

On August 27th, 2007 Adam Dickie drowned in Junction Creek. On October 10th, 2007, a motion was passed by the Council of the City of Greater Sudbury, wherein the Junction Creek Safety Committee was created in an effort to address the concerns of the community.

MOTION BY COUNCILLOR LANDRY-ALTMANN

WHEREAS drownings in Junction Creek have occurred over the past several years;

AND WHEREAS concerned citizens, Councillors and City Staff wish to establish educational and public safety programs and review infrastructure criteria along the Junction Creek Corridor;

THEREFORE BE IT RESOLVED THAT an Ad Hoc Committee comprised of a minimum of two Councillors, supported by a representative from the Nickel District Conservation Authority, a representative from the Junction Creek Stewardship Committee and City Staff, be mandated to establish terms of reference aimed at developing educational and safety programs, and to review infrastructure criteria for the area along Junction Creek;

FURTHER THAT the Junction Creek Safety Committee hold a minimum of one public consultation and bring forward a report to Council by April 2008 outlining the Committee's recommendations;

FURTHER THAT information garnered from this Committee be applied to other similarly identified waterbodies;

AND THAT Councillors Landry-Altmann and Cimino be appointed to the Junction Creek Safety Committee.

We would like to acknowledge and thank the many agencies that came together, donating time in kind, affording us the expertise of their employees, on this Committee.

- The Sudbury and District Health Unit
- Nickel District Conservation Authority
- Junction Creek Stewardship Committee
- Greater Sudbury Fire Services
- Greater Sudbury Police Services
- Infrastructure Services, City of Greater Sudbury

Special acknowledgement to Herakles Tsambis of Manitoulin Stone for his donation of 22 selected commemorative stones for the Louis Street Memorial Park. Every stone symbolizes a drowning victim in Junction Creek.

Many thanks to our official sponsors of the educational program:

- The City Of Greater Sudbury
- Vale
- OPG –Ontario Power Generation (Jeff Fournier)
- Fire services Department
- Police Services Board
- Sudbury Steam (GregHaddad) who donated their time in grooming the Millie Puppets
- The Montessori Club of Sudbury
- The Sudbury Star
- Petryna Advertising
- Union of Ontario Indians (Maurice Switzer, Director of Communications)

Education was deemed the most effective component to create the psychological fence needed to help circumvent further tragedies. Recognition must be given to this eager volunteer team, working towards a safer community.

- Rainbow District School Board
- Lansdowne Public School
Chantale Lacroix, Principal
Teachers and creators of lessons:
Stacey Gianfrancesco & Jody Kelly
- Sudbury Secondary School
Paul Carmello, Principal
Shawn Tilander, Media Arts (Student coordinator in the creation of the coloring booklets and Millie the Muskrat mascot.)
Students: Danielle Leger (creator of our mascot Millie the Muskrat), Sabrina Rainville (illustrator for the aboriginal myth), & Morgan Kasheongai (illustrator for senior activity book)
- Collège Boréal
Isabelle Ratte, Professor
Students (illustrators for the junior colouring book):
Rose Anne Gagné, Lissa Bellaire & Joëlle Lavoie

On behalf of the citizens of Greater Sudbury, we thank you,

Joscelyne Landry-Altmann, Deputy Mayor
Councillor Ward 12
Chair of the Junction Creek Safety Committee

Joe Cimino,
Councillor Ward 1
Co-Chair of the Junction Creek Safety Committee

Dedicated to Adam and all other unfortunate victims of fast water drownings.



BACKGROUND INFORMATION

INTRODUCTION

There have been 22 recorded deaths from drowning in Junction Creek since 1921, as well as many injuries and near death situations. On August 25th, 2007, Adam Dickie, a 13 year old Sudbury boy, was fishing on the shores of Junction Creek with a friend. Adam slipped and fell into the creek and wasn't able to get back out because of the depth of the water. Water levels were high due to heavy rainfall.

Adam's death prompted an appeal by members of the community to find solutions for stopping any further unnecessary deaths and injury in fast-flowing water. "Swift water" in area lakes, rivers and drainage ditches can be life threatening. Education with regards to this issue is a positive step in protecting the children in our community.

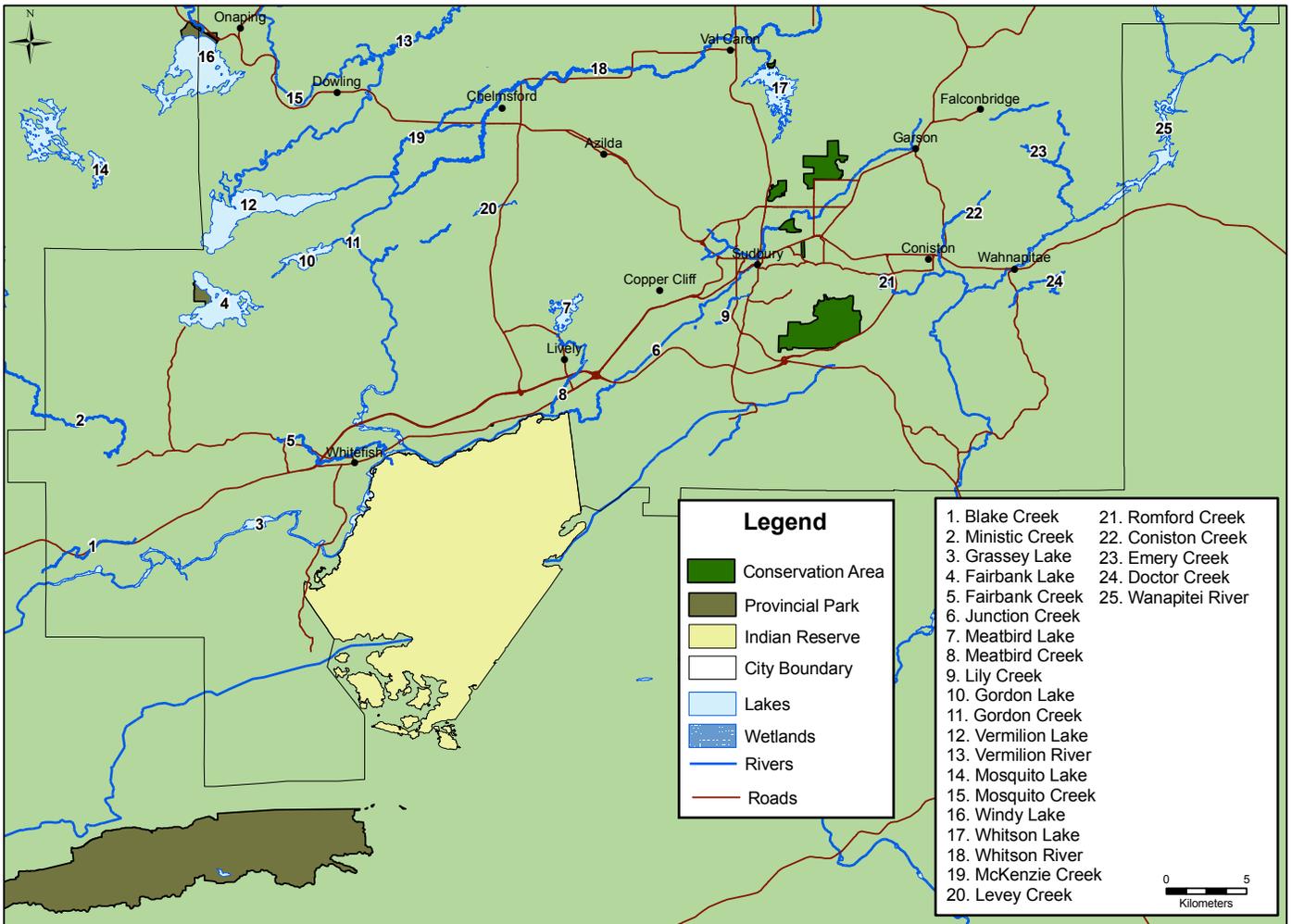
BACKGROUND INFORMATION

- water levels for rivers and creeks get very high and currents get very powerful, especially in the spring because of the melting snow, and also during heavy rain
- creek and river bottoms can be dangerous, muddy and unstable
- creek mud is different than regular sand, it exerts a force or suction on objects
- objects or people may get stuck and be unable to move
- murky water can hide objects or debris that can trap someone
- unexpected drop-offs are also a hazard
- even though the temperature outside might be warming up, the water is still very cold
- even ditches beside the road can be dangerous during high water periods
- some roadside ditches are deeper than you think
- even if the water still looks frozen, ice is thinner on moving water because of currents
- banks are soft and slippery, especially in the spring and fall
- the human body does not float well in fast flowing water (has more air, aerated water provides less buoyancy than calm water)
- hydroelectric dams and stations are dangerous places because water is moving fast around them, strong undercurrents can quickly overwhelm even a strong swimmer, water levels change quickly, calm water can quickly become dangerous



Millie's Fast Flowing Water Safety

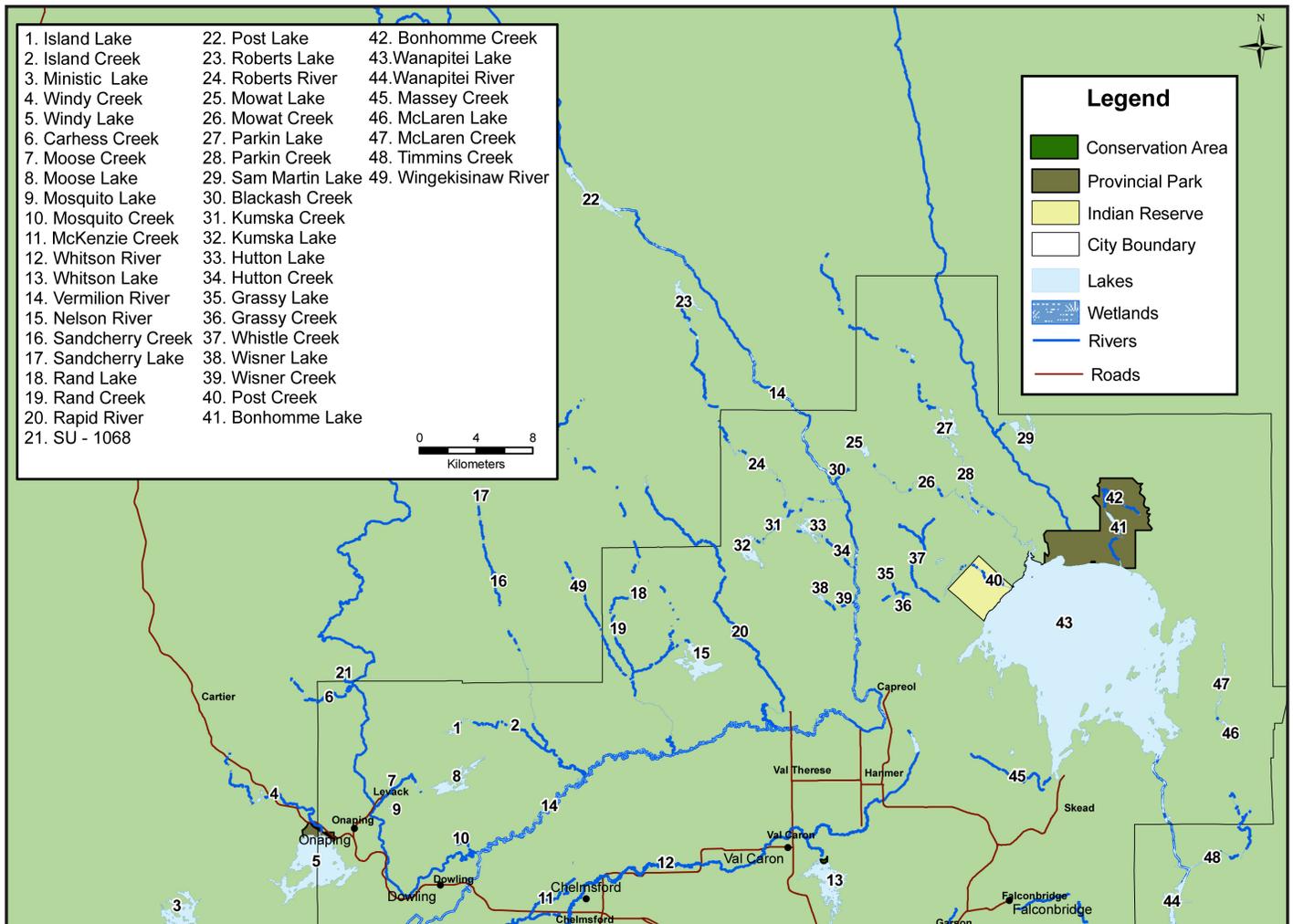
MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





Millie's **Fast Flowing Water** Safety

MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





VOCABULARY

CALM WATER:

Water that does not move, no current, waves or ripples

CURRENT:

The flow and direction of water. Water in the centre of a lake moves faster than water on the edges.

UNDERCURRENT:

Current is the way water flows. Undercurrent is water beneath the surface flowing in a different direction from the water on top.

DEBRIS:

Scattered remains of something that has been thrown away (junk, trash, garbage)

DOWNSTREAM:

Moving in the same direction the water is flowing.

BARRIER:

Something that blocks the way

FAST- FLOWING WATER:

Water that moves quickly and steadily along in a stream.

BANK:

The slope bordering a stream or creek.

DRAINAGE DITCH:

A long, narrow trench, made by digging and used for draining water.

RUNOFF:

Water that drains or flows, due to rain or melting snow.

HYDROELECTRICITY:

Hydroelectricity is electricity generated by hydropower (the production of power through use of the gravitational force of falling or flowing water).



FAST-FLOWING WATER SAFETY TIPS

MILLIE SAYS...

Never go near the water without an adult.	An adult should always know where you are in case of an emergency.
Stay off the ice over fast-flowing water.	Ice over fast-flowing water may appear safe, but is thin and dangerous.
Never retrieve objects that have fallen in the creek.	The current might be stronger than it seems.
Always use designated trails when walking by the water.	Creek and river banks are soft and slippery.
Stay away from drainage ditches.	Some roadside ditches are deeper than you think.
Stay clear, stay safe.	Stay away from dams, hydroelectric stations and surrounding waterways.

WHAT TO DO IF YOU FALL IN THE WATER

- Don't try to swim against the current
- Float on your back, draw your knees up to your chest and point your feet to go with the current.
- Try to steer your body gently towards the shore, where the water is shallower and you can regain your footing.

WHAT TO DO IF A FRIEND FALLS IN THE WATER

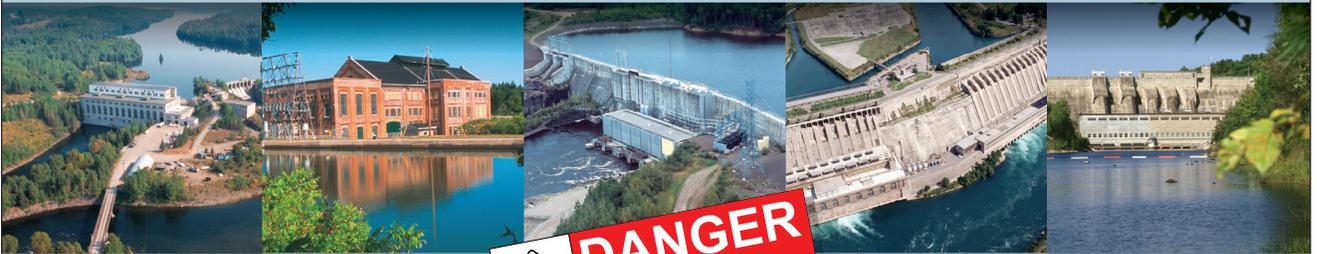
- Never try to rescue a friend who's in the water.
- If you are with an adult, ask them for help immediately, or if you know someone in the area, go and ask them for help.
- If you have a cell phone, call 911 for help immediately. Tell the operator where you are and what has happened.
- Stay on the shore, away from the water, until help arrives.
- If you do not have a cell phone, you can run to a nearby home to ask an adult for help, or find a pay phone and dial 911 for help immediately. This call is free of charge.



