



Syilx Okanagan Flood and Debris Flow Risk Assessment Map Book

Map Series 7 of 7: Disruption Indicator



31 December 2019



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Acknowledgement

The *Syilx* Okanagan Flood and Debris Flow Risk Assessment is made possible by the many *Syilx* Okanagan Nation members from across the territory who generously contributed their input, knowledge, and lived experience – all of which form the foundations of this Assessment. Special recognition is given to the *Syilx* Okanagan traditional knowledge keepers and Elders who led the watershed tours and were a guiding force in rooting the assessment in traditional *Syilx* Okanagan perspectives.

This Assessment is a testament to the power of collaboration and partnership between *Syilx* and non-*Syilx* organizations, including the project team at Ebbwater Consulting Inc. (Ebbwater), and exhibits a shared concern for how water is managed and recognized in the territory.

Support for this project came from Emergency Management British Columbia (EMBC) and Public Safety Canada (PSC) as part of the National Disaster Mitigation Program (NDMP), First Nation Adapt Program and the Real Estate Foundation of B.C. through successful applications submitted by the Okanagan Nation Alliance (ONA).

Okanagan Nation Alliance would like to acknowledge Ebbwater for the production of this Map Book, which was completed by Dickon Wells, M. Eng, with support from Silja Hund, Ph.D., Nikoletta Stamatatou, M.Sc., and Robert Larson, M.Sc. Qualitative input for the Map Book is owed to project participants, as well as Erica Crawford (SHIFT Collaborative) and Kelly Terbasket (indigenEYEZ) for leading the workshops. Cory McGregor, GIT and Derek Cronmiller, P.Geo (both of Palmer Environmental Consulting Group Ltd.) provided the information to quantitatively map debris flow hazard. The Map Book contains significant input from ONA team members Tessa Terbasket, Kathy Holland, and Skyeler Folks. The Map Book was reviewed by Tamsin Lyle, P.Eng of Ebbwater.

The team is grateful to *Syilx* Okanagan community staff who contributed to and supported the process; Colleen Marchand (OKIB), Brody Armstrong (PIB), Stephanie Paul (WFN), Jonathan Ford (WFN), Wendy Hawkes (LSIB), Trudy Peterson (LSIB), Mike Allison (USIB) and Robin Irwin (USIB). Finally, the team would like to thank the *Syilx* Okanagan Flood Adaptation Initiative Steering Committee members who will continue to work together and provide direction to co-build flood resilience in the region.

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Introduction

The ONA was a successful Stream 1 applicant to the National Disaster Mitigation Program (NDMP) to study flood and debris flow hazard risk in the Okanagan-Similkameen region. This project is the initial phase of a multi-year flood and debris flow adaptation initiative. This project's goal is to **understand the risk due to flood and debris flows within the project area, to support priority-setting of future work.**

This Map Book is one of four outputs that form the risk assessment component of this project (Figure 1). The Map Book may also be used as the main visual reference to the Synthesis and Recommendations report, for readers to obtain a summary understanding of the project. The Qualitative, Quantitative, and Basis of, studies contain more detailed information. The Map Book summarizes the spatial results following the methods described in the Qualitative and Quantitative studies.

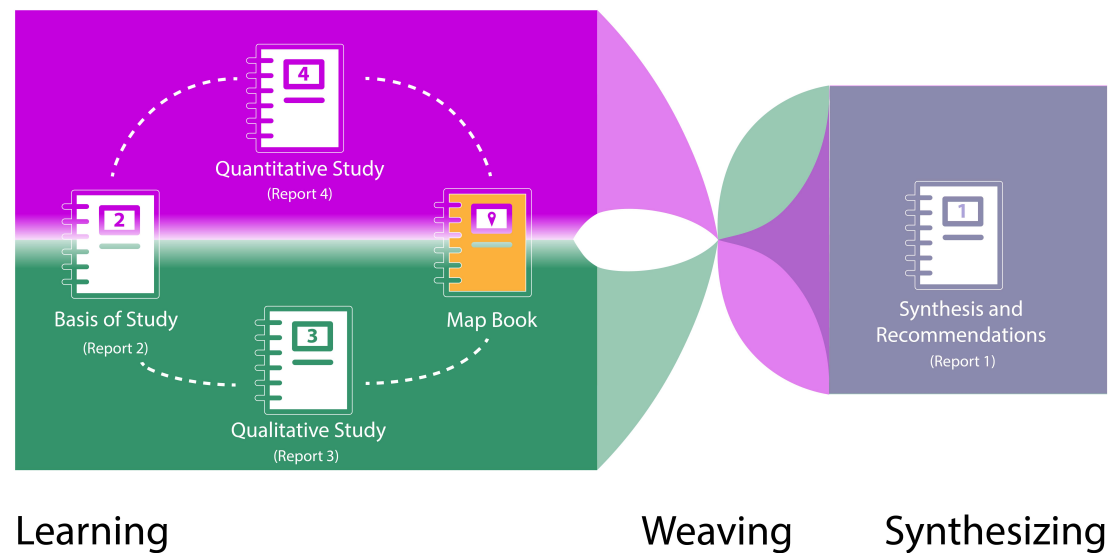


Figure 1: Project reporting diagram, with the Risk Assessment's four distinct outputs (i.e., Map Book, Basis of Study, and the complementary Qualitative and Quantitative studies).

Overview of Maps

Ebbwater assessed the impacts from both flood and debris flow in the Okanagan-Similkameen watersheds. This assessment was done quantitatively and qualitatively. This map series is one out of a series of 7 that together form the Map Book. In aggregate, the 7 series cover the 2 hazards assessed and 6 exposure indicators. The table below lists the 7 series, and highlights the series contained herein. The qualitative maps combine impacts from both flood and debris flow hazards. The quantitative maps show consequences from flood and debris flow hazards separately. In the quantitative maps, the consequences for flood hazard are shown for the moderate magnitude scenario only.

Series	Map Book Title	Information Shown
Series 1	Flood and Debris Flow Hazard	<ul style="list-style-type: none">• Debris Flow• Low, Moderate, and High Magnitude Flood
Series 2	Environment Indicator	<ul style="list-style-type: none">• Qualitative (Impacts)• Quantitative (Consequences)
Series 3	Culture Indicator	<ul style="list-style-type: none">• Qualitative (Impacts)• Quantitative (Consequences)
Series 4	Mortality Indicator	<ul style="list-style-type: none">• Quantitative (Consequences)
Series 5	Affected People Indicator	<ul style="list-style-type: none">• Qualitative (Impacts)• Quantitative (Consequences)
Series 6	Economy Indicator	<ul style="list-style-type: none">• Qualitative (Impacts)• Quantitative (Consequences)
Series 7	Disruption Indicator	<ul style="list-style-type: none">• Qualitative (Impacts)• Quantitative (Consequences)

Printing and Document Navigation

All maps are designed and scaled to be printed in 'ANSI D' format. Maps are linked and can be navigated through by clicking within the following:

- Index line items on page 3.
- Blue tiles, watersheds or text, located in the top right-hand corner of the maps, where present.
- Sub-watershed index maps on pages 12 and 37.
- Hyperlinked Map index on page 7.

Notes to User

Qualitative

1. Impacts were recorded primarily in Workshop 1 in West Kelowna on 13 February 2019 and Workshop 2 on 25 April 2019. Impacts were also recorded based on input obtained from learning sessions, watershed tours, personal communications and electronic feedback.
2. Methodologies and impacts are discussed further in the Qualitative Study which accompanies this Map Book.

Data Sources

1. Lakes, Watercourses, Roads, and Trails: BC Data Catalogue.
2. *Sylix* Place Names: Okanagan Nation Alliance.
3. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.











Quantitative

1. Assets include transportation networks and utilities.
2. The assets (exposure) layers were clipped to the moderate flood or debris flow hazard area. The hazard layer is shown in the hazard maps, and was produced by Palmer Environmental Consulting Group Inc. The method used to produce the hazard layer is described in the Quantitative Study.
3. Sections of assets directly affected by the hazard have been highlighted (i.e. they appear thicker) on the map. However, impacts to these sections may have wider impacts elsewhere in the asset's network.

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Icons

Information Type	
	Qualitative
	Quantitative
Hazard	
	Flood
	Debris Flow
Exposure Indicator	
	Environment
	Culture
	Mortality
	Affected People
	Economy
	Disruption

Map Index

Qualitative Maps

- D-Q-001-001 Qualitative Impacts - Disruption - Project Area Map
- D-Q-001-002 Qualitative Impacts - Disruption - Okanagan Map
- D-Q-001-003 Qualitative Impacts - Disruption - Similkameen Map

Quantitative Maps

- | | | | |
|-------------|---|-------------|---|
| D-F-001-001 | Flood - Disruption - Sub-watershed Index | D-D-001-001 | Debris Flow - Disruption - Sub-watershed Index |
| D-F-002-001 | Flood - Disruption - Quantitative Project Area Map | D-D-002-001 | Debris Flow - Disruption - Quantitative Project Area Map |
| D-F-002-002 | Flood - Disruption - Quantitative Okanagan Map | D-D-002-002 | Debris Flow - Disruption - Quantitative Okanagan Map |
| D-F-002-003 | Flood - Disruption - Quantitative Similkameen Map | D-D-002-003 | Debris Flow - Disruption - Quantitative Similkameen Map |
| D-F-003-001 | Flood - Disruption - Quantitative Map Tile 1 of 20 | D-D-003-001 | Debris Flow - Disruption - Quantitative Map Tile 1 of 20 |
| D-F-003-002 | Flood - Disruption - Quantitative Map Tile 2 of 20 | D-D-003-002 | Debris Flow - Disruption - Quantitative Map Tile 2 of 20 |
| D-F-003-003 | Flood - Disruption - Quantitative Map Tile 3 of 20 | D-D-003-003 | Debris Flow - Disruption - Quantitative Map Tile 3 of 20 |
| D-F-003-004 | Flood - Disruption - Quantitative Map Tile 4 of 20 | D-D-003-004 | Debris Flow - Disruption - Quantitative Map Tile 4 of 20 |
| D-F-003-005 | Flood - Disruption - Quantitative Map Tile 5 of 20 | D-D-003-005 | Debris Flow - Disruption - Quantitative Map Tile 5 of 20 |
| D-F-003-006 | Flood - Disruption - Quantitative Map Tile 6 of 20 | D-D-003-006 | Debris Flow - Disruption - Quantitative Map Tile 6 of 20 |
| D-F-003-007 | Flood - Disruption - Quantitative Map Tile 7 of 20 | D-D-003-007 | Debris Flow - Disruption - Quantitative Map Tile 7 of 20 |
| D-F-003-008 | Flood - Disruption - Quantitative Map Tile 8 of 20 | D-D-003-008 | Debris Flow - Disruption - Quantitative Map Tile 8 of 20 |
| D-F-003-009 | Flood - Disruption - Quantitative Map Tile 9 of 20 | D-D-003-009 | Debris Flow - Disruption - Quantitative Map Tile 9 of 20 |
| D-F-003-010 | Flood - Disruption - Quantitative Map Tile 10 of 20 | D-D-003-010 | Debris Flow - Disruption - Quantitative Map Tile 10 of 20 |
| D-F-003-011 | Flood - Disruption - Quantitative Map Tile 11 of 20 | D-D-003-011 | Debris Flow - Disruption - Quantitative Map Tile 11 of 20 |
| D-F-003-012 | Flood - Disruption - Quantitative Map Tile 12 of 20 | D-D-003-012 | Debris Flow - Disruption - Quantitative Map Tile 12 of 20 |
| D-F-003-013 | Flood - Disruption - Quantitative Map Tile 13 of 20 | D-D-003-013 | Debris Flow - Disruption - Quantitative Map Tile 13 of 20 |
| D-F-003-014 | Flood - Disruption - Quantitative Map Tile 14 of 20 | D-D-003-014 | Debris Flow - Disruption - Quantitative Map Tile 14 of 20 |
| D-F-003-015 | Flood - Disruption - Quantitative Map Tile 15 of 20 | D-D-003-015 | Debris Flow - Disruption - Quantitative Map Tile 15 of 20 |
| D-F-003-016 | Flood - Disruption - Quantitative Map Tile 16 of 20 | D-D-003-016 | Debris Flow - Disruption - Quantitative Map Tile 16 of 20 |
| D-F-003-017 | Flood - Disruption - Quantitative Map Tile 17 of 20 | D-D-003-017 | Debris Flow - Disruption - Quantitative Map Tile 17 of 20 |
| D-F-003-018 | Flood - Disruption - Quantitative Map Tile 18 of 20 | D-D-003-018 | Debris Flow - Disruption - Quantitative Map Tile 18 of 20 |
| D-F-003-019 | Flood - Disruption - Quantitative Map Tile 19 of 20 | D-D-003-019 | Debris Flow - Disruption - Quantitative Map Tile 19 of 20 |
| D-F-003-020 | Flood - Disruption - Quantitative Map Tile 20 of 20 | D-D-003-020 | Debris Flow - Disruption - Quantitative Map Tile 20 of 20 |

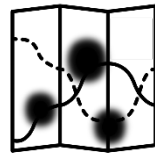
Syilx Okanagan Flood and Debris Flow Risk Assessment

Map Book

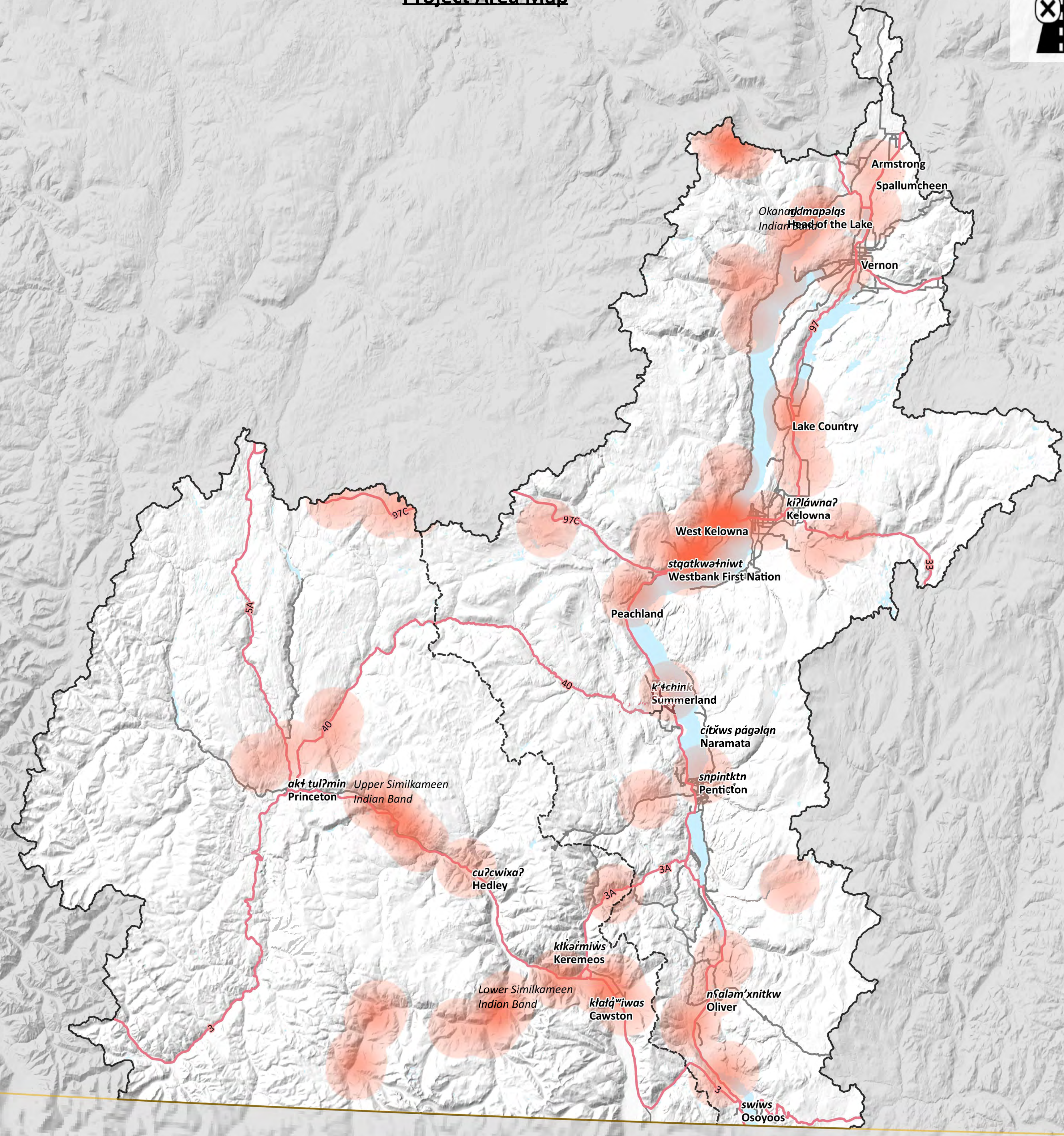
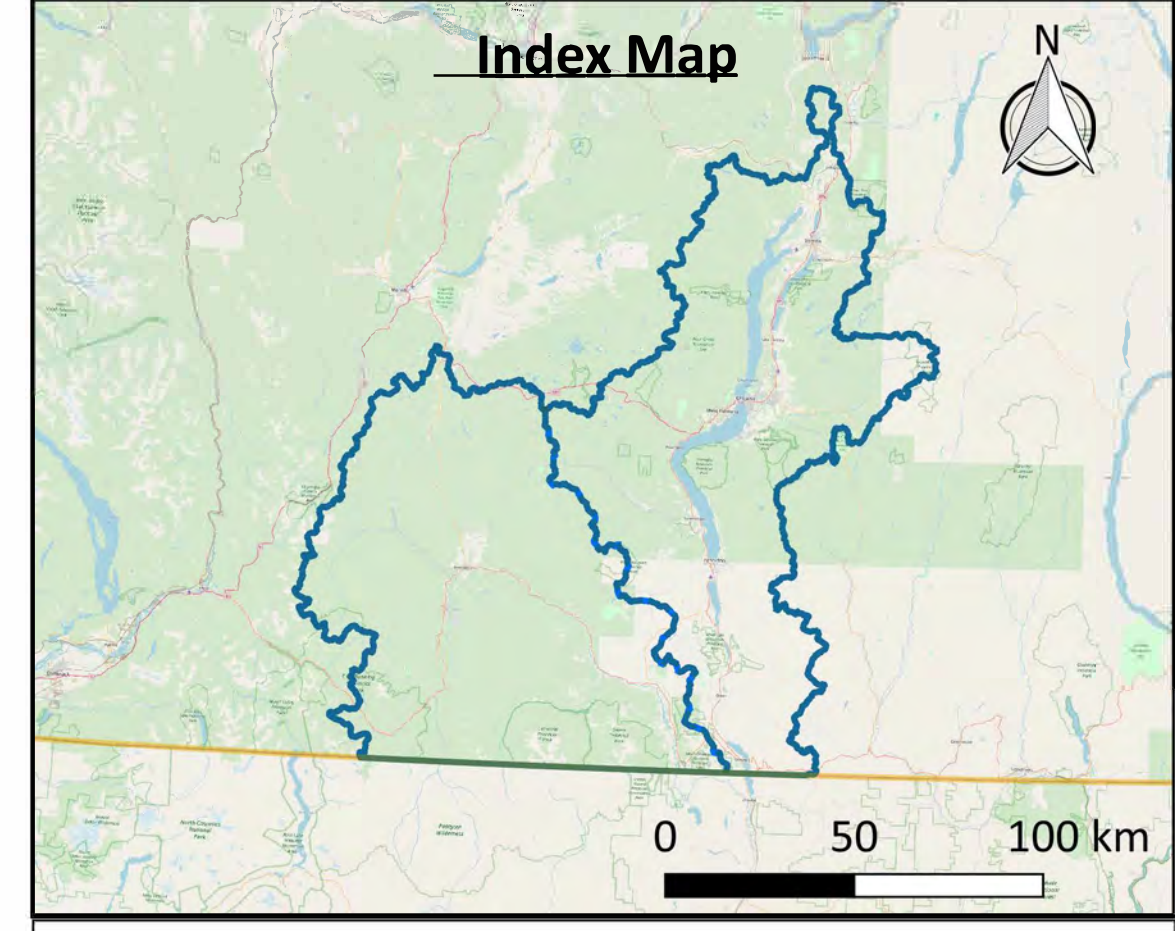
Map Series 7 of 7: Disruption Indicator



Qualitative Flood and Debris Flow Impact Maps



Project Area Map



[Click here to go to Okanagan Map](#)
[Click here to go to Similkameen Map](#)

Map Notes
 1. Map created by Ebbwater Consulting Inc.
 2. Impacts were recorded primarily in Workshop 1 in West Kelowna on 13 February 2019 and Workshop 2 on 25 April 2019. Impacts were also recorded based on input obtained from learning sessions, watershed tours, personal communications and electronic feedback.
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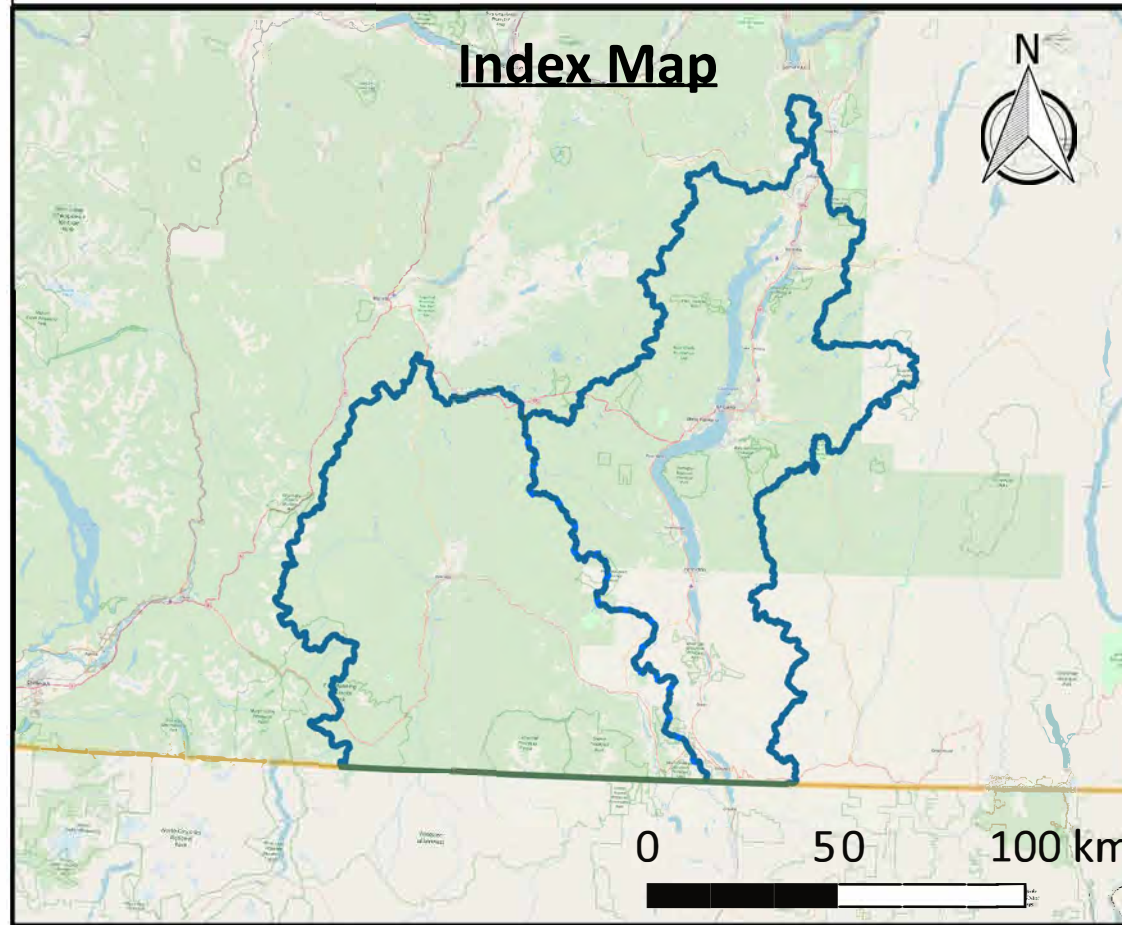
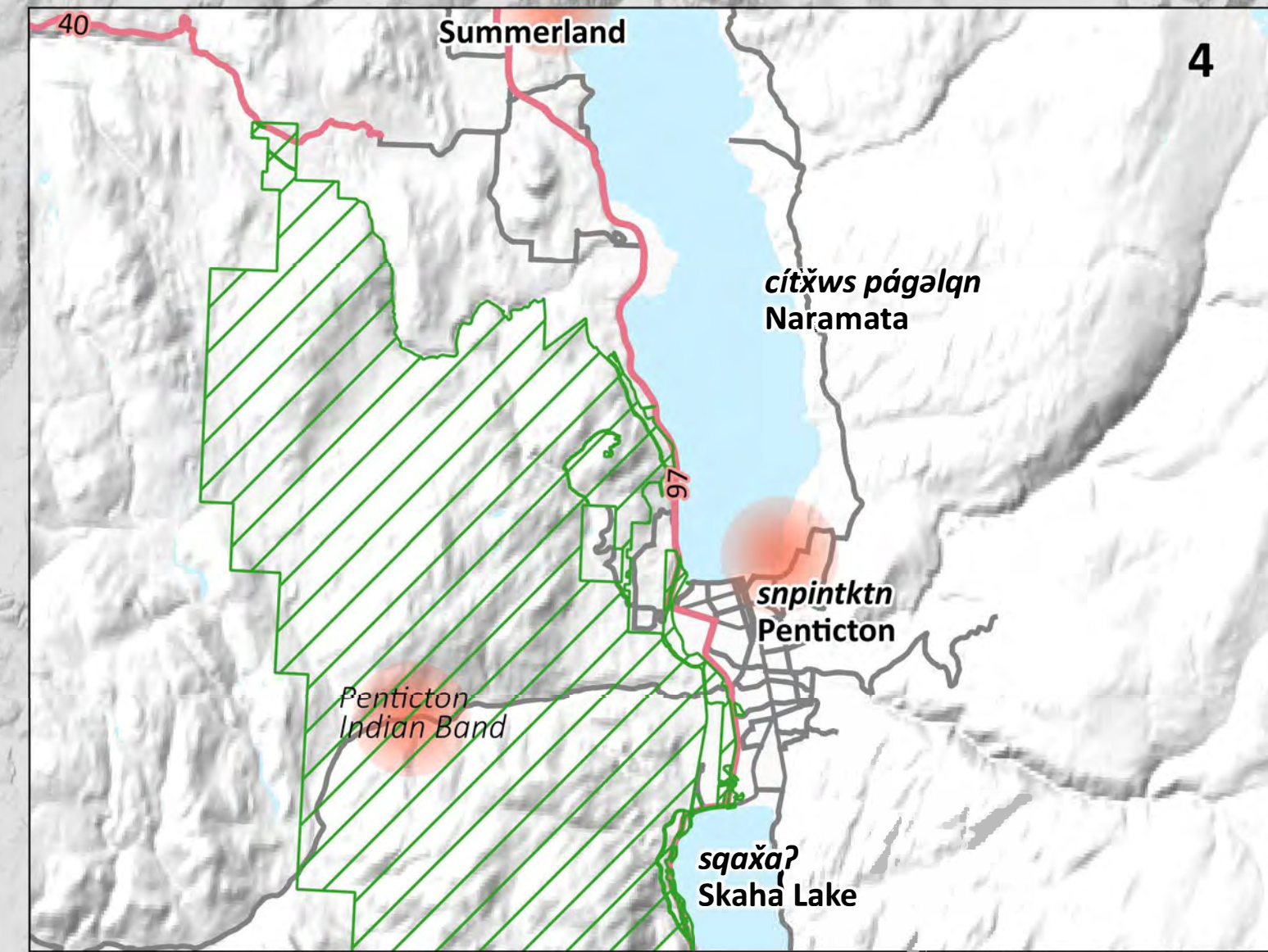
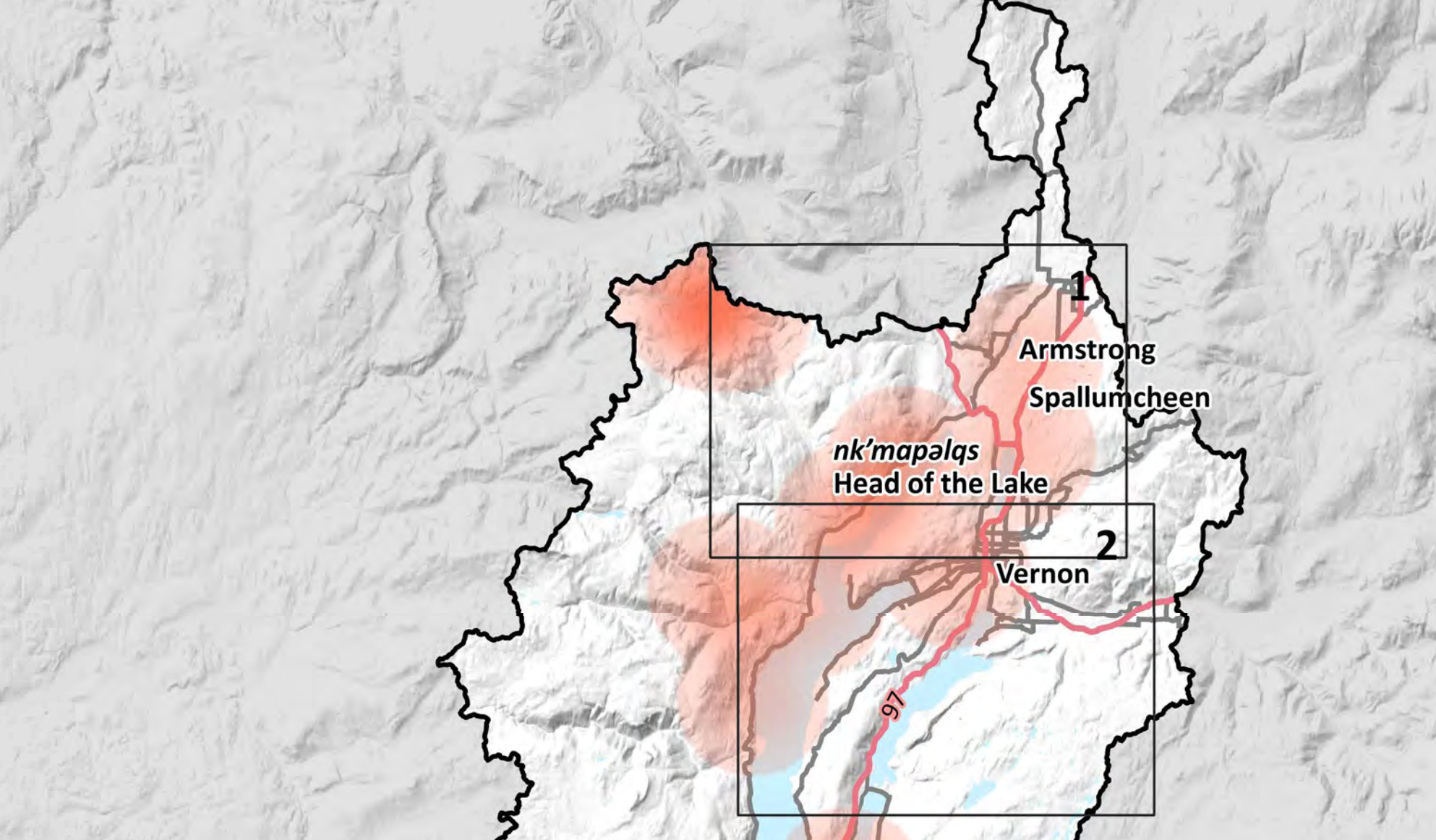
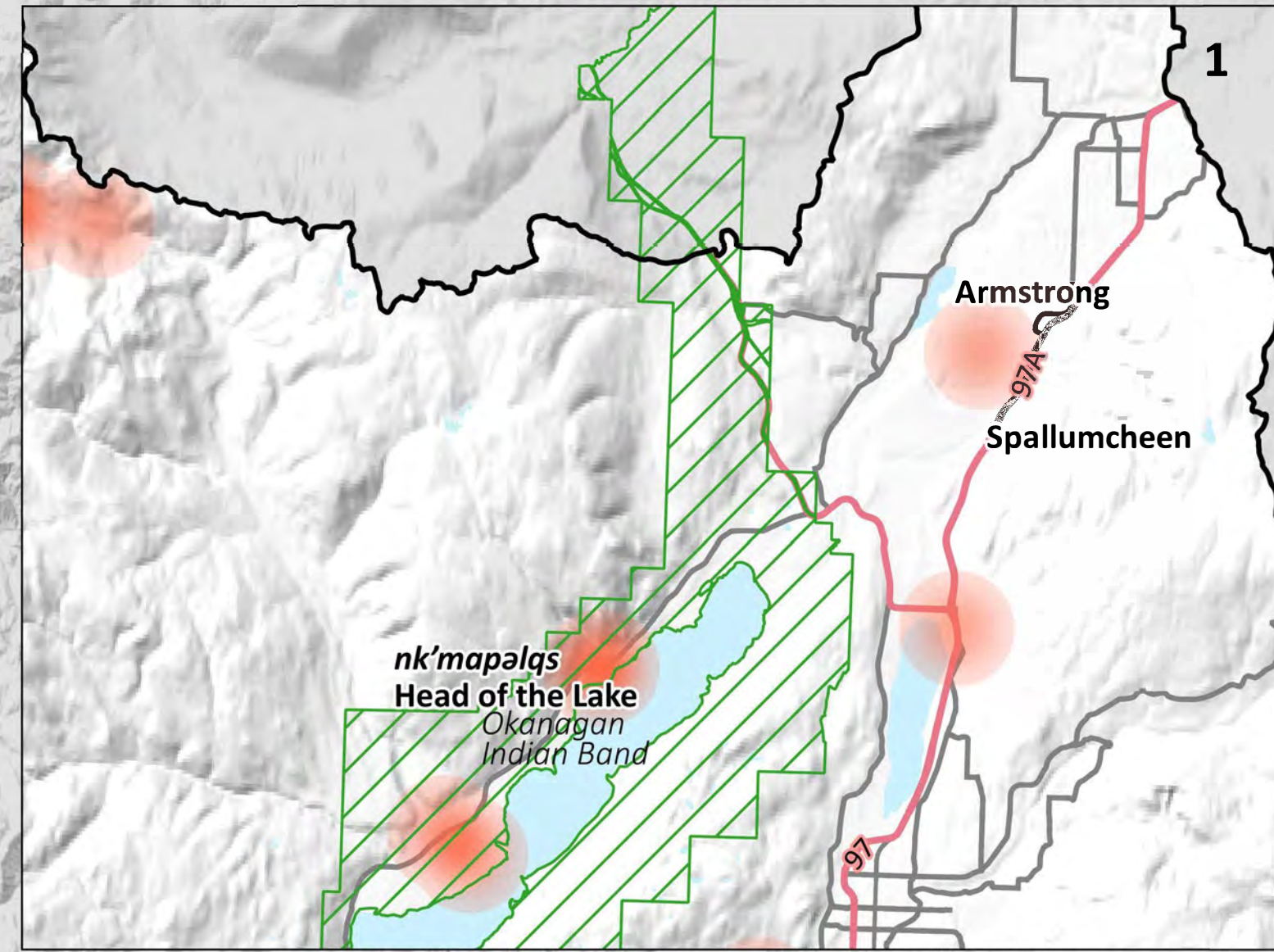
Legend

Watershed Boundary	Disruption Impacts
Okanagan-Similkameen Boundary	
Canada - US Border	
Lakes	
Watercourses	
Highway	
Major Road	

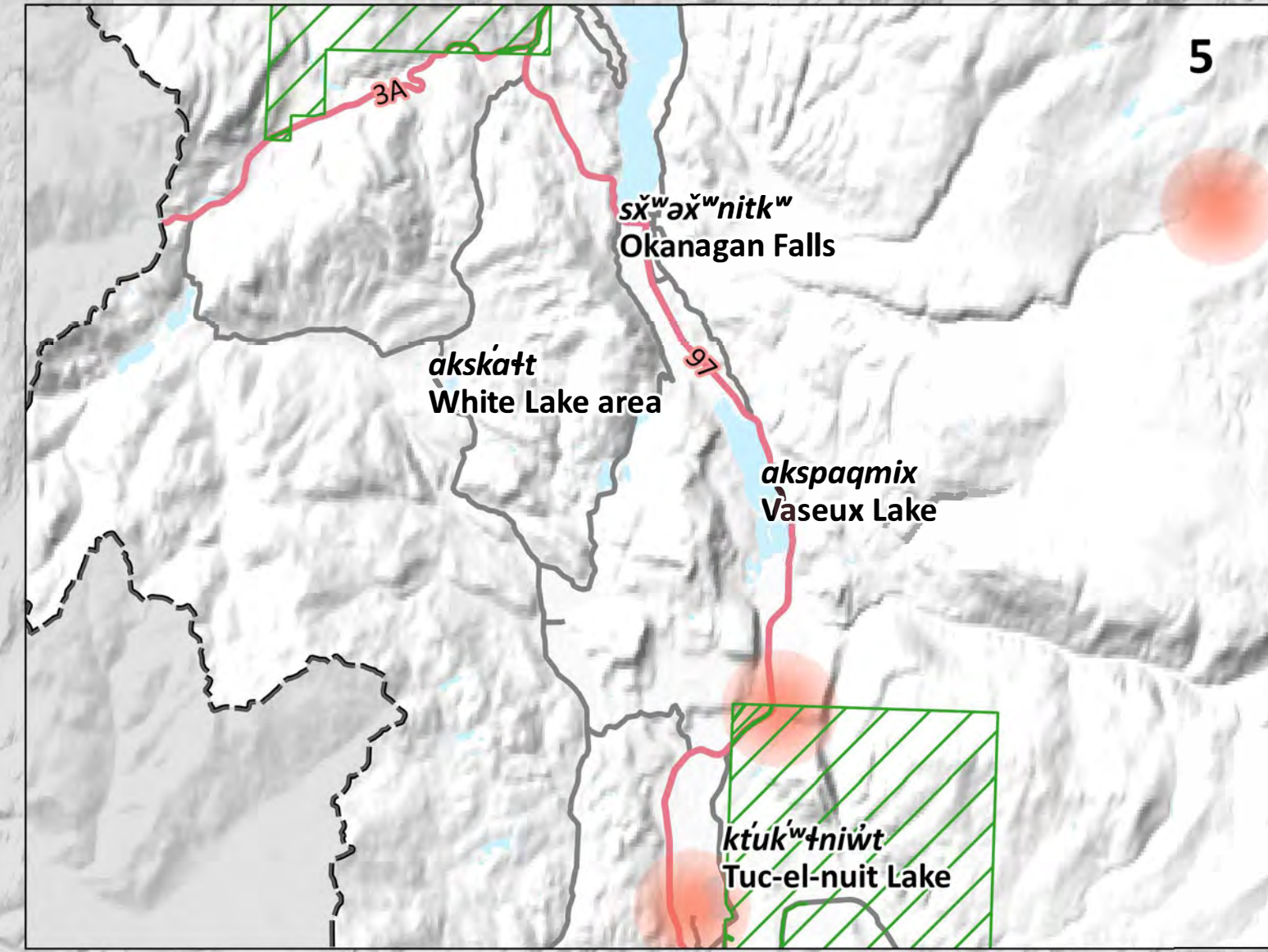
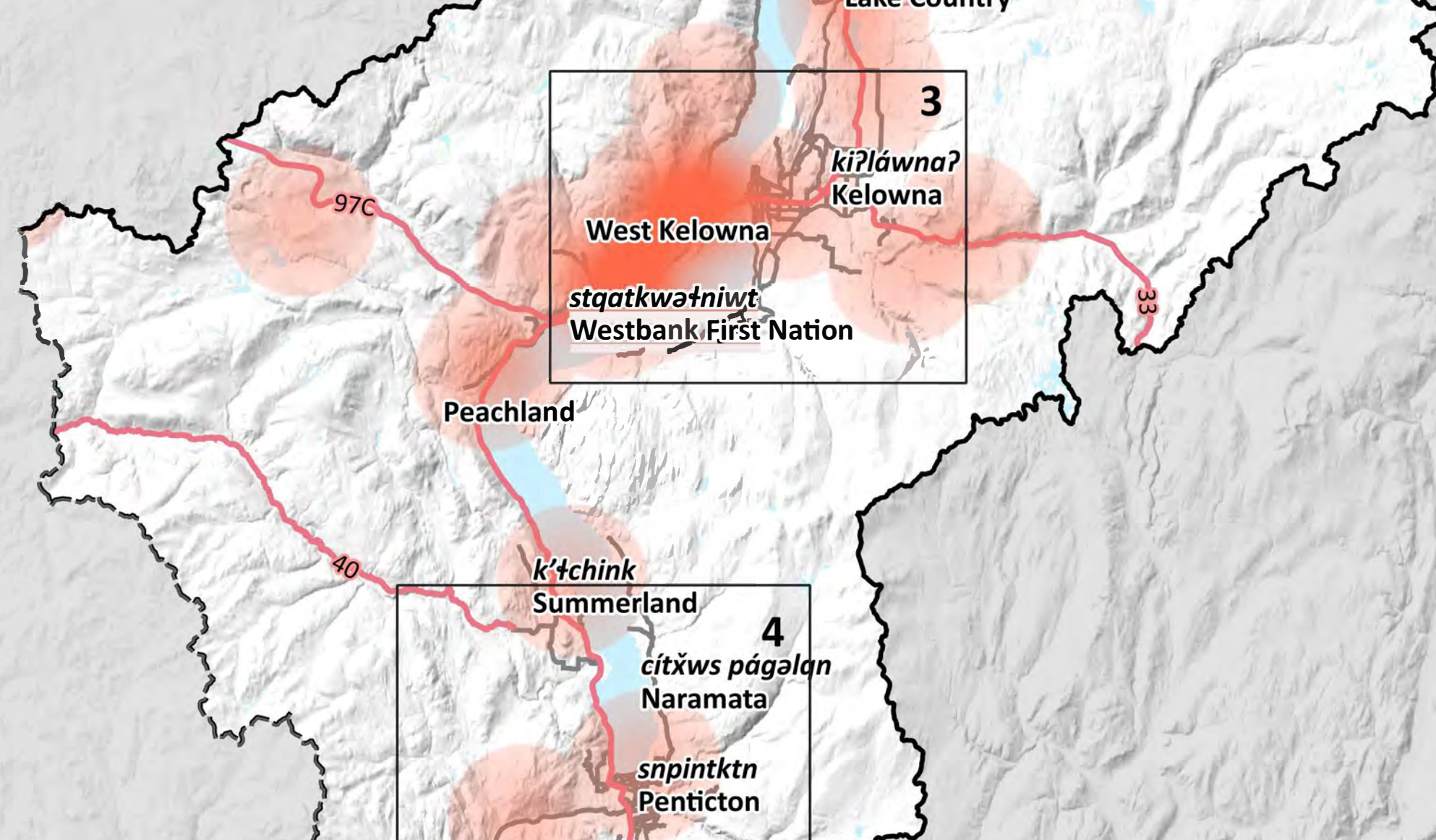
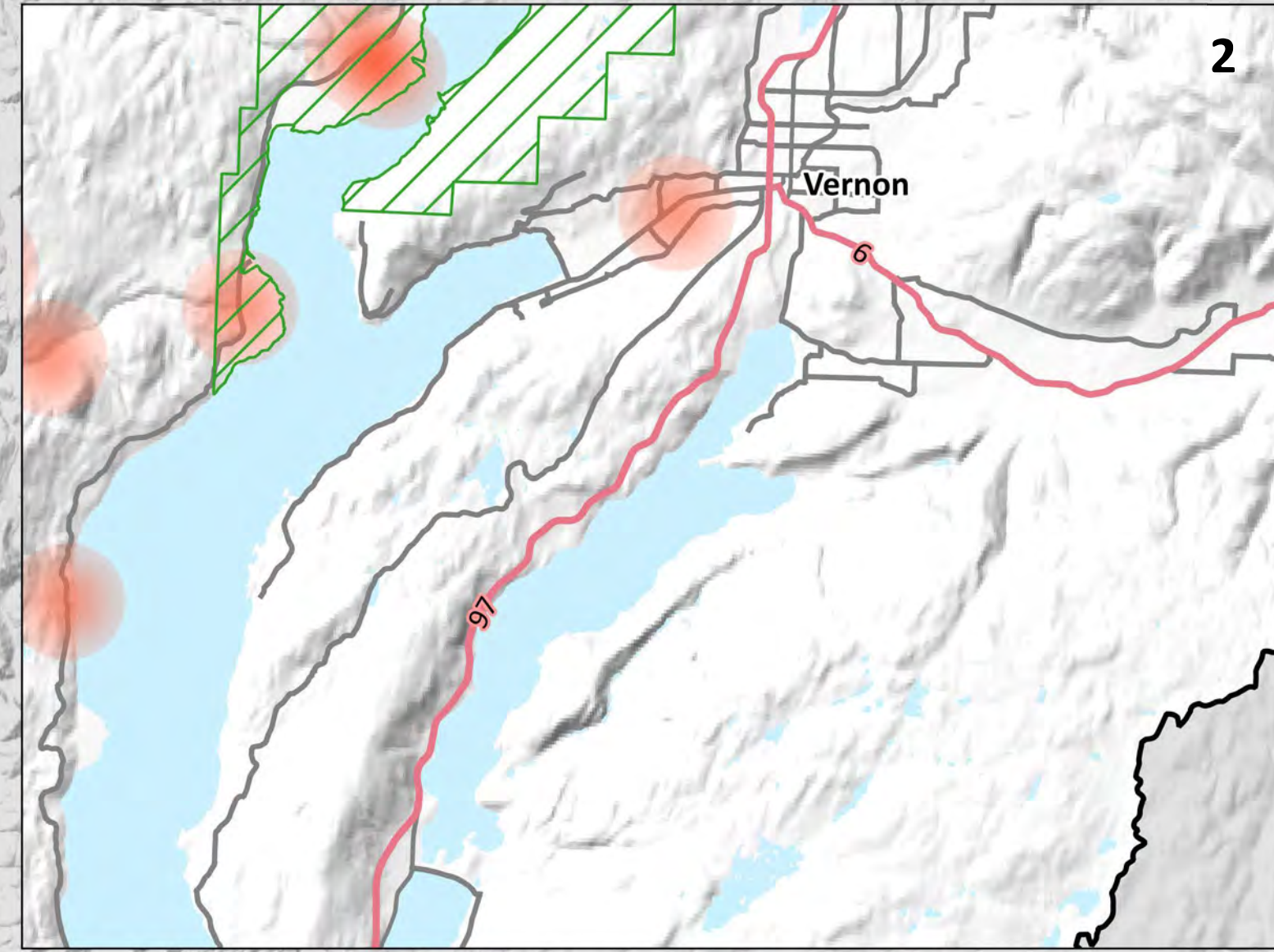
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Qualitative Impacts - Disruption - Project Area

Okanagan Map



[Click here to go to Project Area Map](#)
[Click here to go to Similkameen Map](#)

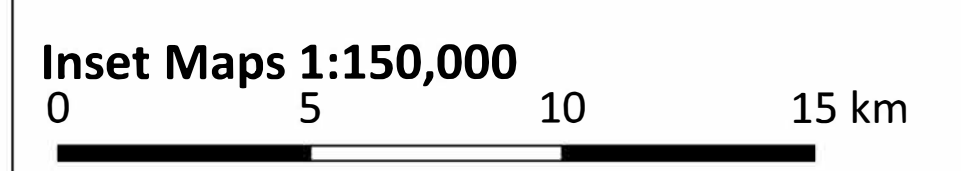


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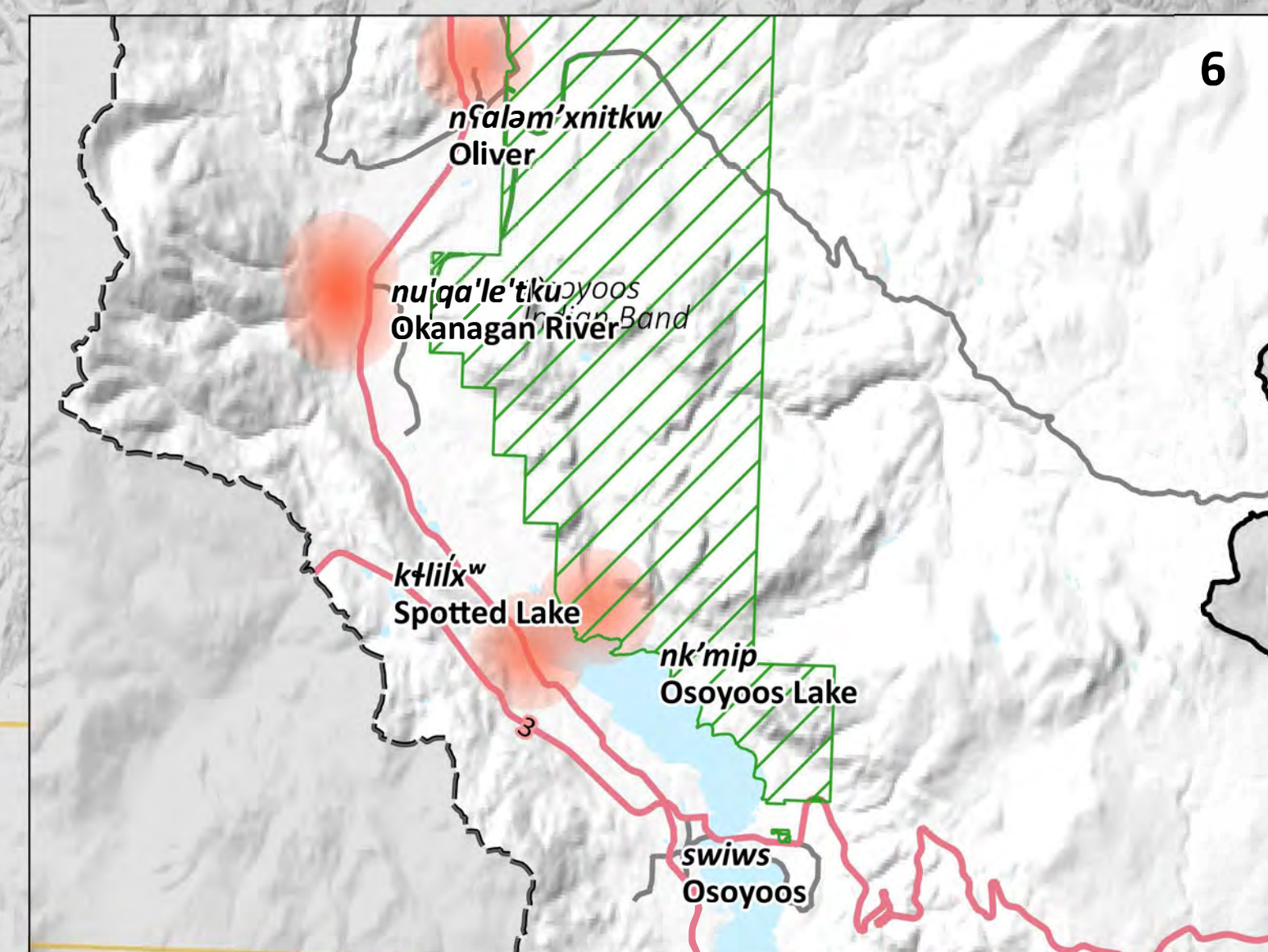
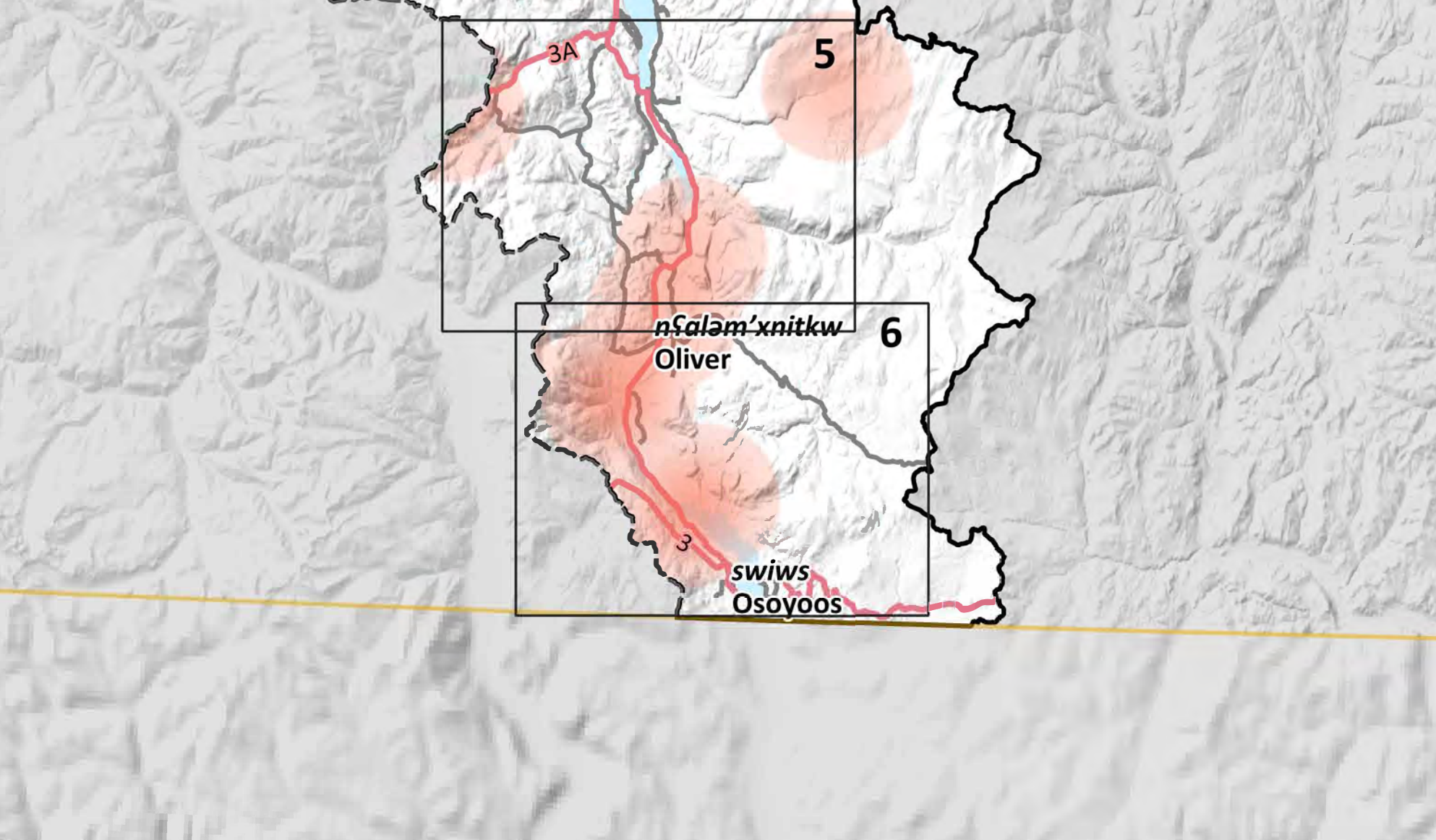
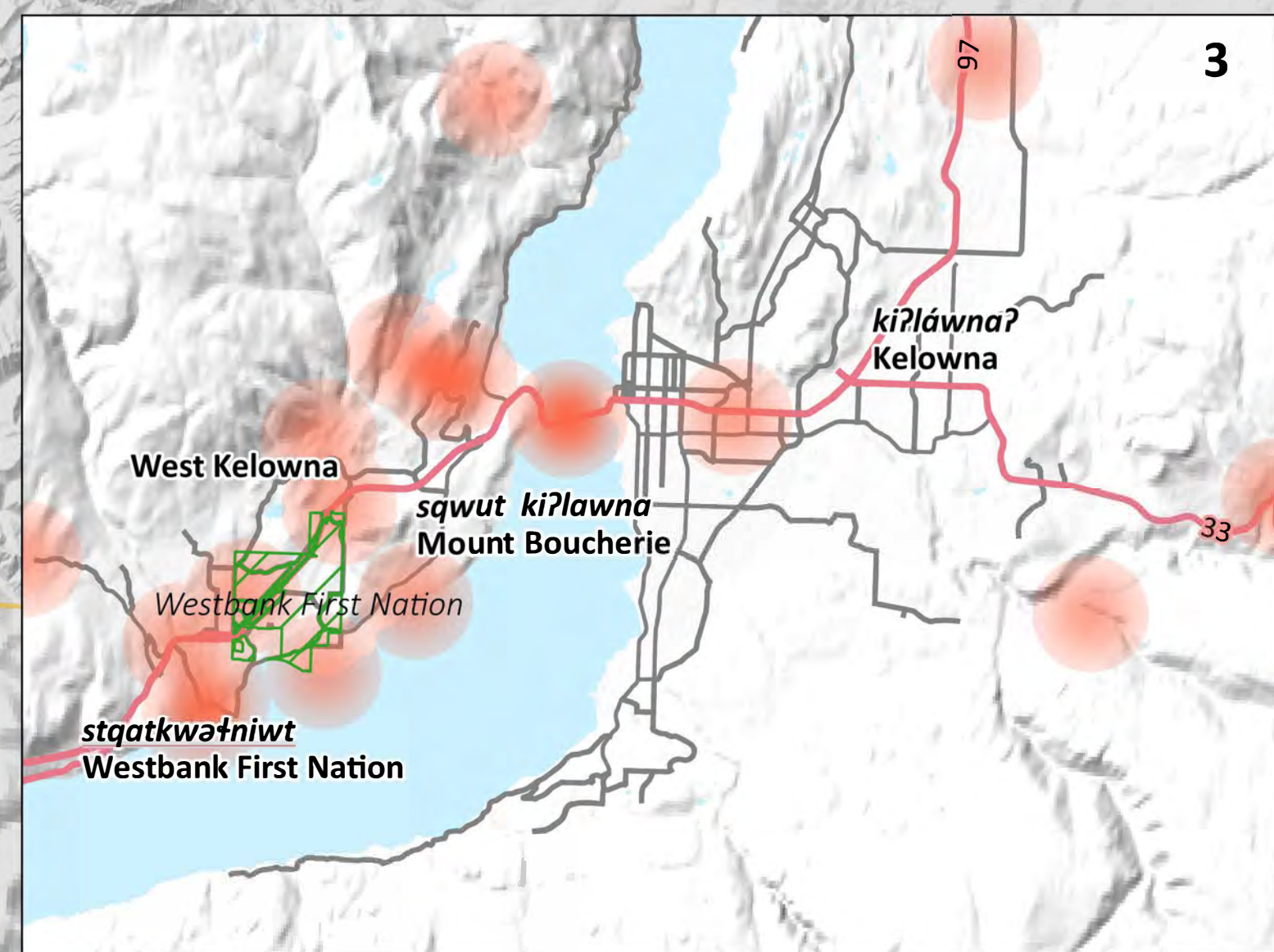


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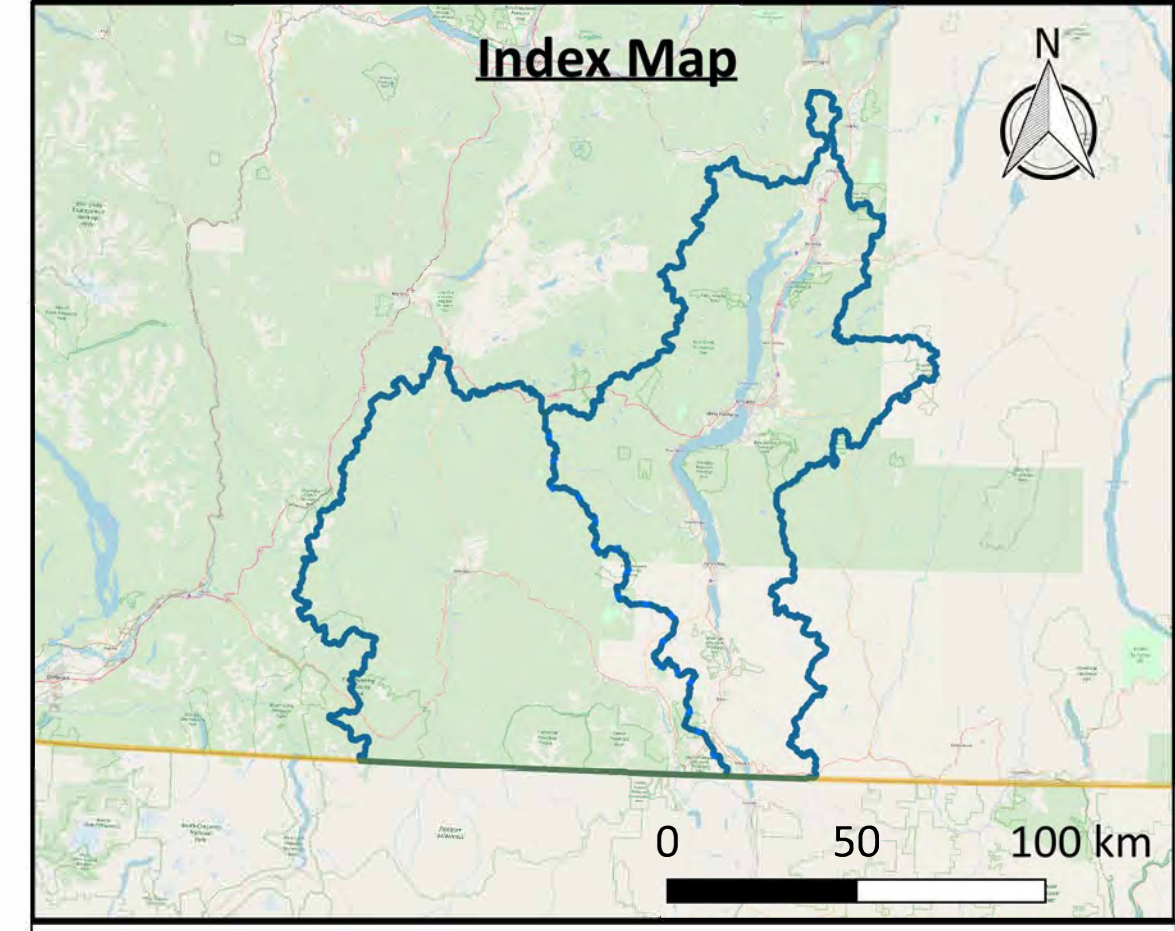
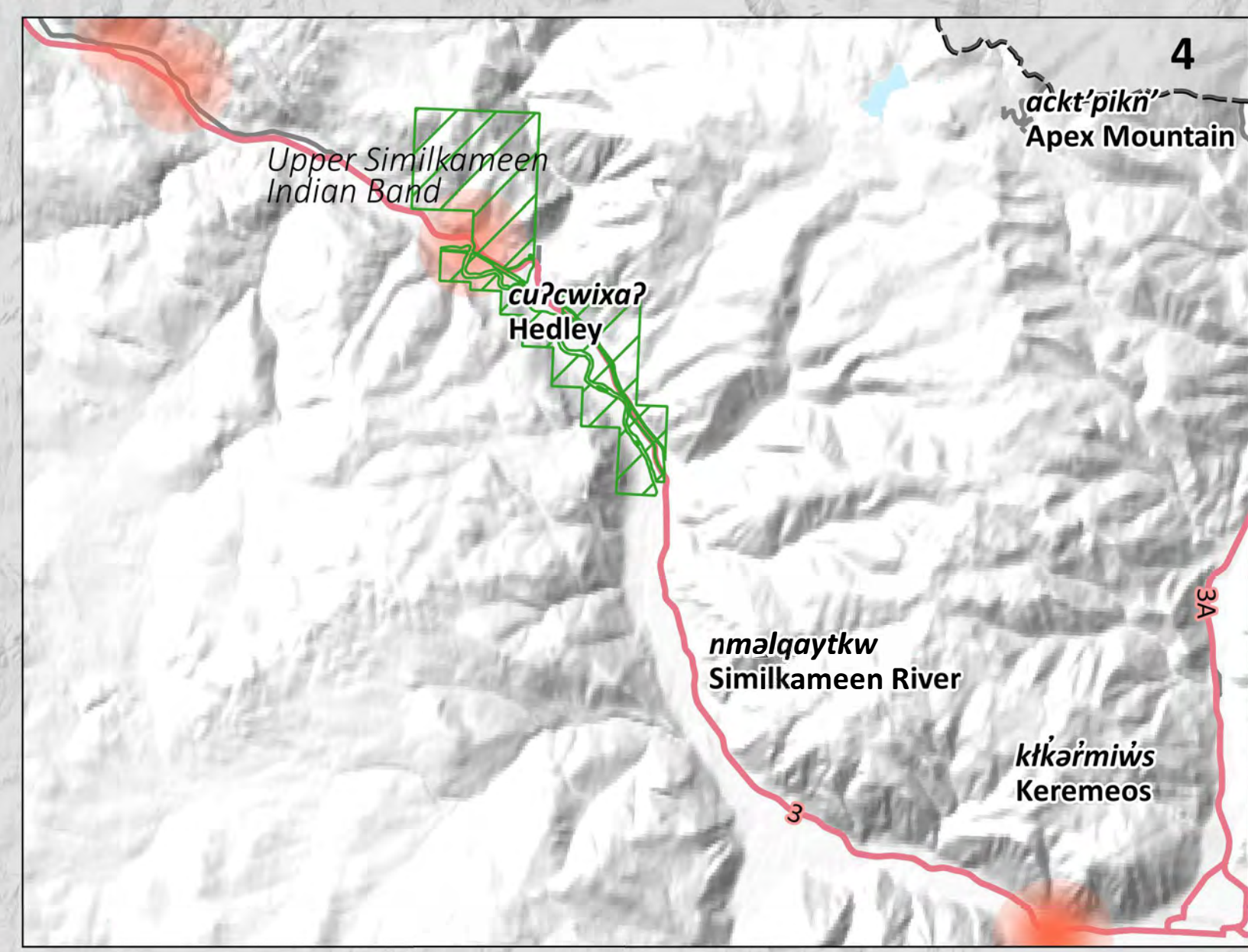
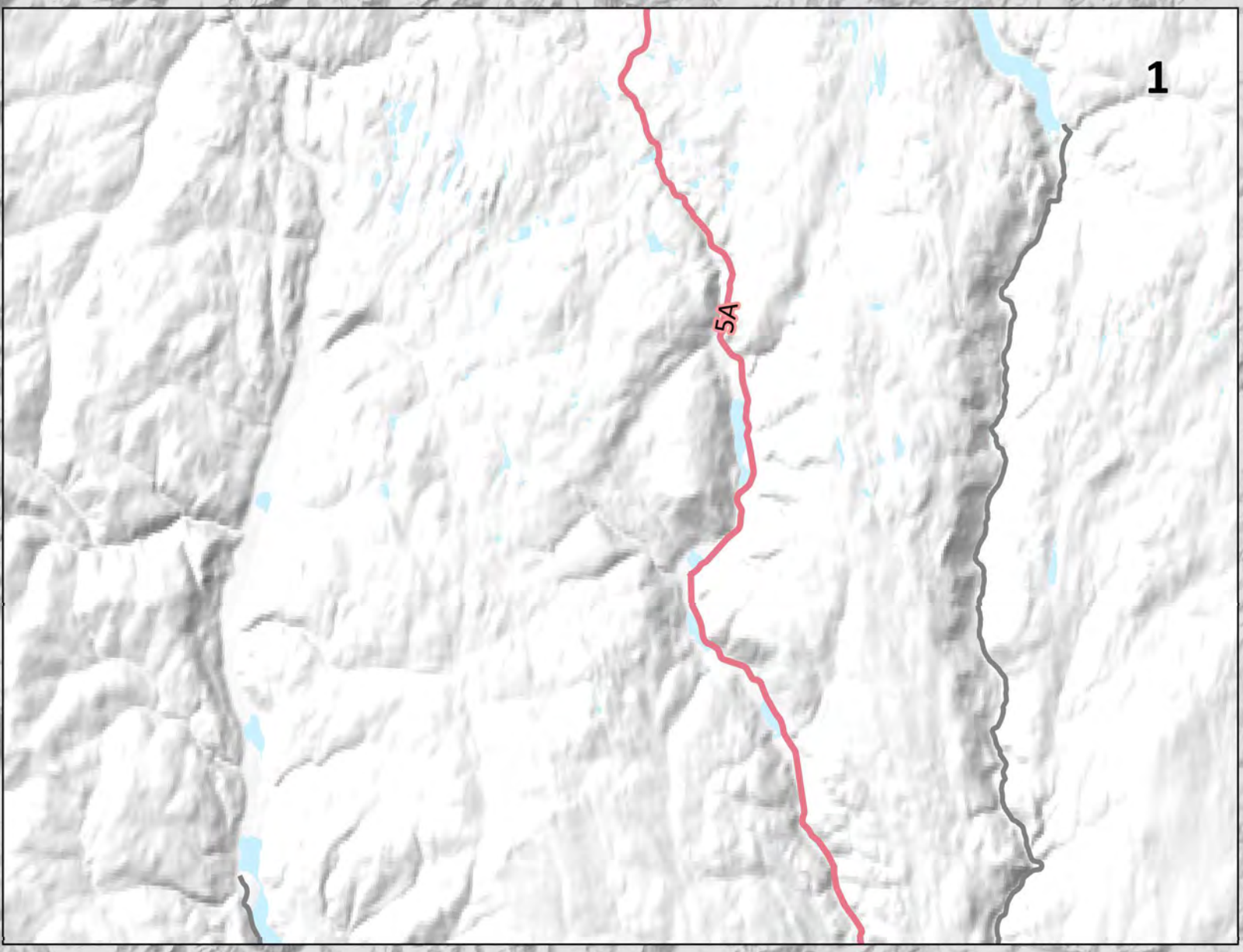
Background	Disruption Impacts
— Watershed Boundary	
- - Okanagan-Similkameen Boundary	
— Canada - US Border	
— Lakes	
— Watercourses	
— Highway	
— Major Road	
▨ Reserves	

