

# Carp River Regulatory Floodplain Mapping Update

**Board of Directors** 

July 8, 2024

### Background

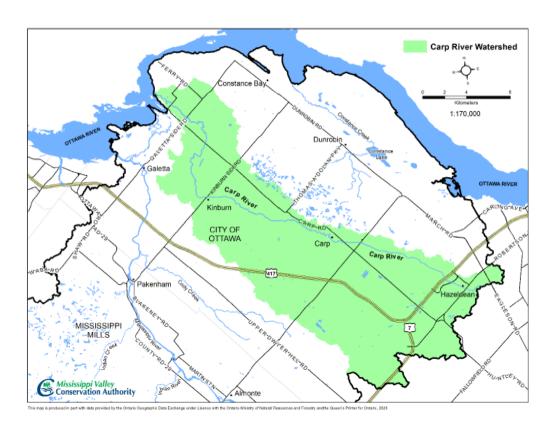
- Existing regulatory hazard mapping completed in 1983
- Major development in upper Carp River watershed
- Carp River Restoration Project
- ☐ Slope hazard previously not mapped
- Completed in partnership and financial support from City of Ottawa





### Study Area

- ☐ Carp River watershed approx. 300 km<sup>2</sup>
- Entire river mapped approx. 50 km of floodplain
- Flood and erosion hazards mapped



### Approach

#### Delineate

#### Prepare

#### Adopt

#### Share

Delineate floodplain and regulation limit based upon existing conditions

Prepare report that documents methodology and findings

Adopt report and floodplain mapping for use in the application of Section 41/24 Regulations

Share with local municipality for incorporation into land use planning documents

Municipal Technical Guidelines: City of Ottawa Sewer Design Guidelines

Flood Hazard Mapping Methodology (MVCA, RVCA, SNC)

**Provincial Technical Guidelines:** Guidelines for Developing Schedules of Regulated Areas

River & Stream Systems: Flooding Hazard Limit

River & Stream Systems: Erosion Hazard Limit

Federal Technical Guidelines: Federal Land Use Guide for Flood Risk Areas

Bibliography of Best Practices for Flood Mitigation

Federal Hydrologic and Hydraulic Procedures for

Flood Hazard Delineation

Federal Geomatics Guidelines for Flood Mapping

Federal Flood Mapping Framework

Technical Review Process



#### Methodology

Topobathymetry

- City of Ottawa LiDAR (2019)
- Survey of water crossing structures (EOS Arrow Gold RTK GNSS)
- Topo-bathymetric survey (MVCA and McIntosh Perry, 2021-2022)

Hydrology

- HEC-HMS model development, calibration and validation
- Flood frequency analysis (Kinburn)
- Flood flows for various return periods at key locations along the river system

Climate Change • 1:350-year event modelled to represent future climate

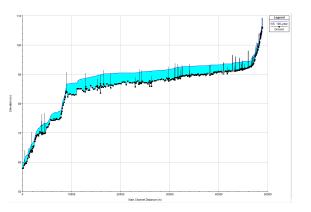
Hydraulics

- HEC-RAS model development, calibration and validation
- Sensitivity analysis and model validation
- Flood levels for various return periods associated with flood flows

Mapping

- Delineation and plotting of flood lines, unstable slopes and meander belt
- · Ground-truthing
- Definition and plotting of Regulatory Limit based on provincial standards

- Technical review by third party engineering firm (Stantec)
- Public Open House
- Dissemination of results





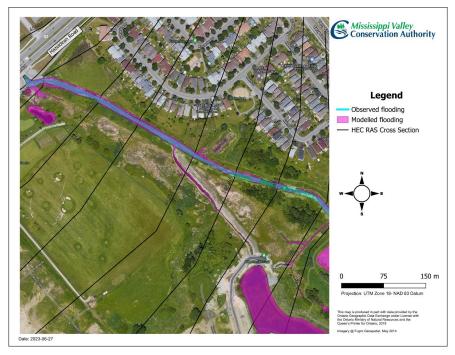
Best data and technology used in the study.

