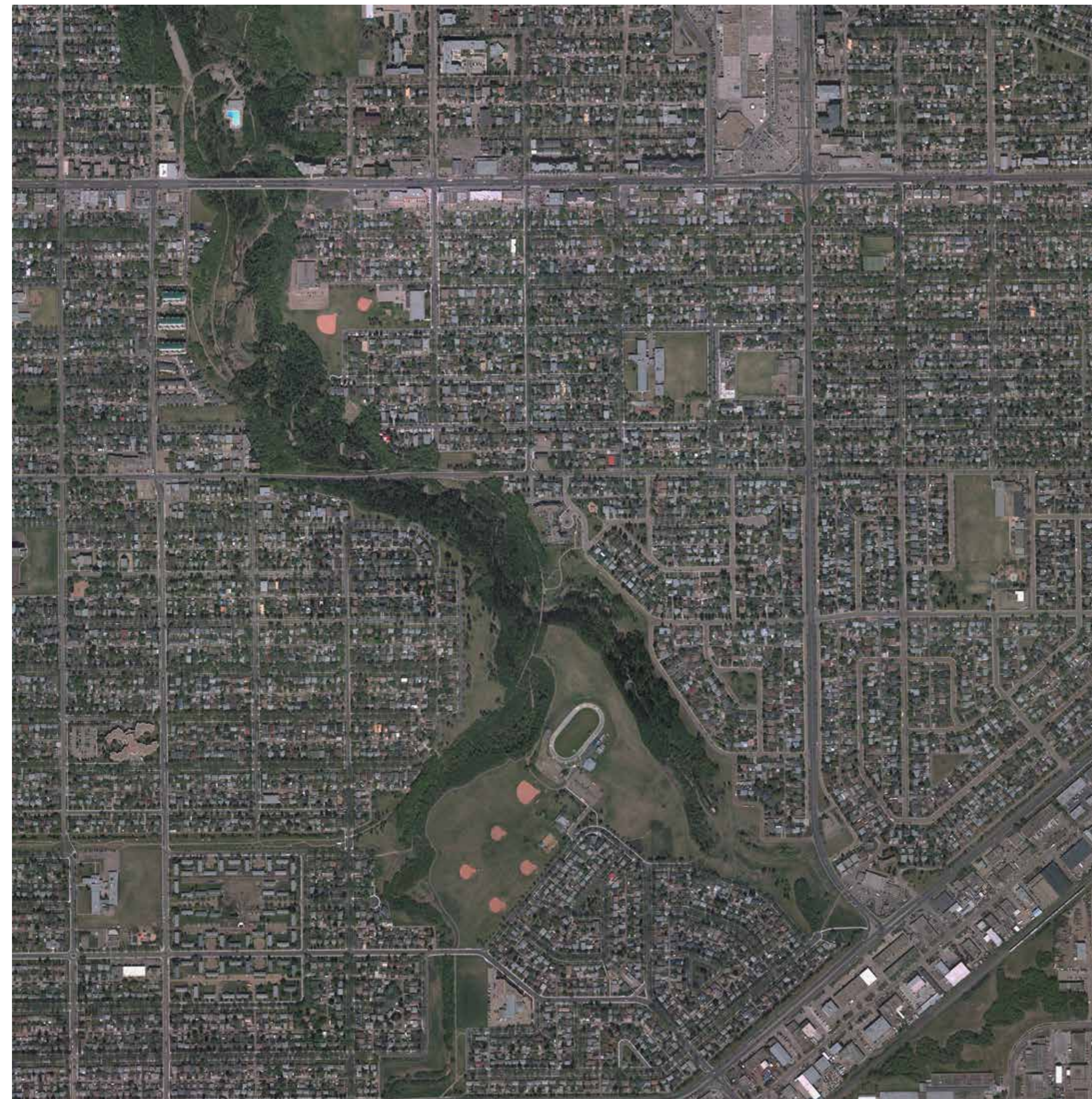


# Background

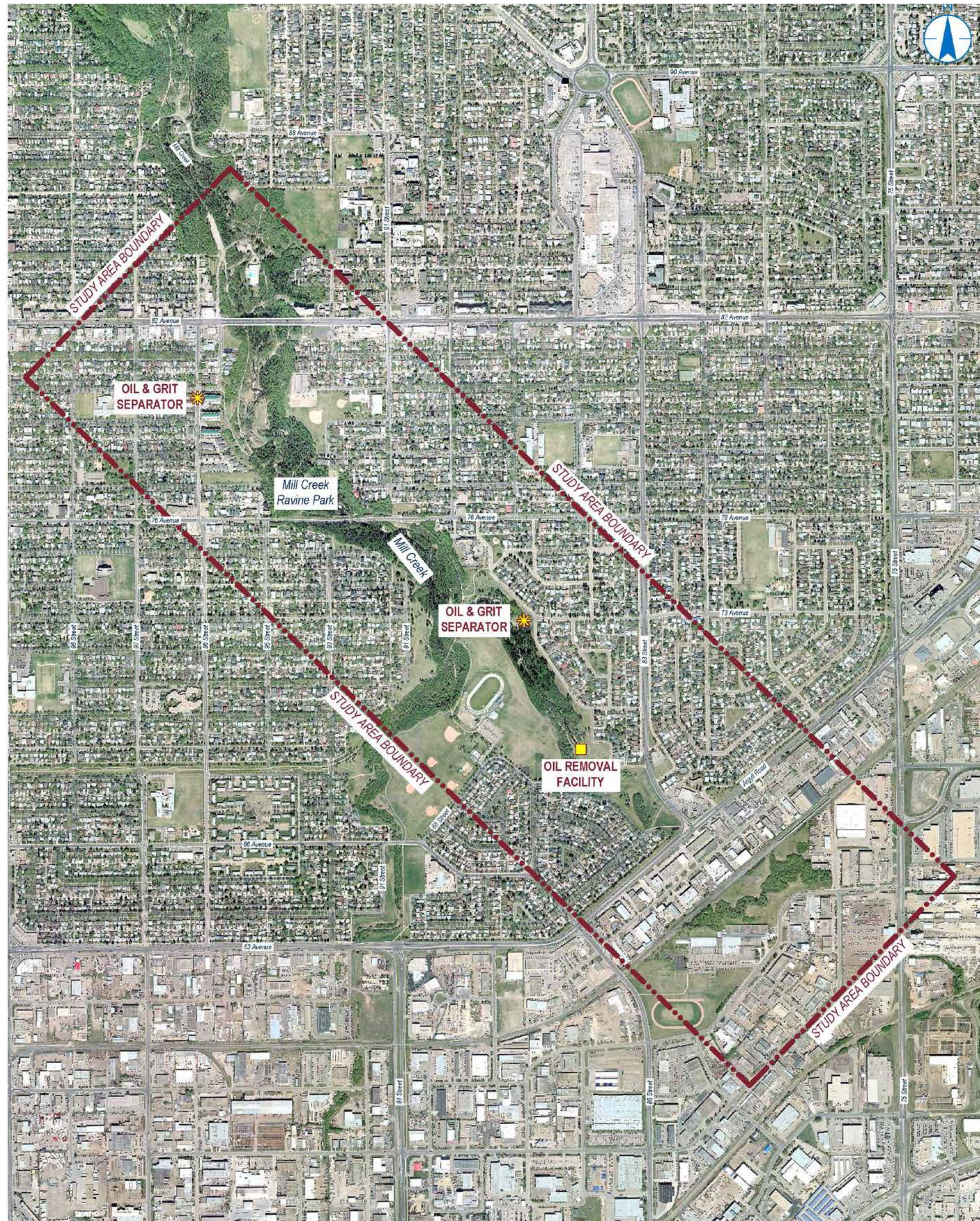
- More frequent and severe rainstorms, along with runoff from urban development around Mill Creek, increase creek flows and cause erosion.
- In addition to slumping banks and damaging bridges, erosion also increases the amount of sediment suspended in the creek water, which ultimately ends up in the North Saskatchewan River.
- In order to improve water quality and reduce erosion, the City is considering various improvements.
- Improvements may include oil and grit separators, ponds, wetlands and a new sewer to divert the increased flows from more severe rainstorms and urban development.



