



Geoscape Ottawa-Gatineau

Grade 7 Lesson Plans to accompany the Geoscape Ottawa-Gatineau poster and website
F. Fiset and J. Aylsworth

Theme Twelve: Land Use

List of Expectations		
Grade	Strand and Topic	Expectations
7	Science: Earth and Space Systems The Earth's Crust	<ul style="list-style-type: none"> identify the factors that must be considered in making informed decisions about land use and explain their importance
7	Geography: Patterns in Physical Geography	<ul style="list-style-type: none"> locate relevant information from primary sources (aerial photographs, satellite images) demonstrate an understanding of how physical patterns affect human activity

Overview

The Geoscape "Land Use" theme consists of lessons that will enable students to investigate different scenarios and make informed recommendations.

At the end of these lessons, students will be able to:

- identify relationships between geological conditions and human activity
- identify risk factors and make informed decisions and recommendations

Suggested Lessons	Brief Description
Students Take Notes	Changing Times: Changing Use
Key Word Game	Crossword puzzle
Lesson 1	What has geology to do with landuse!
Lesson 2	Nice View, But... Worksheet presenting students with different scenarios for house sites and asking their advice.
List of related web sites and resources	City of Ottawa web site http://www.ottawa.ca/index_en.html City of Gatineau web site http://www.ville.gatineau.qc.ca/index-ang.htm

Changing Times: Changing Use

Early settlements in the Ottawa-Gatineau area were defined by:

- early transportation routes (rivers and canal)
- logging in 19th century
- development of farms in lowlands
- mining in the Gatineau Hills

As population increases, urban areas have expanded, taking over:

- natural forested areas
- agricultural land

Ottawa's Greenbelt:

- needed to shape Ottawa's growth and protect the environment
- 20,000 hectares of publicly owned lands
- consists of farms, forests, wetlands, recreational areas
- no urban development permitted

Decisions Can Be Hard!

Building a house close to a river or on a bluff overlooking a river in the Ottawa-Gatineau area may be hazardous due to possible landslides or flooding. Development is either prohibited or subject to rigorous testing prior to municipal approval in the following areas:

- Clay slopes (landslides)
- Organic soils (bogs, marshes)
- Floodplains

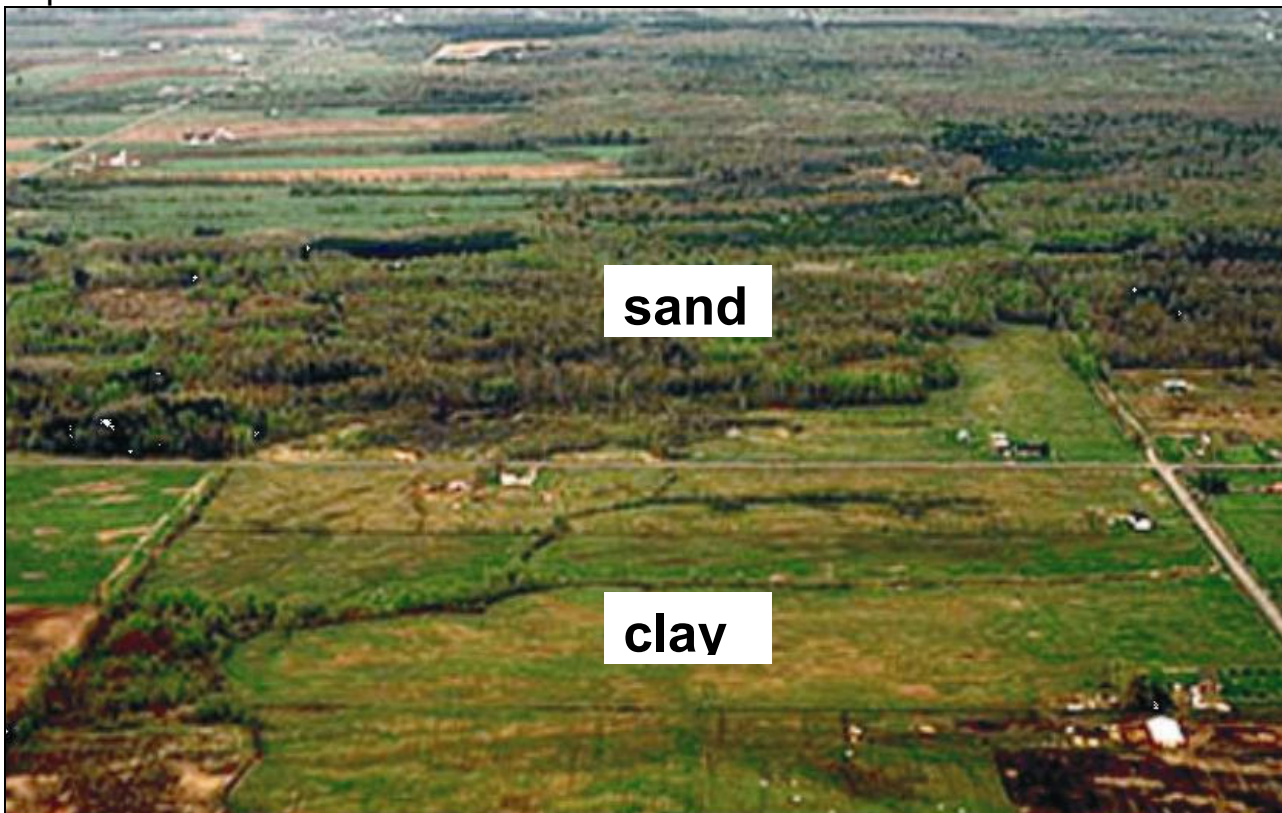
Students take notes:

