

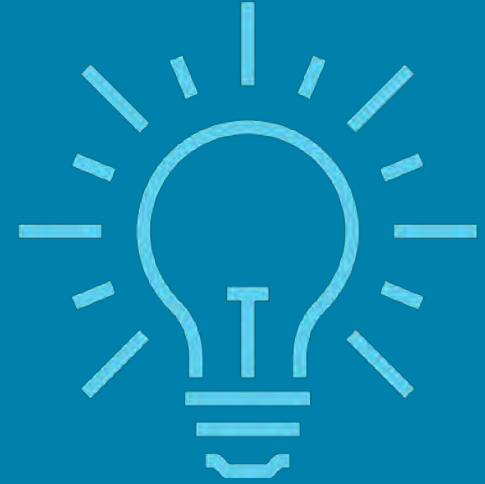
# Provincial Flood Maps

---

## Mighty Peace Watershed Alliance AGM

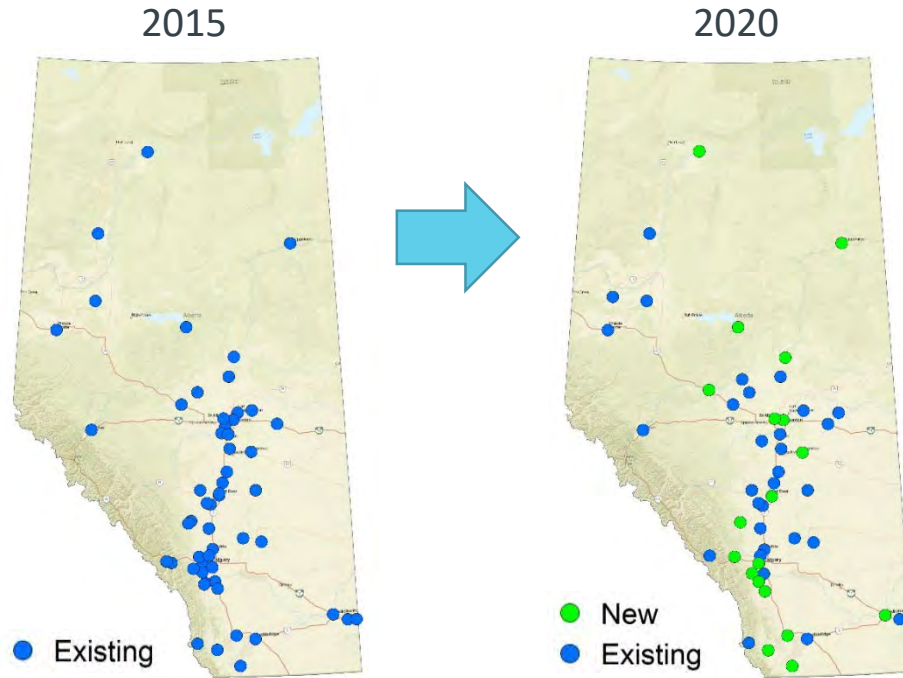
Alberta Environment and Parks

August 13, 2020



Identifying and understanding flood hazards are the first steps to increase public safety and reduce future flood damages.

# Flood Hazard Identification Program



- 60+ studies in 2015
  - 1,200 km of mapping
  - 100+ municipalities
- 21 new studies since 2015
  - Replace 29 existing studies
  - 60+ municipalities
  - 5 First Nations
- 1,500 km of new mapping
  - 600 km of updated maps
  - 900 km of maps in areas never mapped before

# Peace River

---

- 54 km of the Peace River and 1 km of the Heart River through Peace River
- No existing maps in area
- Started work in fall 2016
  - Draft reports and maps shared with local authorities between July 2019 and August 2020
- Public engagement planned for fall 2020

# Fort Vermilion

---

- 28 km of the Peace River through Fort Vermilion
- Replaces existing 2000 maps
- Started work in spring 2019
  - Draft reports and maps shared with local authority in May 2020
- Public engagement began in July 2020
  - Public feedback period remains open until August 31<sup>st</sup>

