80	-0.0223	1.0000	-0.0223	0.1800	-0.0040	-2.32	✓
12	1:50 PM	4.500	0.6	0.600	0.6000	0.360	80	0.0151	1.0000	0.0151	0.2400	0.0036	2.09	✓
13	1:51 PM	5.000	None	0.000	0.0000	0.000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	✓

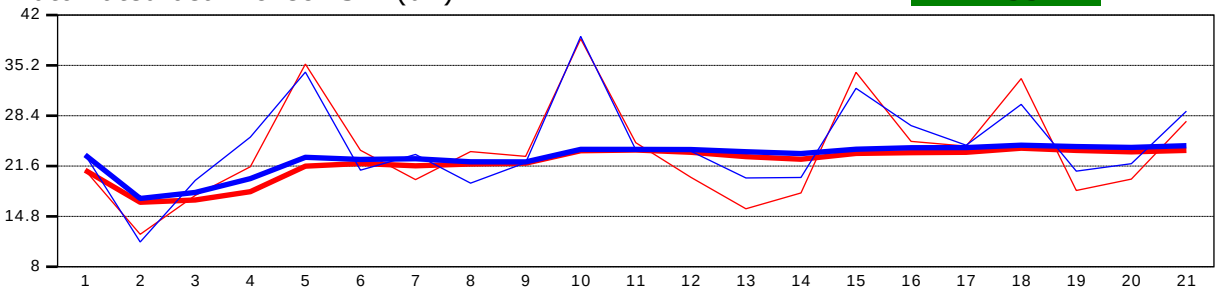
Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings	
1	1:34 PM	1.200	0.6	0.700	0.6000	0.420	High Stn % Discharge	
2	1:36 PM	1.500	0.6	0.750	0.6000	0.450	High Stn % Discharge	
3	1:37 PM	1.800	0.6	0.700	0.6000	0.420	High Stn % Discharge	
4	1:39 PM	2.100	0.6	0.750	0.6000	0.450	High Stn % Discharge	
5	1:40 PM	2.400	0.6	0.800	0.6000	0.480	High Stn % Discharge	
7	1:43 PM	3.000	0.6	0.750	0.6000	0.450	SNR Threshold Variation	
8	1:44 PM	3.300	0.6	0.800	0.6000	0.480	Boundary Interference,Standard Error > QC	
10	1:47 PM	3.900	0.6	0.600	0.6000	0.360	Large SNR Variation	
11	1:48 PM	4.200	0.6	0.600	0.6000	0.360	SNR Threshold Variation	
12	1:50 PM	4.500	0.6	0.600	0.6000	0.360	Large SNR Variation	

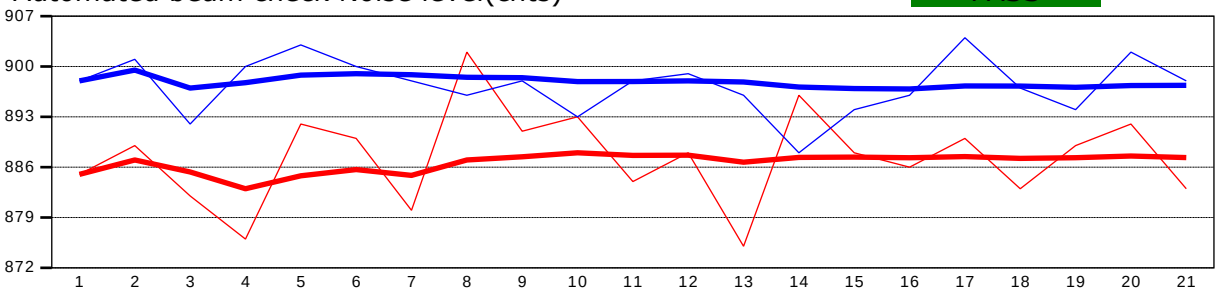
3/23/2018 1:31:31 PM

Automated beam check Start time 3/22/2018 1:33:49 PM

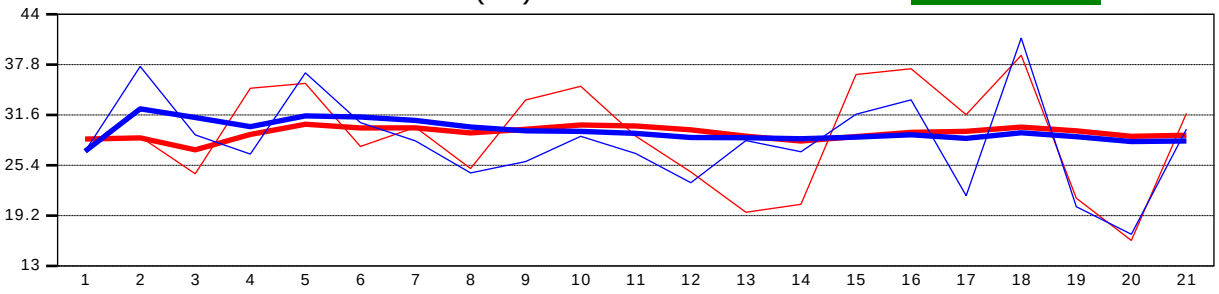
Automated beam check SNR(dB) PASS



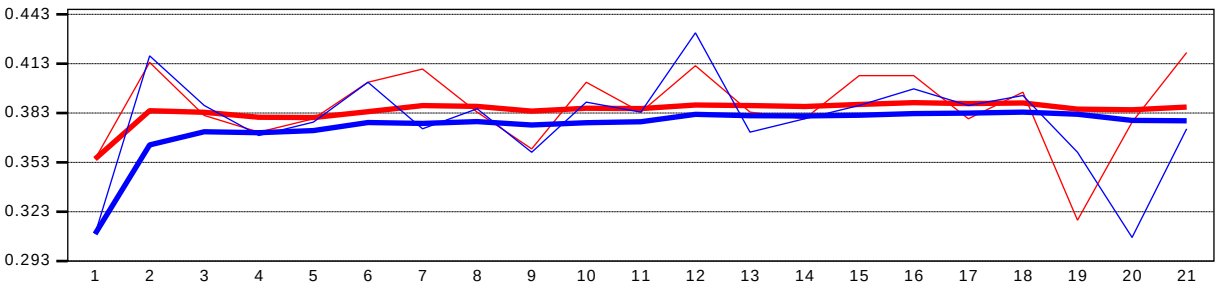
Automated beam check Noise level(cnts) PASS



Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

Start time	4/23/2018 11:17 AM
End time	4/23/2018 11:40 AM
Start location latitude	40.324
Start location longitude	-105.305
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
15	40	0.4291

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
4.200	2.6550	5.087

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
32	0.632	0.1616

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
48.397	0.900	0.4082

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.7%	5.3%
Velocity	1.2%	9.9%
Width	0.2%	0.2%
Method	3.4%	
# Stations	3.3%	
Overall	**5.1%**	**11.3%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

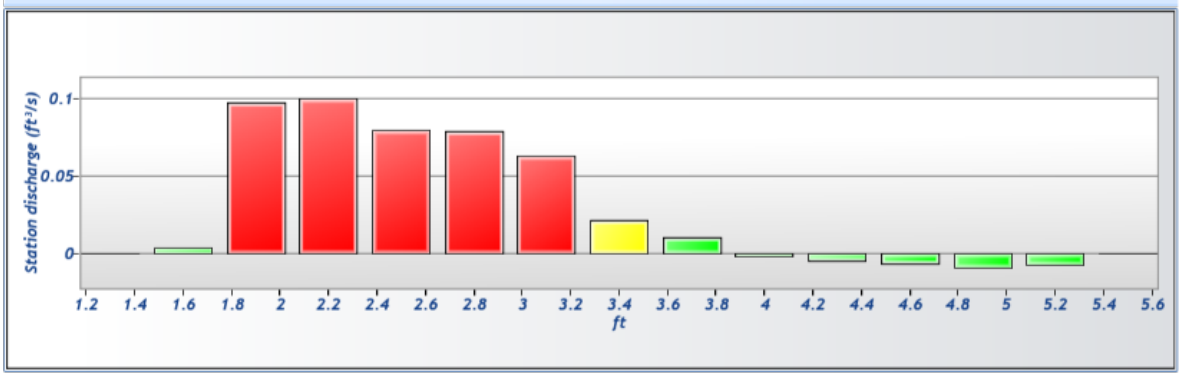
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

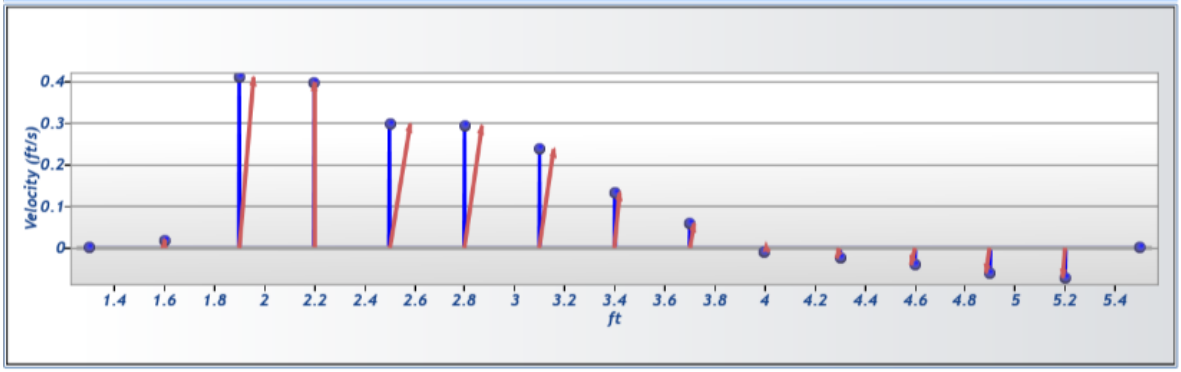
Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

Station Warning Settings		
Station discharge OK	Station discharge < 5.00%	
Station discharge caution	5.00% >= Station discharge < 10.00%	
Station discharge warning	Station discharge >= 10.00%	

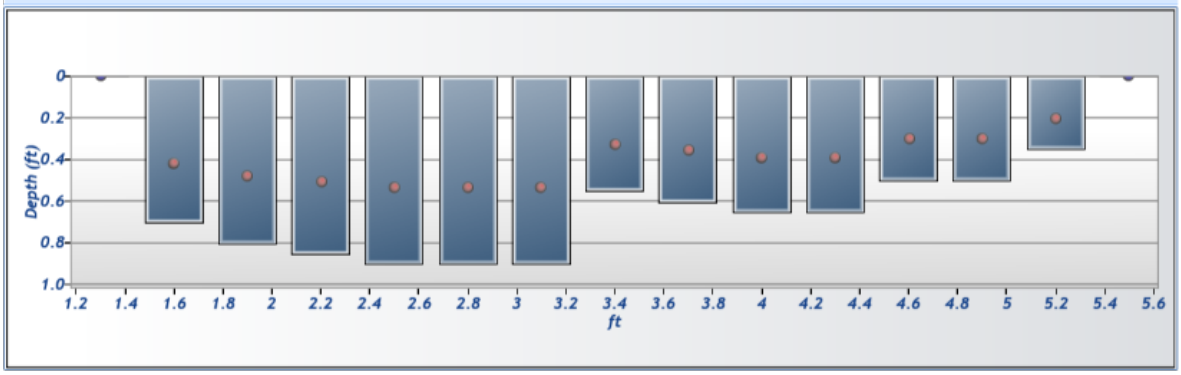
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft^2)	Flow (ft^3/s)	%Q	
0	11:17 AM	1.300	None	0.000	0.0000	0.000	0	0.0000	1.0000	0.0191	0.0000	0.0000	0.00	✓
1	11:17 AM	1.600	0.6	0.700	0.6000	0.420	80	0.0191	1.0000	0.0191	0.2100	0.0040	0.94	✓
2	11:21 AM	1.900	0.6	0.800	0.6000	0.480	80	0.4082	1.0000	0.4082	0.2400	0.0980	22.83	✓
3	11:22 AM	2.200	0.6	0.850	0.6000	0.510	80	0.3961	1.0000	0.3961	0.2550	0.1010	23.54	✓
4	11:24 AM	2.500	0.6	0.900	0.6000	0.540	80	0.2958	1.0000	0.2958	0.2700	0.0799	18.61	✓
5	11:25 AM	2.800	0.6	0.900	0.6000	0.540	80	0.2924	1.0000	0.2924	0.2700	0.0789	18.40	✓
6	11:26 AM	3.100	0.6	0.900	0.6000	0.540	80	0.2364	1.0000	0.2364	0.2700	0.0638	14.88	✓
7	11:28 AM	3.400	0.6	0.550	0.6000	0.330	80	0.1328	1.0000	0.1328	0.1650	0.0219	5.10	✓
8	11:29 AM	3.700	0.6	0.600	0.6000	0.360	80	0.0592	1.0000	0.0592	0.1800	0.0106	2.48	✓
9	11:31 AM	4.000	0.6	0.650	0.6000	0.390	80	-0.0087	1.0000	-0.0087	0.1950	-0.0017	-0.40	✓
10	11:32 AM	4.300	0.6	0.650	0.6000	0.390	80	-0.0239	1.0000	-0.0239	0.1950	-0.0047	-1.09	✓
11	11:34 AM	4.600	0.6	0.500	0.6000	0.300	80	-0.0410	1.0000	-0.0410	0.1500	-0.0062	-1.43	✓
12	11:37 AM	4.900	0.6	0.500	0.6000	0.300	80	-0.0602	1.0000	-0.0602	0.1500	-0.0090	-2.11	✓
13	11:38 AM	5.200	0.6	0.350	0.6000	0.210	80	-0.0718	1.0000	-0.0718	0.1050	-0.0075	-1.76	✓
14	11:40 AM	5.500	None	0.000	0.0000	0.000	0	0.0000	1.0000	-0.0718	0.0000	0.0000	0.00	✓

Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	10 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	11:17 AM	1.600	0.6	0.700	0.6000	0.420	SNR Threshold Variation
2	11:21 AM	1.900	0.6	0.800	0.6000	0.480	High Stn % Discharge
3	11:22 AM	2.200	0.6	0.850	0.6000	0.510	High Stn % Discharge
4	11:24 AM	2.500	0.6	0.900	0.6000	0.540	High Stn % Discharge
5	11:25 AM	2.800	0.6	0.900	0.6000	0.540	High Stn % Discharge
6	11:26 AM	3.100	0.6	0.900	0.6000	0.540	High Stn % Discharge
8	11:29 AM	3.700	0.6	0.600	0.6000	0.360	Large SNR Variation
13	11:38 AM	5.200	0.6	0.350	0.6000	0.210	Large SNR Variation,Velocity Angle > QC

Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

Supplemental data summary

Gauge height time	Gauge height (ft)	Rated discharge (ft³/s)	Temperature (°F)	Salinity (PSS-78)	Gauge height comments
4/23/2018 11:16 AM	0.520				
4/23/2018 11:41 AM	0.520				

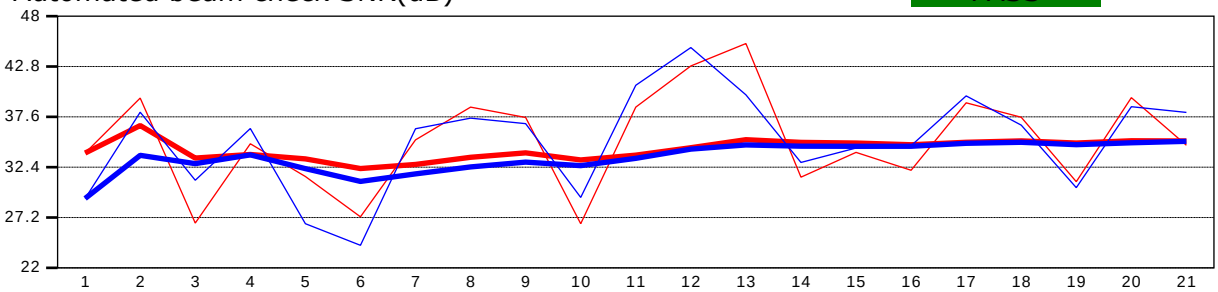
Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

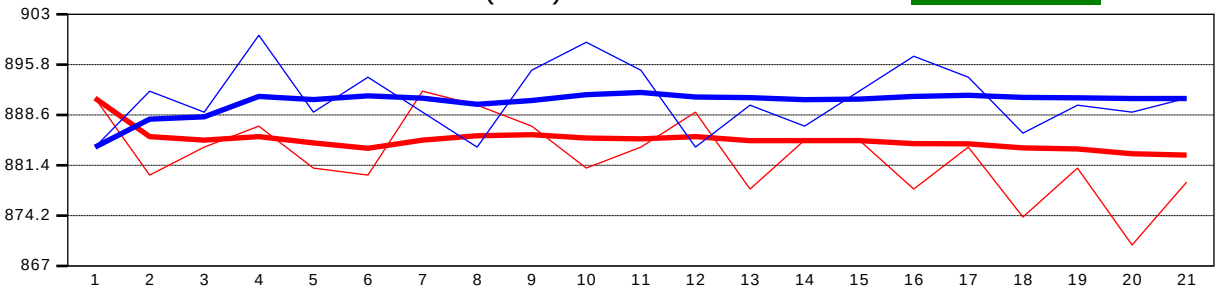
Beam 1	
Beam 2	

Automated beam check Start time 4/23/2018 11:16:33 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

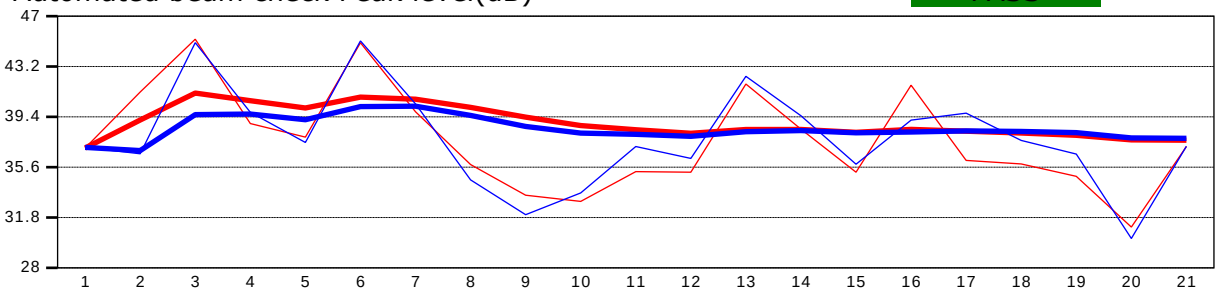
Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0423
Operator(s)	Jack Landers
File name	20180423_N Fk Little Thompson - D1.ft
Comment	Temp gage

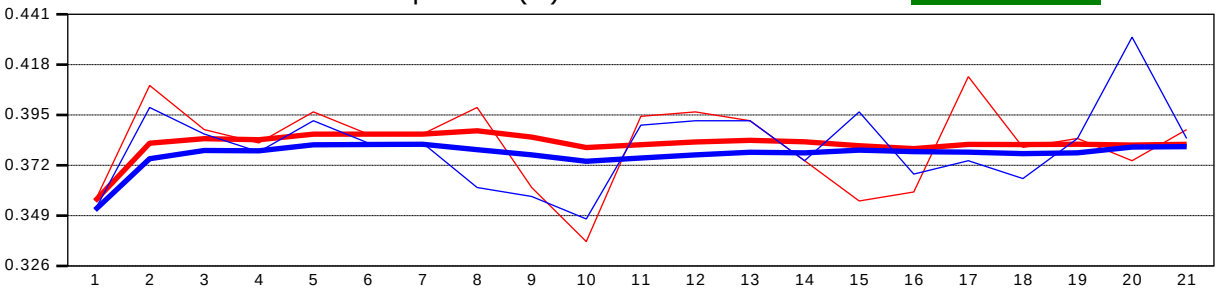
Beam 1	
Beam 2	

Automated beam check Start time 4/23/2018 11:16:33 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

Start time	4/30/2018 1:23 PM
End time	4/30/2018 1:56 PM
Start location latitude	40.311
Start location longitude	-105.303
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
17	40	2.7823

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
15.000	7.9450	15.154

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
31	0.530	0.3502

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
59.535	0.850	0.4497

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.5%	4.9%
Velocity	0.5%	2.1%
Width	0.2%	0.2%
Method	2.5%	
# Stations	3.0%	
Overall	**4.1%**	**5.4%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

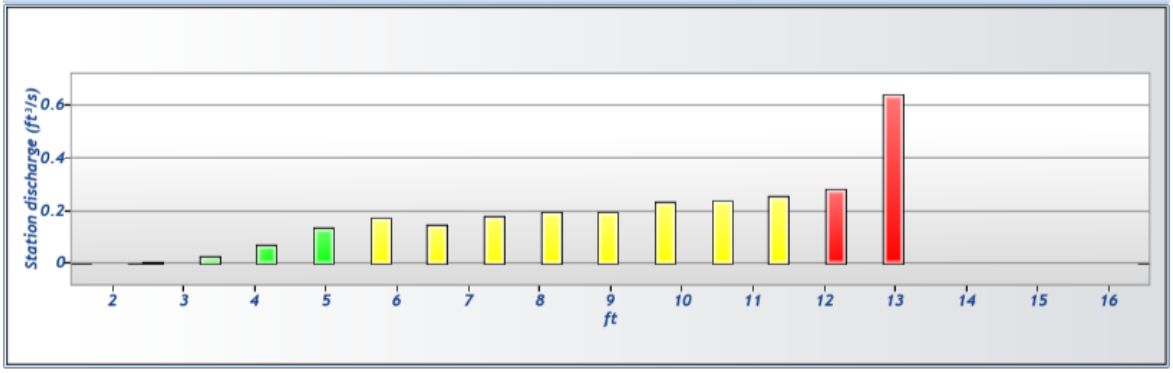
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

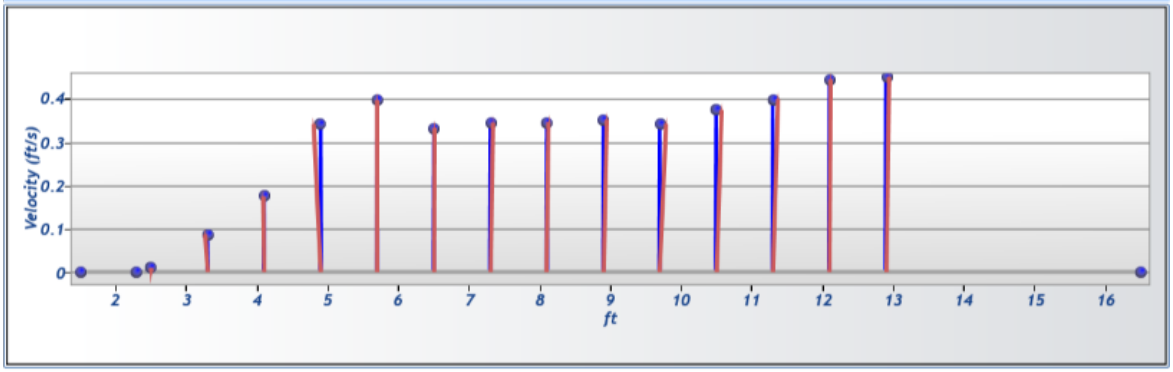
Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

Station Warning Settings		
Station discharge OK	Station discharge < 5.00%	
Station discharge caution	5.00% >= Station discharge < 10.00%	
Station discharge warning	Station discharge >= 10.00%	

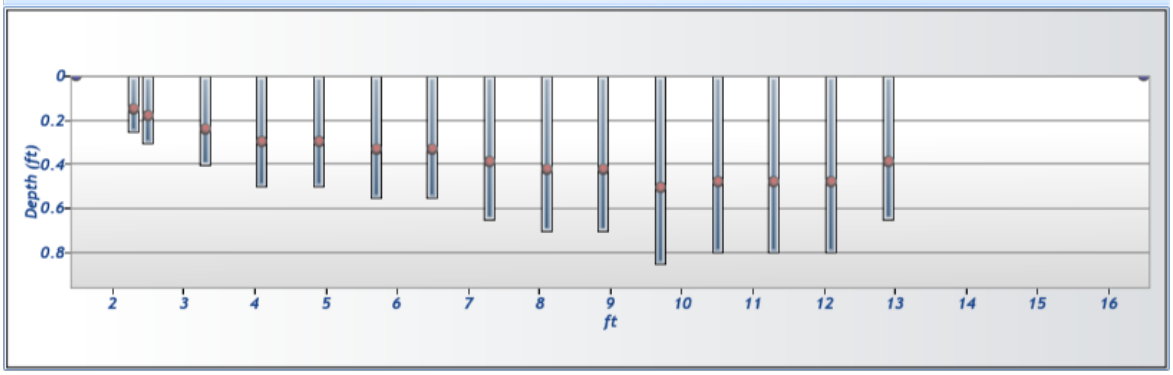
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	1:23 PM	1.500	None	0.000	0.0000	0.000	0	0.0000	1.0000	-0.0004	0.0000	0.0000	0.00	✓
1	1:23 PM	2.300	0.6	0.250	0.6000	0.150	80	-0.0004	1.0000	-0.0004	0.1250	-0.0001	0.00	✓
2	1:25 PM	2.500	0.6	0.300	0.6000	0.180	80	0.0097	1.0000	0.0097	0.1500	0.0014	0.05	✓
3	1:27 PM	3.300	0.6	0.400	0.6000	0.240	80	0.0870	1.0000	0.0870	0.3200	0.0278	1.00	✓
4	1:28 PM	4.100	0.6	0.500	0.6000	0.300	80	0.1748	1.0000	0.1748	0.4000	0.0699	2.51	✓
5	1:29 PM	4.900	0.6	0.500	0.6000	0.300	80	0.3415	1.0000	0.3415	0.4000	0.1366	4.91	✓
6	1:31 PM	5.700	0.6	0.550	0.6000	0.330	80	0.3969	1.0000	0.3969	0.4400	0.1746	6.28	✓
7	1:32 PM	6.500	0.6	0.550	0.6000	0.330	80	0.3328	1.0000	0.3328	0.4400	0.1464	5.26	✓
8	1:34 PM	7.300	0.6	0.650	0.6000	0.390	80	0.3449	1.0000	0.3449	0.5200	0.1794	6.45	✓
9	1:35 PM	8.100	0.6	0.700	0.6000	0.420	80	0.3464	1.0000	0.3464	0.5600	0.1940	6.97	✓
10	1:36 PM	8.900	0.6	0.700	0.6000	0.420	80	0.3519	1.0000	0.3519	0.5600	0.1971	7.08	✓
11	1:38 PM	9.700	0.6	0.850	0.6000	0.510	80	0.3423	1.0000	0.3423	0.6800	0.2328	8.37	✓
12	1:39 PM	10.500	0.6	0.800	0.6000	0.480	80	0.3741	1.0000	0.3741	0.6400	0.2394	8.61	✓
13	1:41 PM	11.300	0.6	0.800	0.6000	0.480	80	0.3989	1.0000	0.3989	0.6400	0.2553	9.17	✓
14	1:42 PM	12.100	0.6	0.800	0.6000	0.480	80	0.4446	1.0000	0.4446	0.6400	0.2845	10.23	✓
15	1:43 PM	12.900	0.6	0.650	0.6000	0.390	80	0.4497	1.0000	0.4497	1.4300	0.6430	23.11	✓
16	1:56 PM	16.500	None	0.000	0.0000	0.000	0	0.0000	1.0000	0.4497	0.0000	0.0000	0.00	✓

Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	10 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	1:23 PM	2.300	0.6	0.250	0.6000	0.150	Boundary Interference,SNR Threshold Variation
2	1:25 PM	2.500	0.6	0.300	0.6000	0.180	Boundary Interference
3	1:27 PM	3.300	0.6	0.400	0.6000	0.240	Stn Spacing > QC,Boundary Interference,Standard Error > QC,Velocity Angle > QC
14	1:42 PM	12.100	0.6	0.800	0.6000	0.480	High Stn % Discharge
15	1:43 PM	12.900	0.6	0.650	0.6000	0.390	High Stn % Discharge
16	1:56 PM	16.500	None	0.000	0.0000	0.000	Stn Spacing > QC

Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

Supplemental data summary

Gauge height time	Gauge height (ft)	Rated discharge (ft³/s)	Temperature (°F)	Salinity (PSS-78)	Gauge height comments
4/30/2018 1:54 PM	1.550				

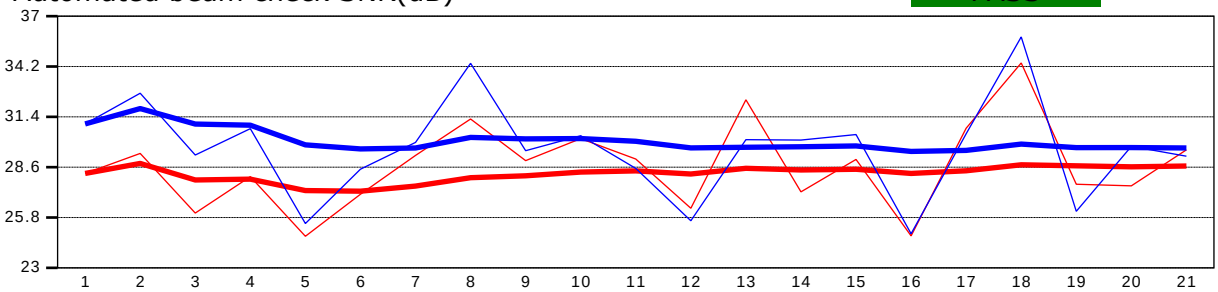
Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

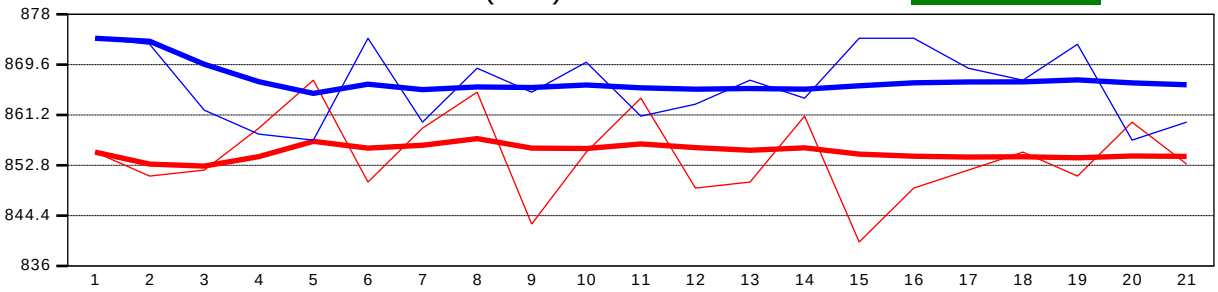
Beam 1	
Beam 2	

Automated beam check Start time 4/30/2018 1:22:33 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

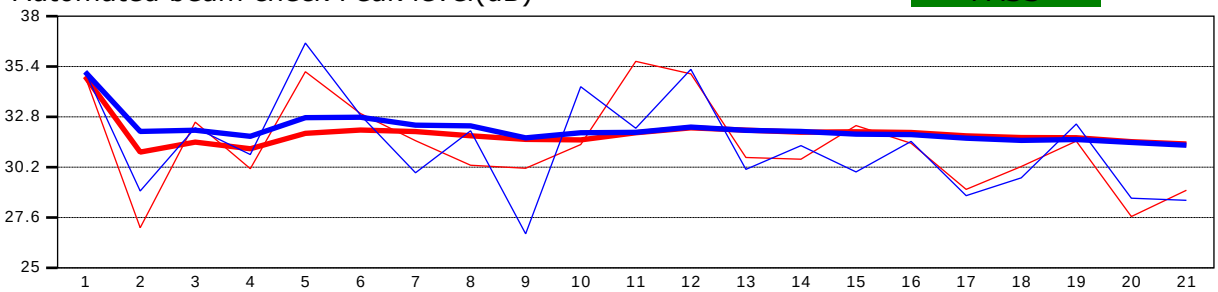
Discharge Measurement Summary

Site name	N Fk Little Thompson - D1
Site number	0430
Operator(s)	Jack Landers
File name	20180430_N Fk Little Thompson - D1.ft
Comment	At van cleve bridge

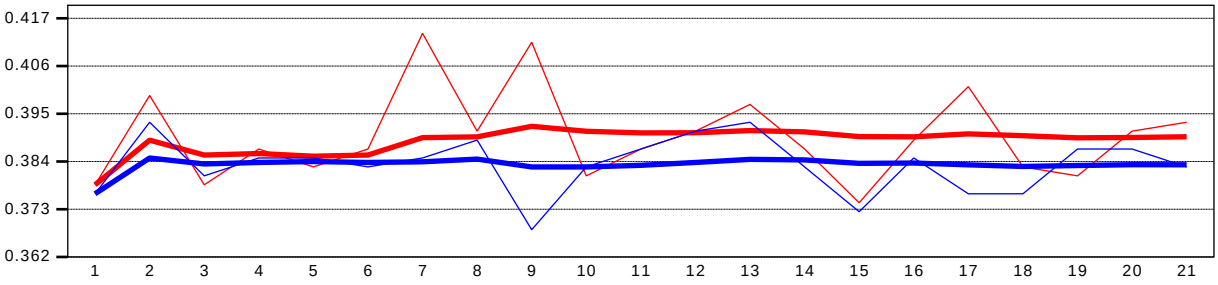
Beam 1	
Beam 2	

Automated beam check Start time 4/30/2018 1:22:33 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	003
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190715-115742.ft
Comment	Temp gage

Start time	7/15/2019 11:32 AM
End time	7/15/2019 11:50 AM
Start location latitude	40.324
Start location longitude	-105.304
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
17	40	3.376

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
6.100	0.426	7.097

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
45.709	0.752	0.224

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
19.293	1.210	0.393

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	2.9%
Velocity	1.0%	1.2%
Width	0.2%	0.2%
Method	2.3%	
# Stations	3.0%	
Overall	**4.0%**	**3.3%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

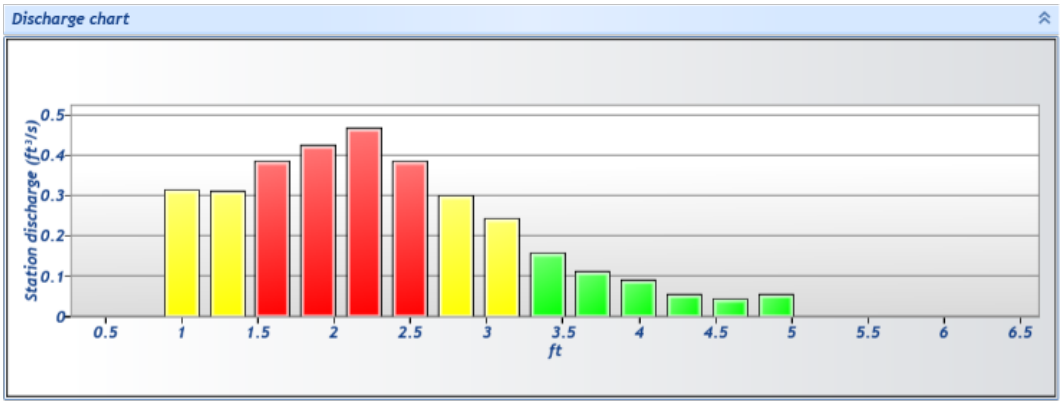
Summary overview

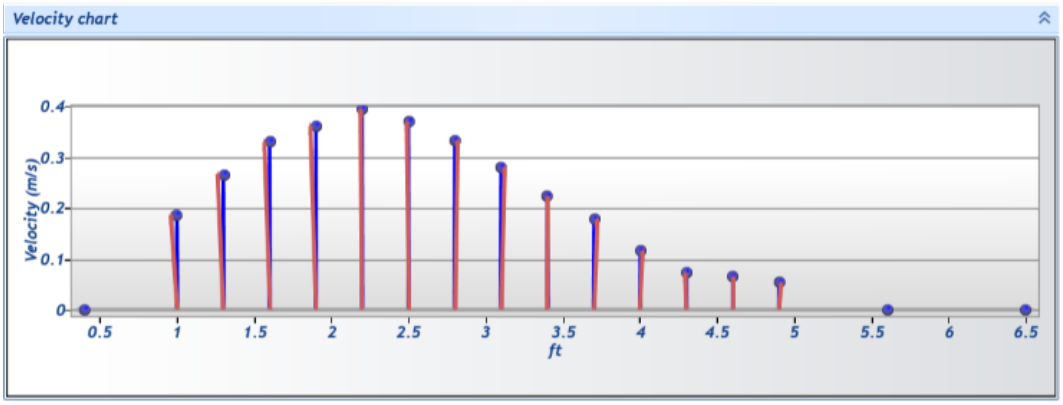
No changes were made to this file
Quality control warnings

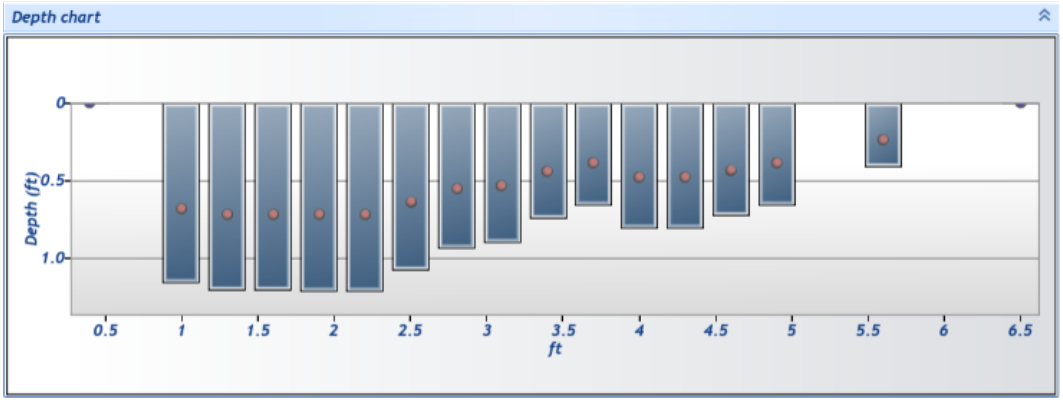
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	003
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190715-115742.ft
Comment	Temp gage

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%







Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	003
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190715-115742.ft
Comment	Temp gage

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m^2)	Flow (ft^3/s)	%Q	
0	11:32 AM	0.400	None	0.000	0.000	0.000	0	0.000	1.000	0.186	0.000	0.000	0.000	✓
1	11:33 AM	1.000	0.6	1.150	0.600	0.690	80	0.186	1.000	0.186	0.048	0.316	9.364	✓
2	11:34 AM	1.300	0.6	1.200	0.600	0.720	80	0.266	1.000	0.266	0.033	0.314	9.309	✓
3	11:35 AM	1.600	0.6	1.200	0.600	0.720	80	0.328	1.000	0.328	0.033	0.388	11.488	✓
4	11:36 AM	1.900	0.6	1.210	0.600	0.726	80	0.360	1.000	0.360	0.034	0.429	12.698	✓
5	11:38 AM	2.200	0.6	1.210	0.600	0.726	80	0.393	1.000	0.393	0.034	0.468	13.870	✓
6	11:39 AM	2.500	0.6	1.070	0.600	0.642	80	0.368	1.000	0.368	0.030	0.388	11.485	✓
7	11:40 AM	2.800	0.6	0.930	0.600	0.558	80	0.332	1.000	0.332	0.026	0.304	8.991	✓
8	11:41 AM	3.100	0.6	0.890	0.600	0.534	80	0.280	1.000	0.280	0.025	0.245	7.257	✓
9	11:42 AM	3.400	0.6	0.740	0.600	0.444	80	0.221	1.000	0.221	0.021	0.161	4.774	✓
10	11:43 AM	3.700	0.6	0.650	0.600	0.390	80	0.178	1.000	0.178	0.018	0.114	3.370	✓
11	11:44 AM	4.000	0.6	0.800	0.600	0.480	80	0.115	1.000	0.115	0.022	0.091	2.686	✓
12	11:45 AM	4.300	0.6	0.800	0.600	0.480	80	0.072	1.000	0.072	0.022	0.057	1.689	✓
13	11:46 AM	4.600	0.6	0.720	0.600	0.432	80	0.064	1.000	0.064	0.020	0.045	1.347	✓
14	11:47 AM	4.900	0.6	0.650	0.600	0.390	80	0.053	1.000	0.053	0.030	0.056	1.665	✓
15	11:48 AM	5.600	0.6	0.400	0.600	0.240	80	0.000	1.000	0.000	0.030	0.000	0.007	✓
16	11:50 AM	6.500	None	0.000	0.000	0.000	0	0.000	1.000	0.000	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	003
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190715-115742.ft
Comment	Temp gage

