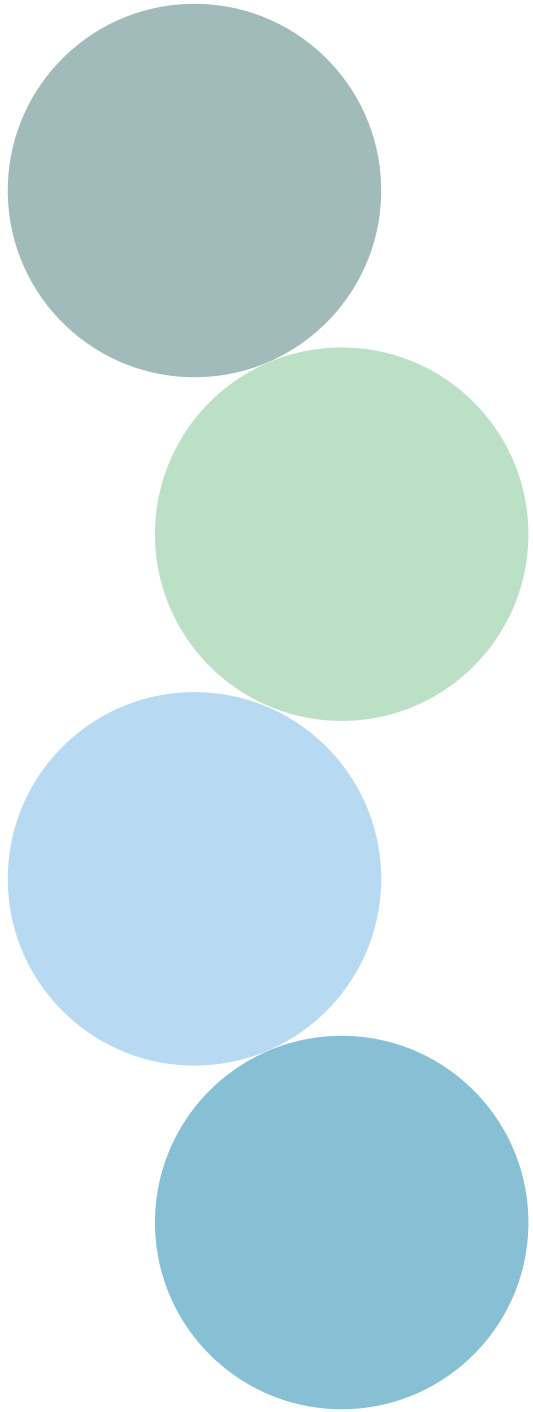
Intro to Stormwater:

What You Can Do for Healthy Waterways

Outline

- What is Stormwater?
- Sources of Stormwater Pollutants
- Stormwater Solutions: What You Can Do!

What is Stormwater?



Stormwater

Any precipitation (rain, snow, sleet, hail) produced by a storm.

Runoff

Water that flows over land as surface water instead of soaking into the ground.

Stormwater

+

Runoff

=

Stormwater Runoff

Stormwater that flows over hard surfaces, picking up pollutants as it flows into local waterways.

Natural Area

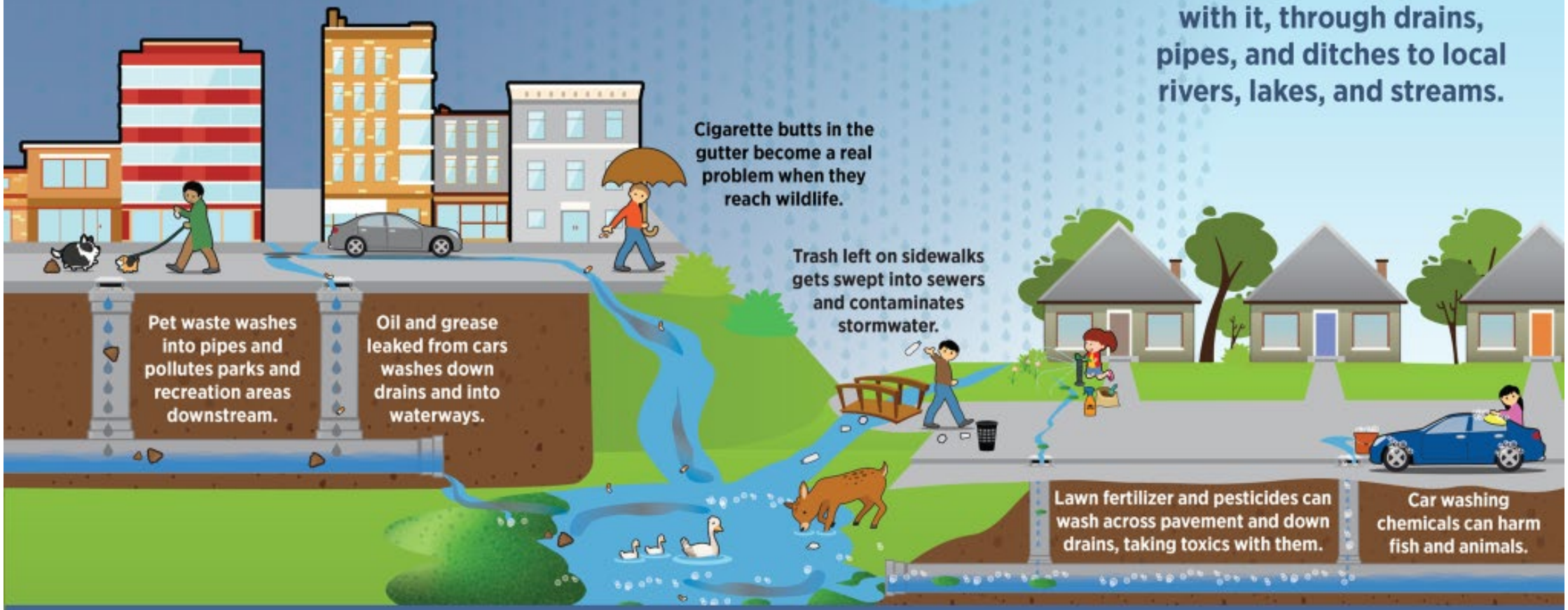
Stormwater Runoff = <1%

Urban Area

Stormwater Runoff = 30%

Stormwater: Where It **Flows,** Everything **Goes**

When it rains, snows, or sleets, water hits hard surfaces and takes anything on that surface with it, through drains, pipes, and ditches to local rivers, lakes, and streams.

