

WATER:

Earth's Most Precious and
Spectacular Substance!

WATER IS SPECIAL

Essential for Life



Powerful!



WATER IS UNIQUE

The only substance on Earth that occurs in 3 different states naturally:

**SOLID
(ICE)**



LIQUID

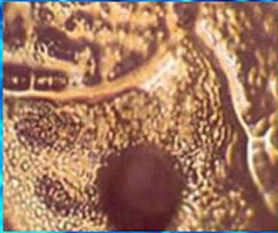


**ICE
FLOATS!**

GAS



WATER CRYSTALS



polluted water
Yodo River, Japan



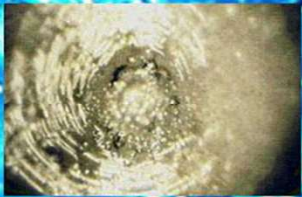
NEGATIVE



POSITIVE



spring water
Yusui Mountain Spring, Japan



you fool



heavy metal music



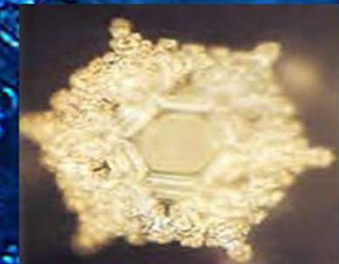
Beethoven's music
Pastoral



thank you



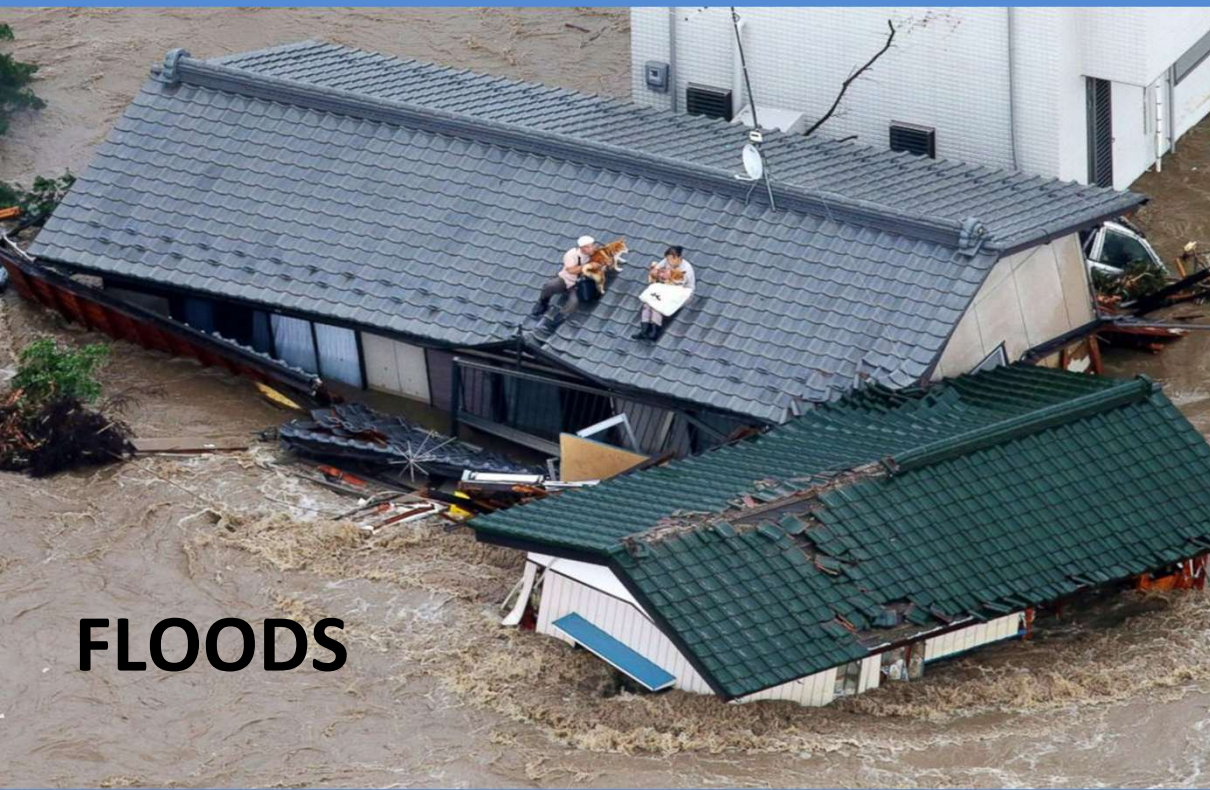
