Freshwater Conservation Canada

Yellow Fish Road™ Program Guide

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Freshwater Conservation Canada

6020 2nd Street SE #B8, Calgary, AB T2H 2L8

1.0 Introduction

1.1 What is Yellow Fish Road?

Freshwater Conservation Canada is Canada's leading freshwater conservation and education organization previously known as Trout Unlimited Canada. Our mission is to conserve, protect, and restore Canada's freshwater ecosystems, and their coldwater resources, for current and future generations.

The Yellow Fish Road (YFR) program is Canada's premier water education program and aims to reduce water pollution. Since 1991, this fun and exciting, curriculum-linked and action-oriented program gets youth participants involved in their community while making a difference to the water they need and use every day. The Yellow Fish Road program offers first-hand experiences that help participants understand their connection to water, and how storm drains often directs water to their local water bodies without purification or treatment.

YFR educates the public about the impact of pollution entering our storm drains and how storm water pollution can harm fish, wildlife and reduce water quality for human use. Participants mark local storm drains with yellow fish symbols and distribute educational door hangers to homes in the area. These symbols and materials help to raise awareness of storm water pollution and serve as a reminder that *only rain should go down the drain*. This program generally takes place from early spring until late fall and is ideal for Grades 1-9. See page 9 for the curriculum links.

In celebration of the 25th Anniversary of Yellow Fish Road, we have launched the new self-delivery program. This new model gives educators the ability to deliver the program at their own time and pace in a convenient and affordable package.

1.2 What's in the new YFR model?

- Easy to use Teacher's Guide
- Yellow Fish Road introductory presentation video
- How to video for the storm water painting project

- Storm drain painting supplies for 24 participants

1.3 Our Specific Goals

- Prevent and reduce stormwater pollution in urban settings
- Protect our rivers, lakes, and streams and their ecosystems
- Inspire youth to take stewardship action in their communities
- Inform citizens of the need for and importance of water protection

This unique program builds on a culture of caring for our most precious resource, water.

1.4 What is a Storm Drain?

Storm drains or catch basins are the grates found along the roadside. They drain runoff water from our yards, driveways, sidewalks and roads, into a network of underground pipes, which lead to an outfall into the local water body. Without storm drains, excess runoff from impervious (hard) surfaces would flood our homes and streets, damaging our communities. In most cities, storm drain systems are not connected to a treatment plant; however, some cities have combined storm drain and sewer systems, which treat storm water and wastewater.

1.5 What is Storm Water Pollution?

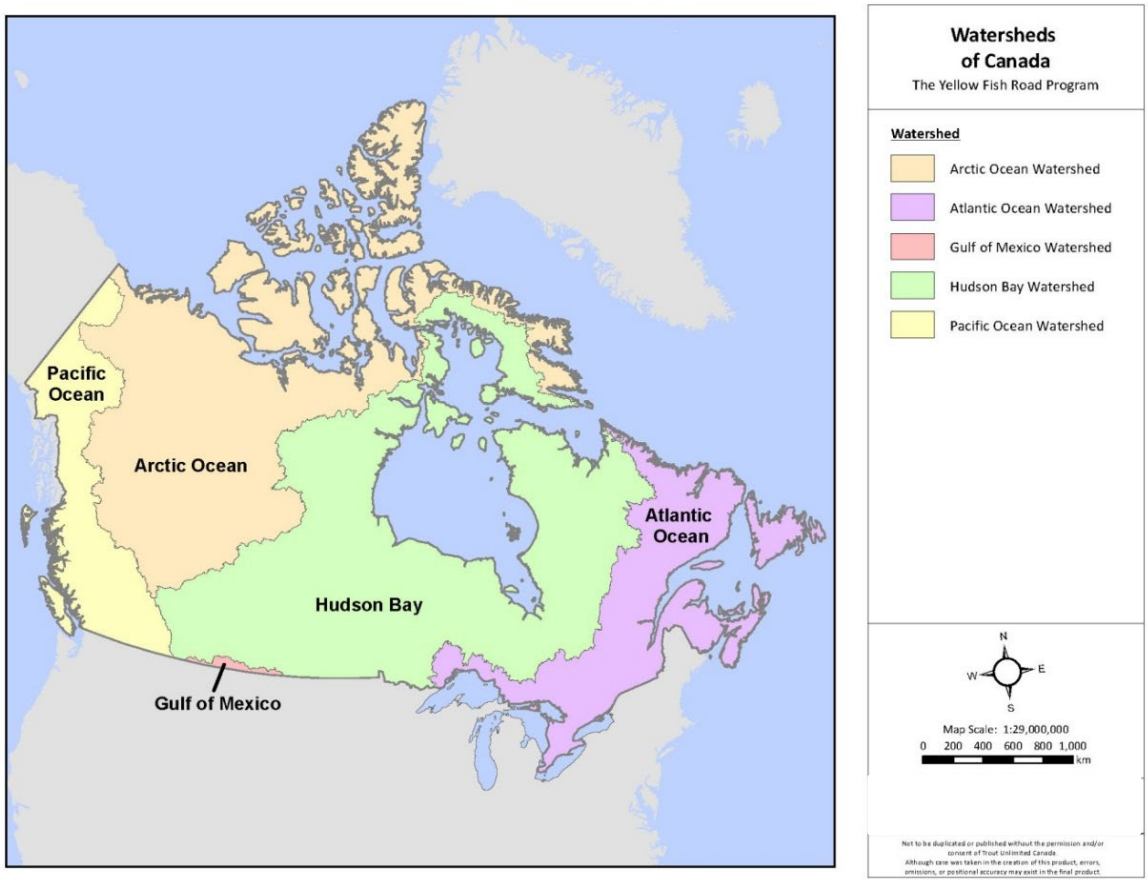
Stormwater pollution is anything other than clean water from rain, snow, or hail that enters the stormwater system through storm drains. Common contaminants include garden chemicals (fertilizer, pesticides and herbicides), construction and landscaping debris dirt (sand and gravel), de-icing salt, car fluids (oil, gasoline, windshield washer fluid, car soap), pet waste and garbage. These all impact our waterways and the life they support. Polluted runoff happens anywhere people use or alter the landscape, and water cannot seep into the ground. When rain falls on a solid surface, more runoff is generated compared to runoff from the same storm over a forested area. These impervious surfaces create large volumes of runoff and swift pathways for pollutants to be carried directly to our waterways, causing flooding, erosion and pollution. By participating in the Yellow Fish Road program, we can work together to slow the rate and volume of storm water flows and reduce sediment, nutrients

and other storm water pollutants from reaching our waterways, ensuring the health of our freshwater ecosystems for everyone.

1.6 What is a Watershed?

A watershed is an area of land that drains to a common water body, like a giant funnel collecting and draining water from up high through smaller brooks and streams, wetlands, and riparian areas to lakes and rivers lower in the watershed. With the very few exceptions (endorheic basins), we all live in a watershed. Eventually, all the water from our rivers flows into the oceans.

All this water comes from precipitation like rain, hail and snow and is drained into local water bodies. Some water soaks into the ground where it becomes groundwater. The water in urban areas that flows across streets, parking lots, sidewalks, driveways, lawns and gardens is



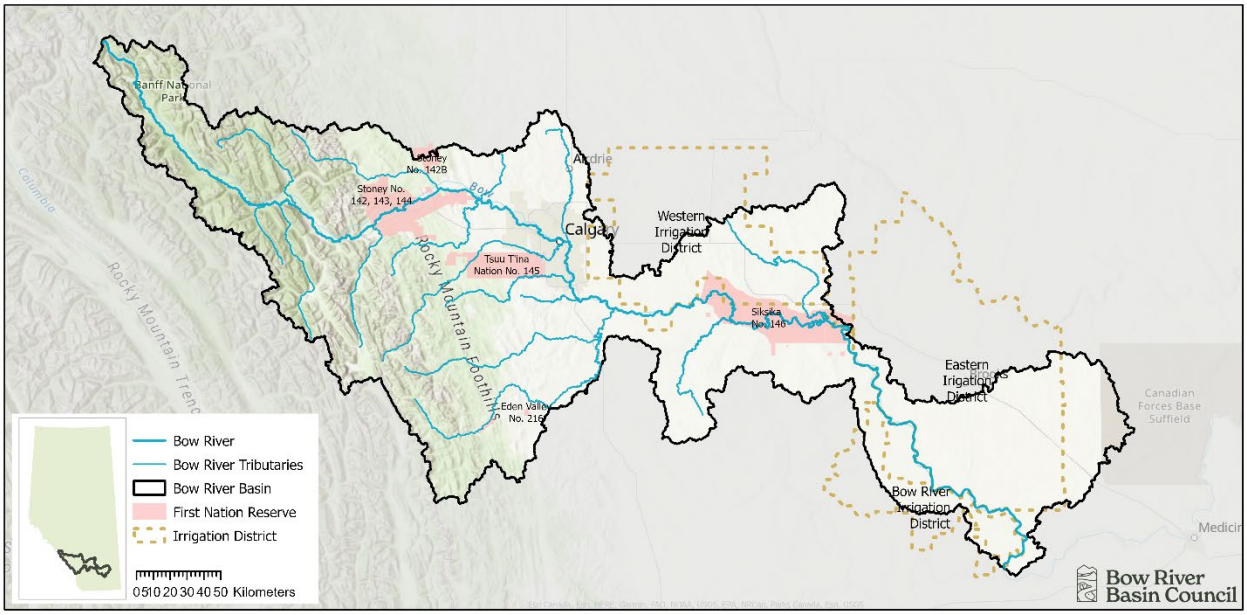
stormwater runoff. Watersheds are home to plants and wildlife and places for people to live, work and play. We depend on water within our watersheds for clean drinking water, food production, laundry, bathing water, and water to power our homes. Canada has five major watersheds (see below). Which river basin or watershed do you live in? Where do you think the water flowing in your rivers and creeks begins? Where does this water eventually go?

Calgary is located in the **Bow River Basin** watershed. From its source (headwaters) at Bow Lake in the Rocky Mountains of Banff National Park, the Bow River flows through Banff, Canmore, Cochrane, and Calgary, joining the Oldman River west of Medicine Hat. The meeting of the Bow and Oldman rivers creates the South Saskatchewan River, the southwest tributary of the Saskatchewan-Nelson River system that eventually flows to Hudson Bay, and then on to the Arctic and Atlantic oceans.

Fed by precipitation, groundwater and numerous tributaries, the Bow River drains an area of approximately 25,000 km2 (representing four percent of Alberta's land area). This drainage area, or basin, is comprised of several smaller drainage areas (watersheds). The Bow River Basin is home to over 35% of Alberta's population, predominantly residing within the City of Calgary. Major centres within the basin also include Canmore, Cochrane, Okotoks, Chestermere, and parts of Airdrie and Strathmore. The basin also falls within the traditional territory of Treaty 7 in Southern Alberta, including the Blackfoot Confederacy, Tsuut'ina First Nation, and Stoney Nakoda Nations. The Bow River Basin is also home to the Metis Nation of Alberta, Region 3.

The Bow River Basin is a hard-working basin that serves approximately 45% of Alberta's irrigated land. Three irrigation Districts use Bow River water: the Western Irrigation District, the Eastern Irrigation District, and the Bow River Irrigation District. The basin is also significantly engineered, containing 15 major dams and weirs.

Due to significant population pressures within the basin, there are ongoing water management challenges to ensure all user needs are met. Learn more about the Bow River Basin watershed by watching this video.



1.7 The Value of Water

Canada is home to 20% of the world's freshwater. According to the 2017 RBC Canadian Water Attitudes Survey1, Canadians value freshwater as our most important natural resource, but see it as unlimited because it is viewed as cheap. While providing easy access to clean drinking water does come at a cost in terms of the operation and maintenance of its conveyance and treatment. Despite improvements to water conservation, Canadians use an average of 251 litres of water a day, one of the highest rates of water use in the world[2]. We need to take measures to ensure that our water is not being polluted, overused, and poorly managed so that there is abundant clean water for all Canadians.

1.8 Case Study

The Nose Creek Watershed in Calgary, Alberta came under pressure after decades of negative cumulative effects of agriculture, transportation, development and storm water discharge. This resulted in degraded water quality, loss of riparian habitat, reduced channel length, and increased water flows at certain times of year. Typical post-development land practices can produce 5 to 100 times more runoff compared to pre-development conditions.[3] The increase in stormwater flows is caused by increased paved surfaces, soil compaction, the drainage of wetlands, and the loss of native vegetation. This can lead to more channel erosion, higher pollutant loads, deterioration of stream water quality, and adverse impacts on aquatic species. To protect and restore water quality and riparian areas, the Nose Creek Watershed Partnership was formed in 1998 by the City of Calgary and surrounding municipalities, with technical assistance from Alberta Environment, Ducks Unlimited and Fisheries and Oceans Canada.

The Nose Creek Watershed Water Management Plan (NCWWPP) outlines goals and policies to guide jurisdictions in protecting Nose Creek from further degradation. It contains an integrated stormwater management plan focusing on restoring natural processes required to manage water and create a healthy urban environment. It incorporated Low Impact Development (LID) strategies, which mimic the natural hydrological cycle, where precipitation captured at the source can be returned to water pathways through infiltration and evapotranspiration. These practices incorporate reducing paved surfaces and increasing green infrastructure features, while utilizing water quality Best Management Practices (e.g. bioretention areas, cisterns and rain barrels) to control runoff and ensure water quality objectives. The plan was completed in 2007 with the assistance of Alberta Environment, but it is a living document that changes as monitored conditions change in the watershed.

1. 2017 RBC Canadian Water Attitudes Study: http://www.rbc.com/newsroom/news/2017/20170320-cwas_cnews.html
2. Environment Canada, Residential Water Use: https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/residential-water-use.html#ftn1-ref

3. Nose Creek Watershed Water Management Plan (NCWWPP) http://nosecreekpartnership.com/wmplan
4. Bow River Basin Council https://brbc.ab.ca/the-watershed

2.0 Storm Drain Painting

2.1 Storm Drain Painting Checklist:

Teachers/Leaders

- Call your local municipality or Yellow Fish Road partner to ensure they know when and where you are doing the storm drain painting. Staff may be available for safety and guidance.
- Complete the attached Participant Agreement, which is also available online or use the one in this guide (p.14).
- Walk to the area where you are planning your activities, scout the streets and storm drains near you that you want to paint and map their locations for groups, and contact your local municipality and ask to use their storm drain maps if they are available.
- Pick only residential streets with low traffic volume and no busy bus routes.
- Depending on the age of your group, an average of six youth can paint six storm drains in an hour.
- Plan for an alternate 'Rain Day' for the painting in the case of bad weather.
- Ensure you use Eco-Friendly outdoor latex paint with low VOCs (Volatile Organic Compounds) and no extra additives or solvents.

Volunteers

- Organize your volunteers: You will need one adult helper for every six students. Plan to have one or two extra volunteers in case others can't make it; extra hands are always helpful.
- Distribute and assign the streets you have chosen amongst the group leaders. Give group leaders simple maps of where you want them to mark or paint.

Students

- Paint does not come out of clothing easily, so wearing some "old painting" clothes is best.
- Have everyone stay with a partner for safety; most jobs will be done with a partner.
- Remind students to stay hydrated, wear sunscreen, and/or bug spray if needed
- Most importantly, **have fun!** You are making a difference in your watershed!

2.2 Yellow Fish Road Terms and Conditions

By participating in Freshwater Conservation Canada's Yellow Fish Road™ (YFR) Program, you also join in the following terms and conditions. Users of the program are teachers, scout or guide leaders, community groups, or other individuals who purchased and/or are using Freshwater Conservation Canada's Yellow Fish Road Kits.

1. Designate a group leader to read and understand the YFR Program Guide and be responsible for the group while implementing the YFR Program.
2. Obtain the necessary supplies and permissions as outlined in the YFR Program Guide, whether through a YFR Partner or through our own means.
3. Ensure group members understand and follow the safety and painting procedures outlined in the YFR Program Guide (or by an YFR Partner or the municipality).
4. Ensure that all groups are supervised at all times.
5. Ensure that any class/group members under the age of majority have written parental consent to participate; and ensure that parents understand that the group leader, not Freshwater Conservation Canada, will be supervising the storm drain painting activities.
6. Ensure a minimum of 1:6 adult to child ratio for the painting/marking.

As participants in Freshwater Conservation Canada's Yellow Fish Road™ Program, your group will **not** be covered by Freshwater Conservation Canada's (TUC) commercial general liability insurance for the storm drain marking. Freshwater Conservation Canada is not responsible for bodily injury incurred or damage to or loss of personal property incurred while implementing the Yellow Fish Road™ Program. Insurance will be the responsibility of the participants and their leaders for the duration of the storm draining marking project.

Should you have any questions about the above Terms and Conditions, please contact us at info@freshwatercanada.org

2.3 Storm Drain Painting Instructions:

Ensure each group with a kit has a 6:1 ratio of 6 youth:1 adult leader to supervise.
There are four jobs: a safety hero, cleaners, painters, and door hangers' distributors. Rotate the duties so everyone gets a chance at them all. One group of two can hang door hangers while the other four paint, but they must always be within sight of the adult leader.

1. Safety First (1 leader and 1 person as a 'Safety Hero')

- **Adult**: Set up a safety zone and instruct children to stay within 1 metre of the storm drain, ensuring they don't step too far onto the road. Traffic cones can optionally be used to mark the safety zone (not included in the package).
- **Safety Hero**: A designated person wearing a safety vest stands by the curb, watching for cars. Their role is to ensure everyone stays within the safety zone, with the curb being the safer choice.
- If a vehicle approaches, the Safety Hero should observe it, notify the group, and make sure everyone stays within the safety zone. If the vehicle comes too close, stop work and move to the curb until it has safely passed.

2. Clean and Paint (3-4 people)

- **Cleaners**: Wear protective gloves (cloth or vinyl) and use the broom provided to sweep debris around the storm drain into the dustpan and then deposit it into the garbage bag.
- **Painters**: Secure the stencil provided down on the road or pavement beside the storm drain, whatever is smoothest and carefully squeeze paint into the fish shape (loonie size).
- Use the paint roller to fill the stencil shape and add more paint as needed. Using too much paint smudges. When doing the words, flip the roller on its end and dab paint into the letters (like a bingo dabber).
- Carry onto the next storm drain covering the roller with a sandwich bag provided so it doesn't dry out or get paint on your clothing as you walk.

2.4 Hanging door hanger Instructions:

3. Door hangers (2 people)

- Stay on the same street as the group and go door to door to hang the door hangers. If a door has a sign that says 'No Flyers, ' respect their wishes and do not leave a door hanger.
- Door hangers: Please ensure they are tightly secured so they do not become litter. Place one fish-shaped door hanger at each house by opening the tail and fitting it around the mailbox hanger or doorknob (in the following preference).

1. In or hanging on the mailbox
2. On the doorknob of the door
3. Inserted securely into the door

4. Fill out the Tally Sheet

Keep a record of your work. This information is very important! Note the following:

- Adults and children participated
- Storm drains were painted
- Door hangers hung

Then, transfer your data to this form to tell us how many door hangars and storm drains you worked with, or use the paper version included in your YFR package. We appreciate your feedback, which we use in our grant applications and reports.

Kit Contents	School Kit
Carrying Caddy for supplies	4
Clipboard & Pencil (Instructions, and tracking locations)	4
Safety Vests	4
Dustpan/Broom to cleaning around drain	4
Garbage Bag to collect garbage around drain	8
1 Plastic Locking Bag for carrying the wet roller or brush	4
Bottles to hold paint	4
Pairs of gloves	8
Paint roller	4
Reusable 'Water Only' stencils	4
Informative Yellow Fish Road door hangers	75

3.0 Yellow Fish Road Resources

3.1 Stormwater Pollutants-Source and Effects

Pollutants	Source	Effects
Soap/Detergent	• Washing cars in the driveway • Dumping wash water onto the street • Washing siding or windows	• Can strip away the protective mucous coating on a fish – without this protective coating, fish will absorb more chemicals and are more susceptible to disease. • High concentrations can kill fish eggs and adult fish.
Litter/Garbage	• Litter from people, houses, industrial areas and construction sites	• Can cause unsightly debris and unpleasant odors. • When ingested by an animal, litter can be dangerous, causing death. • Dangerous litter can harm people or animals (e.g. glass).
Heat	• Even heat can be a pollutant! Storm drain water is coming from runoff over land and roads and l is usually warmer than the local water body	• Increased temperatures can affect certain species of fish, invertebrates, and plants, which are adapted to living in a certain range of temperatures. Fish are particularly sensitive to temperature changes during spawning. • Warmer water holds less dissolved oxygen, which can be a problem for species that require a certain oxygen level in the water. Coldwater fish, such as trout, prefer waters that are cooler than 14°C.
Heavy Metals (i.e. Aluminum, copper)	• Industrial sites • Washing cars in the driveway • Metal corrosion (e.g. from cars and pipes) • Pesticides and herbicides	The levels of heavy metals found in water are generally low, however, due to bioaccumulation, higher concentrations can be found in wildlife. • Bioaccumulation is an increase in the concentration of a chemical in an organism over time. As an organism drinks and eats contaminated sources, it will accumulate chemicals in its body over time. Accumulation can lead to a reduction in aquatic biodiversity and hinder plant growth.
Nitrates/Phosphates	• Nitrates come mainly from fertilizers, and some from animal waste • Phosphates are found in detergents and fertilizers. Some comes from animal waste and car fluids	• Can cause eutrophication or algal bloom. • Nitrates and phosphates are nutrients that plants need for growth. Algae will grow very quickly if there is a high concentration of these nutrients in the water, causing algal blooms. • Too much algae in the water leads to less oxygen for other organisms, less light reaching other plants can clog the gills of fish and clog water drainage systems.
Oil/Grease (Hydrocarbons)	• Leakage of oil and other lubricating agents from cars and other motorized machines	• There is a wide array of hydrocarbon compounds, some of which are known to be toxic to aquatic life. • More oil comes from storm drain pollution than from oil tanker spills! For instance, one drop of oil can contaminate 25 litres of water.
Pathogens (Disease causing organisms)	• Can be found in pet and livestock wastes, and faulty septic systems	• 10 harmful pathogens are associated with dog feces, including; bacteria like E. coli and Salmonella, protozoan parasites like Giardia lamblia (beaver fever), and viruses like Norwalk. • They can cause disease in humans and wildlife.
Pesticides	• Excess herbicides and insecticides from residential and agricultural lands	• Can harm plants, wildlife and humans through chronic low concentration or sudden high concentration exposures. • Effects include: loss in production, changes in growth, development and/or behavior and death of species.
Salts	• Sidewalk and roadway application • Irrigation practices	• Salt dissolves very easily in runoff and can increase the salinity of the local waterbody. In some places, spring runoff can cause the salinity of the local waterbody to reach ocean salinity levels! • Freshwater species of plants and animals are not adapted to the high level of salinity. • The dissolved salts are difficult and expensive to remove. • High salinity water may also be corrosive to piping systems
Sediments	• Includes organic debris, silt and sand from roadways, improperly managed construction sites, crop and forest lands and eroding stream banks	• Can increase turbidity, or the cloudiness of the water, which can clog fish gills, decrease the amount of dissolved oxygen in the water and suffocate trout and other organisms' eggs. • Added sediments can change the course of a river or a stream and damage habitat – it doesn't take much sediment to do this. Sediment and particles such as silt, clay, and organic matter are suspended in water. Total Suspended Solids (TSS) are often a vehicle for which contaminants are transported. High TSS concentrations degrade fish and aquatic environments.
Chlorine, Bromine, Copper and Muriatic Acid	• Swimming pool water	Pool water has chemicals that are very toxic to fish and other organisms in the water. Please drain it into the sewer system or down your house drains.

Other pollutants can be found in our waterways that do not necessarily come from the storm drain system, including:

Acid deposition (e.g. smog, acid rain.) Pharmaceutical and personal care products (e.g. lotions, soaps, make–up) and medications (antibiotics, aspirin and hormones) these products may not be completely filtered out at the wastewater treatment plant.

3.2 Yellow Fish Road AB Curriculum Connections

Grade	Topic	Learner Expectations and Outcomes	YFR connections
K - 2	Earth Systems	Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions	The interactions within natural water systems and the impacts of human activities on them. How pollutants can enter and harm aquatic ecosystems, reinforcing the importance of maintaining balance within Earth's natural systems
1	Earth Systems	Plants and animals require environments that allow them to meet their needs	The importance of clean water in sustaining environments that meet the needs of plants and animals, demonstrating how pollution can disrupt these ecosystems
		Humans, other animals, and plants depend on each other to meet their needs	The interconnectedness of humans, animals, and plants, understanding how clean water is essential for all and how pollution prevention supports this interdependence
2	Earth Systems	Plants and animals can be affected by human behaviour	Human activities, like improper disposal of waste, can negatively impact plants and animals, emphasizing the role of responsible behaviour in protecting ecosystems
		The ways in which individuals or groups relate to land, plants, and animals can influence cultural practices	Cultural practices, such as community efforts to prevent pollution, are influenced by the relationship people have with their local environments
3	Earth Systems	The water on Earth moves continuously in a cycle	Pollutants can enter storm drains and ultimately travel through the entire water system, impacting the cycle and local water quality
		Plants and animals interact with each other in various environments in ways that can be represented with food chains	Pollutants entering waterways can affect food chains, illustrating the broader impact of pollution on interconnected ecosystems
		Awareness and consideration of the interactions of plants and animals in local environments help humans protect them	Human actions, such as keeping pollutants out of storm drains, directly protect plants and animals in the community
4	Earth Systems	A variety of organisms live on Earth and have external structures that support various functions	The diversity of organisms in aquatic ecosystems & how their external structures, like gills or roots, are crucial for survival in clean water environments
	Understanding of the physical world is deepened by investigating matter and energy	Responsible use and disposal can reduce the environmental impacts of dangerous materials	Responsible disposal of hazardous materials to prevent them from entering storm drains & harming aquatic ecosystems showcases how proper practices can reduce environmental impacts
		Responsible methods of waste management can reduce negative environmental impacts	The importance of waste management, particularly in preventing pollutants from reaching waterways, thereby reducing the negative environmental impacts on local ecosystems
	Scientific Methods	Scientific explanations are constructed using reliable, objective data and evidence	YFR encourages students to use data and evidence from their water testing and observations to understand the impact of pollution on local ecosystems and to construct well-informed explanations
		Science is a self-correcting way of knowing about the world, where new evidence can change understandings and explanations	The concept that scientific understandings can evolve, showing how ongoing monitoring of waterways can reveal new information that might alter previous conclusions about pollution and its effects

5	Earth Systems	The study of climates across regions helps identify historical patterns and make predictions	While not a direct focus, YFR can tie into the broader study of climate patterns by helping students understand how pollution in local waterways might be influenced by regional climatic conditions and historical land use
		Climate affects human and other animal activity	Climate conditions influence how pollutants spread through storm drains into water systems, affecting both human and animal activities in the area
6	Earth Systems	The components and characteristics of an ecosystem affect the diversity of the organisms that live in it	How pollution alters the characteristics of aquatic ecosystems, which in turn can reduce the diversity of organisms that are able to thrive in these environments
		There are significant relationships between plants and animals within ecosystems	The interconnected relationships between aquatic plants and animals, showing how pollution can disrupt these connections and impact the overall health of the ecosystem
7	Interactions and Ecosystems		The Program highlights the interaction between human activities and ecosystems by educating participants on how pollutants entering storm drains can harm aquatic life and disrupt ecosystems
8	Freshwater and Saltwater Systems		The program focuses on freshwater systems, teaching participants how pollution from urban runoff can negatively impact rivers, lakes, and streams. By understanding the connection between storm drains and freshwater bodies, participants learn to protect these critical water systems, which ultimately feed into larger saltwater systems
	Mix and Flow of Matter		How pollutants mix and flow through stormwater systems, leading to contamination of water bodies
9	Biological Diversity		The impact of pollution on biodiversity within aquatic ecosystems. By preventing pollutants from entering storm drains, participants contribute to protecting the diverse range of species that depend on clean water for survival
	Environmental Chemistry		The Program incorporates environmental chemistry by exploring how different pollutants, such as chemicals from fertilizers and soaps, affect water quality. Participants learn about the chemical interactions in water that can lead to harmful consequences for aquatic life

3.4 Yellow Fish Road 'Action Ideas'

We can take many actions to conserve fish habitat, improve water quality, reduce the impact of stormwater flows and protect native aquatic life. Here are a few easy things we can all do…

Take action around the home:

- Use lawn chemicals carefully and sweep and clean up any excess that is on the pavement.
- Pull weeds by hand, use small specialized tools or have a work day to get the job done.
- Do companion planting, plant native grasses, and add grass seed or wildflower mixes to your lawn.
- Snip, prune and discard insect-infested leaves and branches to keep them from spreading.
- Dislodge insect pest with insecticidal soap or a high-pressure spray of water.
- Grass cycle: Leave grass clippings on the lawn after mowing to allow the nutrients to be recycled.
- Drain your swimming pool water into the wastewater system or down your household drain.
- Apply natural insecticides such as diatomaceous earth and set out ant and wasp traps.
- Invite insect predators to your yard by building bird houses, leave leaf litter for ladybugs habitat, keep spider webs intact and install water elements for dragonflies and frogs.
- Fertilize with natural materials like new topsoil, compost, compost tea, bone meal or peat.

Take action around the community:

- Wash your car at a car wash, not in your driveway, where soap and water drain to the river.
- Clean up after your pets and ensure their wastes are disposed of properly in the garbage.
- Maintain your vehicle(s) and safely dispose of chemicals (oils, antifreeze, etc.) at lube shops.
- Stay on bike and walking paths to avoid sediment and soil from eroding into the river.
- Dry sweep dirt /debris from landscaping /construction projects before it washes down drains.
- Harvest rainwater in rain barrels and use it to water your lawn and garden.
- Plant groupings of plants and use native and water-wise plants that require less water.
- Plant roof-top green gardens, container plantings, bio swales and bio-retention gardens.
- Have more porous surfaces enabling surface water pollutants to drain and filter into the soil.

Take action around your school:

- Learn more about water pollution and water issues in your own watershed.
- Start your own Water Conservation or Protector Club at school or in your school or community.
- Find out where to dispose of harmful chemicals properly in your community (i.e. Fire Halls).
- Protect storm water through Low Impact Development practices that mimic the water cycle
- Recognize labels for environmentally-friendly products and learn green gardening methods.
- Urge and support federal, provincial and municipal action on non-point source pollution issues.
- Join and support environmental groups that work to solve non-point source pollution.
- Inform your friends and family and help educate others about stormwater pollution.

Take Action and lead a Yellow Fish Road™ Storm Drain Stencilling activity in your community!

4.0 Glossary:

Biodiversity: General measurement of the many kinds of organisms living and interacting within a biotic environment.

Decomposer: Bacteria, fungi, and other organisms which help break down decaying organic matter.

Eutrophication: The condition in which an aquatic ecosystem has an excess amount of a limiting nutrient like phosphorous or nitrogen, which causes accelerated proliferation of plant or algae growth.

Freshwater ecosystem: All living and non-living components related to the ecosystems found in and around water (e.g. lakes, streams, rivers).

Groundwater: Water that flows or seeps underground and saturates soil or rock, supplying springs and wells. Groundwater flows underground through rock crevices and pores of the geological materials which make up the earth's crust.

Hydrological cycle: Pertains to the water cycle, starting from evaporation of water from land and water bodies, to condensation as moist air rises cools and condenses to form clouds, and then precipitation, when moisture in the clouds returns to the ground.

Impervious: A surface which is hard, and water cannot easily soak into.

Indicator: A substance used to indicate chemical conditions or changes, e.g. large algae blooms in lakes (eutrophication) is an indicator of pollution.

Macro invertebrate: A small organism, without a backbone, which can be seen with the naked eye.

Non-point Source Pollution: Pollution spread over a large area and not from a specific location; this type of pollution is hard to trace (e.g. urban runoff, acid rain).

Pathogens: A disease-producing agent; usually applied to a living organism; any viruses, bacteria, or fungi that cause disease.

Photosynthesis: The process by which plants produce sugar and oxygen from carbon dioxide and water in the presence of light.

Point Source Pollution: Pollution that is easy to trace to its source (e.g. factories and sewage or wastewater treatment plants).

Porous Pavement: Alternatives to hard pavement or asphalt surfaces that utilize a variety of porous medium. These surfaces allow water to filter or percolate through the surface.

Purification: The act of making pure or clean (e.g. filters are used in the purification of water)

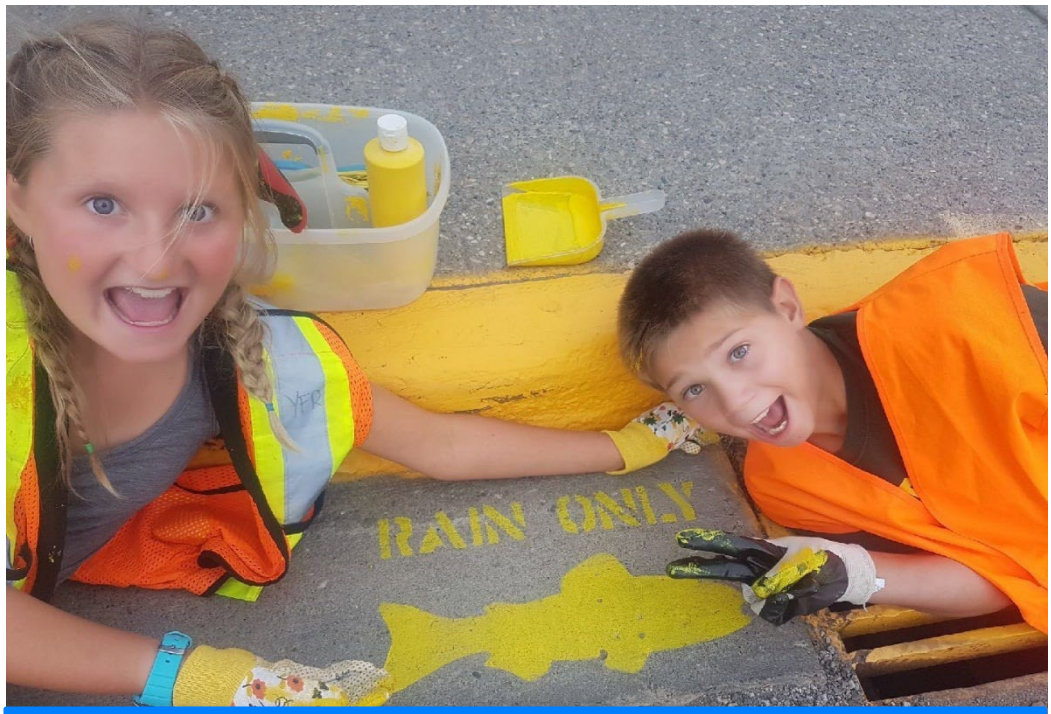
Riparian: The riparian zone includes the area adjacent to a water body where terrestrial (dry) and aquatic (wet) ecosystems meet and interact.

Saturate: Soak thoroughly; fill to capacity with water.

Surface water: Water that is on the earth's surface, such as in a stream, river, lake or reservoir. Surface water can become groundwater and vice versa.

Turbidity: The combination of dissolved and suspended solids in water, which causes the water to be muddy or cloudy (e.g. the turbidity of the river was increased by rainfall).

Wetland: A wetland is a place where water and land meet. Wetlands are often shallow, slow moving water, without a permanent bank and are temporary in nature; some may last just one season.



Help protect our waters one storm drain at a time!