

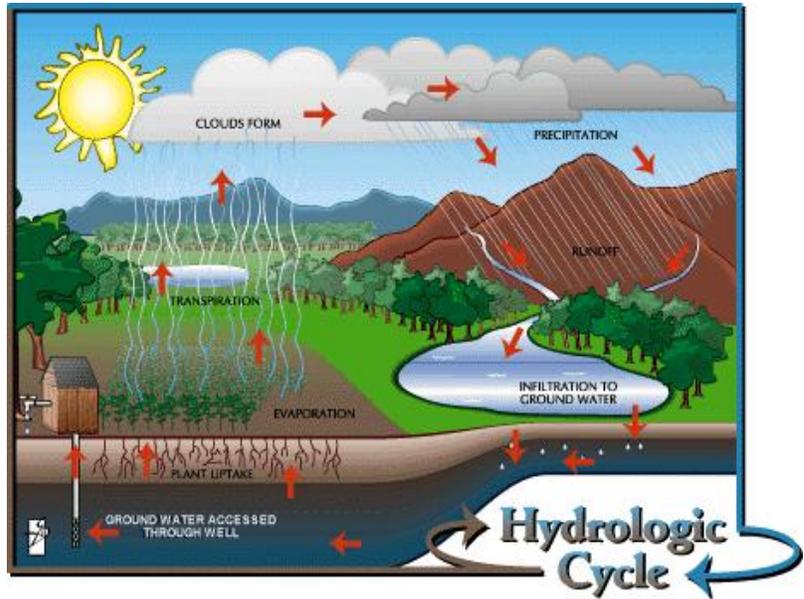


1) What is Stormwater?

What is Stormwater and where does it come from?

Stormwater is the water from rain, snow and sleet that travels down our gutters into the storm drain. Before landing on the ground stormwater starts off clean. Stormwater is almost never treated and flows **DIRECTLY** into our rivers, lakes and streams. As stormwater runs over the ground it collects pollutants from the land surface, roadways, sidewalks, parking lots, construction sites, business parks, etc., and is

carried to gutters, stormdrains, ditches and gulches, drainageways, and finally ends up in our local rivers and streams ~ **UNTREATED!** It is estimated that more than half of the pollution in our nations waterways comes from stormwater runoff.



In the past it was thought that water pollution was caused mainly by industrial and municipal wastewater treatment plant discharges. Because of this a lot of effort was put into cleaning up these “point sources” of waste water. Now the effort is being expended to clean up “non-point source” pollution, or water pollution that is generated all over and carried to rivers and streams in pipes and ditches. The problem with non-point source pollution is that it is very expensive to treat and discharge. Treatment facilities would have to be very large to treat storm peak flows and would sit unused more than 95% of the time. The best way to improve stormwater quality is to treat the source – don’t let runoff get polluted in the first place. These methods are called Best Management Practices (BMPs).

Why should I care what goes down the storm drain?



Water that soaks into the soil is naturally filtered and cleaned. Water flowing on the surface of developed property picks up pollutants such as sediment, oil, and salts from roads and parking areas. Runoff from lawns can pick up fertilizer and bacteria from dog waste. The effect of one property on the quality and quantity of stormwater runoff may seem insignificant however, the collective impact from all properties in the City can negatively affect water quality.

Keep in mind that such stormwater runoff, after it enters streams and ponds, or soaks into the ground, eventually becomes drinking water. **Just think of the pollution coming from all those cities and towns upstream of where you live!** These are some of the reasons protecting water quality is so critical in Wheat Ridge.



Everyone should be concerned about storm water quality because what we put down the storm drain will eventually end up in places like Lena Gulch, Clear Creek, Tabor Lake, Prospect Lake, West Lake, North Henry Lee Lake, Prospect Park, Anderson Park, Johnson Park, and more.

[small 575 Kb](#) [Watch the NEW 2004 Storm Drain Video](#) [large 4.2 Mb](#)

The City is dedicated to keeping our waterways clean and healthy by minimizing stormwater pollution.

Test your smarts on Stormwater pollution!

The following questionnaire is provided to self-test your knowledge of storm water pollution and encourage you to be part of the solution! (The statistics below were developed based on studies in other areas.)

[KIDS- Check out this link for the Kids Playhouse!](#)

1. Approximately how many residents pour something into the gutter or down a storm drain each month?

- A. Less than 3,500 residents each month
- B. Between 12,500 and 17,500 residents each month
- C. More than 25,000 residents each month

Answer: 12,500-17,500 residents

Solution: Recycle all hazardous waste including used motor oil, antifreeze and radiator fluid, paints, pesticides and household cleaners. Don't dump them into the storm drain -it's illegal. Call (303)316-6262 to learn how to dispose of household hazardous materials properly at the City-sponsored Rooney Road Recycling Center ([map](#)).

2. How many cigarette butts would you guess residents drop on the ground each month?

- A. Less than 7,500 butts per month
- B. Between 35,000 and 45,000 butts per month
- C. More than 90,000 butts per month

Answer: 90,000 butts per month

Solution: Throw cigarette butts in an ashtray or trashcan, not the ground. When cigarette butts are dropped on the ground, they end up in the storm drain system. When it rains, cigarette butts flow into the streams and rivers, making area waterways a gigantic ashtray and killing aquatic life.

3. Approximately how many times each month will dog owners walk their dogs and leave the waste lying on the ground?

- A. Less than 1,000 times each month
- B. Between 5,000 and 6,000 times each month
- C. More than 8,000 times each month

Answer: 8,000 times

Solution: Pick up after your dog. Animal waste contains disease-causing pathogens that, when left on the ground, wash down the storm drains and contaminate gulches. Animal waste can increase the risk of viral infections, especially after it rains. When you take your pet out for a walk or to the park, don't forget to bring a bag or other container. There are local ordinances in effect and dog owners disregarding these laws may be fined.