Date: 31 December 2019
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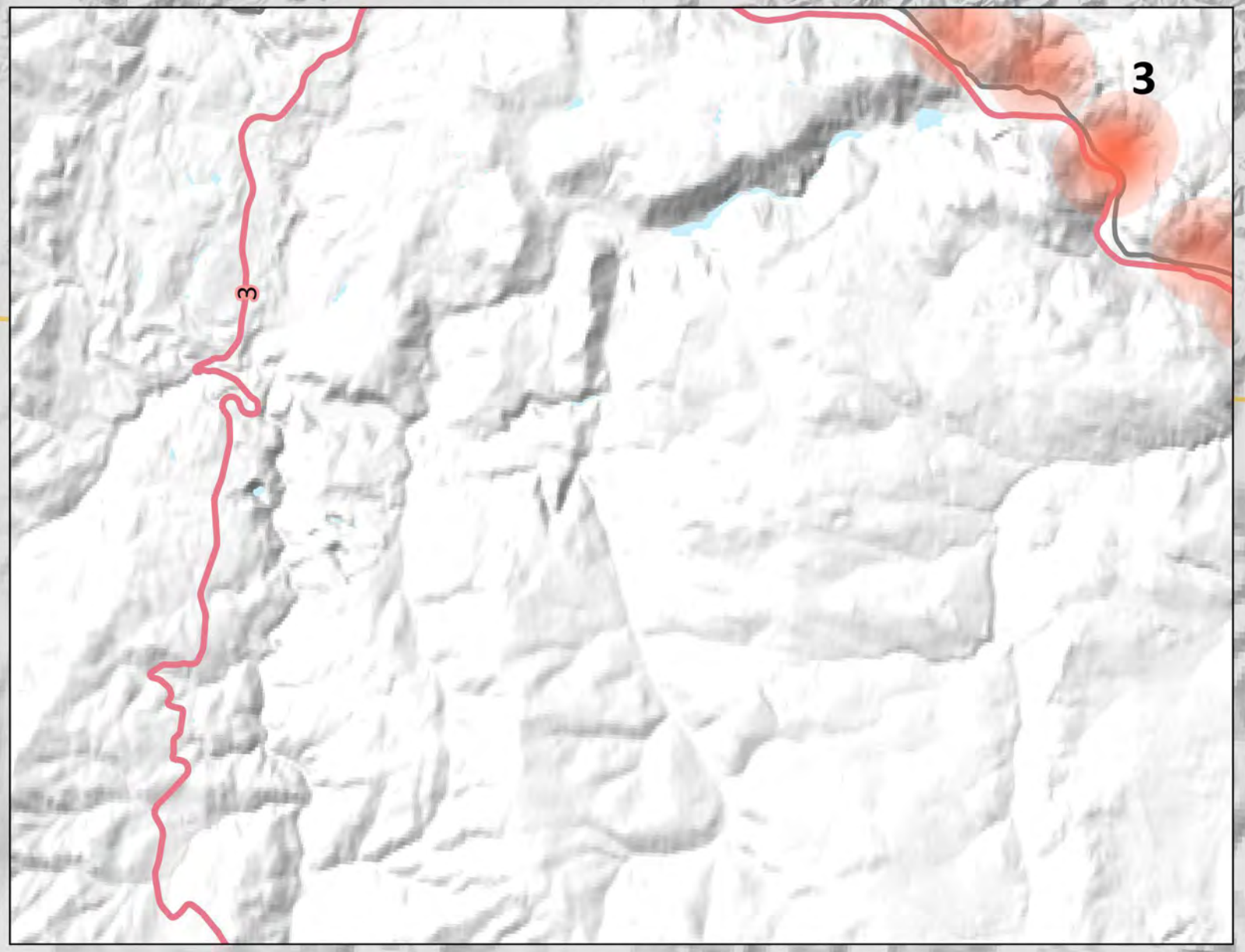
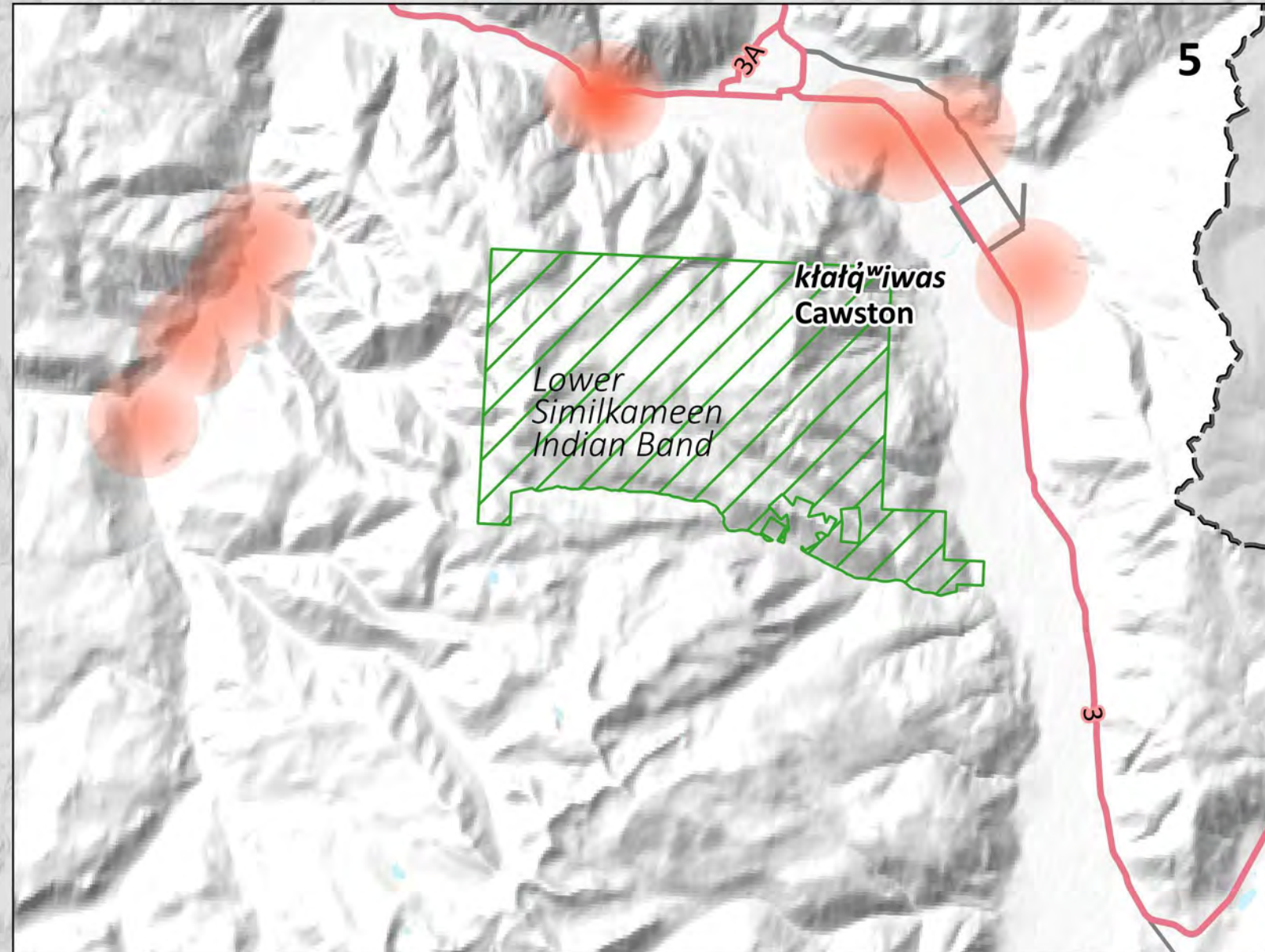
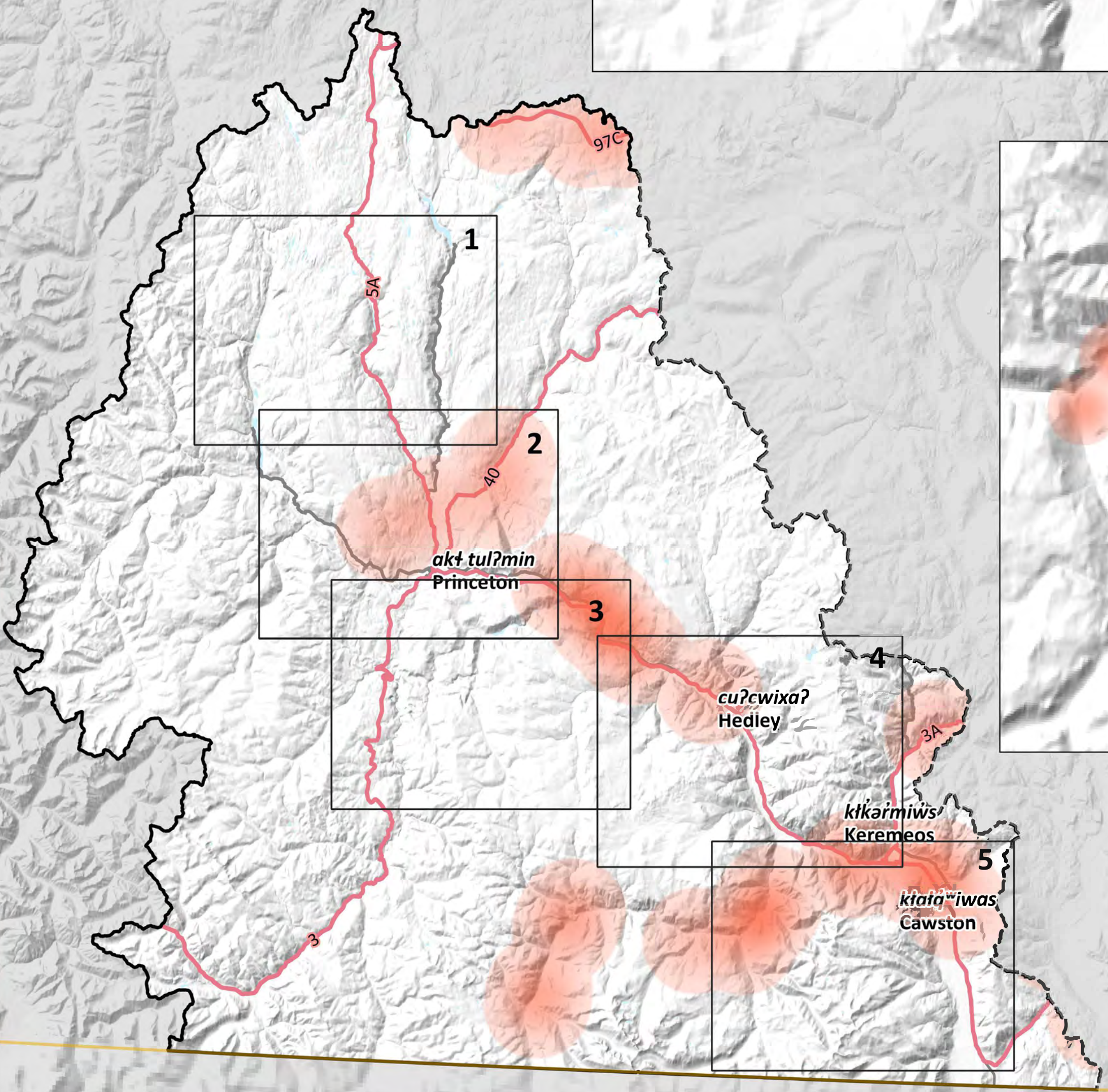
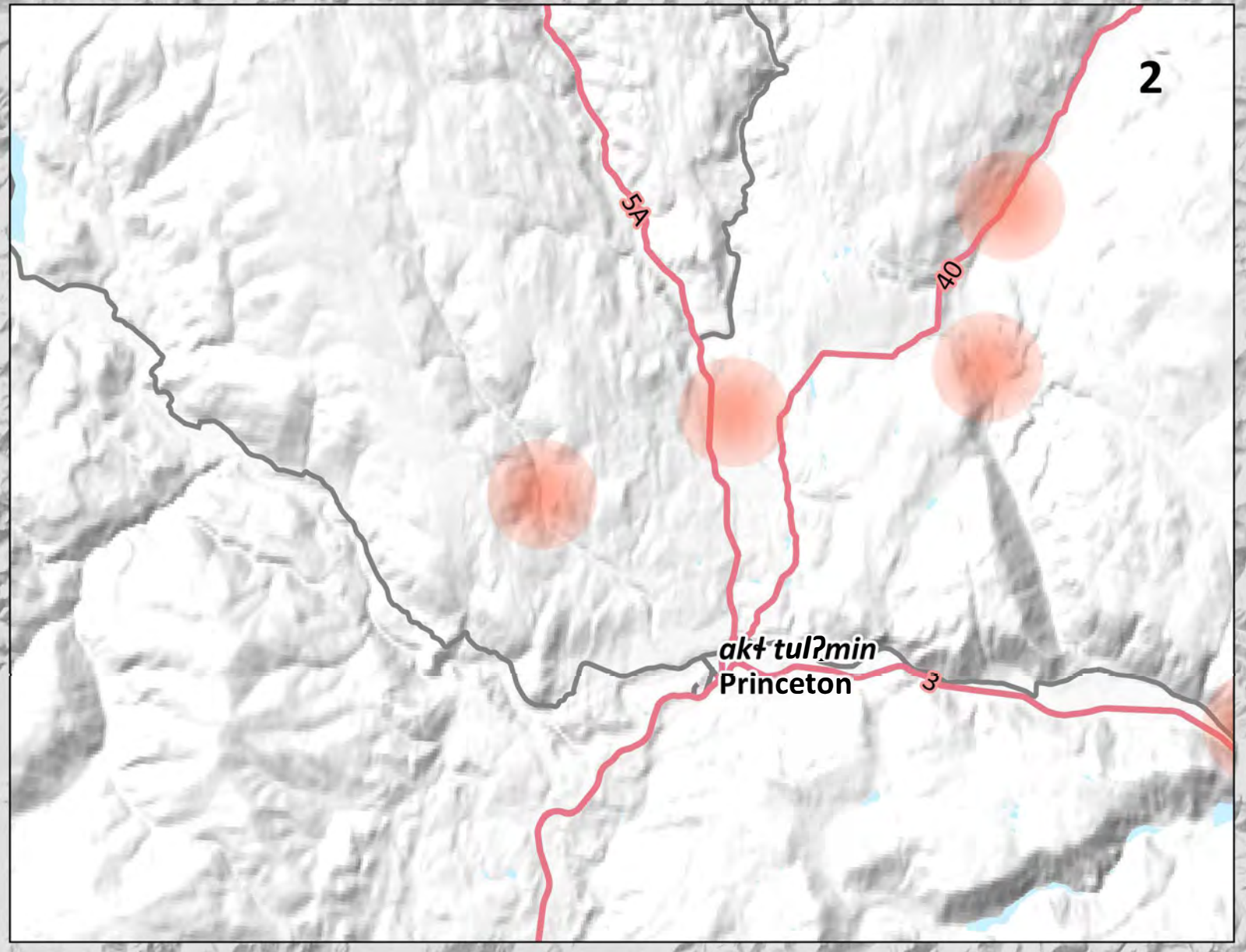
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Qualitative Impacts - Disruption - Okanagan



Similkameen Map

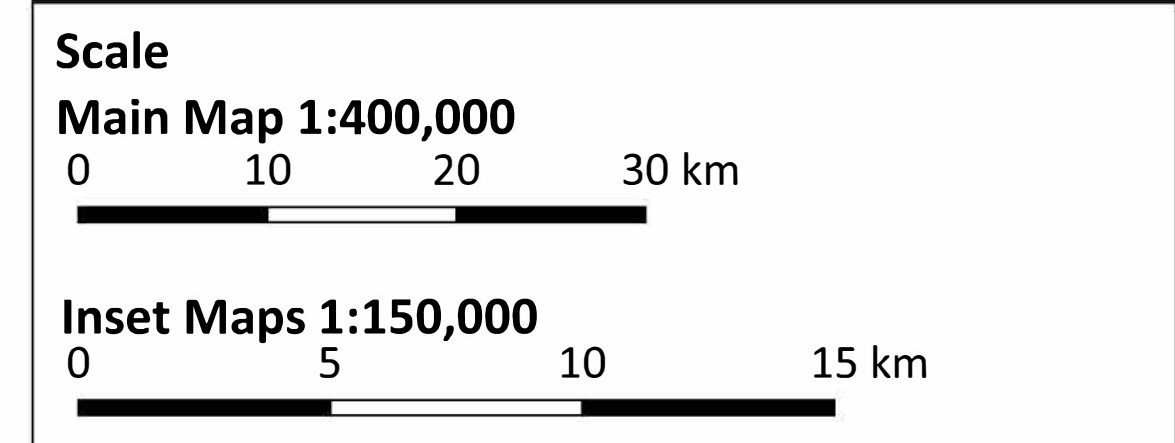


[Click here to go to Project Area Map](#)
[Click here to go to Okanagan Map](#)



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Legend

Background	Disruption Impacts
— Watershed Boundary	
- - - Okanagan-Similkameen Boundary	
— Canada - US Border	
— Lakes	
— Watercourses	
— Highway	
— Major Road	
▨ Reserves	

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Syilx (Okanagan) Flood and Debris Flow Risk Assessment Project
Qualitative Impacts - Disruption - Similkameen

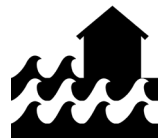
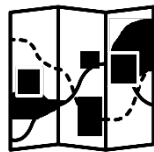
Sylix Okanagan Flood and Debris Flow Risk Assessment

Map Book

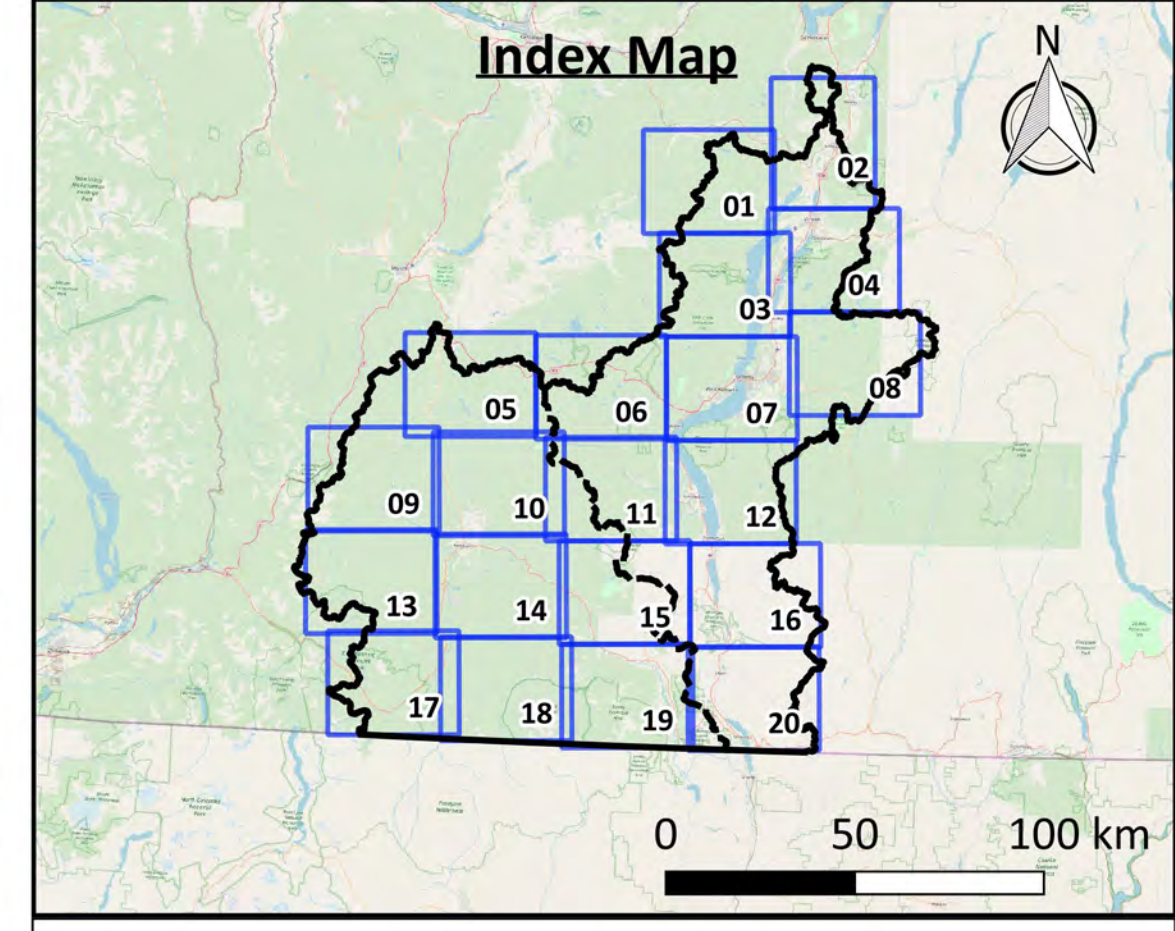
Map Series 7 of 7: Disruption Indicator



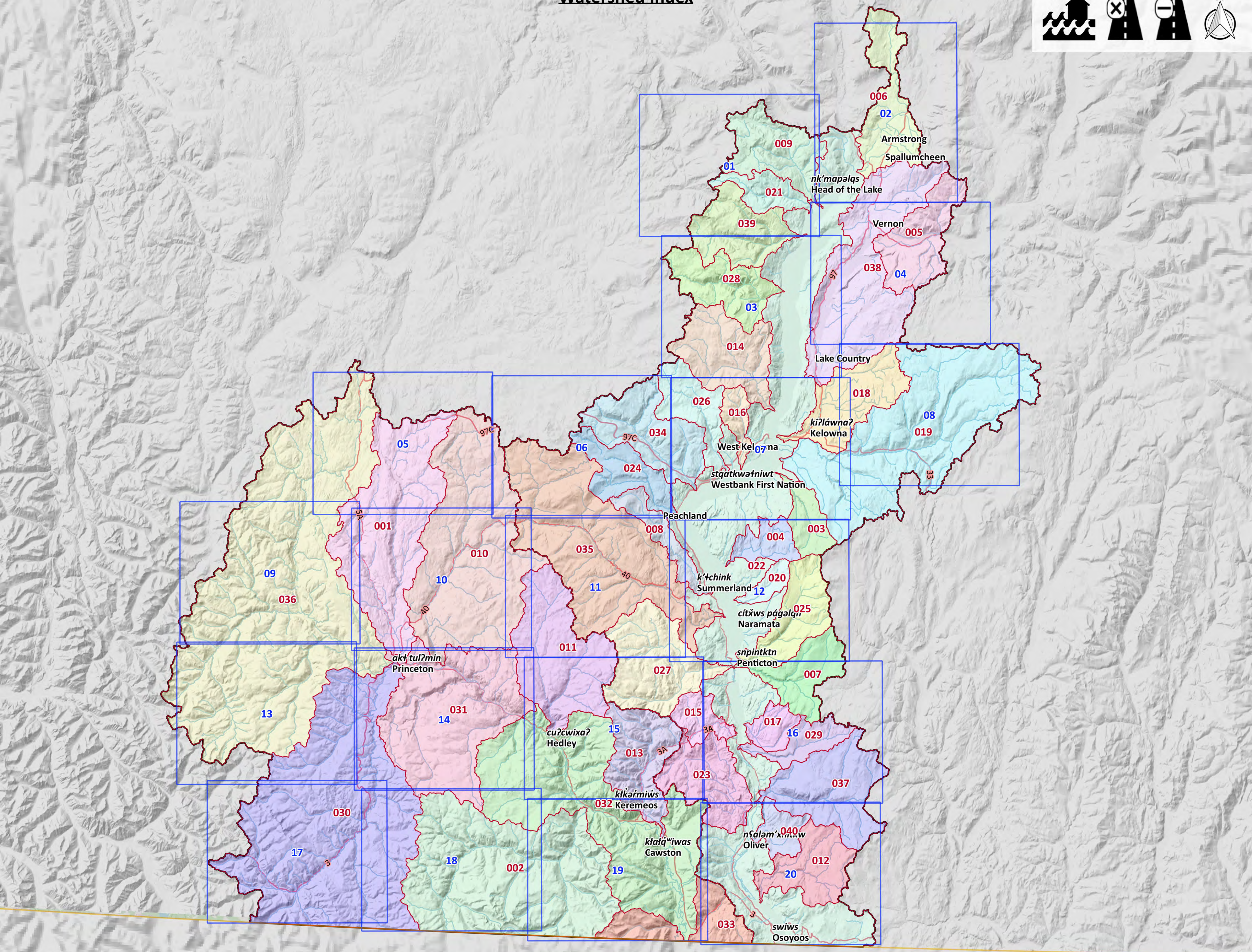
Quantitative Flood Consequence Maps



Watershed Index



Click on the blue map tile to go to the Zoom-In map



Legend

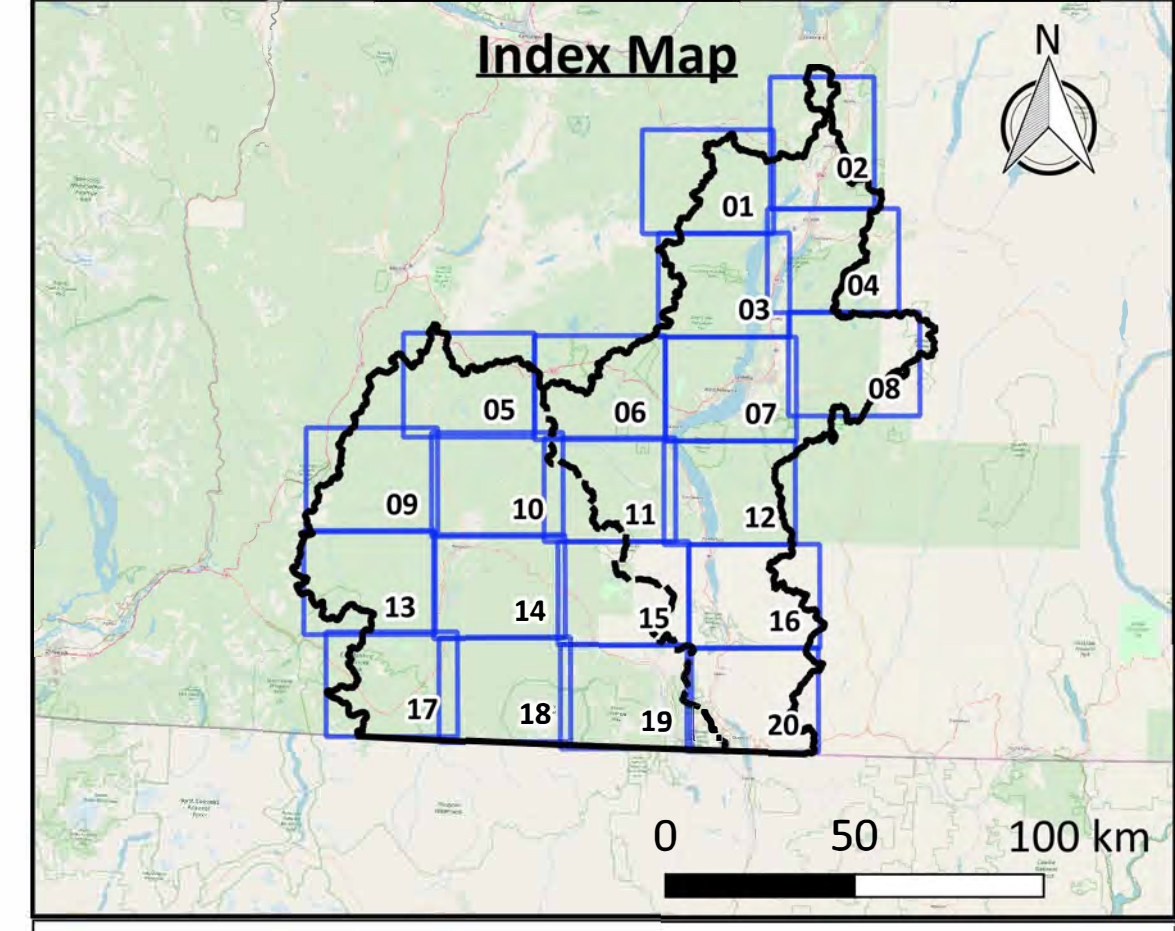
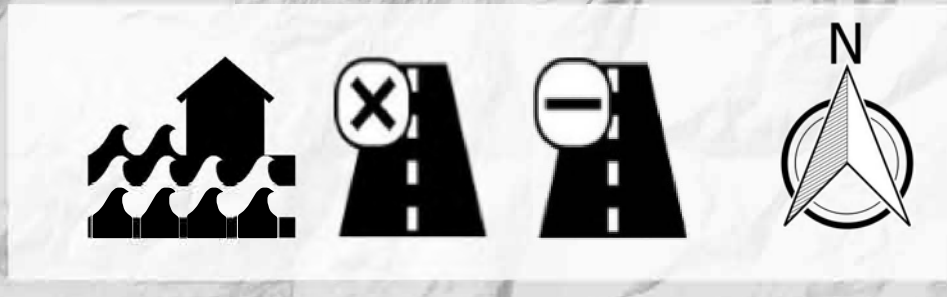
Background	Sub-Watersheds
— Watershed Boundary	001 - Allison Creek
- - - Okanagan-Similkameen Boundary	002 - Ashnola River
— Canada - US Border	003 - Bellevue Creek
— Lakes	004 - Chute Creek
— Watercourses	005 - Coldstream Creek
— Highway	006 - Deep Creek
— Major Road	007 - Ellis Creek
— Map tiles	008 - Eneas Creek
	009 - Equis Creek
	010 - Hayes Creek
	011 - Hedley Creek
	012 - Inkaneep Creek
	013 - Keremeos Creek
	014 - Lambly Creek
	015 - Marron River
	016 - McDougall Creek
	017 - McLean Creek
	018 - Mill Creek
	019 - Mission Creek
	020 - Naramata Creek
	021 - Naswhito Creek
	022 - Okanagan River
	023 - Park Rill
	024 - Peachland Creek
	025 - Penticton Creek
	026 - Powers Creek
	027 - Shingle Creek
	028 - Shorts Creek
	029 - Shuttleworth Creek
	030 - Similkameen River 1
	031 - Similkameen River 2
	032 - Similkameen River 3
	033 - Similkameen River 4
	034 - Trepanier Creek
	035 - Trout Creek
	036 - Tulameen River
	037 - Vaseux Creek
	038 - Vernon Creek
	039 - Whiteman Creek
	040 - Wolfcub Creek

Scale 1:350,000
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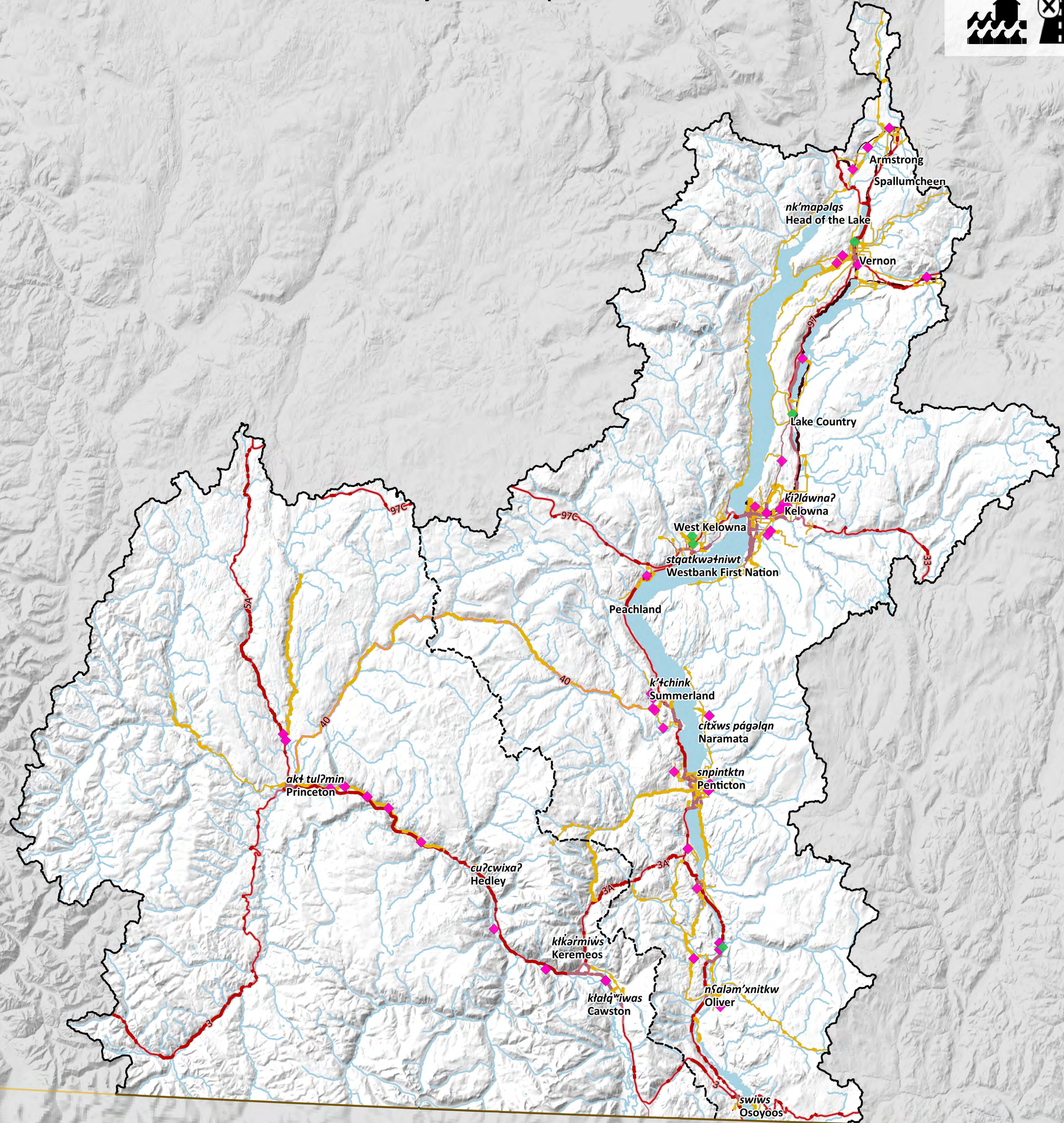
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Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption

Project Area Map



Click above map tile for Zoom-In map
[Click here to go to Okanagan Map](#)
[Click here to go to Similkameen Map](#)



Map Notes

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Scale 1:350,000
 0 10 20 30 km

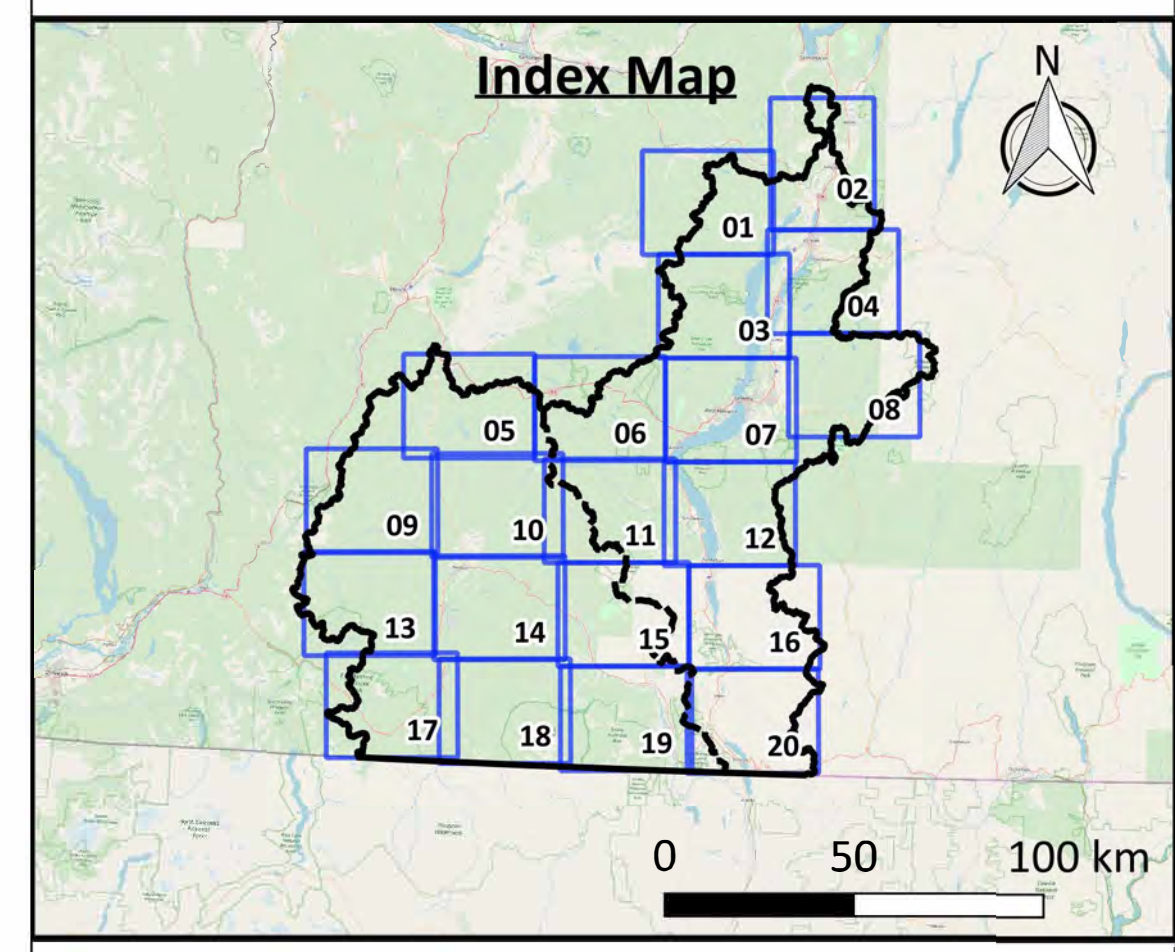
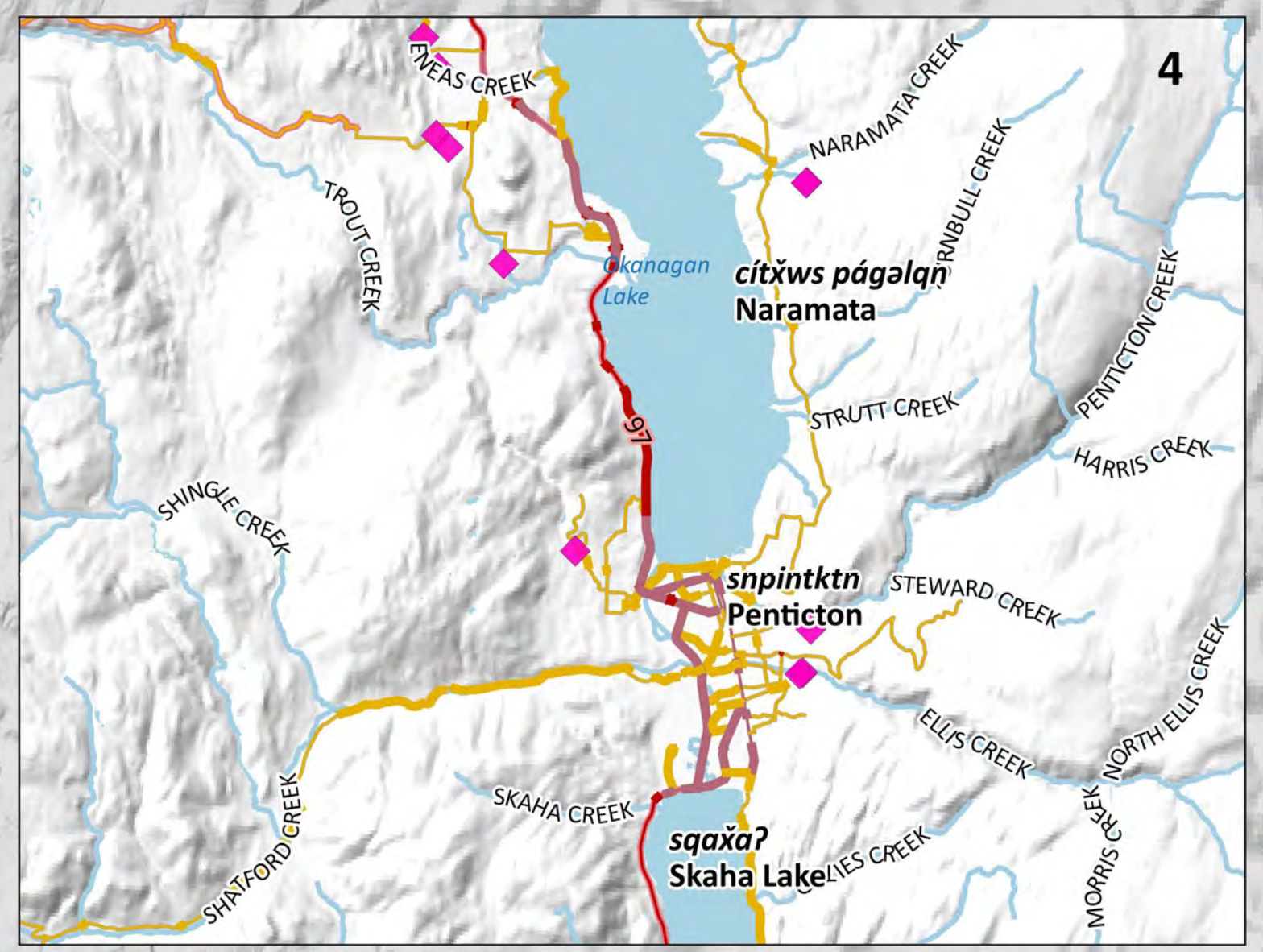
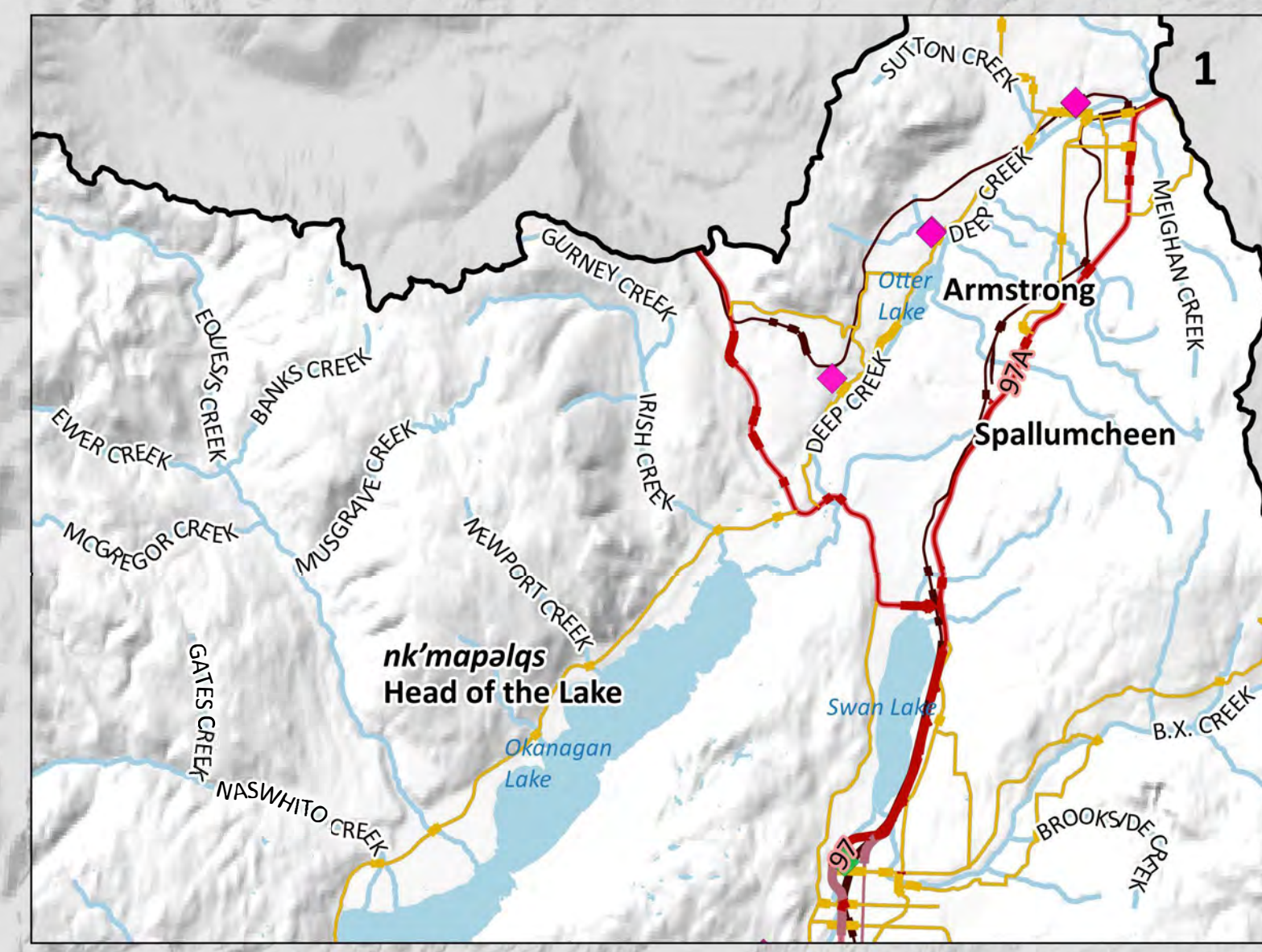
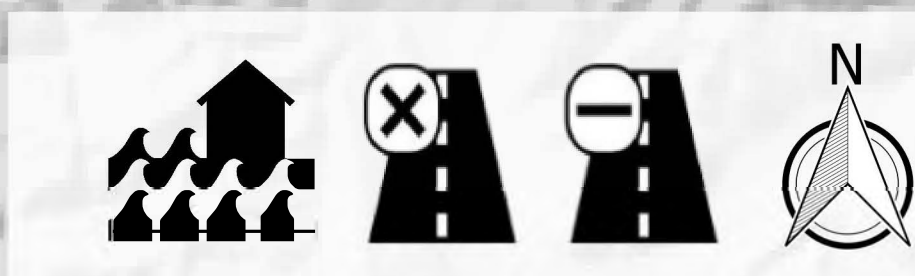
Background		Affected Assets	
—	Watershed Boundary	◆	Critical Electric Structures
- - -	Okanagan-Similkameen Boundary	◆	Critical Gas Structures
—	Canada - US Border	—	Affected Highway
—	Lakes	—	Affected Collector Road
—	Watercourses	—	Affected Arterial Road
—	Highway	—	Affected Rail
—	Collector Road		
—	Arterial Road		
—	Rail		

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

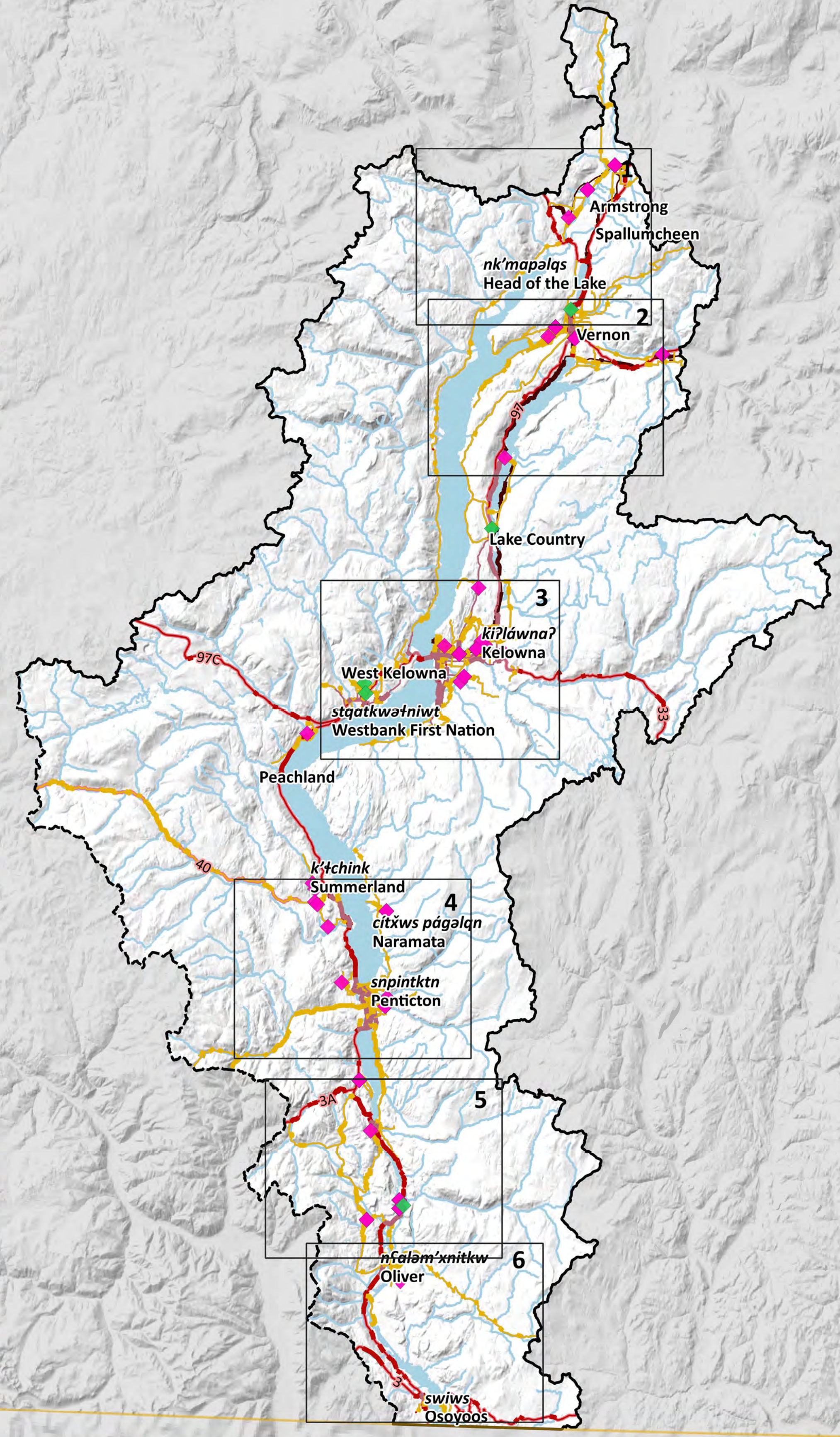
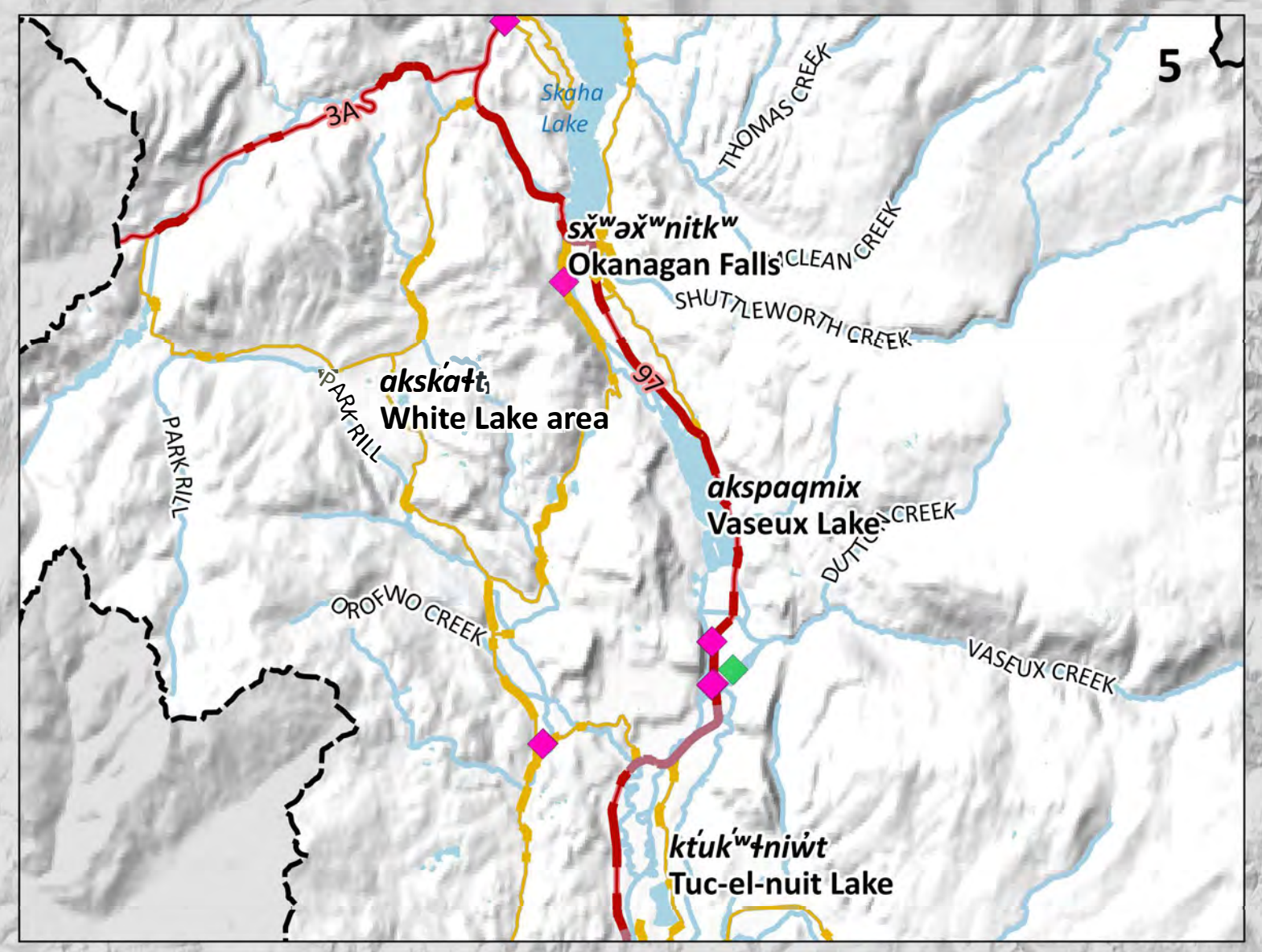
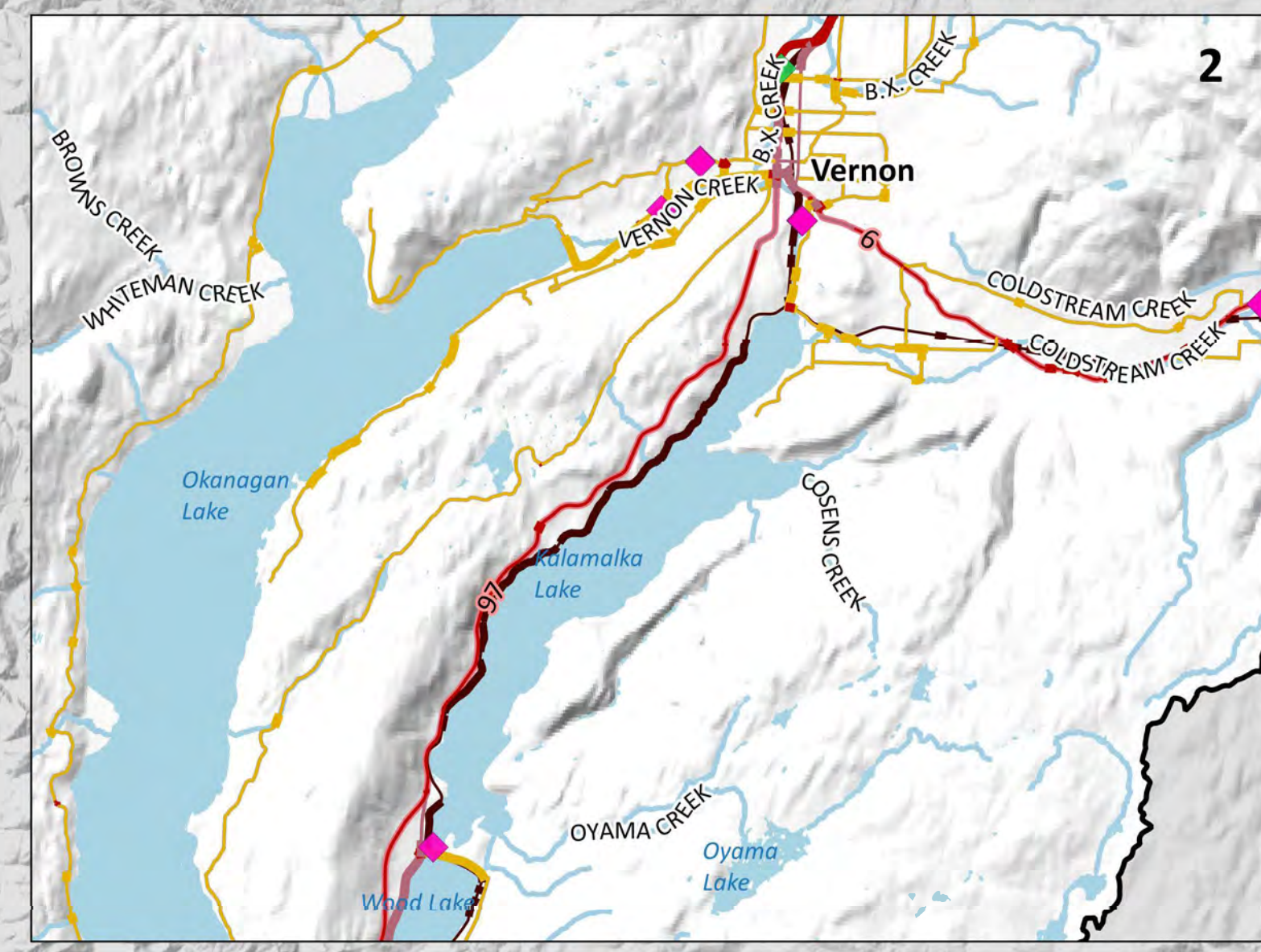
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption

ANSI D - Map No. D-F-002-001

Okanagan Map



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Map Notes

- Map produced by Ebbwater Consulting Inc.
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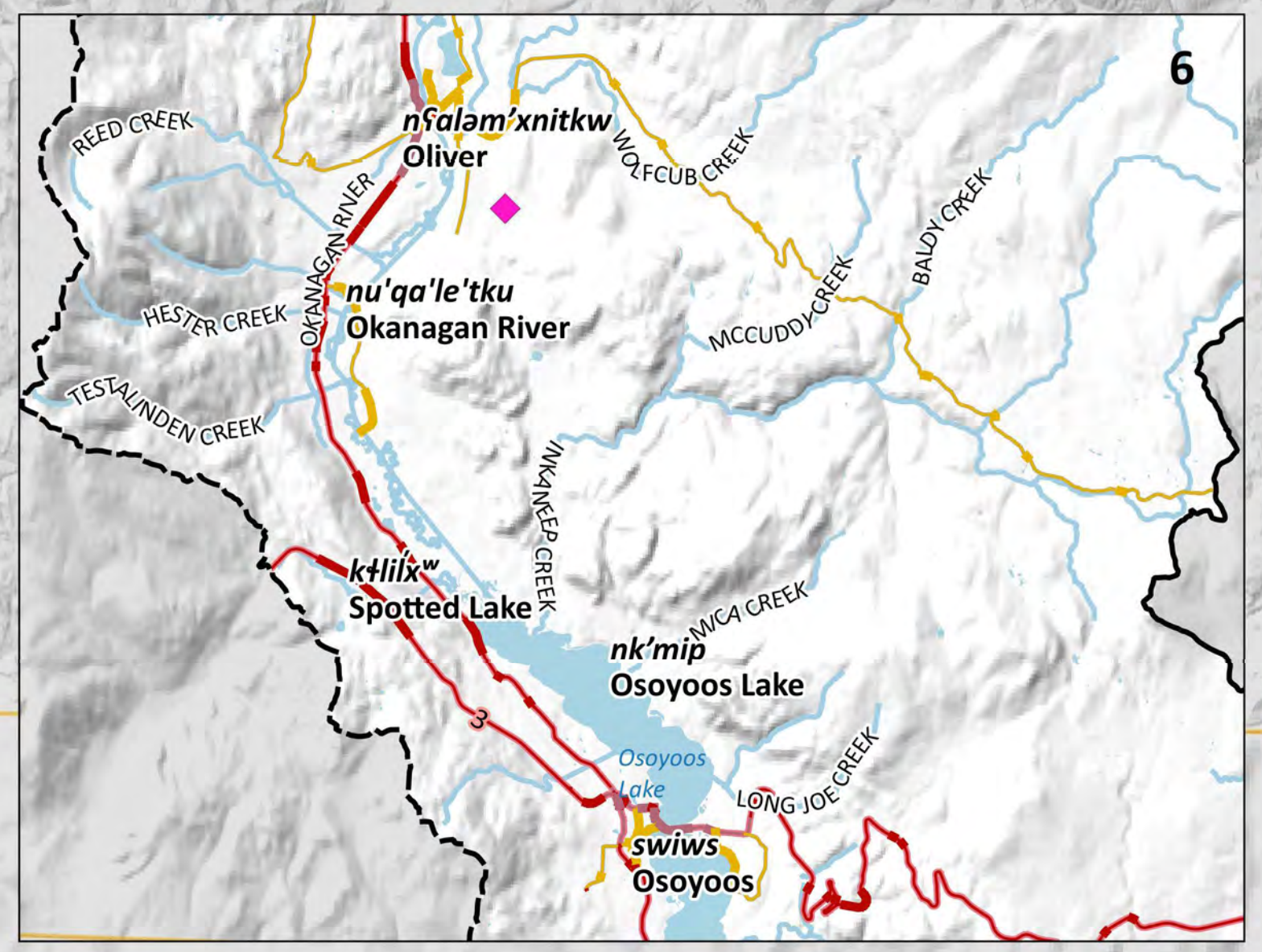
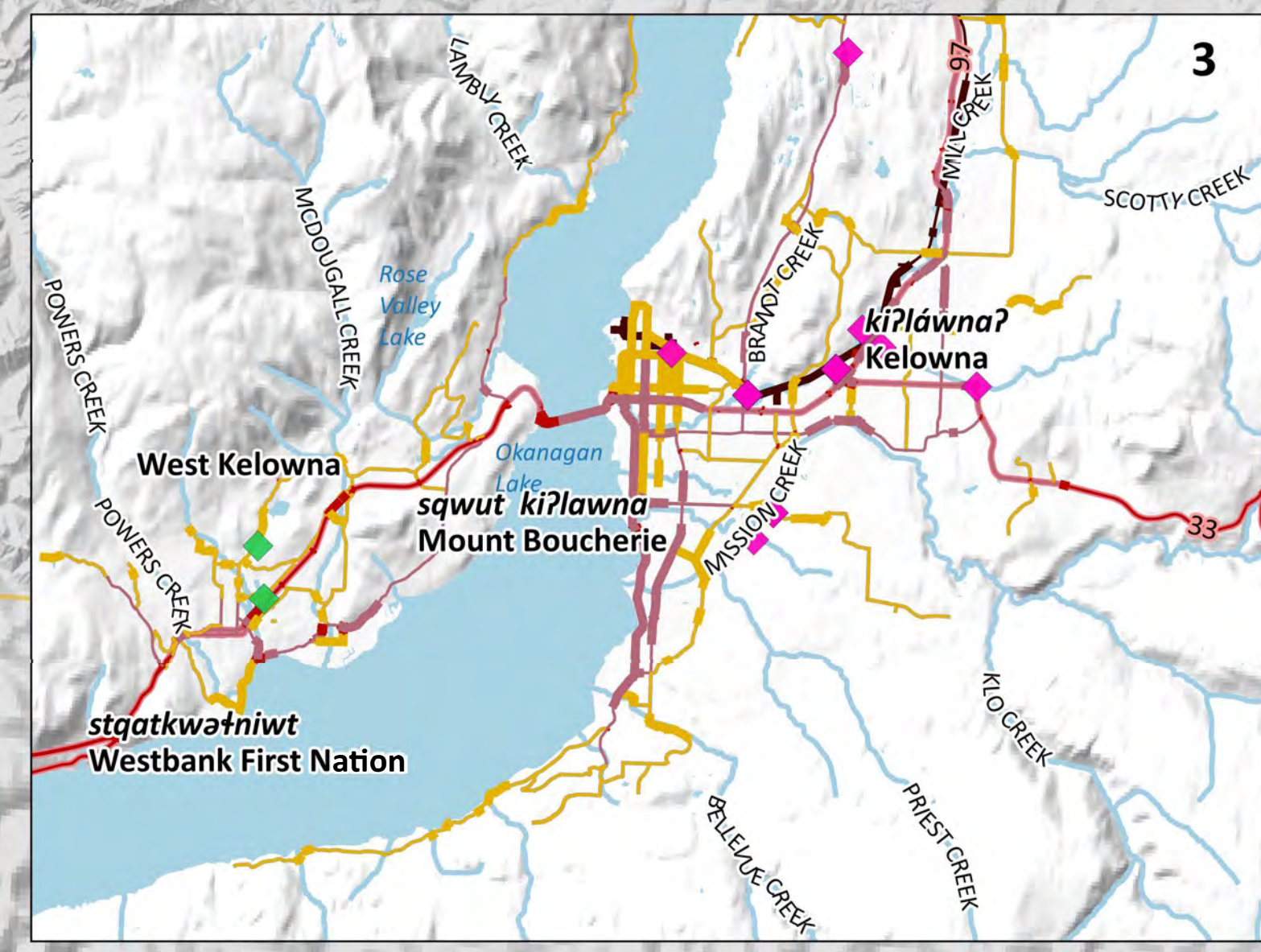
Data Sources

- Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
- Utility Data: Integrated Cadastral Information (ICI) Society.
- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale

Main Map 1:400,000
 0 10 20 30 km

Inset Maps 1:150,000
 0 5 10 15 km



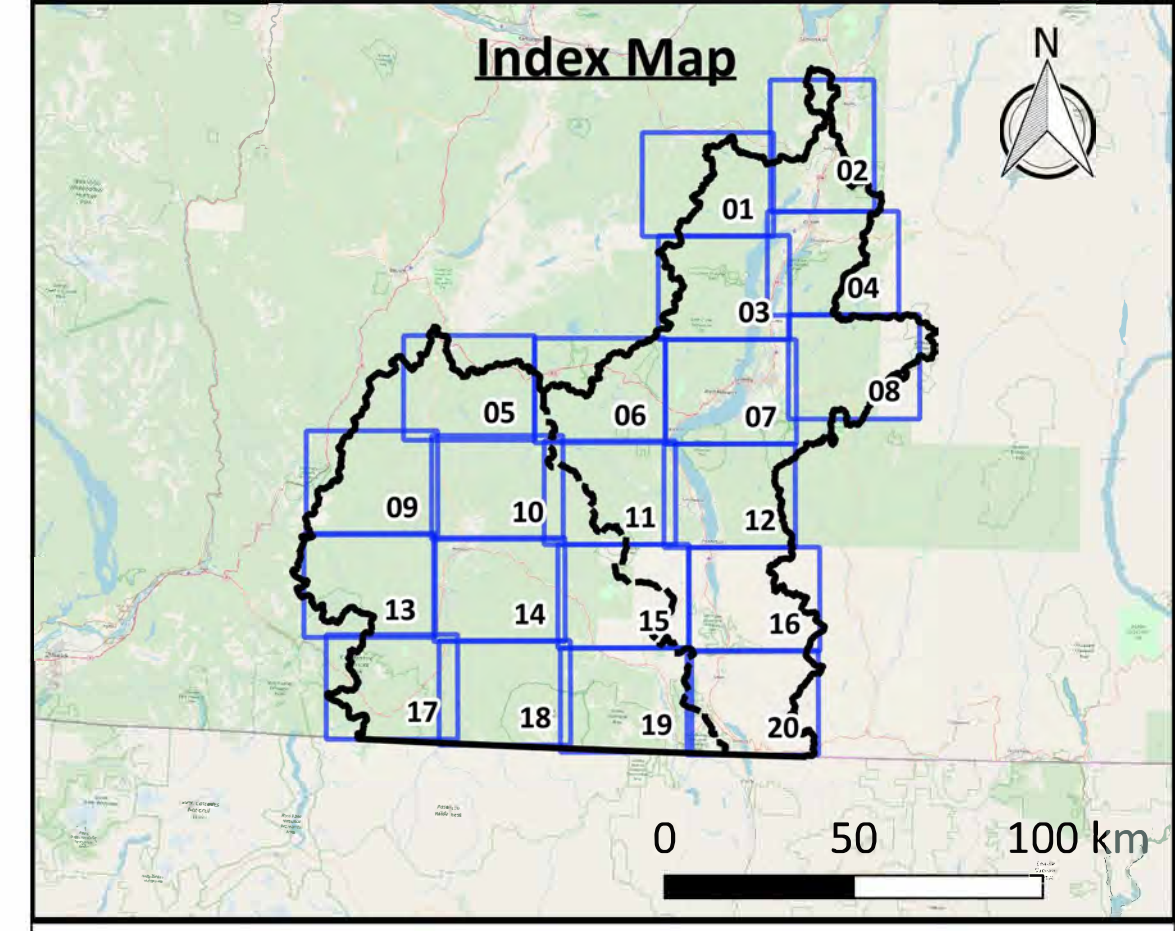
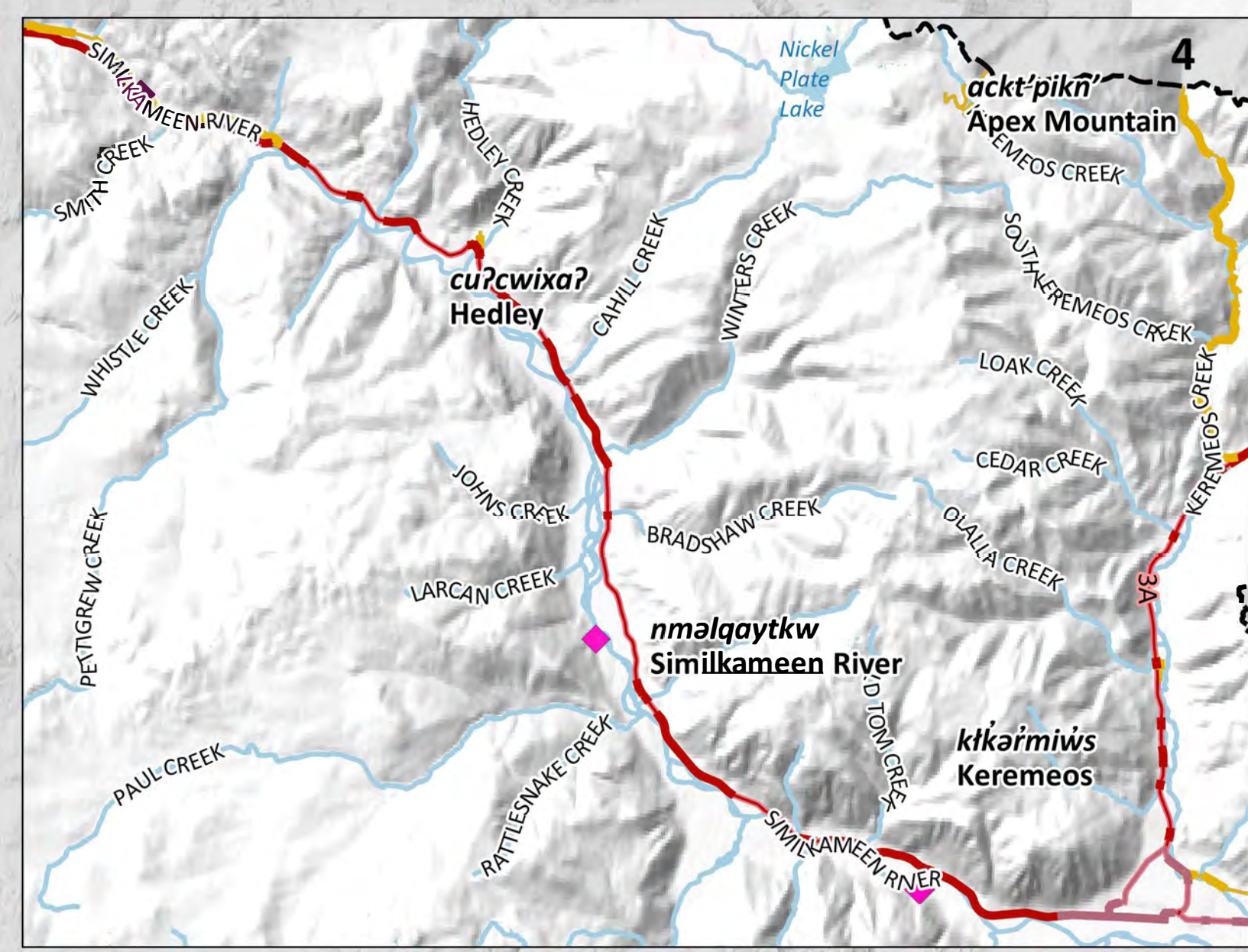
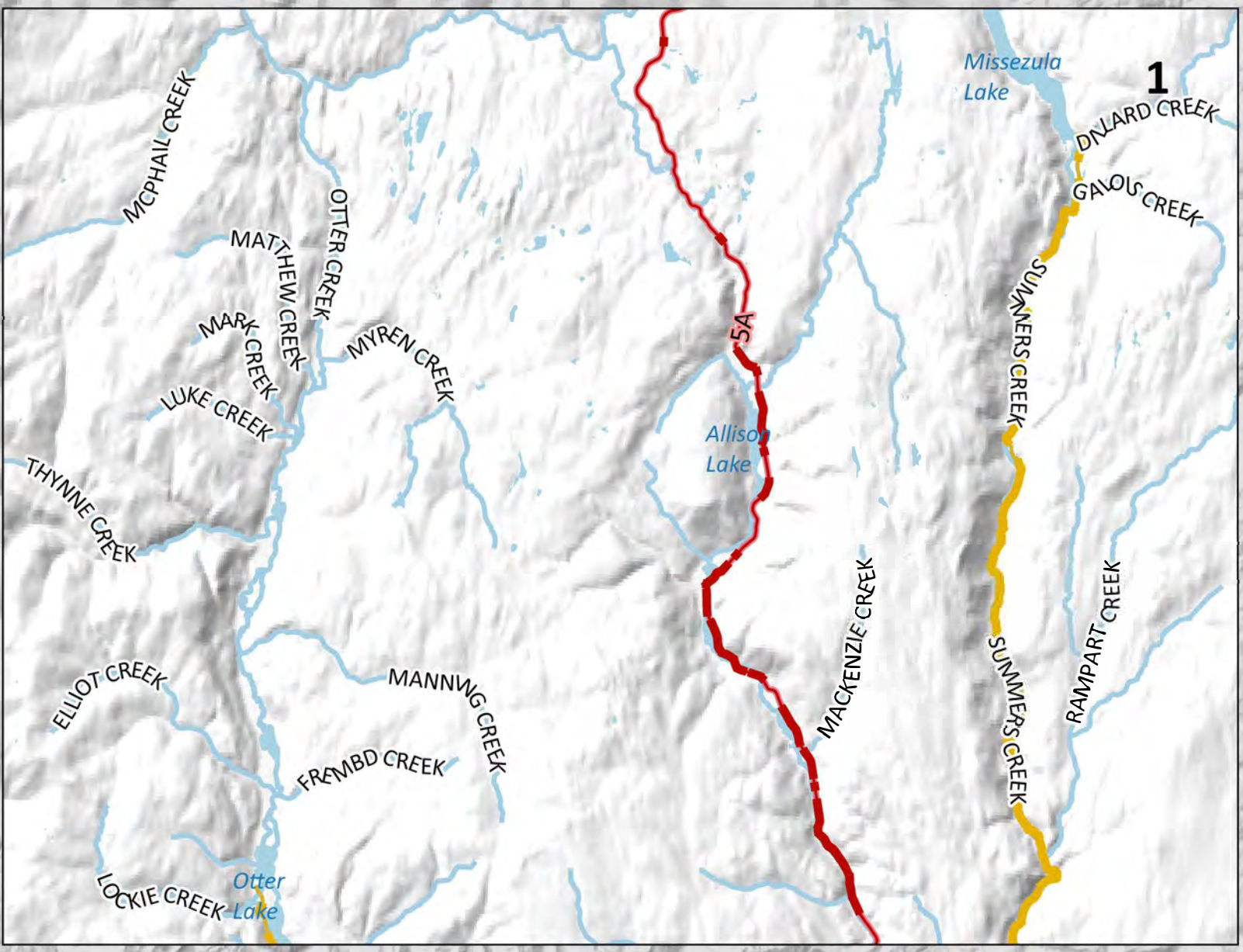
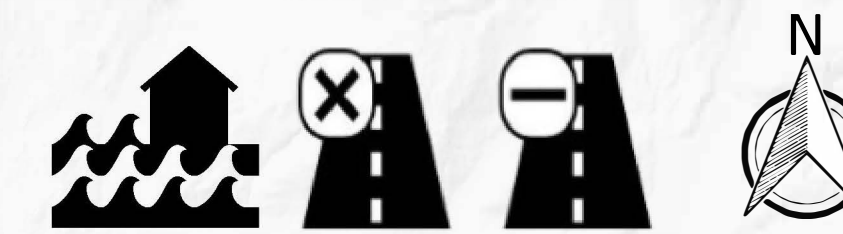
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen	◆ Critical Gas Structures
— Boundary	— Affected Highway
— Canada - US Border	— Affected Collector Road
— Lakes	— Affected Arterial Road
— Watercourses	— Affected Rail
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

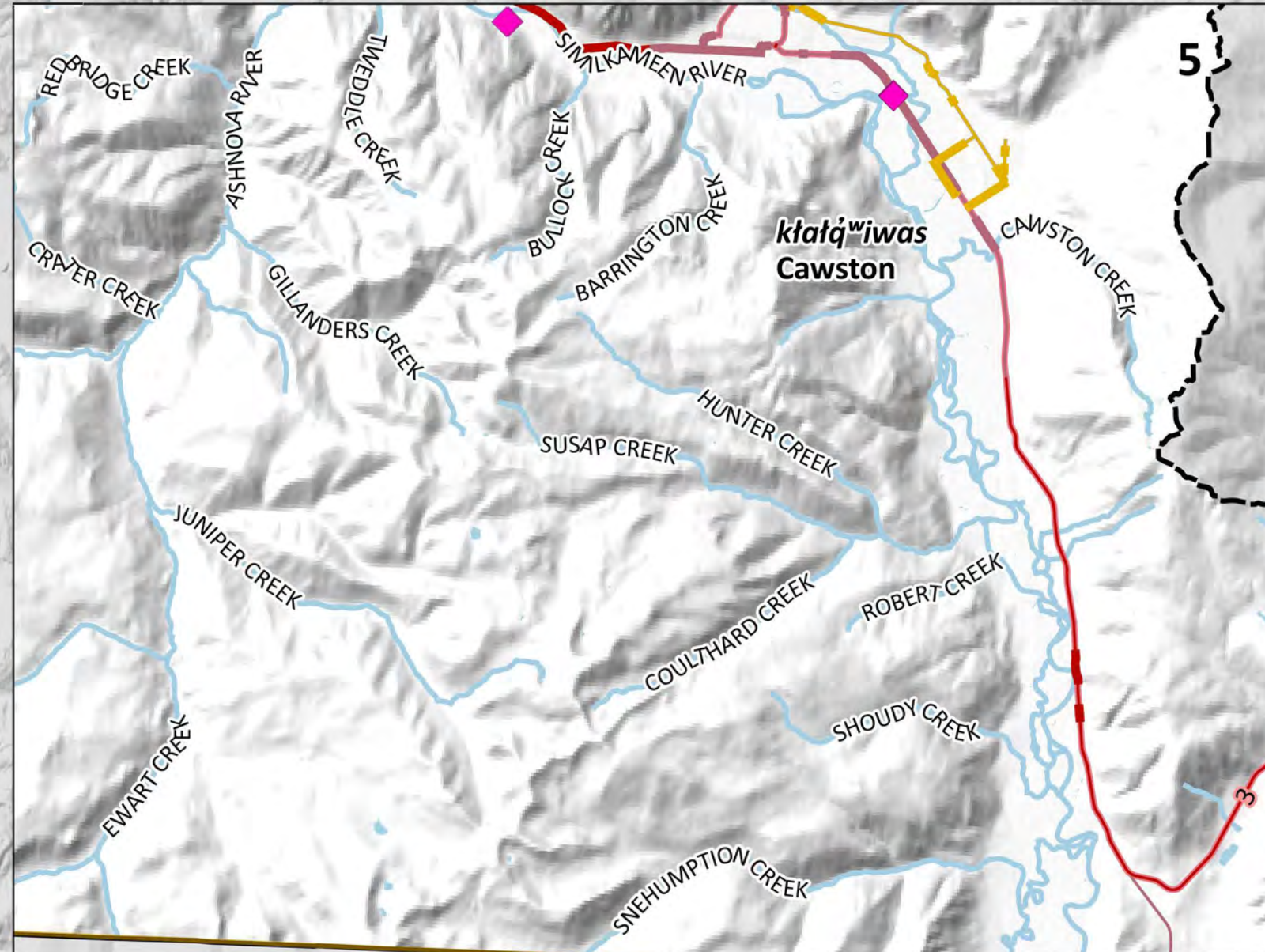
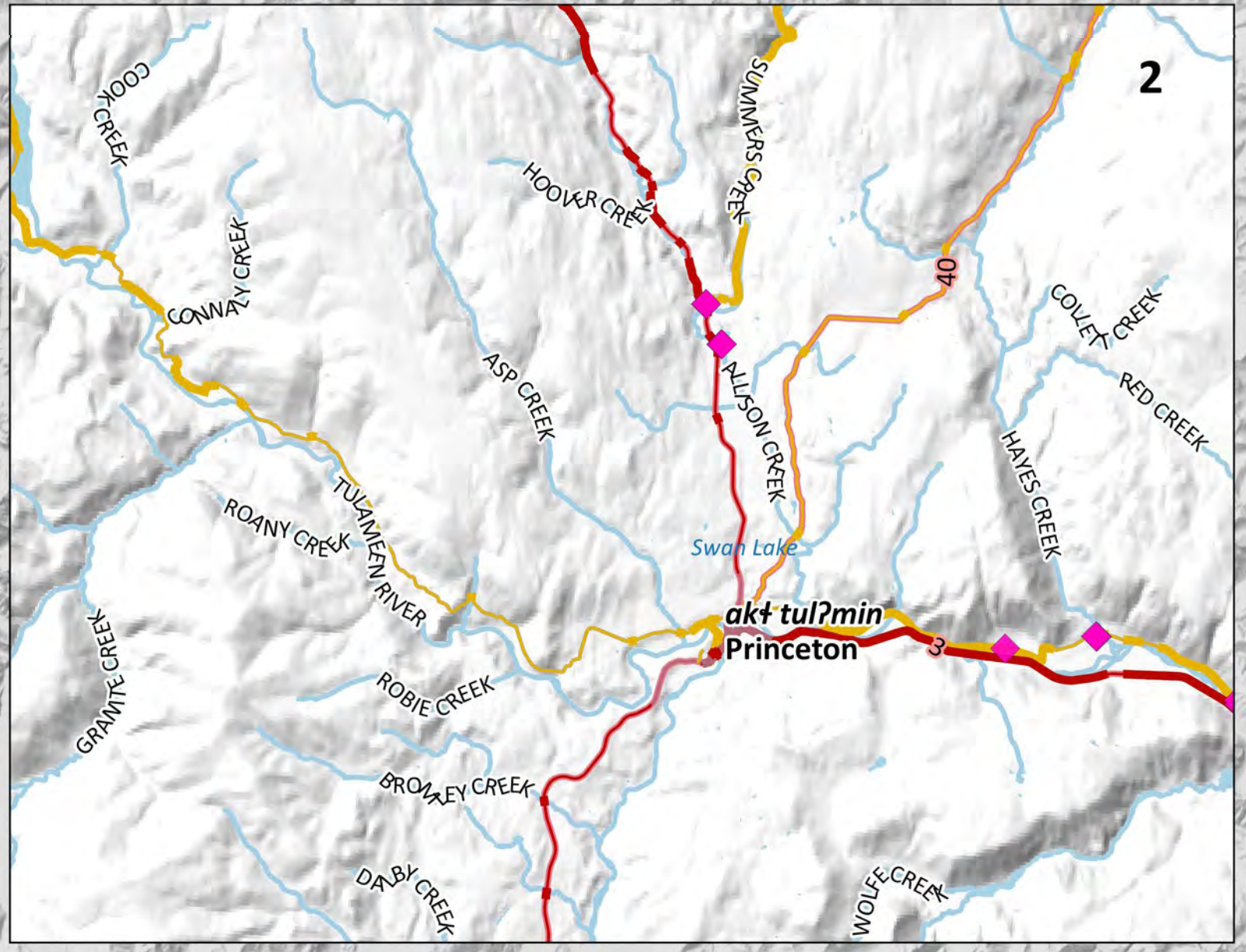
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption - Okanagan
 ANSI D - Map No. D-F-002-002

Similkameen Map



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Map Notes

- Map produced by Ebbwater Consulting Inc.
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Data Sources

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- Utility Data: Integrated Cadastral Information (ICI) Society.
- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale

Main Map 1:400,000
 0 10 20 30 km

Inset Maps 1:150,000
 0 5 10 15 km

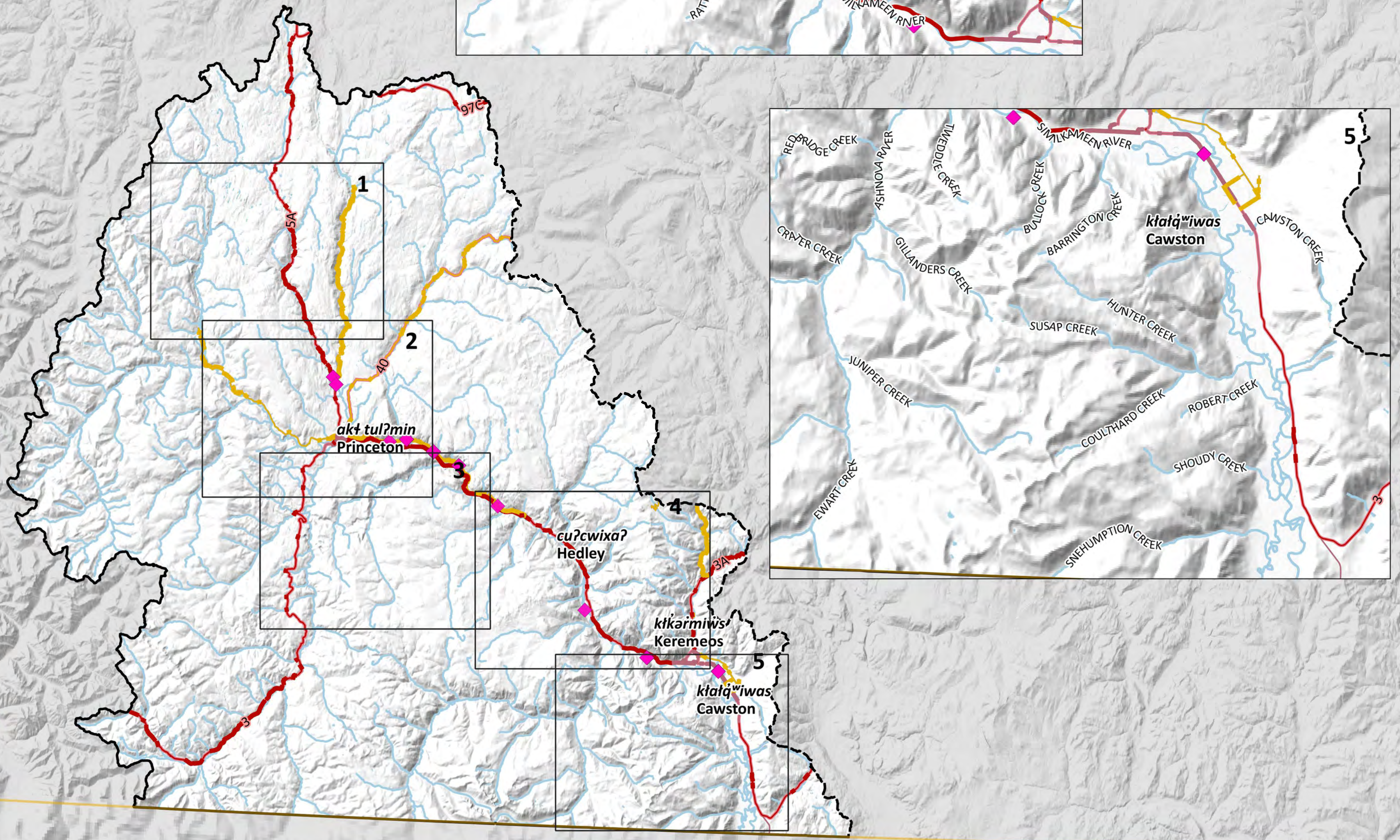
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
— Lakes	— Affected Collector Road
— Watercourses	— Affected Arterial Road
— Highway	— Affected Rail
— Collector Road	
— Arterial Road	
— Rail	

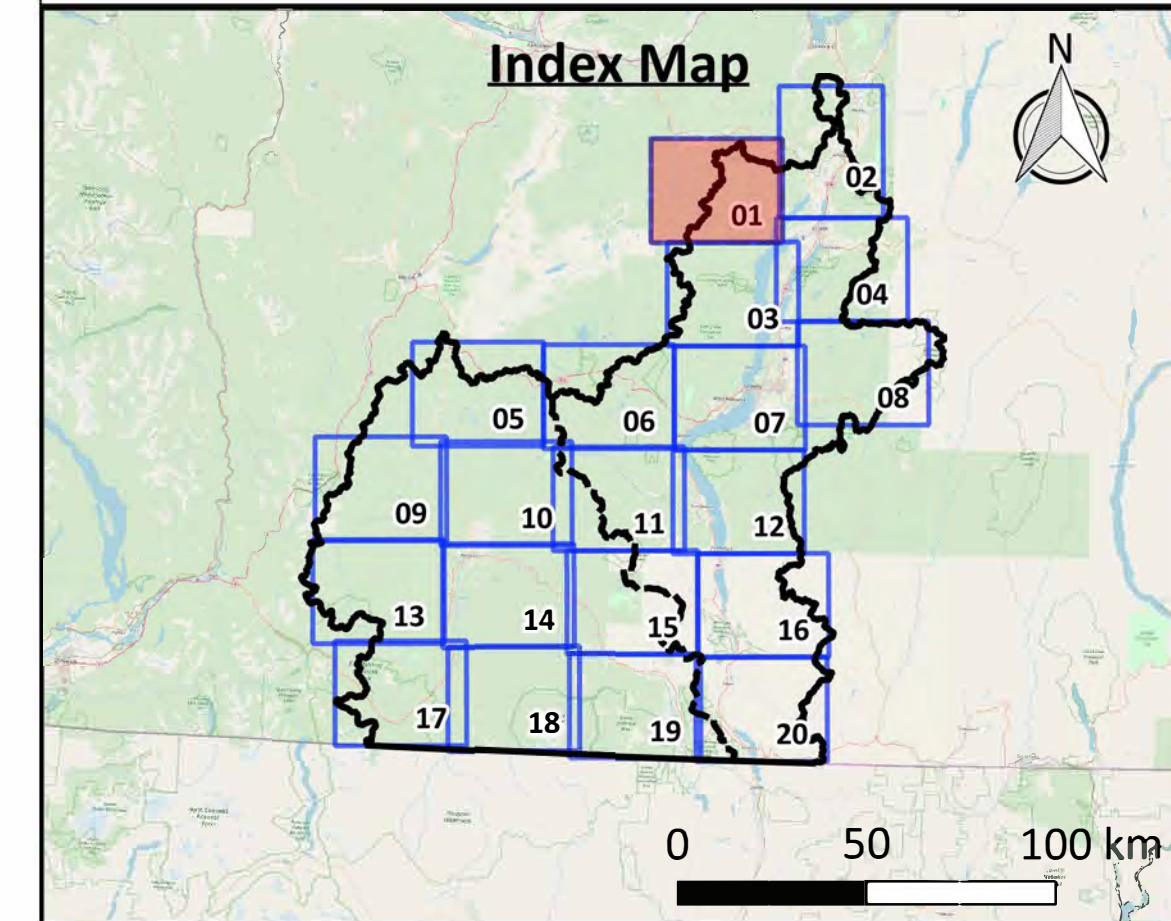
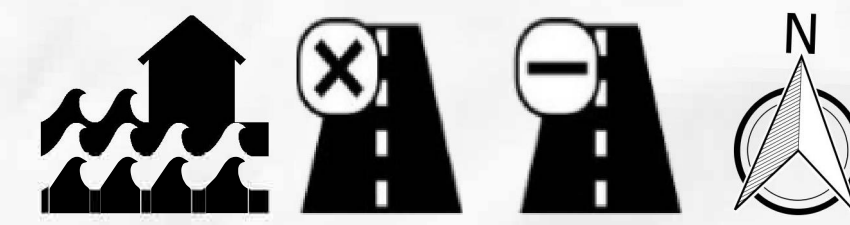
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption - Similkameen

ANSI D - Map No. D-F-002-003



Zoom-In Map



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- Map Notes**
1. Map produced by Ebbwater Consulting Inc.
 2. Assets include transportation networks and utilities.
 3. The assets (exposure) layers were clipped to the moderate flood hazard area. The hazard layer is shown in the hazard maps, and was produced by Ebbwater Consulting. The method used to produce the hazard layer is described in the Quantitative Study.
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- Data Sources**
1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
 2. Utility Data: Integrated Cadastral Information (ICI) Society.
 3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
 4. Sylix Place Names: Okanagan Nation Alliance.
 5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000
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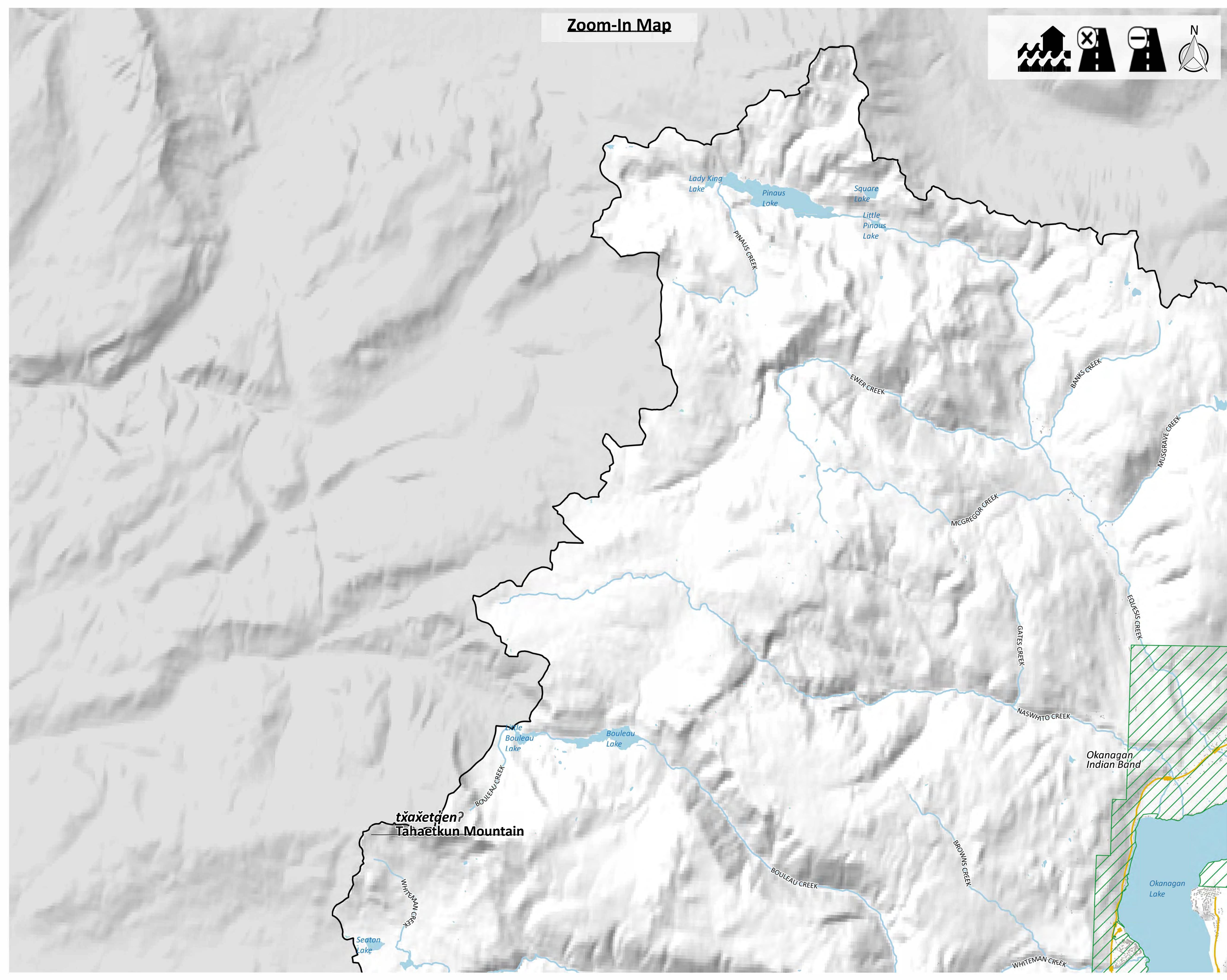
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
▨ Lakes	— Affected Rail
▨ Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

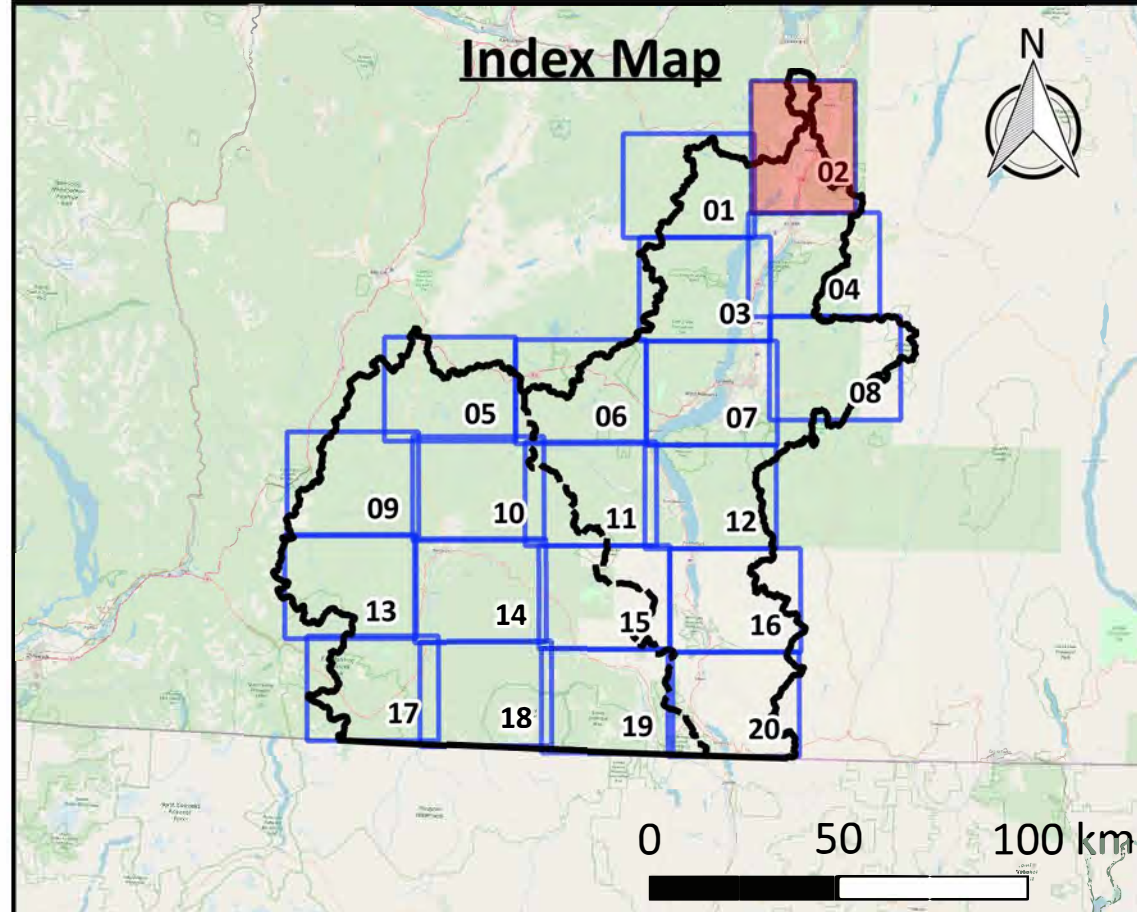
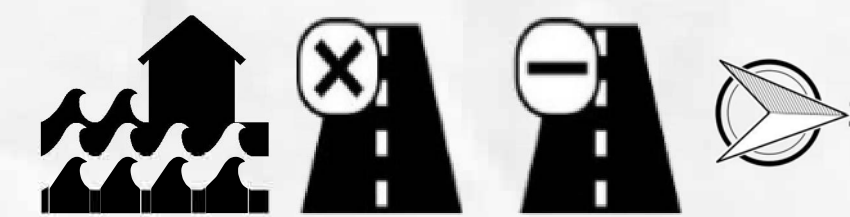
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 01 of 20

ANSI D - Map No. D-F-003-001



Zoom-In Map



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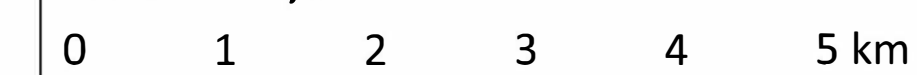
Map Notes

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Scale 1:50,000



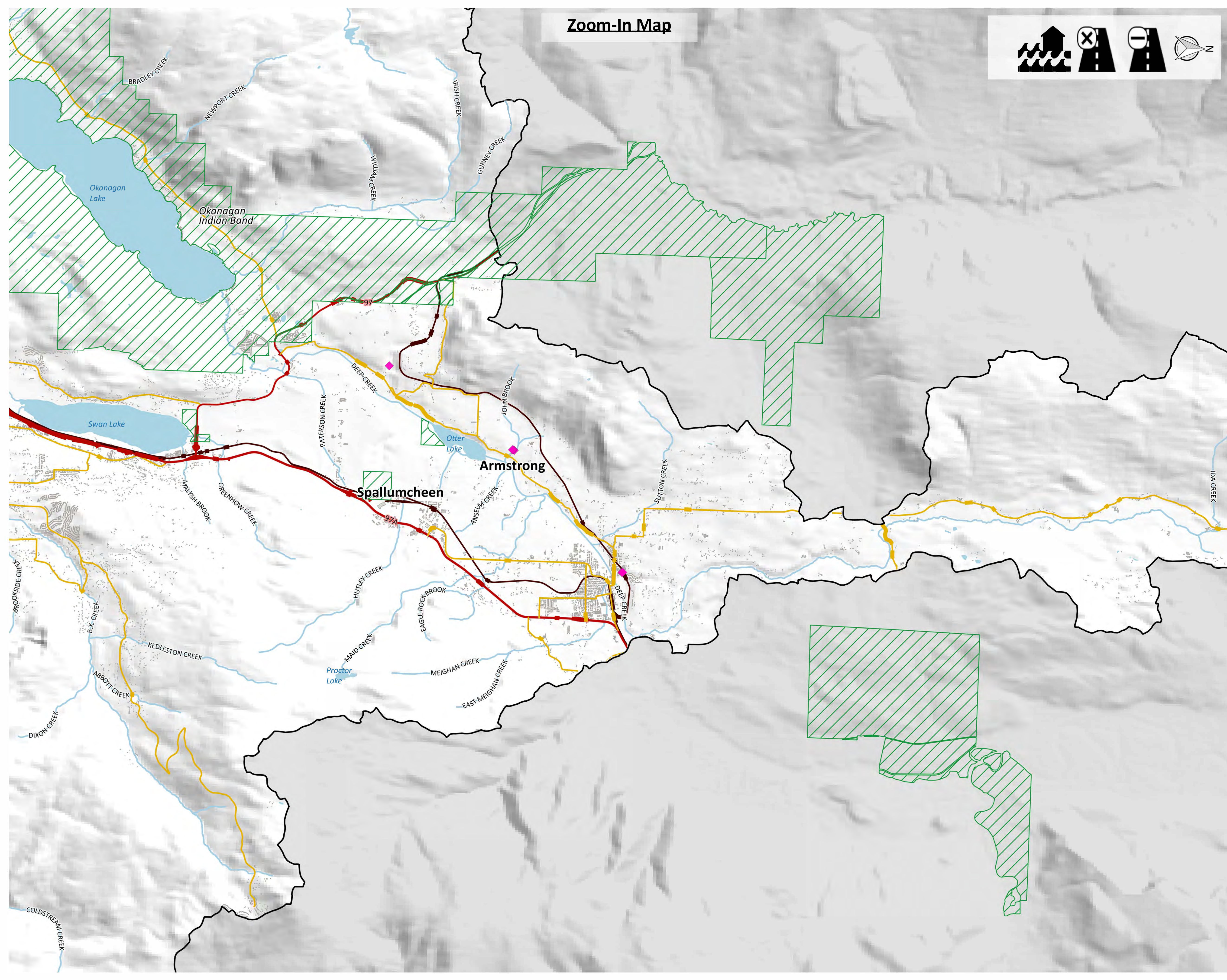
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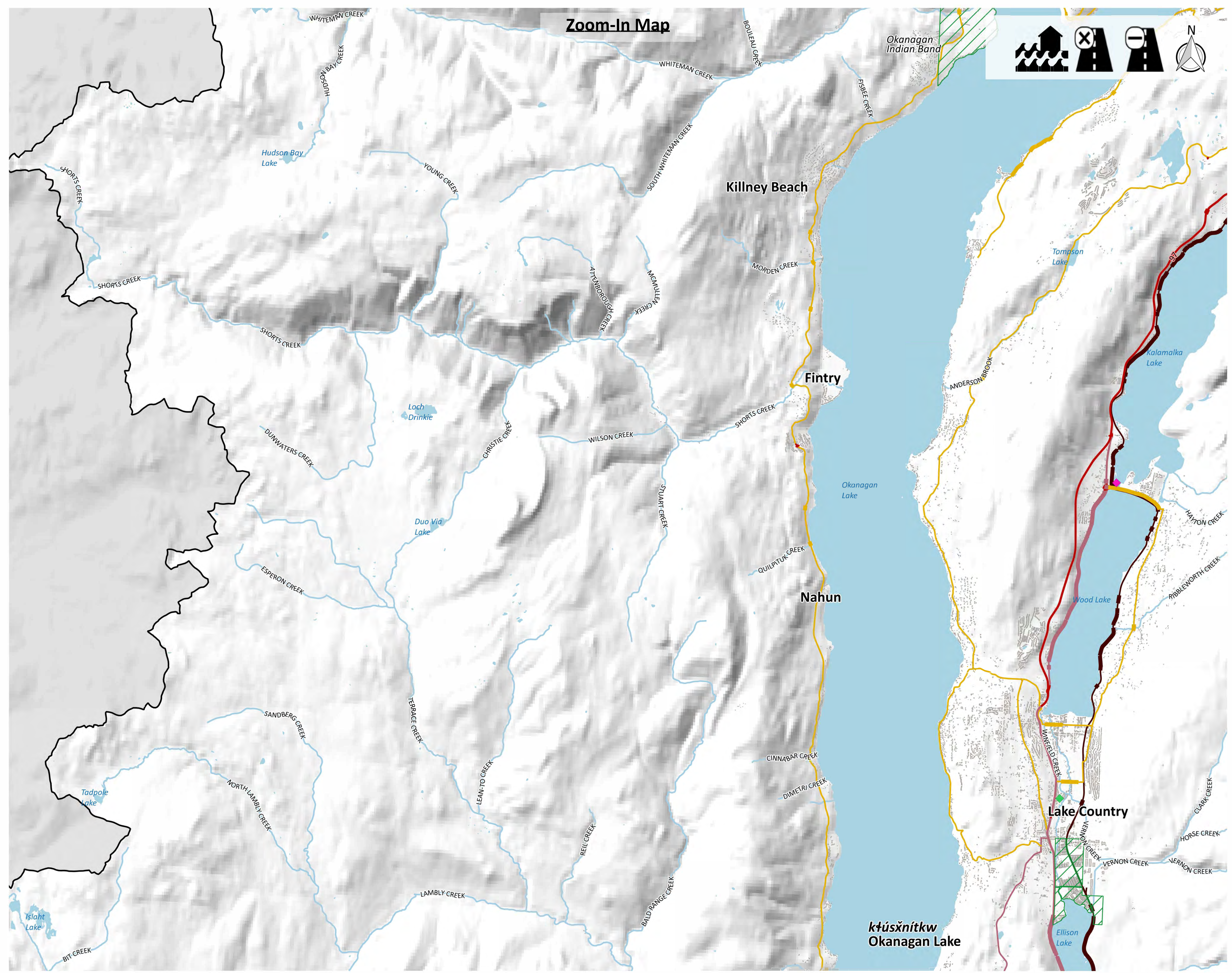
Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
▨ Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

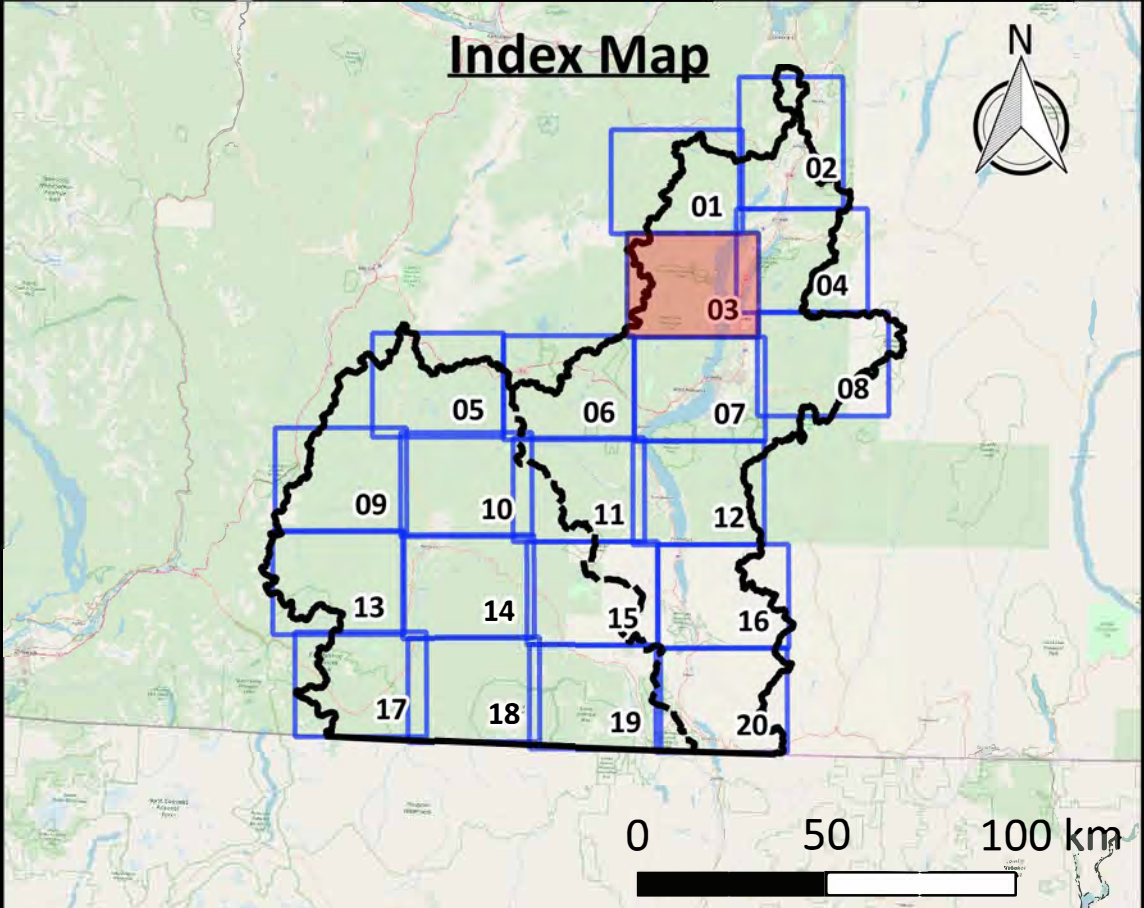
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 02 of 20

ANSI D - Map No. D-F-003-002





Zoom-In Map



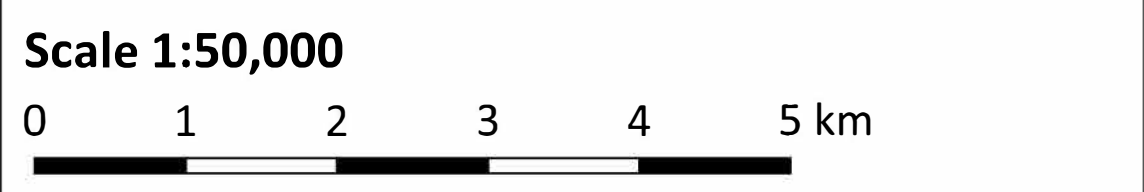
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[Click here to return to Similkameen map](#)

Map Notes

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- Utility Data: Integrated Cadastral Information (ICI) Society.
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- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



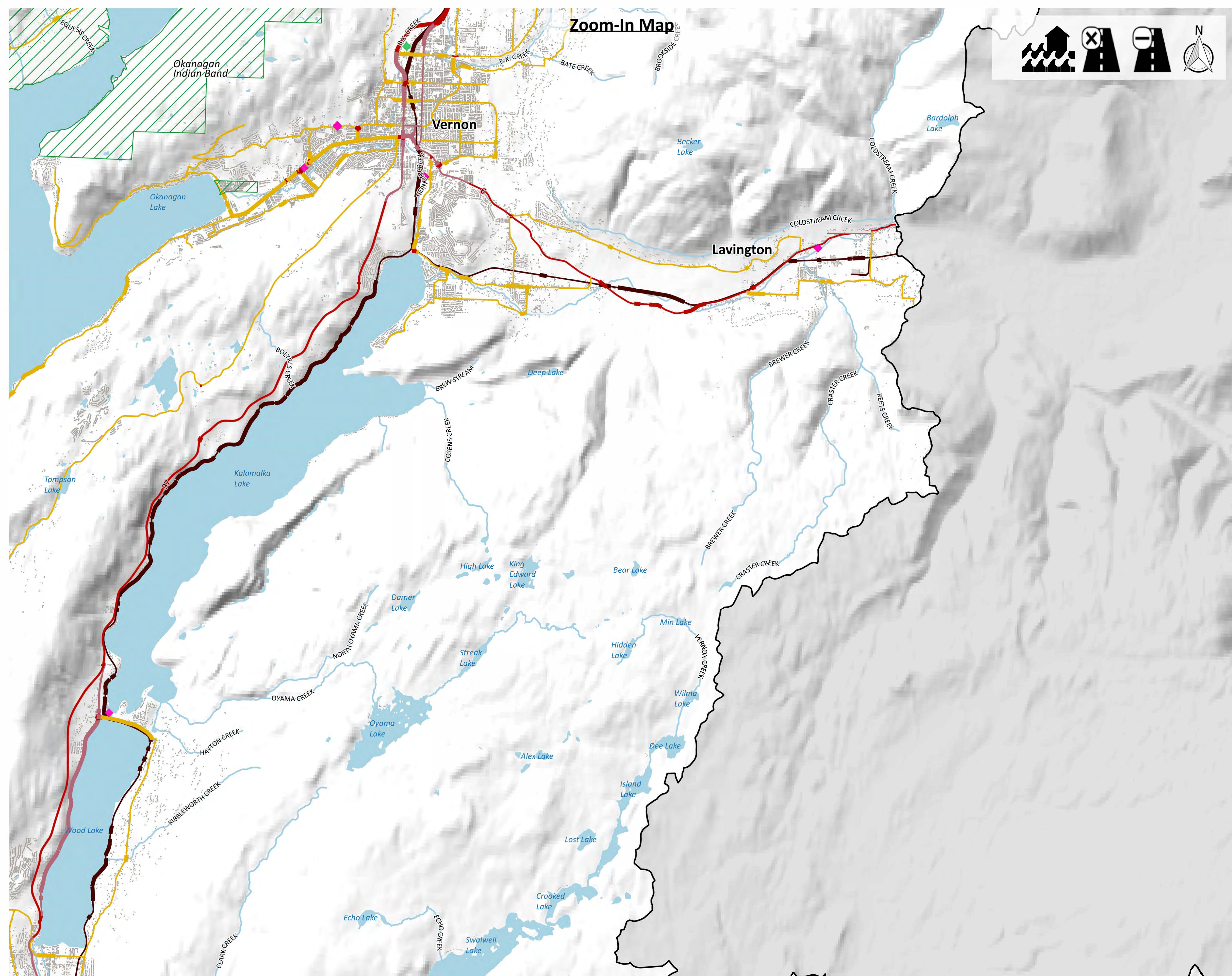
Legend

Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

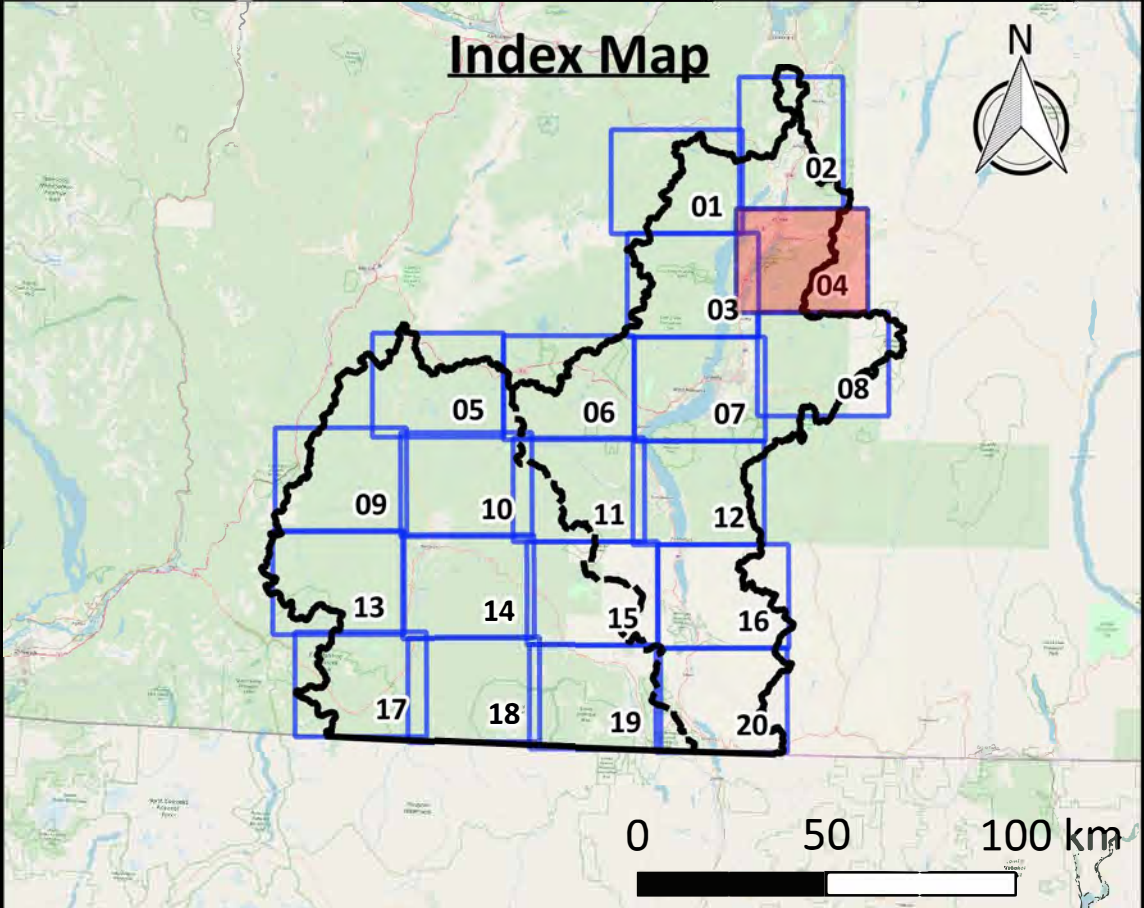
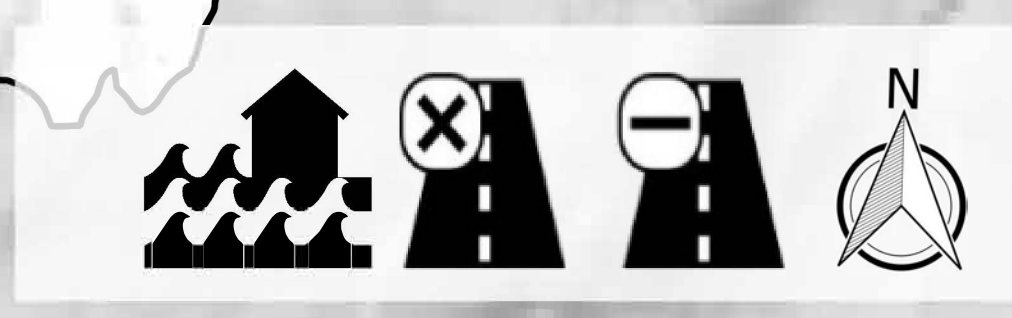
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 03 of 20

ANSI D - Map No. D-F-003-003



Zoom-In Map



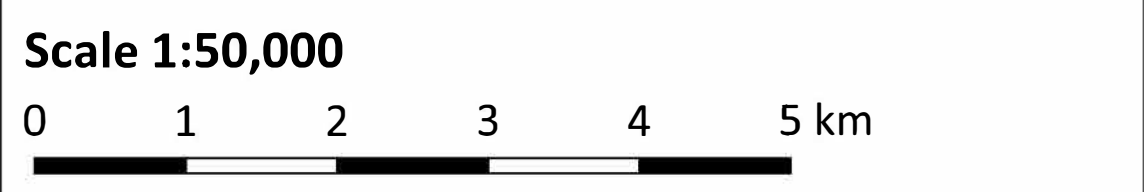
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Map Notes

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2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



Legend

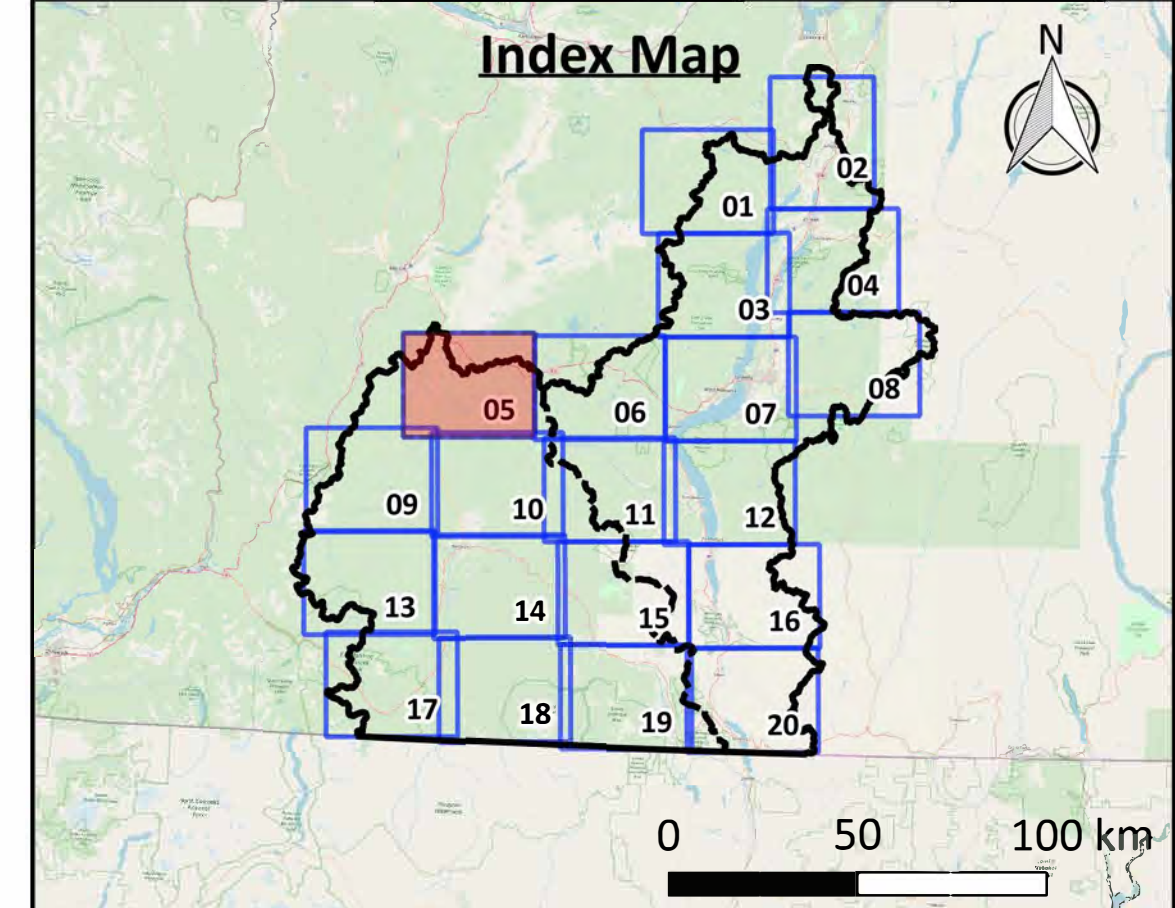
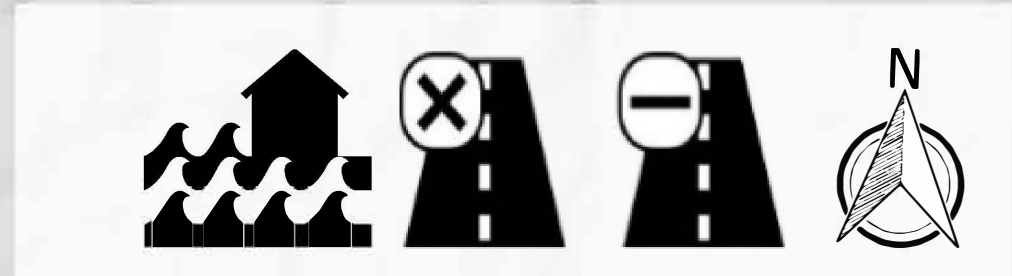
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 04 of 20

ANSI D - Map No. D-F-003-004

Zoom-In Map



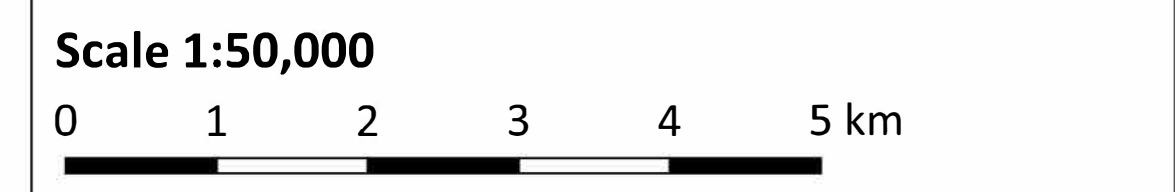
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

1. Map produced by Ebbwater Consulting Inc.
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2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



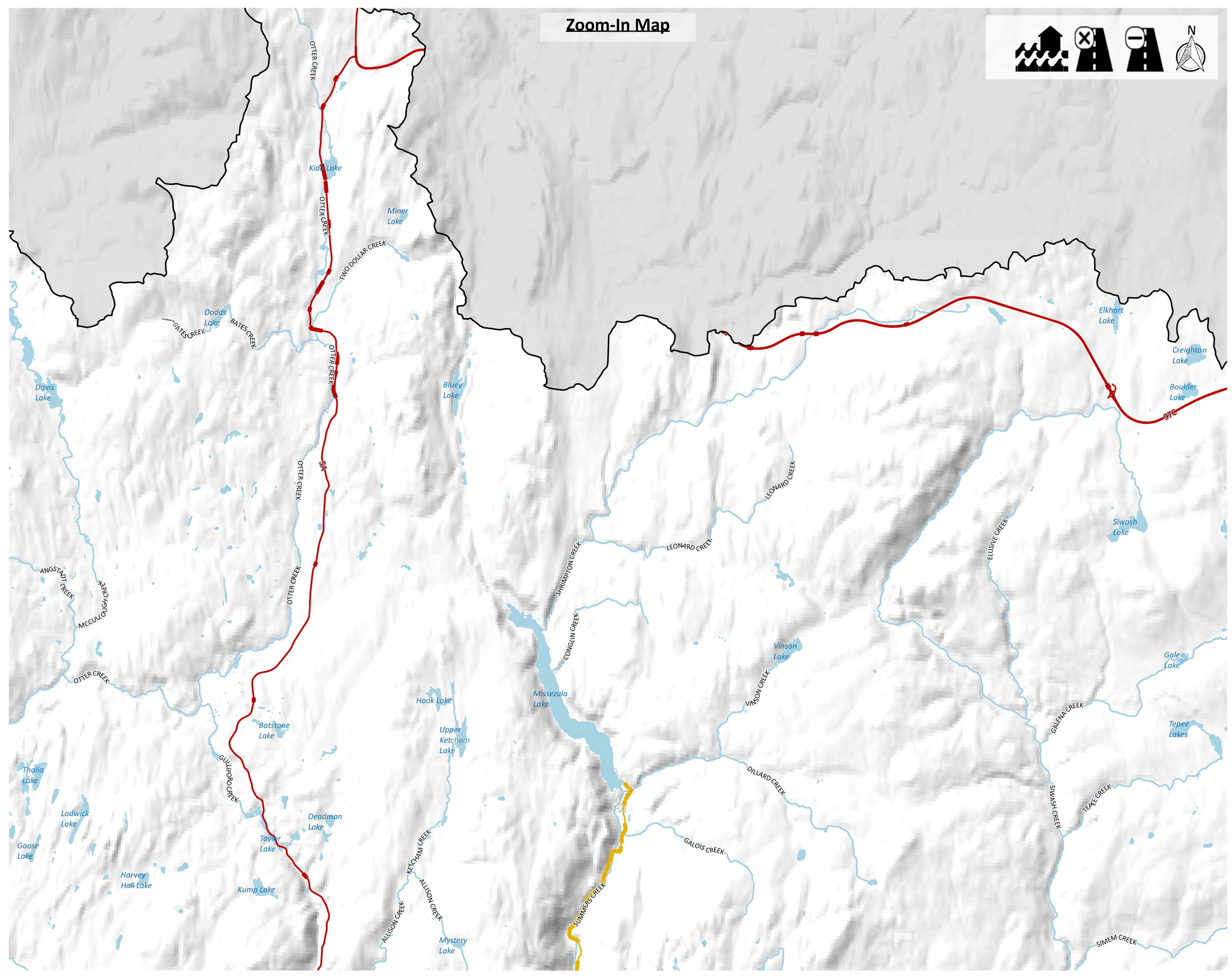
Legend

Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

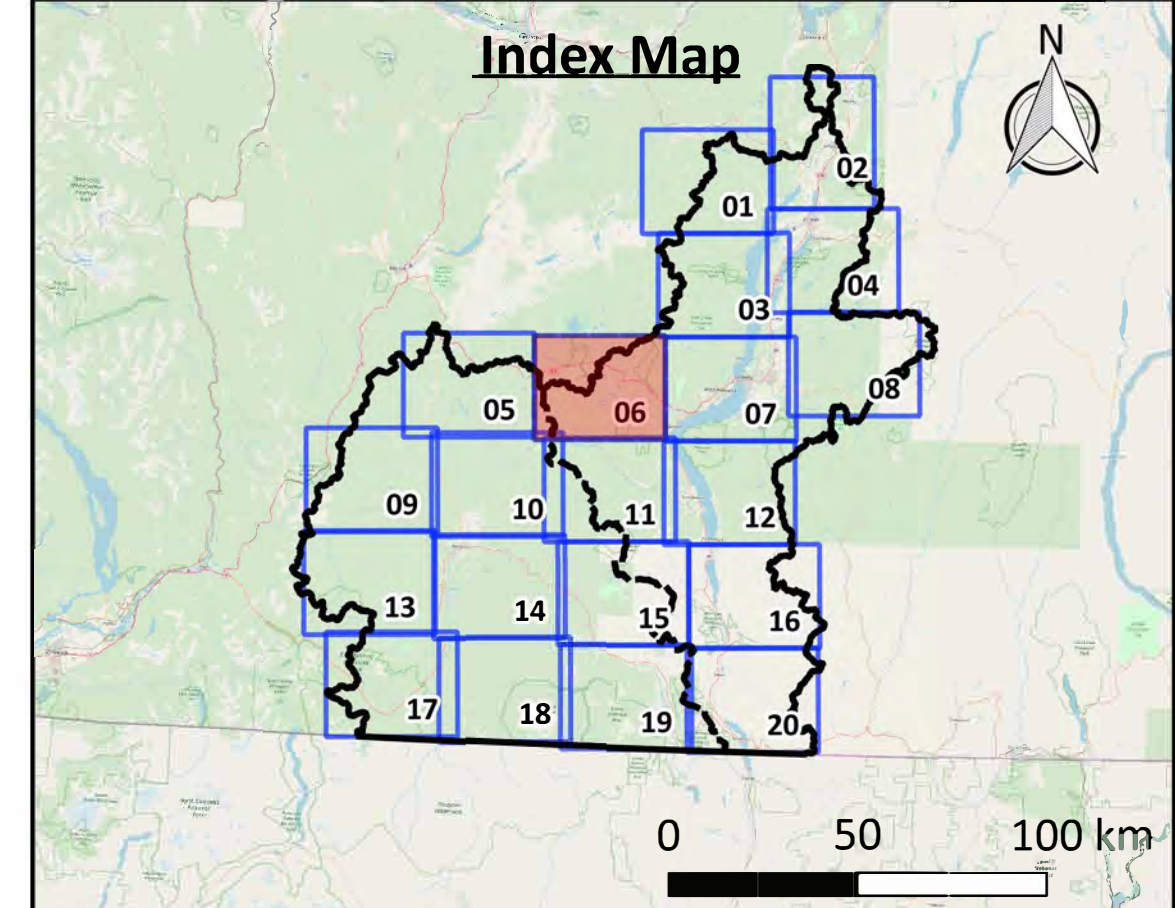
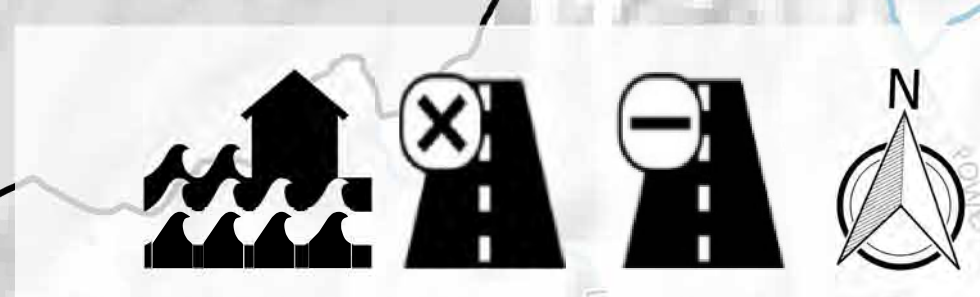
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 05 of 20

ANSI D - Map No. D-F-003-005



Zoom-In Map



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Map Notes

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2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. *Sylix* Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000

