

**WELCOME**

**Braneida Stormwater Management Facility Retrofit  
and Downstream Channel Remediation**

**Municipal Class Environmental Assessment**

**Public Information Centre**

**November 30, 2020**



# The Purpose of this Information Centre

- ❑ Provide information on the Environmental Assessment (EA) study purpose and background
- ❑ Provide summaries of the existing conditions assessments
  - Stormwater Management Pond Design vs Current Functionality
  - Water Resources and Geomorphic Conditions
  - Natural Heritage
  - Archaeological and Cultural Heritage
- ❑ Present alternative solutions and proposed evaluation criteria
- ❑ Present the recommended alternative solution

**We invite your input.**



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# Study Purpose

The EA study follows the **Municipal Class Environmental Assessment** under Schedule 'B' for the stormwater management facility (SWMF) servicing the Braneida Industrial Subdivision in the City of Brantford.

## **Problem Statement:**

The existing Braneida Industrial SWMF was constructed in the 1990s and does not meet current MECP water quality and quantity control standards. Furthermore, there is no Environmental Compliance Approval (ECA) (formerly Certificate of Approval (C of A)) in place.

The ultimate objective on completion of the Municipal Class EA will be to obtain the necessary approvals and permits for the retrofit of the existing SWMF for water quality, erosion and quantity control in compliance with current provincial standards.

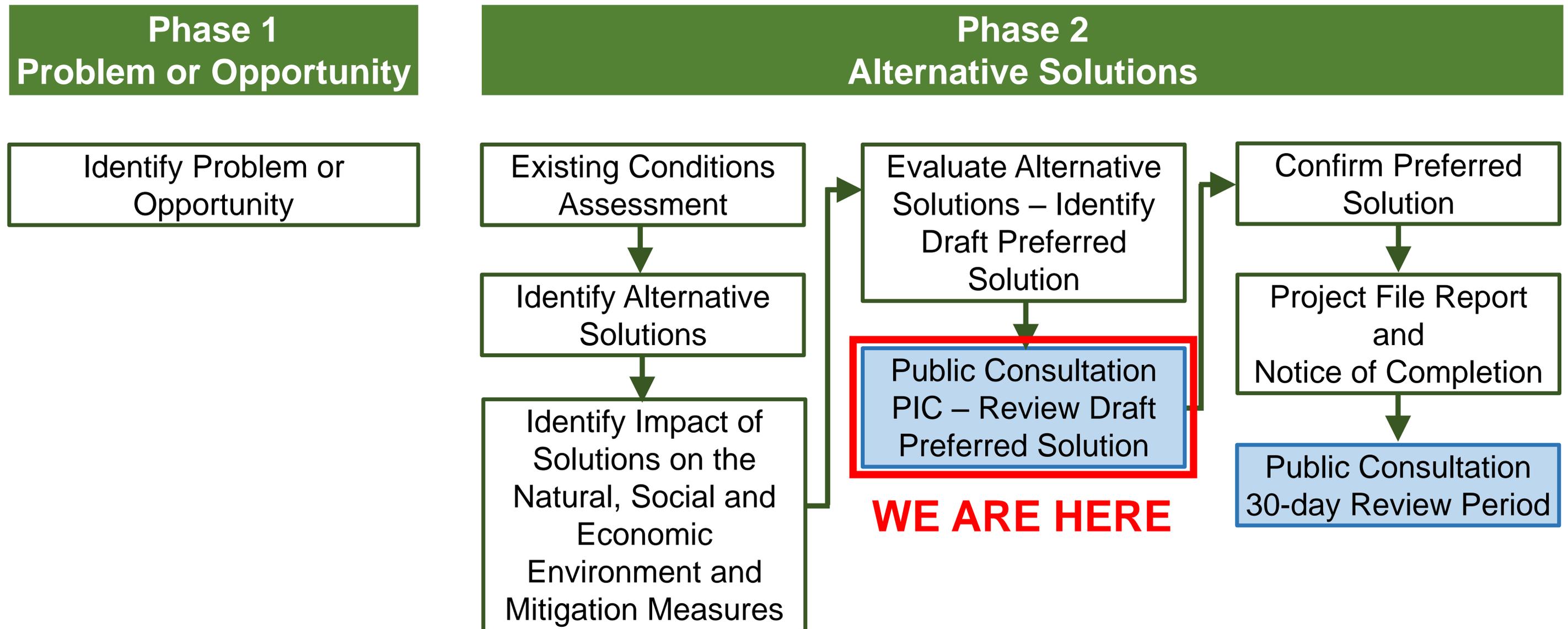


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# Municipal Class EA Process Overview

- ❑ The Municipal Class EA process provides opportunities for **public and stakeholder involvement** throughout the project
- ❑ Ensures that all **reasonable alternatives** are considered and that a selected alternative would have minimal impact on the surrounding environment
- ❑ The Braneida Stormwater Management Facility: Proposed Retrofits EA Study is being undertaken as a **Schedule 'B' Class EA Project**.



