Community Flow Monitoring Network

Vancouver Island

FALL 2024 Network Meeting

November 20, 2024

10:00 AM - 12:00 PM

Via Zoom

Project funding and support provided by:

PACIFIC SALMON FOUNDATION

BRITISH COLUMBIA Ministry of Environment and Climate Change Strategy

BRITISH COLUMBIA Community Gaming Grants

REGIONAL DISTRICT OF NANAIMO

HABITAT CONSERVATION TRUST FOUNDATION

The McLean Foundation

Meeting Agenda

1) 2024 Recap & Update

2) Plans for 2025

5-10 minute break (~ 11:00)

3) Jon Jeffery –

Data progress update & Hydra app. sneak preview

2024…

Community Flow Monitoring Network

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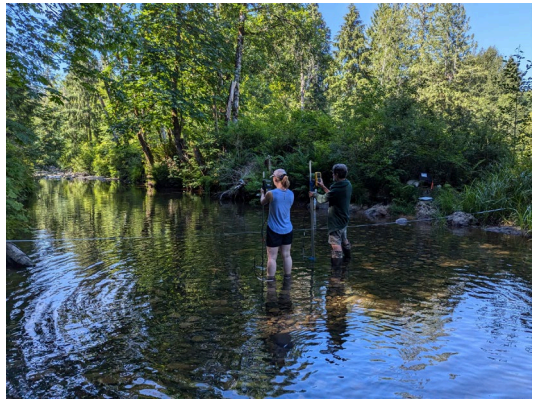
Year 3 of Network (so far)

- **9** active stations (7 continuing + 2 new)
- **60+** site visits
- **330+** volunteer hours



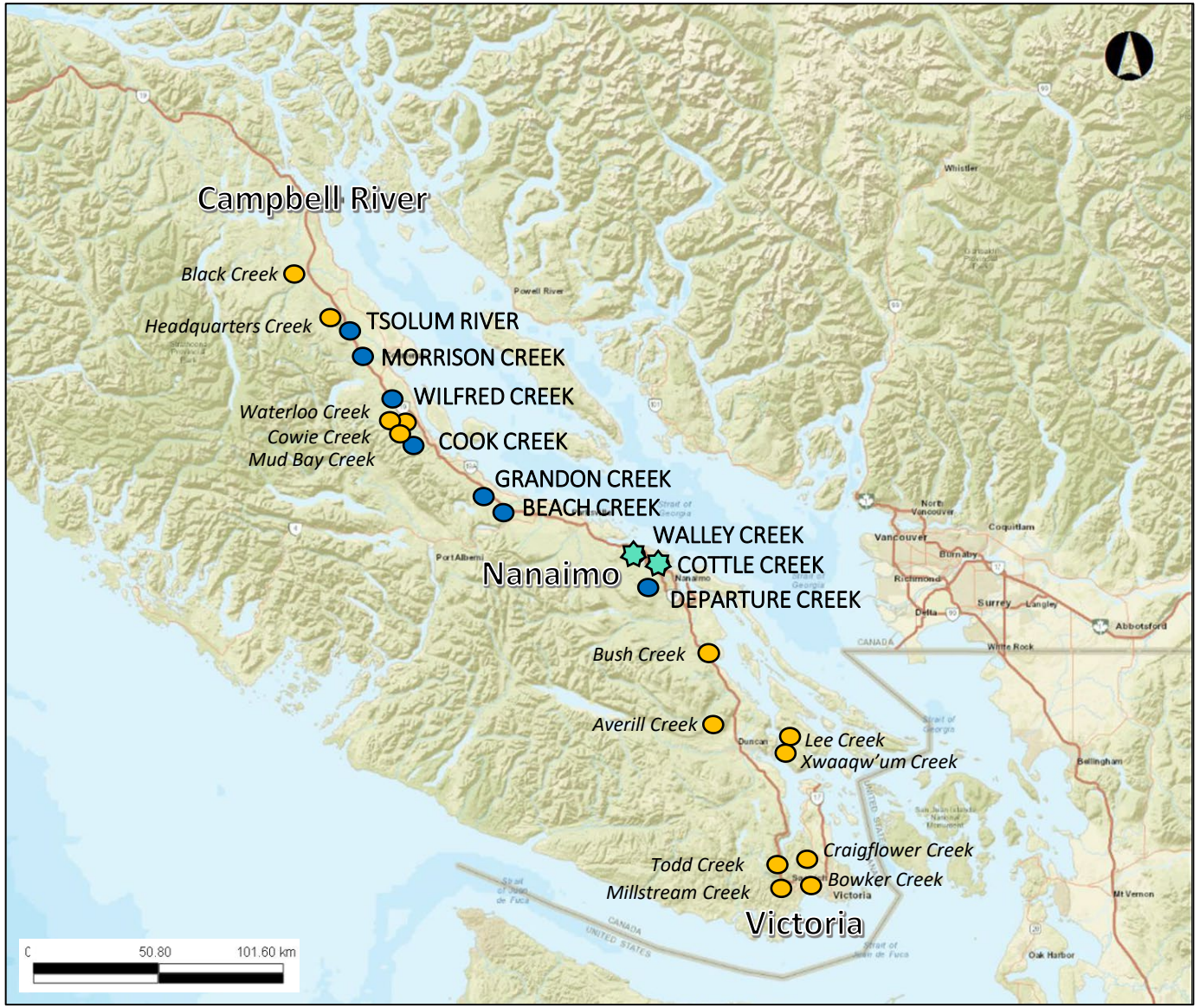




Where are we?

Community Flow Monitoring Network

Vancouver Island

BRITISH COLUMBIA CONSERVATION FOUNDATION



Legend

- Active stations
- Interest in future involvement

New Stations 2024

Community Flow Monitoring Network

Vancouver Island

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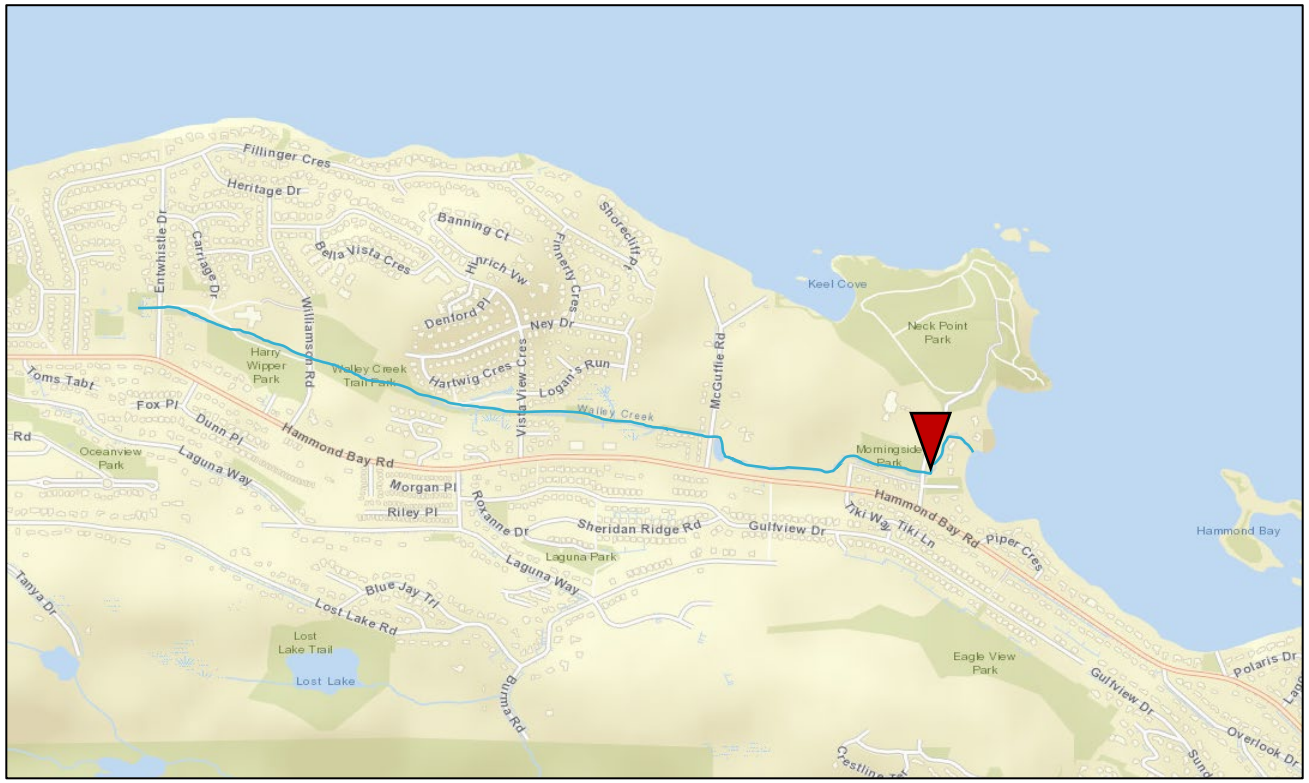
Walley Creek, Nanaimo

