

# Underground Sleuths Discover Riches Beneath the Plains

## Lesson Overview

Students will use the Canadian Atlas to discover two Central Plains natural resources.

## Grade Level

Grade 6 - 8

## Time Required

Day One: *Potash in Saskatchewan* approximately 120 minutes

Day Two: *Oil in Alberta* approximately 45 minutes

## Curriculum Connection

Social Studies Grade 6, Saskatchewan, Unit One: Location and Natural Geography

## Link to Canadian National Geography Standards

*Essential Element #2 (Grade 6-8) - Places and Regions*

- Physical and human characteristics of places and regions in Canada and the World

*Essential Element #5 (Grade 6-8) - Environment and Society*

- Limits and opportunities of the physical environment for human activities

*Geographic Skill #2 (Grade 6-8) - Acquiring Geographic Information*

- [Students will] use a variety of research skills to locate and collect geographic data

## The Canadian Atlas

Pages 22-23 in the Canadian Atlas

## Additional Resources, Materials and Equipment Required

- Blank 8½ X 11" paper
- Computer Lab to access the following websites:
  - Potash website: <http://www.saskschools.ca/~gregory/sask/potash>
  - Oil website: <http://www.oilsandsdiscovery.com/>
  - Petroleum products list website:  
[http://www.beloit.edu/~SEPM/Geology\\_and\\_the\\_enviro/Petroleum\\_need.html](http://www.beloit.edu/~SEPM/Geology_and_the_enviro/Petroleum_need.html)
  - Make-your-own free word searches and crosswords website:  
<http://www.edhelper.com/puzzles.htm>
- Newspaper Rubric (attached)
- Scavenger Hunt Self-Scoring Rubric (attached)

## Main Objective

Students will use the Canadian Atlas to locate regions of natural resources in the Central Plains, which have a vital impact upon the economy.

### Learning Outcomes

- Understand that globes and maps contain information about fundamental systems including natural resources.
- Understand that locations have specific combinations of interrelated characteristics, which make them different from other locations. Organize information obtained from a variety of resources.
- Appreciate that elements of the natural environment are critical to the economy of the Central Plains region in Canada.
- Students will access information on maps by developing their ability to understand spatial relationships and to interpret the various symbols used.

### The Lesson: Day One

	Teacher Activity	Student Activity
<b>Introduction</b> (15 minutes)	<p><i>Pre-teaching</i></p> <p>Ask students to name all the things that are underneath the ground. Record the students' responses on the board or chart paper.</p> <p><i>Activating prior knowledge</i></p> <p>Ask students to draw all the things they think are underneath the ground on an 8.5" X 11" sheet of paper.</p>	<p>Students respond by naming all the things that are underneath the ground.</p> <p>Students draw all the things they think are underneath the ground.</p>
<b>Lesson Development</b>	<p><i>Part 1: Opening the Atlas (5 minutes)</i></p> <p>a) Locating the correct general geographic regions Open the Atlas to pages 22 and 23. Ask students to identify the three provinces represented on these pages.</p> <p>b) Identifying the correct natural resources for further study: Tells students that as underground sleuths they will be searching for two important natural resources: ~ Potash in Saskatchewan ~ Oil in Alberta</p>	<p>Students look at the map and identify Alberta, Saskatchewan and Manitoba.</p>
	<p><i>Part 2: Exploring in the Atlas (10 minutes)</i></p> <p>c) Focusing on specific geographic regions for exploration: Esterhazy, Saskatchewan Ask students how they would locate Esterhazy, Saskatchewan in the Atlas.</p>	<p>Guided by the teacher, students look in the index to find Esterhazy, Saskatchewan. Imitate teacher by finding letter/number key.</p>

<p><b>Lesson Development</b></p>	<p><i>Part 2: Exploring in the Atlas (cont'd)</i></p> <p>d) Focusing on specific geographic regions for exploration.</p> <p>Ask students how they would locate Fort McMurray, Alberta in the Atlas.</p> <p><i>Part 3: Activity Instruction (10 minutes)</i></p> <ul style="list-style-type: none"> <li>• Activity: "Underground Sleuths Discover Potash in Esterhazy!"</li> </ul> <p>Tell students they will produce a newspaper story about the potash mine in Esterhazy, Saskatchewan.</p> <ul style="list-style-type: none"> <li>• Exploration: The Atlas (5 minutes)</li> </ul> <p>Direct the students to identify four key facts from the paragraph at the bottom of page 22.</p> <ul style="list-style-type: none"> <li>• Exploration: Website (10 minutes)</li> </ul> <p>Direct students to examine <a href="http://www.saskschools.ca/~gregory/sask/potash.html">http://www.saskschools.ca/~gregory/sask/potash.html</a> to obtain at least three facts about the potash mine in Esterhazy</p> <ul style="list-style-type: none"> <li>• Recording (30 minutes)</li> </ul> <p>Instruct the students to make notes in point form about the key facts they are learning from both the Atlas as well as the website.</p> <ul style="list-style-type: none"> <li>• Composing (30 minutes)</li> </ul> <p>Ask students to write their own composition using their discovered facts. Remind students to include an introductory sentence, a body containing facts and a concluding sentence.</p>	<p>Guided by the teacher, students look in the index to find Fort McMurray, Alberta. Imitate teacher by finding letter/number key.</p> <p>Each student is to read the paragraph near the bottom of page 22 and identify four key facts.</p> <p>Students examine the website to obtain at least three facts about the potash mine in Esterhazy.</p> <p>Students make notes in point form about the key facts they are learning from both the Atlas as well as the website</p> <p>Students are asked to write their own composition using their discovered facts. They are reminded to have an introductory sentence, a body containing facts and a concluding sentence.</p>
<p><b>Conclusion</b></p>	<ul style="list-style-type: none"> <li>• Measuring Knowledge Gained (15 minutes)</li> </ul> <p>Hand students a piece of blank white 8.5" X 11" white paper. Students may look at the website photos from <a href="http://www.saskschools.ca/~gregory/sask/potash.htm">http://www.saskschools.ca/~gregory/sask/potash.htm</a>. Allow the students to compare their illustration with the first illustration</p>	<p>Students respond by drawing a diagram or picture of underground potash mining in Esterhazy. This is a timed activity; some students may wish to add colour with pencil crayons as time allows.</p>