# Characterization of Existing Conditions

## Site Geometry

**Description:** General description of the subject lands

**Quick Facts:**

- Study area spans over 140 ha of mixed industrial development, the SWMF site is approximately 2.4 ha
- Tributary to Fairchild Creek downstream of SWMF outlet within the study scope is approximately 500 m long

## Geotechnical

**Description:** Hydrologic calculation basis + SWMF construction consideration

**Quick Facts:**

- GRCA GRIN Mapping identifies primarily clay underlying soils within the study area
- Pinchin geotechnical investigation (2019) in the SWM block identified the underlying soils will not require dewatering during construction
- Exp geotechnical reports (2018) identify underlying soils in the greater catchment area of the SWMF as interbedded clayey silt, sandy silt, silty sand, silt and silty clay in a moist to saturated state

## Natural Heritage

**Description:** Potential impacts on natural environment

**Quick Facts:**

- Study area includes meadow, thicket, marsh and industrial lands.
- Tributary to Fairchild Creek contains fish species above and below SWM pond despite instream barriers to fish movement
- Vegetation includes native, non-native and invasive species
- Historic SAR identified within the surrounding habitat

## Archaeological, Built and Cultural Heritage (Timmins and Martell reports, 2019)

**Description:** Archaeological significance of Study Area  
Built heritage and cultural heritage landscapes

**Quick Facts:**

- Proximity to known archaeological sites, water sources, early historic settlements and transportation routes
- Potential easement 1 would require a Stage 2 archeological survey, other easements do not require further assessment work
- The Cultural Heritage Assessment (CHA) found that the subject property does not meet any Ministry of Tourism, Culture and Sports (MTCS) screening criteria for known or potential cultural heritage value
- No further heritage studies are recommended

## Social

**Description:** Impacts on communities

**Quick Facts:**

- There is a series of trails downstream of the SWMF near the Garden Avenue Tributary
- These trails are not projected to be impacted by any of the proposed alternatives

