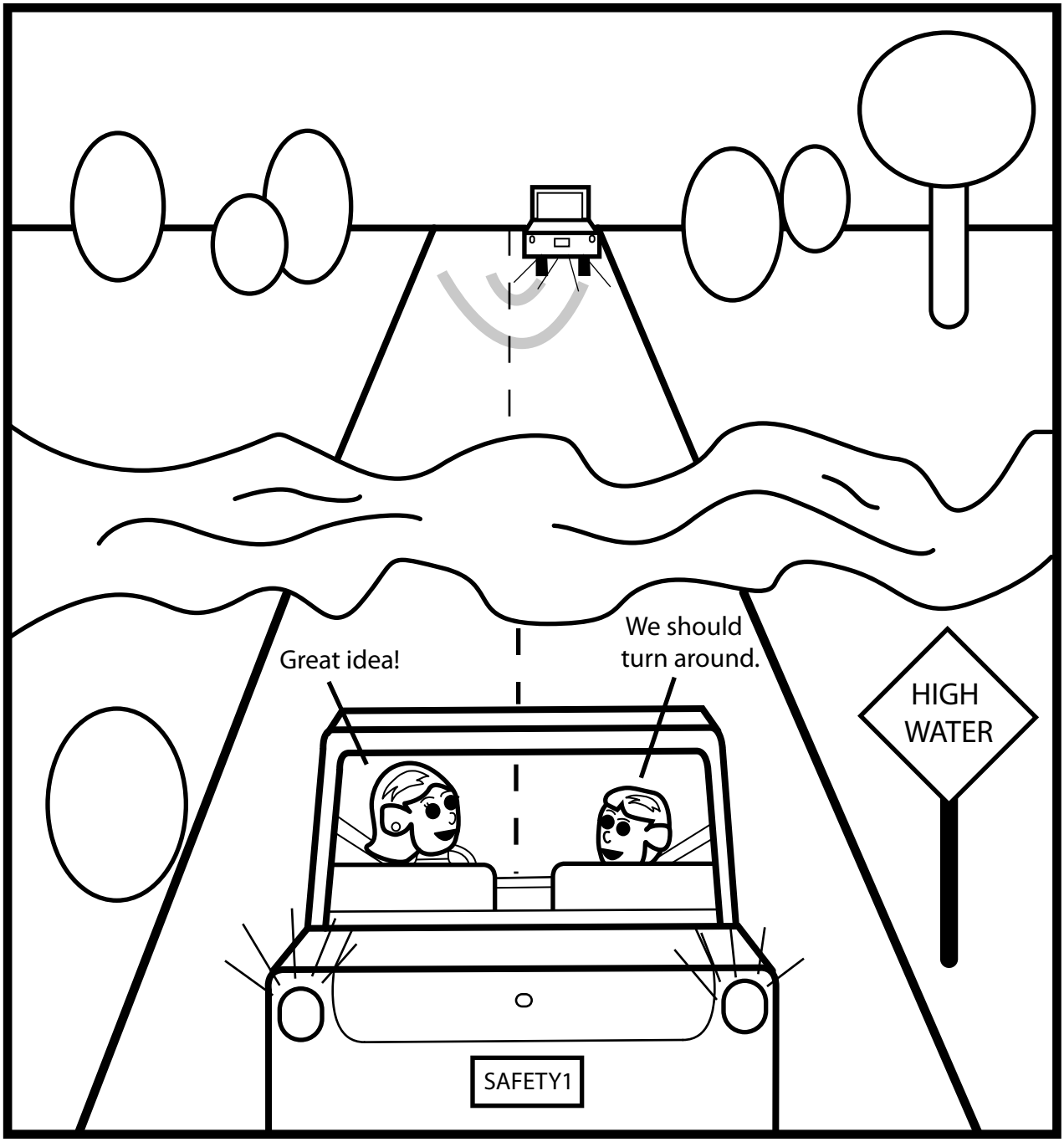
"STAY AFLOAT"
FLOOD AWARENESS CAMPAIGN
CHILDREN'S ACTIVITY BOOK

INDIANA DEPARTMENT
OF HOMELAND SECURITY

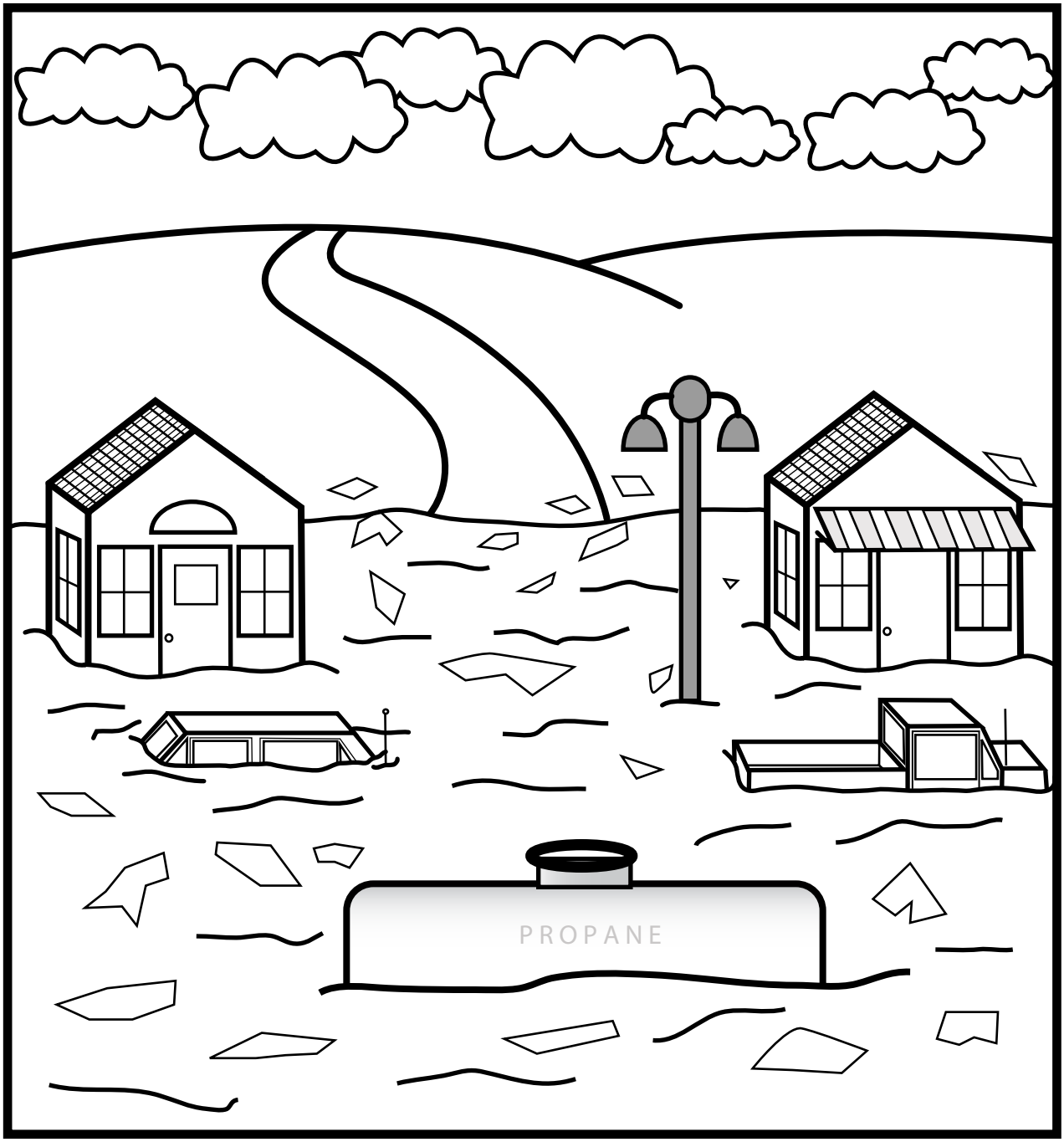
NOAA All-Hazard Radios

A NOAA all-hazard radio is a great way to stay informed about the changing conditions around you. The radios can be programmed to aleart you and your family about possible threatening conditions where you live. All-hazard radios are especially good to have around when you are asleep and unable to hear important messages that might be broadcast on TVs and radios. They are another way to be sure you and your family stay safe - every household should have one!



Avoid Driving Through Flood Waters

Driving through flood water is dangerous! Sometimes there can be a current that can carry your car downstream. Other times the water might keep you from seeing a damaged road underneath. Almost 80% of flood-related fatalities in Indiana occur in vehicles. Be sure to tell your friends and family about the dangers of driving through flood waters!



Toxic Flood Waters

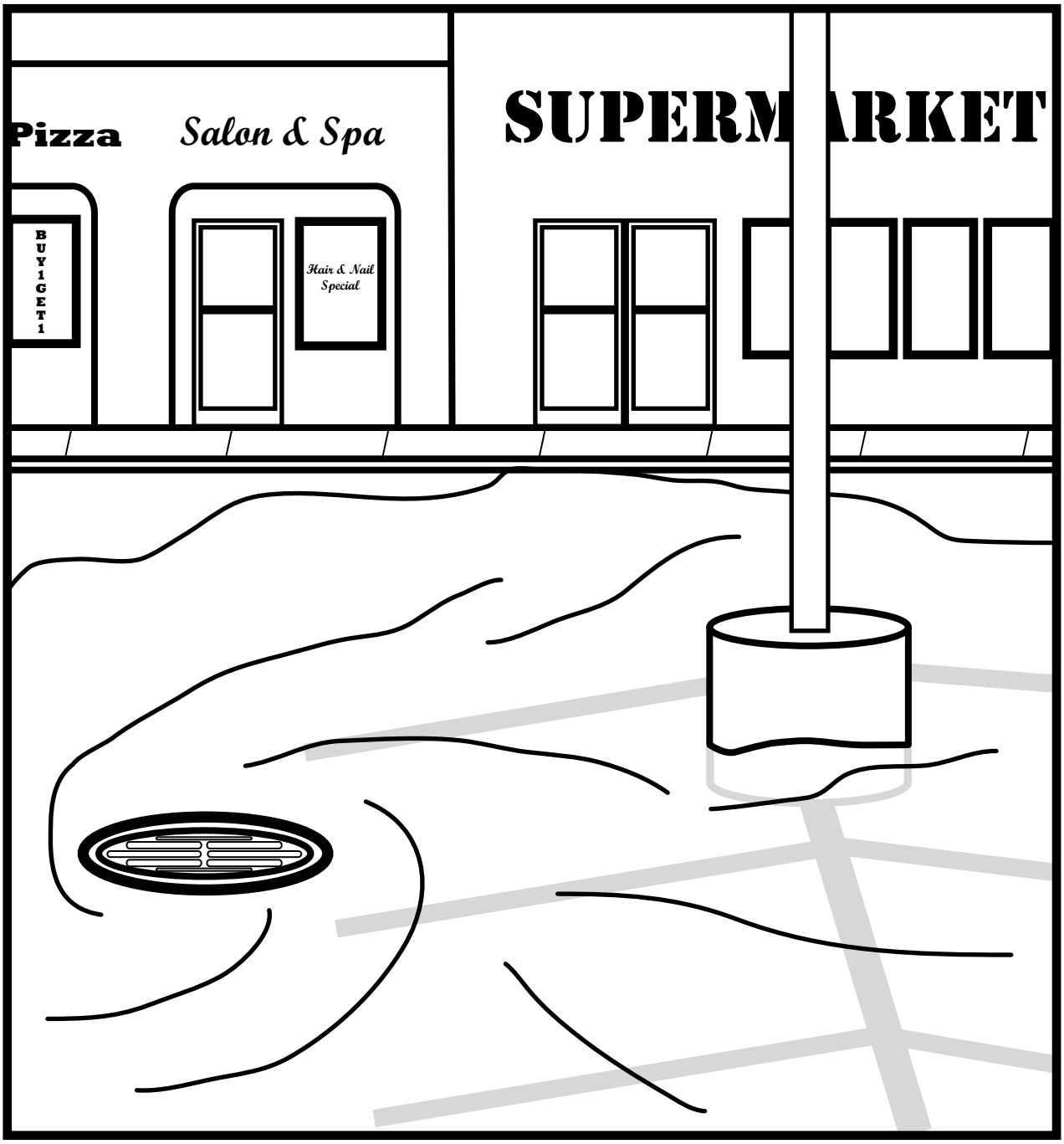
Flood waters can contain very dangergous and poisonous chemicals. Things such as propane tanks, gasoline cans and paint cans can float downstream and often times leak into flood waters. These types of products are not only toxic but can also be highly explosive - so be cautious! If you see something like a propane tank floating in the flood waters report it to you local Emergency Management Agency or law enforcement agency. Contaminated flood water can make you very sick if it is ingested. Certainly never play in flood waters!

EASY

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

FIND THE WORDS LISTED BELOW IN THE PUZZLE ABOVE.
WORDS CAN BE FOUND UP AND DOWN OR ACROSS. GOOD LUCK!

BOAT
BRIDGE
CAR
CREST
DAM
FEMA
FLOOD
INDIANA
LAKE
LEARN
LEVEE
MAP
PLAN
PETS
POND
RADIO
RAIN
RUNOFF
SAFETY
SHELTER
STREAM
WARNING
WATCH
WATER



Storm Drains

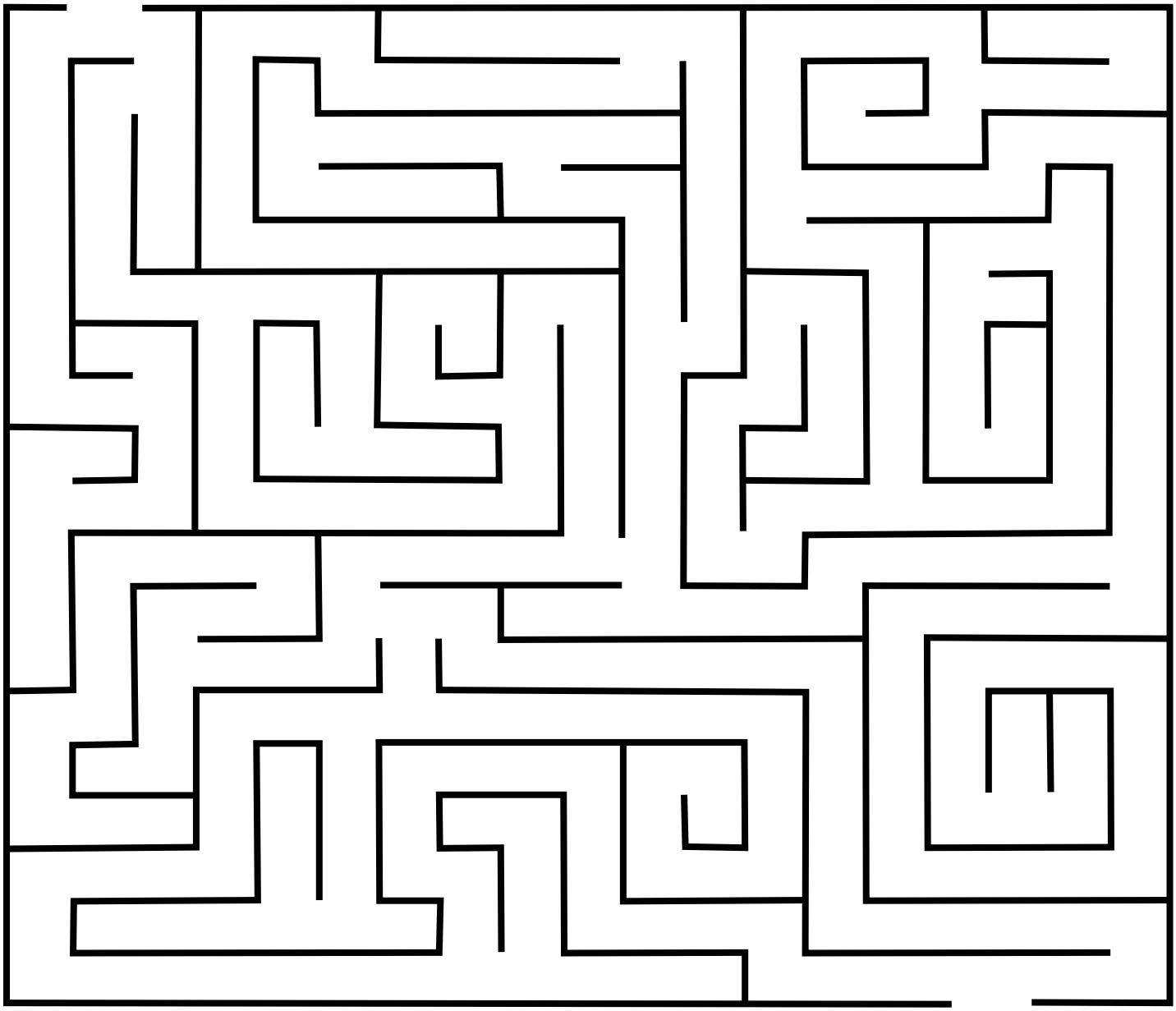
Storm drains can be very dangerous during flooding events and even heavy rainfall events. Storm drains are often found in parking lots and along curbs in neighborhoods and residential areas. The swirling water can create suction as it moves toward the drain. If you are not careful the suction could pull you toward the drain and under water where you might drown. Children should avoid playing around storm drains to prevent injuries and drowning.

Family Disaster Kit

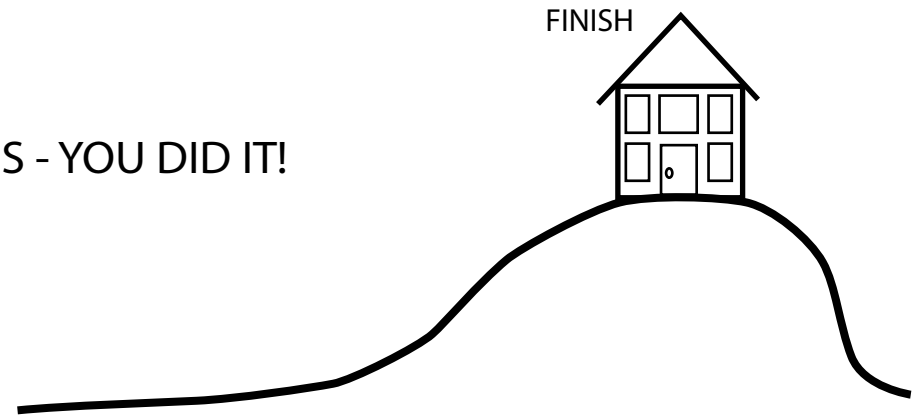
Every family should have a family disaster kit in their house. Kits should include things like a first aid kit, ID for each family member, a battery-operated radio with extra batteries, a 3-day supply of water for each person in the house, canned goods and manual can opener, matches, candles, a map of the area in case evacuation is needed, hand sanitizer, a flashlight, other items that might be needed on a daily basis as well as extra clothes and rubber boots. Keep items stored together to make finding them easy in case you need them!

CAN YOU MAKE IT THROUGH THE MAZE TO GET OUT OF THE FLOODPLAIN AND UP ONTO HIGHER GROUND BEFORE THE FLOOD??

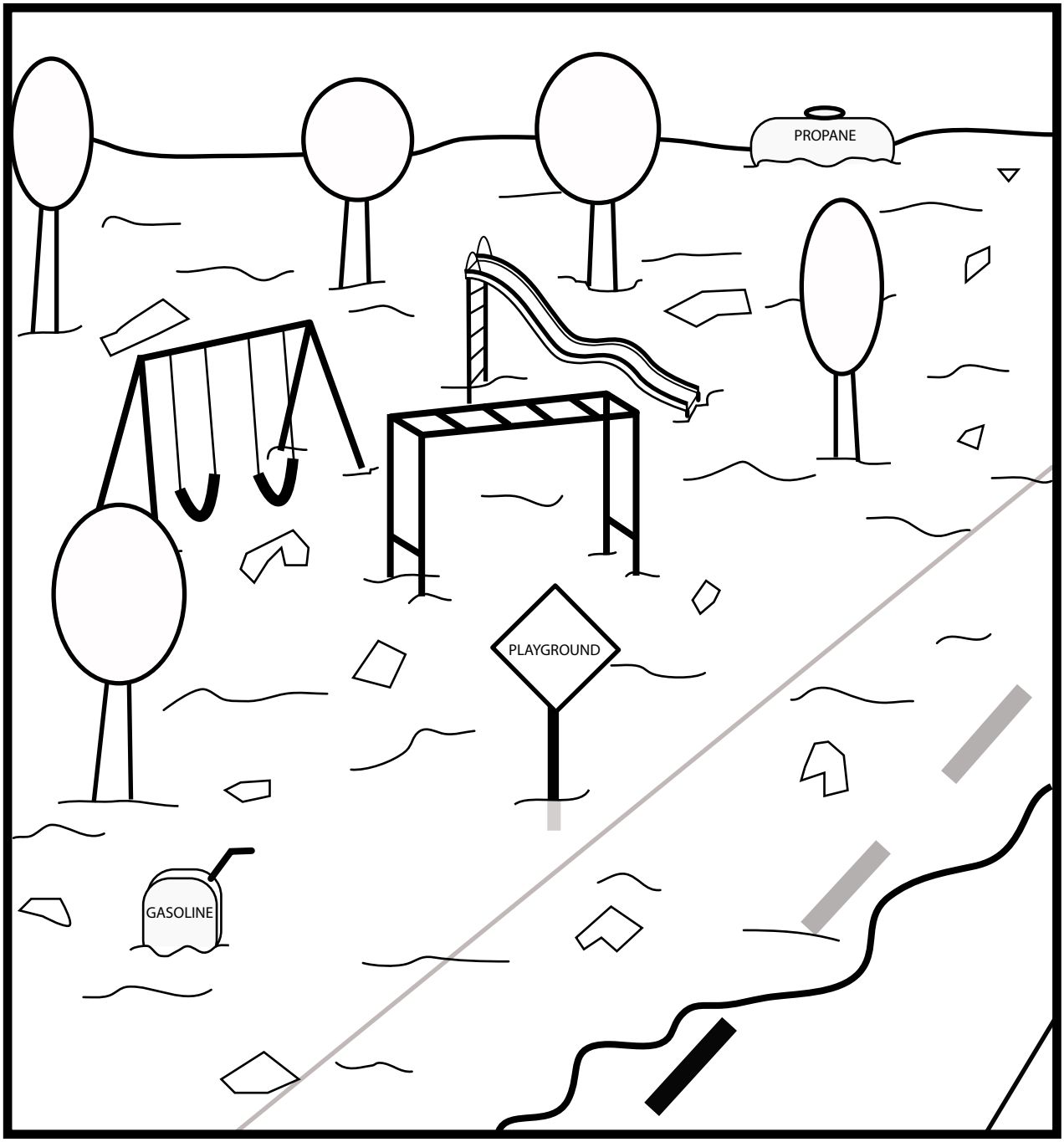
START



FINISH

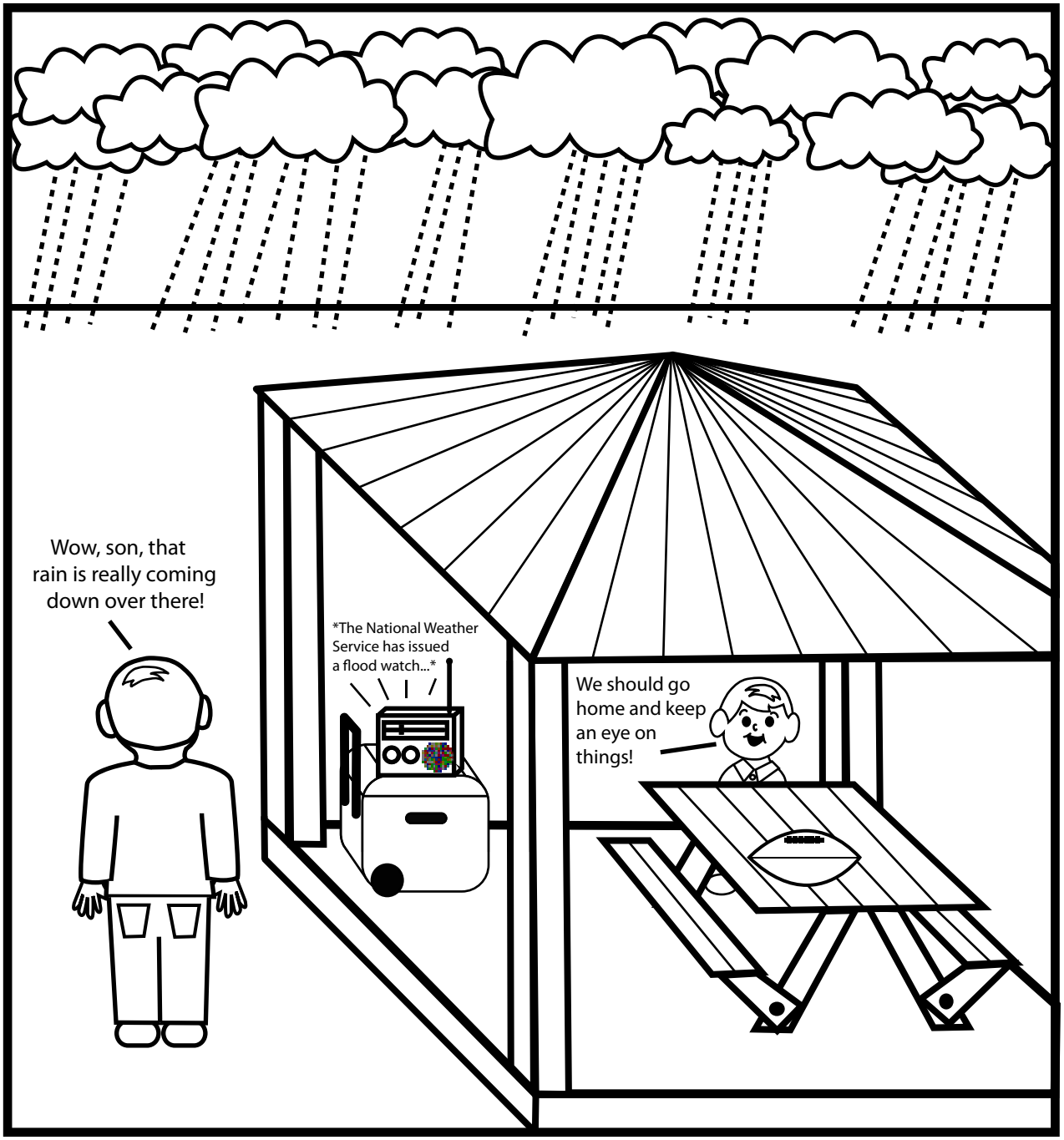


CONGRATULATIONS - YOU DID IT!



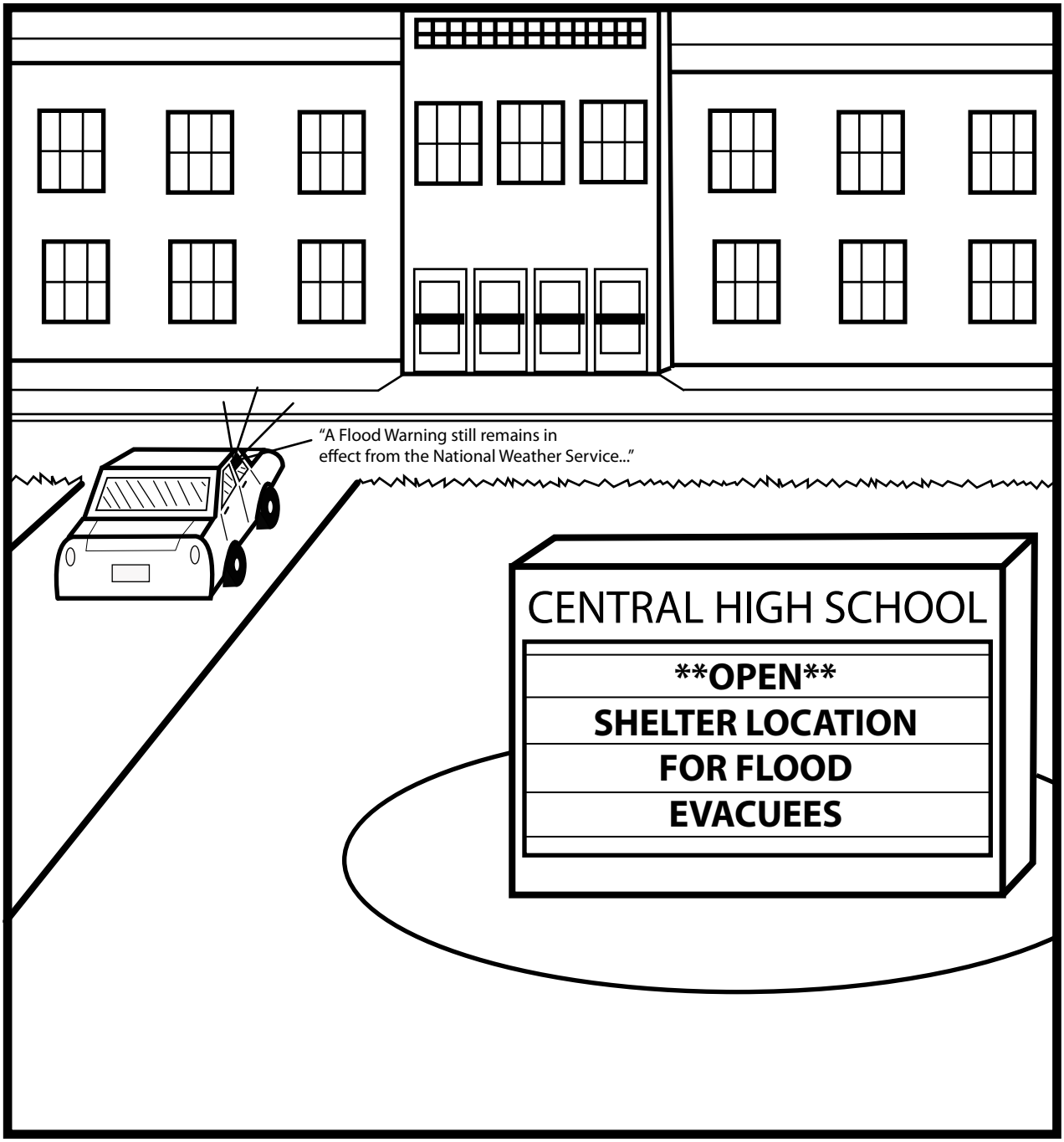
Avoid Playing in Flood Waters

Playing in flood waters can be very dangerous! You might not be able to see how deep the water is where you are playing. There are also toxic chemicals and substances in flood waters. Things like garbage, gasoline, propane, raw sewage, e-coli and industrial chemicals could be lurking in the flood waters; those types of things can make you very sick if you ingest them. Be sure to play safe by avoiding flood waters!



Flood Watch

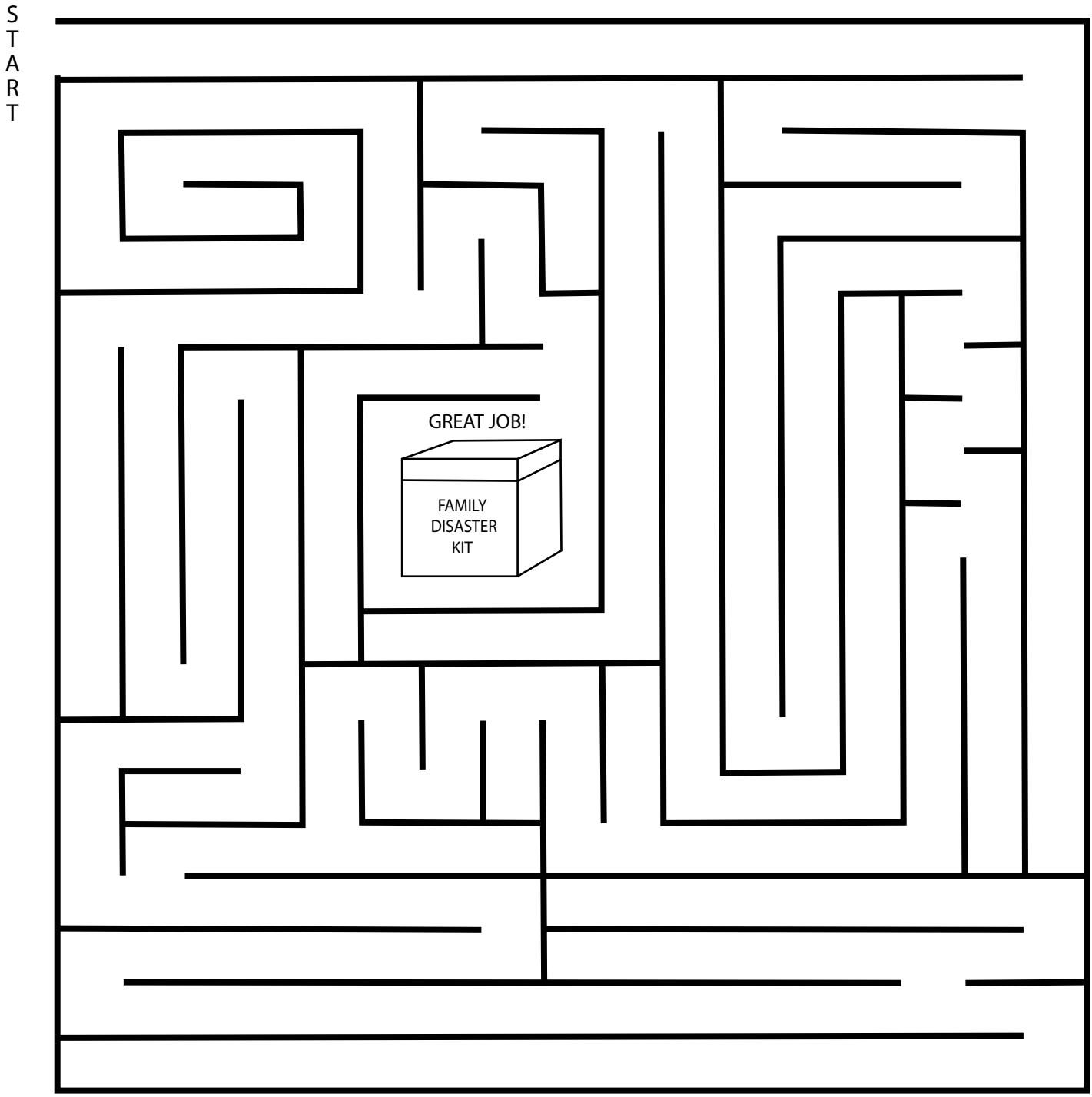
The National Weather Service issues flood watches and flash flood watches. A flood watch means that heavy rain or water drainage may cause flooding in some areas. A flood watch means that flooding may begin about 6 hours after heavy rains have ended. If you hear a flood watch or flash flood watch being issued be sure to monitor your area for flooding and take extra precautions while you are outdoors or traveling. Low-lying areas are usually the first to flood. Stay informed and aware!