you make me sick



love & appreciation

Water has memory

Water Crystals as photographed
by Dr. Masaru Emoto



FLOODS

**WATER IS
POWERFUL**
The power
of water causes
damage and kills.

Tidal Waves: **Tsunamis**

2004 Indonesian Tsunami:
Killed almost 250,000 In
Indonesia, Sri Lanka, India,
Maldives and Thailand





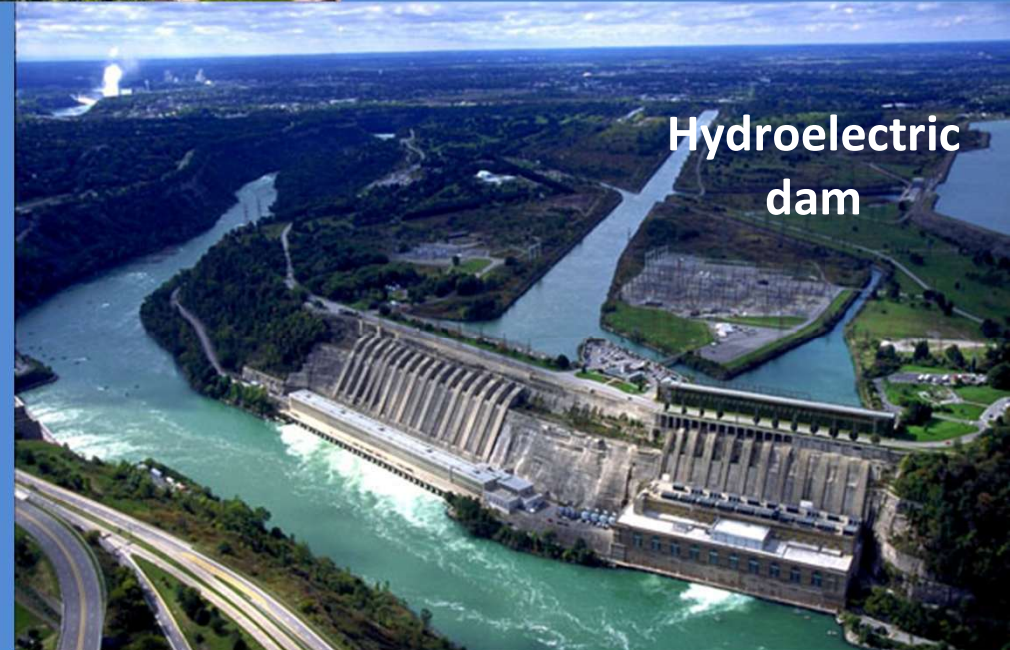
Niagara Falls

176' high
>1,000' wide

**WATER IS
POWERFUL:**
The power
of water
generates
electricity!

**Niagara Falls Dam
provides power for over 4
million homes in the
U.S. and Canada!**

The Niagara River connects 2
Great Lakes – Erie and Ontario



**Hydroelectric
dam**