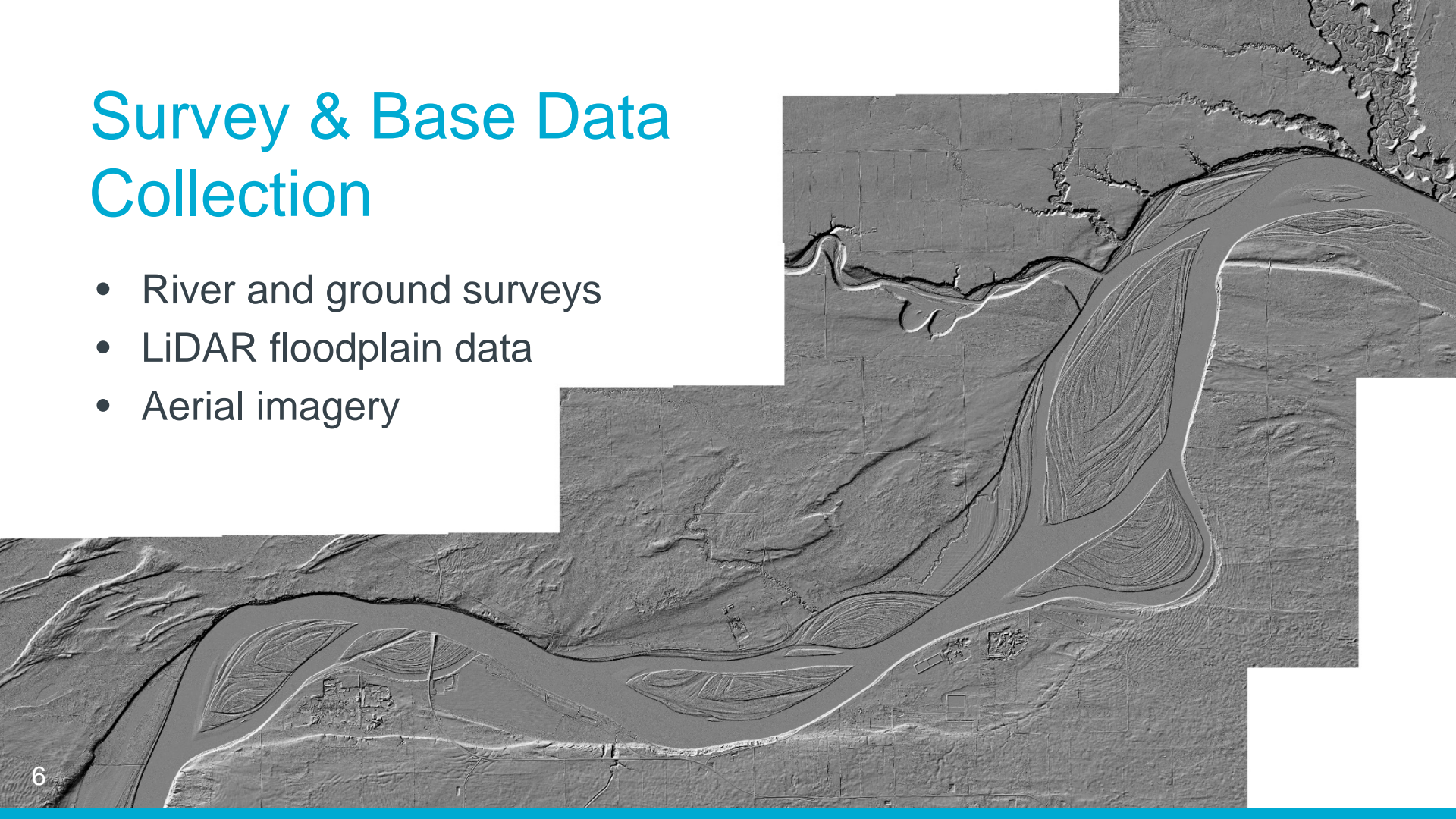
# Flood Study Components

---

	Peace River	Fort Vermilion
1) Survey & Base Data Collection	✓	✓
2) Channel Stability Investigation	✓	x
3) Hydrology Assessment	✓	✓
4) Ice Jam History & Analysis	✓	✓
5) Hydraulic Modelling	✓	✓
6) Open Water Flood Inundation Mapping	✓	✓
7) Ice Jam Flood Inundation Mapping	✓	✓
8) Flood Hazard Mapping	✓	✓
9) Flood Risk Inventory & Assessment	✓	x

