Municipality of West Elgin

WEST ELGIN LANDFILL SITE UPDATE

April 8, 2021

Remote Meeting

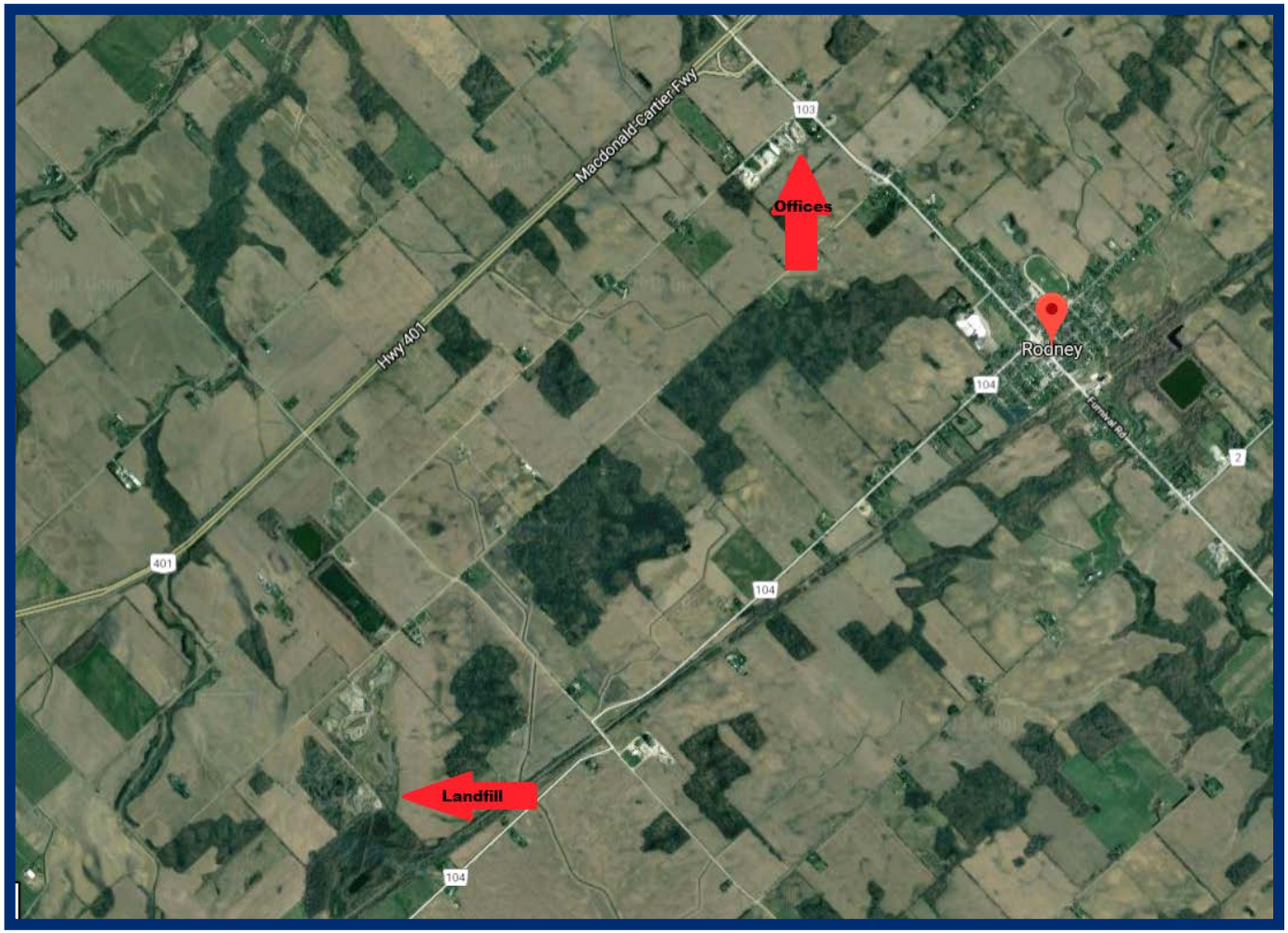
www.blumetric.ca

Presentation Outline

1. 2020 Environmental Monitoring Program & Design and Operations Overview
2. 2021 Activities
3. Future Considerations