WATER USES



Putting out
fires &
Growing food

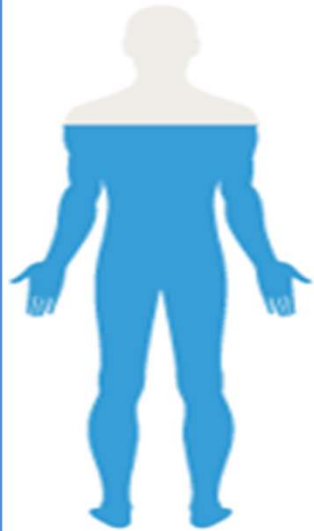
WE ARE WATER



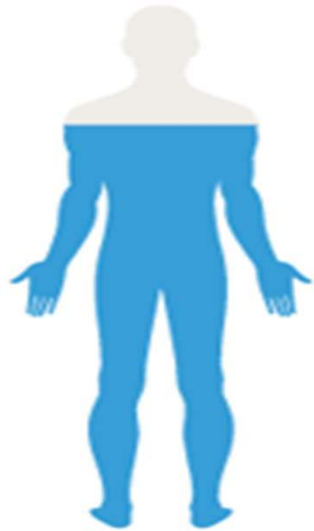
Blood
85% water



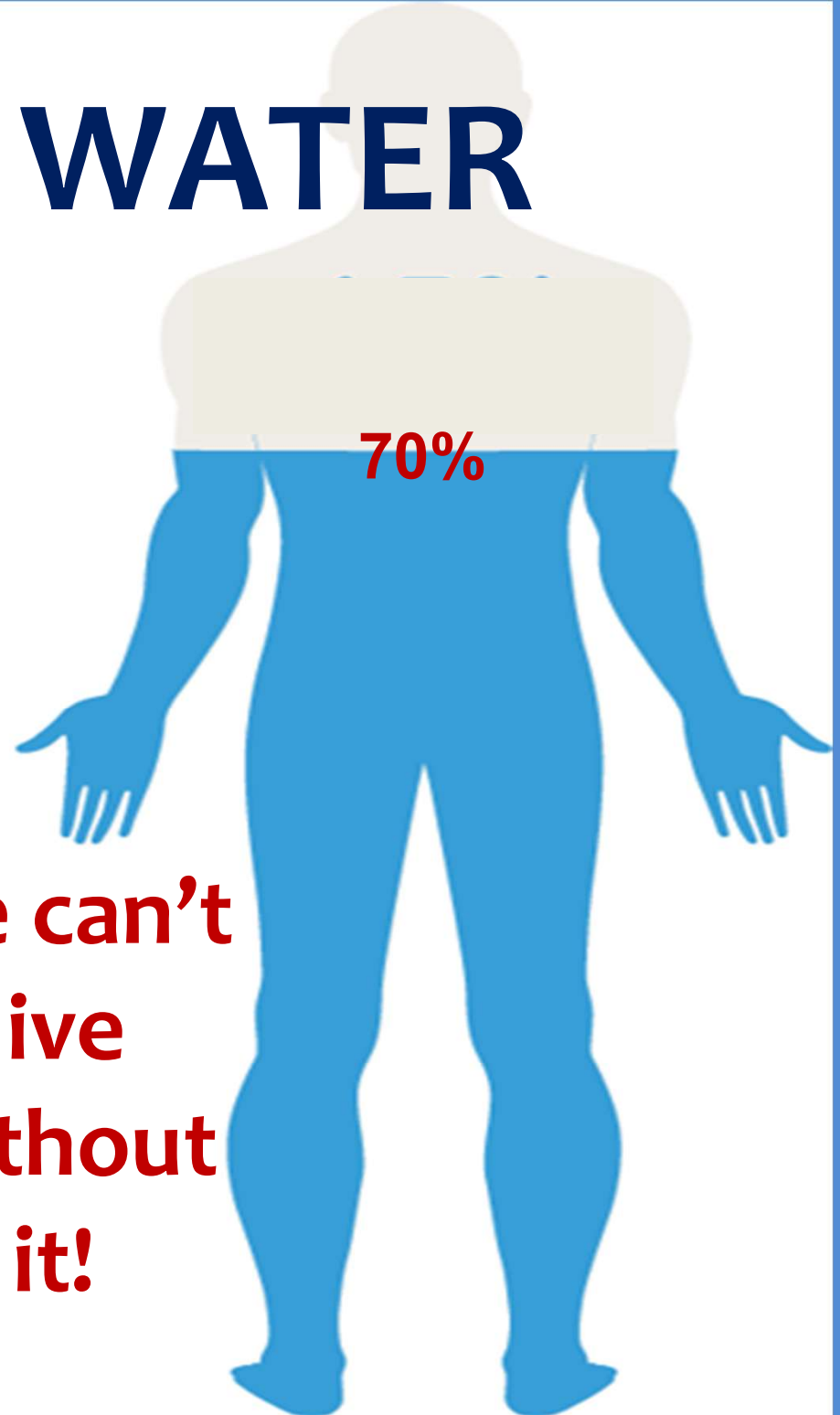
Bone
22% water



Brain
74% water



Muscles
75% water



70%

**We can't
live
without
it!**

THEY ARE MOSTLY WATER TOO



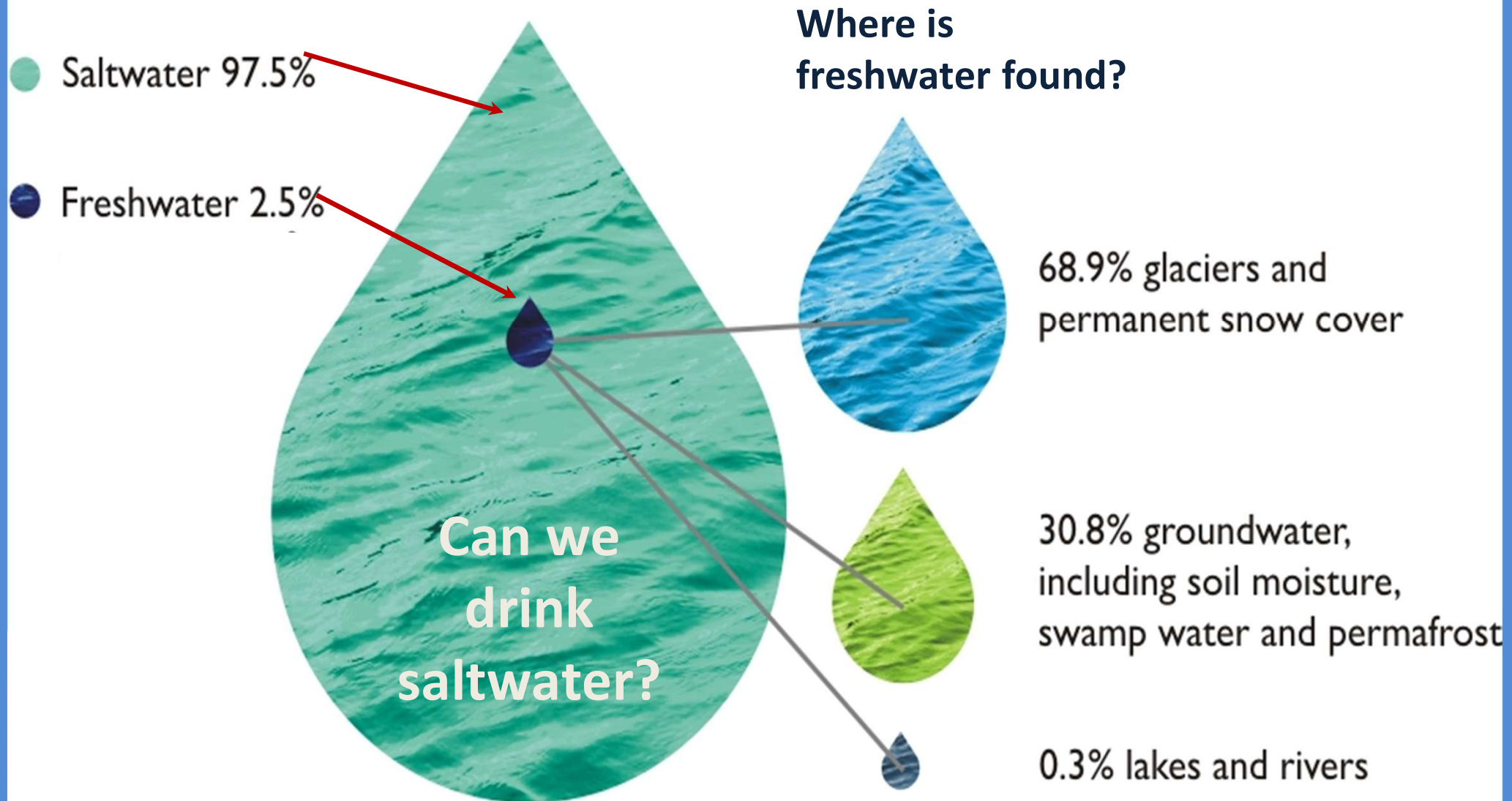
OUR BIG BLUE PLANET EARTH

How
Much
Water?

What
Kind?



WORLD'S WATER – 2 TYPES



That's not much freshwater!



IS FRESHWATER

**that's available for over 8 BILLION people
and even more animals!**

That's not much!

Where's the Freshwater?