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	11:33 AM	1.000	0.6	1.150	0.600	0.690	Boundary Interference,Standard Error > QC
3	11:35 AM	1.600	0.6	1.200	0.600	0.720	Standard Error > QC,High Stn % Discharge
4	11:36 AM	1.900	0.6	1.210	0.600	0.726	High Stn % Discharge
5	11:38 AM	2.200	0.6	1.210	0.600	0.726	High Stn % Discharge
6	11:39 AM	2.500	0.6	1.070	0.600	0.642	High Stn % Discharge
9	11:42 AM	3.400	0.6	0.740	0.600	0.444	Standard Error > QC

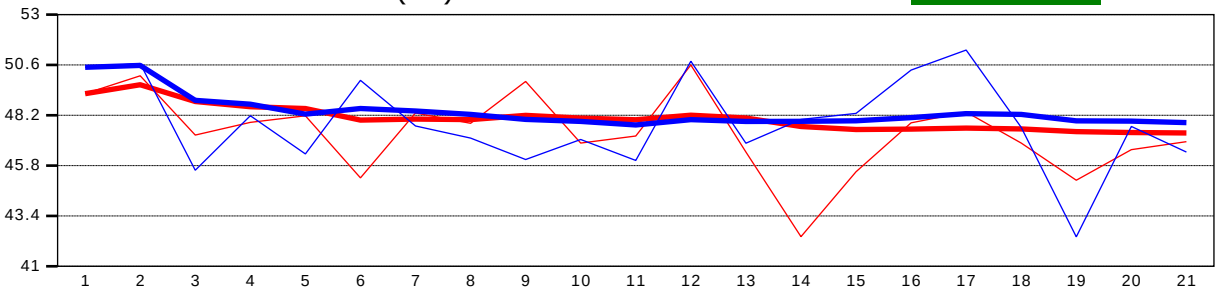
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	003
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190715-115742.ft
Comment	Temp gage

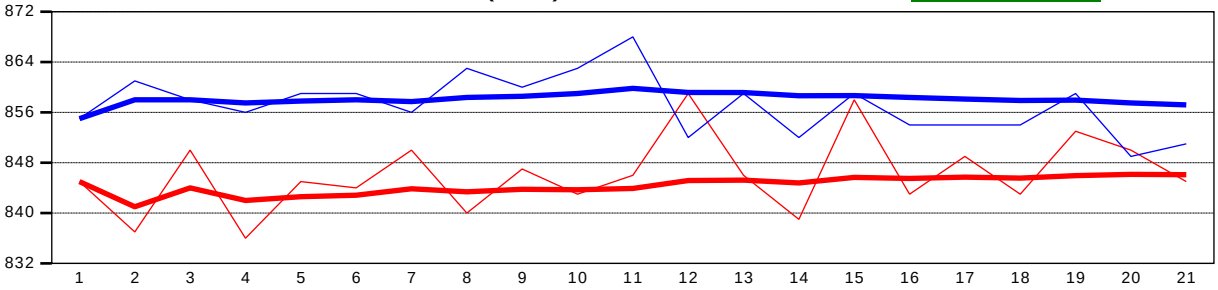
Beam 1	
Beam 2	

Automated beam check Start time 7/15/2019 11:32:21 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

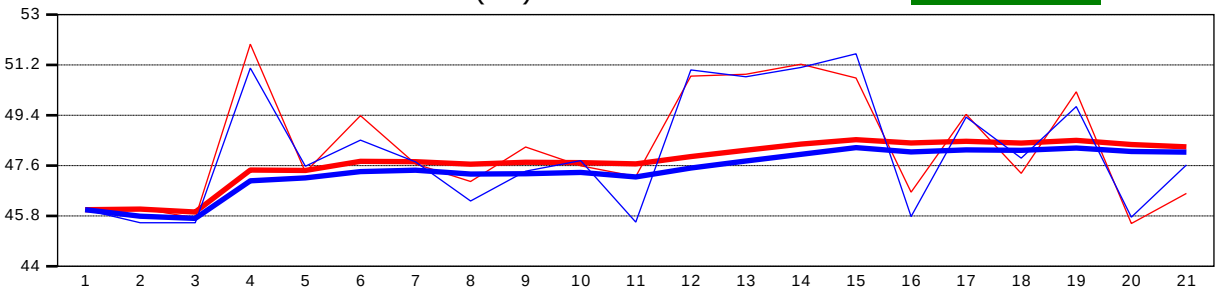
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	003
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190715-115742.ft
Comment	Temp gage

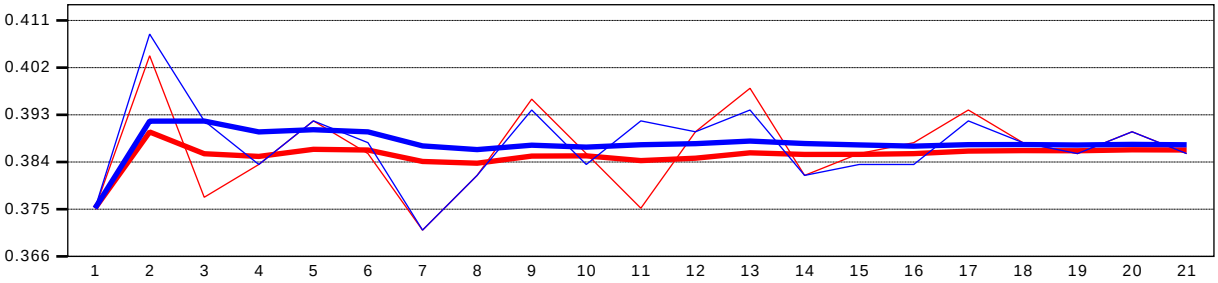
Beam 1	
Beam 2	

Automated beam check Start time 7/15/2019 11:32:21 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

Start time	9/19/2019 11:02 AM
End time	9/19/2019 11:19 AM
Start location latitude	40.331
Start location longitude	-105.313
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
13	40	0.063

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
3.700	0.161	4.472

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
36.004	0.469	0.011

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
15.608	0.800	0.040

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.8%	9.4%
Velocity	2.8%	21.5%
Width	0.3%	0.3%
Method	4.1%	
# Stations	3.9%	
Overall	**6.4%**	**23.4%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

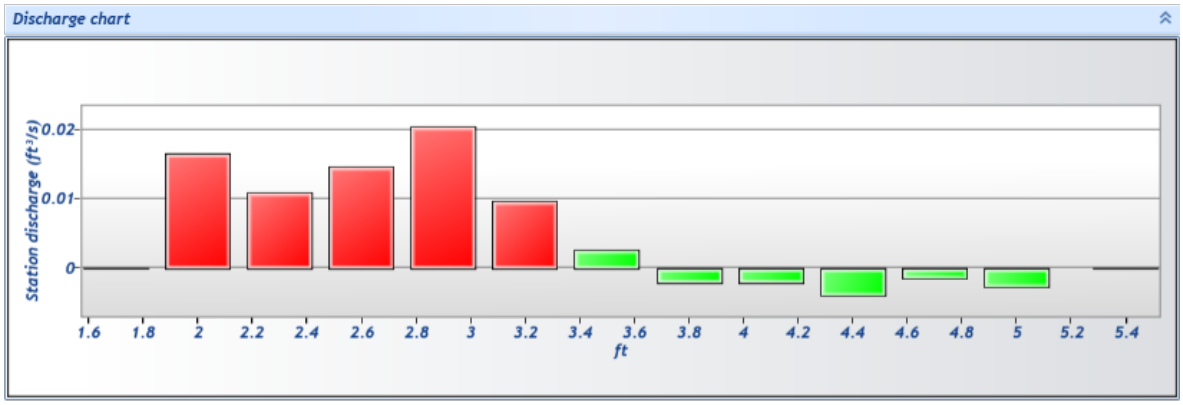
Summary overview

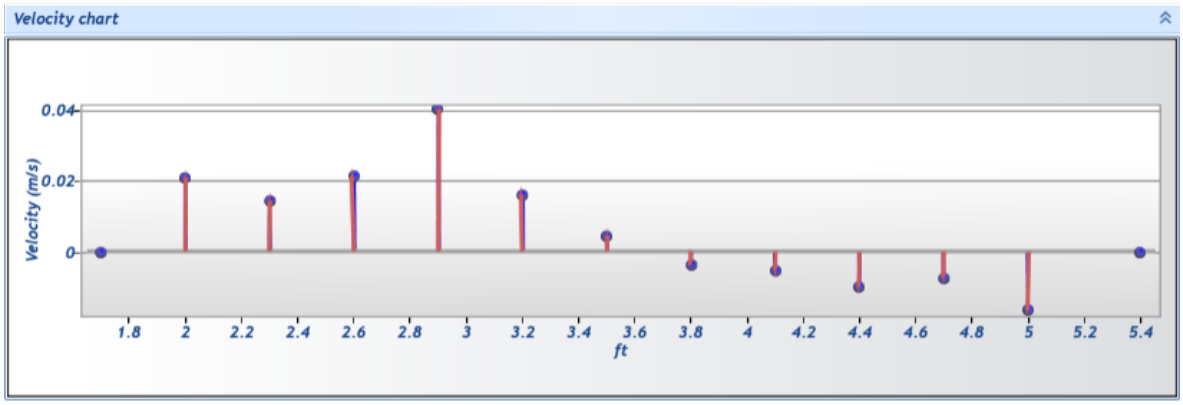
No changes were made to this file
Quality control warnings

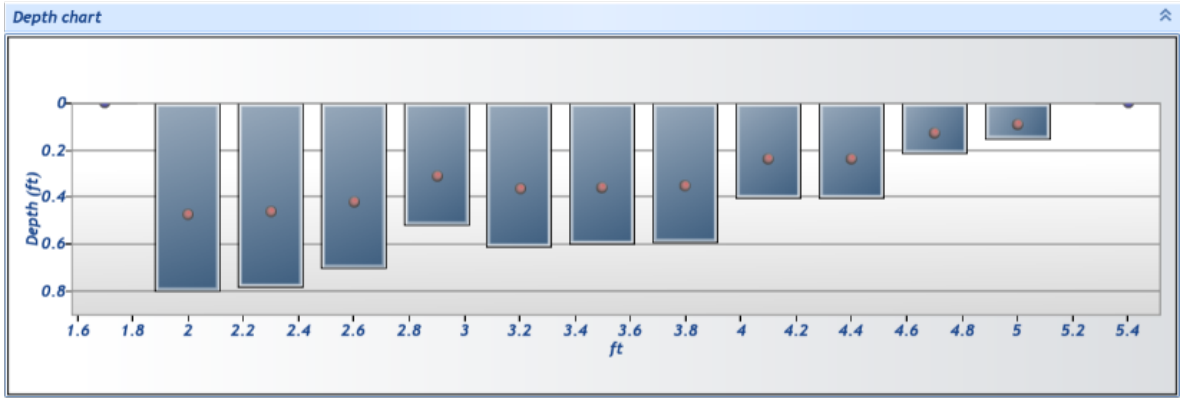
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

Station Warning Settings		
Station discharge OK	Station discharge < 5.000%	
Station discharge caution	5.000% >= Station discharge < 10.000%	
Station discharge warning	Station discharge >= 10.000%	







Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

Measurement results

St.#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	11:02 AM	1.700	None	0.000	0.000	0.000	0	0.000	1.000	0.021	0.000	0.000	0.000	✓
1	11:06 AM	2.000	0.6	0.800	0.600	0.480	80	0.021	1.000	0.021	0.022	0.017	26.371	✓
2	11:07 AM	2.300	0.6	0.780	0.600	0.468	80	0.014	1.000	0.014	0.022	0.011	17.671	✓
3	11:09 AM	2.600	0.6	0.700	0.600	0.420	80	0.021	1.000	0.021	0.020	0.015	23.473	✓
4	11:10 AM	2.900	0.6	0.520	0.600	0.312	80	0.040	1.000	0.040	0.014	0.021	32.846	✓
5	11:11 AM	3.200	0.6	0.610	0.600	0.366	80	0.016	1.000	0.016	0.017	0.010	15.517	✓
6	11:12 AM	3.500	0.6	0.600	0.600	0.360	80	0.004	1.000	0.004	0.017	0.003	4.188	✓
7	11:13 AM	3.800	0.6	0.590	0.600	0.354	80	-0.004	1.000	-0.004	0.016	-0.002	-3.522	✓
8	11:14 AM	4.100	0.6	0.400	0.600	0.240	80	-0.005	1.000	-0.005	0.011	-0.002	-3.352	✓
9	11:15 AM	4.400	0.6	0.400	0.600	0.240	80	-0.010	1.000	-0.010	0.011	-0.004	-6.254	✓
10	11:17 AM	4.700	0.6	0.210	0.600	0.126	80	-0.007	1.000	-0.007	0.006	-0.002	-2.423	✓
11	11:18 AM	5.000	0.6	0.150	0.600	0.090	80	-0.016	1.000	-0.016	0.005	-0.003	-4.516	✓
12	11:19 AM	5.400	None	0.000	0.000	0.000	0	0.000	1.000	-0.016	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	11:06 AM	2.000	0.6	0.800	0.600	0.480	Boundary Interference,High Stn % Discharge
2	11:07 AM	2.300	0.6	0.780	0.600	0.468	High Stn % Discharge
3	11:09 AM	2.600	0.6	0.700	0.600	0.420	Velocity Angle > QC,High Stn % Discharge
4	11:10 AM	2.900	0.6	0.520	0.600	0.312	High Stn % Discharge
5	11:11 AM	3.200	0.6	0.610	0.600	0.366	High Stn % Discharge
8	11:14 AM	4.100	0.6	0.400	0.600	0.240	Large SNR Variation
9	11:15 AM	4.400	0.6	0.400	0.600	0.240	Large SNR Variation

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

Supplemental data summary

Gauge height time	Gauge height (ft)	Rated discharge (ft³/s)	Temperature (°C)	Salinity (PSS-78)	Gauge height comments
9/19/2019 11:02 AM	0.350				