Flood Warning

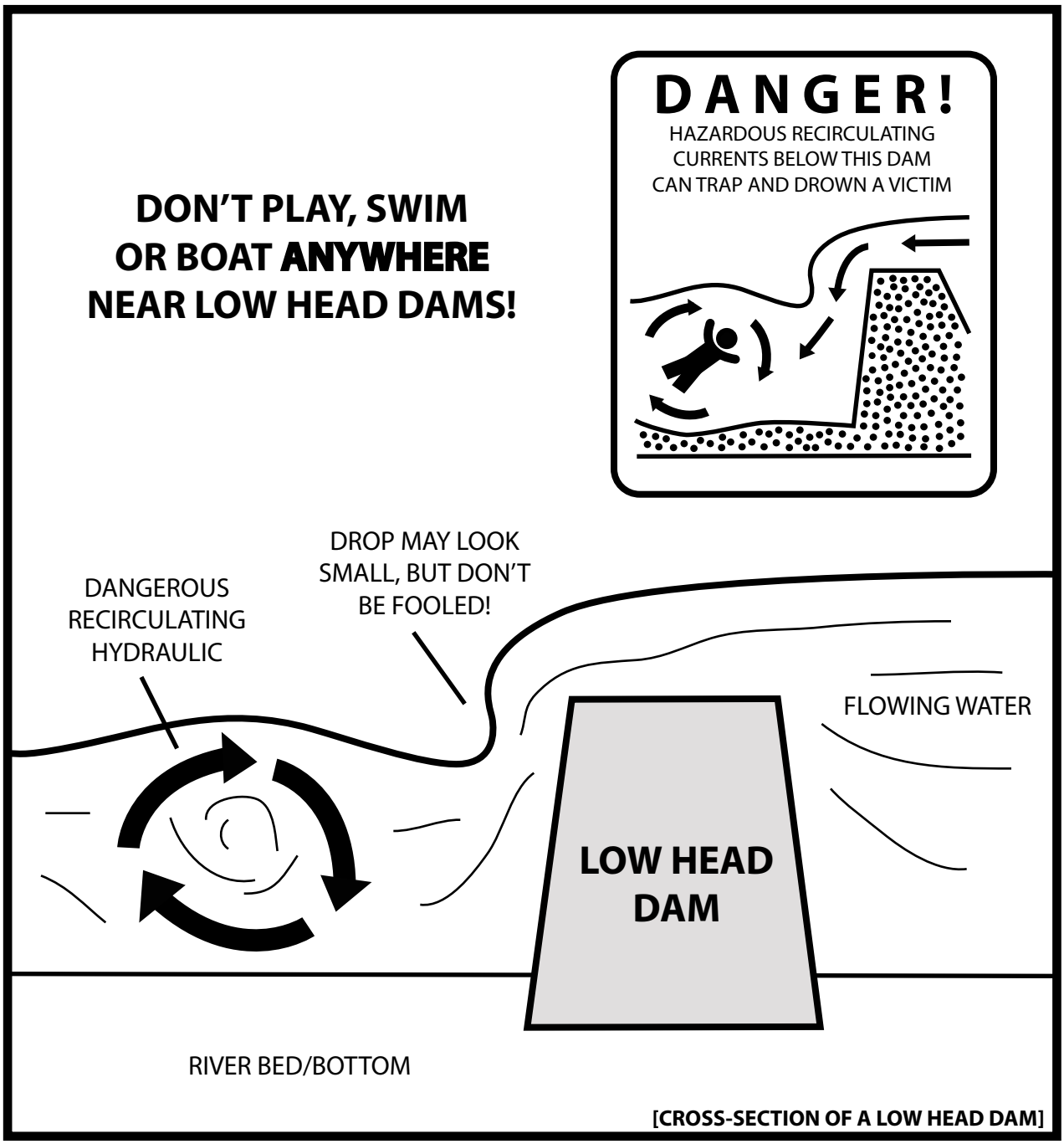
The National Weather Service issues flood warnings and flash flood warnings. A flood warning means that flooding will occur very soon or it is already occurring at the time the warning is issued. A flood warning is usually issued when a river or other water body first begins to exceed its flood stage. If you live in an area that frequently floods be sure to know the safest escape routes. If flooding is significant you may want to evacuate and seek shelter elsewhere; often times churches and schools open up for those who are displaced from their homes during disasters. Your county's emergency management office can provide shelter information.

MAKE YOUR WAY THROUGH THE MAZE TO FIND THE FAMILY DISASTER KIT!



Avoid Walking Through Flood Waters

Even walking through flood waters is dangerous! It only takes 6 inches of moving water to knock an adult off balance! If you trip in the flood waters you might be pulled downstream by the current or towards a storm drain. If you see flood waters in your path you should stop, turn around and find another way to get where you are going. By knowing the dangers of flood waters you can help protect yourself and others!

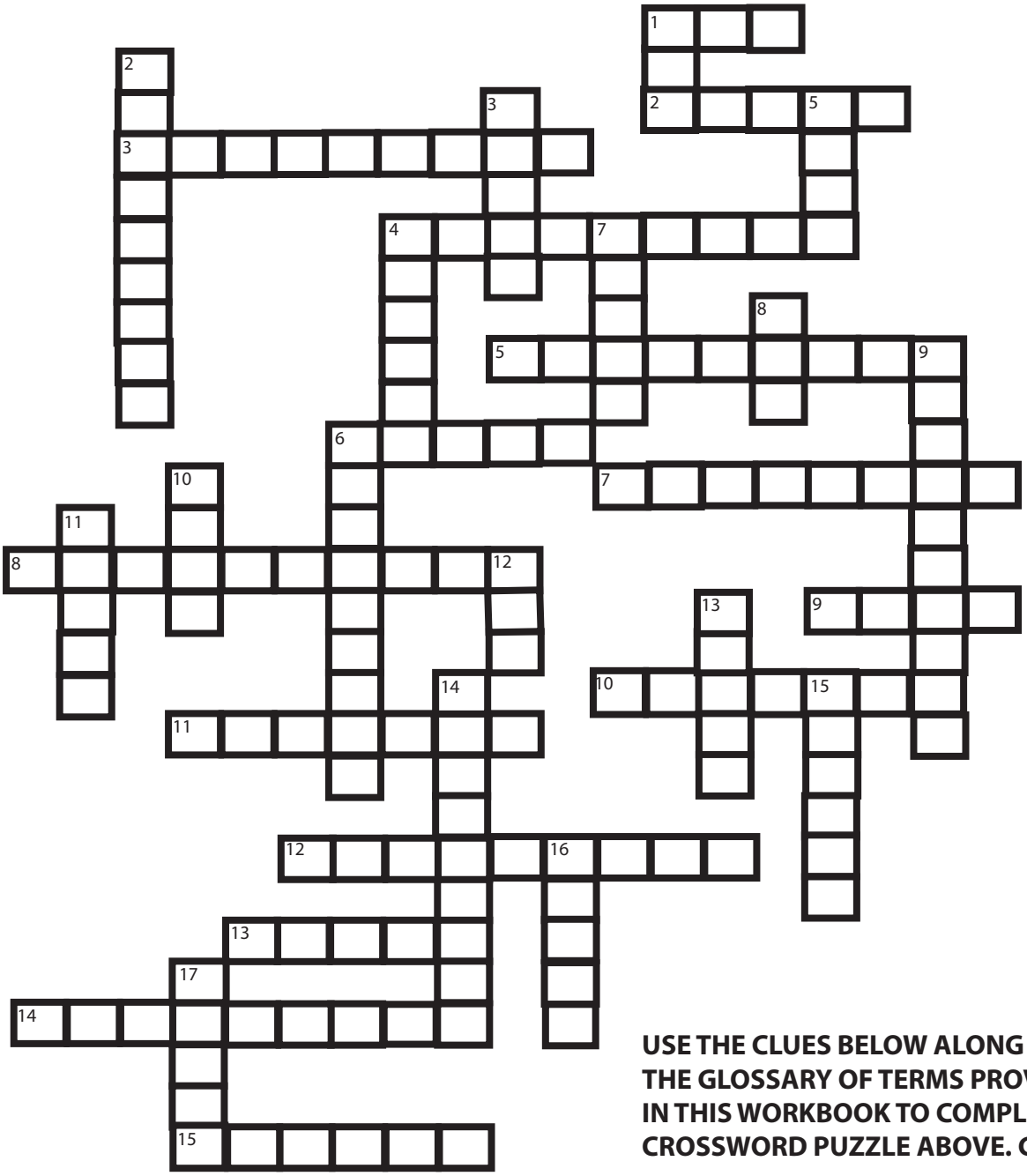


[CROSS-SECTION OF A LOW HEAD DAM]

Low Head Dams

Low head dams are very dangerous! They are used to help control water levels and flow along rivers. It is important to know what low head dams look like from upstream. Although the drop they produce may not seem like a large one, it is the turbulent hydraulic beneath the water that is what makes these dams so dangerous. Once you get trapped in the underwater current it is difficult to escape. Don't play, swim or boat near low head dams; look for signs (like the one above) to help locate these dams. Educating yourself about how to locate a low head dam will decrease your risk of possibly drowning as a result of coming into contact with one.

CROSSWORD PUZZLE



USE THE CLUES BELOW ALONG WITH THE GLOSSARY OF TERMS PROVIDED IN THIS WORKBOOK TO COMPLETE THE CROSSWORD PUZZLE ABOVE. GOOD LUCK!

ACROSS

1. Flash Flood Watch
2. Flood _____: generally issued for flooding that is expected to occur at least 6 hours after heavy rains have ended
3. A stream that contributes its water to another stream or body of water
4. 100-Year Flood
5. Spillway: an outlet pipe or channel serving to _____ water from a dam, ditch, gutter or basin
6. The point at which overflow of the natural banks of a stream begins to cause damage in the reach in which the elevation is measured (flood _____)
7. An emergency _____ provides a safe overflow of floodwaters
8. Working to lessen the risk by lowering its chances of occurring or by reducing its effect if it does occur
9. Federal Emergency Management Agency
10. The wearing away of land by the flow of water
11. A flood _____ is issued when a river first exceeds its flood stage
12. The science dealing with the properties, distribution and circulation of water on and below the earth's surface and in the atmosphere
13. A flood_____ is the lowland which borders a river and usually dry but can be subject to flooding
14. This is usually measured in cubic feet per second (C.F.S.)
15. Surface water resulting from rainfall or snowmelt that flows overland to streams

DOWN

1. Flash Flood Warning
2. Often referred to as a 'basin'
3. Synonymous with 'flood peak'
4. The elimination of potential flood damages to houses or other types of structures by acquiring them and removing them
5. A _____ front forces warmer air to rise, condense and form rain
6. A flood _____ is issued by the NWS to provide follow-up information on river flooding
7. _____ flood: A flood which follows within a few hours of heavy or excessive rainfall, dam or levee failure or the sudden release of water impounded by an ice jam
8. A flood___ can be found adjacent to a floodplain and is the channel of a watercourse
9. A man-made earth structure constructed for the purpose of impounding water
10. National Flood Insurance Program
11. The _____ Forecast Center defines areas by hydrologic boundaries and watersheds
12. ____ is responsible for issuing hazardous weather products
13. A temporary overflow of lands not normally covered by water
14. Flood _____ provides coverage through the NFIP
15. An accumulation of broken river ice caught in a narrow channel of the water body
16. A compacted embankment built alongside a river for the purpose of preventing high water from flooding the adjoining land
17. Erosion caused by rapidly flowing water

Base Flood/100-Year Flood – A flood having a 1% chance of being equaled or exceeded in any given year. This flood is sometimes called the 1% or 100-year flood.

Buyout – The elimination of potential flood damages to houses or other types of structures by acquiring them and removing them.

Cold Front – The forward edge of a mass of cold air intruding into an area of warmer air. The cold front forces the warmer air rise, where its moisture cools, condenses and forms rain.

Crest – The highest value of the stage or discharge attained by a flood; synonymous with Flood Peak, thus peak stage or peak discharge.

Discharge – The amount of water that passes a specific point on a watercourse over a given period of time. Rates of discharge are usually measured in cubic feet per second (C.F.S.)

Embankment – A man-made earth structure constructed for the purpose of impounding water.

Emergency Spillway – An outflow from a detention/retention facility that provides for the safe overflow of floodwaters from large storms that exceed the capacity of the outlet.

Erosion – The wearing away of land by the flow of water.

FEMA (Federal Emergency Management Agency) – The federal agency responsible for providing leadership and support to reduce the loss of life and property and to protect our institutions from all types of hazards.

Flash Flood – A flood which follows within a few (usually less than six) hours of heavy or excessive rainfall, dam or levee failure, or the sudden release of water impounded by an ice jam.

Flash Flood Warning (FFW) – A warning issued by the National Weather Service (NWS) to warn of flash flooding that is imminent or occurring.

Flash Flood Watch (FFA) – A statement issued by the National Weather Service (NWS) which alerts communities to the possibility of flash flooding in specified areas.

Flood – A flood is commonly interpreted as the temporary overflow of lands not normally covered by water, but which are used or usable by man when not covered by water.

Flood Insurance – The insurance coverage provided through the National Flood Insurance Program (NFIP).

Flood Stage – The stage at which overflow of the natural banks of a stream begins to cause damage in the reach in which the elevation is measured.

Flood Statement – A statement issued by the National Weather Service (NWS) which provides follow-up information on river flooding.

Flood Warning – A warning issued by the NWS to warn of river flooding which is imminent or occurring. A flood warning is issued when a river first exceeds its flood stage, and it may be reissued if a new river forecast for a forecast point is significantly higher than a previous forecast.

Flood Watch – High flow or overflow of water from a river is possible in the given time period. It can also apply to heavy runoff or drainage of water into low-lying areas. These watches are generally issued for flooding that is expected to occur at least 6 hours after heavy rains have ended.

Floodplain – The lowland which borders a river, usually dry but subject to flooding. Also, the portion of a river valley which has been inundated by the river during historic floods.

Floodway – The channel of a watercourse and portion of the adjacent floodplain that is needed to convey the base or 100-year flood event without increasing flood levels by more than one foot and without increasing velocities of flood water.

Hydrology – The science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere.

Ice Jam – An accumulation of broken river ice caught in a narrow channel of the water body, frequently producing local flooding.

Levee – As defined by the US Army Corp of Engineers (USACE), a levee is a compacted embankment built alongside a river for the purpose of preventing high water from flooding the adjoining land.

Mitigation - Working to lessen risk by lowering its chances of occurring or by reducing its effect if it does occur.

National Flood Insurance Program (NFIP) – A federal program that allows property owners to purchase insurance protection against losses due to flooding. In order to participate in this program, local communities must agree to implement and enforce measures that reduce future flood risks in special flood hazard areas.

National Weather Service (NWS) – One of six scientific agencies that make up the National Oceanic and Atmospheric Administration (NOAA) of the US government. NWS is responsible for issuing hazardous weather products such as watches, warnings and advisories in order to protect the public.

River Forecast Center (RFC) – A division of the National Weather Service (NWS) which provides river forecasts for rivers within its area of responsibility; there are 13 RFCs in the United States. Their areas are defined by hydrologic boundaries and watersheds.

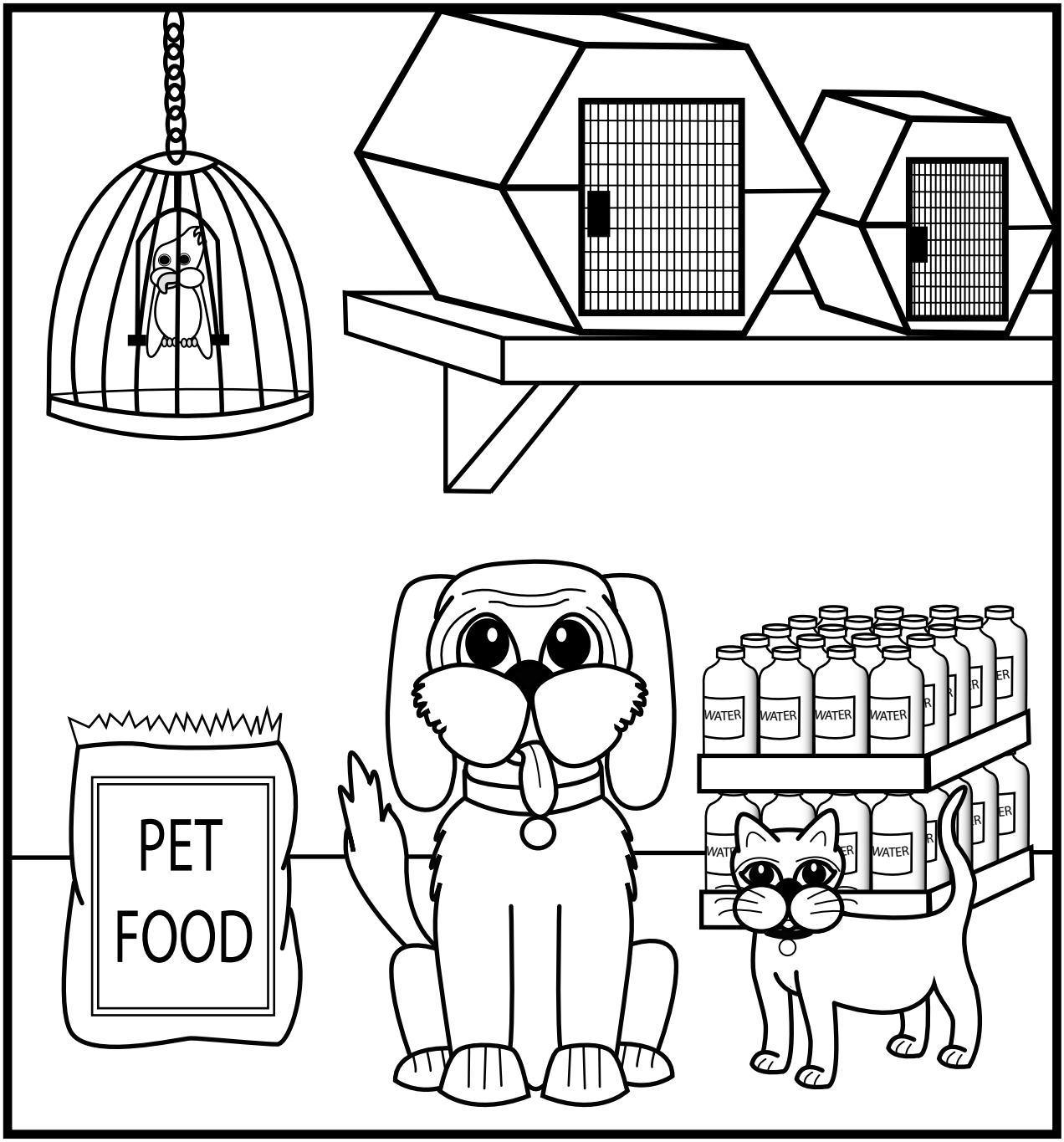
Runoff – Surface water resulting from rainfall or snowmelt that flows overland to streams.

Scour – Erosion caused by rapidly flowing water.

Spillway – An outlet pipe or channel serving to discharge water from a dam, ditch, gutter or basin.

Tributary – A stream that contributes its water to another stream or body of water.

Watershed – An area from which water drains into a lake, stream or other body of water. A watershed is also often referred to as a basin.



Pets

Don't forget about your pets! Be sure you have plenty of food and water for each pet in your household as a part of your preparedness plan and kit. Keep your pet's cage or carrier in an easily accessible area in case you need to leave your house very quickly. Pets can be easily forgotten about when planning what to do during a disaster, so be sure to keep them in mind!

UNSCRAMBLE THE FLOOD-RELATED WORDS. THEN MATCH THE HIGHLIGHTED LETTER FROM EACH WORD WITH THE CORRECT NUMBERED BOX AT THE BOTTOM TO SPELL OUT THE MESSAGE.