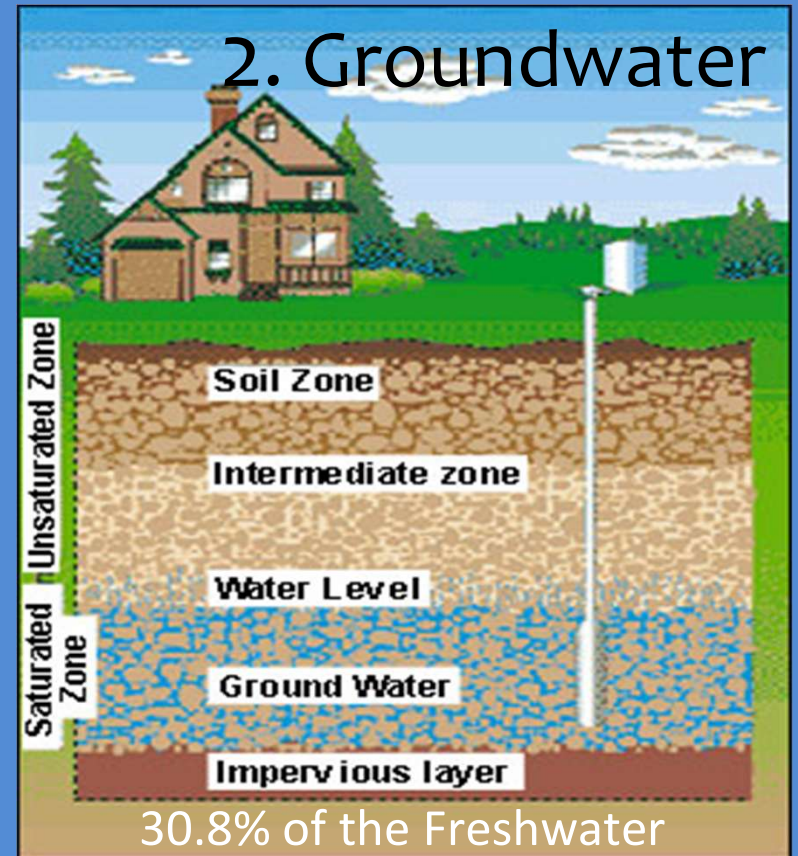
1. Glaciers



3. Lakes & Rivers



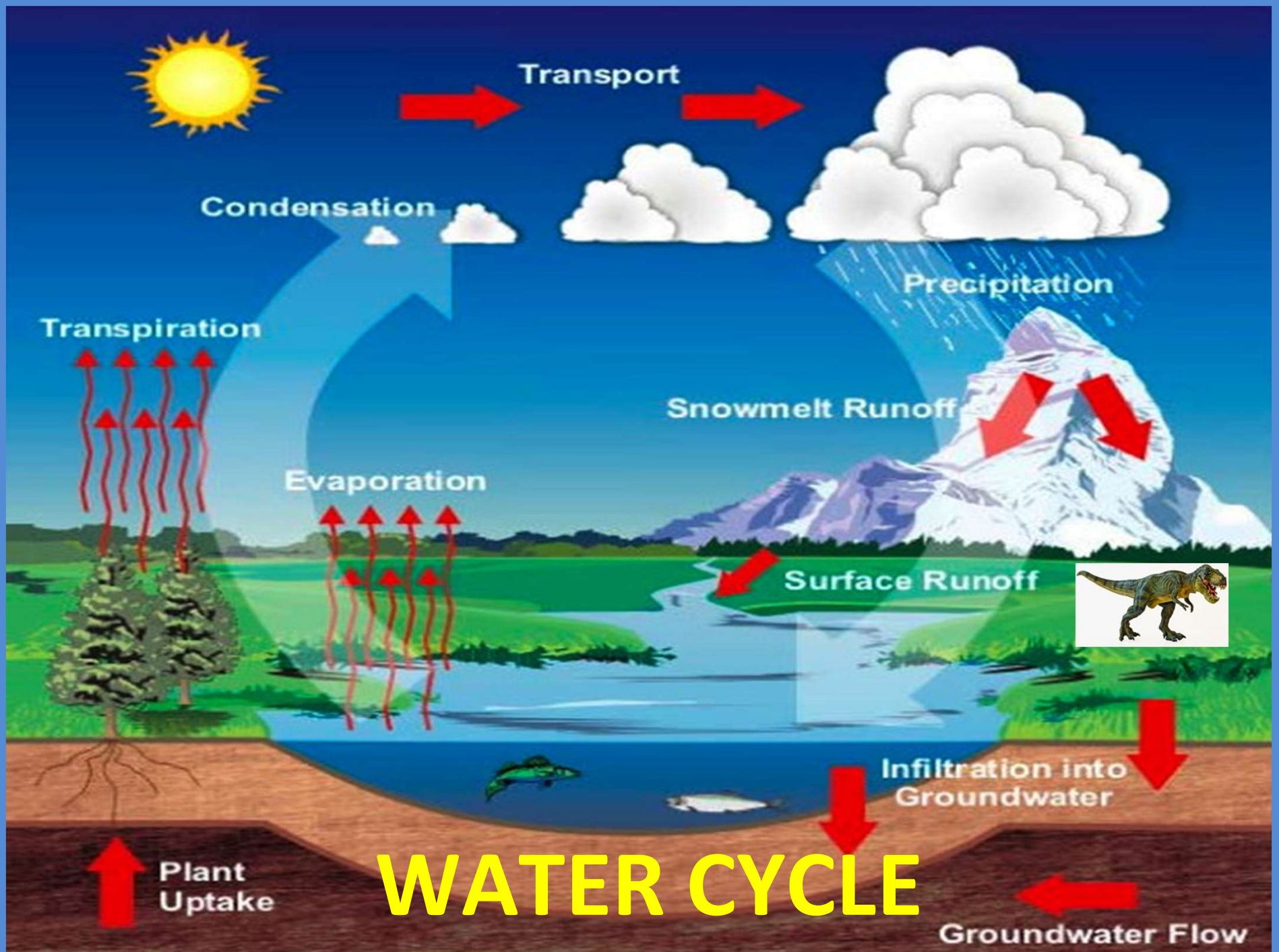
2. Groundwater



4. Air - Humidity

0.001% FRESHWATER





We're So Lucky -
Milwaukee is
water-rich!

*The Freshwater
Capitol of the
World*

1 Great Lake,
3 rivers and
many streams.

MILWAUKEE'S WATERS



3 Rivers

1. Milwaukee River

2. Menomonee River

3. Kinnickinnic River

Where do we get
our
drinking water?

MILWAUKEE'S WATERS



We're So Lucky!

WISCONSIN is surrounded by 3 major bodies of water



1. Mississippi River

WISCONSIN also has over
15,000 LAKES!

