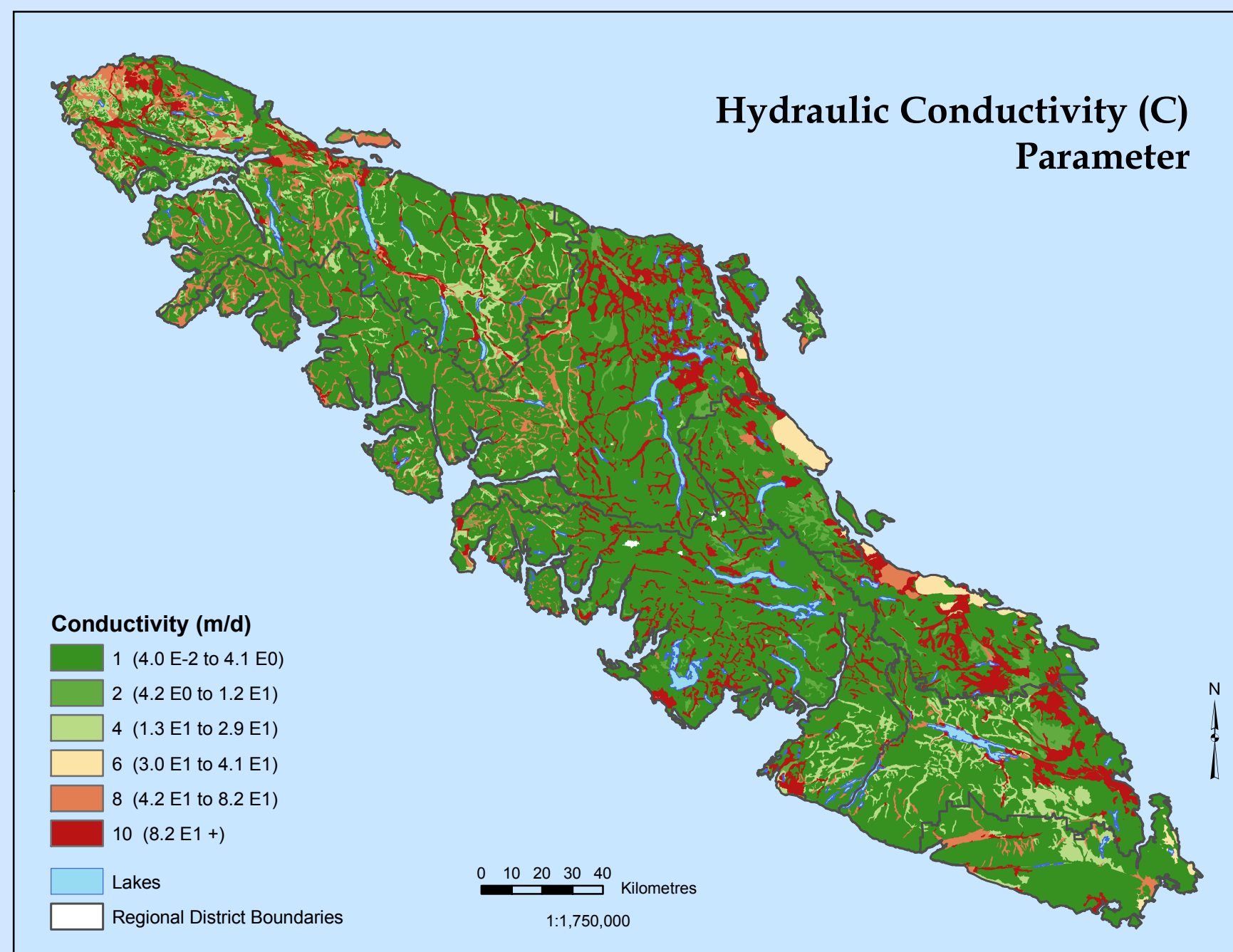
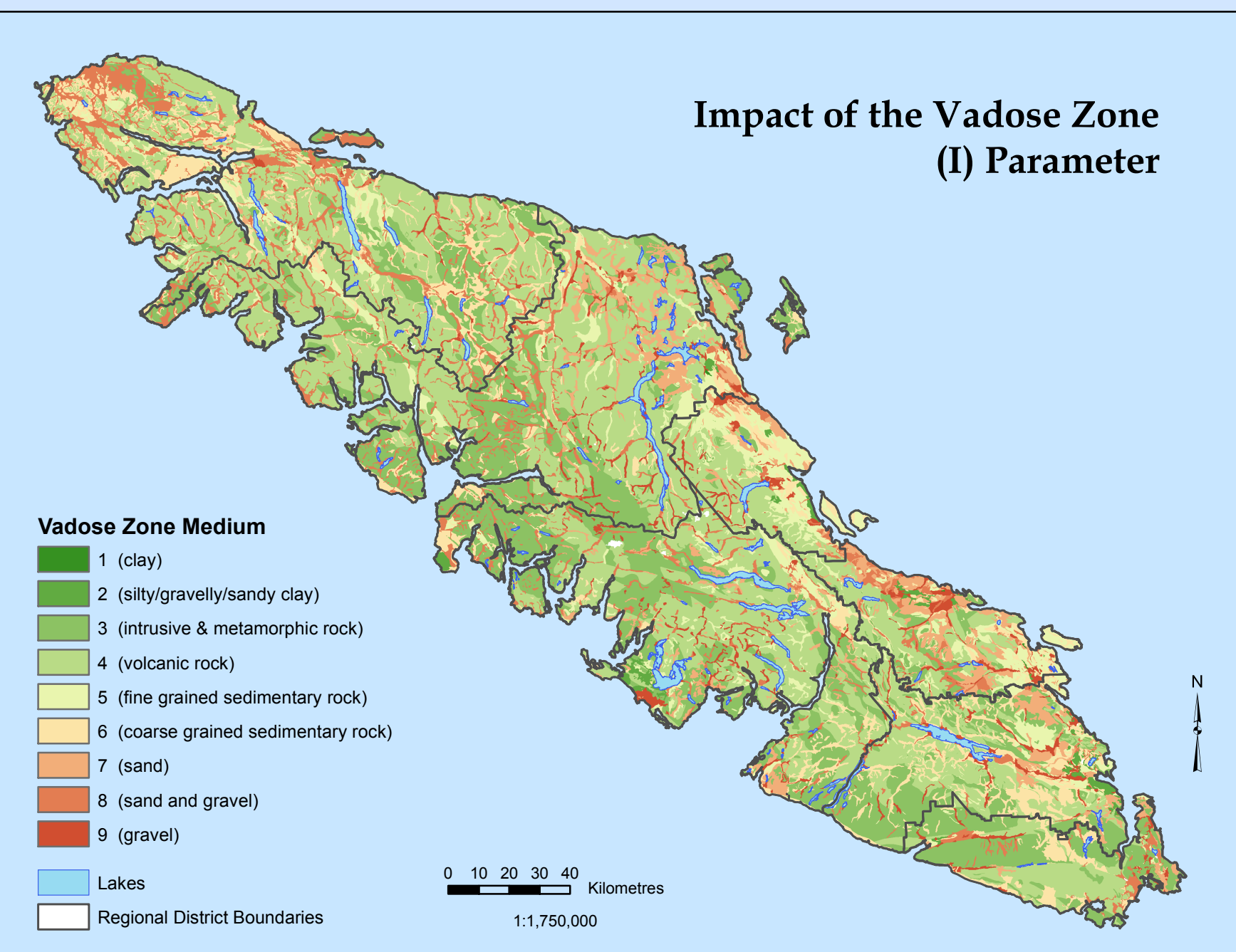
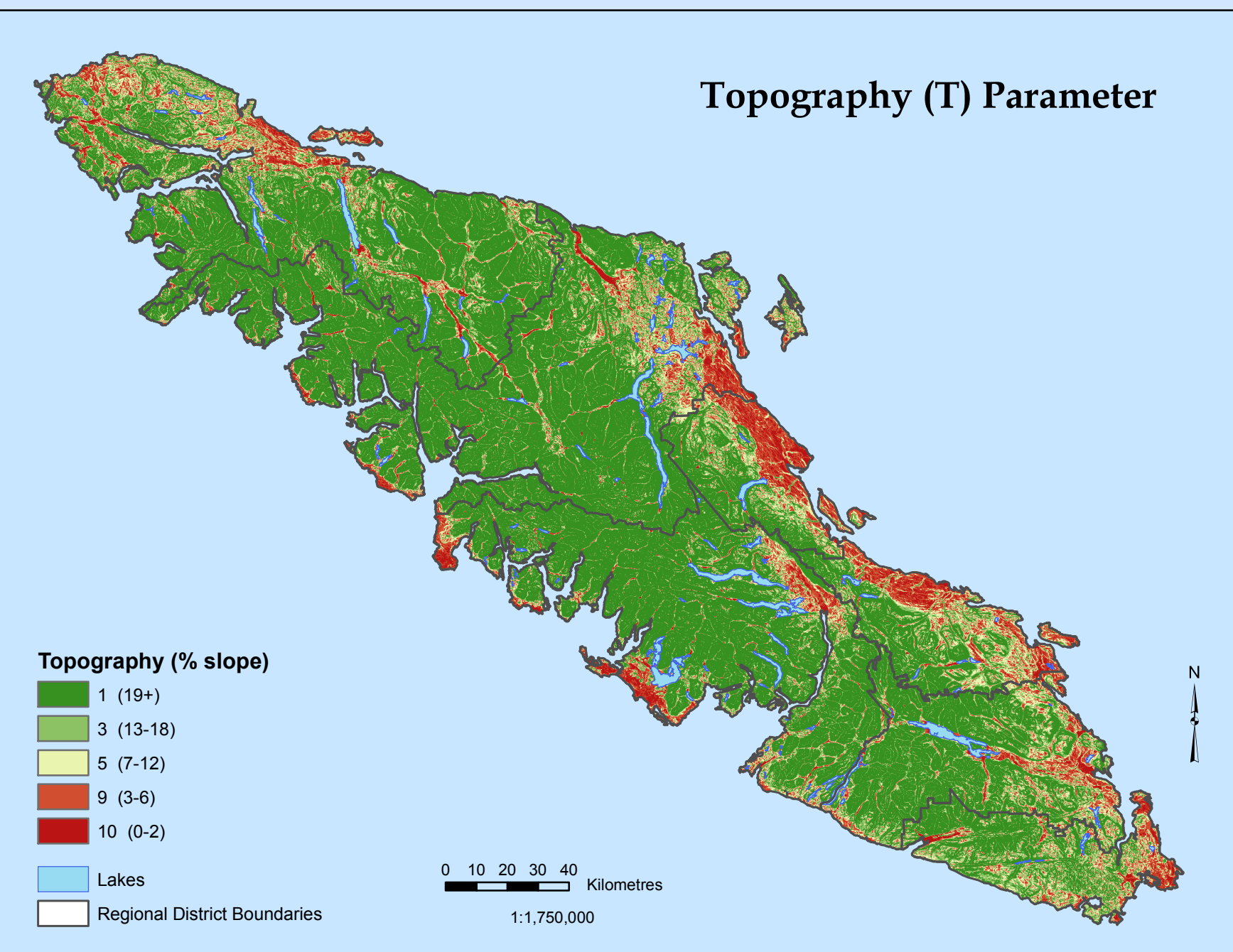
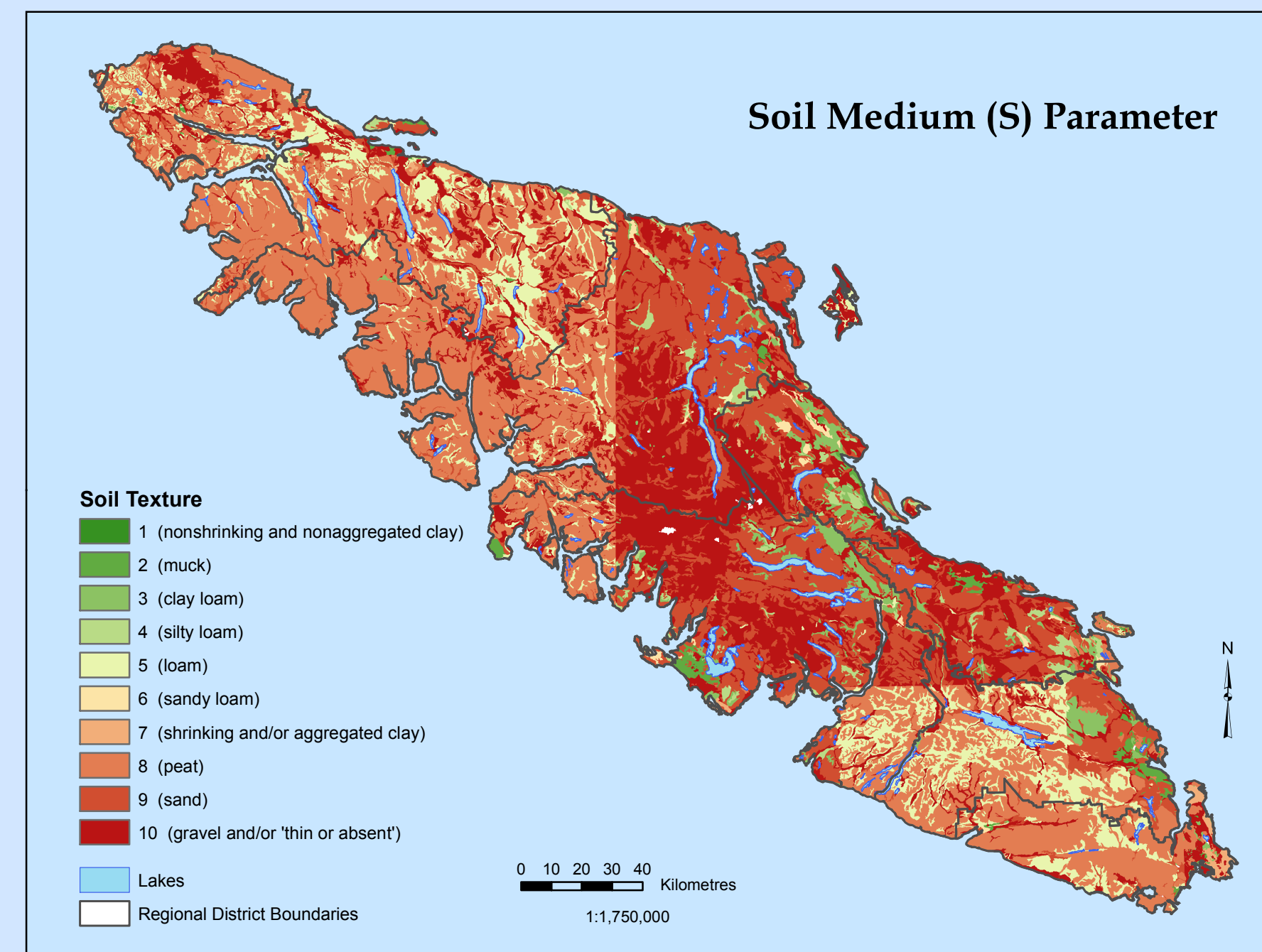
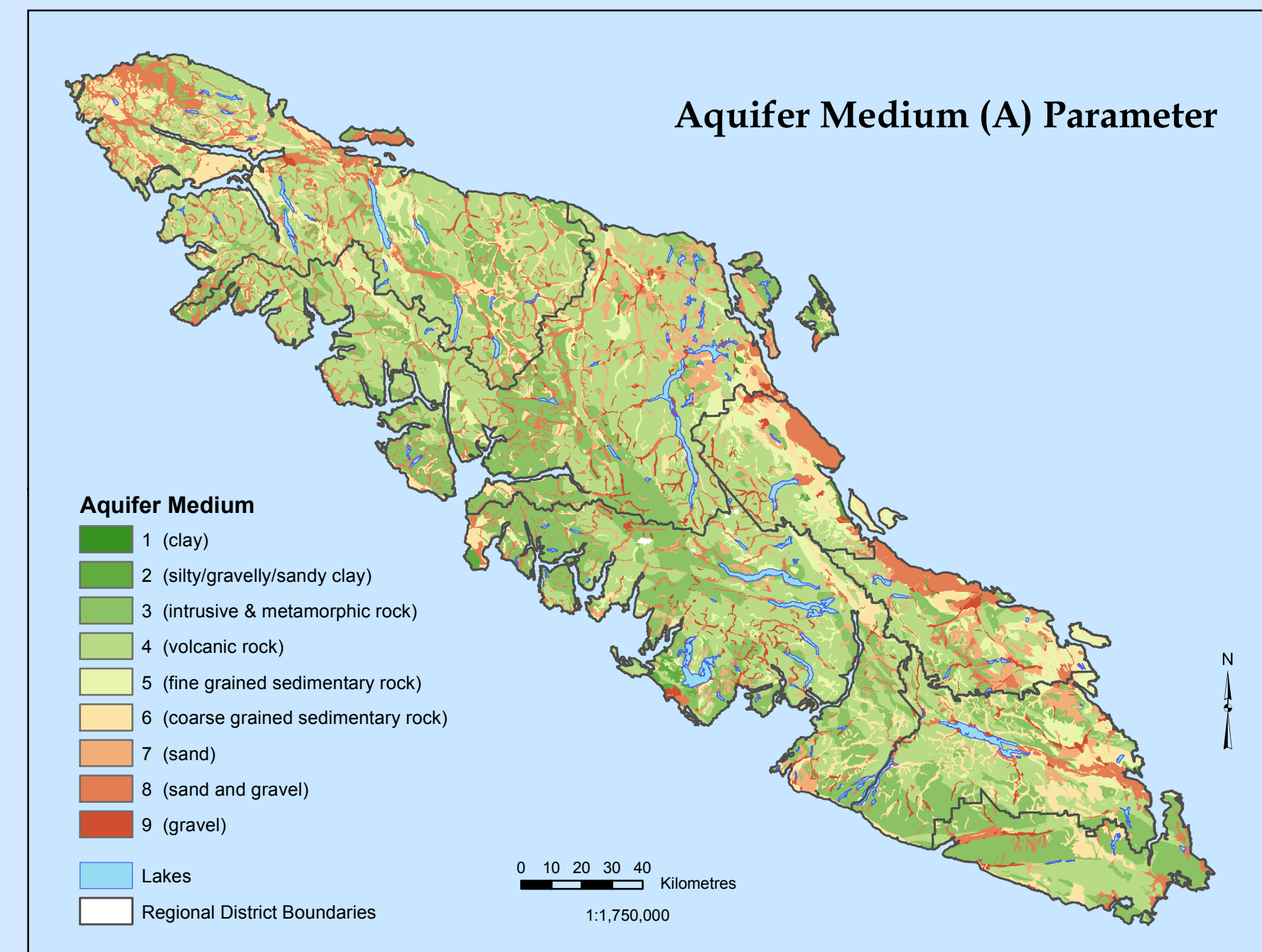
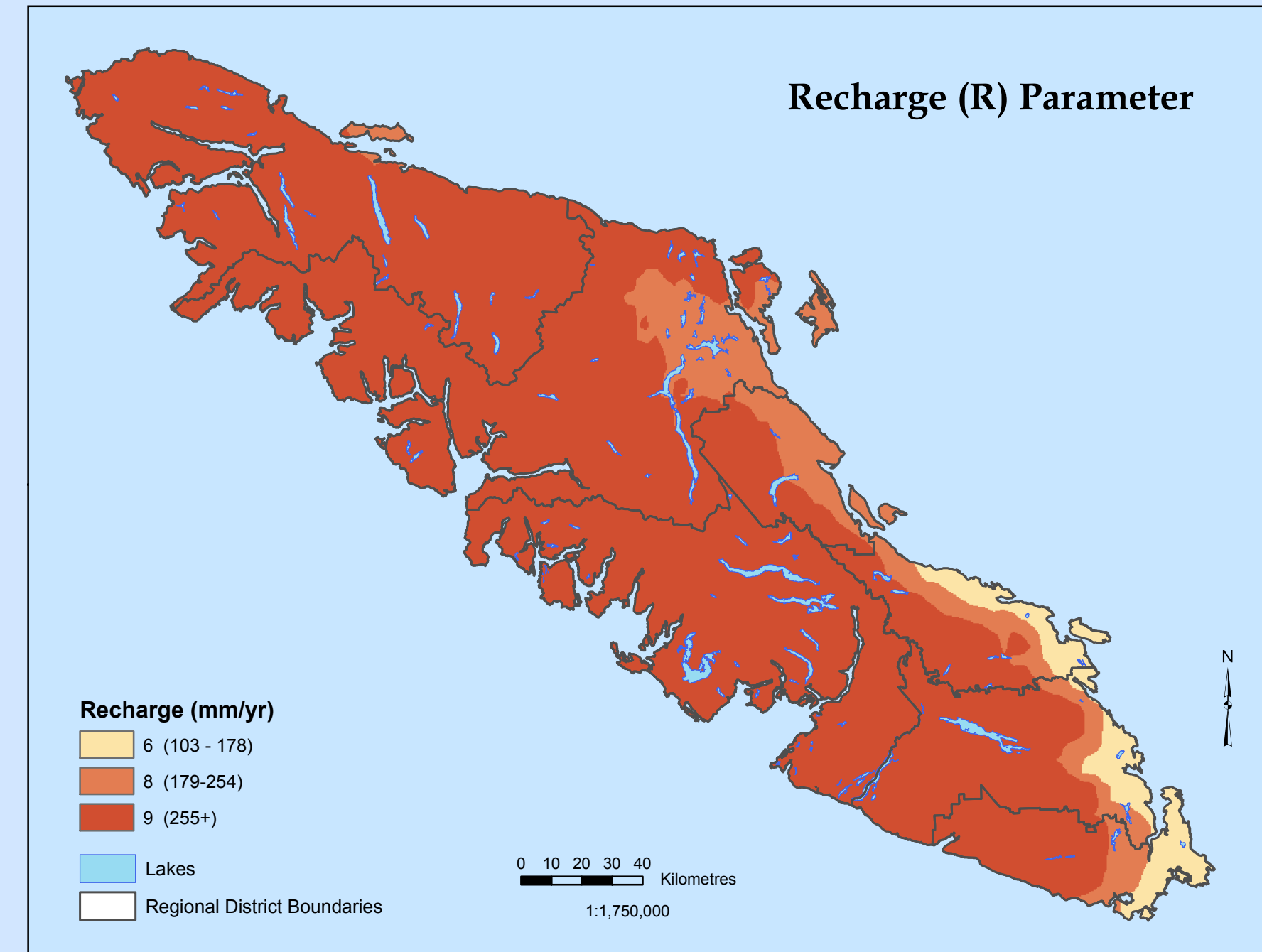
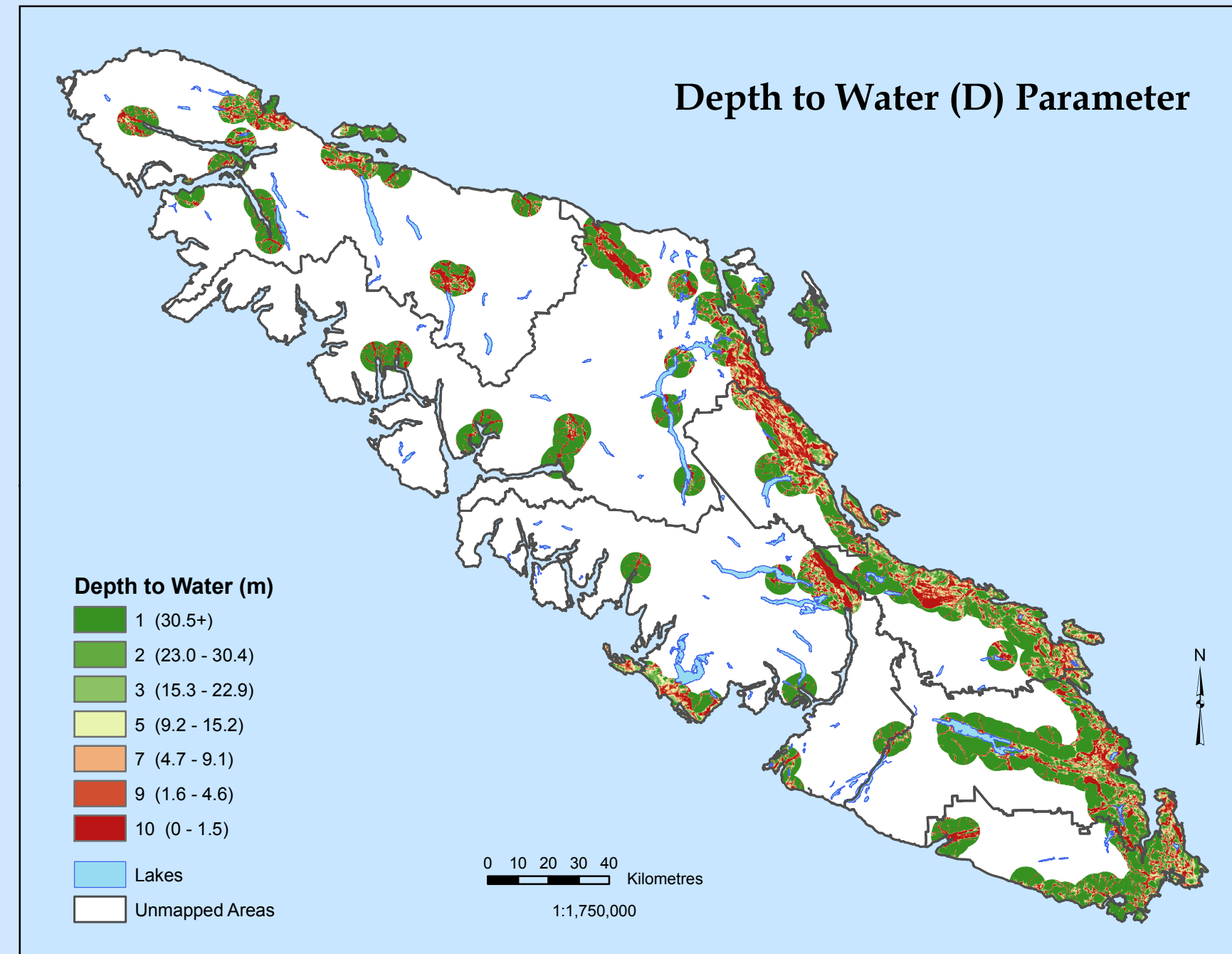
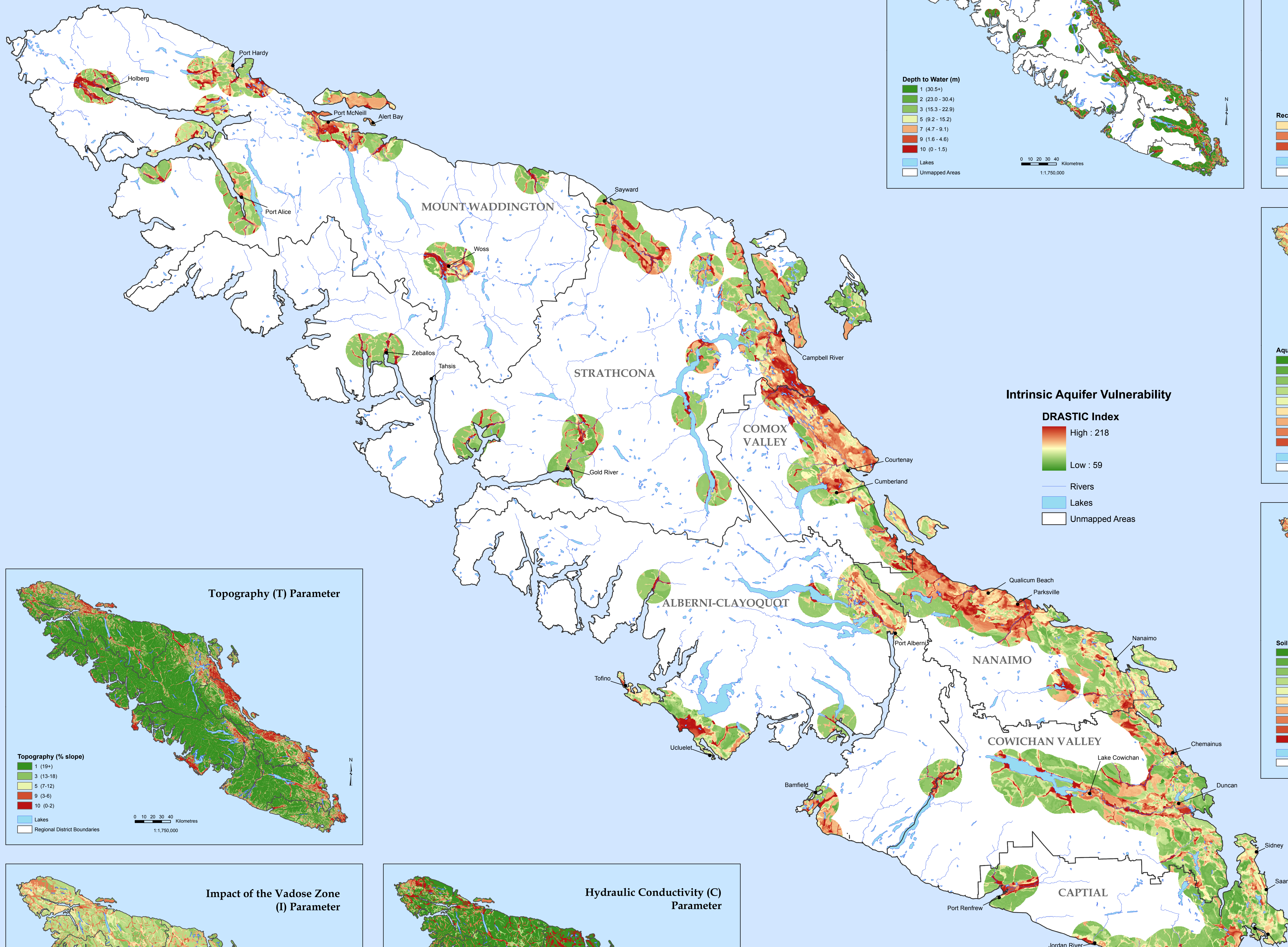