Geology and Agriculture

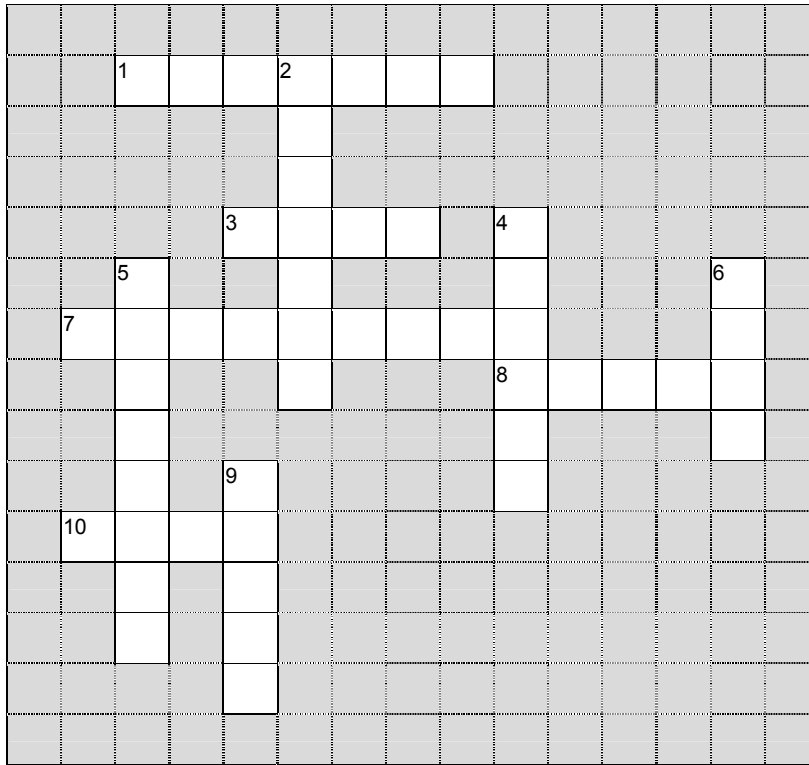
What makes land suitable for agriculture is the quality of the soil. Soil must not only be rich in nutrients but also must retain moisture well and have proper drainage.