#### Validation

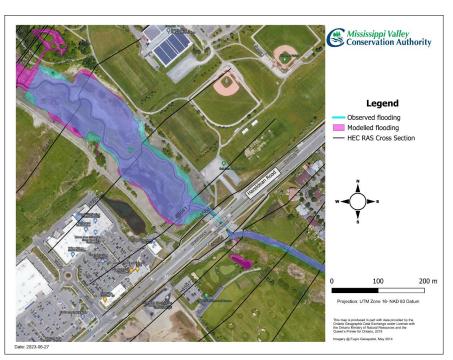
Recent flood surveys (drone, RTK) WSC and MVCA streamflow data Historical flood marks/ observations

#### Validation

Good agreement between modelled and observed flood extents and elevations

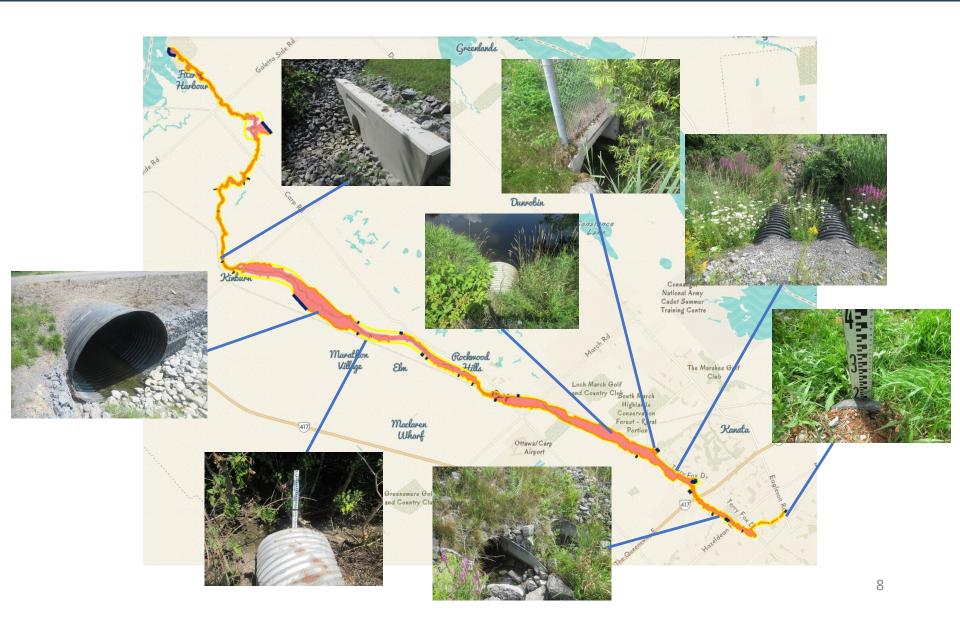


2023 April 11 – Kevin Haimes Golf Centre, Kanata

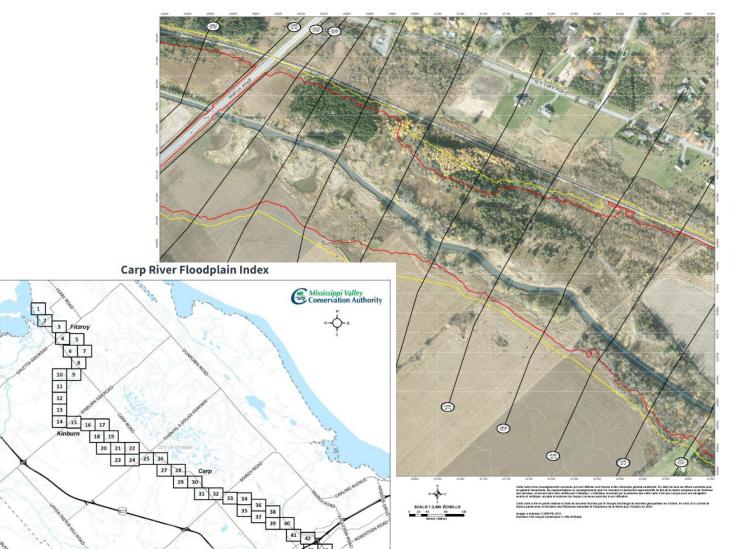


2023 May 1 – CRRA near Hazeldean

# **Ground Truthing**



# Floodplain Maps



#### DRAFT

FLOOD HAZARD AND REGULATION MAP

#### CARP RIVER CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

# LEGEND / LÉGENDE Regulation Flood Plain / La Crue Régulatrice Regulation Limit / Limite Réglementaire Contours / Courbes — Cross Sections / La coupe traversale

Cross Section Number 47919 Nombre de la coupe traverse 130.2

#### WITH 6.5 METRE INTERMEDIATE CONTOUR NORTH AN DRICAN DATUM 1983

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#### SHEET INDEX / TABLEAU D'ASSEMBLAGE



