

# Region of Waterloo Water Education Resources and Related Grade 8 Curriculum\* Expectations

\*Ontario Curriculum as of May 2023

## Geography

**A3.5 describe various ways in which human settlement has affected the environment.**

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b> 60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation. (Also applicable for Geography A3.6; Science E1.1, E1.3, E2.1-3, E2.6-7)</p>	<p><a href="#">Book a presentation HERE</a></p>	In-class. Led by Region staff
<p><b>Topic - Water Cycle and Watershed</b> <b>Video: Shand Dam</b> (9:30m) Details the history and engineering of the Shand Dam and how the dam is helps manage water flow and prevent flooding. (Also applicable for Science E2.2, E2.3, E2.7)</p>	<p>Region of Waterloo. (2020). <a href="#">Shand Dam Video</a></p>	Teacher-led instruction
<p><b>Experiment/Activity: Growing with Groundwater</b> Student inquiry into how the water cycle, groundwater, and the environment can affect plant growth where students create miniature terrariums demonstrating different phases of the water cycle.</p>	<p>Groundwater Foundation. <a href="#">Growing with groundwater activity PDF</a></p>	Teacher-led instruction  Independent Learning
<p><b>Online Activity: Groundwater and Surface Water</b> Interactive activity that uses a set of virtual experiments and check-in learning questions that explores groundwater and well usage. Includes a case study. Students can work through the activities and questions at their own pace. (Also applicable for Science E2.3)</p>	<p>The Concord Consortium. (2022). <a href="#">Groundwater and surface water activity</a></p>	Independent Learning

Resource and description	Source	Applicability
<p><b>Topic - Taking Care of Water</b></p> <p>1. <b>Video: Plastic Pollution</b> (2:20m) Learn about causes of plastic pollution in the Region of Waterloo and ways to reduce water pollution. (Also applicable for Science E2.6)</p> <p>2. <b>Video: Water Ours to Protect</b> (4:47m) How to protect water (quantity and quality) and demonstration of the difficulty of removing pollution from groundwater. (Also applicable for Science E2.6)</p> <p>3. <b>Video: Urban Stormwater and Runoff</b> (2:39m) How water runoff can affect water bodies and how to prevent runoff. (Also applicable for Science E2.6)</p>	<p>1. Region of Waterloo. (2021). <a href="#">Plastic Pollution video</a></p> <p>2. Water Education. (2021). <a href="#">Water Ours to Protect Video</a></p> <p>3. Trout Unlimited Canada. (2018). <a href="#">Urban Stormwater and Runoff Video</a></p>	Teacher-led instruction

### A3.6 describe some practices that individuals and communities have adopted to help make human settlements more sustainable

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b></p> <p>60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation. (Also applicable for Geography A3.5; Science E1.1, E1.3, E2.1-3, E2.6-7)</p>	<p><a href="#">Book a presentation HERE</a></p>	In-class. Led by Region staff
<p><b>Topic - Municipal water and wastewater systems</b></p> <p>1. <b>Video: Where it goes after you flush</b> (4:08m) Overview of what happens to treat water in the Region of Waterloo. (Also applicable for Science E1.3, E2.7)</p> <p>2. <b>Video: Why we test water</b> (8:01m) Overview of why water is tested including a visual demonstration of the water testing process. (Also applicable for Science E1.3, E2.6, E2.7)</p>	<p>1. Region of Waterloo. (2016). <a href="#">Where it goes after you flush Video</a></p> <p>2. Water Education. (2022). <a href="#">Why we test water Video</a></p>	Teacher-led instruction

Resource and description	Source	Applicability
<p><b>Topic - Taking Care of Water</b></p> <p>1. <b>Infographic: Home water conservation tips</b> How to conserve water usage at home.</p> <p>2. <b>Video: What not to flush (wastewater)</b> (3:16m) What to flush and what not to flush into municipal water systems to protect the water supply. (Also applicable for Science E2.6, E2.7)</p>	<p>1. Region of Waterloo. <a href="#">Infographic: Home conservation tips</a></p> <p>2. Water Education. (2021). <a href="#">What not to Flush - Wastewater Video</a></p>	<p>Teacher-led instruction</p>