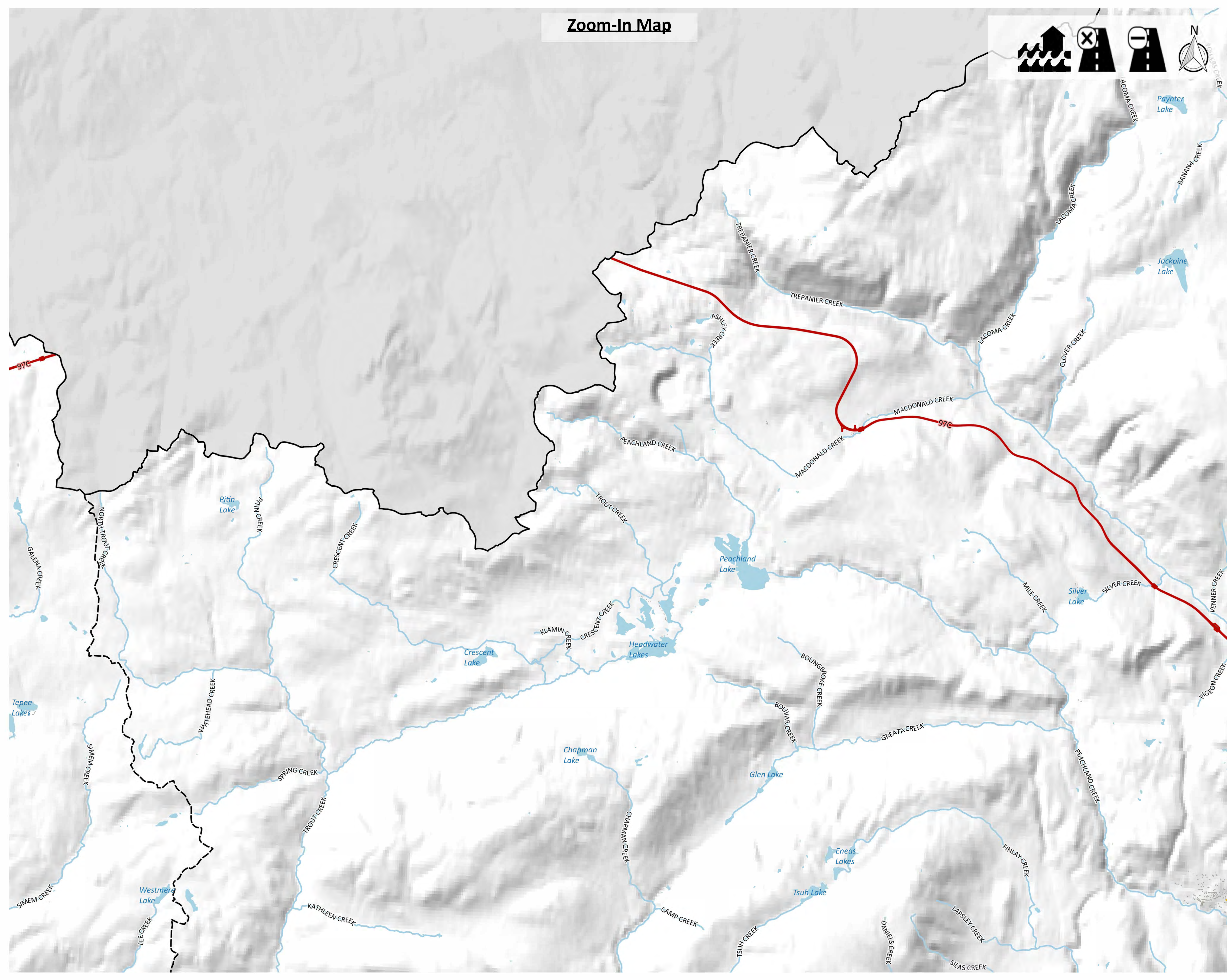
Legend

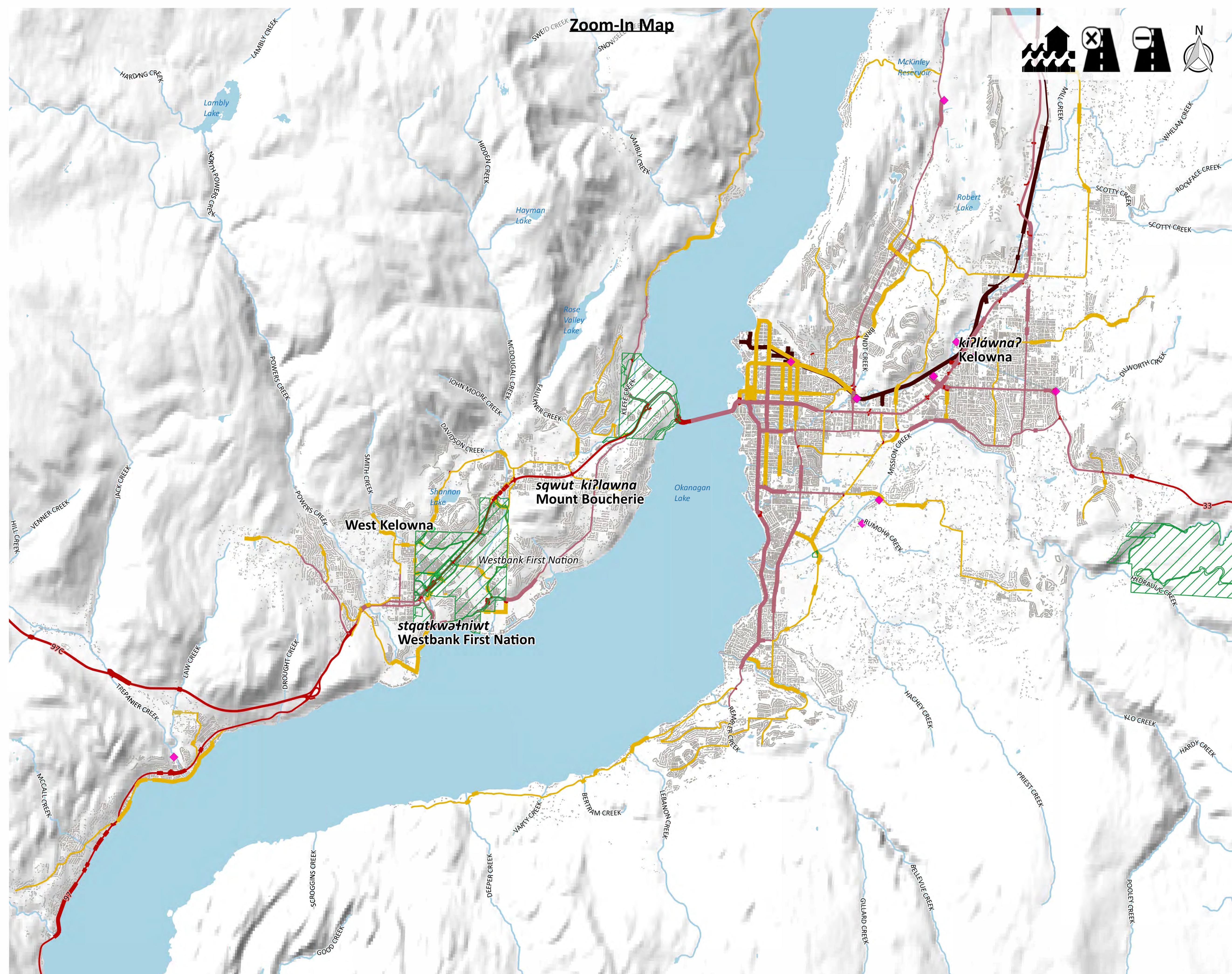
Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

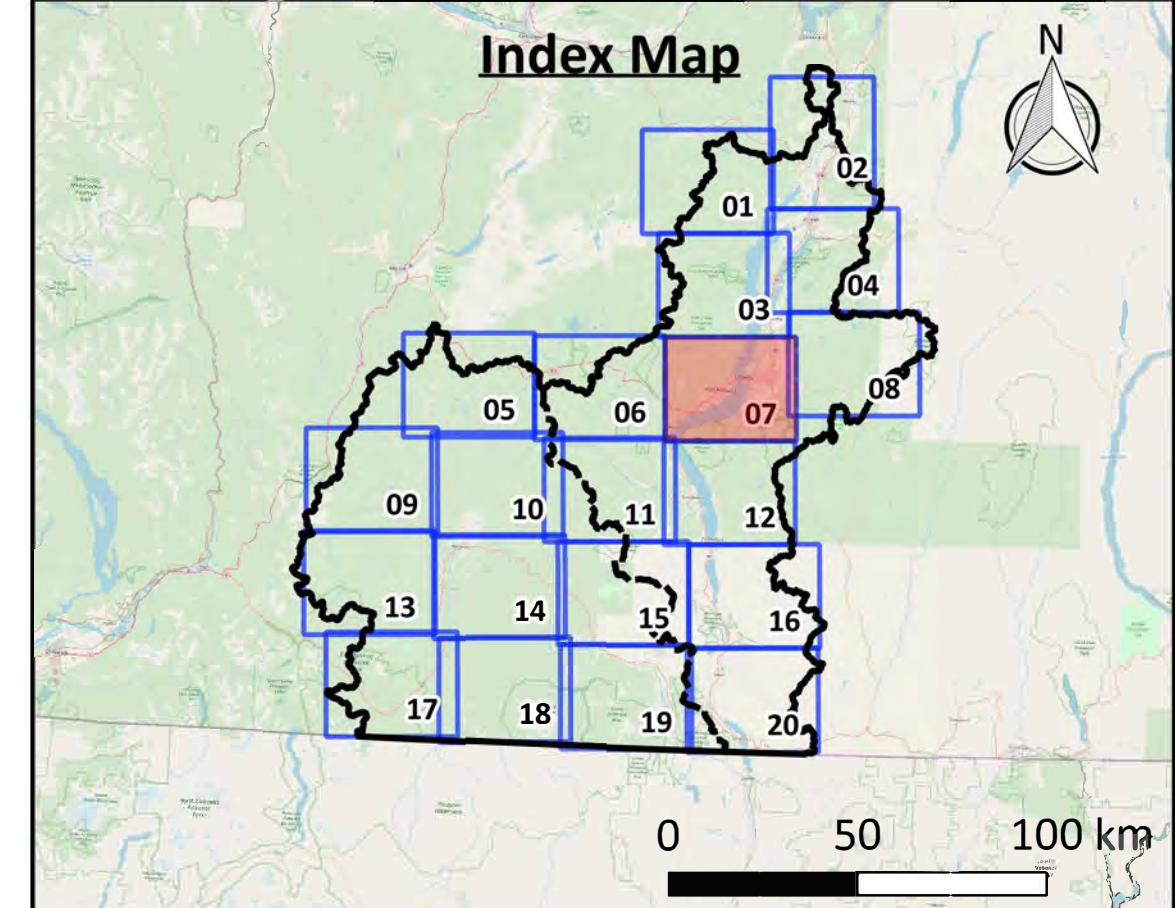
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 06 of 20

ANSI D - Map No. D-F-003-006





Zoom-In Map



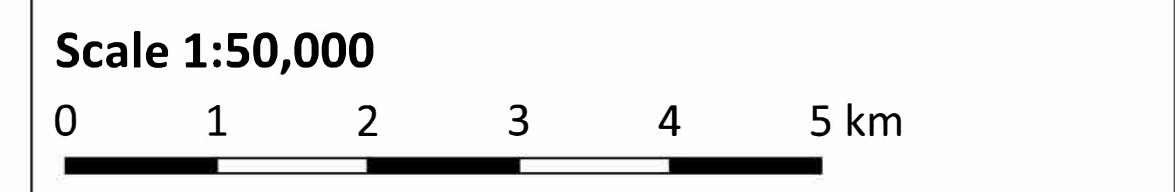
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

1. Map produced by Ebbwater Consulting Inc.
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3. The assets (exposure) layers were clipped to the moderate flood hazard area. The hazard layer is shown in the hazard maps, and was produced by Ebbwater Consulting. The method used to produce the hazard layer is described in the Quantitative Study.
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Data Sources

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2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



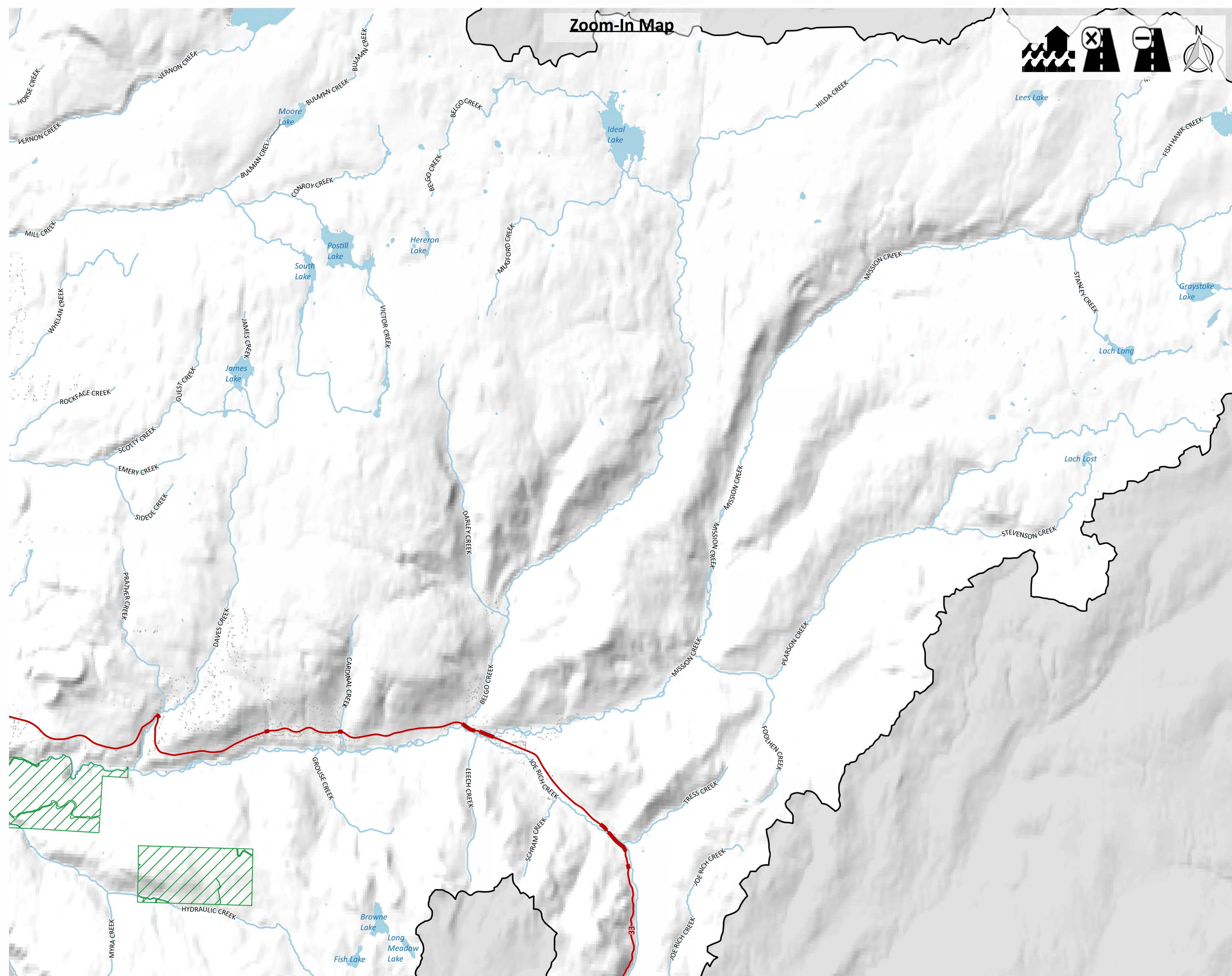
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

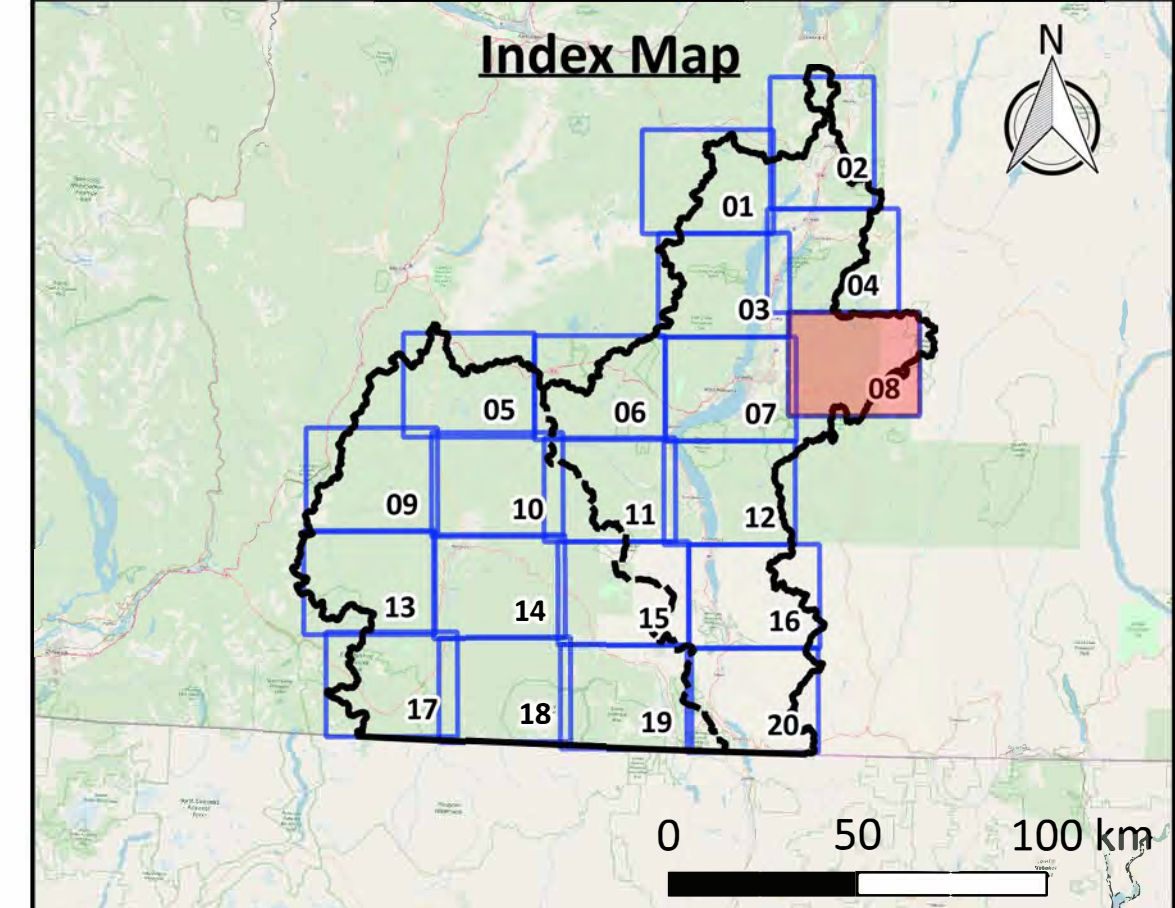
Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 07 of 20

ANSI D - Map No. D-F-003-007



Zoom-In Map



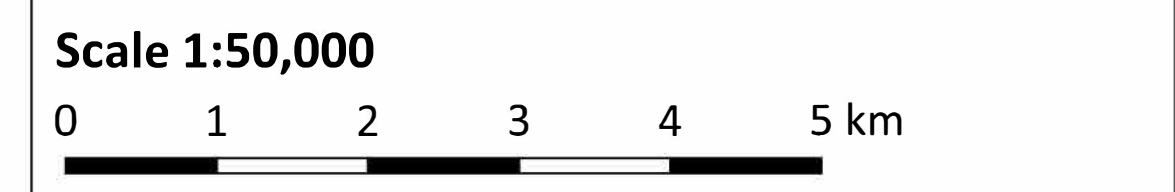
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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4. Sections of assets directly affected by the hazard have been highlighted (i.e. they appear thicker) on the map. However, impacts to these sections may have wider impacts elsewhere in the asset's network.

Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



Legend

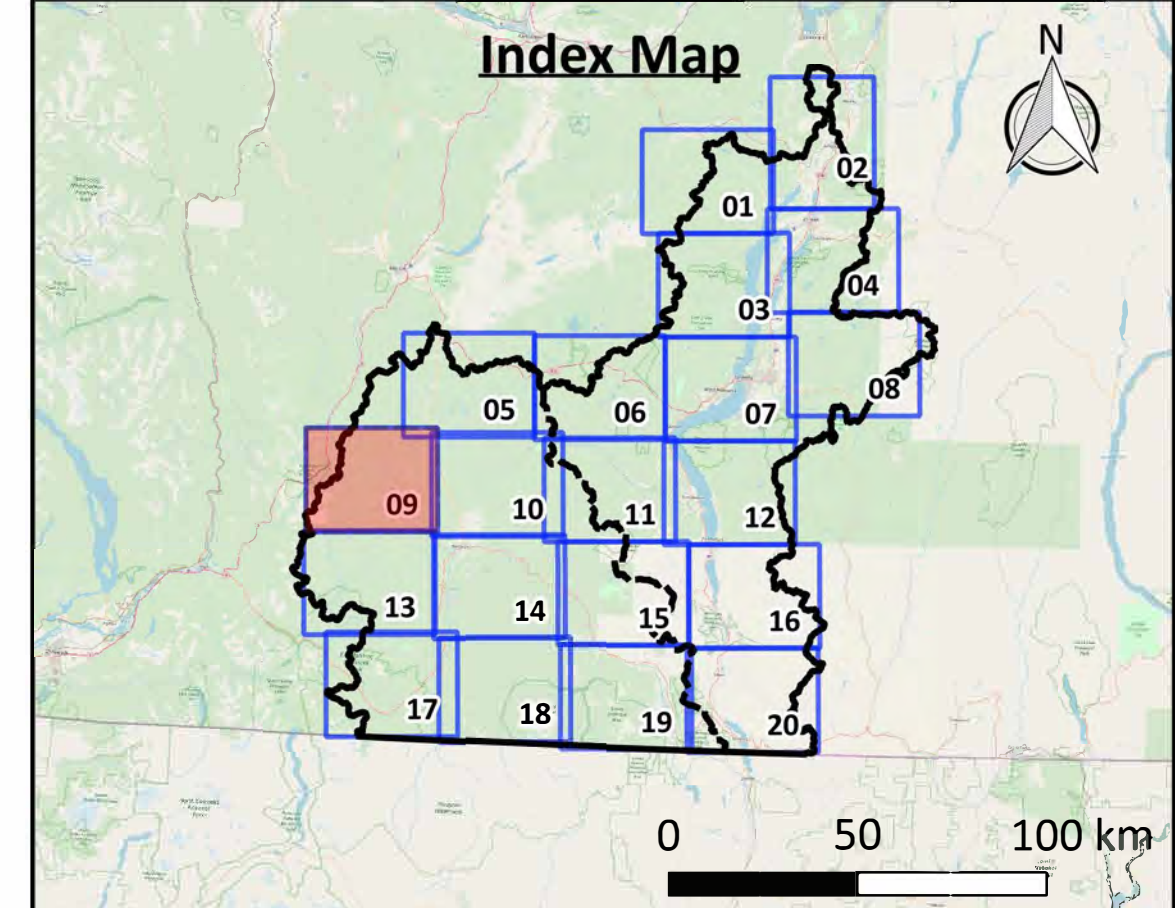
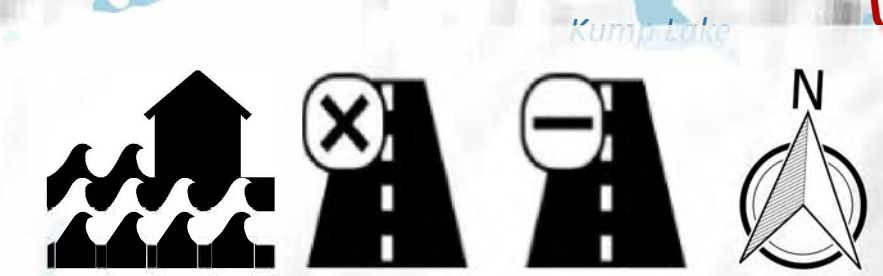
Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 08 of 20

ANSI D - Map No. D-F-003-008

Zoom-In Map



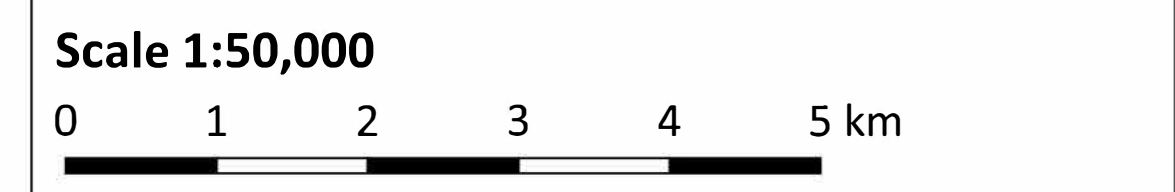
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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Data Sources

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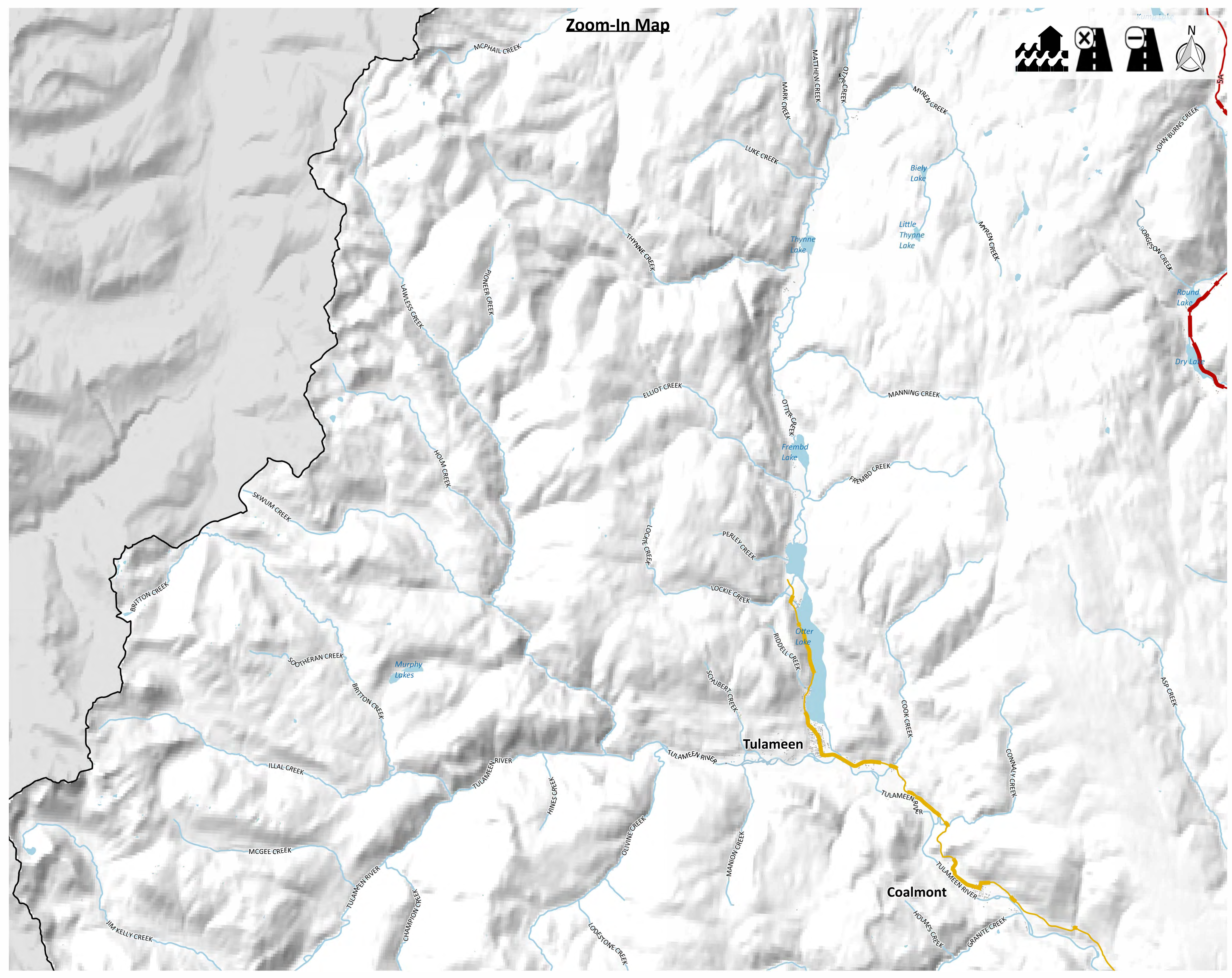
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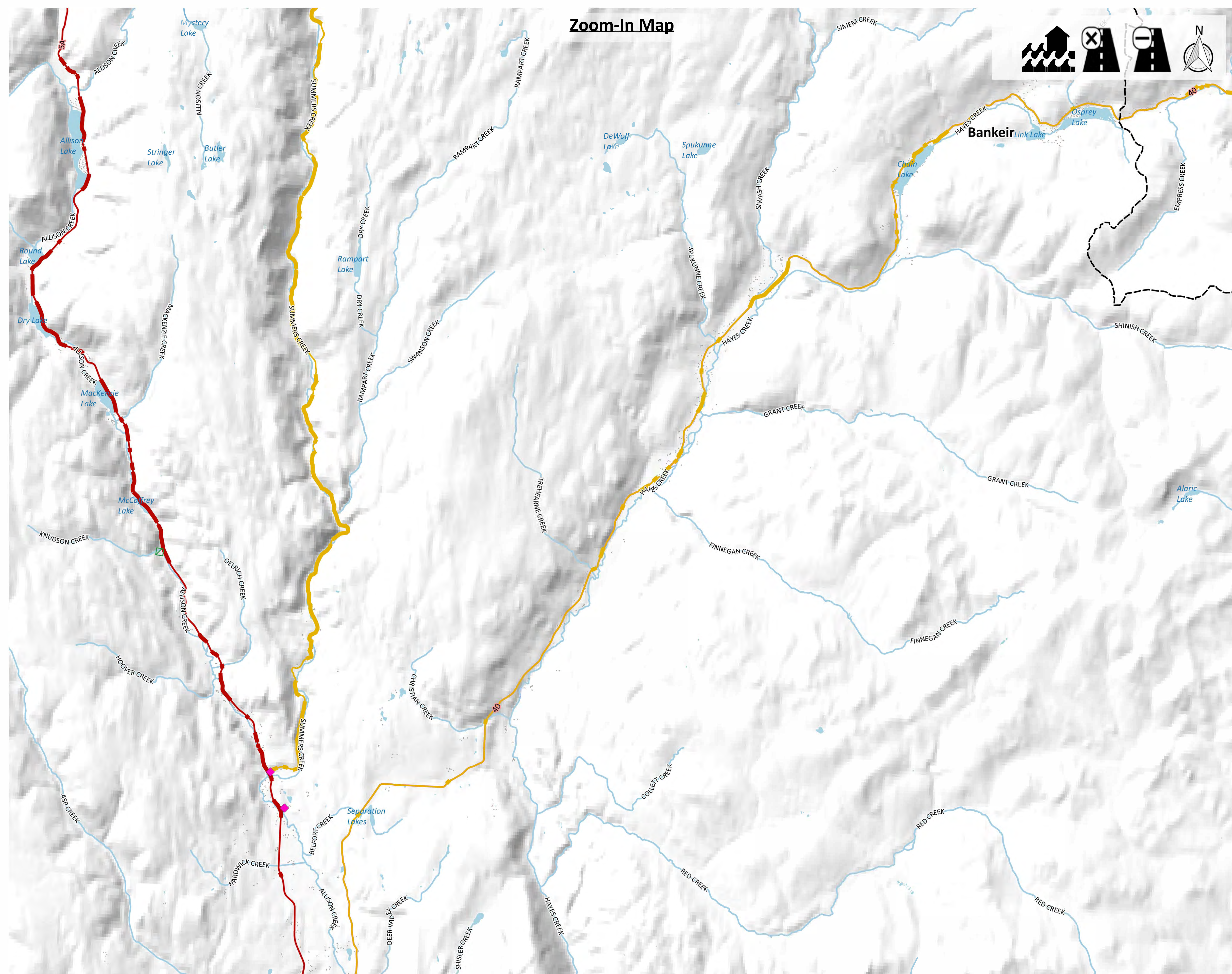
Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

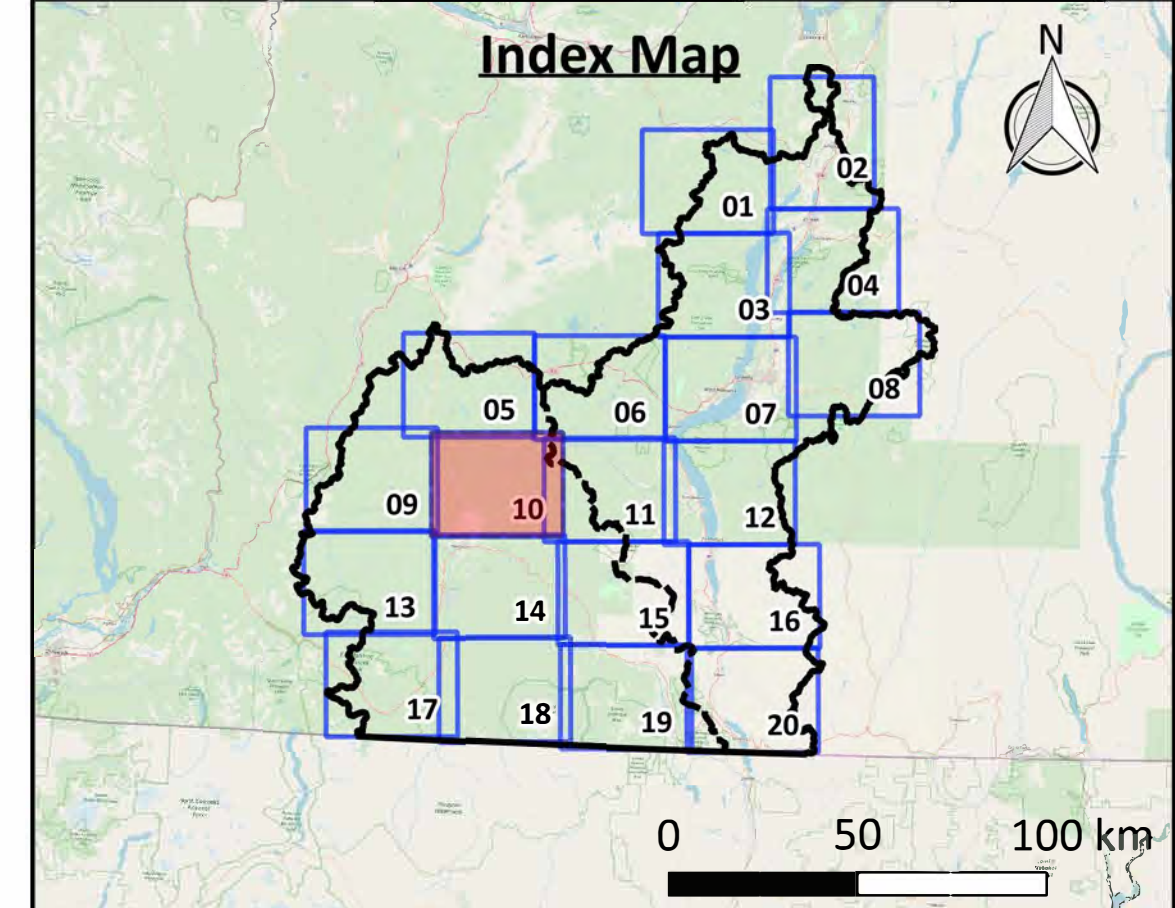
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 09 of 20

ANSI D - Map No. D-F-003-009





Zoom-In Map



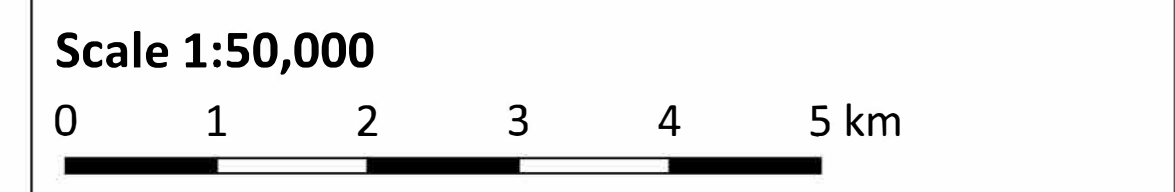
[Click above map tile for Zoom-In map](#)
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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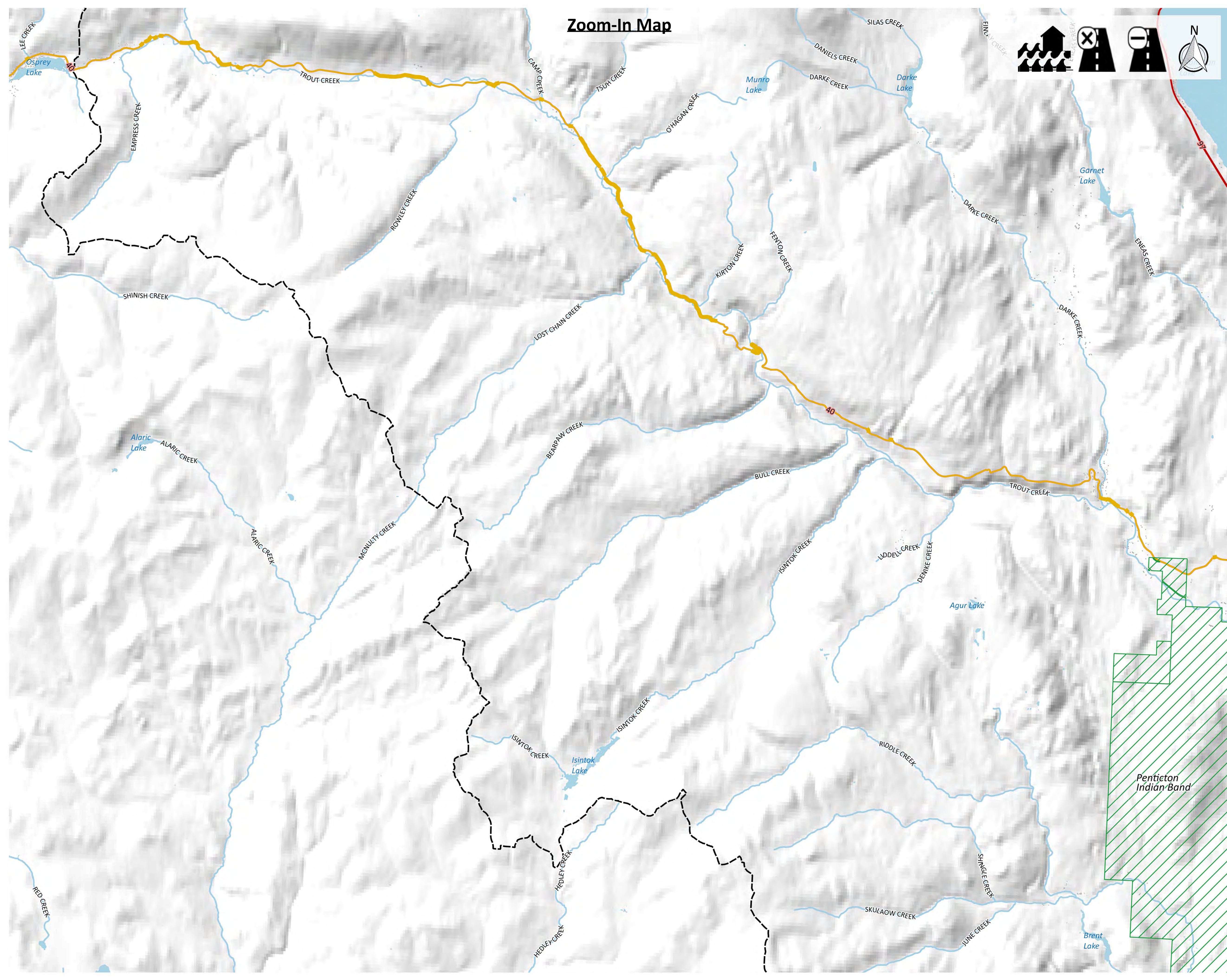
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

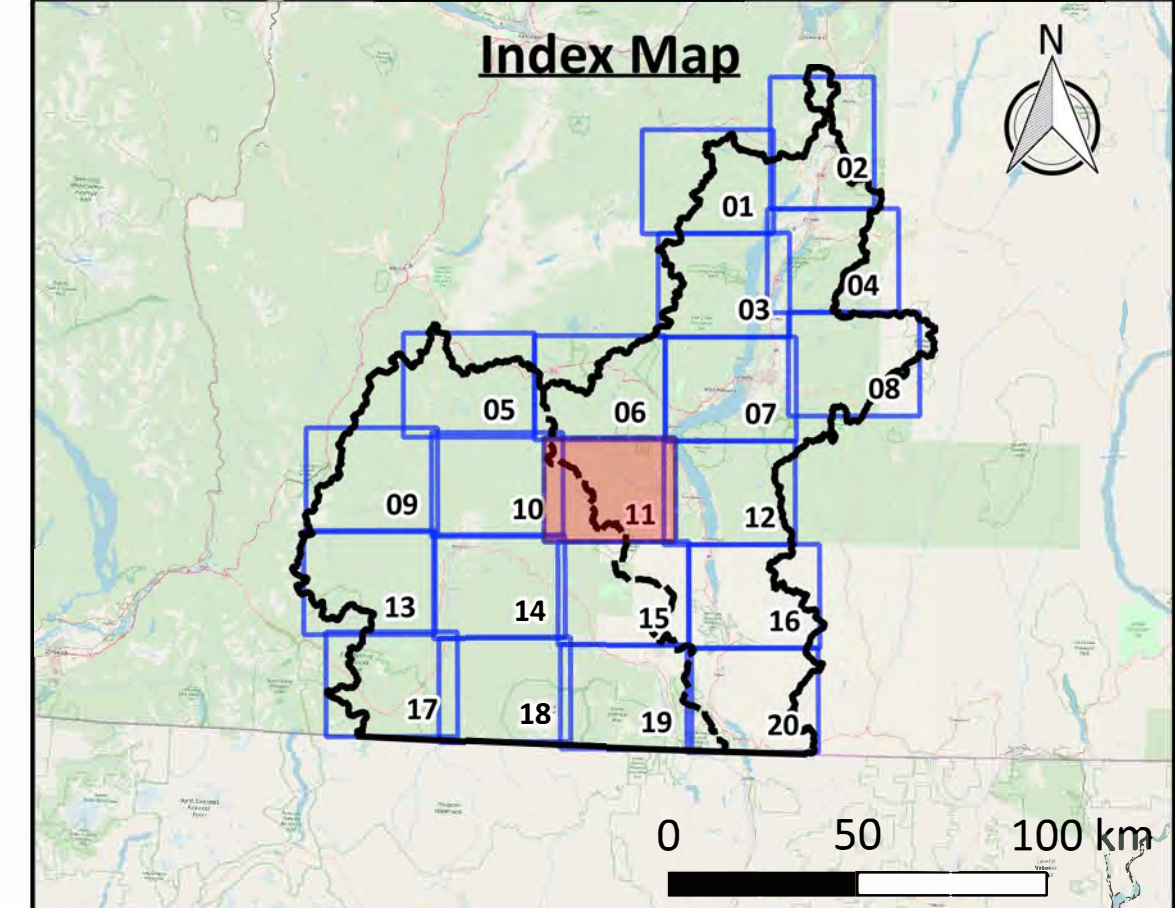
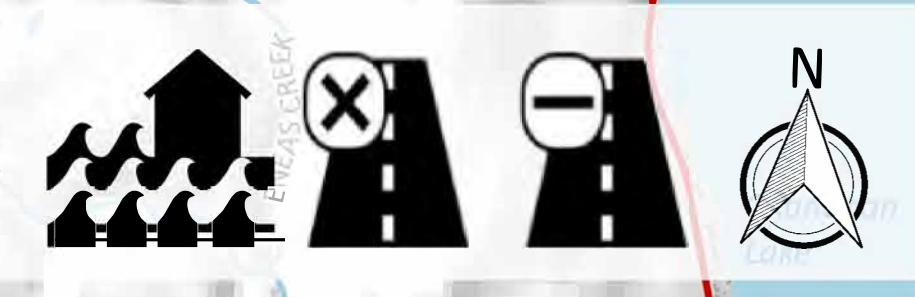
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 10 of 20

ANSI D - Map No. D-F-003-010



Zoom-In Map



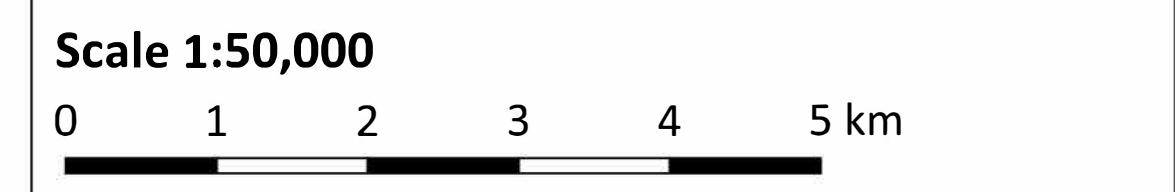
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Legend

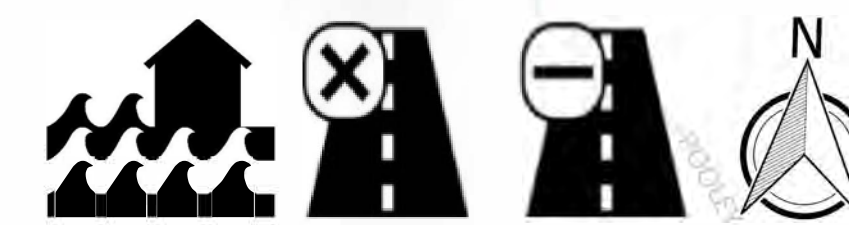
Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
— Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 11 of 20

ANSI D - Map No. D-F-003-011

Zoom-In Map



ebbwater CONSULTING
THOUGHTFUL FLOOD MANAGEMENT

Palmer Environmental Consulting Group Inc.

Sylix Okanagan Nation Alliance

Index Map

0 50 100 km

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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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Data Sources

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- Utility Data: Integrated Cadastral Information (ICI) Society.
- Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000

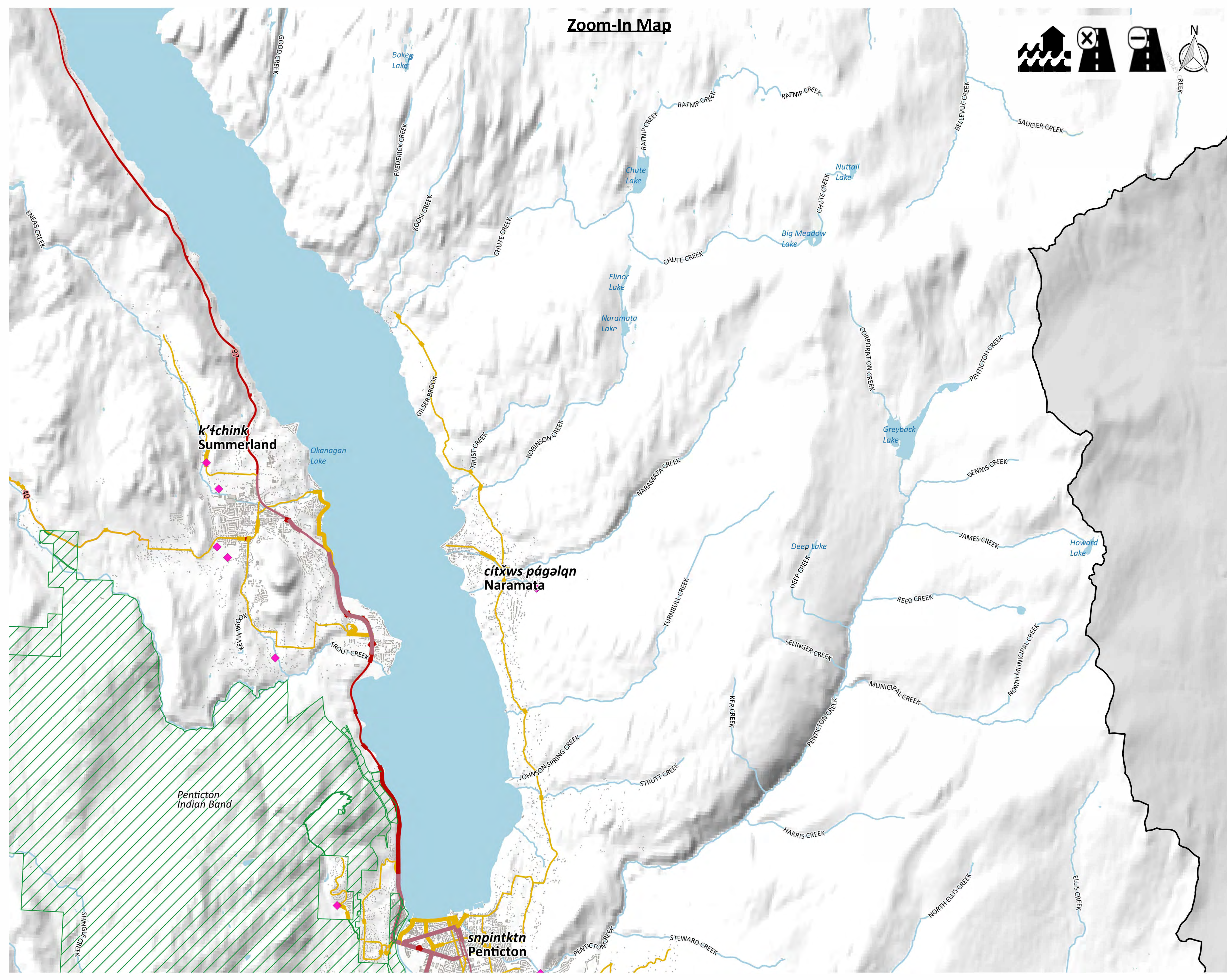
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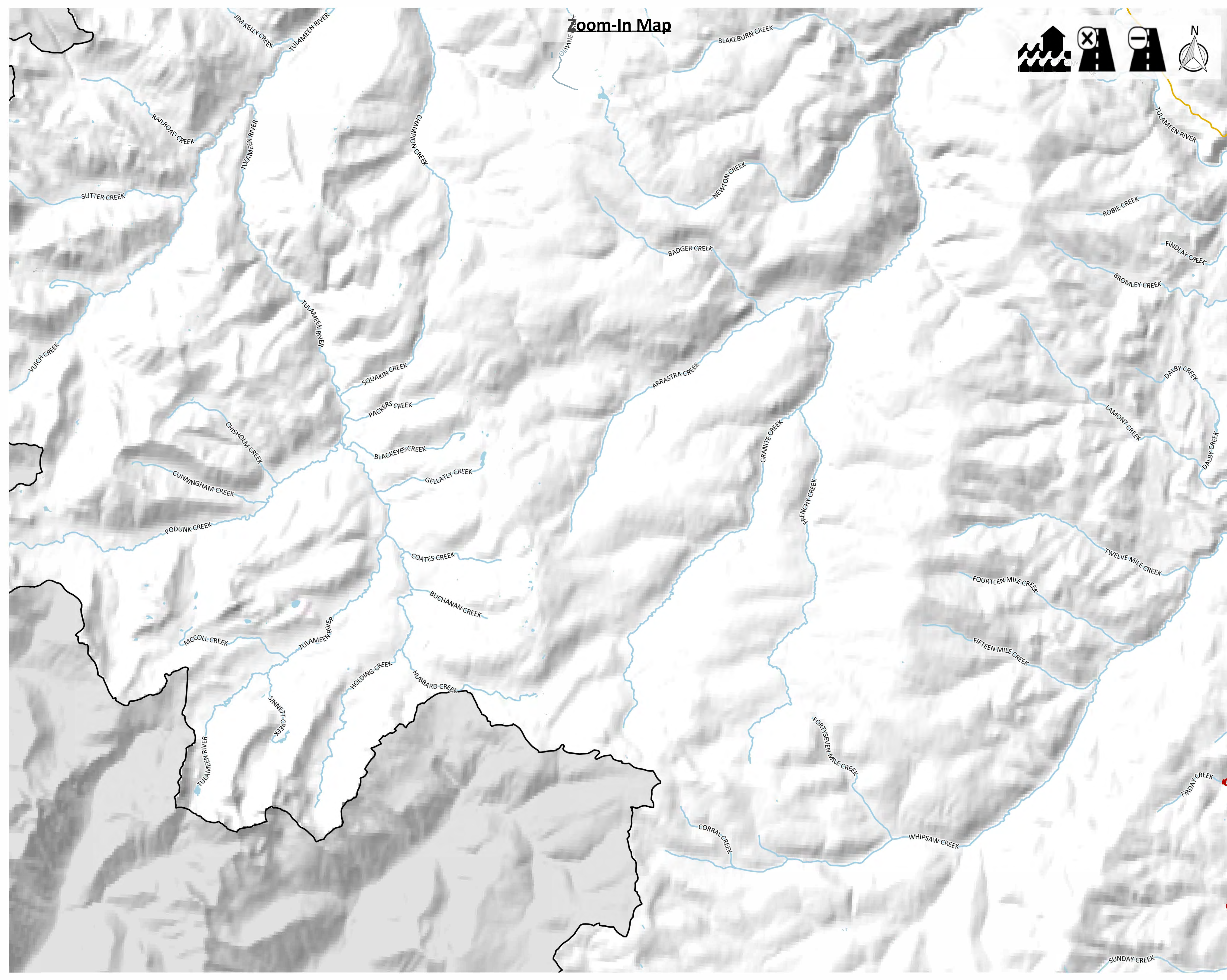
Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
— Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

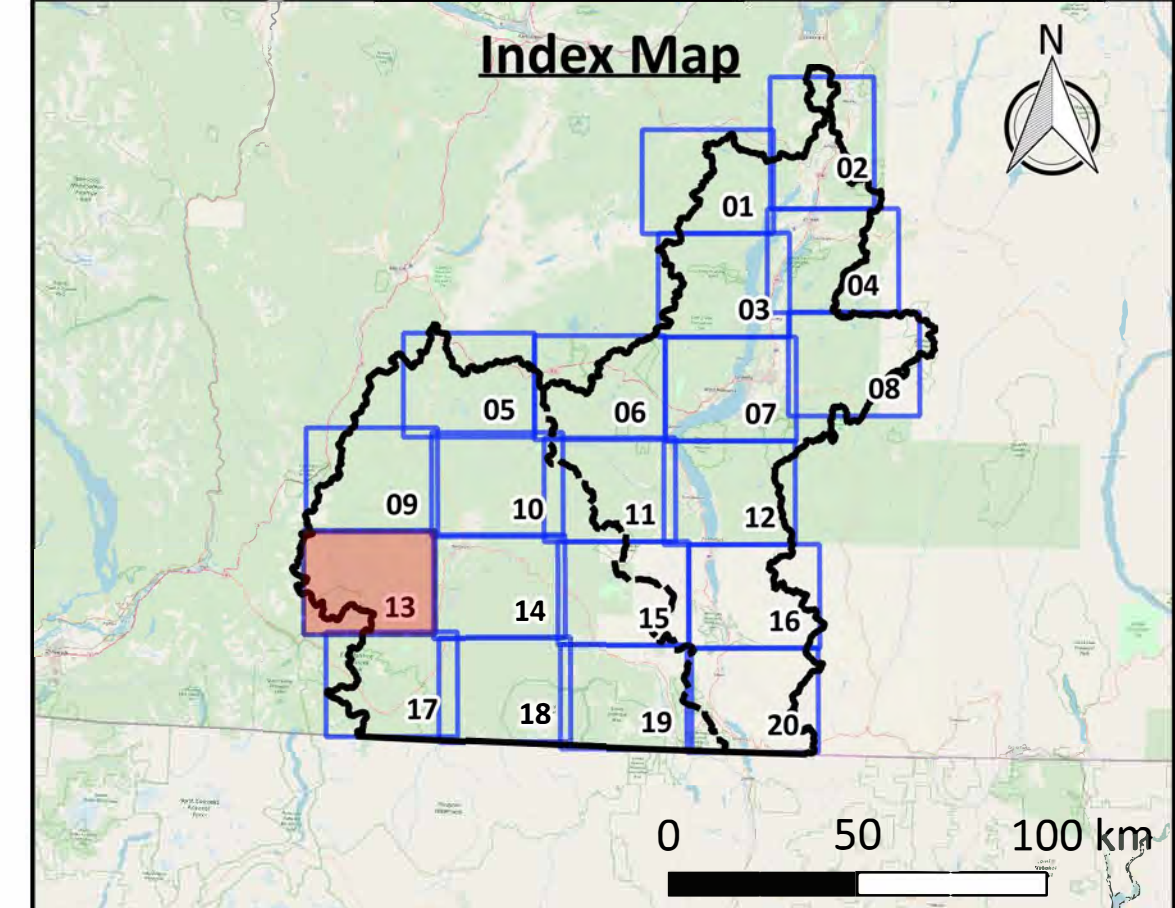
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 12 of 20

ANSI D - Map No. D-F-003-012





Zoom-In Map



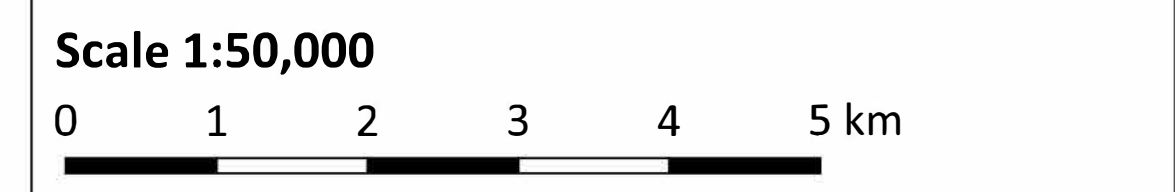
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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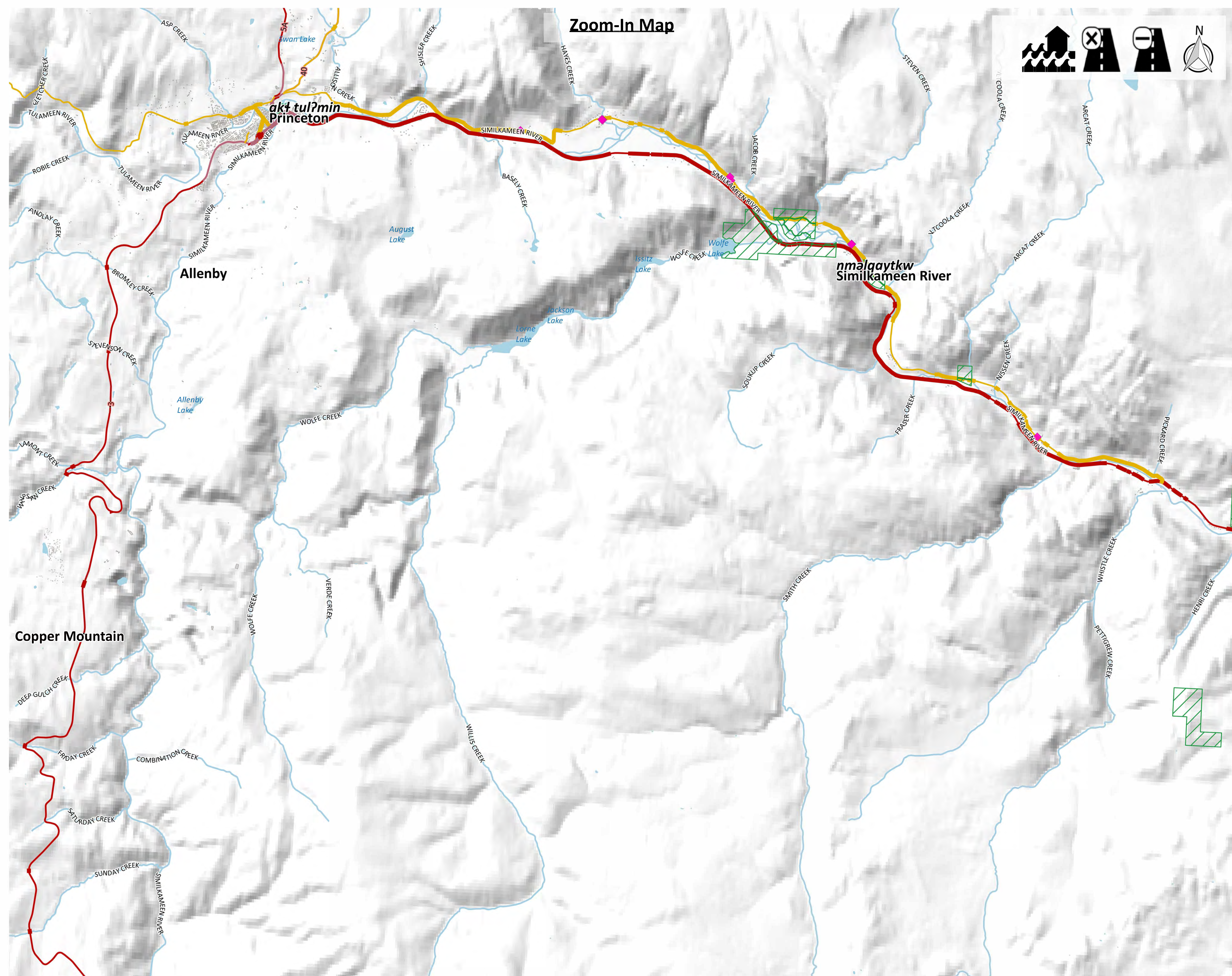
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▭ Reserves	— Affected Collector Road
▭ Building Footprints	— Affected Arterial Road
▭ Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 13 of 20

ANSI D - Map No. D-F-003-013



Zoom-In Map



ebbwater CONSULTING
THOUGHTFUL FLOOD MANAGEMENT

Palmer Environmental Consulting Group Inc.

Sylix Okanagan Nation Alliance

Index Map

0 50 100 km

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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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Scale 1:50,000

0 1 2 3 4 5 km

Legend

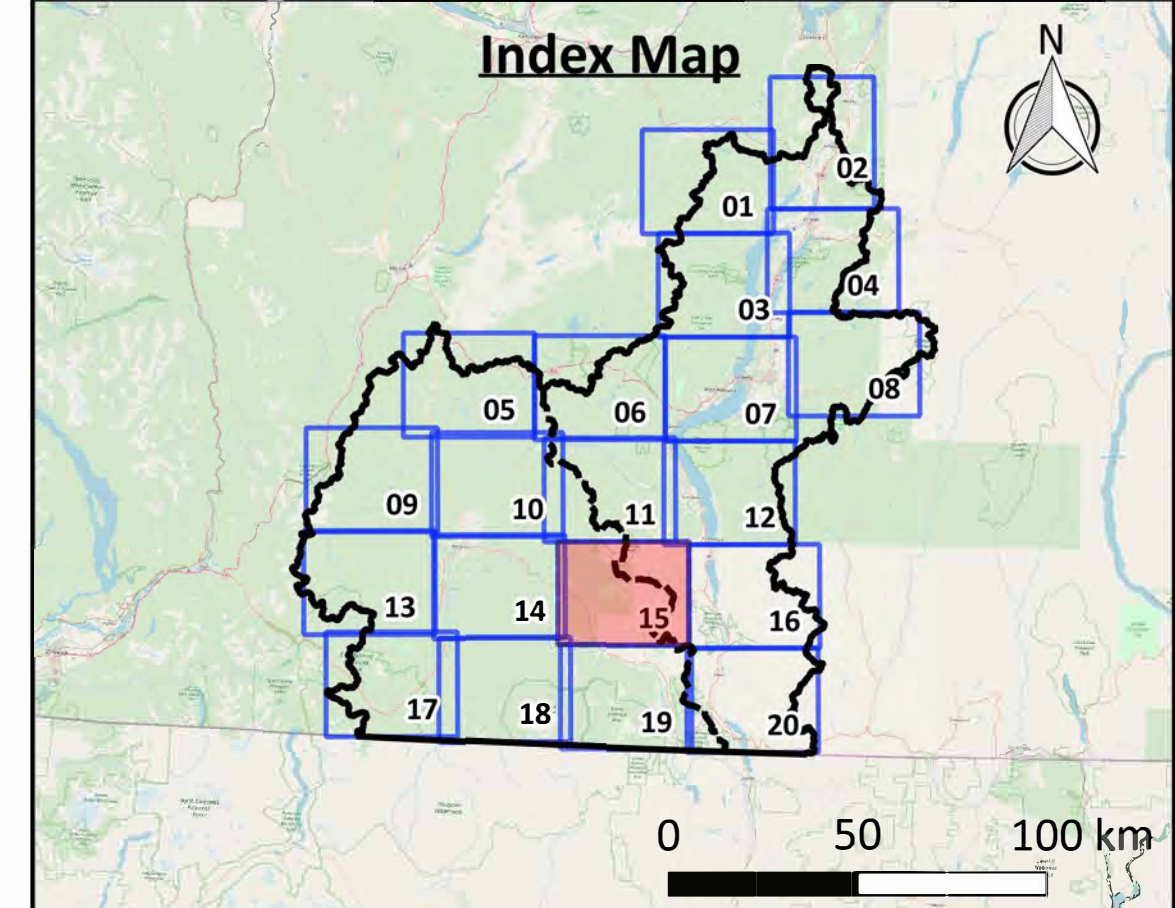
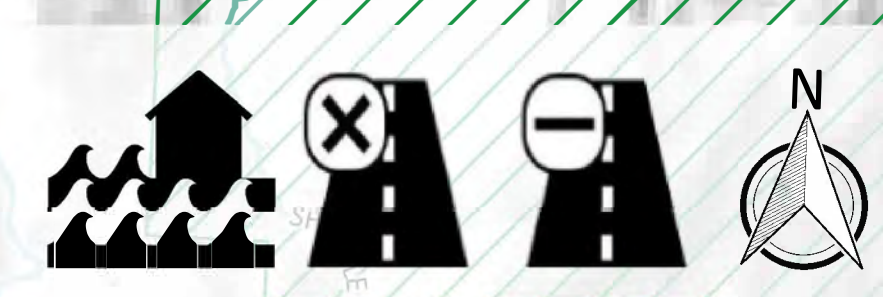
Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▭ Reserves	— Affected Collector Road
▭ Building Footprints	— Affected Arterial Road
▭ Lakes	— Affected Rail
▭ Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 14 of 20

ANSI D - Map No. D-F-003-014

Zoom-In Map



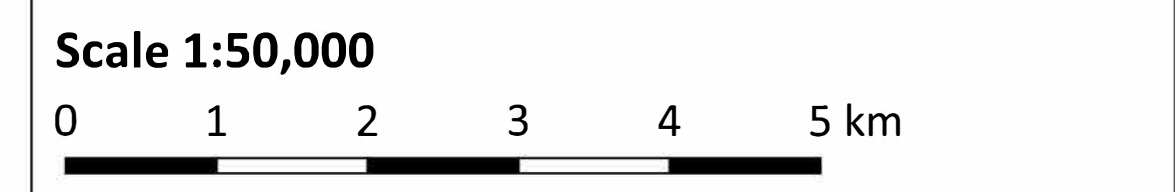
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
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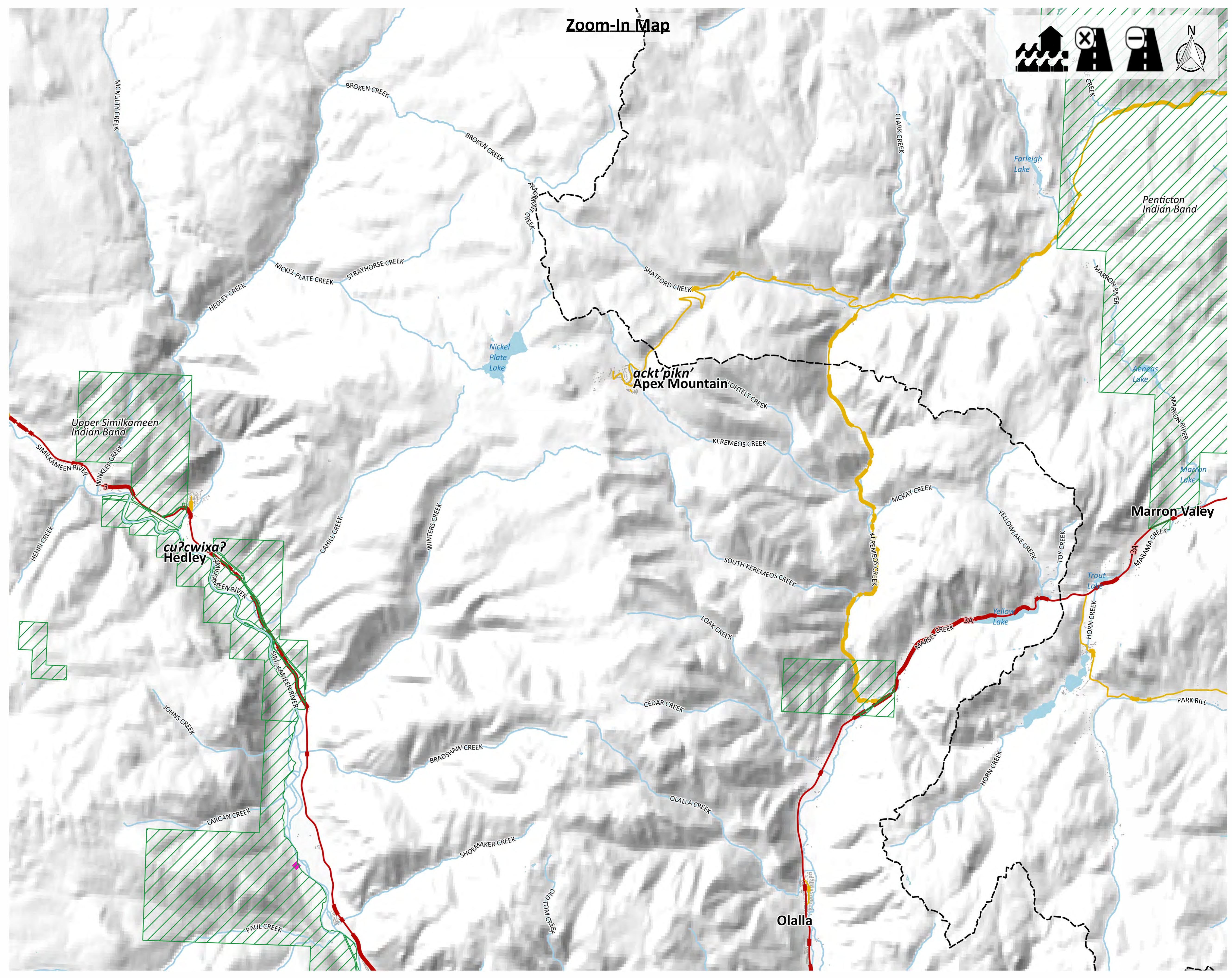
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

