

# The Newtown Creek Nature Walk Scavenger Hunt

Teacher's Answer Key

Name:

Class:

School:



# Map of Newtown Creek Nature Walk

1



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- 1 Boulders at Provost Street and Paidge Avenue
- 2 Trash "Barrels"
- 3 Entry Gates and Fence
- 4 Fragrance Garden and Bridge
- 5 The "Vessel"
- 6 The Turret
- 7 Seven Stone Circles
- 8 Granite Steps
- 9 Watershed Bollard
- 10 Whale Creek
- 11 Native Plants
- 12 Whale Creek Vessels
- 13 Whale Creek Turret
- 14 The Monitor Table
- 15 Rain Garden
- 16 Tree Fossils
- 17 Navigational Star Seats
- 18 Circular Shelter and Metamorphic Rock

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## Welcome to the Newtown Creek Nature Walk!

You are about to embark on a journey through time. Use all of your senses as you explore art, history, geography, and science. Discover how our lives and the lives of the people that came before us are connected.

When the Native Americans lived here and later when the Dutch and English colonists arrived, the land was green. It was colored by the different plants growing in the upland forests and meadows and the marshes hugging the creek. Today, people who work and live in "Greenpoint" have helped to create this Nature Walk, a green space filled with native trees, shrubs, grasses, and flowers. Now you can experience the beauty of the landscape and understand the importance of Newtown Creek.



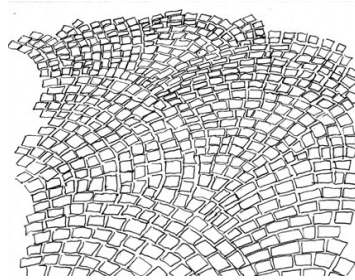
*Use this scavenger hunt to discover the many stories Newtown Creek holds. Just check off the  symbol when you have found what you are looking for. Good luck!*

The scavenger hunt begins at the Paidge Avenue entrance to the Nature Walk (find #1 on the map on page 2).

**Find** the steel pipe fence leading to the stairs and ramp. It looks like moving water.

Throughout the Nature Walk you will notice shapes and patterns that resemble intricate details of the natural world.

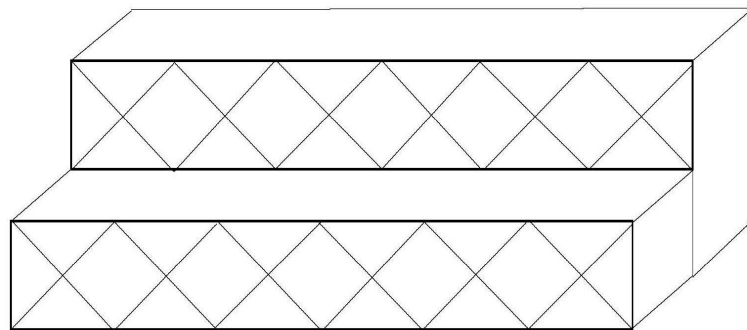
For example, **find** bricks on the road that are arranged to look like fish scales.



Outside of the entrance gate to the Nature Walk.

**Find** another shape or pattern you recognize. Draw it here: (Answers vary.)

Example:



What does this shape or pattern remind you of? (Answers vary.)

Ex: A fishing net

**Find a metal bridge that you can walk across.**

*Stand in the middle and look down.*

Beneath this bridge is a Fragrance Garden. How many different types of plants can you see or smell? *(Answers vary.)*

**FUN  
FACT!**

Although divided by waterways, New York City's five boroughs are connected thanks to the many bridges that help transport people and goods. The earliest bridges were made of wood and stone; today they are made of iron and steel. The City's oldest surviving bridge is the High Bridge, connecting Manhattan and the Bronx. It carried the Old Croton Aqueduct, the first system to bring drinking water from upstate reservoirs.

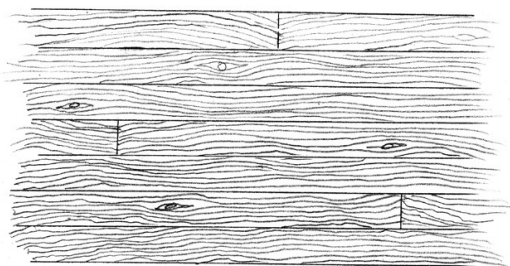
**Find** two different materials that were used to make the bridge you are standing on. What are they?

1. Concrete

2. Metal

**Cross the bridge.**

**Find** walls that have a pattern like this:



What material are they made to look like?

Wood

Where does this material come from?

Trees

## Find openings in the wall to look through.

You are looking at the Newtown Creek Wastewater Resource Recovery Facility (WRRF). Describe what you see through the “portholes”.

Pipes, tanks, and other wastewater treatment infrastructure.

Specific smells may include chlorine from nearby disinfection tanks.

### FUN FACT!

The pipes, tanks, machines and people you see through the portholes are working to clean the 310 million gallons of wastewater that enters the Newtown Creek WRRF each day! This wastewater comes from more than 1.5 million people living, working, and visiting Greenpoint and other parts of Brooklyn, Queens, and even Manhattan.

*As you continue along the Nature Walk, try to spot other features of the Newtown Creek facility.*

## Find walls that are curved. What does this space remind you of?

A boat or vessel

## Continue walking until you **find** a big dark circle on the ground.

*Stand on it and look back to where you just were.*

Name one of the famous buildings in the distance. (Answers vary.)

Ex: Empire State Building or Hudson Yards

What borough is it in? Manhattan

### FUN FACT!

New York City's first skyscrapers were not buildings but tall-masted ships that filled the harbor. The grand shipyards in Greenpoint turned out a variety of ships such as the *Great Republic*, the largest wooden vessel of the day, and the *U.S.S. Monitor*. Ordered by President Lincoln, the *Monitor* was an iron-clad warship built in 1862 to fight in the Civil War!

## Continue your walk down the path...

### Find seven stone circles that you can sit on.

Near the steps to Newtown Creek.

Each stone has words carved into it. These words are in the Munsee language used by the Lenape, the Native American people who farmed, hunted, and fished in this area. When you stand facing the word to read it, your body will be facing the direction of the place that the word describes.

**Find** the word "MESPATHES." It means "great brook with tide," as in Newtown Creek.

**Find** "KESHAECHQUEREN." It means "grassy expanse tide," as in Greenpoint.

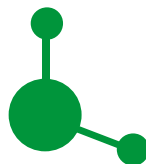
Look at the sign beneath the tree. **Find** another interesting term and define it: *(Answers vary.)*

Ex: "O JIK HA DA GE GA." It means "salt water" as in Atlantic Ocean.

### FUN FACT!

For thousands of years before the Dutch arrived, the Lenape and Algonquin tribes along with other Native Americans lived here as farmers and hunters. During those times, Greenpoint contained pristine forests and lush meadows that provided the inhabitants with grapes and other fruits and nuts. The salt marshes and rivers also teemed with fish, crabs, oysters, and clams.

### Find an object that looks like this:



Located on the handrail to the granite steps into Newtown Creek.

This is a model of what a single water molecule looks like. You have probably heard people speak of water as "h-2-o," which is actually written as H<sub>2</sub>O. The H<sub>2</sub> stands for two Hydrogen atoms and the O stands for one Oxygen atom. All three atoms combined form one water molecule.

## Find a flowing body of water.

Draw an arrow below showing the direction of its flow:



Find out the name of the borough you are standing in.

Brooklyn

Find out the name of the borough across the water.

Queens

What else do you see? Find three things and add them to the drawing above.

### FUN FACT!

This waterbody is Newtown Creek. Named by the British, Newtown Creek is an estuary, which means its waters are brackish, a mixture of fresh and salt water. Newtown Creek is also a tidal estuary. Tides happen because the moon and sun pull the ocean's water causing a rise and fall along our shores. Due to the high and low tides of Newtown Creek, the water's current changes direction four times a day!



**Find the nine stone steps and observe Newtown Creek from one of the top steps.**

Spent a minute looking at the water. How many steps do you see above the water? Why is it like this? (Hint: See Fun Fact on page 8.) **Incoming and outgoing tides.**

Close your eyes and listen. What can you hear?

Boats, cars, waves, birds, or machinery

**Find** four activities on this shore, across the water, and on the creek that might affect the water quality in Newtown Creek.

**1. Boating and fishing**

**2. Heavy machinery and industries, ex. scrap metal recycling site**

**3. Littering**

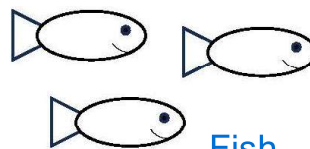
**4. Construction and development**

**Find** four living things in this area.

Sketch two of the living things that you see: (Answers vary.)

Examples:

Mussels



Fish

**FUN  
FACT!**

As you see and hear, Newtown Creek is a very busy place! Even in the 1800s, Newtown Creek was bustling with activity. For example, glass, porcelain, and refined oil were produced here as were the renowned ships the *U.S.S Republic* and *Monitor*. The huge iron pipe (called an aqueduct) that carried drinking water from upstate reservoirs across the High Bridge to Manhattan was also made in Greenpoint.

**Find four words that you see written on a step near you.**

Are any of these words familiar to you? (Answers vary.)

1. Amphibia

2. Mammalia

3. Cretaceous

4. Coniferales

Etched on the steps are the geologic time periods, also known as epochs, that depict the history of the Earth. The steps, and the words on them, represent the origins of life in the water and the evolution of life onto land.

**Find** the PLEISTOCENE Epoch. Found on step 1.

**Find** the nearby PLIOCENE Epoch. Found on step 2.

**FUN  
FACT!**

Just like a timeline, the earliest period of geologic time (the Precambrian) starts at the bottom step in the water and progresses through time up the steps to the most recent period (the Pleistocene) at the top step. The steps also show the names of the significant group of living things that thrived in that particular time period.

**Find** the word "MAMMALIA," meaning mammals, which includes humans. Found on step 1.

**Find** the word "AVES," meaning birds. Found on step 3.

**FUN  
FACT!**

The steps also feature the names of wildlife that could live in Newtown Creek. For example, Atlantic sturgeon, an endangered fish, has been making a comeback in the Hudson River. Perhaps one day it will flourish in Newtown Creek too.

*Continue walking until you see a circular seating area.*

**Find a map that looks like this. It is hidden so look carefully.**



Found on the bollard between two willow trees.

This is a map of what Newtown Creek looked like when the Lenape inhabited the area.

Use these clues to help you label the map above:

**Find** the large section of rough rock along the edge. This is the East River.

**Find** a small brass circle embedded in the map. This marks where you are.

**Find** the compass rose with the North, East, South and West directions.

On the table map, **find** east and with your finger trace a small stream. Move towards the East River. From your tracing feel the gentle sloping of the Creek's bed leading to the East River.

Does your finger move up or down when you do this?

up     down

What do you think will happen when a drop of rain falls on the stream?

It will flow down into deeper tributaries that lead to the East River.

**FUN FACT!**

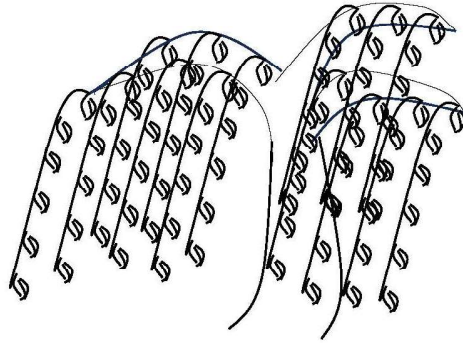
This map also represents the watershed for Newtown Creek. A watershed is all of the land that drains the rain and melting snow into a common waterbody (in this case, Newtown Creek). When it rains or snows, the precipitation falls on the land, soaks into the soil and flows downhill into creeks, streams, and rivers.

## Continue on the path to walk along Whale Creek.

**Find** two plants you have never seen before.

Sketch and identify them here: (Answers vary.)

Examples:



Willow tree



Pine cone

### FUN FACT!

Many of the plants along the Nature Walk are native to New York City. This means that these kinds of plants were here long before humans grew anything in the soil. These plants provide a habitat for wildlife along the creek. Many of these plants were used by the Lenape and later the Europeans to make tools and medicines. Sugar maple trees, for example, offered leaves to cover fish for cooking in pits, hard wood to carve bowls, spoons, and canoe paddles, and sap that was boiled down to make maple syrup!

**Find** one of several large rocks, or boulders. (Answers vary.)


What is the texture of the rock? Very rough and bumpy

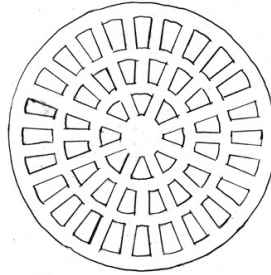
What colors can you find in the rock? Red, gray and white

### FUN FACT!

All of the boulders along this section of the Nature Walk were salvaged from New York City construction sites. Some are from the water filtration facility built in the Bronx. Others are from City Water Tunnel #3, when it was first bored under the streets of Manhattan. Similar rocks can be found throughout the five boroughs. They were originally deposited in New York City during the last Ice Age, around 18,000 years ago.

## Continue walking along Whale Creek.

 **Find** an object that looks like this on the ground:



Located near the green Wet Weather Discharge sign.

This is a storm drain cover. *Listen close or look in. What do you notice?*

### FUN FACT!

Storm drains, also called catch basins, collect rain and melting snow from around the city. They join underground sewer pipes that carry the stormwater and wastewater to wastewater resource recovery facilities. Most often, storm drains are shaped like a rectangle and are located at street corners.

 **Find** a trash can. **Located in different areas.**

What does it look like? A barrel

### FUN FACT!

In the 1800s, Greenpoint was famous for barrel making, called cooperage. Coopers were the people who made wooden barrels used for storing food, liquids, and supplies.

What do you think happens to litter on the ground that is not properly disposed of in a trash can?

It is washed away by precipitation or wind into the water

or surrounding nature.

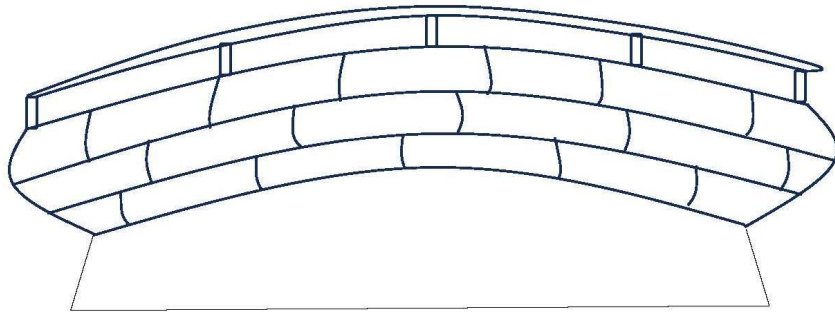
### FUN FACT!

It is very important to dispose of your trash properly. If you litter, your trash sadly can end up in places like Newtown Creek. Sometimes you can see DEP skimmer boats collecting this floating garbage from our waterways. It is then brought to a wastewater resource recovery facility to be disposed of. See if you can spot the *Jamaica Bay* or the *Shearwater* along Whale Creek.

## Continue walking until you find the bridges that lead over Whale Creek.

What are these bridges shaped like? What materials are they made from? **Boats. They are made from metal and wood.**

Draw a picture of the bridges here:



These structures, and others like them along the Nature Walk, represent the vessels commonly found on our waterways.

*As you walk through the three vessels, look for different words etched on the sides. Each vessel symbolizes a portion of history throughout time!*

**Find** the names of elements on the periodic table. **(Answers vary.)**

What elements do you think are necessary for life on Earth?

**Ex: Nitrogen, Oxygen and Carbon**

**FUN  
FACT!**

Many of these elements can be combined to create new chemical compounds. During the wastewater treatment process at the Newtown Creek WRRF, CH<sub>4</sub> (methane gas) is recovered as we digest and treat your waste! This gas can be used at the Newtown Creek WRRF or purified and distributed to the community!

**Find the name of an aquatic animal, etched on the second vessel, that needs clean water to survive.** (Answers vary.) Ex: Seals, beavers, and squid

**FUN FACT!**

Many of the species listed here can be impacted by changes in water quality, including trout and oysters. Both of these animals require clean, oxygen-rich water to survive. Oysters actually help keep the water clean too! As filter feeders, oysters remove unwanted nutrients from the water, maintaining healthy and clean waterways. In fact, a mature oyster can filter 75 gallons of water each day!

**Find** words from each of the three vessels that you think are interesting. (Answers vary.)

Vessel 1

1. Palladium
2. Radium
3. Magma

Vessel 2

1. Desire
2. Elephants
3. Planets

Vessel 3

1. Inlet
2. Chocolates
3. Gulf

Look at the third vessel to **find** three words that deal with the wastewater treatment process. (Answers vary.)

1. Filtration      2. Aeration      3. Sludge

Other examples: decay, engines, energy, gas, sewer, pollution, generators, disinfection, coagulation, recycle, effluent, fertilizer, bacteria, and digestion.

## Continue walking along Whale Creek, the body of water you are standing above.

Take this time to enjoy your surroundings. Write a short story or poem using the words you chose from the three vessels.

In the depths where magma flows

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Silent rivers, secrets untold

---

Above, an elephant roams the plains

---

Beauty etched in every grain

---

Beyond the sky where planets spin

---

Worlds of wonder, where dreams begin

---

 **Find** something that may be polluting the waterway.

How do you think litter and other pollutants can be harmful to our waterways?

They can introduce toxic materials to ecosystems, harming plants and animals. Litter can also be mistaken by animals for food.

What can you do to help protect our local waterways?

Put trash in the bin, conserve water, and use plants and rain barrels to help collect stormwater.

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## Continue walking across the bridge over Whale Creek.

**Find** a shelter that looks like a boat. Explore the *U.S.S. Monitor* plan etched on the table below it. **The covered area to the left when exiting Whale Creek.**

When was the *U.S.S. Monitor* built here in Brooklyn? (Hint: you can also look at the Fun Fact on page 6.)

1862

**Find** the bow of the ship. Is it the front or back of the ship?

front       back

What is the length of the *U.S.S. Monitor*?

179 feet

*Compare this vessel to other boats that you can see along Whale Creek.*

**Find** a sloped path where water might flow during a rainstorm. **The path that leads into the rain garden.**

*Think about why the path might have been designed this way.*

**To direct water into planted areas and away from the creek.**

How do the surrounding plants decrease the amount of water that flows over the ground during a storm?

**The plants help absorb stormwater.**

This sloped area was designed as a rain garden.

### FUN FACT!

Rain gardens are planted areas that collect and absorb stormwater before it can enter the sewer system. This helps reduce the amount of combined sewer overflows that can pollute our local waterways.

What other benefits do you think rain gardens have?

**Provide habitat for local wildlife, reduce air pollution,**

**decrease street flooding, and beautify neighborhoods.**


**Find the five large, fossilized tree stumps.**

How old are these pieces of ecological and geological history?


385 million years old


**Find** another type of fossil nearby. (Hint: Look under your feet!)

Brachiopods


**FUN FACT!**

Trees that become fossilized are referred to as petrified wood. This occurs when trees are buried under a lot of sediment without any oxygen! The five fossilized trees you see have gone through this process — they are 385 million years old! They were discovered during reconstruction of the Gilboa Dam in Schoharie, New York, where some of NYC's fresh drinking water comes from.


**Find** one of the 12 circular seats with the names of stars on them. Write down the name of two of the stars you find on that seat.

(Answers vary.) Ex: Schedar and Alpheratz


**FUN FACT!**

Stars are made up of a gas called hydrogen. The inside, or core, of a star is very hot and under a lot of pressure. As the pressure increases, the hydrogen gas turns to helium and causes the star to shine. The Sun is the closest star to Earth and provides light and heat.


**Find** the large circular shelter. Follow the footsteps to the water fountain in the center.

This fountain is made out of a metamorphic rock called Gneiss.

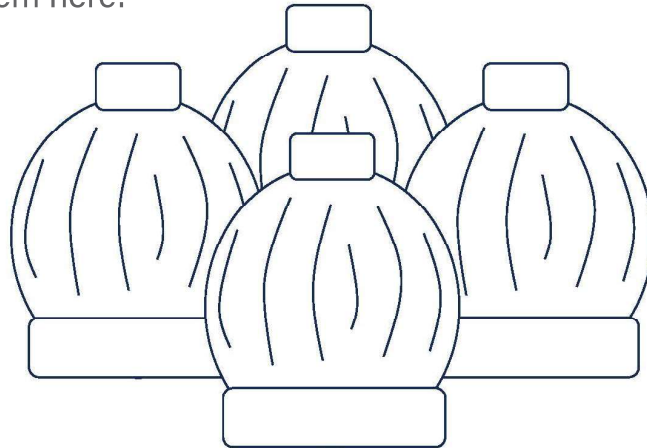

**FUN FACT!**

There are three major types of rocks: metamorphic, sedimentary, and igneous. Gneiss is a type of metamorphic rock that can be found in North America and comes from granite, an igneous rock, when a lot of pressure and heat is added! Minerals in many metamorphic rocks can actually be foliated, meaning that the minerals are formed in layers due to the pressure they undertook. Do you notice these patterns in this Gneiss rock?

**Look around you to find the Newtown Creek WRRF.**

**Find** several large, egg-shaped, metal structures.

Draw them here:



These tanks are part of the Newtown Creek Wastewater Resource Recovery Facility. They function like your stomach.

What does your stomach do?

It digests food!

**FUN  
FACT!**

These tanks, called Digester Eggs, each hold three million gallons of sludge, the solid material removed from wastewater (such as poop, food, and toilet paper). Like your stomach, the digesters get fed a few times a day and are warmed to body temperature (98.6°F). Microscopic bacteria eat and break down the beneficial sludge. After a few weeks, we recover renewable energy and soil from the treated sludge.

Why does NYC need places like the Newtown Creek WRRF?

To properly treat the millions of gallons of wastewater NYC produces every day, and to protect local waterways.

How is this nature walk valuable to the community?

Allows the Greenpoint community to access Newtown Creek and creates safe outdoor space in an industrial area.

## Congratulations on completing your Newtown Creek Nature Walk Scavenger Hunt!

We hope you will continue learning about NYC's water and how we can all work together to protect it.

For more information about New York City's water supply and wastewater treatment systems:

- Visit the New York City Department of Environmental Protection's website at [nyc.gov/dep](https://nyc.gov/dep), or
- Contact [educationoffice@dep.nyc.gov](mailto:educationoffice@dep.nyc.gov)