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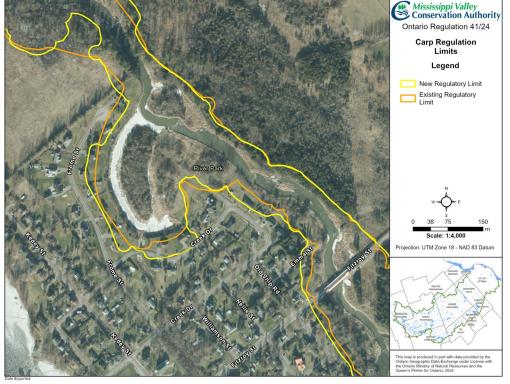
Remarque: La Infille réglementaire organis ente toutes les zones réglementées en verte de la Loi sur les offices de production de la matura suricie. S. Réglement de lo Chartes 1/13. Le inities de régulation est définie comme une zone lampon autour de tous les résques d'inordation, d'étrosion et de zones humides. Ces zones sont réglementées dans le but de maintenn à visiblé de nos basaire ver avants tout en prodigeant les vies el nes biens contre les réques natures.

| REVISIONS |             |      |
|-----------|-------------|------|
| NO.       | DESCRIPTION | DATE |
|           |             |      |
|           |             |      |
| - 12      |             |      |
| - 1       |             |      |
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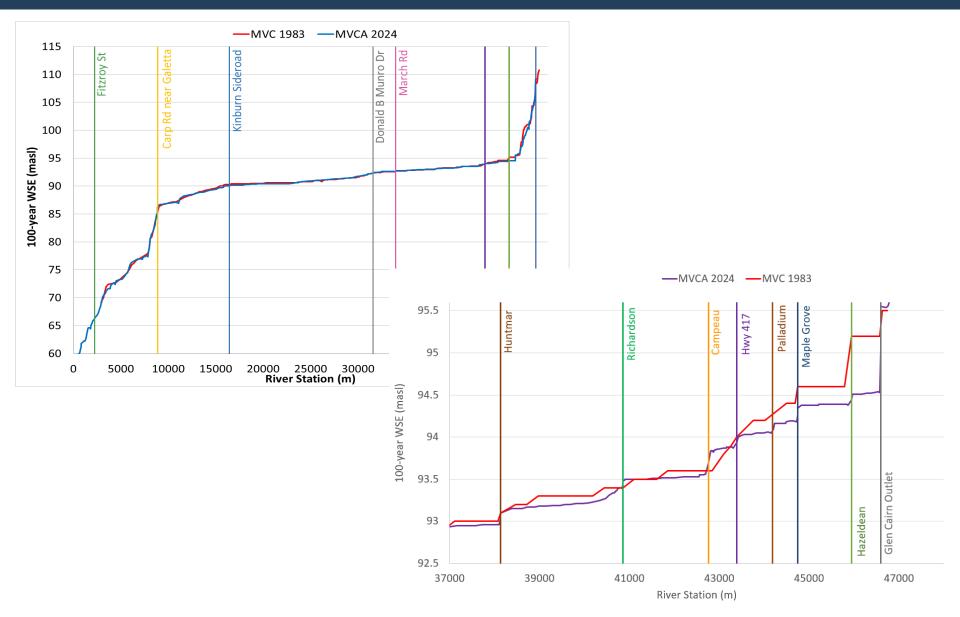
# New and Existing Regulatory Flood Lines







#### New and Existing Regulatory Flood Elevations



# Affected Properties and Infrastructure

| Type of Affected Property                  | Count |
|--|-------|
| Total affected properties                  | 637   |
| Newly affected properties                  | 29    |
| Properties no longer affected              | 266   |
| Dwellings within regulation limit          | 205   |
| Dwellings in floodplain                    | 1     |
| Dwellings without safe access              | 4     |
| Public roads in floodplain                 | 3     |
| Public roads without safe access           | 1     |
| Bridges in floodplain                      | 9     |
| Bridges without safe access                | 9     |
| Public places within regulation limit      | 15    |
| Public places in floodplain                | 6     |
| Public places without safe access          | 0     |
| Businesses within regulation limit         | 15    |
| Businesses in floodplain                   | 1     |
| Businesses without safe access             | 0     |
| Emergency services within regulation limit | 2     |
| Retirement homes within regulation limit   | 2     |
| Schools within regulation limit            | 2     |

<sup>\*</sup>Three of these residences are outside of the Carp River FPM Regulation Limit



#### Public Consultation



Notice published in: Community Voice (Kanata South and North), West Carleton Online, Ottawa Sun, Ottawa Citizen, MVCA website, Social Media, Friends of the Carp Letters mailed to all affected landowners Draft maps posted on MVCA website for review and comment