Topic 1:
2020 Environmental Monitoring Program and Design and Operations

West Elgin Landfill Location



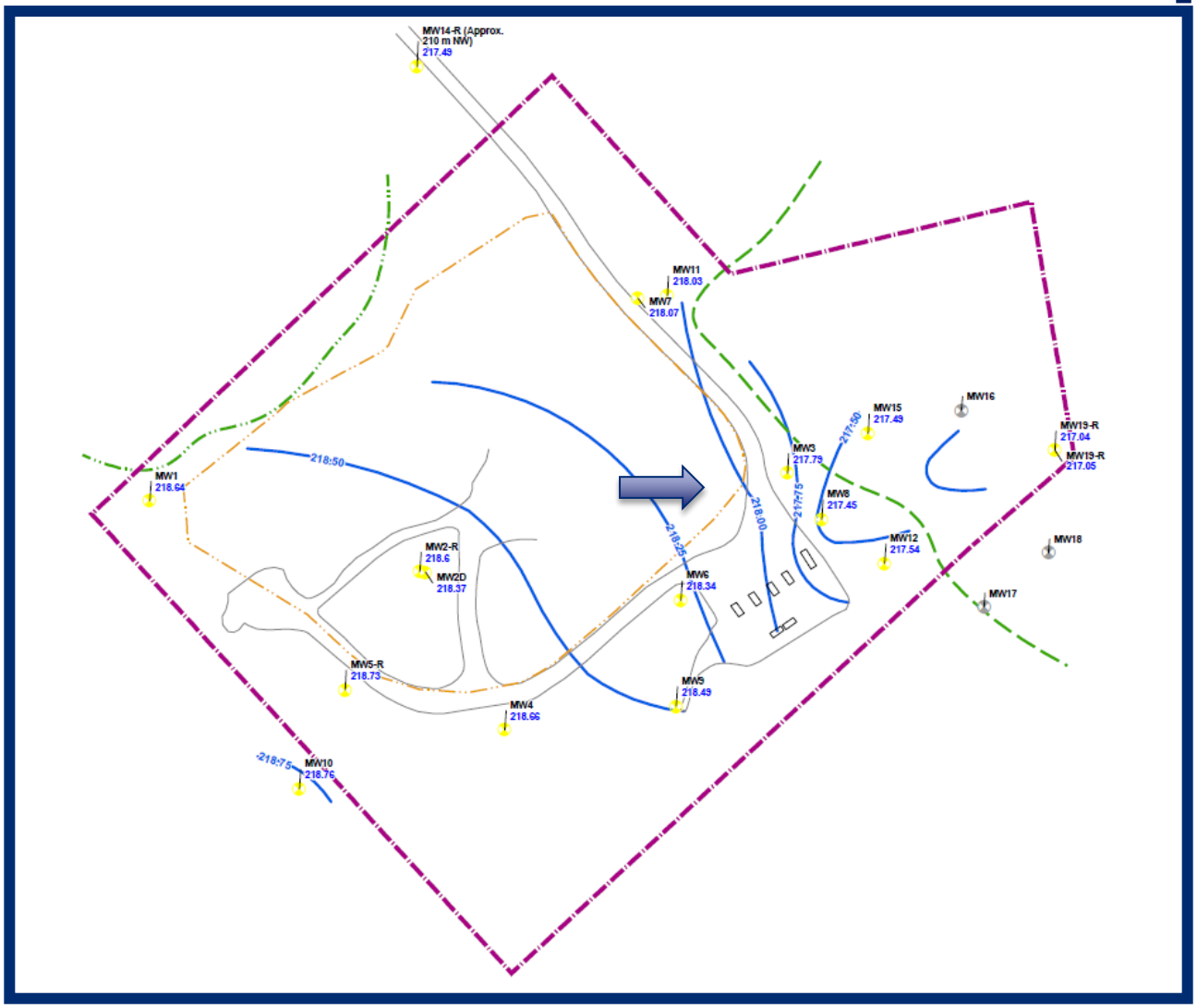
West Elgin Landfill Site Plan

2020 Environmental Monitoring Program and Design & Operations

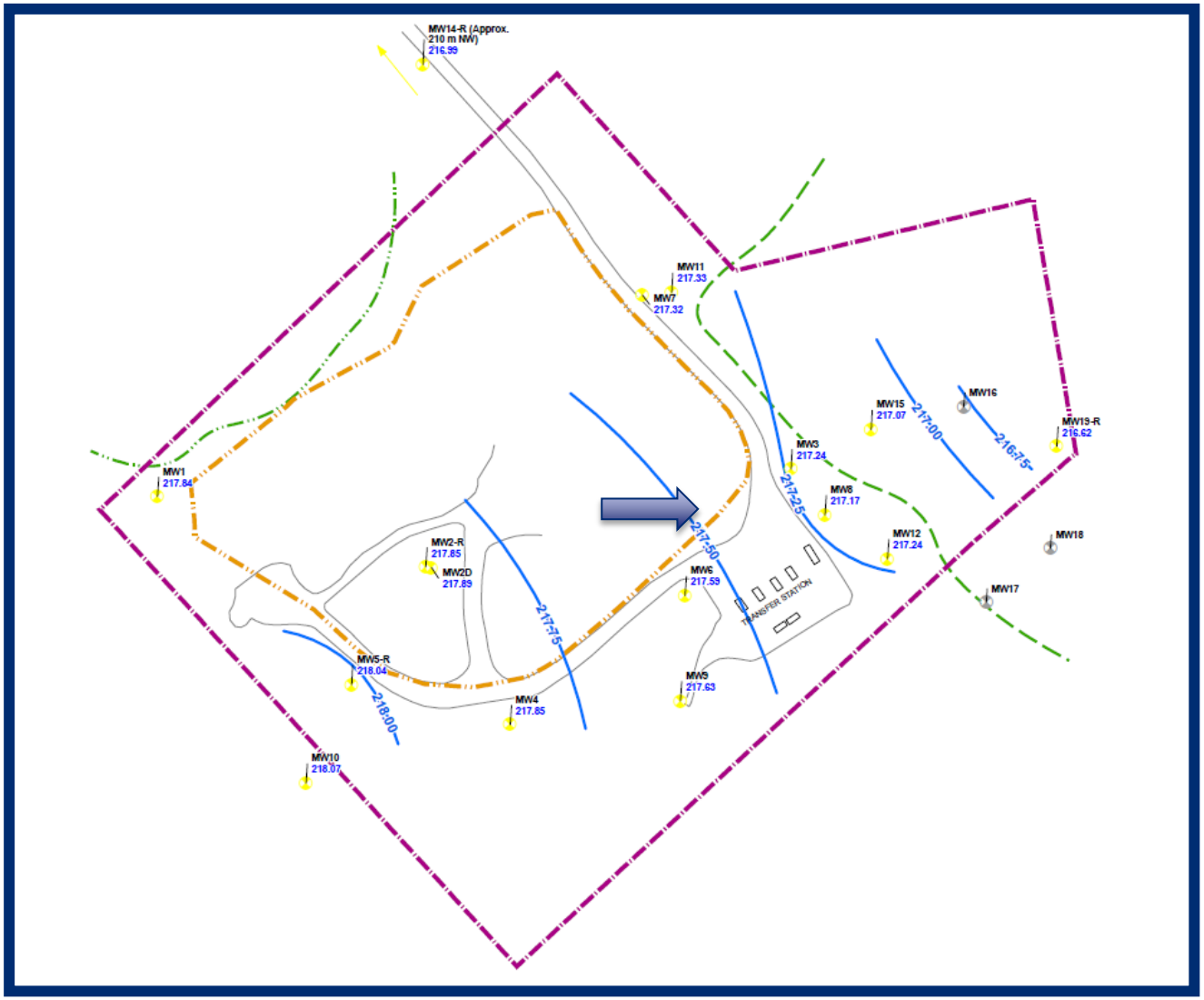
- Groundwater Flow Measurement, Collection of Methane Level Readings, and Groundwater Sampling (Semi-Annual)
- Operations Inspection (Semi-Annual)
- Semi-Annual Interim Reporting (to the Municipality only) and Annual Reporting to the MECP