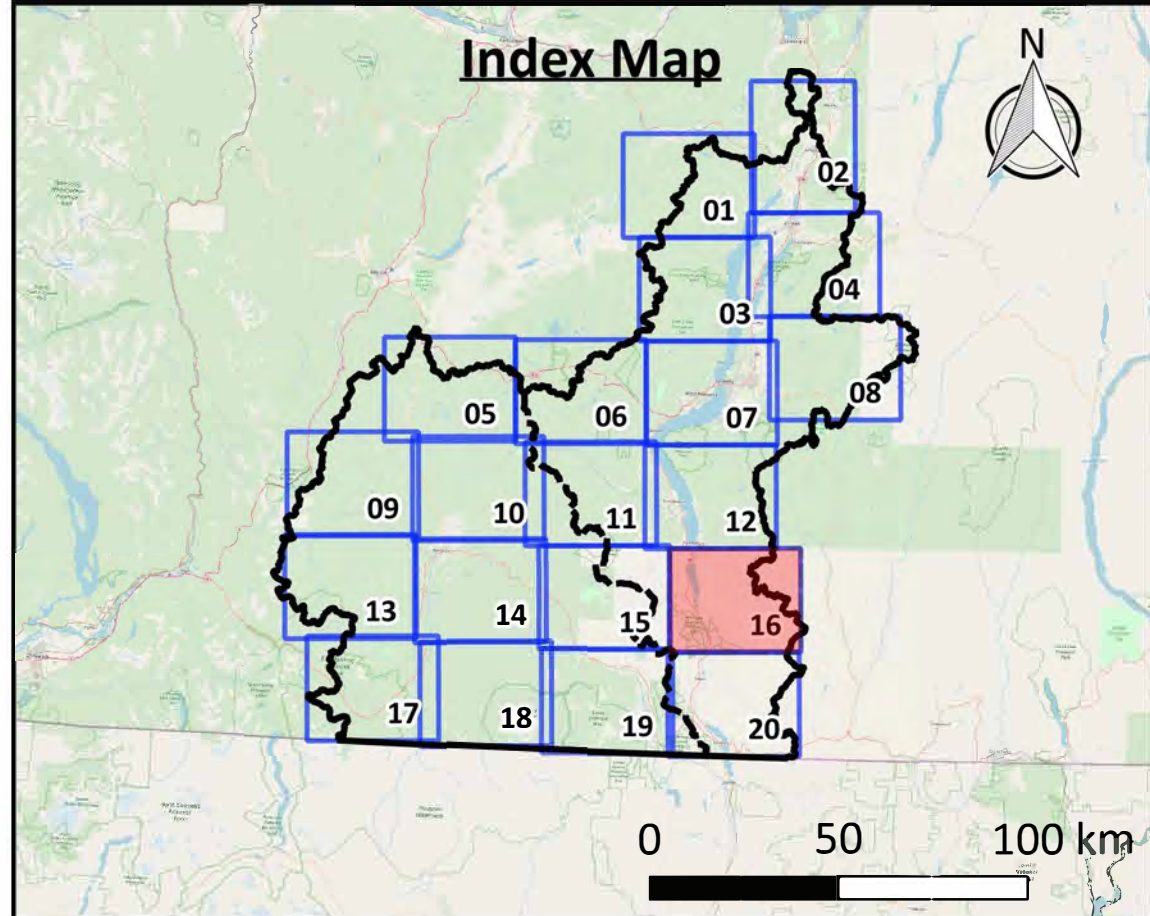
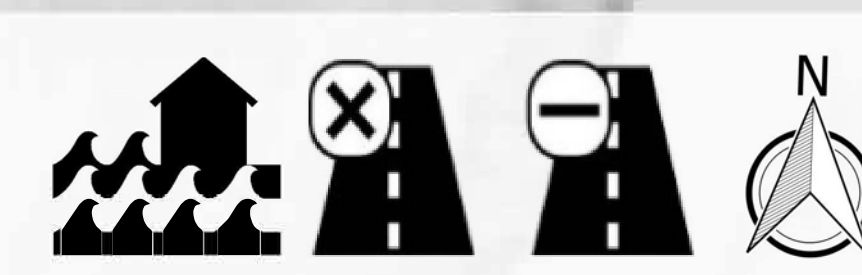
Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 15 of 20

ANSI D - Map No. D-F-003-015



Zoom-In Map



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Scale 1:50,000



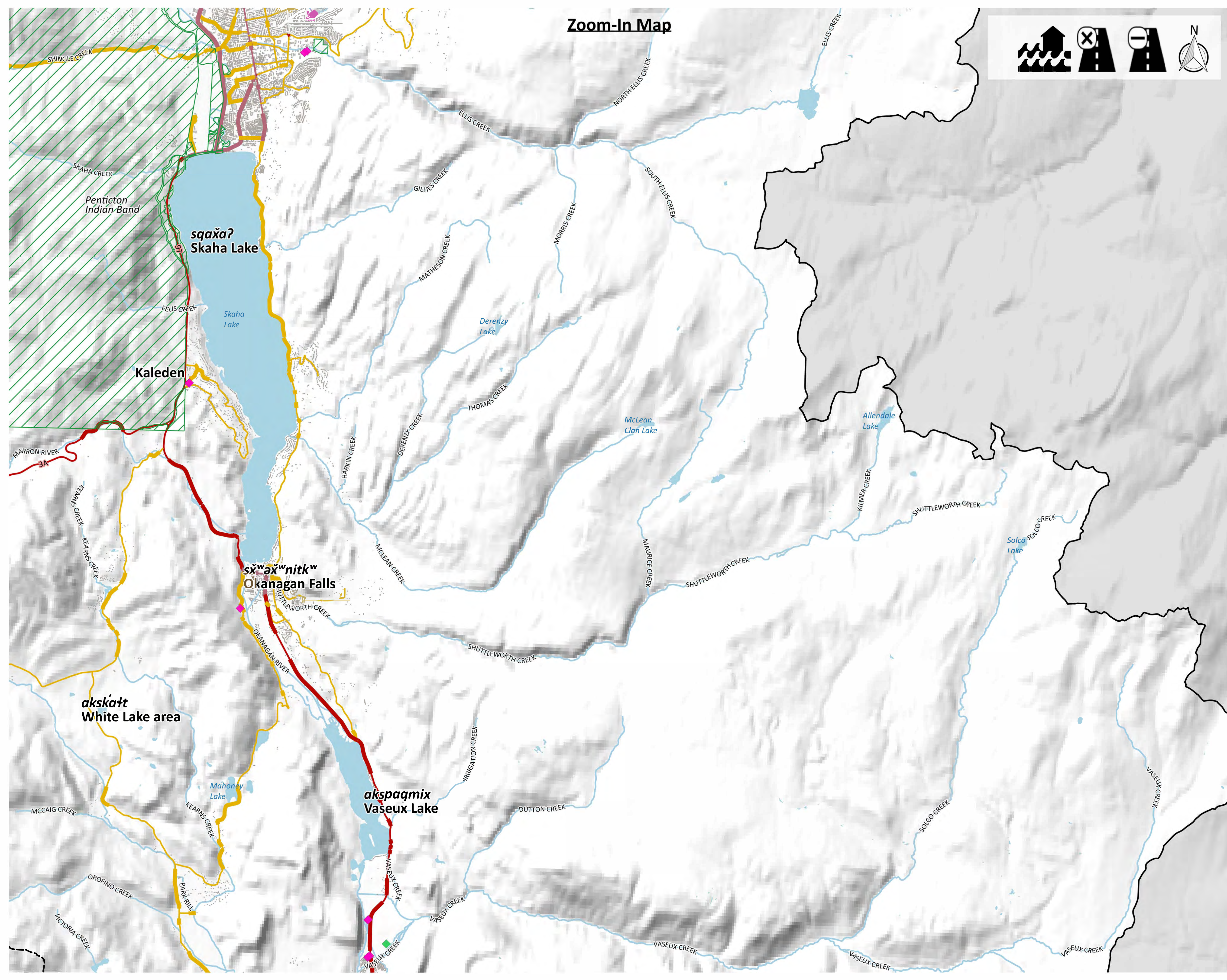
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
— Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

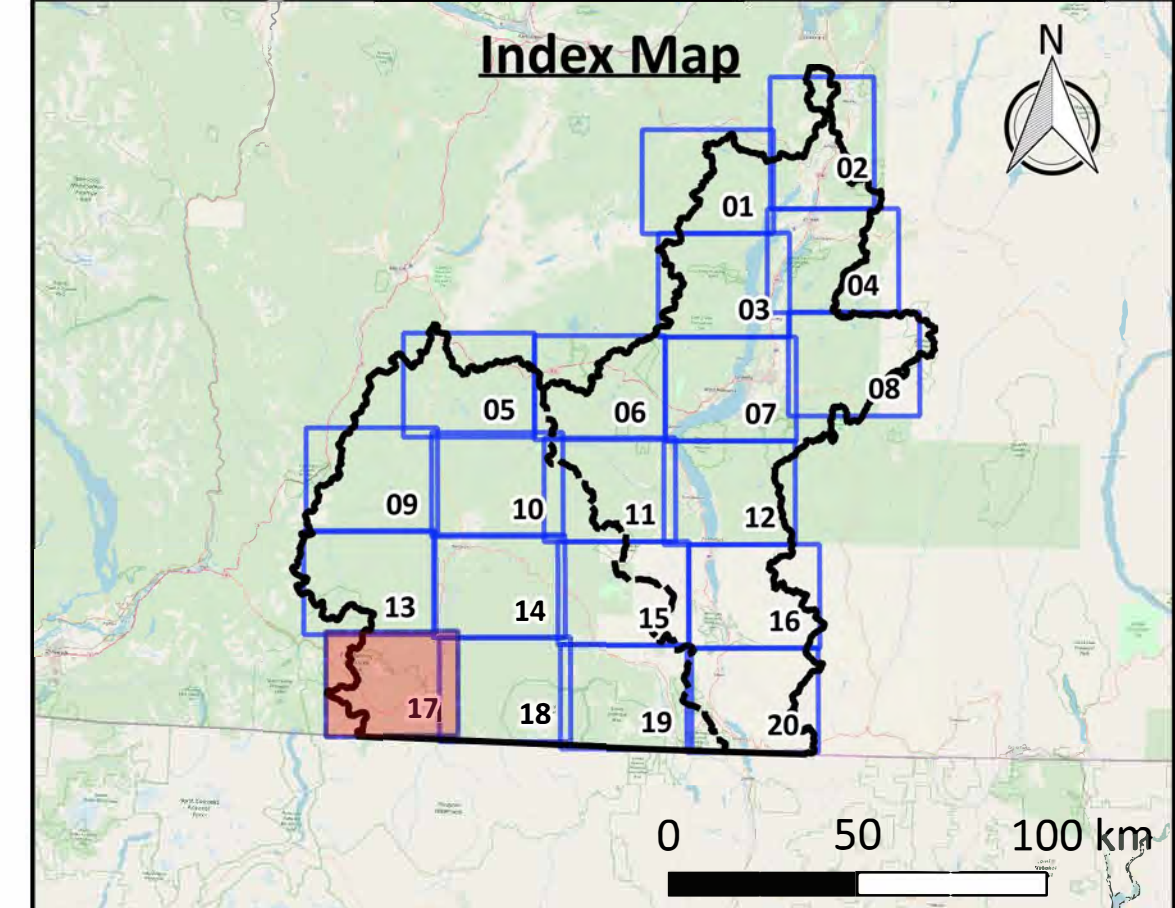
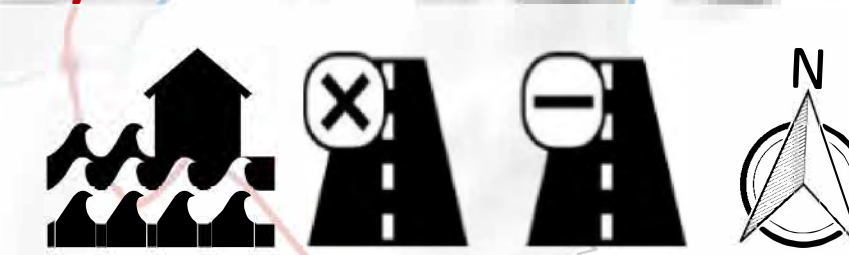
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Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 16 of 20

ANSI D - Map No. D-F-003-016



Zoom-In Map



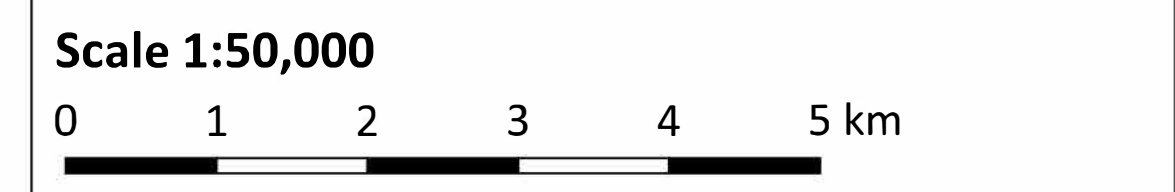
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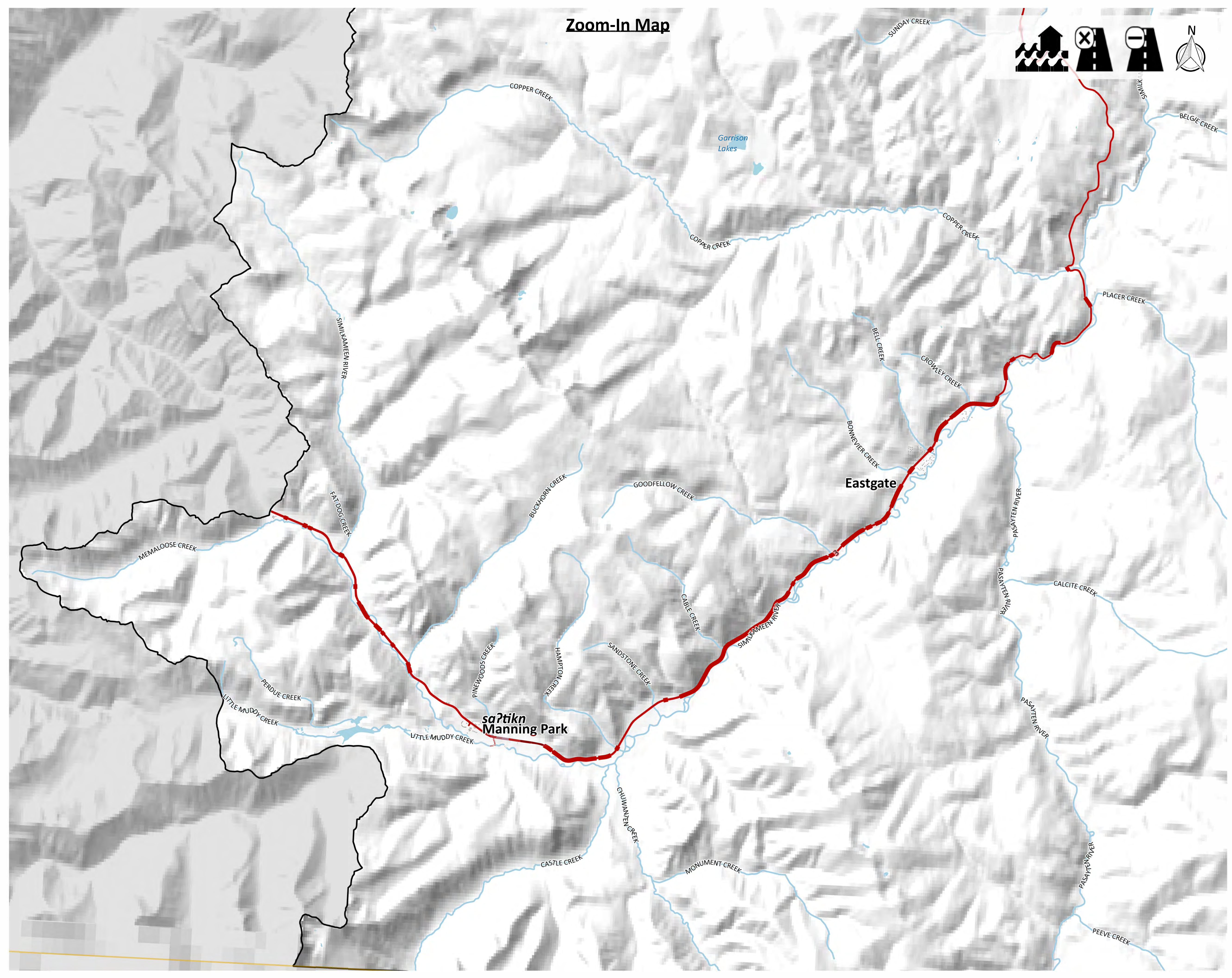
Legend

Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

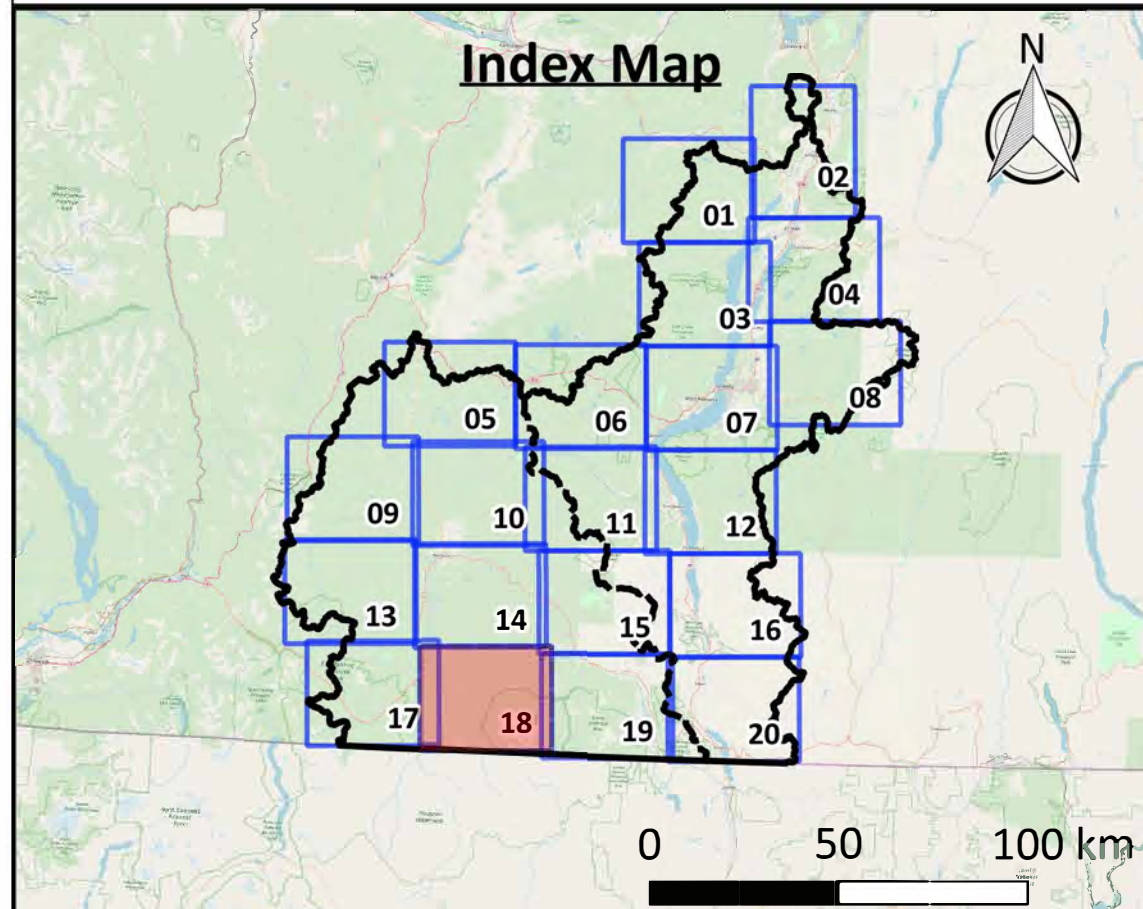
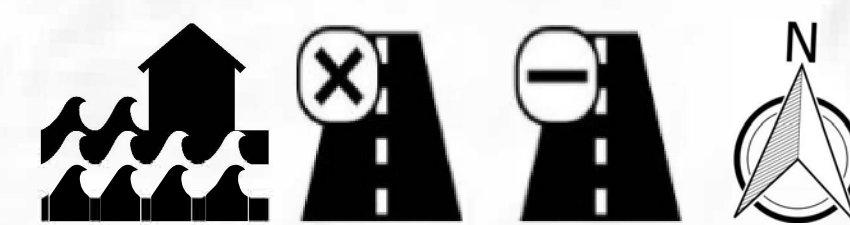
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
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ANSI D - Map No. D-F-003-017



Zoom-In Map



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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

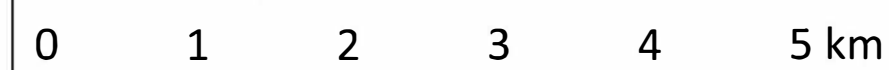
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3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000



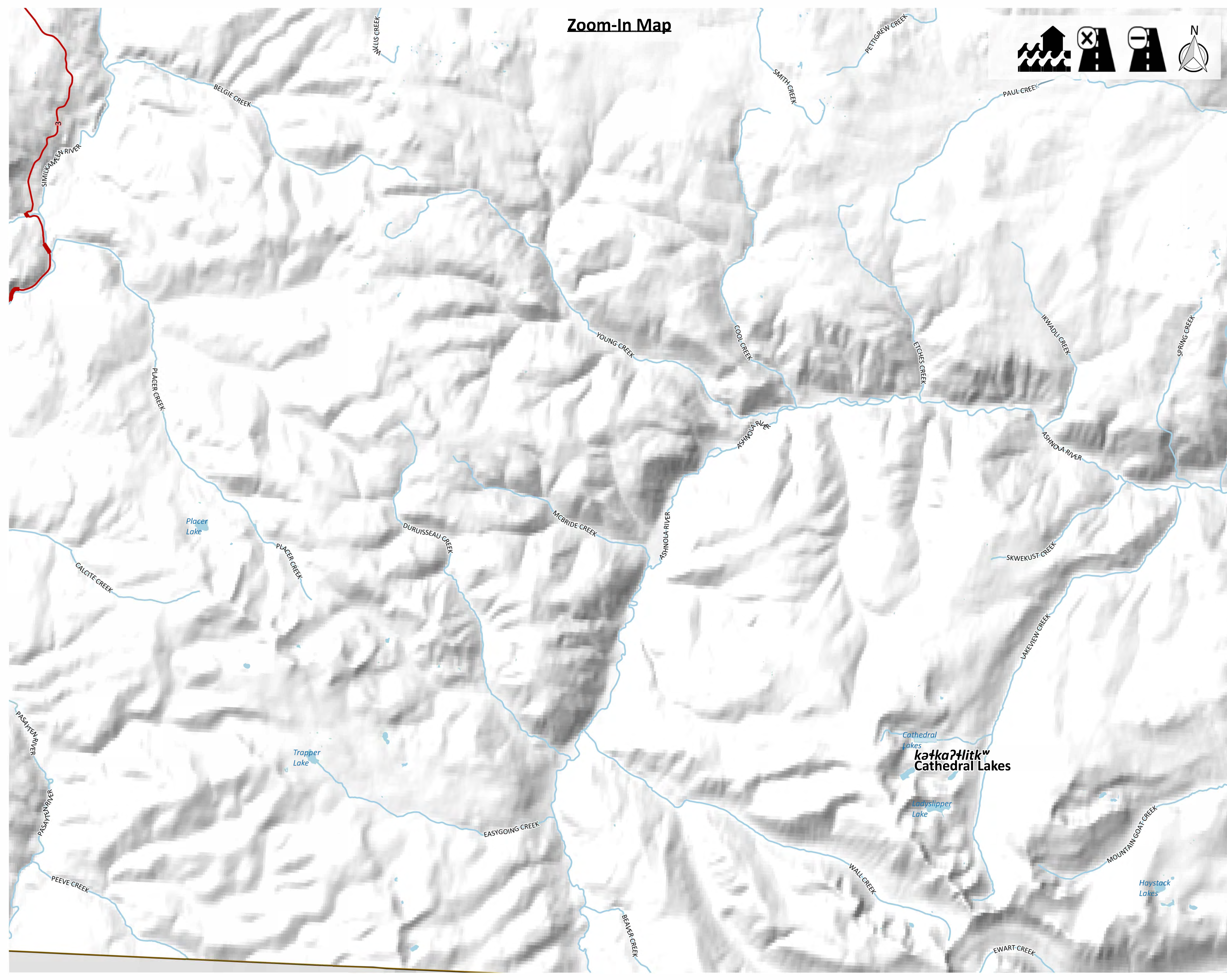
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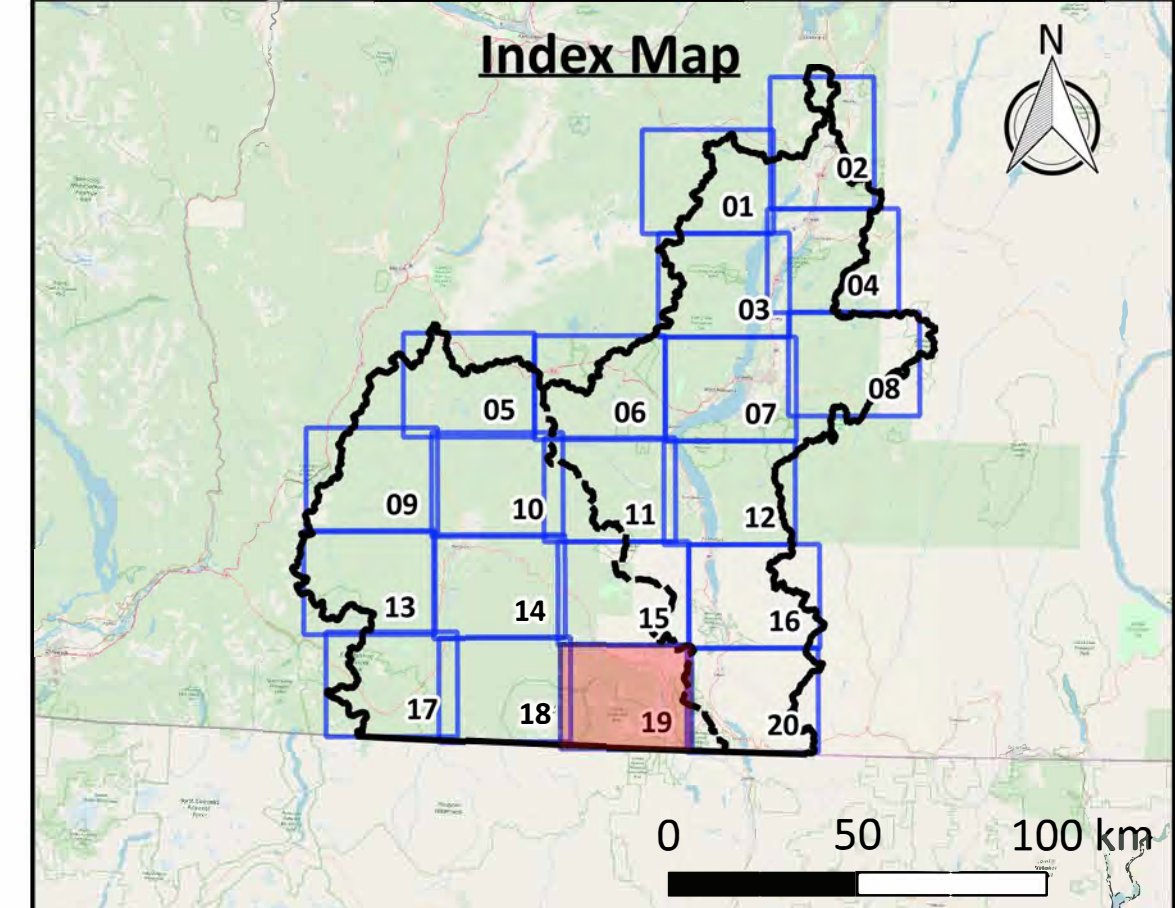
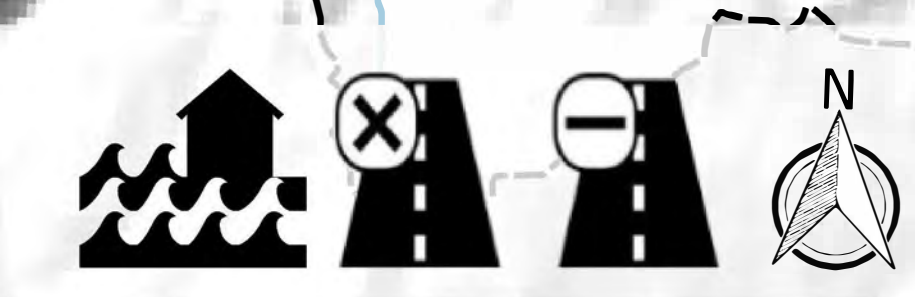
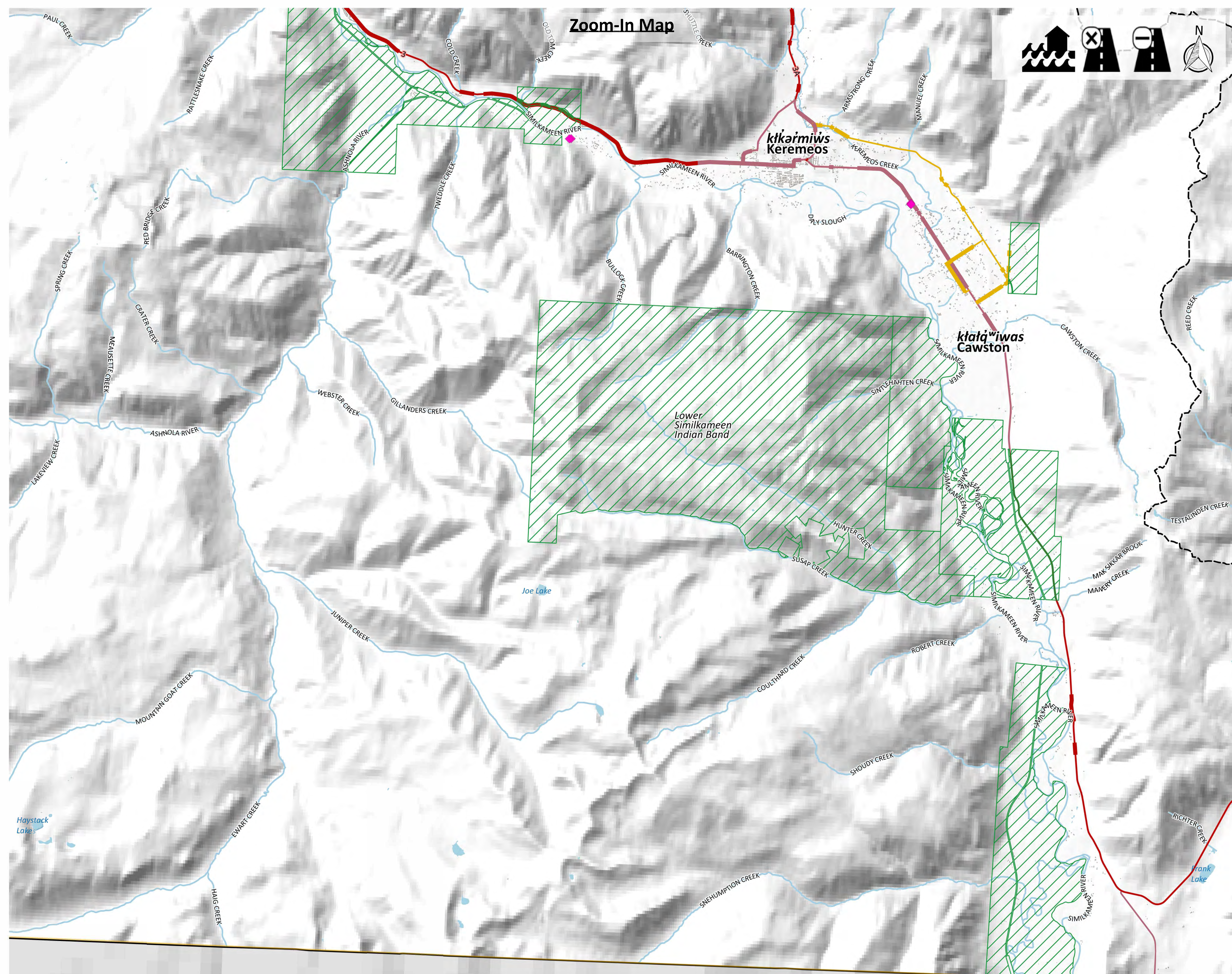
Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▭ Reserves	— Affected Collector Road
▭ Building Footprints	— Affected Arterial Road
▭ Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 18 of 20

ANSI D - Map No. D-F-003-018





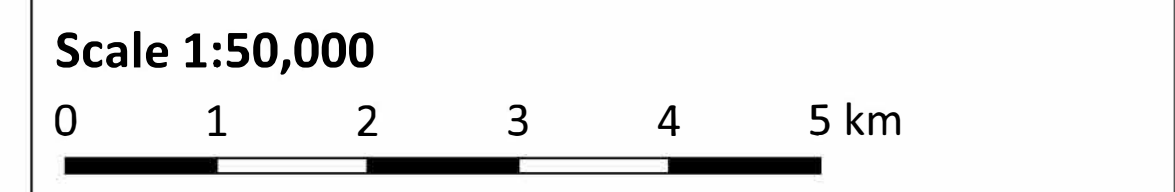
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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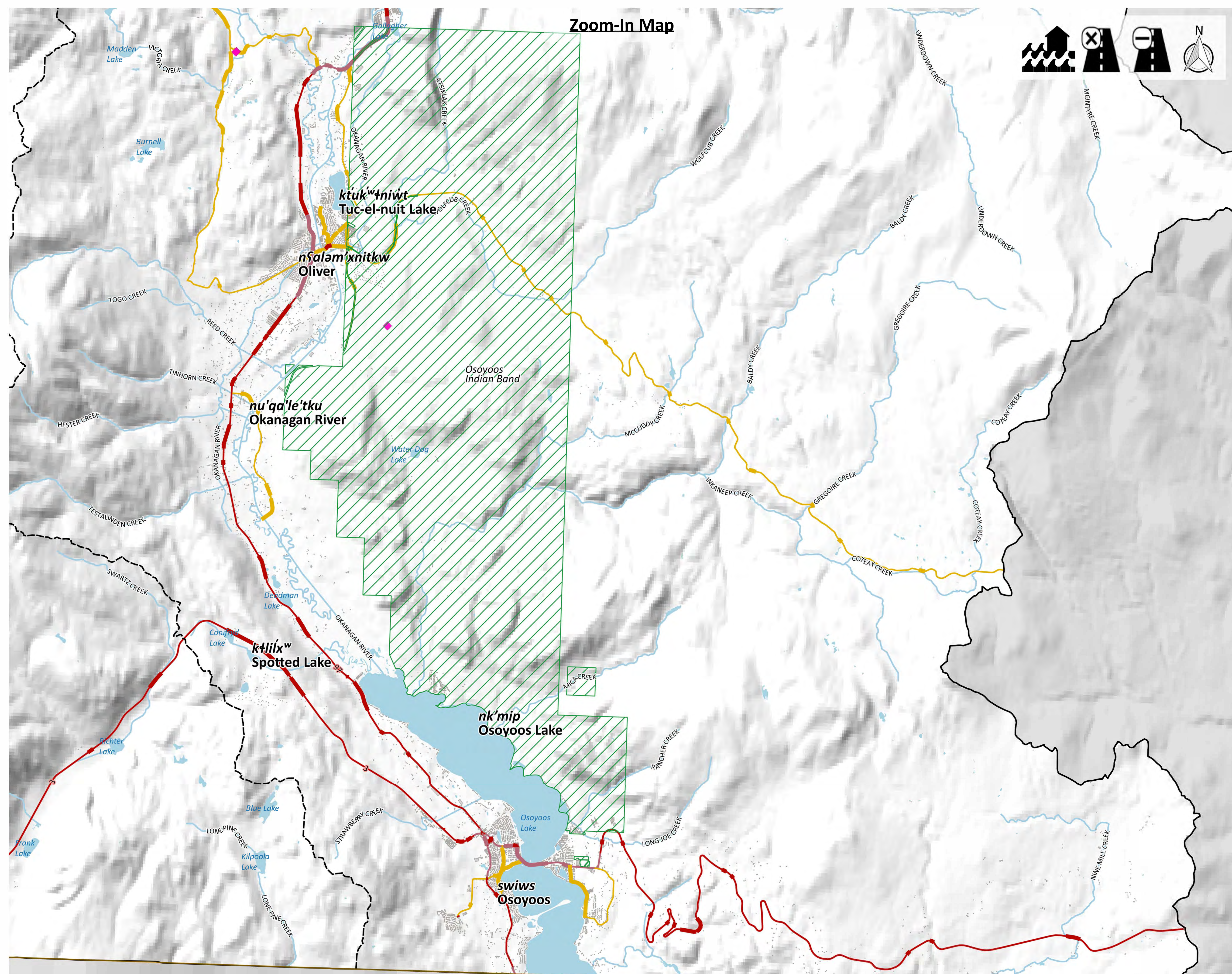
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
— Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

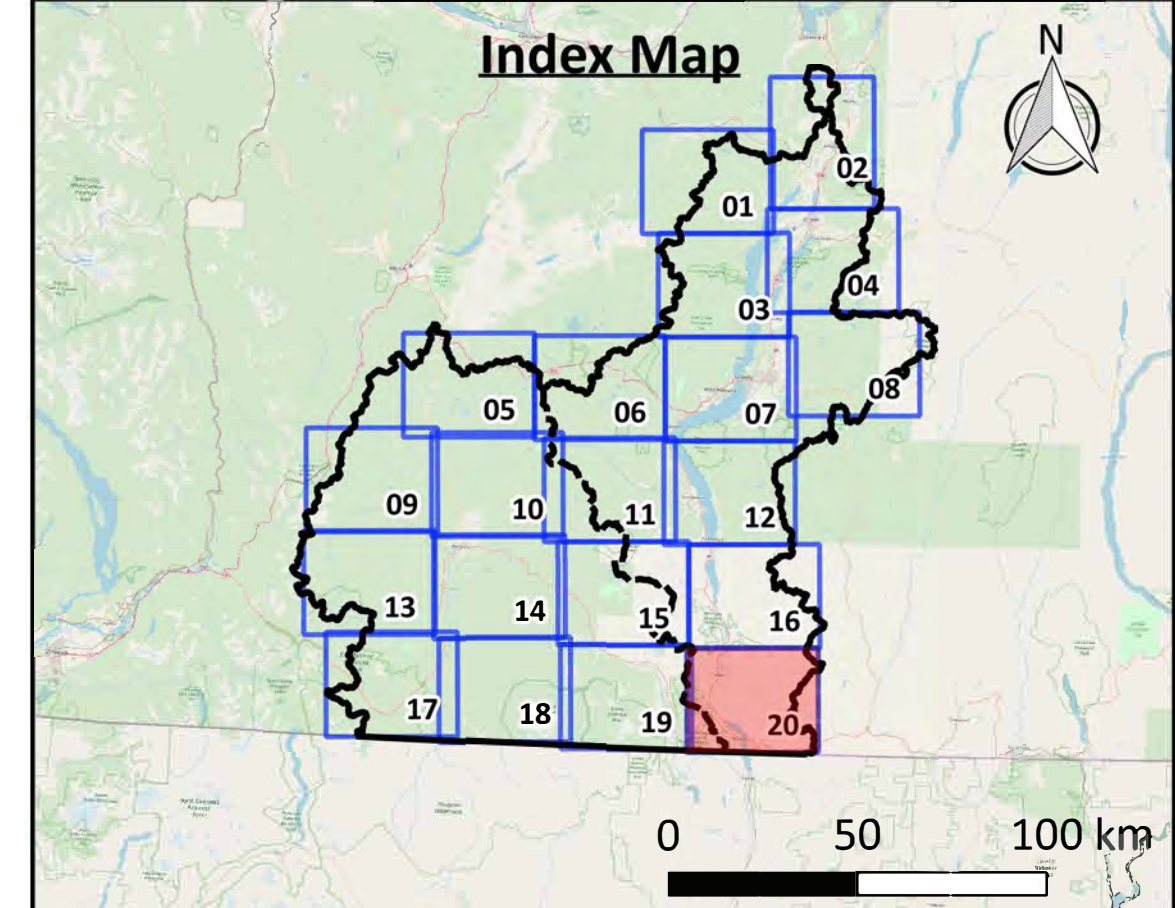
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 19 of 20

ANSI D - Map No. D-F-003-019



Zoom-In Map



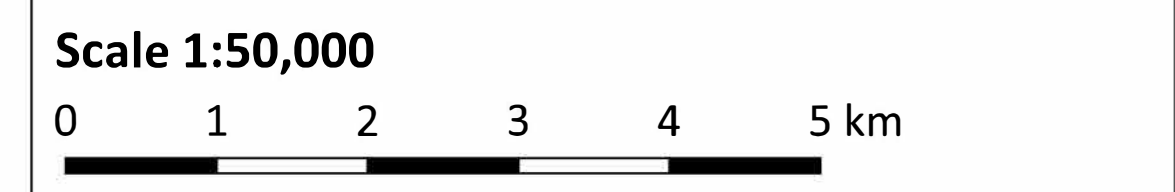
[Click above map tile for Zoom-In map](#)
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Flood - Disruption
Map Tile 20 of 20

ANSI D - Map No. D-F-003-020

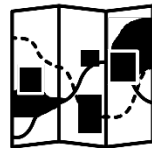
Sylix Okanagan Flood and Debris Flow Risk Assessment

Map Book

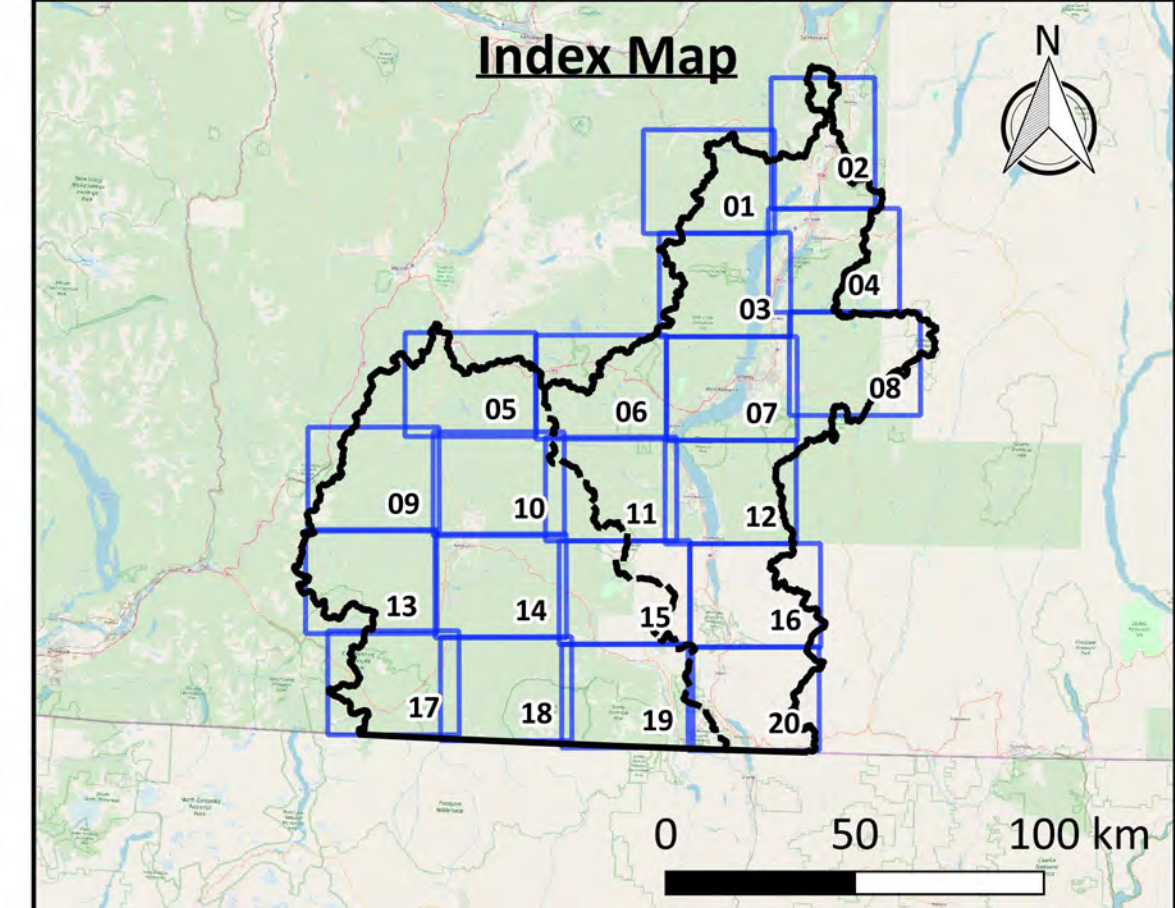
Map Series 7 of 7: Disruption Indicator



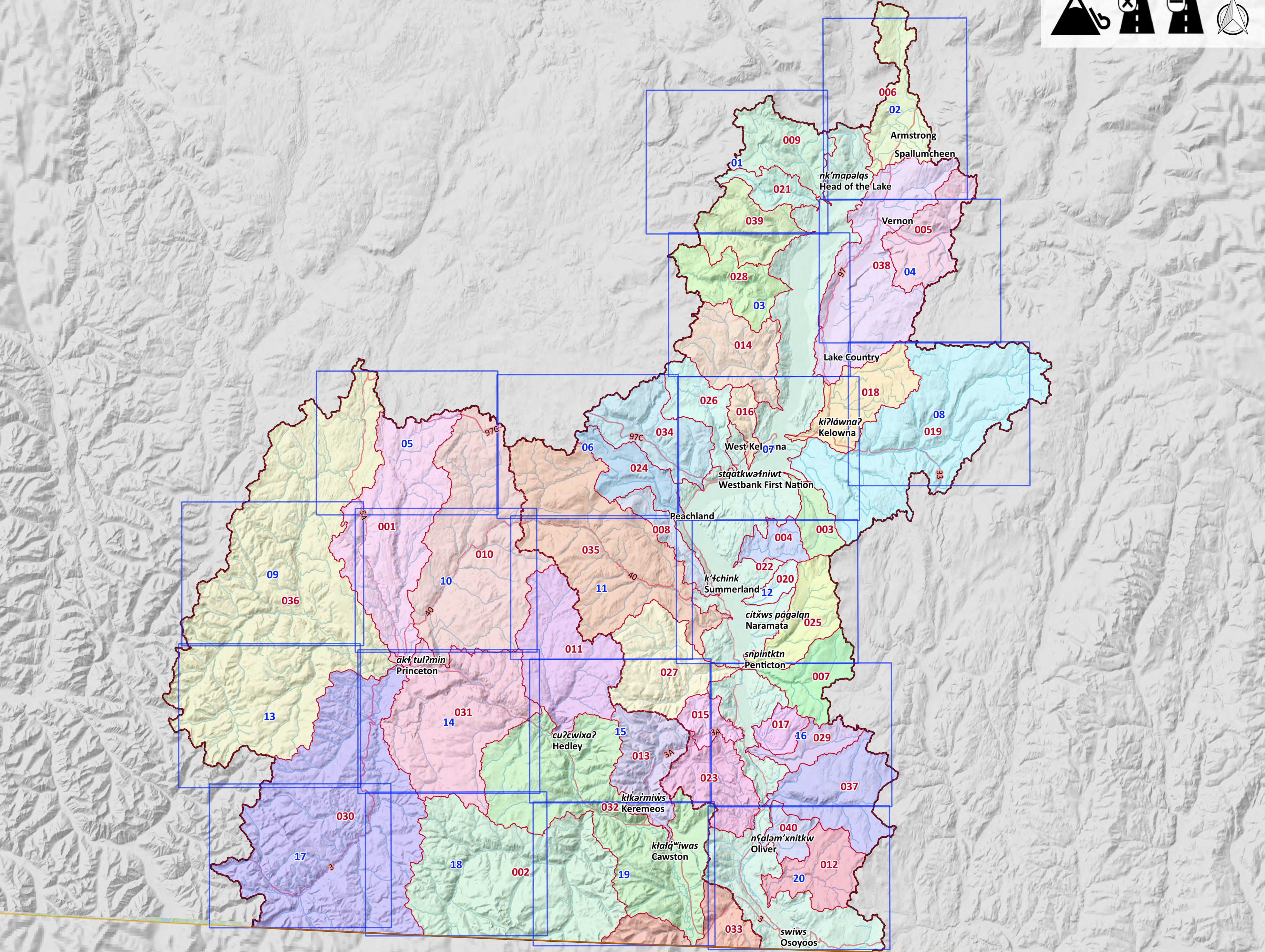
Quantitative Debris Flow Consequence Maps



Watershed Index



Click on the blue map tile to go to the Zoom-In map



Legend

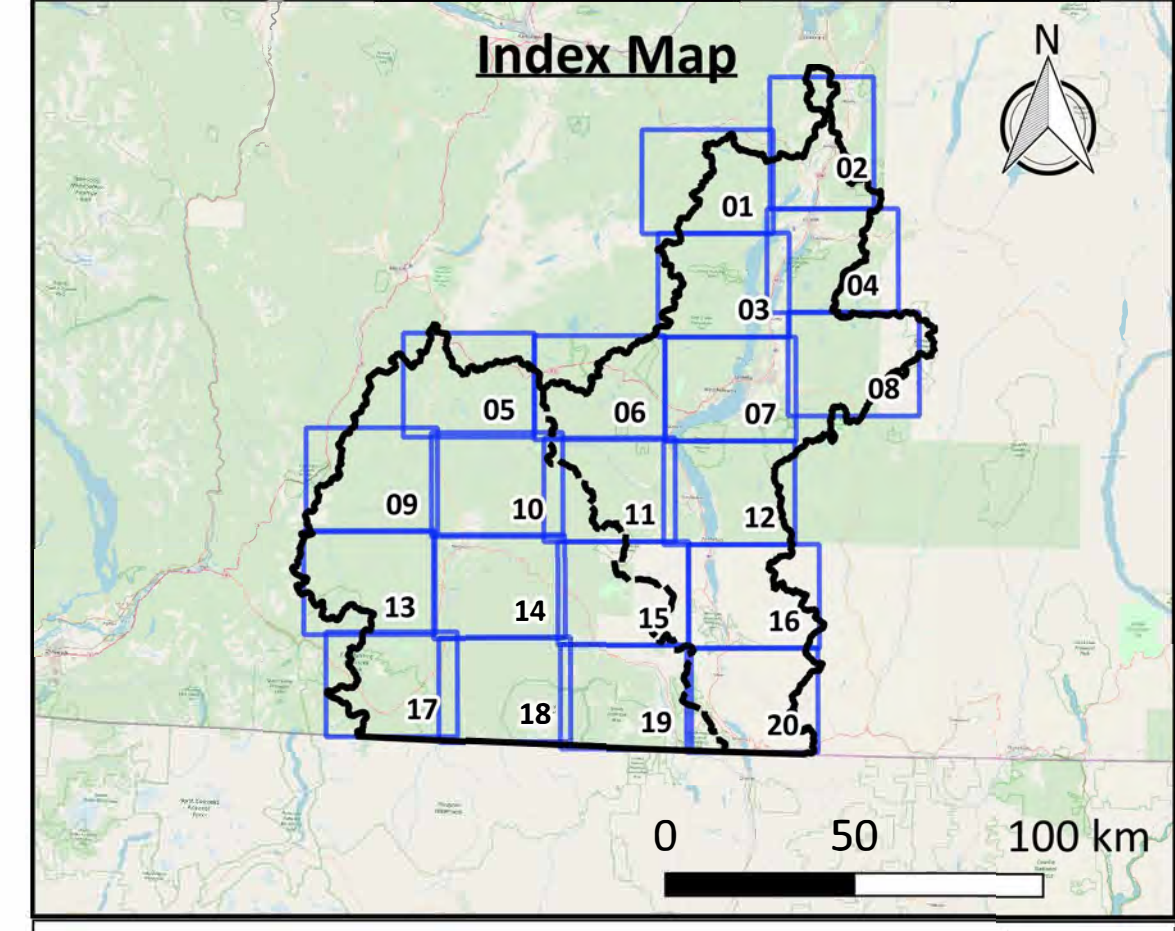
Background	Sub-Watersheds
— Watershed Boundary	001 - Allison Creek
- - - Okanagan-Similkameen Boundary	002 - Ashnola River
— Canada - US Border	003 - Bellevue Creek
— Lakes	004 - Chute Creek
— Watercourses	005 - Coldstream Creek
— Highway	006 - Deep Creek
— Major Road	007 - Ellis Creek
— Map tiles	008 - Eneas Creek
	009 - Equis Creek
	010 - Hayes Creek
	011 - Hedley Creek
	012 - Inkaneep Creek
	013 - Keremeos Creek
	014 - Lambly Creek
	015 - Marron River
	016 - McDougall Creek
	017 - McLean Creek
	018 - Mill Creek
	019 - Mission Creek
	020 - Naramata Creek
	021 - Naswhito Creek
	022 - Okanagan River
	023 - Park Rill
	024 - Peachland Creek
	025 - Penticton Creek
	026 - Powers Creek
	027 - Shingle Creek
	028 - Shorts Creek
	029 - Shuttleworth Creek
	030 - Similkameen River 1
	031 - Similkameen River 2
	032 - Similkameen River 3
	033 - Similkameen River 4
	034 - Trepanier Creek
	035 - Trout Creek
	036 - Tulameen River
	037 - Vaseux Creek
	038 - Vernon Creek
	039 - Whiteman Creek
	040 - Wolfcub Creek

Scale 1:350,000
0 10 20 30 km

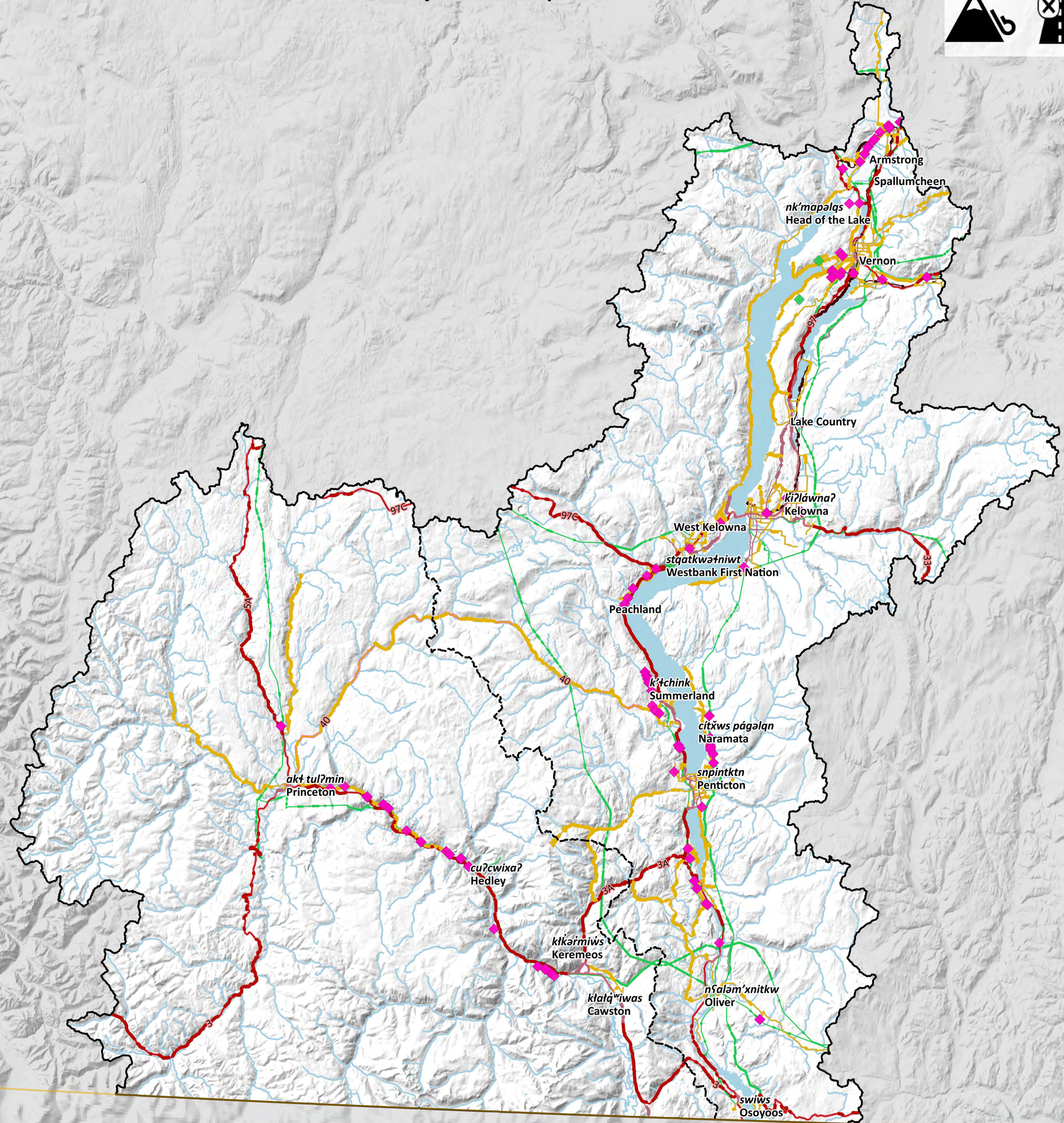
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption

Project Area Map



Click above map tile for Zoom-In map
[Click here to go to Okanagan Map](#)
[Click here to go to Similkameen Map](#)