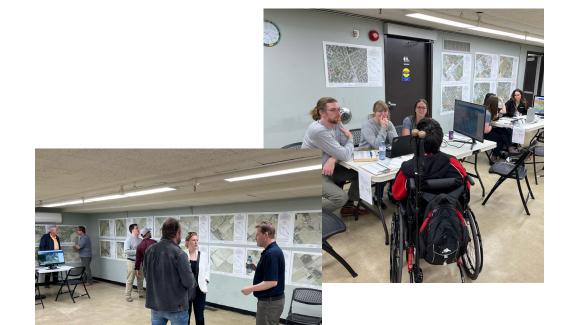
Meetings with City Councilors
Meeting with City Planning Managers
Notified Office of City Manager
Consulted developers, offered 1:1 meetings
Discussed with active permit applicants



Public Open House held on May 2nd, 2024 (Kanata Beaverbrook Community Centre)

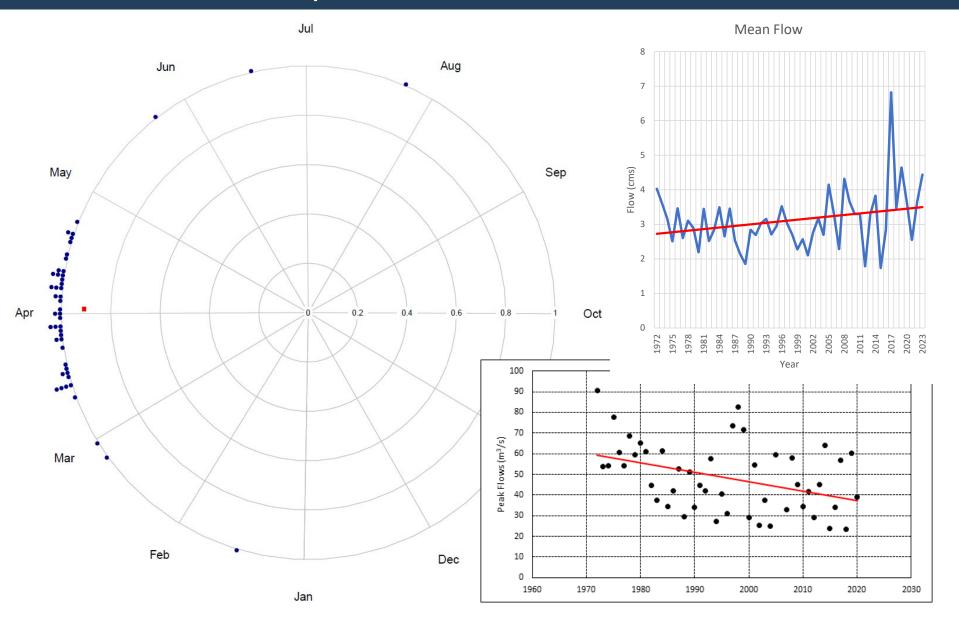
### Public Open House

- ☐ 58 people attended Public Open House
- Support from City staff and Board members
- All comments received during POH and commenting period tracked and addressed



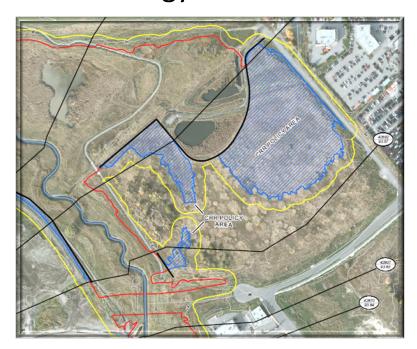
| Public Comments/Inquiries Type                 | Amount |
|--|--------|
| General inquiry questions                      | 5      |
| Concerns regarding changes to floodplain       | 4      |
| Questions regarding development and permitting | 33     |

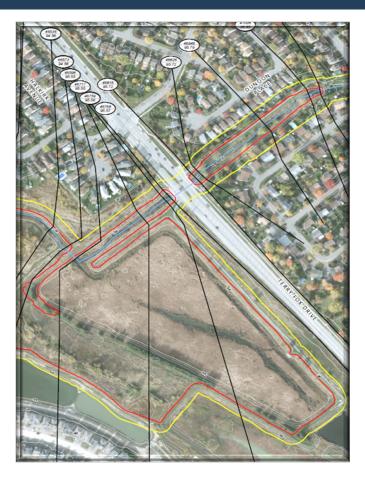
# Carp River Flood Flows



# Carp River Flood Levels

- Expected to be different...
  - Watershed changes
  - Data
  - Methodology





## Floodplain Mapping

- Flood hazard identification and mapping:
  - protect people and property from flooding
  - ✓ direct new development away from high-risk areas
  - ✓ identify areas where flood-proofing or other measures may be required to manage risks to communities