## Geomorphological

**Description:** SWMF outflow impacts on tributary

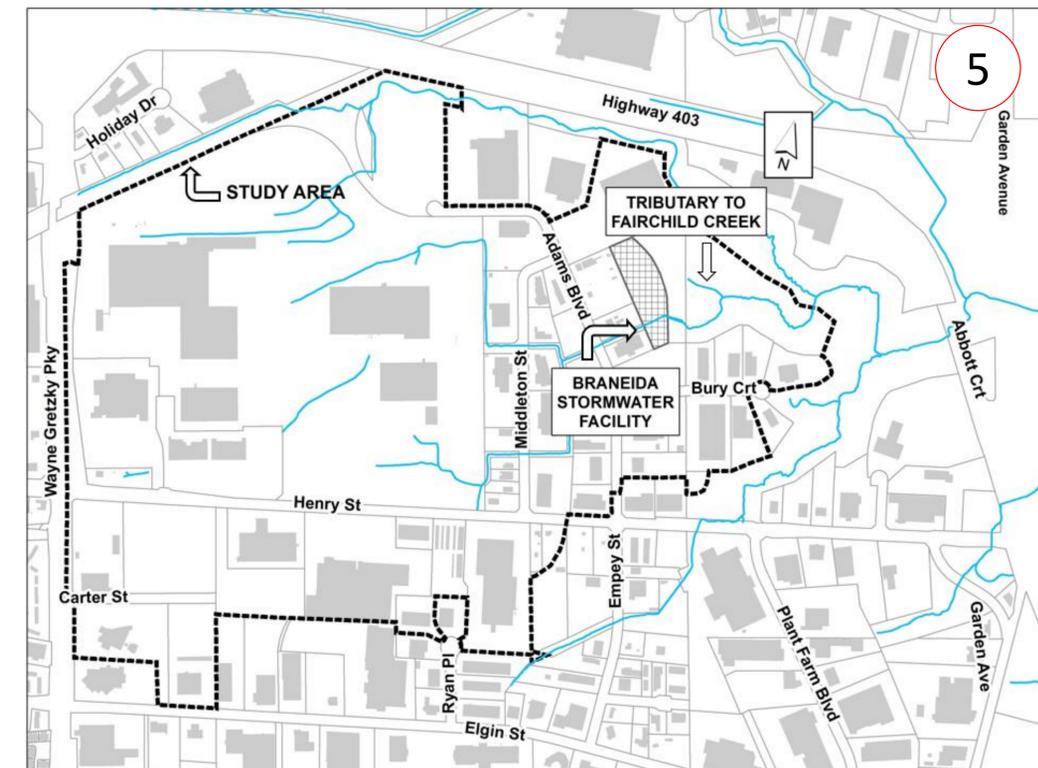
**Quick Facts:**

- The channel has been previously modified and exhibits evidence of response to changes in hydrology and channel realignment
- The channel has incised into silty clay till materials resulting in an entrenched condition (larger than bankfull flows does not spill onto a wide floodplain)
- The incision process is likely to continue as the watercourse adjusts to the modified hydrological conditions, until a state of equilibrium is achieved