MILLIE
the Muskrat

STAY CLEAR STAY SAFE

around dams, hydroelectric stations & surrounding waterways



ONTARIO**POWER**
GENERATION



Stay Clear, Stay Safe around dams,
hydroelectric stations and
surrounding waterways



Remotely-operated dam gates can quickly turn calm waters or dry riverbeds into dangerous flows.

Getting too close to dams and hydroelectric stations is always dangerous. A spot that seems calm and safe one moment can turn into a dangerous surge of rising and fast-flowing water – quickly and often without any warning.

Our operators can't see you

Most facilities are remotely-controlled by operators many kilometres away. They open or close dams, to manage river flows, and start or stop generators throughout the day and night as demand for electricity rises and falls.

This may result in frequent, rapid and dangerous changes in water levels and flows, changes that can harm those who venture too close.

Be especially careful when near waters above and below dams and hydroelectric stations.

At a generating station, water from above the dam runs through the station and then surges out to join the main stream of the river.

In areas above and below dams, fast-moving water creates dangerous turbulence and strong undercurrents which are not always apparent from the calm looking surface waters.

**STAY
CLEAR
STAY
SAFE**



What happens when you fail to stay clear, stay safe?



Before

After

EXTREME DANGER
Dam Upstream - Keep Out
This Riverbed Floods
Without Warning

This is a very dangerous spot and should be avoided. Areas inside warning signs, buoys, booms are extremely dangerous, stay clear of them.

The same spot just minutes later. Remotely operated gates at the dam release large volumes of water that could leave you stranded, swamp your boat or put you in the grip of an undertow.

Be Alert!

Even if you can't see a generating station or dam, waterways upstream and downstream can still be affected by their operations. It's important to be aware of the potential dangers caused by changing flows, and stay clear of waters near stations and dams.

! Don't find yourself on thin ice. Winter brings more dangers.

Ice forming near a dam or hydroelectric station can be thinner and less consistent than ice in other locations because of changing water flows beneath it.

Dams and hydroelectric stations are not recreation areas

Be wise not to treat hydroelectric facilities as fishing holes, boating areas or swimming areas.

These areas are not safe for any recreational activities, including camping, picnicking or even winter activities such as snowmobiling or cross-country skiing.

Put safety first. When travelling on unfamiliar paths or waterways, plan your trip ahead.

For your own safety near a dam or hydroelectric station, make sure that you:

- Obey ALL warning signs, fences, buoys, booms and barriers. They are put there to protect you. The areas inside are dangerous, so stay clear.
- Some signs have pictures that show the consequences of not staying clear.
- Stay well back from the edge of waters above and below dams and hydroelectric stations.
- Never stand below a dam, or anchor or tie your boat there. Rapidly changing water levels and flows can swamp your boat or pull you into an undertow.
- Stay off dams or hydroelectric station structures, unless OPG has clearly indicated where it is safe to walk or drive.



- Avoid snowmobiling, cross-country skiing, skating or ice fishing on rivers or lakes near dams and generating stations.
- Don't risk walking onto a river or lake around dams and generating stations where the ice may be thin due to the current. Changing water levels can crack the ice, leaving it weak and unstable.

TRESPASSING ON OPG PROPERTY IS ILLEGAL.

TO ENSURE YOUR SAFETY,

TRESPASSERS CAN BE CHARGED.



Teach children to Stay Clear and Stay Safe!

Be sure and tell children exactly where they can and cannot go and make sure you are nearby and can see them at all times. For their safety, teach them what the signs and other barriers mean.

As a rule, remember to:

- Stay out of dry or calm riverbeds below dams. They can quickly change into rapidly flowing waterways with dangerous currents.
- Stay a safe distance outside of warning signs, buoys, booms and barriers and be alert for changes in water levels.
- Stay away from the edge of a waterway where footing may be slippery.
- Don't wade into moving water.
- When swimming, fishing, boating or paddling in a river, be aware of the water level and check upstream frequently for any sign of increasing currents or rising water. If the water level is rising or the flow is speeding up, get out of the water or move your boat downstream. Obey all signs and barriers.



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*The area between booms
and dams is very dangerous.
Stay Clear!*



Stay Clear. Stay Safe!

We take pride in operating our facilities safely, in a manner that respects the environment and the rights of other users of the waterways.

Please respect the hazards near our dams and stations, and obey all warning signs, booms, buoys, and barriers. They are there for your protection.

*For more information or to obtain a
FREE DVD and FREE interactive,
educational computer game for children,
simply visit www.opg.com*

**ONTARIO POWER
GENERATION**



FAST-FLOWING WATER (JK/SK)

OBJECTIVE:

Educate students about the dangers of fast-flowing water in the community.

STUDENTS WILL LEARN:

1. It is not safe to play near or in fast-flowing water (lakes, rivers, creeks, ditches)
2. Fast-flowing water safety practices.
3. How to respond when confronted with an emergency.

CURRICULUM EXPECTATIONS:

Students will discuss what action to take when they feel unsafe, and when to seek assistance in unsafe situations (Health and Physical Activity 5)

RESOURCES

- storybook
- poster
- colouring book
- activity pages
- puppet

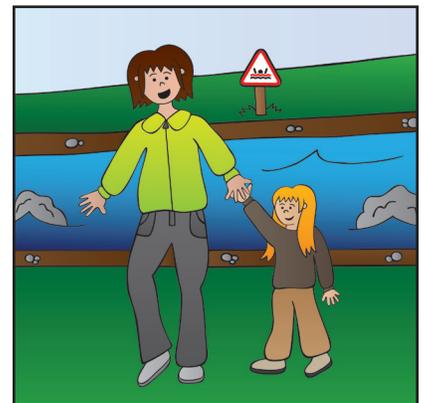
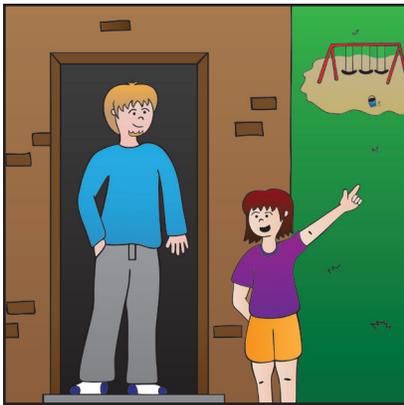
CROSS-CURRICULAR SUGGESTIONS

1. Dramatize the story or an excerpt from the story.
2. Draw posters using fast-flowing water safety rules.



Millie's Fast-Flowing Water Safety

Circle the pictures that show children following fast-flowing water safety rules. Put a large X on the pictures that show children not being safe.



- Make sure an adult always knows where you are playing.
- Never go near fast-flowing water without an adult.
- Don't play in or near fast-flowing water
- Don't try to retrieve objects from the water.
- Don't go in the water after someone falls in.
- If you see someone fall in fast-flowing water, call 911 right away.

MILLIE
the Muskrat





Millie's Fast-Flowing Water Safety

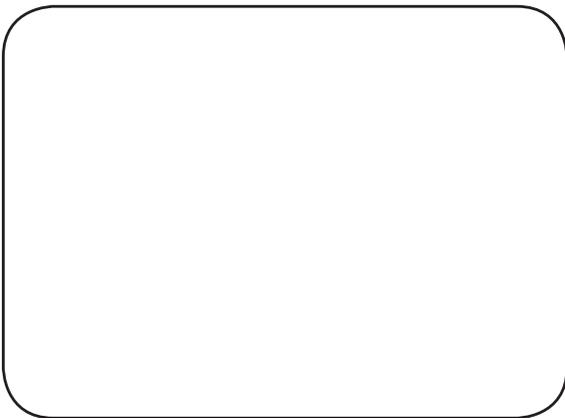
In the boxes below, draw pictures that show the safety rules



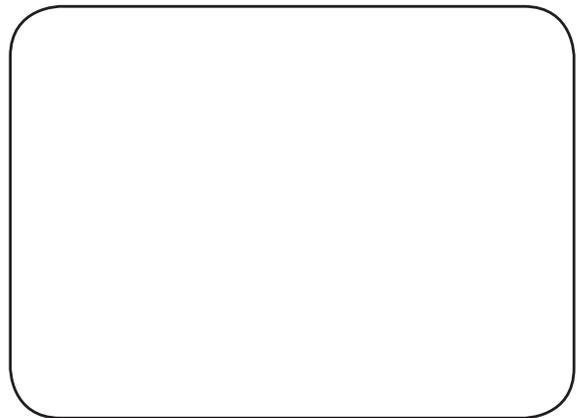
Don't play in the creek.



Don't swim in the creek.



Don't reach for things in the creek.



Don't fish in the creek.

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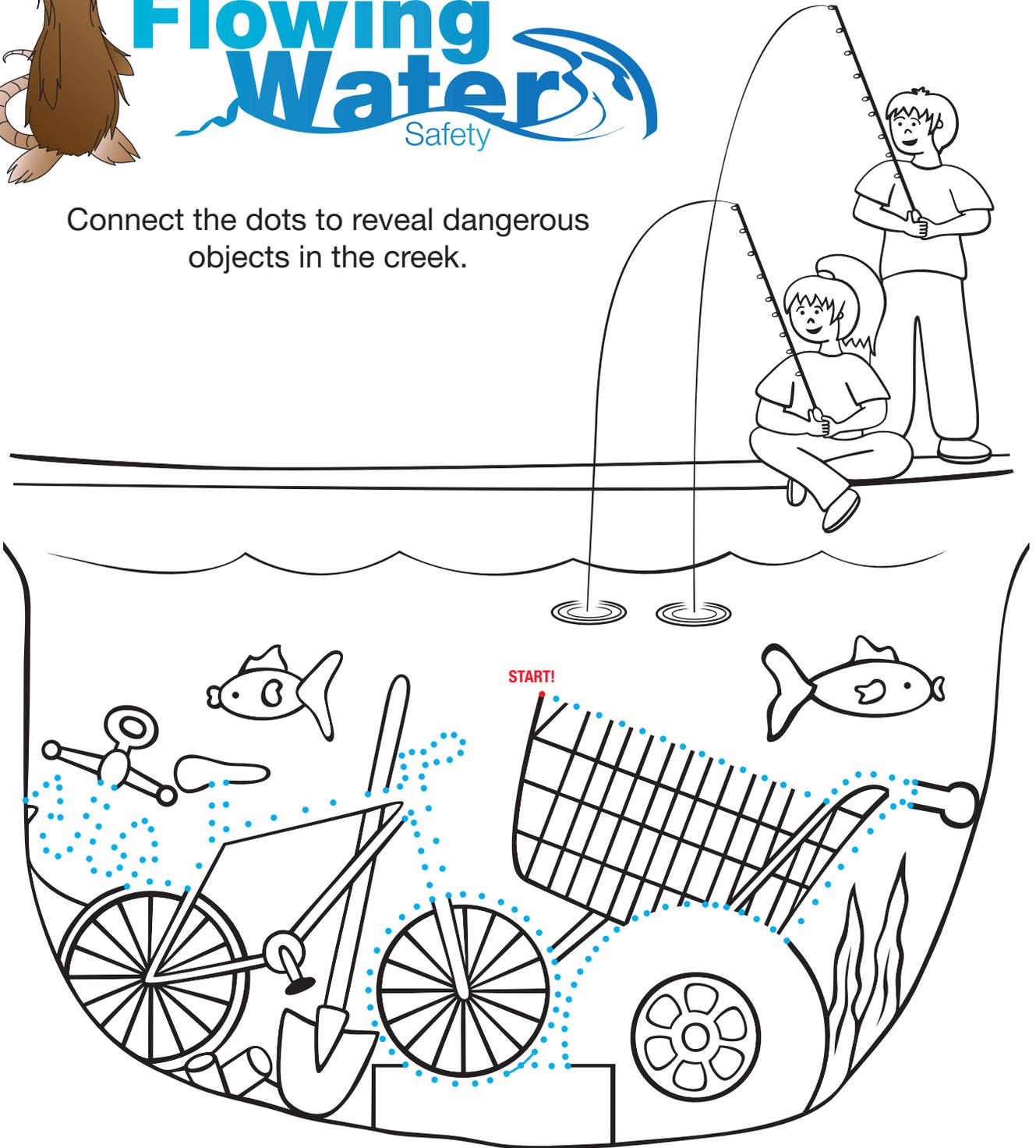
MILLIE
the Muskrat





Millie's Fast Flowing Water Safety

Connect the dots to reveal dangerous objects in the creek.



MILLIE SAYS...

DID YOU KNOW the sides of a creek or river can be very slippery. You could easily slip, fall in, and be carried away by the current if you get too close.





BACKGROUND INFORMATION

INTRODUCTION

There have been 22 recorded deaths from drowning in Junction Creek since 1921, as well as many injuries and near death situations. On August 25th, 2007, Adam Dickie, a 13 year old Sudbury boy, was fishing on the shores of Junction Creek with a friend. Adam slipped and fell into the creek and wasn't able to get back out because of the depth of the water. Water levels were high due to heavy rainfall.

Adam's death prompted an appeal by members of the community to find solutions for stopping any further unnecessary deaths and injury in fast-flowing water. "Swift water" in area lakes, rivers and drainage ditches can be life threatening. Education with regards to this issue is a positive step in protecting the children in our community.