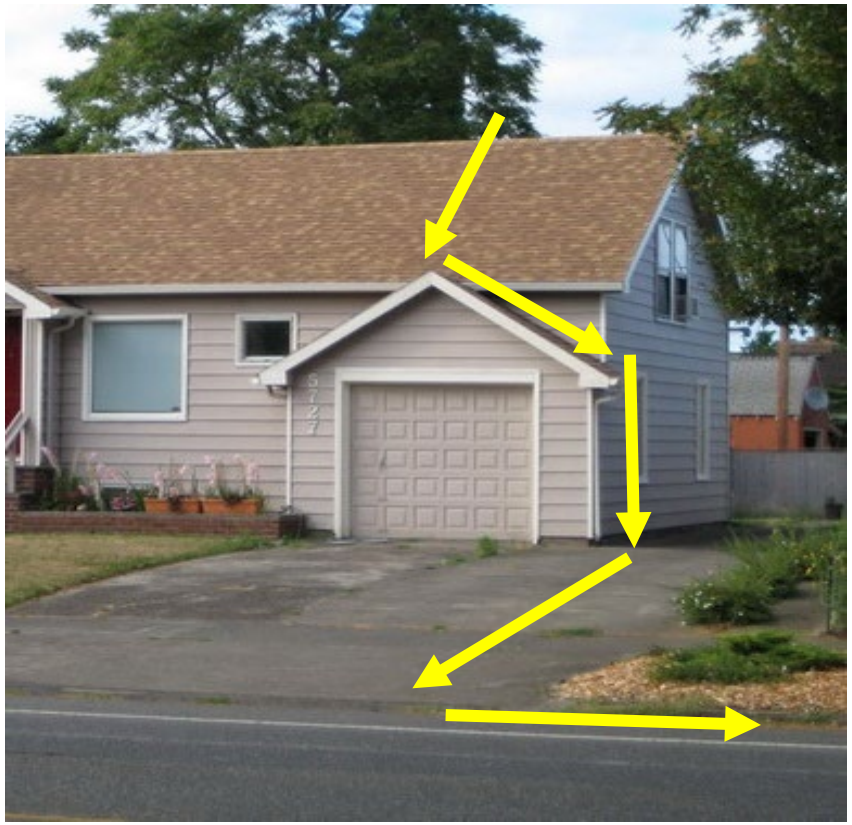


Where Stormwater Flows, Everything Goes

EPA

Urban Areas:

Less Vegetation + More Impervious Surfaces =



More Stormwater Runoff =

More sediment & pollution entering waterways.

More Flooding and Erosion…

Harmful to streambanks, stream habitat, plants, and wildlife.

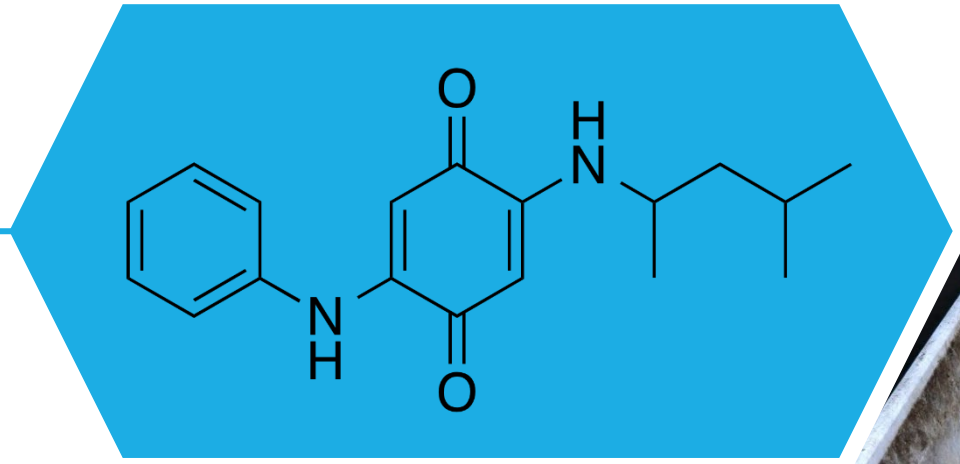
…and Stormwater Pollution

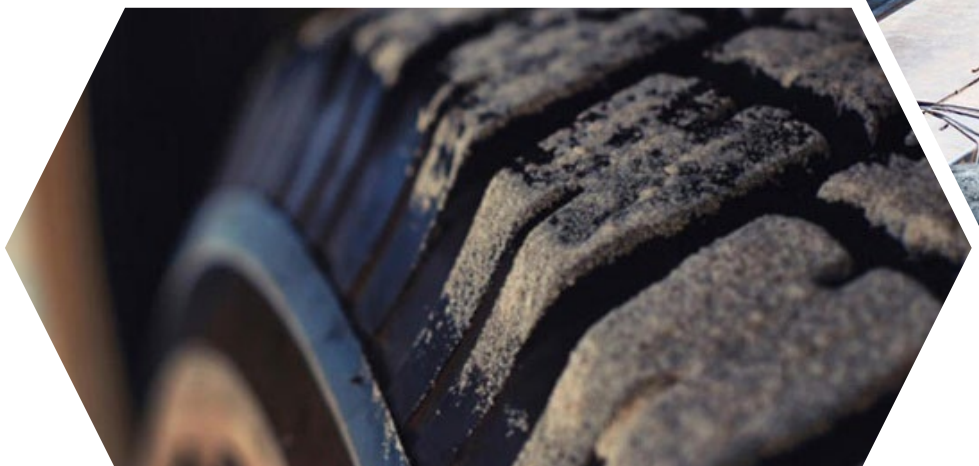
Harmful to humans, wildlife, fish, and other aquatic life.

Sources of Stormwater Pollutants:

Heavy Metals, Oil	Bacteria	Nutrients	Sediment
Vehicles	Pet Waste	Agriculture Pet Waste Yard & Home Products	Erosion Construction