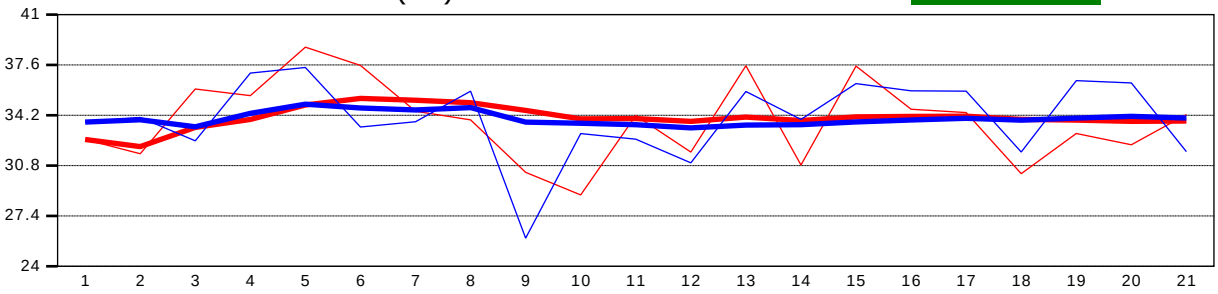
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

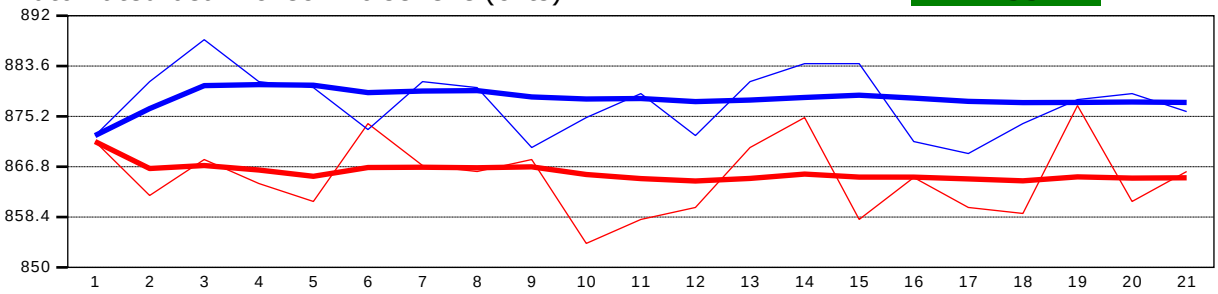
Beam 1	
Beam 2	

Automated beam check Start time 9/19/2019 11:01:45 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

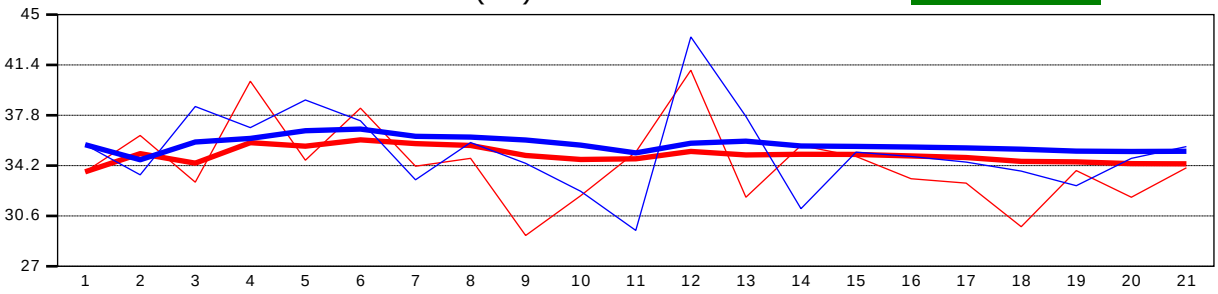
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	004
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20190919-112040.ft
Comment	Temp gage

Beam 1	
Beam 2	

Automated beam check Start time 9/19/2019 11:01:45 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS

Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	04282020
Operator(s)	Lfs
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-123127.ft
Comment	

Start time	4/28/2020 12:00 PM
End time	4/28/2020 12:28 PM
Start location latitude	40.324
Start location longitude	-105.306
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
21	40	14.044

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
17.000	0.942	17.165

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
51.169	0.596	0.422

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
11.957	0.860	0.546

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.4%	3.6%
Velocity	0.2%	2.0%
Width	0.1%	0.1%
Method	1.8%	
# Stations	2.4%	
Overall	**3.2%**	**4.2%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

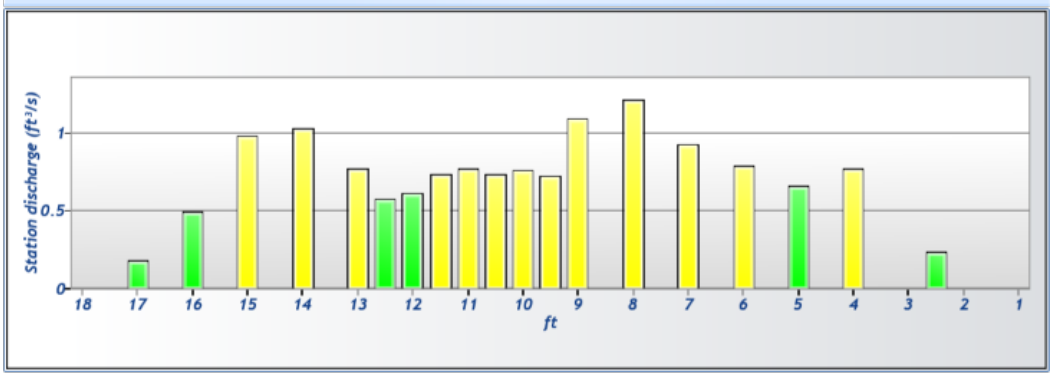
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

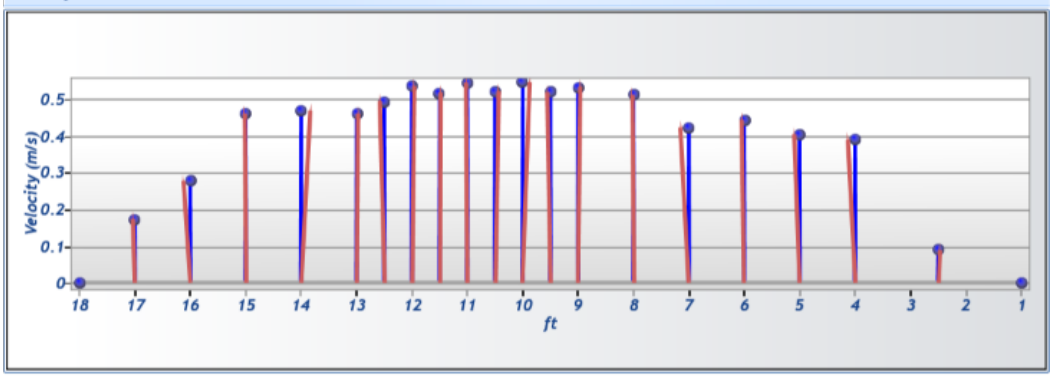
Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	04282020
Operator(s)	Lfs
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-123127.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%

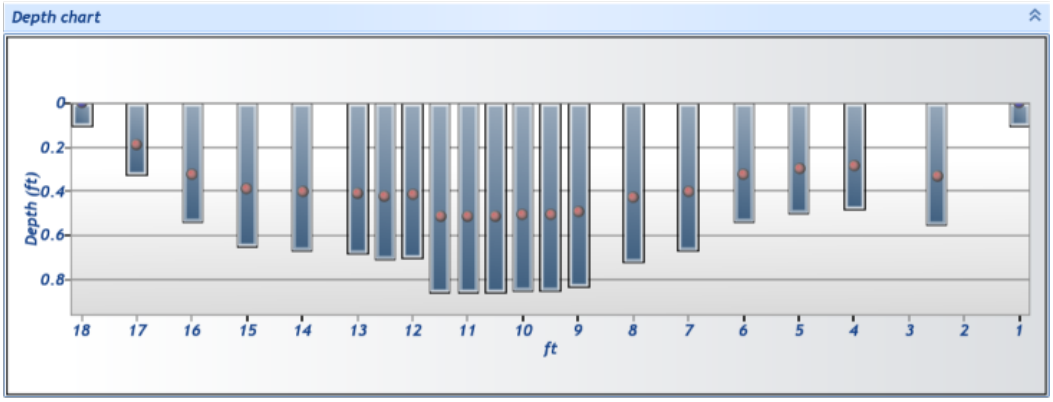
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	04282020
Operator(s)	Lfs
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-123127.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
20	12:28 PM	1.000	None	0.100	0.000	0.000	0	0.000	0.000	0.000	0.007	0.000	0.000	✓
19	12:26 PM	2.500	0.6	0.550	0.600	0.330	80	0.089	1.000	0.089	0.077	0.241	1.714	✓
18	12:25 PM	4.000	0.6	0.480	0.600	0.288	80	0.389	1.000	0.389	0.056	0.766	5.455	✓
17	12:24 PM	5.000	0.6	0.500	0.600	0.300	80	0.404	1.000	0.404	0.046	0.663	4.720	✓
16	12:23 PM	6.000	0.6	0.540	0.600	0.324	80	0.443	1.000	0.443	0.050	0.786	5.595	✓
15	12:21 PM	7.000	0.6	0.670	0.600	0.402	80	0.422	1.000	0.422	0.062	0.929	6.612	✓
14	12:20 PM	8.000	0.6	0.720	0.600	0.432	80	0.511	1.000	0.511	0.067	1.208	8.600	✓
13	12:19 PM	9.000	0.6	0.830	0.600	0.498	80	0.533	1.000	0.533	0.058	1.089	7.754	✓
12	12:18 PM	9.500	0.6	0.850	0.600	0.510	80	0.518	1.000	0.518	0.039	0.723	5.148	✓
11	12:16 PM	10.000	0.6	0.850	0.600	0.510	80	0.546	1.000	0.546	0.039	0.761	5.419	✓
10	12:15 PM	10.500	0.6	0.860	0.600	0.516	80	0.521	1.000	0.521	0.040	0.735	5.235	✓
9	12:14 PM	11.000	0.6	0.860	0.600	0.516	80	0.545	1.000	0.545	0.040	0.769	5.472	✓
8	12:13 PM	11.500	0.6	0.860	0.600	0.516	80	0.518	1.000	0.518	0.040	0.730	5.199	✓
7	12:12 PM	12.000	0.6	0.700	0.600	0.420	80	0.535	1.000	0.535	0.033	0.615	4.378	✓
6	12:10 PM	12.500	0.6	0.710	0.600	0.426	80	0.494	1.000	0.494	0.033	0.576	4.099	✓
5	12:09 PM	13.000	0.6	0.680	0.600	0.408	80	0.460	1.000	0.460	0.047	0.770	5.484	✓
4	12:06 PM	14.000	0.6	0.670	0.600	0.402	80	0.468	1.000	0.468	0.062	1.029	7.328	✓
3	12:05 PM	15.000	0.6	0.650	0.600	0.390	80	0.460	1.000	0.460	0.060	0.981	6.989	✓
2	12:03 PM	16.000	0.6	0.540	0.600	0.324	80	0.277	1.000	0.277	0.050	0.491	3.498	✓
1	12:01 PM	17.000	0.6	0.320	0.600	0.192	80	0.174	1.000	0.174	0.030	0.183	1.301	✓
0	12:00 PM	18.000	None	0.100	0.000	0.000	0	0.000	0.000	0.000	0.005	0.000	0.000	✓

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	04282020
Operator(s)	Lfs
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-123127.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
19	12:26 PM	2.500	0.6	0.550	0.600	0.330	SNR Threshold Variation
2	12:03 PM	16.000	0.6	0.540	0.600	0.324	Velocity Angle > QC

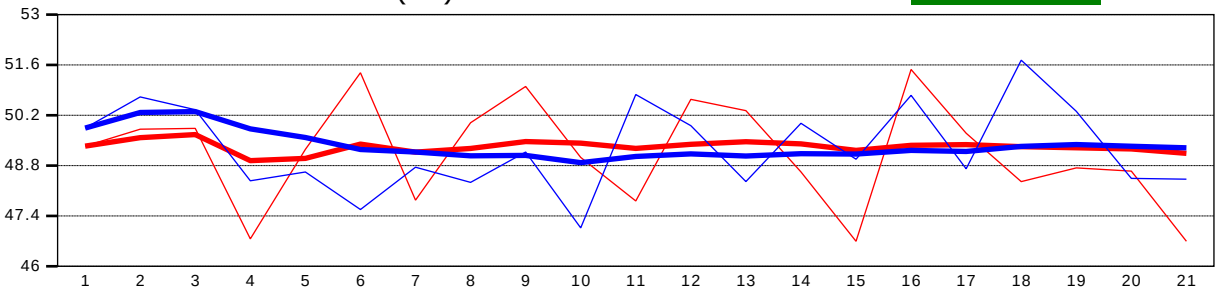
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	04282020
Operator(s)	Lfs
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-123127.ft
Comment	

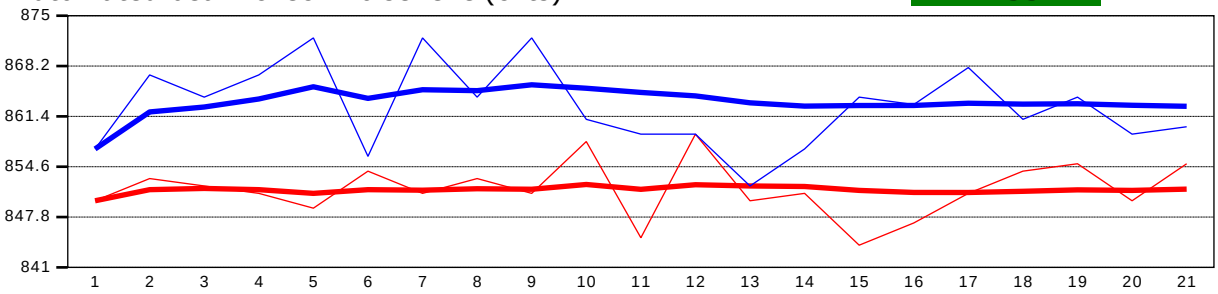
Beam 1	
Beam 2	

Automated beam check Start time 4/28/2020 12:00:36 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