1.2 km^2
2.5 km long

WALLEY CREEK STREAMKEEPERS

NALT NANAIMO & AREA LAND TRUST



New Stations 2024

Community Flow Monitoring Network

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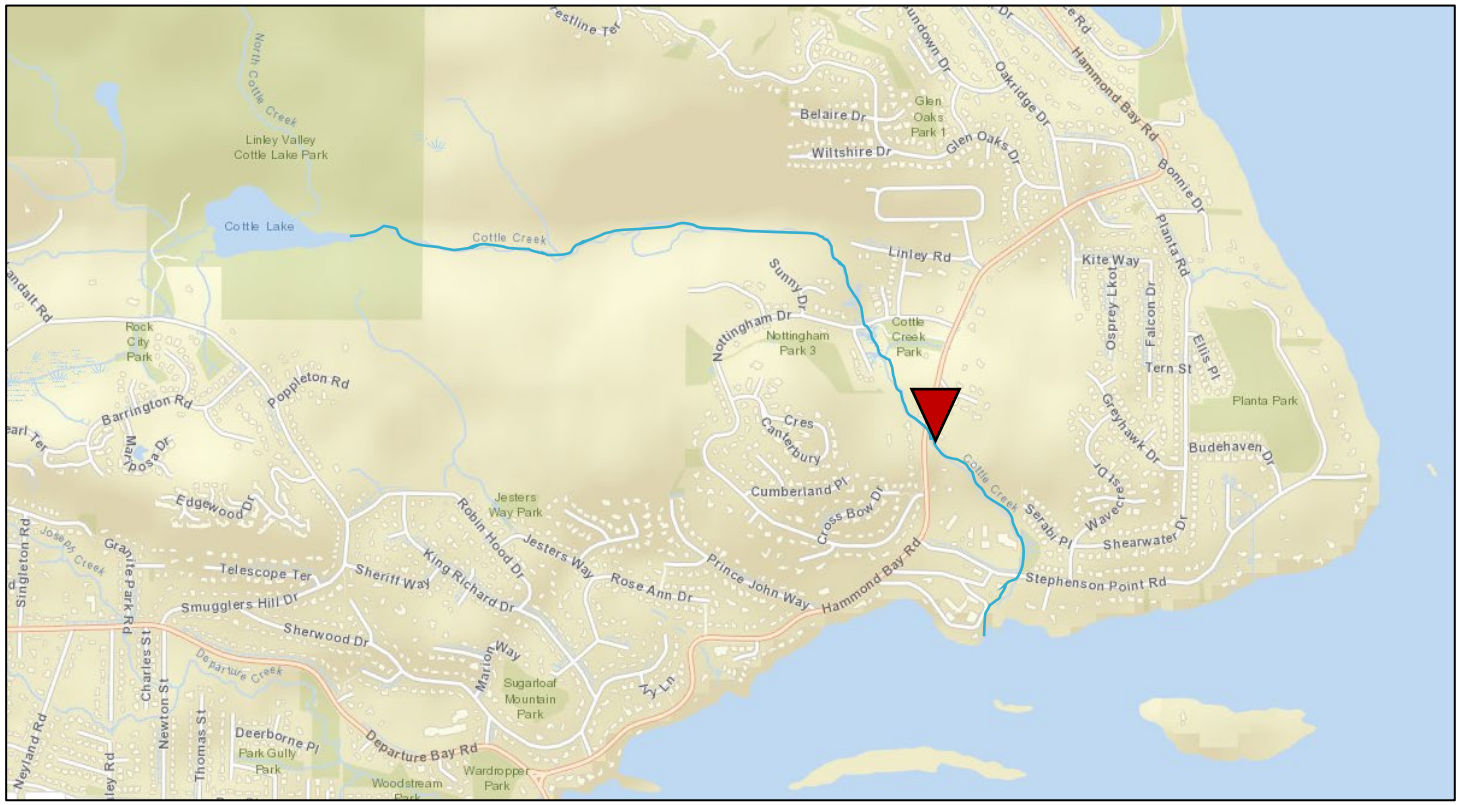
Cottle Creek, Nanaimo

3.8 km^2

2.5 km long

FRIENDS OF COTTLE CREEK

NALT NANAIMO & AREA LAND TRUST



Flow Network Google Drive Updates

Community Flow Monitoring Network

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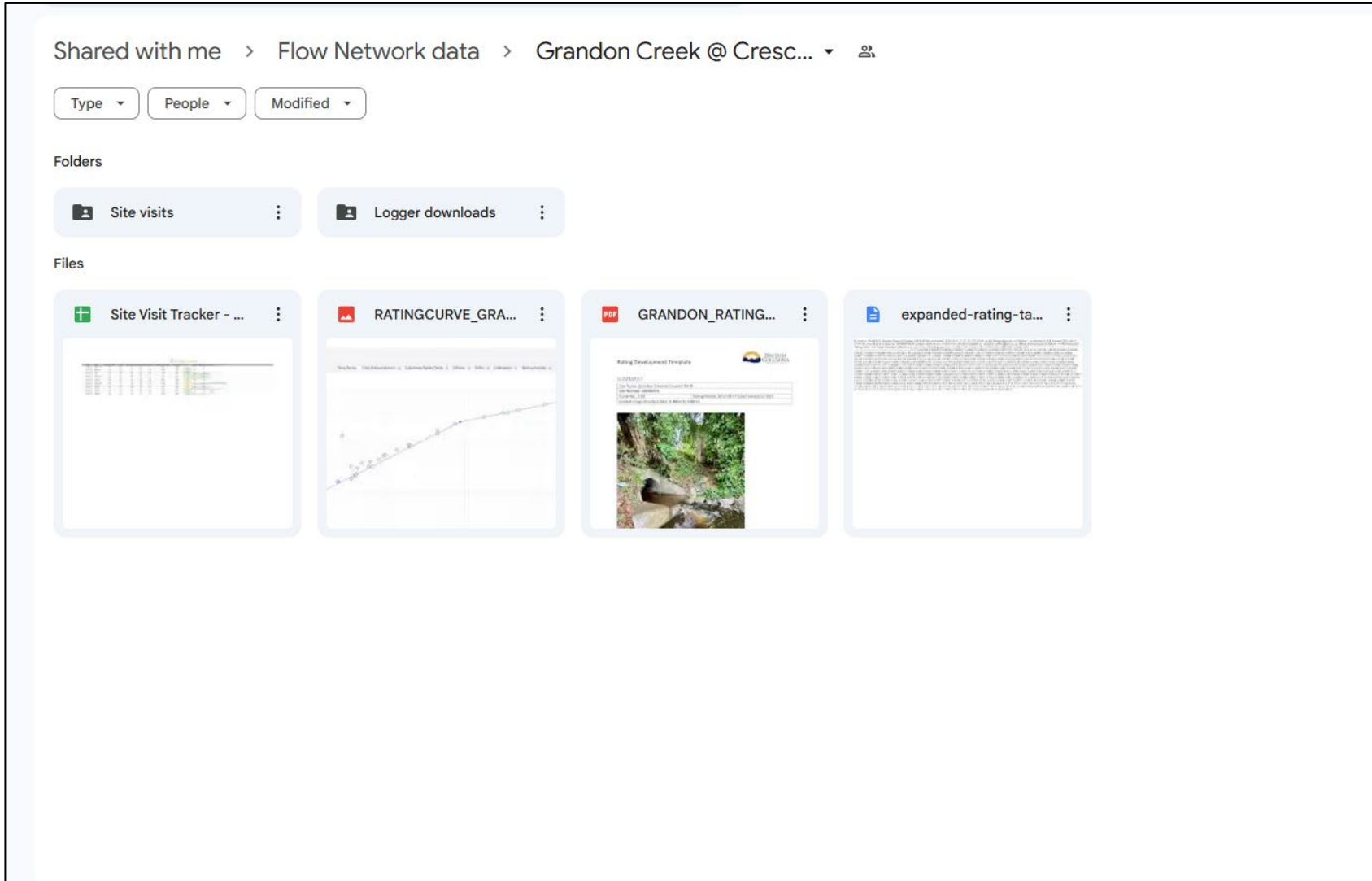
- Site Visit Tracker
- Rating Curve
- Expanded Rating Table
- Station reports



Google Drive Updates

Community Flow Monitoring Network

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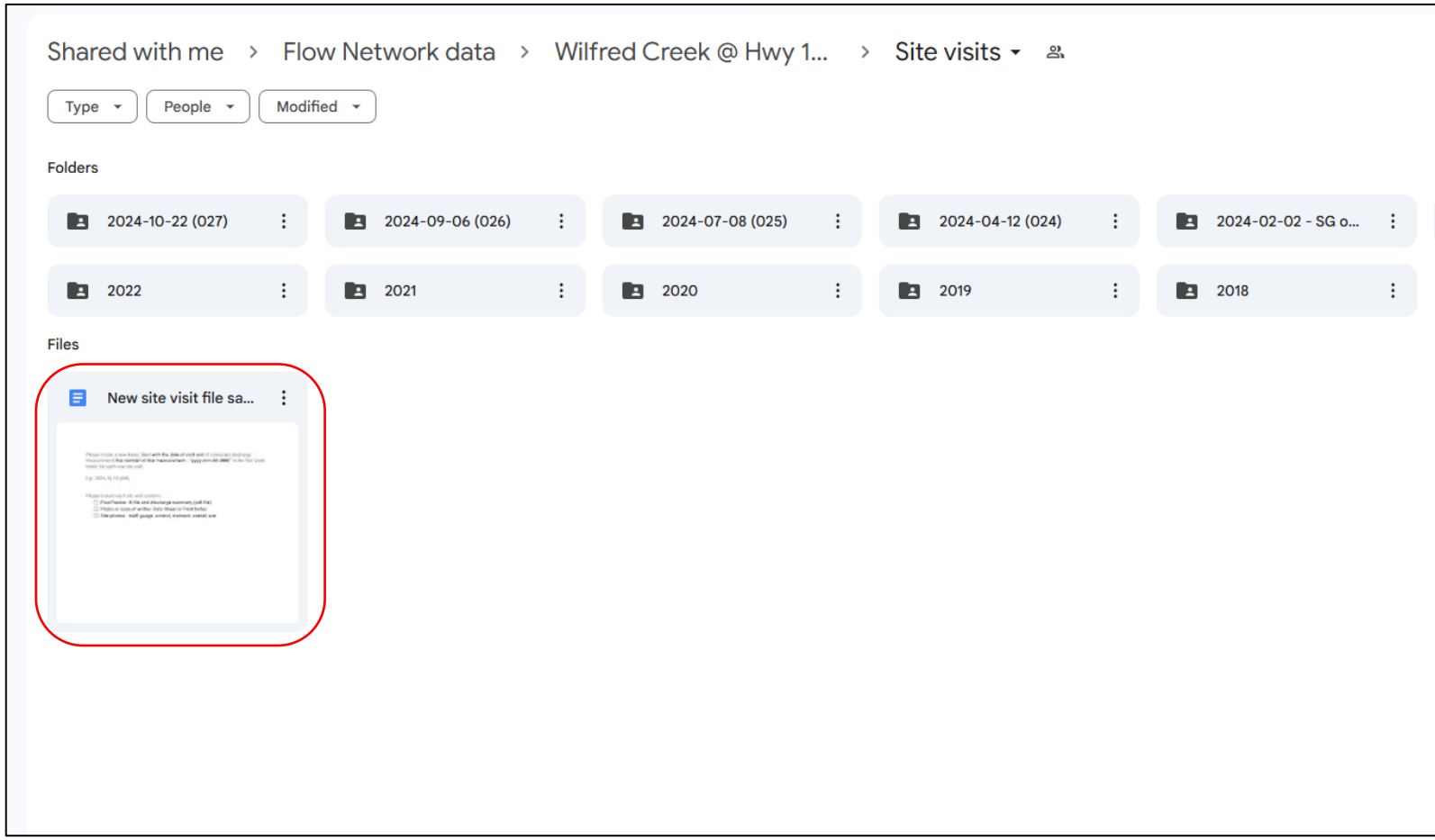
- Updated file saving protocols
  - New site visit
  - Logger downloads



