

TWG Meeting #9 Notes for TWG meeting May 27 2020

Attendees

- Justus
- Henry
- Dan
- Mike
- James
- Kevin
- Gina
- Andrea
- Phillip
- Wayne
- Stephan
- Rahul
- Jayson

Discussion on TWG Attendees

Wayne

- Concerned we are losing focus, who should attend? Usually scientists.

James

- BC will support with scientists

Henry

- Suggest 3-person TWG and hire scientists to support

Jayson

- BC Hydro Water Use Plans:
 - typically had 6-10 participants, typically scientists and technical, some laypeople
 - typically had technical background reports, then TWG articulate technical details to MT
 - WEI approach is in-line with what would be expected

Discussion on Andre (NHC) geomorphology presentation:

Wayne

- Last 2 presentations very useful, highlights of the process so far.
- Interested in exploring sediment sources (sandbar at Burrard St bridge is 40% from Murray Ck?)
- (Jayson note: Andre did not discuss this)
- Is tributary sediment input a data gap?

Kevin

- Agrees presentations are great

- Suggests we record presentations
- Would be interested in learning more about backwatering effect and change from gravel to sand in Vanderhoof area.
- Agrees tributary sediment input data gap.

Justus

- Asking the correct question is critical
- Intent of Andre presentation was specific, but geomorphology of watershed more complex
- Have been studying geomorphology and sediment since 80's
- There are various data gaps: Cheslatta fan, Nechak/Fraser fan at PG, tributaries, other sediment sources (e.g., erosion).

James

- Air photo interpretation can help understand bigger picture
- Was good to learn about sediment transport at various flows
- Recognize that sediment transport at Vanderhoof is atypical
- How do we use this information to develop sturgeon flows?

Andrea

- Was not at meeting, Gina will comment for PG

Mike

- Not at meeting but reviewed powerpoint – was very informative
- Need to remember other geomorphology issues (Cheslatta fan)
- Announced that a few weeks ago human bones were discovered on Cheslatta: erosion of pre-contact burial (not the cemetery)

Dan

- Useful presentation, provides foundation for understanding flow effects
- Acknowledged he had pre-conceived ideas about sediment transport that were not correct: this information challenges our assumptions
- Interesting that form of river is not that different now from pre-regulation (atypical from most hydro projects)

Gina

- Was not at meeting but reviewed presentation: good new information for her
- PG interested in how sediment accumulation affects flooding

Henry

- Presentation led him to reflect on his experience on the river
- How has timing and magnitude of Nechako flow affected input and transport of tributary sediment: sandbars accumulating
- Recognizes that we need to consider all factors and that sediment transport is complicated.

Phillip

- Good presentation, helped bring everyone into same framework, valuable to have history of geomorphology
- Key message: sediment transport is complicated, changes in flow don't necessarily produce typical results.
- Targeting specific reaches may be important rather than flow changes for the river in general
- Recognizes that different areas in the river provide different substrates and habitat function.

Stephan

- Good presentation, good reminder of how complex and dynamic rivers are
- Outstanding questions:
 - What is the source of sediment?
 - Where does it go?
 - What is the sediment quality?
 - What other factors affect sediment movement (tributaries)?
 - What are the cumulative impacts?

Henry

- What do we know about other life-stage requirements for sturgeon?

Justus

- NWSRI has considered all life stages, early (egg and larva) appear to be bottlenecks
- Also considered overwintering, food supply as potential bottlenecks.

Henry

- Are there enough sturgeon to occupy available habitat?

Discussion on Sturgeon Recovery Pathway Document

James

- Should our questions be more direct?

Henry

- How will the letter change what we are doing?

Phillip

- NWSRI likely correct team to advance our knowledge of how sediment and flows affects sturgeon
- We might need to provide more specific questions
- What are the temperature effects on sturgeon?
- Changing flows likely not a standalone solution

Dan

- Are we inviting their TWG to be part of our Main Table? Or part of our TWG?

Rahul

- We will ask them how they would like to participate

Summary of key messages from presentation (from Jayson)

- Glaciation has larger influence on geomorphology than river discharge (i.e. flow regulation has not dramatically changed geomorphology and sediment transport).
- Generally low gradient and has low sediment transport for its size.
- Some substrates will not move downstream past certain locations regardless of flows (e.g. gravel will not move through the braided Vanderhoof reach).
- Variable morphology along its length, including distinct sections of channel shape, bank height, bedload type etc.
- Variable bedload within a reach (100's of meters, e.g. Vanderhoof area) and site (1-10s of meters, e.g., middle spawning site).
- Currently many areas with clean gravel at a reach scale (e.g., 30km d/s of dam) and at the site scale (e.g., within the Vanderhoof reach).
- Increasing flow does not necessarily increase sediment transport: is site-specific, and sometimes higher flow results in deposition.
- Variability in river height at a given flow, especially at lower flows (the relationship between stage (river height) and discharge varies as much as 90cm due to changes in bedload, LWD and backwatering).
- LWD not a big influence in channel morphology due to channel width (ice likely more important)
- No clear trend in bedload elevation over time: generally up to 18cm increase over last 45 years, and not directly caused by flow regulation.
- If biology data gaps are addressed (e.g., what habitat do sturgeon specifically need) then we can look at changing regulated flows, or engineering options to provide those habitat conditions.
- Sediment transport and suitable spawning conditions is complex and there is no obvious answer at this point.

General Discussion

- We need to recognize we can't recommend a flow specific to sturgeon until data gaps are filled
- How do we prioritize our efforts: addressing data gaps vs summarizing existing information?
- Need to consider scope when we review existing information
- Need to focus on Main Table needs, including providing fundamental background information.
- We can look at other STMP issues:
 - Has climate change affected timing? (previously, sockeye migrated through in 30 days). Should STMP have a new target?
- Potential next topics:
 - Geomorphology and sediment transport at tributaries, PG, Cheslatta?
 - LWD
 - Ice jams
 - Vanderhoof flooding
 - Salmon

- Other sturgeon life stage requirements