Groundwater Levels and Flow Direction

Groundwater Flow Direction-Spring



Groundwater Flow Direction - Fall

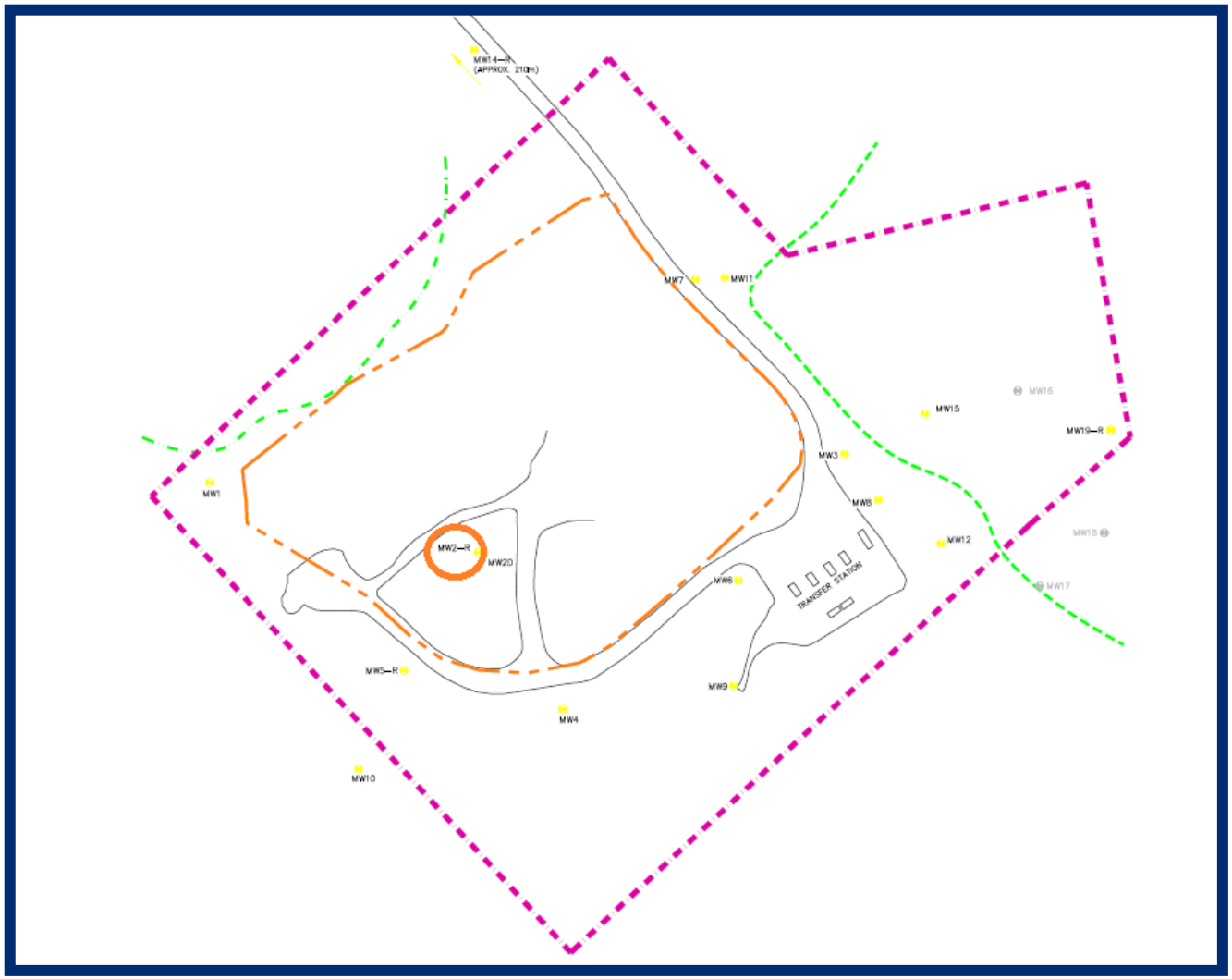


Methane Vapour Readings

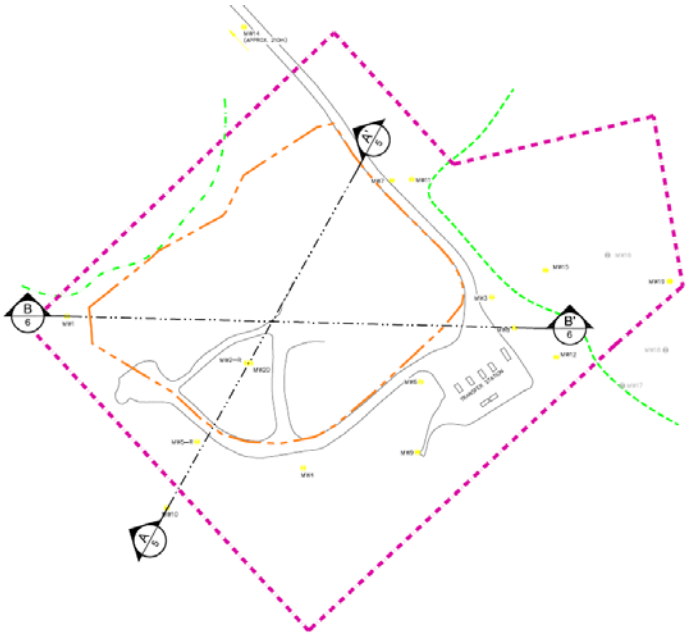
2020 Methane Vapour Readings

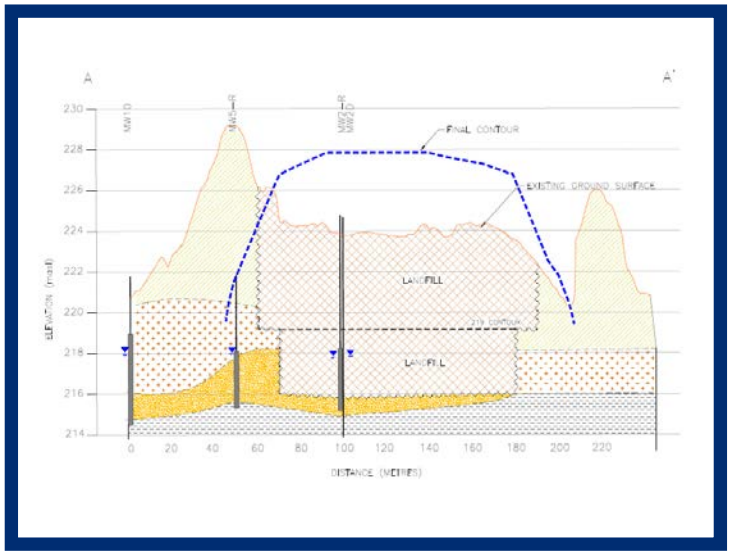
- Historically highest methane readings were noted in wells located within or below landfill material (MW2/ MW2-R and MW2D) or in close proximity to landfilling operations (MW4 and MW5-R)
- In 2020, the highest readings were at MW2-R as per usual. The rest of the results were below the detection limit of 0.5%.
- No concern for gas building in the former on-site attendant trailer and sea container (wells in the vicinity are < 0.5%).

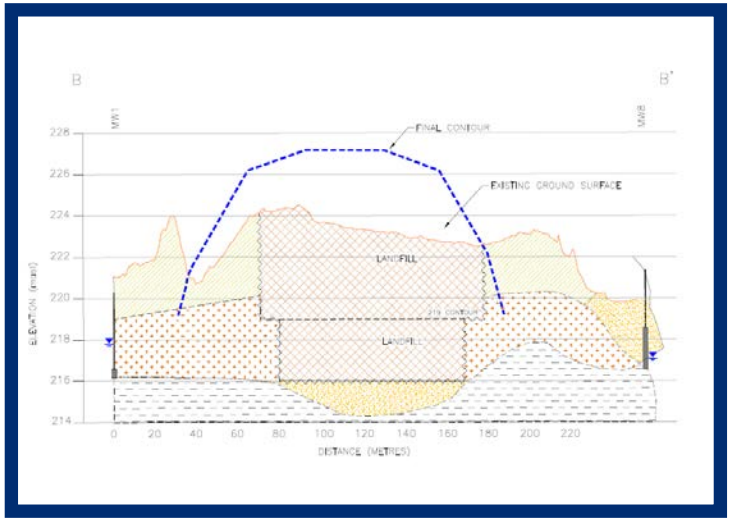
2020 Methane Vapour Readings



Groundwater Quality Assessment







2020 Groundwater Quality Assessment

- Leachate Indicator Parameters (LIPs) include: *alkalinity, arsenic, chloride, DOC, iron, and sodium*
- Also consider: *ammonia, Organic N, colour, hardness, TDS, turbidity, fluoride, nitrate, nitrite, manganese and zinc, Volatile Organic Carbons (VOCs)*
- Chloride is the most mobile and conservative leachate indicator parameter

2020 Groundwater Quality
Trigger Mechanism and Contingency Plan

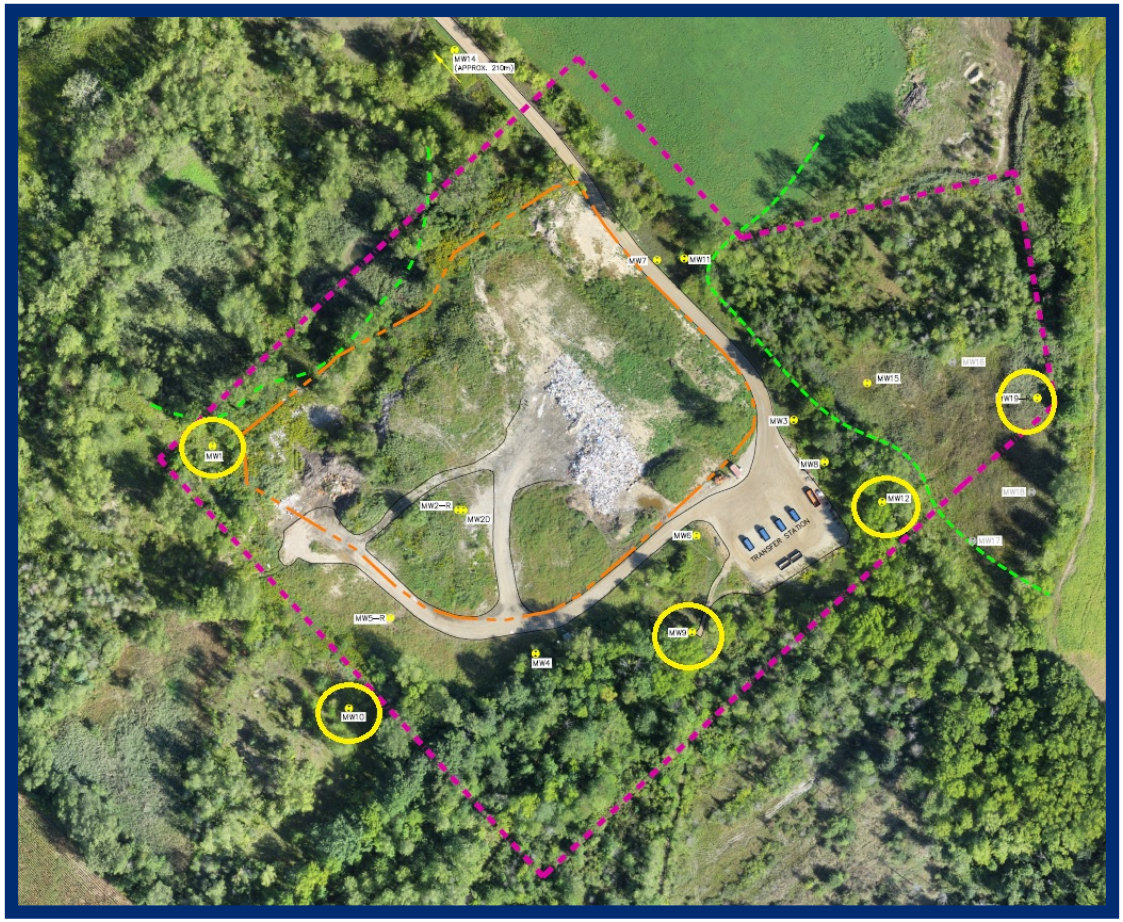
1. **Tier 1 Alert** – 3 consecutive exceedances of 75% RUL at a trigger well of the LIPs

2. **Tier 2 Assessment** – consider trends in LIPs. Confirm increasing trends in concentrations. Confirm likely landfill-related.

3. **Tier 3 Confirmation** – monthly samples for 3 months

4. **Tier 4 Compliance** – discussions between MECP and Municipality within 6 months to assess if remedial measures are required.