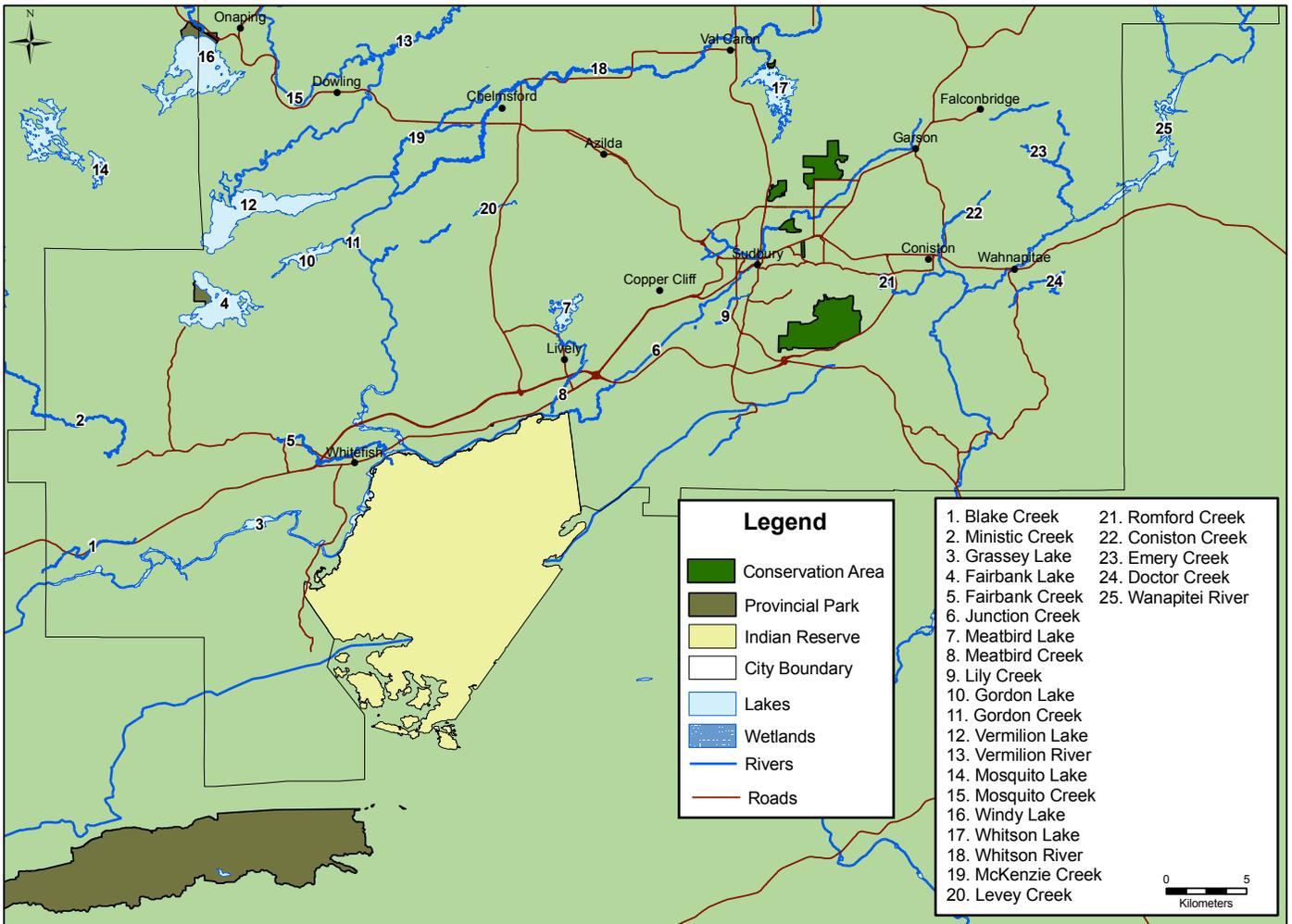
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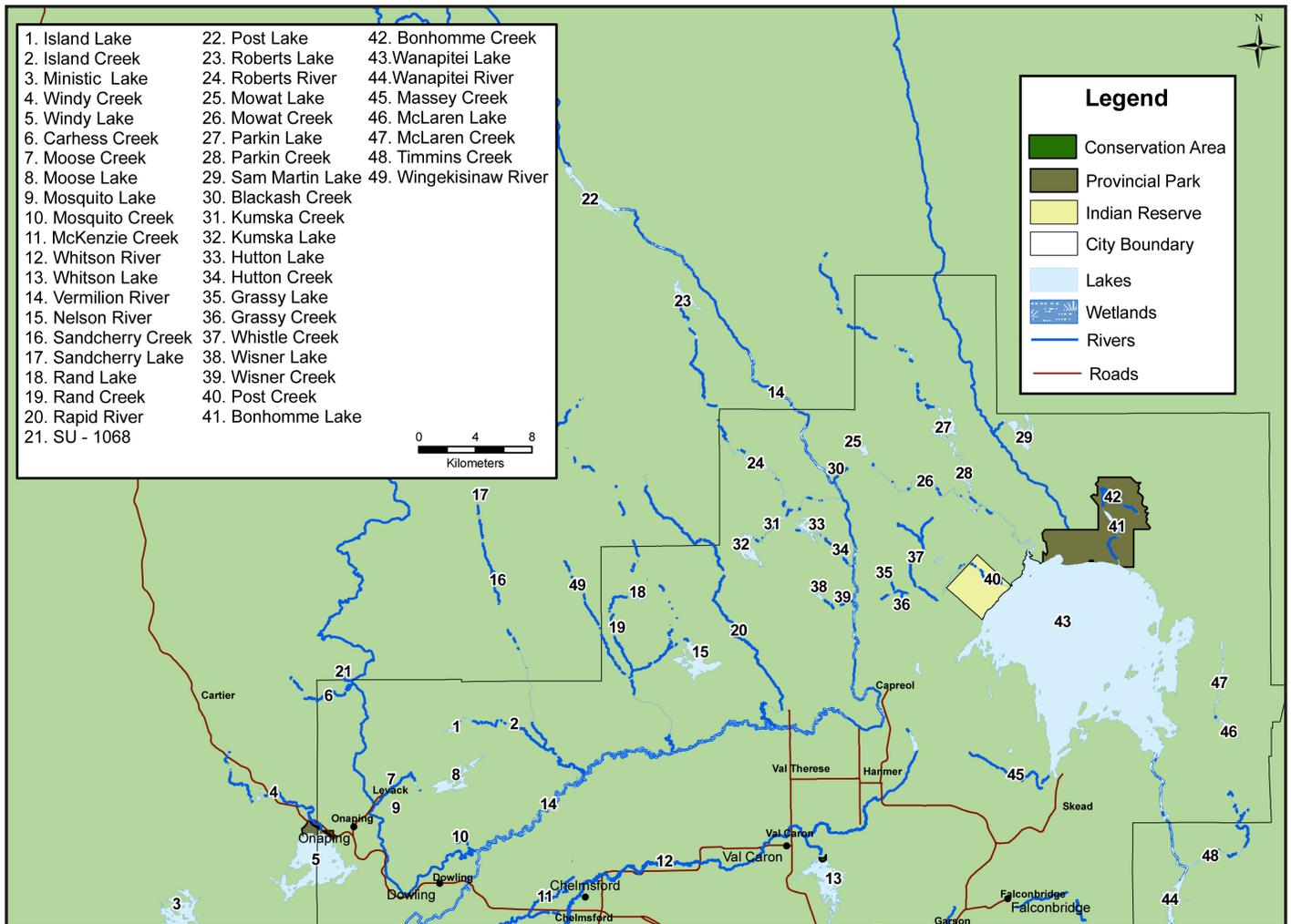
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FAST-FLOWING WATER SAFETY TIPS

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WHAT TO DO IF YOU FALL IN THE WATER

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WHAT TO DO IF A FRIEND FALLS IN THE WATER

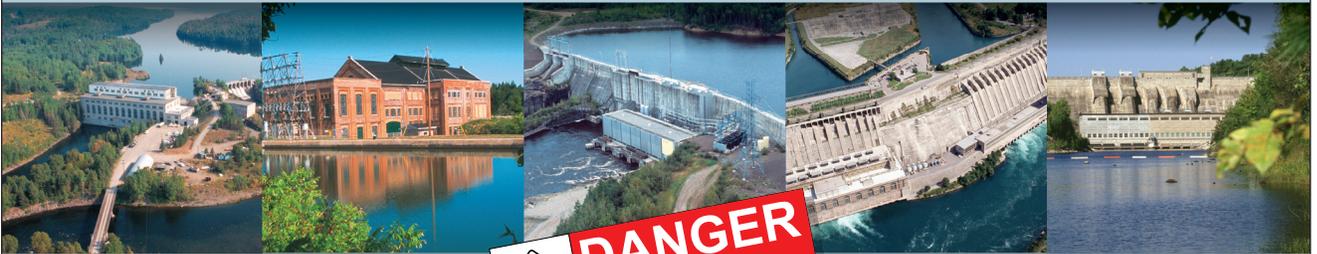
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MILLIE
the Muskrat

STAY CLEAR STAY SAFE

around dams, hydroelectric stations & surrounding waterways



ONTARIO**POWER**
GENERATION



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Before



After

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- ❗ **Don't find yourself on thin ice. Winter brings more dangers.** Ice forming near a dam or hydroelectric station can be thinner and less consistent than ice in other locations because of changing water flows beneath it.
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**ONTARIO POWER
GENERATION**



FAST-FLOWING WATER (GR 1 & 2)

OBJECTIVE:

Educate students about the dangers of fast-flowing water in the community.

STUDENTS WILL LEARN:

1. It is not safe to play near or in fast-flowing water (lakes, rivers, creeks, ditches)
2. Fast-flowing water safety practices.
3. How to respond when confronted with an emergency.

CURRICULUM EXPECTATIONS (HEALTH AND PHYSICAL EDUCATION):

GRADE 1

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

A3.2 identify environmental factors that post safety risks during participation in physical activity

C2.4 apply their knowledge of essential safety practices to take an active role in their own safety

GRADE 2

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

A3.2 identify ways of protecting themselves and others, from safety risks while participating in physical activity

RESOURCES

- storybook
- poster
- colouring book
- activity pages
- puppet



FAST-FLOWING WATER (GR 1 & 2)

LITERACY CONNECTION (ONTARIO WRITING EXEMPLAR TASK)

<http://www.edu.gov.on.ca/eng/curriculum/elementary/writing18ex.pdf>

GRADE 1 – Students will write a short paragraph describing a picture related to this unit. Students will focus on identifying and describing the potential dangers of fast flowing water.

GRADE 2 – Students will write a short narrative describing the potential dangers of fast flowing water. Refer to activity page provided.

OTHER CROSS-CURRICULAR SUGGESTIONS

1. Dramatize the story or an excerpt from the story.
2. Draw posters using fast-flowing water safety rules.
3. Complete science experiment/demonst



Millie's Fast-Flowing Water Safety

Draw a picture for each Water Safety Rule



Never go near fast-flowing water without an adult.



Don't play in or near fast-flowing water.



Don't try to retrieve objects that have fallen in the water.



Don't go in the water after someone falls in.

MILLIE SAYS...

DID YOU KNOW there are often dangerous objects in fast-flowing water.





Look at the pictures. Choose the best safety rule to go with each picture. Write its number in the box next to the picture.



1. Millie Muskrat says, "Never go near fast-flowing water without an adult."
2. Millie Muskrat says, "Don't play in or near fast-flowing water."
3. Millie Muskrat says, "Don't try to retrieve objects that have fallen in the water."
4. Millie Muskrat says, "Don't go in the water after someone falls in."

MILLIE SAYS...

DID YOU KNOW the sides of a creek or river can be very slippery. You could easily slip, fall in, and be carried away by the current if you get too close.





Look at the words listed in the word bank below. Find and circle them in puzzle.

WORD BANK

fast-flowing
slippery
danger
swim
objects
current
creek
water
ice
play
fall
adult

Z	E	C	D	S	I	P	G	G	H	K	M	N	Q	A
C	F	A	S	T	F	L	O	W	I	N	G	P	Y	M
B	U	X	S	C	L	Y	O	B	J	E	C	T	S	P
R	A	R	N	Y	R	E	P	X	C	L	S	R	V	S
A	K	X	R	A	O	E	S	H	G	R	W	T	B	L
B	D	L	R	E	Z	X	E	V	W	B	I	W	D	I
W	C	F	D	B	N	M	Z	K	Q	L	M	J	H	P
U	A	E	H	I	P	T	D	A	N	G	E	R	P	P
W	H	T	T	Z	I	V	U	M	J	H	T	F	L	E
Q	X	G	E	U	W	C	A	D	U	L	T	Y	A	R
F	A	L	L	R	X	F	E	U	M	O	I	F	Y	Y

Look up, down, forwards and diagonally!

FILL-IN-THE-BLANKS

Complete the safety rules below, using words from the word bank.

1. Never go near _____ water without an _____.
2. Don't _____ in or near fast-flowing water.
3. There may be dangerous _____ in the creek.
4. If you see someone _____ in fast-flowing water, call 9-1-1 right away.

MILLIE SAYS...

DID YOU KNOW ice on fast flowing water is often thin and dangerous to walk on. Before you head onto the ice, check with an adult.





Read the story. Write an ending below.

Billy loves to skate and play hockey. He practices as much as he can so he can be a professional hockey player someday. Billy's dad takes him skating at Ramsey Lake every Saturday morning. He always wears his helmet and doesn't go on the ice without his dad. Billy's dad says you have to make sure the ice is safe and thick enough not to be dangerous.

One Saturday in March, Billy's dad has to work and he goes to his friend John's house to play. John lives near a river and says that he goes skating on the ice there all the time. John suggests they go shoot the puck around on the river. Billy isn't sure this is a good idea but decides to go anyway.

Millie says...

DID YOU KNOW fast-flowing water has a strong current that can pull people and objects through and under the water.





Millie's Fast Flowing Water Safety

Look at the words listed in the word bank below. Find and circle them in puzzle.

WORD BANK

fast-flowing
slippery
danger
swim
objects
current
creek
water
ice
play
fall
adult



Look up, down, forwards and diagonally!

FILL-IN-THE-BLANKS

Complete the safety rules below, using words from the word bank.

1. Never go near fast-flowing water without an adult.
2. Don't play in or near fast-flowing water.
3. There may be dangerous objects in the creek.
4. If you see someone fall in fast-flowing water, call 9-1-1 right away.

MILLIE SAYS...

DID YOU KNOW ice on fast flowing water is often thin and dangerous to walk on. Before you head onto the ice, check with an adult.





BACKGROUND INFORMATION

INTRODUCTION

There have been 22 recorded deaths from drowning in Junction Creek since 1921, as well as many injuries and near death situations. On August 25th, 2007, Adam Dickie, a 13 year old Sudbury boy, was fishing on the shores of Junction Creek with a friend. Adam slipped and fell into the creek and wasn't able to get back out because of the depth of the water. Water levels were high due to heavy rainfall.

Adam's death prompted an appeal by members of the community to find solutions for stopping any further unnecessary deaths and injury in fast-flowing water. "Swift water" in area lakes, rivers and drainage ditches can be life threatening. Education with regards to this issue is a positive step in protecting the children in our community.

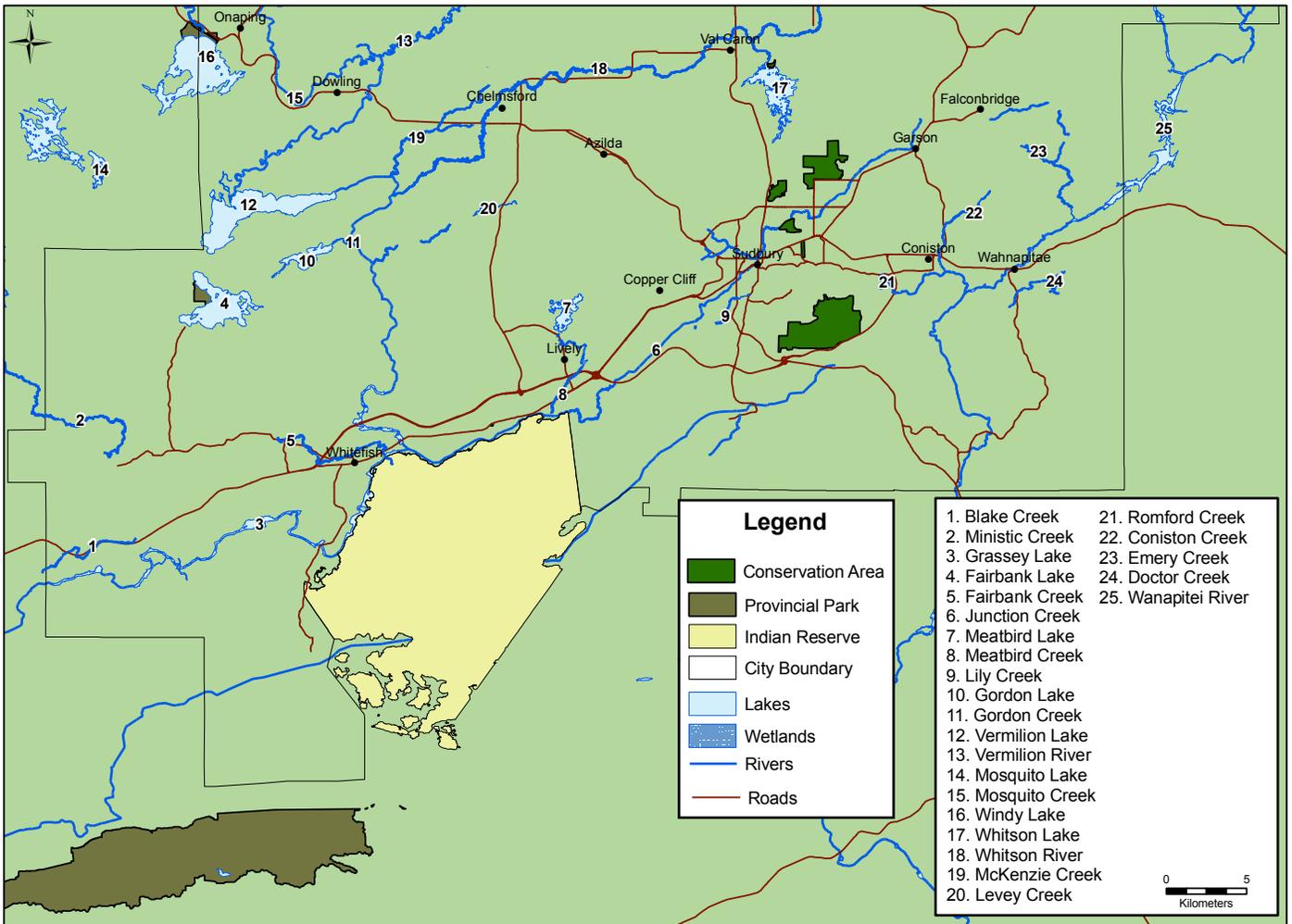
BACKGROUND INFORMATION

- water levels for rivers and creeks get very high and currents get very powerful, especially in the spring because of the melting snow, and also during heavy rain
- creek and river bottoms can be dangerous, muddy and unstable
- creek mud is different than regular sand, it exerts a force or suction on objects
- objects or people may get stuck and be unable to move
- murky water can hide objects or debris that can trap someone
- unexpected drop-offs are also a hazard
- even though the temperature outside might be warming up, the water is still very cold
- even ditches beside the road can be dangerous during high water periods
- some roadside ditches are deeper than you think
- even if the water still looks frozen, ice is thinner on moving water because of currents
- banks are soft and slippery, especially in the spring and fall
- the human body does not float well in fast flowing water (has more air, aerated water provides less buoyancy than calm water)
- hydroelectric dams and stations are dangerous places because water is moving fast around them, strong undercurrents can quickly overwhelm even a strong swimmer, water levels change quickly, calm water can quickly become dangerous



Millie's **Fast Flowing Water** Safety

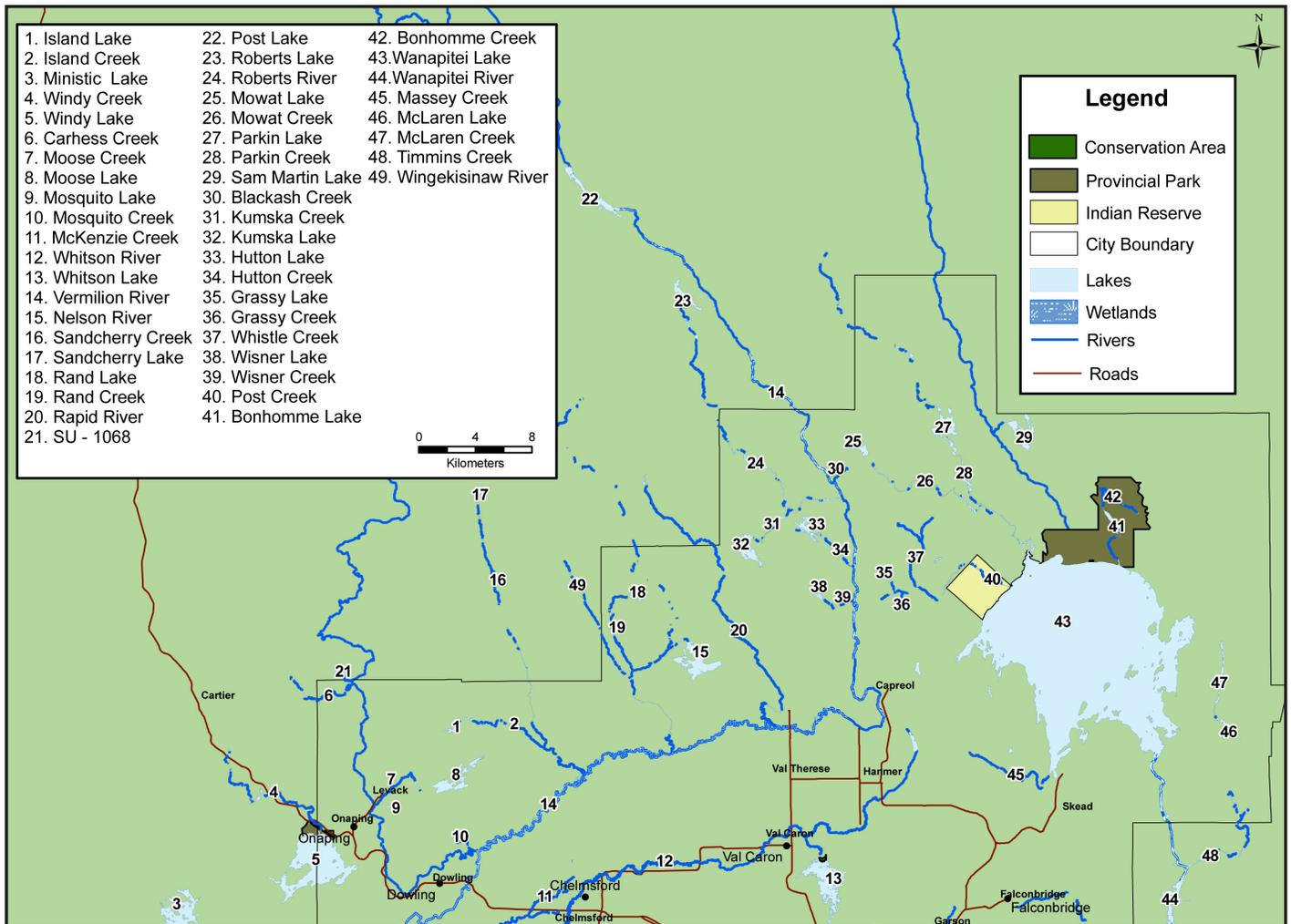
MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





Millie's **Fast Flowing Water** Safety

MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





VOCABULARY

CALM WATER:

Water that does not move, no current, waves or ripples

CURRENT:

The flow and direction of water. Water in the centre of a lake moves faster than water on the edges.

UNDERCURRENT:

Current is the way water flows. Undercurrent is water beneath the surface flowing in a different direction from the water on top.

DEBRIS:

Scattered remains of something that has been thrown away (junk, trash, garbage)

DOWNSTREAM:

Moving in the same direction the water is flowing.

BARRIER:

Something that blocks the way

FAST- FLOWING WATER:

Water that moves quickly and steadily along in a stream.

BANK:

The slope bordering a stream or creek.

DRAINAGE DITCH:

A long, narrow trench, made by digging and used for draining water.

RUNOFF:

Water that drains or flows, due to rain or melting snow.

HYDROELECTRICITY:

Hydroelectricity is electricity generated by hydropower (the production of power through use of the gravitational force of falling or flowing water).



FAST-FLOWING WATER SAFETY TIPS

MILLIE SAYS...

Never go near the water without an adult.	An adult should always know where you are in case of an emergency.
Stay off the ice over fast-flowing water.	Ice over fast-flowing water may appear safe, but is thin and dangerous.
Never retrieve objects that have fallen in the creek.	The current might be stronger than it seems.
Always use designated trails when walking by the water.	Creek and river banks are soft and slippery.
Stay away from drainage ditches.	Some roadside ditches are deeper than you think.
Stay clear, stay safe.	Stay away from dams, hydroelectric stations and surrounding waterways.

WHAT TO DO IF YOU FALL IN THE WATER

- Don't try to swim against the current
- Float on your back, draw your knees up to your chest and point your feet to go with the current.
- Try to steer your body gently towards the shore, where the water is shallower and you can regain your footing.

WHAT TO DO IF A FRIEND FALLS IN THE WATER

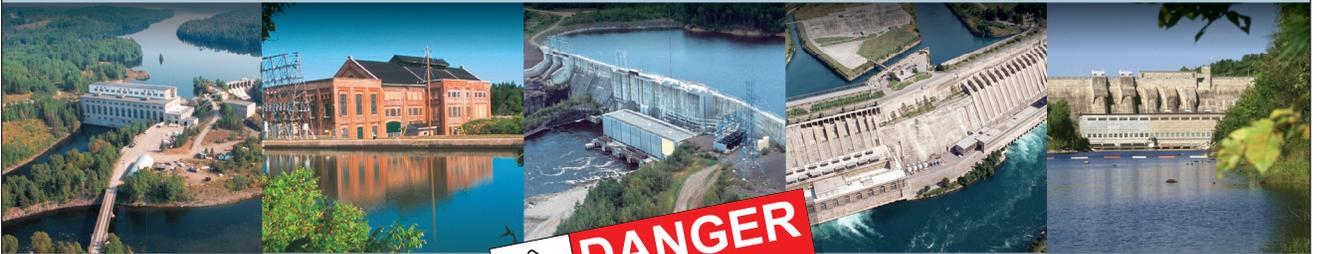
- Never try to rescue a friend who's in the water.
- If you are with an adult, ask them for help immediately, or if you know someone in the area, go and ask them for help.
- If you have a cell phone, call 911 for help immediately. Tell the operator where you are and what has happened.
- Stay on the shore, away from the water, until help arrives.
- If you do not have a cell phone, you can run to a nearby home to ask an adult for help, or find a pay phone and dial 911 for help immediately. This call is free of charge.



MILLIE
the Muskrat

STAY CLEAR STAY SAFE

around dams, hydroelectric stations & surrounding waterways



ONTARIO**POWER**
GENERATION



Stay Clear, Stay Safe around dams,
hydroelectric stations and
surrounding waterways



Remotely-operated dam gates can quickly turn calm waters or dry riverbeds into dangerous flows.

Getting too close to dams and hydroelectric stations is always dangerous. A spot that seems calm and safe one moment can turn into a dangerous surge of rising and fast-flowing water – quickly and often without any warning.

Our operators can't see you

Most facilities are remotely-controlled by operators many kilometres away. They open or close dams, to manage river flows, and start or stop generators throughout the day and night as demand for electricity rises and falls.

This may result in frequent, rapid and dangerous changes in water levels and flows, changes that can harm those who venture too close.

Be especially careful when near waters above and below dams and hydroelectric stations.

At a generating station, water from above the dam runs through the station and then surges out to join the main stream of the river.

In areas above and below dams, fast-moving water creates dangerous turbulence and strong undercurrents which are not always apparent from the calm looking surface waters.



**STAY
CLEAR
STAY
SAFE**

What happens when you fail to stay clear, stay safe?



This is a very dangerous spot and should be avoided. Areas inside warning signs, buoys, booms are extremely dangerous, stay clear of them.

The same spot just minutes later. Remotely operated gates at the dam release large volumes of water that could leave you stranded, swamp your boat or put you in the grip of an undertow.

Be Alert!

Even if you can't see a generating station or dam, waterways upstream and downstream can still be affected by their operations. It's important to be aware of the potential dangers caused by changing flows, and stay clear of waters near stations and dams.

! Don't find yourself on thin ice. Winter brings more dangers.

Ice forming near a dam or hydroelectric station can be thinner and less consistent than ice in other locations because of changing water flows beneath it.

Dams and hydroelectric stations are not recreation areas

Be wise not to treat hydroelectric facilities as fishing holes, boating areas or swimming areas.

These areas are not safe for any recreational activities, including camping, picnicking or even winter activities such as snowmobiling or cross-country skiing.

Put safety first. When travelling on unfamiliar paths or waterways, plan your trip ahead.

For your own safety near a dam or hydroelectric station, make sure that you:

- Obey ALL warning signs, fences, buoys, booms and barriers. They are put there to protect you. The areas inside are dangerous, so stay clear.
- Some signs have pictures that show the consequences of not staying clear.
- Stay well back from the edge of waters above and below dams and hydroelectric stations.
- Never stand below a dam, or anchor or tie your boat there. Rapidly changing water levels and flows can swamp your boat or pull you into an undertow.
- Stay off dams or hydroelectric station structures, unless OPG has clearly indicated where it is safe to walk or drive.



- Avoid snowmobiling, cross-country skiing, skating or ice fishing on rivers or lakes near dams and generating stations.
- Don't risk walking onto a river or lake around dams and generating stations where the ice may be thin due to the current. Changing water levels can crack the ice, leaving it weak and unstable.

TRESPASSING ON OPG PROPERTY IS ILLEGAL.

TO ENSURE YOUR SAFETY,

TRESPASSERS CAN BE CHARGED.



Teach children to Stay Clear and Stay Safe!

Be sure and tell children exactly where they can and cannot go and make sure you are nearby and can see them at all times. For their safety, teach them what the signs and other barriers mean.

As a rule, remember to:

- Stay out of dry or calm riverbeds below dams. They can quickly change into rapidly flowing waterways with dangerous currents.
- Stay a safe distance outside of warning signs, buoys, booms and barriers and be alert for changes in water levels.
- Stay away from the edge of a waterway where footing may be slippery.
- Don't wade into moving water.
- When swimming, fishing, boating or paddling in a river, be aware of the water level and check upstream frequently for any sign of increasing currents or rising water. If the water level is rising or the flow is speeding up, get out of the water or move your boat downstream. Obey all signs and barriers.



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*The area between booms
and dams is very dangerous.
Stay Clear!*



Stay Clear. Stay Safe!

We take pride in operating our facilities safely, in a manner that respects the environment and the rights of other users of the waterways.

Please respect the hazards near our dams and stations, and obey all warning signs, booms, buoys, and barriers. They are there for your protection.

*For more information or to obtain a
FREE DVD and FREE interactive,
educational computer game for children,
simply visit www.opg.com*

**ONTARIO POWER
GENERATION**



FAST-FLOWING WATER (GR 3 & 4)

OBJECTIVE:

Educate students about the dangers of fast-flowing water in the community.

STUDENTS WILL LEARN:

1. It is not safe to play near or in fast-flowing water (lakes, rivers, creeks, ditches)
2. Fast-flowing water safety practices.
3. How to respond when confronted with an emergency.

CURRICULUM EXPECTATIONS (HEALTH AND PHYSICAL EDUCATION):

GRADE 3

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

A3.2 describe how to respond to accidents or injuries incurred while participating in physical activity

C2.2 apply their understanding of good safety practices by developing safety guidelines for various places and situations outside the classroom

GRADE 4

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

A3.2 describe common precautions for preventing accidents and injuries while participating in different types of physical activity

C2.2 apply a decision making process to assess risks and make safe decisions in a variety of situations

RESOURCES

- storybook
- poster
- colouring book
- activity pages
- puppet
- DVD (refer to suggested activities)



FAST-FLOWING WATER (GR 3 & 4)

LITERACY CONNECTION (ONTARIO WRITING EXEMPLAR TASK)

<http://www.edu.gov.on.ca/eng/curriculum/elementary/writing18ex.pdf>

GRADE 3 – Students will write a friendly letter to Millie the Muskrat. Students should refer to Millie’s teachings about fast flowing water safety.

GRADE 4 – Students will write a fictional story referring to the dangers of fast flowing water. Refer to activity page provided.

OTHER CROSS-CURRICULAR SUGGESTIONS

1. Dramatize the story or an excerpt from the story.
2. Draw posters using fast-flowing water safety rules.
3. Complete science experiment/demonstration (Appendix)



CORRECT THE RULE Read the safety rules. Each rule has something wrong with it and the words are mixed up. Write the rule correctly.