Intrinsic Groundwater Vulnerability Map of Vancouver Island



Intrinsic Aquifer Vulnerability

DRASTIC Index

High : 218

Low : 59

Rivers

Lakes

Unmapped Areas

0 5 10 20 30 40 Kilometres

1:450,000

Projected Coordinate System: BC Albers
Datum: NAD 1983

Explanatory Notes:

This map illustrates the intrinsic vulnerability of groundwater to contamination across the phase 2 study area of the Vancouver Island Water Resources Vulnerability Mapping Project (VMP). It is a regional screening tool, developed to aid in the improvement of land-use decision making, with specific interest in the protection of groundwater quality.

The DRASTIC methodology, developed by the U.S. EPA, was used to prepare this map. This method identifies seven parameters that influence intrinsic groundwater vulnerability:

D – Depth to Water; R – Net Recharge; A – Aquifer Medium; S – Soil Medium; T – Topography; I – Impact of the Vadose Zone; and C – Hydraulic Conductivity.

All parameters are mapped and their attributes rated from 1 to 10, as shown in the inset maps. The rated parameters are then combined to determine the intrinsic vulnerability of a region using the following weighted sum equation:

$$5D + 4R + 3A + 2S + 1T + 5I + 3C = \text{intrinsic vulnerability}$$

The result is a qualitative index, with potential vulnerability values ranging from 23 to 230. Values of 23 represent areas of low vulnerability to contamination; values of 230 represent areas of high vulnerability to contamination. The results of the VMP phase 2 analysis range from 59 to 218, and vary slightly from the pilot study in the RDN and CVRD due to differences in data and methods used.

The extent of the intrinsic vulnerability mapping is limited by the availability of well data used to complete the D parameter; the map shown above is limited to within 5 km of these wells.

For a more detailed description of this methodology, refer to the following two documents:

Liggett, J. and Gilchrist, A., 2010. Technical Summary of Intrinsic Vulnerability Mapping Methods in the Regional Districts of Nanaimo and Cowichan Valley. Geological Survey of Canada, Open File 6168. 64 pp.

Newton, P. and Gilchrist, A., 2010. Technical Summary of Intrinsic Vulnerability Mapping Methods of Vancouver Island. Vancouver Island University, Nanaimo, BC. 45 pp.

Created by: P. Newton
For: Vancouver Island Water Resources Vulnerability Mapping Project (VMP)
Data Sources:
BC Ministry of Environment (MoE),
Natural Resources Canada (NRCan),
BC Integrated Land Management Bureau (ILMB),
Forest Renewal BC,
Climate BC,
BC Geological Survey (BCGS),
Geological Survey of Canada (GSC),
BC Watershed Atlas
Date: 16 April 2010