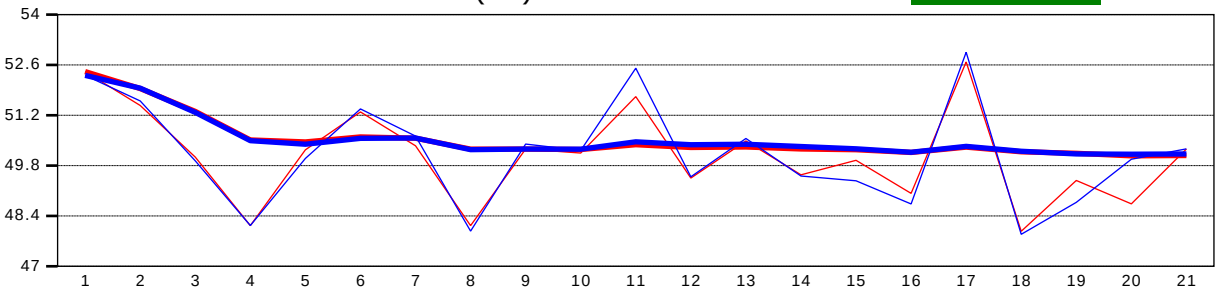
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	04282020
Operator(s)	Lfs
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-123127.ft
Comment	

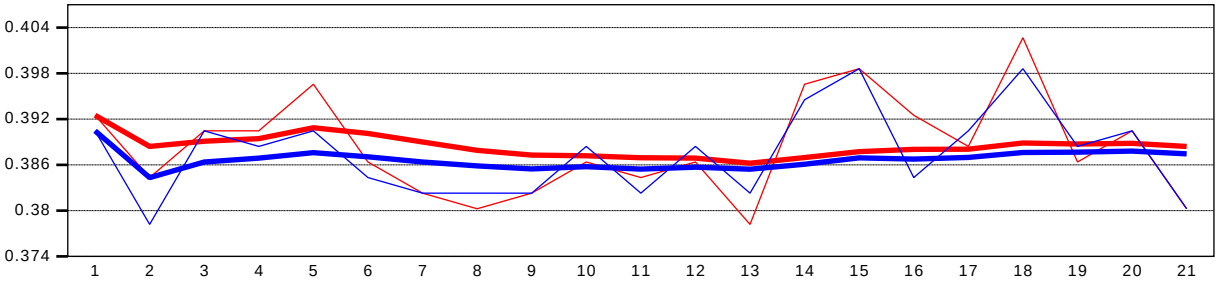
Beam 1	
Beam 2	

Automated beam check Start time 4/28/2020 12:00:36 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	4282020CHECK
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-132032.ft
Comment	

Start time	4/28/2020 12:32 PM
End time	4/28/2020 1:03 PM
Start location latitude	40.324
Start location longitude	-105.306
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
26	40	14.260

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
17.000	0.950	17.155

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
51.505	0.601	0.425

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
12.554	0.880	0.550

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.3%	3.2%
Velocity	0.3%	2.3%
Width	0.1%	0.1%
Method	1.6%	
# Stations	2.0%	
Overall	**2.8%**	**4.1%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

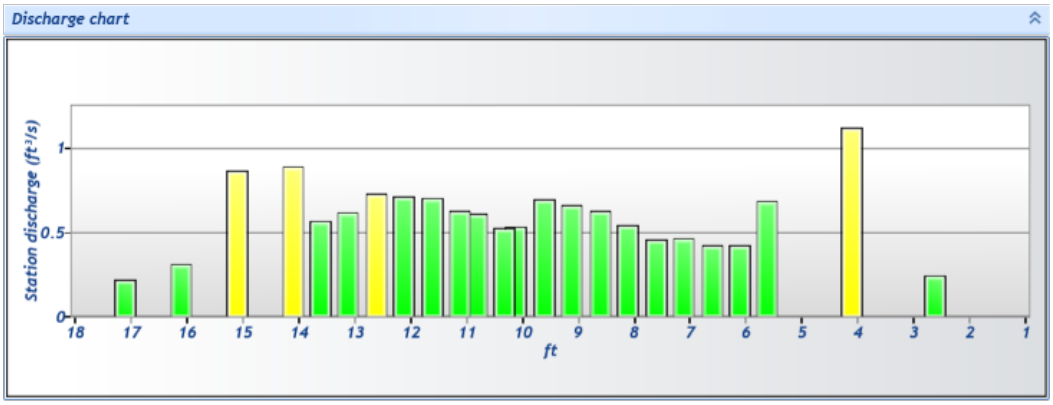
Summary overview

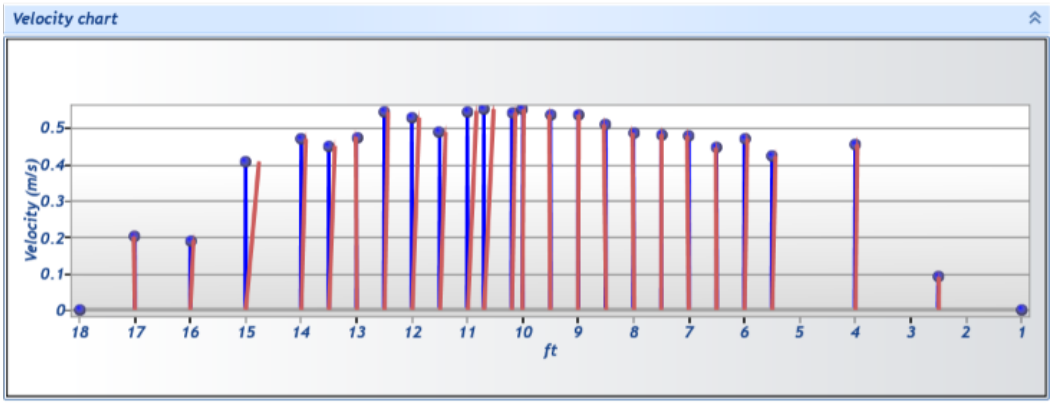
No changes were made to this file
Quality control warnings

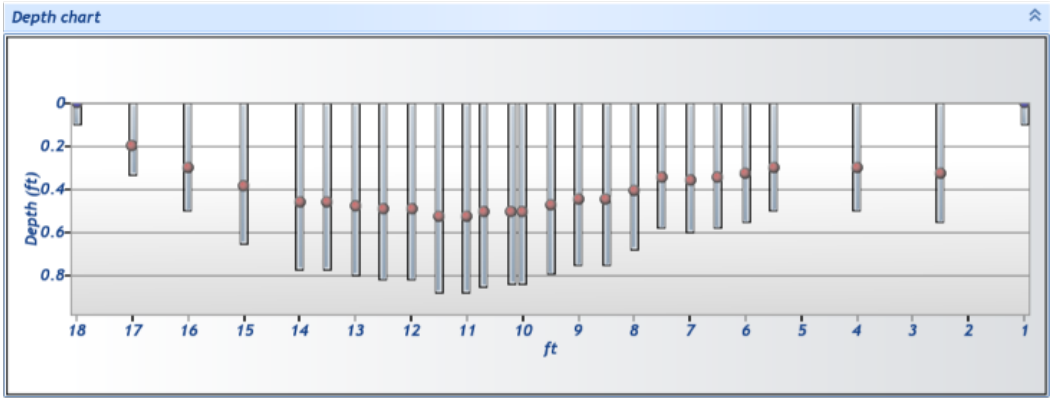
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	4282020CHECK
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-132032.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%







Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	4282020CHECK
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-132032.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	12:32 PM	1.000	None	0.100	0.000	0.000	0	0.000	0.000	0.000	0.007	0.000	0.000	✓
1	12:32 PM	2.500	0.6	0.550	0.600	0.330	80	0.091	1.000	0.091	0.077	0.245	1.720	✓
2	12:34 PM	4.000	0.6	0.500	0.600	0.300	80	0.454	1.000	0.454	0.070	1.117	7.833	✓
3	12:35 PM	5.500	0.6	0.500	0.600	0.300	80	0.421	1.000	0.421	0.046	0.691	4.848	✓
4	12:36 PM	6.000	0.6	0.550	0.600	0.330	80	0.469	1.000	0.469	0.026	0.423	2.967	✓
5	12:38 PM	6.500	0.6	0.580	0.600	0.348	80	0.445	1.000	0.445	0.027	0.423	2.967	✓
6	12:39 PM	7.000	0.6	0.600	0.600	0.360	80	0.478	1.000	0.478	0.028	0.470	3.297	✓
7	12:40 PM	7.500	0.6	0.580	0.600	0.348	80	0.482	1.000	0.482	0.027	0.458	3.213	✓
8	12:41 PM	8.000	0.6	0.680	0.600	0.408	80	0.485	1.000	0.485	0.032	0.542	3.798	✓
9	12:42 PM	8.500	0.6	0.750	0.600	0.450	80	0.509	1.000	0.509	0.035	0.626	4.389	✓
10	12:44 PM	9.000	0.6	0.750	0.600	0.450	80	0.535	1.000	0.535	0.035	0.659	4.618	✓
11	12:45 PM	9.500	0.6	0.790	0.600	0.474	80	0.535	1.000	0.535	0.037	0.693	4.862	✓
12	12:46 PM	10.000	0.6	0.840	0.600	0.504	80	0.550	1.000	0.550	0.027	0.530	3.720	✓
13	12:47 PM	10.200	0.6	0.840	0.600	0.504	80	0.541	1.000	0.541	0.027	0.522	3.661	✓
14	12:48 PM	10.700	0.6	0.850	0.600	0.510	80	0.550	1.000	0.550	0.032	0.614	4.305	✓
15	12:50 PM	11.000	0.6	0.880	0.600	0.528	80	0.545	1.000	0.545	0.033	0.629	4.411	✓
16	12:51 PM	11.500	0.6	0.880	0.600	0.528	80	0.487	1.000	0.487	0.041	0.703	4.932	✓
17	12:53 PM	12.000	0.6	0.820	0.600	0.492	80	0.527	1.000	0.527	0.038	0.709	4.971	✓
18	12:54 PM	12.500	0.6	0.820	0.600	0.492	80	0.542	1.000	0.542	0.038	0.729	5.112	✓
19	12:55 PM	13.000	0.6	0.800	0.600	0.480	80	0.474	1.000	0.474	0.037	0.622	4.364	✓
20	12:56 PM	13.500	0.6	0.770	0.600	0.462	80	0.449	1.000	0.449	0.036	0.568	3.980	✓
21	12:57 PM	14.000	0.6	0.770	0.600	0.462	80	0.469	1.000	0.469	0.054	0.888	6.230	✓
22	12:58 PM	15.000	0.6	0.650	0.600	0.390	80	0.407	1.000	0.407	0.060	0.867	6.080	✓
23	1:00 PM	16.000	0.6	0.500	0.600	0.300	80	0.191	1.000	0.191	0.046	0.313	2.198	✓
24	1:01 PM	17.000	0.6	0.330	0.600	0.198	80	0.201	1.000	0.201	0.031	0.217	1.524	✓
25	1:03 PM	18.000	None	0.100	0.000	0.000	0	0.000	0.000	0.000	0.005	0.000	0.000	✓

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	4282020CHECK
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-132032.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	12:32 PM	2.500	0.6	0.550	0.600	0.330	SNR Threshold Variation
5	12:38 PM	6.500	0.6	0.580	0.600	0.348	Stn Spacing > QC
22	12:58 PM	15.000	0.6	0.650	0.600	0.390	Velocity Angle > QC
24	1:01 PM	17.000	0.6	0.330	0.600	0.198	Boundary Interference

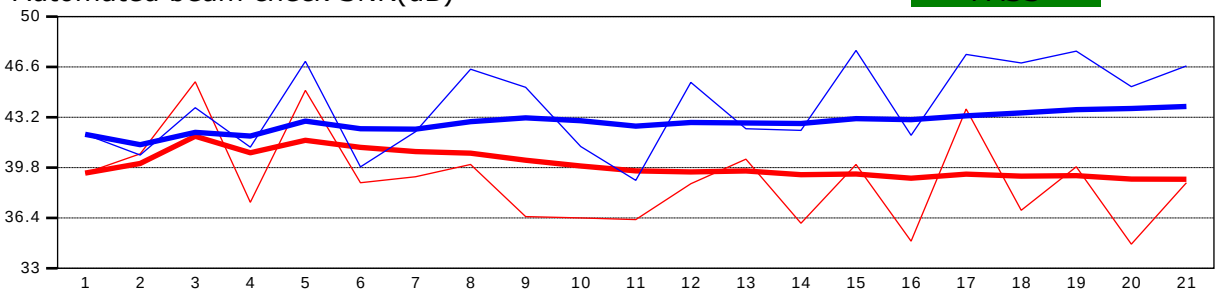
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	4282020CHECK
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-132032.ft
Comment	

