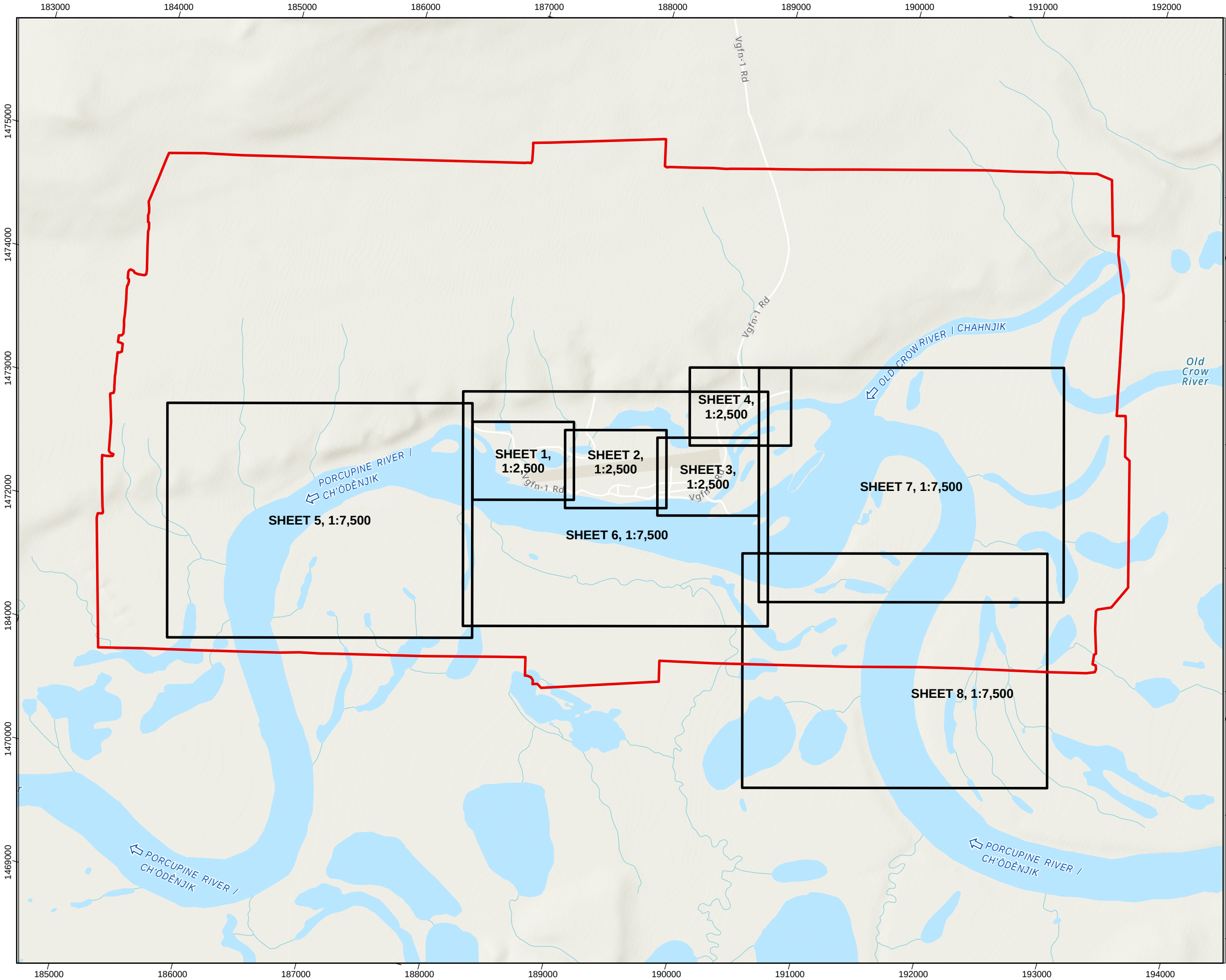
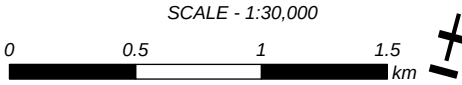




- MAPPING INDEX SHEETS
- LIDAR EXTENT

Engineer	GIS	Reviewer
SGZ	JXD	FMH/PKK



Coordinate System: NAD 1983 CSRS YUKON ALBERS
Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

Job: 1008777 Date: 15-MAY-2025

OLD CROW FLOOD
MAPPING
SHEET INDEX

General Notes:

1. The associated report should be read and understood prior to use of these flood maps: Northwest Hydraulic Consultants Ltd. (NHC) 2025. *Old Crow Flood Mapping Study*. NHC project 1008777.
2. Flood extents were delineated for the following flood scenarios: 5%, 1%, and 0.5% Annual Exceedance Probability (AEP, 1-in-20, 1-in-100, and 1-in-200 year events). The inundation extents for each AEP represent results for ice induced food events. All breakup scenarios were considered.
3. Flood levels were calculated using a 1D numerical flow model developed by NHC within HEC-RAS software.
4. All elevations are referenced to Canadian Geodetic Vertical Datum 2013 (CGVD2013). Water surface elevations do not include freeboard.
5. The asset ID number corresponds to asset ID numbers assigned by Underhill Geomatics during the June 2024 survey.

A generalized minimum setback of 30 m from the top of bank is suggested for planning of infrastructure and development. This setback is in general agreement with published guidelines (APEGBC, 2017; FLNRORD, 2018). Land within the setback area should be designated as unsuitable for further development; where exemptions to the setback are applied for, potential geomorphic hazards should be further assessed, understood, and mitigated (if and where applicable). For further information on areas of erosion vulnerability, see Appendix C of the associated project report.

Data Sources:

1. The digital elevation model (DEM) used to develop the flood mapping and terrain contours was pre- and post-processed using Esri ArcGIS Pro software. The data sources for the DEM are listed below.
 - a. LiDAR flown by McElhanney, acquired September 10, 2019.
 - b. The study area outside the LiDAR boundary was supplemented using high resolution digital elevation model (HRDEM) data from Natural Resources Canada.
2. River channel bathymetry on Porcupine and Old Crow Rivers was surveyed by Underhill Geomatics in June 2024.
3. Mapping background - Orthophotos from McElhanney, acquired September 10, 2019 and Esri World Imagery where needed. Inset map and Index backgrounds - Esri World Topo.

Use and Limitations of Flood Maps:

1. The maps delineate flood inundation areas for flood scenarios based on available survey data and water level records.
2. Future changes to the river channels, floodplain, and future climate will render the maps obsolete. The information on the maps should be reviewed after 5 years have elapsed since publication or after any extreme flood occurrence.

3. Flood mapping delineates flood inundation areas, showing the extent of one or more flood scenarios under existing conditions. Flood mapping is typically used for near real-time emergency response planning and operations.
4. The intent of the field survey, data collected, analyses, and results was for the purposes of flood mapping. The flood maps are not intended for engineering design or construction.
5. Underlying hydraulic analysis assumes channel and shoreline geometry is stationary. Erosion, deposition, degradation, and aggradation are expected to occur and may alter actual observed flood levels and extents. Roads, bridges, new dikes, and future developments on the floodplain can restrict water flow and increase local water levels. Obstructions, such as log-jams, blockages, local storm water inflows, groundwater, other land drainage or tributary flows beyond those indicated were not modelled and may cause flood levels to exceed those indicated on the maps. Additionally, flooding may occur outside of the designated boundaries caused by ponding from rainwater or snowmelt on the floodplain, groundwater seepage, local snowmelt, or local drainage courses.
6. The flood extents for modelled scenarios have not been established on the ground by legal survey. The accuracy of the flood boundaries is limited by the LiDAR base mapping and orthophotography.
7. Isolated areas of inundation smaller than 100 m² and some manually flagged areas larger than 100m² were removed from the maps. Holes in the inundation extents with areas less than 100 m² were also removed.
8. The flood maps do not represent hazards due to erosion, avulsion, or channel migration. An overview assessment of geomorphic hazards can be found in Appendix C of the associated project report.
9. Industry best practices were followed to generate the flood maps. However, actual flood levels and extents may vary from those shown. Residual flood risk beyond that mapped exists for flood events more extreme than the design events. Northwest Hydraulic Consultants Ltd. and the Government of Yukon do not assume any liability for such variations.

DISCLAIMER

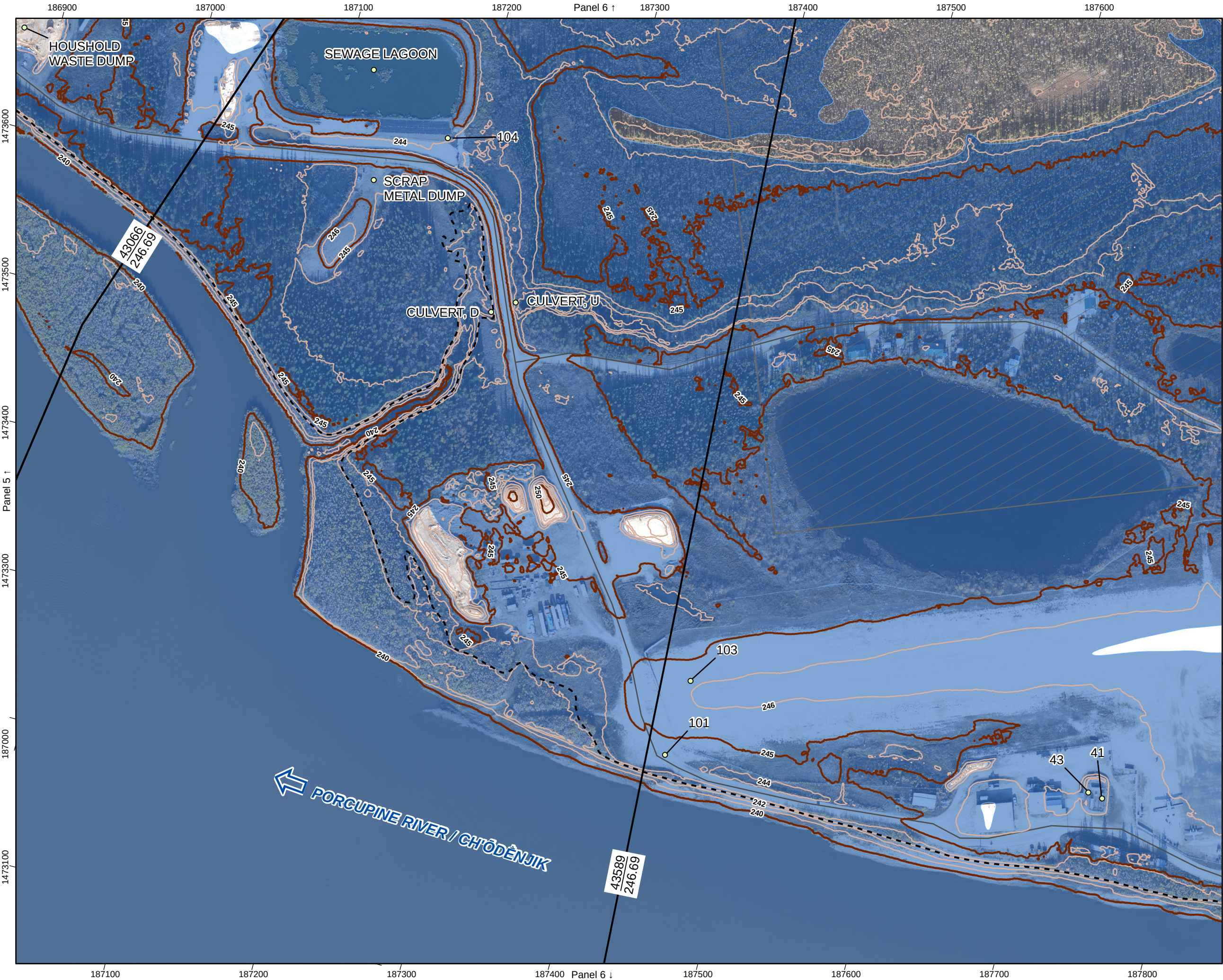
This report has been prepared by Northwest Hydraulic Consultants Ltd. for the Government of Yukon Department of Environment – Water Resources Branch for specific application to the Old Crow Flood Mapping Study (Porcupine River and Old Crow River), a project funded through the Flood Hazard Identification and Mapping Program. The information and data contained herein represent **Northwest Hydraulic Consultants Ltd.’s** professional judgment in light of the knowledge and information available to **Northwest Hydraulic Consultants Ltd.** at the time of preparation and was prepared in accordance with generally accepted engineering and geoscience practices. This study and associated project deliverables may be used and relied upon by Government of Yukon Department of Environment – Water Resources Branch, its officers, and employees, as well as all orders of government and other public and private sector organizations, to understand clearwater and ice jam flood hazards for the specific flood scenarios and water bodies assessed in the study. The report and flood maps produced as part of this project are intended to inform decision-making support of land use planning, flood mitigation, emergency preparedness and response, and adaptation to a changing climate. **Northwest Hydraulic Consultants Ltd.** is not liable in any way whatsoever to any party for any injury, loss, or damages suffered by such parties arising from the misuse, misinterpretation, or reliance upon this report or any of its contents.

