Ecological Review of Port Colborne Quarry Expansion

Anne R. Yagi MSc., EP, CERP

President, 8Trees Inc.

Prepared for local landowners and NWPAG

Background

- Most wetlands and watercourses in Niagara Region are precipitation dependant
  - This is true for features in the vicinity of Port Colborne Quarry
- Wetlands form where water is held on the surface in organic or mineral clay soils with microtopography (e.g. forest sloughs or seasonal / vernal pools)
- The periodicity of water within a wetland and watercourse determines the ecological functions (i.e. hydro period)
- Examples of wetland functions; reptile and amphibian breeding and overwintering

Purpose of an EIS

- is to document existing ecological functions
- What happens when the EIS is evaluating functions that are already impacted by the land use changes being proposed?
  - The expectation is the EIS will under value the significance of the impacted areas.

Potential Quarry Watershed Impacts

- Quarry discharges deep aquifer groundwater into surface water which flows into Lorraine Bay
- Lorraine Bay water quality and algae blooms is a concern for residents, are these actions. reactions linked?
- Quarry groundwater is mineralized wastewater and is not high-quality groundwater resource that you would find near Guelph or Cambridge.
- The pumped ex-flow attracts fish into areas with poor or no natural habitat (ditch) and is therefore harmful to fish community.

➢ **Therefore, refill one of the older quarries (start the restoration) is less impactful over discharging to into drain which is linked to Lorraine Bay.**

Spring 2015

Potential Quarry Impacts on adjacent Wetlands

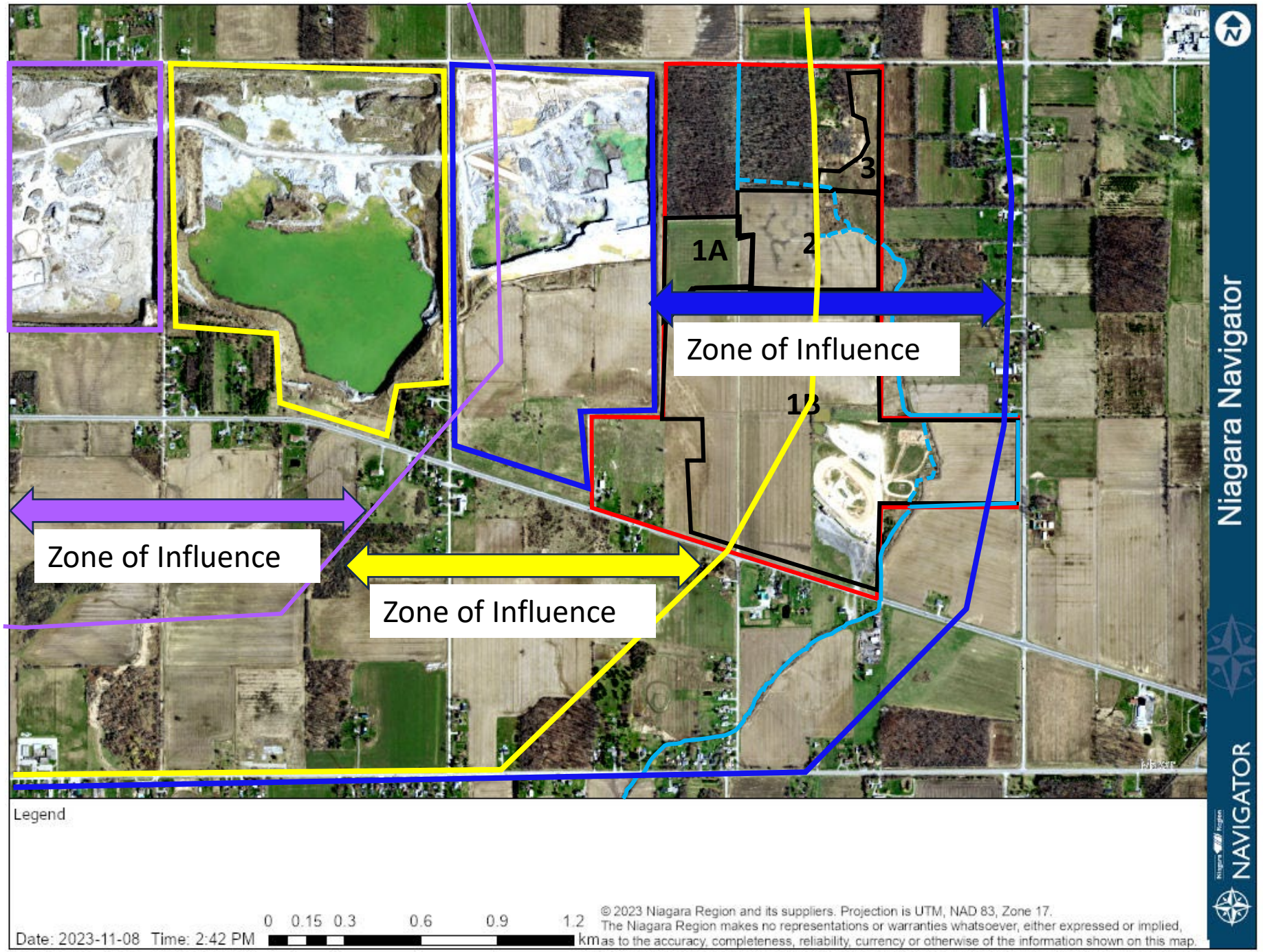
- Have a drawdown cone of influence outward from the quarry face estimated 1 km out from edge
- Exposed quarry rock faces are also conducive for surface drainage and ground temperature effects, increased heat, drying, cracking, in summer increased freezing, drying and cracking in winter which in turn affects ecological functions
- Some bedrock when exposed to rain forms cavities, caves and karsts this can occur below a wetland

