

Rio Tinto

Water Engagement Initiative

Main Table videoconference

Wednesday, June 10, 2020



Agenda

- *Action items (agenda addition)*
- Nechako White sturgeon:
 - Finalize letter to Nechako White Sturgeon Recovery Initiative (NWSRI)
 - Discuss performance measures and flow alternatives
 - How to incorporate sturgeon improvements
- *Proposed WEI pathway (agenda addition)*
- *Process to draft, review, and advance topic-specific WEI recommendations (reordered)*

Agenda (2)

- Flooding in the Vanderhoof region
 - Current flood criteria
 - Vanderhoof floodplain and flood elevations
 - Develop Vanderhoof flood objective and performance measures
- Next steps
 - Review list of interests
 - Identify information needs
 - Plan next meetings
- Next meeting dates

Meeting 10 Action items

- **ACTION ITEM:** TWG to present results of the NHC investigation into the impact of backflow from the Nechako of Fraser Lake.
- **Update:** Ongoing

Meeting 10 Action items

- **ACTION ITEM:** TWG to present results from research on the potential ways of retaining woody debris in the Nechako System.
- **Update:** Ongoing

Meeting 10 Action items

- **ACTION ITEM:** Rahul and Jayson to draft letter to the NWSRI for Main Table review to explore a WEI/NWSRI working relationship.
- **Update:** Draft letter prepared and emailed to WEI participants for review. Letter to be revised today, finalized, and sent to NWSRI.

Draft letter from WEI to NWSRI

- Draft letter prepared by Jayson and Rahul and sent to WEI participants for review
- Intent for today is to address comments and finalize letter
- Key elements in the letter:
 - Review of WEI Guiding Principles
 - WEI Table has “strong interest in supporting actions that will increase the viability of Nechako White sturgeon in the short, medium, and long-term.”
 - Recognize NWSRI as leading experts

Draft letter from WEI to NWSRI (2)

- WEI Table interest in:
 - NWSRI involvement in WEI process
 - WEI Table supporting NWSRI efforts
 - “collaborating with you to meet our common interest of recovering Nechako white sturgeon populations.”
- WEI participant comments:
 - Strategic partnership versus collaboration
 - Timeline for short, medium, and long-term
- Further comments
- Ready to send?

Proposed WEI Pathway

- The WEI Table has identified the different components expected to result from WEI discussions, including:
- Recommendations on:
 - 1. Rio Tinto operational water flow improvements:** interests have been identified, research is being conducted, and trade-off analysis will be conducted through Structured Decision Making (SDM)
 - 2. Rio Tinto non-flow improvements**

Proposed WEI Pathway (2)

3. Rio Tinto communication improvements:

Recommendations from the WEI Communication Working Group relate to:

- Emergency communication
- Operational communication efficiency
- Flow Facts

4. Links to related initiatives: Include recommendations from WEI Table related to:

- Water release facility

Structured Decision Making: Objectives and Performance Measures

- What are they and why they matter?
- Where they fit in the WEI process?
- Where we are and what we have left to do?

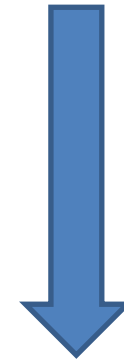
Objectives and PMs: What are they and why they matter?

- Objectives and Performance Measures (PM) help decision makers (us) compare alternatives
- Objectives are “what matters” about an interest and describe a desired change from status quo
- Key considerations about objectives
 - Complete, concise, sensitive, understandable, specific/independent
 - Not targets
 - Separate “means” from “ends” (ask “why”)
 - Can be hierarchical

Objectives and PMs: What are they and why they matter

- Fertilize the lake
- Increase lake nutrients
- Increase lake productivity
- Increase numbers of fish
- Maximize fishing experience
- Maximize navigation
 - Maximize length of mapped navigation channels
 - Minimize number of deadheads

means



ends

Objectives and PMs: What are they and why they matter

- PMs are how we measure, estimate, report “what matters”
- Key considerations about PMs
 - Predicted not monitored
 - Are often subjective (more than option)
 - Can be absolute (technical measurement), binary (yes/no, present/absent), or relative (scale of 1 to 10)
 - Should be complete and concise, unambiguous, understandable, direct, operational

Objectives and PMs: What are they and why they matter

- # of fish
- Amount of spawning habitat (m²)
- Improvement (y/n) in habitat quality
- Navigation suitability (1=less suitable, 2- same, 3= more suitable)

Objectives and PMs: Where they fit in the WEI process

- Interest
- Relationship to RT Operations
- Issue
- Objective
- PM
- Uncertainty/Information Gaps
- Potential Solutions
- Trade-off Analysis
- Action Plan
- Implement
- Monitor
- Adaptive Management

Objectives and PMs: Where we are and what we have left to do

- WEI Process Team have been compiling a list of stated interests, inferred objectives, potential PMs, next steps

Interest	Relationship to RT Operations (communications/planning, flow (river and reservoir elevation), not related)	Issue category	Location	Issue	Objective	Performance Measure	Uncertainties/Information Needs	Current Status
Flood emergency communication	Communication	Communication	na/	Current approach to distribute flooding forecast and real-time information not meeting needs of Indigenous communities and stakeholders	Develop an emergency communications process that meets needs of Indigenous communities and stakeholders	Process successfully implemented	<ul style="list-style-type: none"> What information needs to be communicated? How is the information sent and received (what format)? When/how frequently? 	<ul style="list-style-type: none"> Communication Working Group has confirmed need for Emergency Response Plan and identified key components. RT developing format, content, recipient list, etc.
River flow and reservoir elevation information	Communication	Communication	n/a	Current approach to distribute real-time and forecast water information not meeting needs of Indigenous communities and stakeholders	Revise "Flow Facts" to meet information needs of Indigenous communities and stakeholders	Flow Facts revised		
Sturgeon recruitment	Flow	Fish	River	Sturgeon population is declining due to lack of recruitment	Naturally functioning sturgeon population	to be determined (depends on NWSRI research results)	<ul style="list-style-type: none"> What causes recruitment failure? How can changes in flow affect recruitment? What alternatives to flow changes can improve recruitment? 	
flooding in Vanderhoof	Flow	Flooding	River	high flows cause overground flooding of property and infrastructure	Minimize overland flooding within Vanderhoof	# days water levels exceed XXXm elevation (= XXXm3/s)	<ul style="list-style-type: none"> Is the relationship between stage (elevation) and discharge (flow) current? What, if any, is acceptable flooding? How frequently is flooding acceptable? What "risk-frequency" is acceptable? 	
Erosion and sediment from farmers' fields	not related	Fish	River	Land management (e.g., farming) contributes sediment delivery to the Nerchako River, potential confounding fish habitat impacts (including sturgeon).	Minimize sediment input from adjacent land use			

- Several examples provided in following slides

Objectives and PMs: Communication

- **Interest:** Flood emergency communication
- **Relationship to Rio Tinto Operations:** communications/planning
- **Location:** entire watershed
- **Issue:** Current approach to distribute flooding forecast and real-time information not meeting needs of Indigenous communities and stakeholders
- **Potential Objective:** Develop an emergency communications process that meets needs of Indigenous communities and stakeholders
- **Potential PM:** Process successfully implemented

Objectives and PMs: Communication

- **Interest:** River flow and reservoir elevation information
- **Relationship to RT Operations:** communications/planning
- **Location:** entire watershed
- **Issue:** Current approach to distribute real-time and forecast water information not meeting needs of Indigenous communities and stakeholders
- **Potential Objective:** Revise "Flow Facts" to meet information needs of Indigenous communities and stakeholders
- **Potential PM:** Flow Facts revised

Objectives and PMs: Sturgeon

- **Interest:** Sturgeon recruitment
- **Relationship to RT Operations:** flow (river/reservoir elevation)
- **Location:** River
- **Issue:** Sturgeon population is declining due to lack of recruitment
- **Potential Objective:** Self-sustaining sturgeon population
- **Potential PM:** to be determined (depends on NWSRI research results)
- **Potential next steps:** collaborate with NWSRI, determine cause of recruitment failure, use adaptive management to bring back to Main Table in future

