

## FIRS 4950003, Quesnel TSA Type 2 Silviculture Strategies: Project Status Report (April 2009)

Although planned for completion in the 2008/09 fiscal year the Type 2 project is only partially complete for the following reasons:

- The TSR 4 Data Package was released by the MFR on April 3, 2009 rather than January 15, 2009 as planned.
- At the “issue analysis” meeting, held with MFR, licensee and consultant representatives, it was agreed the initial focus of the project will be to assemble a comprehensive spatial data set that incorporates TR 4 “current management” data and, as much as possible, quantifies risk factors and hazard ratings such as forest health and fire probability. The increasingly negative forest health situation in Quesnel is considered to be the largest risk to silviculture investment opportunities and a data set that reflects risk and hazard categories was deemed essential<sup>1</sup>.
- The following data, also deemed essential, was not available until Feb. 2 through Feb. 23:
  - New vectorized PEM with SIBEC/SIA based site productivity estimates
  - New wildfire probability data
  - Updated harvest depletion data
- The “conceptual framework” meeting determined that the project would initially focus on developing the complex algorithms required to evaluate pine fertilization opportunities as measured against risk categories and financial analysis parameters. Determining any potential fertilization opportunities in pine stands was considered to be a high priority in preparation for the fall 2009 treatment window.
- Evaluating pine fertilization opportunities proved to be very complex and iterative as few opportunities were found that could be justified for treatment.

The following was accomplished in the 2008/09 fiscal year:

### Data:

The GIS data set was comprehensively updated as far as possible without access to the TSR 4 Data Package. The data set builds on previous Quesnel Mitigation Committee projects and includes:

Dataset Name	Description
Resultant	Timberline STTA Resultant (2005)
Resultant3	Cortex resultant with pem/tem
Resultant4	Cortex final Type2 resultant (2006)
critfish	Critical Fish Streams
snowpack	Snowpack transition zones

---

<sup>1</sup> The 2008 Quesnel TSA Forest Health Strategy document also stated “In support of the mid-term timber supply, a predictive tool for evaluating forest health risk and hazard rating in young stands is needed to guide investment and basic silviculture efforts.”

moose	High value wetlands for moose
depletions	Various shapefiles
ft_rdlns	Forestry tenure road section lines
fires_all	Fires from 2001-2006
yod_all_years_4923_ver2	Year of Death
quesnel_pineleading	Pine-leading stands attacked by MPB
quesnel_pine100	Pure pine stands attacked by mpb
quesnel_mpb_2005	Mountain pine beetle 2005 flight data
quesneloperatingareas	Licensee operating areas
pem_2007_v41	New PEM data
resultant	Canfor resultant
strm_buf	Stream buffers
tscl_rca	Classified streams
tdsc_rca	Classified double-line rivers
ogma_car	Cariboo OGMA
wcp_uwr_sp	Ungulate Winter Range
ogma	Cariboo OGMA received from Canfor
togma_rca	Cariboo OGMA from ILMB
lk_bufs	Lake buffers
tlks_rca	Classified lakes
twet_rca	Classified wetlands
twet_rca_bufs	Wetland buffers
wcp_whaply	Wildlife habitat areas
	Grasslands benchmark
	Forest Encroachment
	Backcountry Recreation Data
	Roads
	TRIM
	DEM
	BEC
	Ecosections
	Glacial Landforms
	Lithic Zone
	VRI
	Archaeological Sites
	Trails
	Arch. Assessment Areas
QU_UTM_SHP.shp	New vectorized PEM
netdown_quesnel_sia.shp	Site Index Adjusted PEM
pinemask_quesnel_updated_dissolved.shp	MPB data
prob_final.img	Wildfire probability
	Plot data, various files (approx.

	15,700 spatially referenced plots)
	Depletions, Feb 2009
	SSC (stand & stock tables) link to FC polygons
	SEDA linked to FC polygons

The FORREX Stand Establishment Decision Aids<sup>2</sup> information (forest health and competing vegetation risk and hazard ratings) was linked to the spatial data set via BEC to the site series level. This was deemed of high priority due to forest health issues on the land base. Activities included building the relational database, input of the data from 19 forest health and 13 stand establishment sheets and connect with the resultant including PEM. We understand this marked the first time this had been done with SEDA. Vectorized PEM with new SIBEC/SIA based Site Productivity estimates were incorporated. Wildfire probability rankings for the Quesnel TSA from a FFT funded project were added to the data set. The Quesnel TSA Operability project provided Stand Structure classification data with stand and stock tables associated with each inventory polygon. Stand and stock data is useful as MPB attack level and degradation rates appear to be linked to stand level diameter distributions and will impact silviculture opportunities.

The spatial data and associated data bases are available for download via FTP at:

Host Name/Address: 24.68.237.187

User Name: Quesnel

Password: FertilizationAnalysis

**Meetings:**

Two meetings were held in Victoria with MFR FAIB staff to ensure linkage and compatibility with the TSR 4 process. It was agreed that selected scenarios modeled in the Type 2 process, as advocated and agree to by licensees and MFR, would be considered for incorporation in the TSR 4 Analysis as “sensitivity analysis”. The TSR 4 Analysis process is currently due in June 2009.

A meeting was held on January 13 in Kamloops with licensees, MFR and consultants. The meeting reviewed the 2005/06 Type 2 report, currently available spatial data set and opportunities for improvement, importance of attaching stand structure class (stand & stock tables) data to the spatial data set, agreement to utilize latest PEM site productivity data, forest health risk would be evaluated with combination of MPB attack data and FORREX SEDA. Additional meetings were held to facilitate the approach to understanding the data set and to develop complex fertilization query routines.

---

<sup>2</sup> See <http://www.forrex.org/tools/sedas/> for an explanation of SEDA

**Fertilization:**

Methodology and results of the assessment for pine fertilization are provided in a separate report entitled "Pine Fertilization Opportunities for the Quesnel TSA". A series of thematic maps and tabular reports identifying the approach used to identify potential candidate stands accompany the report. The maps are available for download at [www.cortex.bc.ca/QuesnelFertRankMaps-Apr2008.zip](http://www.cortex.bc.ca/QuesnelFertRankMaps-Apr2008.zip)

Based on draft updated Stand Selection Guidelines (which incorporate age, dbh, management history, forest health status, soil moisture and nutrient regimes, site quality, terrain and logistics) and MoFR fertilization research results and TIPSy, an analytical tool was developed to assess the financial viability of fertilization of the different populations identified through GIS analysis. The analytical tool determines the net present value (NPV), volume and value response to the treatment of a planted stand of pine established at 2000sph and spaced to 1200sph based on user supplied assumptions. Based on the results of the financial analysis, the GIS population rankings were refined and the stand selection criteria updated.

The fertilization analysis concluded that as a tactical response to significantly improving short to mid timber supply, fertilization of pine leading stands which have survived the current MPB is not financially viable using reasonable assumptions for future log values and a discount rate of 2%. As a result it is not recommended that significant resources be put into fertilization planning for pine-leading stands in the Quesnel TSA. However there is always a level of uncertainty in spatial data and analysis. Therefore, it is recommended that limited reconnaissance-level ground checking of select stand types be conducted to confirm the assumed risk categories and stand conditions. Information gathered in this way could alter the future plans.

**Next Steps:**

Except for confirming TSR 4 Data Package assumptions and the addition of recently available dothistroma needle blight SEDA data, the spatial data set is complete and suitable for supporting the remaining two issues (genetic stock and managed stand diversification opportunities) to be undertaken in this Type 2 project. These aspects will be dealt with during the 2009/10 fiscal year.