Map Notes

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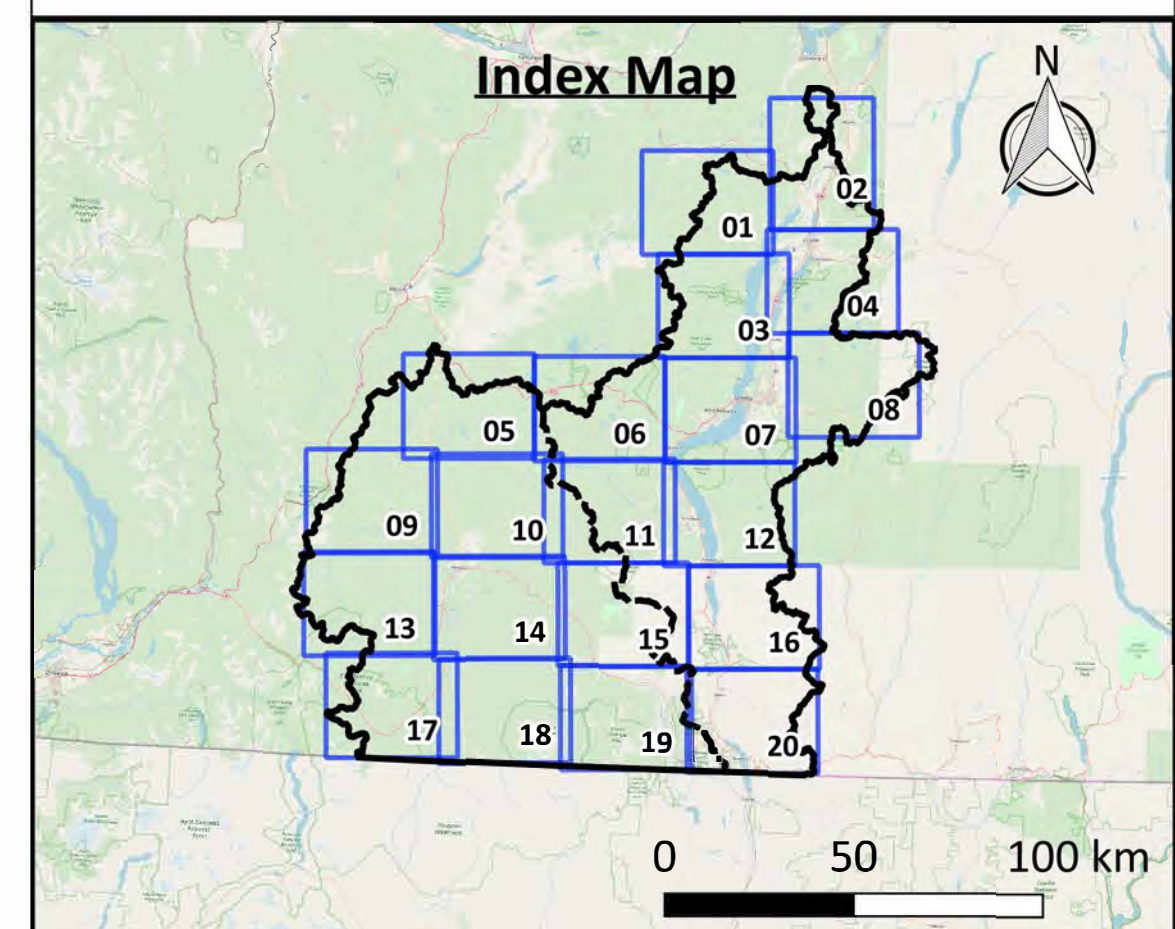
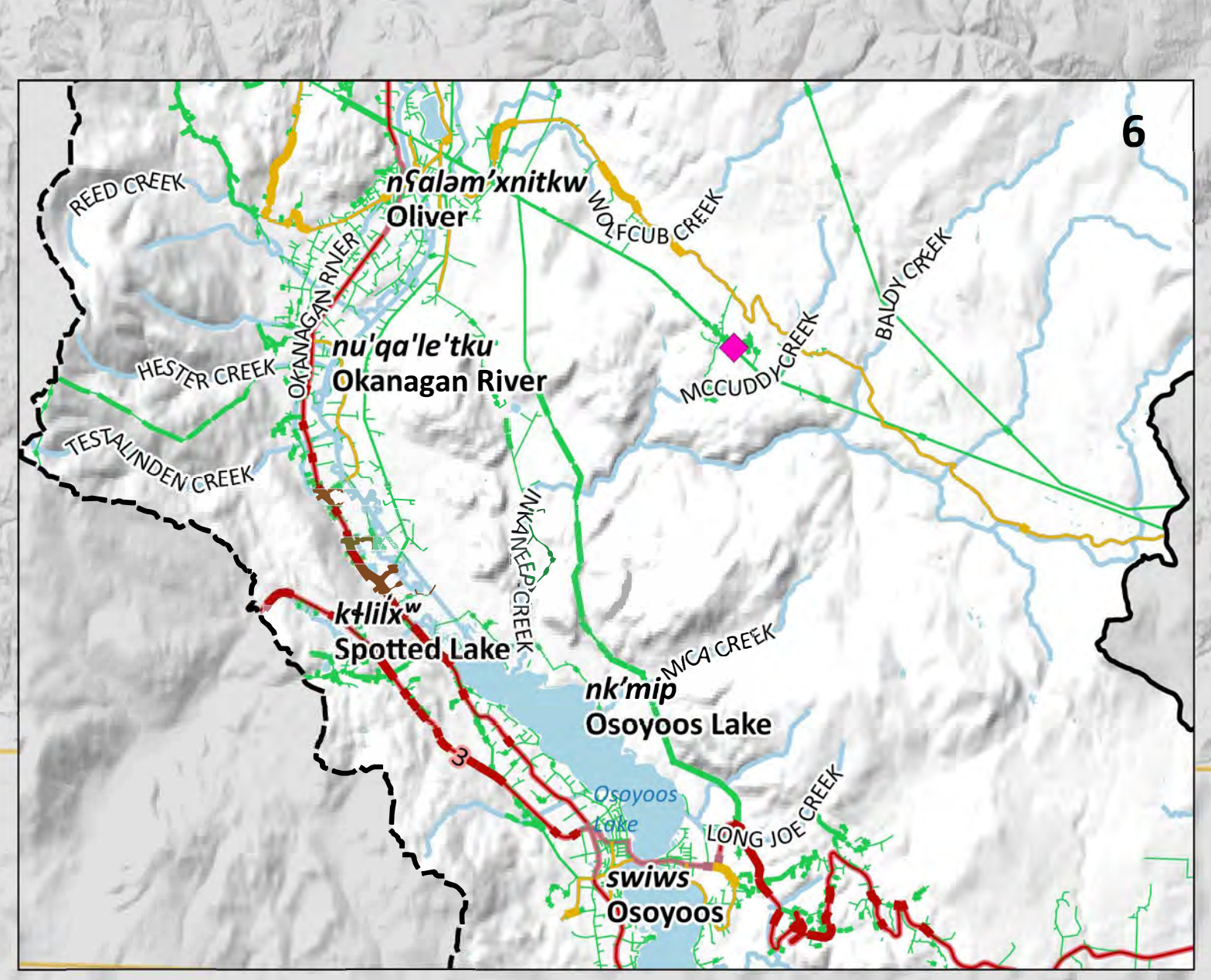
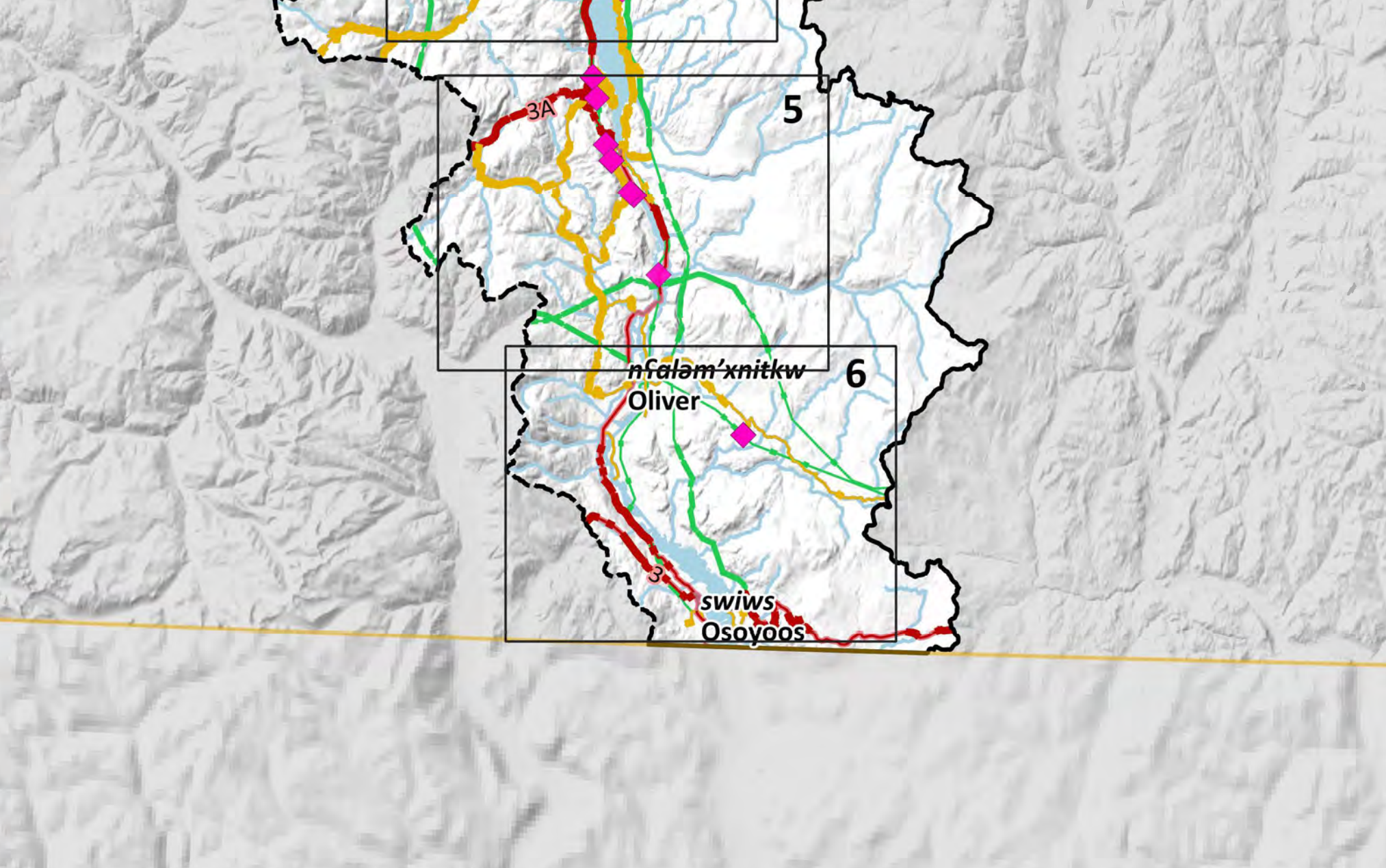
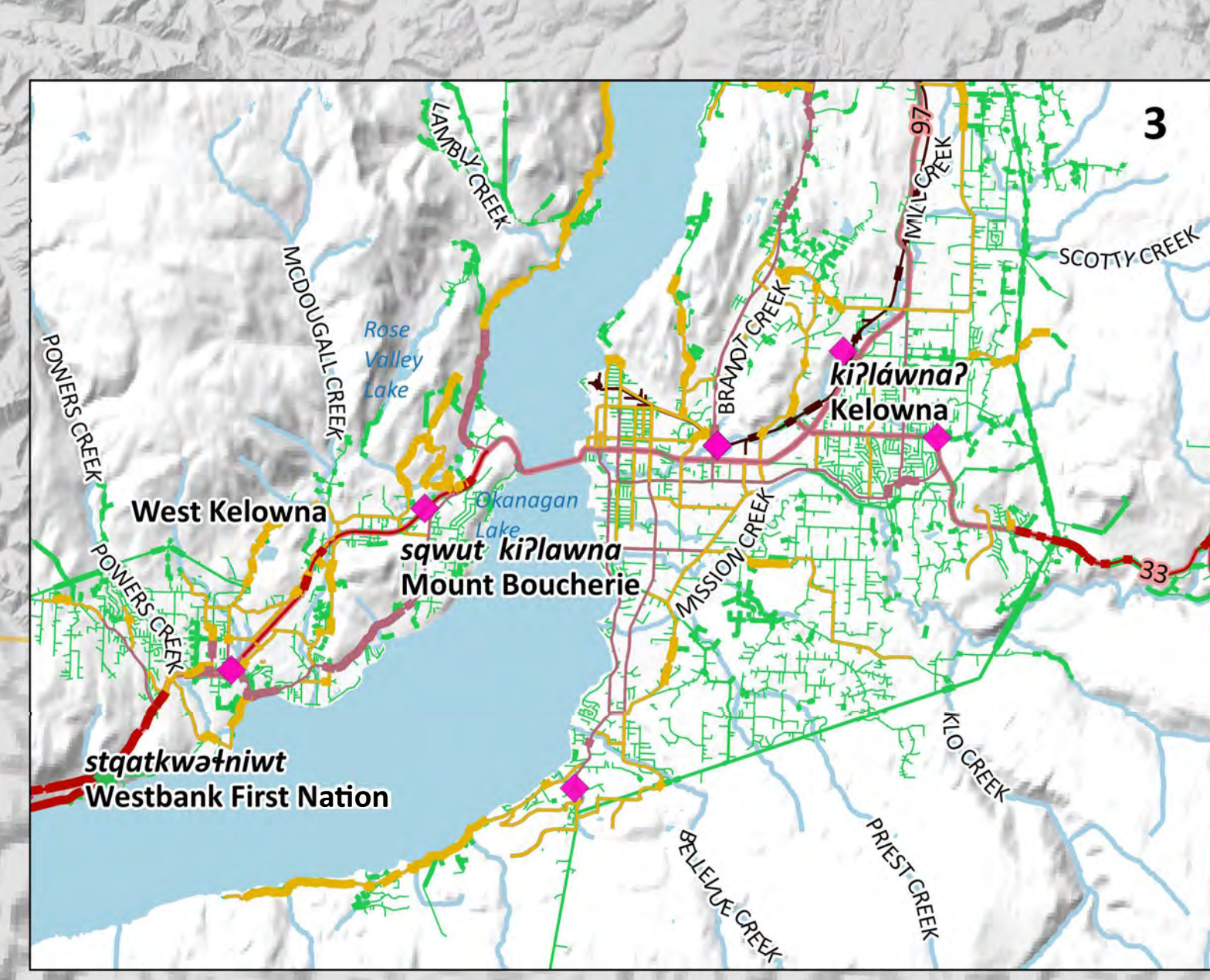
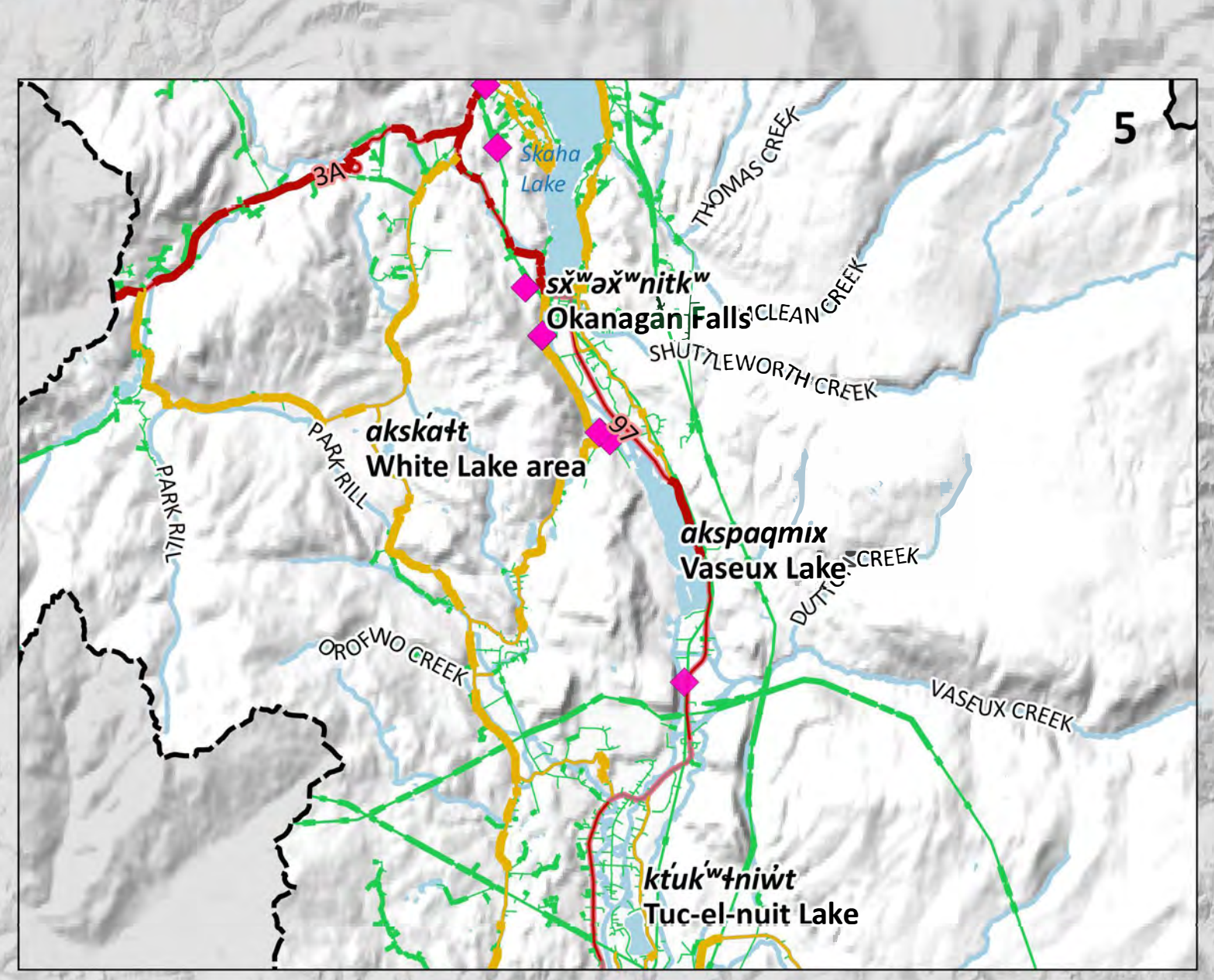
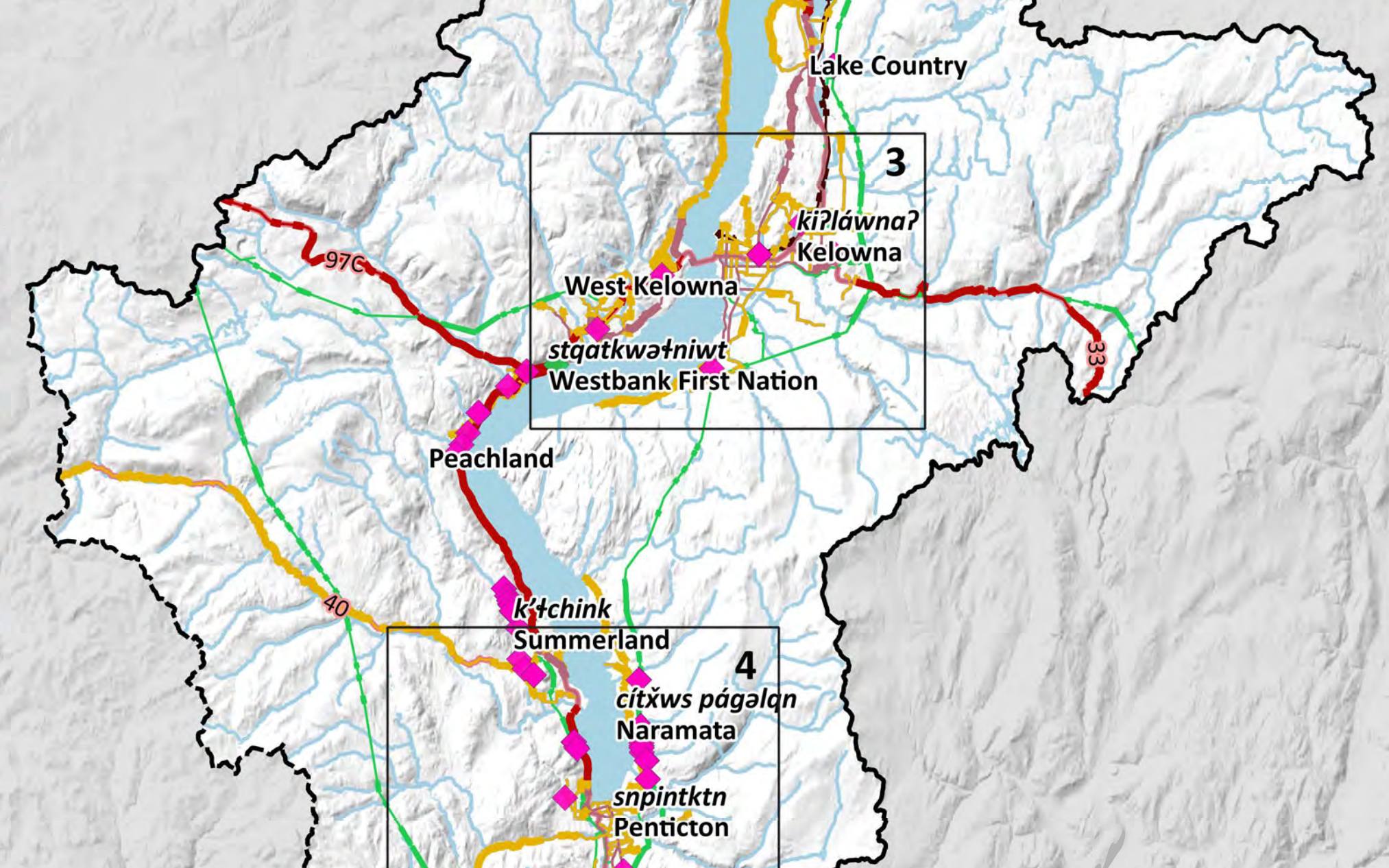
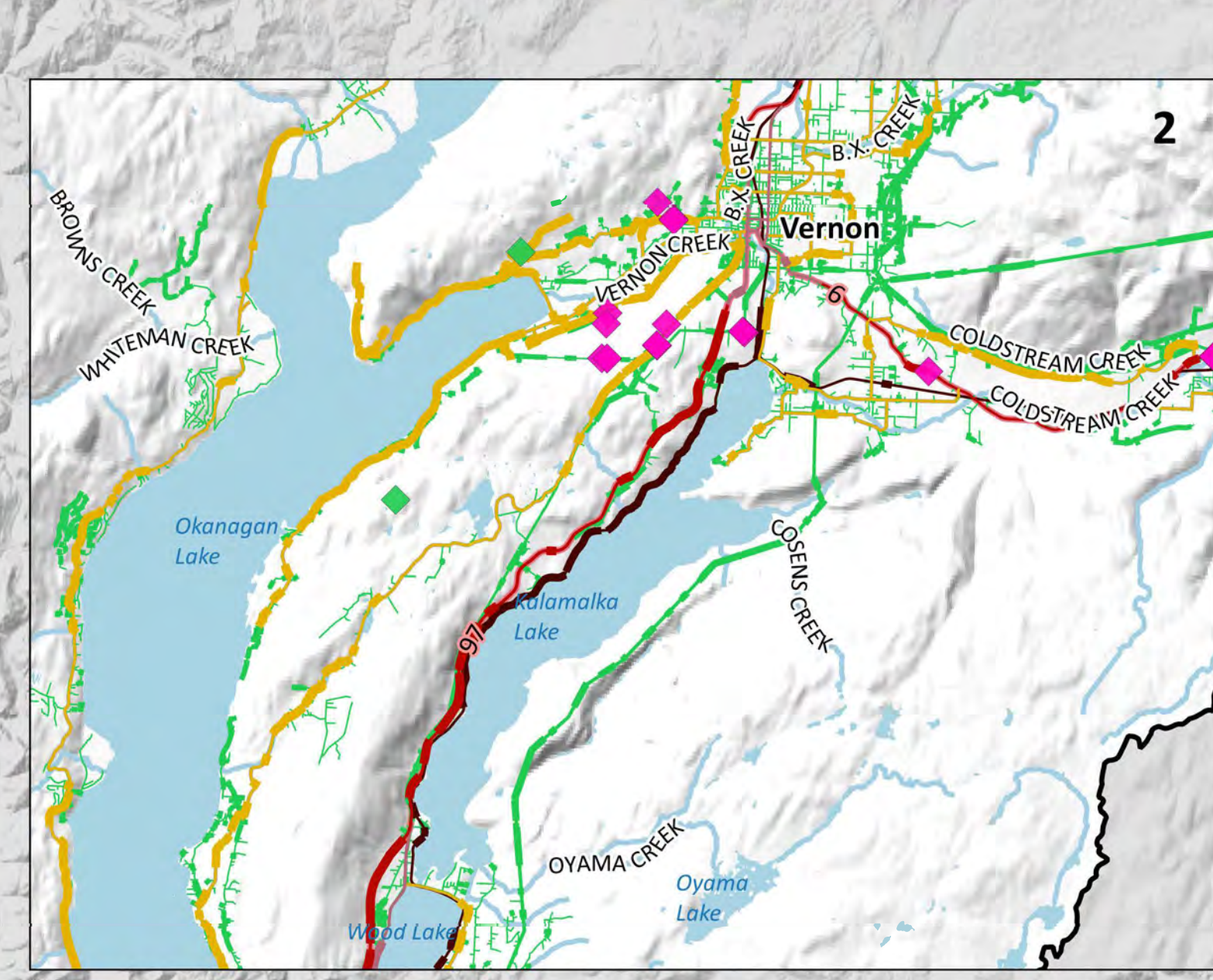
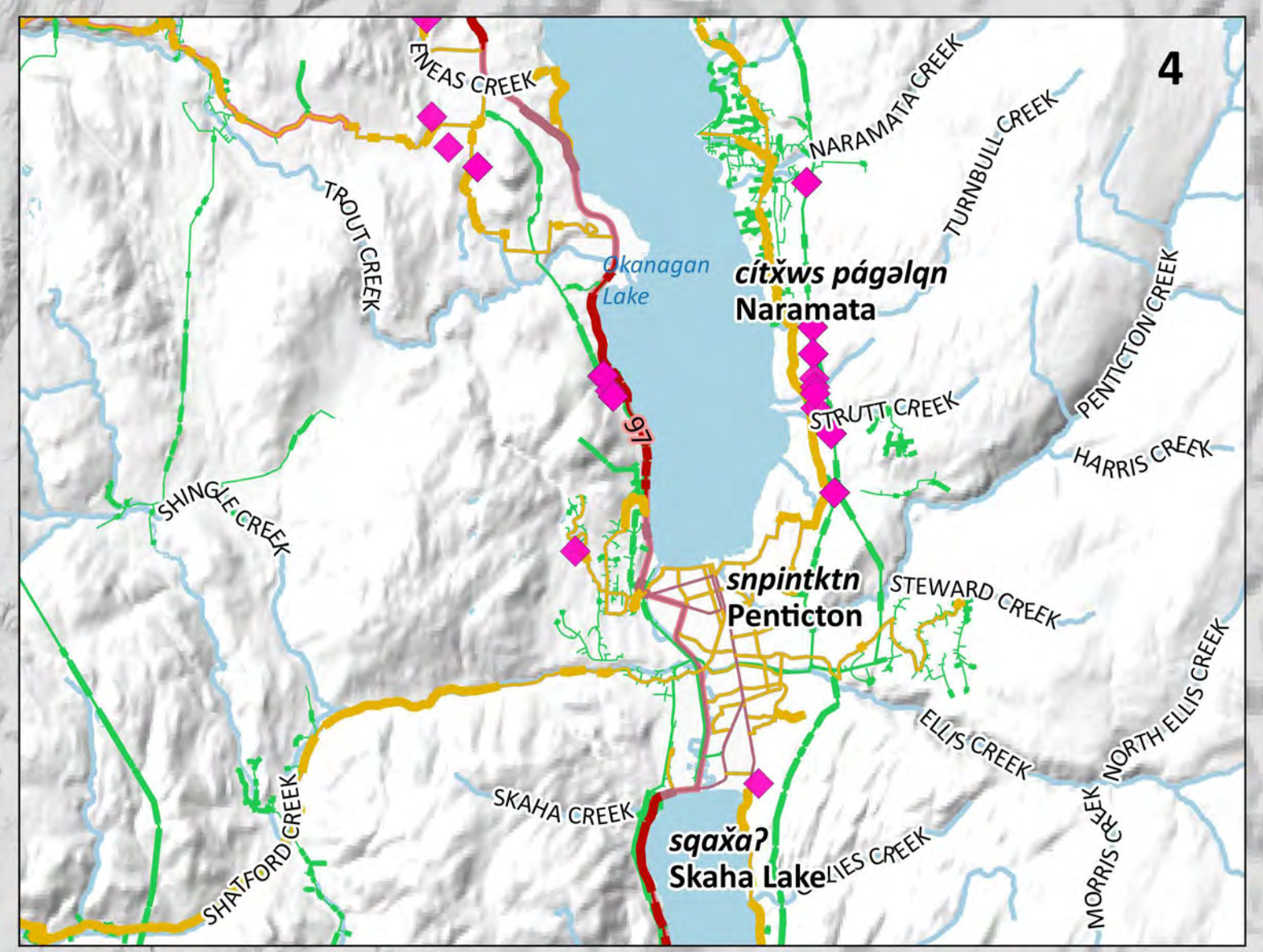
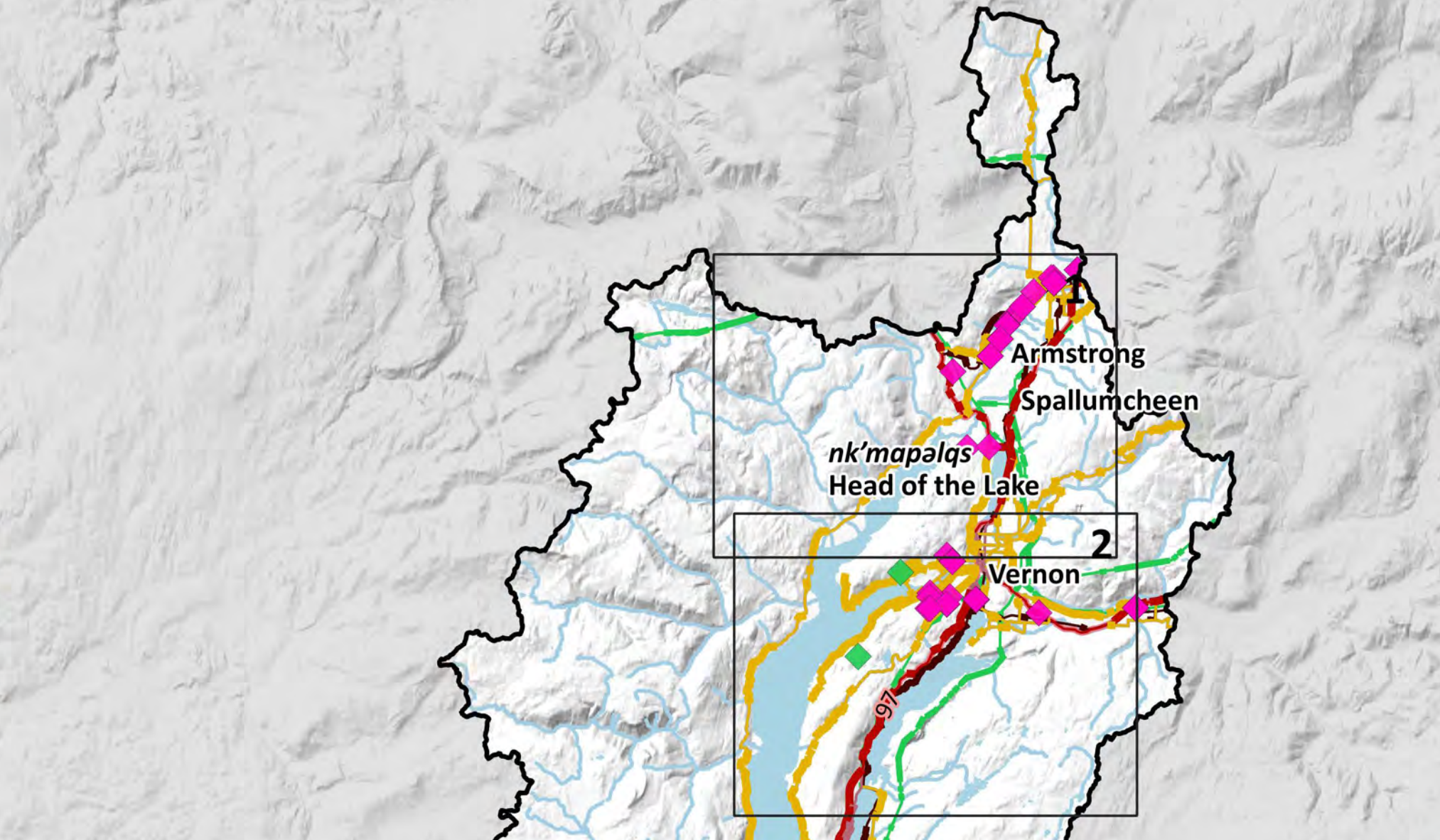
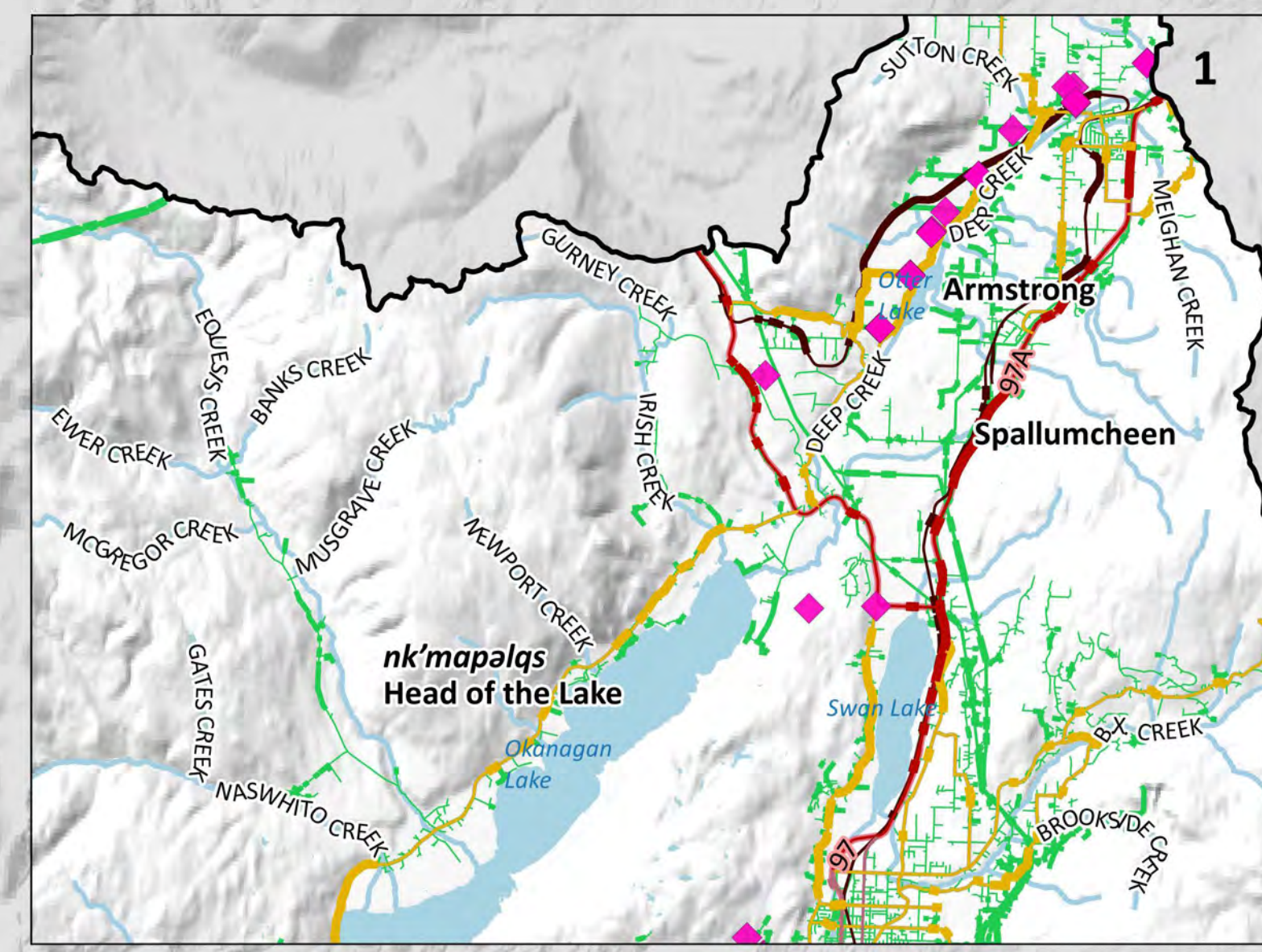
Scale 1:350,000
 0 10 20 30 km

Legend	
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Lakes	Affected Collector Road
Watercourses	Affected Arterial Road
Highway	Affected Rail
Collector Road	Affected Transmission Powerlines
Arterial Road	
Rail	
Transmission Powerlines	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption

Okanagan Map



[Click above map tile for Zoom-In map](#)
[Click here to return to Project Area map](#)
[Click here to go to Similkameen map](#)

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Main Map
 Scale 1:400,000
 Legend

<ul style="list-style-type: none"> — Watershed Boundary — Canada - US Border — Lakes — Watercourses — Highway — Collector Road — Arterial Road — Rail — Okanagan-Similkameen Boundary — Transmission Powerlines 	<ul style="list-style-type: none"> ◆ Critical Electric Structures ◆ Critical Gas Structures — Affected Highway — Affected Collector Road — Affected Arterial Road — Affected Rail — Affected Transmission Powerlines
---	---

Inset Maps
 Scale 1:150,000
 Legend (Additional Features Only)

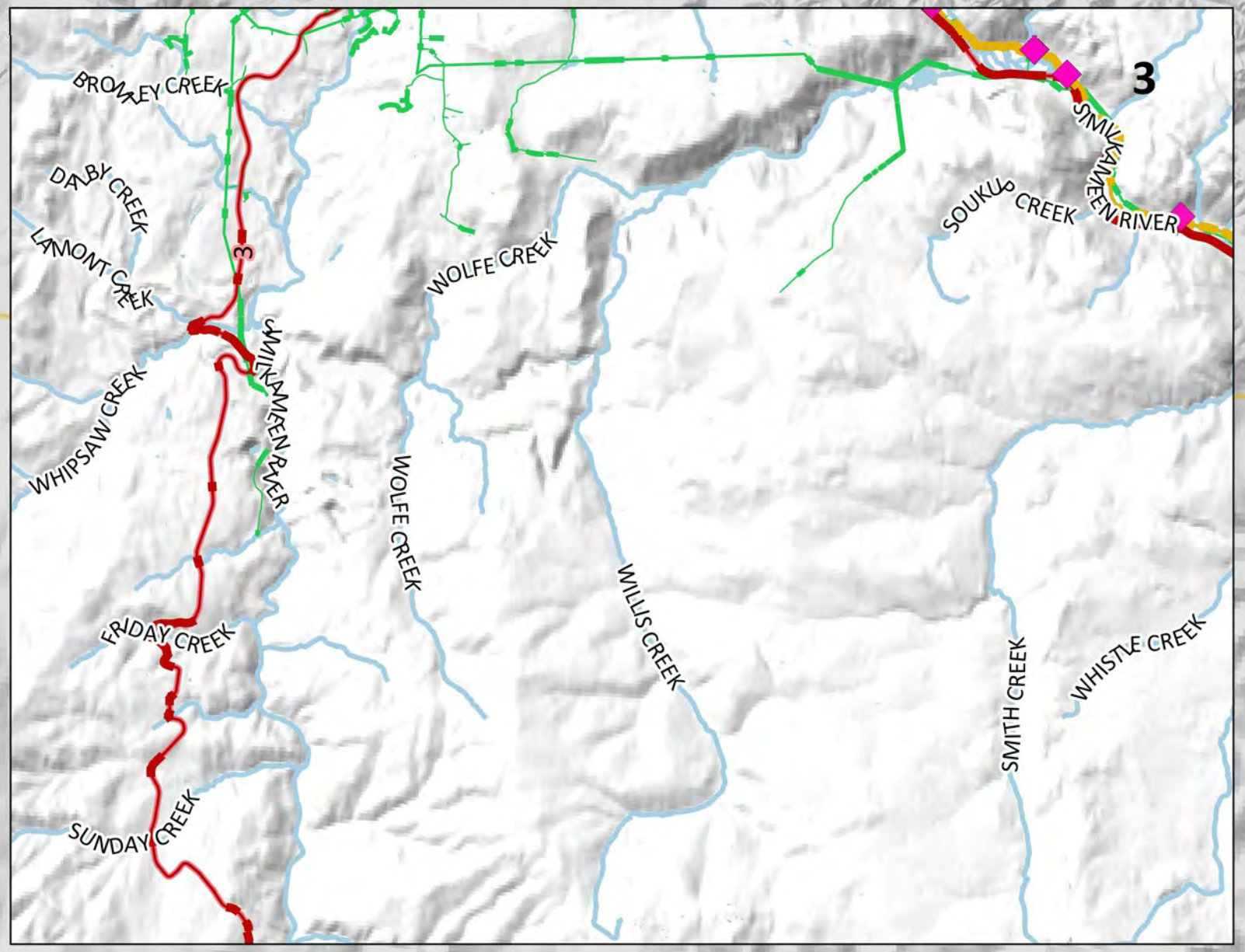
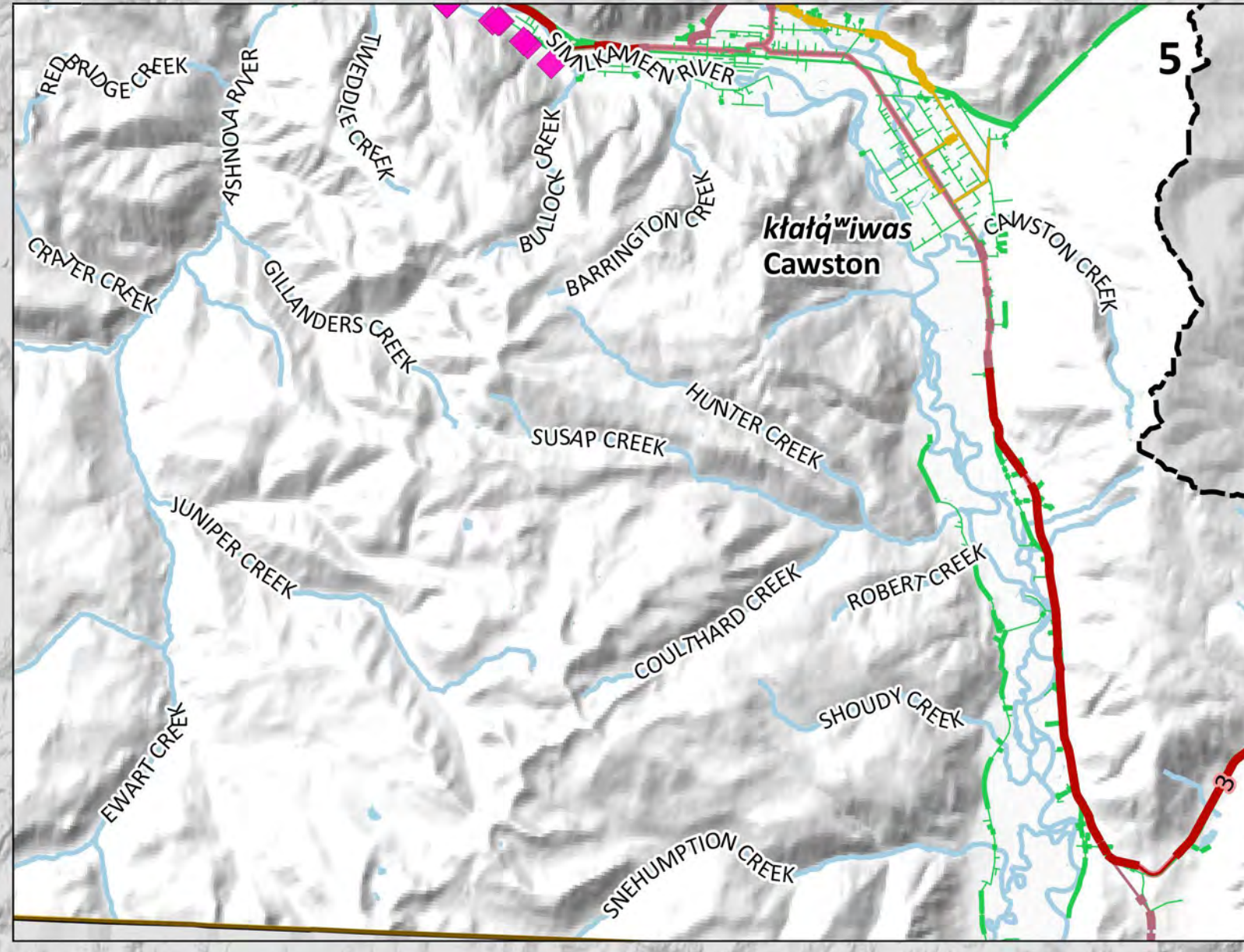
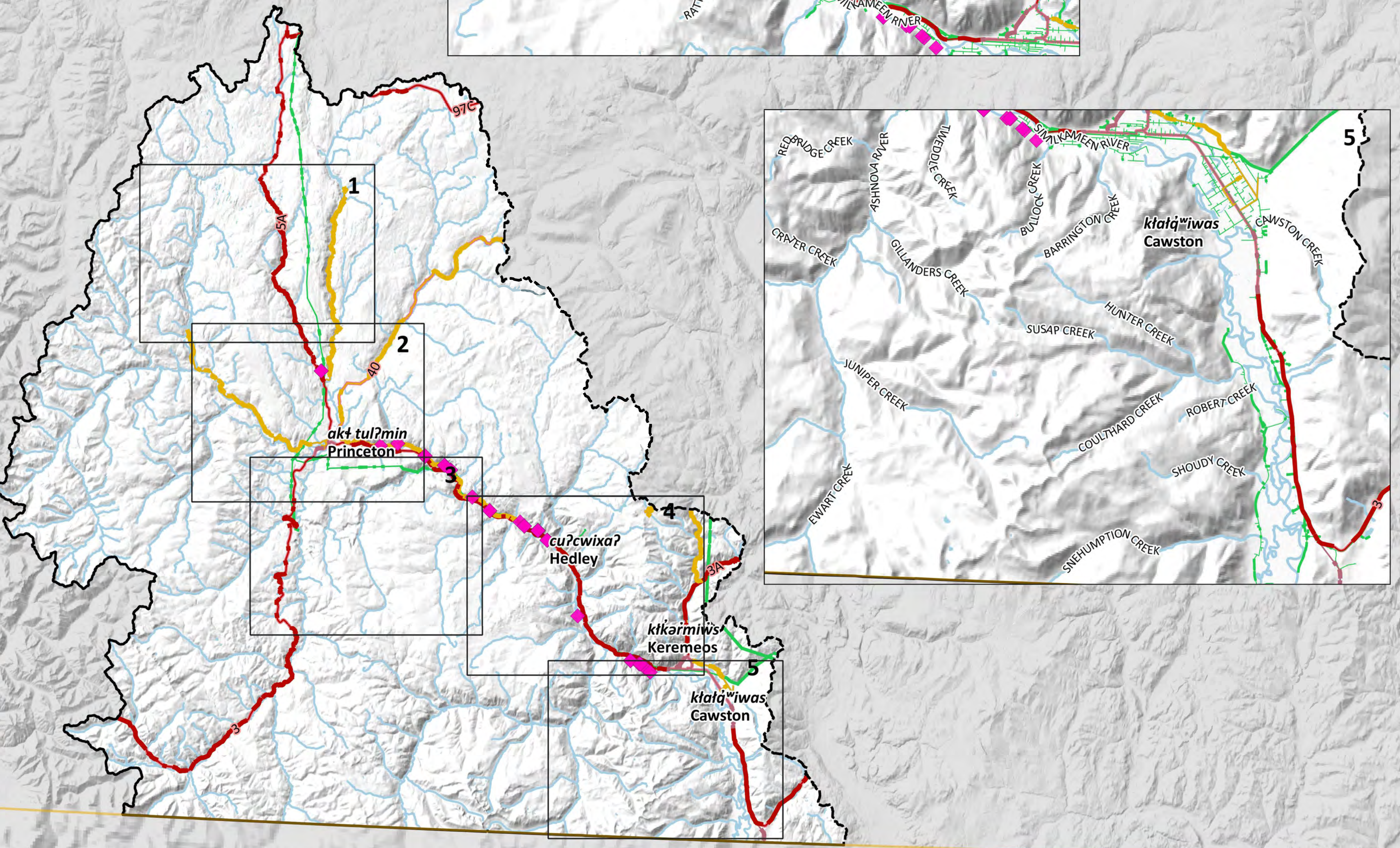
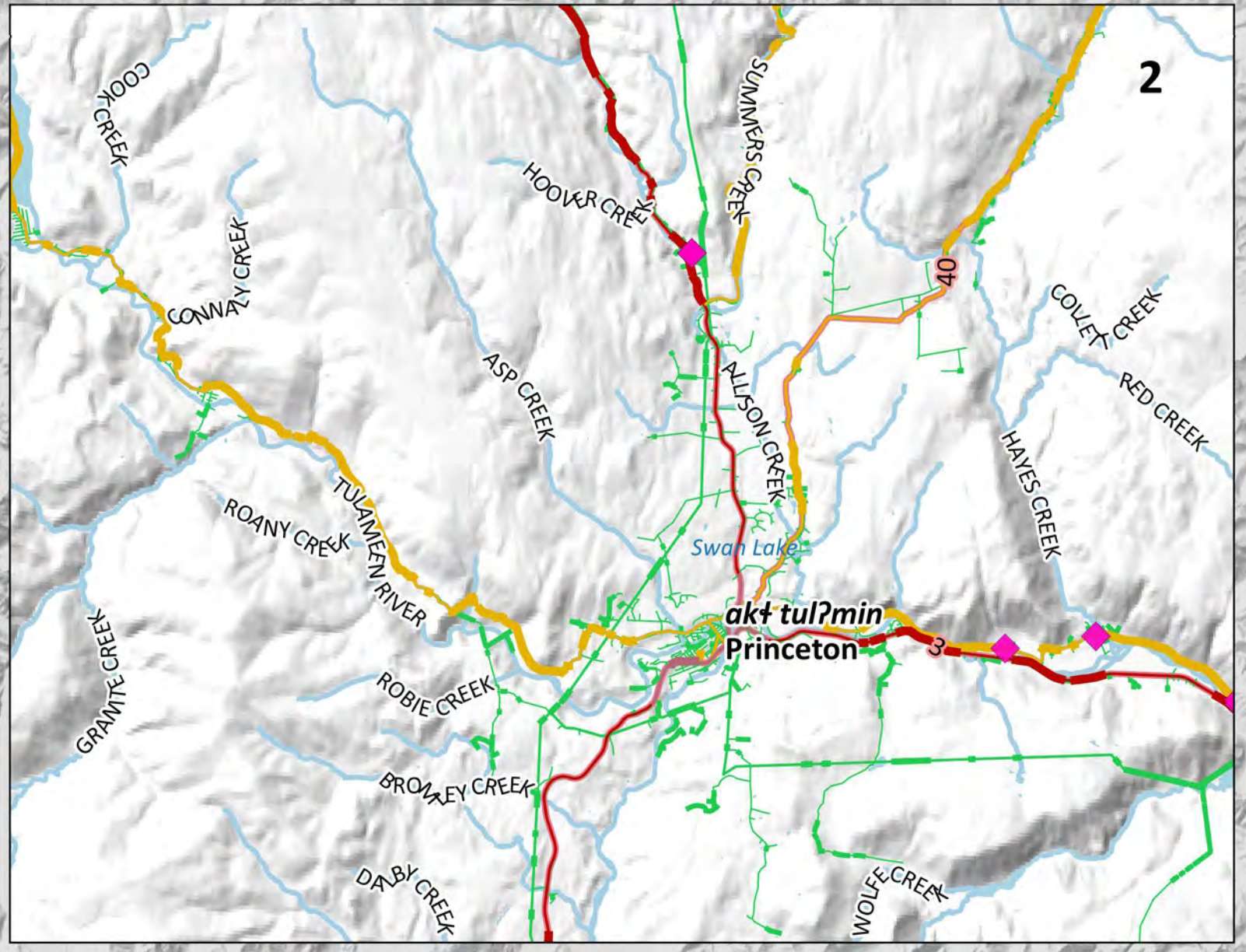
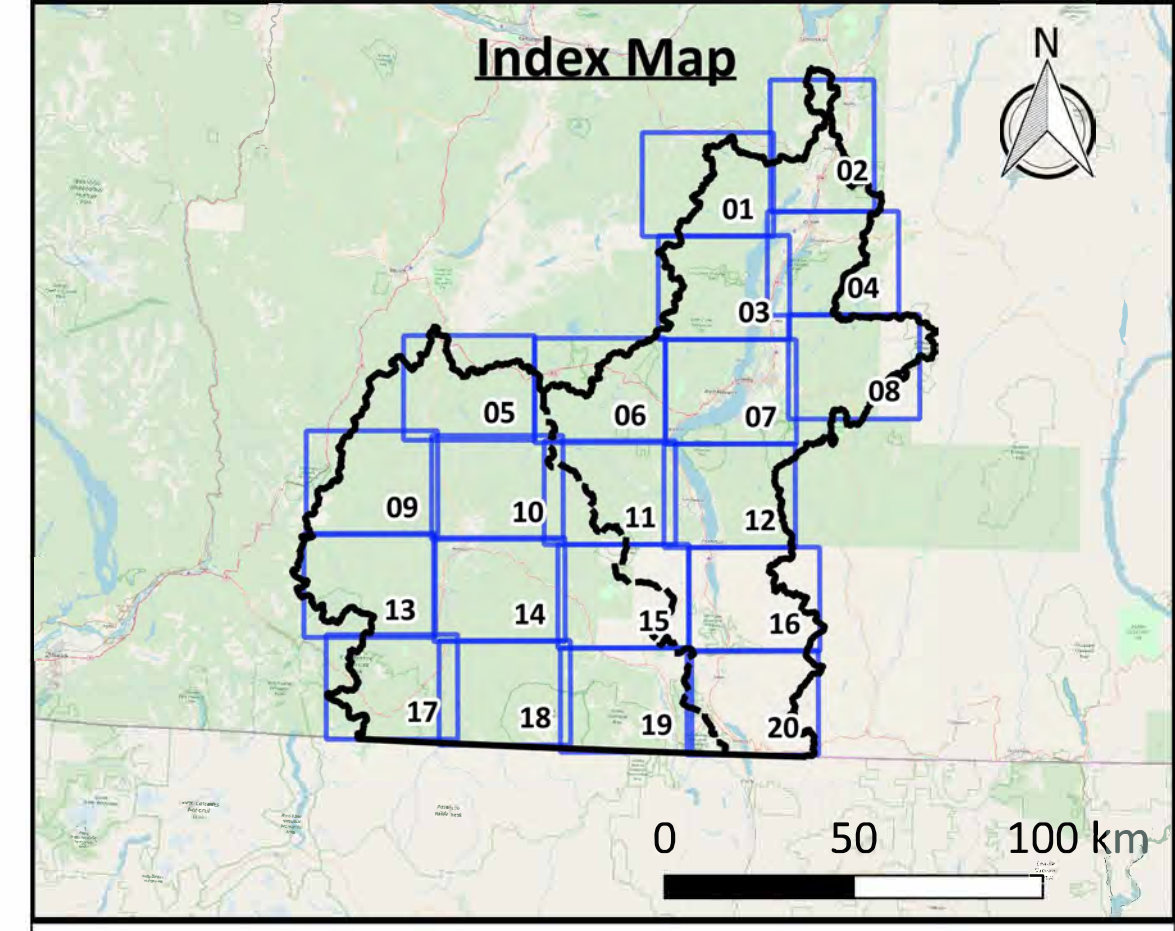
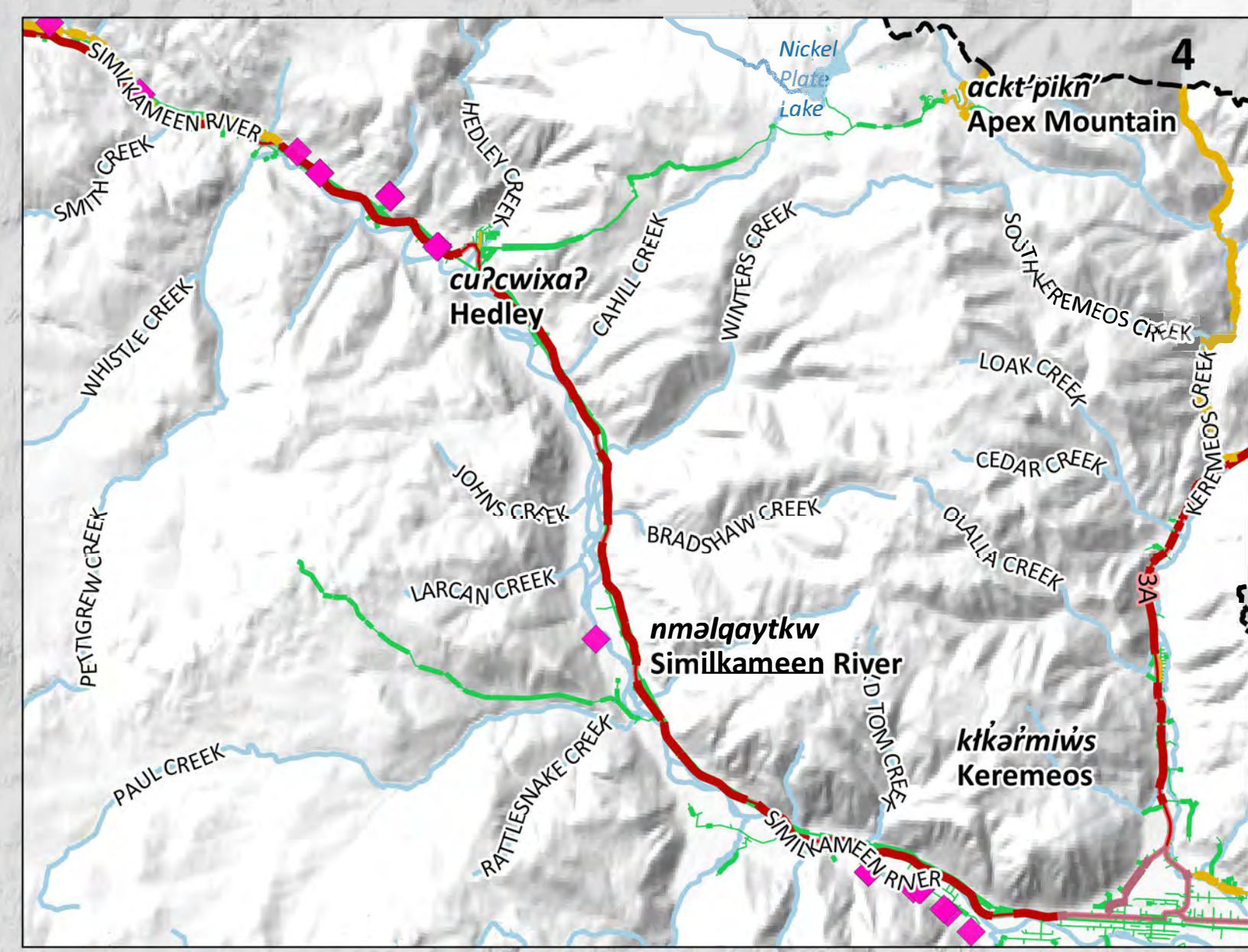
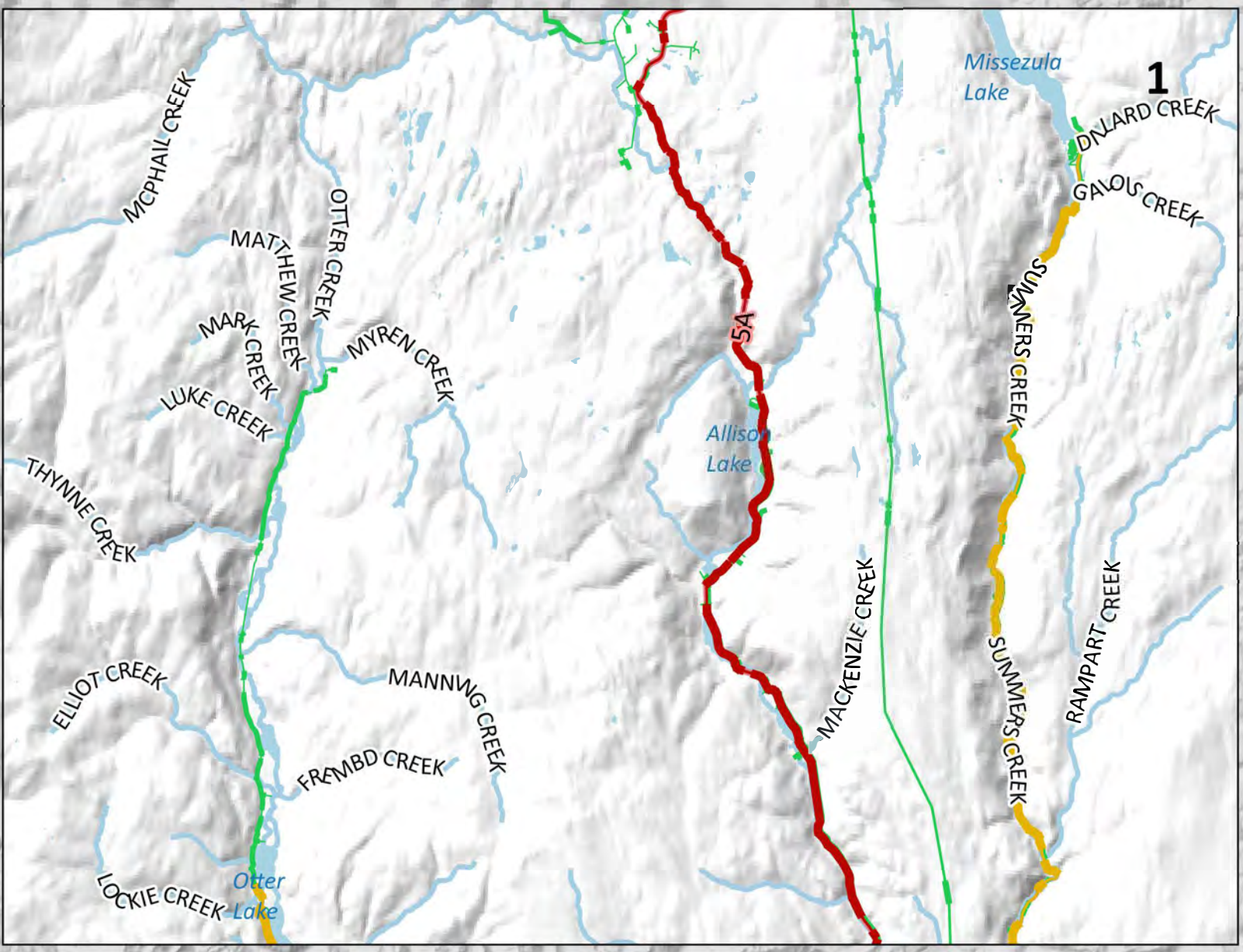
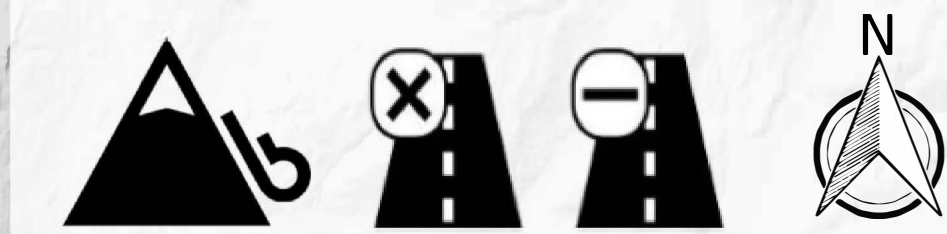
<ul style="list-style-type: none"> — Major Distribution Powerlines 	<ul style="list-style-type: none"> — Affected Major Distribution Powerlines
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Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project

Debris Flow - Disruption - Okanagan

Similkameen Map



Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to go to Okanagan map](#)

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Main Map
 Scale 1:400,000
 Legend

Watershed Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Lakes	Affected Highway
Watercourses	Affected Collector Road
Highway	Affected Arterial Road
Collector Road	Affected Rail
Arterial Road	Affected Transmission Powerlines
Rail	
Okanagan-Similkameen Boundary	
Transmission Powerlines	

Inset Maps
 Scale 1:150,000

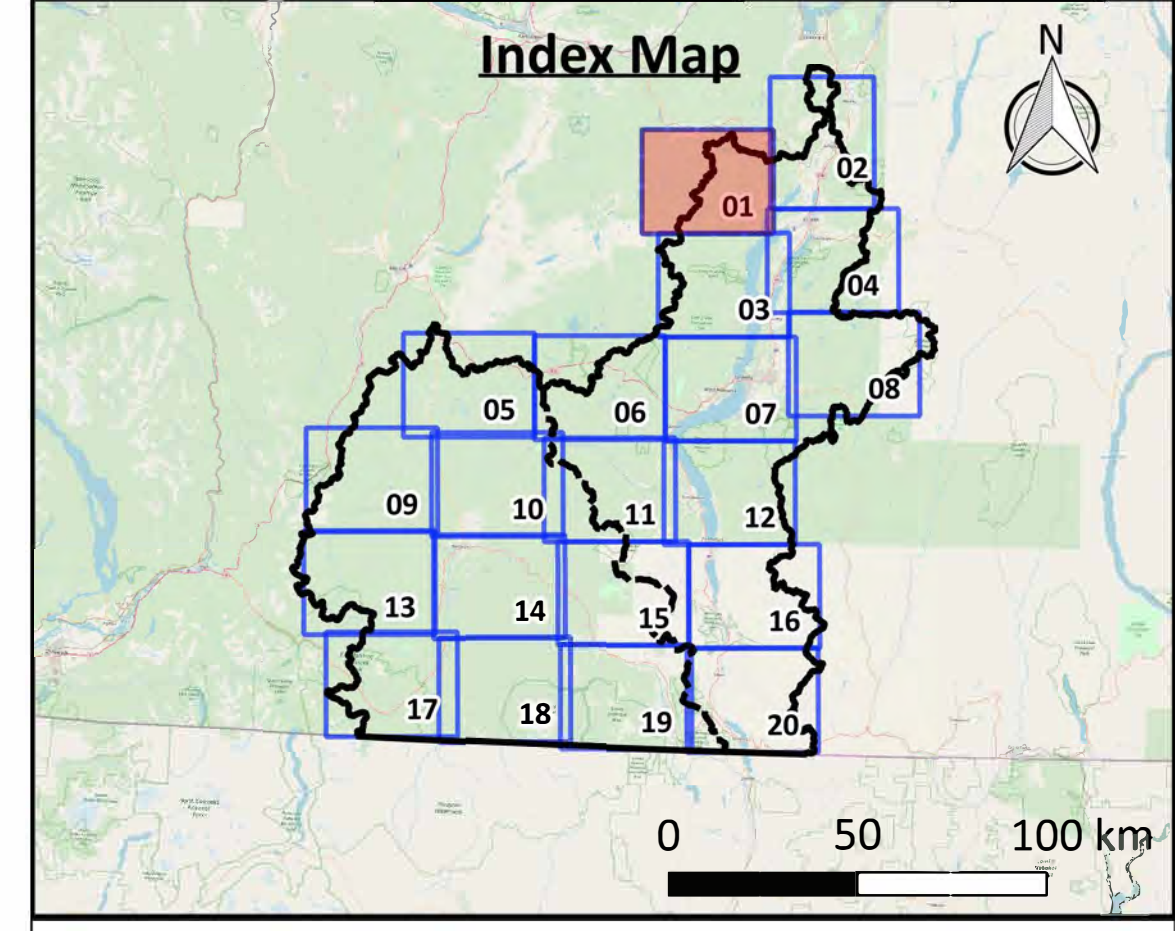
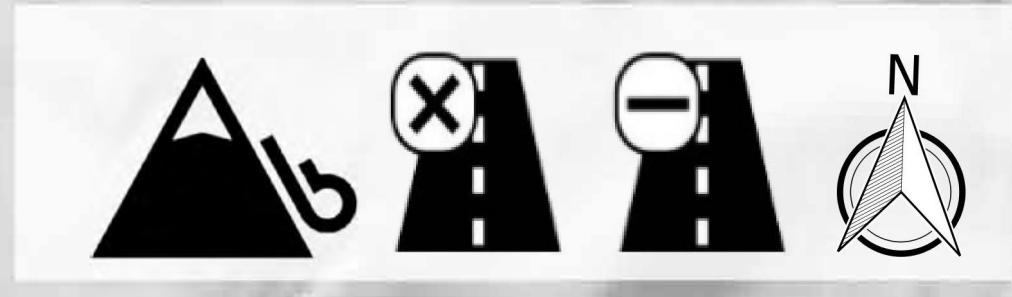
Legend (Additional Features Only)

Major Distribution Powerlines	Affected Major Distribution Powerlines
-------------------------------	--

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption - Similkameen

Zoom-In Map



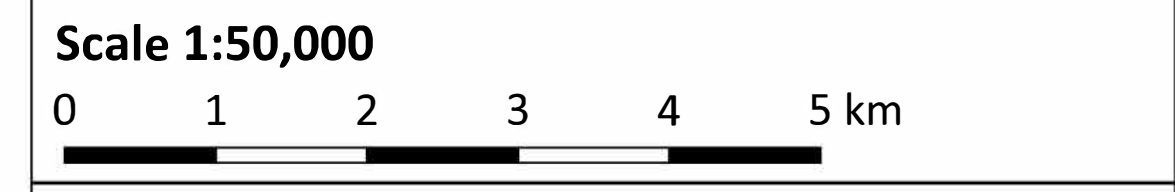
Click above map tile for Zoom-In map
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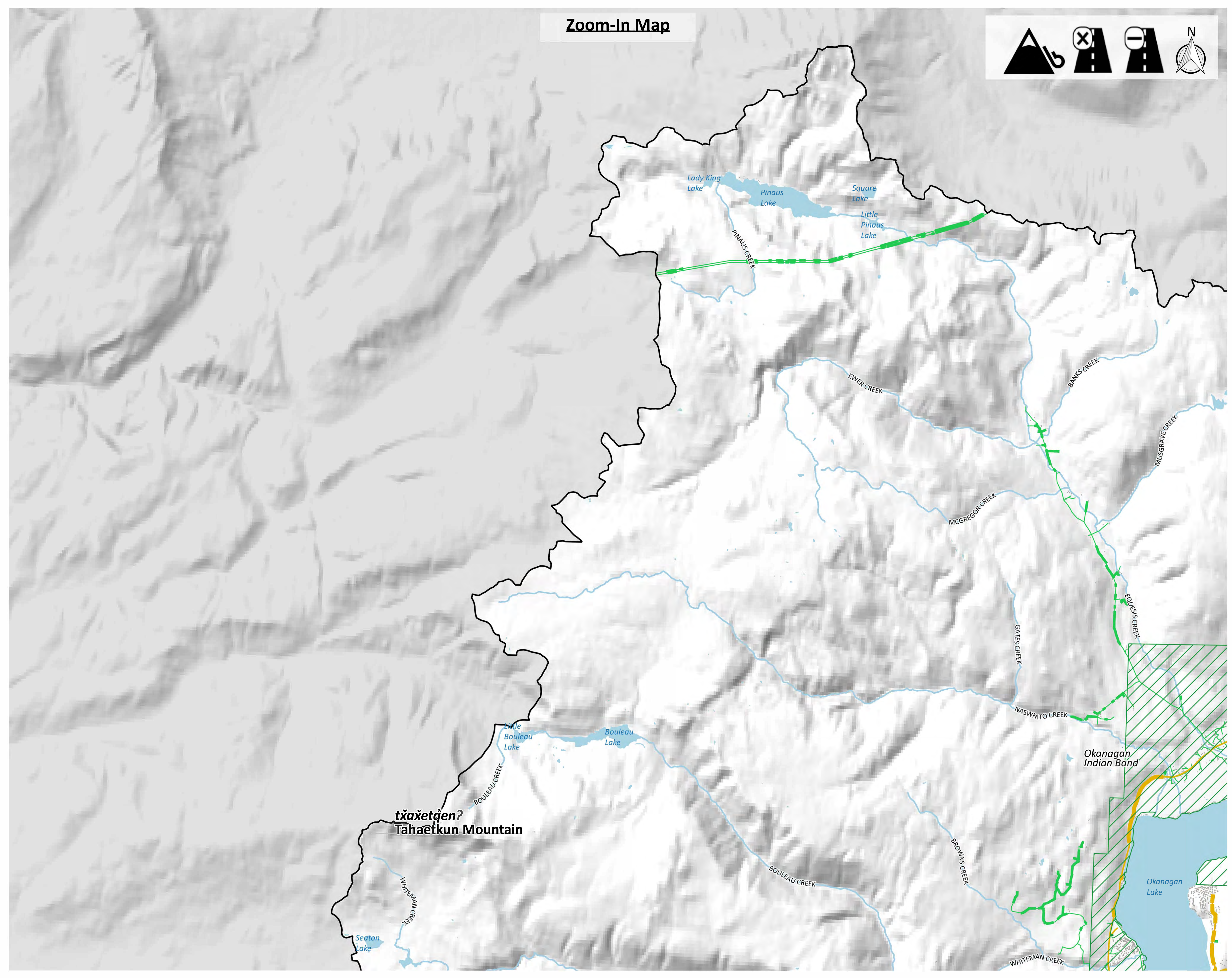
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
▨ Lakes	— Affected Rail
▨ Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

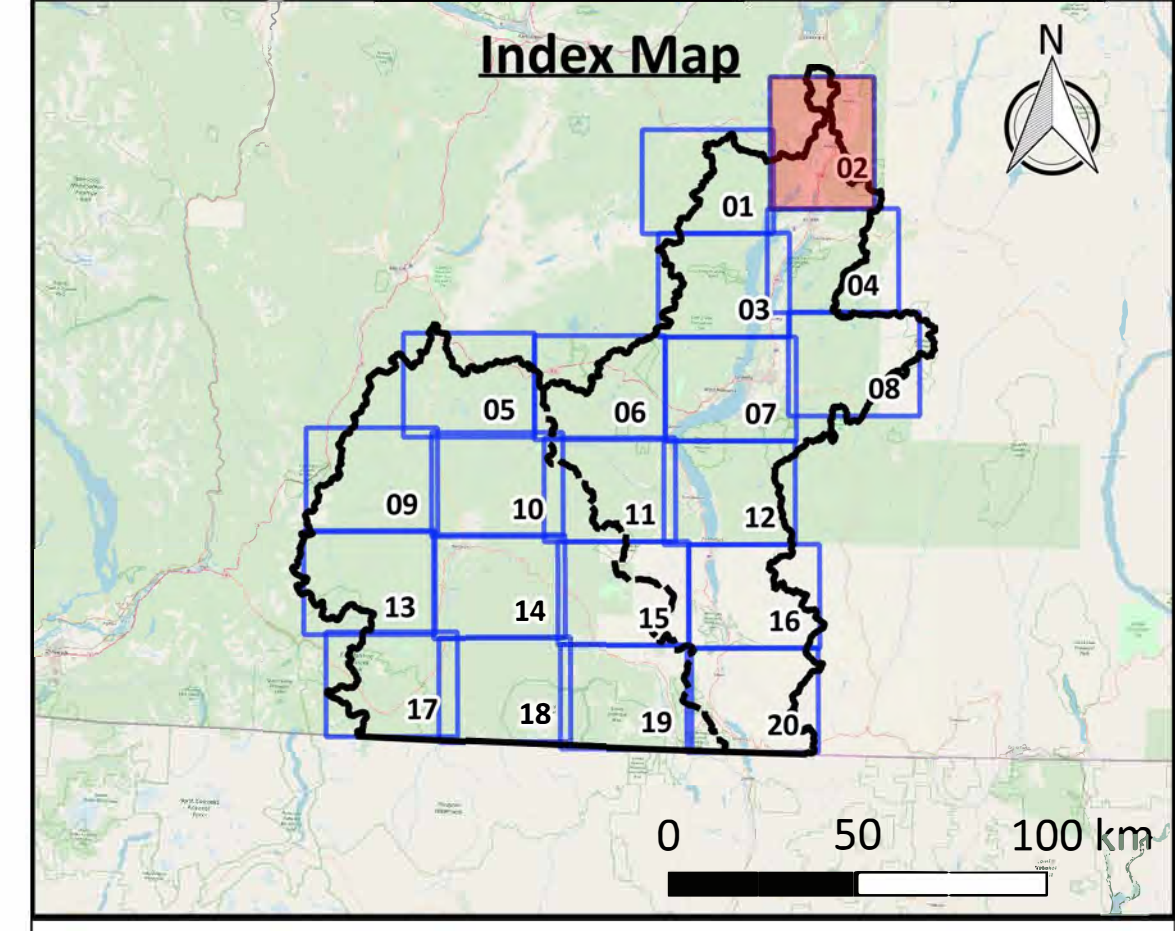
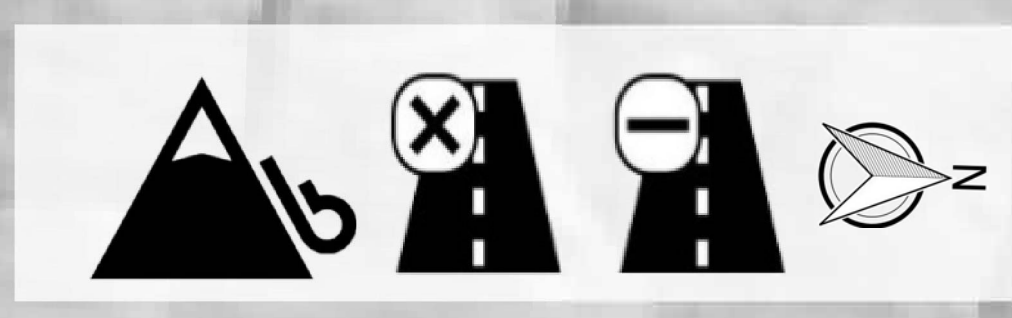
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 01 of 20

ANSI D - Map No. D-D-003-001



Zoom-In Map



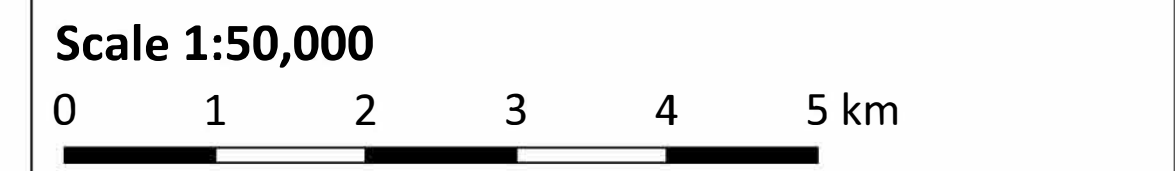
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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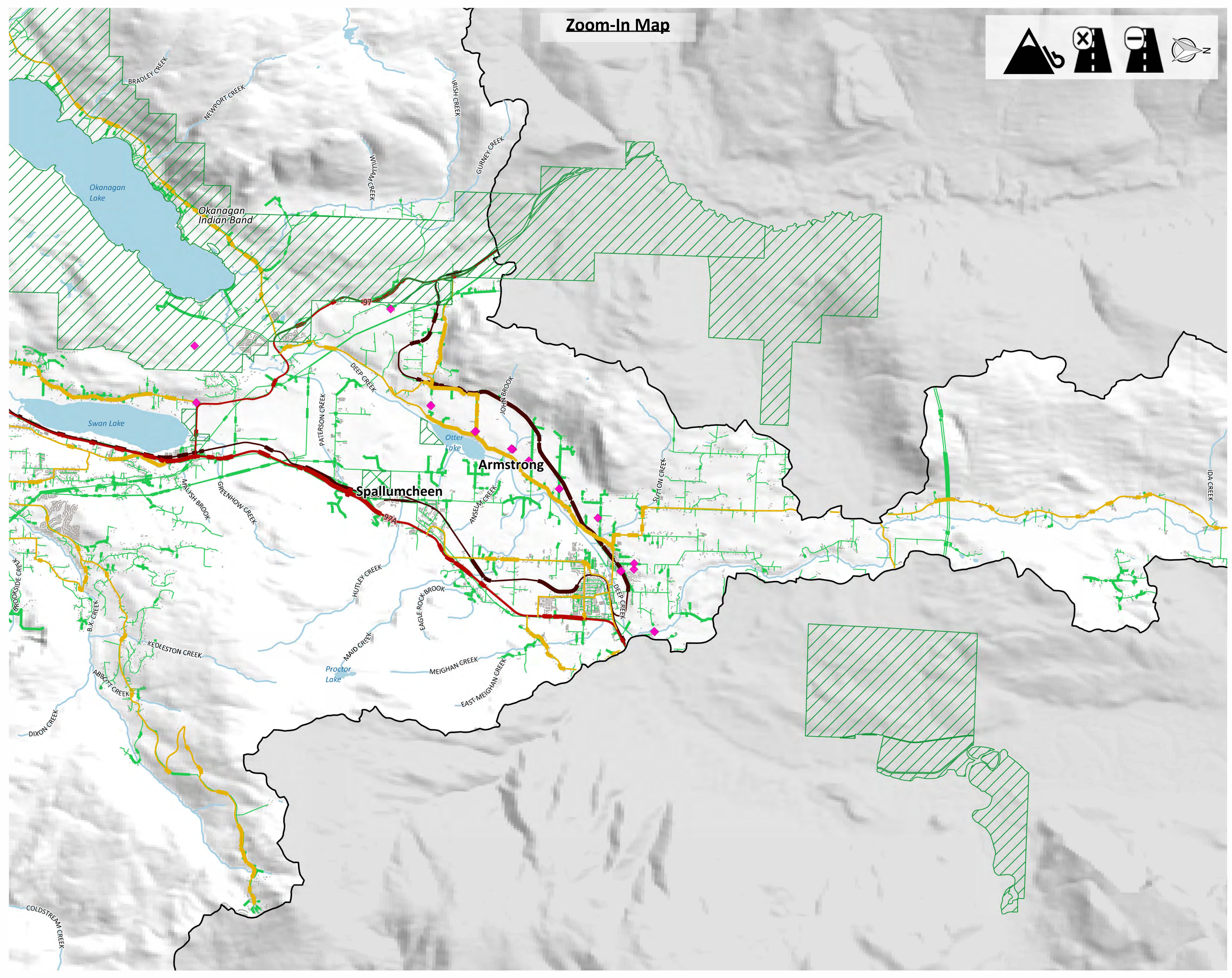
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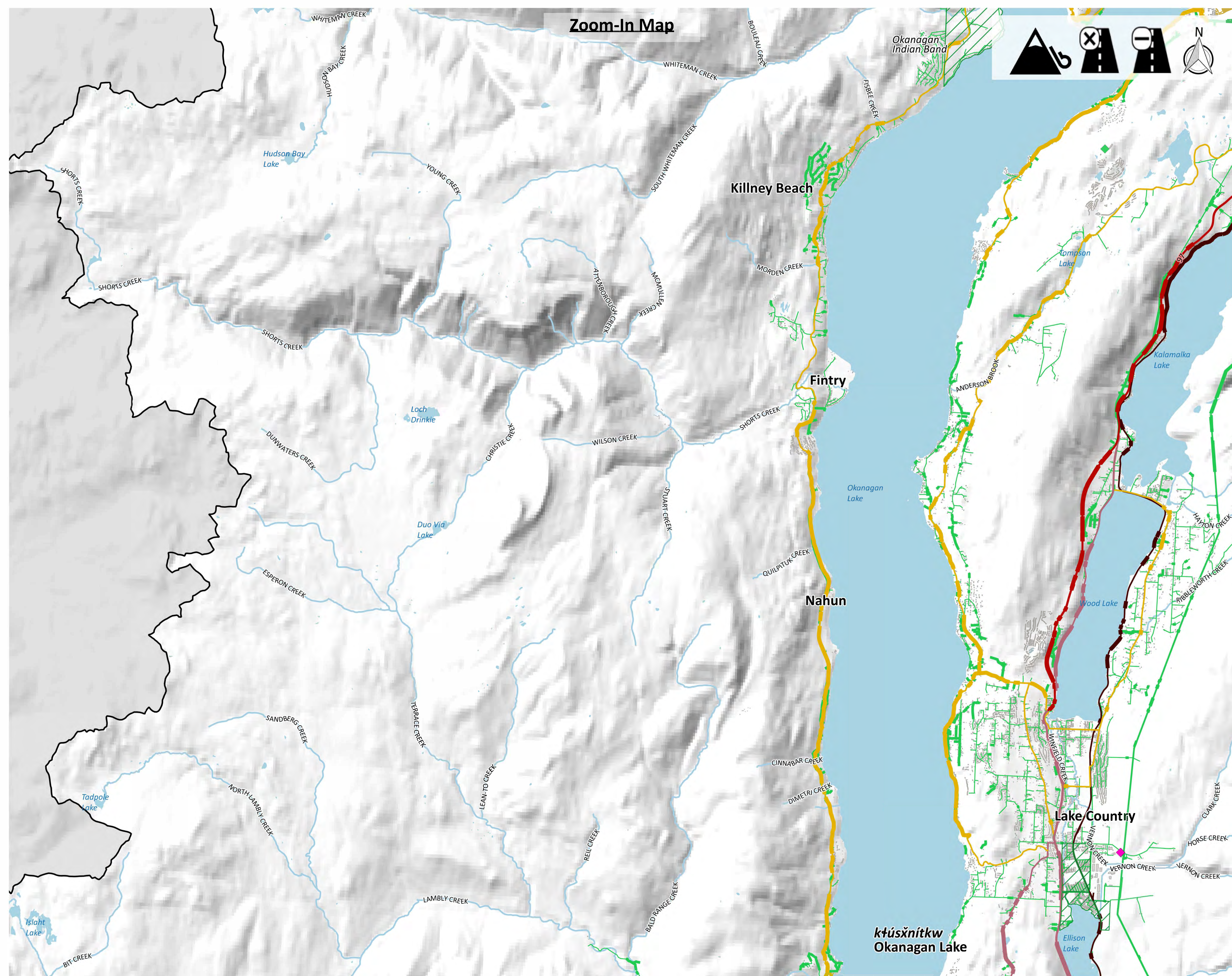
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