Objectives and PMs: Fences

- **Interest:** Livestock fences in the reservoir
- **Relationship to RT Operations:** flow (river/reservoir elevation)
- **Location:** Reservoir
- **Issue:** During low water fences are dewatered, allowing livestock to escape.
- **Potential Objective:** Maximize effectiveness of existing livestock fences
- **Potential PM:** # days water levels are below XXXm elevation
- **Potential Next Steps:** Collect additional information
 - What are the lower elevations of fences?
 - What exceptions, if any, are acceptable
 - How frequently are exceptions acceptable? What "risk-frequency" is acceptable?
 - Is there a season that is more, or less, important?

Proposal to record WEI-recommendations:

“Rio Tinto Operational Improvement Plan”

- The recommendations flowing from the WEI Table need to be captured in a usable format
- For now, we have named this the: **Rio Tinto Operational Improvement Plan (“the Plan”)**.
- Assumptions:
 - This document is driven by you
 - Jason, Jayson, and Rahul will help to draft content, based on your recommendations
 - The WEI Table will review and revise the draft text
 - The WEI Table will approve the final text

Proposed contents

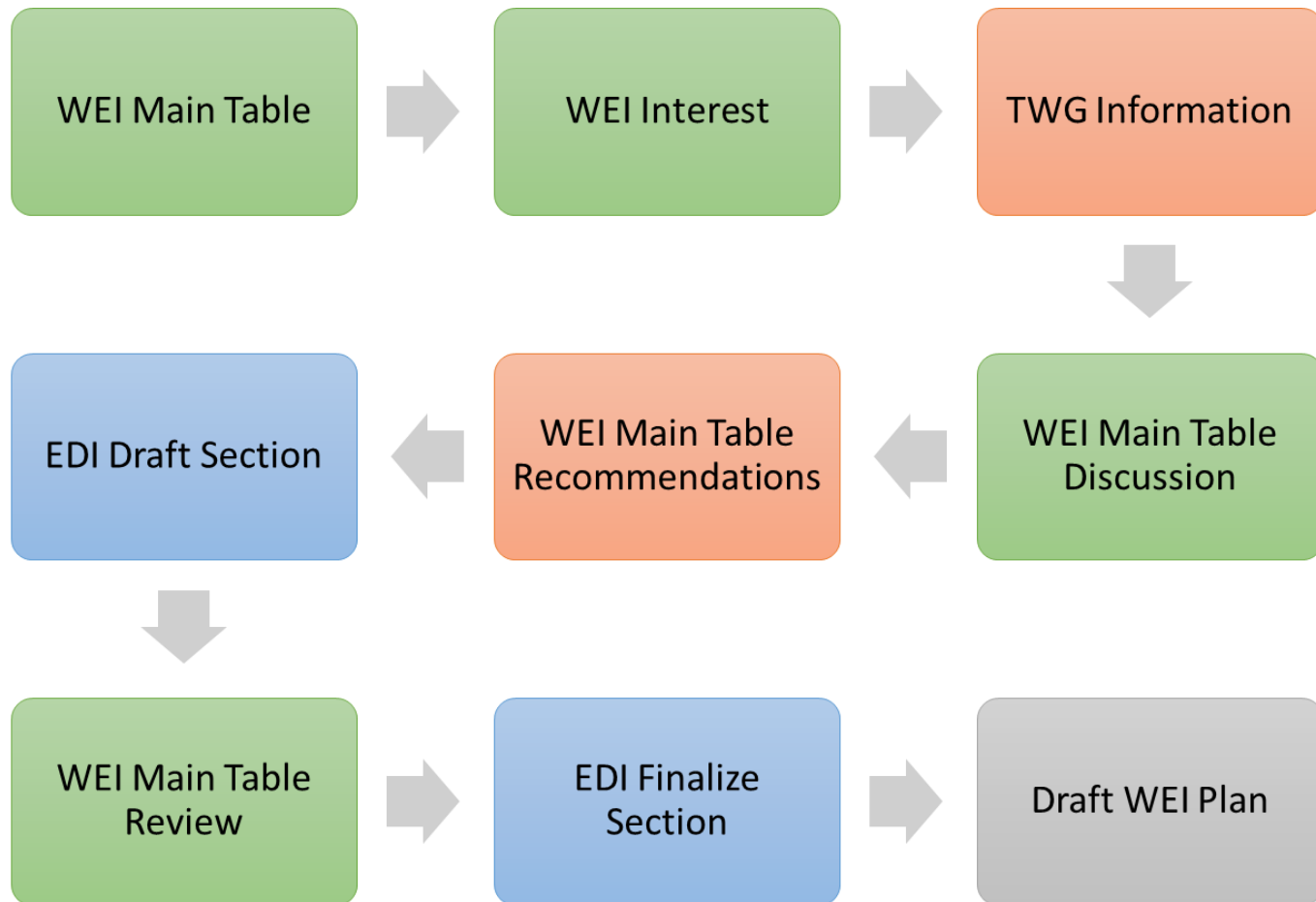
Three main sections:

