

Integrating results from Kispiox Expert Water Panel
and the
Kispiox Forest and Range Practices Act Higher Level Plan
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The Kispiox Expert Water Panel (we) was tasked with identifying hydrologic and geomorphic hazards (natural and related to forest land use) and making recommendations regarding future forest management in the watersheds of the Kispiox TSA. To do this, we had the benefit of GIS-based WAP Level 1 assessments, GIS layers (included roads, streams, past and proposed harvesting, ESAs, terrain stability, and commercial forest land base), summaries of fish values, WRP experience (assessments and prescriptions), and our combined experience.

We found a range of watershed conditions, but what is striking is the legacy of past forest management that has, and continues to, impact water resources. The Watershed Restoration Program (WRP) of FRBC addressed some of this legacy through inventory, assessment, and prescription work in approximately 50% of the watersheds. While some prescriptions were implemented, many were not. Currently, with WRP discontinued and most of the licensees either in financial difficulties or bankrupt, the legacy of past practices continues to be a serious issue for watersheds in the Kispiox TSA. To address the situation we have identified and recorded watershed-specific recommendations for proposed forest harvesting, including:

Assessments for:

- terrain stability,
- surface erosion,
- channels,
- fish habitat,
- stream crossings (including fish passage),
- roads (surface erosion and mass wasting),
- riparian areas,
- gullies
- WAP's

Inventories for

- fish populations,
- fish habitat,
- surface erosion prone soils

Specific works

- bridge removals
- road deactivation
- update and implement WRP prescriptions

Reviews to be done

- WRP inventories and prescriptions

Detailed planning

- drainage patterns in gentle-over-steep terrain
- alluvial and colluvial fans
- long-term access

Monitoring

- temperatures
- repeat sediment source mapping (gentle-over-steep terrain)
- bio-monitoring (benthic monitoring)
- landslides
- fish populations
- channel stability
- water quality

Auditing

- new developments (technical effectiveness)
- C&E

Specific recommendations

- limits to logging on flood plain benches
- recommendations based on level 1 WAP triggers

In short, we have done a thorough job of identifying issues that forest licensees should seriously consider when planning new operations and developing their forest stewardship plans. In general we accepted the triggers or threshold values presented in the Level 1 WAP: road densities, stream crossings, riparian logging, and ECAs. Of particular note, we did not discuss specific threshold ECAs for individual watersheds as may be assumed by Table A in “Kispiox FRP Project Watershed Objectives” dated February 18, 2005. The values in Table A were established through GIS, using the WAP calculations, whereby harvested and approved areas above the H60 line are given extra weight (that is why they are close to, but not over, 30%). There are several reasons we did not establish individual threshold ECAs:

- While any forest harvesting in a watershed will influence streamflows, it is very difficult to identify a specific value beyond which negative impacts will occur. There are few detailed studies, and very few examples of stream channels that fall apart without direct impacts from landslides. The channels that do fall apart without landslide impacts present a challenge to determine exactly what the mechanism of failure was (e.g., increased peak flows, a single wind thrown tree into the channel in the wrong place, bedload aggradation in the “wrong reach”).
- Establishing “new” ECAs, either higher or lower, would be met with strong opposition that would be challenging to scientifically defend.

With regards to the caption for Table A, we prefer the word “threshold” rather than target. Threshold means that the ECA should not be exceeded without further hydrologic or geomorphic investigation. Also, it should be noted that using ECA in isolation of other factors is not hydrologically valid. It is necessary to place a watershed in context—to fish values, geomorphic and hydrologic processes, and the legacy of past forest

harvesting. It is likely that some of the values given in Table A are too high given watershed context, others may be too low.

While we have done a thorough, professional job, we as a panel have no power to require licensees to do anything, except for what can be put in the context of the FRPA Higher Level Plan (The Plan).

The Plan will establish the legal “bottom line,” the minimum standards that are expected in forest management in the Kispiox. It will be used by licensees in developing their Forest Stewardship Plans, and by C&E in their investigations of compliance.

The structure of The Plan is: Objectives, Indicators, Targets/Measures, and Management considerations (all but management considerations are legally binding on licensees).

Objectives are high-level, and currently for Watersheds is:

- to protect the hydrological integrity of watersheds by:
 - maintaining peak flow within the range of natural variability
 - mitigating the potential for soil surface erosion
 - maintaining the integrity of floodplain ecosystems

Important points for us that are missing:

- no mention of stream temperature, potentially because reserves are to be left on S1 (<100 m wide), S2, and S3 streams, and S4 streams require management zones with specified basal area retention. But these measures do not address S5 and S6 streams, or streams that have already had extensive, un-recovered riparian logging. In addition to riparian zones, we discussed hydrologically connected forested wet sites, and concluded that in watersheds with high water temperatures, these sites should either not be logged, but if they are logged consideration should be given to retaining a portion of the stand (recognizing that this option could result in serious blowdown).
- no mention of past practices – the legacy in watersheds.
- additional words in the objectives could be: *maintain or return* peak flows, *sediment budgets*, and *stream temperatures* to within the range of *contemporary (<200 years)* natural variability
- mass wasting is missing because FRPA doesn’t allow landslides. But ignoring them doesn’t reduce the legacy of past mistakes, nor does it “make them go away” when they happen as a result of new forest development.
- no mention of destabilizing fans – this is probably because the Kispiox TSA is considered to be “interior” with regards to FRPA. Given the many fans that have been historically destabilized in the Kispiox, and that this is ecologically and hydrologically a transitional area, we consider that Section 54 should apply to the Kispiox.
- It is necessary for us to review the work we’ve done and if necessary add new objectives to cover the issues that we consider are important.

Indicators are measurable, and currently are GIS-based (ECA, road density, and stream crossings). The question is whether this is adequate. The Plan refers to “range of natural variability” and this is established through long-term records—which do not exist for most key watershed values (temperature, water quality, peak flows, channel stability). An indicator could be the establishment of index sites and long-term sampling stations. We have to get creative to realize action on the issues we identified.

“**Targets**” should (and can) be referred to as “Thresholds” or “Triggers”, that are either the maximum allowed or the ‘red light’ that initiates a specific study or prescription (note, this should be used in the caption for Table A).

Management considerations are not legally binding. An example is the output from our panel.