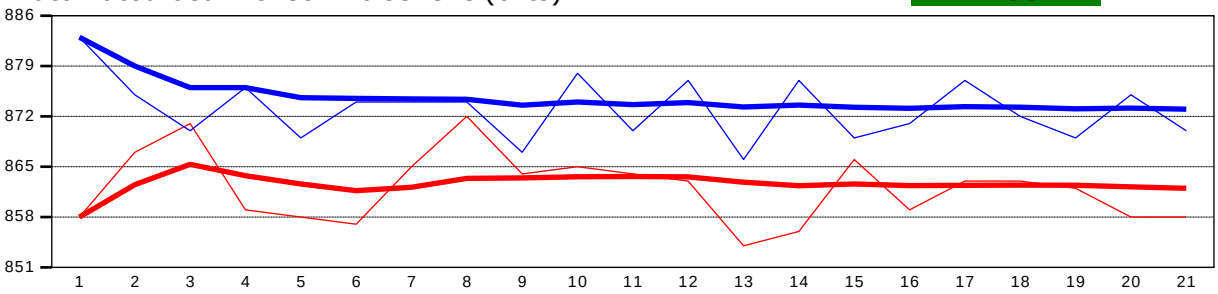
Beam 1	
Beam 2	

Automated beam check Start time 4/28/2020 12:32:26 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

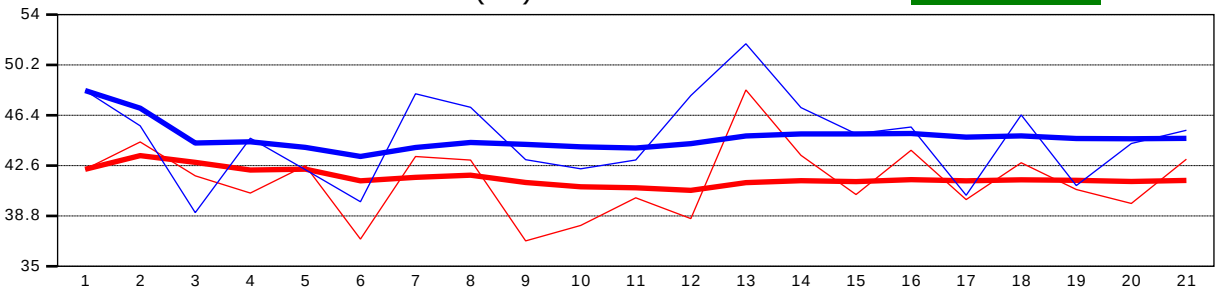
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	4282020CHECK
Operator(s)	Jack Landers
File name	North Fork Little Thompson River on Peiloch Ranch_20200428-132032.ft
Comment	

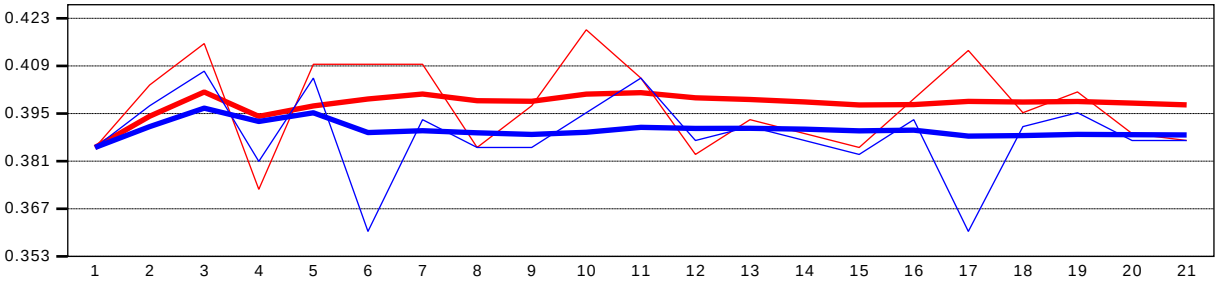
Beam 1	
Beam 2	

Automated beam check Start time 4/28/2020 12:32:26 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	NFLT5132.FlowTracker2.ft
Comment	Measured with Flowtracker1 and recalculated with Flowtracker2 algorithms

Start time	5/13/2020 1:20 PM
End time	5/13/2020 1:56 PM
Start location latitude	-
Start location longitude	-
Calculations engine	FlowTracker2

Sensor type	Unknown
Handheld serial number	n/a
Probe serial number	P2355
Probe firmware	3.90
Handheld software	n/a

# Stations	Avg interval (s)	Total discharge (ft³/s)
21	40	4.9159

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
14.600	12.2948	15.046

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
30	0.842	0.3998

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
56.991	1.320	0.5777

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	1.5%
Velocity	0.6%	2.0%
Width	0.1%	0.1%
Method	1.8%	
# Stations	2.4%	
Overall	**3.2%**	**2.7%**

Discharge equation	Mid Section
Discharge uncertainty	ISO
Discharge reference	Measured

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

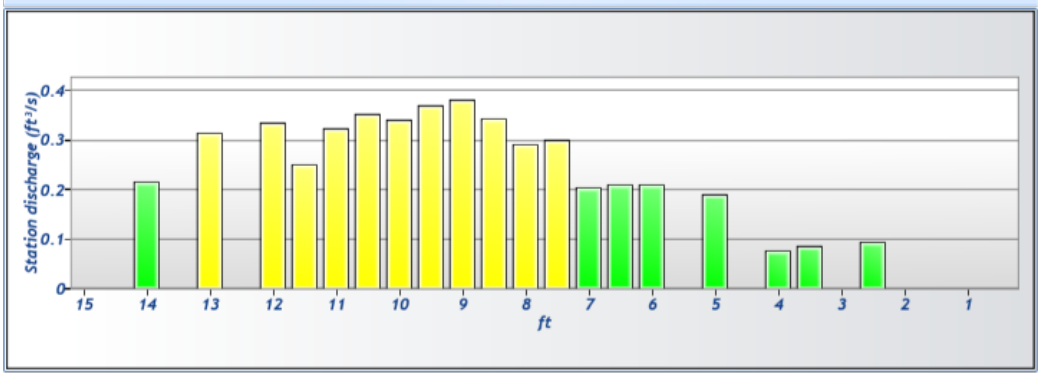
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

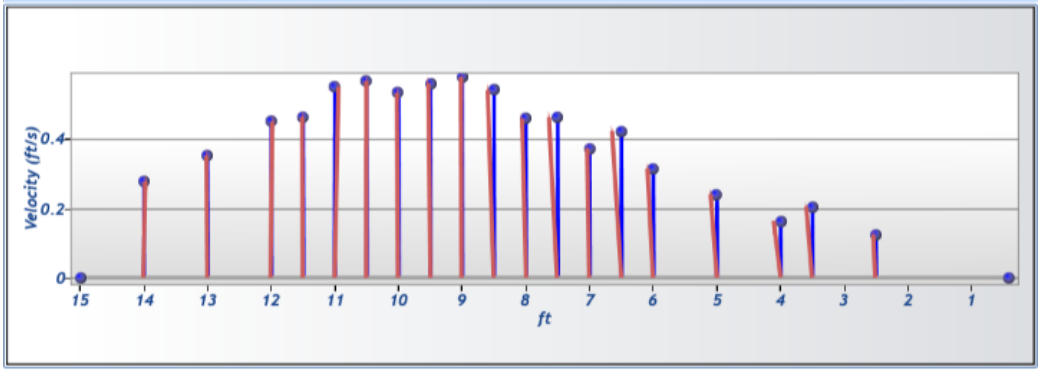
Site name	
Site number	
Operator(s)	LFS
File name	NFLT5132.FlowTracker2.ft
Comment	

Station Warning Settings		
Station discharge OK	Station discharge < 5.00%	
Station discharge caution	5.00% >= Station discharge < 10.00%	
Station discharge warning	Station discharge >= 10.00%	

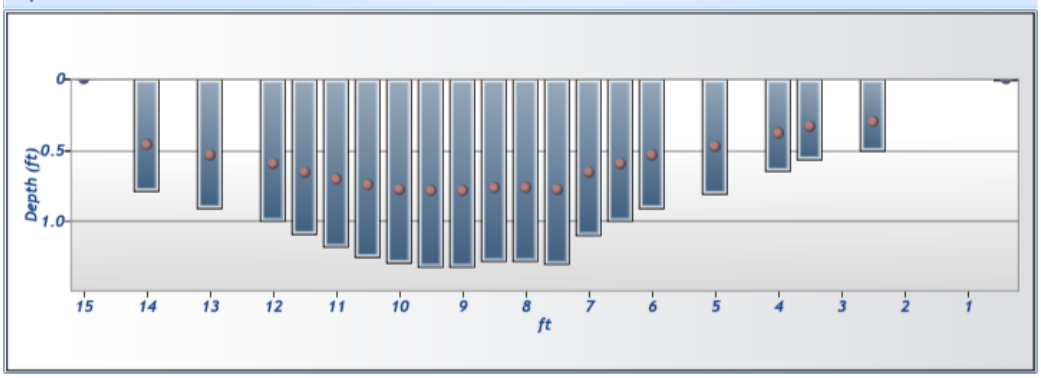
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	NFLT5132.FlowTracker2.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	1:20 PM	0.400	None	0.010	0.0000	0.000	0	0.0000	1.0000	0.1240	0.0103	0.0013	0.03	✓
1	1:26 PM	2.500	0.6	0.500	0.6000	0.300	40	0.1240	1.0000	0.1240	0.7750	0.0961	1.96	✓
2	1:28 PM	3.500	0.6	0.560	0.6000	0.336	40	0.2051	1.0000	0.2051	0.4200	0.0862	1.75	✓
3	1:30 PM	4.000	0.6	0.640	0.6000	0.384	40	0.1634	1.0000	0.1634	0.4801	0.0784	1.60	✓
4	1:32 PM	5.000	0.6	0.800	0.6000	0.480	40	0.2404	1.0000	0.2404	0.7999	0.1923	3.91	✓
5	1:33 PM	6.000	0.6	0.900	0.6000	0.540	40	0.3147	1.0000	0.3147	0.6750	0.2124	4.32	✓
6	1:36 PM	6.500	0.6	1.000	0.6000	0.600	40	0.4224	1.0000	0.4224	0.5000	0.2112	4.30	✓
7	1:37 PM	7.000	0.6	1.100	0.6000	0.660	40	0.3715	1.0000	0.3715	0.5500	0.2044	4.16	✓
8	1:39 PM	7.500	0.6	1.300	0.6000	0.780	40	0.4619	1.0000	0.4619	0.6499	0.3002	6.11	✓
9	1:41 PM	8.000	0.6	1.280	0.6000	0.768	40	0.4578	1.0000	0.4578	0.6399	0.2930	5.96	✓
10	1:42 PM	8.500	0.6	1.280	0.6000	0.768	40	0.5402	1.0000	0.5402	0.6399	0.3457	7.03	✓
11	1:43 PM	9.000	0.6	1.320	0.6000	0.792	40	0.5777	1.0000	0.5777	0.6599	0.3812	7.75	✓
12	1:45 PM	9.500	0.6	1.320	0.6000	0.792	40	0.5599	1.0000	0.5599	0.6599	0.3695	7.52	✓
13	1:47 PM	10.000	0.6	1.290	0.6000	0.774	40	0.5317	1.0000	0.5317	0.6450	0.3430	6.98	✓
14	1:48 PM	10.500	0.6	1.250	0.6000	0.750	40	0.5667	1.0000	0.5667	0.6250	0.3542	7.21	✓
15	1:50 PM	11.000	0.6	1.180	0.6000	0.708	40	0.5489	1.0000	0.5489	0.5901	0.3239	6.59	✓
16	1:52 PM	11.500	0.6	1.090	0.6000	0.654	40	0.4633	1.0000	0.4633	0.5449	0.2525	5.14	✓
17	1:53 PM	12.000	0.6	1.000	0.6000	0.600	40	0.4491	1.0000	0.4491	0.7500	0.3368	6.85	✓
18	1:55 PM	13.000	0.6	0.900	0.6000	0.540	40	0.3515	1.0000	0.3515	0.8999	0.3163	6.44	✓
19	1:56 PM	14.000	0.6	0.780	0.6000	0.468	40	0.2785	1.0000	0.2785	0.7799	0.2172	4.42	✓
20	1:56 PM	15.000	None	0.000	0.0000	0.000	0	0.0000	1.0000	0.2785	0.0000	0.0000	0.00	✓

Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	NFLT5132.FlowTracker2.ft
Comment	

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	4 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	1:26 PM	2.500	0.6	0.500	0.6000	0.300	Large SNR Variation
2	1:28 PM	3.500	0.6	0.560	0.6000	0.336	Velocity Angle > QC
3	1:30 PM	4.000	0.6	0.640	0.6000	0.384	Stn Spacing > QC,Velocity Angle > QC
4	1:32 PM	5.000	0.6	0.800	0.6000	0.480	Velocity Angle > QC
20	1:56 PM	15.000	None	0.000	0.0000	0.000	Water Depth > QC

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	5192020
Operator(s)	Laura FS
File name	North Fork Little Thompson River on Peiloch Ranch_20200519-083434.ft
Comment	

Start time	5/19/2020 7:44 AM
End time	5/19/2020 8:31 AM
Start location latitude	40.327
Start location longitude	-105.328
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
32	40	2.819

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
15.700	1.373	16.233

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
35.859	0.941	0.058

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
11.558	1.580	0.113

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	1.8%
Velocity	1.1%	2.6%
Width	0.1%	0.1%
Method	1.5%	
# Stations	1.6%	
Overall	**2.7%**	**3.3%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