2020 Groundwater Quality
Tier 1 – Trigger or Boundary Wells



2020 Groundwater Quality
Tier 1 - Trigger Alerts

- Background Well Concentration (MW14-R)
- Ontario Drinking Water Quality Standards (ODWQS)
- Reasonable Use Guideline/ Limits
- 75%
- Three Consecutive Occurrences

2020 Groundwater Quality Results

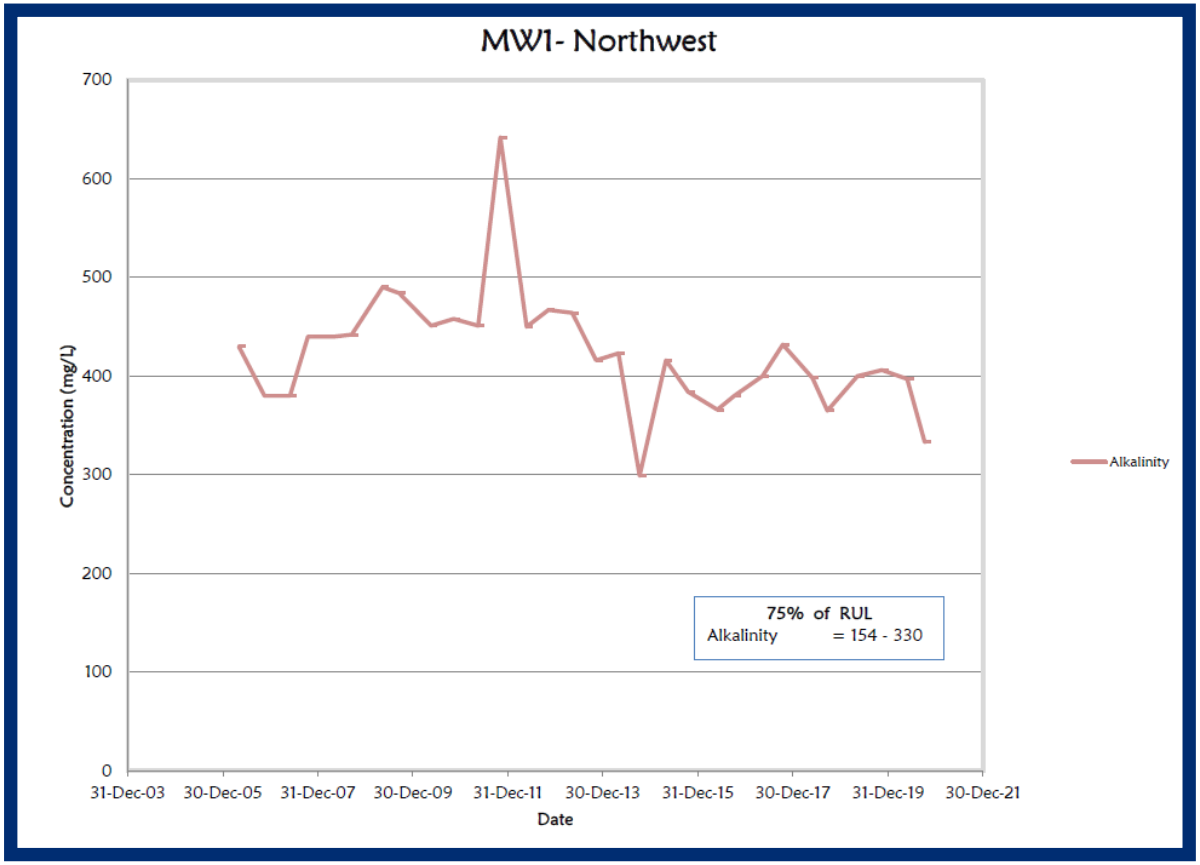
- All RULs were calculated using historical data from background monitoring well
- Tier 1 Alerts:
    - *MW1 for alkalinity;*
    - *MW9 for alkalinity and DOC;*
    - *MW19-R for iron;*
    - *all other trigger/ boundary wells were in compliance.*

2020 Groundwater Quality
Tier 2 Assessment – MW1 (Alkalinity)

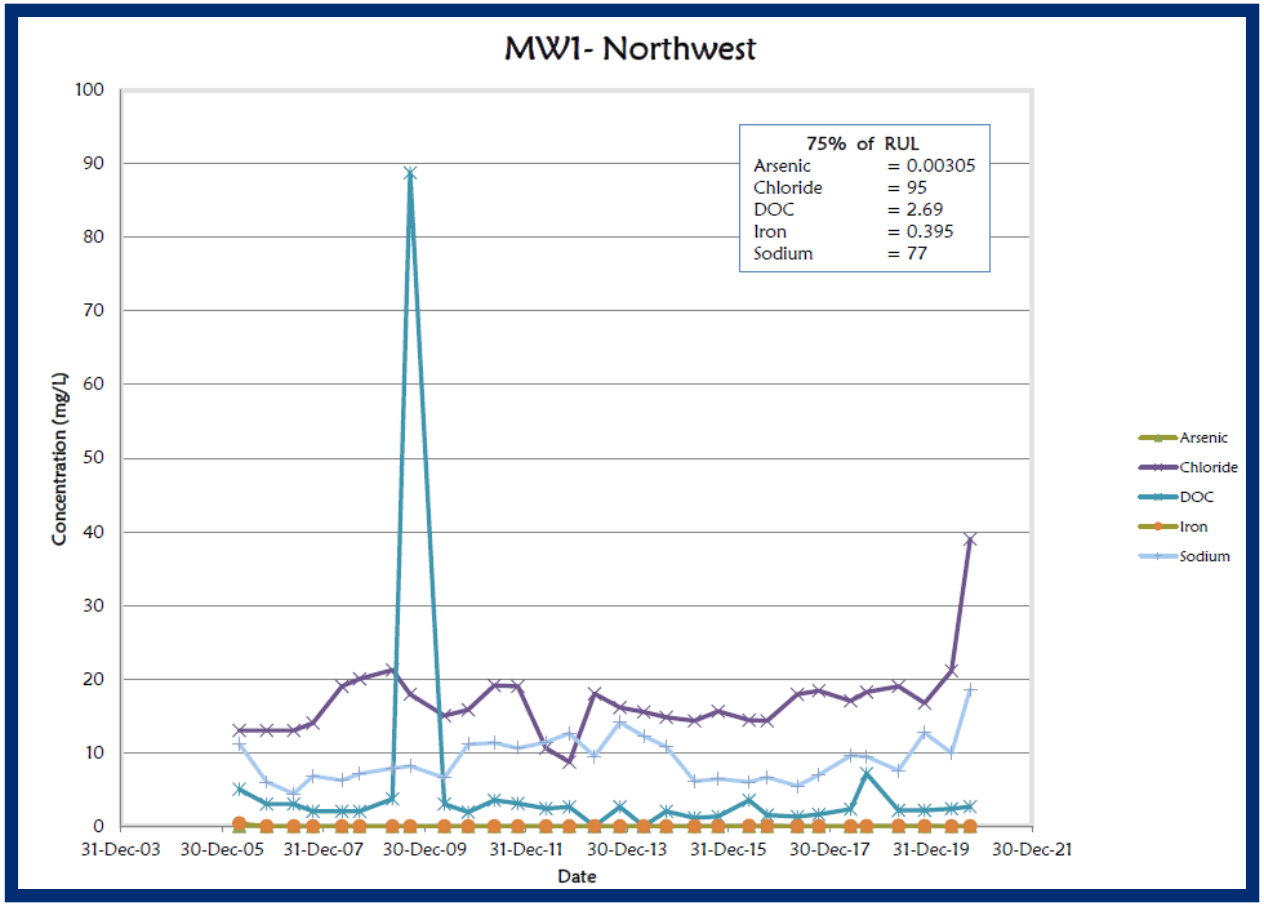
Tier 2 Assessment Discussion for MW1

- Results are still less than 100% of the RUL
- Alkalinity is the measure of the water's ability to neutralize acid (versus pH that measures how acidic or basic the water is)
- Alkalinity results show a decreasing trend, however, LIPs chloride and sodium are slightly increasing.
- No Tier 3 Confirmation required at this time.

2020 Groundwater Quality
MW1- Alkalinity



2020 Groundwater Quality
MW1 – Other LIPs

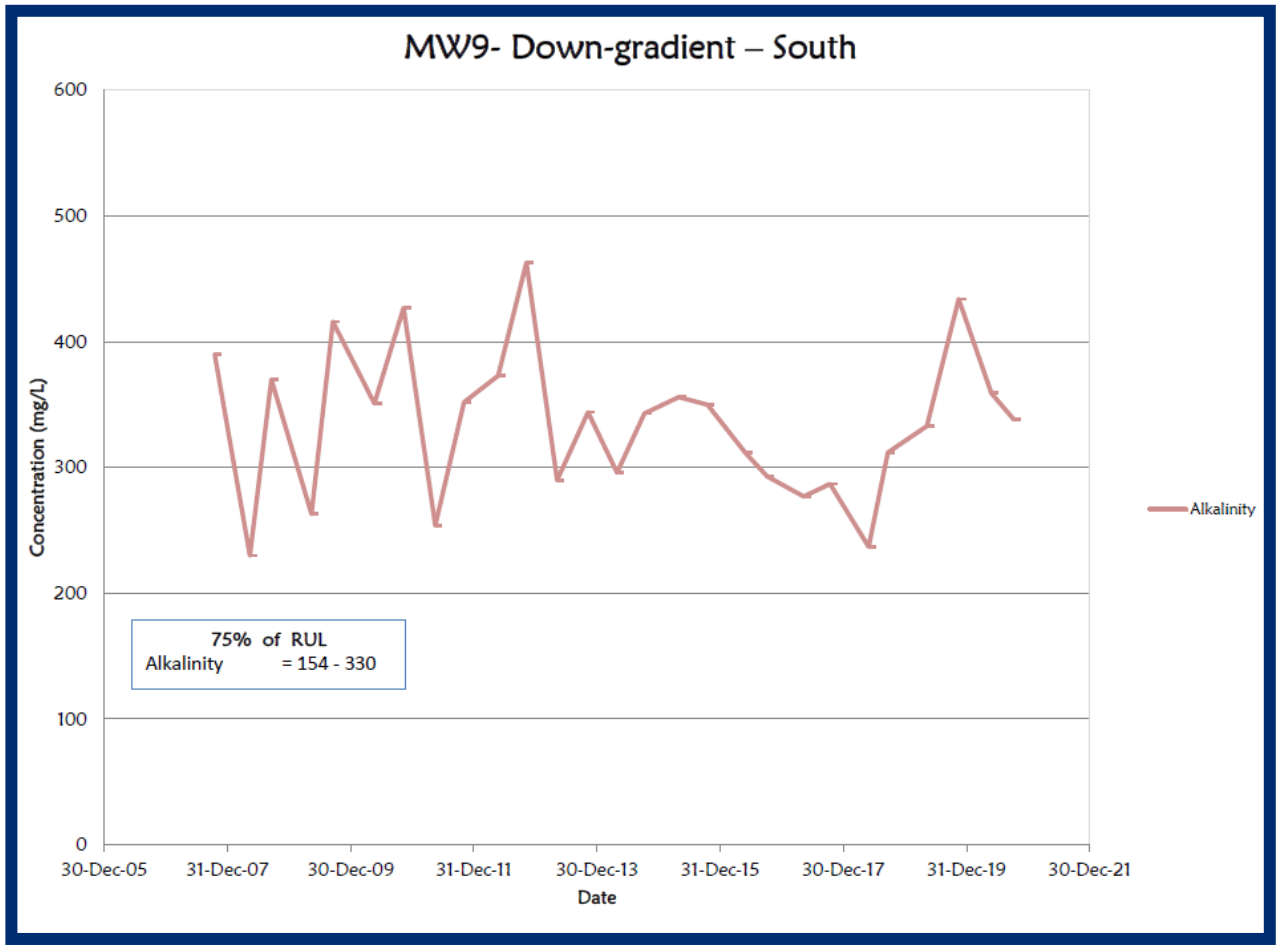


2020 Groundwater Quality Tier 2 Assessment – MW9 (Alkalinity & DOC)

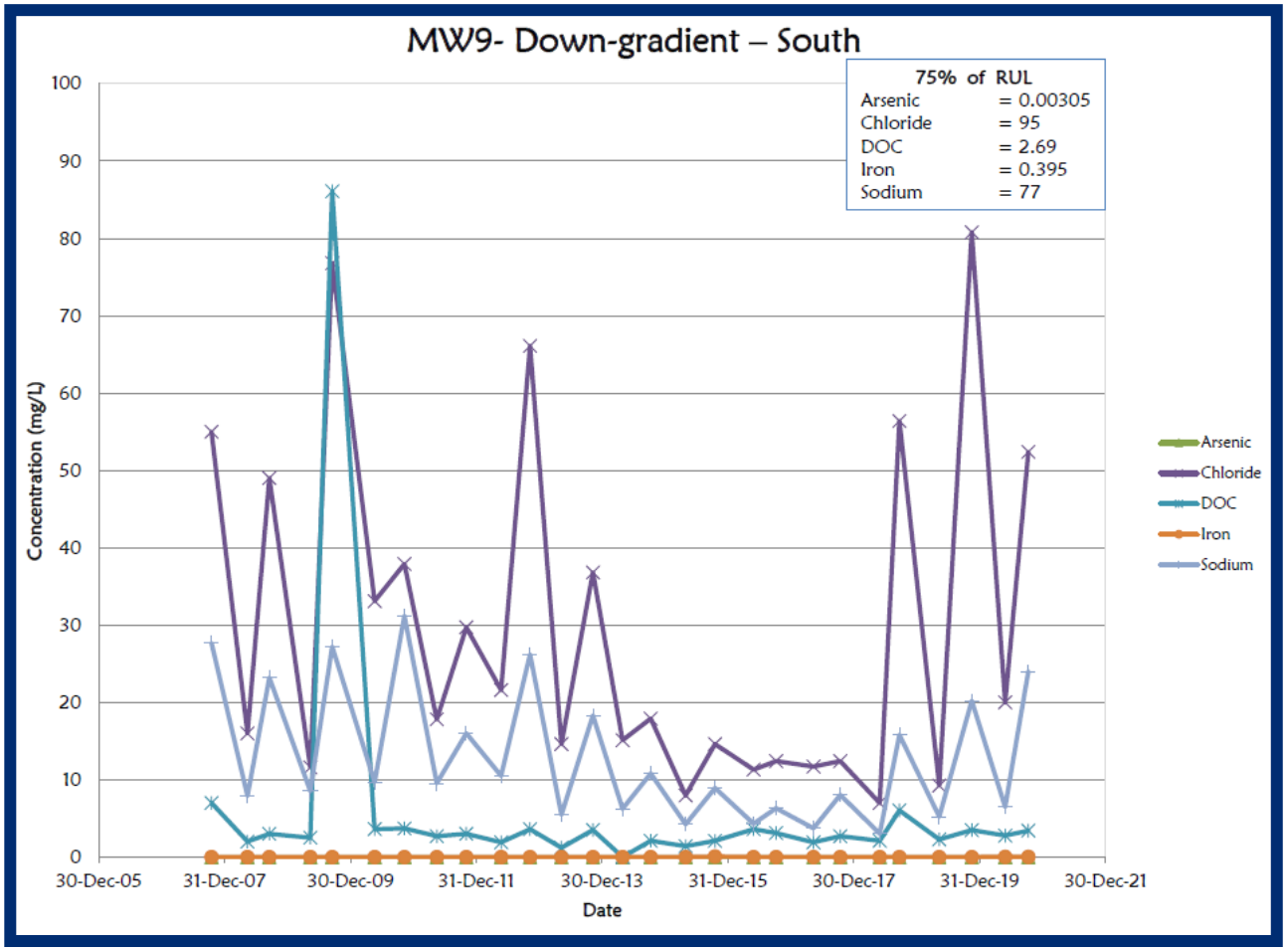
Tier 2 Assessment Discussion for MW9

- Results are still less than 100% of the RUL
- No definite trend is noted in the LIP concentrations over time.
- No Tier 3 Confirmation required at this time.

2020 Groundwater Quality
MW9- Alkalinity



2020 Groundwater Quality
MW9 – DOC and Other LIPs

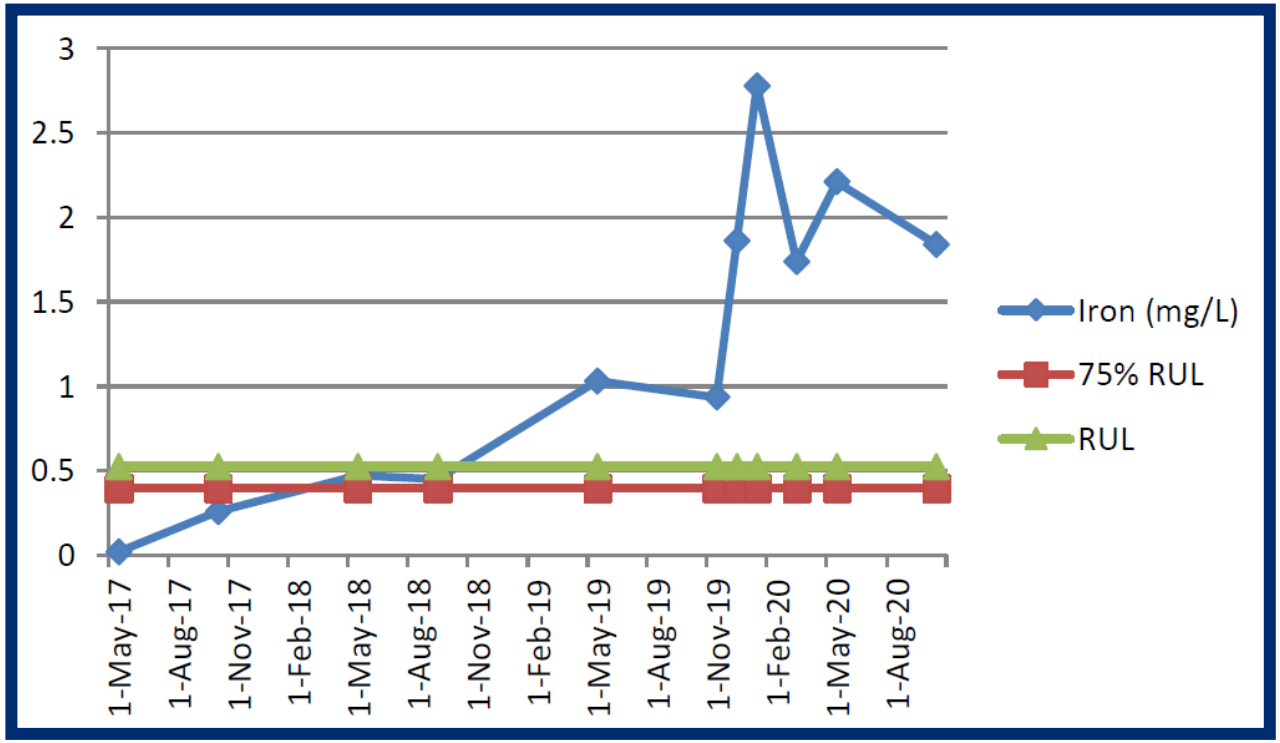


2020 Groundwater Quality
Tier 2 Assessment – MW19-R (Iron)

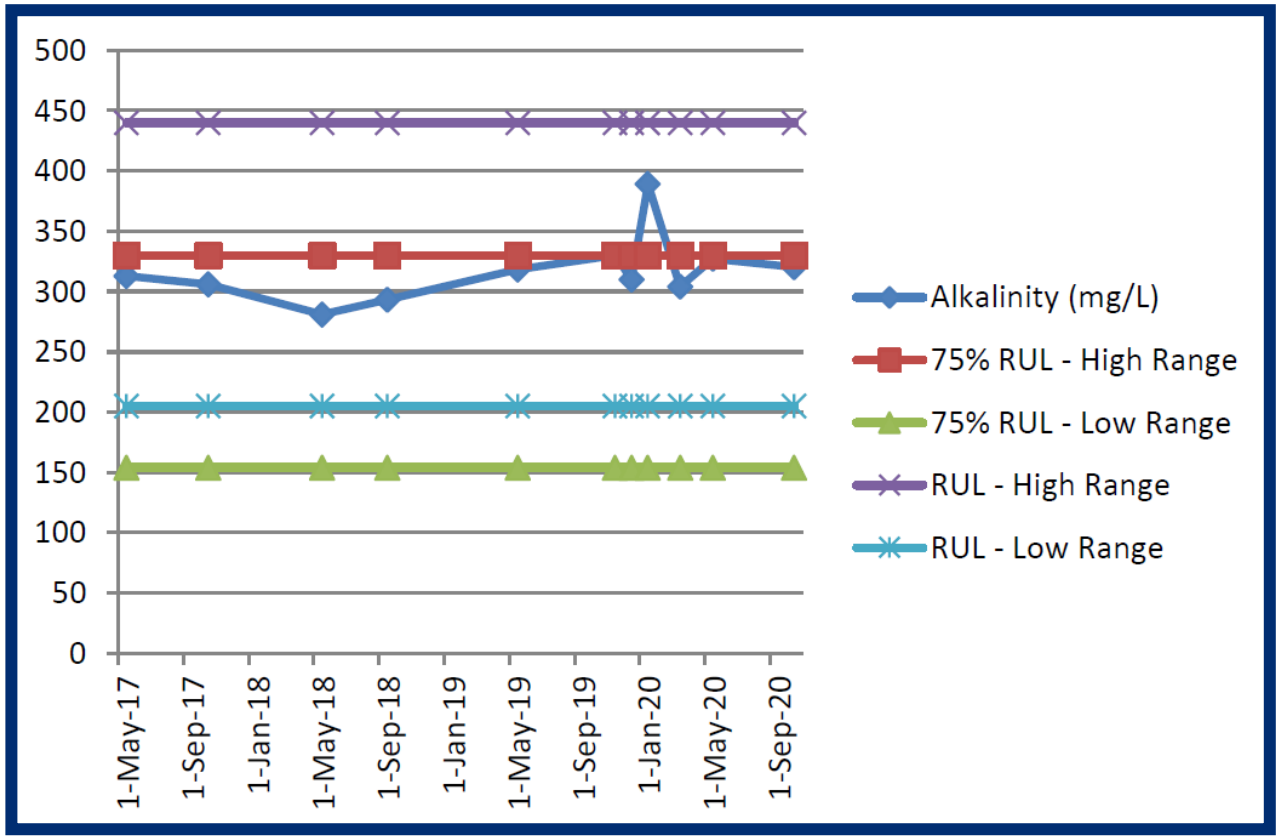
Tier 2 Assessment Discussion for MW19-R

- This alert was first noted in 2019 and resulted in Tier 3 Monitoring.
- Iron on its own are not fully attributed to landfill activities, but may be a sign of localized impacts (i.e. due to metals storage)
- No definite trend is noted in the LIP concentrations over time.

