



**Notes to Users**

1. Please refer to the **Disclaimer** below.
2. Please review the associated project report before referring to the maps: Northwest Hydraulic Consultants Ltd. (NHC). 2023. 'Northwest Vancouver Island Tsunami Risk Assessment (Phase 2)'. Report prepared for Ocean Networks Canada. NHC project number 3006332.
3. Tsunami model results shown correspond to an earthquake with a magnitude of 9.0 from the Cascadia Subduction Zone. Please refer to the project report for additional information on tsunami source.
4. Initial water level for tsunami simulations consists of current-day Higher High Water Mean Tide (HHWMT) which at Winter Harbour and Gold River terminal correspond to an elevation of 1.5 m above the Canadian Geodetic Vertical Datum of 2013 (CGVD2013). HHWMT is defined as the average from all the higher high waters from 19 years of tidal predictions.
5. Spatially varying land subsidence and uplift associated to the Cascadia Subduction Zone earthquake has been applied by adjusting the underlying digital elevation model as per Natural Resources Canada information.
6. Information shown on maximum tsunami amplitude maps corresponds to model results of maximum water surface elevation above a reference plane corresponding to HHWMT. Over the ocean this information corresponds to the maximum tsunami amplitude, which is defined as the vertical distance of the tsunami wave crest above the reference plane. Overland this information corresponds to the maximum tsunami runup, which is defined as the vertical distance of the leading edge (most upland reach) of the tsunami flow above the reference plane.
7. Information shown on maximum tsunami-induced current velocity maps corresponds to model results of maximum current velocity encountered during the tsunami. Tsunami simulations were performed for a constant tide level and therefore do not include the influence of tidal currents, on which can be superimposed tsunami-induced currents.
8. No safety factor, or freeboard was applied to the results shown on these maps. Any inundation visible on these maps corresponds to the inundation as estimated by the numerical model without any adjustment and should be considered as indicative only. For inundation extents, refer to maps of tsunami inundation level for emergency planning to which a safety factor is applied.
9. These maps provide results for one possible tsunami scenario with associated earthquake magnitude and subduction zone rupture mechanism. Inundation characteristics and associated effects can vary for different tsunami scenarios that may occur.
10. The influence stream flow may have on the propagation and inundation of tsunamis in rivers and creeks was not included in the numerical model.

**Data Sources and References**

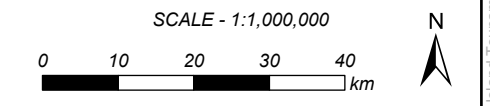
1. Topographic basemaps from Esri Canada, Natural Resources Canada, and Esri Canadian Community Maps contributors.
2. Imagery basemaps from Esri and Maxar.
3. Coastline and riverbanks from GeoBC 1:20,000 scale Freshwater Atlas data.
4. First Nation administrative boundaries based on GeoBC data with adjustments by NHC and should be considered as approximate only.
5. Road locations and classification based on GeoBC Digital Roads Atlas data with adjustments by NHC and should be considered approximate only.
6. Ferry route, municipal boundary, and regional district boundary data from GeoBC.

**Disclaimer**

These maps have been prepared by **Northwest Hydraulic Consultants Ltd.** for the benefit of **Ocean Networks Canada Society and The Lake Family's All One Fund** for specific application to the **Northwest Vancouver Island Tsunami Risk Assessment Phase II** project undertaken to support emergency planning in Nootka Sound and Quatsino Sound, British Columbia. The information and data contained herein represent **Northwest Hydraulic Consultants Ltd.**'s best professional judgement 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. Except as required by law, these maps and the information and data contained herein are for the information of **Ocean Networks Canada Society and The Lake Family's All One Fund**, their officers, and employees. **Northwest Hydraulic Consultants Ltd.** denies any liability whatsoever to other parties who may obtain access to these maps for any injury, loss, or damage suffered by such parties arising from their use of or reliance upon these maps or any of their contents.



- 1:100,000 (REGIONAL SCALE) HAZARD MAP SHEET
- REGIONAL DISTRICT BOUNDARY
- FERRY ROUTE
- HIGHWAY
- ROAD
- RECREATION/RESOURCE ROAD

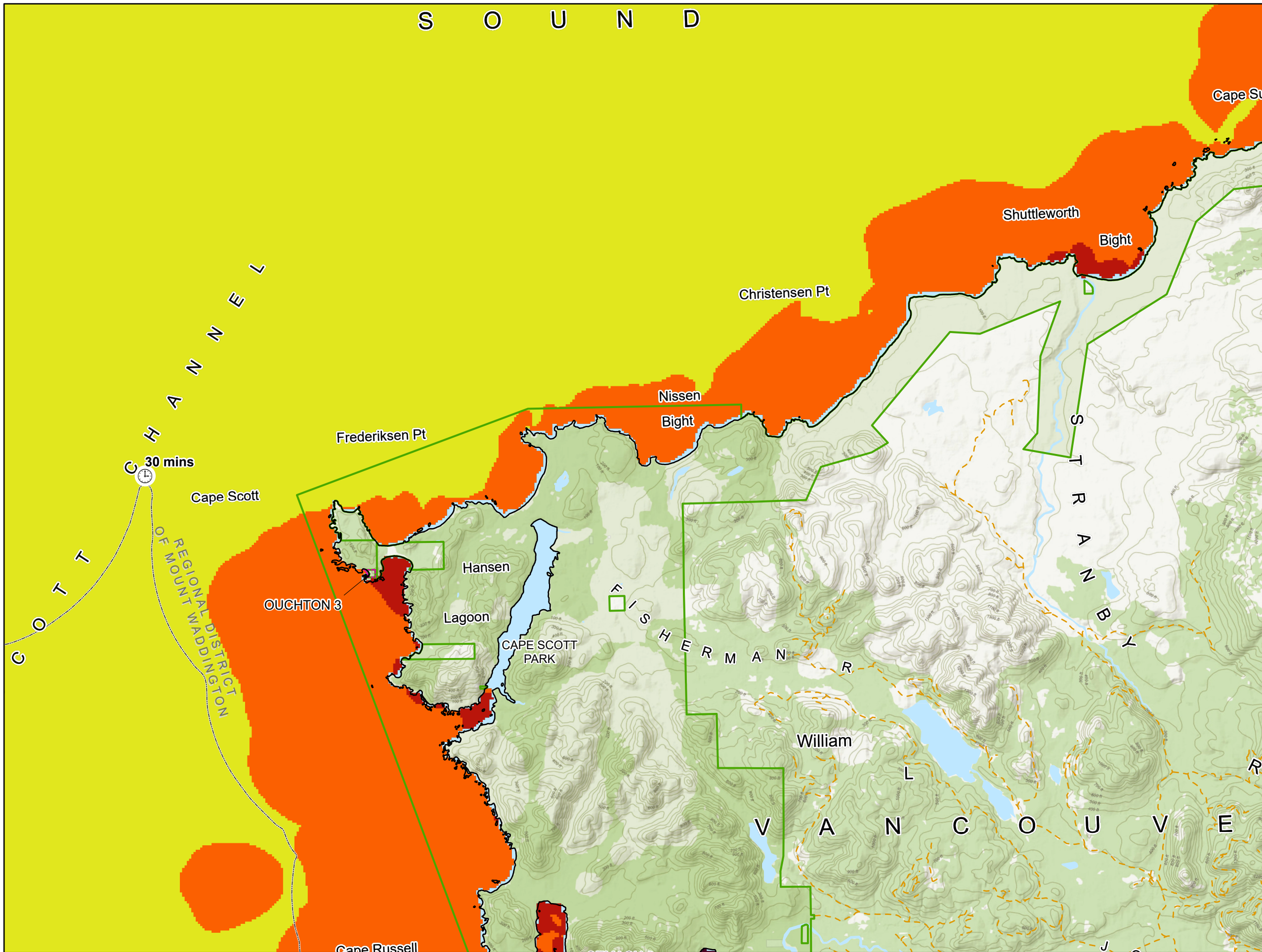


Coordinate System: NAD 1983 CSRS UTM ZONE 9N  
Units: METRES

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Job Number	3006332			Date	11-MAY-2023

**NORTHWEST VANCOUVER ISLAND  
TSUNAMI RISK ASSESSMENT PROJECT**

**REGIONAL SCALE  
OVERWATER HAZARD MAP  
INDEX & NOTES  
CASCADIA TSUNAMI**



S O U N D

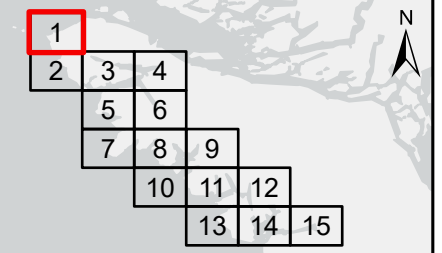
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C O T T

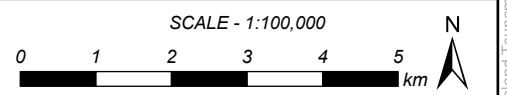
F I S H E R M A N

S T R A N B

V A N C O U V E



- TSUNAMI ARRIVAL TIME
  - APPROXIMATE COASTLINE
  - FERRY ROUTE
  - HIGHWAY
  - ROAD
  - RECREATION/RESOURCE ROAD
  - FIRST NATION TREATY LANDS BOUNDARY
  - FIRST NATION ADMINISTRATIVE BOUNDARY
  - MUNICIPAL BOUNDARY
  - REGIONAL DISTRICT BOUNDARY
  - PROVINCIAL PARK
  - AREA NOT CAPTURED BY MODEL
- MAX TSUNAMI AMPLITUDE**
- 0 - 0.5 m REFER TO INDEX MAP FOR COMPLETE NOTES.
  - 0.5 - 1 m NO SAFETY FACTOR WAS APPLIED TO THE RESULTS SHOWN. FOR INUNDATION EXTENTS, REFER TO MAPS OF TSUNAMI INUNDATION LEVEL FOR EMERGENCY PLANNING.
  - 1 - 2 m
  - 2 - 4 m
  - 4 - 6 m
  - >6 m