1949 aerial photo (left) and current aerial photo (right)

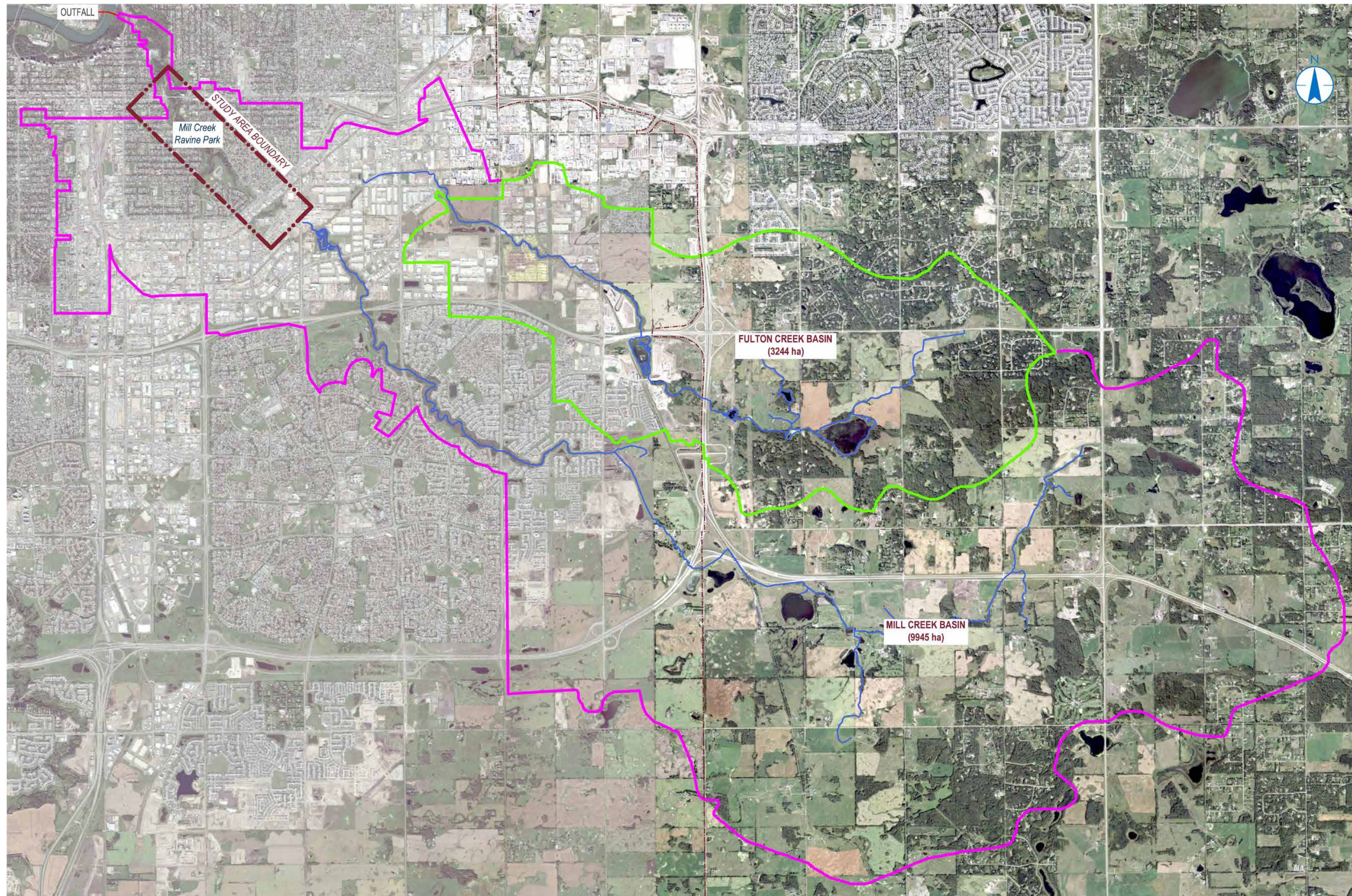


# Mill Creek Ravine





# Mill Creek Basin

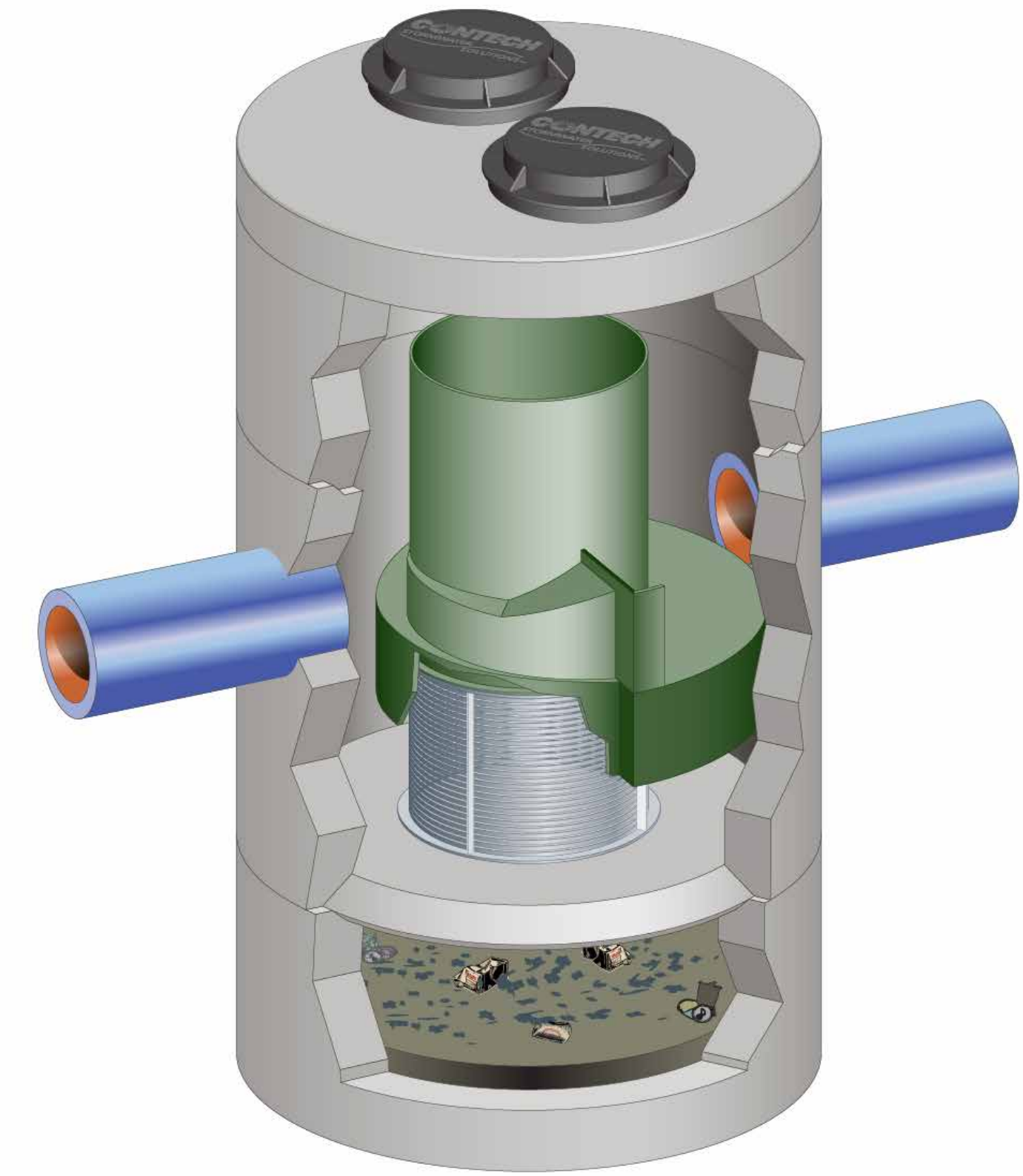


Stormwater from these areas enters Mill Creek just north of Argyll Road

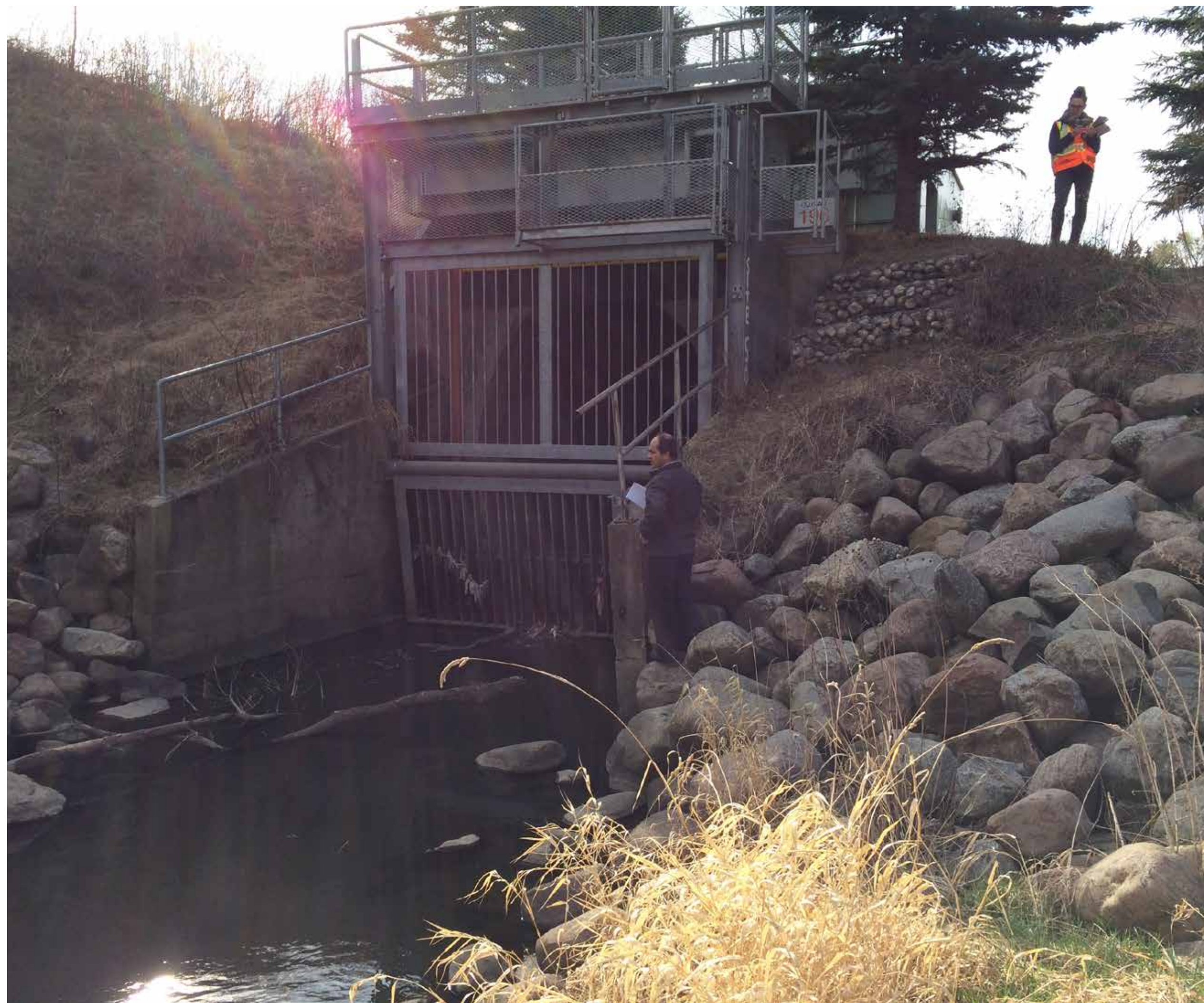


# Past Improvement Projects

- Several water quality improvement projects have been constructed including:
  - » An oil removal facility was installed north of Argyll Road in 2000.
  - » Oil and grit separators were installed underground in Avonmore and Ritchie neighbourhoods in 2016.



Underground oil and grit separator schematic



Oil removal facility



Underground oil and grit separator



# Water Quality Recommendations

Other water quality and erosion measures have been proposed in past studies, which include:

- Ponds
- Wetlands
- Additional oil and grit separators
- Flow diversion around the creek
- Rain gardens
- Stormwater retention ditches