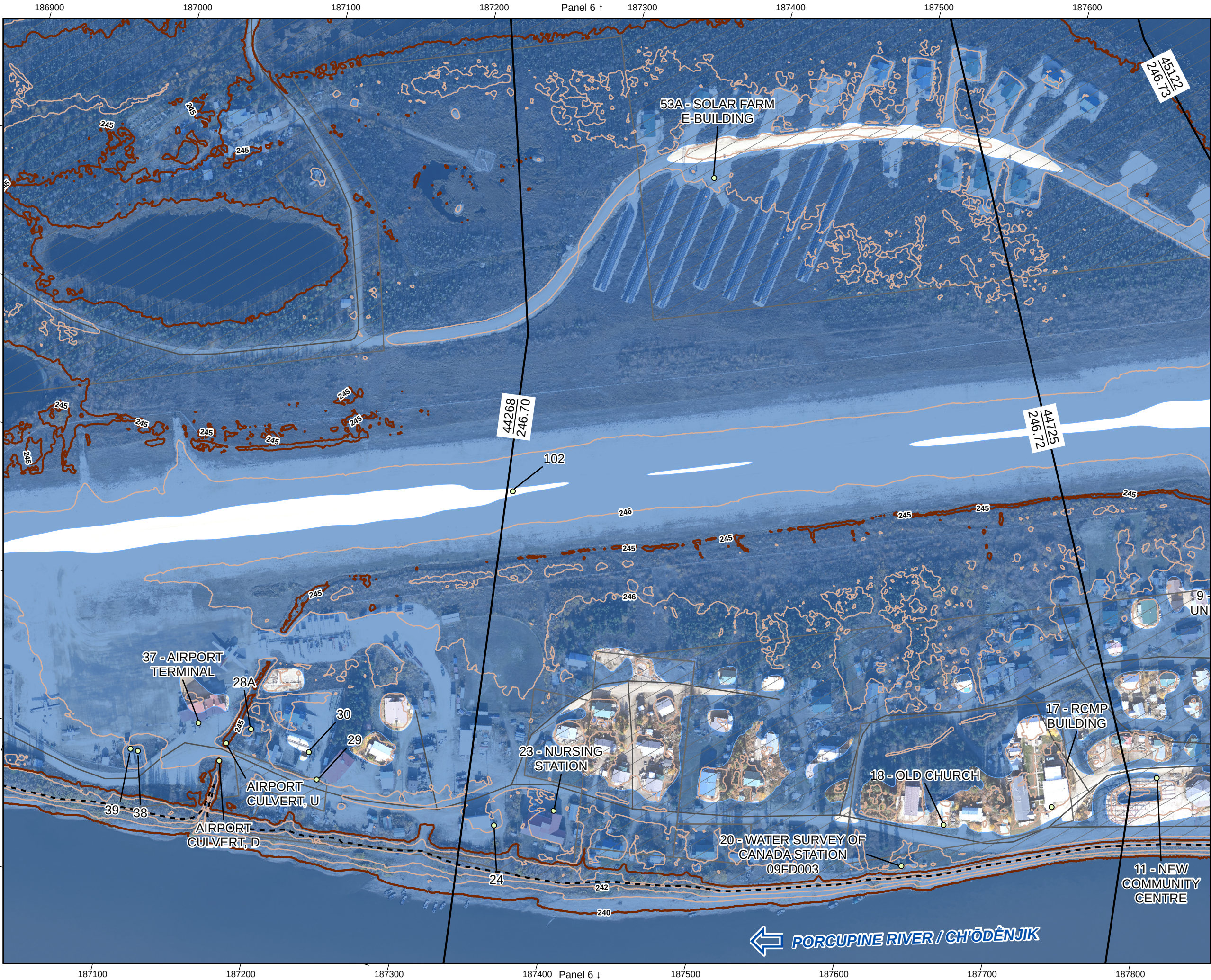






Engineer SGZ	GIS JXD	Reviewer FMH/PKK
Coordinate System: NAD 1983 CSRS YUKON ALBERS Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)		
Job: 1008777		Date: 03-JUN-2025
OLD CROW FLOOD MAPPING MAP NOTES		





- POINT OF INTEREST
Asset ID number (see General Notes)
- ROAD
- MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres
- MINOR CONTOUR AT 1M INTERVAL
Labelled with elevation in metres
- MODELLED CROSS-SECTION
- STATIONING (Labelled in metres)
WATER SURFACE ELEVATION (Labelled in metres)
- 50% AEP OPEN WATER EXTENT
- INUNDATION EXTENT
- VUNTUT GWITCHIN FIRST NATION SETTLEMENT LAND
- FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

Engineer SGZ	GIS JXD	Reviewer FMH/PKK
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SCALE - 1:2,500

0 25 50 75 100 M

N

Coordinate System: NAD 1983 CSRS YUKON ALBERS
Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