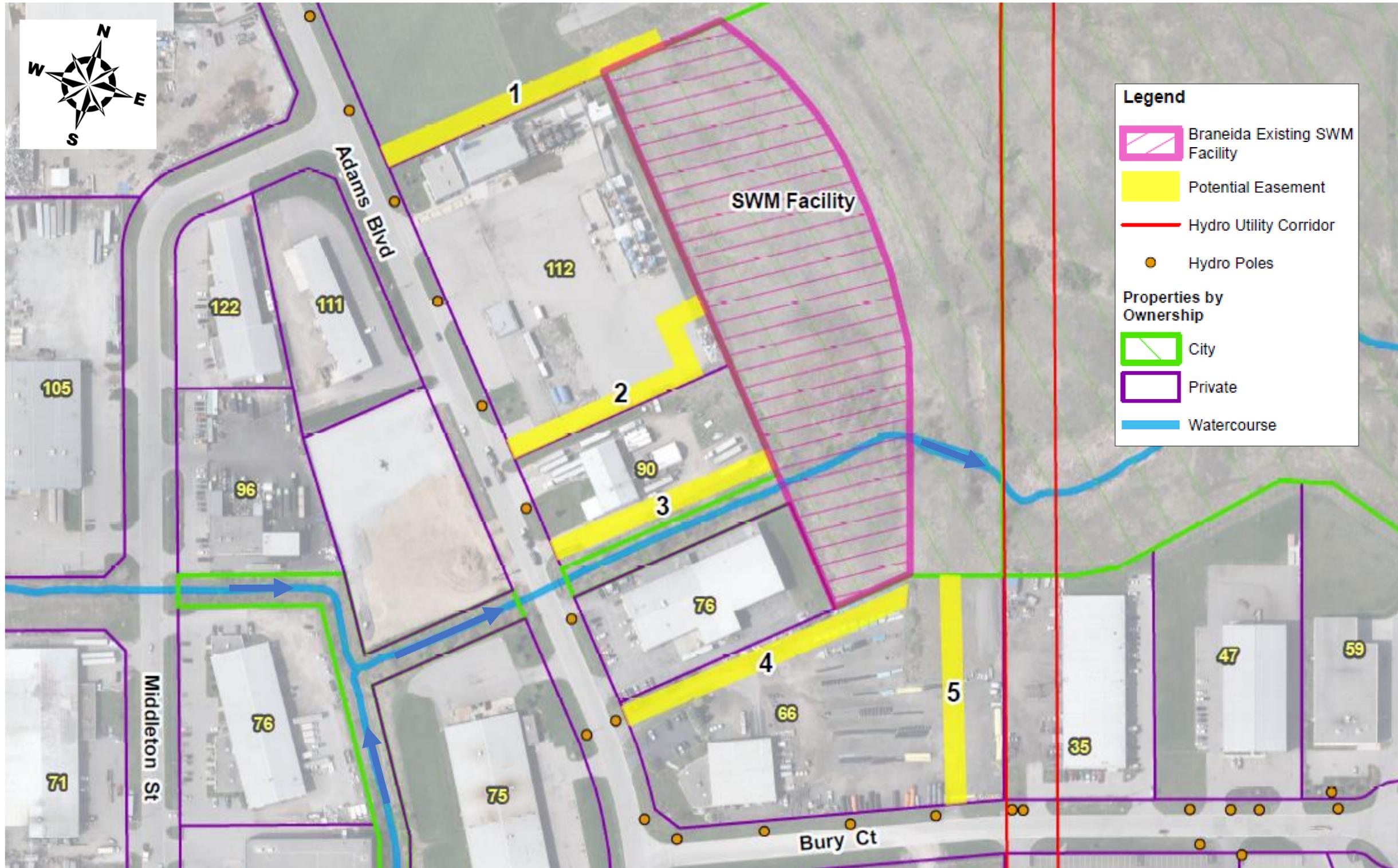
# Existing Conditions



1. The outlet of the stormwater management facility has been clogged, resulting in the pictured weir acting as an overflow outlet for the facility. This has resulted in the loss of 13,700 m<sup>3</sup> of stormwater storage space.
2. Twin 2000 mm diameter culverts downstream of stormwater management facility.
3. Tributary approximately 300 m downstream of stormwater management facility.
4. Indication of active bank erosion, lack of rooting depth, exposed clay at bank toe .
5. Study Area



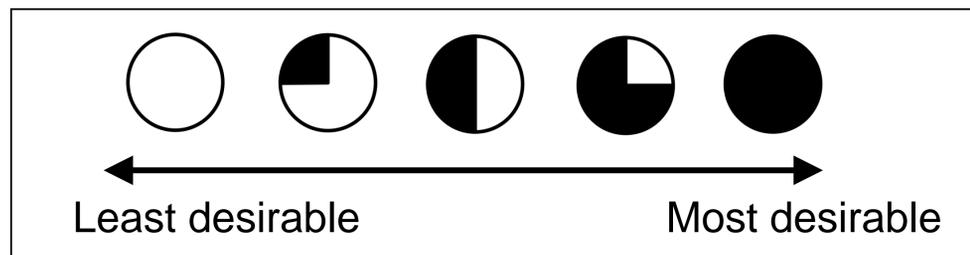
# Potential Easement Locations



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# Alternatives – Easement Location

Criteria	132 Adams Blvd (1)	112 Adams Blvd (2)	90 Adams Blvd (3)	66 Adams Blvd (4)	66 Adams Blvd from Bury Ct (5)
Land Use (35%)	●	○	◐	○	◐
Natural Environment (15%)	●	●	●	●	●
Design Requirements (25%)	◐	◐	◐	◐	◐
Land Availability (25%)	◐	◐	●	◐	◐
<b>Overall Score</b>	◐	◐	●	◐	○



Recommended alternative solution at this stage

# Alternatives – SWM Facility Retrofit

## Alternative 1

### Do Nothing

- This alternative is a baseline for comparison. Under this option, there would be no implementation of retrofit stormwater quantity, quality or erosion controls to the existing Braneida SWM facility.