## Science

### A1.1 use a scientific research process and associated skills to conduct investigations

Resource and description	Source	Applicability
<p><b>Online Activity: Exploring Groundwater Movement</b> Students can work individually or in pairs/small groups to investigate how soil layers affect the movement of water. Students will also investigate the effect of well placement on water levels and how placement impacts well output. Note that several templates are available which prompt investigation into rural vs. urban water movement, comparing permeability of Earth's layers, and types of aquifers.</p>	<p>Activity: The Concord Consortium. (2018). <a href="#">Exploring Groundwater Activity</a></p>	<p>Teacher-led instruction</p> <p>Independent Learning</p>
<p><b>Activity: Resource Management - Protecting Drinking Water</b> Students can work in pairs or small grouping to use information on factors affecting groundwater vulnerability to make decisions on management of a small town's water supply. Students play the role of hydrogeologists, measuring how rainwater will move into the groundwater in several areas of the town. Includes discussion questions to help students demonstrate their thinking. (Also applicable for Science E2.7)</p>	<p>United States Environmental Protection Agency. (2008). <a href="#">Resource Management Activity</a></p>	<p>Teacher-led instruction</p> <p>Independent Learning</p>

## A1.2 use a scientific experimentation process and associated skills to conduct investigations

Resource and description	Source	Applicability
<p><b>Topic - Groundwater aquifers and wells</b>  <b>Experiment: Make Your Own Groundwater Aquifer</b>            Activity steps for students to create their own aquifers and test water filtration.            (Also applicable for Science E2.3)</p>	<p>Groundwater Foundation.  <a href="#">Make your own aquifer experiment</a>            Groundwater Foundation. (2013).  <a href="#">Make your own aquifer video instructions</a></p>	<p>Teacher-led instruction            Independent Learning</p>
<p><b>Experiment/Activity: Water Power</b>            Build a model waterwheel to investigate the connection between water and power and identify dams as a source of hydropower. *Note that this activity has the potential to be adapted for Grade 8 by incorporating elements of the scientific research process in the experiment.            (Also applicable for Science E1.3)</p>	<p>Teach Engineering. (2020).  <a href="#">Water Power Activity</a></p>	<p>Teacher-led instruction            Independent Learning</p>
<p><b>Experiment/Activity: Clean Water Challenge</b>            Students work in groups of 2-4 and utilize scientific methods to gather a water sample from a local water source and filter water. Follow up-up questions to gauge student thinking are included.            (Also applicable for Science E2.6)</p>	<p>Groundwater Foundation.  <a href="#">Clean Water Challenge Activity</a></p>	<p>Teacher-led instruction</p>

## E1.1 assess the social and environmental impact of the scarcity of fresh water, and propose a plan of action to help address fresh water sustainability issues

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b>            60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation.            (Also applicable for Geography A3.5, A3.6; Science E1.3, E2.1-3, E2.6-7)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>

Resource and description	Source	Applicability
<p><b>Online resource: National Geographic – Freshwater</b> Idea set for classroom activities and discussions from National Geographic Education on how to be aware of and conserve water in the classroom and community</p>	<p>National Geographic. <a href="#">Freshwater resource</a></p>	<p>Teacher Resource</p>

### E1.3 assess the impact of scientific discoveries and technological innovations on local and global water systems

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b> 60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation. (Also applicable for Geography A3.5, A3.6; Science E1.1, E2.1-3, E2.6-7)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>
<p><b>Topic - Municipal water and wastewater systems</b> 1. <b>Video: Where it goes after you flush</b> (4:08m) Overview of what happens to treat water in the Region of Waterloo. (Also applicable for Geography A3.6; Science E2.7) 2. <b>Video: Why we test water</b> (8:01m) Overview of why municipalities test water including a visual demonstration of the water testing process. (Also applicable for Geography A3.6; Science E2.6, E2.7)</p>	<p>1. Region of Waterloo. (2016). <a href="#">Where it goes after you flush Video</a> 2. Water Education. (2022). <a href="#">Why we test water Video</a></p>	<p>Teacher-led instruction</p>
<p><b>Experiment/Activity: Water Power</b> Build a model waterwheel to investigate the connection between water and power, and identify dams as a source of hydropower. *Note that this activity has the potential to be adapted for Grade 8 by incorporating elements of the scientific research process in the experiment. (Also applicable for Science A1.2)</p>	<p>Teach Engineering. (2020). <a href="#">Water Power Activity</a></p>	<p>Teacher-led instruction  Independent Learning</p>