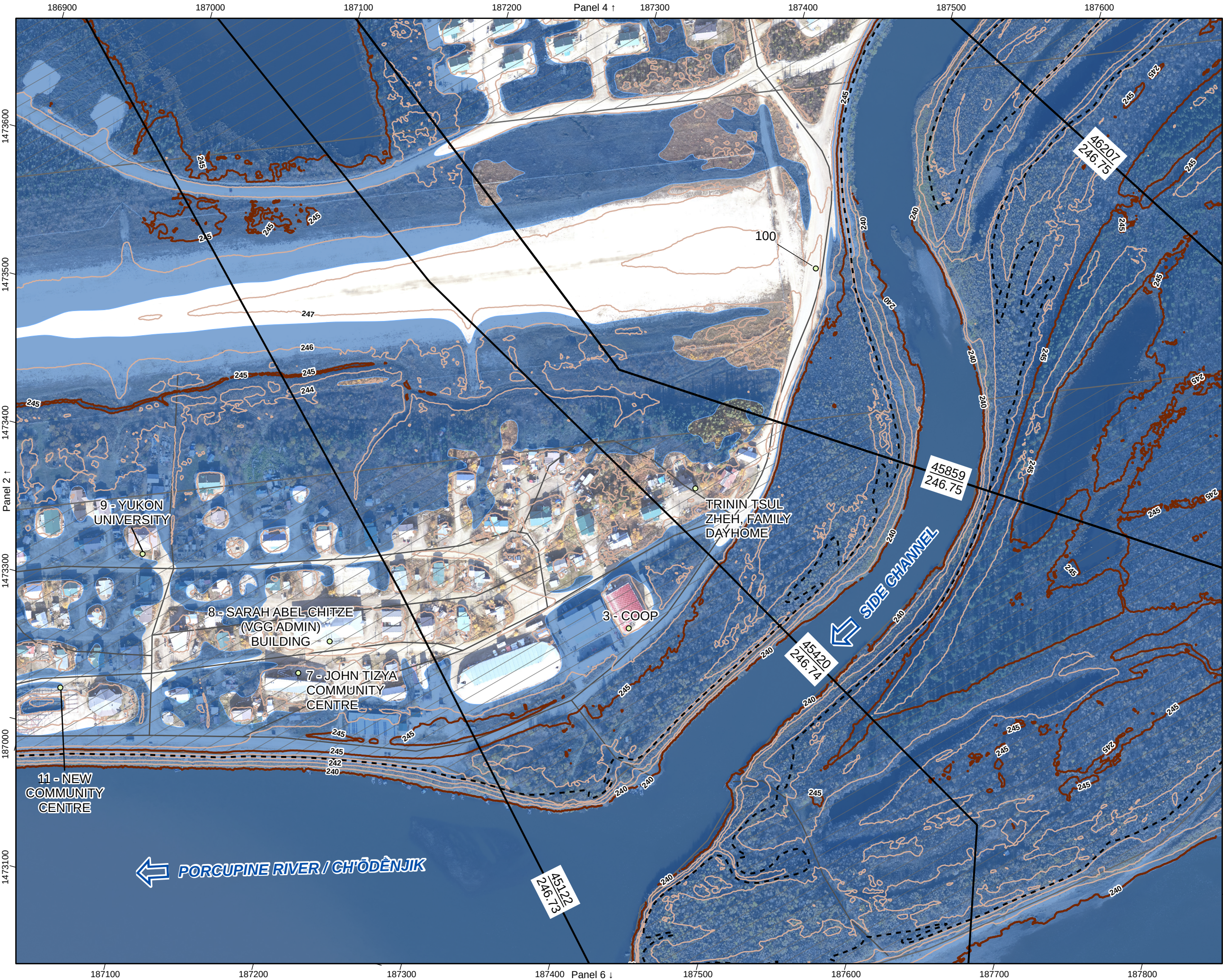
Job: 1008777	Date: 15-MAY-2025
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OLD CROW FLOOD MAPPING

5.0% ICE INDUCED ANNUAL EXCEEDANCE PROBABILITY

SHEET 2 of 8

JXD, \\miamfile-van\Projects\Active\1008777_Old_Crow\95_GIS\1008777_JXD_FloodMapping_2p5k_2.aprx



- POINT OF INTEREST
Asset ID number (see General Notes)
- ROAD
- MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres
- MINOR CONTOUR AT 1M INTERVAL
Labelled with elevation in metres
- MODELLED CROSS-SECTION
- STATIONING (Labelled in metres)
- WATER SURFACE ELEVATION (Labelled in metres)
- 50% AEP OPEN WATER EXTENT
- INUNDATION EXTENT
- VUNTUT GWITCHIN FIRST NATION SETTLEMENT LAND
- FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

Engineer SGZ	GIS JXD	Reviewer FMH/PKK
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SCALE - 1:2,500

0 25 50 75 100 M

Coordinate System: NAD 1983 CSRS YUKON ALBERS
Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

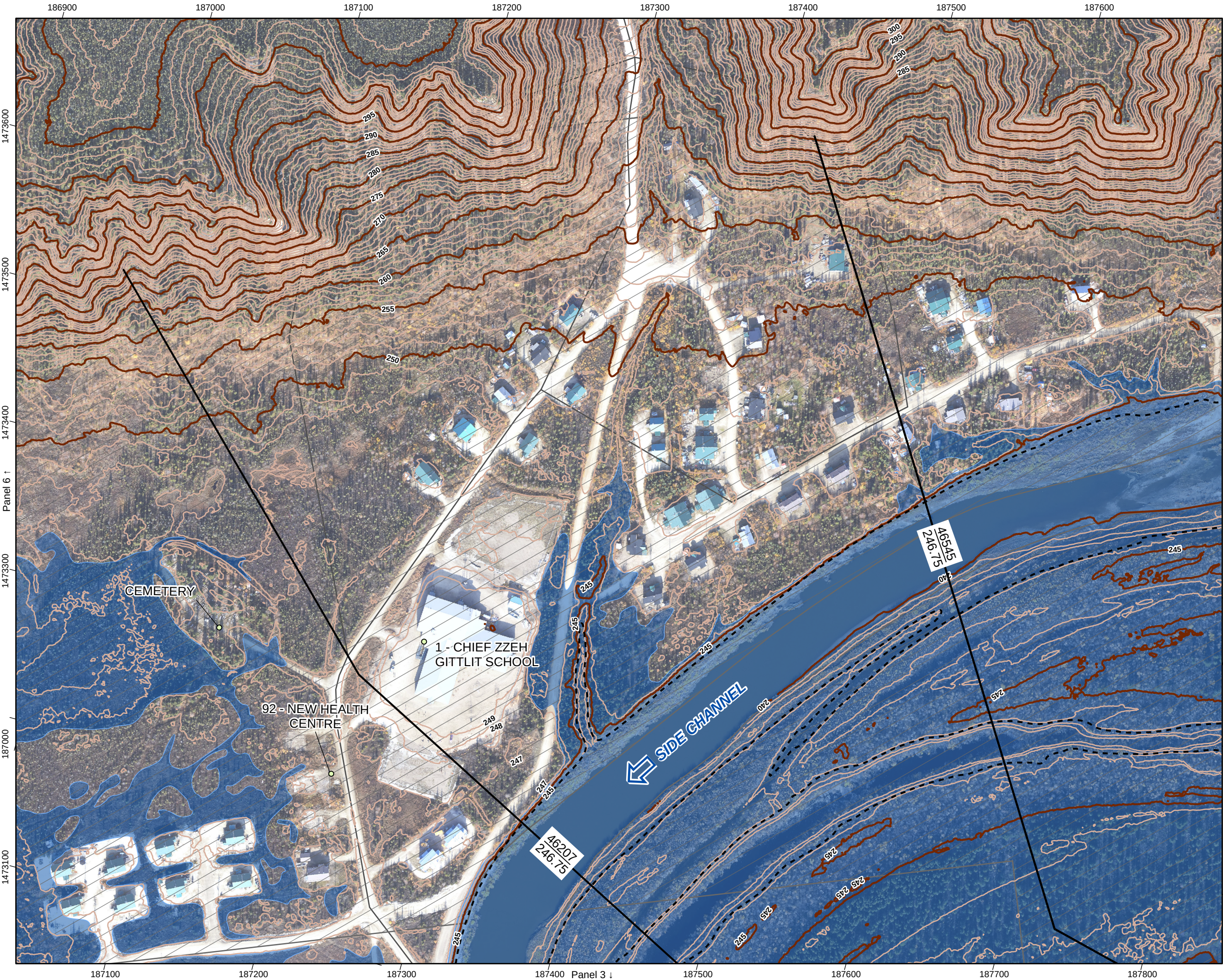
Job: 1008777 Date: 15-MAY-2025

OLD CROW FLOOD MAPPING

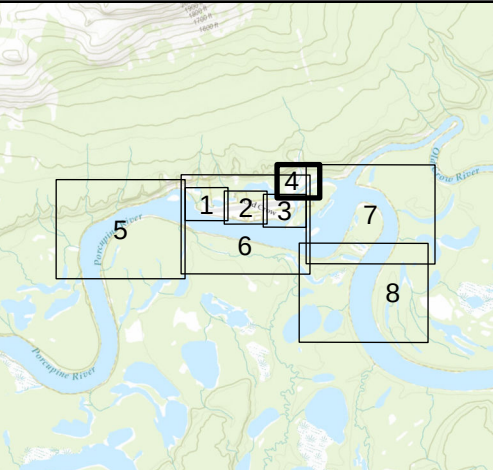
5.0% ICE INDUCED ANNUAL EXCEEDANCE PROBABILITY

SHEET 3 of 8

JXD, \\mainfile-van\Projects\Active\1008777_Old_Crow\95_GIS\1008777_JXD_FloodMapping_2p5k_2.aprx







 POINT OF INTEREST
Asset ID number (see General Notes)

 ROAD

 MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres

 MINOR CONTOUR AT 1M INTERVAL
Labelled with elevation in metres

 MODELLED CROSS-SECTION

40757

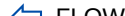
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 STATIONING (*Labelled in metres*)
WATER SURFACE ELEVATION
(*Labelled in metres*)