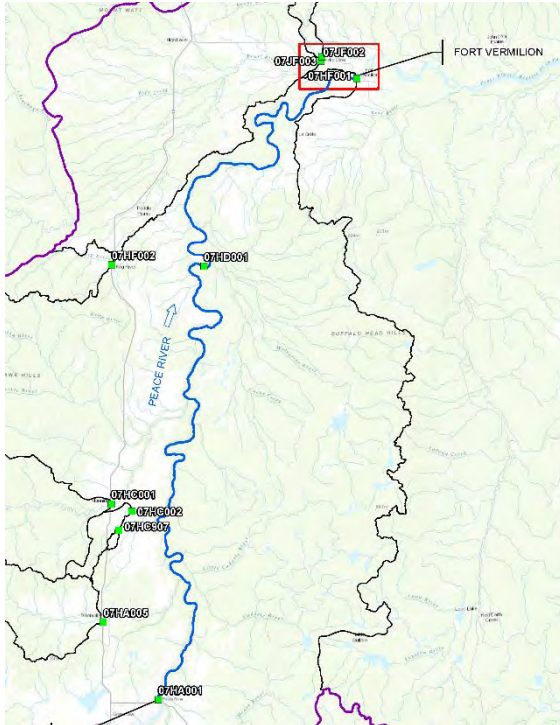
# Survey & Base Data Collection

- River and ground surveys
- LiDAR floodplain data
- Aerial imagery



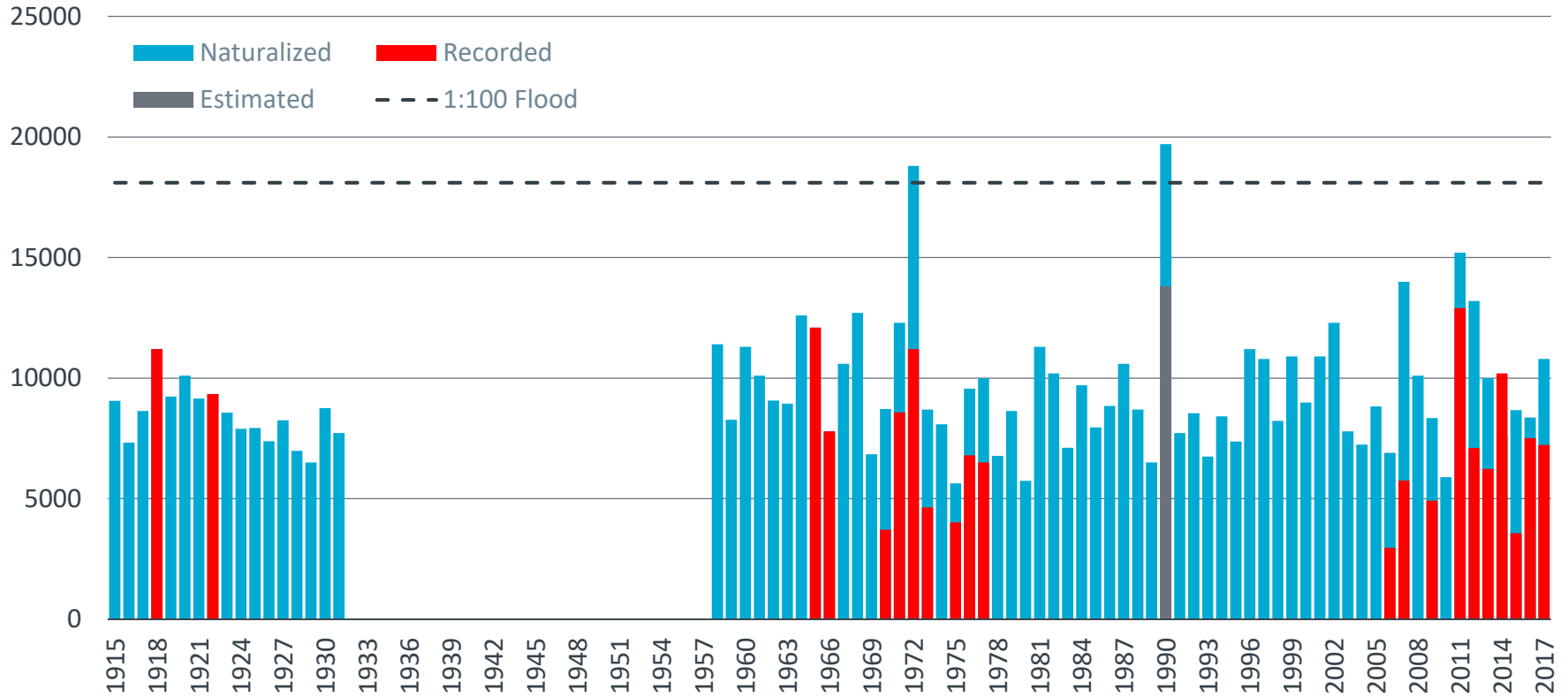


# Hydrology Assessment



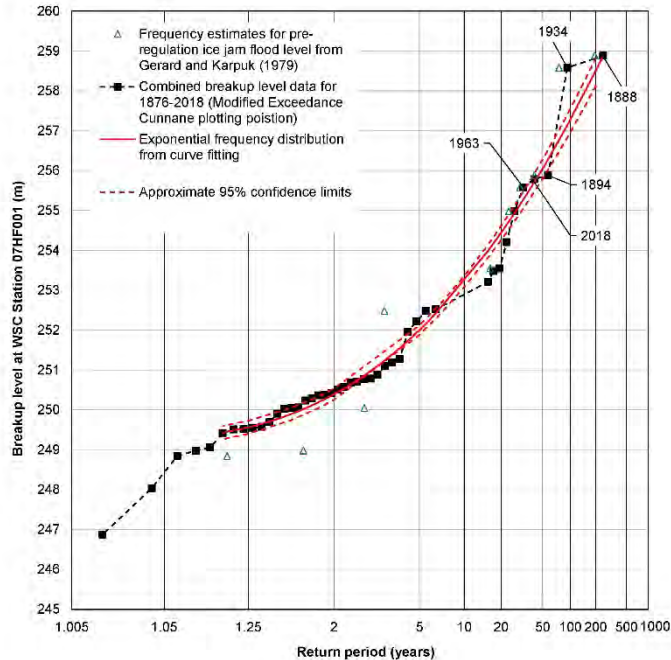
- Recorded and modelled flows
- 13 naturalized flood frequencies
  - 1:2, 1:5, 1:10, 1:20, 1:35, 1:50, 1:75, 1:100, 1:200, 1:350, 1:500, 1:750, and 1:1000 open water floods
- Peace River at Fort Vermilion
  - 1:100 flood = 18,100 m<sup>3</sup>/s
  - 1990 flood = 13,800 m<sup>3</sup>/s

## Open Water Flood Peak Flows for Peace River at Fort Vermilion (m<sup>3</sup>/s)

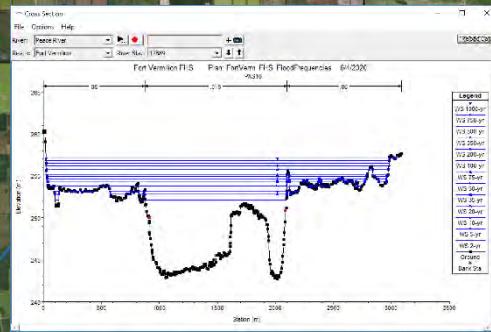




# Ice Jam Flood History & Analysis



- Recent and historic ice jam floods and water levels
  - Peace River – 1973, 1974, 1979, 1982, 1992, and 1997
  - Fort Vermilion – 1888, 1894, 1934, 1963, 2018, and 2020
- Focus on 1:50, 1:100, and 1:200 ice jam floods





# Hydraulic Model Calibration



- Models calibrated using surveyed open water flood highwater marks and ice jam flood information
- Reasonable simulation of past floods gives confidence in results for other floods