Vehicles



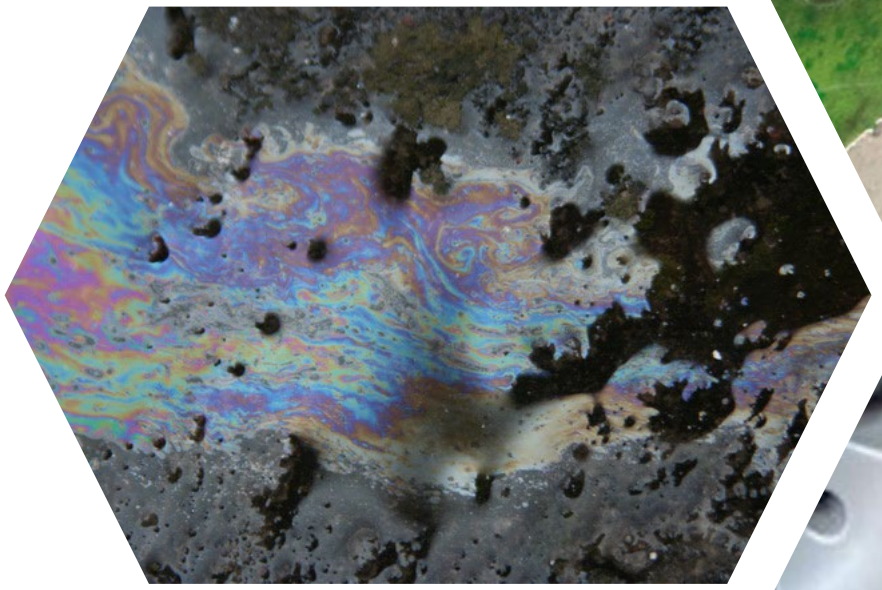


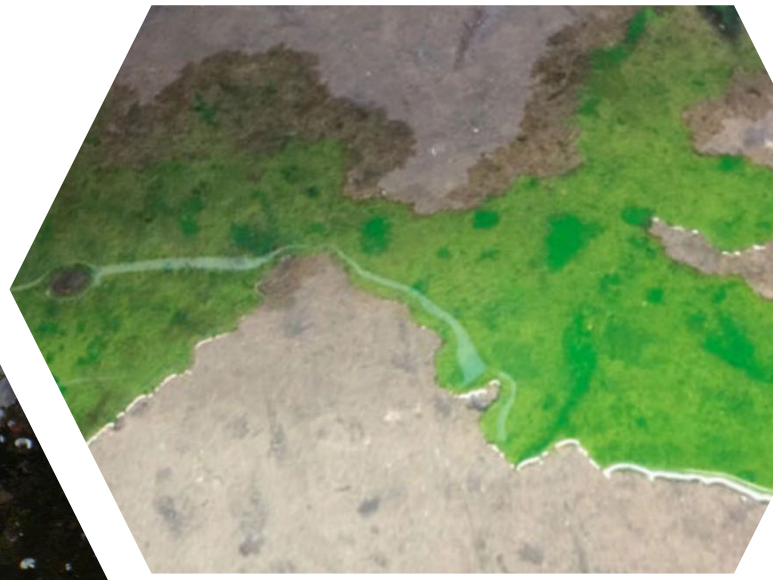
6-PPD Quinone:

- Discovered in 2022
- Lethal to Coho Salmon and other fish
- Present in tires worldwide

Vehicles

- Exhaust
- Oil & gas leaks
- Antifreeze
- Brake pad dust
- Car-washing products

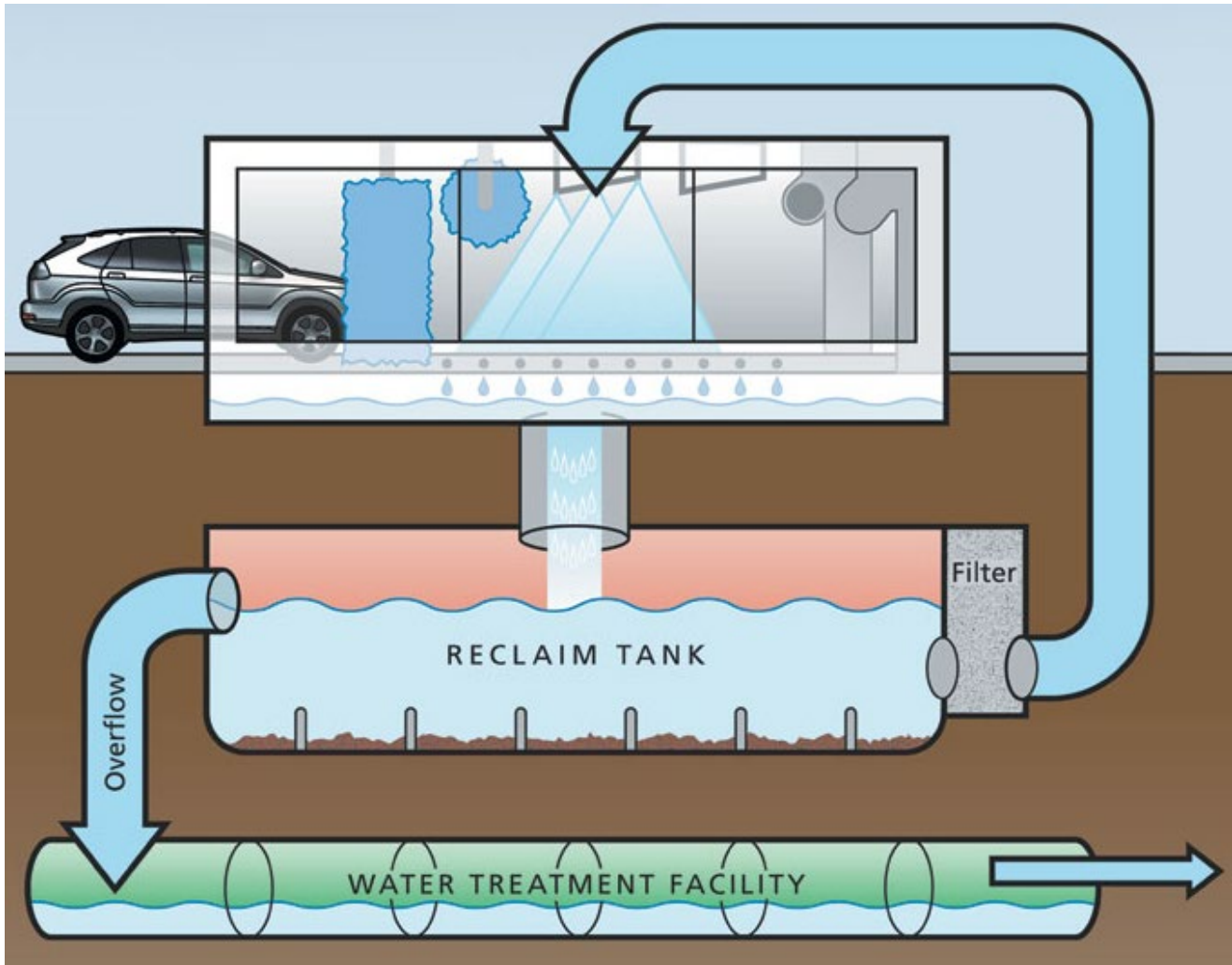




Vehicles: What you can do

- Drive Less!
- Check for leaks & service regularly
- Dispose of oil and antifreeze safely
- Accelerate & brake gently to reduce brake & tire wear

Vehicles: What you can do



Bacteria

E. coli bacteria in pet waste makes waterways unsafe for swimming and fishing.

Nutrients

Nitrogen & Phosphorus cause algal blooms, reducing the amount of oxygen in the water.

Mud/Sediment

Erosion from exposed slopes, streambanks & construction sites bring sediment to local waterways.

Fish, aquatic insects and amphibians need cool, clear water.

Yard & Home Products

- Herbicides and Pesticides
- Fertilizers
- Soaps/detergents
- Cleaning chemicals
- Oil and grease
- Microplastics
- Trash

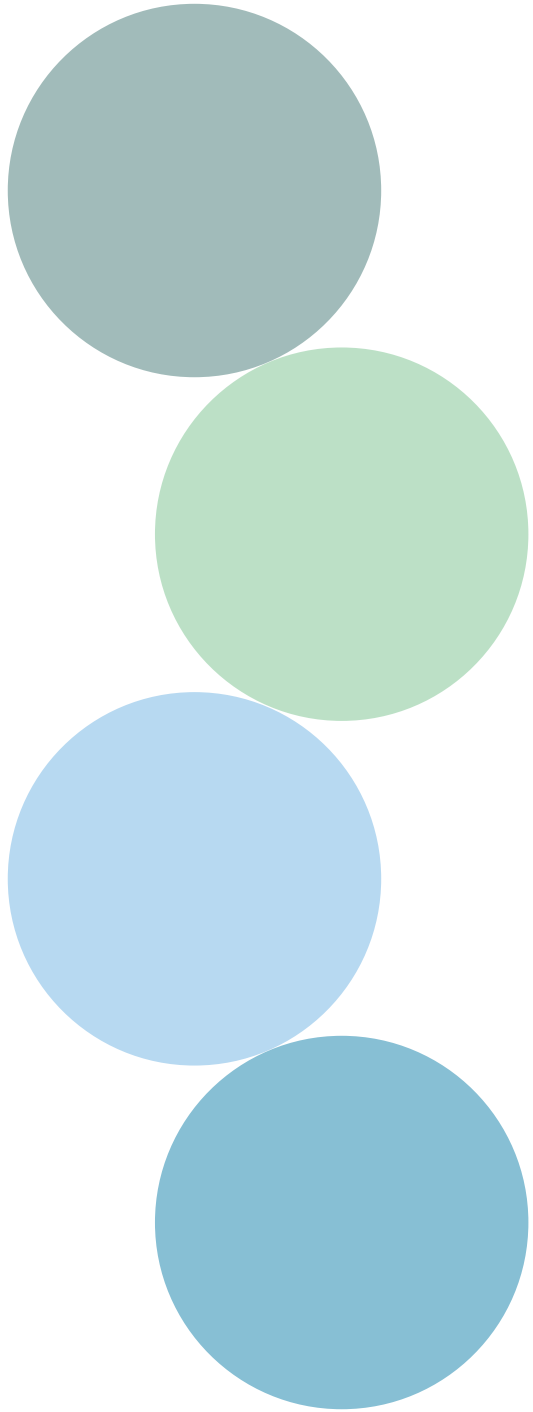
Stormwater Solutions: What you can do

Prevent Pollution

Contain the Rain

Slow the Flow

Soak it up



Reduce Products that Pollute

Pesticides & Herbicides

Inorganic Fertilizers

CORROSIVE
Batteries
Drain Cleaners
Oven Cleaners

TOXIC
Pesticides
Rat Poison
Pharmaceuticals
Cleaning Fluids

REACTIVE
Pool Chemicals
Ammonia
Bleach
Aerosols

FLAMMABLE
Paints, Solvents
Oils, Gasoline
BBQ Starter
Propane Cylinders

Metro

www.oregonmetro.gov

503-234-4000

Tools for Living

Garbage and recycling

Healthy home

Yard and garden

Getting around

Common hazardous products

Green cleaning

Grow Smart, Grow Safe

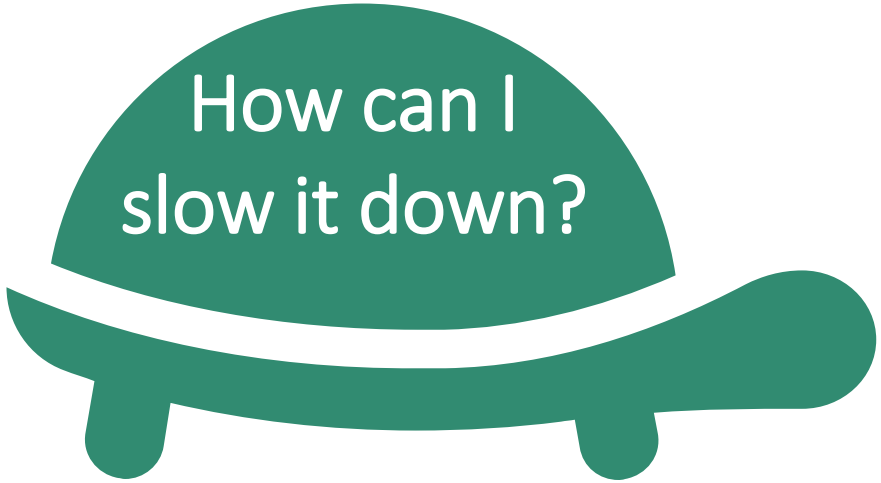
Buying safer cleaners

Healthy lawn and garden pledge

Healthy home and yard online learning


Home
About
Integrated Pest Management
Natural Yard Care
Pests
Good Bugs
Resources
Glossary
Grow Smart
Grow Safe®
OMRI LISTED
For Organic Use
New for 2020: Updated product list, to include OMRI products for certified organic gardening.
Animal Pests
Diseases
Insects
Moss
Slugs & Snails
Weeds
A gardener's guide to choosing safer pesticides and garden products
https://growsmartgrowsafe.org/

Getting Started

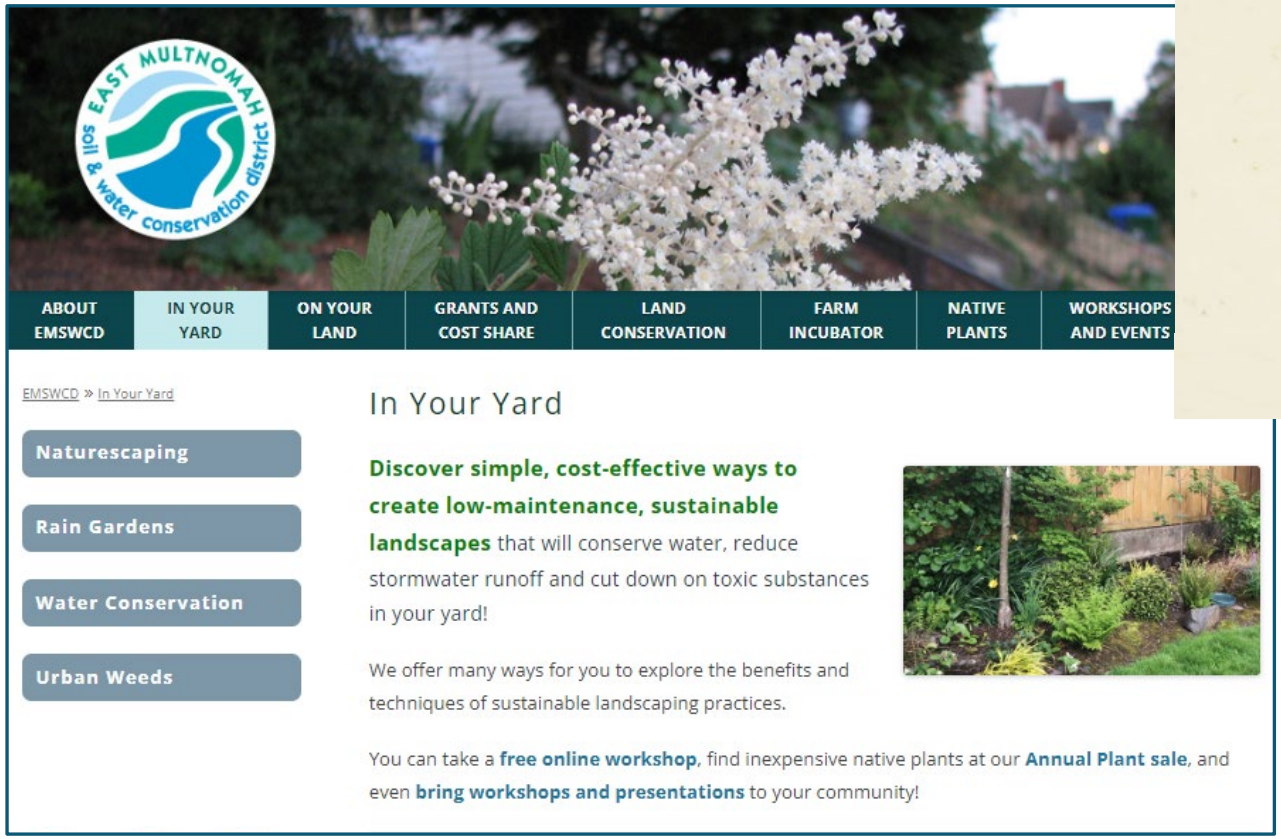


Add Native Plants!

- Leaves capture rainfall
- Roots loosen soil
- Helps soak up rainwater
- Provides habitat
- Adds beauty
- Creates shade
- Cools your space

Learn more:


Backyard Habitat Certification Program
What to Expect
Certification Criteria
Resources
Benefits
Galleries
Backyard Habitat Certification Program
PORTLAND AUDUBON
TOGETHER FOR NATURE
Columbia Land Trust


EAST MULTNOMAH soil & water conservation district
ABOUT EMSWCD
IN YOUR YARD
ON YOUR LAND
GRANTS AND COST SHARE
LAND CONSERVATION
FARM INCUBATOR
NATIVE PLANTS
WORKSHOPS AND EVENTS
EMSWCD » In Your Yard
Naturescaping
Rain Gardens
Water Conservation
Urban Weeds
In Your Yard
Discover simple, cost-effective ways to create low-maintenance, sustainable landscapes that will conserve water, reduce stormwater runoff and cut down on toxic substances in your yard!
We offer many ways for you to explore the benefits and techniques of sustainable landscaping practices.
You can take a free online workshop, find inexpensive native plants at our Annual Plant sale, and even bring workshops and presentations to your community!

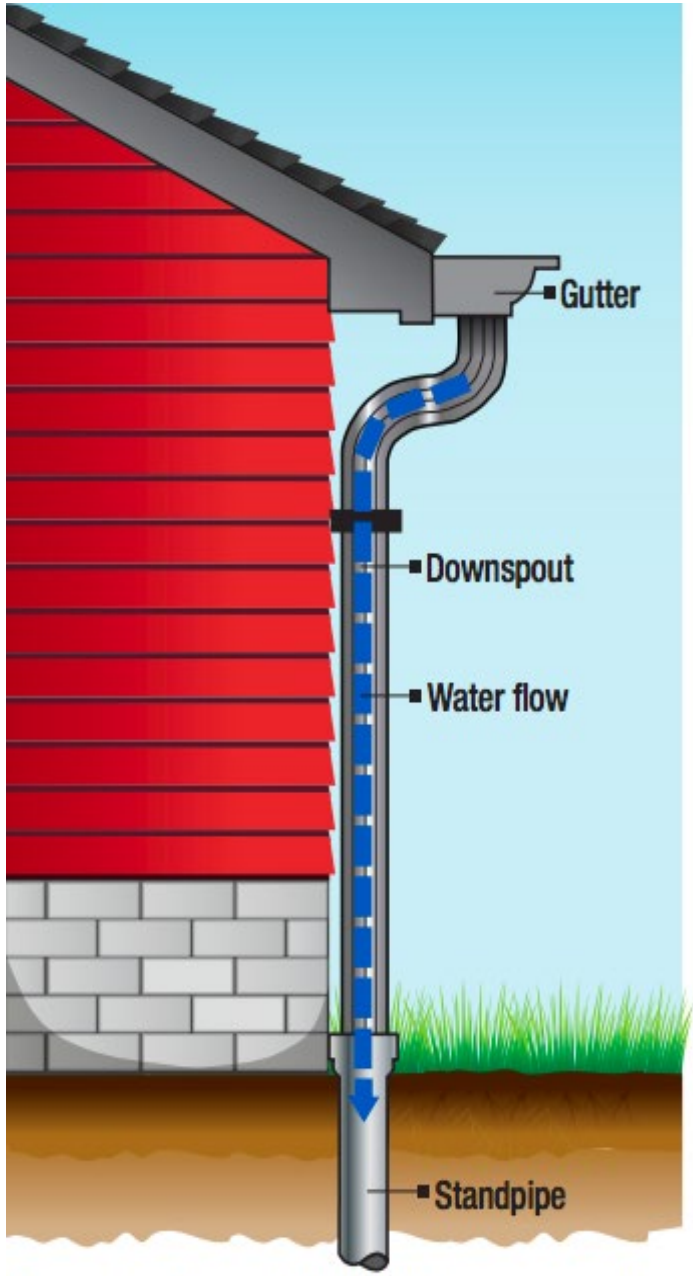
Plant a tree, get credit!

Get a one-time credit on your City of Portland water, sewer, stormwater bill for planting a tree in your yard.

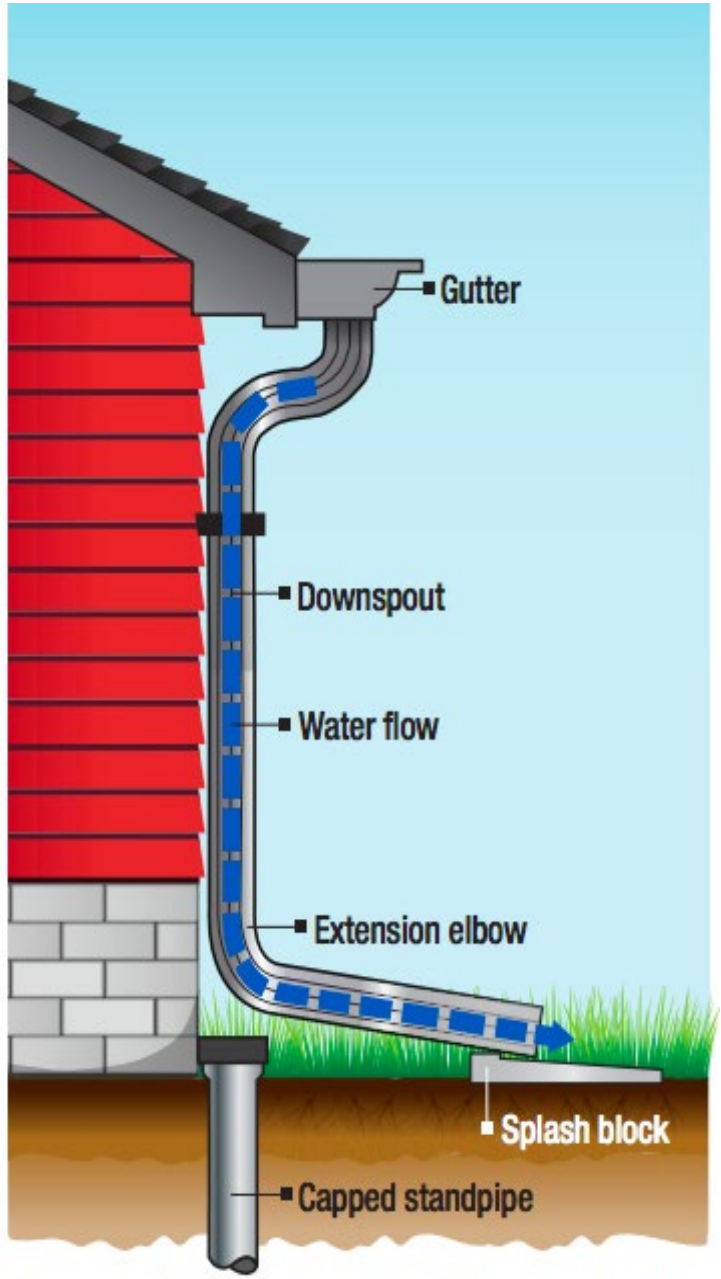
Email:
treebate@portlandoregon.gov

503-823-7640

Disconnect Downspouts



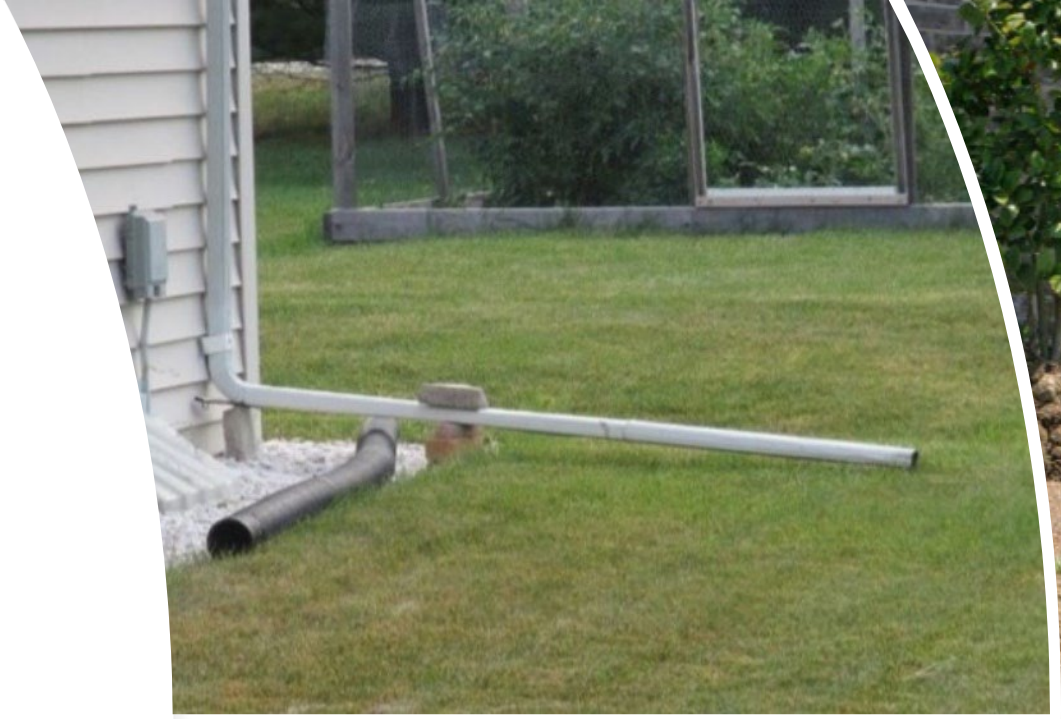
Downspout connected to the sewer system



Downspout disconnected from the sewer system

Consider Distance:

- Sidewalk = 3’
- Basement = 6’
- Slab/Crawlspace = 2’



Check for incentives & assistance:

CITY OF
GRESHAM

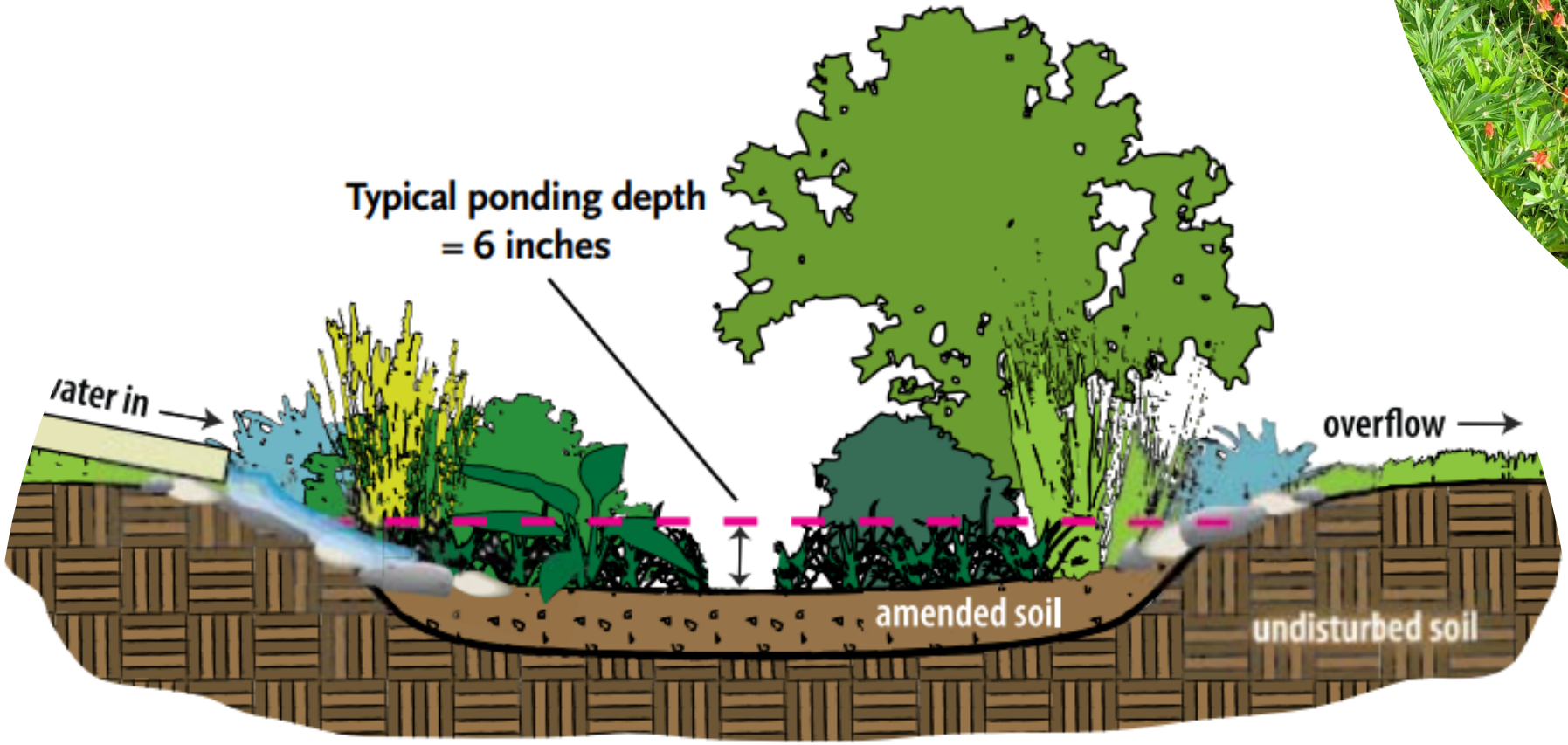
After Disconnecting:

Vegetated Areas

Rain Gardens

Sunken garden beds that capture rainwater from hard surfaces (rooftops, sidewalks and driveways) and allow it to soak into the ground slowly.

Rain Gardens



Residential Rain Gardens

Municipal Example:

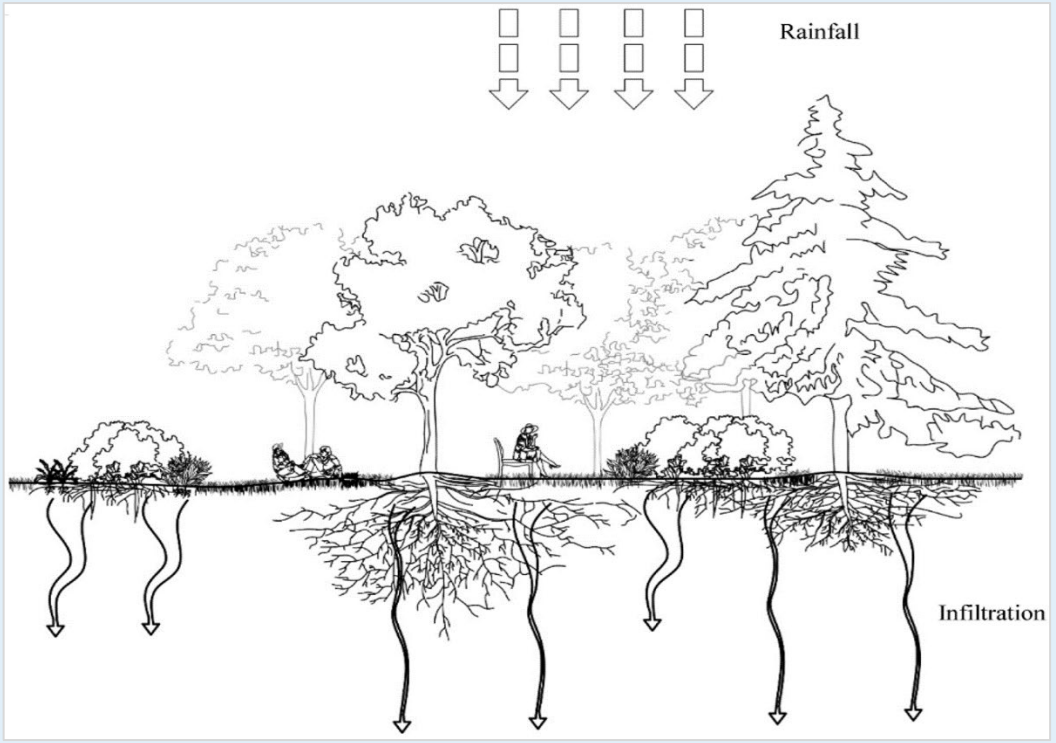
Green Streets filter and clean roadway runoff in Portland.

Dry Creek Bed

Vegetated Swale

Flow-through Planters

Reduce or Replace your Lawn



Getting Started

Rethink	Consider	Start	Choose
Rethink size of your lawn	Consider alternatives	Start with areas where lawn may not make sense - Slopes - High traffic areas - Shady, mossy spots - Hard to mow areas	Choose wide variety of trees, shrubs, plants w/ varying root depths

Eco-Lawn

Fleur-de-Lawn

- Photo Credit: Amy Whitworth, Plan-it-Earth

Groundcover

Meadowscaping

Outdoor Seating Areas

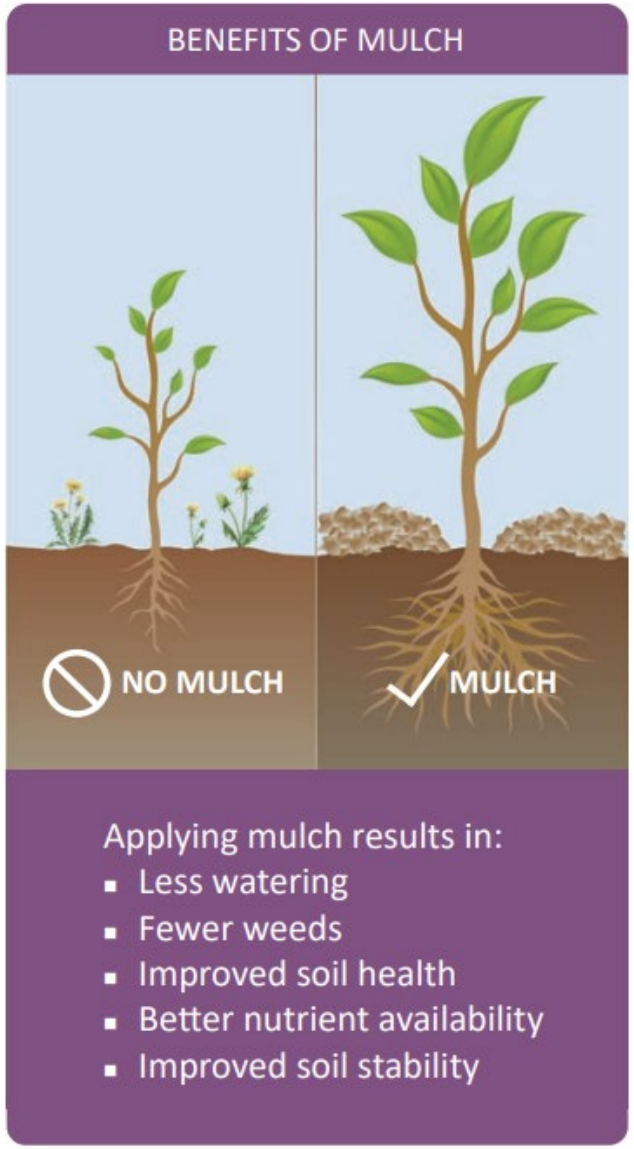
Pea-gravel allows water to soak into the ground.