## Alternative 2

### Retrofit Existing Braneida SWMF within existing SWM Block

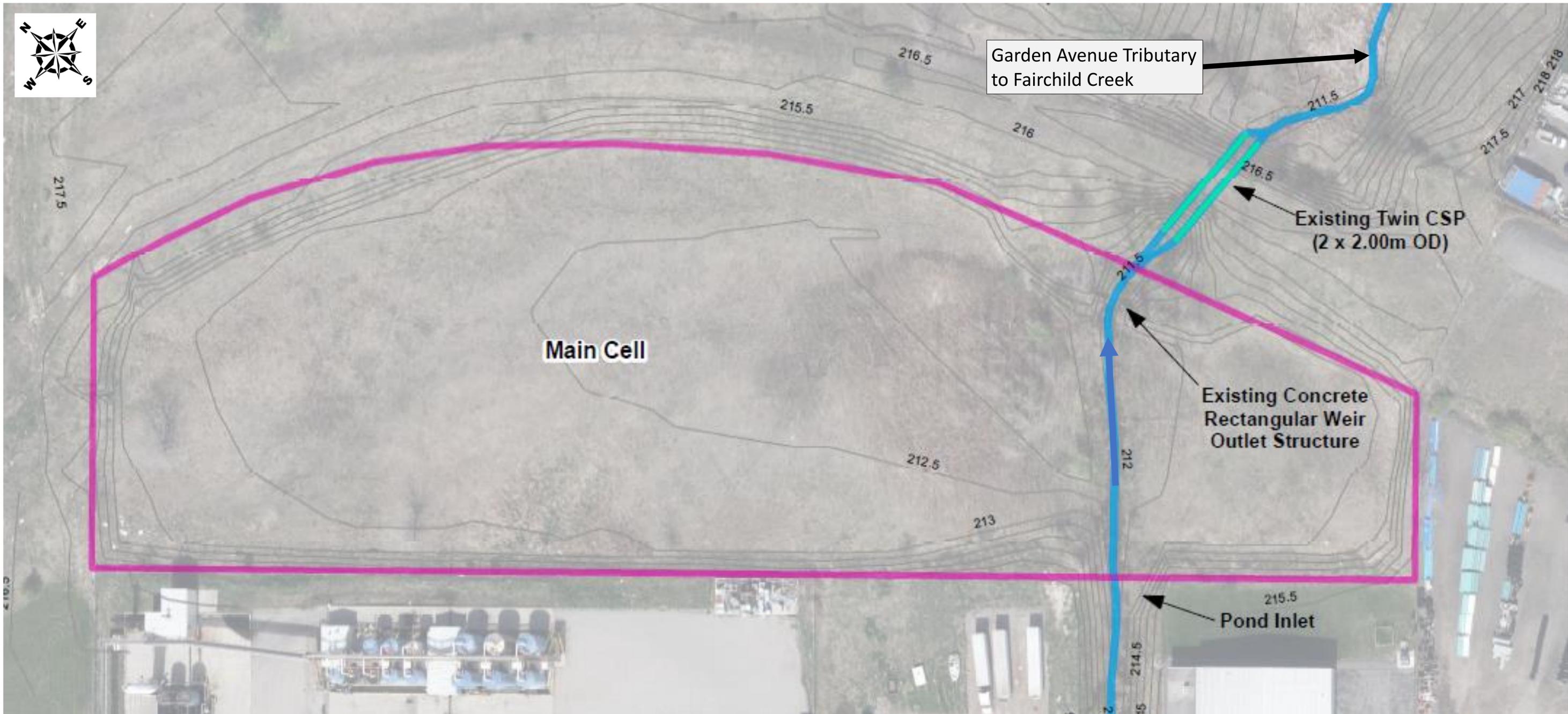
- Use existing SWMF block area, the only additional land required is a maintenance access easement
- Construct a permanent pool to provide water quality control
- Implement multi-stage outlet with erosion and quantity control
- Construct a forebay to improve maintenance accessibility to permanent pool
- Separation of inlet and outlet structure to increase flow path and detention time within SWMF

## Alternative 3

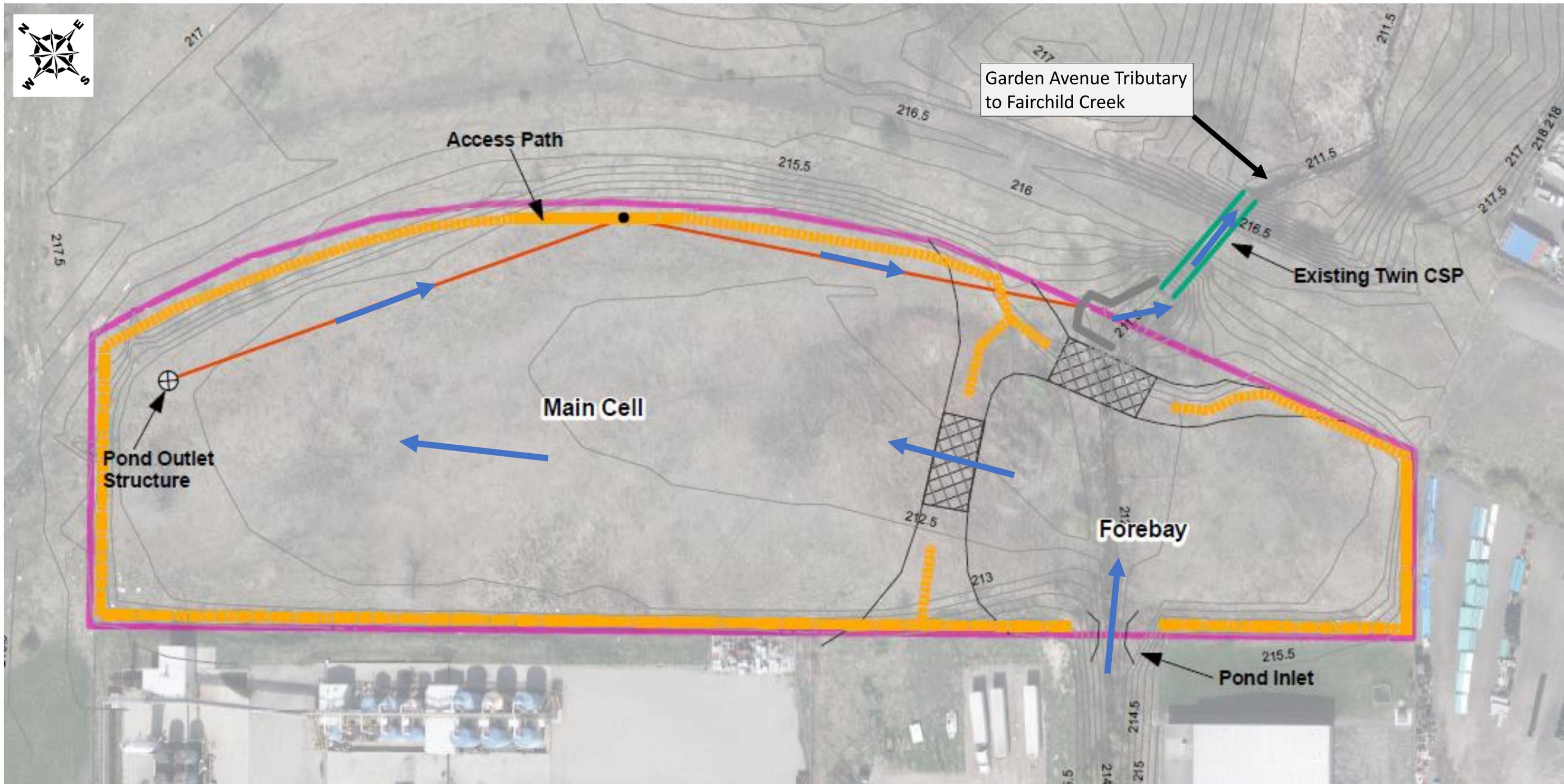
### Retrofit Existing Braneida SWMF within expanded SWM Block

- Same design criteria as Alternative 2, but with an expanded SWM Block to allow for additional storage and quality treatment volumes