 50% AEP OPEN WATER
EXTENT

 INUNDATION EXTENT

 VUNTUT GWITCHIN FIRST NATION
SETTLEMENT LAND

 FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

Engineer	GIS	Reviewer
SGZ	JXD	FMH/PKK

SCALE - 1:2,500

0

25

50

75

100

M



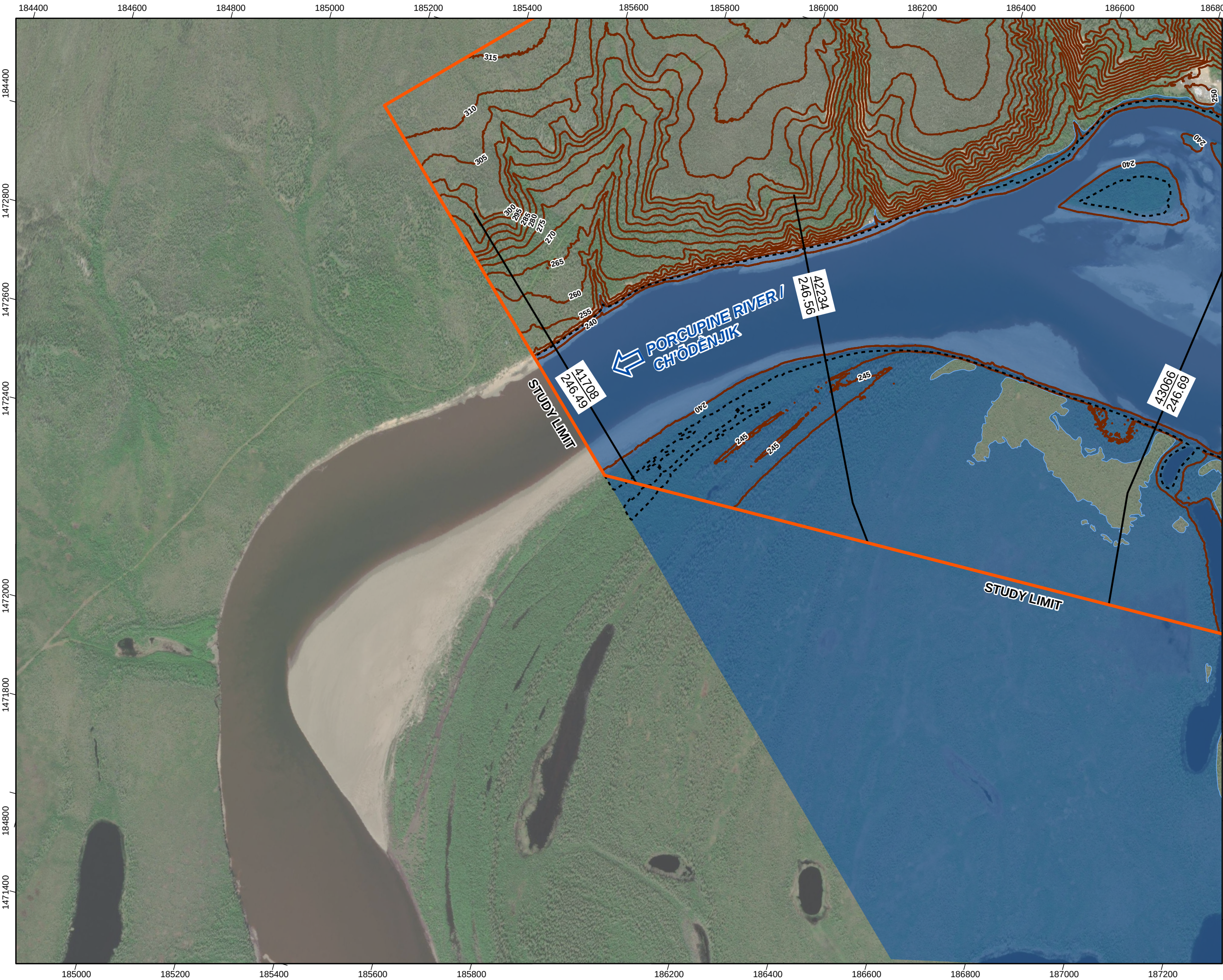
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Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

Job: 1008777	Date: 15-MAY-2025
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OLD CROW FLOOD MAPPING
5.0% ICE INDUCED ANNUAL
EXCEEDANCE PROBABILITY

SHEET 4 of 8

JXD, \\unamfile-van\Projects\Active\1008777_Old_Crow\95_GIS\1008777_JXD_FloodMapping_2p5k_2.aprx



ROAD

STUDY LIMIT

MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres

MODELLED CROSS-SECTION

40757
246.43

STATIONING (*Labelled in metres*)
WATER SURFACE ELEVATION
(*Labelled in metres*)

50% AEP OPEN WATER EXTENT

INUNDATION EXTENT

FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

Engineer SGZ	GIS JXD	Reviewer FMH/PKK
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SCALE - 1:7,500

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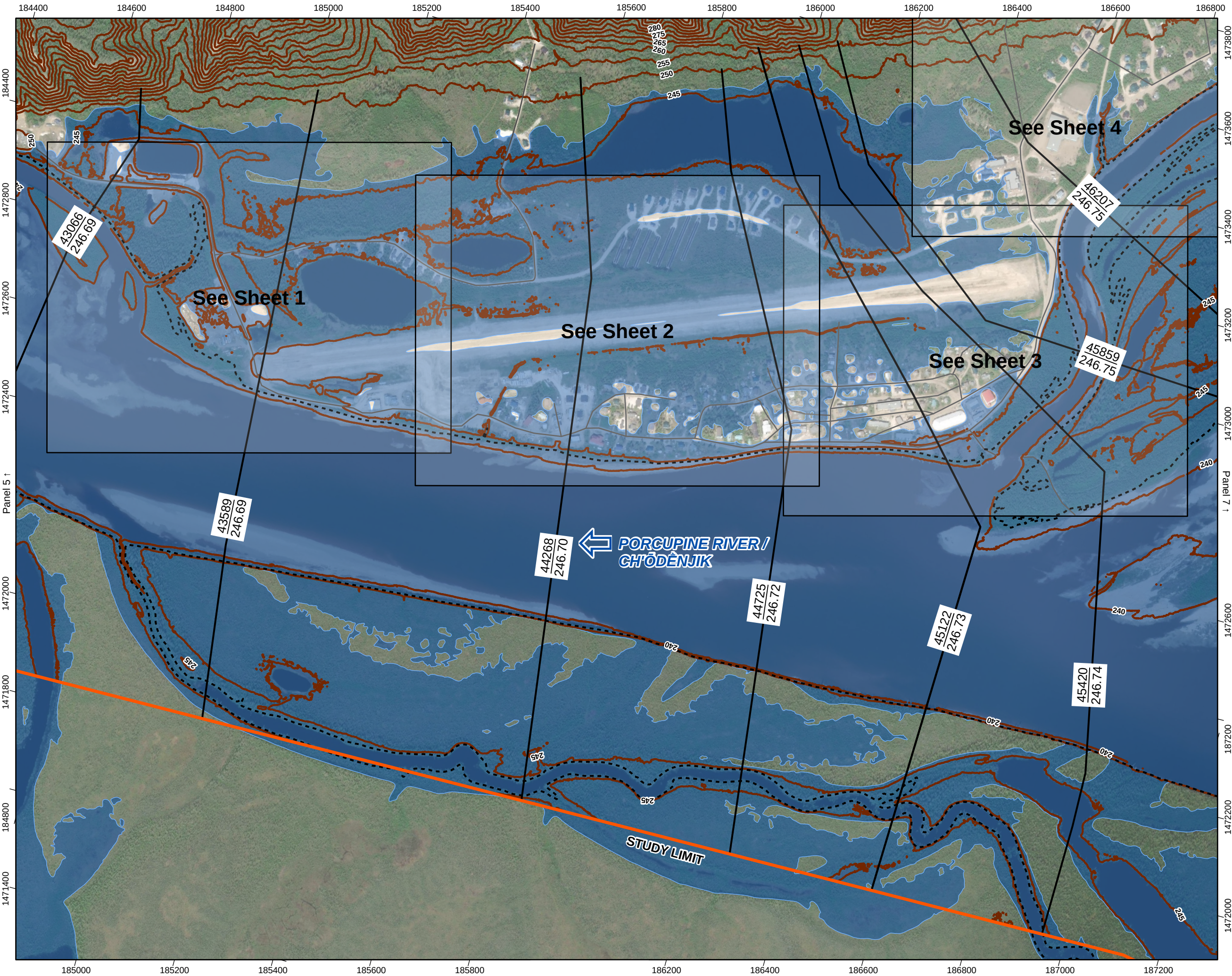
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Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

Job: 1008777	Date: 15-MAY-2025
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OLD CROW FLOOD MAPPING
5.0% ICE INDUCED ANNUAL
EXCEEDANCE PROBABILITY

SHEET 5 of 8

JXD, \\mmainfile-van\Projects\Active\1008777_Old_Crow\95_GIS\1008777_JXD_FloodMapping_705k_2.aprx



ROAD

STUDY LIMIT

MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres

MODELLED CROSS-SECTION

40757
246.43

STATIONING (*Labelled in metres*)

WATER SURFACE ELEVATION
(*Labelled in metres*)

50% AEP OPEN WATER EXTENT

INUNDATION EXTENT

FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

Engineer	GIS	Reviewer
SGZ	JXD	FMH/PKK

SCALE - 1:7,500

0

50

100

150

200

250

300

M

N

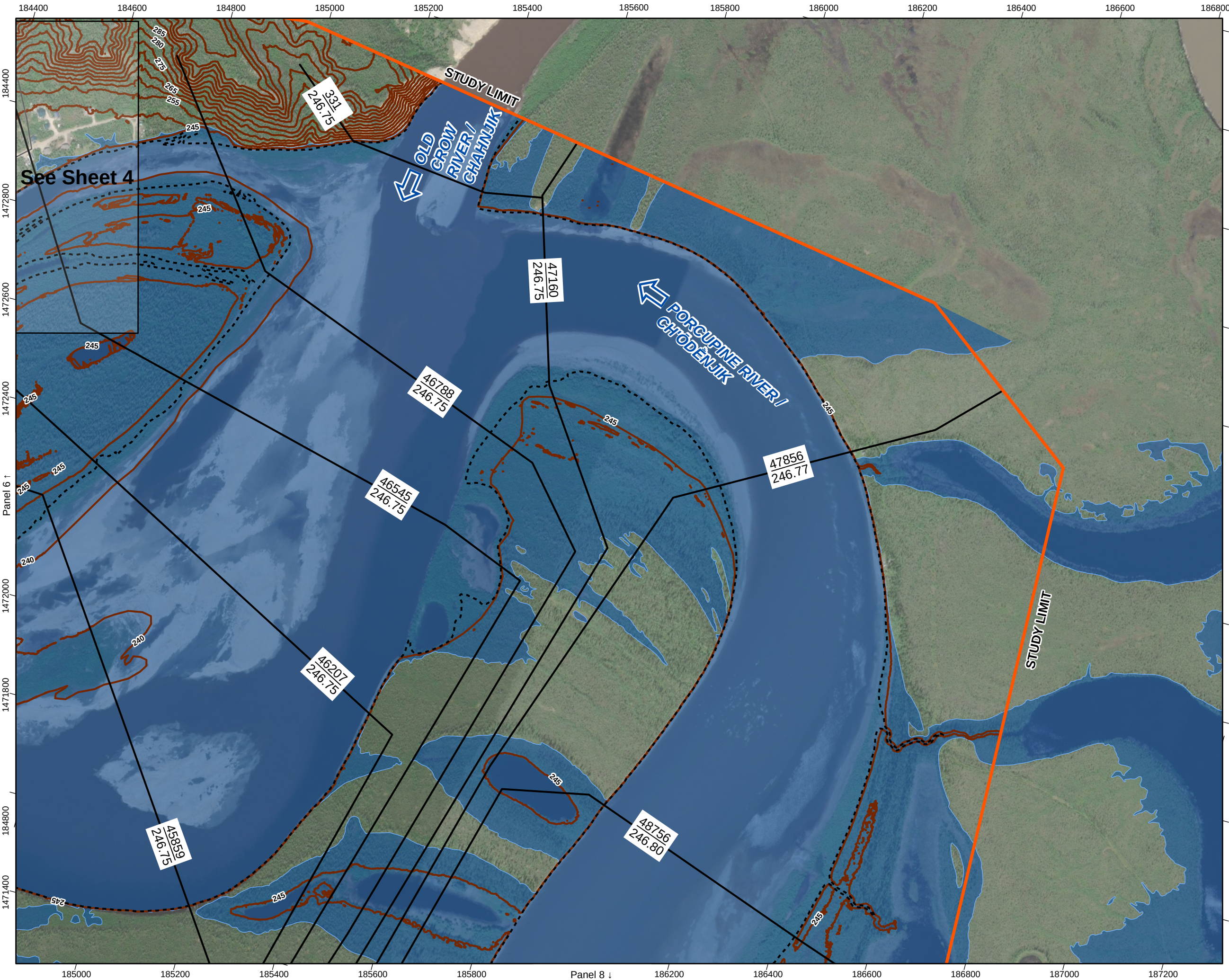
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Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

Job: 1008777	Date: 15-MAY-2025
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OLD CROW FLOOD MAPPING
5.0% ICE INDUCED ANNUAL
EXCEEDANCE PROBABILITY

SHEET 6 of 8

JXD, \\mainfile-van\Projects\Active\1008777_Old_Crow\95_GIS\1008777_JXD_FloodMapping_705k_2.aprx



ROAD

STUDY LIMIT

MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres

MODELLED CROSS-SECTION

40757

246.43

STATIONING (*Labelled in metres*)
WATER SURFACE ELEVATION (*Labelled in metres*)