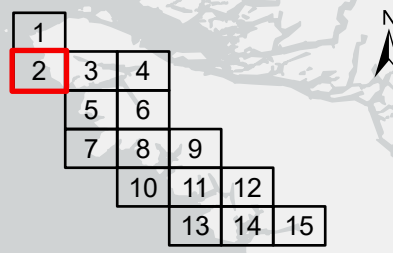
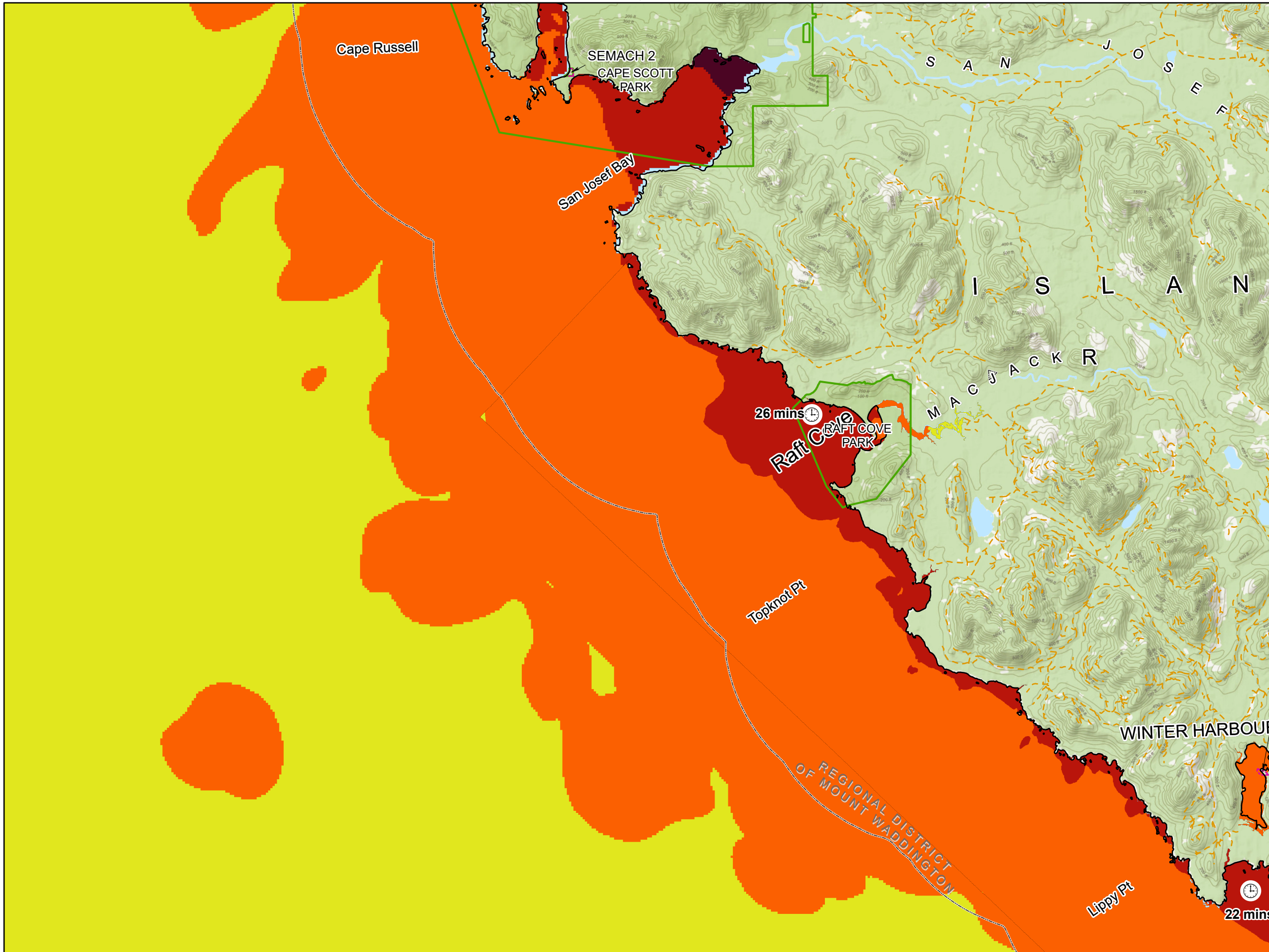
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Units: METRES; Amplitude Referenced to HHWMT

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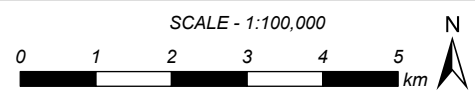
**NORTHWEST VANCOUVER ISLAND  
TSUNAMI RISK ASSESSMENT PROJECT**