SOP Update

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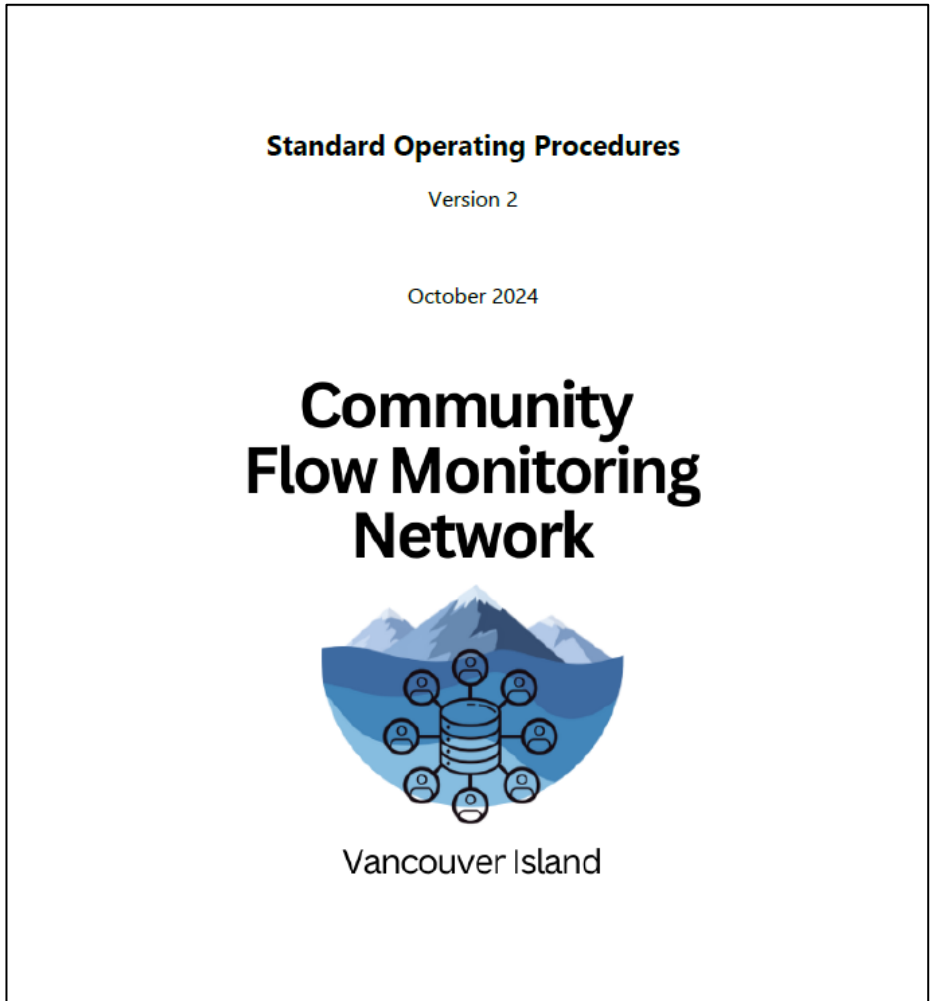
Version 2

- Added FlowTracker 1 set up and protocol
- Updated protocols – e.g., logger downloads, etc.

Available at *cfmnvi.com* & Google Drive
or ask me for a paper copy



2024…

Community Flow Monitoring Network

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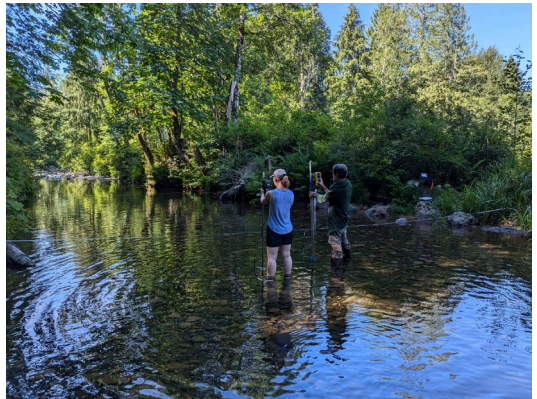


2024…

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2024 Measurement Summary

Station	# Site Visits			% Error		Max Shift (m)	Uncertainty (%)	
	Stage-Discharge	Stage only	Total	Min	Max		Min	Max
Tsolum River	5/6	0	5	0.03	-13.11	-0.022	±3.3	±6.1
Wilfred Creek	4/6	1	5	-3.54	19.41	0.030	±3.7	±16.9
Cook Creek	4/6	2	6	-2.46	-12.88	-0.006	±3.1	±11.6
Grandon Creek	5/6	12	17	-0.21	6.35	0.006	±2.9**	±9.7**
Beach Creek	5/6	1	6	-2.48	-40.48	-0.018	±5.5**	±9.1**
Departure Creek	5/6	5	10	-6.69	-33.43	-0.016	±3.6	±7.5
Morrison Creek	5/6	0	5	n/a	n/a	n/a	±3.4	±8.6
Walley Creek	3/6*	0	3	n/a	n/a	n/a	±4.3	±24.7
Cottle Creek	4/6*	3	7	n/a	n/a	n/a	±2.4	±17.4

*- new station

** - based on only 2 Flowtracker measurements

2023-2024 Comparison

Community Flow Monitoring Network

Vancouver Island

BRITISH COLUMBIA CONSERVATION FOUNDATION

Station	# Stage Discharge Visits		% Error				Max Shift (m)		Uncertainty (%)			
	2023	2024	2023		2024		2023	2024	2023		2024	
			Min	Max	Min	Max			Min	Max	Min	Max
Tsolum River	5/6	5/6	-0.37	8.34	0.03	-13.11	0.008	-0.022	±2.2	±6.5	±3.3	±6.1
Wilfred Creek	4/6	4/6	-0.71	-19.93	-3.54	19.41	0.026	0.030	±2.3	±9.8	±3.7	±16.9
Cook Creek	6/6	4/6	0.42	17.15	-2.46	-12.88	-0.003	-0.006	±2.4	±9.9	±3.1	±11.6
Grandon Creek	7/6	5/6	1.97	12.41	-0.21	6.35	-0.006	0.006	±3.7	±8.7	±2.9**	±9.7**
Beach Creek	7/6	5/6	4.01	85.33	-2.48	-40.48	-0.048	-0.018	±5.7	±11.0	±5.5**	±9.1**
Departure Creek	5/6*	5/6	0.63	-39.64	-6.69	-33.43	-0.24	-0.016	±3.4	±11.3	±3.6	±7.5
Morrison Creek	3/6*	5/6	n/a	n/a	n/a	n/a	n/a	n/a	±3.8	±4.1	±3.4	±8.6
Walley Creek	n/a	3/6*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	±4.3	±24.7
Cottle Creek	n/a	4/6*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	±2.4	±17.4

*- new station

** - based on only 2 Flowtracker measurements

Community Flow Monitoring Network

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Equipment Loans

Community Flow Monitoring Network

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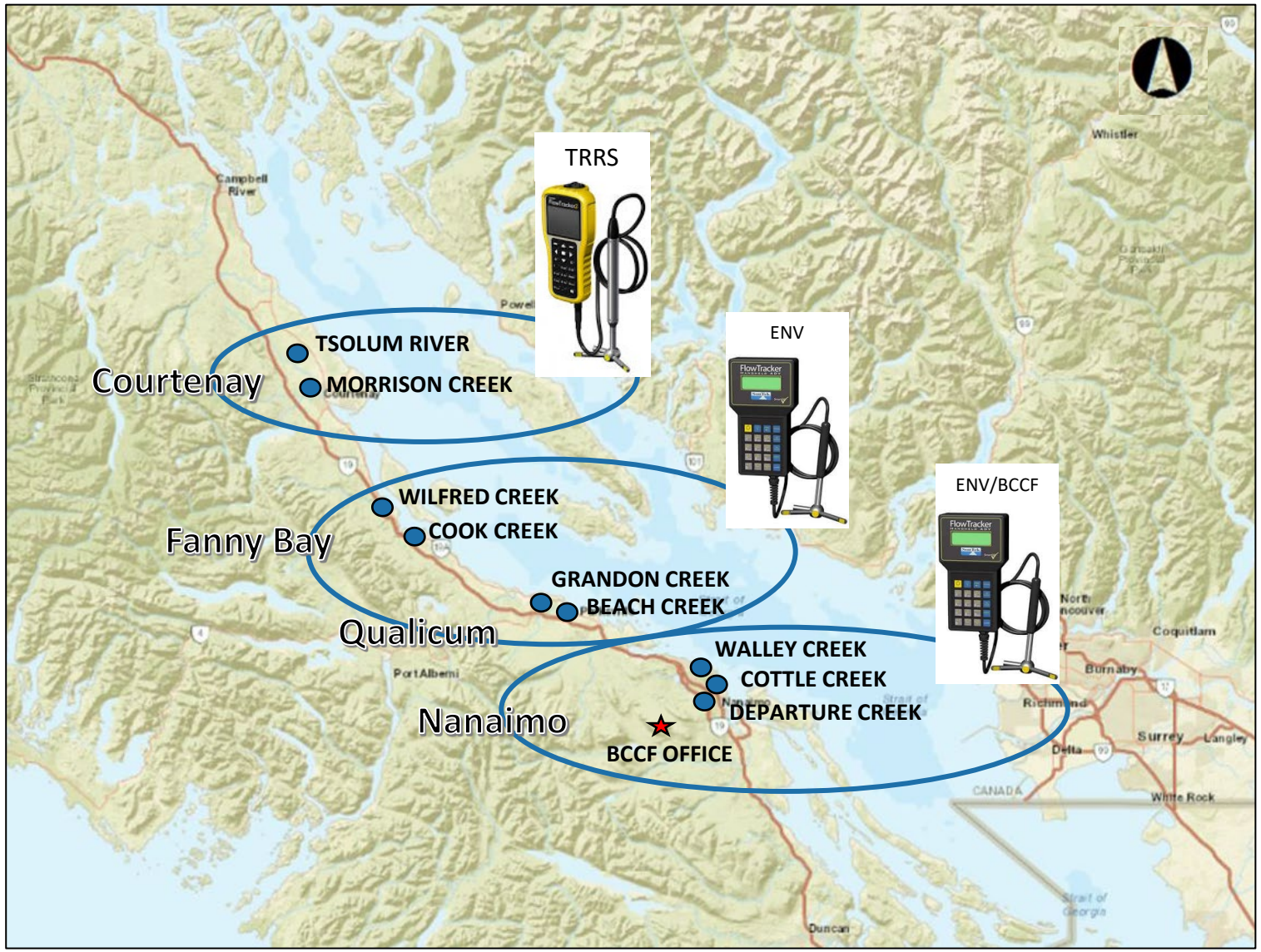

Monitoring Schedule 2025

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Unassisted measurements

Winter

January – early March:

- Winter *high* flow measurement – FT2* stage + discharge
- Logger downloads

**only if safe to enter stream; ADCP measurements can be conducted with assistance from Province for larger streams and rivers*

Spring

Late March – June:

- Spring *moderate* flow measurement – FT2 stage + discharge
- Station maintenance
  - clean debris inside logger pipe
  - note any other maintenance to be done during low flow
- Logger downloads
- Level Survey

Summer

Late June/July:

- *Low* flow measurement – FT2 or bucketfill stage + discharge
- Station maintenance
  - clean logger pipe
  - re-secure logger housing, staff gauge
  - replace equipment where necessary

July/August:

- *Low* flow measurement – FT2 or bucketfill stage + discharge
- Logger downloads

Fall

September/October:

- Fall *moderate* flow measurement - FT stage + discharge
- Level Survey

November/December:

- Fall *high* flow measurement – FT2* stage + discharge
- Logger downloads

**only if safe to enter stream*

- High visibility vests
- Sturdy non-slip wading boots
- Wading belts (done up + snug)
- PFDs (depending on site conditions)
- Warm clothing (socks, hat, gloves, etc.)

Minimum 2 people for taking measurements

High Flow Safety

Flow Regatta 2025

Community Flow Monitoring Network

Vancouver Island

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Late spring/early summer 2025

Between Courtenay and Nanaimo

Flow Regatta 2025

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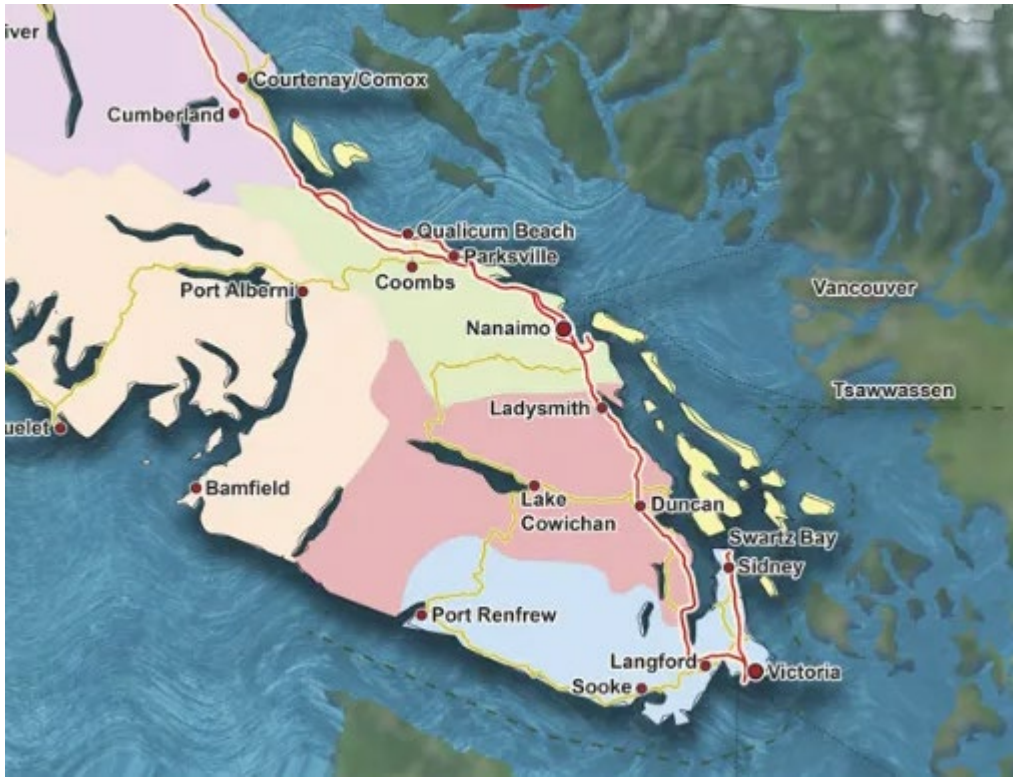
Location Criteria

- Space for 10-20+ people
- Stream side
  - Large enough to measure
  - Easy/safe access
- Washroom

- BONUS: picnic tables, picnic shelter



Community Flow Monitoring Network

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5 Minute Break

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HABITAT CONSERVATION TRUST FOUNDATION

REGIONAL DISTRICT OF NANAIMO

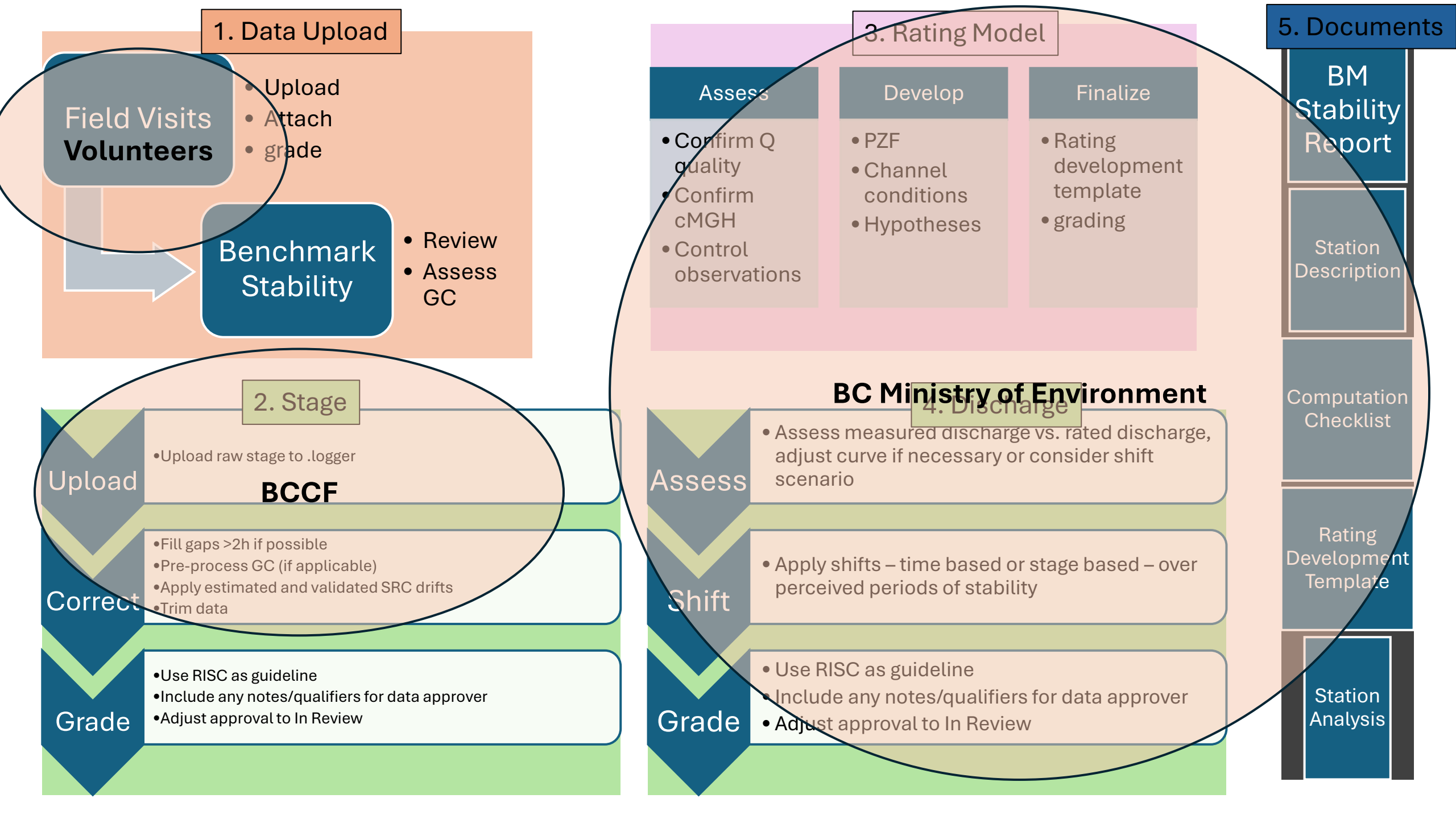
The McLean Foundation

Flo-Mo Roundup

November 20, 2024

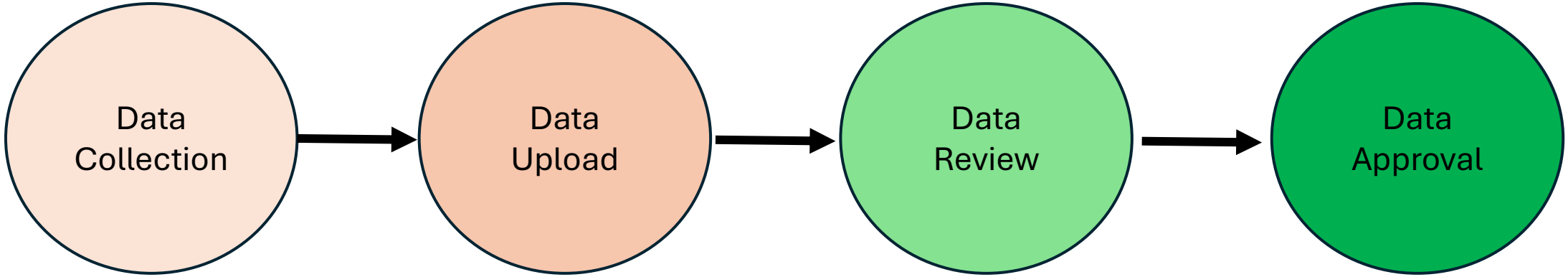
Data Update

Site	Status	Timeline
Grandon Creek	Historical (2012-2022)	Finalized and approved – **grade unknown**
	2023	Finalized and approved – **grade C** ☺
Beach Creek	Historical (2020-2022)	Finalized and approved – **grade unknown**
	2023	Finalized and approved – **grade C** ☺
Cook Creek	Historical (2018-2022)	Finalized and approved – **grade unknown**
	2023	Finalized and approved – **grade C** ☺
Tsolum Creek	Historical (2012-2022)	Reviewed – **grade unknown**
	2023	Reviewed – **grade C** ☺
Wilfred Creek	Historical (2018-2022)	Reviewed – **grade unknown**
	2023	In Review – rating curve in development
Morrison Creek	2023	Rating curve needs development
Departure Creek	2023-24	To be reviewed – 2025, prelim rating curve made
Cottle Creek	2024	To be reviewed – 2025
Walley Creek	2024	To be reviewed - 2025


