Levelton Consultants Ltd

Sea – to – Sky Highway Corridor Improvement Project

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BC and Yukon Chapter of the
Pacific Northwest and International Section (PNWIS) of the
Air and Waste Management Association (A&WMA)
March 18th, 2004

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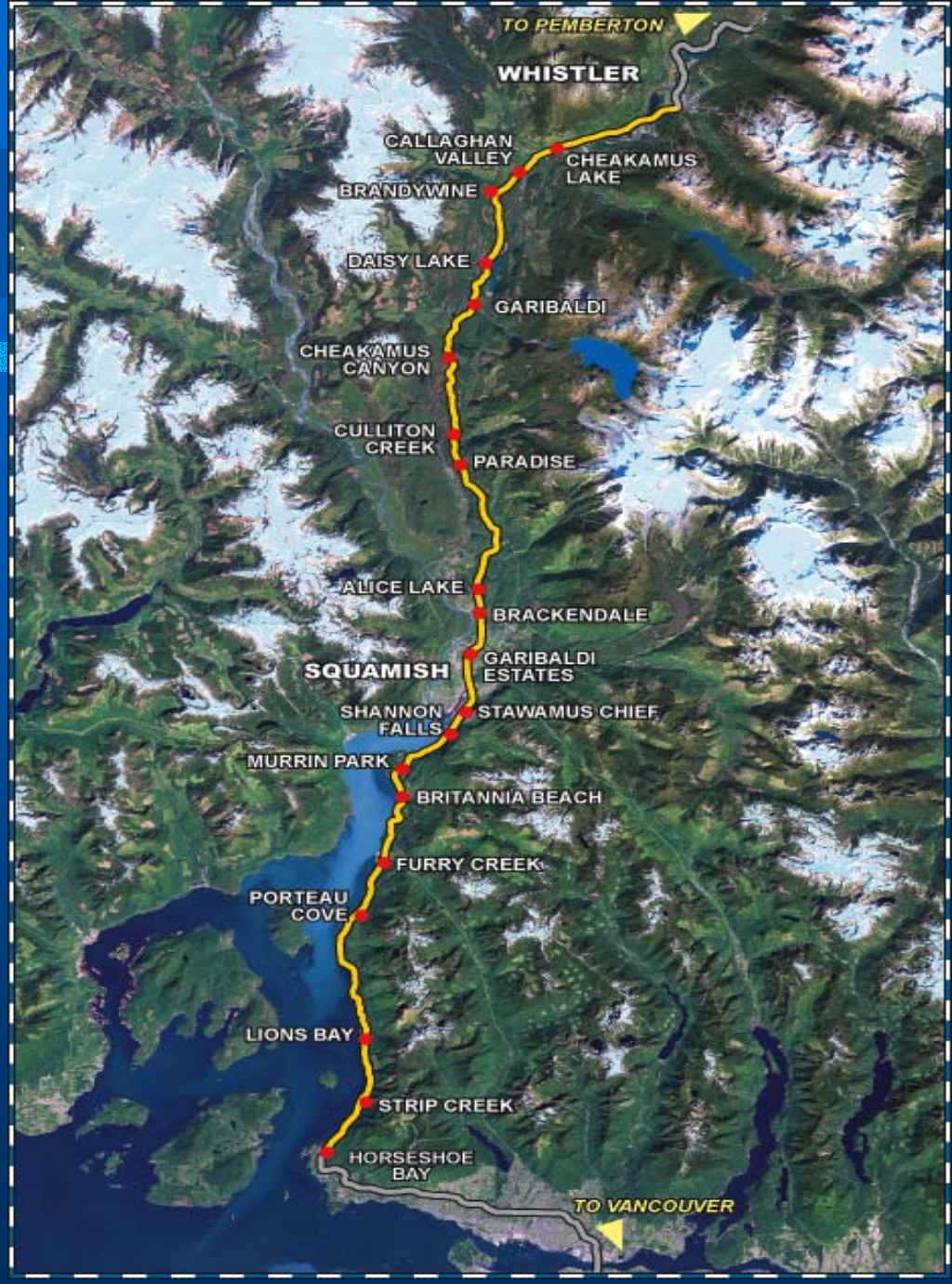
Outline

- Project Description
- Air Quality
  - Emissions
  - Methodology
  - Issue Highlights



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Project Description

- Sea to Sky – Highway 99
- $600 million
- Improvements – Not Upgrade
- Approximately 95km
- