River Valley Neighbourhoods Flood Risk Study

Cloverdale

Public Consultation - May 13, 2015

Drainage Services
Financial Services & Utilities

THE CITY OF Edmonton

Today's Meeting

1. Provide results of the studies done regarding drainage issues in your neighbourhood.
2. Discuss proposed flood mitigation improvements.
3. Share Drainage Services' process for moving improvements forward.
4. Outline next steps.
5. Answer questions/get your input and feedback.

After Today's Meeting

1. Summarize and share meeting input.
2. Consider community input in work ahead.
3. Report on progress and keep you informed.

Please hold questions until after presentation.

Study Objectives

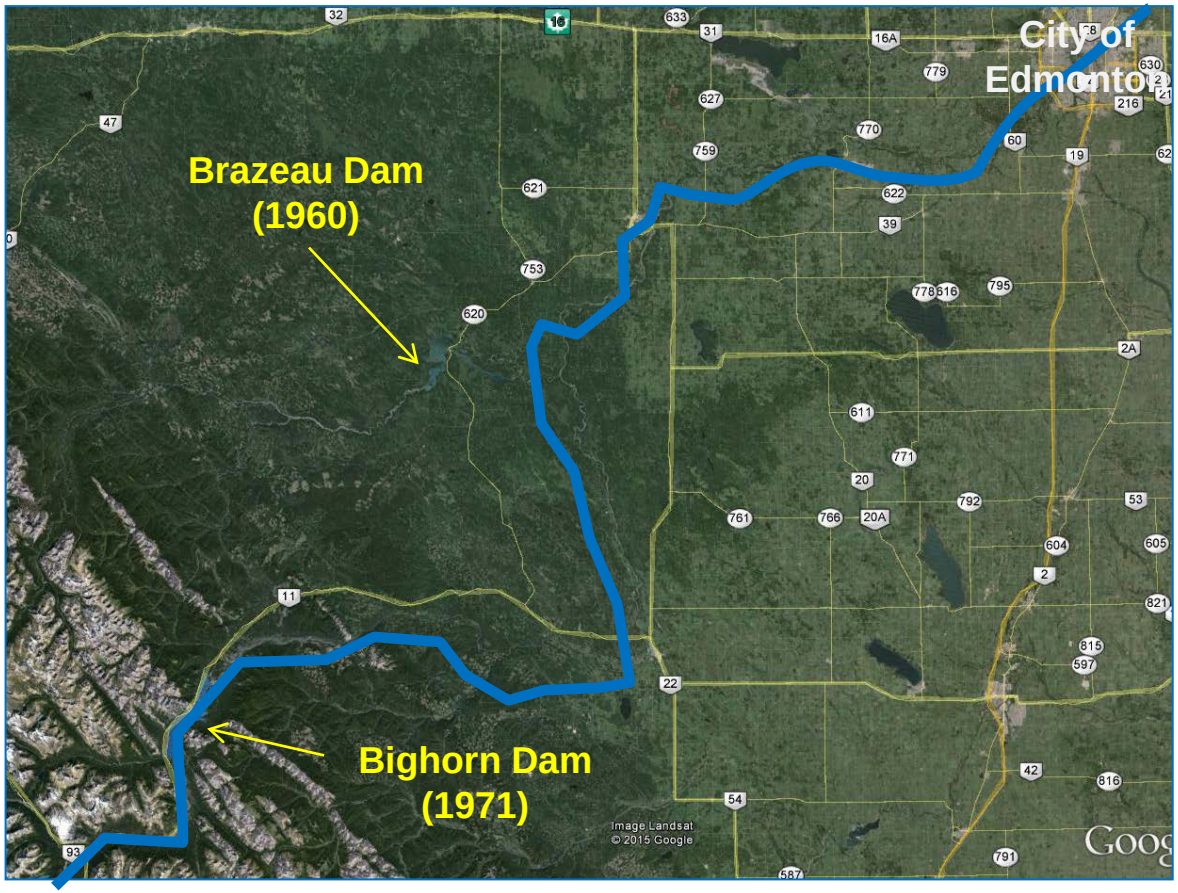
1. Comprehensive review and understanding of the existing drainage and sewer systems.
   - Cloverdale
   - Riverdale
   - Rossdale
2. Develop flood mitigation concepts to improve the level of flood protection in the neighbourhoods.

What is a 100 Year Event?

A 100 year event has a 1% chance of being exceeded in any given year.

Return Period	% Chance of Exceedance in any given year
100 year	1% (1/100)
50 year	2%
25 year	4%
10 year	10%
5 year	20%
2 year	50%

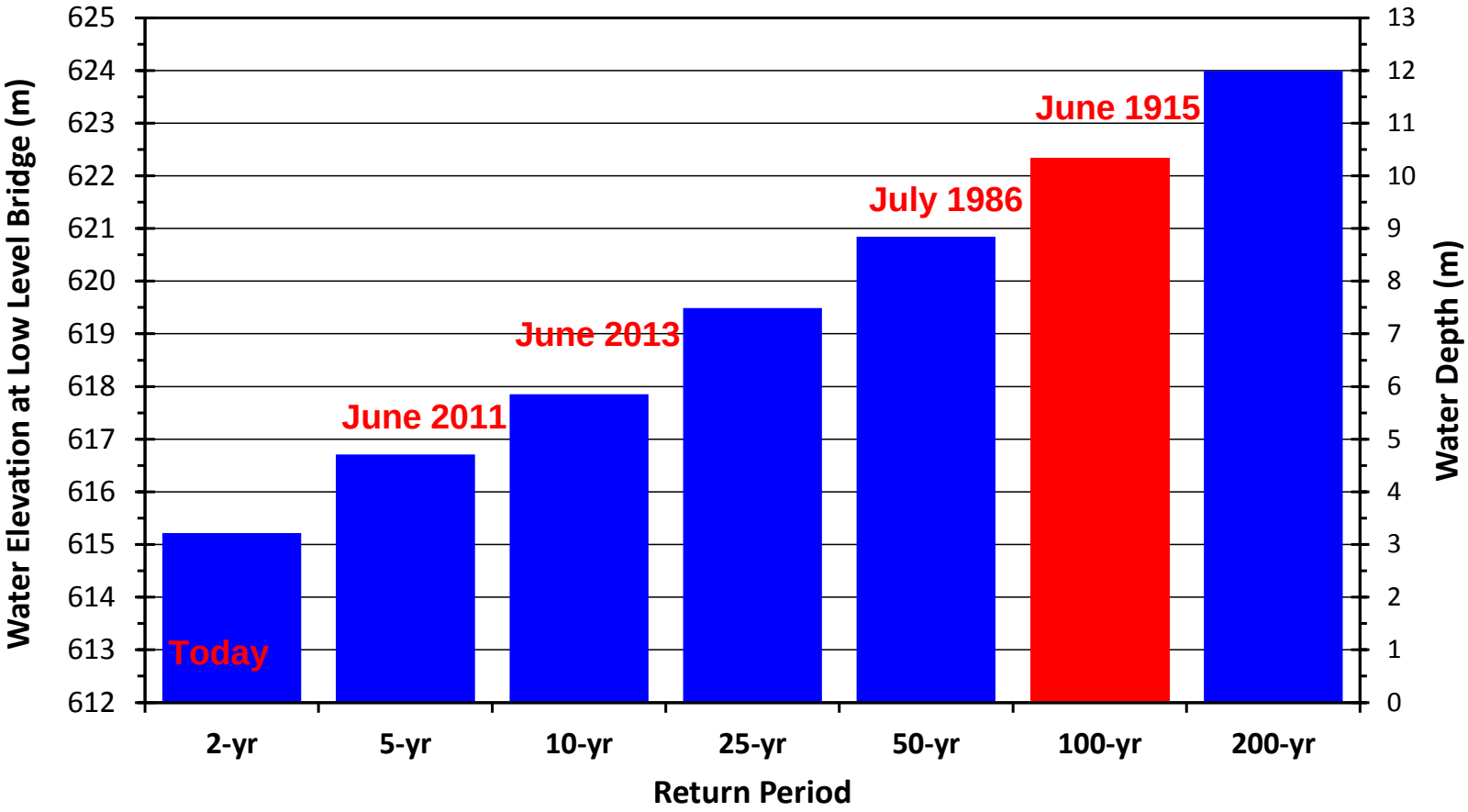
North Saskatchewan River



- River flows recorded since 1911(104 years)
- The dams have negligible impact on extreme peak flows events.

