
YYC
CALGARY AIRPORT AUTHORITY
L'ADMINISTRATION AÉROPORTUAIRE DE CALGARY
GREATER MONCTON ROMÉO LEBLANC INTERNATIONAL AIRPORT
AÉROPORT INTERNATIONAL ROMÉO-LEBLANC DU GRAND MONCTON
LaGuardia GATEWAY PARTNERS
Stantec
Deicing Facility Solutions
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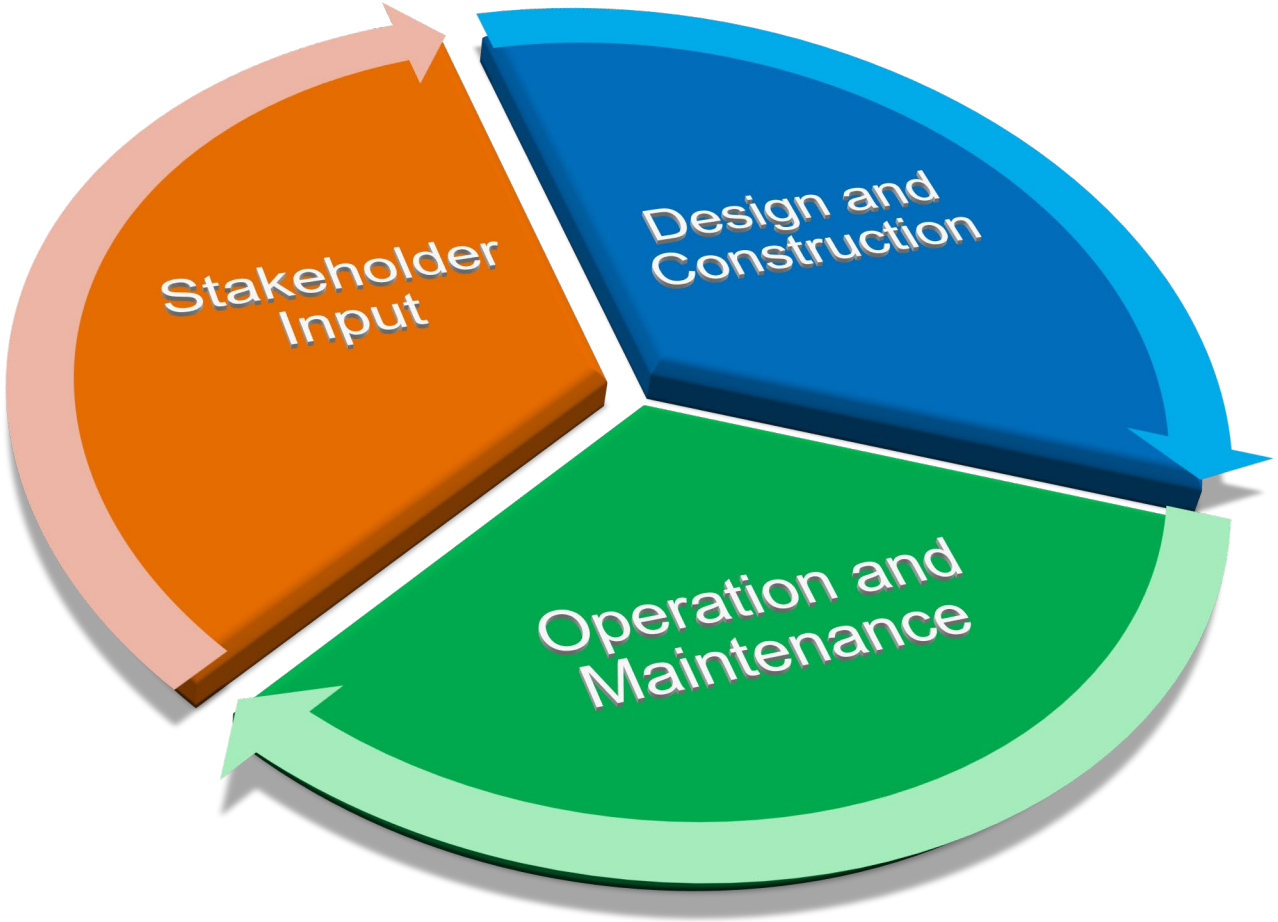
September 14, 2022
Stantec
YYJ VICTORIA INTERNATIONAL AIRPORT
43
YYC