1 YOLDOAWF

2 ADM

3 LALMEUBR

4 NNARWGI

5 YSETFA

6 EALVTEE

7 CHATW

8 TFAEOSRC

9 RANEL

10 SSARIDET

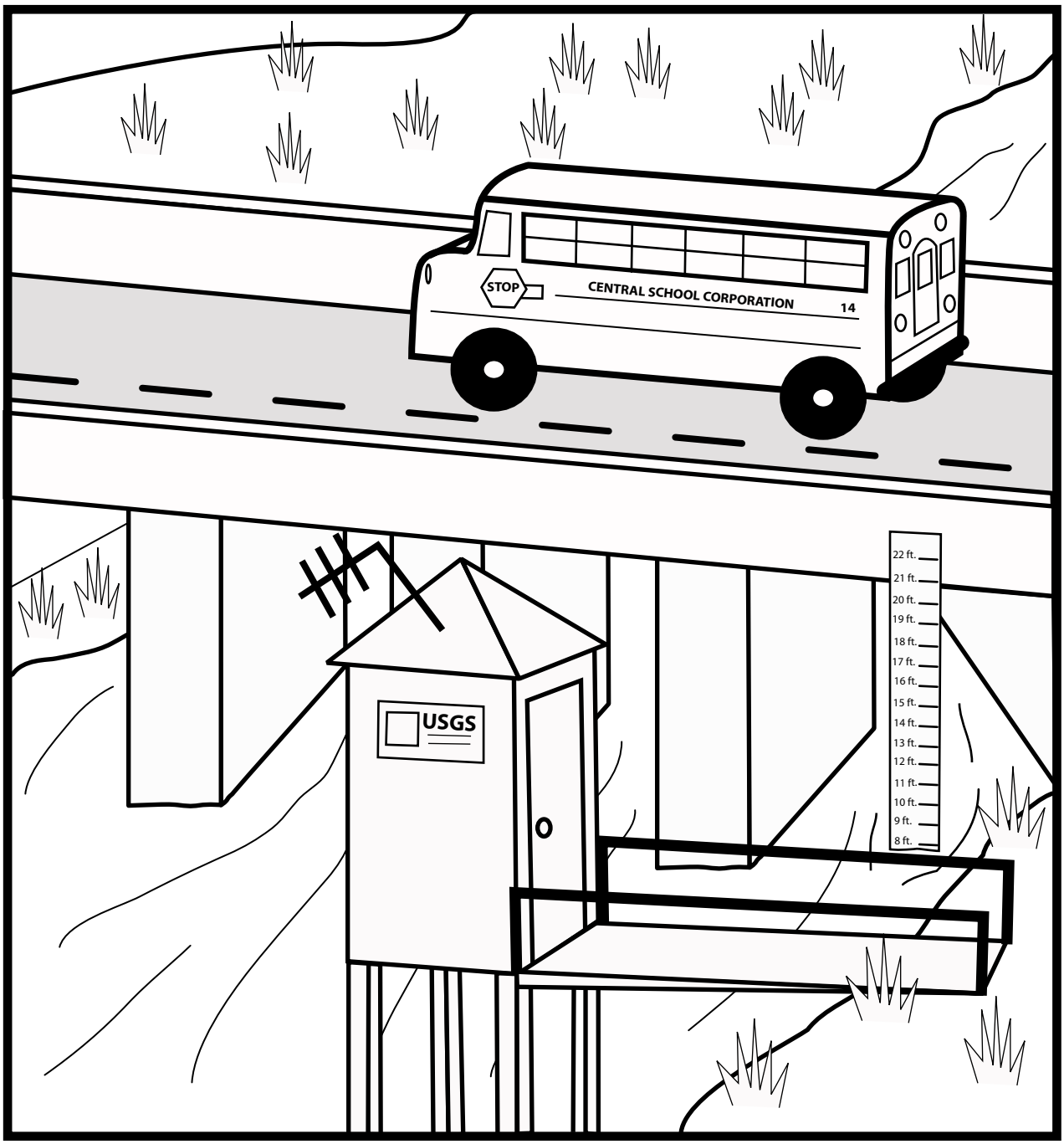
11 SAFLH OFODL

12 LAODFPIONL

3 6

11 12 1 8 2

9 7 4 10 5



Flood Monitoring

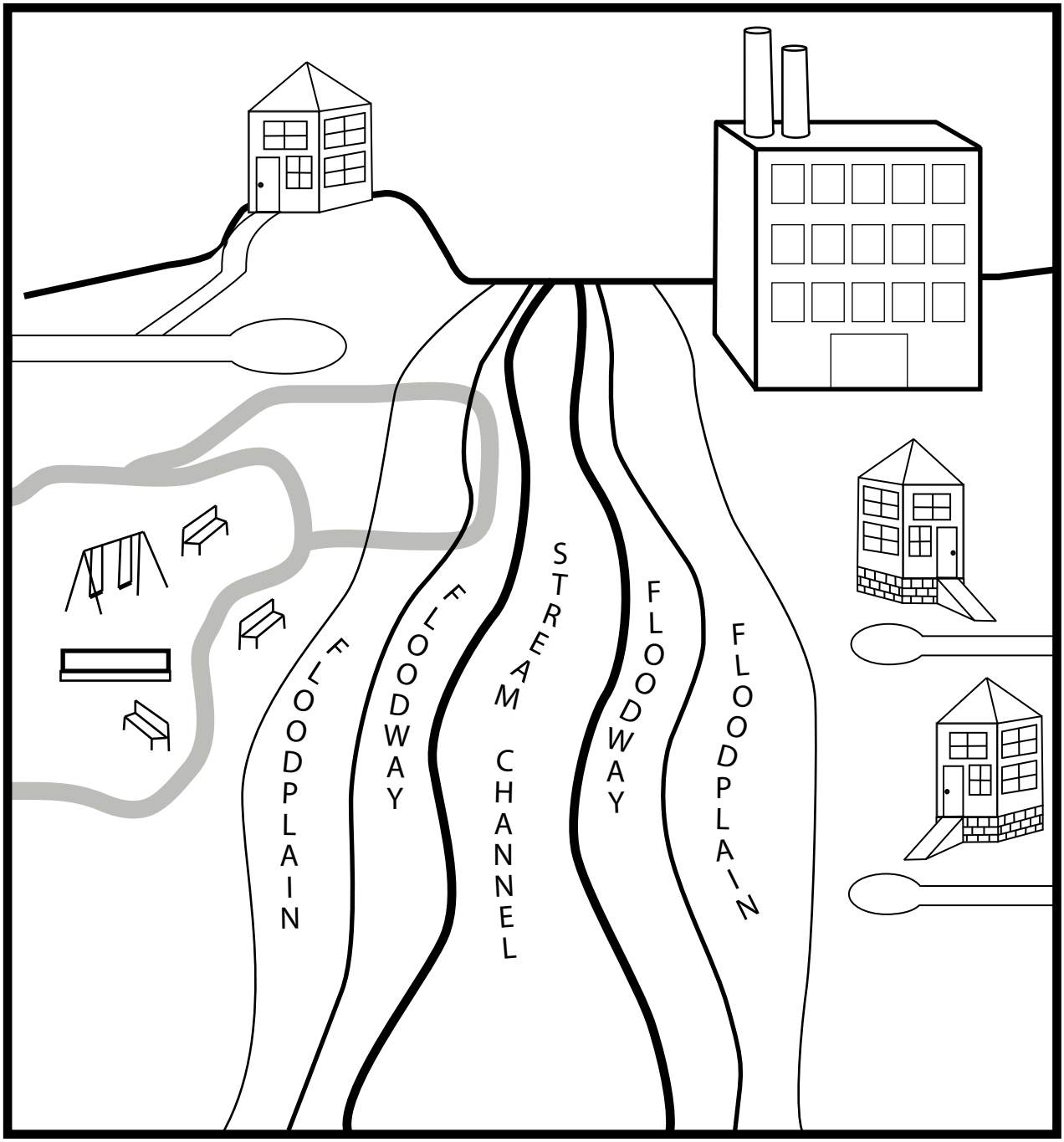
The National Weather Service uses information from the U.S. Geological Survey streamgages to help issue flood watches and warnings. A streamgage is a small building that sits beside a river or stream. Instruments inside the streamgage measure how high the water gets. The instruments send this water level data up to a satellite in space, then the data comes back down to earth and into computers where the National Weather Service or anyone else can use the Internet to look at it. The streamgages also provide information about how much water is flowing down the river. This information is important for engineers to know so that they can design buildings that do not get flooded and bridges that are high enough so you can safely drive across them during a flood.

ADVANCED

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

FIND THE WORDS LISTED BELOW IN THE PUZZLE ABOVE.
WORDS CAN BE FOUND UP, DOWN, STRAIGHT ACROSS OR DIAGONALLY. GOOD LUCK!