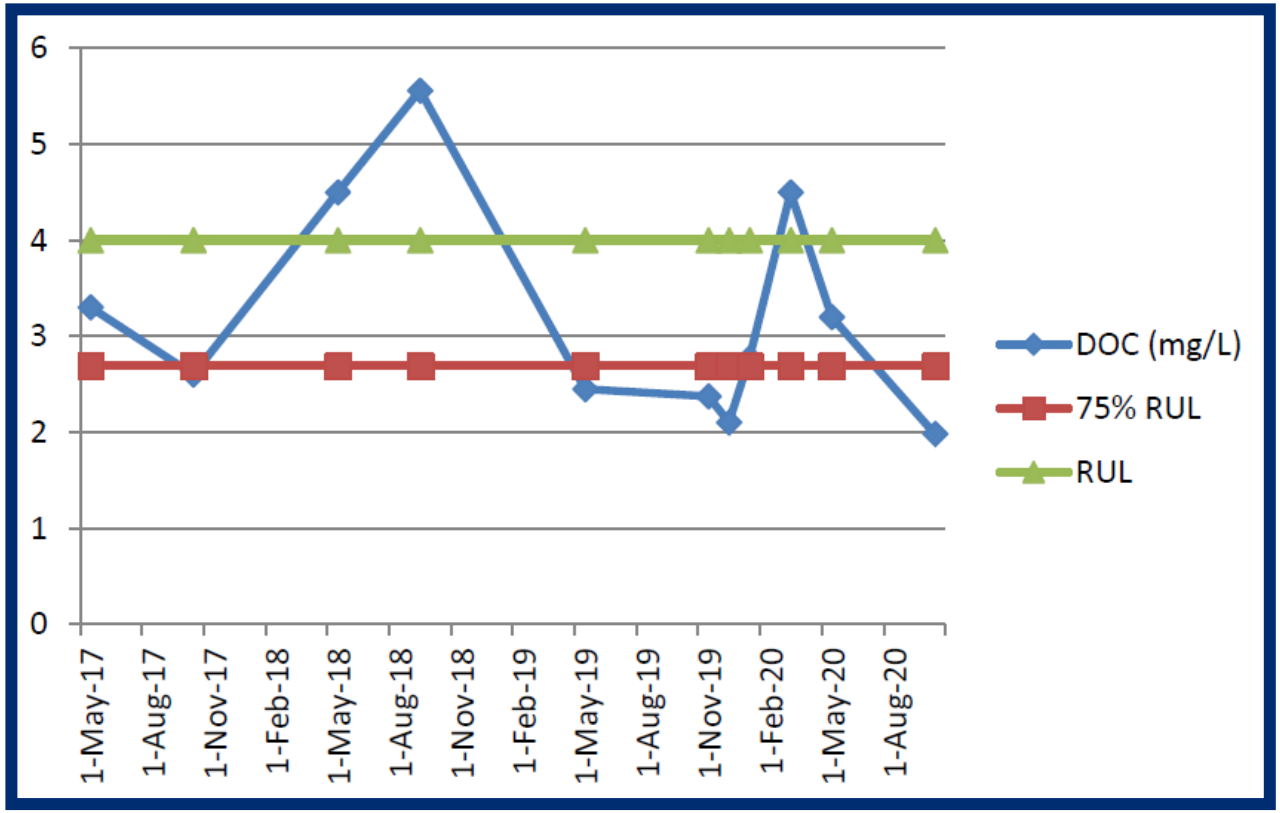
2020 Groundwater Quality
MW19-R- Iron



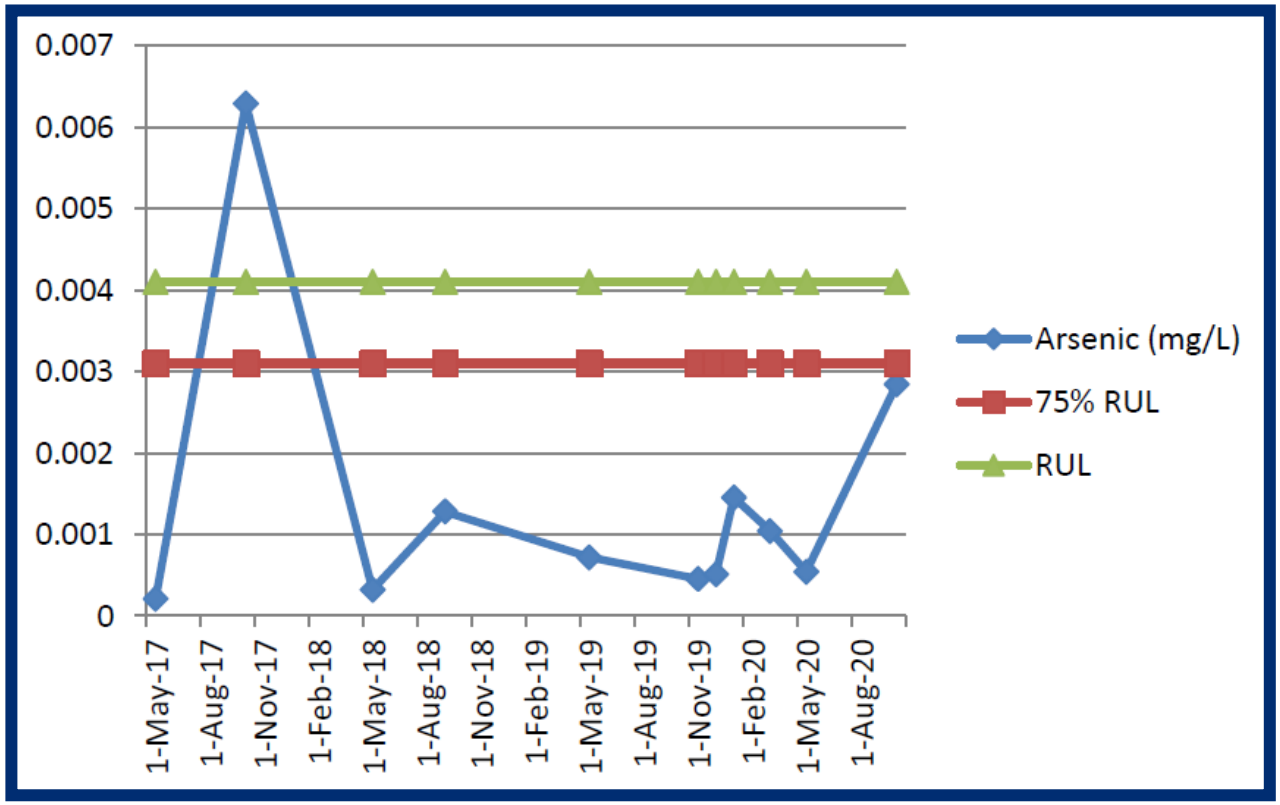
2020 Groundwater Quality
MW19-R- Alkalinity



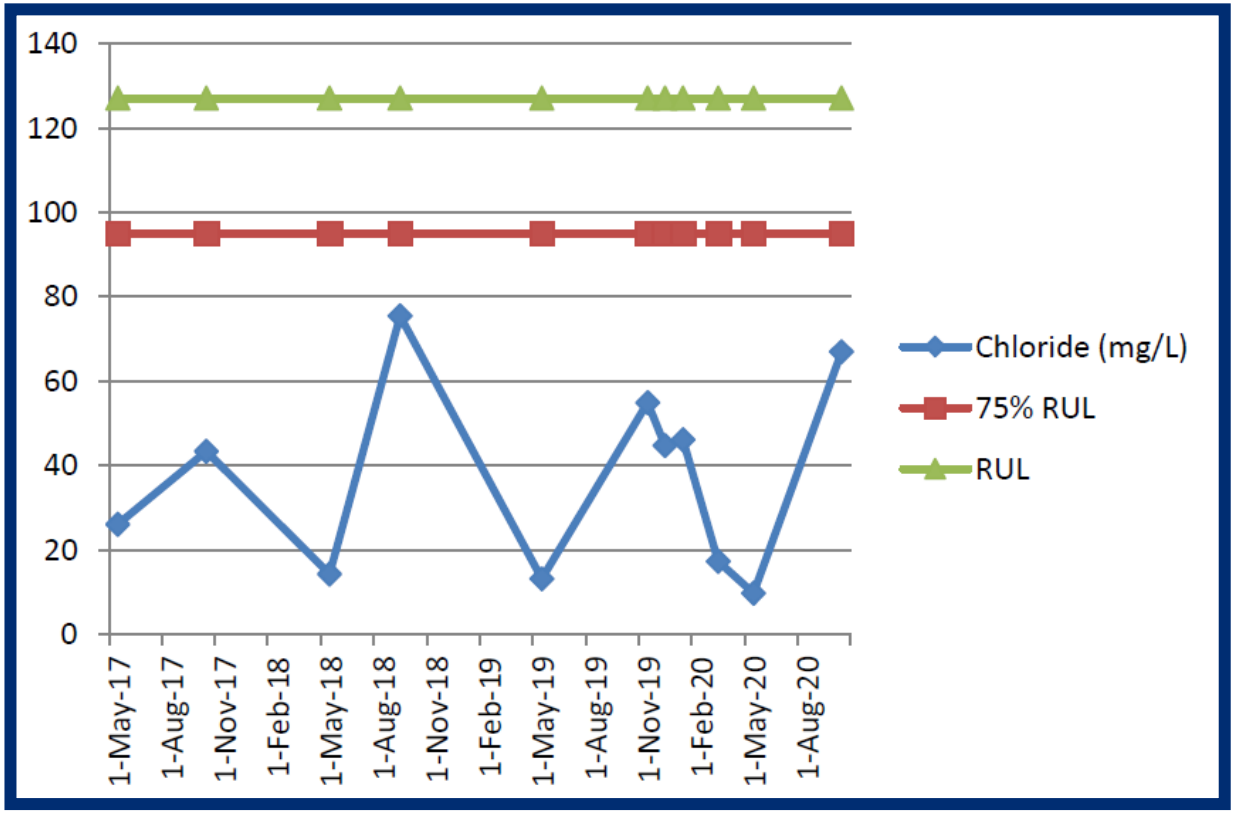
2020 Groundwater Quality
MW19-R- DOC



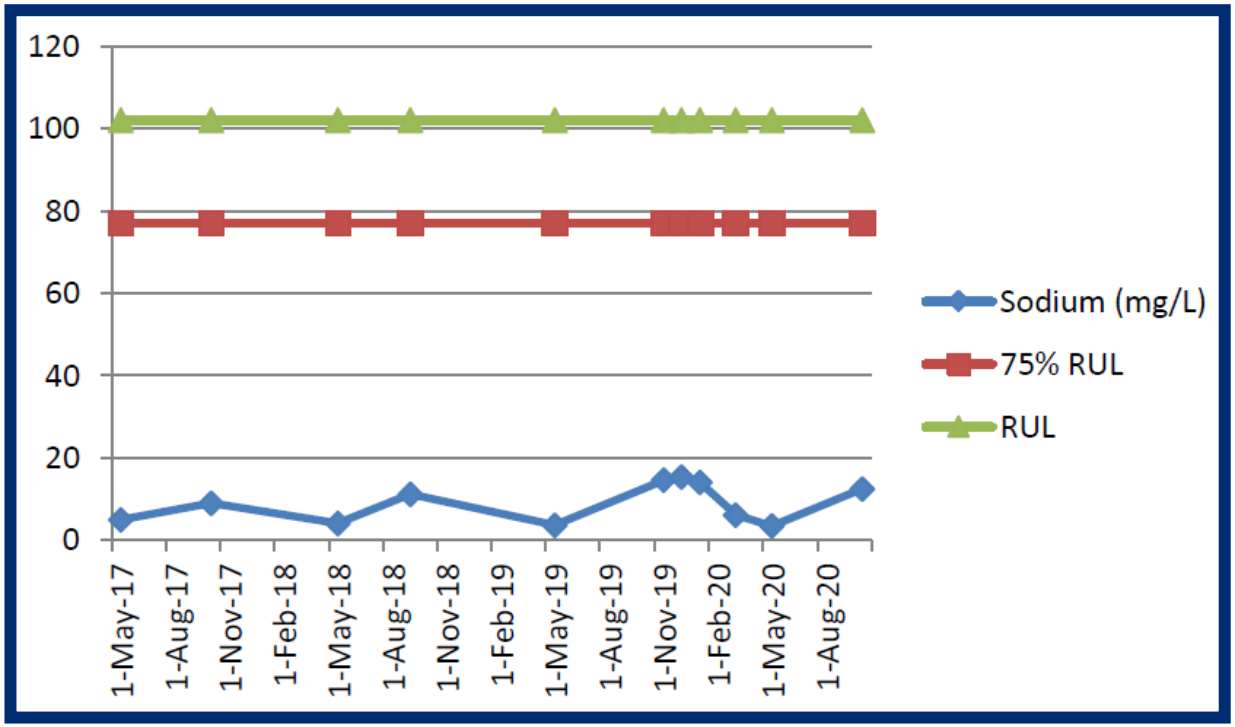
2020 Groundwater Quality
MW19-R- Arsenic