Designing a Deicing Facility



Stakeholder Input

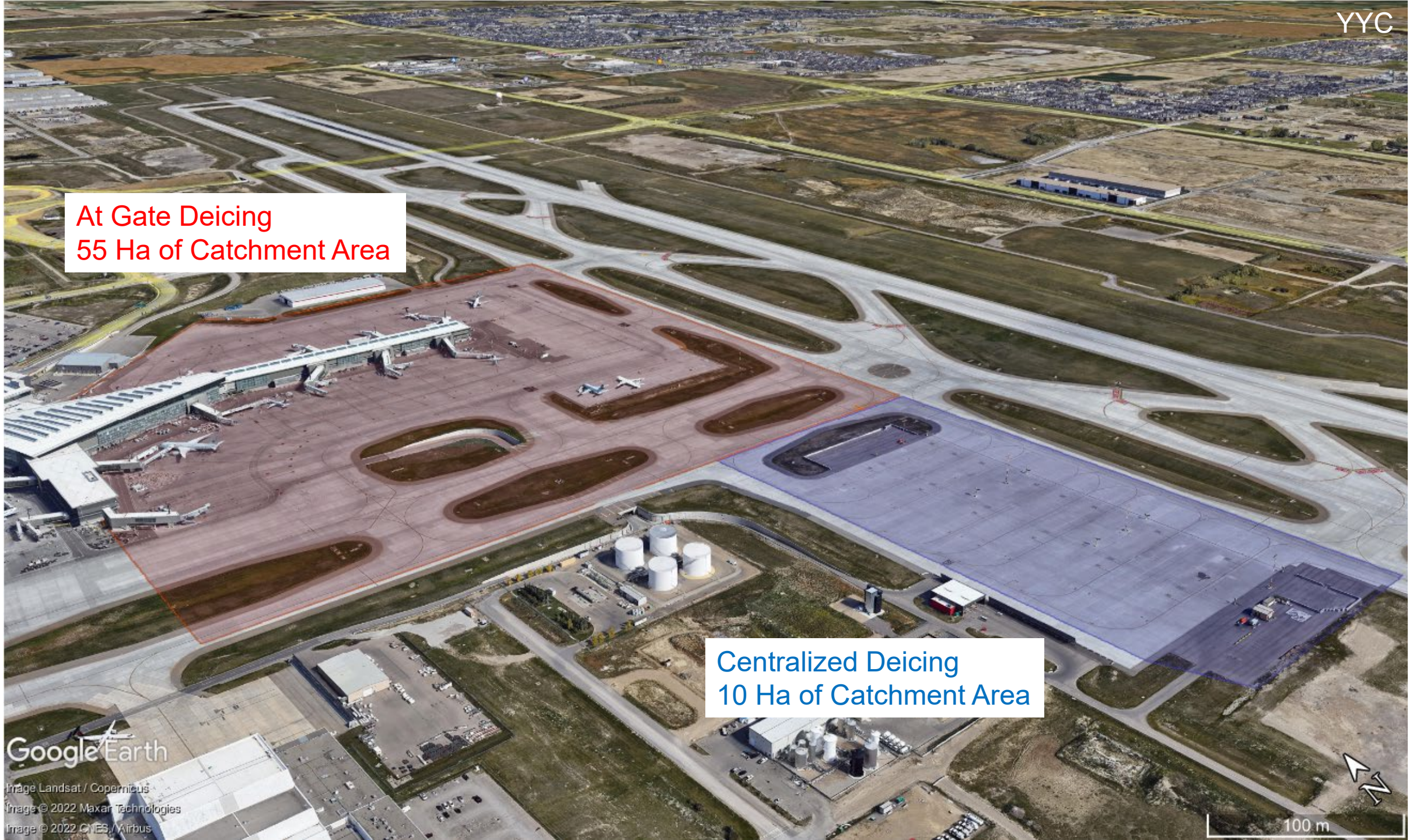
- Goal and Objectives
- Historical ADF Usage and Precipitation Data
- Municipalities Constraints

Design and Construction

- Aviation Design
- System Integration and Control Design
- Wastewater Treatment Design
- Constructability and Material Lead Time

Operation and Maintenance

- Single or Multiple Operators
- Standard Operation Procedure
- Training


YYC
At Gate Deicing
55 Ha of Catchment Area
Centralized Deicing
10 Ha of Catchment Area
Google Earth
Image Landsat / Copernicus
Image © 2022 Maxar Technologies
Image © 2022 CNES / Airbus
N
100 m

Case Study #1 – YYC East Deicing Apron

Challenges

- Existing NPS-V close to the EDA site
- Existing onsite Recycling and Treatment Capability
- Deep construction
- No discharge to City of Calgary's wastewater treatment plant