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Topic - Groundwater aquifers and wells</b>  <b>Video: Using Flow Model to Understand Groundwater</b> (12:28m)            Visual demonstration of how groundwater moves through wells and aquifers, as well as through different layers of soil materials (permeability), in the Region of Waterloo.            (Also applicable for Science E2.3, E2.4, E2.6, E2.7)</p>	<p>Water Education. (2021).  <a href="#">Using a Flow Model Video</a></p>	<p>Teacher-led instruction</p>

## E2.1 identify the states of water on Earth’s surface, their distribution, relative amounts, and circulation, and the conditions under which they exist

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b>            60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation.            (Also applicable for Geography A3.5-6; Science E1.1, E1.3, E2.2-3, E2.6-7)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>
<p><b>Topic – Groundwater aquifers and wells</b>  <b>1. Infographic: Groundwater aquifer</b>            Diagram of how groundwater moves between wells and to municipal distribution systems.            (Also applicable for Science E2.3, E2.7)  <b>2. Video: Groundwater Movement</b> (5:08m)            How groundwater moves through different Earth layers (permeability).</p>	<p>1. Region of Waterloo.  <a href="#">Groundwater Aquifer Infographic</a>            2. Water Education. (2022).  <a href="#">Groundwater Movement Video</a></p>	<p>Teacher-led instruction</p>
<p><b>Topic - Water Cycle and Watershed</b>  <b>Video: All the Water in the World</b> (6:32m)            Demonstration of the world's water supply and amount of fresh and drinkable water.</p>	<p>Water Education. (2021).  <a href="#">All the water in the world Video</a></p>	<p>Teacher-led instruction</p>

## E2.2 demonstrate an understanding of a watershed, and explain its importance to water management and planning

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b> 60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation. (Also applicable for Geography A3.5, A3.6; Science E1.1, E1.3, E2.1, E2.3, E2.6, E2.7)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>
<p><b>Topic - Water Cycle and Watershed</b> 1. <b>Video: Up on the watershed</b> (5:04m) Demonstration of how a water shed works. (Also applicable for Science E2.4) 2. <b>Video: Create a watershed using a high-tech sandbox</b> (7:03m) Demonstration of watersheds and water formation using a 3D augmented reality map. 3. <b>Video. Grand River Watershed Mapping Activity</b> (7:52m). Follow-along video mapping Grand River watershed. 4. <b>Map: Watersheds in Ontario</b> 5. <b>Video: Shand Dam</b> (9:30m) Details the history and engineering of the Shand Dam and how the dam is helps manage water flow and prevent flooding. (Also applicable for Geography A3.5; Science E2.3, E2.7)</p>	<p>1. Water Education. (2021). <a href="#">Up on the watershed Video</a> 2. Water Education. (2021). <a href="#">Watershed High-Tech Sandbox Video</a> 3. Water Education. (2021). <a href="#">Watershed Mapping Video</a> 4. Conservation Authorities of Ontario. <a href="#">Ontario Watersheds Map</a> 5. Region of Waterloo. (2020). <a href="#">Shand Dam Video</a></p>	<p>Teacher-led instruction</p>
<p><b>Topic - Water cycle, watersheds and stormwater</b> 1. <b>Webpage: Grand River watershed (GRCA)</b> Overview of the Grand River watershed. 2. <b>Webpage: Watersheds, Great Lakes and St. Lawrence River</b> Quick-facts overview of the Great Lakes from Conservation Ontario. 3. <b>Video: Explore watersheds</b> (0:45m) Short video overviewing the parts of and movement of water through a watershed.</p>	<p>1. Grand River Conservation Authority. <a href="#">Grand River Watershed</a> 2. Conservation Ontario. (2016). <a href="#">Watersheds and Great Lakes</a> 3. Project WET Foundation. (2012). <a href="#">Explore Watersheds Video</a></p>	<p>Teaching Resource</p>