Research on Impacted Wetlands

- Soil cracking can form within the zone of influence of quarries and other drainage effects.
- Impacts short hydroperiod and decrease wetland functions
- Wetlands with an artificially shortened hydroperiod are impacted wetlands

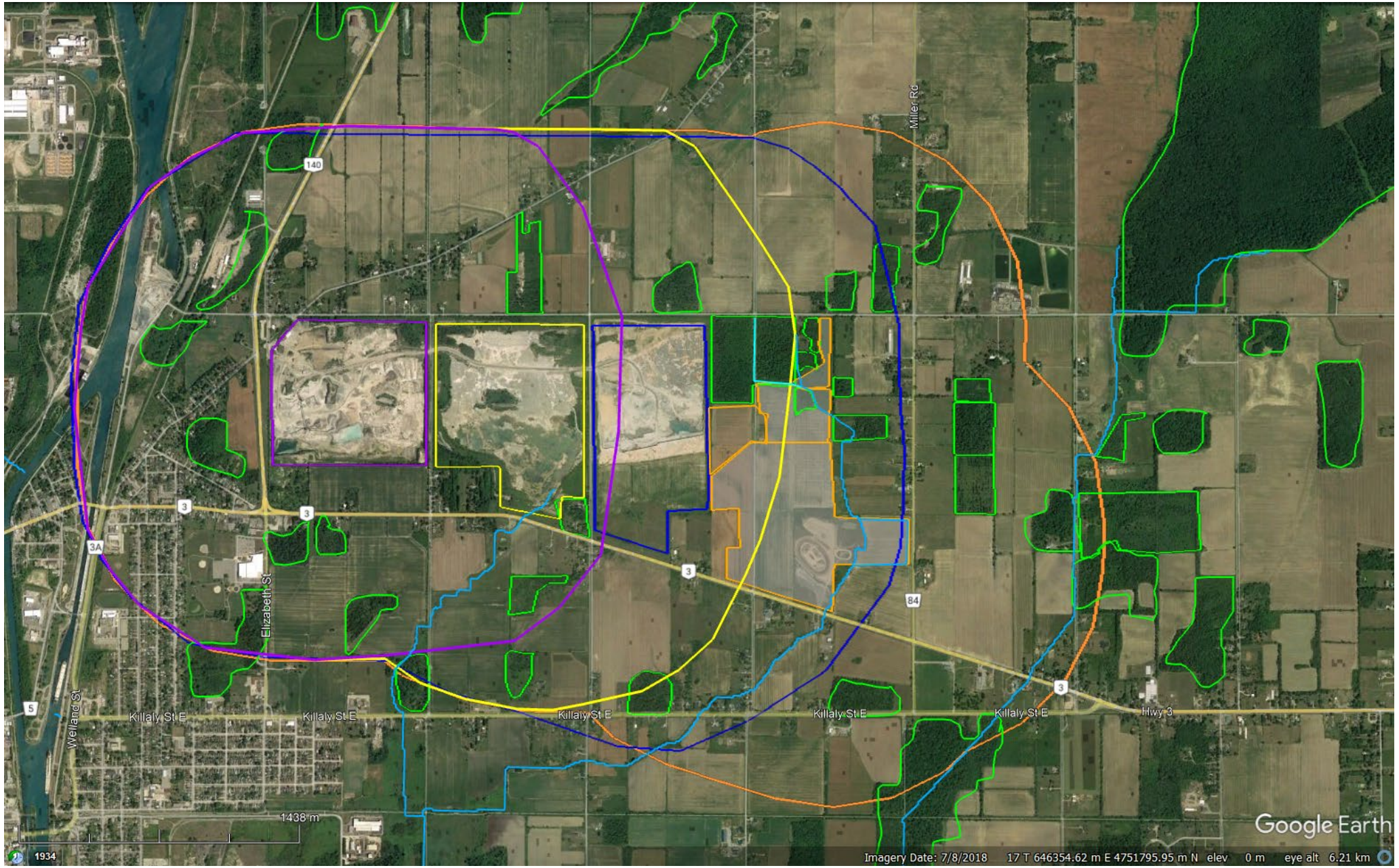
2015
Three
Quarries

Zone of
influence
EIS
Assessing
already
impacted
wetlands
since 1980s



Cumulative Zones of Influence for Each Quarry

PDS-C 6-2024



Legend

- Quarry 1 + zone of influence
- Quarry 2 + zone of influence
- Quarry 3 + zone of influence
- Quarry 4 + zone of influence

Conclusions

- Each Successive quarry has broadened the zone of influence eastward and the impacted area is cumulative (from 6.57 km^2 to 14.2 km^2)
- EIS is influenced by cumulative impacts which affects the decision process for protection today
- Re-do EIS scope and long-term wetland monitoring needs to be beyond the zone of influence to properly evaluate impacts on natural features and ecological functions. (i.e. reference sites)
- Re-think past assumptions on discharging wastewater as a fisheries enhancement when considering poor habitat in drain, poor water quality and watershed linkages.
- Re-evaluate Phase 3 extraction area and distance set back from exposed quarry faces or properly lined quarry face to protect and improve adjacent already impacted wetlands