4. How many times per month would you guess that residents drop litter on the ground or out their car windows?

- A. Less than 5,000 times each month
- B. Between 25,000 and 30,000 times each month
- C. More than 80,000 times each month

Answer: Between 25,000 and 30,000 times

Solution: Don't throw litter and yard waste into the street. Trash-laden gutters are double trouble. Not only is neighborhood pollution increased, clogged gutters can cause street flooding when it rains and it's unsafe for commuters and children at play.

5. How many times each month would you guess residents over water their lawns or gardens and let the water run into the street?

- A. Less than 2,500 times each month
- B. Between 10,000 and 15,000 times each month.
- C. More than 35,000 times each month.

Answer: More than 35,000 times each month

Solution: Never apply pesticides and fertilizers when you expect precipitation. You will not only lose the fertilizer or pesticide, but in heavy rain these chemicals may harm the environment. Excessive use of fungicides, insecticides and fertilizers, and improper landscaping practices contribute to storm water pollution because the toxic chemicals cause health risks for people and kill aquatic life

Get Technical- a review for those seeking technical knowledge

STORMWATER is water from rain, snow, ice, sleet, and hail that flows across the ground and pavement. The water seeps into the ground or drains into what we call the storm drain system. These are the drains you see at street corners or the low points on the sides of streets. The storm drain system in Wheat Ridge consists of storm drain pipe, catch basins, detention/retention basins, irrigation ditches, and Clear Creek. Collectively, the draining water is called stormwater runoff and is a concern in all areas of the Denver metro area, including residential, commercial, industrial, and roadway areas.

Stormwater that does not seep into the ground, drains into the storm drain system, which is a series of underground pipes and may travel for many miles before entering ditches, gulches, and ultimately Clear Creek. Lakes are also part of the storm drain system including West Lake, Tabor Lake, Prospect Lake and North Henry Lee Lake.

The storm drain system does NOT have a mechanism for treating the stormwater runoff. Anything poured into a gutter or drain, such as used motor oil or antifreeze, flows directly into the gulches and creeks.

When it rains chemicals and pollutants get washed from the Earth's surface into storm drains and then directly to the Clear Creek UNTREATED! It is not reasonable to construct a treatment facility for stormwater because of the massive amount of water that passes through the system during a large storm event. Such a facility would be extremely costly to build and maintain, especially since it would sit idle a majority of the time.

The consequences of pollution in the creeks, canals, and lakes is reduced fisheries, habitat disruption, and restrictions on recreation such as boating and swimming. The following items specify everyday pollutants occurring at our homes, businesses, and construction sites:

[Watershed Education Slideshow!](#)

Floatables

Floatables are pieces of litter in the water. They may be contaminated with toxic chemicals and bacteria. Floatables are also an eyesore in our waterways. Commonly observed floatables include cigarettes, plastic containers, wrappers, and cans. Floatables such as these are generally the result of careless handling practices or littering.

Sediment

Sediment can be harmful to aquatic life such as plants, fish, and other animals that live in lakes and streams because it blocks the light needed to support the habitat. Also, sediments can carry chemicals that are toxic and that cause the oxygen in water to be used up. Sediments clog fish gills and fill in the places they hide. They can also cover the bottoms of streams, harming the habitat needed by aquatic insects and plants. Sediment generally is the result of soil erosion from lawns, hillsides, and gardening/landscaping activities. Large amounts of sediment can reduce the capacity of streams to carry storm runoff requiring tax dollars to clean the streambed.

Nutrients

Nutrients such as nitrogen and phosphorus result in excessive plant growth that clogs waterways, blocks sunlight, and reduces oxygen available to fish and other aquatic life. Some sources of nutrients are fertilizer, excrement, and detergents.

Bacteria and Viruses

Bacteria is washed with animal excrement and leakage from sewers and septic tanks into waterways. These organisms can cause disease in both animals and humans. Biological contaminants come from litter, organic matter, and animal waste.

Oxygen Demanding Substances

The biochemical breakdown of organic materials (leaves, excrement and street litter) washed into waterways decreases levels of dissolved oxygen in water. Organisms that live in all waterways consume organic materials and in doing so utilize oxygen. Too much organic material can cause a reduction of dissolved oxygen to levels that will not support desired aquatic life.

Oil and Grease

Petroleum products (gasoline, oil, and grease) may be toxic to aquatic life, even in small amounts. Oil and grease in storm drains can generally be traced to automotive leaks and spills or improper disposal of used oil and automotive products into storm drains.

Pesticides, Herbicides and Fertilizers

Excess amounts of pesticides, herbicides, and fertilizers applied to yards, lawns and greenways are washed into streams during rainfall events. These chemicals can cause increased algae growth and toxicity to organisms.

Metals

Metals such as lead, zinc, mercury, copper, and cadmium in water, can be toxic to humans, aquatic life and other animals that drink the water. Metals come from vehicle exhaust, weathered paint, metal plating, tires and motor oil.

Toxic Substances

Gasoline, household products, and paint thinner are examples of toxic substances. These substances can deplete oxygen in waterways and cause toxic effects in living organisms. Potential pollutants that may be present in residential areas, businesses and construction sites are listed below.

Residential. Pet waste, vehicle fluids (oil, gas and antifreeze), paint, pesticides, solvents, batteries, hazardous wastes, grass clippings, tree trimmings, leaves, street litter, soap from car washing.

Businesses. Fuel, soap from equipment washing, waste process water, hazardous liquids.

Construction. Sediment, wash water from concrete mixers, used oils and solvents, landscaping materials (trees, shrubs, soil additives), vehicle fluids (oil, gas and antifreeze).