1. Data Upload
Field Visits
Volunteers
Upload
Attach
grade
Benchmark Stability
Review
Assess GC
2. Stage
Upload
•Upload raw stage to .logger
BCCF
Correct
•Fill gaps >2h if possible
•Pre-process GC (if applicable)
•Apply estimated and validated SRC drifts
•Trim data
Grade
•Use RISC as guideline
•Include any notes/qualifiers for data approver
•Adjust approval to In Review
3. Rating Model
Assess
Confirm Q quality
Confirm cMGH
Control observations
Develop
PZF
Channel conditions
Hypotheses
Finalize
Rating development template
grading
BC Ministry of Environment
4. Discharge
Assess
Assess measured discharge vs. rated discharge, adjust curve if necessary or consider shift scenario
Shift
Apply shifts – time based or stage based – over perceived periods of stability
Grade
Use RISC as guideline
Include any notes/qualifiers for data approver
Adjust approval to In Review
5. Documents
BM Stability Report
Station Description
Computation Checklist
Rating Development Template
Station Analysis

Data Production

- Approval means the data is locked, it is available

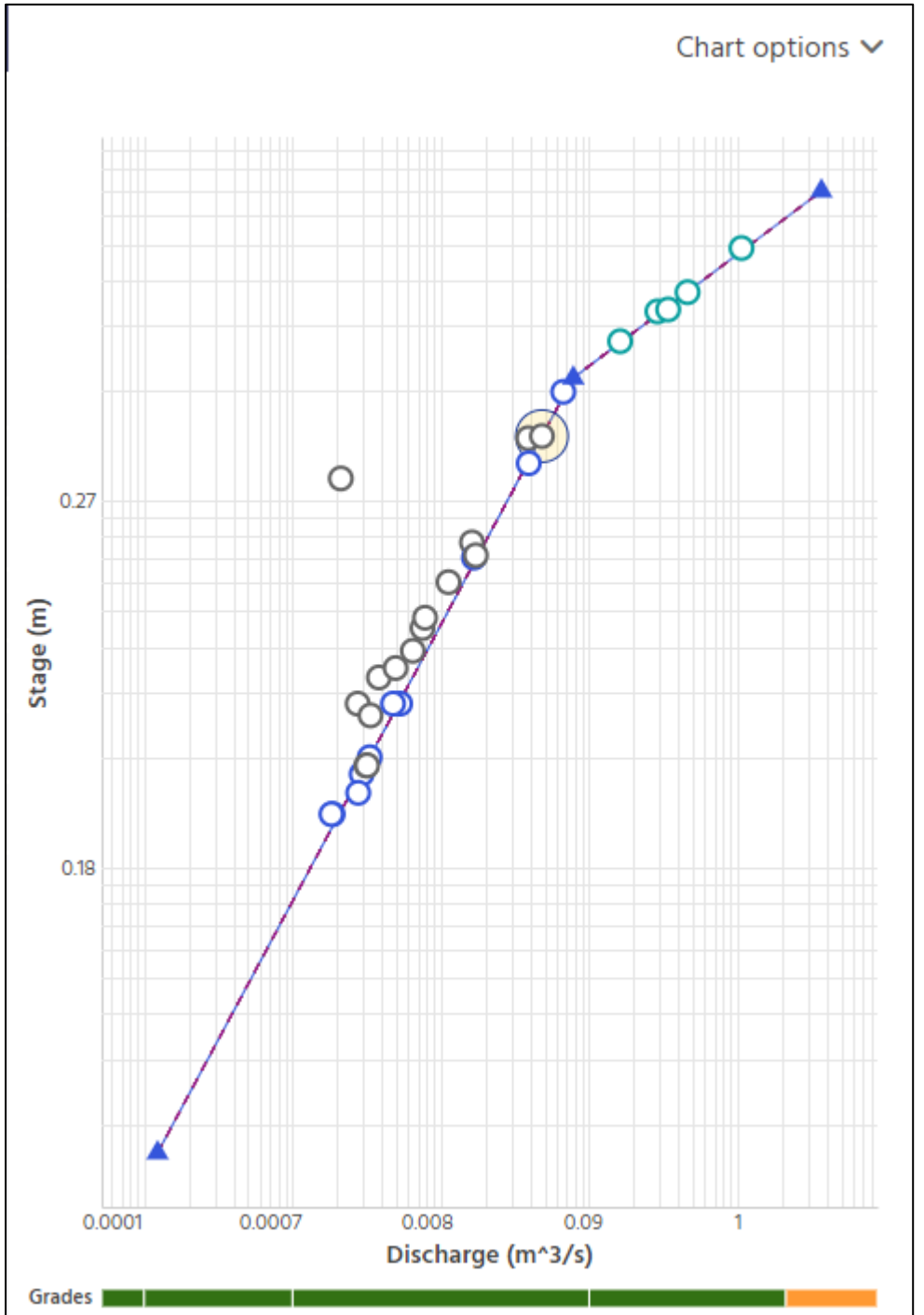


WHO?	Volunteers BCCF	BCCF	BCCF ENV	ENV
WHAT?	Field visits Logger D/Ls	BC Aquarius Google drive	BC Aquarius	BC Aquarius Web Portal

Data Quality – Great work!

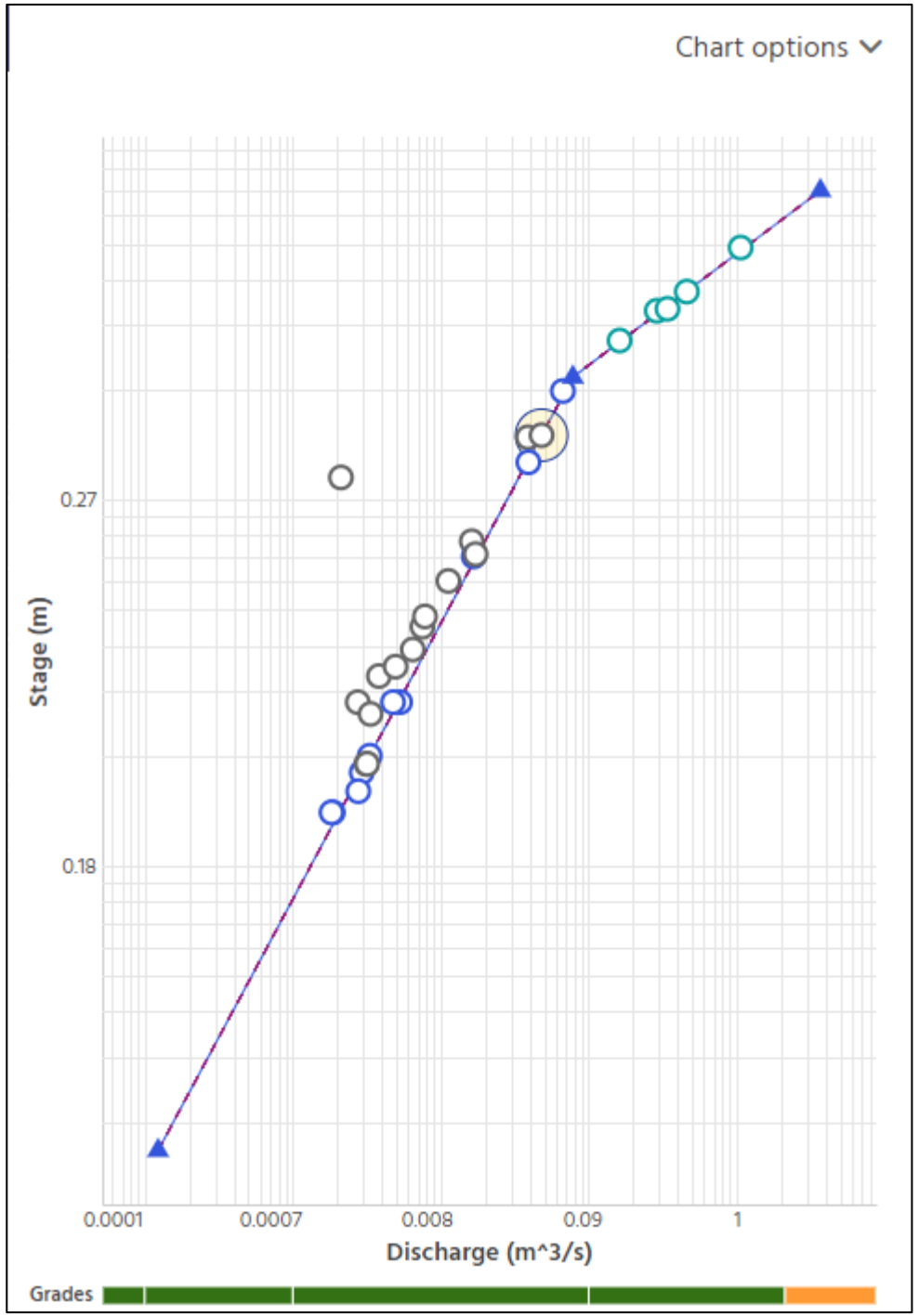
- Grandon Creek – curve verification!

ID	Timestamp ↓	Stage m	Discharge m^3/s	Method	R Error %	Shift m	Grade	Uncertair
034	2024-10-31 12:09:34	0.3200	0.048	Mid-section	-0.21	-0.0002	31 - Good	9.70
033	2024-09-05 09:30:...	0.1890	0.00318	Volumetric	2.65	0.0004	31 - Good	2.00
032	2024-07-10 10:00:00	0.1890	0.00315	Volumetric	1.52	0.0002	31 - Good	
031	2024-04-19 11:06:29	0.2410	0.0172	Mid-section	-3.50	-0.0019	31 - Good	3.50
030	2024-01-26 11:16:54	0.5020	0.341	Mid-section	6.35	0.0063	51 - Excellent	3.20
029	2023-10-13 11:30:00	0.1980	0.00476	Volumetric	-8.23	-0.0018	25 - Best Practice	
028FT	2023-08-14 14:07:05	0.1840	0.00183	Mid-section	-11.49	-0.0012	25 - Best Practice	8.50
028Vol	2023-08-14 13:18:22	0.1840	0.00186	Volumetric	-9.78	-0.0010	25 - Best Practice	
027	2023-07-26 12:57:30	0.1860	0.00277	Volumetric	12.41	0.0015	25 - Best Practice	
026	2023-05-26 13:02:30	0.1980	0.00531	Volumetric	2.43	0.0005	31 - Good	
025	2023-04-19 13:51:15	0.2965	0.0391	Mid-section	1.97	0.0019	31 - Good	6.80



Data Quality – Great work!