2. Lake Superior

3. Lake Michigan

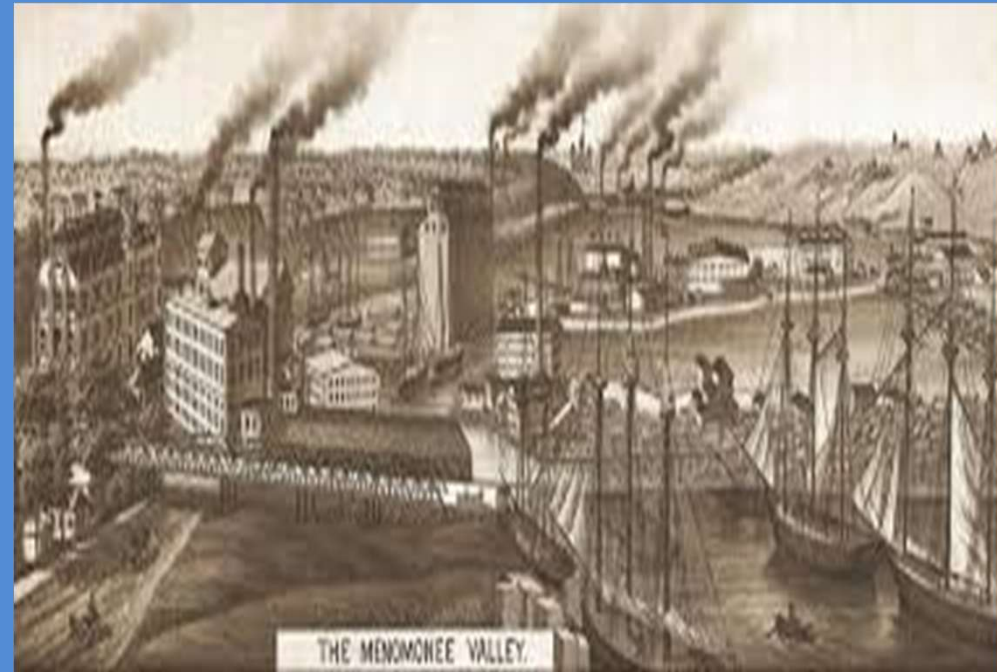


A vibrant photograph of the Milwaukee skyline across a body of water, with a lush green park in the foreground. The foreground is filled with tall grasses and bright yellow wildflowers. In the middle ground, a paved walkway and a rocky shoreline are visible, with many people gathered in the park. The background features a dense cluster of skyscrapers under a blue sky with scattered white clouds. The text "Why Do We Live Here? Milwaukee's Water History" is overlaid in white on the left side of the image.

Why Do We Live Here? Milwaukee's Water History



Before 1600's
Milwaukee's rivers and
Lake Michigan were
highways of water for
Native American tribes
to hunt, fish and move.



Late 1800's:
The Menomonee Valley
wetlands were drained and
replaced with factories
and toxic waste.

WATER USES:

Manufacturing:

BEER, BRATS & BIKES!

Milwaukee is famous for these!



Milwaukee's Water History

Over 150 years of
dirty rivers &
beaches

1850's to 1990's



TODAY: OUR WATERS ARE CLEANER!



**BEAVERS ARE
BACK!**

- Fish and other wildlife are returning
- Lots of canoeing & kayaking!
- Milwaukee River swimraces. Started in 2018 – the 1st in over 80 years!



OUR WATERS ARE CLEANER!

Thanks to
thousands of
individuals and
dozens of
organizations...



WATER FLOW

Where does water
go...

- From **INSIDE** buildings? and
- **OUTSIDE** from rain and snow?



WATER FLOW

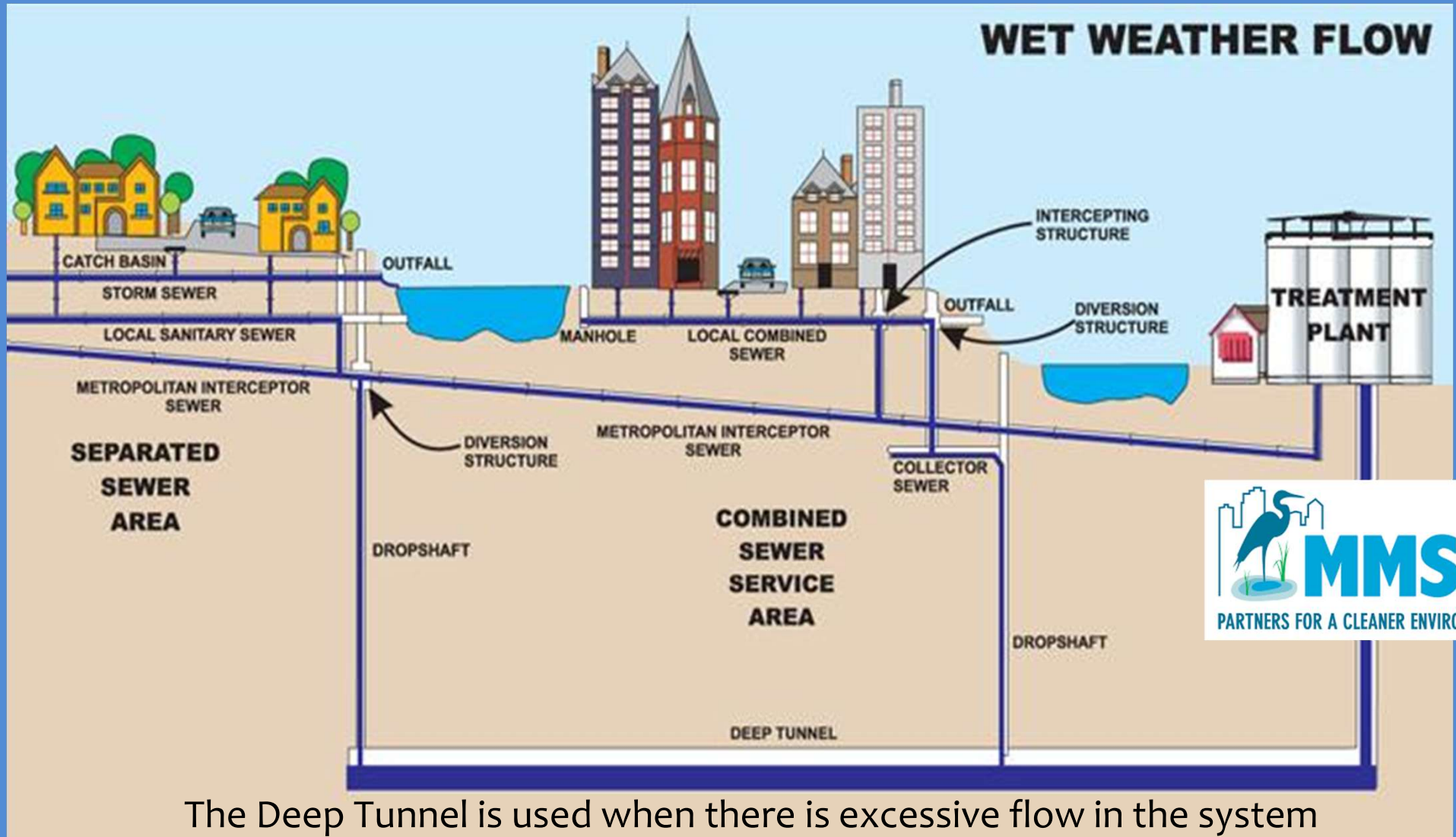
Where does water go...