1. playing knows sure where an Make adult always you are.

2. go Never near adult without water fast-flowing an.

3. or play fast-flowing in near Don't water.

4. try Don't retrieve to from objects water the.

5. Don't after water go in the falls someone in.

6. go flow Where do waters not!

MILLIE SAYS...

DID YOU KNOW the sides of a creek or river can be very slippery. You could easily slip, fall in, and be carried away by the current if you get too close.





Millie's Fast Flowing Water Safety

YOU DECIDE Look at the pictures. Write a sentence about each picture. Then write what you would do.







- Make sure an adult always knows where you are playing.
- Never go near fast-flowing water without an adult.
- Don't play in or near fast-flowing water
- Don't try to retrieve objects from the water.
- Don't go in the water after someone falls in.
- If you see someone fall in fast-flowing water, call 911 right away.

MILLIE the Muskrat





WHAT'S THE MAIN IDEA? Read each paragraph. Choose the sentence that tells the main idea.

1. Water levels for rivers, creeks and drainage ditches get very high and currents get very strong in the spring because of the rain and melting snow. Strong currents can pull in even strong adults.
 - A. In the spring, there is a lot of rain and melting snow.
 - B. Strong currents are dangerous.
 - C. Water levels for rivers, creeks and drainage ditches drop in the spring.
2. Stay away from shorelines unless you're with an adult, and even then be very careful not to go close to the water. Banks can be soft and slippery. Use designated walking and biking trails.
 - A. Lots of rain makes the banks of the creek soft and slippery.
 - B. Biking is fun in the spring and summer.
 - C. Don't walk or play near fast-flowing water.
3. Ditches, rivers and creeks often freeze over in the winter. However, due to strong currents, ice is not thick. Even if water looks frozen, ice is thinner on moving water.
 - A. Ice is not always as thick as it appears.
 - B. Ditches, rivers and creeks do not freeze.
 - C. Shallow water is not dangerous.
4. Creek and lake bottoms are very different; they are muddy, unstable and can prevent you from moving properly because of mud and debris.
 - A. Lake bottoms are not like creek bottoms.
 - B. Mud and objects in the water can prevent you from moving freely and safely.
 - C. Lakes and creeks are a beautiful part of our community.

- **Make sure an adult always knows where you are playing.**
- **Never go near fast-flowing water without an adult.**
- **Don't play in or near fast-flowing water**
- **Don't try to retrieve objects from the water.**
- **Don't go in the water after someone falls in.**
- **If you see someone fall in fast-flowing water, call 911 right away.**

MILLIE
the Muskrat





BACKGROUND INFORMATION

INTRODUCTION

There have been 22 recorded deaths from drowning in Junction Creek since 1921, as well as many injuries and near death situations. On August 25th, 2007, Adam Dickie, a 13 year old Sudbury boy, was fishing on the shores of Junction Creek with a friend. Adam slipped and fell into the creek and wasn't able to get back out because of the depth of the water. Water levels were high due to heavy rainfall.

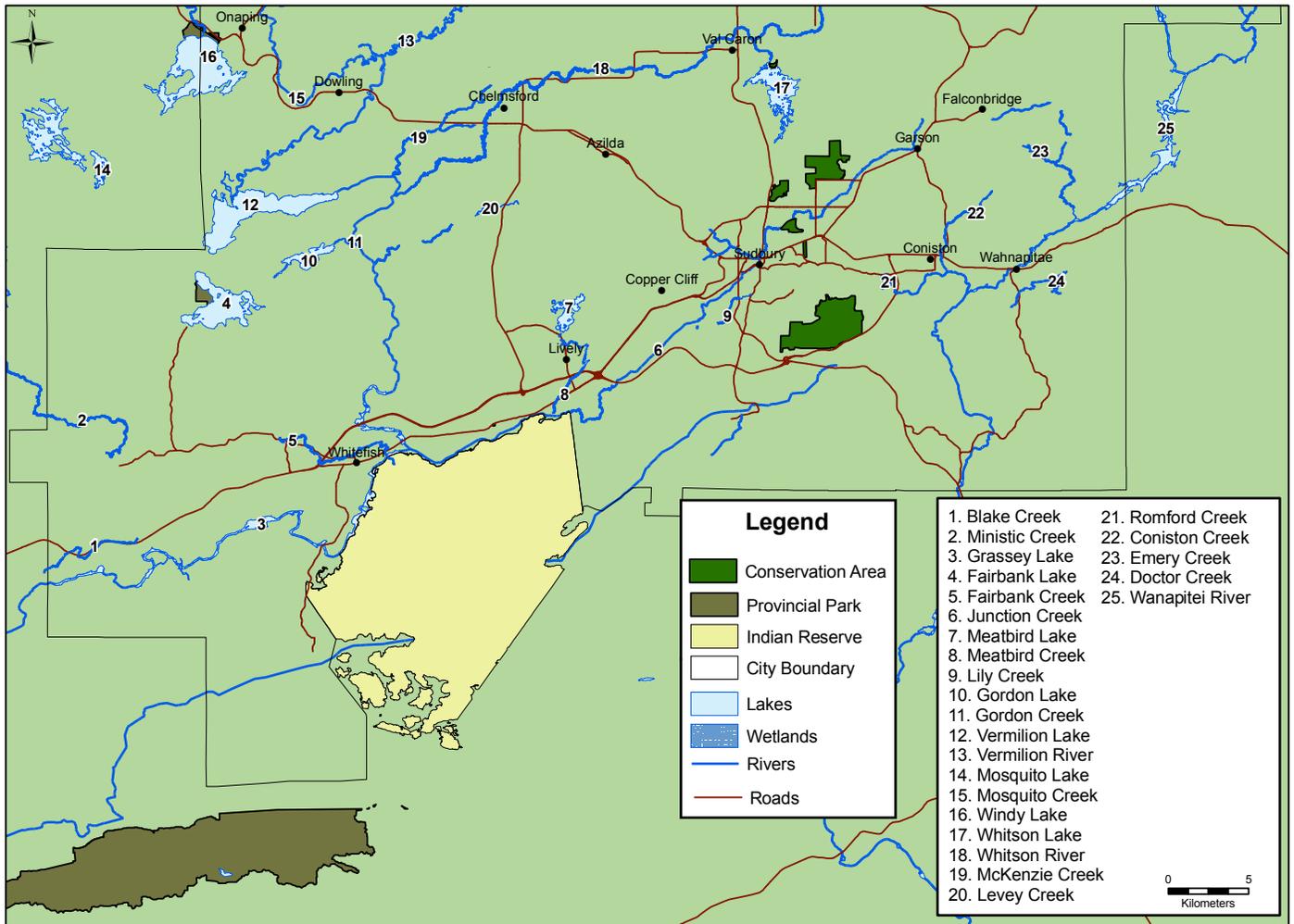
Adam's death prompted an appeal by members of the community to find solutions for stopping any further unnecessary deaths and injury in fast-flowing water. "Swift water" in area lakes, rivers and drainage ditches can be life threatening. Education with regards to this issue is a positive step in protecting the children in our community.

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- murky water can hide objects or debris that can trap someone
- unexpected drop-offs are also a hazard
- even though the temperature outside might be warming up, the water is still very cold
- even ditches beside the road can be dangerous during high water periods
- some roadside ditches are deeper than you think
- even if the water still looks frozen, ice is thinner on moving water because of currents
- banks are soft and slippery, especially in the spring and fall
- the human body does not float well in fast flowing water (has more air, aerated water provides less buoyancy than calm water)
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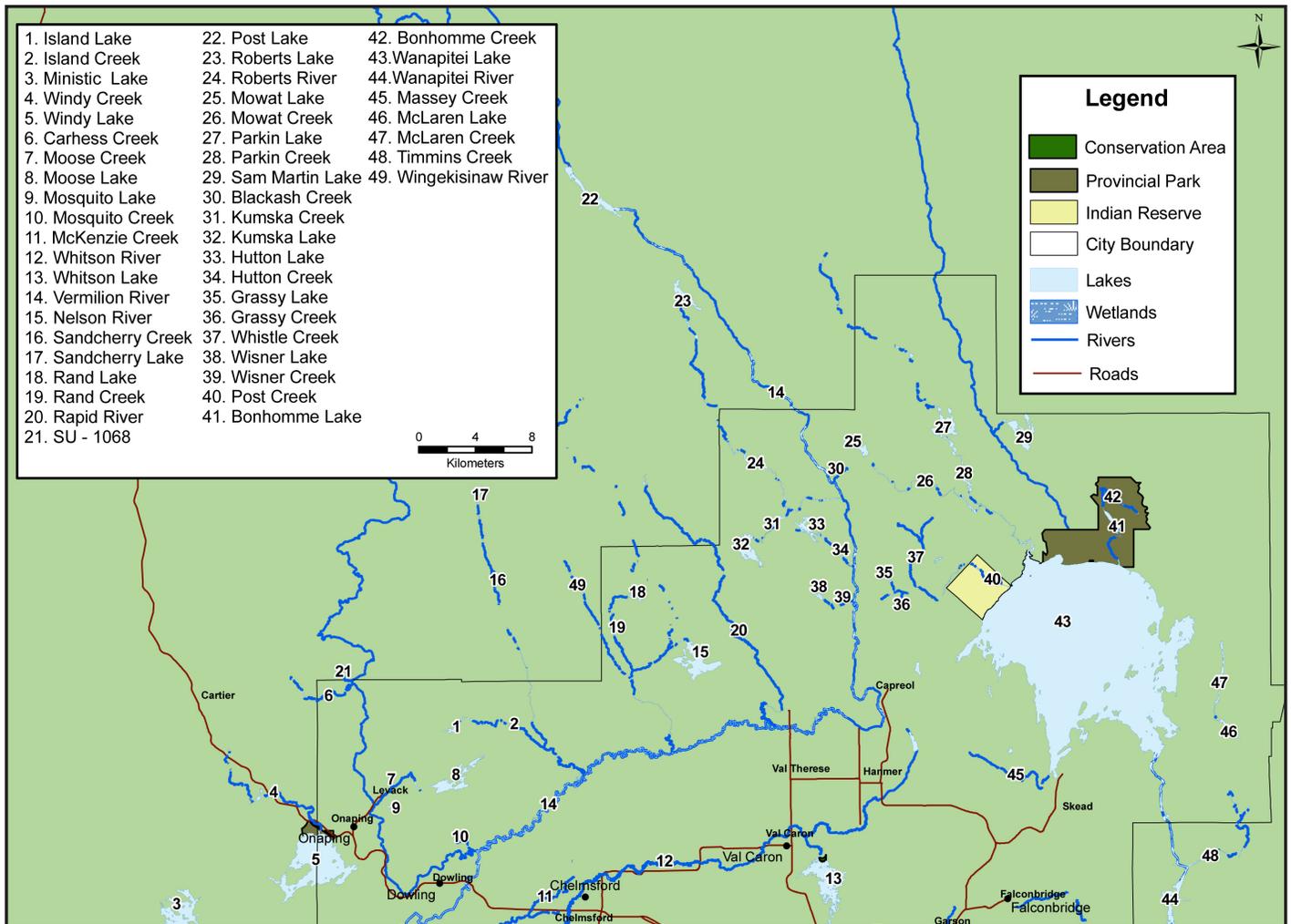
MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





Millie's **Fast Flowing Water** Safety

MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





VOCABULARY

CALM WATER:

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FAST-FLOWING WATER SAFETY TIPS

MILLIE SAYS...

Never go near the water without an adult.	An adult should always know where you are in case of an emergency.
Stay off the ice over fast-flowing water.	Ice over fast-flowing water may appear safe, but is thin and dangerous.
Never retrieve objects that have fallen in the creek.	The current might be stronger than it seems.
Always use designated trails when walking by the water.	Creek and river banks are soft and slippery.
Stay away from drainage ditches.	Some roadside ditches are deeper than you think.
Stay clear, stay safe.	Stay away from dams, hydroelectric stations and surrounding waterways.

WHAT TO DO IF YOU FALL IN THE WATER

- Don't try to swim against the current
- Float on your back, draw your knees up to your chest and point your feet to go with the current.
- Try to steer your body gently towards the shore, where the water is shallower and you can regain your footing.

WHAT TO DO IF A FRIEND FALLS IN THE WATER

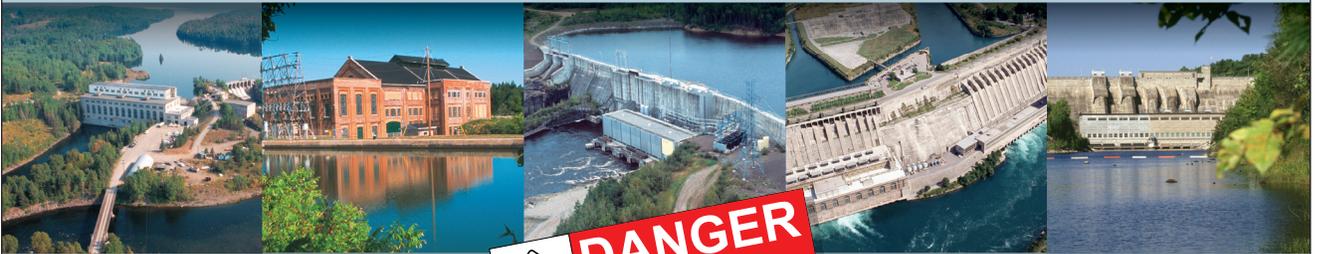
- Never try to rescue a friend who's in the water.
- If you are with an adult, ask them for help immediately, or if you know someone in the area, go and ask them for help.
- If you have a cell phone, call 911 for help immediately. Tell the operator where you are and what has happened.
- Stay on the shore, away from the water, until help arrives.
- If you do not have a cell phone, you can run to a nearby home to ask an adult for help, or find a pay phone and dial 911 for help immediately. This call is free of charge.



MILLIE
the Muskrat

STAY CLEAR STAY SAFE

around dams, hydroelectric stations & surrounding waterways



ONTARIO**POWER**
GENERATION



Stay Clear, Stay Safe around dams,
hydroelectric stations and
surrounding waterways



Remotely-operated dam gates can quickly turn calm waters or dry riverbeds into dangerous flows.

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Be especially careful when near waters above and below dams and hydroelectric stations.

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In areas above and below dams, fast-moving water creates dangerous turbulence and strong undercurrents which are not always apparent from the calm looking surface waters.

**STAY
CLEAR
STAY
SAFE**



What happens when you fail to stay clear, stay safe?



EXTREME DANGER
Dam Upstream - Keep Out
This Riverbed Floods
Without Warning

This is a very dangerous spot and should be avoided. Areas inside warning signs, buoys, booms are extremely dangerous, stay clear of them.

The same spot just minutes later. Remotely operated gates at the dam release large volumes of water that could leave you stranded, swamp your boat or put you in the grip of an undertow.

Be Alert!

Even if you can't see a generating station or dam, waterways upstream and downstream can still be affected by their operations. It's important to be aware of the potential dangers caused by changing flows, and stay clear of waters near stations and dams.

! Don't find yourself on thin ice. Winter brings more dangers.

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Dams and hydroelectric stations are not recreation areas

Be wise not to treat hydroelectric facilities as fishing holes, boating areas or swimming areas.

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For your own safety near a dam or hydroelectric station, make sure that you:

- Obey ALL warning signs, fences, buoys, booms and barriers. They are put there to protect you. The areas inside are dangerous, so stay clear.
- Some signs have pictures that show the consequences of not staying clear.
- Stay well back from the edge of waters above and below dams and hydroelectric stations.
- Never stand below a dam, or anchor or tie your boat there. Rapidly changing water levels and flows can swamp your boat or pull you into an undertow.
- Stay off dams or hydroelectric station structures, unless OPG has clearly indicated where it is safe to walk or drive.