# Flood Inundation Mapping



## Open Water Scenarios

**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**

**1:2 Flood**



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**

**1:5 Flood**



**DRAFT**

NORTH  
VERMILION  
SETTLEMENT

HAMLET  
OF FORT  
VERMILION

**Open Water**  
1:10 Flood



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**  
1:20 Flood



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**

**1:35 Flood**



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**

**1:50 Flood**



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**

**1:75 Flood**



**DRAFT**

NORTH  
VERMILION  
SETTLEMENT

HAMLET  
OF FORT  
VERMILION

**Open Water**  
1:100 Flood



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**  
1:200 Flood



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**  
1:350 Flood



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**  
1:500 Flood



**DRAFT**

**NORTH  
VERMILION  
SETTLEMENT**

**HAMLET  
OF FORT  
VERMILION**

**Open Water**  
1:750 Flood



**DRAFT**

NORTH  
VERMILION  
SETTLEMENT

HAMLET  
OF FORT  
VERMILION

**Open Water**  
1:1000 Flood

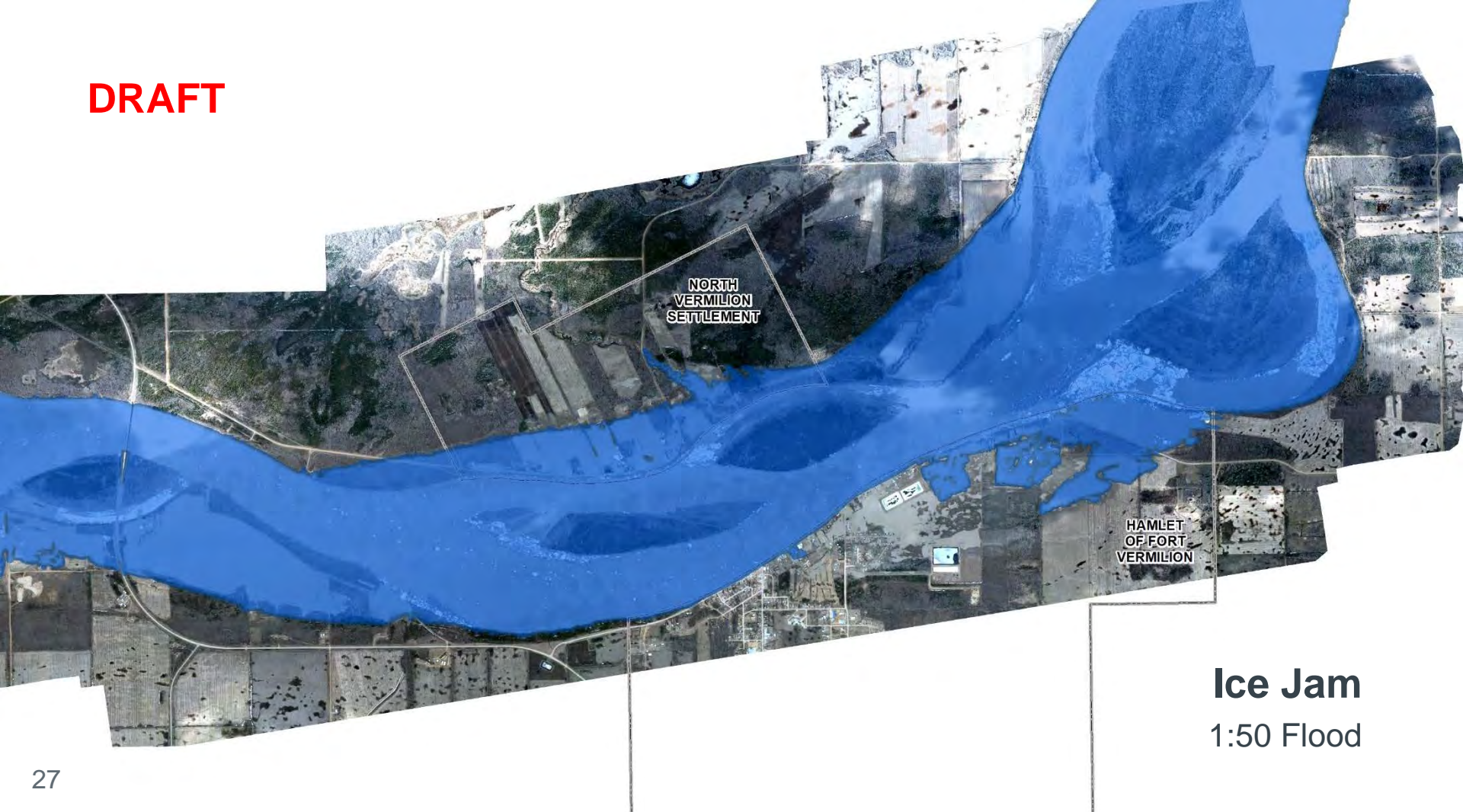
# Flood Inundation Mapping



## Ice Jam Scenarios



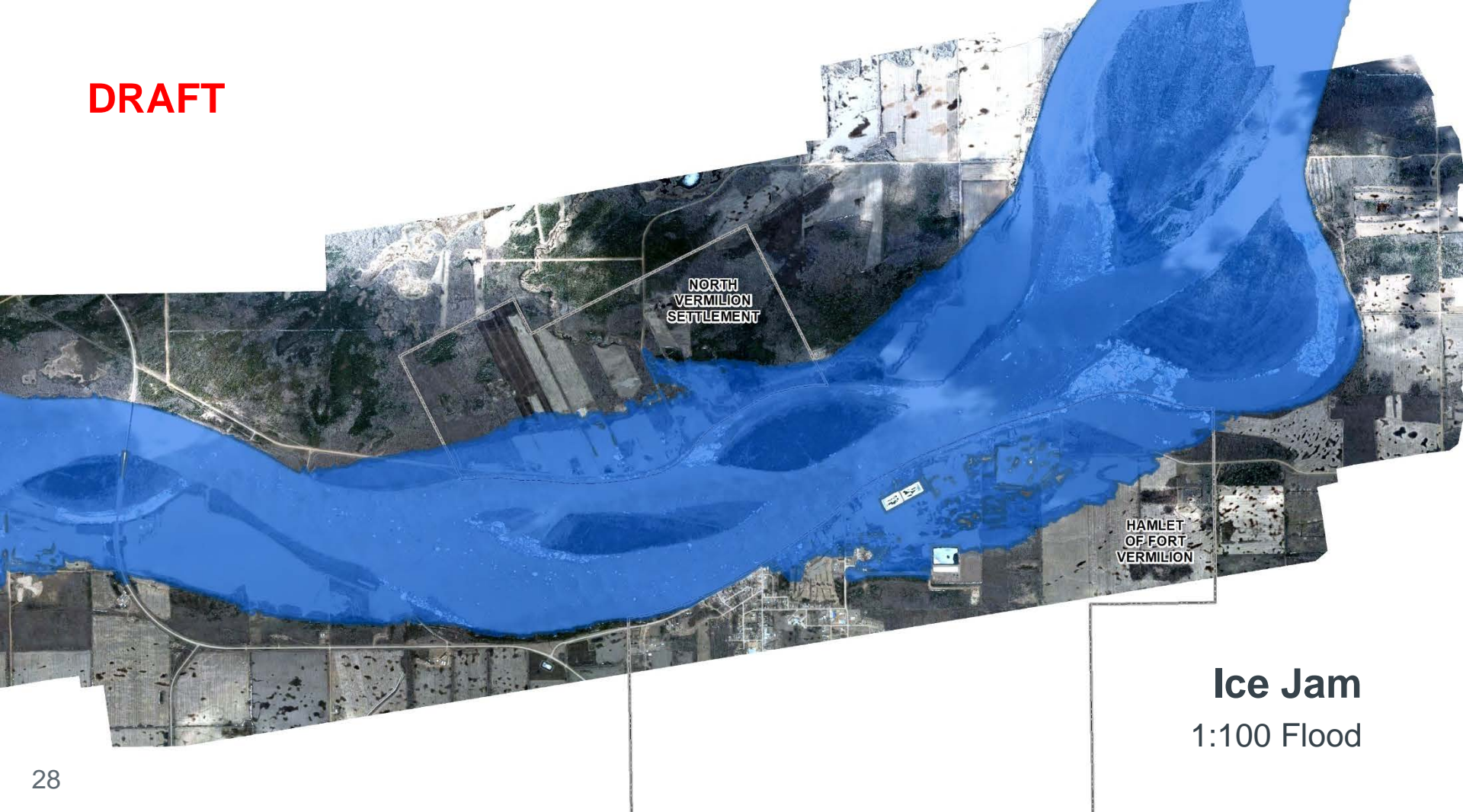