- Grandon Creek – curve verification!

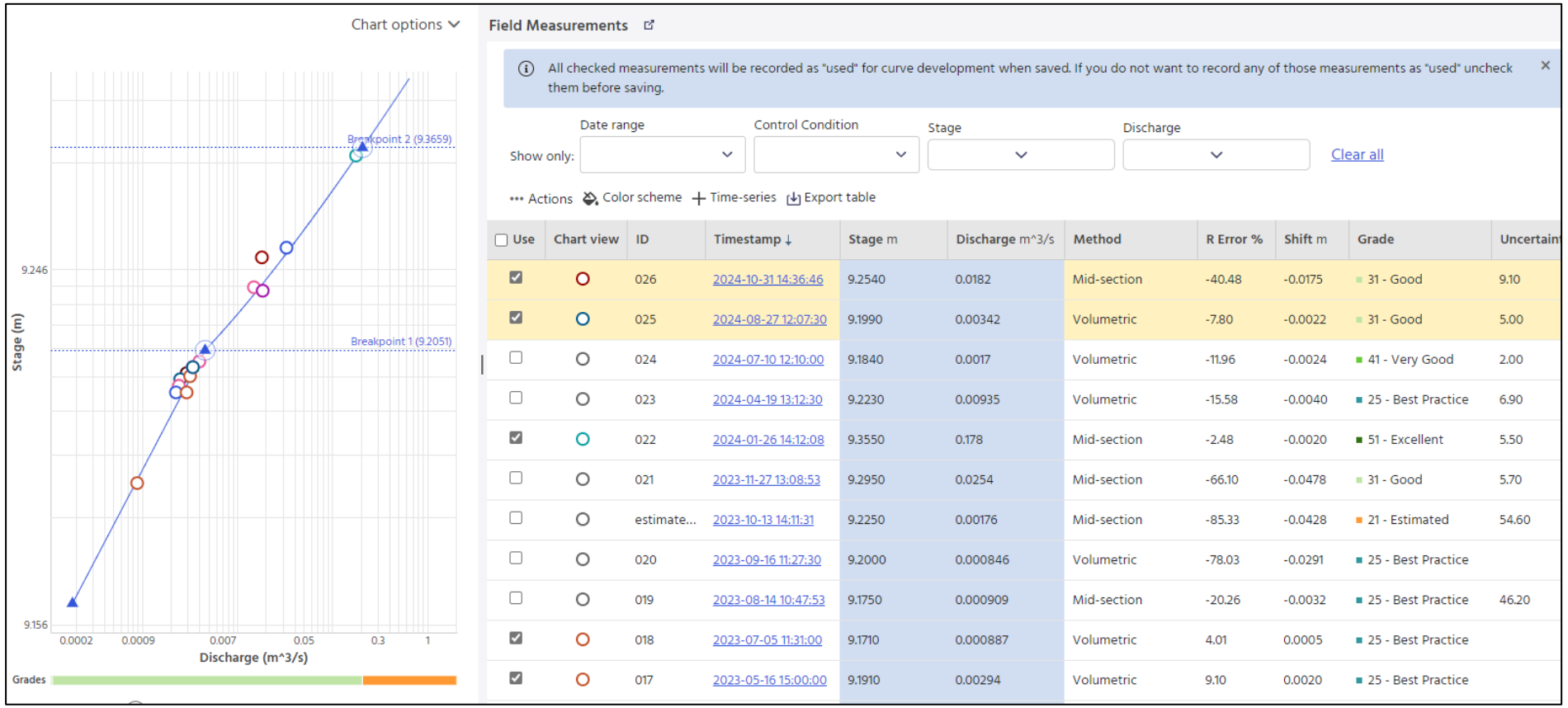


Data Quality – Great work!

- Beach Creek –
  - vegetation is manageable as long as you measure discharge

Data Quality – Great work!

- Beach Creek –
  - vegetation is manageable as long as you measure discharge



Field Measurements

All checked measurements will be recorded as "used" for curve development when saved. If you do not want to record any of those measurements as "used" uncheck them before saving.

Show only: Date range | Control Condition | Stage | Discharge | Clear all

Actions | Color scheme | Time-series | Export table

Use	Chart view	ID	Timestamp	Stage m	Discharge m^3/s	Method	R Error %	Shift m	Grade	Uncertain
☑	○	026	2024-10-31 14:36:46	9.2540	0.0182	Mid-section	-40.48	-0.0175	31 - Good	9.10
☑	○	025	2024-08-27 12:07:30	9.1990	0.00342	Volumetric	-7.80	-0.0022	31 - Good	5.00
☐	○	024	2024-07-10 12:10:00	9.1840	0.0017	Volumetric	-11.96	-0.0024	41 - Very Good	2.00
☐	○	023	2024-04-19 13:12:30	9.2230	0.00935	Volumetric	-15.58	-0.0040	25 - Best Practice	6.90
☑	○	022	2024-01-26 14:12:08	9.3550	0.178	Mid-section	-2.48	-0.0020	51 - Excellent	5.50
☐	○	021	2023-11-27 13:08:53	9.2950	0.0254	Mid-section	-66.10	-0.0478	31 - Good	5.70
☐	○	estimate...	2023-10-13 14:11:31	9.2250	0.00176	Mid-section	-85.33	-0.0428	21 - Estimated	54.60
☐	○	020	2023-09-16 11:27:30	9.2000	0.000846	Volumetric	-78.03	-0.0291	25 - Best Practice	
☐	○	019	2023-08-14 10:47:53	9.1750	0.000909	Mid-section	-20.26	-0.0032	25 - Best Practice	46.20
☑	○	018	2023-07-05 11:31:00	9.1710	0.000887	Volumetric	4.01	0.0005	25 - Best Practice	
☑	○	017	2023-05-16 15:00:00	9.1910	0.00294	Volumetric	9.10	0.0020	25 - Best Practice	

Data Quality – Great work!

- Wilfred Creek – noisy but workable site

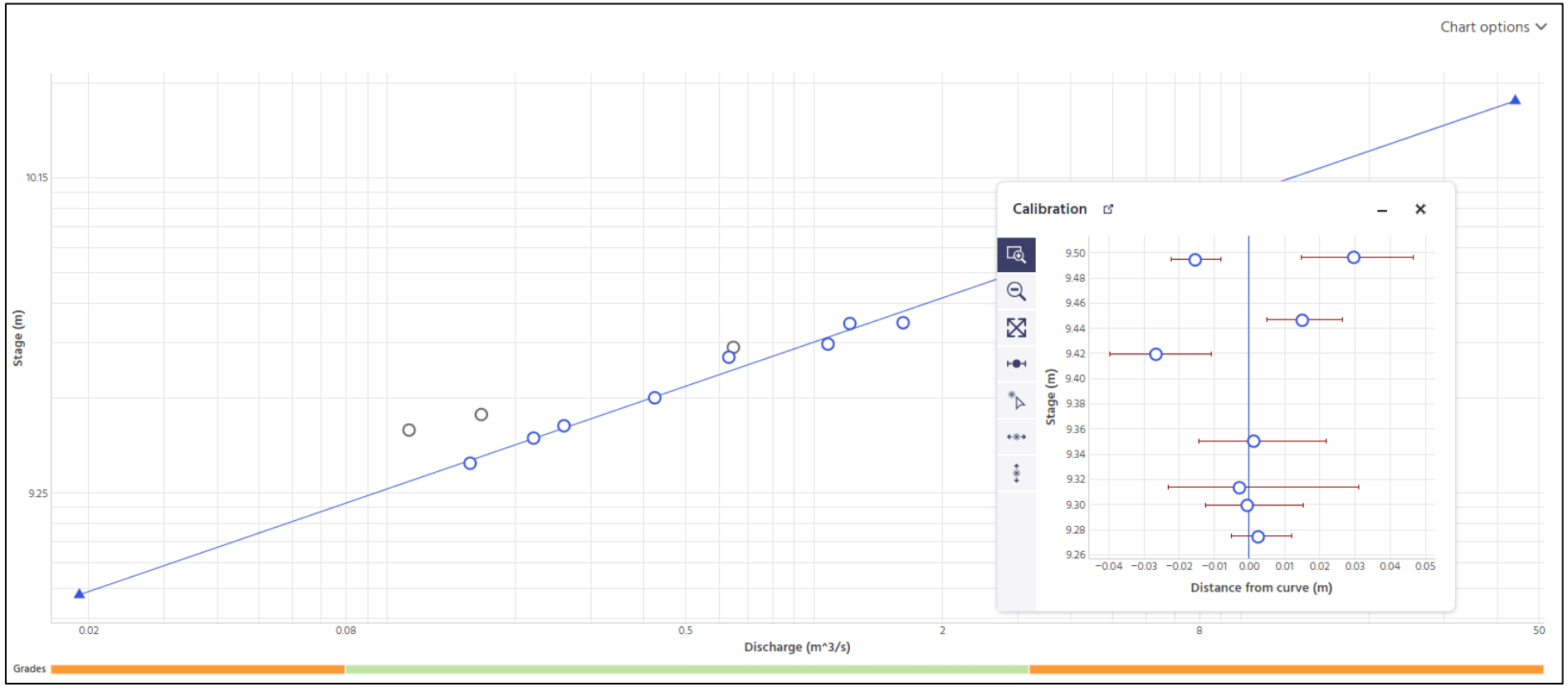
Data Quality – Great work!