50% AEP OPEN WATER EXTENT

INUNDATION EXTENT

FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

Engineer	GIS	Reviewer
SGZ	JXD	FMH/PKK

SCALE - 1:7,500

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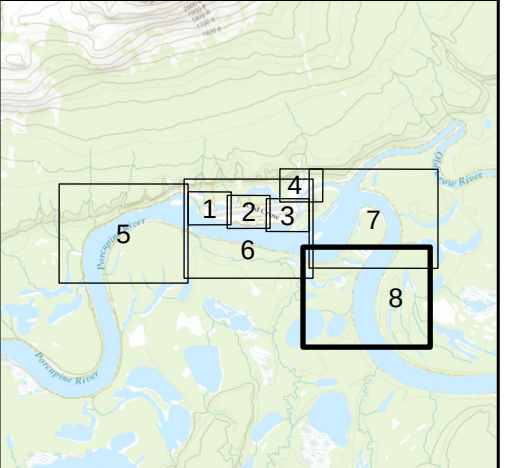
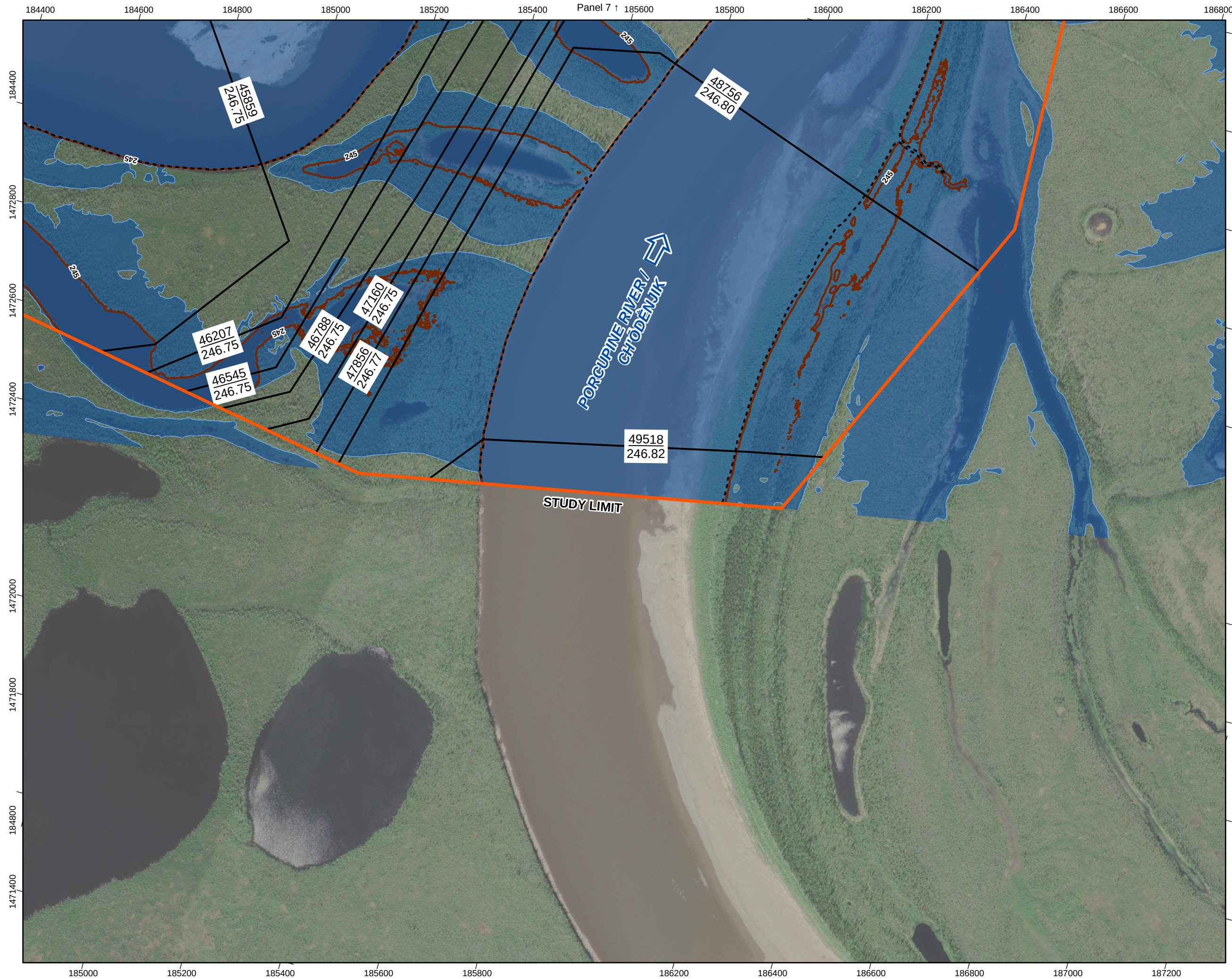
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Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

Job: 1008777	Date: 15-MAY-2025
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OLD CROW FLOOD MAPPING
5.0% ICE INDUCED ANNUAL EXCEEDANCE PROBABILITY

SHEET 7 of 8

JXD, \\mainfile-van\Projects\Active\1008777 Old Crow\95 GIS\1008777_JXD_FloodMapping_705k_2.aprx



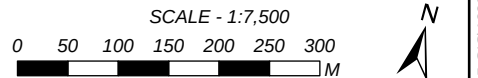
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-  STUDY LIMIT
-  MAJOR CONTOUR AT 5M INTERVAL
Labelled with elevation in metres
-  MODELLED CROSS-SECTION
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 STATIONING (*Labelled in metres*)
- 246.43

 WATER SURFACE ELEVATION
(*Labelled in metres*)
-  50% AEP OPEN WATER EXTENT
-  INUNDATION EXTENT
-  FLOW DIRECTION

DATA SOURCES: REFER TO NOTES ON INDEX MAP

<i>Engineer</i> <i>SGZ</i>	<i>GIS</i> <i>JXD</i>	<i>Reviewer</i> <i>FMH/PKK</i>
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Coordinate System: NAD 1983 CSRS YUKON ALBERS
Units: METRES; Vertical Datum: CGVD2013 (CGG2013a)

Job: 1008777

Date: 15-MAY-2025

OLD CROW FLOOD MAPPING

SHEET 8 of 8