**MAXIMUM TSUNAMI AMPLITUDE  
REGIONAL SCALE  
CASCADIA TSUNAMI**

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- TSUNAMI ARRIVAL TIME
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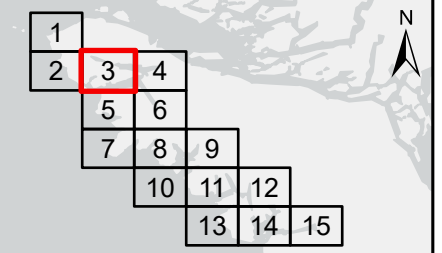
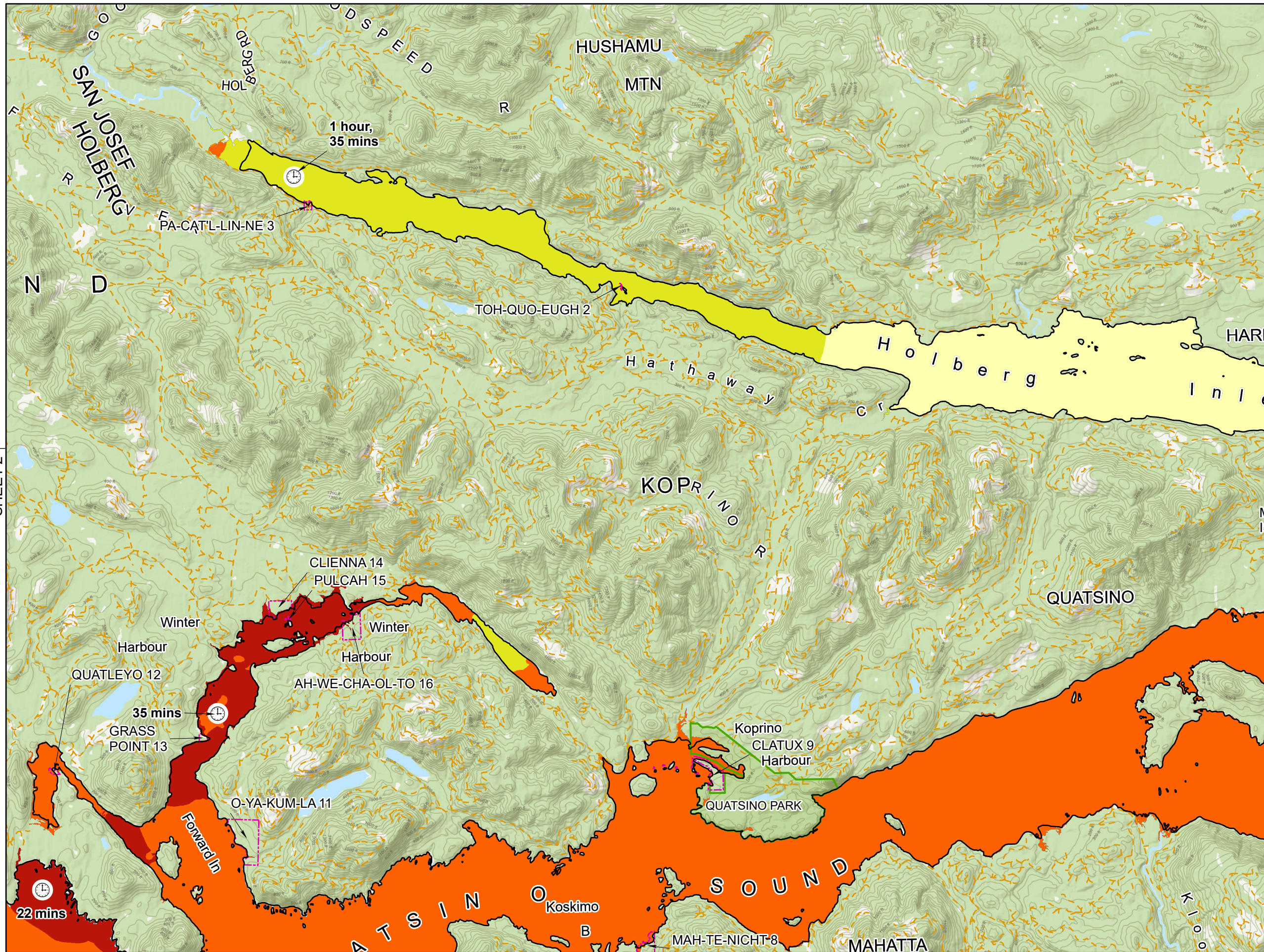
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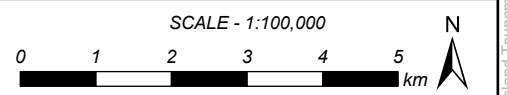
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**NORTHWEST VANCOUVER ISLAND  
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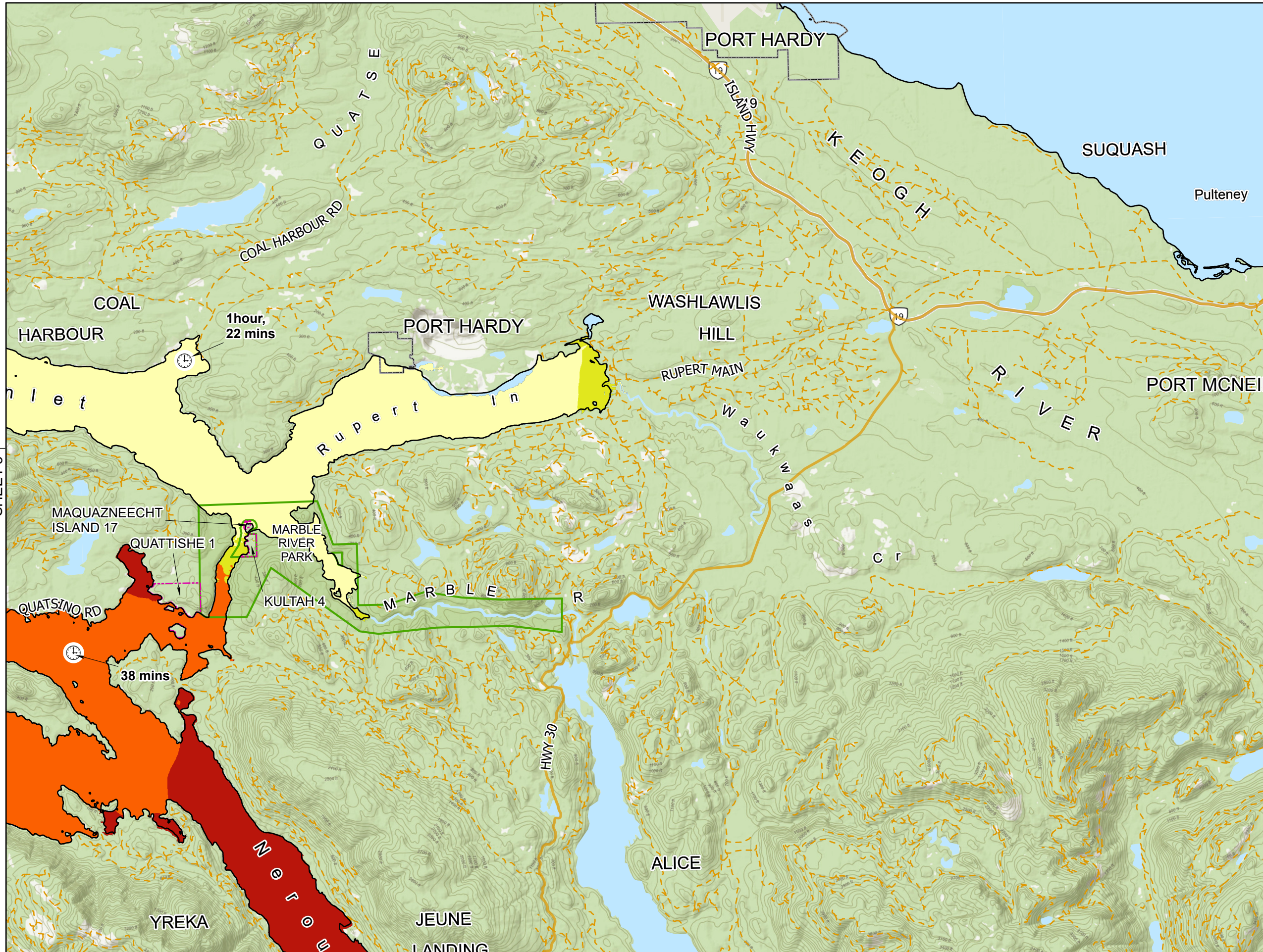
**MAXIMUM TSUNAMI AMPLITUDE  
REGIONAL SCALE  
CASCADIA TSUNAMI**

SHEET 2 ↑

SHEET 4 ↓

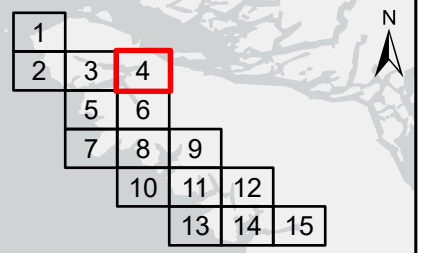
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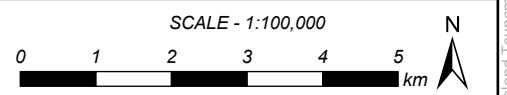


SHEET 3 ↑

SHEET 6 ↓



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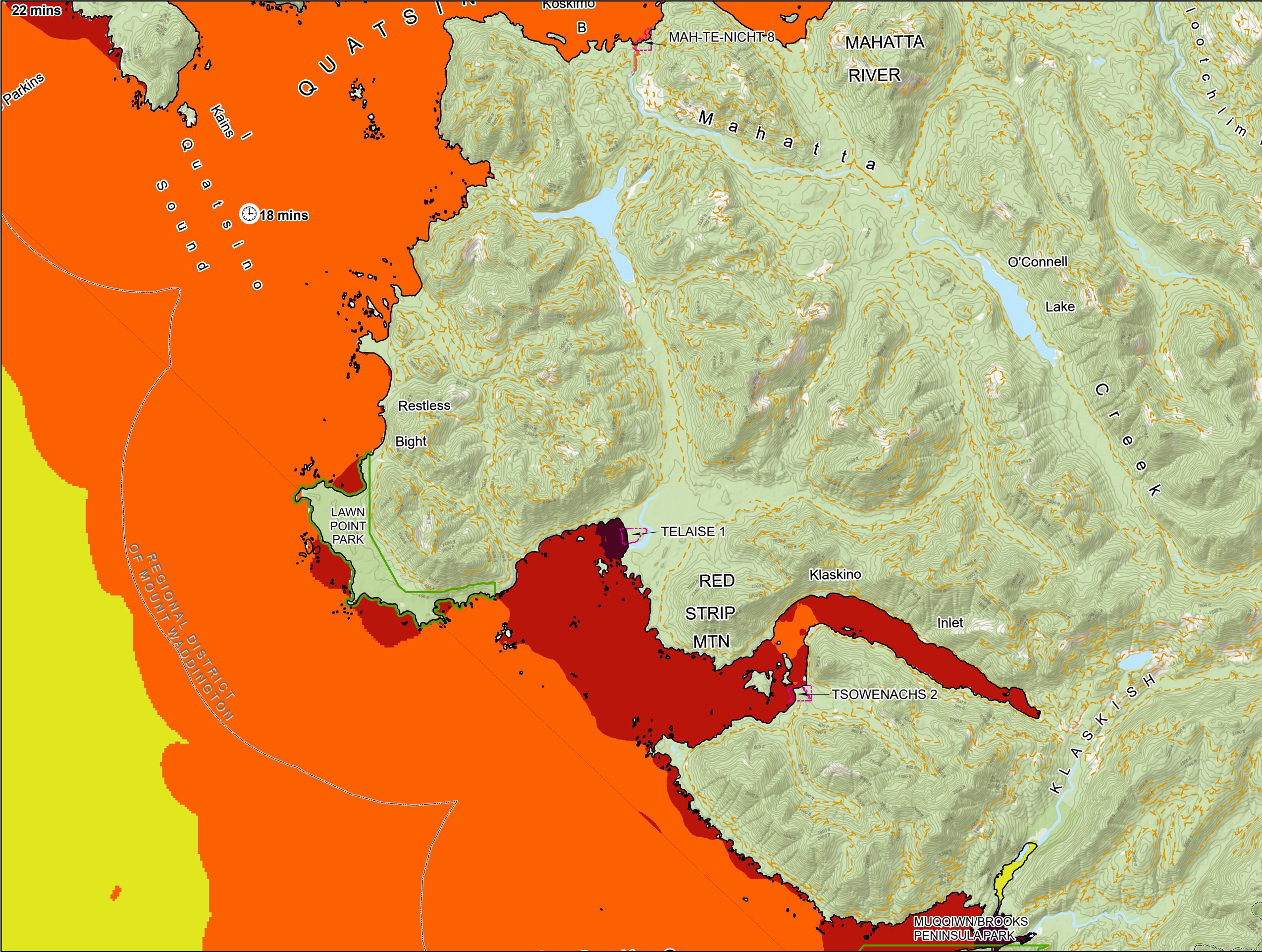
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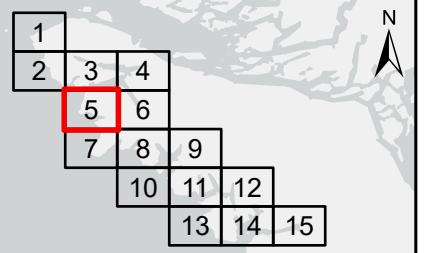
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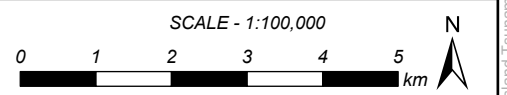
SHEET 3 ↑



SHEET 7 ↓



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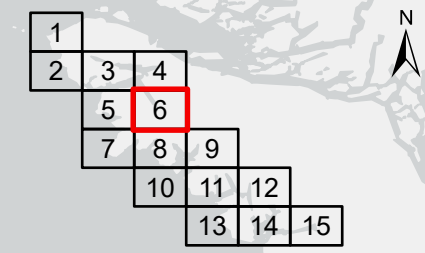
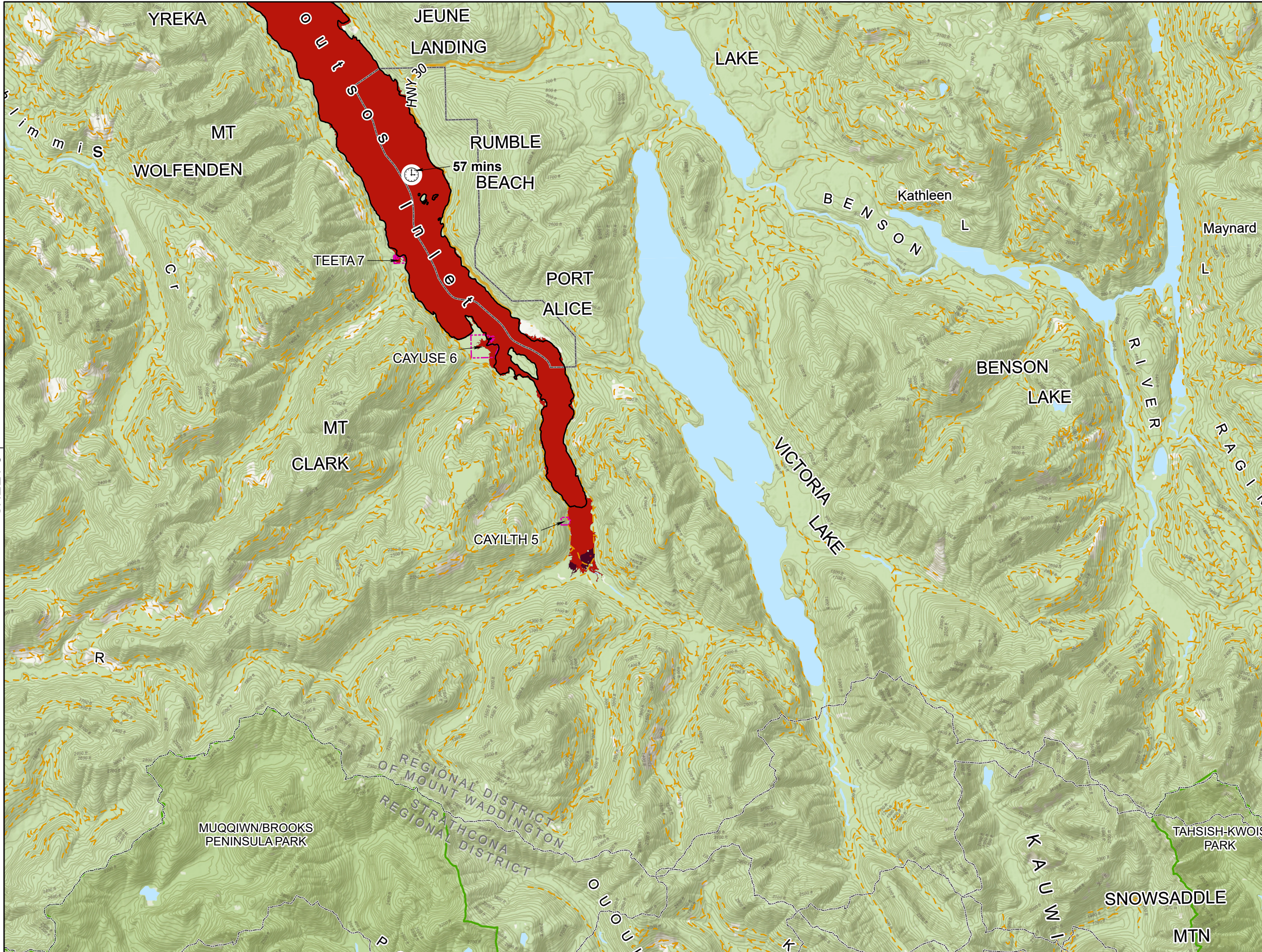
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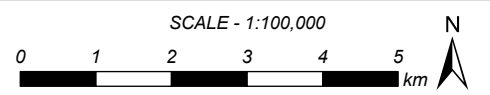
**NORTHWEST VANCOUVER ISLAND  
 TSUNAMI RISK ASSESSMENT PROJECT**

**MAXIMUM TSUNAMI AMPLITUDE  
 REGIONAL SCALE  
 CASCADIA TSUNAMI**

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- TSUNAMI ARRIVAL TIME
  - APPROXIMATE COASTLINE
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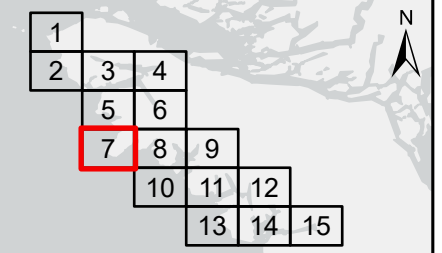
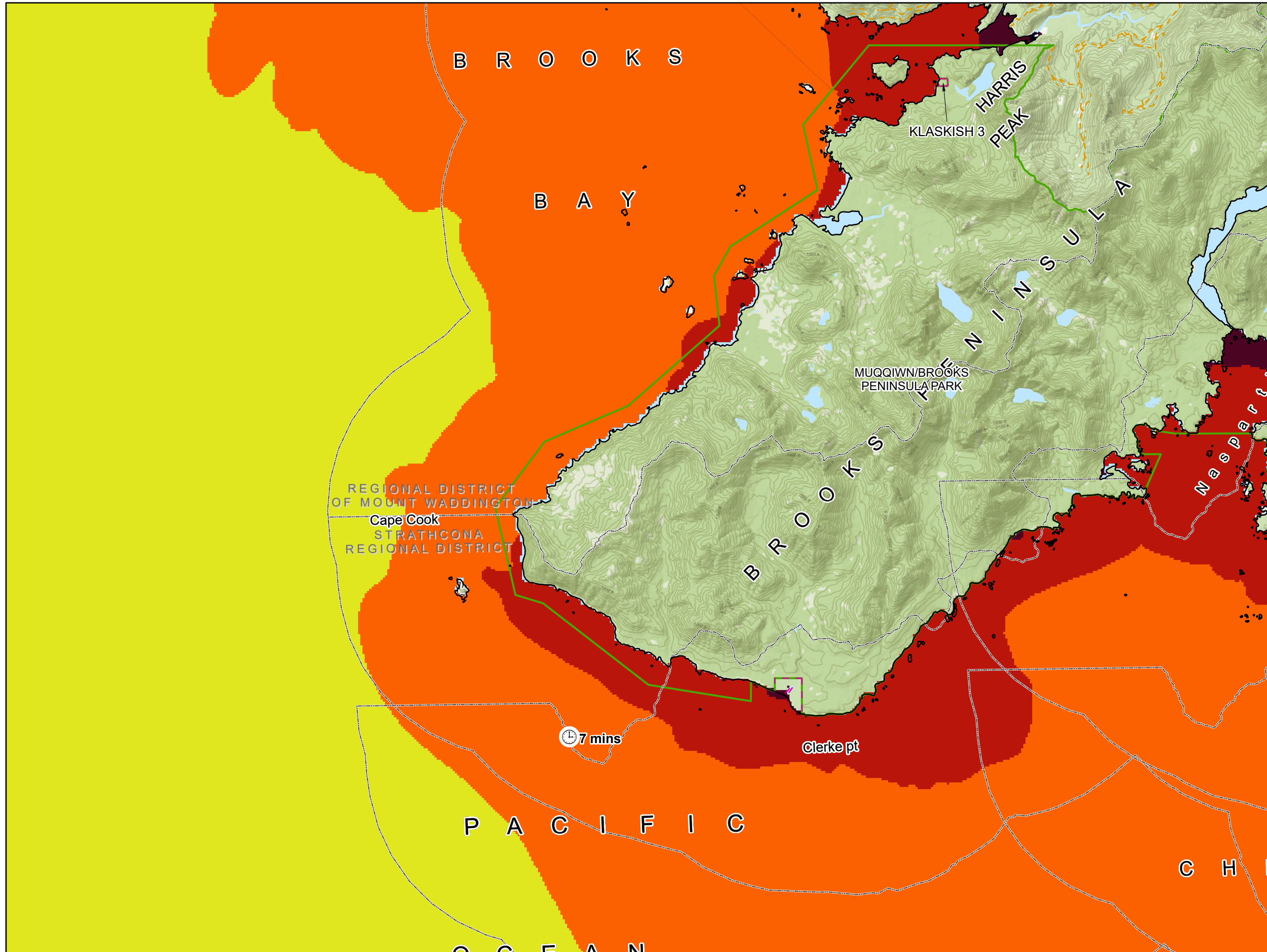
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TSUNAMI RISK ASSESSMENT PROJECT**

**MAXIMUM TSUNAMI AMPLITUDE  
REGIONAL SCALE  
CASCADIA TSUNAMI**

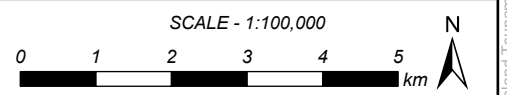
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**MAX TSUNAMI AMPLITUDE**

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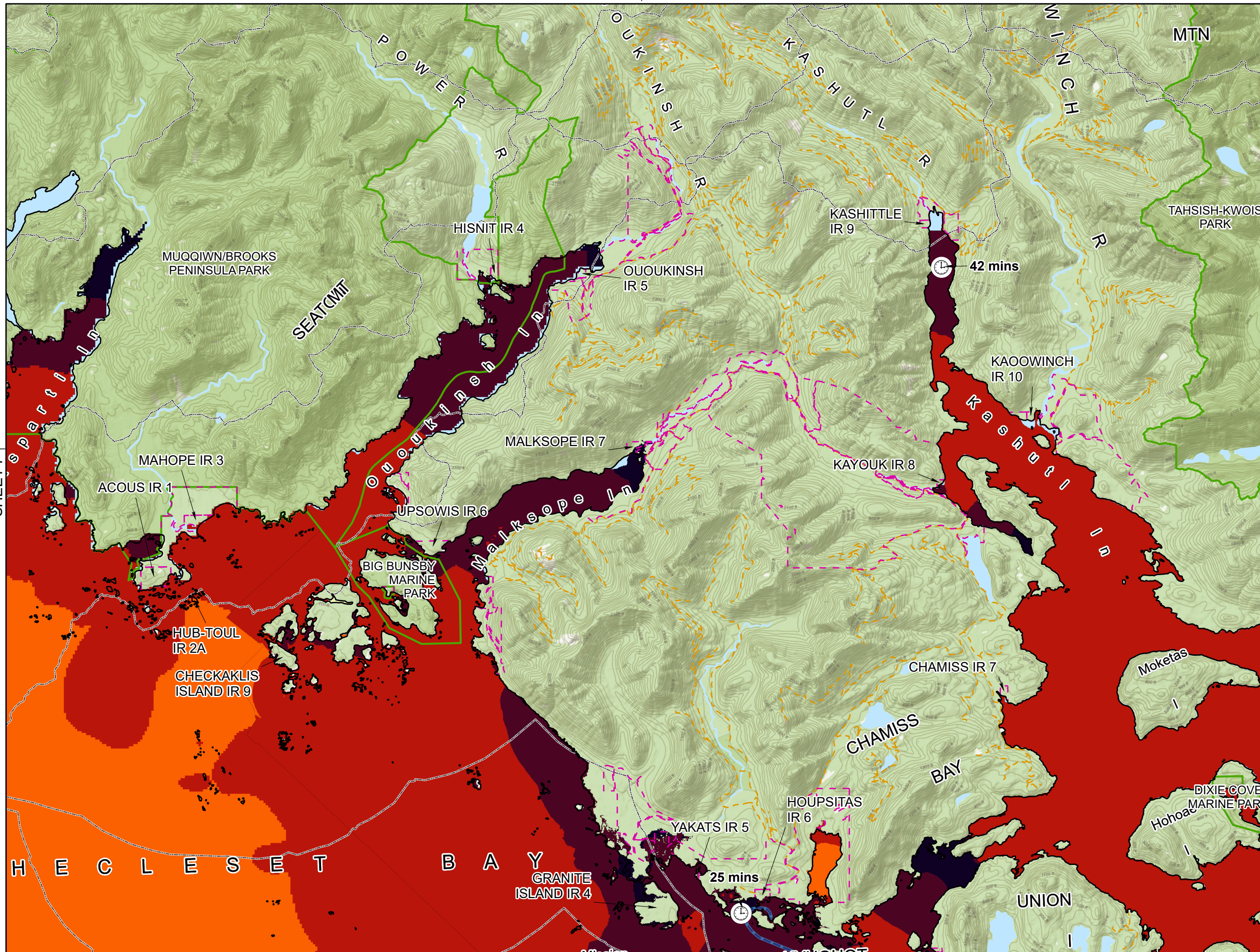
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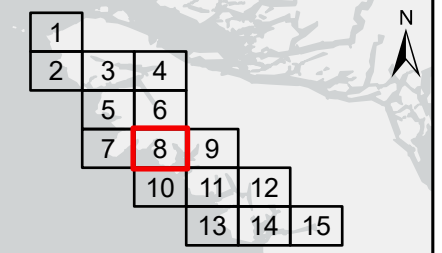
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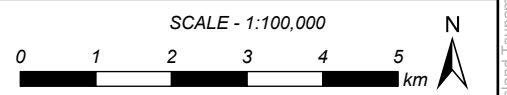


SHEET 7 ↑

SHEET 9 ↓



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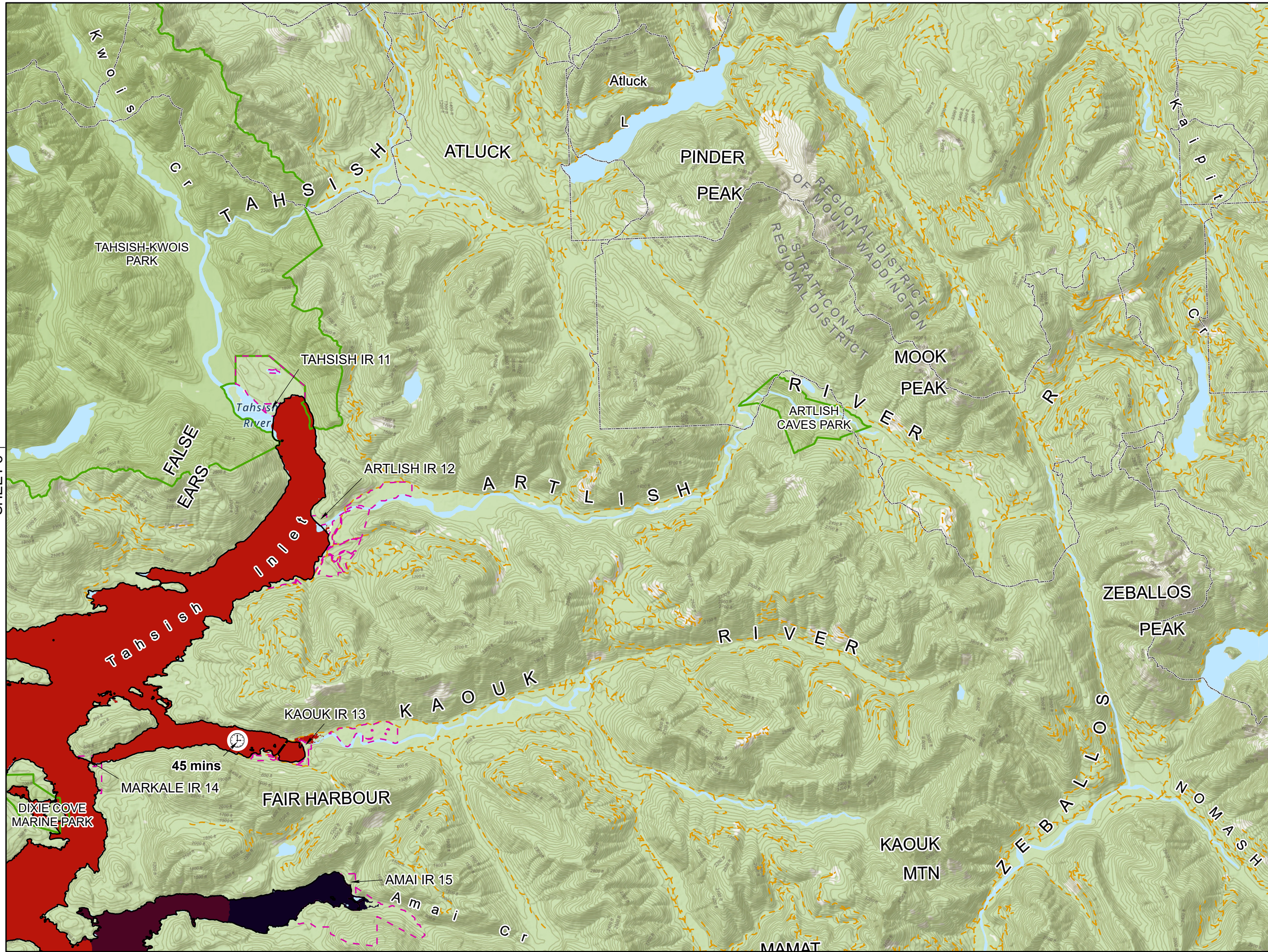
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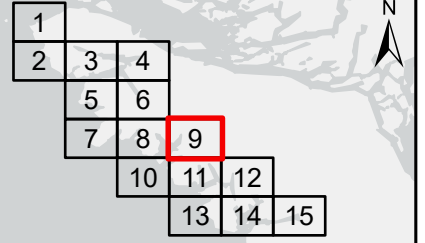
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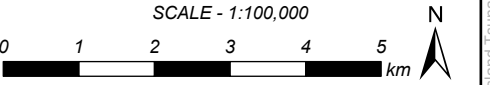


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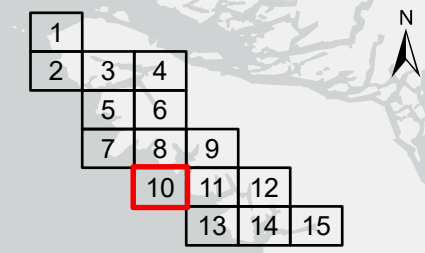
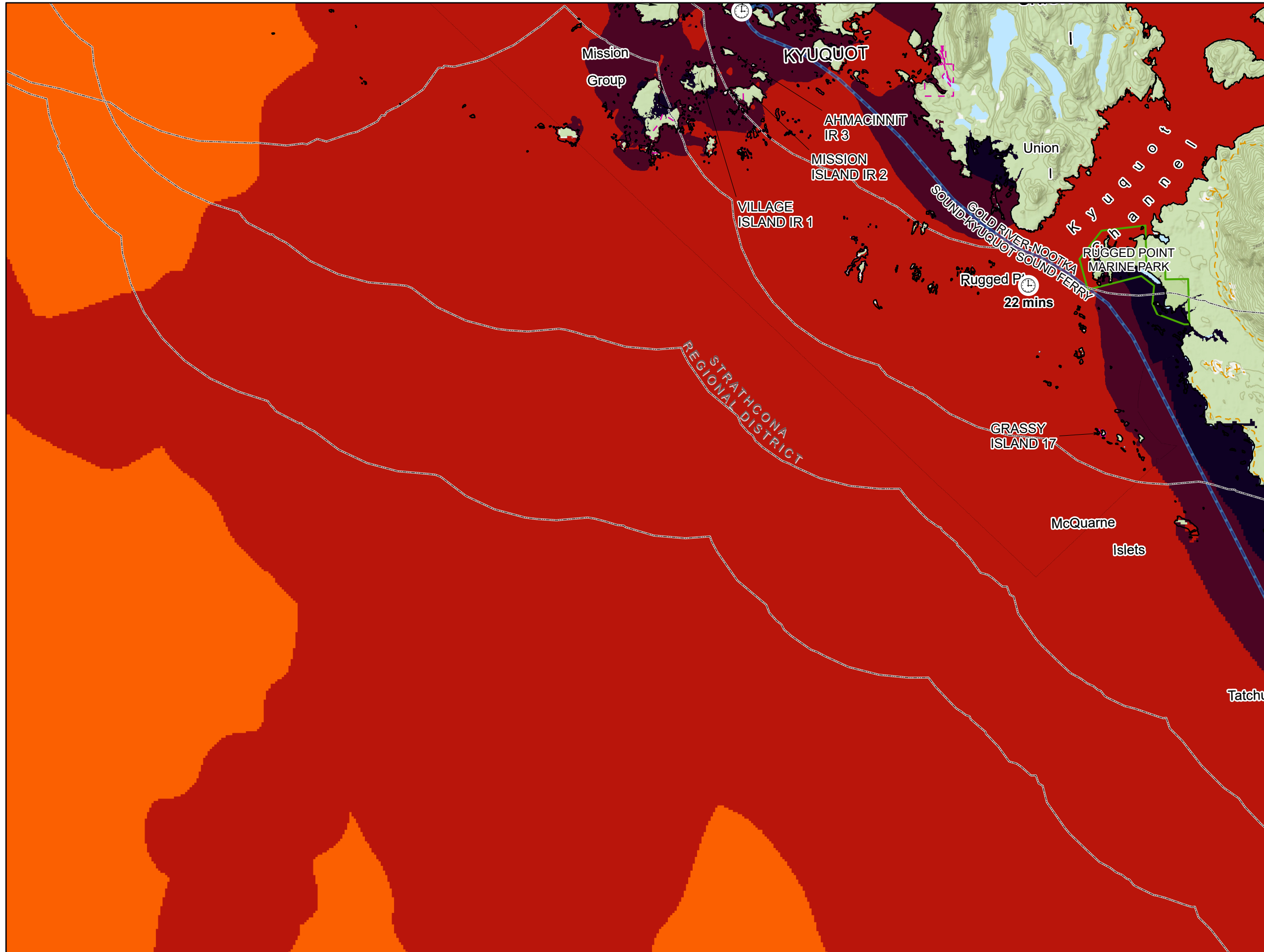
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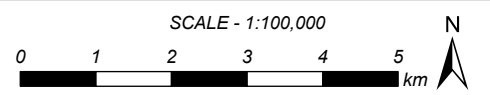
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- REGIONAL DISTRICT BOUNDARY
- PROVINCIAL PARK
- AREA NOT CAPTURED BY MODEL

- MAX TSUNAMI AMPLITUDE**
- 0 - 0.5 m REFER TO INDEX MAP FOR COMPLETE NOTES.
  - 0.5 - 1 m NO SAFETY FACTOR WAS APPLIED TO THE RESULTS SHOWN. FOR INUNDATION EXTENTS, REFER TO MAPS OF TSUNAMI INUNDATION LEVEL FOR EMERGENCY PLANNING.
  - 1 - 2 m
  - 2 - 4 m
  - 4 - 6 m
  - >6 m



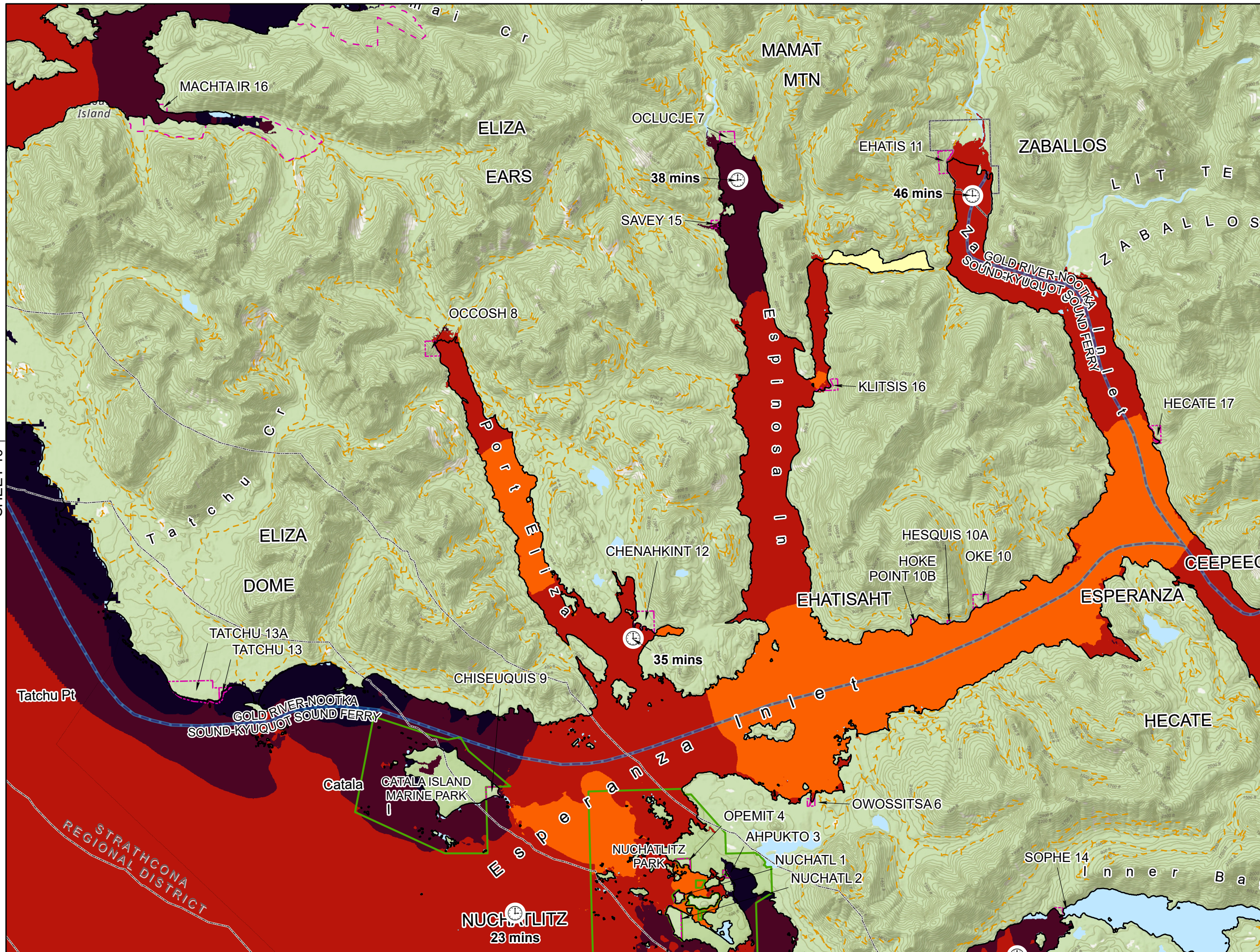
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 Units: METRES; Amplitude Referenced to HHWMT

Engineer	PGS	GIS	SWM	Reviewer	GFL
Job Number	3006332		Date	11-MAY-2023	

**NORTHWEST VANCOUVER ISLAND  
 TSUNAMI RISK ASSESSMENT PROJECT**

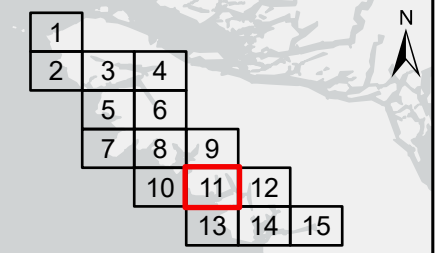
**MAXIMUM TSUNAMI AMPLITUDE  
 REGIONAL SCALE  
 CASCADIA TSUNAMI**

SWM, \\mainfile-van\Projects\Active\3006332 NW Vancouver Island Tsunami Risk Assessment - Phase 2\95 GIS\3006332\_map\_100K\_HazardMap\_1.aprx

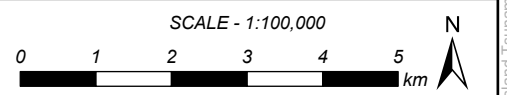


SHEET 10 ↑

SHEET 12 ↓



- TSUNAMI ARRIVAL TIME
  - APPROXIMATE COASTLINE
  - FERRY ROUTE
  - HIGHWAY
  - ROAD
  - RECREATION/RESOURCE ROAD
  - FIRST NATION TREATY LANDS BOUNDARY
  - FIRST NATION ADMINISTRATIVE BOUNDARY
  - MUNICIPAL BOUNDARY
  - REGIONAL DISTRICT BOUNDARY
  - PROVINCIAL PARK
  - AREA NOT CAPTURED BY MODEL
- MAX TSUNAMI AMPLITUDE**
- |           |  |
|-----------|--|
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| 0.5 - 1 m | NO SAFETY FACTOR WAS APPLIED TO THE RESULTS SHOWN. FOR INUNDATION EXTENTS, REFER TO MAPS OF TSUNAMI INUNDATION LEVEL FOR EMERGENCY PLANNING. |
| 1 - 2 m   |  |
| 2 - 4 m   |  |
| 4 - 6 m   |  |
| >6 m      |  |



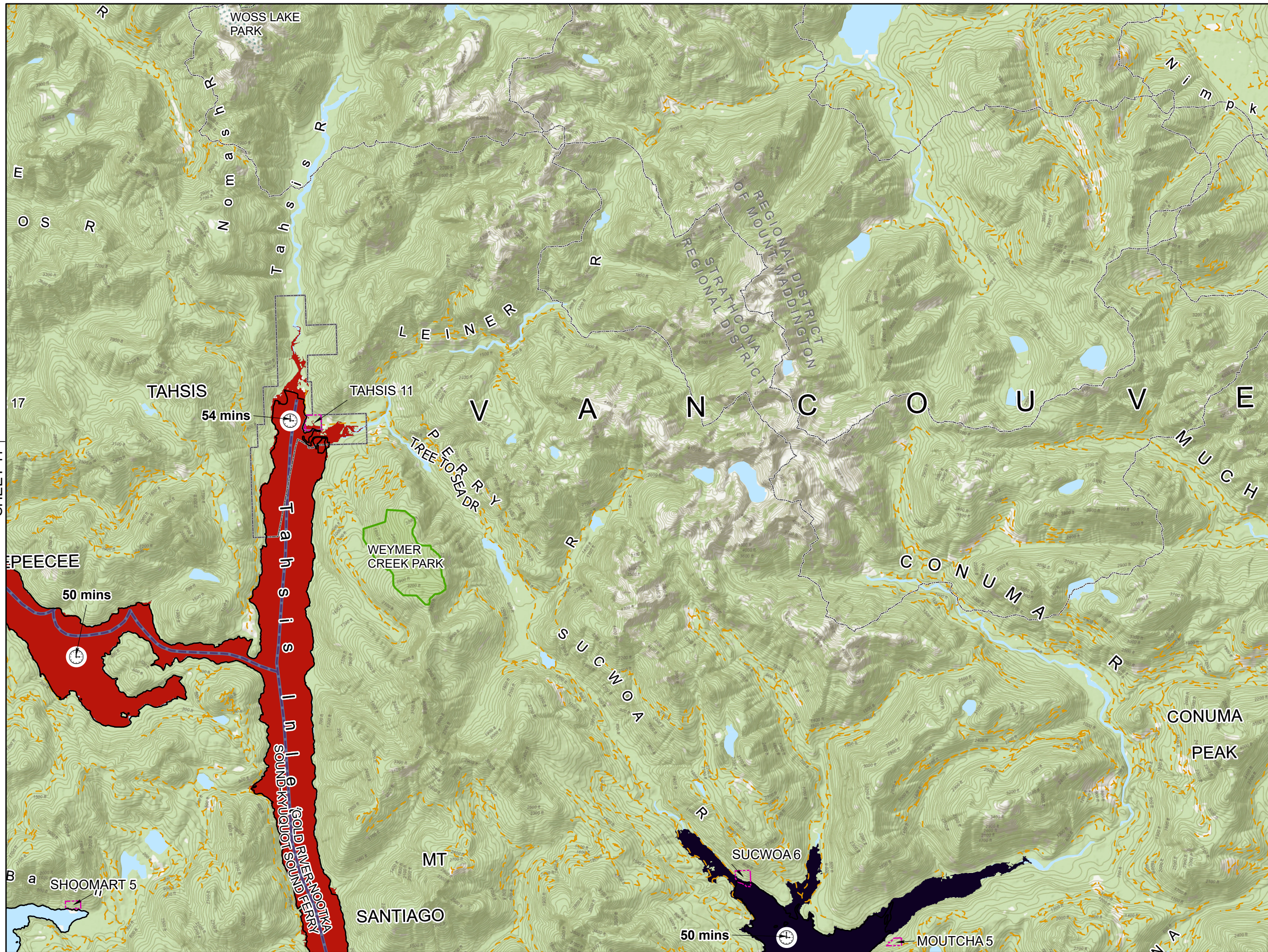
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Units: METRES; Amplitude Referenced to HHWMT

Engineer	PSG	GIS	SWM	Reviewer	GFL
Job Number	3006332		Date	11-MAY-2023	

**NORTHWEST VANCOUVER ISLAND TSUNAMI RISK ASSESSMENT PROJECT**

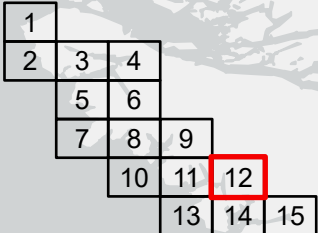
**MAXIMUM TSUNAMI AMPLITUDE REGIONAL SCALE CASCADIA TSUNAMI**

SWM, \\mainfile-van\Projects\Active\3006332\_NW Vancouver Island Tsunami Risk Assessment - Phase 2\96 GIS\3006332\_map\_100K\_HazardMap\_1.aprx

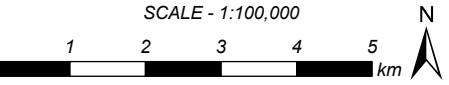


SHEET 11 ↑

SHEET 14 ↓



- TSUNAMI ARRIVAL TIME
  - APPROXIMATE COASTLINE
  - FERRY ROUTE
  - HIGHWAY
  - ROAD
  - RECREATION/RESOURCE ROAD
  - FIRST NATION TREATY LANDS BOUNDARY
  - FIRST NATION ADMINISTRATIVE BOUNDARY
  - MUNICIPAL BOUNDARY
  - REGIONAL DISTRICT BOUNDARY
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  - AREA NOT CAPTURED BY MODEL
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|  | 4 - 6 m   |   |
|  | >6 m      |   |



Coordinate System: NAD 1983 CSRS UTM ZONE 9N  
Units: METRES; Amplitude Referenced to HHWMT

Engineer	PSG	GIS	SWM	Reviewer	GFL
Job Number	3006332		Date	11-MAY-2023	

NORTHWEST VANCOUVER ISLAND  
TSUNAMI RISK ASSESSMENT PROJECT

MAXIMUM TSUNAMI AMPLITUDE  
REGIONAL SCALE  
CASCADIA TSUNAMI

SHEET 12 OF 15

SWM, v:\mainfile-van\Projects\Active\3006332\_NW Vancouver Island Tsunami Risk Assessment - Phase 2\96 GIS\3006332\_map\_100K\_HazardMap\_1.aprx