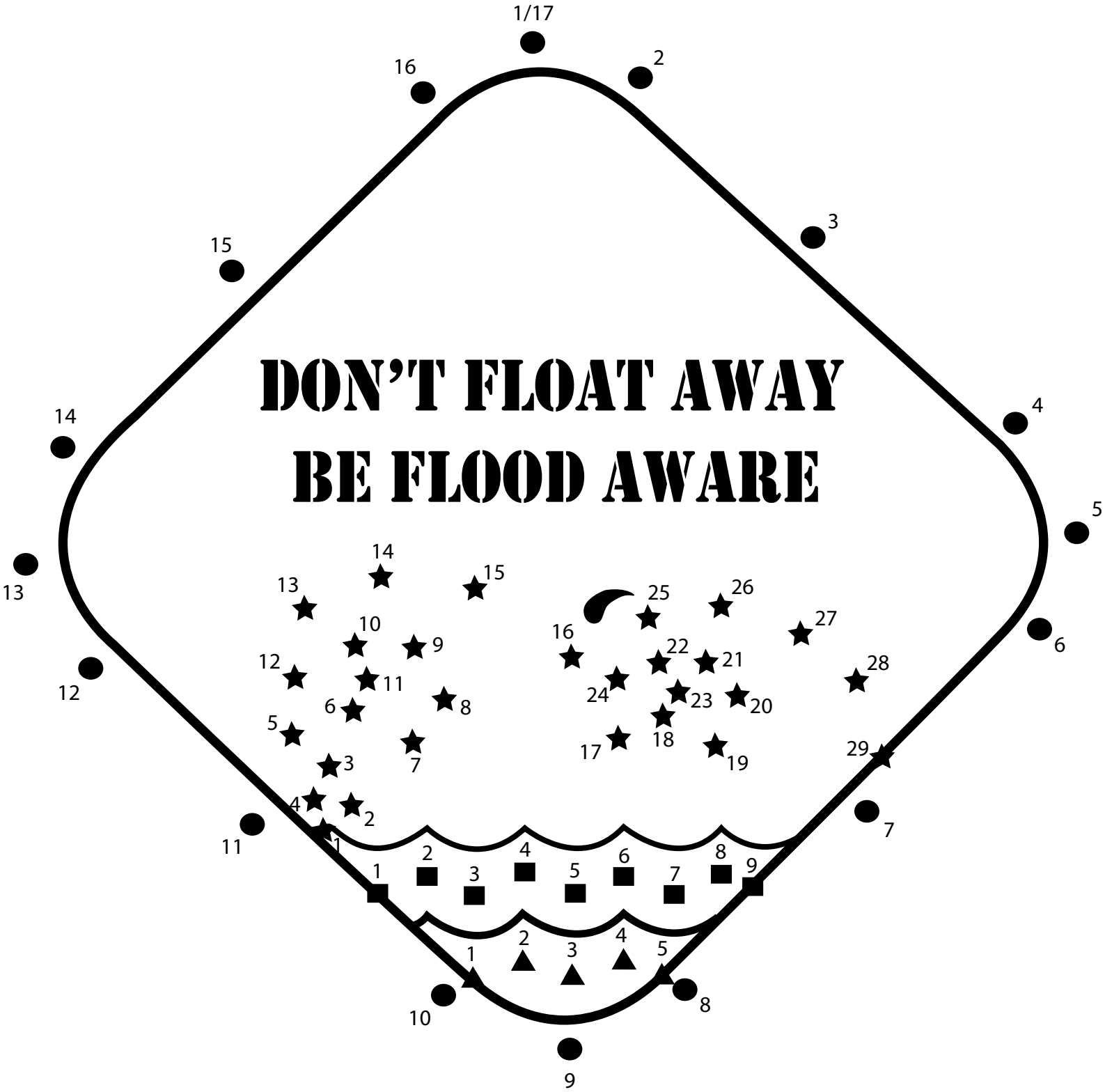
BOAT
BRIDGE
CAR
CREST
DAM
DISASTER
DISASTER KIT
ELEVATE
EROSION
FAMILY PLAN
FLASH FLOOD
FEMA
FLOOD
FLOODPLAIN
FLOODWAY
FORECAST
ICE JAM
INDIANA
INSURANCE
LAKE
LEARN
LEVEE
MAP
MITIGATE
POND
RADIO
RAIN
RESCUE
RIVER GAGE
RUNOFF
SAFETY
SHELTER
STAY AFLOAT
STREAM
TELEVISION
UMBRELLA
WARNING
WATCH
WATER
WEATHER



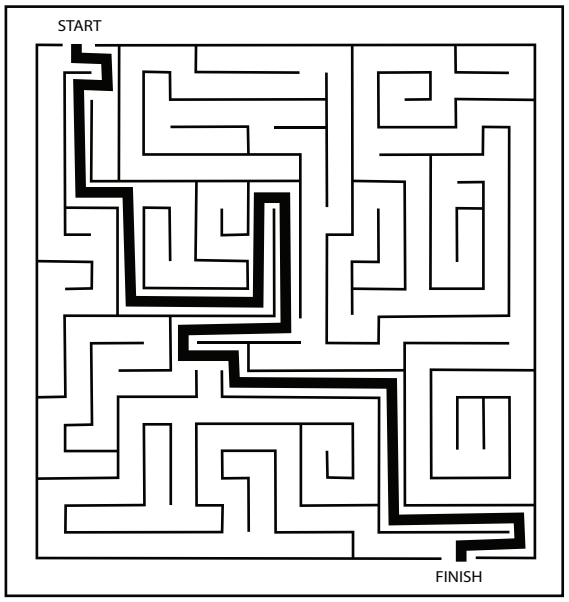
Floodways and Floodplains

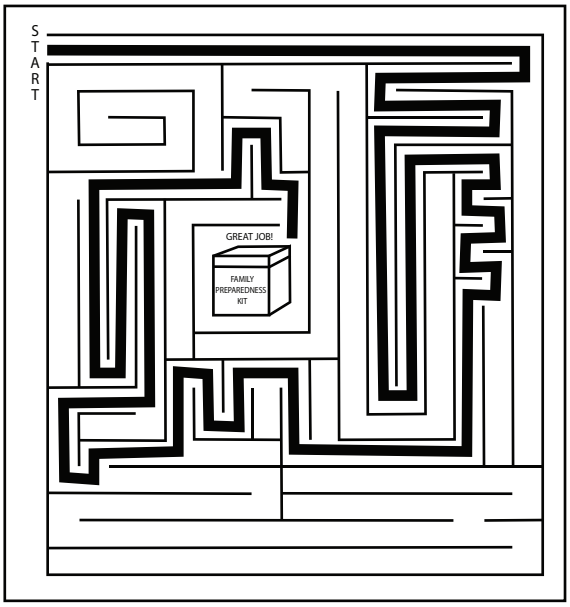
Floodways and floodplains are usually the first places to flood when water levels rise. Homes and businesses should NOT be built in floodplains and may never be built in floodways; however it is ok to have parks and recreation areas in floodplains. Homes that are close to the floodplain that are elevated are at a lower risk for flood damage. Homes built on higher elevations away from rivers and streams are also less likely to flood. If you already live in or near a floodplain be sure you have flood insurance for your home; if you are planning to build a home avoid floodprone areas like floodplains.

CONNECT THE SHAPES



CONNECT LIKE-SHAPES IN NUMBERED ORDER TO REVEAL THE "STAY AFLOAT" CAMPAIGN LOGO.
HAVE FUN!





WORD SCRAMBLE

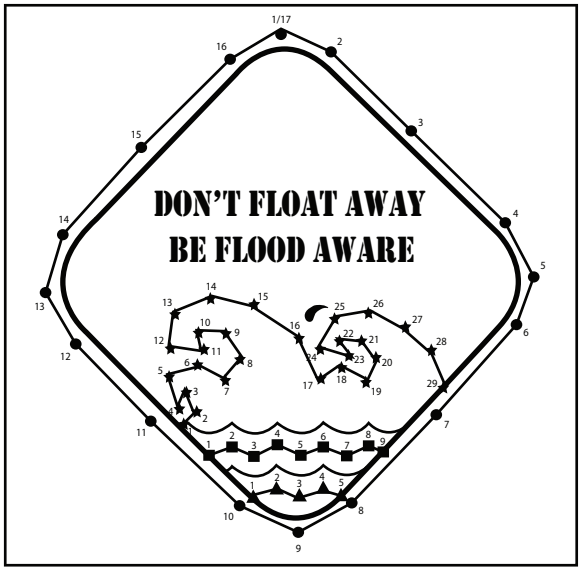
1. FLOODWAY
2. DAM
3. UMBRELLA
4. WARNING
5. SAFETY
6. ELEVATE
7. WATCH
8. FORECAST
9. LEARN
10. DISASTER
11. FLASH FLOOD
12. FLOODPLAIN

SECRET PHRASE: BE FLOOD AWARE

CROSSWORD PUZZLE

ACROSS
1. FFA
2. WATCH
3. TRIBUTARY
4. BASE FLOOD
5. DISCHARGE
6. STAGE
7. SPILLWAY
8. MITIGATION
9. FEMA
10. EROSION
11. WARNING
12. HYDROLOGY
13. PLAIN
14. DISCHARGE
15. RUNOFF

DOWN
1. FFW
2. WATERSHED
3. CREST
4. BUYOUT
5. COLD
6. STATEMENT
7. FLASH
8. WAY
9. EMBANKMENT
10. NFIP
11. RIVER
12. NWS
13. FLOOD
14. INSURANCE
15. ICE JAM
16. LEVEE
17. SCOUR



ANSWER PAGE

ADVANCED WORD SEARCH

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

EASY WORD SEARCH

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