- 1. Background Information:** Current Rio Tinto Operations, WEI Context and Purpose, Environmental Context, etc.
- 2. Recommendations:**
 - Rio Tinto operational water flow improvements
 - Rio Tinto non-flow improvements
 - Rio Tinto communication improvements
 - Links to related initiatives
- 3. Adaptive Management:** Post implementation approach to continue to make improvements to Rio Tinto operations; integrate new information

Draft Execution Plan

- EDI to develop Draft Execution Plan
- Draft Execution Plan to provide a *tentative* process that can be used to amalgamate WEI information for the Main Table to review - before finalizing and including in the WEI Plan.
- Main Table to review and vet the Execution Process

WEI Plan – Content development



Next Steps and Approximate Timeline

1. **Late June:** Draft Execution Plan to Main Table for Review
2. **July:** Main Table reviews/comments on Draft Execution Plan
3. **July 8 Meeting:** Main Table discuss Draft Execution Plan
4. **Late July/Early August:** EDI incorporates Main Table comments and develops Final Draft Execution Plan
5. **Early August:** Final Draft Execution Plan to Main Table
6. **August 5 Meeting:** Main Table Finalize Execution Plan

Next topics

- Review list of interests
- Identify information needs
- Plan next meetings

- WEI participant request
 - Reservoir interests

Next Steps: Flooding in the Vanderhoof?

- Rio Tinto has existing operational flood criteria
- Vanderhoof has identified floodplain and flood elevations
- Can we easily develop a Vanderhoof flood objectives and performance measures?

Flooding: Current RT Operations

- **All Year:**

- Maximum of 330 m³/s at Cheslatta Falls (to prevent flooding of ancestral burial grounds along Cheslatta Lake)
- Maximum 550 m³/s in the Nechako River at Vanderhoof (bankfull flow) (flooding of low-lying areas in Vanderhoof begins at ~500 m³/s)

- **During freeze-up**

- Maximum of 100 m³/s in the Nechako River at Vanderhoof (ice jam formation above this level has caused flooding of homes)

- **After freeze-up**

- Not more than 15 m³/s increase in discharge per step.
- Based on ice stability assessment to avoid causing ice break up and ice jam formation
- Balance risk of ice jam vs flood risk in spring
- Exceeds the NFCP suggestion of 10% maximum increase after freeze up

Vanderhoof Flooding: Objectives and PMs

- What are our interests?
- What is the objective for Vanderhoof flooding?
- Does the current operational criteria represent the interests?
- Can we define a PM?
- What information do we need?
 - Elevation of residential door thresholds?
 - Confirmation of the stage-discharge relationship?

Next meeting dates

- **TWG – Wednesday, June 24, 2020**
- **Main Table – Wednesday, July 8, 2020**
- **Proposed TWG – Wednesday, July 22, 2020**
- **Proposed Main Table – Wednesday, August 5, 2020**
- **Mid-late August break?**

Thank you!

