



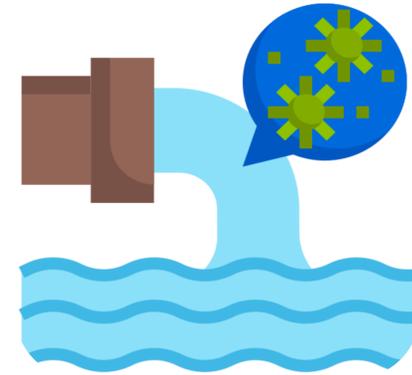
MITIGATING STORMWATER RUNOFF IN HAMILTON

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PROBLEM

How might we alleviate the pressure from the drainage systems in urban Hamilton by reducing run-off?

- Increased **urbanization** → more **impervious surfaces** → higher **stormwater runoff** and **drainage overload**
- Runoff carries **pollutants** → contaminates **waterways** → harms **ecosystems** and **water quality**
- South Ontarian flash floods caused **\$940M** in insured damage²
- Hamilton annually spends **\$63M** on the stormwater program³

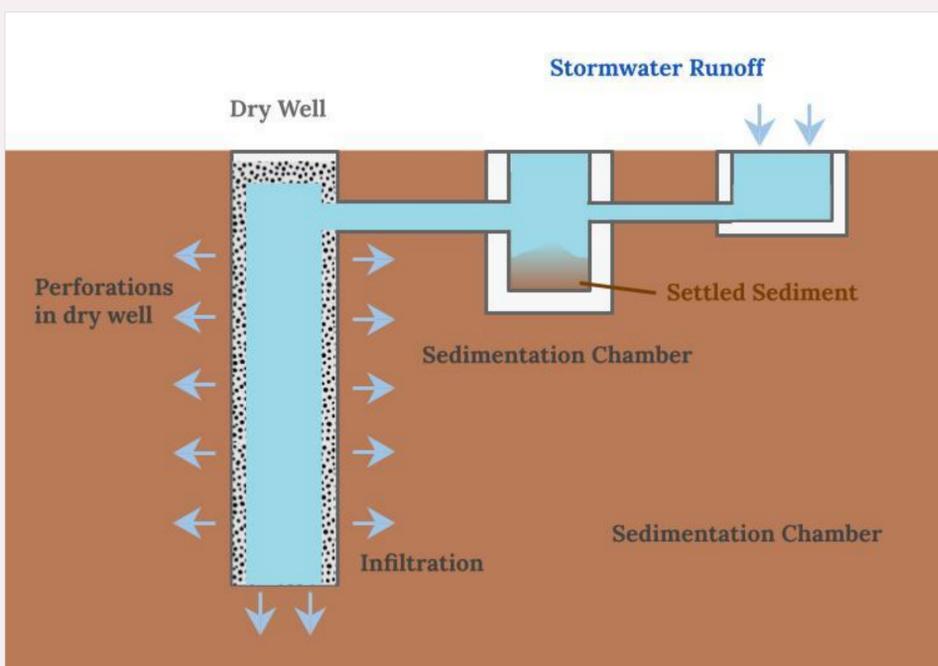


The Chedoke Creek spill has cost the city of Hamilton more than **\$3M** after spilling more than **24B liters** of combined sewage into the creek¹

SOLUTION

Underground Injection System (UIC) with the following features:

- Surface Drains
 - Stormwater enters through surface drains
- Sedimentation Chamber
 - Water goes through a gravity-based filtration system
 - Debris get separated
- Dry Well
 - Chamber with porous walls
 - Water infiltrates the ground
 - Replenishes aquifers



NEXT STEPS

1. **Pilot test** - Install the system alongside other road projects to assess performance and feasibility
2. **Expand to High-Risk Areas** - Scale up implementation in regions with frequent flooding and high runoff
3. **Citywide Integration** - Incorporate the system into municipal infrastructure planning for long-term sustainability



REFERENCES

1. Davey, P. (2021, July 8). *Hamilton considers new report of cleanup options for Chedoke Creek*. Environmental Science & Engineering Magazine. <https://esemag.com>
2. The Canadian Press. (2024, August 20). *July flash floods in Toronto, southern Ontario caused over \$940M in insured damage*. Global News. <https://globalnews.ca>
3. City of Hamilton. (n.d.). *Stormwater Funding Review*. <https://www.hamilton.ca>
4. *Portland's Underground Injection Control (UIC) Facilities Stormwater Permit*. (2015). Portland.gov. <https://www.portland.gov/bes/stormwater/uic-permit>
5. Godwin, D. (2018, May 24). *Drywells: Low-impact development fact sheet*. OSU Extension Service. <https://extension.oregonstate.edu/catalog/pub/em-9200-drywells-low-impact-development-fact-sheet>
6. *Pennsylvania Stormwater Best Management Practices Manual*. (6 C.E.). https://www.stormwaterpa.org/assets/media/BMP_manual/chapter_6/Chapter_6-4-6.pdf

ACKNOWLEDGEMENTS