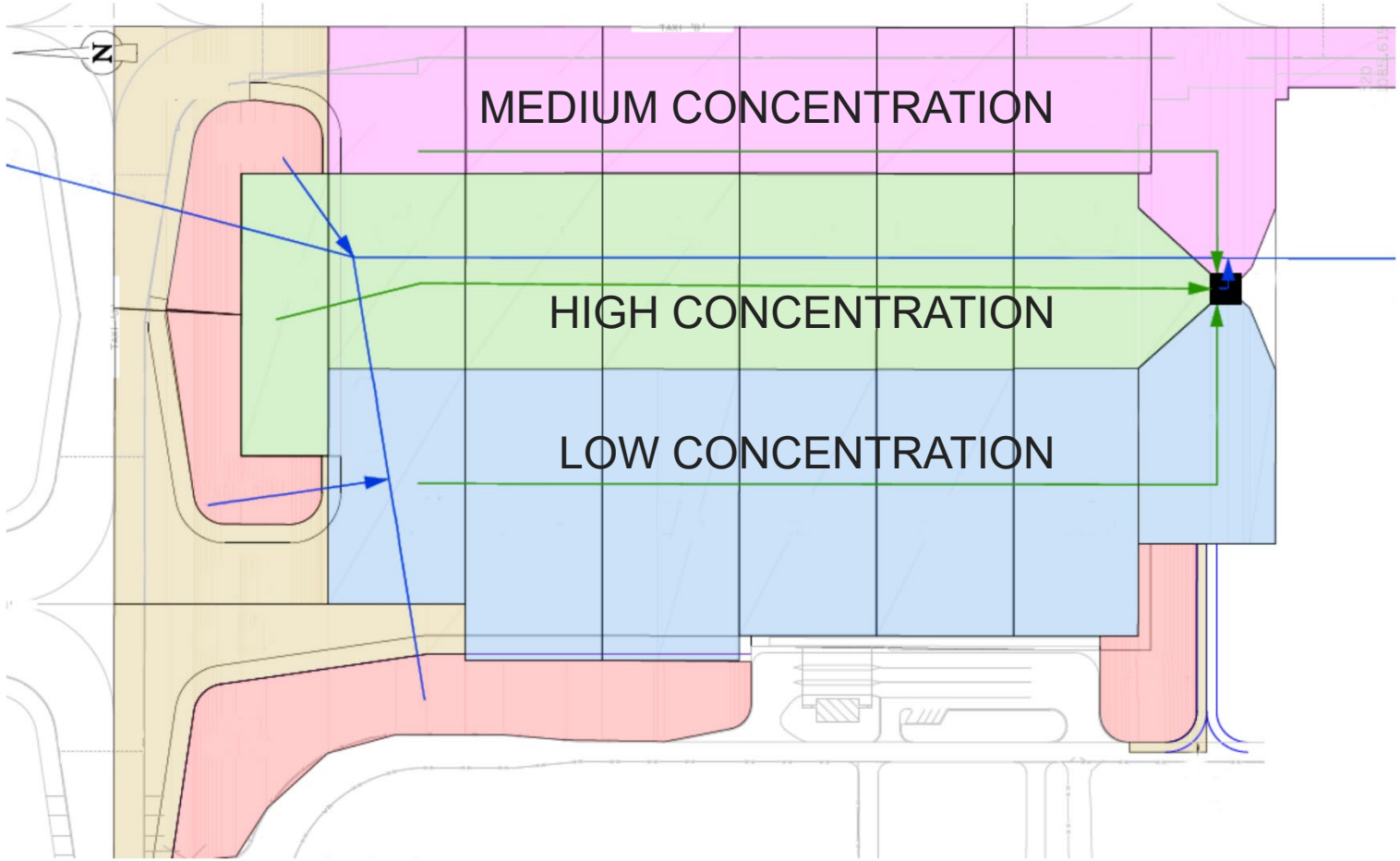
Stakeholder Input

- Single hour, 1:2 year Storm event
- Reviewed designs in YYZ and DEN

Case Study #1 – YYC East Deicing Apron

Design and Construction

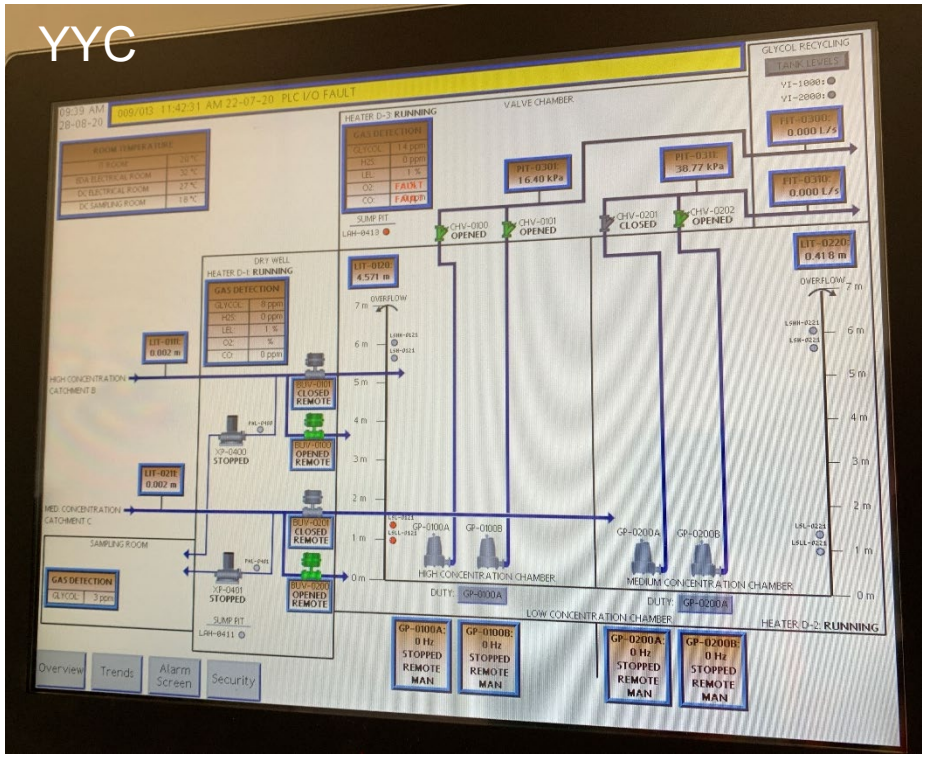
- 100,000m^2 of apron
- 1,500m of upstream underground utilities
- Refinement of catchment areas within the EDA

