Rethink the Rain

Sustainable Peterborough Coordinating Committee
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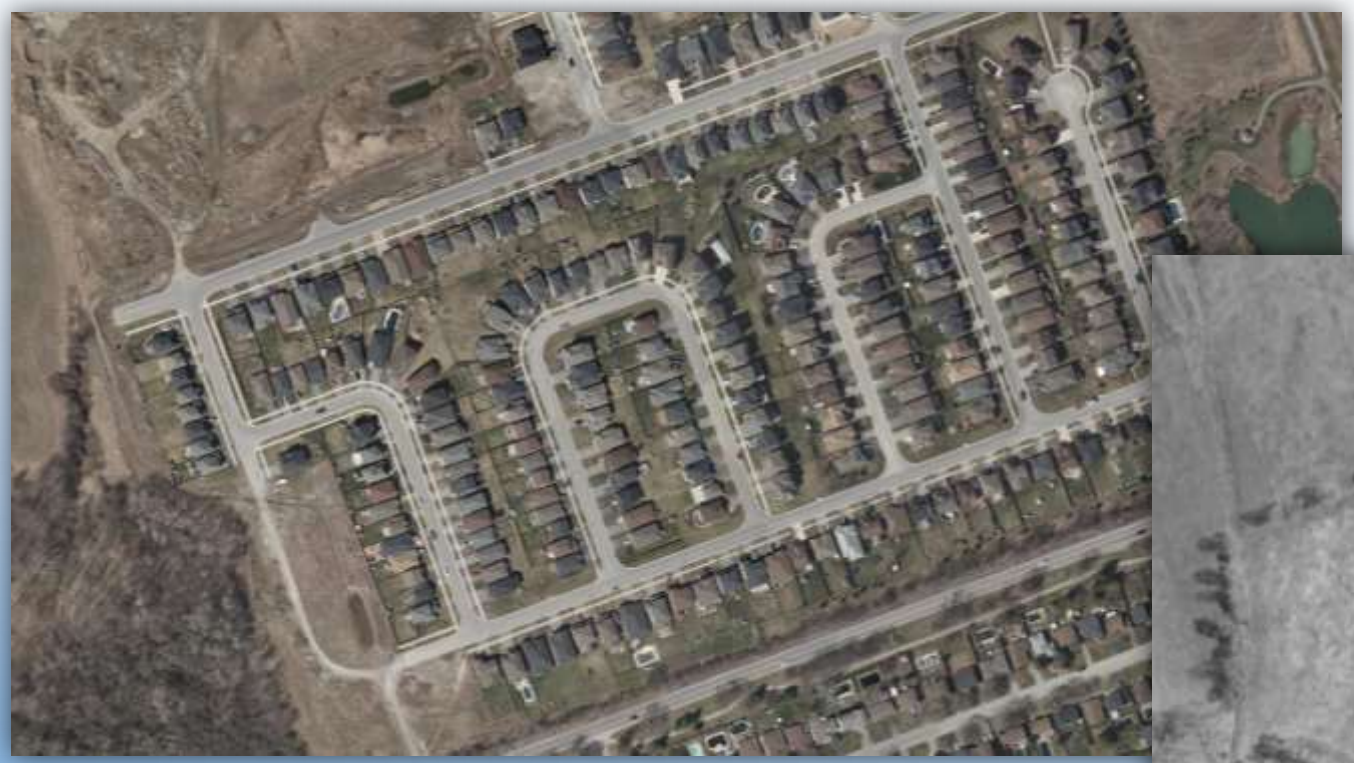
STORMWATER IS…

- Rainwater and melted snow
- A water quality challenge when it flows along hard surfaces because it picks up pollution along the way and takes it directly to Little lake, the Otonabee River and other waterways.
- A water quantity challenge because climate change is leading to more frequent, higher intensity storms.
- A resource that must be used to replenish groundwater and surface water features....climate change is also leading to more frequent and severe droughts.
- It’s all one water!

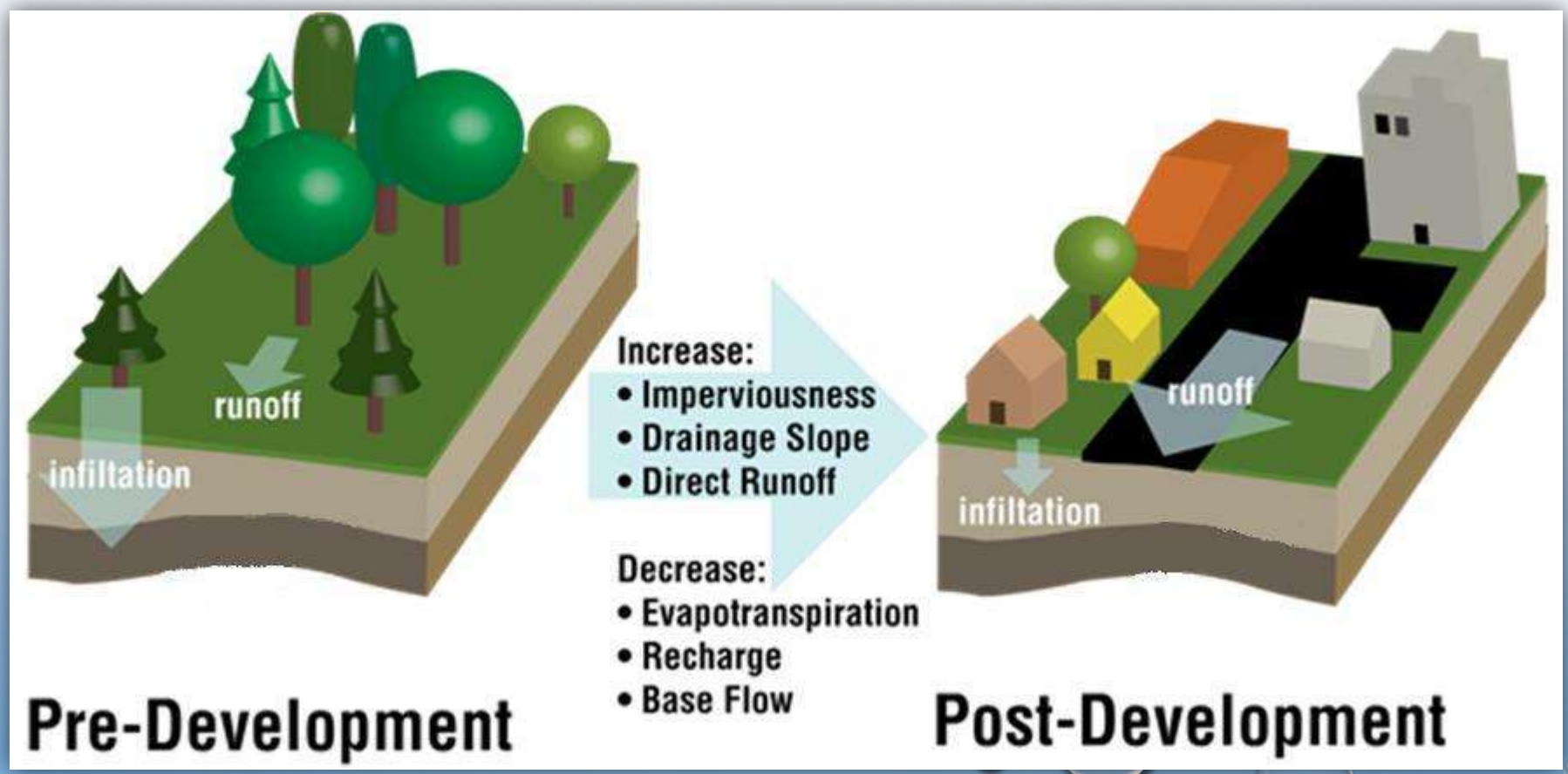
THE CITY MANAGES STORMWATER WITH...

- 319km of stormsewers
- 12,297 catchbasins, manholes and outfalls
- 26 stormwater management ponds (soon to be 29), including 19 “wet ponds” and 10 “dry ponds”.
- An annual operating budget of approximately $715,000 for staffing, public works (street sweeping, CB cleaning, general repairs) and environmental protection (flushing and cleaning).
- An annual capital budget of approximately $3 million, dedicated primarily to flood reduction projects (storm and sanitary) with portions dedicated towards pond maintenance.

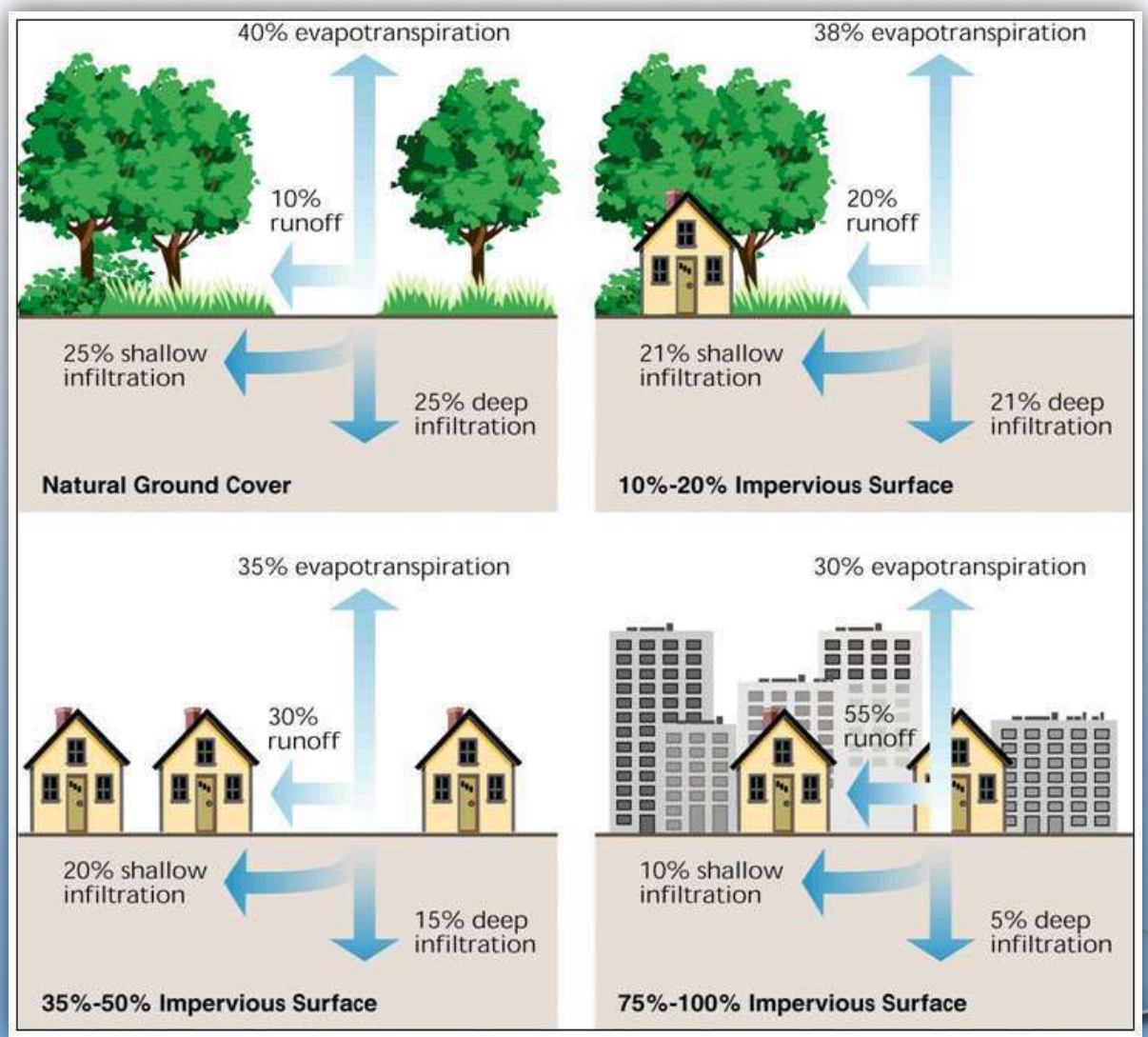
WHAT HAPPENS TO RAIN WATER WHEN URBANIZATION AND DEVELOPMENT OCCUR?