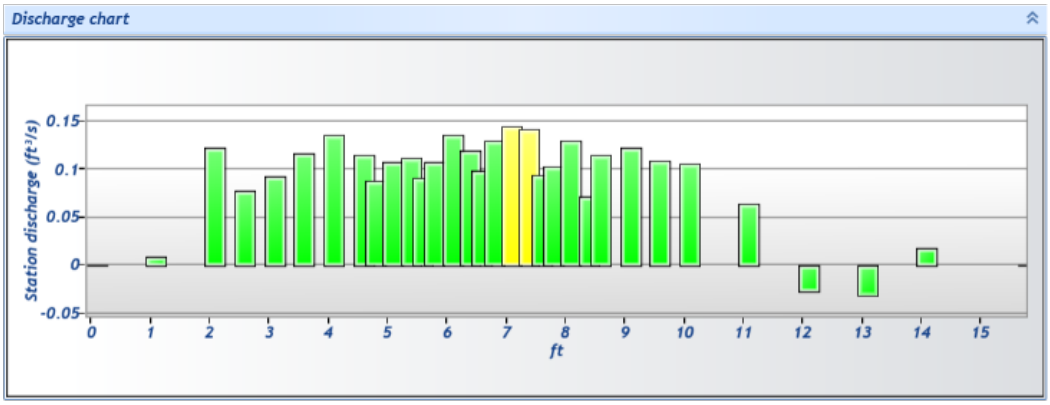
Summary overview

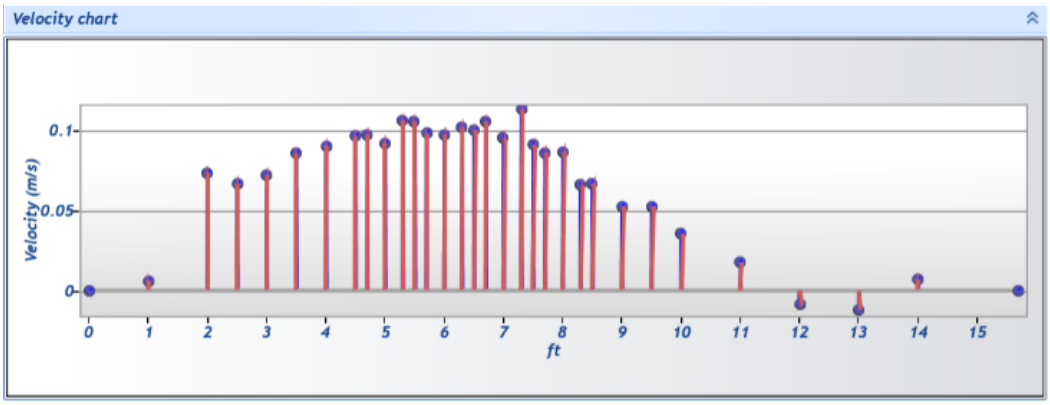
No changes were made to this file
Quality control warnings

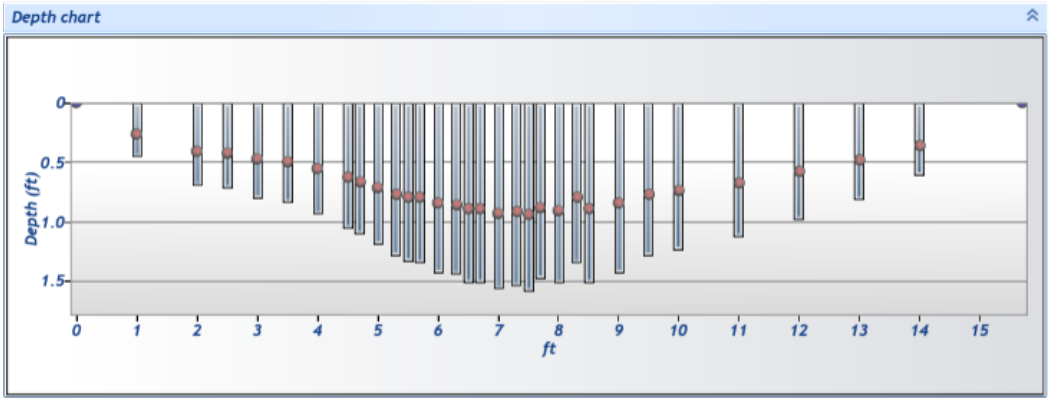
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	5192020
Operator(s)	Laura FS
File name	North Fork Little Thompson River on Peiloch Ranch_20200519-083434.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%







Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	5192020
Operator(s)	Laura FS
File name	North Fork Little Thompson River on Peiloch Ranch_20200519-083434.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	7:44 AM	0.000	None	0.010	0.000	0.000	0	0.000	1.000	0.006	0.000	0.000	0.004	✓
1	7:44 AM	1.000	0.6	0.440	0.600	0.264	80	0.006	1.000	0.006	0.041	0.009	0.322	✓
2	7:46 AM	2.000	0.6	0.680	0.600	0.408	80	0.073	1.000	0.073	0.047	0.122	4.340	✓
3	8:29 AM	2.500	0.6	0.710	0.600	0.426	80	0.067	1.000	0.067	0.033	0.078	2.754	✓
4	7:48 AM	3.000	0.6	0.790	0.600	0.474	80	0.072	1.000	0.072	0.037	0.093	3.303	✓
5	7:49 AM	3.500	0.6	0.830	0.600	0.498	80	0.085	1.000	0.085	0.039	0.116	4.116	✓
6	7:50 AM	4.000	0.6	0.920	0.600	0.552	80	0.090	1.000	0.090	0.043	0.136	4.837	✓
7	7:52 AM	4.500	0.6	1.040	0.600	0.624	80	0.096	1.000	0.096	0.034	0.115	4.063	✓
8	8:27 AM	4.700	0.6	1.100	0.600	0.660	80	0.097	1.000	0.097	0.026	0.088	3.107	✓
9	7:53 AM	5.000	0.6	1.180	0.600	0.708	80	0.092	1.000	0.092	0.033	0.107	3.792	✓
10	8:26 AM	5.300	0.6	1.280	0.600	0.768	80	0.106	1.000	0.106	0.030	0.111	3.947	✓
11	7:54 AM	5.500	0.6	1.320	0.600	0.792	80	0.106	1.000	0.106	0.025	0.091	3.241	✓
12	8:24 AM	5.700	0.6	1.340	0.600	0.804	80	0.098	1.000	0.098	0.031	0.108	3.814	✓
13	7:56 AM	6.000	0.6	1.420	0.600	0.852	80	0.097	1.000	0.097	0.040	0.136	4.820	✓
14	8:22 AM	6.300	0.6	1.430	0.600	0.858	80	0.102	1.000	0.102	0.033	0.120	4.243	✓
15	7:57 AM	6.500	0.6	1.500	0.600	0.900	80	0.100	1.000	0.100	0.028	0.098	3.489	✓
16	8:21 AM	6.700	0.6	1.500	0.600	0.900	80	0.105	1.000	0.105	0.035	0.130	4.603	✓
17	8:00 AM	7.000	0.6	1.550	0.600	0.930	80	0.095	1.000	0.095	0.043	0.145	5.149	✓
18	8:18 AM	7.300	0.6	1.530	0.600	0.918	80	0.113	1.000	0.113	0.036	0.142	5.030	✓
19	8:01 AM	7.500	0.6	1.580	0.600	0.948	80	0.091	1.000	0.091	0.029	0.094	3.333	✓
20	8:17 AM	7.700	0.6	1.470	0.600	0.882	80	0.086	1.000	0.086	0.034	0.104	3.674	✓
21	8:03 AM	8.000	0.6	1.510	0.600	0.906	80	0.087	1.000	0.087	0.042	0.129	4.579	✓
22	8:31 AM	8.300	0.6	1.340	0.600	0.804	80	0.065	1.000	0.065	0.031	0.072	2.553	✓
23	8:04 AM	8.500	0.6	1.500	0.600	0.900	80	0.067	1.000	0.067	0.049	0.115	4.082	✓
24	8:06 AM	9.000	0.6	1.420	0.600	0.852	80	0.052	1.000	0.052	0.066	0.122	4.314	✓
25	8:07 AM	9.500	0.6	1.280	0.600	0.768	80	0.052	1.000	0.052	0.059	0.109	3.880	✓
26	8:09 AM	10.000	0.6	1.230	0.600	0.738	80	0.035	1.000	0.035	0.086	0.107	3.782	✓
27	8:10 AM	11.000	0.6	1.120	0.600	0.672	80	0.017	1.000	0.017	0.104	0.064	2.277	✓
28	8:11 AM	12.000	0.6	0.970	0.600	0.582	80	-0.009	1.000	-0.009	0.090	-0.027	-0.974	✓
29	8:13 AM	13.000	0.6	0.800	0.600	0.480	80	-0.012	1.000	-0.012	0.074	-0.031	-1.113	✓
30	8:14 AM	14.000	0.6	0.600	0.600	0.360	80	0.007	1.000	0.007	0.075	0.018	0.633	✓
31	8:16 AM	15.700	None	0.010	0.000	0.000	0	0.000	1.000	0.007	0.001	0.000	0.007	✓

Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	5192020
Operator(s)	Laura FS
File name	North Fork Little Thompson River on Peiloch Ranch_20200519-083434.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	7:44 AM	1.000	0.6	0.440	0.600	0.264	Boundary Interference,Large SNR Variation,SNR Threshold Variation
2	7:46 AM	2.000	0.6	0.680	0.600	0.408	Boundary Interference,Standard Error > QC
9	7:53 AM	5.000	0.6	1.180	0.600	0.708	Stn Spacing > QC
19	8:01 AM	7.500	0.6	1.580	0.600	0.948	Velocity Angle > QC
21	8:03 AM	8.000	0.6	1.510	0.600	0.906	Velocity Angle > QC
22	8:31 AM	8.300	0.6	1.340	0.600	0.804	Velocity Angle > QC
23	8:04 AM	8.500	0.6	1.500	0.600	0.900	Velocity Angle > QC
24	8:06 AM	9.000	0.6	1.420	0.600	0.852	Velocity Angle > QC
25	8:07 AM	9.500	0.6	1.280	0.600	0.768	Velocity Angle > QC
26	8:09 AM	10.000	0.6	1.230	0.600	0.738	Velocity Angle > QC
30	8:14 AM	14.000	0.6	0.600	0.600	0.360	Boundary Interference,Low SNR,Approaching Low SNR,SNR Threshold Variation

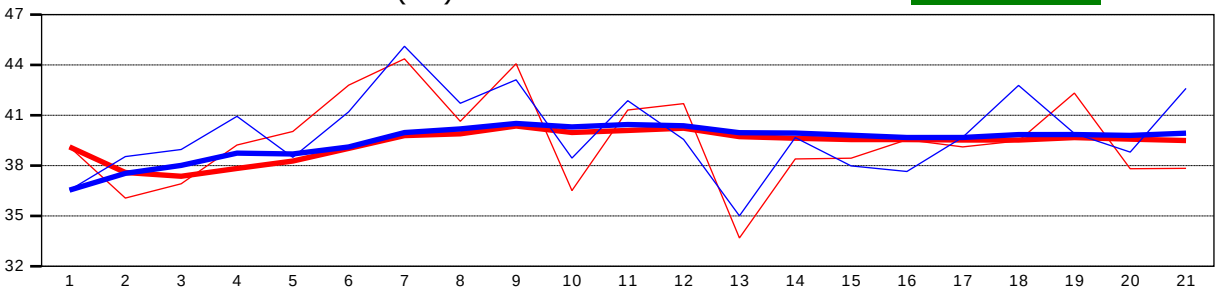
Discharge Measurement Summary

Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	5192020
Operator(s)	Laura FS
File name	North Fork Little Thompson River on Peiloch Ranch_20200519-083434.ft
Comment	

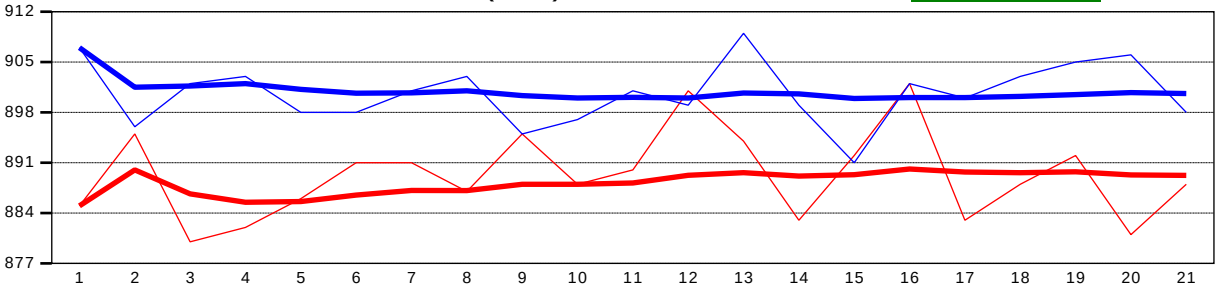
Beam 1	
Beam 2	

Automated beam check Start time 5/19/2020 7:43:52 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

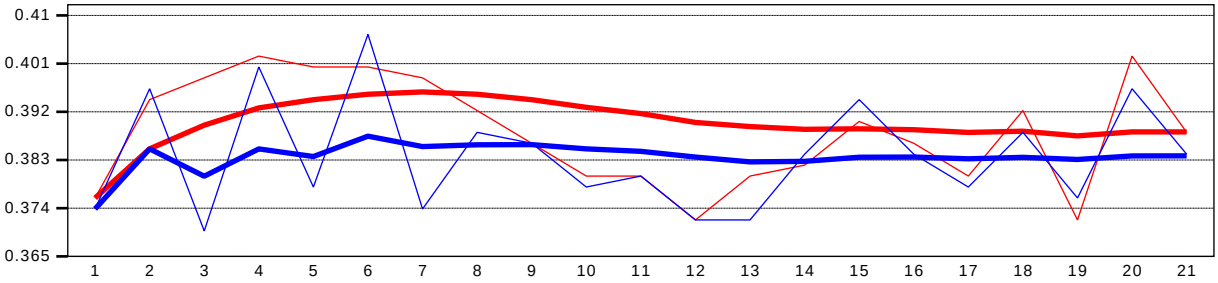
Site name	North Fork Little Thompson River on Peiloch Ranch
Site number	5192020
Operator(s)	Laura FS
File name	North Fork Little Thompson River on Peiloch Ranch_20200519-083434.ft
Comment	

Beam 1	
Beam 2	

Automated beam check Start time 5/19/2020 7:43:52 AM

Automated beam check Peak level(dB) PASS

Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings