

Appendix B

Water Budget Maps

MOE Suggested WB Maps	Lakehead SPA WB Action Maps	Comments
WB Map 1- Climate Stations	Map 1 Weather Stations and Mean Annual Precipitation	Combined with WB Map 1 and WB Map 2
WB Map 2- Precipitation Distribution		
WB Map 3 – Representative Areas for Climate station (e.g. Thiessen Polygons)	Not required	Inverse Distance Weighting Interpolation Technique Used
WB Map 4 – Meteorological Zones	Not required	Only 1 Meteorological zone exists
WB Map 5 - Evapotranspiration	Map 2 Weather Stations and Mean Annual Actual Evapotranspiration	Actual Evapotranspiration was determined from Thornthwaite and Mather method
WB Map 6 – Bedrock Geology	Map 3 Bedrock Geology	
WB Map 7 – Sediment Thickness	Map 4 Overburden Thickness	
WB Map 8 – Geologic Unit Thickness	Not required	- Shallow Overburden - No discrete aquifer/aquitards,
WB Map 9 – Bedrock Topography (elevation)	Map 5 Bedrock Elevation	
WB Map 10 – Surficial Geology	Map 6 Surficial Geology	
WB Map - 11 Hummocky Topography		Included in Map 6
WB Map 12 – Physiographic Regions		Included in Map 6
WB Map 13 – Ground Surface Topography	Map 7 Surface Topography	
WB Map 14 – Soils Map	Not required	No full coverage. Use of Surficial Geology map and GIS Approach
WB Map 15 – Land Cover Map	Map 8 Land Cover	
WB Map 16 – Streamflow Gauging Stations	Map 9 Water Control Structures	Combined with WB Map 16, 18 and 21
WB Map 17 – Flow Distribution	Map 10 Flow Distribution	
WB Map 18 – Dams, Channel diversions etc.		Included in Map 9
WB Map 19 – Fisheries	Map 11 Fisheries	Very few portions of the watershed covered under this category
WB Map 20 – Surface Water Takings	Map 12 Surface –and GW takings	Combined with WB Map 25 and WB Map 26
WB Map 21 – Surface Water Nodes		Included in WB Map 9
WB Map 22 – Aquifer Extents, GW Flow Directions	Map 13 Water Table Elevation	Combined with WB map 24
WB Map 23 – Recharge and Discharge Zone	Map 14a Recharge Distribution	
WB Map 24 – Depth to Water Table		Included in Map 13
WB Map 25 – GW Monitoring Network Locations		Included in Map 12
WB Map 26 – Groundwater Takings		Included in Map 12
WB Map 27 – Stress Assessment Subwatersheds	Map 15 Rosslyn Village and Loch Lomond Watershed	

Note: * "WB Map" # refers to the suggested mapping from the MOE Interim Water Budget Technical Direction Document (Version 3.0, December 21, 2005)

Some of the suggested maps have not been used in this report. WB Map 3 for the Theissen polygons was not included because this was not used in the analysis. Rather an Inverse Distance Weighting interpolation technique was used to avoid the “steps” that cross the watershed when using the Theissen technique. This was particularly important, as there were no useable meteorological stations in the west, north and east of SPA. WB Map 4 on meteorological zones was also not included because the whole watershed lies in one zone due to the similar physiography. WB Map 8 was intended to identify the unit thicknesses, however given the shallow overburden there are no major aquifer/aquitards or other formations that can be discretely identified.

WB Map 14 was intended to be the pedological soils mapping. Such mapping exists only for a part of the SPA, however much is based on interpretation of high level aerial photography. Since soil properties (from a groundwater recharge perspective) have been obtained from the surficial quaternary mapping, the soils map was deemed redundant. Two (2) maps which are not specified by MOE were prepared for the quantification of run-off (Map 14b) surplus (Map 14c) distribution.

Water Quantity Stress Assessment Maps

Map 16: Loch Lomond Subwatershed

Map 17: High Volume Recharge Areas, Lakehead SPA (MOE Method 3)

Map 18: Significant Recharge Areas (Rosslyn Village/Wells)