Once Upon a Gravel Pit: Reconnecting Floodplain through Aggregate Extraction

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The Story of Snyder’s Flats

- Historical influences on the site
- Identifying gravel and proposing a model for environmentally friendly aggregate extraction
- Restoration beyond the floodplain
- 25 years later – Snyder’s Flats Management Plan
Historical Influences

• Retreat of the Laurentide Ice Sheet altered the landscape and meltwater channels deposited well-sorted cobbles, gravels and sands

• Settle in 1807 by Jacob Snyder, gradually cleared and remained mix farming until 1960s
Historical Influences

• Between 1942 and 1976 the GRCA built seven multi-purpose reservoirs for flood damage reduction low-flow augmentation.

• In 1969, the GRCA purchased the flats as part of the K-W Valley Lands Acquisition Program to reduce flooding & erosion risks.
Identifying the Aggregate Resource

• Beginning in 1979, the GRCA worked with Preston Sand & Gravel to extract gravel with the vision of modeling an “environmentally friendly” approach

• Extensive below the water table resources confirmed in 1987 creating an opportunity to prepare a site plan for enhancing local aquatic and wildlife habitats
The Design Concept
The Big Dig (1988-1990)
The Big Dig (1988-1990)
Reconnecting the Floodplain
The Early Years (1990 – 1996)
The Early Years (1990 – 1996)
Snyder’s Flats – Present Day

The Warmwater Habitat

- 9.6 hectares (23.7 acres)
- 1,640m (5,380ft) of shoreline

- Pond depths range between 0.2m to 7m providing spawning and nursery habitat
Snyder’s Flats – Present Day

The Coolwater Habitat

3.6 hectares (8.9 acres)

- Pond depths range between 0.6m to 6m
- Design includes vegetated finger projections to minimize thermal mixing caused by wind gusts

1,120 meters (3,670 feet) of shoreline
Snyder’s Flats – Present Day

North Flood Plain Pool – 3.8ha (9.4 acres) & 1,620m (5,320ft) of shoreline

Flood Plain Pools & Connecting Channel

- Riffles oxygenate water and contribute to sustaining aquatic life

The Connecting Channel – 530m (1,740ft)
Restoration Beyond the Floodplain

**Year 1, 2009**
- 16,000 trees planted
- 1st Kiosk
- Project launch

**Year 2, 2010**
- 20,000 trees planted
- Prescribed burn & seeding
- Trail design & construction
- Installation 2nd kiosk and benches

**Year 3, 2011**
- 7,100 trees planted
- 2,500 trees replanted
- 5,000 trees tended
- Trail upgrades continued
- Interpretive signage
- Ongoing monitoring

**2012 - 2016**
- Invasive plant control
- Trail maintenance
- Tree Maintenance & Tending
- Adaptive infill tree planting
- Approx. 1000 trees/year
Management Plan update

• In response to growing public recreational usage of the property, an update to the Snyder’s Flats Conservation Area Management Plan was completed in 2015

• Restoration objectives were reviewed and the following monitoring was carried out:
  – Fisheries surveys
  – Breeding bird surveys
  – Amphibian surveys
  – Incidental Wildlife Observations
  – Completion of ELC mapping for vegetation communities

• Summarize 25 years of restoration efforts
Historical Fisheries

- **1966:** *Biological Survey of the Grand River and its Tributaries* identifies 8 species of fish in the Grand River in the vicinity of Snyder’s Flats

- **1988:** 8 species of fish identified
  
  *Extraction of gravel and development of ponds*

- **1991-1996:** over 5 years a total of 26 species of fish identified in the new aquatic habitat features
Fisheries Results in 2015

Fisheries monitoring confirmed 33 species of fish including Silver Shiner, a provincially threatened species at risk.
Was it a Happy Ending?

- From farmland to aggregate pit to valuable wildlife habitats – evolved into diverse ecological landscape
- Demonstrated environmentally friendly approach to gravel extraction
- 92 hectares of passive recreation area
- Creation of 17 hectares of pond & floodplain habitat
- 1000’s of trees planted and early succession transition habitat establishing
- Generated approximately $2.4 M
To Learn More

• Snyder’s Flats Management Plan is available online at www.grandriver.ca

• GRCA Natural Heritage department, Crystal Allan callan@grandriver.ca

• Visit the conservation area – access via Snyder’s Flats Rd near the village of Bloomingdale