Underground oil and grit separator



Stormwater retention ditch



Rain garden



Pond



Large diameter storm sewer for flow diversion



Wetland



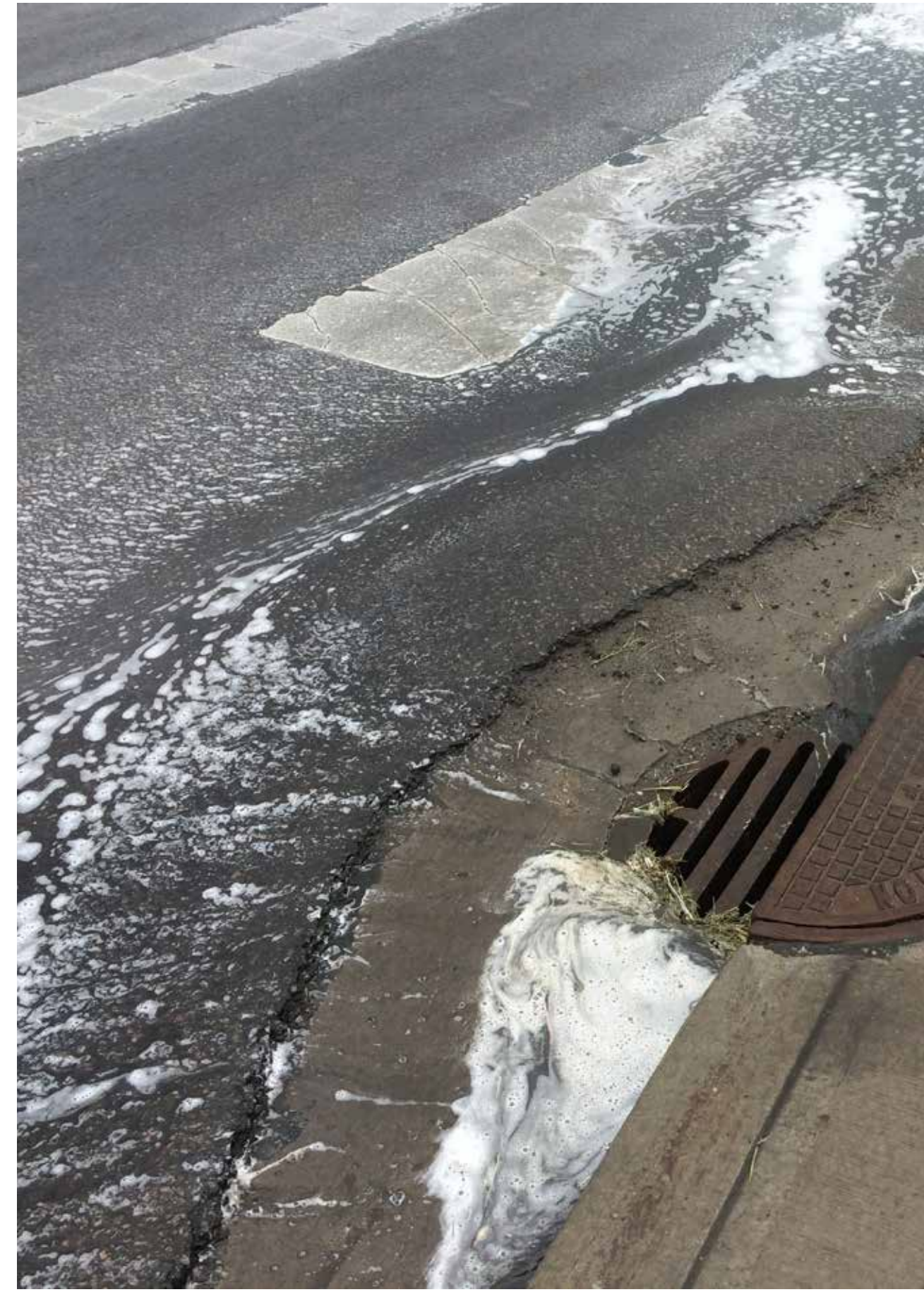
# Water Quality



Grit buildup from winter road sanding



Oil spill



Degraded water quality



Trash buildup

- Some stormwater enters the creek without treatment.
- Pollutants, such as oil and grit, can be washed into the creek via storm sewers.
- Water quality affects the environment and natural habitats.



# Potential Solution: Treat Stormwater

- Oil and grit separators are installed underground along stormwater sewers to improve water quality by removing sand, trash and oil. Oil and grit separators retain the debris until they are cleaned out by vacuum trucks.
- Ponds and wetlands improve water quality through the natural processes of particle/sediment settling and pollutant removal.



Underground oil and grit separator in the process of being covered up



Wetland



Vacuum truck used for cleaning oil and grit separators



# Erosion



Bank erosion



Bank failure



Undermining of erosion protection

- Erosion increases the amount of sediment suspended in the creek water.
- Erosion causes unstable banks and damages trails and bridges.
- The City of Edmonton is spending thousands of dollars each year on repairing the trails and eroded creek banks.



# Potential Solution: Reduce Erosion



Sewer under construction



Constructed wetland



Pond

- A sewer diversion would take the extra water directly to the North Saskatchewan River, maintaining natural flows in Mill Creek. The feasibility of this option is still unknown.
- Ponds and wetlands slow down the water and reduce erosion. Available space for ponds and wetlands is still unknown.



# Comparison of Potential Solutions

Potential Solution	Treats	Reduces Erosion	Construction Impacts	Additional Comments
Oil & grit separators	Yes	No	<ul style="list-style-type: none"> <li>• Truck traffic</li> <li>• Potential road/lane/sidewalk closure</li> <li>• Construction noise</li> </ul>	<ul style="list-style-type: none"> <li>• Need to consider space availability</li> <li>• Must have access for clean out of trapped debris (normally cleaned twice per year)</li> </ul>
Ponds or wetlands	Yes	Yes	<ul style="list-style-type: none"> <li>• Truck traffic</li> <li>• Construction noise</li> <li>• Potential trail detours</li> </ul>	<ul style="list-style-type: none"> <li>• Requires a large area</li> <li>• Limited space available due to existing development</li> </ul>
New storm sewers	No	Yes	<ul style="list-style-type: none"> <li>• Truck traffic</li> <li>• Potential road/lane/sidewalk closure</li> <li>• Construction noise</li> </ul>	<ul style="list-style-type: none"> <li>• Potentially the most costly</li> <li>• Feasibility is under investigation</li> </ul>