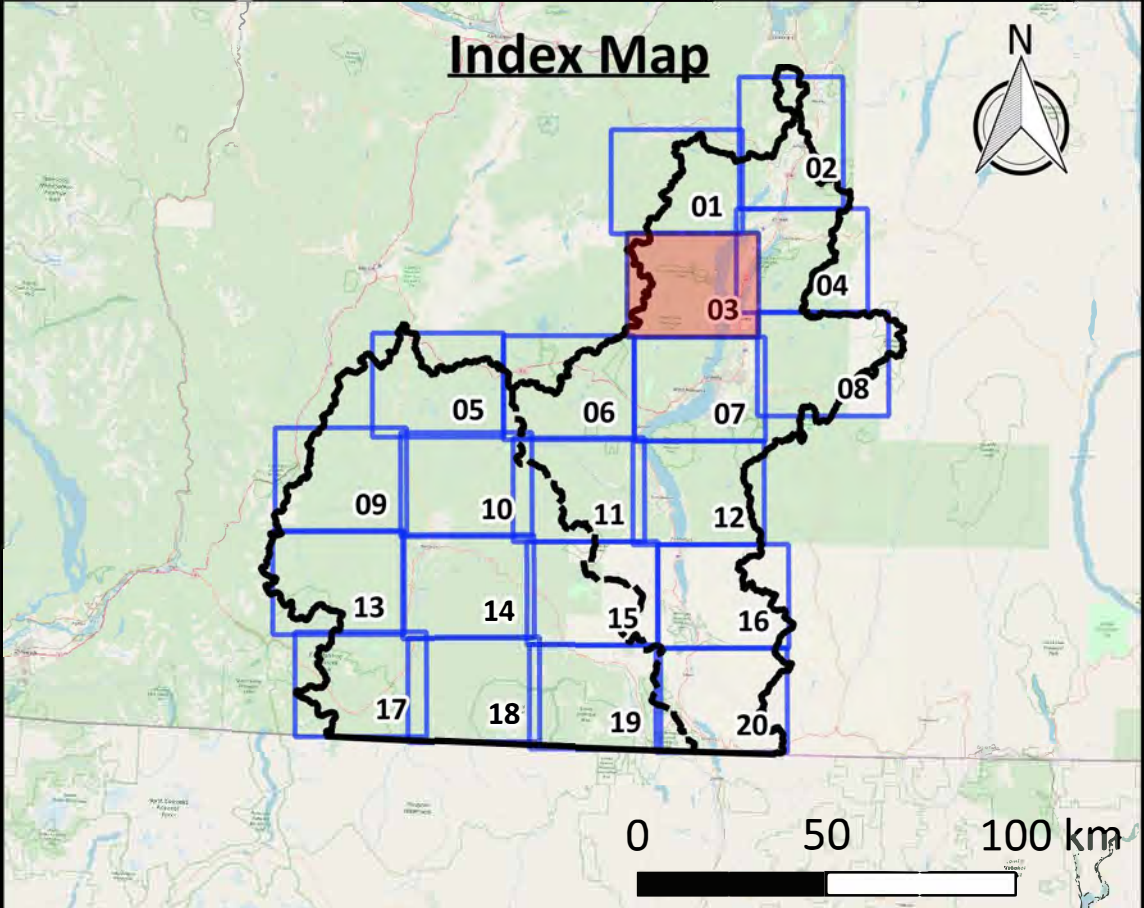
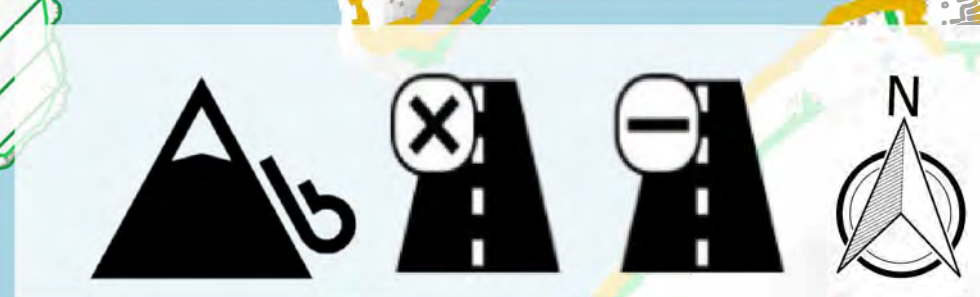
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 02 of 20

ANSI D - Map No. D-D-003-002





Zoom-In Map



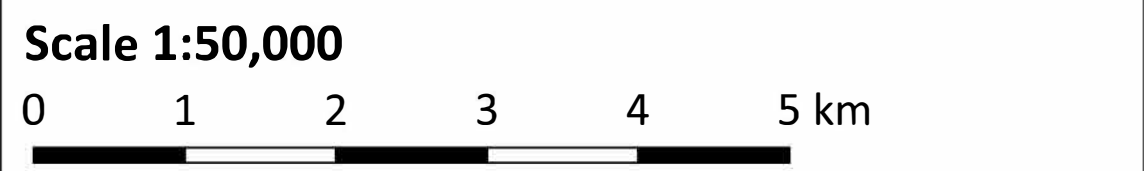
[Click above map tile for Zoom-In map](#)
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



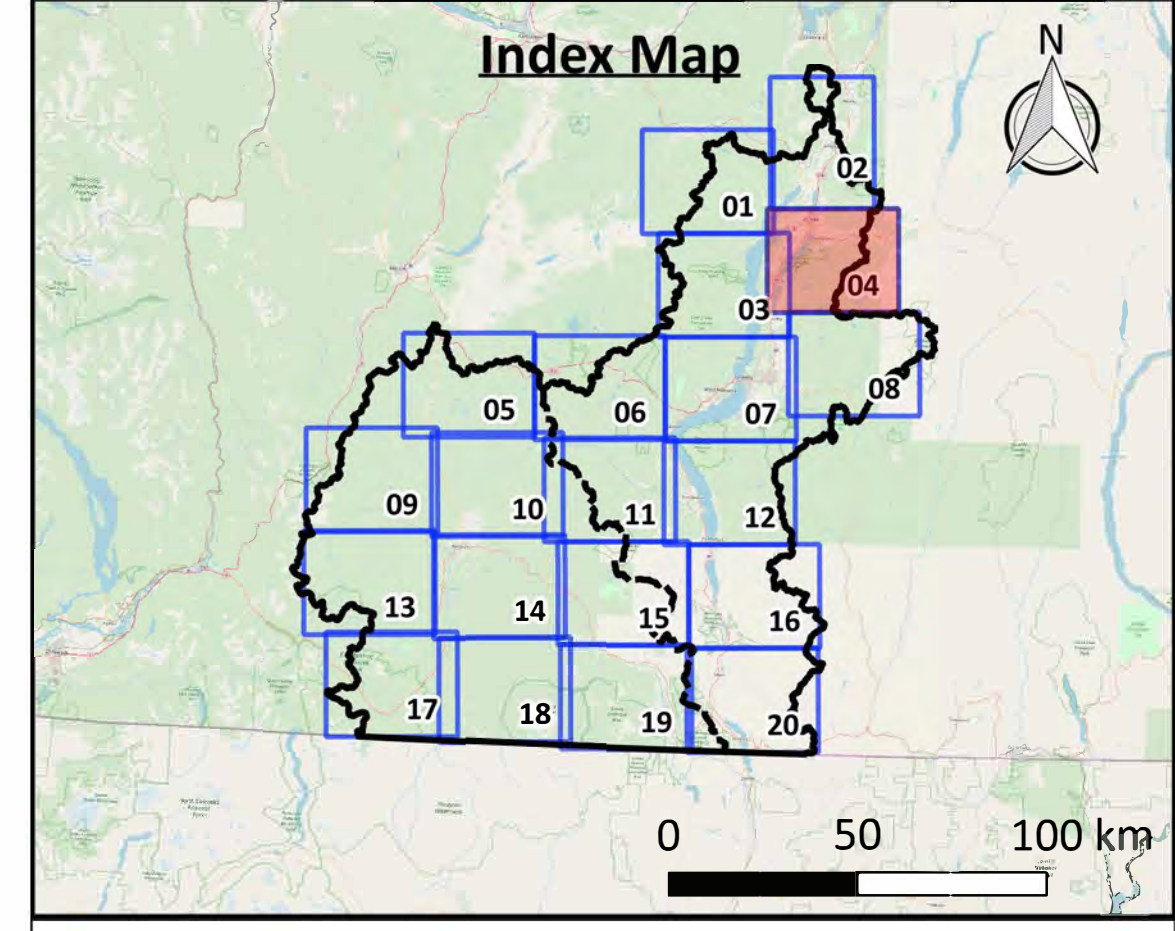
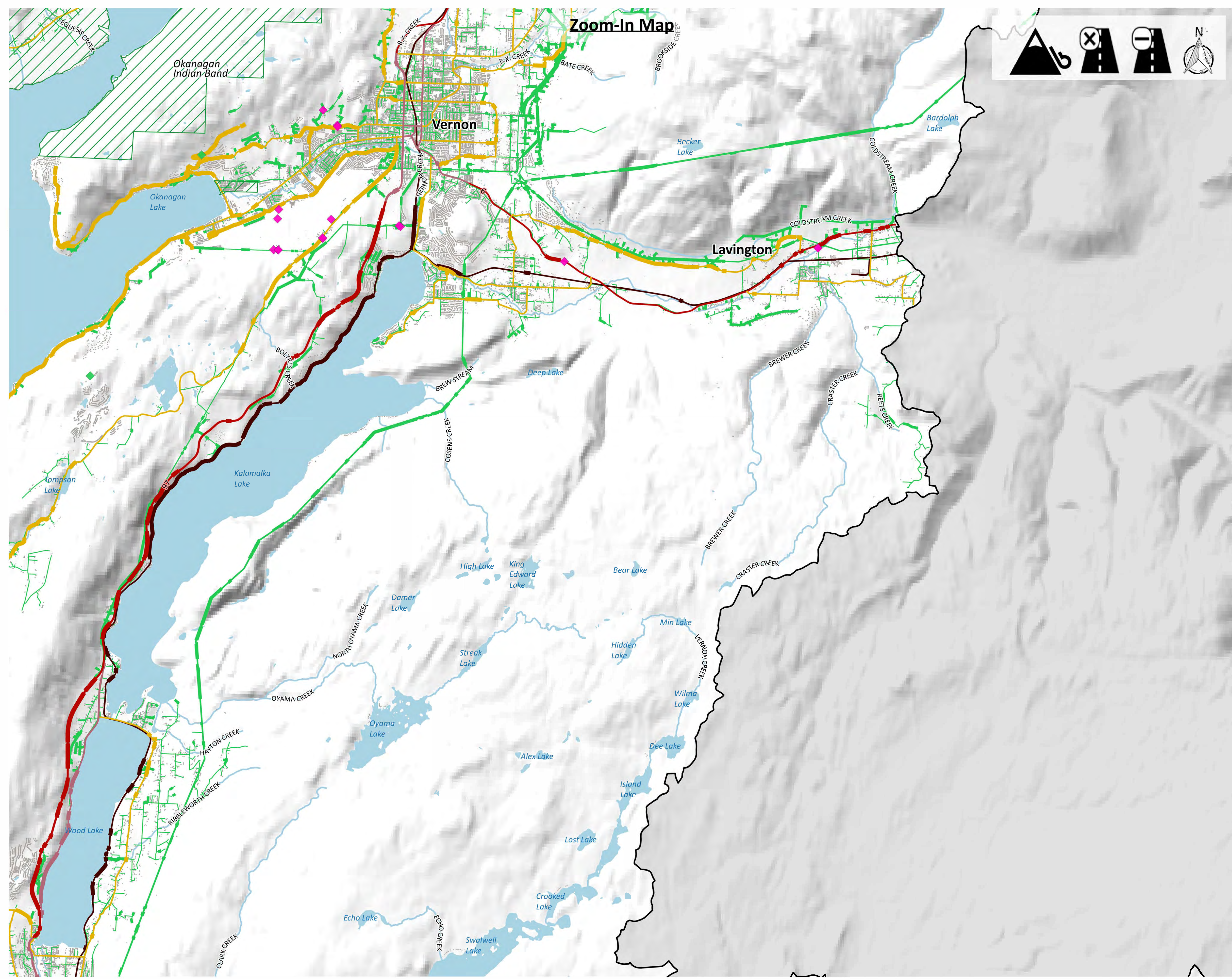
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 03 of 20

ANSI D - Map No. D-D-003-003



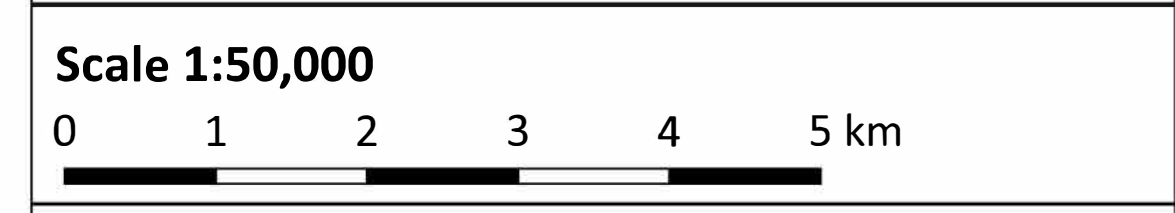
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

1. Map produced by Ebbwater Consulting Inc.
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Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



Legend

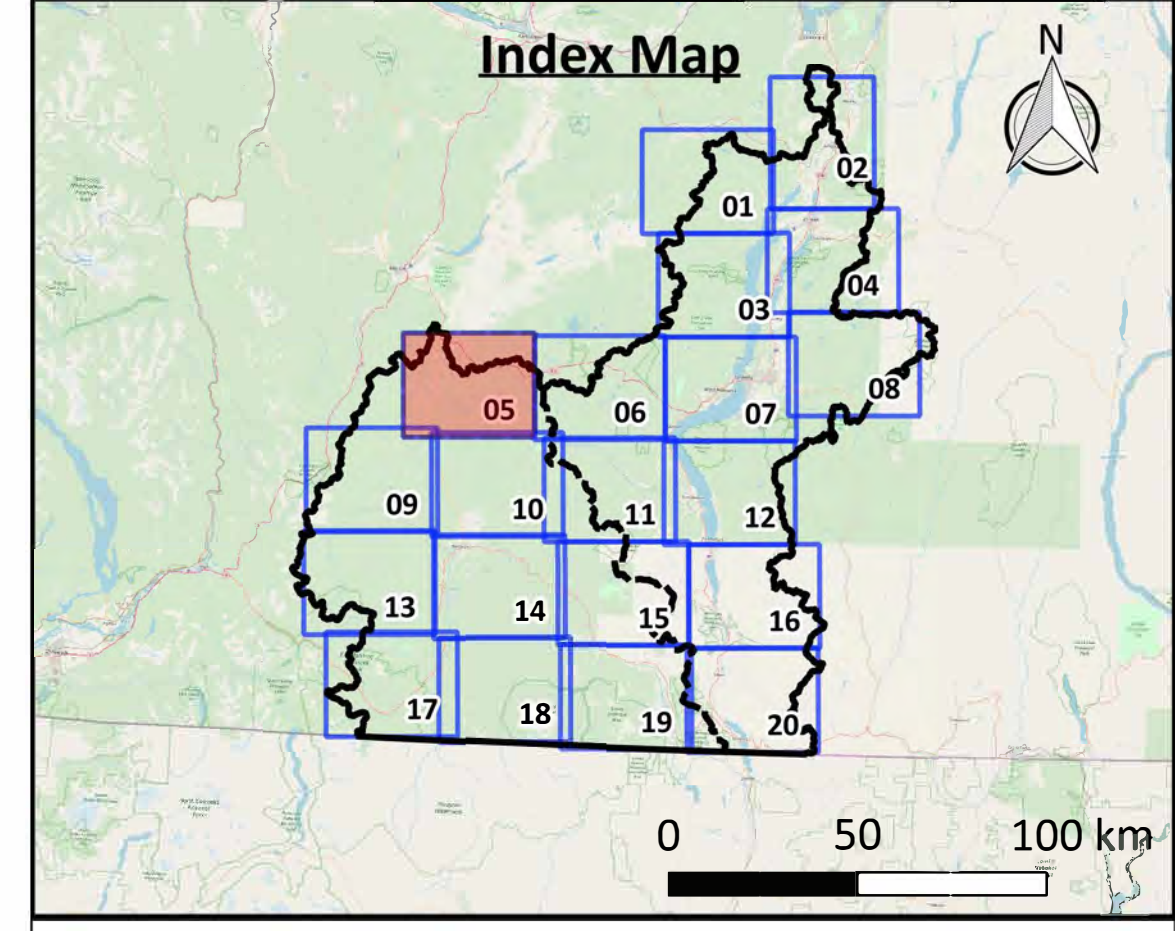
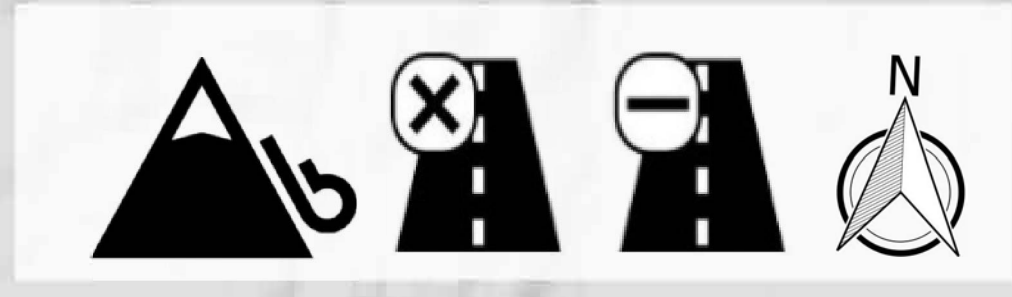
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 04 of 20

ANSI D - Map No. D-D-003-004

Zoom-In Map



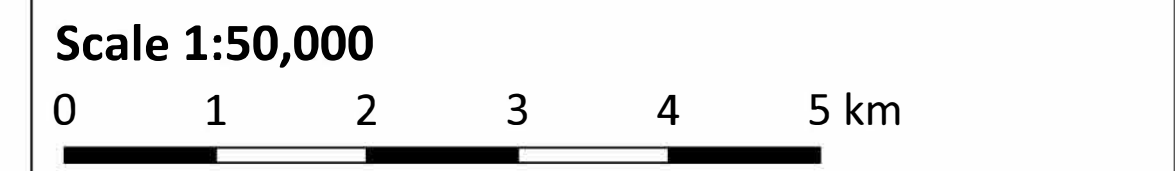
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
2. Utility Data: Integrated Cadastral Information (ICI) Society.
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4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



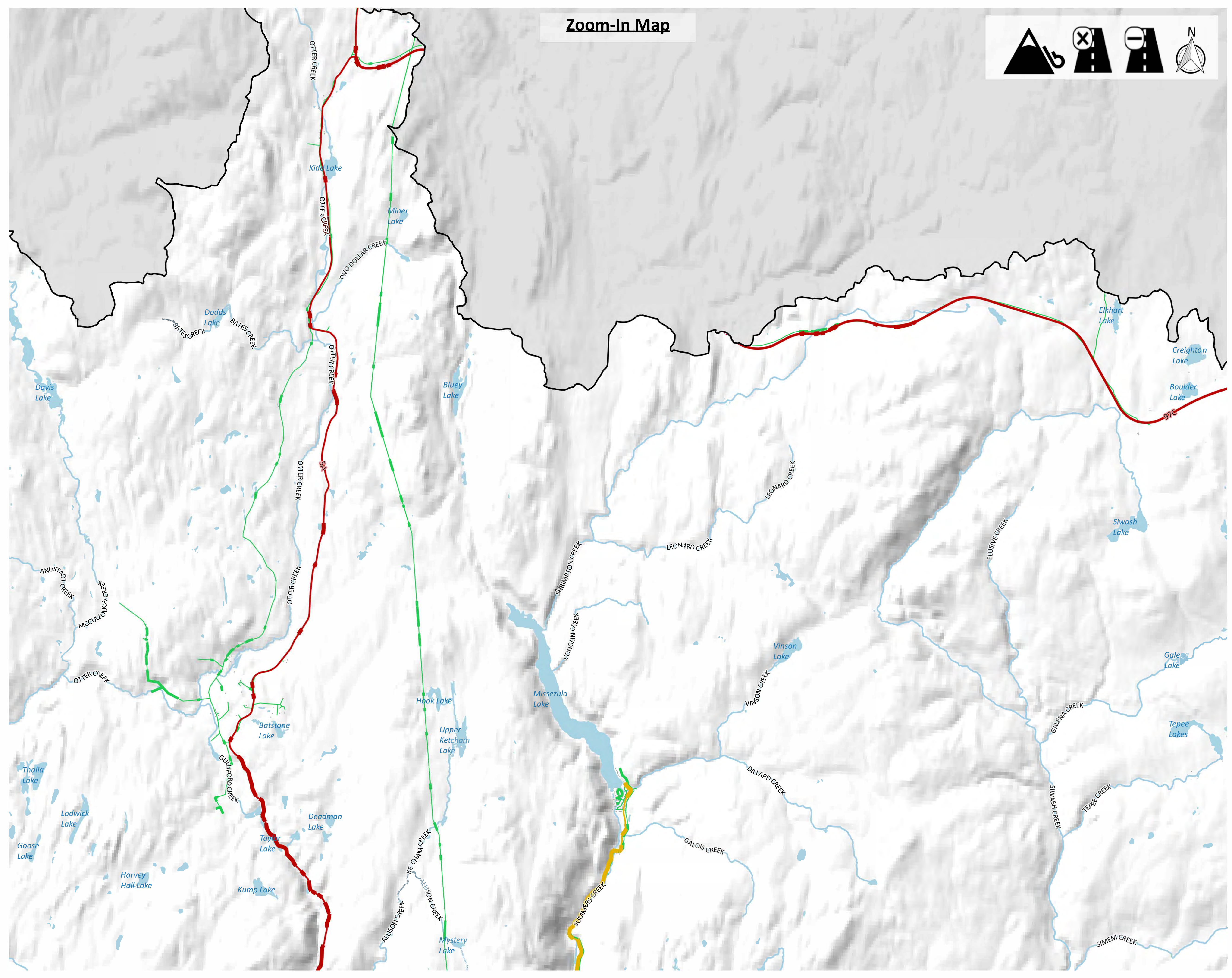
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

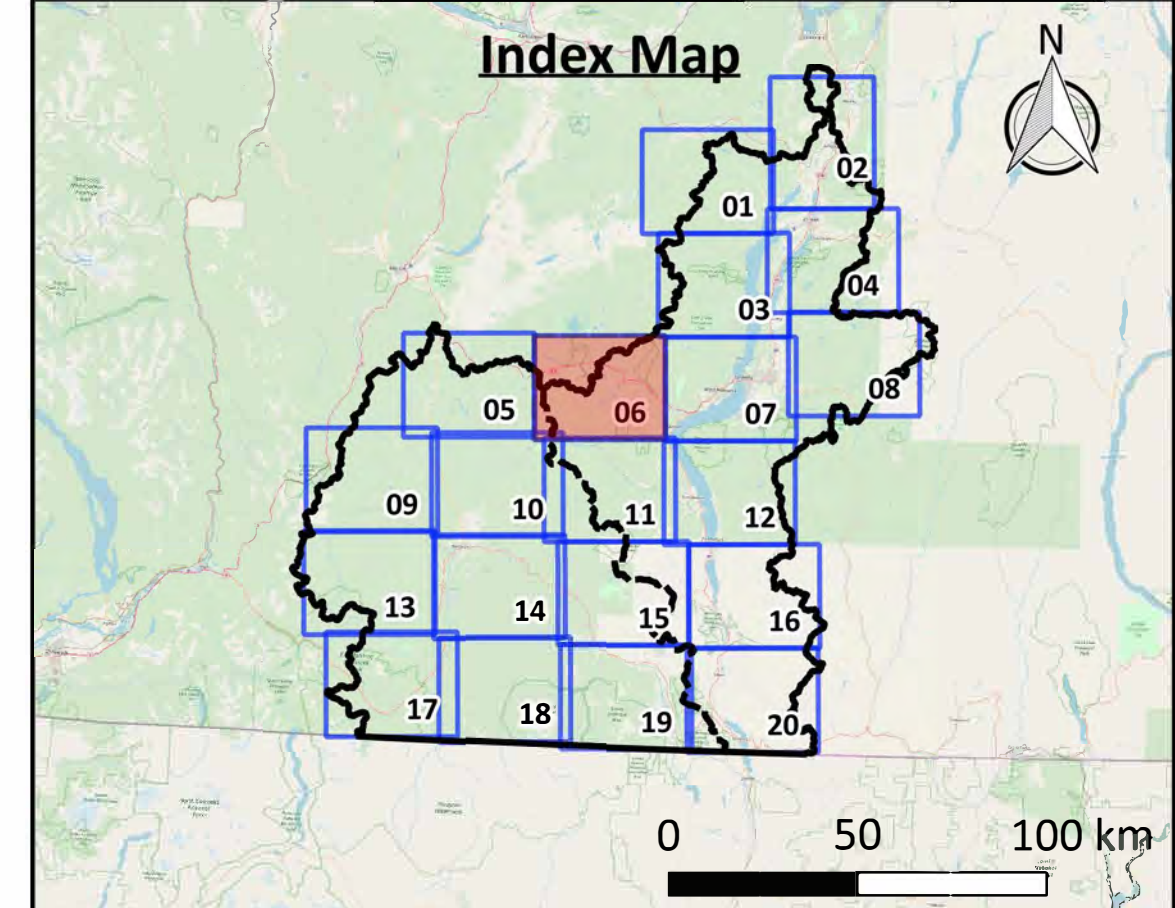
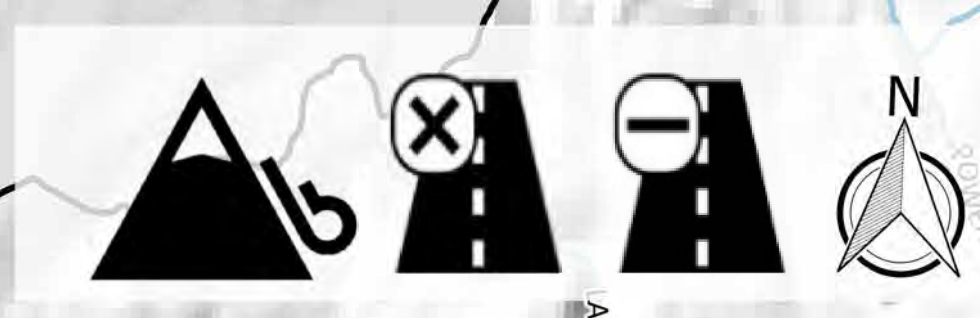
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 05 of 20

ANSI D - Map No. D-D-003-005



Zoom-In Map



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Map Notes

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Data Sources

- Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
- Utility Data: Integrated Cadastral Information (ICI) Society.
- Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000

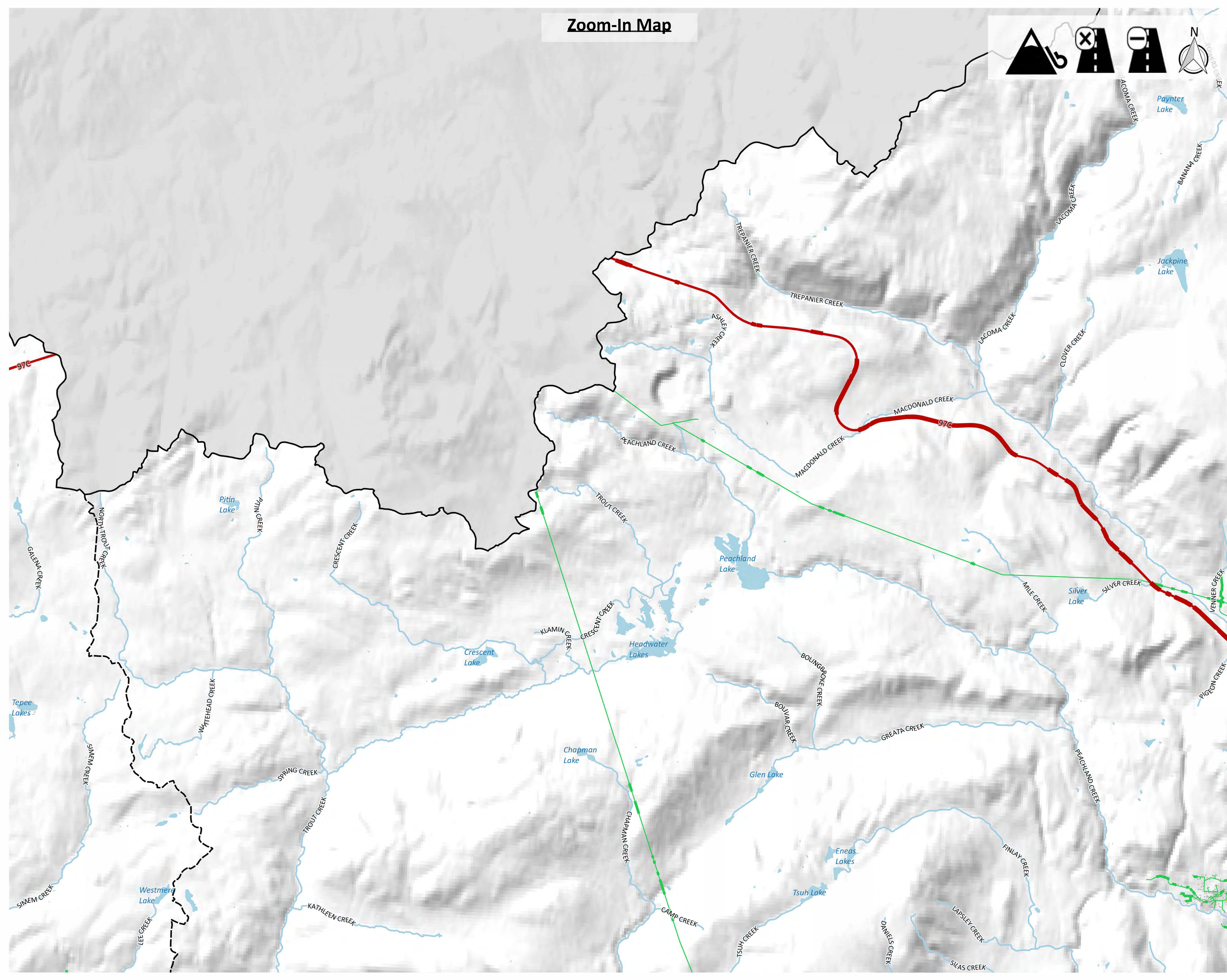
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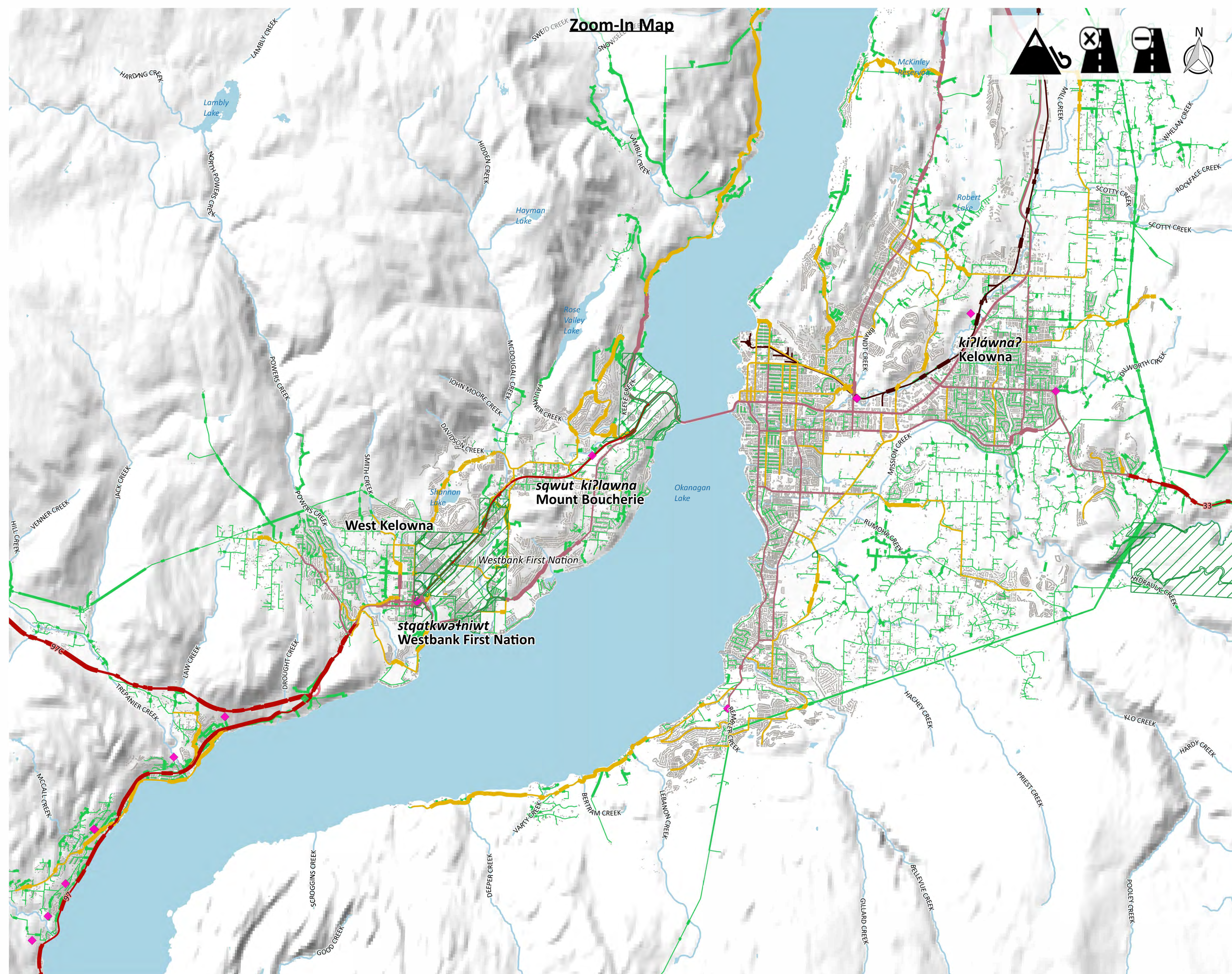
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

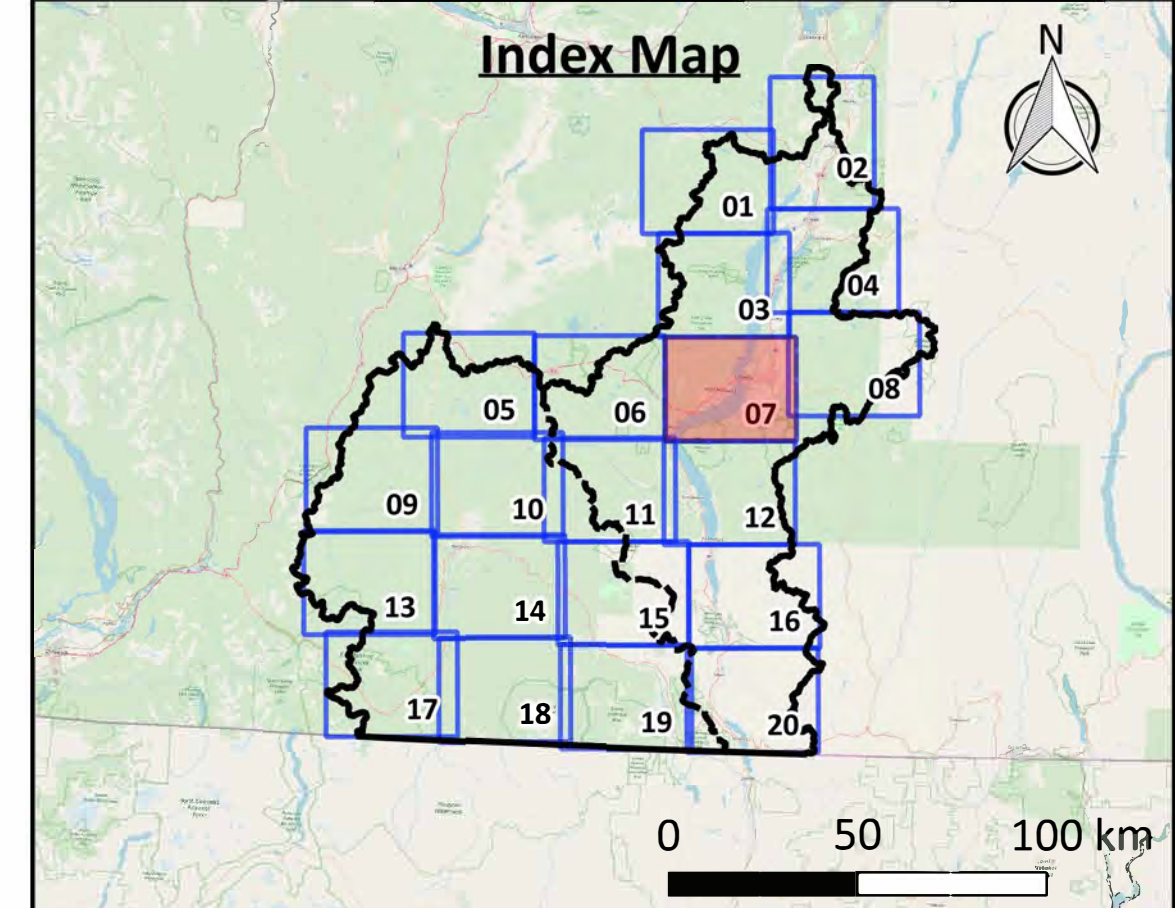
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 06 of 20

ANSI D - Map No. D-D-003-006





Zoom-In Map



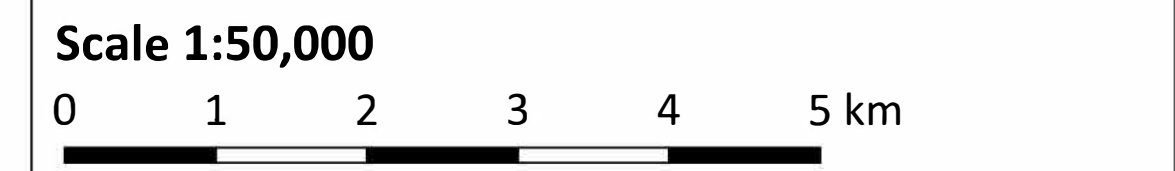
[Click above map tile for Zoom-In map](#)
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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Data Sources

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4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



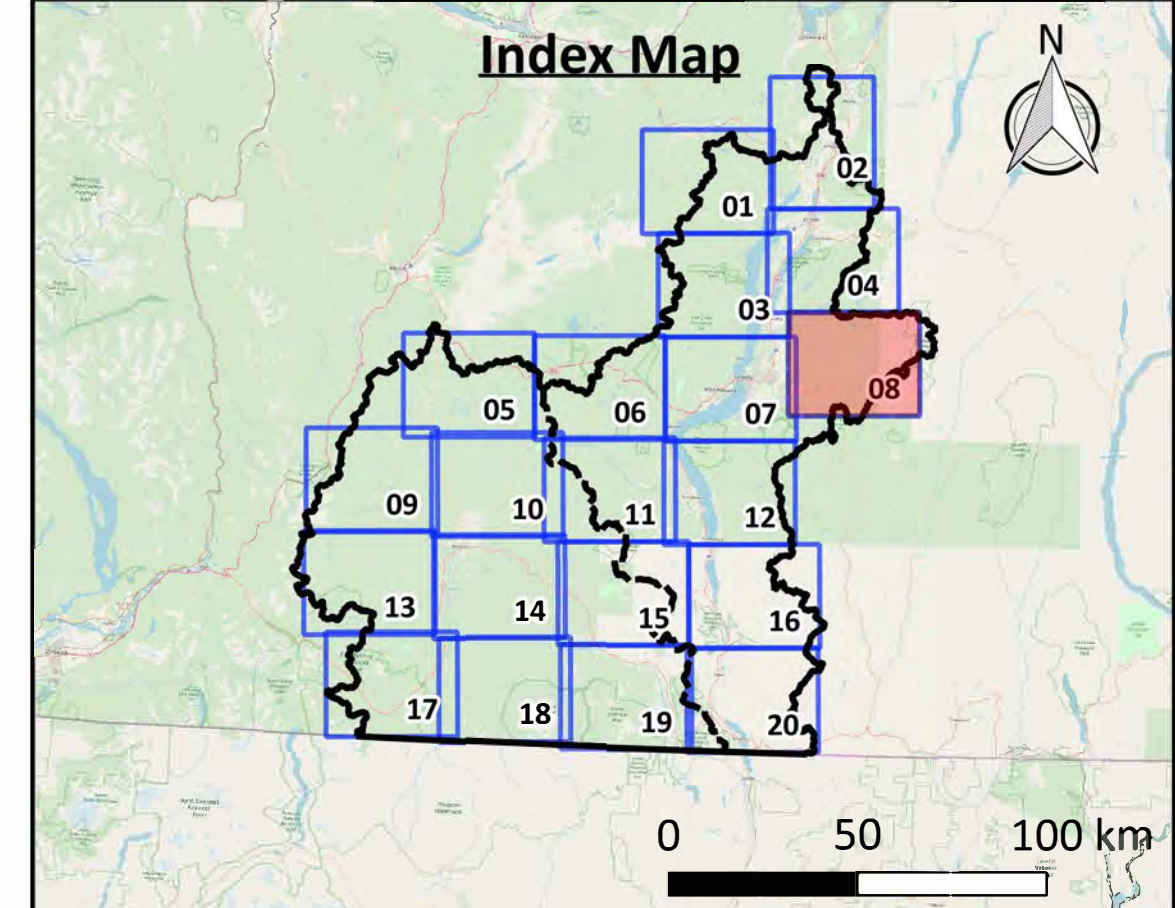
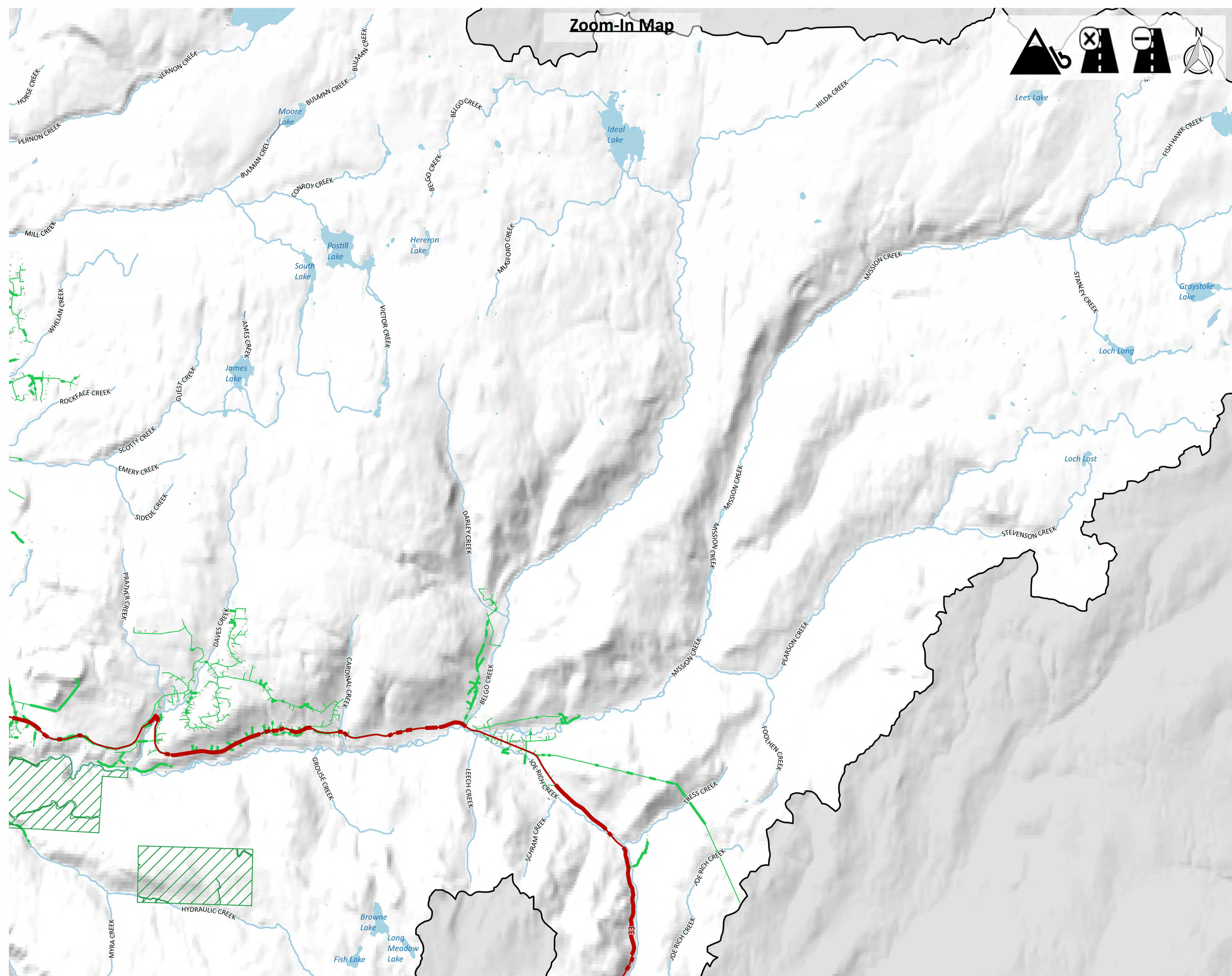
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 07 of 20

ANSI D - Map No. D-D-003-007



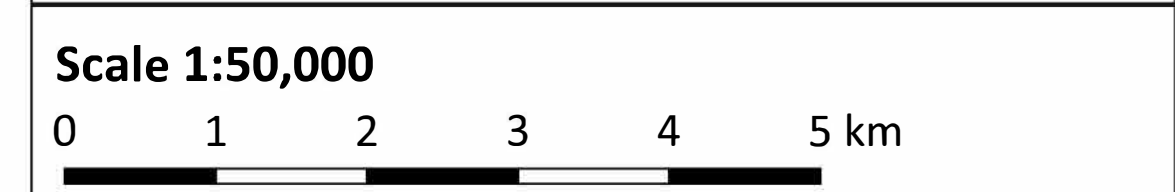
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

Map Notes

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Data Sources

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2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



Legend

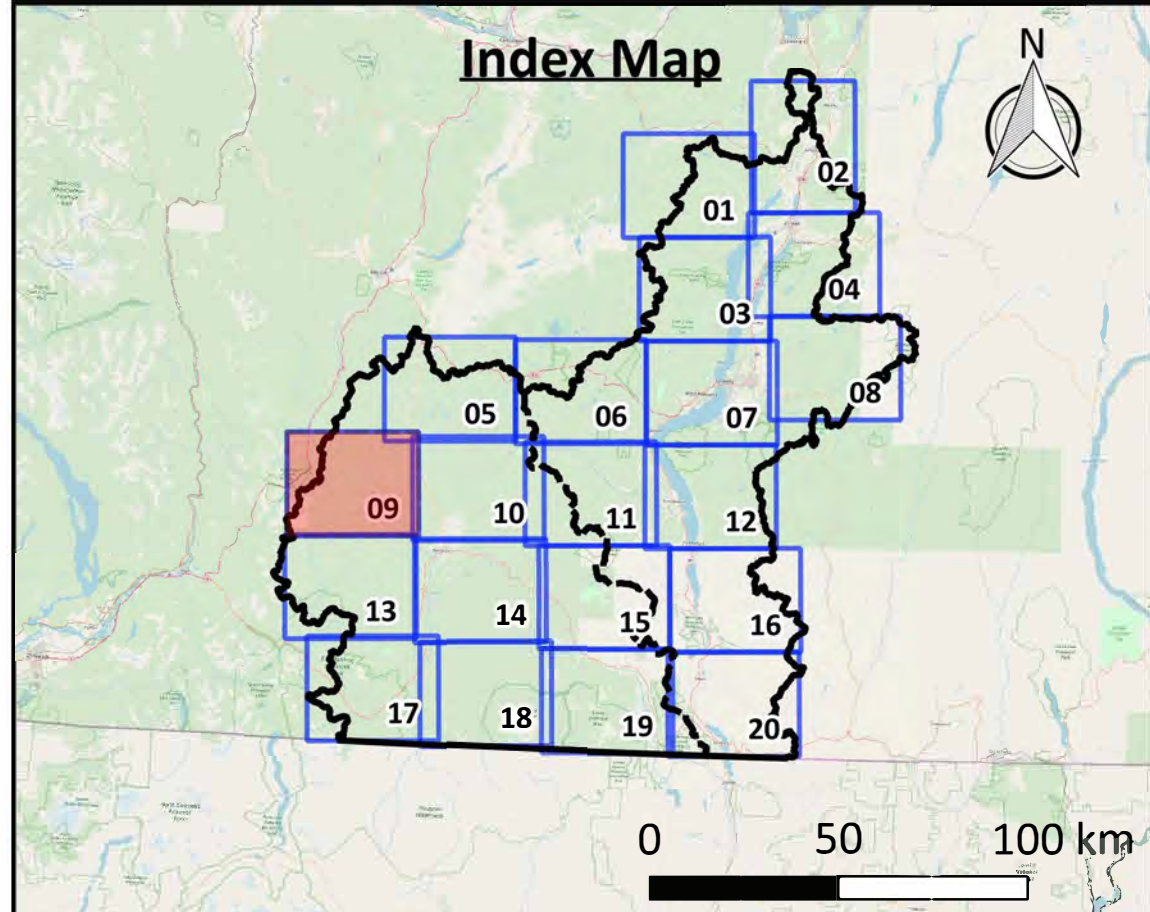
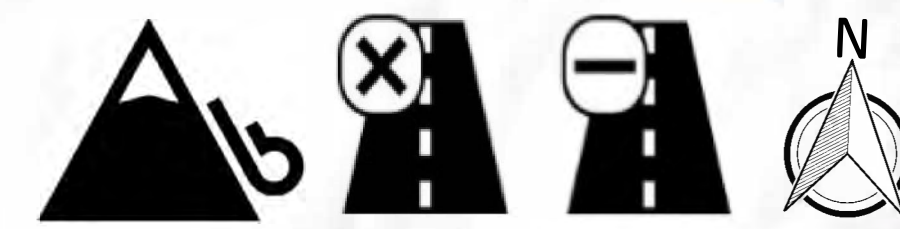
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
 Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
 Map Tile 08 of 20

ANSI D - Map No. D-D-003-008

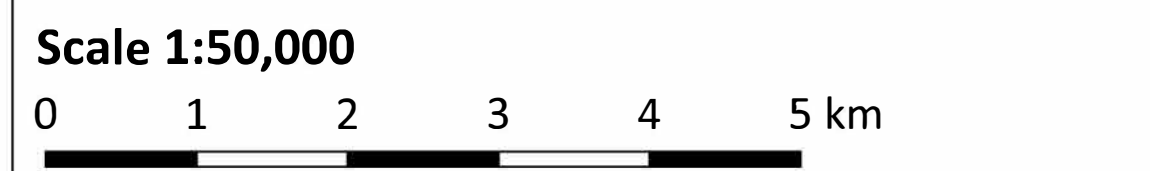
Zoom-In Map



Click above map tile for Zoom-In map
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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

- Map Notes**
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- Data Sources**
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 3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
 4. Sylix Place Names: Okanagan Nation Alliance.
 5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



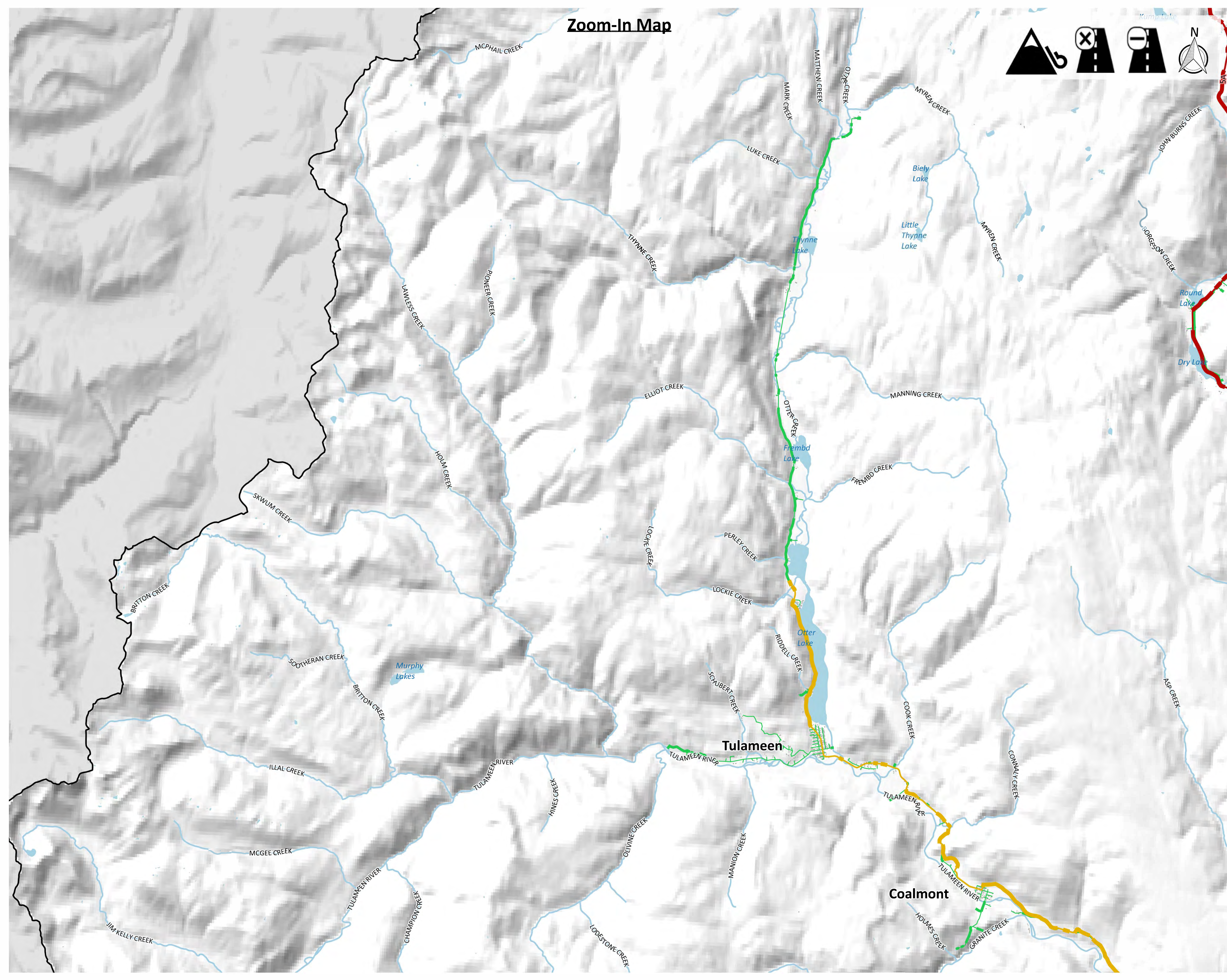
Legend

Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▭ Reserves	— Affected Collector Road
▭ Building Footprints	— Affected Arterial Road
▭ Lakes	— Affected Rail
▭ Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

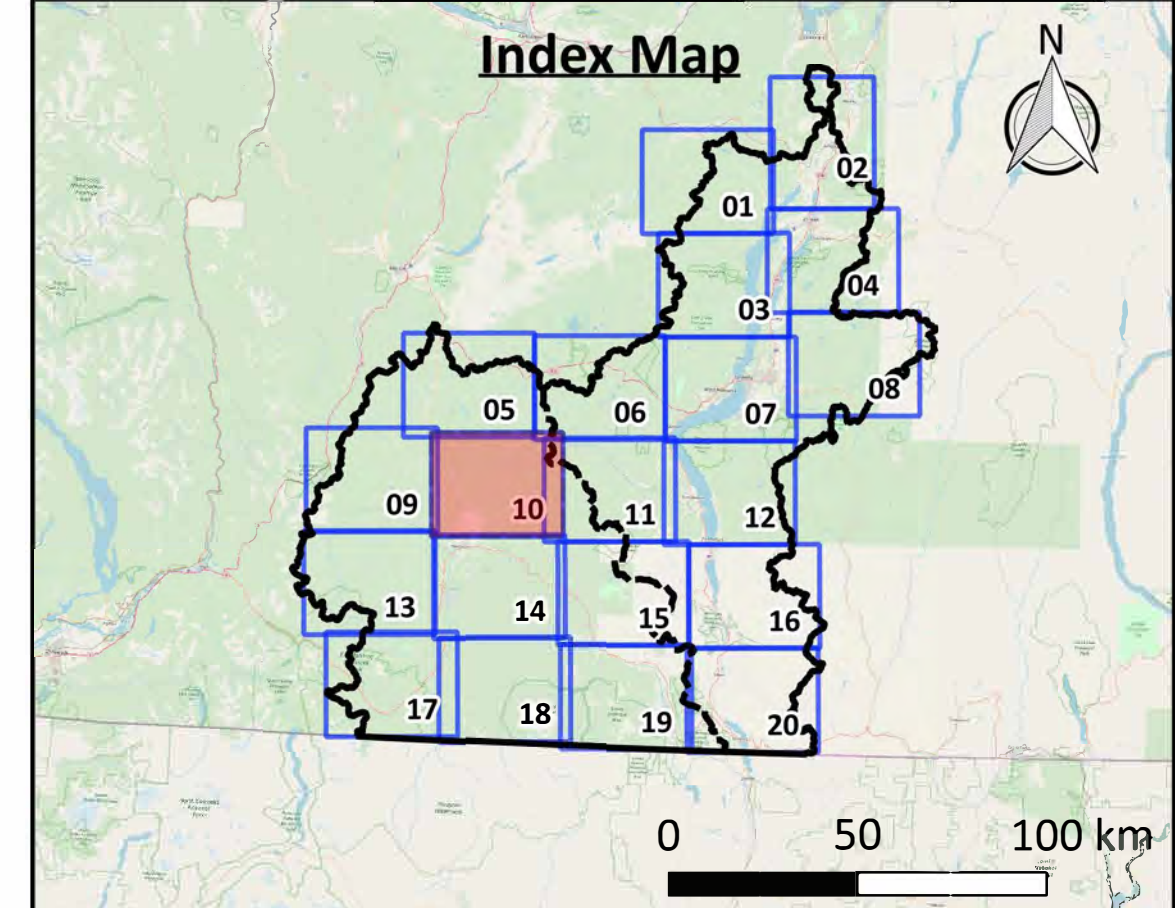
Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 09 of 20

ANSI D - Map No. D-D-003-009



Zoom-In Map



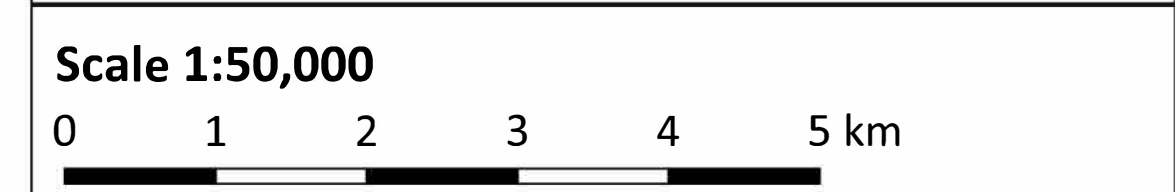
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[Click here to return to Similkameen map](#)

Map Notes

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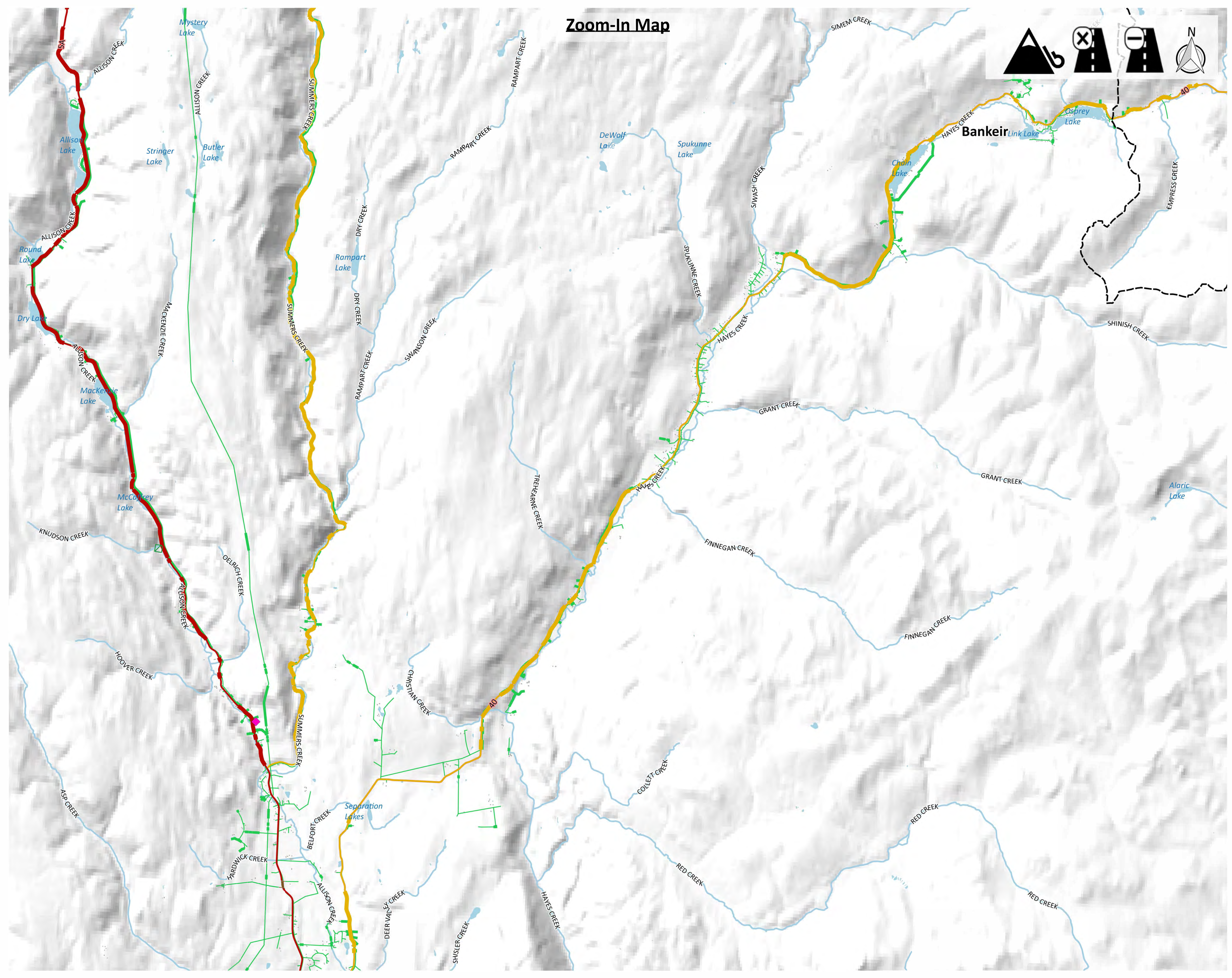
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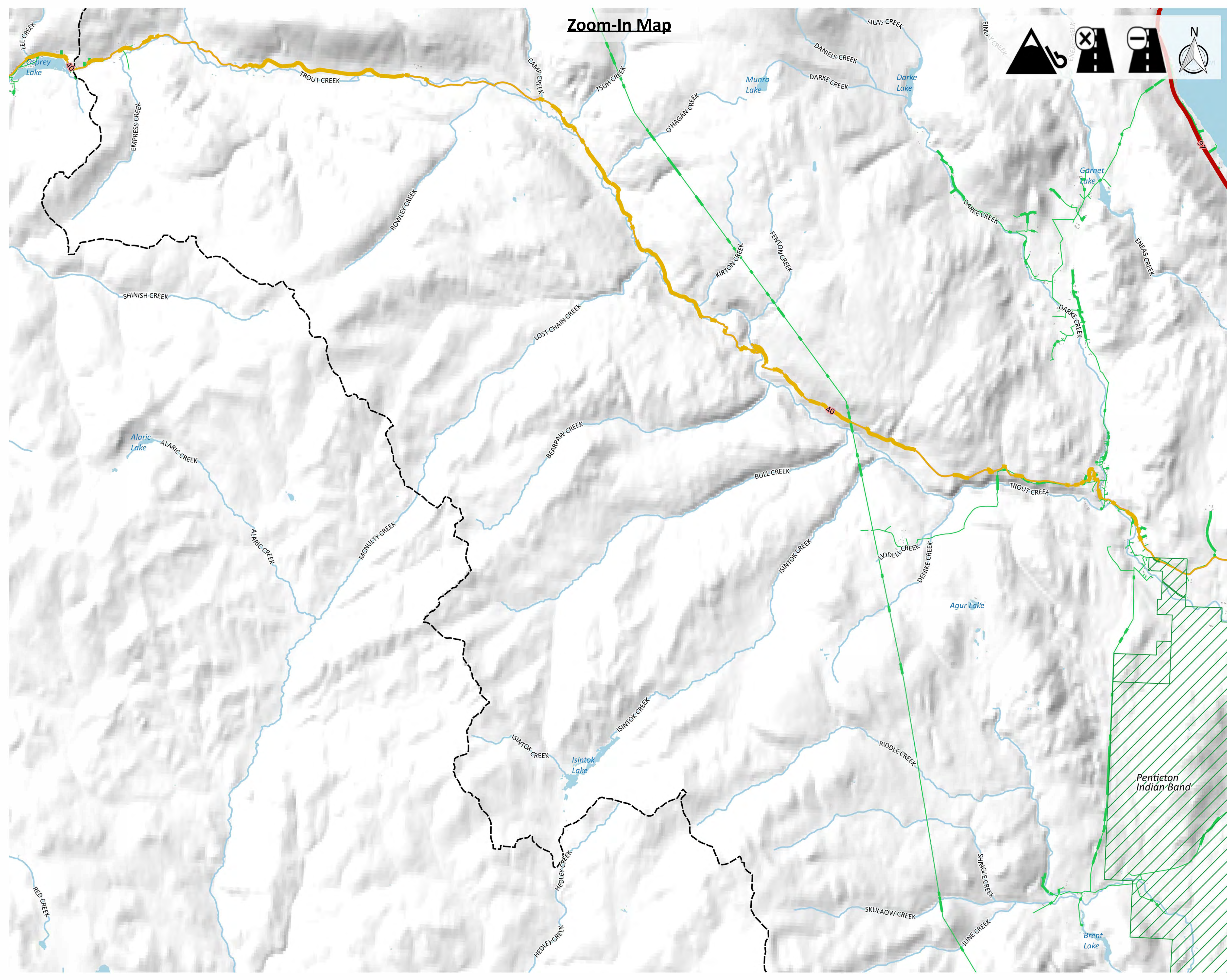
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