2020 Groundwater Quality
MW19-R- Chloride



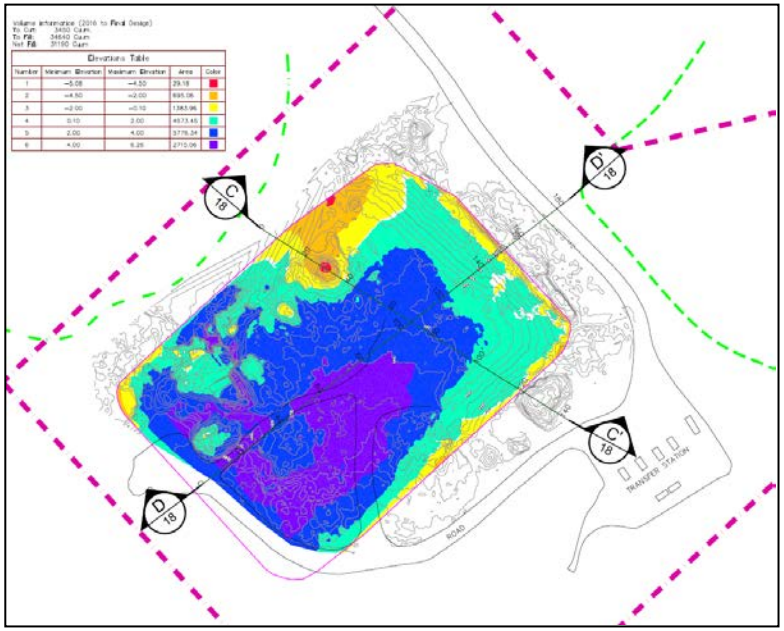
2020 Groundwater Quality
MW19-R- Sodium



Design and Operations Assessment

2016 Landfill Unmanned Aerial Vehicle (UAV) Survey

- In September 2016, BluMetric completed a UAV survey of the landfill



Based on the 2016 UAV and data provided the estimated life of the landfill was 19 years.

2020 Landfill Capacity

Factors used to determine capacity:

- annual waste input rate (430 metric tonnes – down from 1,200 metric tonnes in 2018)
- a compaction density of 0.5 tonne/m^3
- waste to cover ratio of 4:1
- estimated quantity of in-place waste
- a projected annual population (i.e. waste) growth rate of 0.5% over the next 25 years

The estimated life of the landfill is <u>20 years</u> (that is, until December 2039).

2020 - Waste Collection

Waste Source	Measured/ Tracked	Weight (Metric Tonnes)
Municipal-Wide Curbside	Measured (Scale)	844
Waste Transfer Site	Tracked Acceptance/ Assumed Weights	430
Large Item Collection (from Rodney & West Lorne)	Tracked Acceptance/ Assumed Weights	0 (Cancelled due to Covid)
TOTAL		**1274**

In 2020, the total recorded amount of waste brought to the landfill has decreased as material is diverted to Green Lane Landfill.

2020 - Waste Diversion

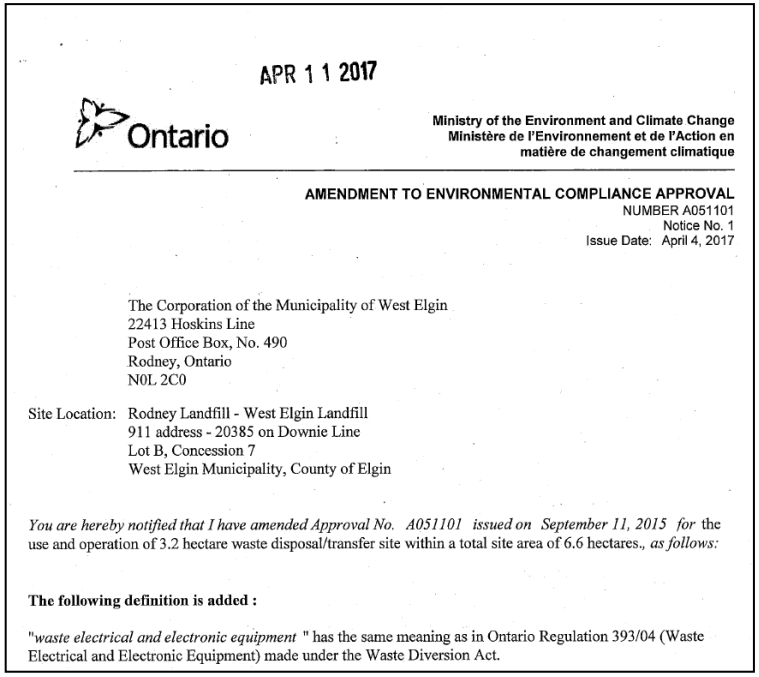
Source	Measured/ Tracked	Weight (Metric Tonnes)
Municipal-Wide Curbside	Measured (Scale)	183
Waste Transfer Site	Tracked Acceptance/ Assumed Weights	71
Waste Transfer Station (Steel/ Electronics)	Tracked Acceptance/ Assumed Weights	114
		

In total, the Municipality diverted 368 metric tonnes of recyclable material from the landfill in 2020 plus organic material that is not weighed.

Topic 1 Summary

- Groundwater flow continues to be to the east (towards newly purchased CAZ)
- No methane concerns
- Tier 1 Alerts at MW1, MW9, and MW19-R initiated Tier 2 Discussions, and Tier 3 Monitoring in 2019, however no further action is recommended.
- Estimated Landfill Life = 20 years

Topic 2:
2021 Activities



APR 1 1 2017

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A051101
Notice No. 1
Issue Date: April 4, 2017

The Corporation of the Municipality of West Elgin
22413 Hoskins Line
Post Office Box, No. 490
Rodney, Ontario
N0L 2C0

Site Location: Rodney Landfill - West Elgin Landfill
911 address - 20385 on Downie Line
Lot B, Concession 7
West Elgin Municipality, County of Elgin

You are hereby notified that I have amended Approval No. A051101 issued on September 11, 2015 for the use and operation of 3.2 hectare waste disposal/transfer site within a total site area of 6.6 hectares., *as follows:*

The following definition is added :

"*waste electrical and electronic equipment* " has the same meaning as in Ontario Regulation 393/04 (Waste Electrical and Electronic Equipment) made under the Waste Diversion Act.

2021 Monitoring

- Groundwater Flow Measurement, Collection of Methane Level Readings, and Groundwater Sampling (Semi-Annual)
- Operations Inspection (Semi-Annual)
- Semi-Annual Interim Reporting (to the Municipality only) and Annual Reporting the Ministry
- Scheduled May 10th

Topic 3:
Future Considerations

Landfill Capacity Reminder

- Estimated Life = 20 years
- Survey would confirm
- Waste Transfer Station can continue indefinitely

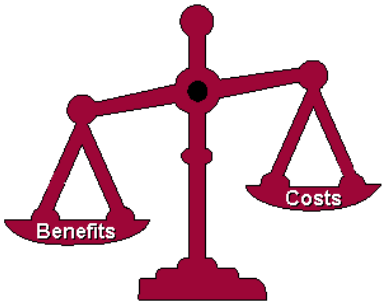
Landfill Closure

- ECA dictates that 3 years prior to closure of landfill you must provide the MECP with a 'Closure Plan'
  - *End use of landfill and appearance*
  - *Roll out to the community*
  - *Plan for post-closure care*

- Design and Operations Report (2006) specifies:
  - End use of landfill is green space area
  - Final cover will consist of 600 mm of compacted clay and 150 mm of seeded topsoil

Topic 3 Summary

- Recommend that capacity is confirmed with survey asap
- Consider further diversion of waste



Questions?