FROM **INSIDE** OUR HOMES,
SCHOOLS & BUSINESSES?

WHERE DOES **INSIDE** WATER GO?

Out through pipes under the ground and streets to the treatment plant



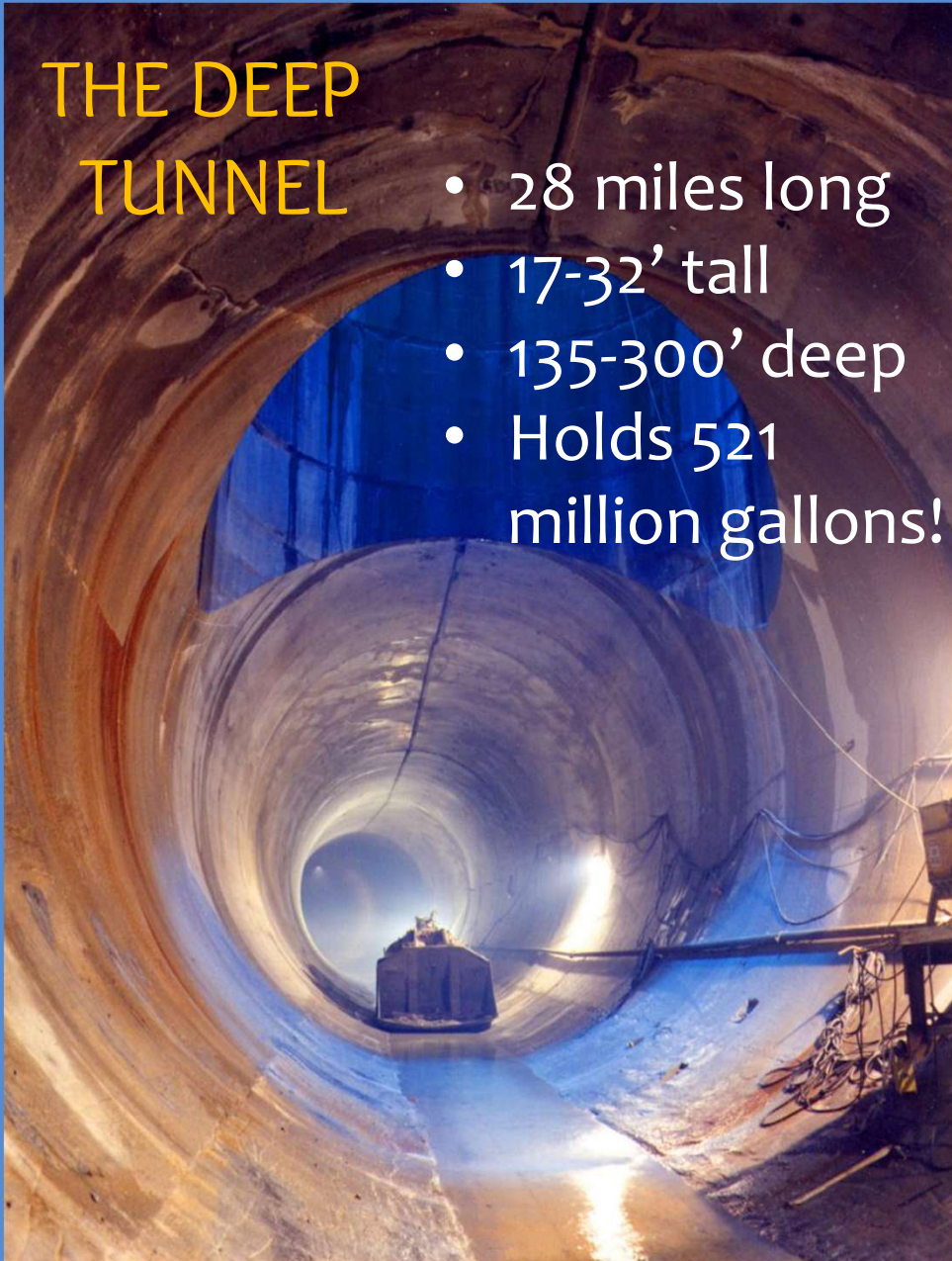
WHERE DOES **INSIDE** WATER GO?

THE DEEP TUNNEL

- 28 miles long
- 17-32' tall
- 135-300' deep
- Holds 521 million gallons!

Created in the 1980's to manage large rain events.

Since 1994, they've captured and cleaned 98.4% of stormwater & wastewater that entered the regional sewer system.



TREATMENT

Milwaukee Metropolitan Sewerage District Jones Island Treatment Plant



WATER FLOW

Where does **outside** water go?



FROM **OUTSIDE**: RAIN SNOW HAIL

WHERE DOES RAIN & SNOW MELT GO?

Rain in streets flows to storm drains and then **directly into a river or lake!**

Stormwater

Rain washes everything off the land: litter, dog poo, cigarette butts, chemicals, fertilizer, pesticides and soil.



Storm Drain



STORMWATER RUNOFF

#1 Pollutant!



OH NO!!!

We can fix this!
Keeping the land clean
helps keep the water clean!