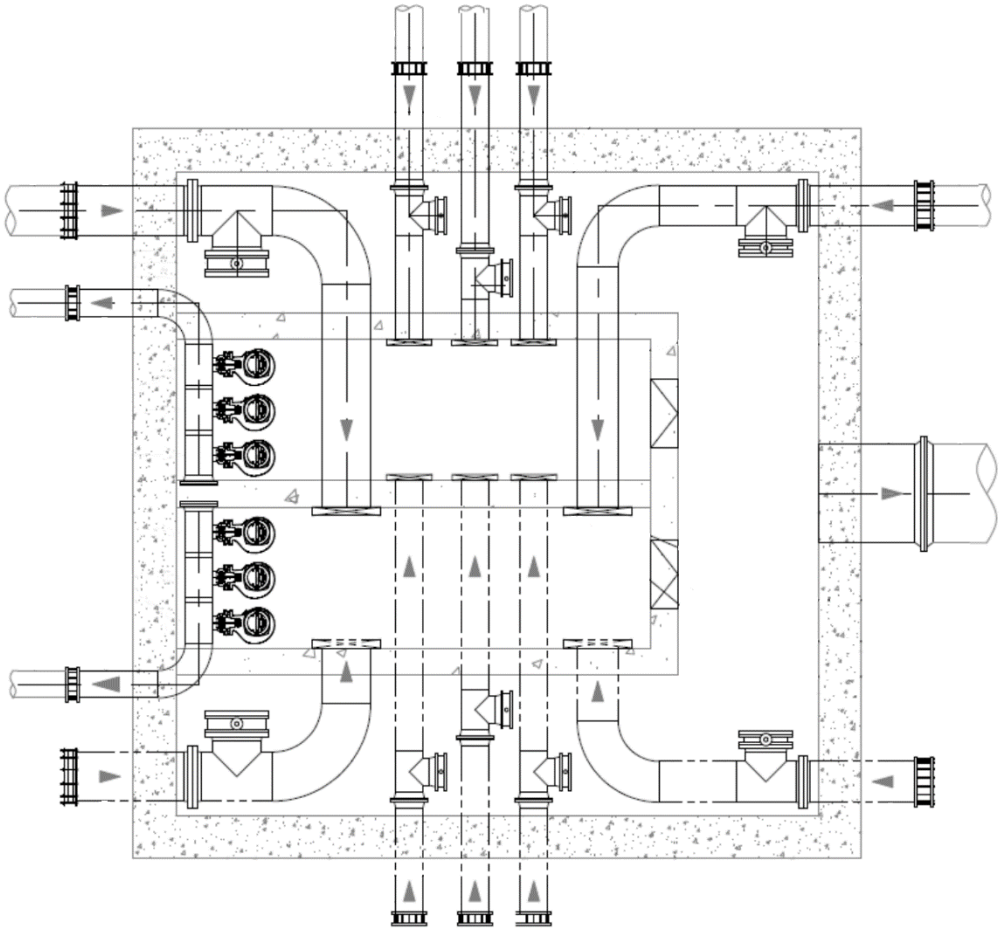


Case Study #1 – YYC East Deicing Apron

Design and Construction

- Diversion Chamber capable of future expansion
- 10m x 10m x 10m in dimension





Case Study #1 – YYC East Deicing Apron

Design and Construction

- 6 months schedule of construction

Case Study #1 – YYC East Deicing Apron

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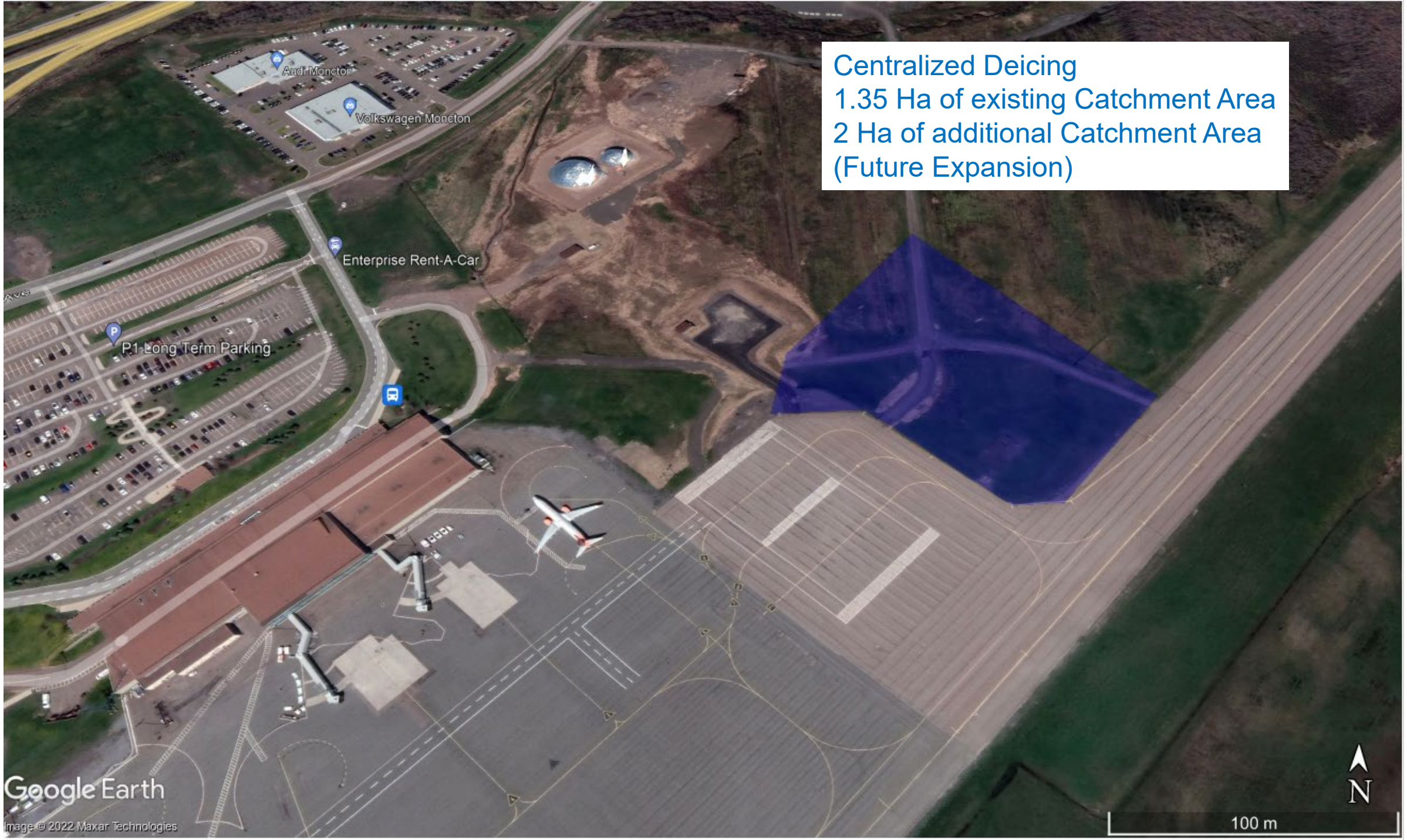
YYC