# Alternative 1 – Do Nothing

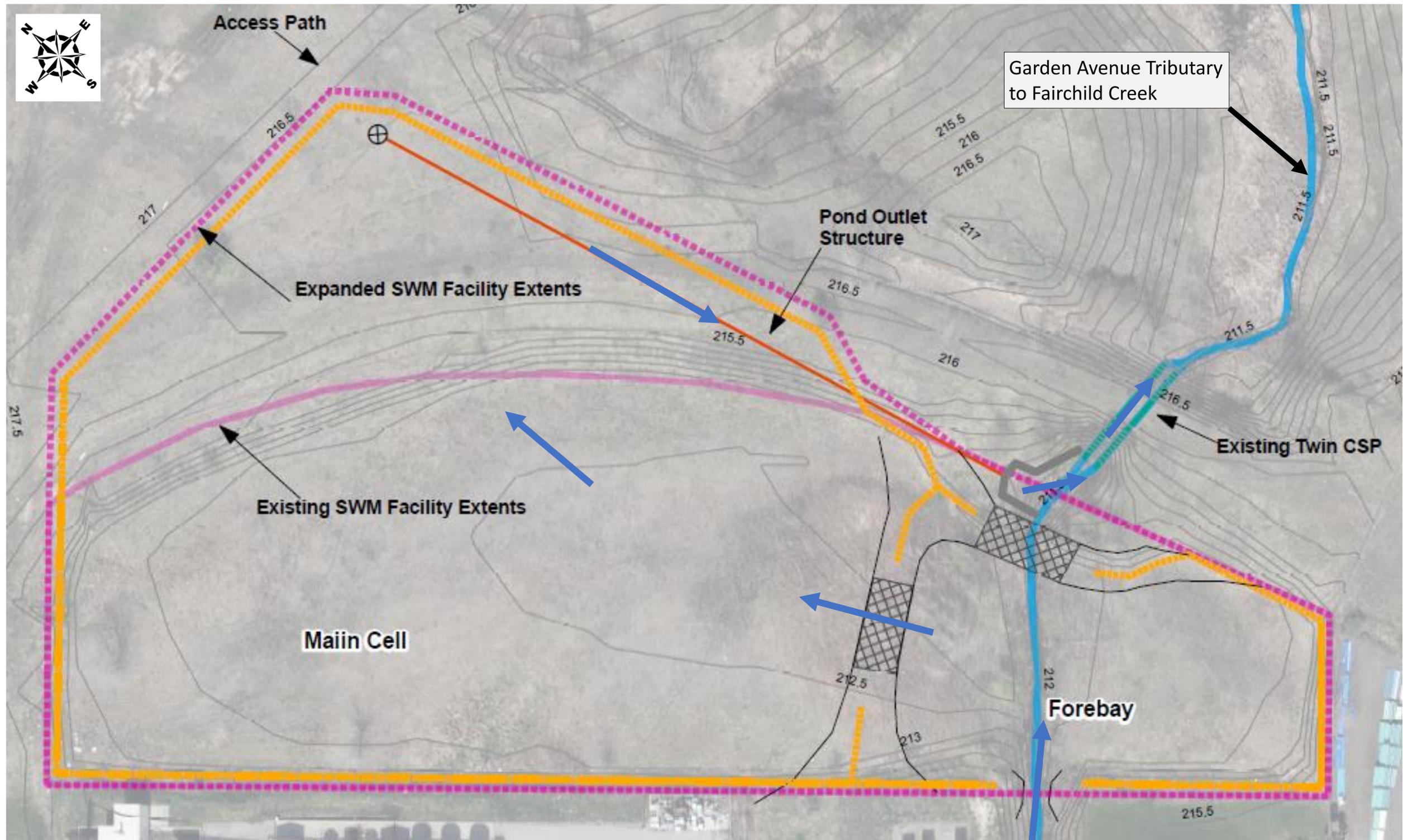


# Alternative 2 – Retrofit Existing SWM Facility



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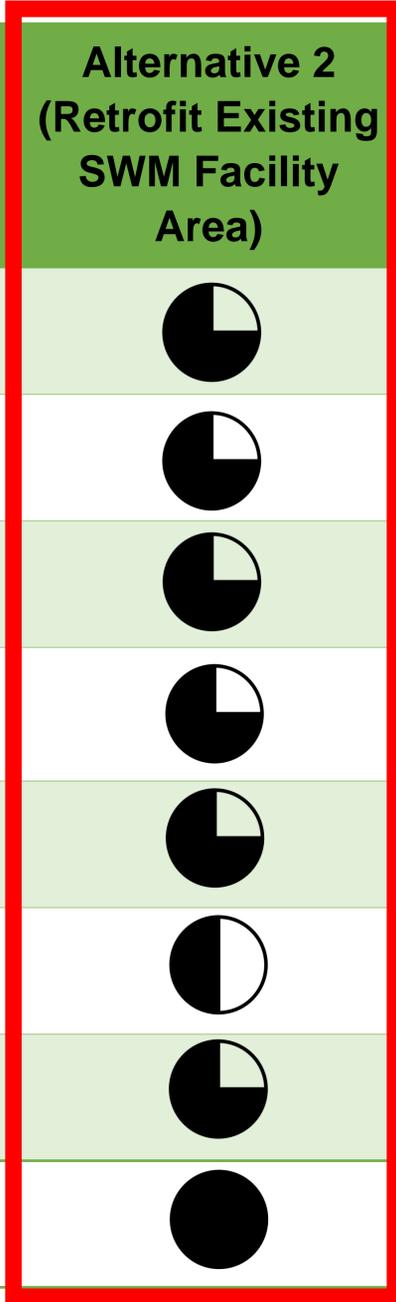
# Alternative 3 – Retrofit with Expanded SWM Block



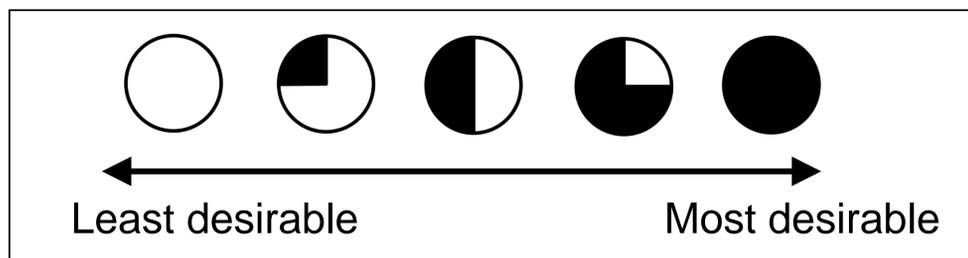
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# Evaluation of Alternative Solutions