Productive Soils	Silt and Clay	Nutrient-rich Drainage ditches may be required to improve drainage
	Till	Nutrient-rich Retains moisture well
Poor Soils	Sand	Low in nutrients Does not hold moisture

* The **Larose Forest** is a public recreation forest, owned by the Ontario government. Farms, abandoned due to dry sandy soils, have been returned to pine forests.



Land Use



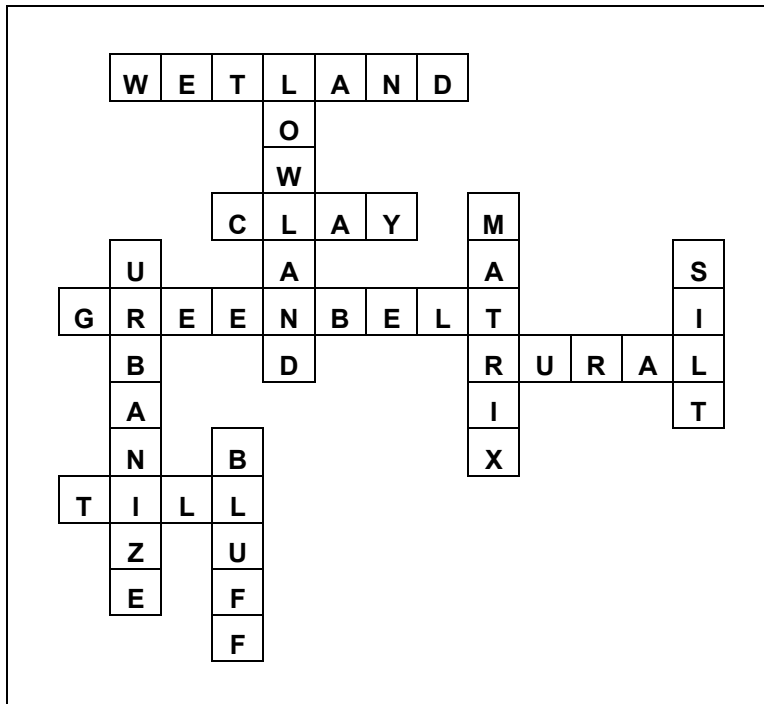
ACROSS

- 1. land which is commonly wet
- 3. very fine grain size (< 1/ 256mm)
- 7. green space where building is prohibited or restricted
- 8. land in the countryside, rather than in the city
- 10. sediment deposited by a glacier

DOWN

- 2. low-lying, relatively flat geographic area, with very little change in elevation
- 4. the finer grain sizes in a mixture of varying grain sizes
- 5. the process of becoming a densely populated area or a city
- 6. fine grain size (1/ 256 to 1/ 16mm)
- 9. a steep cliff or bank

Land Use: Solution



12.1 Lesson 1 What has geology to do with landuse!

Brief Description

Students examine maps and satellite image to investigate how geology influences landuse.