**DRAFT**



**Ice Jam**

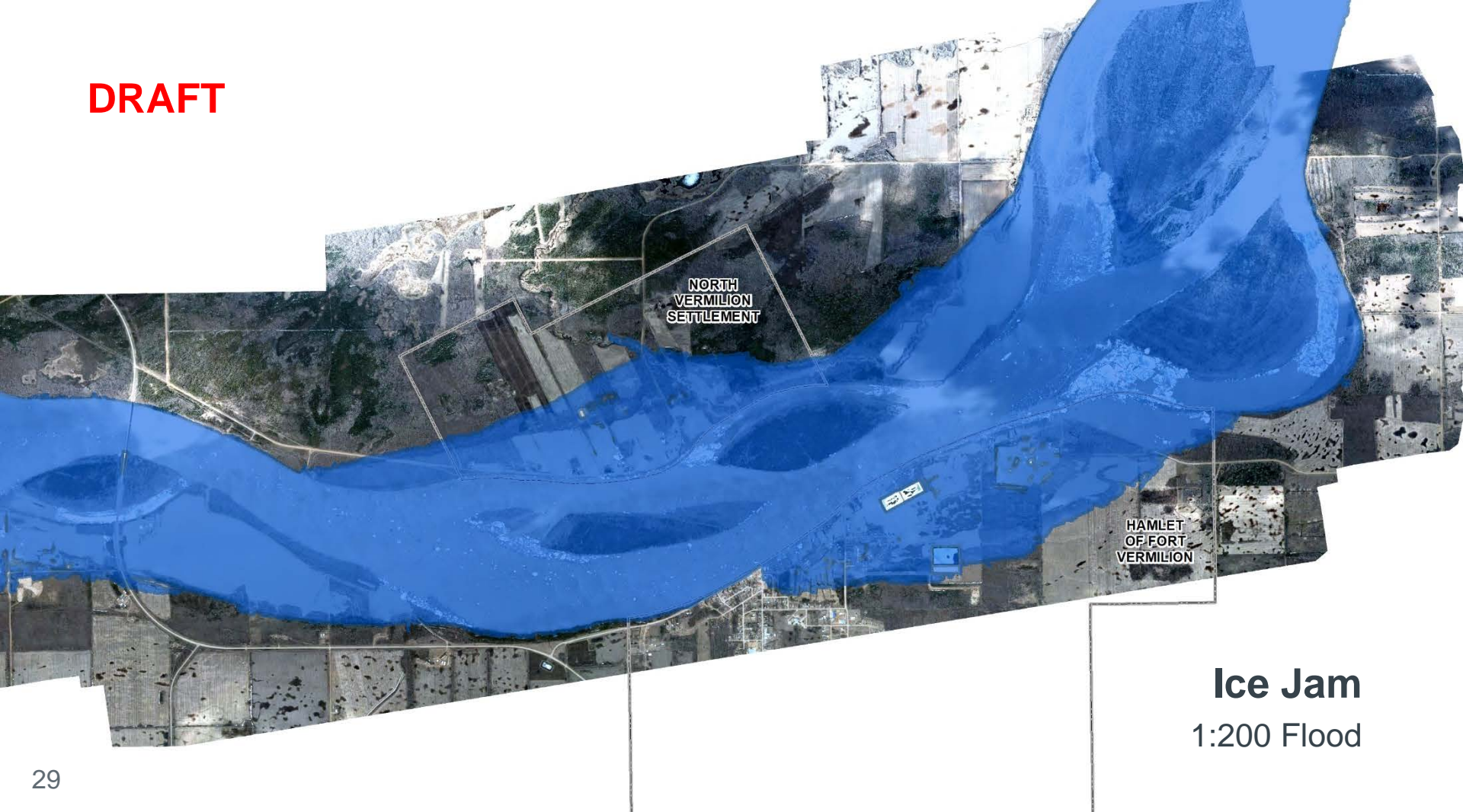
1:50 Flood

**DRAFT**





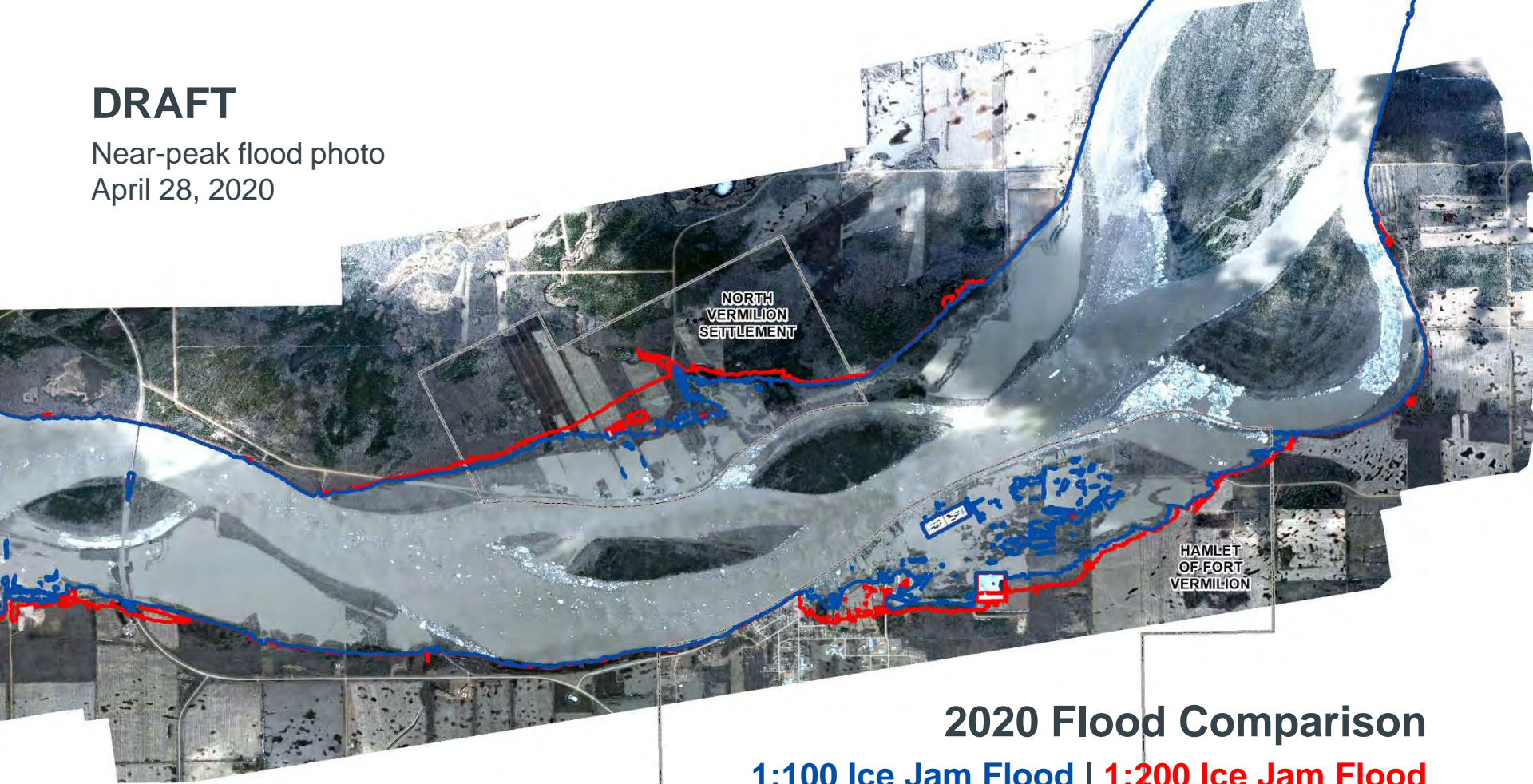
**DRAFT**





# DRAFT

Near-peak flood photo  
April 28, 2020



2020 Flood Comparison

1:100 Ice Jam Flood | 1:200 Ice Jam Flood

Public engagement is an important part of the flood study finalization process.

# Thank you

---

[www.floodhazard.alberta.ca](http://www.floodhazard.alberta.ca)

