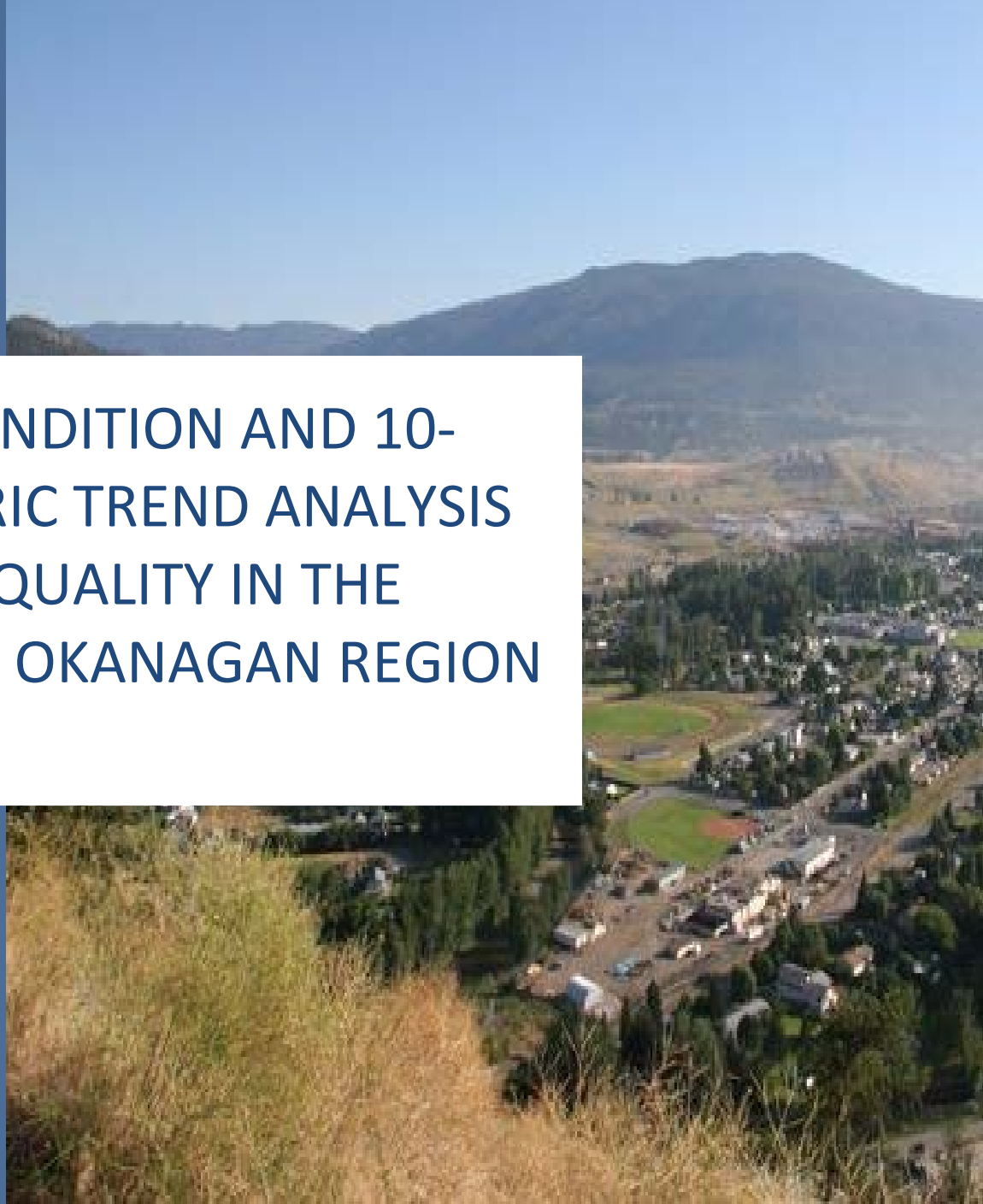


# CURRENT CONDITION AND 10- YEAR HISTORIC TREND ANALYSIS FOR VISUAL QUALITY IN THE THOMPSON- OKANAGAN REGION

OCTOBER 2016



B.C. Ministry of Forests, Lands and Natural  
Resource Operations



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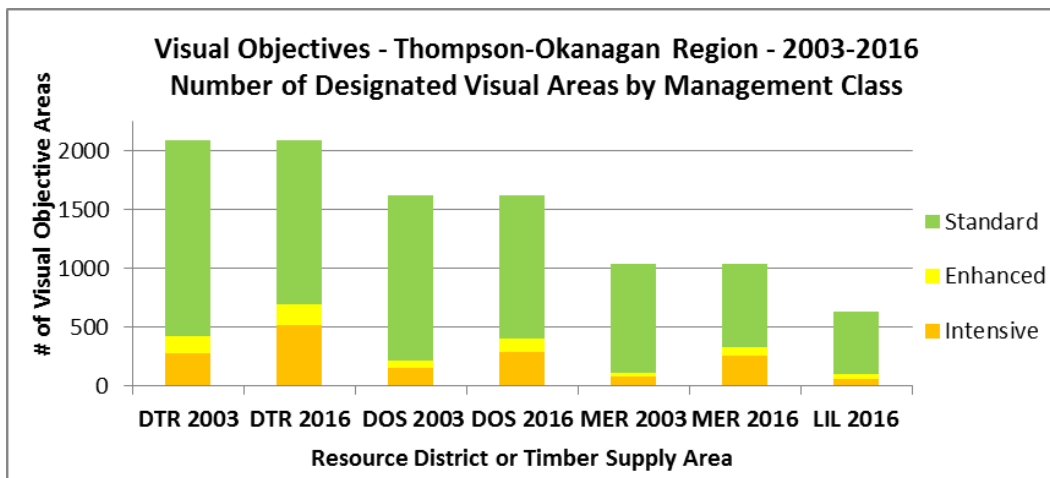
## **Acknowledgements**

Thank you to Peter Rennie and Jacques Marc who provided written excerpts and expert advice and input in establishing the assessment approach and to Muqsit Faruqi, Graham MacGregor and Sasha Lees who provided GIS analysis and support.

## Executive Summary

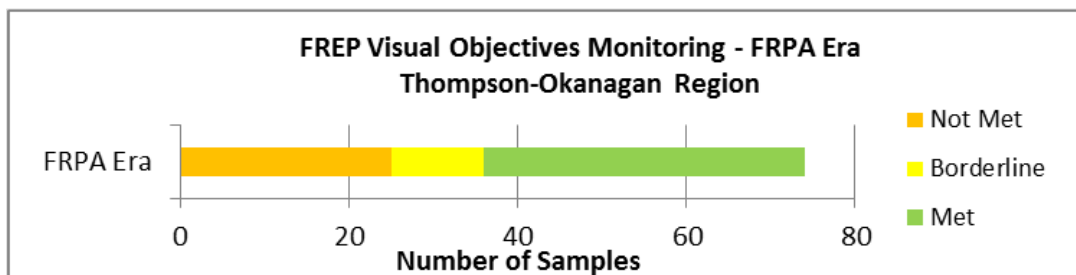
Visual Quality Objectives are established for the principle purpose of managing the rate and distribution of forest clearing and road building on the landscape to meet the scenic quality expectations of the public and tourism sectors. Tourism accounts for significant employment and revenues in both the Thompson-Okanagan Region and British Columbia (B.C.). Visual Quality Objective designations also provide protection of wildlife habitat, old growth and biodiversity values.

A ministry standard GIS based assessment approach was used and formatted to be consistent with the *Cumulative Effects Framework Interim Policy for the Natural Resource Sector* (CEF Policy) (2016). It was utilized to flag the potential status and trends of visual objectives on the landscape (graph below; DTR = Thompson Rivers, DOS = Okanagan Shuswap, MER = Merritt TSA, LIL = Lillooet TSA). The ‘Intensive’ management class is estimated to be beyond the regulatory trigger, meaning that objectives are currently not being met. ‘Standard’ and ‘Enhanced’ management classes are below the regulatory trigger and are estimated to be meeting objectives.



**Figure 1.** Number of Designated Visual Areas by Management Class for the Thompson-Okanagan Region (2003-2016).  
 \*Note: The Lillooet TSA (LIL) did not exist at the time of the report, but will be available in subsequent reports.

In areas managed for visual objectives, assessments indicate increases in landscape disturbance in every District/Timber Supply Area in the Thompson Okanagan Region. Disturbance in areas potentially exceeding objectives varied between 10 and 25% by District/TSA. Disturbance was dominated by, but not limited to, response to the Mountain Pine Beetle (MPB) infestation. Over approximately the same time period, random sample Forest and Range Evaluation Program (FREP) monitoring (Figure 2) indicates that a combination of the amount of disturbance and design of forest harvesting did not meet objectives 33% of the time in the Thompson-Okanagan.



**Figure 2.** FREP Visual Objectives Monitoring for the Thompson-Okanagan Region

Although the broad scale GIS assessment approach yields similar results to the FREP monitoring, the latter is the authority for determining compliance with government objectives. The GIS-based approach may vary from actual landscape condition, as there is potential for some areas to be pushed into the exceeding management class based on natural disturbance (e.g. fire) and/or limitations in inventory details that vary with inventory update cycles. Conversely, the GIS-based approach may indicate a standard or enhanced management category condition, but may not pass the design category of the FREP Visuals Monitoring Protocol.

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) has been raising awareness of these challenges through internal and external engagement, including workshops with practitioners, with a focus on improving the Forest Stewardship Plan process so that there are intended outcomes that are consistent with government objectives. In addition, best management practices with regard to major projects have been developed.

The purpose of this assessment is to provide decision support tools (maps and reports) for statutory decision makers and support professionals working for project proponents or forest licensees, especially in areas with intense levels of development. This model can be used for future looking impact assessment or cumulative effects assessment of proposed activity.

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## 1. Project Background

The province of British Columbia (B.C.) is committed to considering cumulative effects as an integral component of natural resource management and decision-making. The B.C. Cumulative Effects Framework<sup>1</sup> (CEF) complements current land management achieved through B.C.'s legislative framework, land use plans and various best practices and processes (i.e. the CEF is one of many natural resource tools used). In short, the CEF will provide policy, procedures and improved information for a variety of resource values. This report is intended in part to satisfy the latter (i.e. information) by providing the current state and trend for the value as it has been affected by a variety of natural resource sector (NRS) activity and natural disturbance.

The CEF Policy provides guidance for spatial characterization of information associated with both *broad objectives*<sup>2</sup> and *specific objectives*<sup>3</sup>. The assessment of visual objectives is consistent with the requirements for specific objectives in the interim Cumulative Effects Framework (CEF) Policy specifically section 3, part 11.

Visual objectives are identified as one of the initial CEF provincial values and have been supported by the Thompson-Okanagan Cumulative Effects Management Team (2012) for application within the CEF context.

### 1.1 Intended Application

The intended applications of this report and associated maps are to support:

- a) Screening of natural resource sector (NRS) project applications. Proactive identification of the location and condition of the value is intended to save time and effort for project proponents and well set expectations for potential mitigative actions if applicable;
- b) Support professional reliance under the *Forest and Range Practices Act* (FRPA) subsequent interactions with FLNR staff;
- c) Support internal FLNR planning for activities such as monitoring, assessment, inventory and research; and,
- d) Provide a baseline for future looking cumulative effects assessment or impact assessment.

### 1.2 Socio-Economic Context

B.C. has become a world-class tourist destination. Its mountain and coastal scenery provide opportunities for a host of outdoor activities from skiing in the winter, to fishing and sightseeing in the summer. Visitors from within B.C., and visiting from other parts of Canada, the United States or Europe spend money in B.C. on services. These services include: accommodation, food, transportation, retail, entertainment and experiences. Government derives taxes from the goods and services and the service sector generates jobs for the local economies.

Statistics B.C. 2010 figures show that the Tourism sector employed 127,400 people provincially and produced \$6.5 billion in GDP. By comparison Forestry employed 54,600 people and produced \$7.3 billion in GDP. Approximately 15% of the Tourism revenue is directly attributable to nature-based tourism activities

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<sup>1</sup> B.C. Cumulative Effects Framework: <http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/cumulative-effects-framework>

<sup>2</sup> A **broad objective** qualitatively describes the overall desired conditions for a value or component, and the way the value is characterized for assessment and condition is endorsed through CEF governance

<sup>3</sup> A **specific objective** quantitatively describes desired conditions for a component or indicator associated with a value. This may be an indicator or component of a broad objective, and has usually been established as a legal objective through existing government processes

which rely on our province's reputation for natural beauty. The nature-based tourism sub-sector is growing at a rate of more than 10% a year.

Visual Quality Objectives are established for the principle purpose of managing the rate and distribution of forest clearing and road building on the landscape to meet the scenic quality expectations of the public and tourism sector.

## 2. Regulatory Framework for Visual Quality in British Columbia

The *Forest and Range Practices Act* (FRPA) recognizes Visual Quality as one of the 11 FRPA values to be managed and contains regulatory provisions for managing this value. Our most sensitive landscapes are usually steep, forested slopes exposed to many viewers.

Visual Quality Objectives (VQOs) describe levels of visual alteration which are appropriate for landscapes based on their visual sensitivity. VQOs are established consistent with public expectations and consistent with direction from objective setting processes (e.g. Land Use Plans) that have considered the implications on timber and other economic values. Visual objectives are also applied under other regulatory contexts, for instance, when they are identified as a component to address in project proposals that fall under the mandate of the Environmental Assessment Office (EAO), or when VQO's are identified as a component to address for project proposals that fall outside of the EAO mandate: for example, Wind Energy Projects, Transportation and transmission corridors, gravel pits etc.

## 3. Application of CEF Policy

Cumulative Effects Management Review Triggers have been established for Visual Objectives (specifics outlined in Methodology section below). A generalized description of the classes and illustration from CEF Policy (Section 11.2) is provided below.

### **Standard Management Review Class**

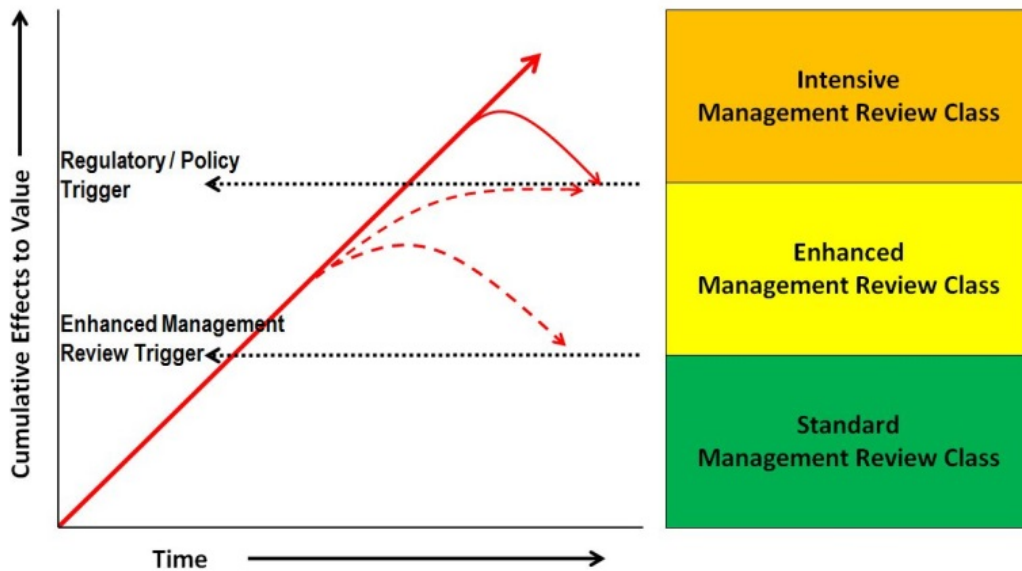
The condition of an indicator for a CEF value is assessed as being below (i.e. better than) both the regulatory/policy trigger and enhanced management review trigger, indicating that the specific objective is being achieved.

### **Enhanced Management Review Class**

The condition of an indicator for a CEF value is assessed as being below the regulatory/policy trigger but above the enhanced management review trigger. The specific objective is being achieved, but conditions are approaching a level where further development could put their achievement at risk. ***The management goal is to enhance consistent and coordinated responses to ensure the specific objective is not unintentionally exceeded.***

### **Intensive Management Review Class**

The condition of an indicator for a CEF value is assessed as being above the regulatory/policy trigger, and therefore the specific objective is not currently being achieved. ***The management goal is to ensure consistent and coordinated responses to meet the specific objective.***



**Figure 3.** Management Review Triggers and Management Classes (from the Interim CEF Policy).

#### 4. Factors Affecting Visual Quality

Figure 4 provides a conceptual overview of Visual Quality. Components (green boxes) include aspects of visual quality that we directly manage or monitor to meet objectives include the amount of visual area affected, the design or shape of affected areas on the scenic landscape relative to the major natural lines flow and pattern of major features in the scenic landscape and the amount and type of permanent or semi-permanent alteration such as building wind-towers, radio towers or linear corridors in the scenic landscape<sup>4</sup>. Forest clearing activities primarily act on the amount and pattern of forested area that is altered. Other factors such as residential developments, linear developments from non-forest sector activities such as pipelines, or non-forest sector development such as wind-towers, cell-towers or open pit mines also influence visual quality.

<sup>4</sup> Visual Landscape Design Training Manual: [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/visual-resource-mgmt/training-vmr/vrm\\_visual\\_landscape\\_design\\_training\\_manual\\_complete.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/visual-resource-mgmt/training-vmr/vrm_visual_landscape_design_training_manual_complete.pdf)

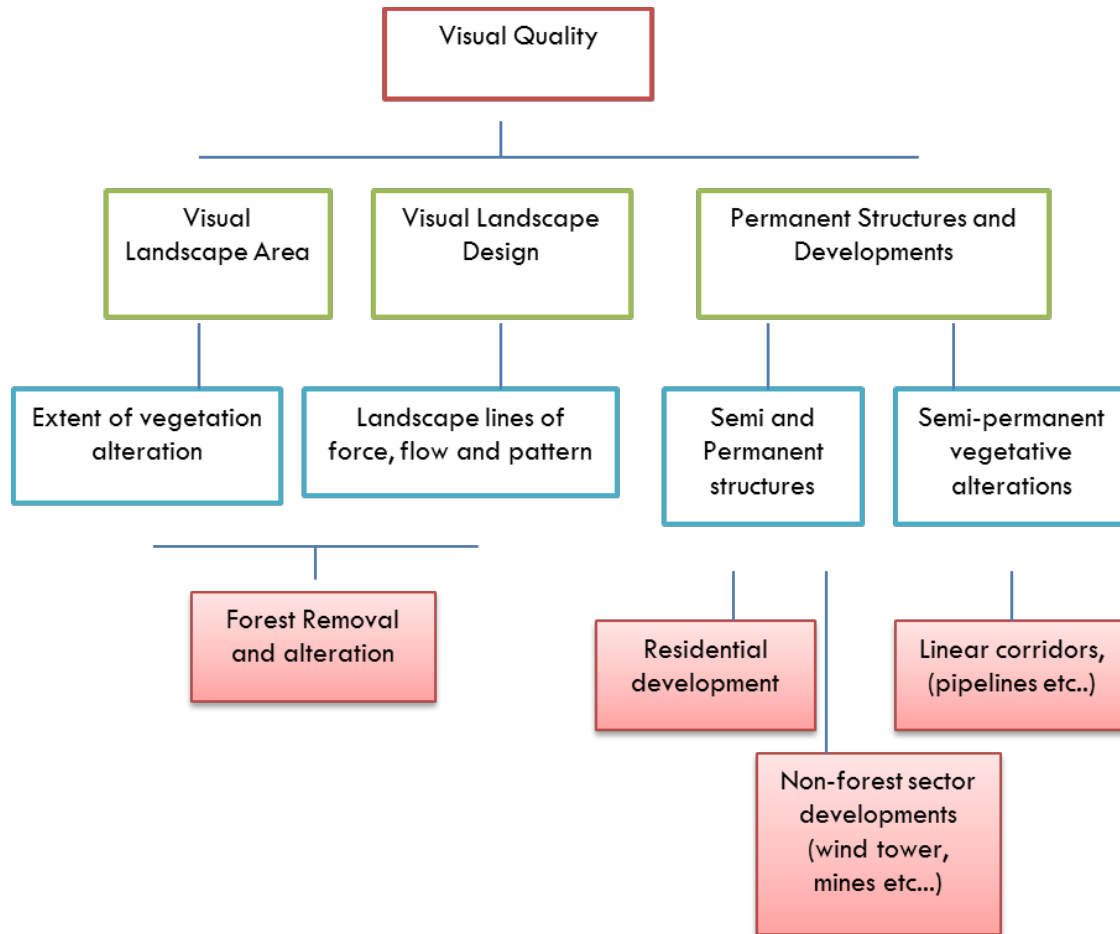


Figure 4. Conceptual diagram for Visual Quality.

## 5. Methodology

To assess the extent of forest harvesting in each visual polygon we used the current GIS-based approach *Procedures for Factoring Visual Resources into Timber Supply Analyses, Ministry of Forests, 1998*. Areas with slopes <10% were adjusted to exclude harvested areas from the analysis that are unlikely to be viewable. Information on the extent of forest harvesting and projected tree height was obtained from the Province’s Vegetation Resources Inventory (VRI) classification system. VRI information on harvested openings and tree height from 2003 and the 2015 dataset was updated from most recent cut-block and natural disturbance datasets to represent the current condition of the forested land-base.

**Table 1.** The percent denudation range of visual area allowed in each Visual Quality Class (From Table 3, page 6, Ministry of Forests, 1998).

Visual Quality Class	% Denudation range for use in timber supply analyses
Preservation	0 to 1%
Retention	>1% to 5%
Partial Retention	>5% to 15%
Modification	>15% to 25%
Maximum Modification	> 25% to 40%

The probability of exceeding objective established in VQOs was based on the degree of deviation from the denudation range for each visual quality class provided in Table 1. Given uncertainty in the accuracy of two dimensional GIS-based analyses correctly interpreting the actual VCQ assigned through ground-based observation, a range of was applied to the percent denudation range. The classes that were assigned included:

- **Standard Management:** visual areas meeting the % denudation range
- **Enhanced Management:** visual areas within 20% of not meeting the objective
- **Intensive Management:** visual areas exceeding the % denudation range by over 20%

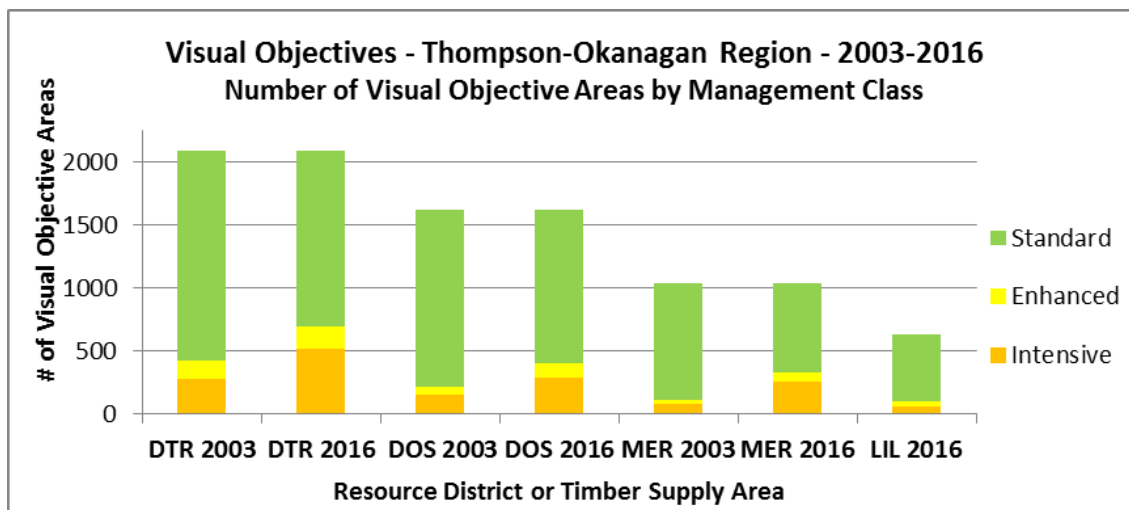
## 6. Results

### 6.1 Number of Visual Objectives Areas

The number and trends of designated visual objective areas by management class is presented in the table and figures below.

**Table 2.** Number of Visual Objectives Areas by Management Class in the Thompson-Okanagan Region for 2003-2016.

Management Class	Thompson Rivers District (DTR) 2003	Thompson Rivers District (DTR) 2016	Okanagan Shuswap District (DOS) 2003	Okanagan Shuswap District (DOS) 2016	Merritt TSA (MER) 2003	Merritt TSA (MER) 2016	Lillooet TSA (LIL) 2016
<b>Intensive</b>	272	513	149	288	77	255	59
<b>Enhanced</b>	150	183	65	118	32	73	38
<b>Standard</b>	1666	1392	1402	1210	931	712	532



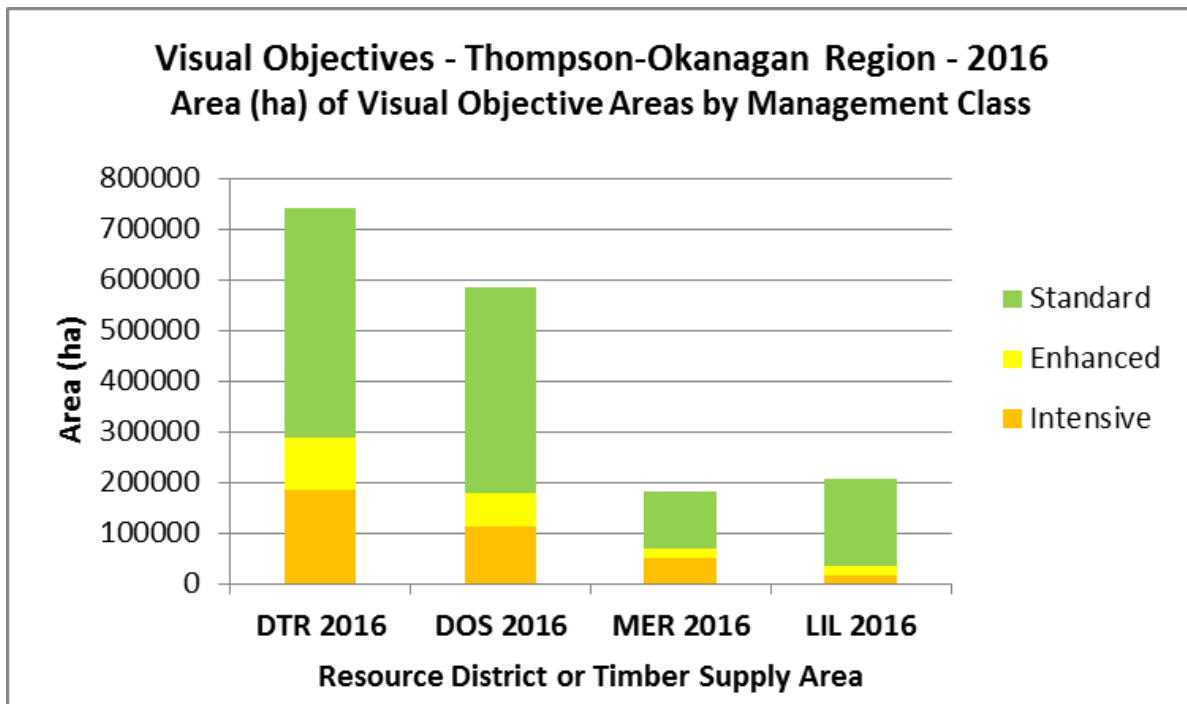
**Figure 5:** Number of Visual Objectives Areas by Management Class in the Thompson-Okanagan Region for 2003-2016.

## 6.2 Visual Objectives Areas (in hectares)

The area covered by the visual objectives by management class (2016 only) is presented in the table and figure below. Additional maps with Visuals Management Classes in the Thompson-Okanagan are provided in the Appendix.

**Table 3.** Area of Visual Objectives Areas by Management Class in the Thompson-Okanagan Region (2016).

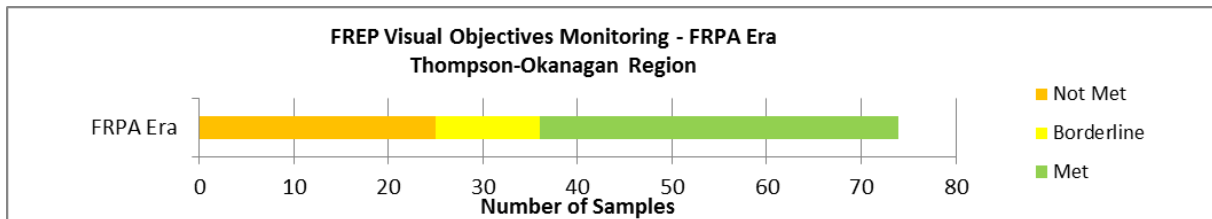
Management Class	DTR 2016	DOC 2016	MER 2016	LIL 2016
<b>Intensive</b>	184,488 ha	112,933 ha	50,027 ha	17,326 ha
<b>Enhanced</b>	103,813 ha	65,714 ha	19,022 ha	16,726 ha
<b>Standard</b>	453,842 ha	404,980 ha	113,999 ha	172,946 ha



**Figure 6.** Area of Visual Objectives Areas by Management Class in the Thompson-Okanagan Region (2016).

## 7. Monitoring

Monitoring of the effectiveness of forest practices is conducted under the FLNRORD Forests and Range Evaluation Program (FREP). A standard monitoring protocol is applied that considers all factors (i.e. area denuded, design and permanent features) associated with visual objectives. This monitoring protocol is also the authority for actions taken under compliance and enforcement of legal objectives, when applicable. Results over the last decade are presented in the graph below.

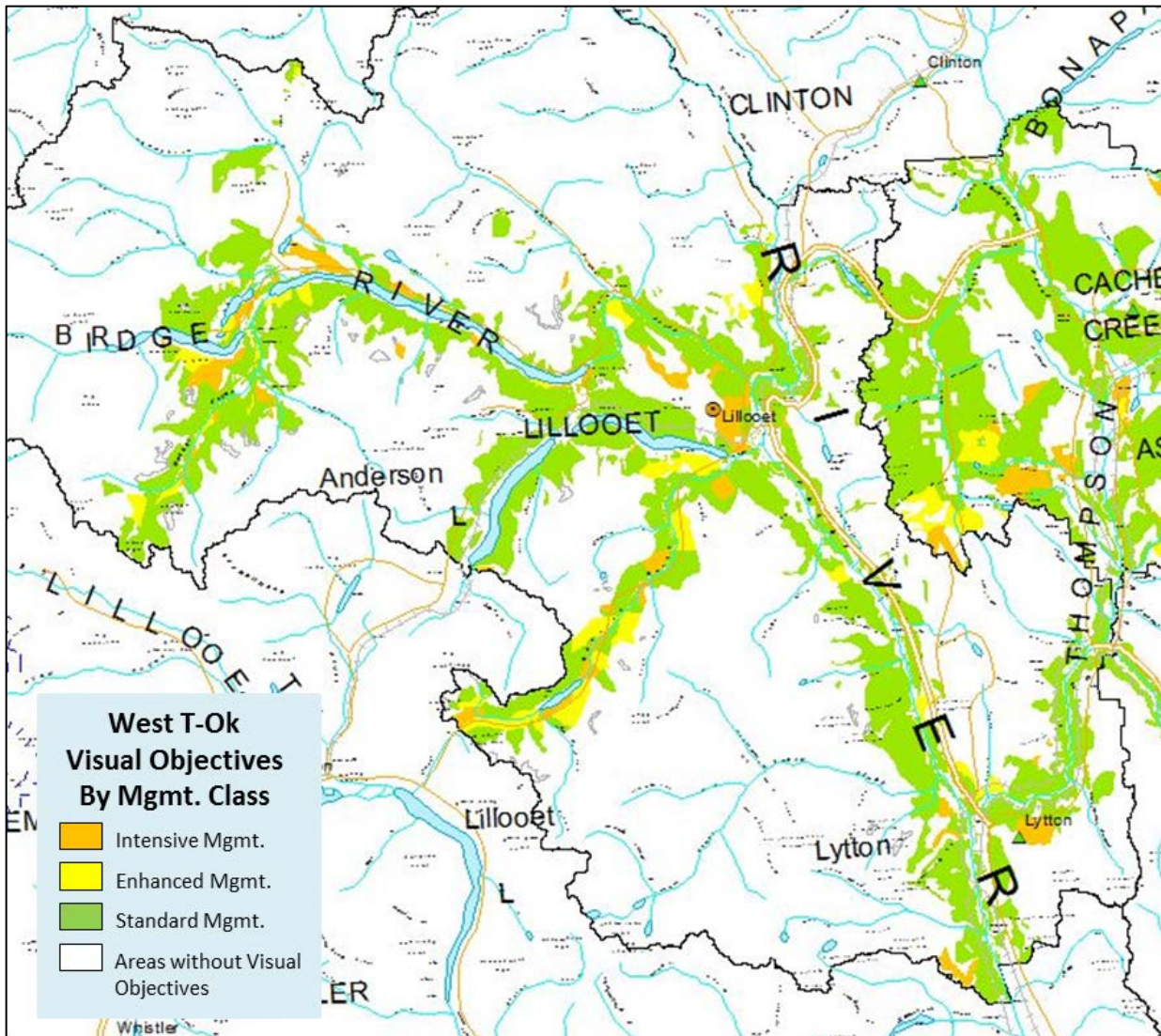


**Figure 7.** FREP Visual Objectives Monitoring for the Thompson-Okanagan Region.

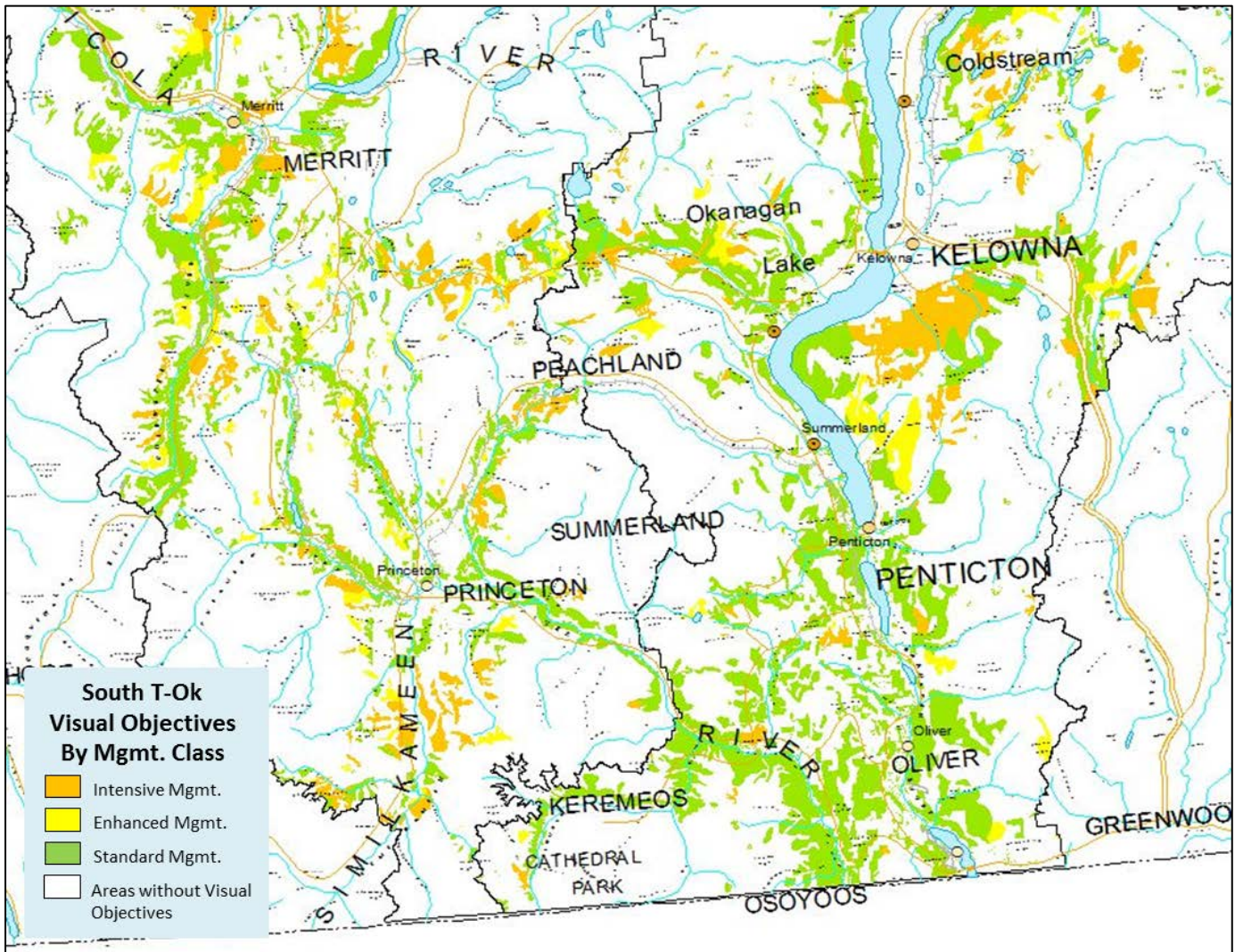
\*Note: Samples classified as "Not Met" clearly did not meet the objective, "Borderline" results are close to meeting/not meeting the objective, whereas samples identified as "Met" clearly met the objective. There is general alignment between the GIS based assessment over the full region and monitoring results; however, the GIS based results tend to be relatively more conservative than the monitoring results.