YYC

Case Study #1 – YYC East Deicing Apron


Centralized Deicing
1.35 Ha of existing Catchment Area
2 Ha of additional Catchment Area
(Future Expansion)
Audi Moncton
Volkswagen Moncton
Enterprise Rent-A-Car
P1 Long Term Parking
Google Earth
Image © 2022 Maxar Technologies
N
100 m

Case Study #2 – YQM Deicing Facility

Challenges

- Cannot discharge to sanitary plant uncontrolled
- Very low BOD allowable discharge

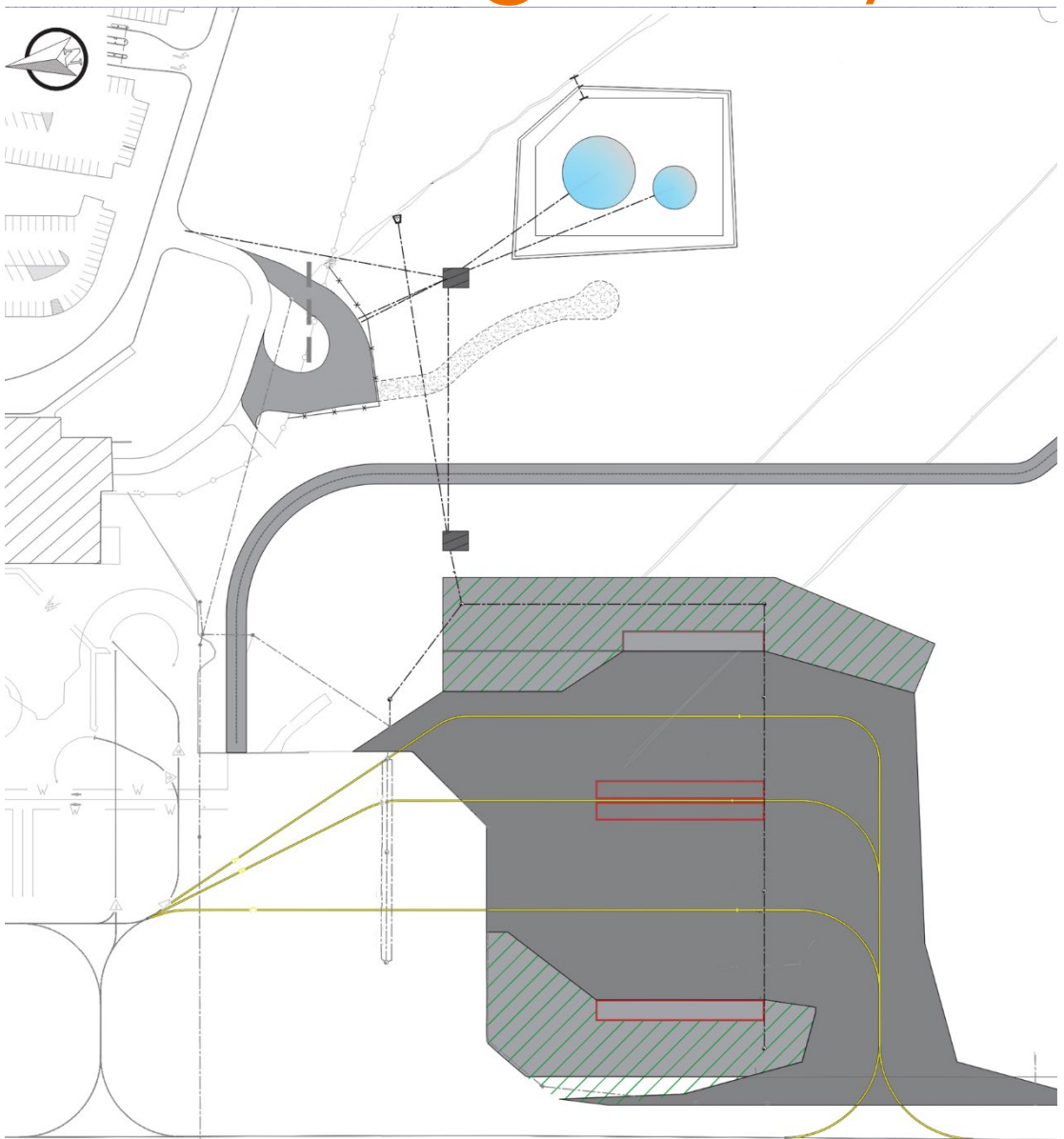
Stakeholder Input

- Discharge to Sanitary solution
- Partnership between YQM, TransAqua, and City of Dieppe
- The Sanitary discharge permit limits at 2500lb of BOD per day
- AGN V aircraft, and a composite pad of AGN III/IV Aircrafts