Pathways

Build Healthy Soil

- Photo Credit: Amy Whitworth, Plan-it-Earth

Mulch


BENEFITS OF MULCH
NO MULCH
MULCH
Applying mulch results in:
Less watering
Fewer weeds
Improved soil health
Better nutrient availability
Improved soil stability

De-Pave!

Break up unused paved areas (“depaving”)

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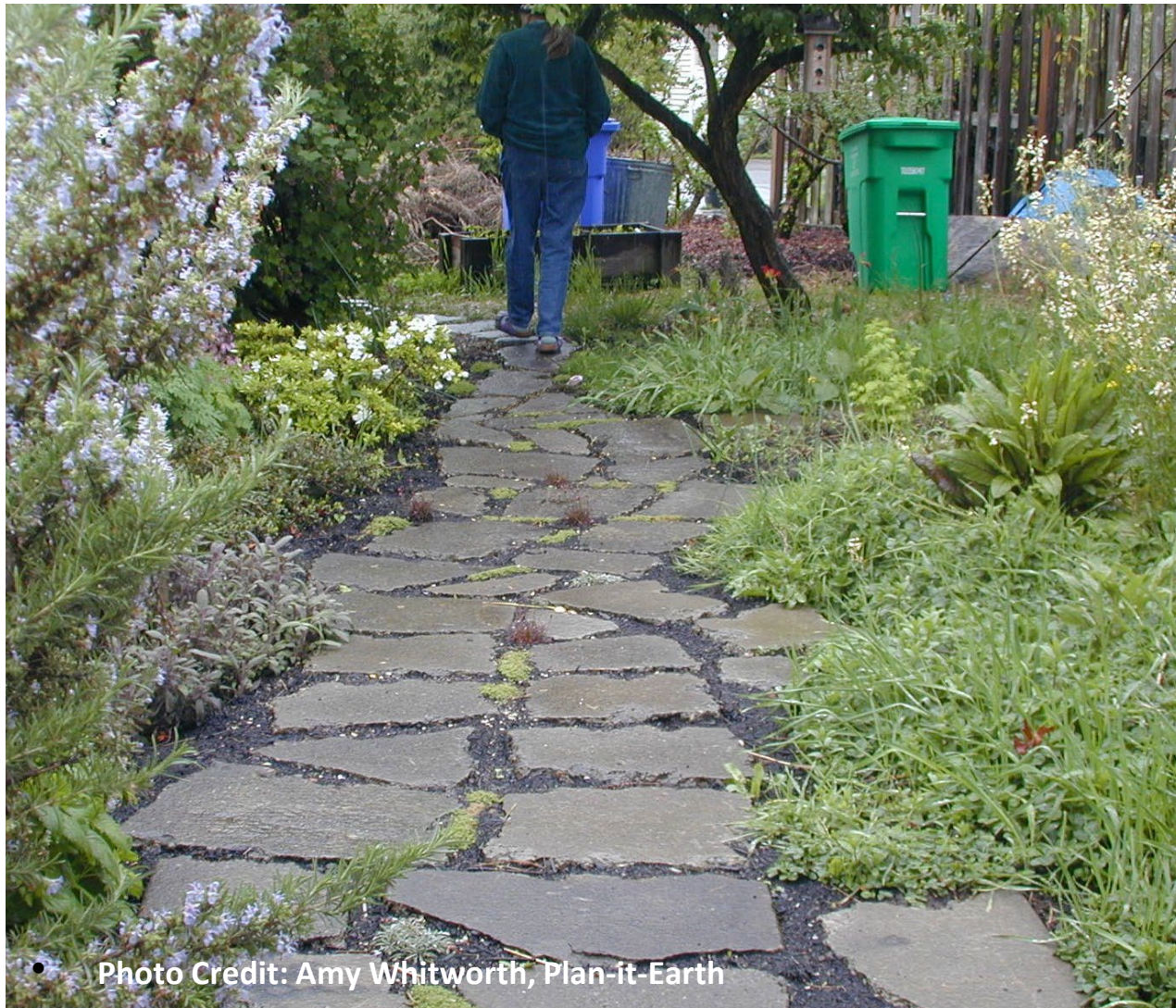
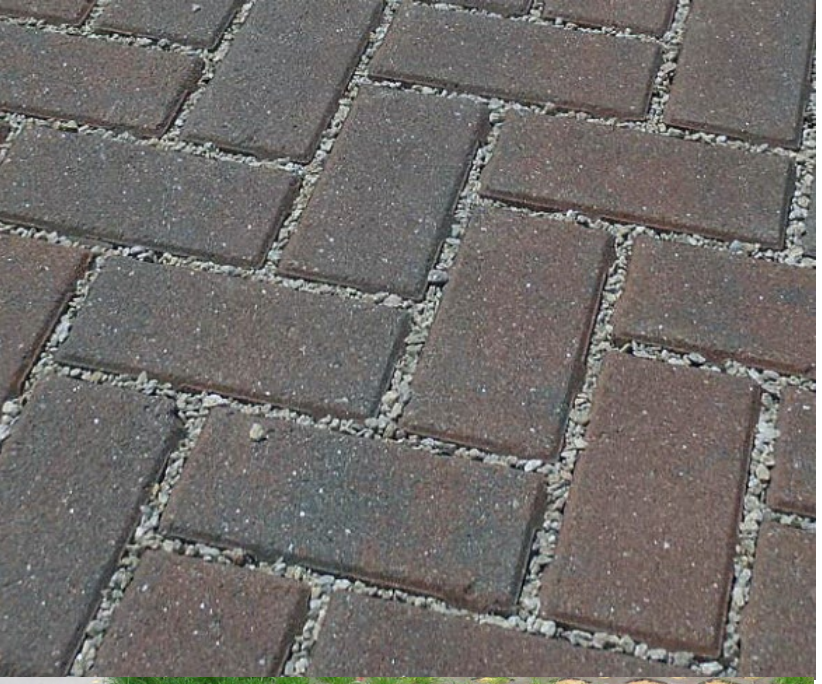
Re-purpose your pavement!



- Photo Credit: Amy Whitworth, Plan-it-Earth

Create a ribbon driveway to let stormwater soak in

Add planter boxes on top of hard surfaces



If hardscapes are necessary, use pervious pavers or open flagstones

Porous Pavement

Water passes through empty spaces and is naturally filtered by the soils below.

Porous Pavement

Stormwater collected from regular asphalt, untreated.

Stormwater after flowing through 3” of pervious pavement.

Eco-roofs

Take-home messages:

Impervious surface in a watershed is the biggest predictor of urban stream health.

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Retaining, restoring, and reusing stormwater helps restore urban streams.

Come back for more!

NATIVE PLANTS

LANDSCAPE FOR WILDLIFE

INTRO TO STORMWATER

INCORPORATE EDIBLES

INTRO TO NATURESCAPING

MANAGE WEEDS & PESTS

OUTDOOR WATER CONSERVATION

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