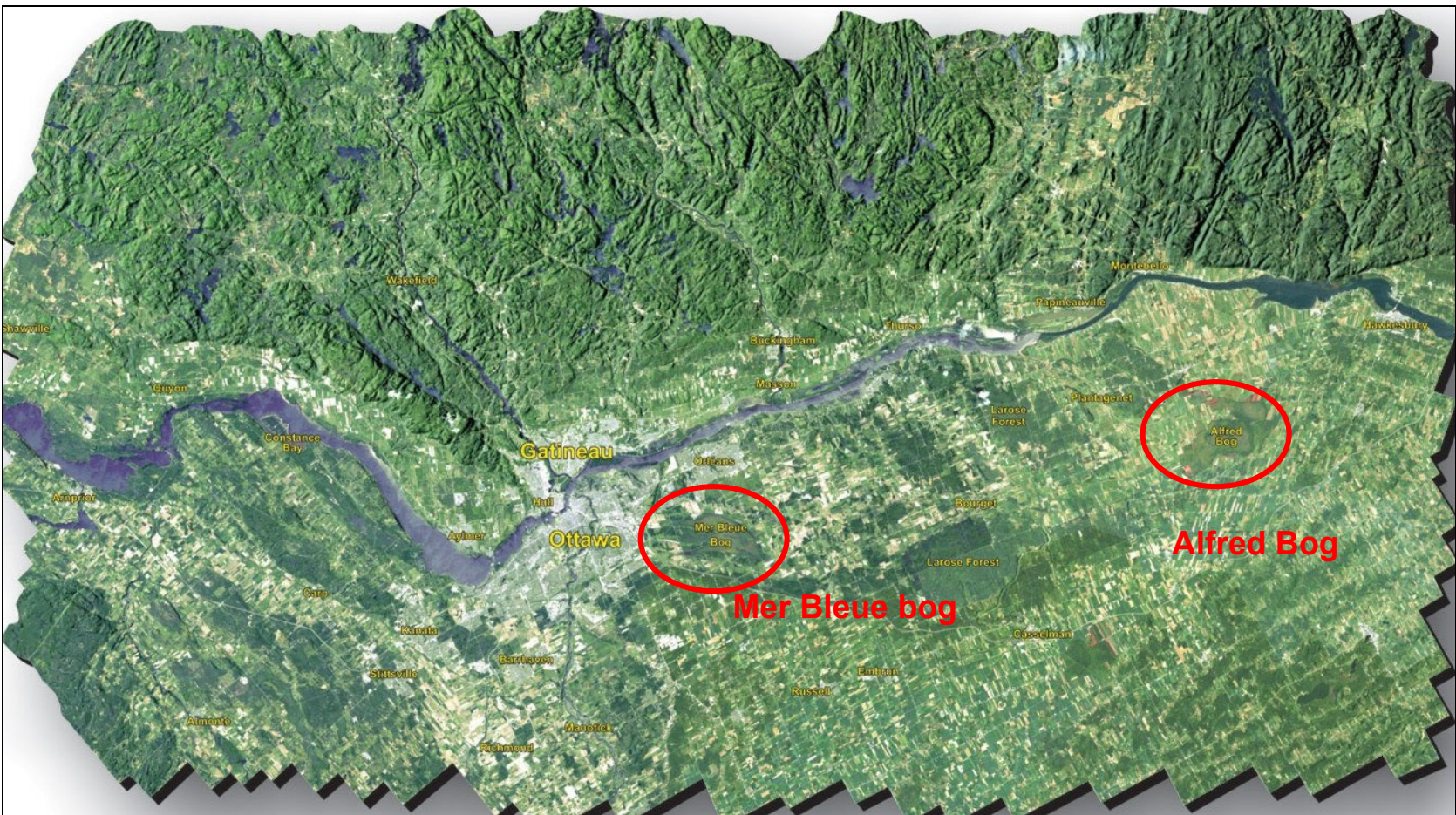
Suggested Materials

Overheads and Handouts: "Satellite Image", "Geological Regions map", "Simple Geology map", Student worksheets and blank map of Ottawa-Gatineau

Duration 40 min

Instructions

1. Teacher reviews the major geological regions (Precambrian Shield, Paleozoic Lowlands, Quaternary sediments)
2. Teacher explains "Simple Geology Map". It shows what is at the surface and students may have to interpret what is underneath. (e.g. The sand deposits shown on the map are a sand delta on the surface of the Champlain Sea sediments. It is likely that Leda clay underlies area of these areas of sand.) (Note: the eastern part of the geoscape is not covered by this map.)
3. Teacher reviews the satellite image, indicating the major rivers, urban areas, farmland, forested areas, bogs on the image.
4. Teacher distributes handouts and worksheets and reminds students to also check the various maps on the Geoscape poster or website.
5. Students use handouts to complete the worksheet.