- Wilfred Creek – noisy but workable site

Chart view	ID	Timestamp ↓	Stage m	Discharge m^3/s	Method	R Error %	Shift m	Grade	Uncertainty
○	027	2024-10-22 12:00:49	9.4960	1.62	Mid-section	19.41	0.0298	■ 51 - Excellent	9.00
○	026	2024-09-06 11:14:43	9.2740	0.157	Mid-section	4.58	0.0026	■ 51 - Excellent	14.40
○	025	2024-07-08 11:25:42	9.3130	0.26	Mid-section	-3.54	-0.0027	■ 51 - Excellent	33.80
○	024	2024-04-12 12:35:28	9.4460	1.08	Mid-section	11.32	0.0152	■ 51 - Excellent	7.40
○	023	2023-10-04 13:42:13	9.3500	0.425	Mid-section	1.46	0.0014	■ 51 - Excellent	18.80
○	022	2023-07-25 13:23:35	9.2990	0.221	Mid-section	-0.71	-0.0005	■ 51 - Excellent	19.60
○	021	2023-06-14 13:04:27	9.4190	0.633	Mid-section	-19.93	-0.0264	■ 51 - Excellent	12.60
○	020	2023-04-18 14:44:13	9.4940	1.22	Mid-section	-9.31	-0.0153	■ 51 - Excellent	4.60
○	019	2022-10-06 09:37:30	9.3080	0.113	Mid-section	-55.29	-0.0494	■ 51 - Excellent	24.60
○	017	2022-08-18 14:00:00	9.3270	0.167	Mid-section	-48.25	-0.0468	■ 51 - Excellent	11.20
○	016	2022-07-19 15:45:00	9.4390	0.649	Mid-section	-29.67	-0.0437	■ 51 - Excellent	10.40

Data Quality – Great work!

- Wilfred Creek – noisy but workable site



Data Quality – Great work!

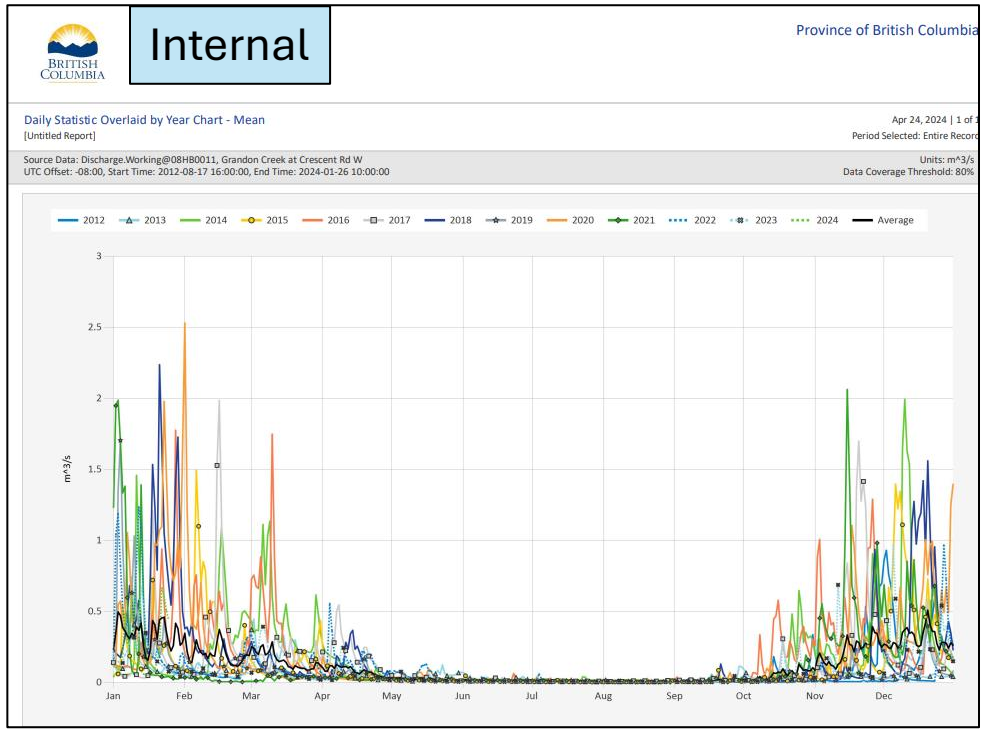
- Wilfred Creek – noisy but workable site

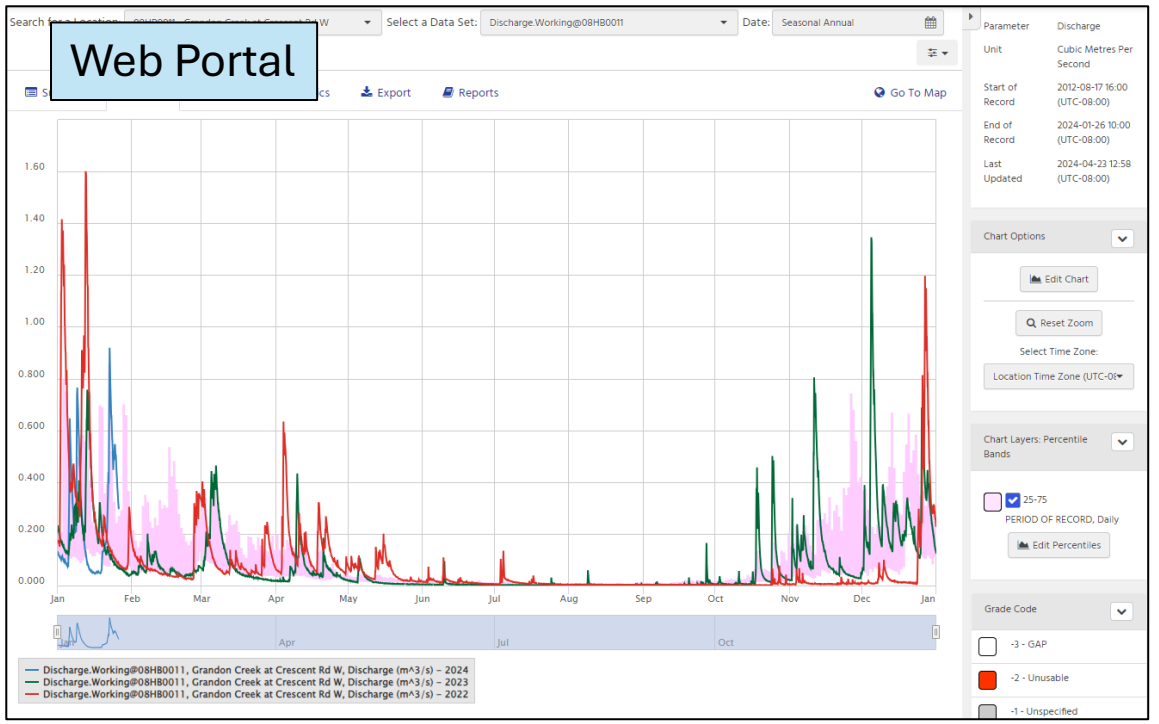
Takeaways

- Visit frequency – aim for frequency and variety
  - Frequency: every 4-6 weeks
  - Variety: low, medium, high flows (ENV can help with highs)
- Control photos
  - Consistent perspective, looking downstream from gauge
- Note taking
  - Keep up the good work!
- Equipment sharing and use…opportunity for networking and knowledge exchange!

Web Portal Tour – Grandon Creek

- Streamflow statistics and charts!
- Web Portal charts and displays available to public
- Feel free to download data as well





Rating Table – How to Use

```
# Location: 08HB0011    Grandon Creek at Crescent Rd W
# Date processed: 2024-01-30 10:46:30 UTC-08:00 by Jonathan.Jeffery@gov.bc.ca
# Rating: Log Method-1.00
# Created: 2022-08-12 17:57:34 UTC-08:00
# Created by: TRODGERS
# Updated: 2024-01-30 10:34:19 UTC-08:00
# Updated by: Jonathan.Jeffery@gov.bc.ca


                                        Offsets and Breakpoints
Offset1: 0.1700


                                     Expanded Rating Table: 1.00


   Stage                                                Discharge                                                Difference in
    (m)                                                 (m^3/s)                                                     Discharge
                                                                                                                per 0.01 m
            0.000     0.001     0.002     0.003     0.004     0.005     0.006     0.007     0.008     0.009
-------------------------------------------------------------------------------------------------------------------------
    0.17                      0.000156  0.000267  0.000392  0.000527  0.000671  0.000823  0.000983  0.00115
    0.18    0.00132   0.0015    0.00168   0.00187   0.00207   0.00226   0.00247   0.00267   0.00288   0.0031    0.00199
    0.19    0.00332   0.00354   0.00376   0.00399   0.00422   0.00446   0.0047    0.00494   0.00518   0.00543   0.00236

    0.20    0.00568   0.00593   0.00619   0.00645   0.00671   0.00697   0.00724   0.0075    0.00777   0.00805   0.00264
    0.21    0.00832   0.0086    0.00888   0.00916   0.00944   0.00973   0.01      0.0103    0.0106    0.0109    0.00287
    0.22    0.0112    0.0115    0.0118    0.0121    0.0124    0.0127    0.013     0.0133    0.0136    0.0139    0.00306
    0.23    0.0143    0.0146    0.0149    0.0152    0.0155    0.0159    0.0162    0.0165    0.0168    0.0172    0.00324
    0.24    0.0175    0.0178    0.0182    0.0185    0.0188    0.0192    0.0195    0.0198    0.0202    0.0205    0.00339

    0.25    0.0209    0.0212    0.0216    0.0219    0.0223    0.0226    0.023     0.0233    0.0237    0.0241    0.00353
    0.26    0.0244    0.0248    0.0251    0.0255    0.0259    0.0262    0.0266    0.027     0.0273    0.0277    0.00366
    0.27    0.0281    0.0285    0.0288    0.0292    0.0296    0.03      0.0303    0.0307    0.0311    0.0315    0.00379
    0.28    0.0319    0.0323    0.0326    0.033     0.0334    0.0338    0.0342    0.0346    0.035     0.0354    0.0039
    0.29    0.0358    0.0362    0.0366    0.037     0.0374    0.0378    0.0382    0.0386    0.039     0.0394    0.00401

    0.30    0.0398    0.0402    0.0406    0.041     0.0414    0.0418    0.0422    0.0426    0.0431    0.0435    0.00411
    0.31    0.0439    0.0443    0.0447    0.0451    0.0456    0.046     0.0464    0.0468    0.0473    0.0477    0.00421
    0.32    0.0481    0.0485    0.049     0.0494    0.0498    0.0502    0.0507    0.0511    0.0515    0.052     0.0043
    0.33    0.0524    0.0528    0.0533    0.0537    0.0541    0.0546    0.055     0.0555    0.0559    0.0564    0.00439
    0.34    0.0568    0.0572    0.0577    0.0581    0.0586    0.059     0.0595    0.0599    0.0604    0.0608    0.00448

    0.35    0.0613    0.0617    0.0622    0.0626    0.0631    0.0635    0.064     0.0645    0.0649    0.0654    0.00456
    0.36    0.0658    0.0663    0.0668    0.0672    0.0677    0.0681    0.0686    0.0691    0.0695    0.07      0.00464
    0.37    0.0705    0.0709    0.0714    0.0719    0.0723    0.0728    0.0733    0.0738    0.0742    0.0747    0.00471
    0.38    0.0752    0.0757    0.0761    0.0766    0.0771    0.0776    0.078*    0.0792    0.0804    0.0817    0.00771
    0.39    0.0829    0.0841    0.0854    0.0867    0.0879    0.0892    0.0906    0.0919    0.0932    0.0946    0.013

    0.40    0.0959    0.0973    0.0987    0.10      0.102     0.103     0.104     0.106     0.107     0.109     0.0144
```

Site Visit in Summer:
Staff Gauge = 0.295m
Measured Discharge = 0.015 m^3/s

1. What is my expected stage at this discharge? (shift)

2. What is my expected discharge at this stage? (% diff)

3. What is the shift or percent difference?

(ie. How off am I from the curve? Should I re-do my measurement or take a really good control photo?)