Criteria	Alternative 1 (Do Nothing)	Alternative 2 (Retrofit Existing SWM Facility Area)	Alternative 3 (Retrofit an expanded SWM Facility Area)
Public Health and Safety (25%)	○	● (1/4 shaded)	● (3/4 shaded)
Technical (10%)	○	● (1/4 shaded)	● (3/4 shaded)
Environmental (15%)	● (1/4 shaded)	● (1/4 shaded)	○
Heritage and Archaeological Resources (10%)	● (3/4 shaded)	● (1/4 shaded)	○
Socio-economic (15%)	● (1/4 shaded)	● (1/4 shaded)	● (1/4 shaded)
Construction Cost (15%)	● (1/4 shaded)	● (1/2 shaded)	○
Constructability (10%)	● (3/4 shaded)	● (1/4 shaded)	● (1/2 shaded)
<b>Overall Score</b>	● (1/2 shaded)	● (3/4 shaded)	● (1/4 shaded)



Recommended alternative solution at this stage



# Alternatives – Channel Remediation

## Alternative 1

### Do Nothing

- This option is a baseline for comparison. Under this option, there would be no action taken to address the identified channel bed incision and erosion concerns.

## Alternative 2

### Channel Bed / Profile Enhancements

- This alternative would maintain the existing footprint of the channel and address sensitive areas within the study area.
- Protection of the clay channel bed would be provided at vertical drops (knickpoints) to prevent upstream migration. Placement of stone on the clay bed will also be provided in areas of sensitivity to prevent further incision.
- Implementation of this alternative will not completely halt ongoing channel bed incision or widening.

## Alternative 3

### Channel Capacity / Floodplain Connectivity

- The cross-sectional configuration will be altered to include a floodplain adjacent to the defined bankfull channel that conveys frequent flows, in the incised sections. The increased area will convey larger storm events and will reduce erosion potential and attenuate the larger flow events compared to existing conditions. No in-channel changes would occur.
- Impacts to the natural environment are expected to be greater than those resulting from Alternative 2; impacts would remain limited to the channel and new floodplain.
- Like Alternative 2, impacts to the terrestrial natural environment will result at the locations of construction access, and in locations where vegetation removal will be required. This alternative would allow for enhancement opportunities to the terrestrial natural environment and also to the aquatic habitat within the channel.

## Alternative 4

### Channel Realignment

- In this alternative, the watercourse would be re-aligned to a new location in the study area, with a new planform pattern.
- The cross-sectional configuration would include a defined bankfull channel for frequent flows that is set within a larger section that conveys larger storm event flows. The larger channel is intended to reduce erosion potential and to attenuate flows during the larger flow events.
- Modification of the channel bed profile would be undertaken to conform to the natural occurring patterns within the channel and to be suitable for the planform pattern
- This alternative will address all identified erosion issues and erosion mechanisms. The focus would be on reducing flow energy and increasing floodplain connectivity.



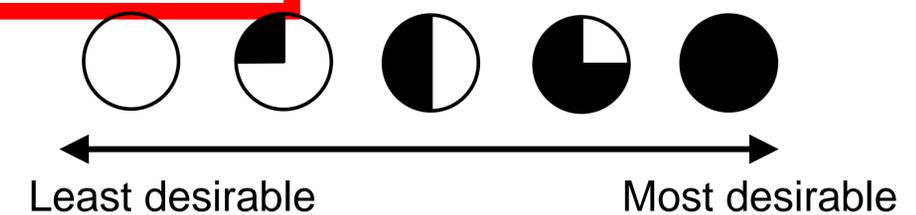
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# Alternatives – Geomorphic Assessment

Criteria	Alternative 1 (Do Nothing)	Alternative 2 (Channel Bed / Profile Enhancements)	Alternative 3 (Channel Capacity / Floodplain Connectivity)	Alternative 4 (Channel Realignment)
Technical (25%)				
Environmental (25%)				
Socio-economic (20%)				
Cost (15%)				
Constructability (15%)				
<b>Overall Score</b>				

Recommend hybrid alternative solution at this stage including Alternatives 2 and 3



# Extents of Creek Rehabilitation



# Next Steps Before



- Finalize preferred alternative design considering public feedback
- Complete Project File Report
- Notice of Completion and 30-day public review period
- Detailed design, tendering and construction

# Project Contacts



Please complete a Comment Sheet and return it to Chris Moon by December 14, 2020.

Should you have any questions or concerns at any time during the project, please contact either of the following people:

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