North Saskatchewan River

Water Levels

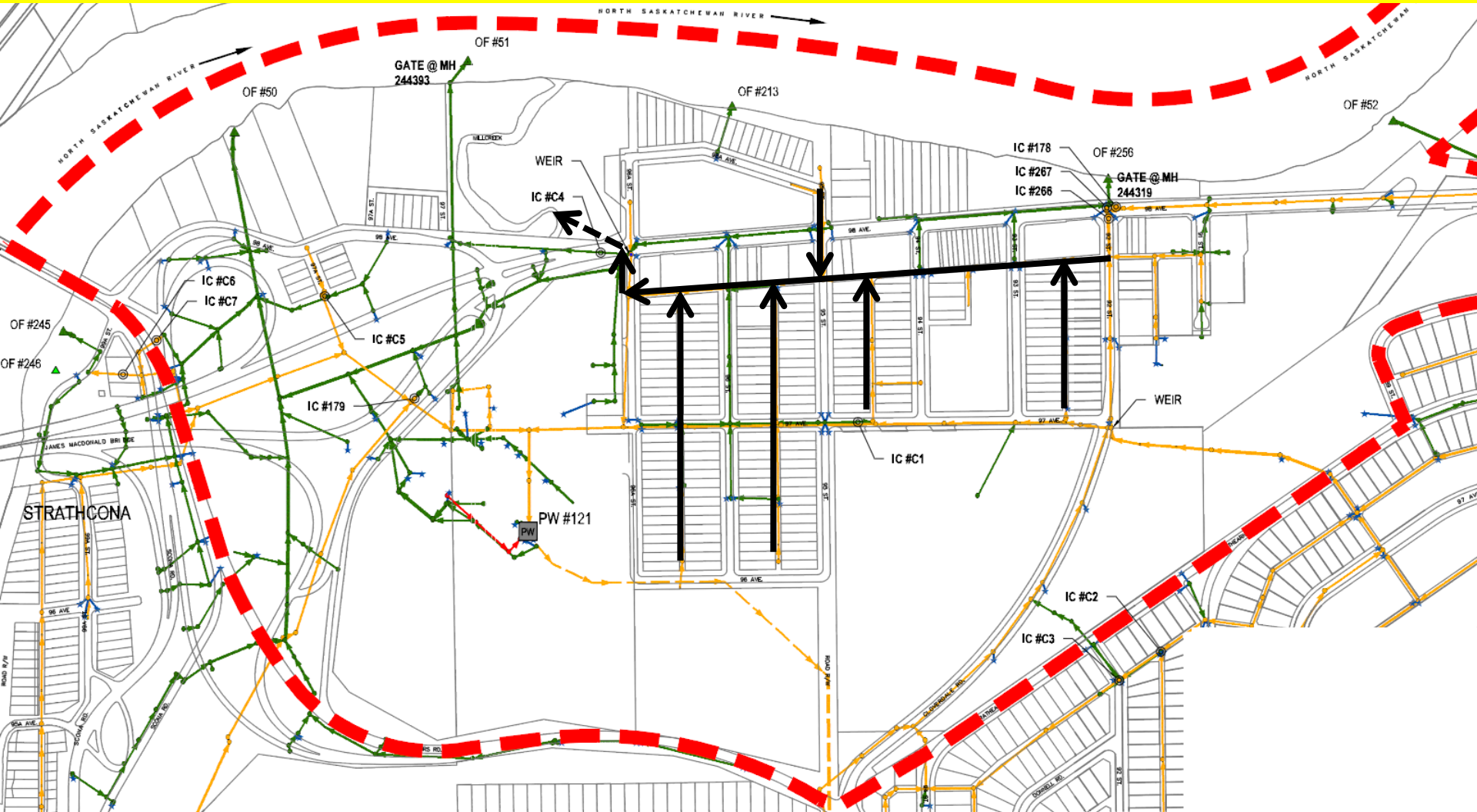


Floodplain Mapping

Note: This map shows the area on the ground surface that will be flooded due to high River water levels. It does not show properties that may experience sewer backups or underground parking floods.

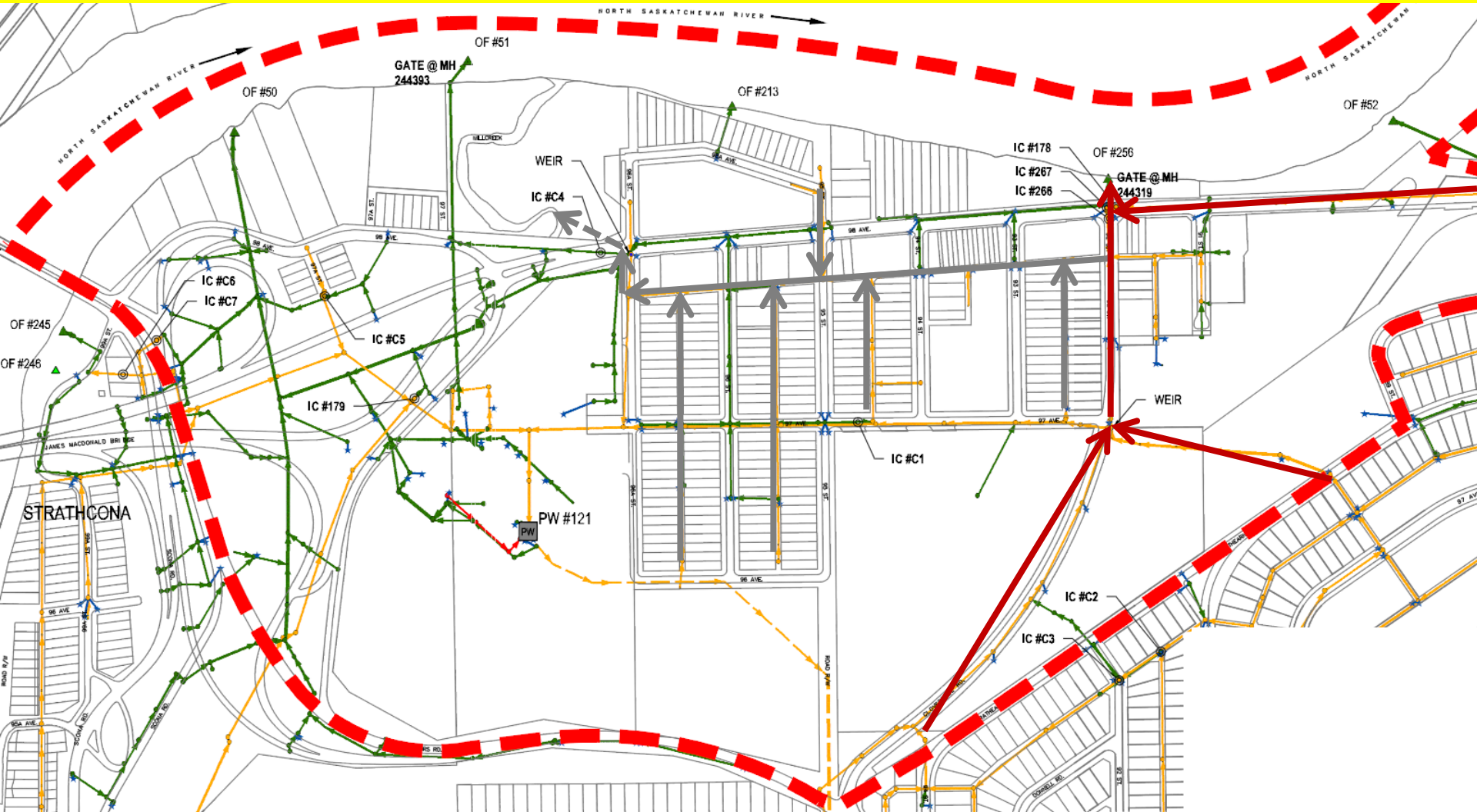
Existing Drainage and Sewer System

1926: Combined sewer system in Cloverdale, discharging directly into the River.



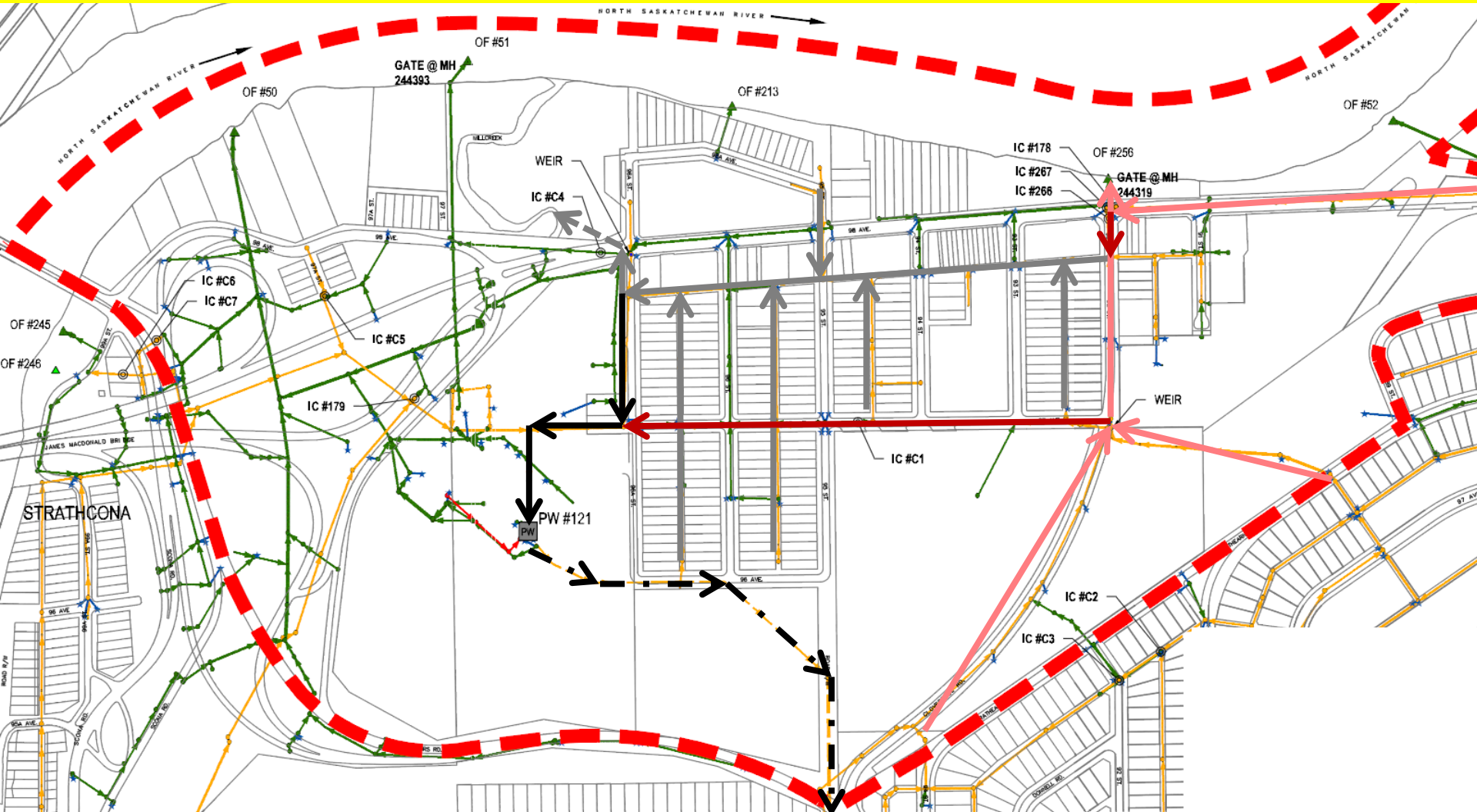
Existing Drainage and Sewer System

1950: Combined sewer system from Strathearn, Bonnie Doon and Forest Heights discharging to River.



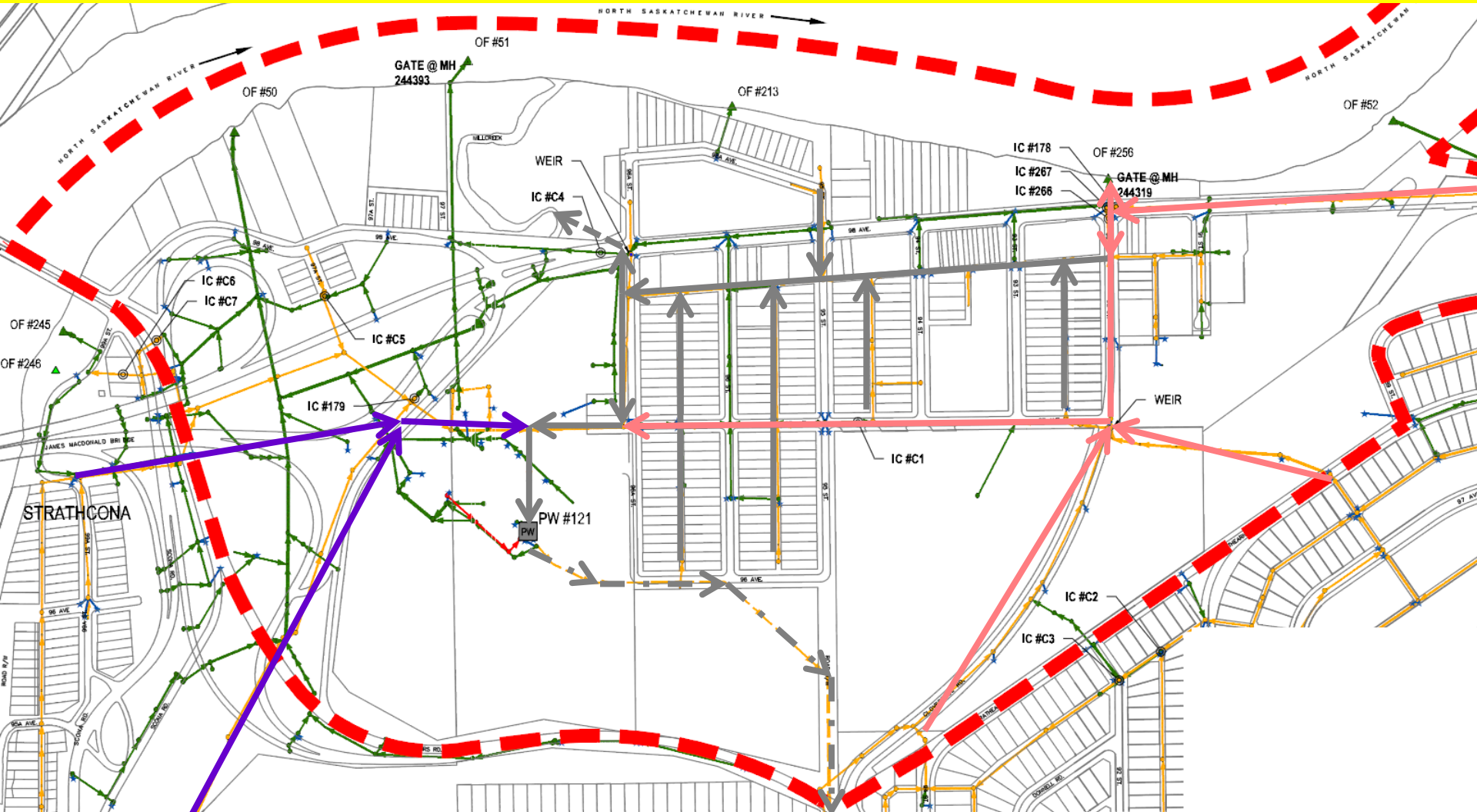
Existing Drainage and Sewer System

1960: All combined sewer flows diverted to new pump station. Sewer overflow to River maintained.



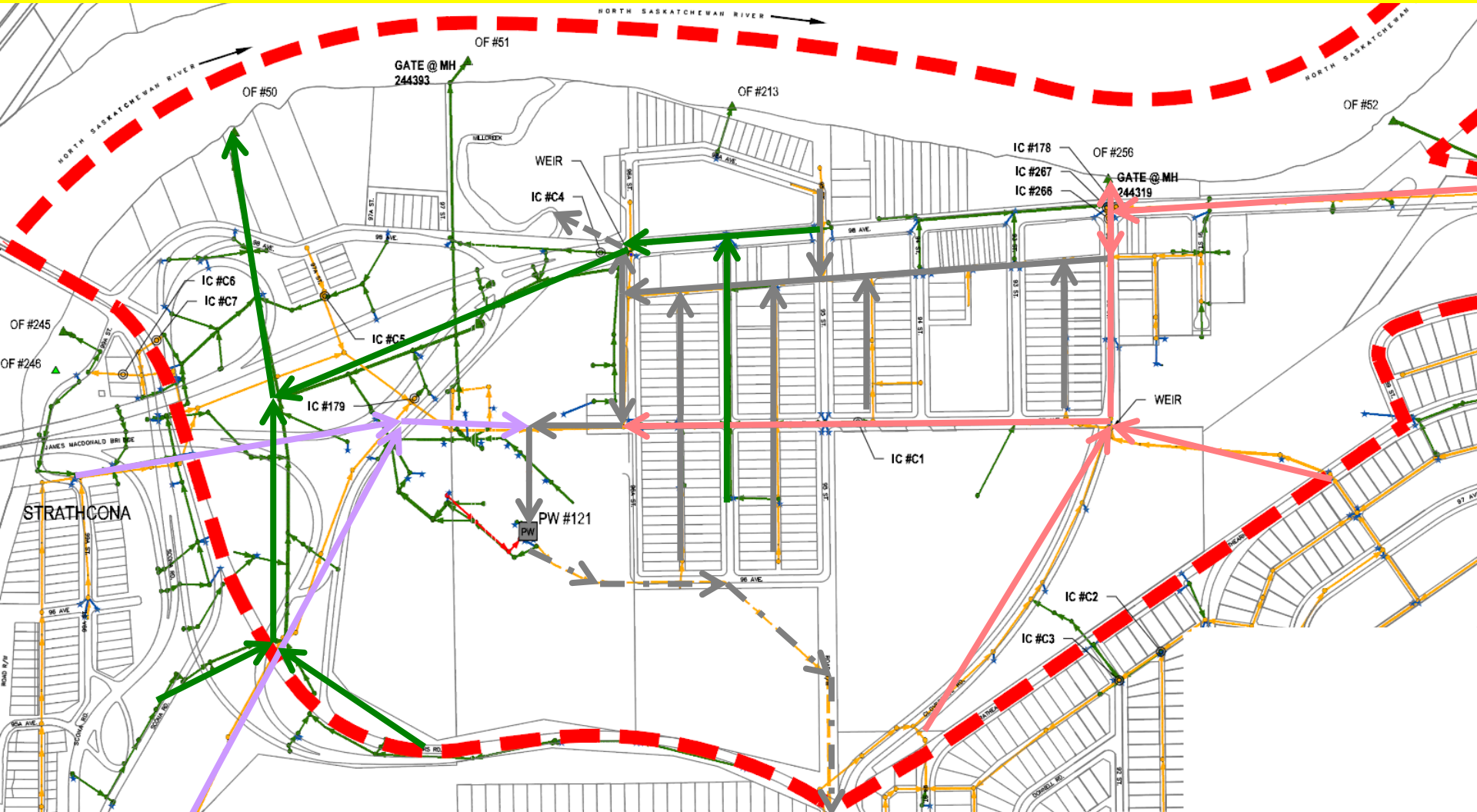
Existing Drainage and Sewer System

1970s: Combined sewer system from Strathcona diverted to Cloverdale pump station.



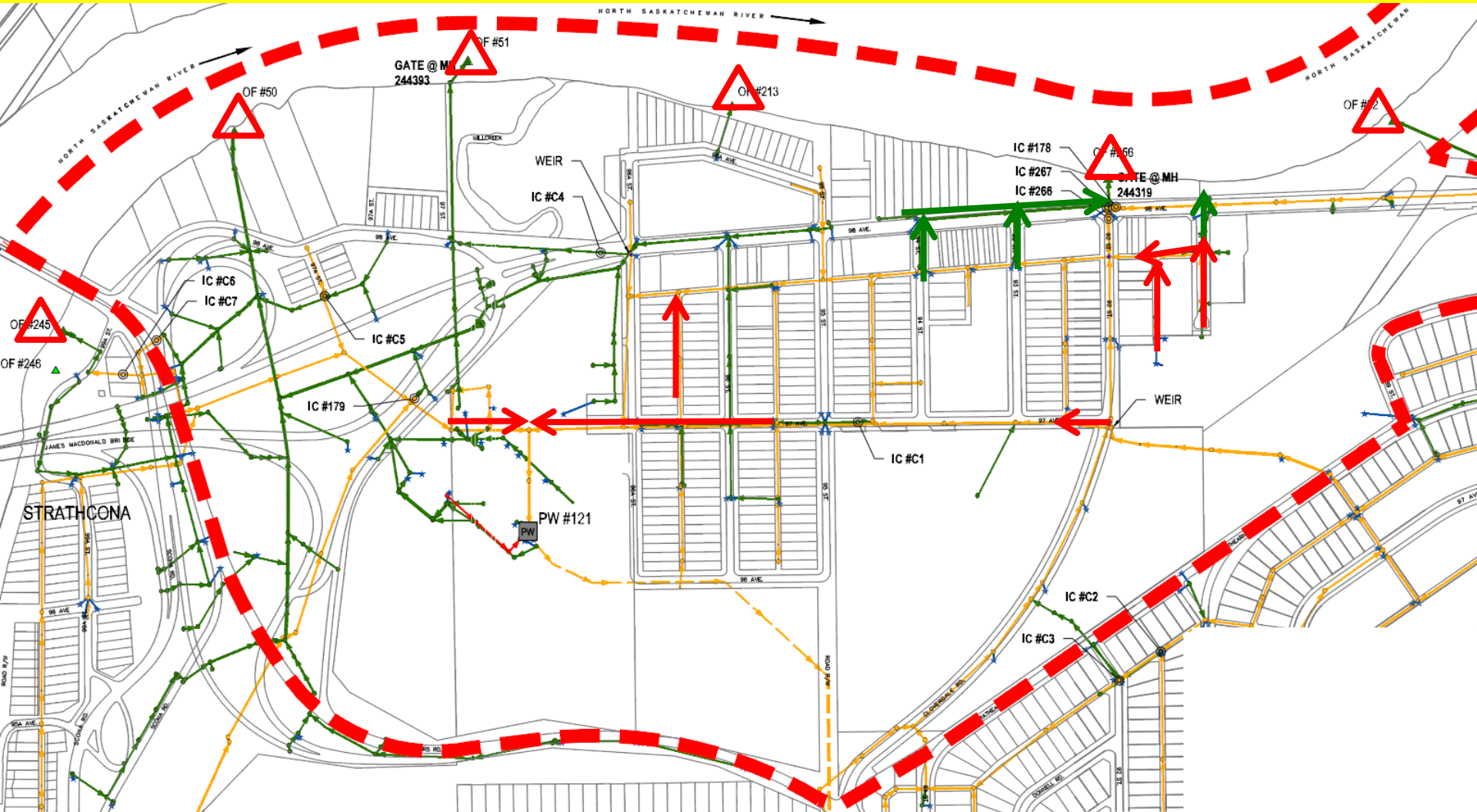
Existing Drainage and Sewer System

1970s: Storm sewer system constructed at interchange and west Cloverdale area.



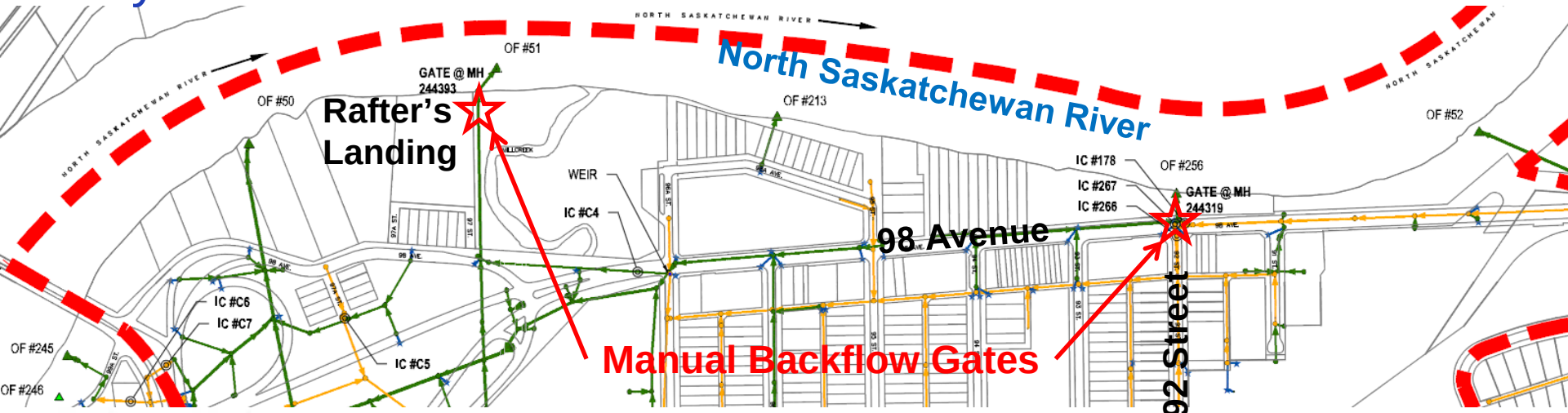
Existing Drainage and Sewer System

Since 1980s: Minor sewer works. Pump Station upgrades. Today, there are 6 outfalls in the area.



Manual Backflow Gates

- Manual gate at two outfalls in Cloverdale (installed 1990).
- The gates are normally open.
- The gates are manually closed when the River is high to prevent River water from flowing into the combined sewer system.



Manual Backflow Gates

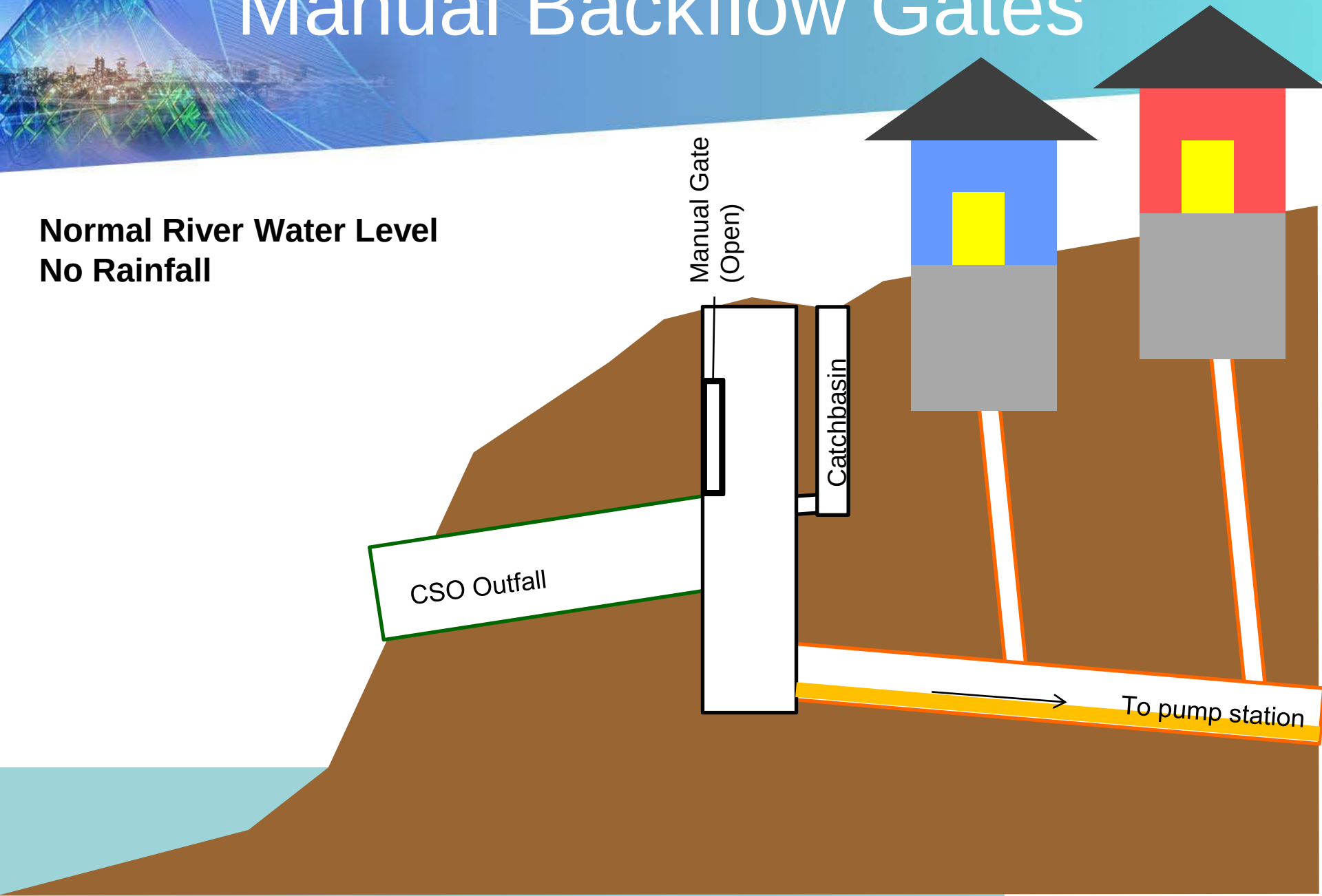
- City has established protocol to close gates.

Outfall No.	Gate Closure Elevation (Water Elevation at Low Level Bridge)
	Existing Protocol
51 (near Rafter's Landing)	616.30 m (1:4yr – River Water Level)
256 (north of 92 Street)	616.30 m (1:4yr – River Water Level)

- The gates were closed in June 2011 and 2013.
- The gates are normally closed for up to 5 days.

Manual Backflow Gates

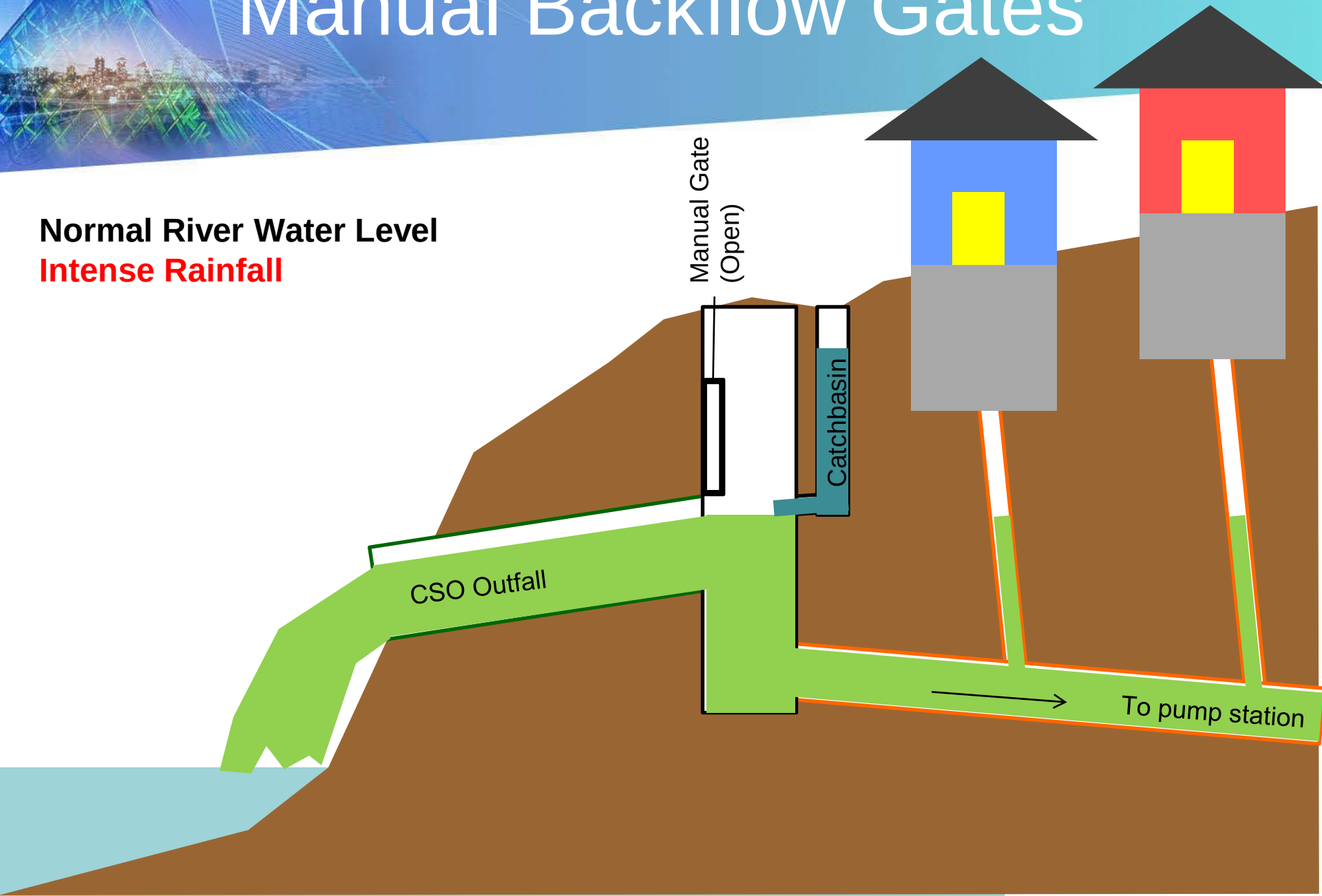
Normal River Water Level
No Rainfall



Manual Backflow Gates

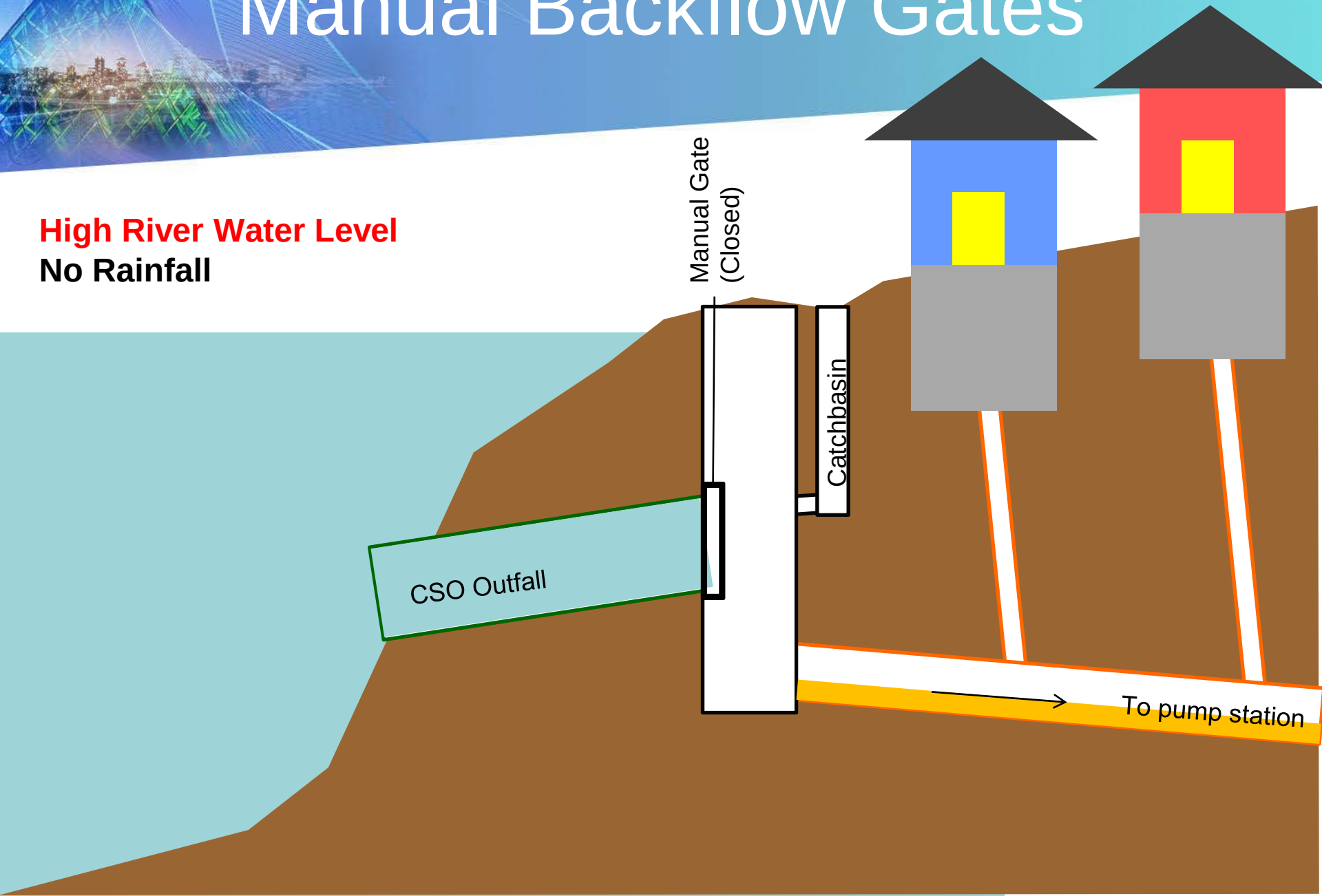
Normal River Water Level

Intense Rainfall



Manual Backflow Gates

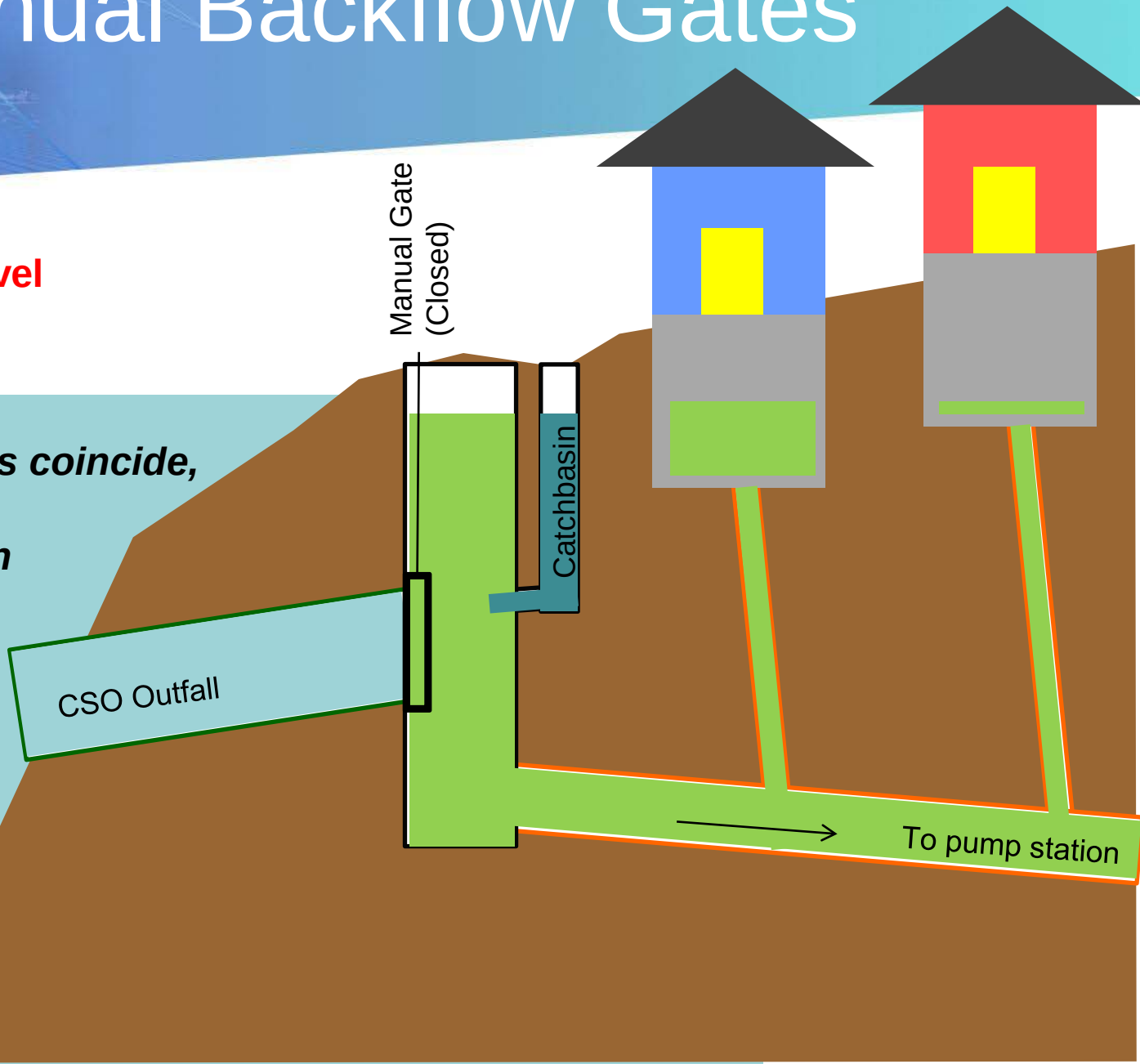
High River Water Level
No Rainfall



Manual Backflow Gates

High River Water Level
Intense Rainfall

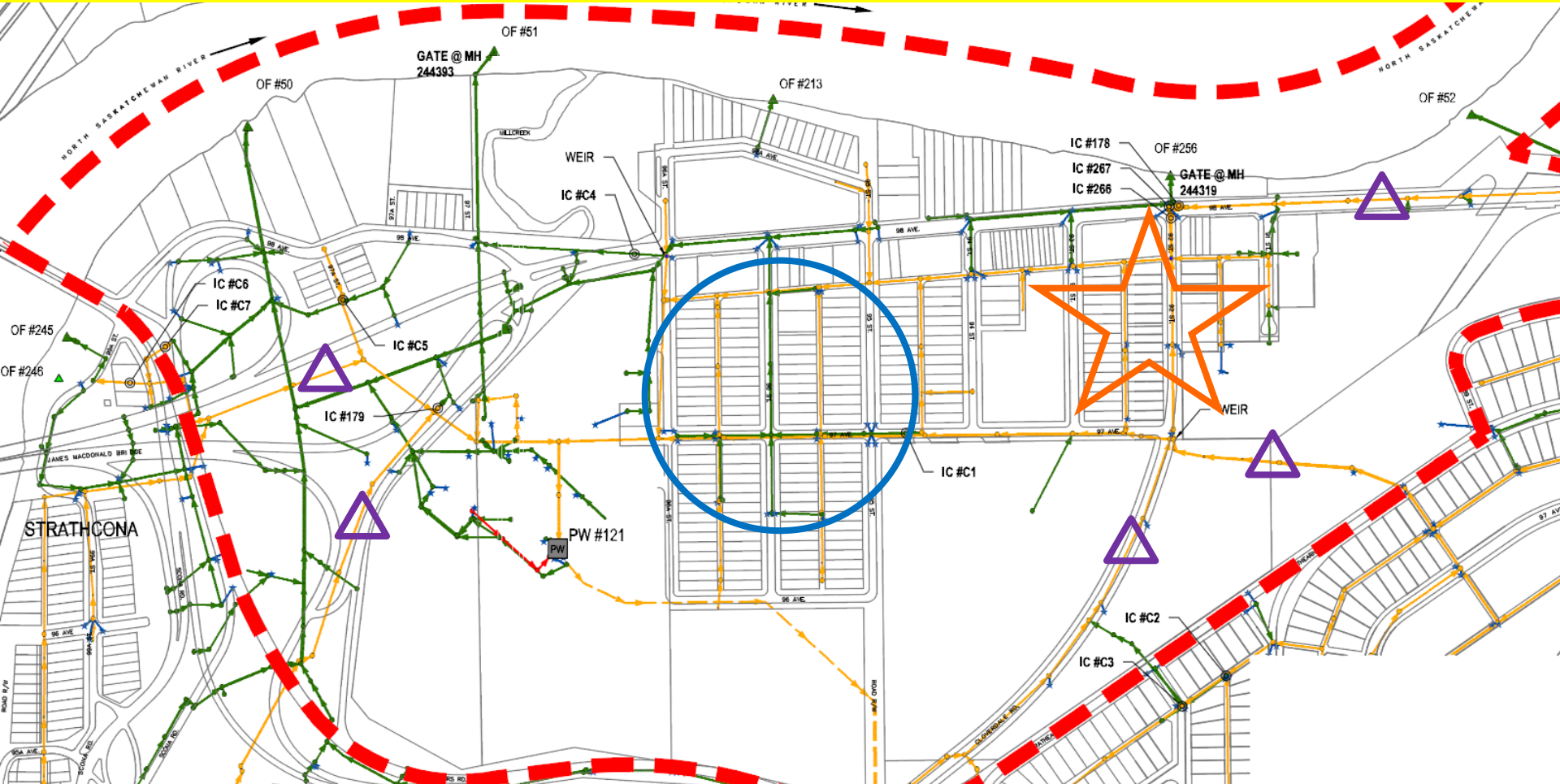
Rare that both events coincide, but it did happen on June 20, 2011 and on June 25, 2013



Main Drainage Issues

Intense Rainfall

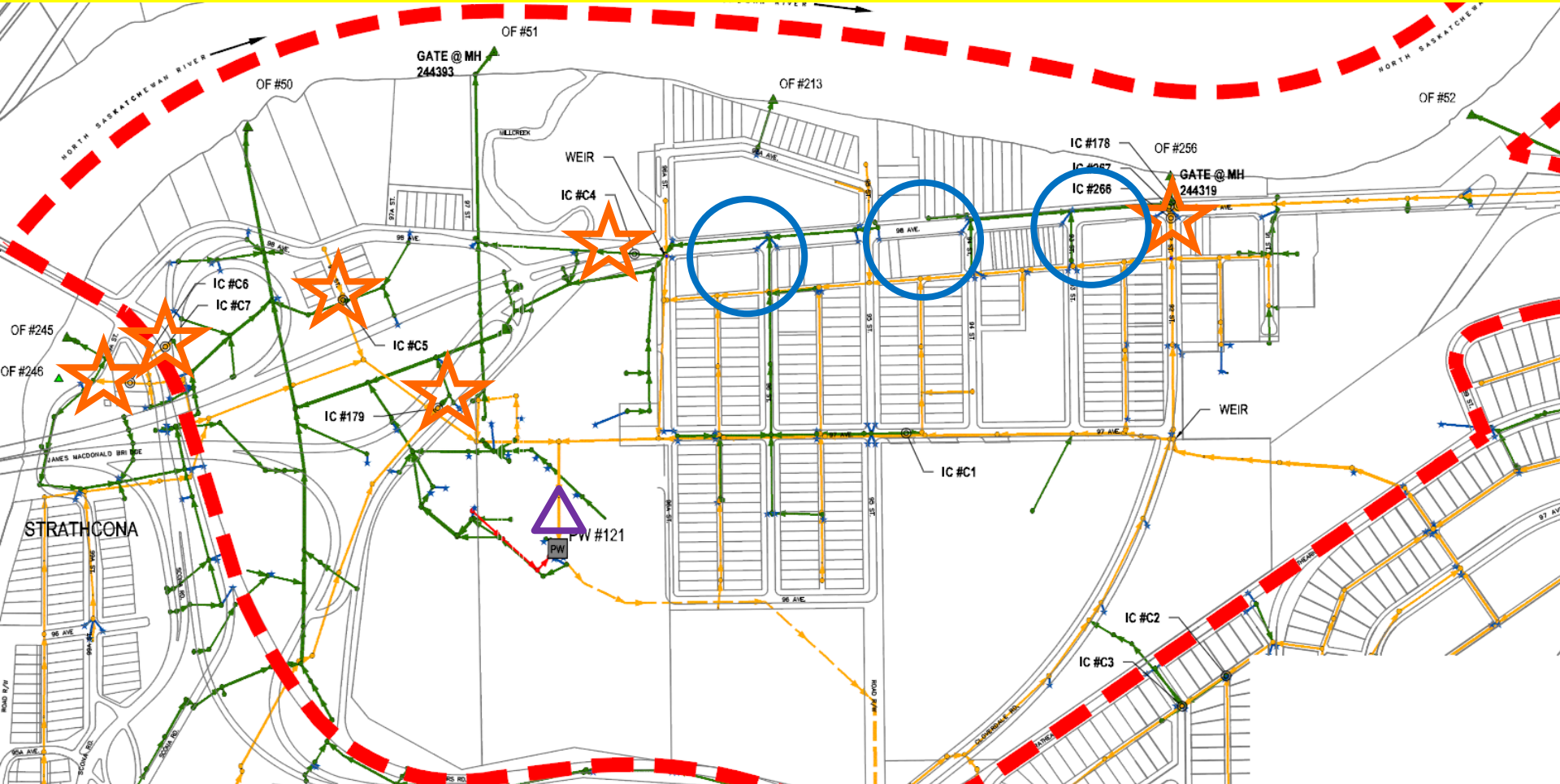
1- Too much storm runoff flowing into combined sewers (east of Cloverdale).....Risk of Sewer Backup (all)
2- Large flows from upstream neighbourhoods during rainfall events.....Risk of Sewer Backup (all)
3- Insufficient capacity in storm sewer system in West Cloverdale.....Risk of Surface Floods (southwest)



Main Drainage Issues

High River Water Level

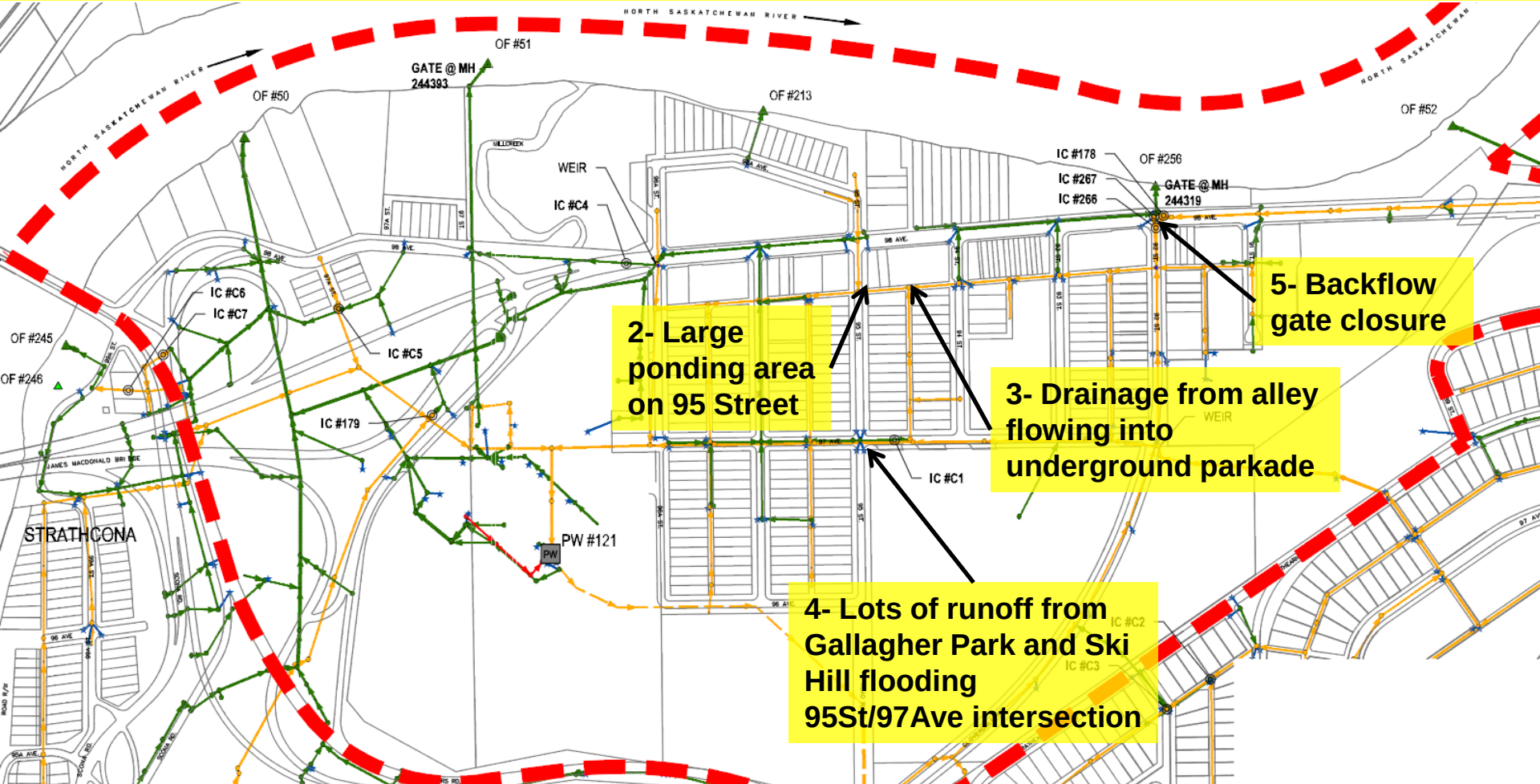
1- River backflows into combined sewers via outfalls and interconnections……Risk of Sewer Backup (all)
2- No dedicated CSO Outfall or emergency storage at Pump Station……Risk of Sewer Backup (all)
3- High River Water Levels flooding floodplain (>1:50 year)…… Risk of Surface Floods (floodplain)



Main Drainage Issues

Top 5 Concerns According to Residents

1- Sewer backups in entire neighbourhood



Improvement Concepts

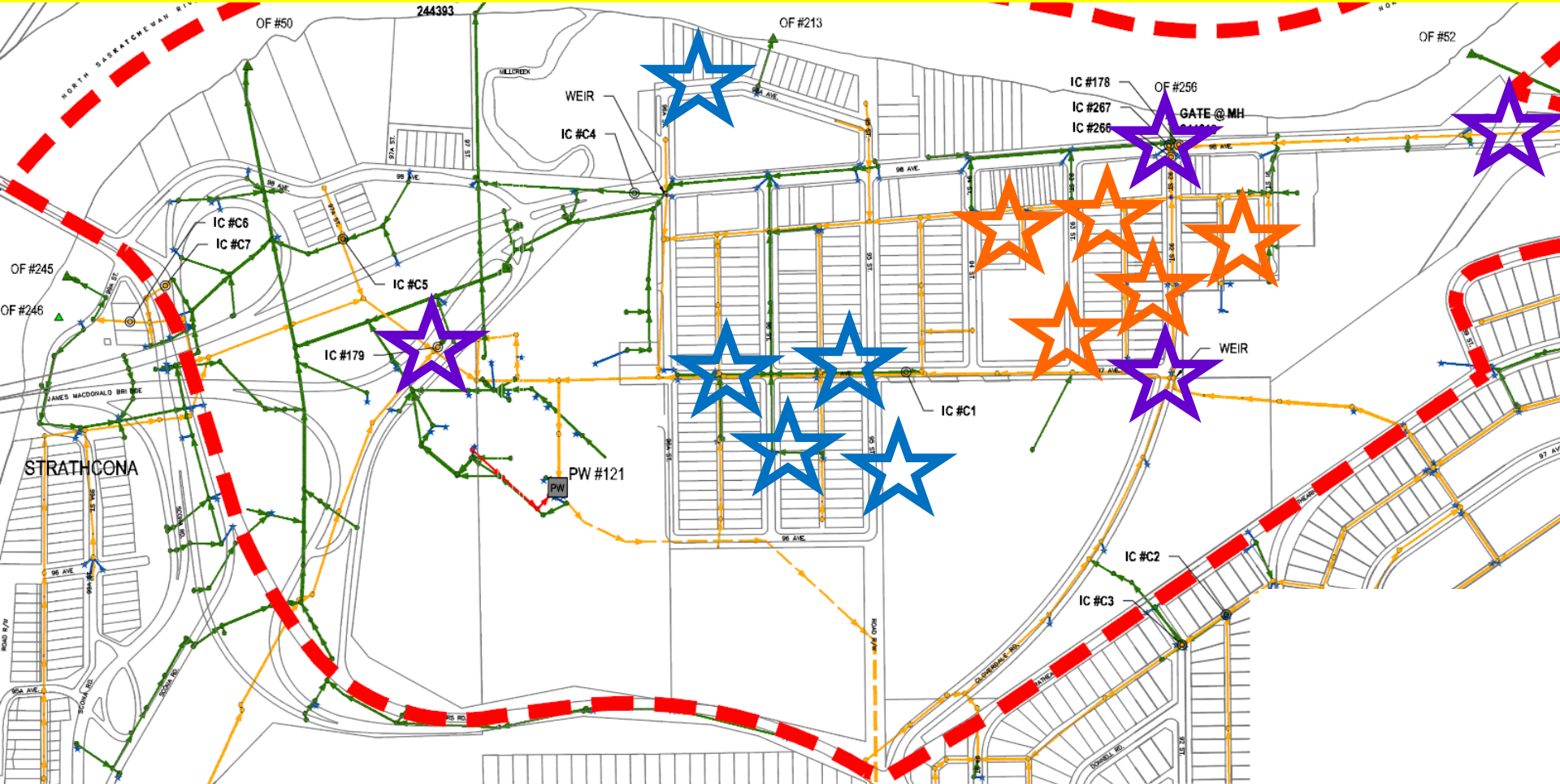
Main Objectives

- Increase the level of flood protection, and reduce flood risks throughout Cloverdale due to:
  - Intense Rainfall
  - High River Water Level
  - Both at the same time
- Provide up to 100 year level of flood protection

Improvement Concepts

Intense Rainfalls

1. Provide additional sewer separation (catchbasin reconnections, new storm sewers)
2. Control combined sewer flows from upstream neighbourhoods to the Pump Station.
3. Provide storm sewer improvements in West Cloverdale (new sewers, dry pond in Gallagher Park)