- Avoid snowmobiling, cross-country skiing, skating or ice fishing on rivers or lakes near dams and generating stations.
- Don't risk walking onto a river or lake around dams and generating stations where the ice may be thin due to the current. Changing water levels can crack the ice, leaving it weak and unstable.

TRESPASSING ON OPG PROPERTY IS ILLEGAL.

TO ENSURE YOUR SAFETY,

TRESPASSERS CAN BE CHARGED.



Teach children to Stay Clear and Stay Safe!

Be sure and tell children exactly where they can and cannot go and make sure you are nearby and can see them at all times. For their safety, teach them what the signs and other barriers mean.

As a rule, remember to:

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- Stay away from the edge of a waterway where footing may be slippery.
- Don't wade into moving water.
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*The area between booms
and dams is very dangerous.
Stay Clear!*



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**ONTARIO POWER
GENERATION**



FAST-FLOWING WATER (GR 5 & 6)

OBJECTIVE:

Educate students about the dangers of fast-flowing water in the community.

STUDENTS WILL LEARN:

1. It is not safe to play near or in fast-flowing water (lakes, rivers, creeks, ditches)
2. Fast-flowing water safety practices.
3. How to respond when confronted with an emergency.

CURRICULUM EXPECTATIONS (HEALTH AND PHYSICAL EDUCATION):

GRADE 5

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

C2.2 demonstrate the ability to deal with threatening situations by applying appropriate living skills

GRADE 6

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

RESOURCES

- storybook
- poster
- colouring book
- activity pages
- puppet
- DVD (refer to suggested activities)



FAST-FLOWING WATER (GR 5 & 6)

LITERACY CONNECTION (ONTARIO WRITING EXEMPLAR TASK)

<http://www.edu.gov.on.ca/eng/curriculum/elementary/writing18ex.pdf>

GRADE 5 – Students can research one aspect of fast flowing water safety (creeks, drainage ditches, dams) and complete a non-fiction report.

GRADE 6 – Students will write a summary of a newspaper article related to the dangers of fast flowing water. (See articles provided).

OTHER CROSS-CURRICULAR SUGGESTIONS

1. Dramatize the story or an excerpt from the story.
2. Draw posters using fast-flowing water safety rules.
3. Complete science experiment/demonstration (Appendix)



Millie's Fast Flowing Water Safety

WORD BANK

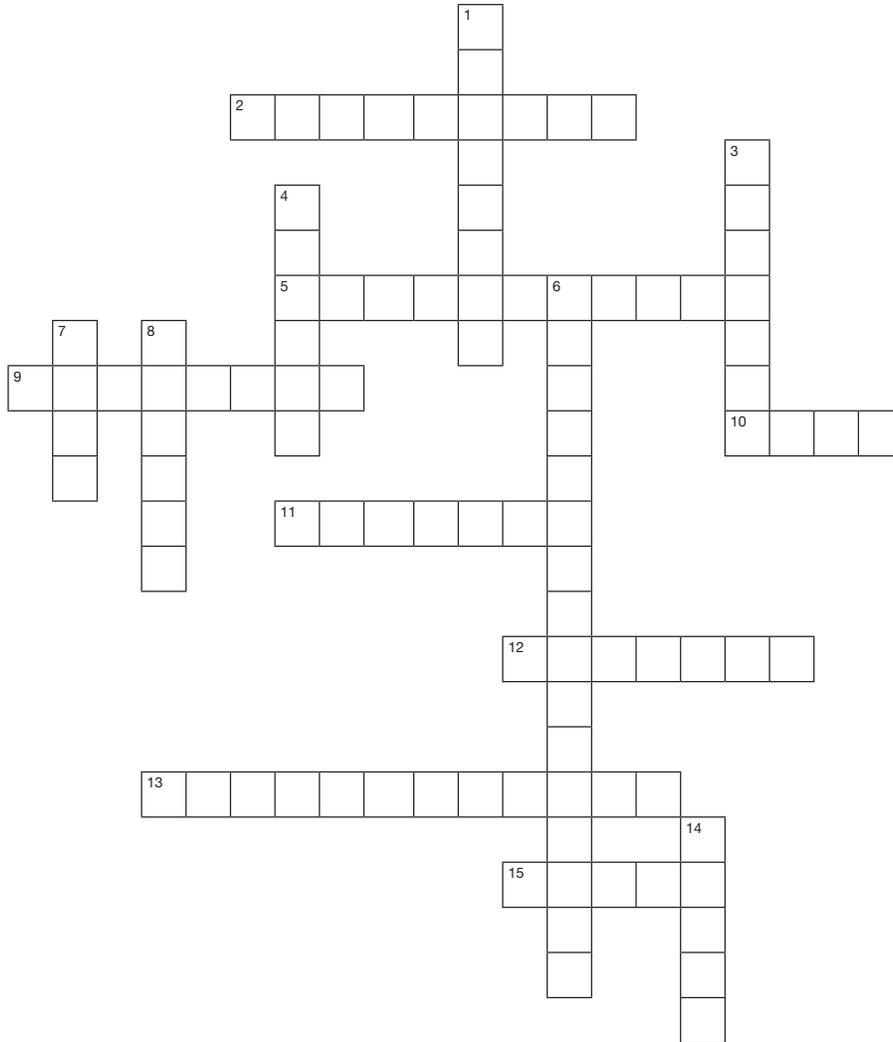
bottoms
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flow
objects
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fall
ice
slippery
temperature
dangerous
fast-flowing
millie
spring
trails

T	J	J	G	K	A	I	T	F	Q	N	A	Y	M	G	E	S	O	Q	B
K	D	O	A	M	V	M	B	T	F	L	O	W	M	W	W	P	K	G	P
H	L	A	R	Y	U	M	X	R	Q	W	K	Q	F	Z	D	H	H	L	W
M	U	K	U	N	P	G	Z	A	L	X	W	V	X	H	J	V	J	Q	F
J	I	K	G	C	O	M	B	I	P	D	F	B	T	P	Q	B	X	A	V
S	Z	L	E	Q	I	I	G	L	W	Y	R	E	P	P	I	L	S	L	X
Q	Z	C	L	I	Z	B	S	S	T	E	M	P	E	R	A	T	U	R	E
U	Q	N	C	I	J	C	E	I	S	Y	R	P	L	H	F	M	B	C	S
M	E	T	E	L	E	M	H	T	V	O	G	N	E	L	X	D	K	Y	D
V	R	T	B	N	S	Z	C	P	U	R	L	M	O	F	N	F	R	H	B
R	X	R	E	T	R	E	T	P	J	Z	E	W	K	X	F	I	E	Q	Z
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M	L	F	T	V	M	Z	P	L	L	L	R	R	G	N	I	R	P	S	J
T	B	S	R	T	A	T	X	L	P	E	E	Z	R	Y	B	H	A	P	L
G	U	Q	U	V	O	Q	H	T	G	O	L	U	N	U	X	H	N	W	R
X	W	V	X	G	W	B	K	N	B	R	K	F	Y	I	C	K	H	J	S
P	J	U	W	Q	Q	W	A	E	C	L	V	M	K	B	Q	C	O	Q	D
L	A	P	J	U	F	D	I	S	I	T	I	C	C	B	M	L	O	X	J

- Creek and river _____ can be _____, muddy and unstable.
- Do not try to retrieve _____ if they _____ in the water. The _____ may be much stronger than it seems.
- Even _____ beside the road can be _____ in the _____ due to melting snow.
- _____ on creeks and rivers can be very thin, even if it appears to be safe.
- Use only designated walking and biking _____. Stay away from _____ water at all times.
- Never go near fast-flowing water without adult _____.
- Even though the _____ outside might be warming up, the water is still very cold.
- _____ the muskrat says, "Where waters _____ do not go!"



Millie's Fast Flowing Water Safety



1. _____ (V14) and _____ (H15) bottoms can be _____ (H9), muddy and unstable.
2. Do not try to retrieve _____ (V3) if they fall in the water. The current may be much _____ (V1) than it seems.
3. Even _____ (H11) beside the road can be _____ (H2) in the _____ (V8) due to _____ (H12) snow.
4. Ice on _____ (H13) water can be very thin, even if it appears to be _____ (V10).
5. Never go near fast-flowing water without _____ (V6).
6. Even though the _____ (H5) outside might be warming up, the water is still very cold.
7. Millie the muskrat says, "Where _____ (V4) _____ (V7) do not go!



THE SUDBURY STAR

Your news. Today.

TEEN WAS BELOVED: NEIGHBOURS; COMMUNITY GRIEVES ADAM DICKIE, 13, WHO DROWNED IN JUNCTION CREEK

By Carol Mulligan | August 28, 2007

Families in the Louis and Mountain street area of downtown Sudbury are mourning the loss of the popular teenager who drowned Saturday in the swollen waters of Junction Creek.

Adam Dickie, son of Dennis and Kim Croteau, was fishing with friends on the shore of the creek when he fell in and was carried downstream.

Officials with Greater Sudbury Fire Services say the youngster's body was recovered about 40 feet away in a box culvert.

Adam, who would have entered Grade 8 at Lansdowne Public School next month, was a typical 13-year-old whom everyone loved, said next-door neighbour Darrin Ayerst.

"He was just so easy to get along with and so friendly," said Ayerst.

Adam was like a big brother to Ayerst's sons, aged seven and nine.

When Ayerst's nine-year-old would play road hockey, "every time somebody would bully my son, this boy would stick up for him."

Adam loved hockey, was good at the game and played for a city houseleague, said Ayerst. His favourite hockey star was Mats Sundin of the Toronto Maple Leafs.

Two memorials have sprung up near the spot where Adam slipped into the water. Just feet from the creek shoreline, Ayerst's eldest son placed hockey cards on the ground in memory of his friend.

The handmade poles Adam and his friends were fishing with are placed alongside a wooden cross constructed by two little girls in the neighbourhood.

The cross is surrounded by hand-painted pictures and real and artificial flowers.

In the centre is a photograph of Adam, smiling brightly, dressed in a colourful striped T-shirt. Little poems and letters to Adam are placed in a pile under the cross, along with a copy of Monday's Sudbury Star with the front-page story about Adam's drowning.

A single candy wrapped in cellophane was placed amid the papers on the ground.

"He loved candy," said Ayerst with a half-chuckle.

The father is deeply shaken by Adam's death.

"It's devastating for his family," he said.

Ayerst said he was beside Croteau on Saturday after he was alerted by another youngster that Adam had fallen into the creek.

"I never left his side, and we were up and down here. We even went to Brady Street looking, and then we came back," he said.

It was about two hours before Adam's body was recovered.

Ayerst said his own children used to play at the spot where Adam fell in the water.

"I used to say (to my kids), 'Stay away from here. If you slip and fall, you don't know what will happen.'"

The drowning has hit very close to home, he said.

"(It's) our best friends' child and it's very traumatic."

Said Ayerst: "I know how I feel, so it's probably 100 times worse" for Adam's parents.



THE SUDBURY STAR

Your news. Today.

PROJECT HONOURS MEMORY OF ADAM DICKIE

By Harold Carmichael | June 12, 2009

If someone ever falls into the fast-flowing waters of Junction Creek in the Flour Mill or downtown, emergency services workers now have a quick way to go and search for them.

That's because the Junction Creek Access Structure, or "egress," on Larch Street next to Tom Davies Square is now finished.

"This egress is long overdue and it will be a valued asset to the safety of the community," Mayor John Rodriguez told reporters at the unveiling ceremonies Thursday.

The City of Greater Sudbury and the province, through its Water and Erosion Control Infrastructure Program, split the project's \$565,000 cost. Motorists could not use Larch Street for a long period during the winter months while construction was underway.

A plaque dedicating the structure to the memory of Adam Dickie, a 13-year-old who fell into the section of Junction Creek near Louis Street Aug. 25, 2007 and drowned was also unveiled. The drowning occurred following heavy rains which had raised the water level in the creek considerably.

Dickie was a former student of Rodriguez' at St. David School.

The egress features concrete walls, a metal stairwell and a hatch. At the bottom of the stairwell, there is a concrete ramp that leads to an opening in the concrete box culvert underneath Larch Street.

A rubber dinghy can fit through the opening.

At the moment, the section of creek flowing through the box culvert is about a foot high. During the spring runoff or heavy rains, however, the water level can rise considerably.

In addition to an emergency rescue situation, the egress also allows Nickel District Conservation Authority and city staff easy access to the box culvert for ongoing maintenance and inspection.

Dickie's death led to a petition by residents to improve Junction Creek safety. That led to the creation of the Junction Creek Safety Committee.

Chairwoman Joscelyne Landry-Altman, who was on hand for the egress and plaque unveiling, will be out at the site along the creek where Dickie fell in to lead a rose-planting project Saturday. Some 225 rose bushes will be planted on the creek's slopes.

"It will serve two purposes," she said, in an interview. "One is that they will serve as a memorial. The second is as a physical barrier. They are prickly and you shouldn't be there."

The committee will also be announcing Friday the winners of a water safety poster contest involving elementary schools situated along the creek. The theme of the contest was *Where Waters Flow, Don't Go*.

The two poster winners will see their work displayed on billboards in the city.

Sudbury MPP Rick Bartolucci said the egress was a much-needed project for the downtown.

"Water is incredibly powerful," he told reporters.

"You know we need water to live. We need water to travel. We need water for energy. Unfortunately, sometimes water can take a life away. In this instance, it did ... If we don't learn from history, we are bound to repeat it."

Members of Adam Dickie's family were not on hand for Thursday's unveiling ceremonies. The family, noted Landry-Altman, has been working closely with the committee since its creation.



THE SUDBURY STAR

Your news. Today.

PROVINCE PAYING FOR NEEDED WATER PROJECTS

By Angela Scappatura | January 8, 2008

The province has reaffirmed its support for two projects being carried out by the Nickel District Conservation Authority.

Liberal MPP Rick Bartolucci gathered with city leaders to praise the work being completed under the Water and Erosion Control Infrastructure Program.

Construction is already underway to create a new access point on Larch Street for the Junction Creek box culvert.

City councillor Joscelyne Landry-Altman referred to the tragic drowning of 13- year-old Adam Dickie two summers ago as she talked about the importance of adding to the box culvert.

Dickie died after falling into the swollen waters of Junction Creek following a rainstorm. Rescuers had trouble locating the boy because of the long stretch between the Louis Street and Brady Street access points.

“Rescuers had no way of going in between,” said Landry-Altman.

Construction on the new access structure is expected to be complete before the new year, and Altmann said the total cost will reach \$600,000.

Concrete restoration and repair on the Nickeldale Dam has been completed for the year and the conservation authority is already preparing a proposal for more money next year.

Workers have been repairing a concrete slab and earthen pieces to maintain the dam's structural integrity.

“You’ve got to keep what you’ve got in good shape before you build something new,” said Paul Sajatovic from the Nickel District Conservation Authority.

“It’s like your house, you’ve got to keep that in good shape so the walls don’t fall out around you.” The province has given the community nearly \$500, 000 for the projects and the city promised to match the amount.



SCIENCE CONNECTIONS

OBJECTIVE:

Demonstrate the physical effects of cold water temperature (ability to move and control the body, reasoning, hypothermia).

MATERIALS:

- bucket
- ice
- water
- paper towels
- 100 coins (pennies)

PROCEDURE:

1. Place the coins in the bottom of the bucket. Fill the bucket with ice. Add water to fill almost to the top.
2. Ask for a student volunteer. Explain that they will have 3 minutes to pick out the coins one at a time and place on a paper towel. Ask for predictions from the class of how many coins the students will be able to remove.
3. Ask the student volunteer to explain how their hand feels after 1, 2, and 3 minutes in the ice water (numbness, stiffness, white colouring and lack of muscle control should be noticed). Ask the students to imagine the results if their entire body were to fall in cold water.