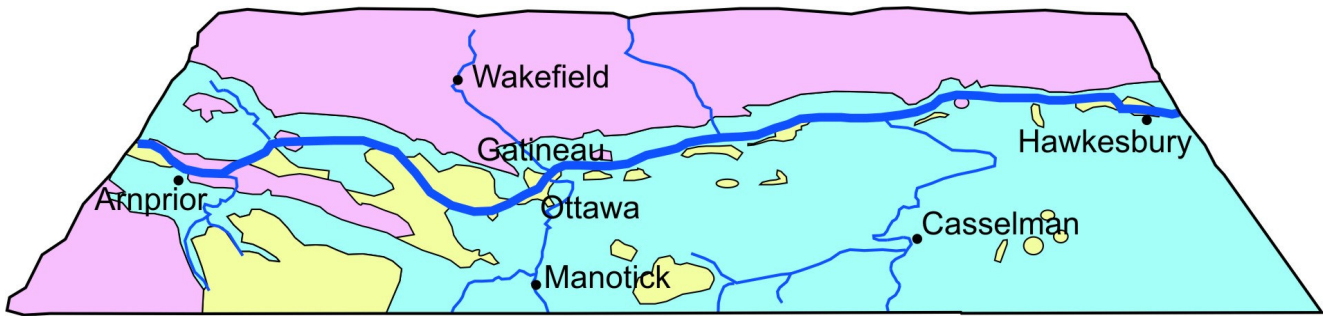


Overhead

Overhead: Geoscape Ottawa-Gatineau satellite image http://geoscape.nrcan.gc.ca/ottawa/index_e.php

Landsat TM (5/7) Shaded Relief Fusion (Landsat TM 7.)
Data collected by USGS/EROS Data Center and provided courtesy of Canada Centre for Remote Sensing.

Geological Map of the Ottawa-Gatineau Region

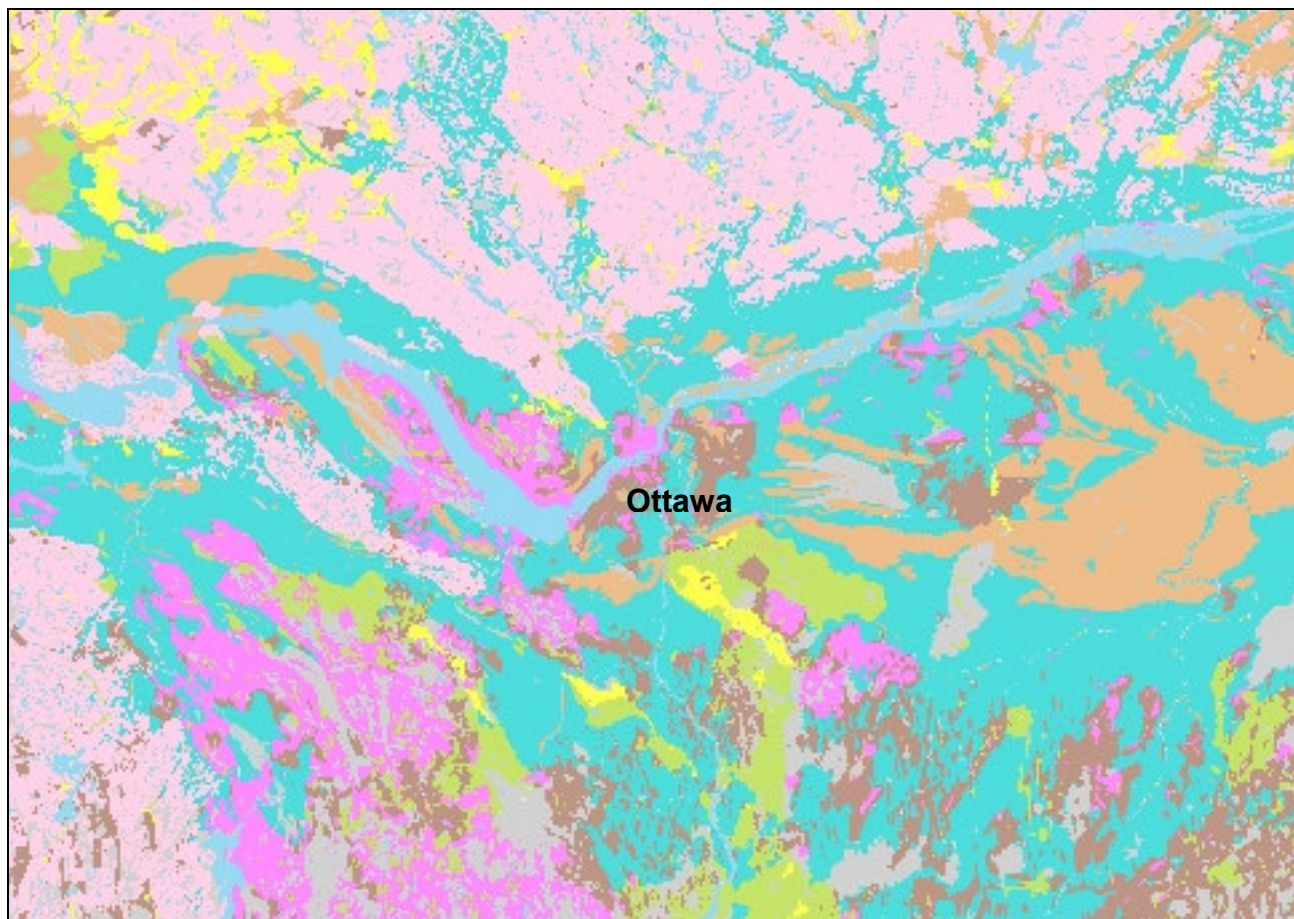


Precambrian
marble, quartzite,
granite, gneiss

Paleozoic
limestone, sandstone,
shale

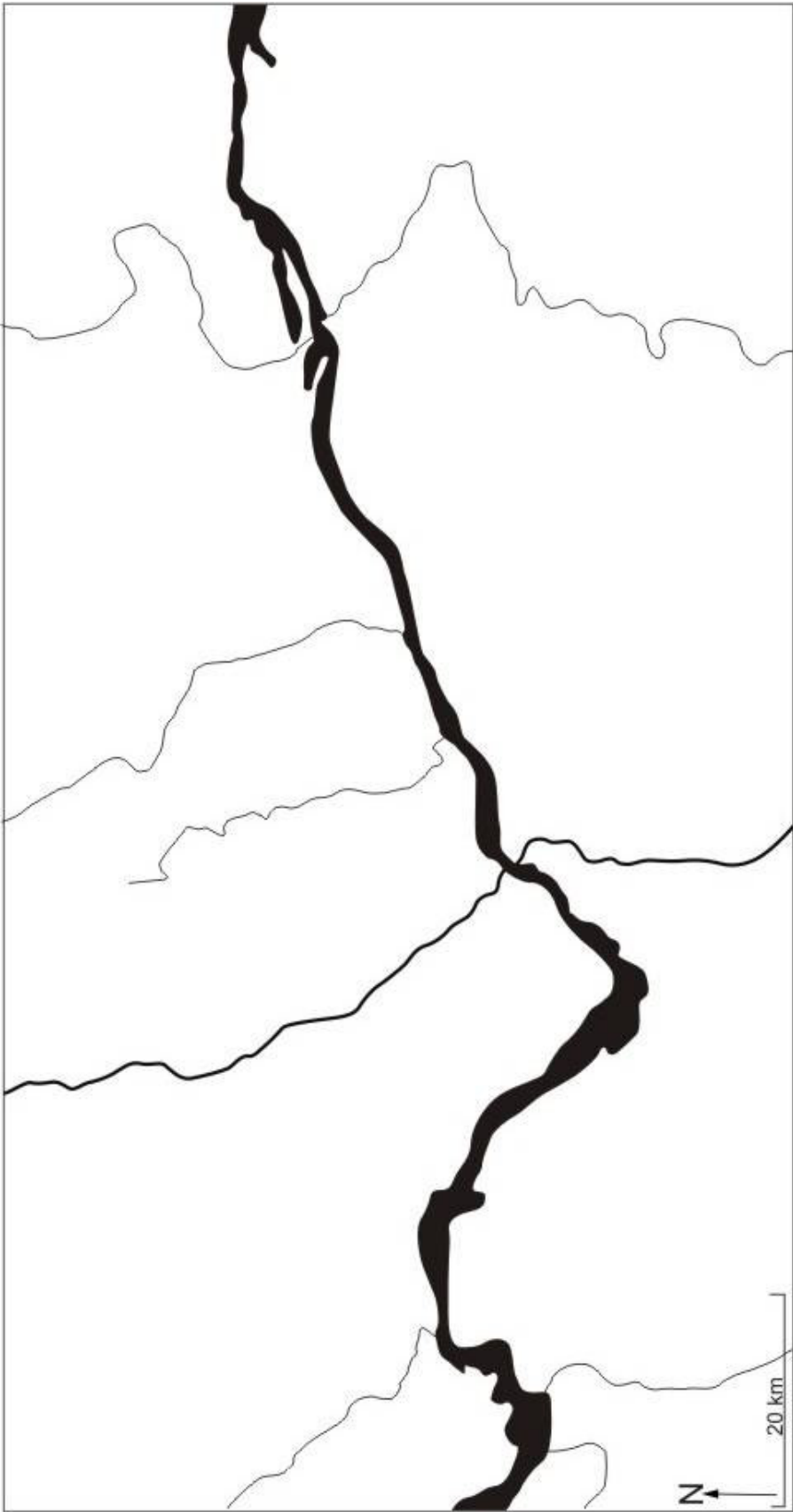
Quaternary
till, gravel, sand,
silt, clay