NUCHATLITZ  
23 mins

NUCHATLITZ  
PARK

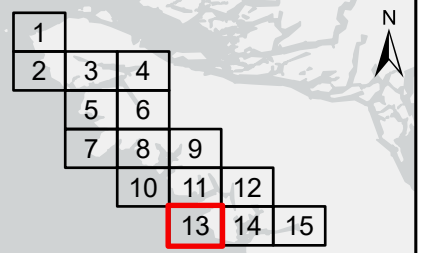
42 mins

N u c h a t l i t z I n l e t

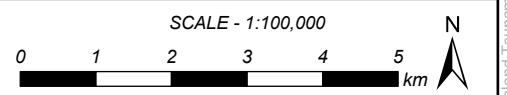
Ferrer Pt

STRATHCONA  
REGIONAL DISTRICT

AASS 3



- TSUNAMI ARRIVAL TIME
  - APPROXIMATE COASTLINE
  - FERRY ROUTE
  - HIGHWAY
  - ROAD
  - RECREATION/RESOURCE ROAD
  - FIRST NATION TREATY LANDS BOUNDARY
  - FIRST NATION ADMINISTRATIVE BOUNDARY
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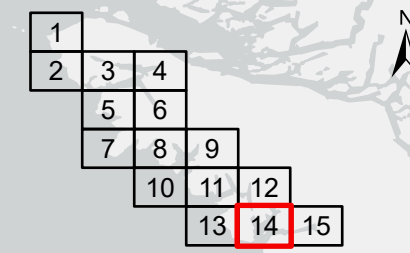
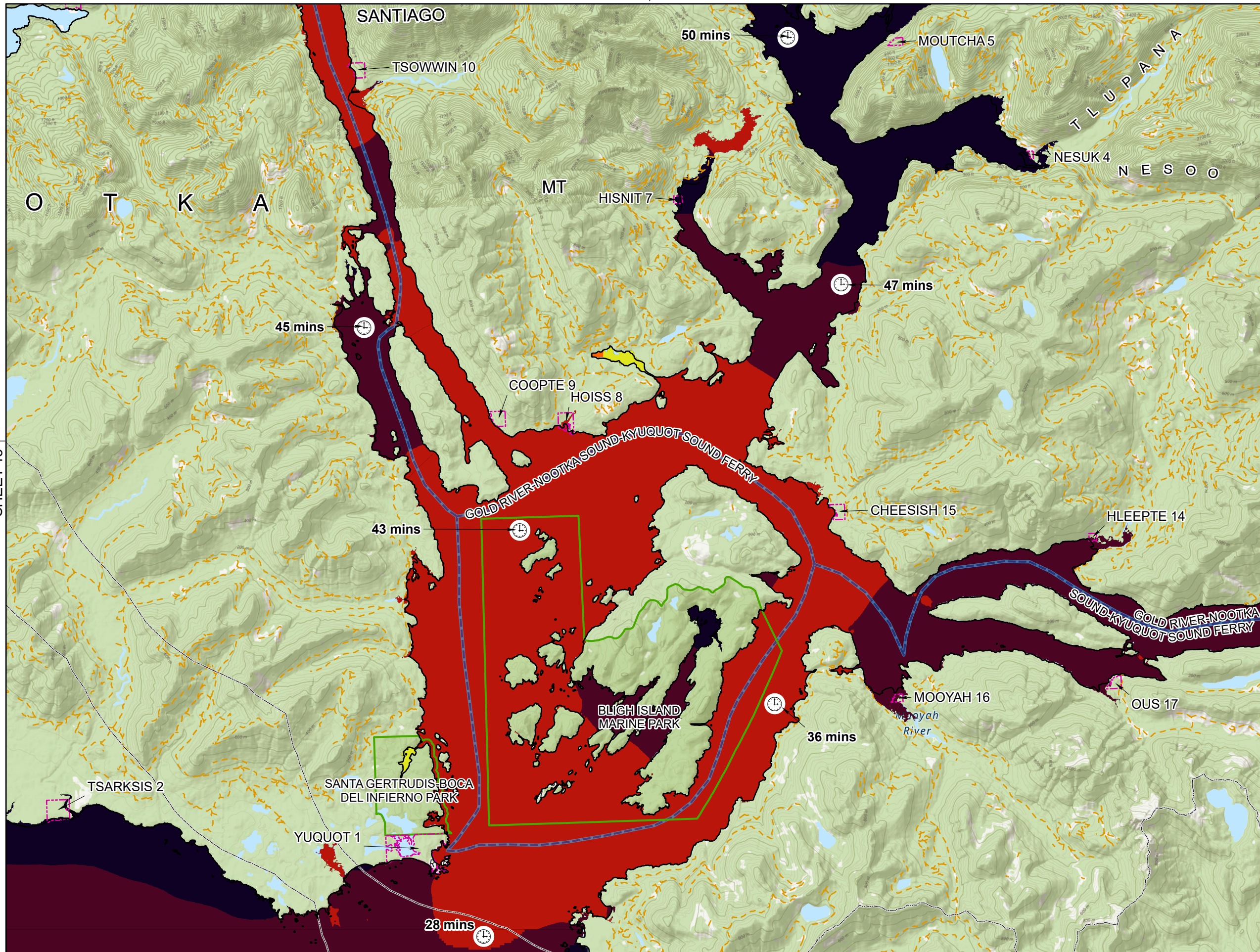
Coordinate System: NAD 1983 CSRS UTM ZONE 9N  
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Engineer	PSG	GIS	SWM	Reviewer	GFL
Job Number	3006332		Date	11-MAY-2023	

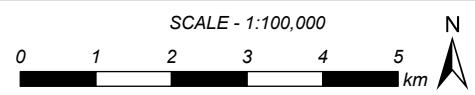
NORTHWEST VANCOUVER ISLAND  
TSUNAMI RISK ASSESSMENT PROJECT

MAXIMUM TSUNAMI AMPLITUDE  
REGIONAL SCALE  
CASCADIA TSUNAMI

SWM, \\mainfile-van\Projects\Active\3006332 NW Vancouver Island Tsunami Risk Assessment - Phase 2\96 GIS\3006332\_map\_100K\_HazardMap\_1.aprx



- TSUNAMI ARRIVAL TIME
  - APPROXIMATE COASTLINE
  - FERRY ROUTE
  - HIGHWAY
  - ROAD
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|  | >6 m      |   |



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Engineer	PSG	GIS	SWM	Reviewer	GFL
Job Number	3006332		Date	11-MAY-2023	

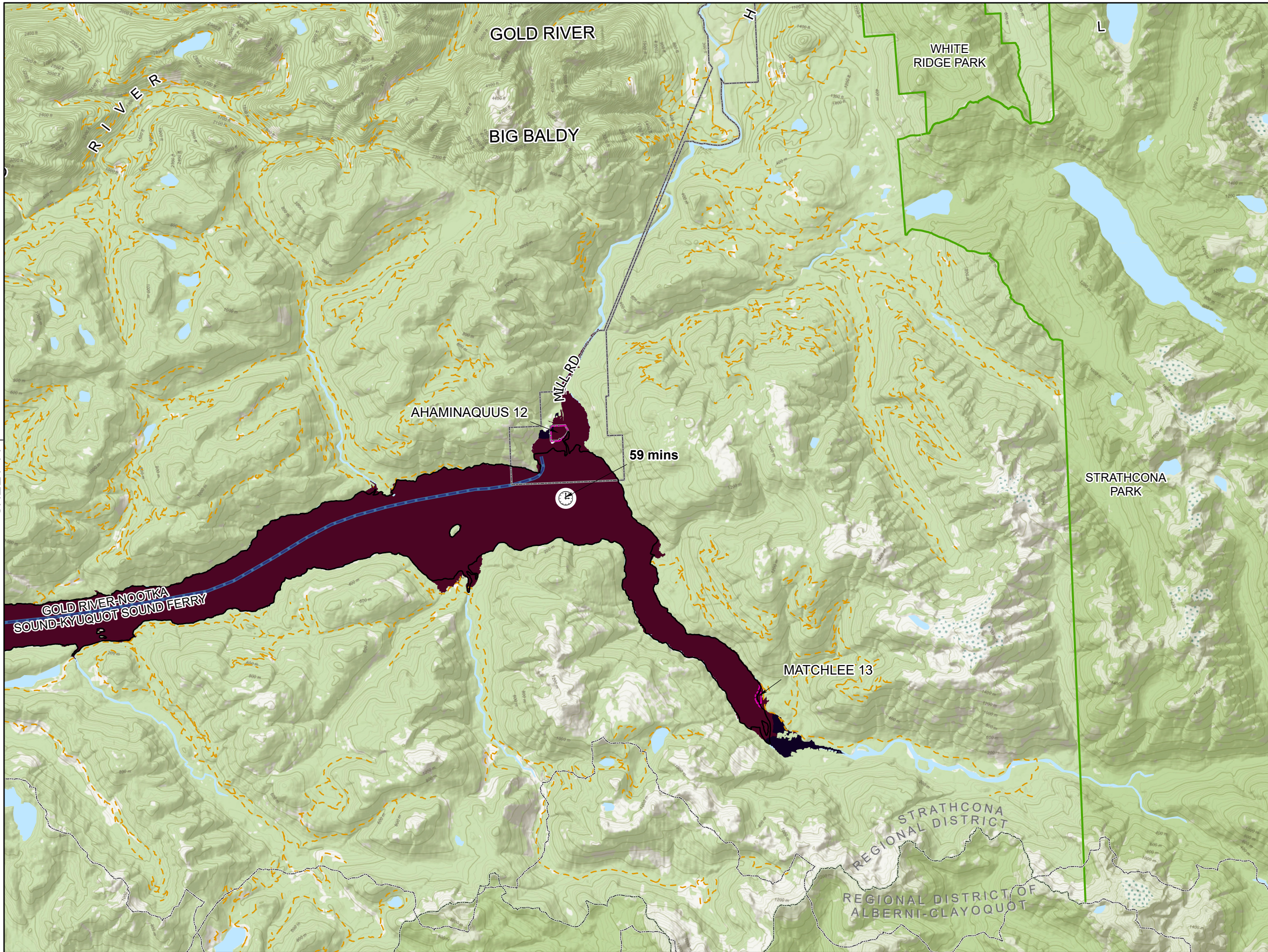
**NORTHWEST VANCOUVER ISLAND  
TSUNAMI RISK ASSESSMENT PROJECT**

**MAXIMUM TSUNAMI AMPLITUDE  
REGIONAL SCALE  
CASCADIA TSUNAMI**

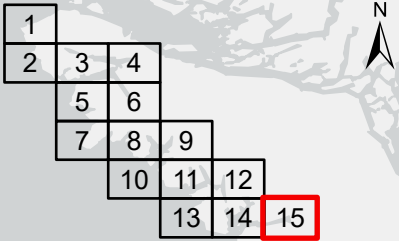
SHEET 13 ↑

SHEET 15 ↓

SWM, \\mainfile-van\Projects\Active\3006332 NW Vancouver Island Tsunami Risk Assessment - Phase 2\96 GIS\3006332\_map\_100K\_HazardMap\_1.aprx

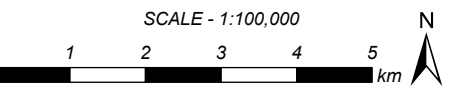


SHEET 14 ↑



- TSUNAMI ARRIVAL TIME
- APPROXIMATE COASTLINE
- FERRY ROUTE
- HIGHWAY
- ROAD
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- FIRST NATION TREATY LANDS BOUNDARY
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**NORTHWEST VANCOUVER ISLAND TSUNAMI RISK ASSESSMENT PROJECT**

**MAXIMUM TSUNAMI AMPLITUDE REGIONAL SCALE CASCADIA TSUNAMI**

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