Stormwater Runoff Pollutes



SHOREWOOD
WATERS PROJECT

RUNOFF PICKS UP:

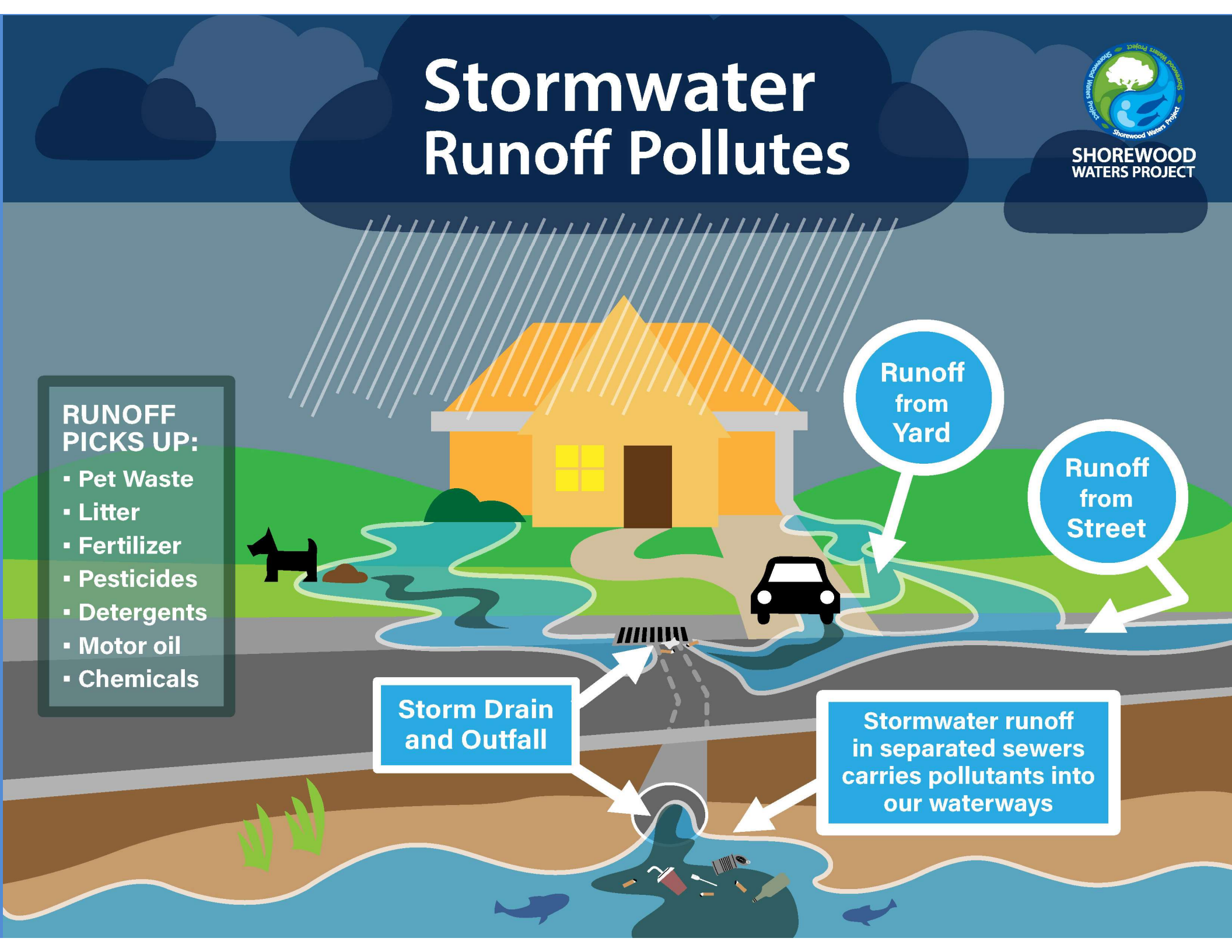
- Pet Waste
- Litter
- Fertilizer
- Pesticides
- Detergents
- Motor oil
- Chemicals

Runoff
from
Yard

Runoff
from
Street

Storm Drain
and Outfall

Stormwater runoff
in separated sewers
carries pollutants into
our waterways



WHERE DOES WATER GO?

WATERSHEDS & MILWAUKEE'S WATERS

3D Model
Demo



3 RIVERS FLOW INTO THE LAKE



Jones Island

Summerfest

Stormwater

WATERSHED DEMO



WHY CARE #1?

The source of our drinking water!



Milwaukee Water Works

They pull water from Lake Michigan, clean it and send it to everyone.

Milwaukee
Water Works



Ozone(O_3) used to clean the water. Why?

A tiny bug called **Cryptosporidium** - 1993



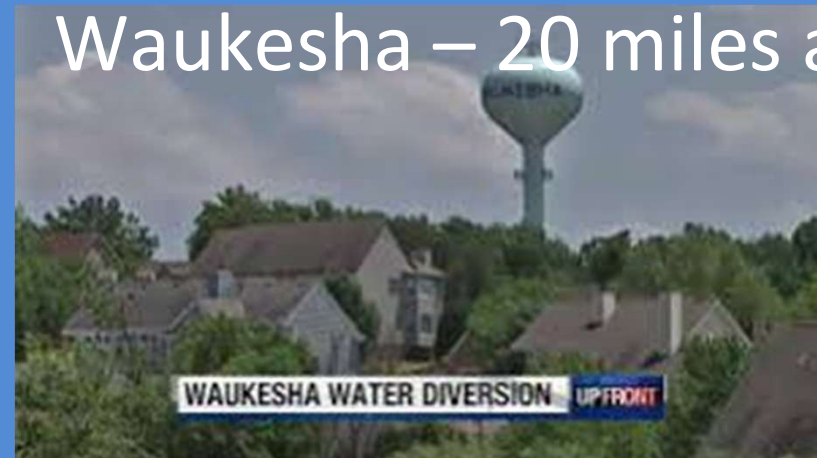
WHY CARE #2?

There's toxic water near us!

Contaminated Groundwater



Waukesha – 20 miles away!



RADIUM



WHY CARE #3?

Lakes & ponds have toxic algae blooms in summer!



CYANOBACTERIA IN BLUE GREEN ALGAE

WHY CARE #4?

Water Can disappear!

Look what happened to the **Aral Sea**!

A lake
larger than
Lake
Michigan is
GONE!



The world's
4th largest
freshwater
lake.

WHY CARE #4?

The Aral Sea Disappears!



The Aral Sea Today!

A desert – it lost nearly 90% of its water!



Now toxic dust blows across to surrounding villages

SOLUTIONS

**1. Never dump
anything in
storm drains**

**2. Keep the
land clean**



PICK-UP DOG POO!

POO FACTS

- ❖ Contains things that can make people sick!
- ❖ Gets in stormwater & pollutes our waters
- ❖ 89 million dogs in the US =
Over **32.5 billion pounds** of poo per year!