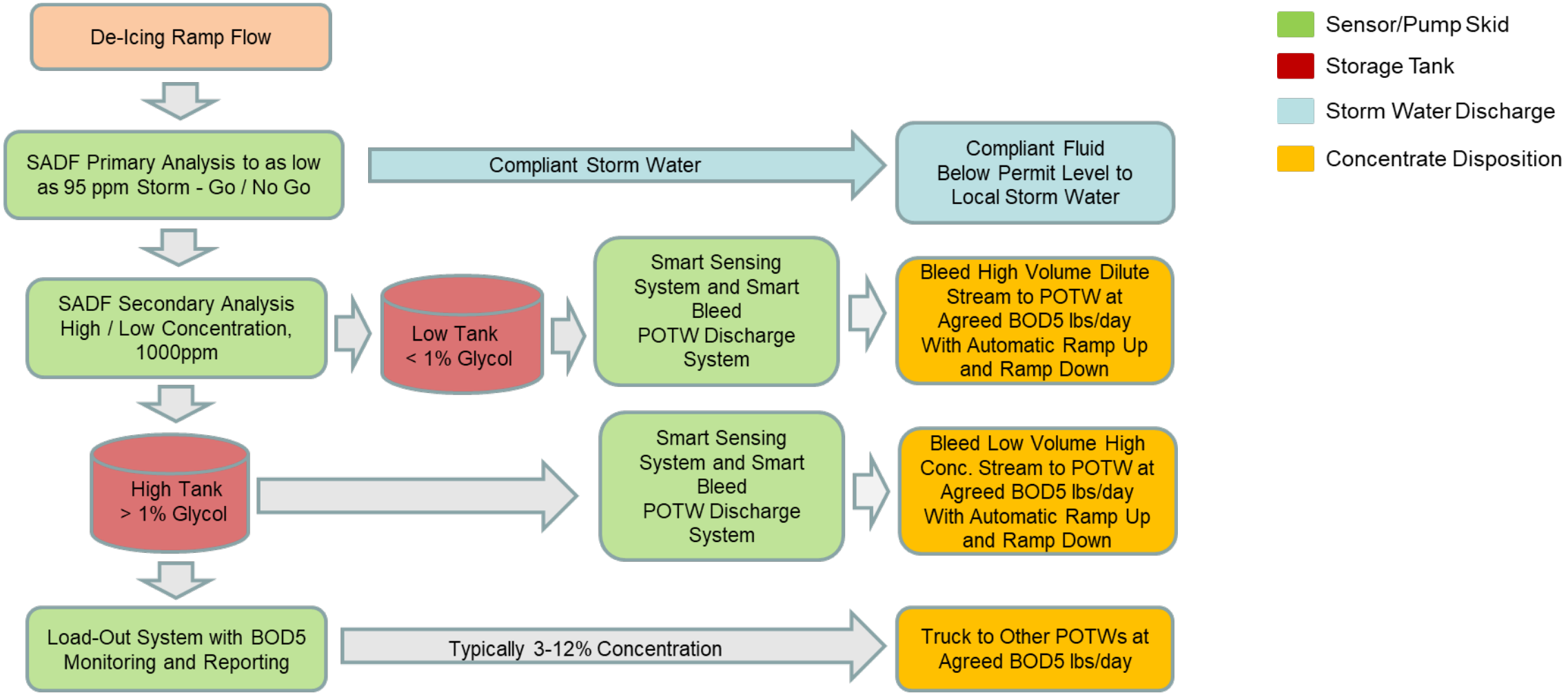
Case Study #2 – YQM Deicing Facility

Design and Construction

- 20,000m^2 of apron
- 2.8 Million L of Low Concentration Tank
- 950,000 L of High Concentration Tank



Case Study #2 – YQM Deicing Facility



Case Study #2 – YQM Deicing Facility

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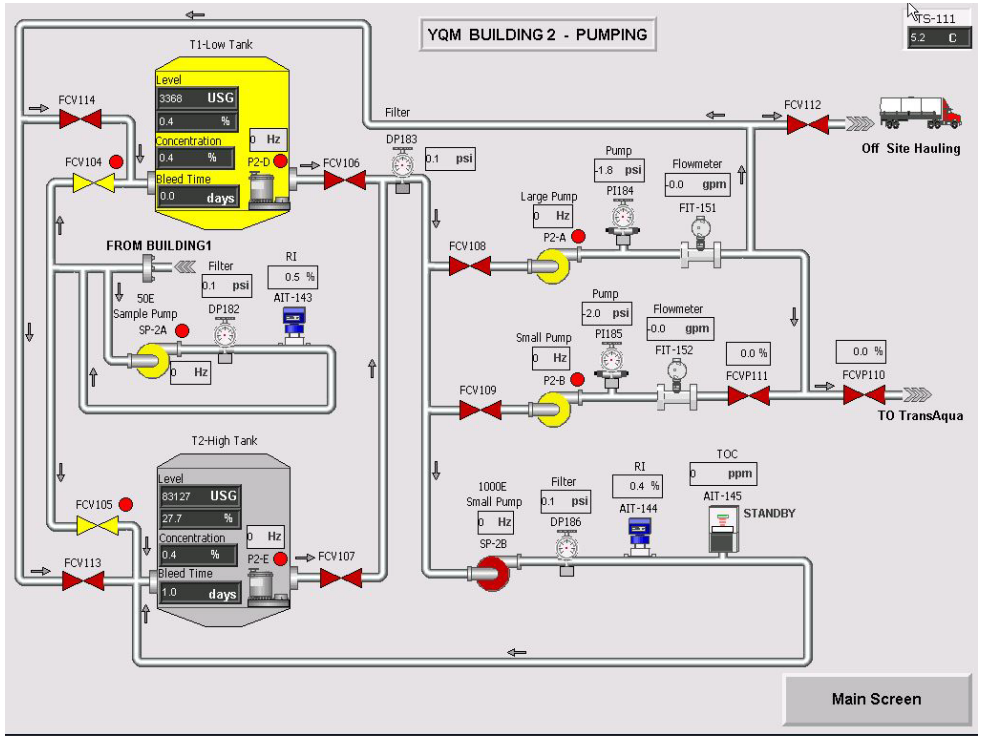



Centralized Deicing
1.5 Ha of Catchment Area
Solution requires both
airside and landside use
Central Terminal Dr
Google Earth
50 m

Case Study #3 – LGA Terminal B Deicing

Challenges

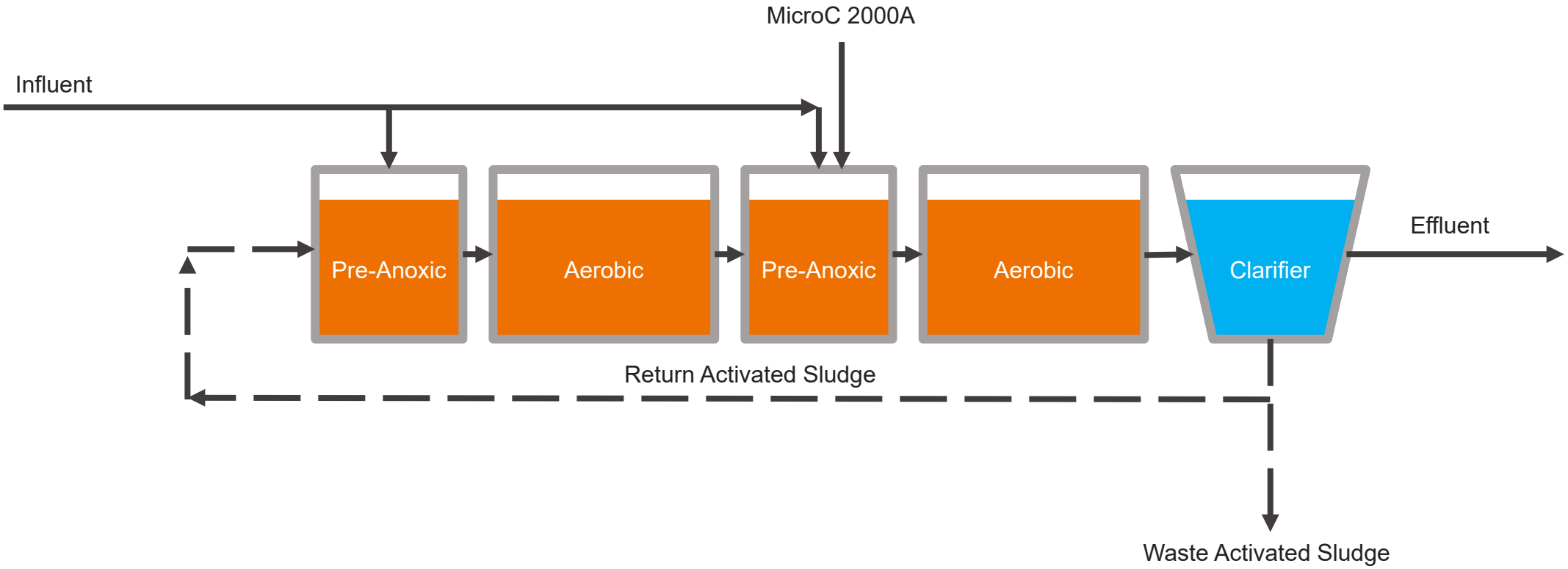
- Congested site, servicing the newly constructed Terminal B
- Very limited space on airside
- Multiple lease holders

Stakeholder Input

- AGN III Aircraft operation, with special OP of AGN IV
- Storage tank to be on landside
- Discharge to Sanitary solution through an existing Lift Station
- 3 Years of ADF usage Data was available
- Propylene Glycol is used


Terminal B Airside Construction
Port Authority Lease Hold
25KV Line
48” Storm Trunk
Storage Tank
Water & Comm
Pump Station