OTHER SUGGESTIONS

You may wish to try this experiment in smaller groups and have predictions, observations and conclusions recorded on a data sheet. Then have a group discussion after.

You may wish to research and discuss cold water conditions and the effects of cold water on the body before or after this activity.



SCIENCE CONNECTIONS

OBJECTIVE:

Demonstrate the weight and force of moving water.

MATERIALS:

- bucket
- water
- cork
- hose or tap

ACTIVITIES:

1. In a large bucket or a sink full of water, swirl your hand around in the water to form a whirlpool. Drop a cork in the water and note how rapidly it moves and in which direction. Discuss the connection to current in fast-flowing water.
2. With a hose or water flowing from the tap, let the children feel the force of the water coming out when you: turn it on slowly, half way, then full force. Water can exert a lot of pressure. Relate this to the force of the water in a fast-flowing river or creek.



Millie's Fast Flowing Water Safety

WORD BANK

- bottoms
- ditches
- flow
- objects
- supervision
- current
- fall
- ice
- slippery
- temperature
- dangerous
- fast-flowing
- millie
- spring
- trails

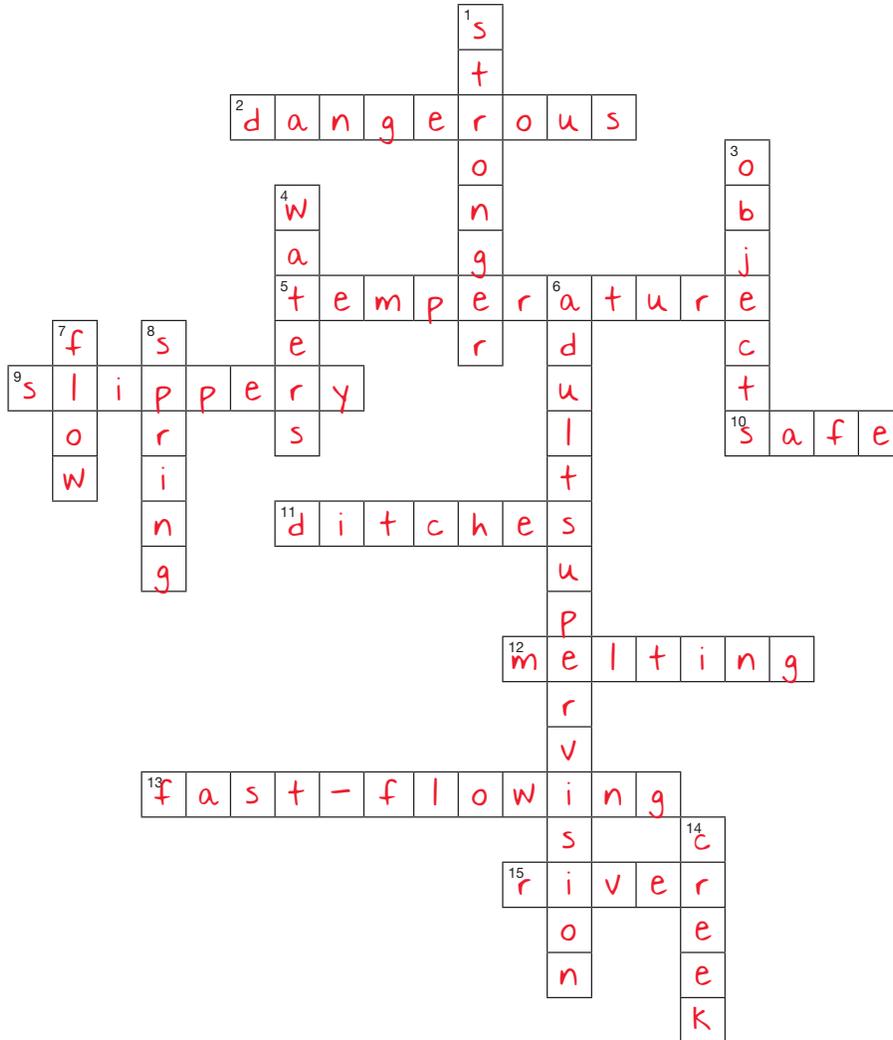
Look forwards,
backwards,
up, down,
& diagonally!

T	J	J	G	K	A	I	T	F	Q	N	A	Y	M	G	E	S	O	Q	B
K	D	O	A	M	V	M	B	T	F	L	O	W	M	W	W	P	K	G	P
H	L	A	R	Y	U	M	X	R	Q	W	K	Q	F	Z	D	H	H	L	W
M	U	K	U	N	P	G	Z	A	L	X	W	V	X	H	J	V	J	Q	F
J	I	K	G	C	O	M	B	I	P	D	F	B	T	P	Q	B	X	A	V
S	Z	L	E	Q	I	I	G	L	W	Y	R	E	P	P	I	L	S	L	X
Q	Z	C	L	I	Z	B	S	S	T	E	M	P	E	R	A	T	U	R	E
U	Q	N	C	I	J	C	E	I	S	Y	R	P	L	H	F	M	B	C	S
M	E	T	E	L	E	M	H	T	V	O	G	N	E	L	X	D	K	Y	D
V	R	T	B	N	S	Z	C	P	U	R	L	M	O	F	N	F	R	H	B
R	X	R	E	T	R	E	T	P	J	Z	E	W	K	X	F	I	E	Q	Z
S	I	H	D	P	J	Q	I	B	T	H	I	P	W	S	P	M	E	C	I
M	M	F	W	B	N	E	D	F	T	N	P	I	U	A	W	H	G	R	D
F	F	O	O	K	G	T	T	A	G	S	E	O	J	S	V	L	I	Z	I
M	L	F	T	V	M	Z	P	L	L	L	R	R	G	N	I	R	P	S	J
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X	W	V	X	G	W	B	K	N	B	R	K	F	Y	I	C	K	H	J	S
P	J	U	W	Q	Q	W	A	E	C	L	V	M	K	B	Q	C	O	Q	D
L	A	P	J	U	F	D	I	S	I	T	I	C	C	B	M	L	O	X	J

- Creek and river bottoms can be slippery, muddy and unstable.
- Do not try to retrieve objects if they fall in the water. The current may be much stronger than it seems.
- Even ditches beside the road can be dangerous in the spring due to melting snow.
- Ice on creeks and rivers can be very thin, even if it appears to be safe.
- Use only designated walking and biking trails. Stay away from fast-flowing water at all times.
- Never go near fast-flowing water without adult supervision.
- Even though the temperature outside might be warming up, the water is still very cold.
- Millie the muskrat says, "Where waters flow do not go!"



Millie's Fast-Flowing Water Safety



1. Creek (V14) and river (H15) bottoms can be slippery (H9), muddy and unstable.
2. Do not try to retrieve objects (V3) if they fall in the water. The current may be much stronger (V1) than it seems.
3. Even ditches (H11) beside the road can be dangerous (H2) in the spring (V8) due to melting (H12) snow.
4. Ice on fast-flowing (H13) water can be very thin, even if it appears to be safe (V10).
5. Never go near fast-flowing water without adult supervision (V6).
6. Even though the temperature (H5) outside might be warming up, the water is still very cold.
7. Millie the muskrat says, "Where waters (V4) flow (V7) do not go!



BACKGROUND INFORMATION

INTRODUCTION

There have been 22 recorded deaths from drowning in Junction Creek since 1921, as well as many injuries and near death situations. On August 25th, 2007, Adam Dickie, a 13 year old Sudbury boy, was fishing on the shores of Junction Creek with a friend. Adam slipped and fell into the creek and wasn't able to get back out because of the depth of the water. Water levels were high due to heavy rainfall.

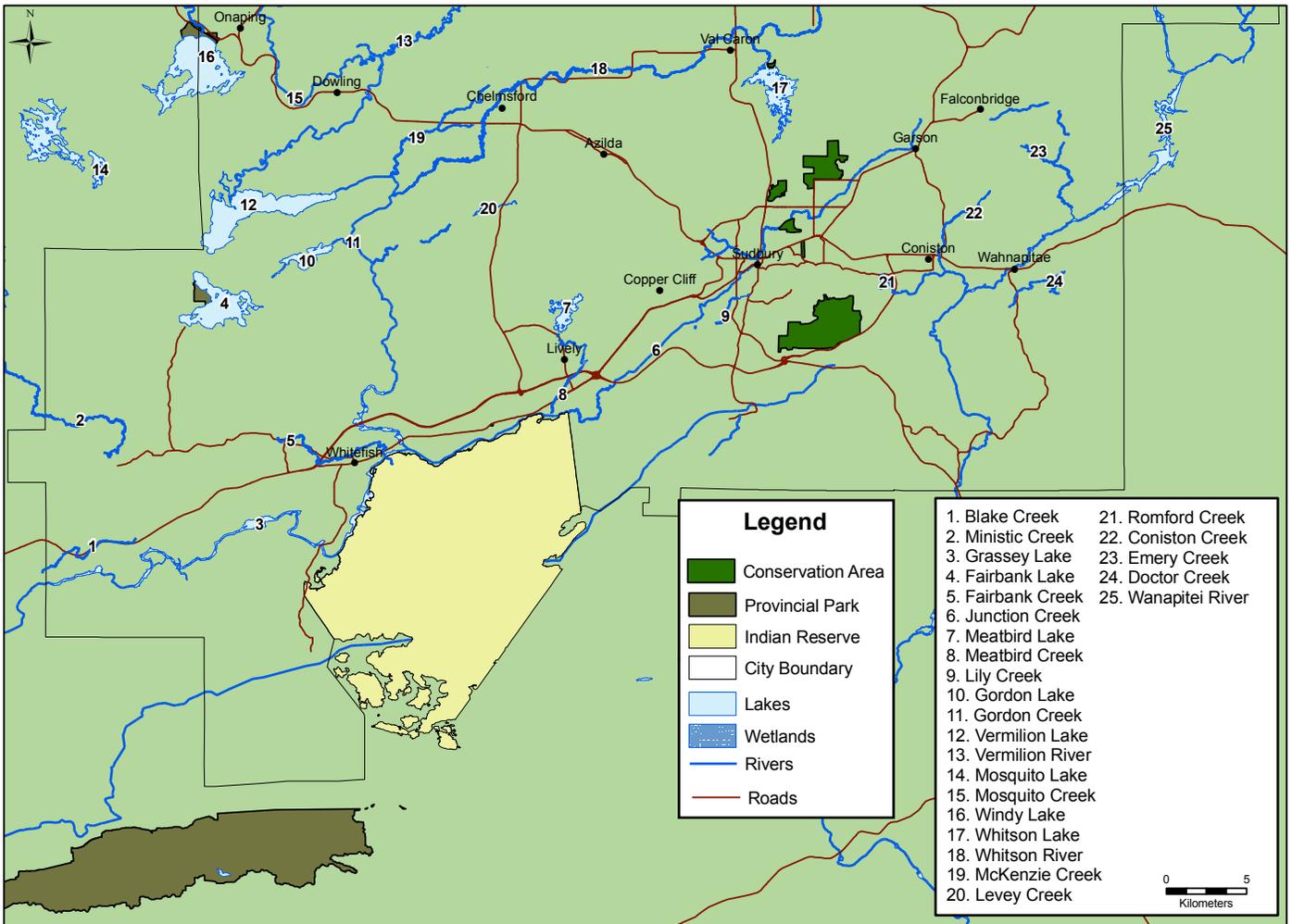
Adam's death prompted an appeal by members of the community to find solutions for stopping any further unnecessary deaths and injury in fast-flowing water. "Swift water" in area lakes, rivers and drainage ditches can be life threatening. Education with regards to this issue is a positive step in protecting the children in our community.

BACKGROUND INFORMATION

- water levels for rivers and creeks get very high and currents get very powerful, especially in the spring because of the melting snow, and also during heavy rain
- creek and river bottoms can be dangerous, muddy and unstable
- creek mud is different than regular sand, it exerts a force or suction on objects
- objects or people may get stuck and be unable to move
- murky water can hide objects or debris that can trap someone
- unexpected drop-offs are also a hazard
- even though the temperature outside might be warming up, the water is still very cold
- even ditches beside the road can be dangerous during high water periods
- some roadside ditches are deeper than you think
- even if the water still looks frozen, ice is thinner on moving water because of currents
- banks are soft and slippery, especially in the spring and fall
- the human body does not float well in fast flowing water (has more air, aerated water provides less buoyancy than calm water)
- hydroelectric dams and stations are dangerous places because water is moving fast around them, strong undercurrents can quickly overwhelm even a strong swimmer, water levels change quickly, calm water can quickly become dangerous



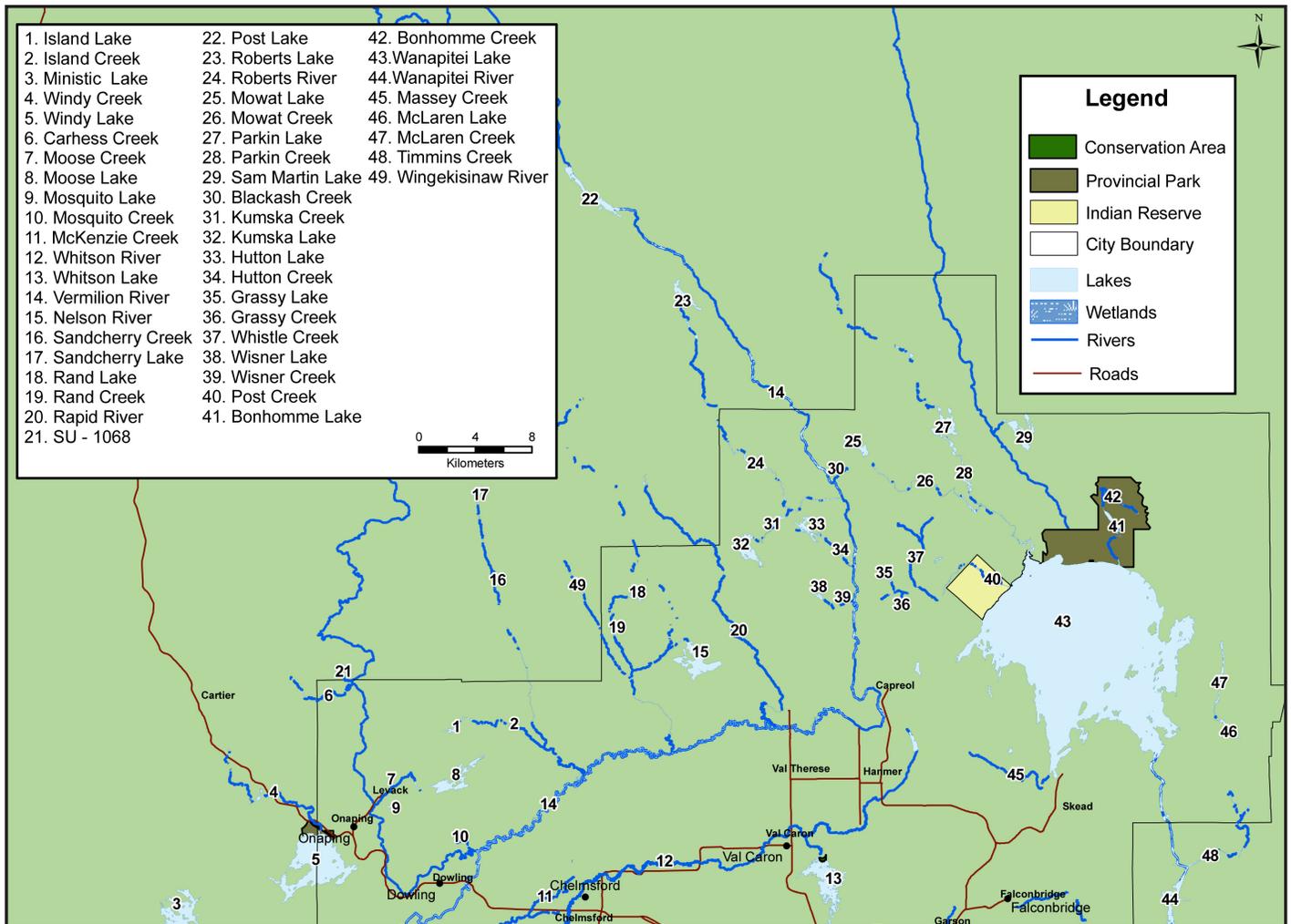
MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





Millie's **Fast Flowing Water** Safety

MAJOR CREEKS AND RIVERS IN GREATER SUDBURY





VOCABULARY

CALM WATER:

Water that does not move, no current, waves or ripples

CURRENT:

The flow and direction of water. Water in the centre of a lake moves faster than water on the edges.