### E2.3 explain how human activity and natural phenomena cause changes in the water table

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b> 60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation. (Also applicable for Geography A3.5-6; Science E1.1, E1.3, E2.1-2, E2.6,-7)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>
<p><b>Topic - Groundwater aquifers and wells</b> 1. <b>Infographic: Groundwater aquifer</b> Diagram of how groundwater moves between wells and to municipal distribution systems. (Also applicable for Science E2.1, E2.7) 2. <b>Video: Using Flow Model to Understand Groundwater</b> (12:28m) Visual demonstration of how groundwater moves through wells and aquifers, as well as through different layers of soil materials (permeability), in the Region of Waterloo. (Also applicable for Science E1.3, E2.4, E2.6, E2.7) 3. <b>Video: All about groundwater wells</b> (11:16m) Walkthrough the purpose of a well and how they work. (Also applicable for Science E2.7)</p>	<p>1. Region of Waterloo. <a href="#">Groundwater Aquifer Infographic</a> 2. Water Education. (2021). <a href="#">Using a Flow Model Video</a> 3. Water Education. (2021). <a href="#">All about groundwater wells Video</a></p>	<p>Teacher-led instruction</p>
<p><b>Online Activity: Groundwater and Surface Water</b> Interactive activity which uses a set of virtual experiments and check-in learning questions that explores groundwater and well usage. A case study is also presented. Students can work through the activities and questions at their own pace. (Also applicable for Geography A3.5)</p>	<p>The Concord Consortium. (2022). <a href="#">Groundwater and Surface Water Activity</a></p>	<p>Independent Learning</p>
<p><b>Topic - Water Cycle and Watershed</b> <b>Video: Shand Dam</b> (9:30m) Details the history and engineering of the Shand Dam and how the dam is helps manage water flow and prevent flooding. (Also applicable for Geography A3.5; Science E2.2, E2.7)</p>	<p>Region of Waterloo. (2020). <a href="#">Shand Dam Video</a></p>	<p>Teacher-led instruction</p>



Resource and description	Source	Applicability
<p><b>Topic - Groundwater aquifers and wells</b>  <b>Experiment: Make Your Own Groundwater Aquifer</b>            Activity steps for students to create their own aquifers and test water filtration.            (Also applicable for Science A1.2)</p>	<p>Groundwater Foundation.  <a href="#">Make your own aquifer Experiment</a>            Groundwater Foundation. (2013).  <a href="#">Make your own aquifer video instructions</a></p>	<p>Teacher-led instruction            Independent Learning</p>

### E2.4 identify factors, including climate change, that have contributed to the melting of glaciers and polar ice-caps, and describe the effects of this phenomenon on local and global water systems

Resource and description	Source	Applicability
<p><b>Topic - Groundwater aquifers and wells</b>  <b>Video: Using Flow Model to Understand Groundwater</b> (12:28m)            Visual demonstration of how groundwater moves through wells and aquifers, as well as through different layers of soil materials (permeability), in the Region of Waterloo.            (Also applicable for Science E1.3, E2.3, E2.6, E2.7)</p>	<p>Water Education. (2021).  <a href="#">Using a Flow Model Video</a></p>	<p>Teacher-led instruction</p>
<p><b>Topic - Water Cycle and Watershed</b>  <b>1. Video. Up on the watershed</b> (5:04m)            Demonstration of how a water shed works.            (Also applicable for Science E2.2)</p>	<p>Water Education. (2021).  <a href="#">Up on the watershed Video</a></p>	<p>Teacher-led instruction</p>

### E2.6 describe various indicators of water quality, and explain the impact of human activity on those indicators

Resource and description	Source	Applicability
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b>            60-90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation.            (Also applicable for Geography A3.5-6; Science E1.1, E1.3, E2.1-3, E2.7)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Topic Municipal water and wastewater systems</b></p> <p>1. <b>Video: Why we test water</b> (8:01m) Overview of why municipalities test water including a visual demonstration of the water testing process. (Also applicable for Geography A3.6; Science E1.3, E2.7)</p> <p>2. <b>Video: Water Filtration Experiment</b> (2:13m) Short video demonstrating a water filtration experiment.</p>	<p>1. Water Education. (2022). <a href="#">Why we test water Video</a></p> <p>2. Home Science Tools. (2012). <a href="#">Water filtration experiment video</a></p>	Teacher-led instruction
<p><b>Topic - Groundwater aquifers and wells</b></p> <p><b>Video: Using Flow Model to Understand Groundwater</b> (12:28m) Visual demonstration of how groundwater moves through wells and aquifers, as well as through different layers of soil materials (permeability), in the Region of Waterloo. (Also applicable for Science E1.3, E2.3, E2.4, E2.7)</p>	<p>Water Education. (2021). <a href="#">Using a Flow Model Video</a></p>	Teacher-led instruction
<p><b>Topic - Taking Care of Water</b></p> <p>1. <b>Video: Plastic Pollution</b> (2:20m) Learn about causes of plastic pollution in the Region of Waterloo and ways to reduce water pollution. (Also applicable for Geography A3.5)</p> <p>2. <b>Video: Water Ours to Protect</b> (4:47m) How to protect water (quantity and quality). Includes a hands-on demonstration of the difficulty of removing pollution from groundwater. (Also applicable for Geography A3.5)</p> <p>3. <b>Video: Urban stormwater and runoff</b> (2:39m) How water runoff can affect water bodies and how to prevent runoff. (Also applicable for Geography A3.5)</p> <p>4. <b>Video: Shovel the snow</b> (2:33m) How to protect water quality and stormwater runoff by limiting salting during winter.</p> <p>5. <b>Video: What not to flush (wastewater)</b> (3:16m) What to flush and what not to flush into municipal water systems to protect the water supply. (Also applicable for Geography A3.6; Science E2.7)</p>	<p>1. Region of Waterloo. (2021). <a href="#">Plastic Pollution video</a></p> <p>2. Water Education. (2021). <a href="#">Water Ours to Protect Video</a></p> <p>3. Trout Unlimited Canada. (2018). <a href="#">Urban Stormwater and Runoff Video</a></p> <p>4. Region of Waterloo. (2022). <a href="#">Shovel the snow Video</a></p> <p>5. Water Education. (2021). <a href="#">What not to Flush - Wastewater Video</a></p>	<p>Teacher-led instruction</p> <p>Independent Learning</p>

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Experiment/Activity: Clean Water Challenge</b>            Students work in groups of 2-4 and utilize scientific methods to gather a water sample from a local water source and filter water. Follow up-up questions to gauge student thinking are included.            (Also applicable for Science A1.2)</p>	<p>Groundwater Foundation.  <a href="#">Clean Water Challenge Activity</a></p>	<p>Teacher-led instruction</p>
<p><b>Online Game/Activity: Watershed Detective</b>            Students analyze virtual water pollution samples to find how causes of water pollution and prevention.</p>	<p>Leara. <a href="#">Watershed Detective Activity</a></p>	<p>Independent Learning</p>

### E2.7 explain how municipalities process water and manage water usage

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Region of Waterloo Staff-Led Grade 8 Presentation</b>            60 to 90 minute presentation led by a knowledgeable Region of Waterloo staff member. Topics include information on groundwater aquifer and municipal drinking water systems (collection, treatment, distribution), water usage and conservation.            (Also applicable for Geography A3.5-6; Science E1.1, E1.3, E2.1-3, E2.6)</p>	<p><a href="#">Book a presentation HERE</a></p>	<p>In-class. Led by Region staff</p>

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Topic - Municipal water and wastewater systems</b></p> <p>1. <b>Infographic: Journey of Water</b> How water moves from the Grand River and through testing to our homes in the Region of Waterloo.</p> <p>2. <b>Video: Journey of Water to Your Tap</b> (4:11m) How groundwater moves through wells to our homes.</p> <p>3. <b>Video: Treating Surface Water</b> (5:26m) How the Region of Waterloo treats surface water to prepare it for drinking in the Region of Waterloo.</p> <p>4. <b>Video: Where it goes after you flush</b> (4:08m) Overview of what happens to treat water in the Region of Waterloo. (Also applicable for Geography A3.6; Science E1.3)</p> <p>5. <b>Video: Why we test water</b> (8:01m) Overview of why municipalities test water including a visual demonstration of the water testing process. (Also applicable for Geography A3.6; Science E1.3, E2.6)</p>	<p>1. Region of Waterloo. <a href="#">Journey of Water Infographic</a></p> <p>2. Water Education. (2022). <a href="#">Journey of water to your tap Video</a></p> <p>3. Water Education. (2022). <a href="#">Treating surface water video</a></p> <p>4. Region of Waterloo. (2016). <a href="#">Where it goes after you flush Video</a></p> <p>5. Water Education. (2022). <a href="#">Why we test water Video</a></p>	Teacher-led instruction
<p><b>Activity: Resource Management - Protecting Drinking Water</b> Students can work in pairs or small grouping to use information on factors affecting groundwater vulnerability to make decisions on management of a small town's water supply. Students play the role of hydrogeologists, measuring how rainwater will move into the groundwater in several areas of the town. Discussion questions to help students demonstrate their thinking are provided in this resource. (Also applicable for Science A1.1)</p>	<p>United States Environmental Protection Agency. (2008). <a href="#">Resource Management Activity</a></p>	Teacher-led instruction  Independent Learning

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Topic – Groundwater aquifers and wells</b></p> <p>1. <b>Infographic: Groundwater aquifer</b> Diagram of how groundwater moves between wells and to municipal distribution systems. (Also applicable for Science E2.1, E2.3)</p> <p>2. <b>Video: Using Flow Model to Understand Groundwater</b> (12:28m) Visual demonstration of how groundwater moves through wells and aquifers, as well as through different layers of soil materials (permeability), in the Region of Waterloo. (Also applicable for Science E1.3, E2.3, E2.4, E2.6)</p> <p>3. <b>Video: All about groundwater wells</b> (11:16m) Walkthrough the purpose of a well and how they work. (Also applicable for Science E2.3)</p> <p>4. <b>Video: Groundwater's Journey to Tap</b> (0:58m) How groundwater moves through aquifers and wells to our taps.</p>	<p>1. Region of Waterloo. <a href="#">Groundwater aquifer Infographic</a></p> <p>2. Water Education. (2021). <a href="#">Using a Flow Model Video</a></p> <p>3. Water Education. (2021). <a href="#">All about groundwater wells Video</a></p> <p>4. Region of Waterloo. (2022). <a href="#">Groundwater journey to tap Video</a></p>	Teacher-led instruction
<p><b>Topic: Water cycle and watershed</b></p> <p><b>Video: Shand Dam</b> (9:30m) Details the history and engineering of the Shand Dam and how the dam is helps manage water flow and prevent flooding. (Also applicable for Geography A3.5; Science E2.2, E2.3)</p>	<p>Region of Waterloo. (2020). <a href="#">Shand Dam Video</a></p>	Independent Learning
<p><b>Topic – Taking care of water</b></p> <p><b>Video: What not to flush (wastewater)</b> (3:16m) Details the history and engineering of the Shand Dam and how the dam is helps manage water flow and prevent flooding. (Also applicable for Geography A3.6; Science E2.6)</p>	<p>Water Education. (2021). <a href="#">What not to Flush - Wastewater Video</a></p>	Teacher-led instruction
<p><b>Online Quiz: Test Your Water Knowledge</b> (~10 min) Students can check their knowledge of the Region of Waterloo's water distribution system.</p>	<p>Region of Waterloo. <a href="#">Test your water knowledge quiz</a></p>	Teaching Resource  Independent Learning

<b>Resource and description</b>	<b>Source</b>	<b>Applicability</b>
<p><b>Video quiz: Water quality quiz - 2 parts</b> (Part 1 6:30m, Part 2 13:09m) Video quiz on the Region of Waterloo's water system including information on water quality, treatment, source, and journey to our taps. Also discussed is how to conserve and protect drinking water.</p>	<p>GroundwaterWR. (2011). <a href="#">Water video quiz PART 1</a> <a href="#">Water video quiz PART 2</a></p>	<p>Teaching Resource</p>
<p><b>Topic - Municipal water and wastewater systems</b> 1. <b>Video: How Do Water Towers Work</b> (4:30m) Overview of how water lines and towers store and distribute water to homes 2. <b>Video: How Water Towers Work</b> (10:59m) Brief history and explanation of the purpose and function of water towers and municipal water systems. 3. <b>Video: How Sewers Work</b> (12:27m) Overview of wastewater systems and the transport of human waste through sewer systems.</p>	<p>1. Concerning Reality. (2018). <a href="#">How do water towers work Video</a> 2. Practical Engineering. (2018). <a href="#">How water towers work (Video option 2)</a> 3. Practical Engineering. (2021). <a href="#">How sewers work Video</a></p>	<p>Teaching Resource</p>
<p><b>Topic - Groundwater wells</b> 1. <b>Webpage: Water Sources - Groundwater.</b> Government of Canada overview of groundwater, aquifers, and groundwater usage in Canada. 2. <b>Webpage: Understanding Groundwater</b> Technical information on groundwater usage and private water supplies (rural community focus). 3. <b>Resource Bank: Groundwater Foundation Resources.</b> Lesson plan, hands-on activities, guides and more on groundwater usage and protection. 4. <b>Video: How Do Wells Work?</b> (7:00m) How wells can provide reliable and safe drinking water.</p>	<p>1. Environment and Climate Change Canada. (2013). <a href="#">Water sources - Groundwater</a> 2. Ontario Ministry of Agriculture, Food, and Rural Affairs. (2021). <a href="#">Understanding groundwater</a> 3. Groundwater Foundation. <a href="#">Groundwater resource bank</a> 4. Concerning Reality. (2020). <a href="#">How do wells work Video</a></p>	<p>Teaching Resource</p>

## Additional Resources

### Career Connections

Resource and description	Source	Applicability
<p><b>1. Webpage: Work for Water</b> Learn about a variety of careers related to water usage, protection and conservation from the American Water Works Association.</p> <p><b>2. Video Series: Career Corner</b> Learn about a variety of careers in water from an online video panel hosted during the Children's Groundwater Festival.</p>	<p>1. Work for Water. (2023). <a href="https://www.workforwater.org/">https://www.workforwater.org/</a></p> <p>2. Water Education. (2021). <a href="#">Career corner video series</a></p>	<p>Teacher-led instruction</p> <p>Independent Learning</p>

### Activity Kits

Resource and description	Source	Applicability
<p><b>Equipment/Activity Kit: Awesome Aquifer</b> (\$45/kit) The Awesome Aquifer kit contains materials and instructions required for students to build an aquifer model to learn about groundwater movement.</p>	<p>Groundwater Foundation. (2022). <a href="#">Information on awesome aquifer kits</a></p>	<p>Activity Kit</p>

### Water Education Support Resources

Resource and description	Source	Applicability
<p><b>Multi-language content</b> Binogi Canada offers videos corresponding to Grade 8 curriculum expectations (Science E2.1, E2.2, E2.3, E2.4, E2.6, E2.7; Geography E1.1) in a variety of languages including English, Arabic, Dari, Somali, Spanish + more. <b>*Subscription required for most content - Check if your board has access</b></p>	<p>Binogi Canada. <a href="https://app.binogi.ca//watersheds?subject=64720">https://app.binogi.ca//watersheds?subject=64720</a></p>	<p>ELL Support</p>