Case Study #3 – LGA Terminal B Deicing



Case Study #3 – LGA Terminal B Deicing

Design and Construction

- Opportunity to discharge to Bowery Bay WRRF
- No discharge during storm events
- 9000lb of daily BOD allowed
- FAA and EPA requirement for Spent ADF capture is set at 60% capture of available ADF

Case Study #3 – LGA Terminal B Deicing

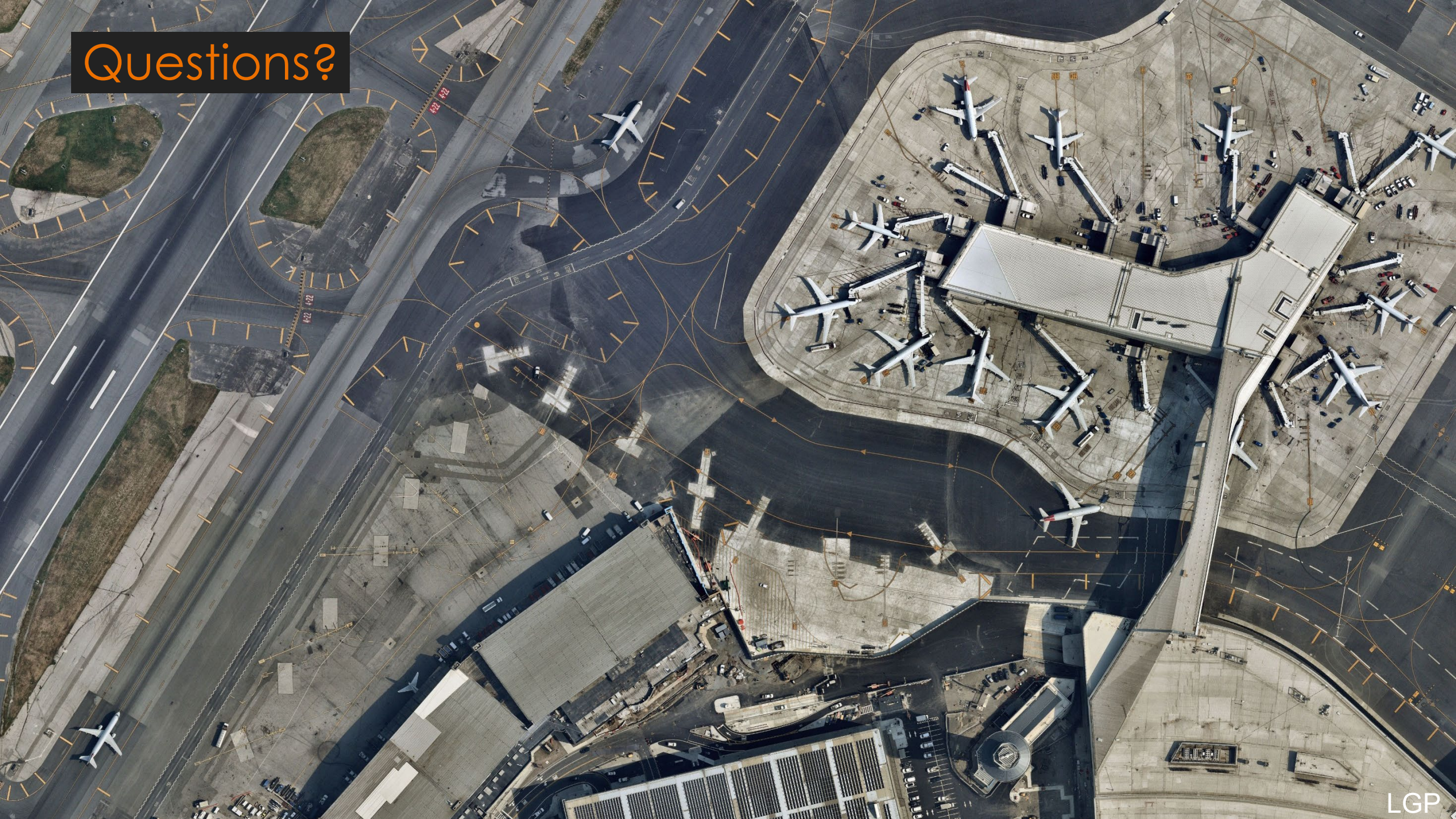
Case Study #3 – LGA Terminal B Deicing

Case Study #3 – LGA Terminal B Deicing

Summary

Case Study	YYC	YQM	LGA
ADF Type	Ethylene Glycol	Ethylene Glycol	Propylene Glycol
Inflow Calculation	IDF curve and storm events, historical ADF usage	8 years of precipitation data and ADF usage	3 years of precipitation data and ADF usage
Apron Size	10 hectare	3.5 hectare	1.5 hectare
Disposal Solution	Onsite recycling and treatment, stormwater	Sanitary and stormwater discharge	Sanitary and stormwater discharge
Storage Tank Sizes	2 Million L	3.8 Million L	1.2 Million L
Unique Challenges	Deep drainage due to large catchment area, required large and complex diversion device	Very low BOD limit for sanitary discharge, needed to control bleed rate to the plant	Congested site, lots of existing utilities, allocating the necessary infrastructure within the available land
Unique Design Solution	A mirrorable design for future expansion	High accuracy and automated diversion and discharge	Discharging sanitary to the wastewater treatment plant to help with its operation

Questions?



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