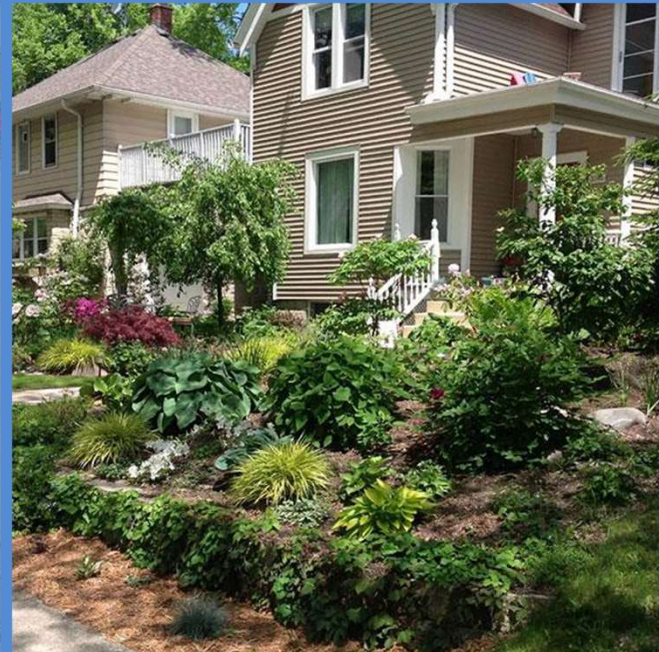


365 days x 1 pound/day x 89 million dogs = 32.5 billion pounds per year!

SOLUTIONS: GREEN INFRASTRUCTURE

KEEP WATER WHERE IT FALLS!

- ❖ Rain Barrels
- ❖ Rain Gardens
- ❖ Green Roofs
- ❖ Porous Pavers
- ❖ Native plant landscaping
- ❖ Trees



SOLUTIONS: YOU!



...and your creative minds to
find more solutions!

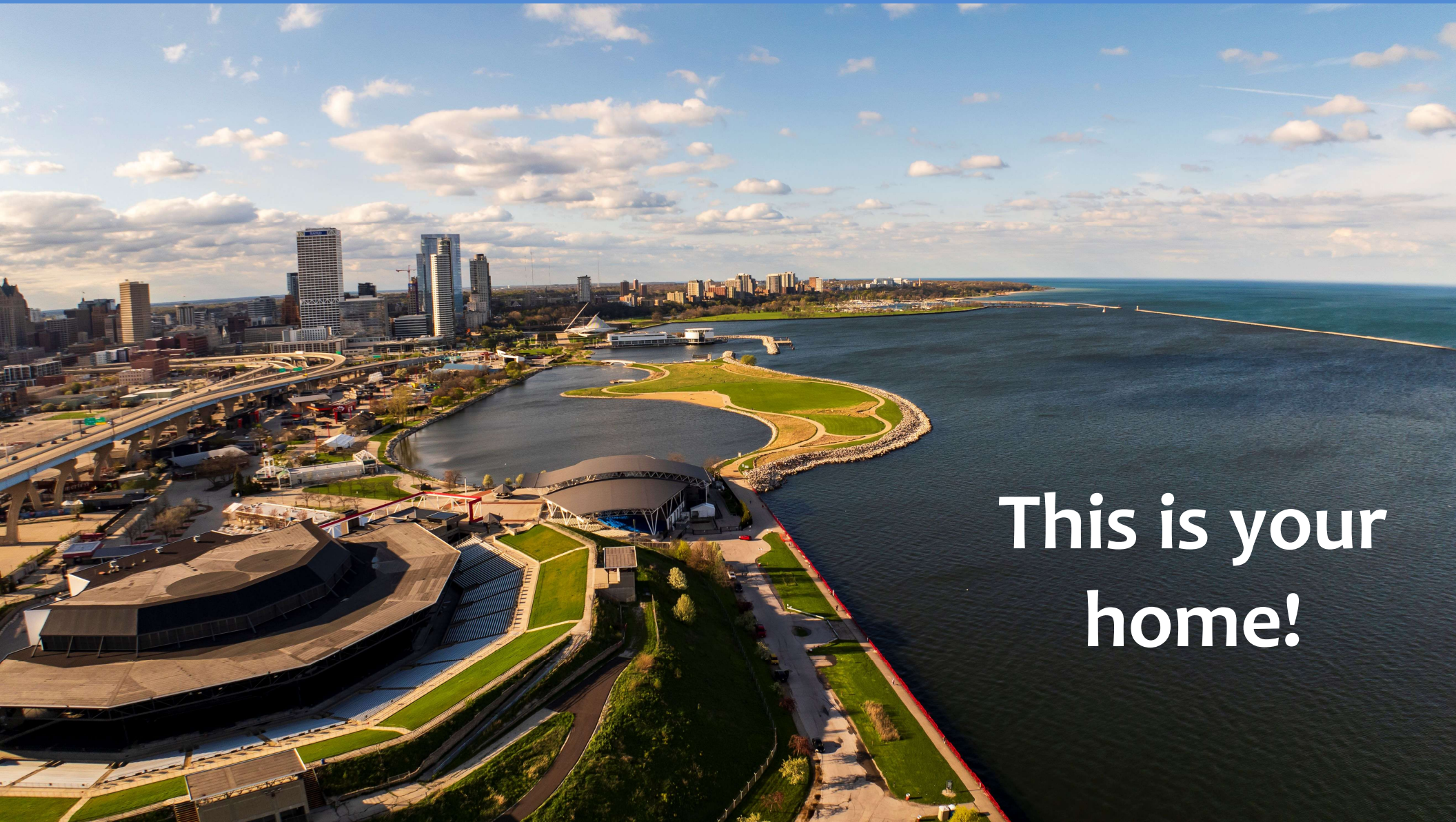
WE'RE SO LUCKY!

UW MILWAUKEE'S

School of Freshwater Sciences



Only school like it in the world!
Creating the next Water Generation!



This is your
home!

LAKE SHORE STATE PARK

WE'RE SO LUCKY!



KEEP IT CLEAN!