	<p>they did.</p> <ul style="list-style-type: none"> <li>• Evaluation</li> </ul> <p>Distribute and explain rubric "Underground Sleuths Newspaper Activity Rubric" to students at the start of the activity.</p>	
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### Day Two: The Lesson

	Teacher Activity	Student Activity
<b>Lesson Development</b>	<ul style="list-style-type: none"> <li>• Scavenger Hunt in Fort McMurray (30 minutes)</li> </ul> <p>Direct students to the scavenger hunt worksheet and assist students in using both the Atlas as well as the Internet.</p>	Students each have a copy of the scavenger hunt worksheet and proceed through the prompts.
<b>Conclusion</b> (15 minutes)	Instruct students to score their own work practice on this activity using the Self-Scoring Rubric.	Students score their own work practice as reflected in the activity <i>Scavenger Hunt in Fort McMurray!</i> Self-Scoring Rubric.

### Lesson Extension

Students can explore the Alberta Oil Sands website's "Discovery Centre" at <http://www.oilsandsdiscovery.com/> and the Kid's Centre PDF link for more activities.

Teachers can use the site <http://www.edhelper.com/puzzles.htm> to make Word Find puzzles and crosswords to help students understand the vast uses of petroleum in our everyday lives. A list of petroleum products may be found at: [http://www.beloit.edu/~SEPM/Geology\\_and\\_the\\_enviro/Petroleum\\_need.html](http://www.beloit.edu/~SEPM/Geology_and_the_enviro/Petroleum_need.html).

### Assessment of Student Learning

This lesson requires student utilization of independent research skills, note-taking and reporting. Use the *Underground Sleuths Newspaper Activity Rubric* on the next page to assess these learning outcomes.

To assist students in recording their own on-task practices, the *Scavenger Hunt in Fort McMurray!* Activity Self-Scoring Rubric is effective.

**Underground Sleuths Newspaper Activity Rubric**

Category	Score			
	4	3	2	1
<b>Fact Finding</b>	The newspaper article has six accurate facts about potash mining in Esterhazy as learned from both the Atlas and the resource website.	The article has five accurate facts as learned from both the Atlas and the resource website.	The article has four accurate facts.	The article has three or fewer accurate facts.
<b>Notes</b>	Notes are recorded and organized in and extremely neat and orderly fashion.	Notes are recorded neatly and are somewhat organized.	Notes are recorded.	Notes do not seem to be recorded anywhere.
<b>Newspaper Article Construction</b>	The article includes an introductory sentence, a body containing facts in complete sentences, and a concluding sentence.	The article includes a body containing facts in complete sentences and a concluding sentence.	The article includes only a body containing facts in complete sentences.	The article includes only a body containing facts in point or jot note form.

## Scavenger Hunt in Fort McMurray

Student's Name \_\_\_\_\_

1) Please use the information from the Atlas (near the bottom of page 23 *Alberta - Treasure of the Tar Sands*) to complete these sentences:

- a) The most \_\_\_\_\_ resources on the Central Plains are its \_\_\_\_\_ and natural gas deposits.
- b) The \_\_\_\_\_ holds over 70 percent of Canada's oil reserves.
- c) \_\_\_\_\_ carry western oil and gas to eastern Canada and the United States.
- d) The tar sands put Canada after \_\_\_\_\_ in proven oil reserves.

**Well done!** Now you may go on-line to the Alberta Oil Sands website at <http://www.oilsandsdiscovery.com/>, to find the answers the questions in part 2.

2) On the website, open the webpage which says "Welcome". Once you are there, click "The Oil Sands Story".

- a) Click "The Resource". Circle the correct word to make this sentence true:

**Alberta's oil sands contain the (smallest biggest dirtiest) known reserve of oil in the world.**

- b) Now click on "In Situ", which is found on the left hand side of the webpage.

**What does "In Situ" mean?** (Hint: the answer is in the paragraph – it's a Latin phrase!)

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- d) **Excellent work so far!** Go to the bottom and click "Kid's Centre". Click the part that says, "Top Ten Questions About the Oil Sands". If you can do this on-line quiz, you are a master explorer!

**Please call your teacher to show him or her that you have completed the Scavenger Hunt.**

## Scavenger Hunt in Fort McMurray!

How well did you do in this activity?

Choose the sentence in the table below that best describes your effort, then look up your score.

I started work immediately and continued working until I completed it.	Give yourself a: <b>4</b>
I started work after a while and continued working until I completed it.	Give yourself a: <b>3</b>
I started work eventually but did not stay on task until completion	Give yourself a: <b>2</b>
I started work eventually but often I stopped to talk to others.	Give yourself a: <b>1</b>