Simple Geology Map of Ottawa-Gatineau



- Generalized geology
- Surficial material
 - Bedrock, Paleozoic
 - Bedrock, Precambrian
 - Clay and silt
 - Organic
 - Sand
 - Sand and gravel, boulders
 - Sand and silt
 - Till

Source: Urban Geology of the National Capital Area, Online Maps
http://gsc.nrcan.gc.ca/urbgeo/natcap/geoserv_e.php



12.2 Lesson 2 Nice View, But...

Brief Description

Worksheet presenting students with different scenarios for house sites and asking their advice.

Suggested Materials

Student worksheets

Duration 20 min

Lesson Instructions

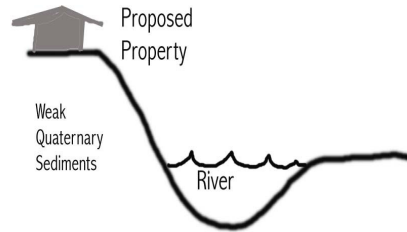
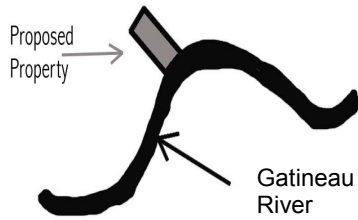
1. Students complete handout

Nice View, But...

In this activity, you will play the role of a geologist or a geotechnical engineer in the Ottawa-Gatineau area. Below are various situations on which you will give advice. From what you know about geology and land use, write a recommendation for each.

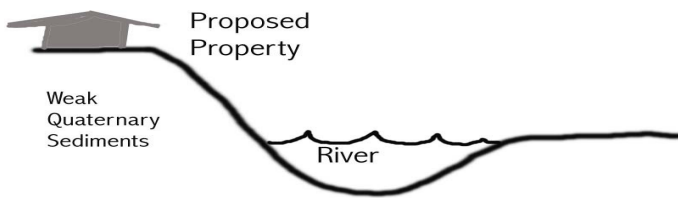
Situation A

Mr. And Mrs. Lucky have just won \$1,000,000 and want to build their dream house. They have chosen a location on a hill overlooking the Gatineau River. Below are a top view and a side view of their home. What do you suggest and why?



Situation B

Mr. Hopeful is putting an offer on a beautiful house in Rockland. The house is on a slope and provides a beautiful view of the countryside. He has only visited the property on dry hot summer days. How would you advise him?



Nice View, But...

Situation C

Mrs. Sunny would like to build a cottage near the Ottawa River. She would like her property to have a waterfront. What suggestions would you make?