URBANIZATION IMPACTS THE NATURAL PROCESSES



WHAT IS THE IMPACT?



MANAGING THE IMPACT

Factors the City looks at:

- Peak Flow Rate: A higher peak flow rate requires larger and more expensive storm pipes and drains. Higher peak flow rates mean more frequent floods and more intense floods.
- Water Quality: Poor management of runoff could result in increased contamination and pollution in our waters, impacting fish and wildlife.

- Volume: A larger volume means more energy that scour and erode creek beds leading to bank instability, increased sediment deposition in the lower reaches, and loss of habitat.
- Groundwater: If groundwater is not allowed to recharge, baseflows are reduced leading to longer, drier durations in ditches and streams.

MOVING F

The most significant advancements in stormwater ma s are now upon us. Not in the technology we use to control or convey stormwat ng of stormwater and the guidelines and standards we'll use.

- The MOECC is scheduled to release the LID Guida next), as a complement to existing stormwater guidance manuals. This docume quirements) for volume control, mitigation of negative groundwater impacts, a mate change.
- The 2017 Growth Plan for the GGH includes provis d/sub-watershed plans and stormwater master plans, that will address all of tormwater (at a watershed scale).
- The City has adopted the Stormwater Quality Mast ards full implementation of that plan; including applicable sections of the Offic g to Engineering Standards, Community Outreach and Collaboration, , infrastructure renewal, system monitoring, Sewer Use By-Law and looking at opportunities for new infrastructure.

MOVING FORWARD

To address the negative impact of a changing climate, stormwater MUST be controlled where it originates to the greatest extent possible… on Municipal AND privately owned lands.

In Peterborough, approximately 84% of all existing impervious surface is on private property.

The City will need to work towards…

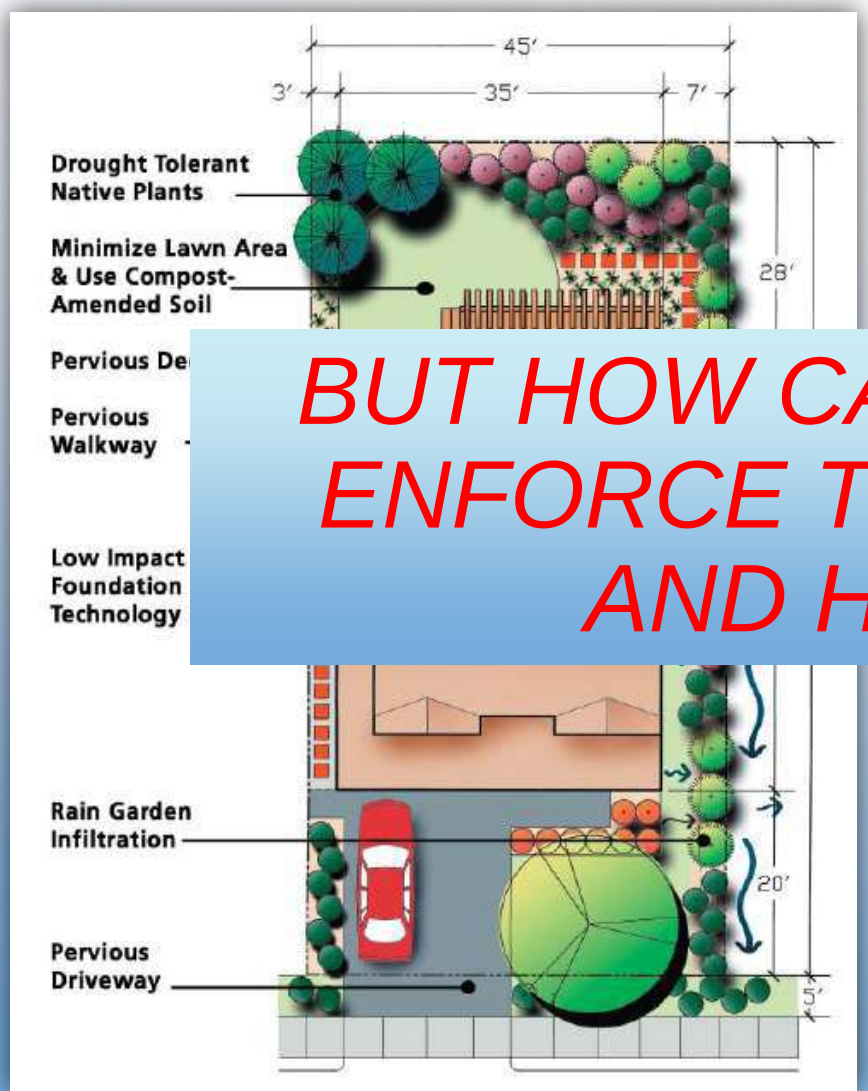
- Becoming a community leader in Low Impact Development projects, through new and existing infrastructure upgrades.
- Maintaining and improving its existing stormwater infrastructure to ensure it is operating as intended.
- Finding ways to make it financially viable for property owners to construct stormwater facilities (LID's) on their own property.
- Enforcing the management and maintenance of existing SWM Facilities on private property.

BETTER DESIGN STANDARDS

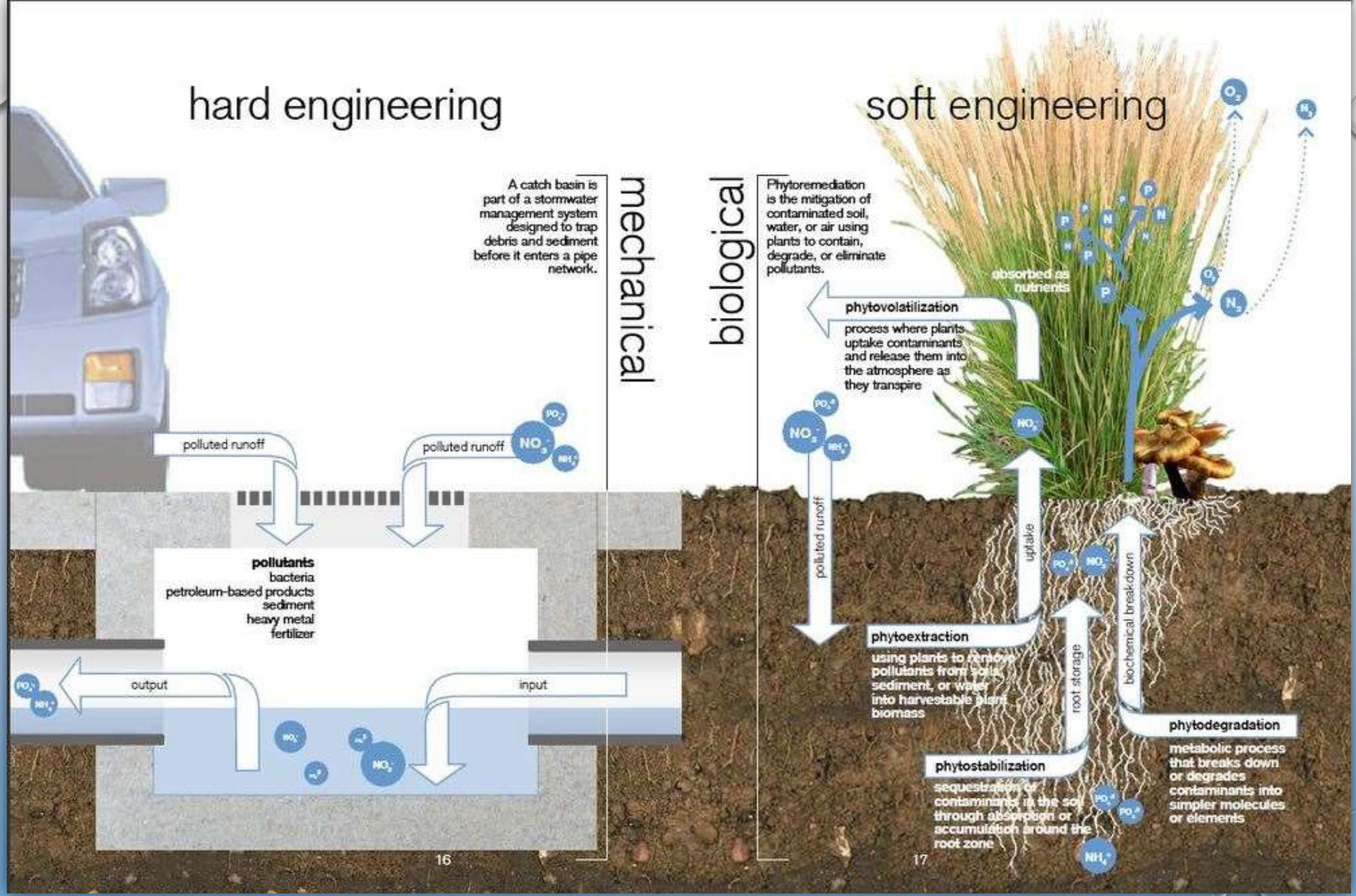
Mimic nature by integrating stormwater management into building and site developments to reduce the impacts that urbanization has on our natural resources.

- New subdivisions are required to undertake a detailed water balance evaluation and integrate measures to match the pre to post development water balance. LID's are used to achieve the necessary infiltration targets.
- Detailed LID guidance will be developed for the City to ensure specific measures are suitable for our area, are financially manageable and consistent across all developments.
- Design standards cannot just be for the City's ROW, but will need to guide the development of each individually owned property!

BETTER DESIGN STANDARDS



BUT HOW CAN YOU REQUIRE AND ENFORCE THIS ON DEVELOPERS AND HOME OWNERS?


hard engineering
soft engineering
mechanical
biological
A catch basin is part of a stormwater management system designed to trap debris and sediment before it enters a pipe network.
polluted runoff
polluted runoff
pollutants
bacteria
petroleum-based products
sediment
heavy metal
fertilizer
output
input
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Phytoremediation is the mitigation of contaminated soil, water, or air using plants to contain, degrade, or eliminate pollutants.
absorbed as nutrients
phytovolatilization
process where plants uptake contaminants and release them into the atmosphere as they transpire
polluted runoff
uptake
phytoextraction
using plants to remove pollutants from soil, sediment, or water into harvestable plant biomass
root storage
biochemical breakdown
phytodegradation
metabolic process that breaks down or degrades contaminants into simpler molecules or elements
phytostabilization
sequestration of contaminants in the soil through absorption or accumulation around the root zone
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MOECC LID MANUAL

Section 6 - Climate Change

- Section 6 will provide guidance with respect to climate change and stormwater for Ontario.
- One of the most comprehensive guidance pieces related to climate change and stormwater in Ontario, and possibly Canada.
- Stormwater Practitioners will be encouraged (required) to undertake a four step process to incorporate climate change adaptation strategies into stormwater management projects

1. Identify Climate Change Considerations
2. Evaluate Risk Caused by Climate Change Parameter
3. Climate Change Impact Management Planning
4. Monitoring and Adaptive Management

Rethink the Rain

GOOD PRACTICES

ON YOUR PROPERTY

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