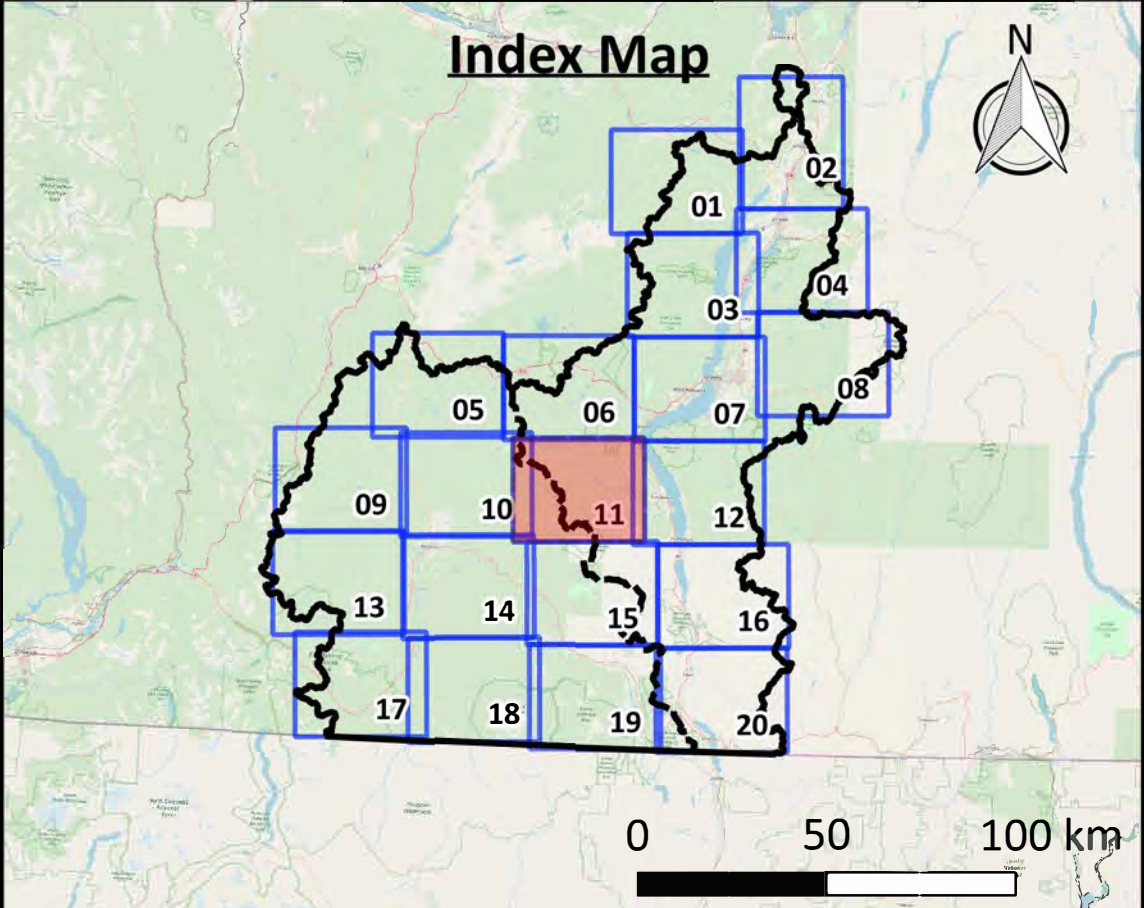
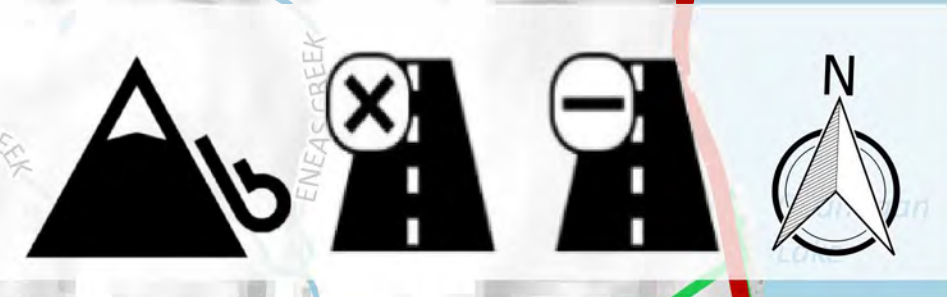
Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 10 of 20

ANSI D - Map No. D-D-003-010





Zoom-In Map



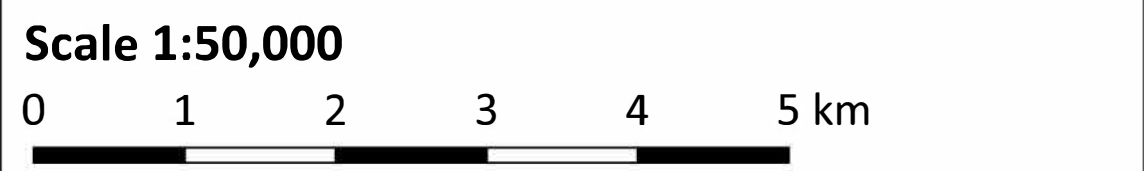
Click above map tile for Zoom-In map
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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Data Sources

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- Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



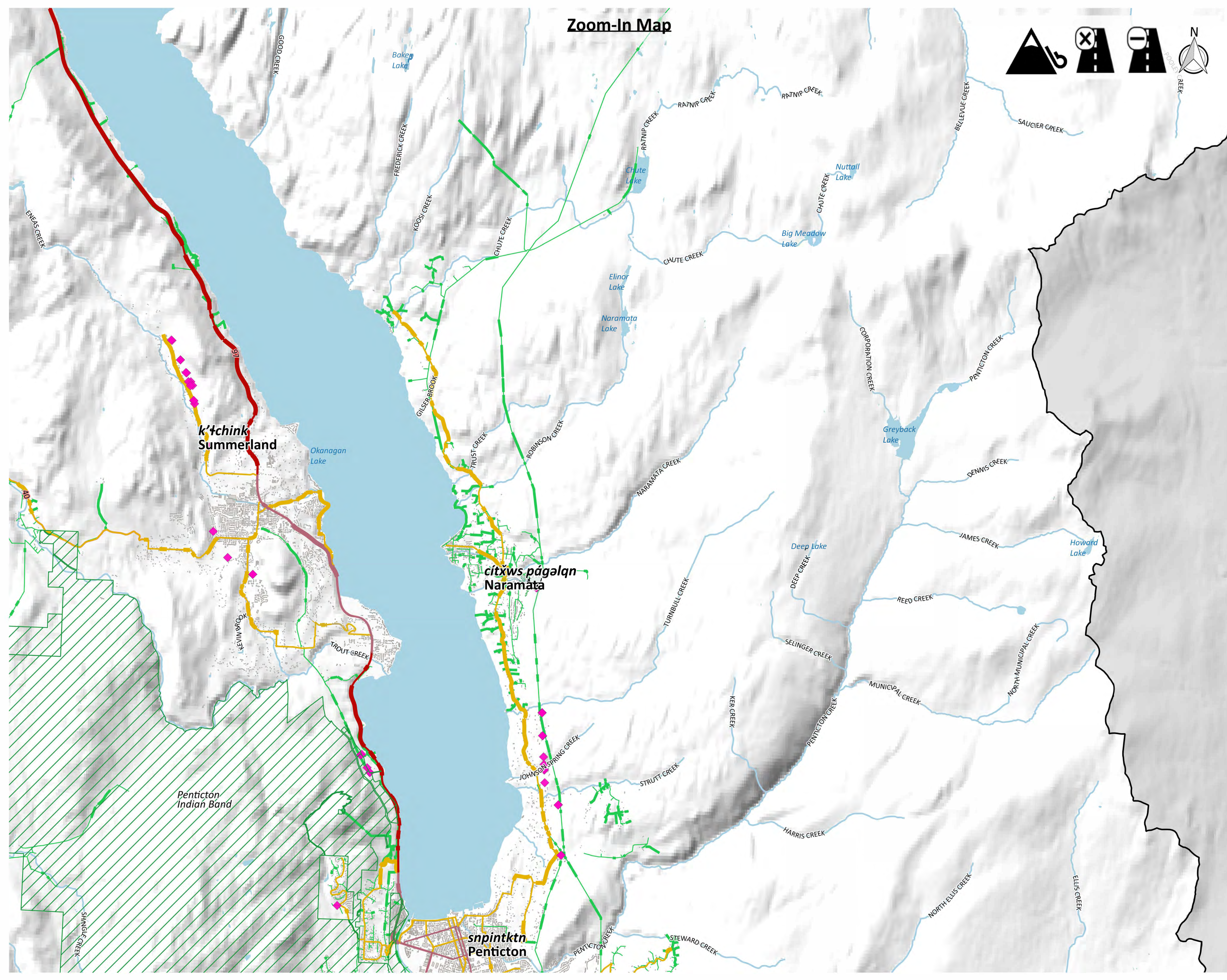
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

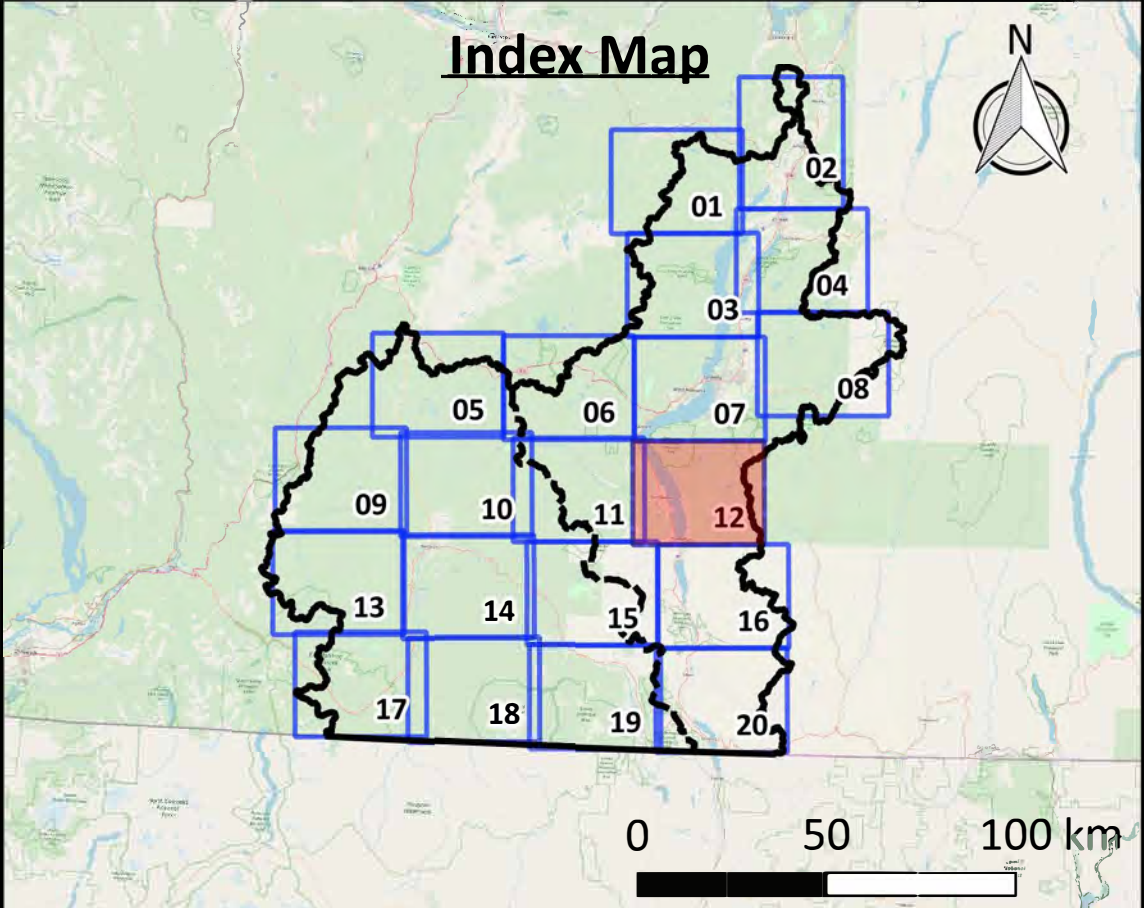
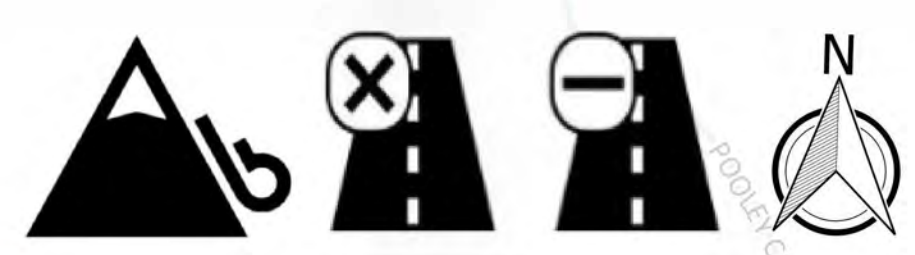
Date: 31 December 2019
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Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
 Map Tile 11 of 20

ANSI D - Map No. D-D-003-011



Zoom-In Map



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[Click here to return to Similkameen map](#)

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- Utility Data: Integrated Cadastral Information (ICI) Society.
- Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
- Sylix Place Names: Okanagan Nation Alliance.
- Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



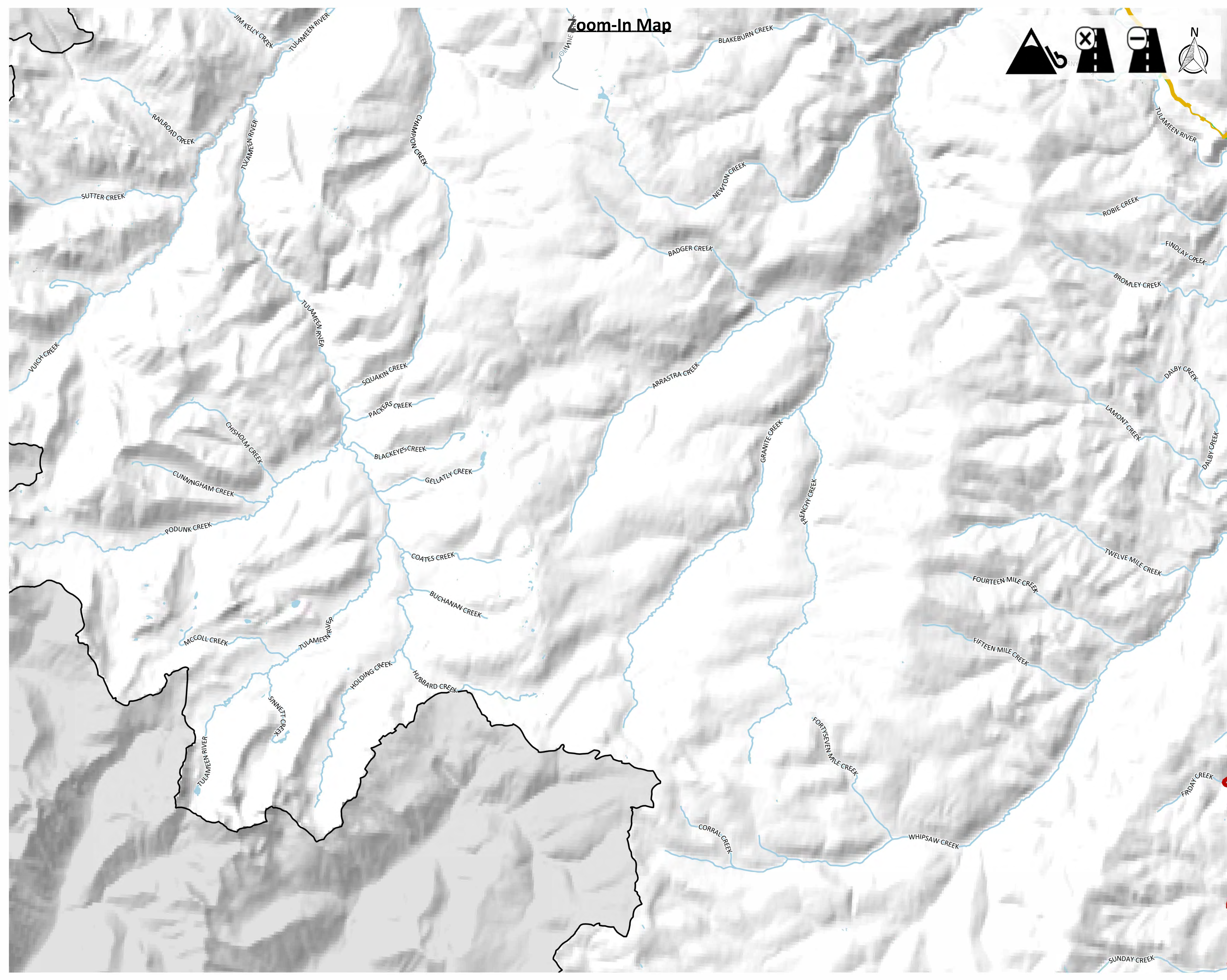
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 12 of 20

ANSI D - Map No. D-D-003-012



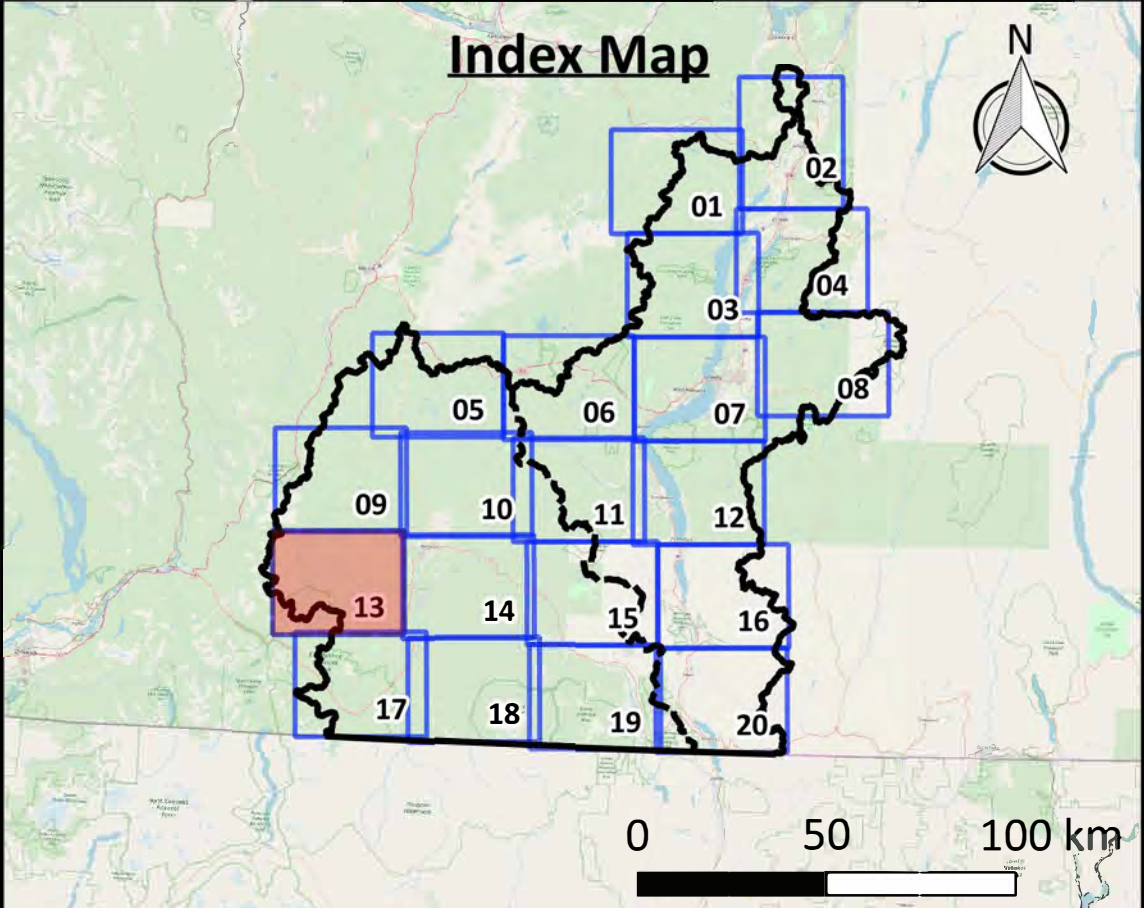
Zoom-In Map



ebbwater CONSULTING
THOUGHTFUL FLOOD MANAGEMENT

Sylix
Okanagan Nation Alliance

PALMER ENVIRONMENTAL CONSULTING GROUP INC.



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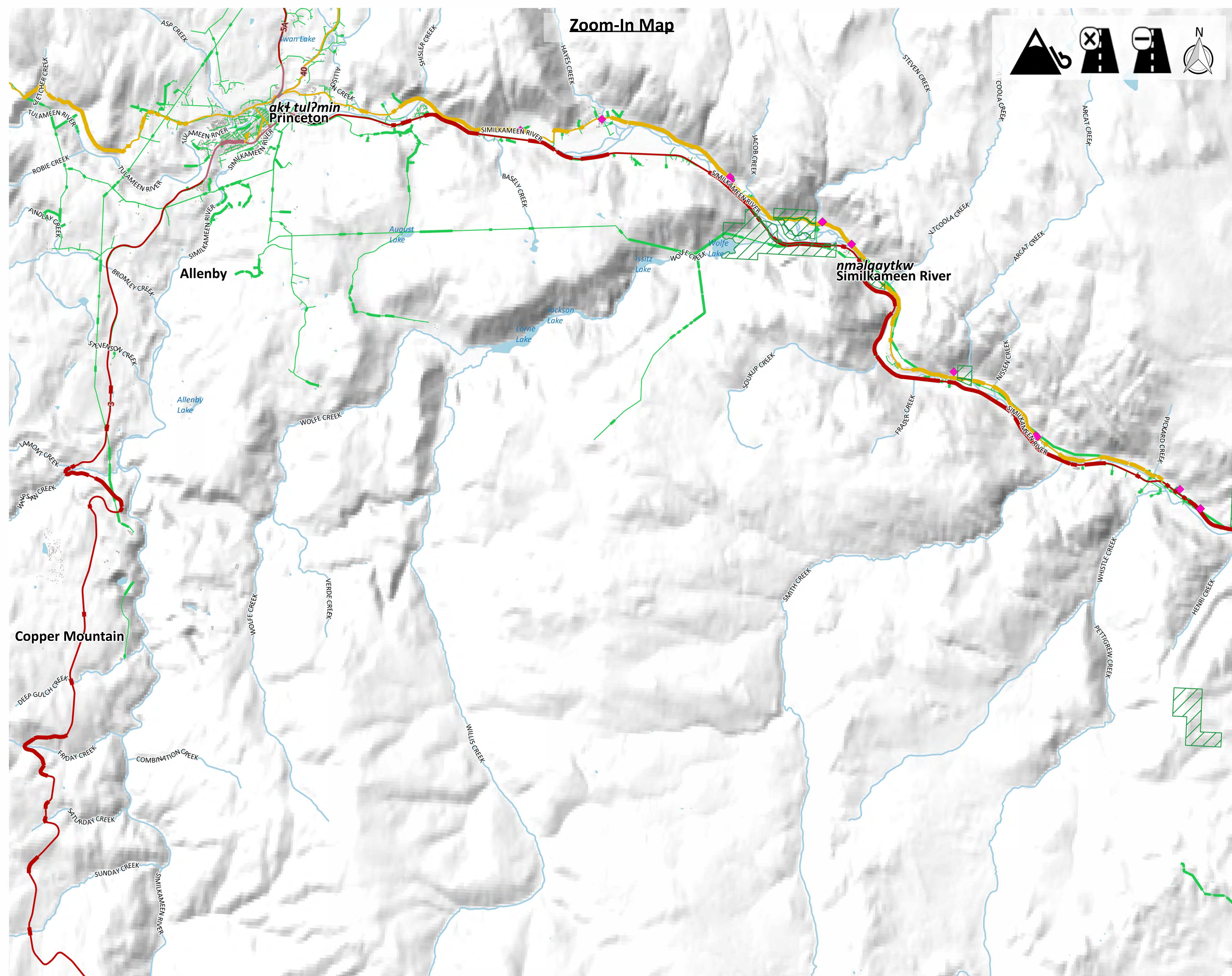
Legend

Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 13 of 20

ANSI D - Map No. D-D-003-013



Zoom-In Map



ebbwater CONSULTING
THOUGHTFUL FLOOD MANAGEMENT

Palmer Environmental Consulting Group Inc.

Sylix Okanagan Nation Alliance

Index Map

0 50 100 km

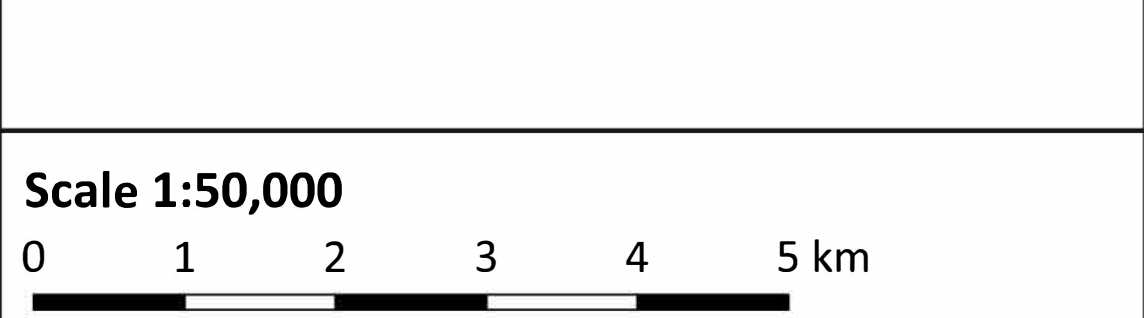
[Click above map tile for Zoom-In map](#)
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[Click here to return to Similkameen map](#)

Map Notes

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Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.
2. Utility Data: Integrated Cadastral Information (ICI) Society.
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.
4. Sylix Place Names: Okanagan Nation Alliance.
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.



Legend

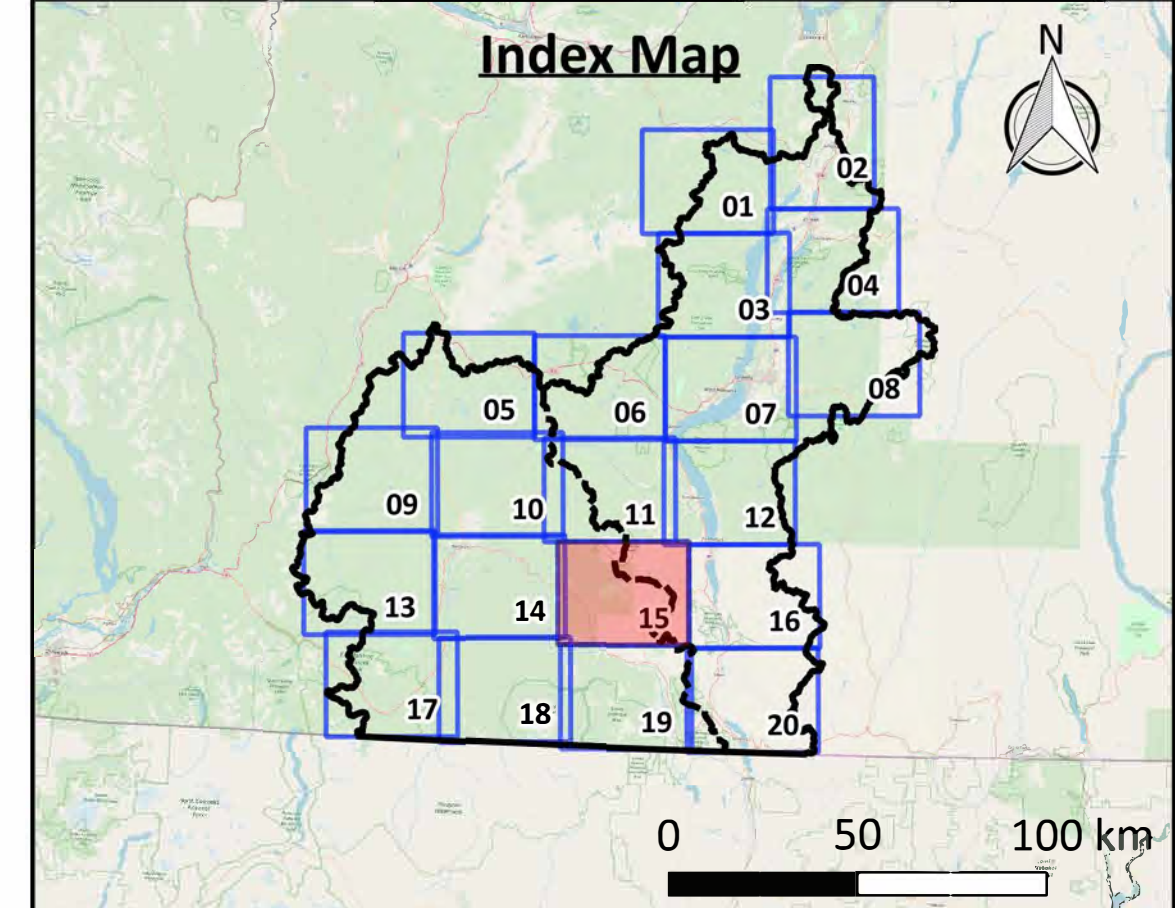
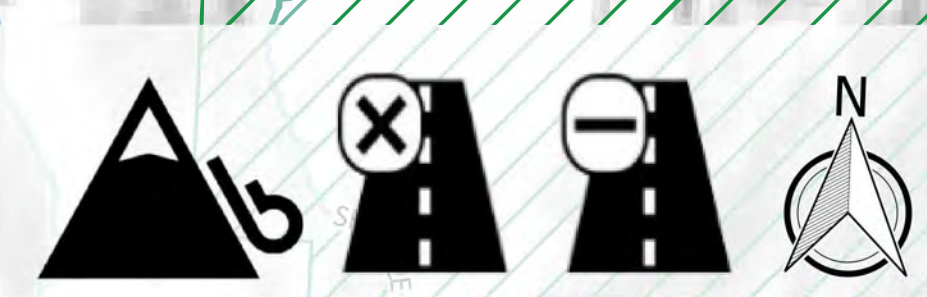
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 14 of 20

ANSI D - Map No. D-D-003-014

Zoom-In Map



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[Click here to return to Similkameen map](#)

Map Notes

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Scale 1:50,000

0 1 2 3 4 5 km

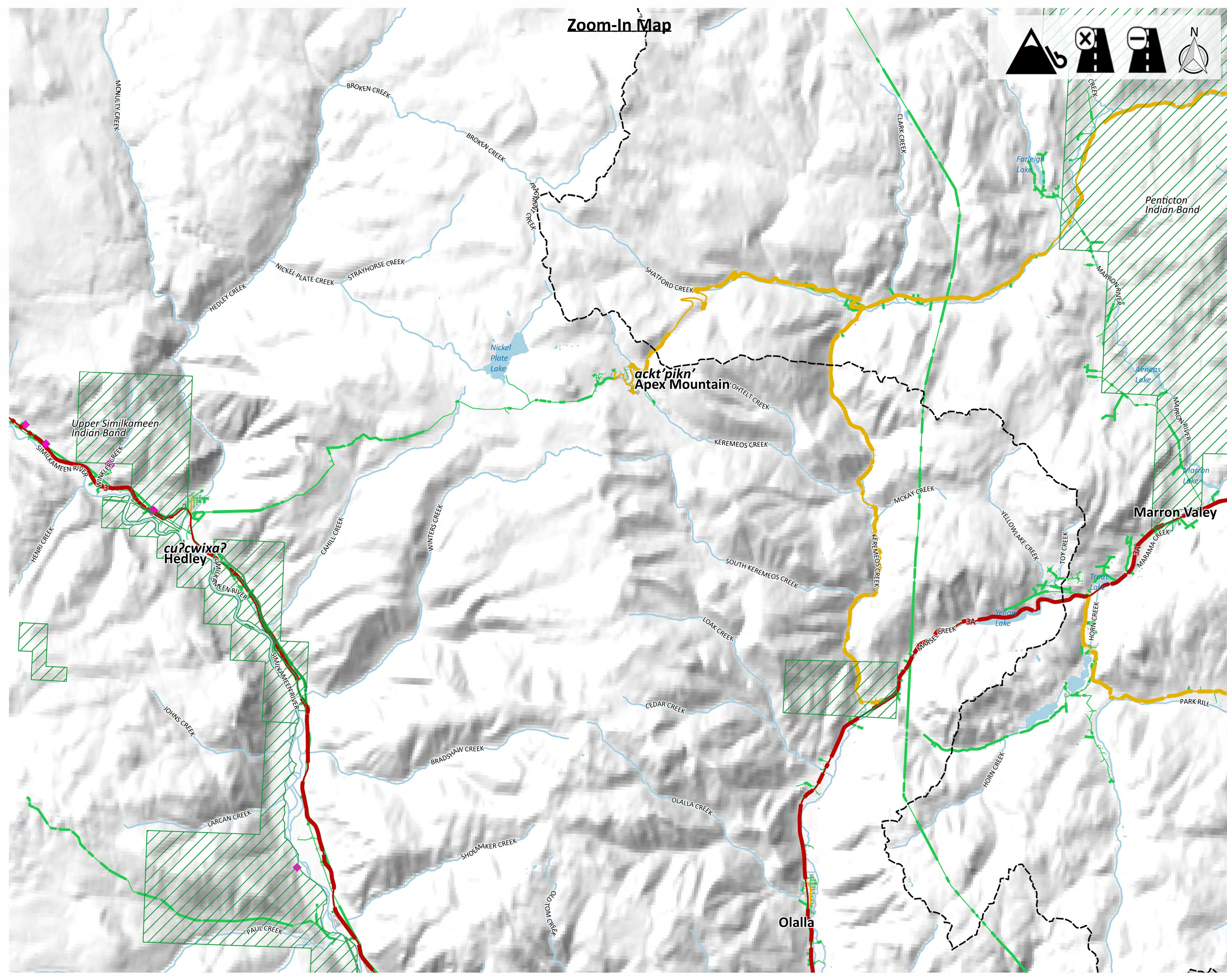
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

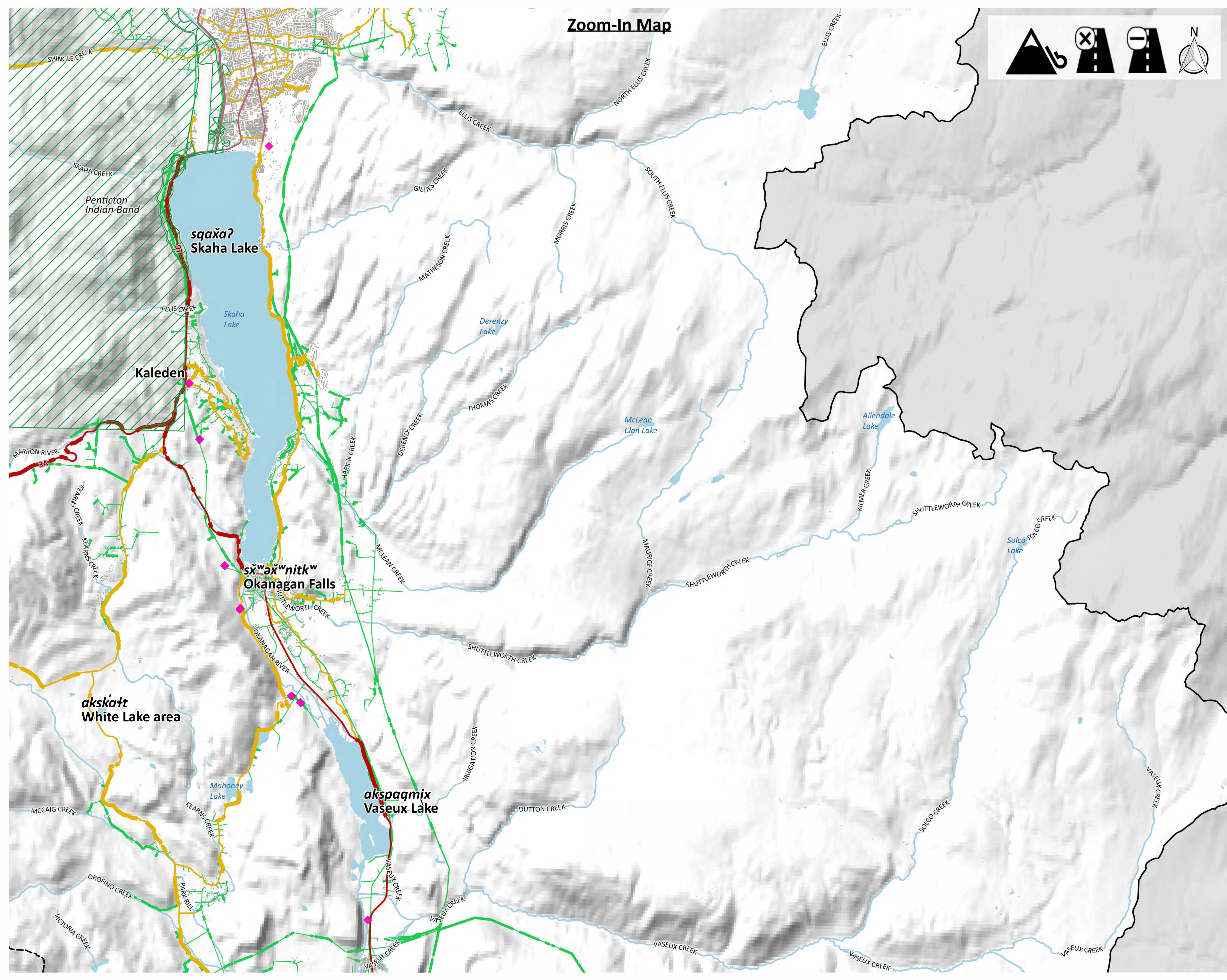
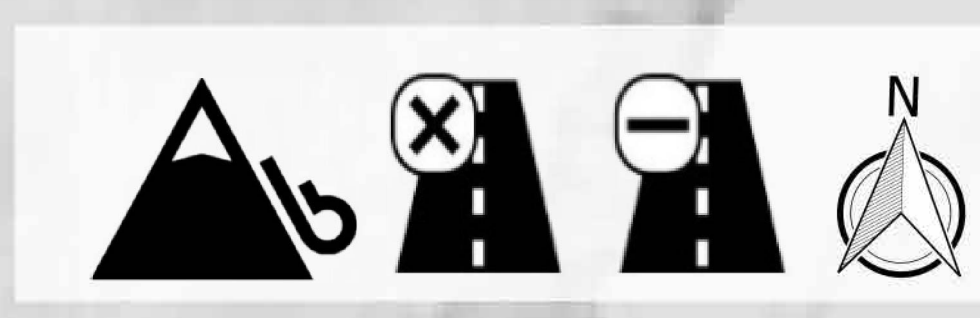
Date: 31 December 2019
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Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
 Map Tile 15 of 20

ANSI D - Map No. D-D-003-015



Zoom-In Map



ebbwater CONSULTING
THOUGHTFUL FLOOD MANAGEMENT

Palmer Environmental Consulting Group Inc.

Sylix Okanagan Nation Alliance

Index Map

0 50 100 km

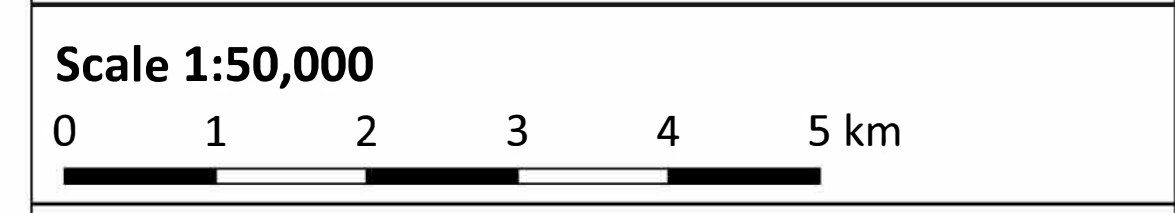
[Click above map tile for Zoom-In map](#)
[Click here to return to Project Area map](#)
[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

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Legend

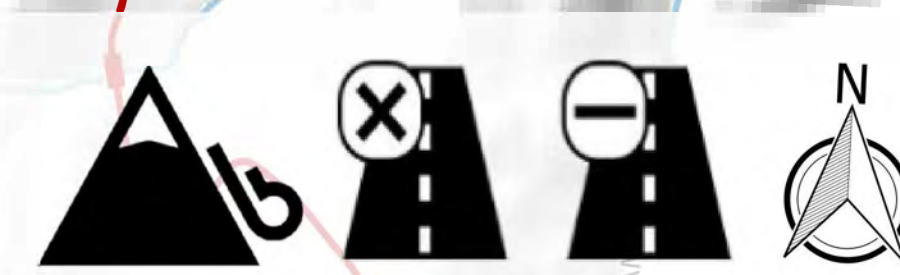
Background	Affected Assets
— Watershed Boundary	◆ Critical Electric Structures
- - - Okanagan-Similkameen Boundary	◆ Critical Gas Structures
— Canada - US Border	— Affected Highway
▨ Reserves	— Affected Collector Road
▨ Building Footprints	— Affected Arterial Road
— Lakes	— Affected Rail
— Watercourses	
— Highway	
— Collector Road	
— Arterial Road	
— Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 16 of 20

ANSI D - Map No. D-D-003-016

Zoom-In Map



ebbwater CONSULTING
THOUGHTFUL FLOOD MANAGEMENT

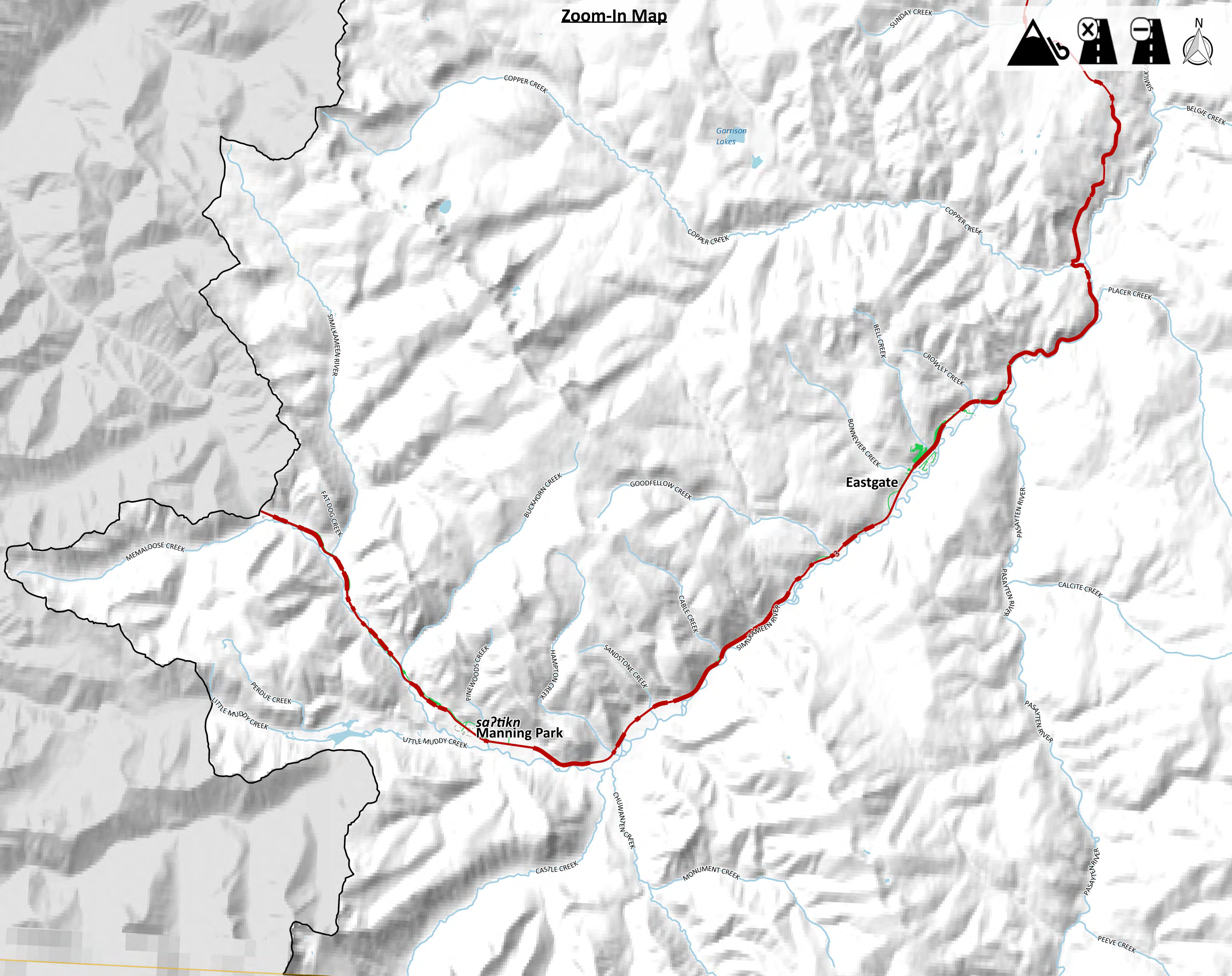
Palmer Environmental Consulting Group Inc.

Sylix Okanagan Nation Alliance

Index Map

0 50 100 km

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[Click here to return to Okanagan map](#)
[Click here to return to Similkameen map](#)

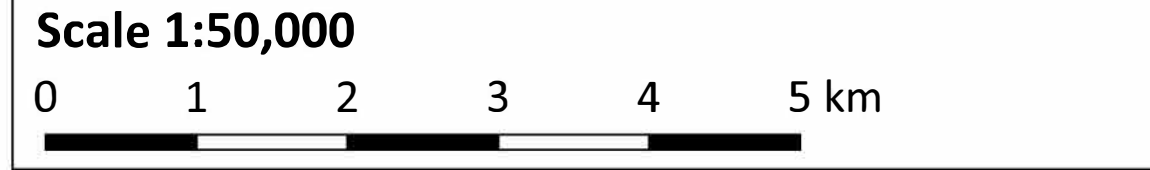


Map Notes

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Legend

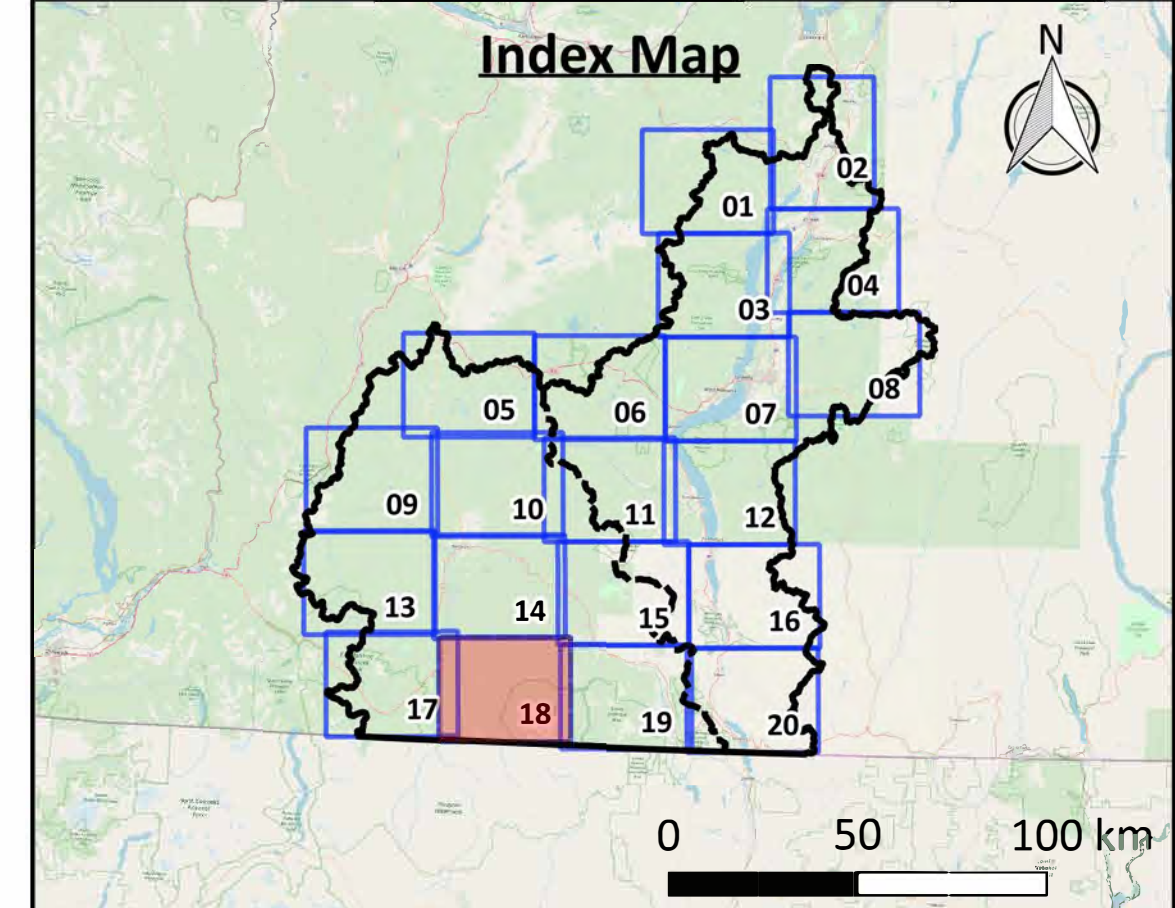
Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
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ANSI D - Map No. D-D-003-017

Zoom-In Map



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Scale 1:50,000

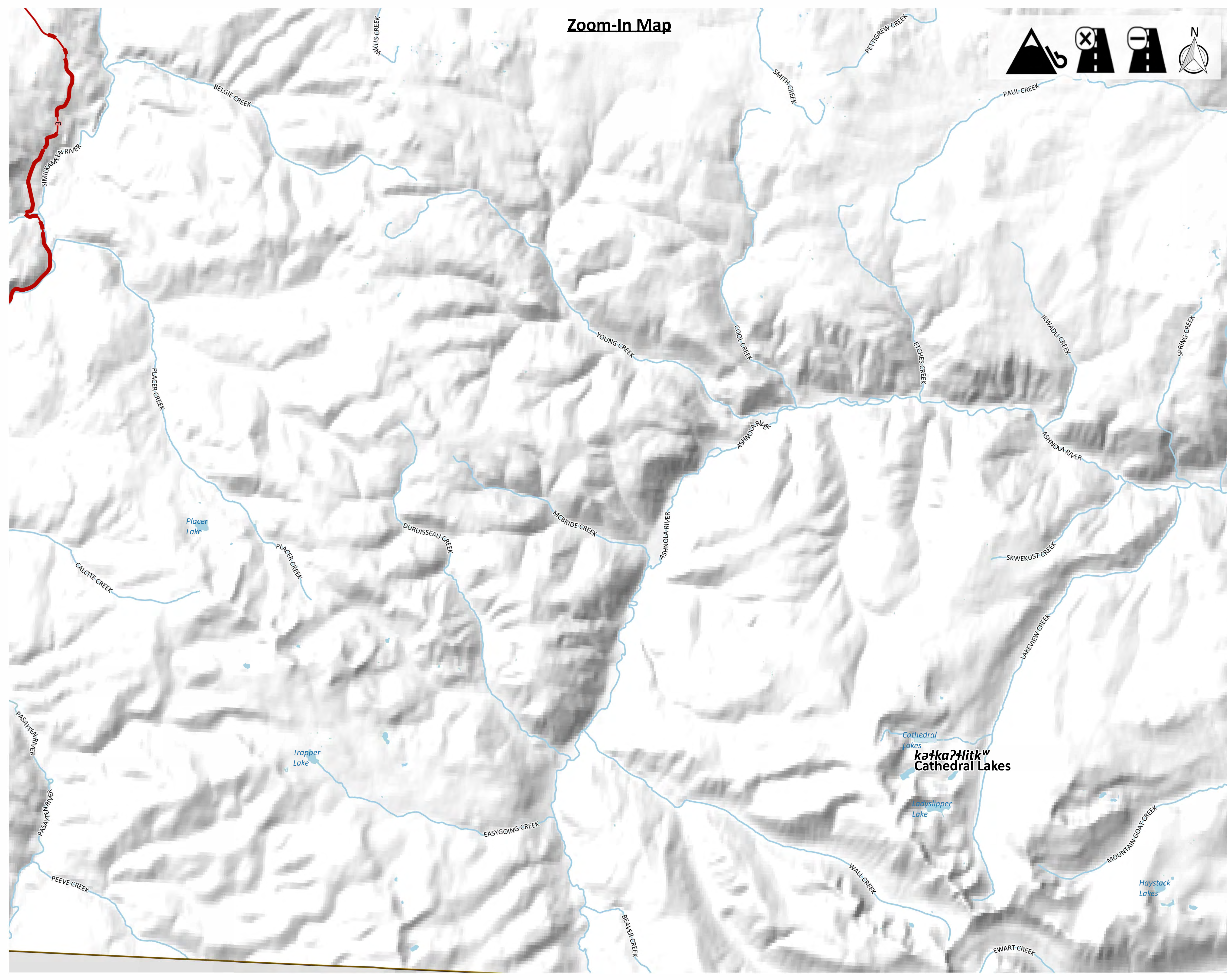
Legend

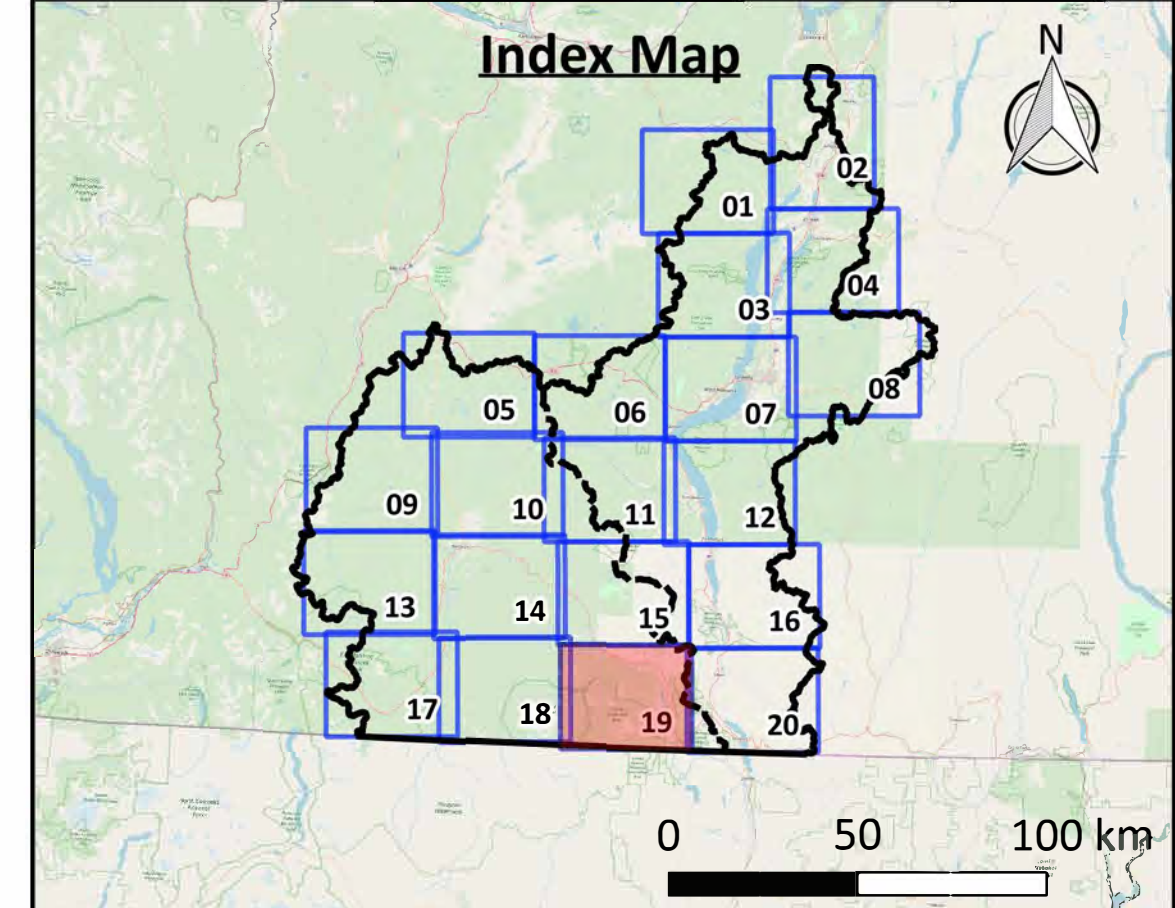
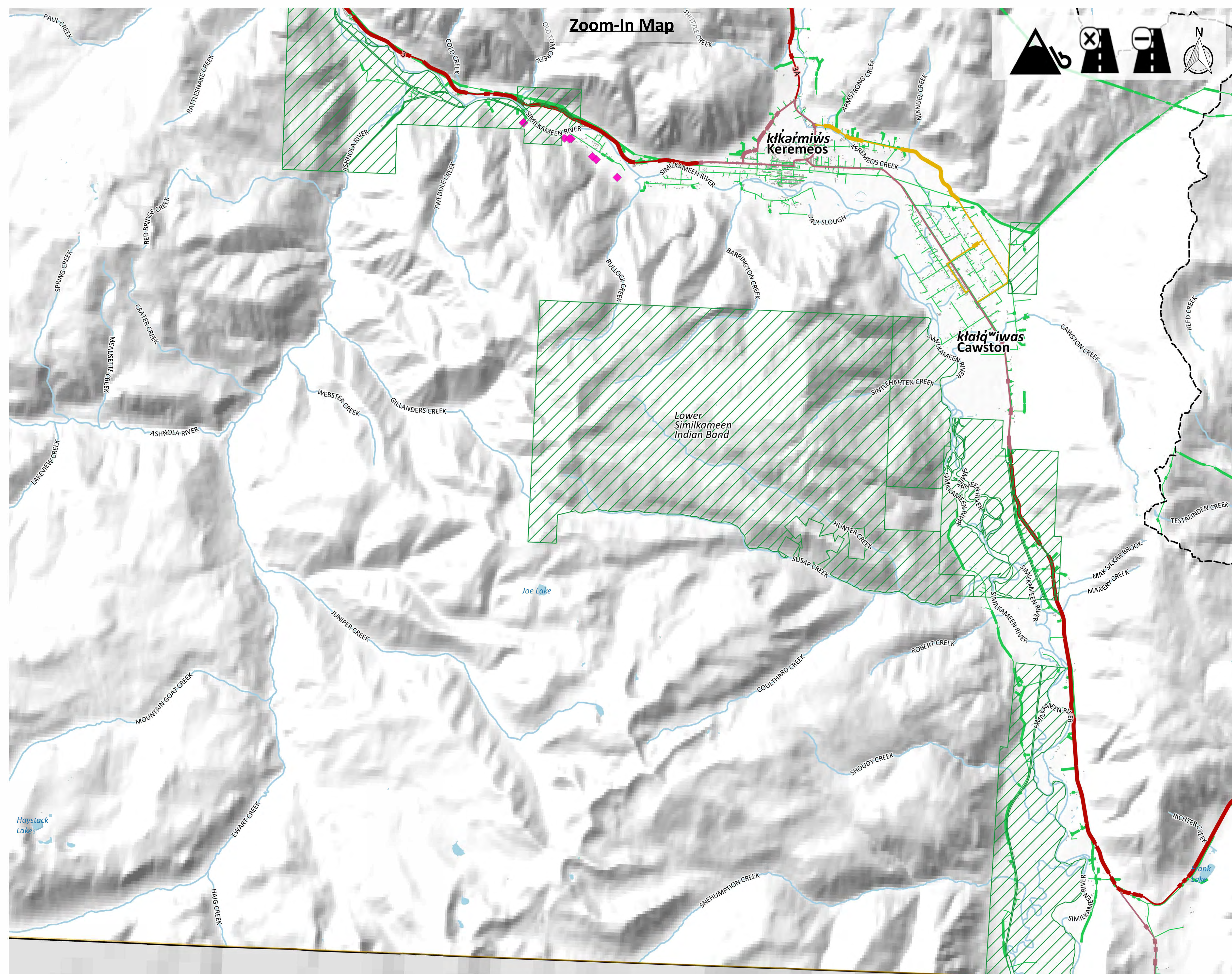
Watershed Boundary	Affected Assets
Okanagan-Similkameen Boundary	Critical Electric Structures
Canada - US Border	Critical Gas Structures
Reserves	Affected Highway
Building Footprints	Affected Collector Road
Lakes	Affected Arterial Road
Watercourses	Affected Rail
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
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Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
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ANSI D - Map No. D-D-003-018





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Scale 1:50,000

0 1 2 3 4 5 km

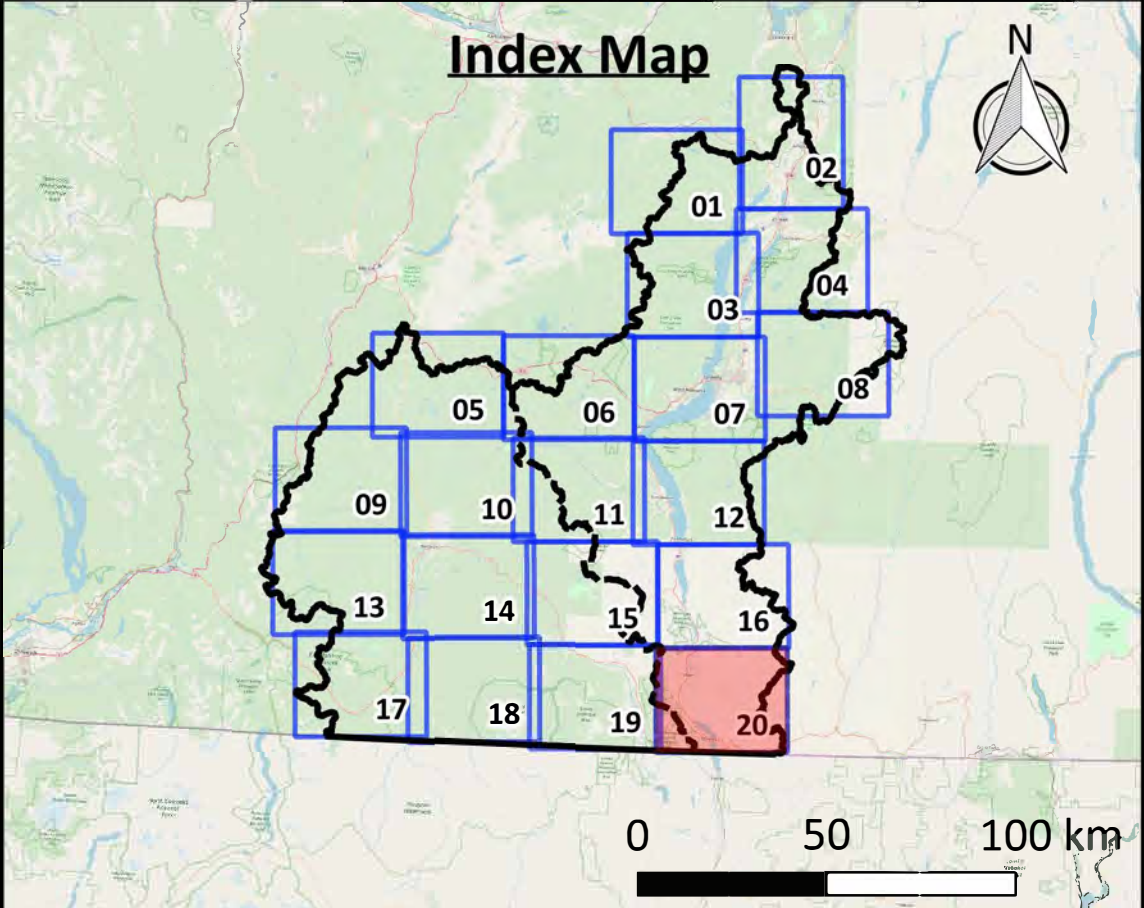
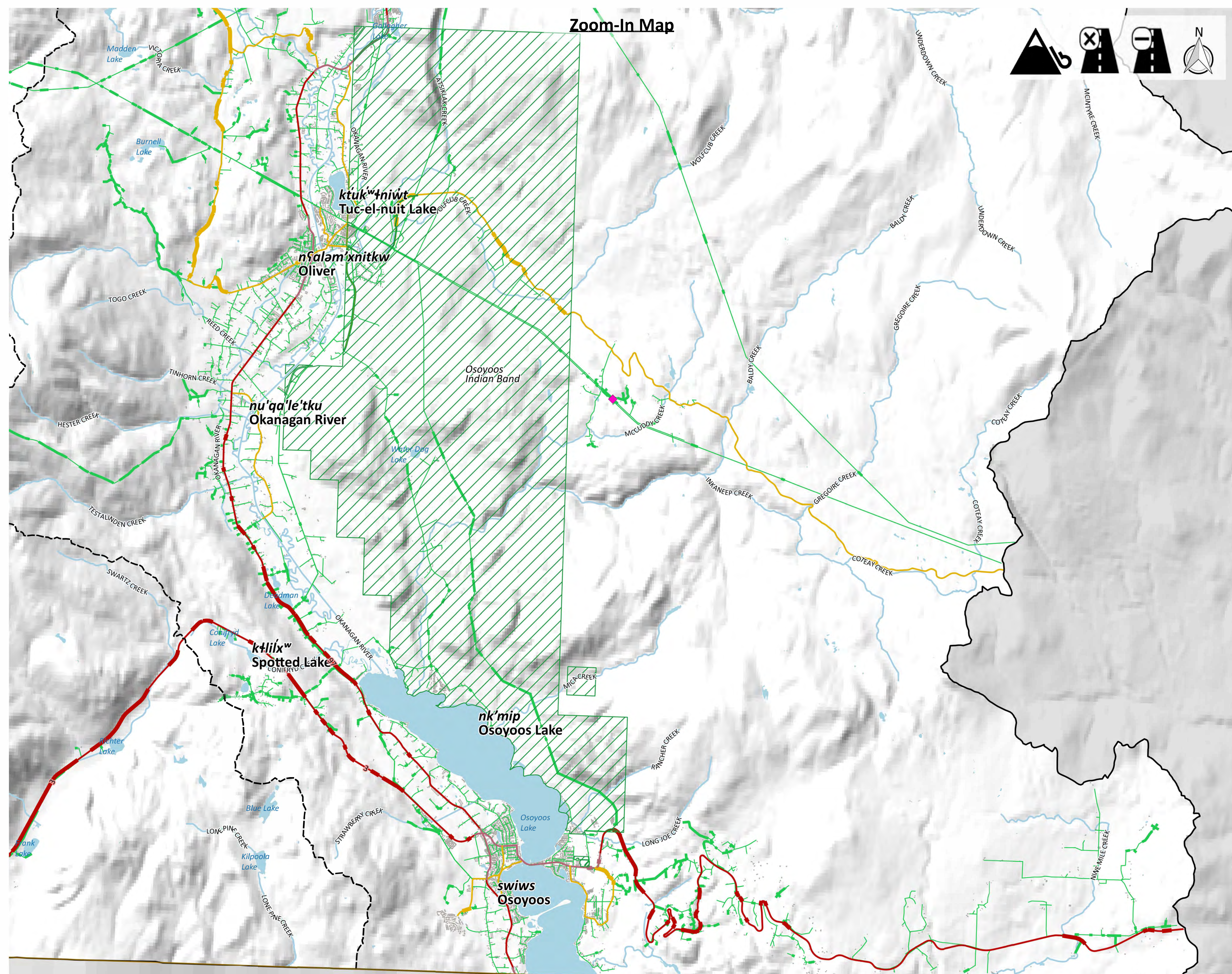
Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
Produced by: Ebbwater Consulting Inc.

Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 19 of 20

ANSI D - Map No. D-D-003-019



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Legend

Watershed Boundary	Critical Electric Structures
Okanagan-Similkameen Boundary	Critical Gas Structures
Canada - US Border	Affected Highway
Reserves	Affected Collector Road
Building Footprints	Affected Arterial Road
Lakes	Affected Rail
Watercourses	
Highway	
Collector Road	
Arterial Road	
Rail	

Date: 31 December 2019
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Sylix (Okanagan) Flood and Debris Flow Risk Assessment Project
Debris Flow - Disruption
Map Tile 20 of 20

ANSI D - Map No. D-D-003-020