Rating Table – How to Use

```
# Location: 08HB0011    Grandon Creek at Crescent Rd W
# Date processed: 2024-01-30 10:46:30 UTC-08:00 by Jonathan.Jeffery@gov.bc.ca
# Rating: Log Method-1.00
# Created: 2022-08-12 17:57:34 UTC-08:00
# Created by: TRODGERS
# Updated: 2024-01-30 10:34:19 UTC-08:00
# Updated by: Jonathan.Jeffery@gov.bc.ca


                                    Offsets and Breakpoints
Offset1: 0.1700


                                  Expanded Rating Table: 1.00


   Stage                                        Discharge                                        Difference in
    (m)                                         (m^3/s)                                             Discharge
                                                                                                  per 0.01 m
           0.000    0.001    0.002    0.003    0.004    0.005    0.006    0.007    0.008    0.009
-------------------------------------------------------------------------------------------------------------
    0.17                     0.000156 0.000267 0.000392 0.000527 0.000671 0.000823 0.000983 0.00115
    0.18  0.00132  0.0015   0.00168  0.00187  0.00207  0.00226  0.00247  0.00267  0.00288  0.0031   0.00199
    0.19  0.00332  0.00354  0.00376  0.00399  0.00422  0.00446  0.0047   0.00494  0.00518  0.00543  0.00236

    0.20  0.00568  0.00593  0.00619  0.00645  0.00671  0.00697  0.00724  0.0075   0.00777  0.00805  0.00264
    0.21  0.00832  0.0086   0.00888  0.00916  0.00944  0.00973  0.01     0.0103   0.0106   0.0109   0.00287
    0.22  0.0112   0.0115   0.0118   0.0121   0.0124   0.0127   0.013    0.0133   0.0136   0.0139   0.00306
    0.23  0.0143   0.0146   0.0149   0.0152   0.0155   0.0159   0.0162   0.0165   0.0168   0.0172   0.00324
    0.24  0.0175   0.0178   0.0182   0.0185   0.0188   0.0192   0.0195   0.0198   0.0202   0.0205   0.00339

    0.25  0.0209   0.0212   0.0216   0.0219   0.0223   0.0226   0.023    0.0233   0.0237   0.0241   0.00353
    0.26  0.0244   0.0248   0.0251   0.0255   0.0259   0.0262   0.0266   0.027    0.0273   0.0277   0.00366
    0.27  0.0281   0.0285   0.0288   0.0292   0.0296   0.03     0.0303   0.0307   0.0311   0.0315   0.00379
    0.28  0.0319   0.0323   0.0326   0.033    0.0334   0.0338   0.0342   0.0346   0.035    0.0354   0.0039
    0.29  0.0358   0.0362   0.0366   0.037    0.0374   0.0378   0.0382   0.0386   0.039    0.0394   0.00401

    0.30  0.0398   0.0402   0.0406   0.041    0.0414   0.0418   0.0422   0.0426   0.0431   0.0435   0.00411
    0.31  0.0439   0.0443   0.0447   0.0451   0.0456   0.046    0.0464   0.0468   0.0473   0.0477   0.00421
    0.32  0.0481   0.0485   0.049    0.0494   0.0498   0.0502   0.0507   0.0511   0.0515   0.052    0.0043
    0.33  0.0524   0.0528   0.0533   0.0537   0.0541   0.0546   0.055    0.0555   0.0559   0.0564   0.00439
    0.34  0.0568   0.0572   0.0577   0.0581   0.0586   0.059    0.0595   0.0599   0.0604   0.0608   0.00448

    0.35  0.0613   0.0617   0.0622   0.0626   0.0631   0.0635   0.064    0.0645   0.0649   0.0654   0.00456
    0.36  0.0658   0.0663   0.0668   0.0672   0.0677   0.0681   0.0686   0.0691   0.0695   0.07     0.00464
    0.37  0.0705   0.0709   0.0714   0.0719   0.0723   0.0728   0.0733   0.0738   0.0742   0.0747   0.00471
    0.38  0.0752   0.0757   0.0761   0.0766   0.0771   0.0776   0.078*   0.0792   0.0804   0.0817   0.00771
    0.39  0.0829   0.0841   0.0854   0.0867   0.0879   0.0892   0.0906   0.0919   0.0932   0.0946   0.013

    0.40  0.0959   0.0973   0.0987   0.10     0.102    0.103    0.104    0.106    0.107    0.109    0.0144
```

Site Visit in Summer:
Staff Gauge = 0.295m
Measured Discharge = 0.015 m^3/s

What is my expected stage at this discharge? (shift)

1. Find your measured discharge in the rating table
2. Determine the expected stage at this discharge (rated stage)
3. Calculate the difference between the observed stage and the rated stage

Shift = 0.295m – 0.232m
= -0.063m

Rating Table – How to Use

```
# Location: 08HB0011    Grandon Creek at Crescent Rd W
# Date processed: 2024-01-30 10:46:30 UTC-08:00 by Jonathan.Jeffery@gov.bc.ca
# Rating: Log Method-1.00
# Created: 2022-08-12 17:57:34 UTC-08:00
# Created by: TRODGERS
# Updated: 2024-01-30 10:34:19 UTC-08:00
# Updated by: Jonathan.Jeffery@gov.bc.ca


                                    Offsets and Breakpoints
Offset1: 0.1700


                                  Expanded Rating Table: 1.00


   Stage                                        Discharge                                          Difference in
    (m)                                         (m^3/s)                                             Discharge
                                                                                                    per 0.01 m
           0.000    0.001    0.002    0.003    0.004    0.005    0.006    0.007    0.008    0.009
-------------------------------------------------------------------------------------------------------------
    0.17                    0.000156 0.000267 0.000392 0.000527 0.000671 0.000823 0.000983 0.00115
    0.18    0.00132 0.0015   0.00168  0.00187  0.00207  0.00226  0.00247  0.00267  0.00288  0.0031   0.00199
    0.19    0.00332 0.00354  0.00376  0.00399  0.00422  0.00446  0.0047   0.00494  0.00518  0.00543  0.00236

    0.20    0.00568 0.00593  0.00619  0.00645  0.00671  0.00697  0.00724  0.0075   0.00777  0.00805  0.00264
    0.21    0.00832 0.0086   0.00888  0.00916  0.00944  0.00973  0.01     0.0103   0.0106   0.0109   0.00287
    0.22    0.0112  0.0115   0.0118   0.0121   0.0124   0.0127   0.013    0.0133   0.0136   0.0139   0.00306
    0.23    0.0143  0.0146   0.0149   0.0152   0.0155   0.0159   0.0162   0.0165   0.0168   0.0172   0.00324
    0.24    0.0175  0.0178   0.0182   0.0185   0.0188   0.0192   0.0195   0.0198   0.0202   0.0205   0.00339

    0.25    0.0209  0.0212   0.0216   0.0219   0.0223   0.0226   0.023    0.0233   0.0237   0.0241   0.00353
    0.26    0.0244  0.0248   0.0251   0.0255   0.0259   0.0262   0.0266   0.027    0.0273   0.0277   0.00366
    0.27    0.0281  0.0285   0.0288   0.0292   0.0296   0.03     0.0303   0.0307   0.0311   0.0315   0.00379
    0.28    0.0319  0.0323   0.0326   0.033    0.0334   0.0338   0.0342   0.0346   0.035    0.0354   0.0039
    0.29    0.0358  0.0362   0.0366   0.037    0.0374   0.0378   0.0382   0.0386   0.039    0.0394   0.00401

    0.30    0.0398  0.0402   0.0406   0.041    0.0414   0.0418   0.0422   0.0426   0.0431   0.0435   0.00411
    0.31    0.0439  0.0443   0.0447   0.0451   0.0456   0.046    0.0464   0.0468   0.0473   0.0477   0.00421
    0.32    0.0481  0.0485   0.049    0.0494   0.0498   0.0502   0.0507   0.0511   0.0515   0.052    0.0043
    0.33    0.0524  0.0528   0.0533   0.0537   0.0541   0.0546   0.055    0.0555   0.0559   0.0564   0.00439
    0.34    0.0568  0.0572   0.0577   0.0581   0.0586   0.059    0.0595   0.0599   0.0604   0.0608   0.00448

    0.35    0.0613  0.0617   0.0622   0.0626   0.0631   0.0635   0.064    0.0645   0.0649   0.0654   0.00456
    0.36    0.0658  0.0663   0.0668   0.0672   0.0677   0.0681   0.0686   0.0691   0.0695   0.07     0.00464
    0.37    0.0705  0.0709   0.0714   0.0719   0.0723   0.0728   0.0733   0.0738   0.0742   0.0747   0.00471
    0.38    0.0752  0.0757   0.0761   0.0766   0.0771   0.0776   0.078*   0.0792   0.0804   0.0817   0.00771
    0.39    0.0829  0.0841   0.0854   0.0867   0.0879   0.0892   0.0906   0.0919   0.0932   0.0946   0.013

    0.40    0.0959  0.0973   0.0987   0.10     0.102    0.103    0.104    0.106    0.107    0.109    0.0144
```

Site Visit in Summer:
Staff Gauge = 0.295m
Measured Discharge = 0.015 m^3/s

What is my expected discharge at this stage?

1. Find the discharge in the table based on measured stage
2. Calculate percent difference between rated and measured discharge

$$\% \text{ diff} = \frac{0.015 m3/s - 0.038 m3/s}{0.038 m3/s} * 100\%$$

$$= -60.5\%$$

Hydrometric Rating Application Launch!

Next Steps

- Higher water visits – BCCF/MOE collab
- Data review
  - 2024 to be finalized after 1st visit in 2025
  - Historical review on-going
    - Tsolum, Wilfred next
  - Ongoing rating curve development at new sites
    - Departure, Morrison, Cottle, Walley

Questions?

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