- Establish new policies (flood levels, projects, etc.)
- Review/design infrastructure
- Channel restoration
- Identify floodplain storage alternatives (cuts/fills)
- Capital projects (infrastructure maintenance/ownership)

#### Recommendations

#### That the Board of Directors:

- 1. Adopt the report Carp River Floodplain Mapping Update, dated June 2024, and the associated GIS-based Regulation Limit lines and floodplain maps as the delineation of areas along the Carp River that are susceptible to flooding during the Regional flood standard as defined in Schedule 1 of Ontario Regulation 41/24, and
- 2. Direct that the report, maps and Regulation Limit be used in the implementation of Ontario Regulation 41/24.

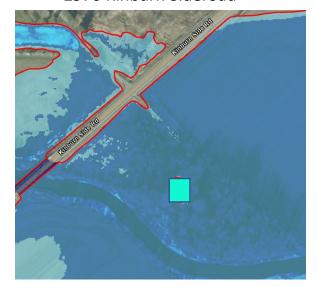


# Properties Without Safe Access

3679 Carp Road



2976 Kinburn Sideroad



3680 John Shaw Road



3956 Loggers Way



#### Public Roads Without Safe Access

#### **Fitzroy Provincial Park**



Pine Grove Campground Loop – does not have safe access



Two Rivers Campground Loop – has safe access



Limestone Road – has safe access

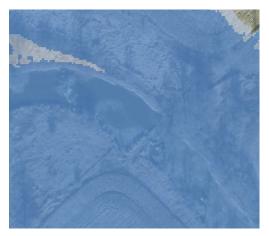
# Overtopped Bridges (no safe access)



Pedestrian Bridge U/S Maple Grove

Representative of several other pedestrian bridges along the Carp River

- Footbridge U/S Old Colony
- Footbridge D/S Maple Grove
- Footbridge D/S Hwy 417
- Footbridge U/S Richardson
- Footbridge U/S Donald B Munro



Farm Crossing U/S Thomas A Dolan Pkwy



Farm Crossing D/S Diamondview Rd



Private Road off of Loggers Way

# Affected Parks / Recreation

Appaloosa Park Ravine Park Rickey Place Park







Kinburn Community Centre



River Park



Fitzroy Provincial Park



#### Affected Businesses

Kevin Haimes Golf Centre has golf courses within the 1:100 year floodplain. However no company buildings are in the floodplain and the property has safe access



Businesses within (or partially within) the regulation limit, but not the regulatory floodplain:

| Name                                   | Address                |
|--|------------------------|
| Bell Sensplex                          | 1565 MAPLE GROVE RD    |
| Business Park                          | 501 PALLADIUM DR       |
| Quality Automotive                     | 1625 MAPLE GROVE RD    |
| Business Park                          | 50 FRANK NIGHBOR PL    |
| Business Park                          | 700 - 770 PALLADIUM DR |
| Kanata Commons                         | 8231 CAMPEAU DR        |
| Carp Chiropractic Clinic               | 435 DONALD B MUNRO     |
|  | DR                     |
| Carp Pizza                             | 439 DONALD B MUNRO     |
|  | DR                     |
| Star Fashion Cleaners                  | 449 DONALD B MUNRO     |
|  | DR                     |
| Carp Plaza                             | 461 DONALD B MUNRO     |
|  | DR                     |
| McNeely's Outdoor Power Equipment      | 469 DONALD B MUNRO     |
| Ltd                                    | DR                     |
| CSS Industrial Group / Canadian Centre | 2336 CRAIG'S SIDE RD   |
| for Experimental Radio                 |                        |
| KIN Vineyards                          | 2225 CRAIG'S SIDE RD   |
| Irish Hills Gold and Country Club      | 3248 CARP RD           |
|  |                        |

#### Affected Emergency Services / Retirement Homes

None of these properties are within the Regulatory Floodline



Fire Station 41 380 Eagleson Rd



Fire Station 64 475 Donald B Munro Dr



Shepherds of Good Hope 145 Castlefrank



The West Carleton
518 Donald B Munro Dr

### Affected Schools



St. Martin de Porres Catholic School



A.Y. Jackson Secondary School