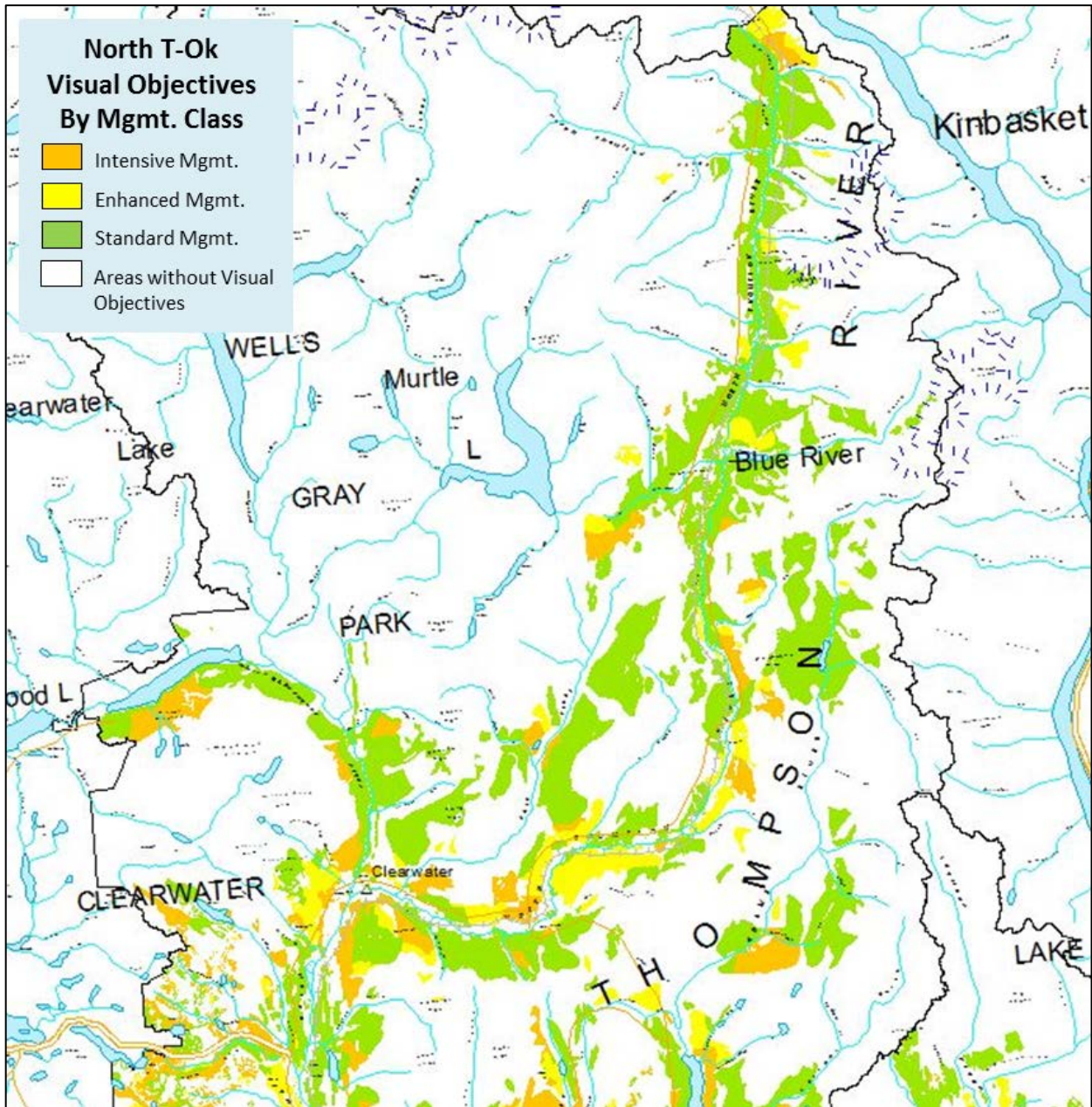
Map 2: West Thompson-Okanagan Region Map of Visual Objectives



Map 3: South Thompson-Okanagan Region Map of Visual Objectives



Map 4: North Thompson-Okanagan Region Map of Visual Objectives



Map 5: East Thompson-Okanagan Region Map of Visual Objectives