Oil and grit separator construction



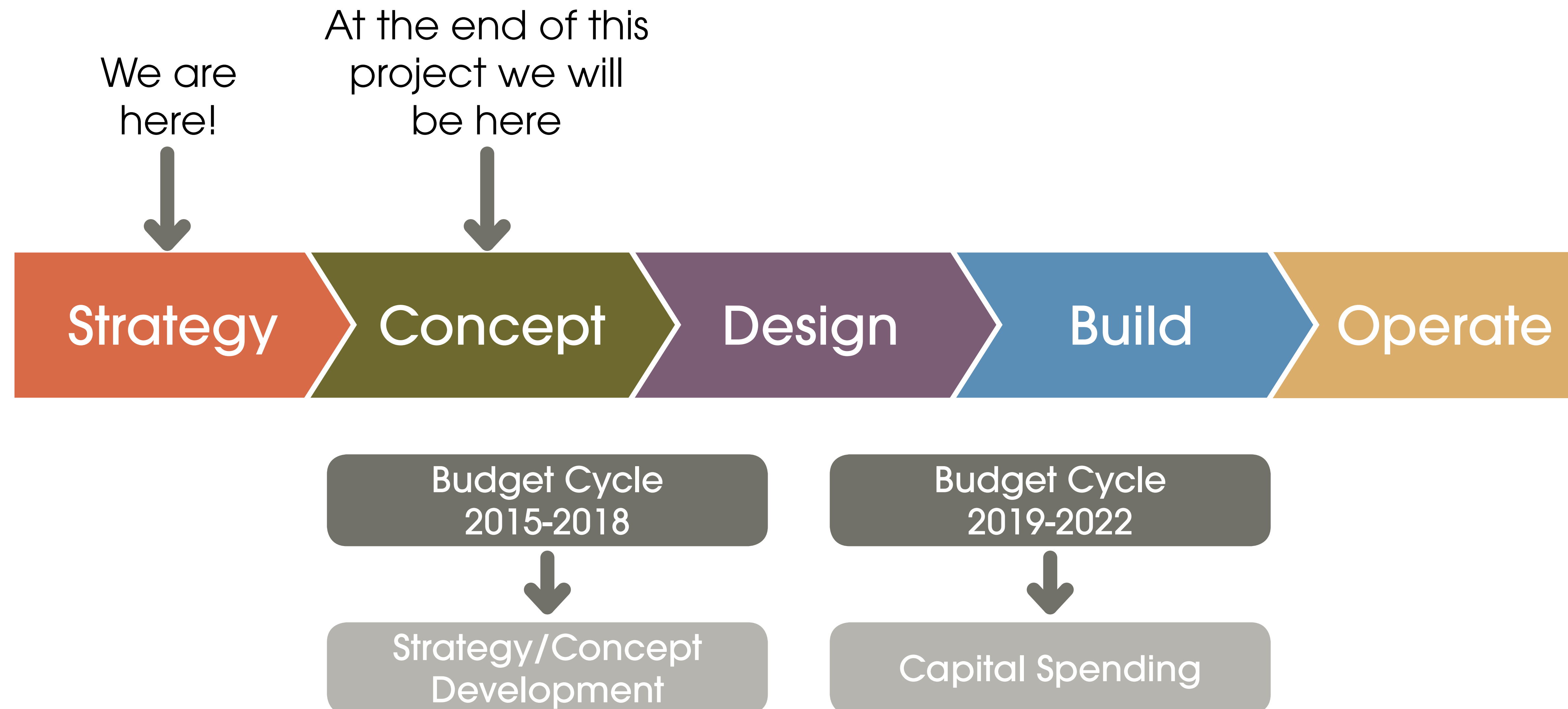
Pond



Storm sewer construction access shaft



# Project Process Strategy



## Project Timeline

- Survey #1: Available now at [www.edmonton.ca/millcreekwaterquality](http://www.edmonton.ca/millcreekwaterquality)
- Survey #2: Fall 2016
- Open House #2: Fall 2016
- Project Wrap-Up: November 2016

For more information, please visit [edmonton.ca/millcreekwaterquality](http://edmonton.ca/millcreekwaterquality)