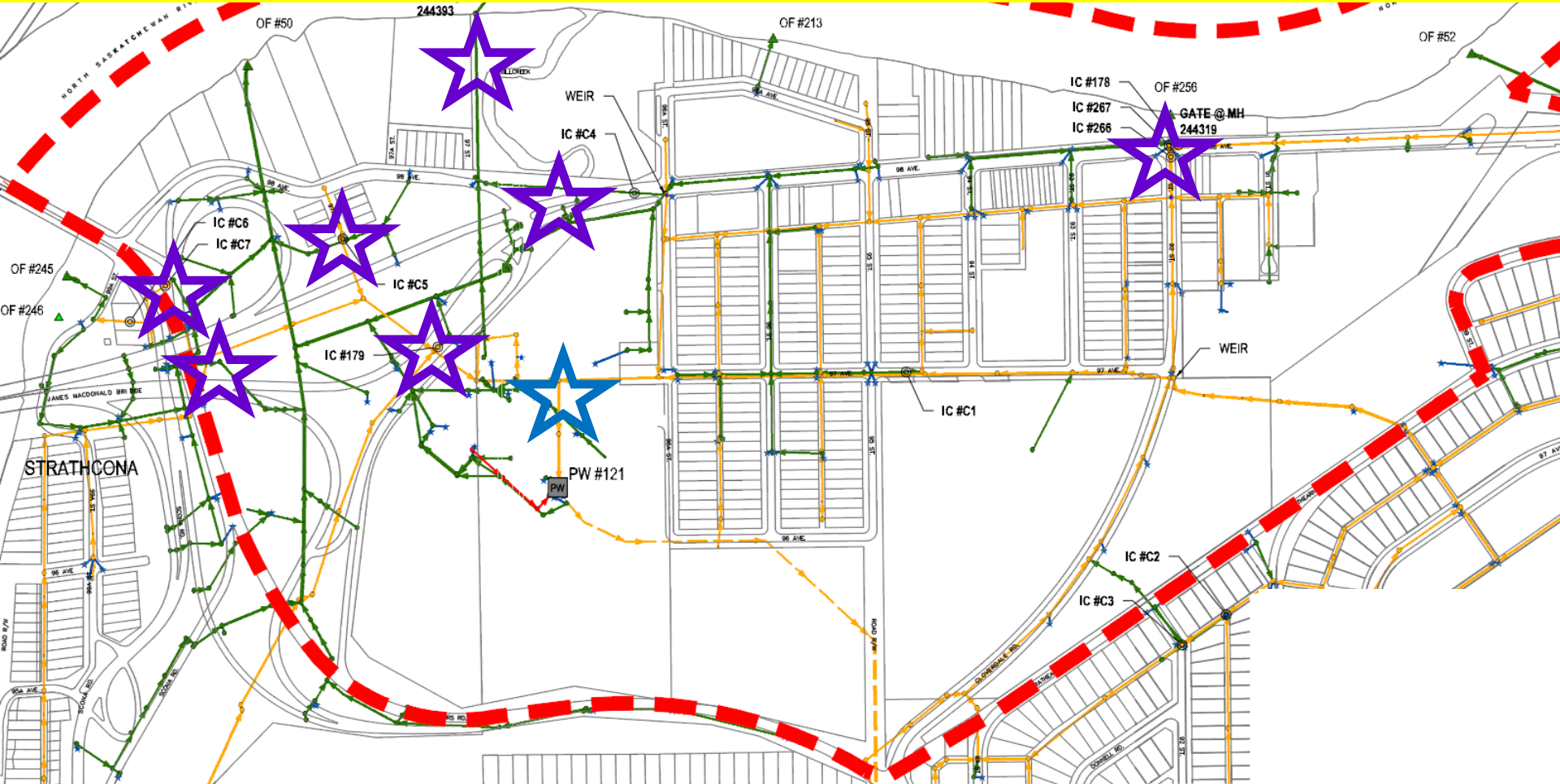


Improvement Concepts

High River Water Level – Sewer Backups

1. Prevent River water from entering the sewer system via the outfalls and the several interconnections (e.g. flap gates at outfalls/interconnections, remove interconnections, remove manual backflow gates)

2. Provide emergency storage and dedicated sewer overflow at the Cloverdale Pump Station.



Improvement Concepts
High River Water Level – Sewer Backups

Manual Backflow Gate

- Conducted a thorough review of gate closure elevations.

Outfall No.	Gate Closure Elevation	
	Existing Protocol	Proposed Protocol
51 (near Rafter's Landing)	616.30 m (1:4yr)	616.42 m (1:4yr) ← Safety of City staff as gate is located near River
256 (north of 92 Street)	616.30 m (1:4yr)	618.24 m (1:12yr) ← Higher water level may cause sewer backups

- The City is in the process of updating the Protocol according to these recommendations.

Improvement Concepts
High River Water Level – Surface Floods

- Current Strategy:
  - Flood proofing of homes – by homeowner.
  - City installs sand bags at most vulnerable properties.

- Alternative Solutions:
  - Permanent Flood Barrier (i.e. berm, wall) along River.
  - Temporary Flood Barrier installed days before floods and removed after flood.
    - Flood barrier: Up to 2.2m high, 850m in length.

Improvement Concepts
High River Water Level – Surface Floods

- Alberta Government conducting Flood Study on North Saskatchewan River watershed.
  - Expected completion in 2015.

- Work with the Alberta Government to identify next steps and develop a flood mitigation plan.

Improvement Concepts
Enhanced Communications

- Provide early warning system for the residents when:
  - High River water levels that may cause flooding is forecasted.
  - Backflow gates may be closed, increasing sewer backup flood risks especially when it rains.

- Implement Communication Plan:
  - Email List
  - Community League
  - Street Signage
  - Social Media

Until improvements are in place, what can residents do to prevent flooding?

Physical Improvements:

1. Install **backflow valve on the sanitary service line** to reduce the risk of sewer backups in basement.
   a) Drainage Services has a Backflow Valve Subsidy Program.
2. Ensure **roof leaders** discharge to ground surface.
3. Ensure **lot grading** is sloped away from your home.
4. Install **weeping tiles**, connected to a sump and sump pump.
5. Ensure **sump pump** discharges on ground or into storm sewer.

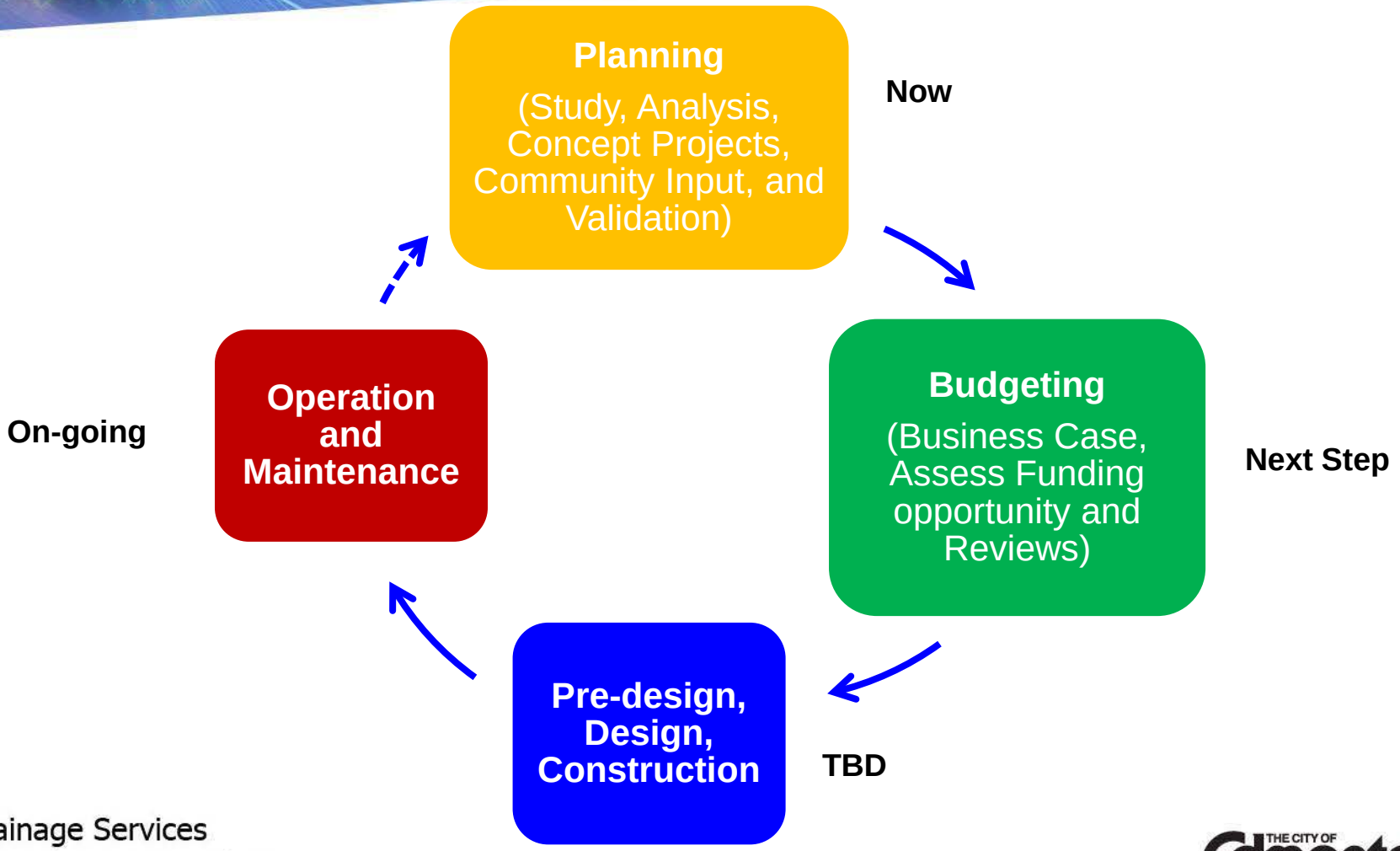
City of Edmonton's Flood Prevention Home Check-Up
*** Free Inspection and Recommendations by Drainage Specialist ***

Until improvements are in place, what can residents do to prevent flooding?

Prior to High River Water Level / Intense Rainfall:

1. Move valuables to high ground (not basement).
2. Ensure street catchbasins are free of debris.
3. Ensure eavestroughs are clean.
4. Park vehicles at safe location:
   a) Not in depressions on the streets.
   b) Not in underground garage.
   c) Not in floodplain.
5. Minimize water usage.

Next Steps


Planning
(Study, Analysis, Concept Projects, Community Input, and Validation)
Now
Budgeting
(Business Case, Assess Funding opportunity and Reviews)
Next Step
Pre-design, Design, Construction
TBD
Operation and Maintenance
On-going

Next Steps

1. Implement immediate improvements:
   a. Update backflow gate operation protocols.
   b. Monitor water level at manholes where gates are located.
   c. Improve communication during a potential flooding threat from high river levels.
2. Take input, validate and prioritize recommended improvements.
3. Look at how high priority projects can be advanced as quickly as possible.

Next Steps

4. Coordinate planning and work with:
   a. Drainage Services programs including Neighbourhood Renewal Program, Opportunistic Sewer Separation, Flood Mitigation Program and Sewer Upgrading Strategy
   b. Other City departments like Transportation
   c. Other organizations like Community League, Edmonton Ski Club.
5. Follow up with provincial North Saskatchewan River Basin Study.
6. Support homeowners via Flood Prevention Home Check-up and subsidies.

Questions
Comments