UNDERCURRENT:

Current is the way water flows. Undercurrent is water beneath the surface flowing in a different direction from the water on top.

DEBRIS:

Scattered remains of something that has been thrown away (junk, trash, garbage)

DOWNSTREAM:

Moving in the same direction the water is flowing.

BARRIER:

Something that blocks the way

FAST- FLOWING WATER:

Water that moves quickly and steadily along in a stream.

BANK:

The slope bordering a stream or creek.

DRAINAGE DITCH:

A long, narrow trench, made by digging and used for draining water.

RUNOFF:

Water that drains or flows, due to rain or melting snow.

HYDROELECTRICITY:

Hydroelectricity is electricity generated by hydropower (the production of power through use of the gravitational force of falling or flowing water).



FAST-FLOWING WATER SAFETY TIPS

MILLIE SAYS...

Never go near the water without an adult.	An adult should always know where you are in case of an emergency.
Stay off the ice over fast-flowing water.	Ice over fast-flowing water may appear safe, but is thin and dangerous.
Never retrieve objects that have fallen in the creek.	The current might be stronger than it seems.
Always use designated trails when walking by the water.	Creek and river banks are soft and slippery.
Stay away from drainage ditches.	Some roadside ditches are deeper than you think.
Stay clear, stay safe.	Stay away from dams, hydroelectric stations and surrounding waterways.

WHAT TO DO IF YOU FALL IN THE WATER

- Don't try to swim against the current
- Float on your back, draw your knees up to your chest and point your feet to go with the current.
- Try to steer your body gently towards the shore, where the water is shallower and you can regain your footing.

WHAT TO DO IF A FRIEND FALLS IN THE WATER

- Never try to rescue a friend who's in the water.
- If you are with an adult, ask them for help immediately, or if you know someone in the area, go and ask them for help.
- If you have a cell phone, call 911 for help immediately. Tell the operator where you are and what has happened.
- Stay on the shore, away from the water, until help arrives.
- If you do not have a cell phone, you can run to a nearby home to ask an adult for help, or find a pay phone and dial 911 for help immediately. This call is free of charge.



MILLIE
the Muskrat

STAY CLEAR STAY SAFE

around dams, hydroelectric stations & surrounding waterways



ONTARIO**POWER**
GENERATION



Stay Clear, Stay Safe around dams,
hydroelectric stations and
surrounding waterways



Remotely-operated dam gates can quickly turn calm waters or dry riverbeds into dangerous flows.

Getting too close to dams and hydroelectric stations is always dangerous. A spot that seems calm and safe one moment can turn into a dangerous surge of rising and fast-flowing water – quickly and often without any warning.

Our operators can't see you

Most facilities are remotely-controlled by operators many kilometres away. They open or close dams, to manage river flows, and start or stop generators throughout the day and night as demand for electricity rises and falls.

This may result in frequent, rapid and dangerous changes in water levels and flows, changes that can harm those who venture too close.

Be especially careful when near waters above and below dams and hydroelectric stations.

At a generating station, water from above the dam runs through the station and then surges out to join the main stream of the river.

In areas above and below dams, fast-moving water creates dangerous turbulence and strong undercurrents which are not always apparent from the calm looking surface waters.



**STAY
CLEAR
STAY
SAFE**

What happens when you fail to stay clear, stay safe?



Before



After

This is a very dangerous spot and should be avoided. Areas inside warning signs, buoys and booms are extremely dangerous, stay clear of them.

The same spot just minutes later. Remotely operated gates at the dam release large volumes of water that could leave you stranded, swamp your boat or put you in the grip of an undertow.

Dams and hydroelectric stations are not recreation areas

Be wise not to treat hydroelectric facilities as fishing holes, boating areas or swimming areas.

These areas are not safe for any recreational activities, including camping, picnicking or even winter activities such as snowmobiling or cross-country skiing.

Put safety first. When travelling on unfamiliar paths or waterways, plan your trip ahead.

For your own safety near a dam or hydroelectric station, make sure that you:

- Obey ALL warning signs, fences, buoys, booms and barriers. They are put there to protect you. The areas inside are dangerous, so stay clear.
- Some signs have pictures that show the consequences of not staying clear.
- Stay well back from the edge of waters above and below dams and hydroelectric stations.
- Never stand below a dam, or anchor or tie your boat there. Rapidly changing water levels and flows can swamp your boat or pull you into an undertow.
- Stay off dams or hydroelectric station structures, unless OPG has clearly indicated where it is safe to walk or drive.



Be Alert!

Even if you can't see a generating station or dam, waterways upstream and downstream can still be affected by their operations. It's important to be aware of the potential dangers caused by changing flows, and stay clear of waters near stations and dams.

- ❗ **Don't find yourself on thin ice. Winter brings more dangers.** Ice forming near a dam or hydroelectric station can be thinner and less consistent than ice in other locations because of changing water flows beneath it.
- Avoid snowmobiling, cross-country skiing, skating or ice fishing on rivers or lakes near dams and generating stations.
- Don't risk walking onto a river or lake around dams and generating stations where the ice may be thin due to the current. Changing water levels can crack the ice, leaving it weak and unstable.

TRESPASSING ON OPG PROPERTY IS ILLEGAL.

TO ENSURE YOUR SAFETY,

TRESPASSERS CAN BE CHARGED.



Teach children to Stay Clear and Stay Safe!

Be sure and tell children exactly where they can and cannot go and make sure you are nearby and can see them at all times. For their safety, teach them what the signs and other barriers mean.

As a rule, remember to:

- Stay out of dry or calm riverbeds below dams. They can quickly change into rapidly flowing waterways with dangerous currents.
- Stay a safe distance outside of warning signs, buoys, booms and barriers and be alert for changes in water levels.
- Stay away from the edge of a waterway where footing may be slippery.
- Don't wade into moving water.
- When swimming, fishing, boating or paddling in a river, be aware of the water level and check upstream frequently for any sign of increasing currents or rising water. If the water level is rising or the flow is speeding up, get out of the water or move your boat downstream. Obey all signs and barriers.



Mixed Sources
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*The area between booms
and dams is very dangerous.
Stay Clear!*



Stay Clear. Stay Safe!

We take pride in operating our facilities safely, in a manner that respects the environment and the rights of other users of the waterways.

Please respect the hazards near our dams and stations, and obey all warning signs, booms, buoys, and barriers. They are there for your protection.

*For more information or to obtain a
FREE DVD and FREE interactive,
educational computer game for children,
simply visit www.opg.com*

**ONTARIO POWER
GENERATION**



FAST-FLOWING WATER (GR 7 & 8)

OBJECTIVE:

Educate students about the dangers of fast-flowing water in the community.

STUDENTS WILL LEARN:

1. It is not safe to play near or in fast-flowing water (lakes, rivers, creeks, ditches)
2. Fast-flowing water safety practices.
3. How to respond when confronted with an emergency.

CURRICULUM EXPECTATIONS (HEALTH AND PHYSICAL EDUCATION):

GRADE 7

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

C2.2 demonstrate the ability to assess situations for potential dangers

GRADE 8

A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity

A3.2 demonstrate a basic understanding of how to deal with emergency situations that may occur while participating in physical activities

The grade 7 and 8 expectations for Personal Safety and Injury Prevention focus mainly on harassment and situations involving violence. Discussion related could highlight how to deal with peer pressure and possible dangerous consequences.

RESOURCES

- storybook
- poster
- colouring
- puppet
- DVD (refer to suggested activities)



FAST-FLOWING WATER (GR 7 & 8)

LITERACY CONNECTION (ONTARIO WRITING EXEMPLAR TASK)

<http://www.edu.gov.on.ca/eng/curriculum/elementary/writing18ex.pdf>

GRADE 7 – Students can create a public service announcement, commercial or advertisement about the dangers of fast flowing water.

GRADE 8 – Using the newspaper article provided, students will write a letter to the editor taking a position on the issue of the creation of an emergency dive team in Sudbury.

OTHER CROSS-CURRICULAR SUGGESTIONS

1. Dramatize the story or an excerpt from the story.
2. Draw posters using fast-flowing water safety rules.
3. Complete science experiment/demonstration (Appendix)



THE SUDBURY STAR

Your news. Today.

RESPONSE NOT ENOUGH, VICTIM'S FATHER SAYS

Boy drowned in junction creek

By Denis St. Pierre | June 20, 2008

The father of a boy who drowned last summer in Junction Creek is disappointed in the city's response to the tragedy following several months of study.

"It's a start, but it's not enough," a sombre Denis Croteau said after city council endorsed a series of recommendations Wednesday aimed at preventing tragedies in Junction Creek.

Croteau's son, Adam Dickie, 13, drowned in the creek on Aug. 25, 2007. The boy was playing with a friend along the banks of the rain-swollen, fast-flowing creek when he fell and was pulled underwater.

Denis Croteau observed police, firefighters and paramedics search a considerable distance along the creek for Adam on the day the boy died. It took about two hours for emergency workers to locate the boy's body, found a few feet from where he fell in.

In subsequent days, Croteau called for the creation of a local diving team to search underwater for victims of such tragedies. Such a crew could have found Adam almost immediately after arriving on the scene, the boy's father suggested.

Croteau made the same request to the Junction Creek Safety Committee, a city council advisory committee that was created last fall. He was on hand Wednesday as the committee presented several recommendations to council and said he was disappointed there was no proposal for creation of an emergency dive team.

"Where's the diving team? The lack of a diving team is what held up the entire (search) process" the day Adam drowned, he said. "If the divers had been there earlier, they could have found him faster."

Given that Greater Sudbury has more than 300 water bodies, it makes sense to have a local emergency dive team, said Ray Croteau, Denis's father and Adam's grandfather.

"It took two hours to find Adam -- that's ridiculous," Ray Croteau said.

"This wouldn't just be for Junction Creek," he added. "We are the city of lakes. For Pete's sake, let's get a diving team here in Sudbury."

The Junction Creek Safety Committee rejected the proposal for an emergency dive team due to cost implications, Ray Croteau said.

"That was my first recommendation to them and the answer was, 'that would cost a lot.' And I said, 'how much is a life worth?' "

Ward 12 Coun. Joscelyne Landry-Altmann, who chairs the safety committee, said she sympathizes with the Croteau family's feelings. But Landry-Altmann said she has been informed there are "phenomenal" cost and logistical implications of maintaining a municipal rescue dive team.

There are rarely, if ever, situations where an emergency dive team could rescue a potential drowning victim, said Marc Leduc, the city's acting fire chief.

"Unfortunately, dive teams are used mostly for recovery," Leduc said.

Still, city officials are open to further study of the merits of a municipal dive team, Leduc said. But it likely is more practical to consider establishing "swift-water" rescue capabilities, he said, referring to one of the Junction Creek Safety Committee's recommendations.

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THE SUDBURY STAR

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RESPONSE NOT ENOUGH, VICTIM'S FATHER SAYS **Boy drowned in junction creek**

By Denis St. Pierre | June 20, 2008

Continued from previous page

The committee provided city council with numerous recommendations for measures such as improved public education, creek monitoring and water-management planning; new policies to reduce dangerous obstructions and refuse in the creek; and infrastructure work such as fencing, signage and wires across culverts to improve safety and rescue efforts.

"The committee members realize that the actions required to improve the safety of Junction Creek will call upon many departments and community agencies," Landry- Altmann said. "I will be taking this presentation to all agencies involved in fulfilling the recommendations over the next several months."

Council endorsed the recommendation that immediate action be launched on five proposals, including the installation of a temporary fence along the creek in the Louis Street area where Adam drowned last year. The temporary fence will be installed while the city considers a long-term policy for fencing along the creek.

Other immediate measures call for city crews to remove fallen trees that hinder the creek's current and often become unsafe "balance beams" that attract children, as well as pursuing a new bylaw to reduce the number of shopping carts dumped into the creek.

Landry-Altmann ended her presentation by reading aloud the names of 23 drowning victims known to have lost their lives in Junction Creek since 1921. She said later that she expects the city to create a memorial for Adam Dickie along Junction Creek.



SCIENCE CONNECTIONS

OBJECTIVE:

Demonstrate the physical effects of cold water temperature (ability to move and control the body, reasoning, hypothermia).

MATERIALS:

- bucket
- ice
- water
- paper towels
- 100 coins (pennies)

PROCEDURE:

1. Place the coins in the bottom of the bucket. Fill the bucket with ice. Add water to fill almost to the top.
2. Ask for a student volunteer. Explain that they will have 3 minutes to pick out the coins one at a time and place on a paper towel. Ask for predictions from the class of how many coins the students will be able to remove.
3. Ask the student volunteer to explain how their hand feels after 1, 2, and 3 minutes in the ice water (numbness, stiffness, white colouring and lack of muscle control should be noticed). Ask the students to imagine the results if their entire body were to fall in cold water.

OTHER SUGGESTIONS

You may wish to try this experiment in smaller groups and have predictions, observations and conclusions recorded on a data sheet. Then have a group discussion after.

You may wish to research and discuss cold water conditions and the effects of cold water on the body before or after this activity.



SCIENCE CONNECTIONS

OBJECTIVE:

Demonstrate the weight and force of moving water.

MATERIALS:

- bucket
- water
- cork
- hose or tap

ACTIVITIES:

1. In a large bucket or a sink full of water, swirl your hand around in the water to form a whirlpool. Drop a cork in the water and note how rapidly it moves and in which direction. Discuss the connection to current in fast-flowing water.
2. With a hose or water flowing from the tap, let the children feel the force of the water coming out when you: turn it on slowly, half way, then full force. Water can exert a lot of pressure. Relate this to the force of the water in a fast-flowing river or creek.



SCIENCE CONNECTIONS

OBJECTIVE:

Determine the effect of aerated water on buoyancy.

MATERIALS:

- Several pennies
- 2 squares of aluminum foil (15cm x 15cm)
- a rectangular container with water in it
- straws

ACTIVITIES:

1. Design a boat made of aluminum foil that can hold pennies.
2. Experiment with different shapes and structures to come up with your best design
3. Draw a diagram of your boat design.
4. Before you test your boat, predict how many pennies your boat will hold.
5. Test your boat to determine how many pennies it will hold before it sinks.
6. Record data.
7. Repeat the experiment using aerated water. (Using a straw, blow bubbles in the water).

CONCLUSIONS:

1. Discuss the difference between the two sets of data.
2. Why do you think this was the case? Refer specifically to the effect of the air bubbles in the water.
3. How does this relate to fast flowing water?
4. Does fast flowing water contain more air? If so, how would that affect the buoyancy of an object or person?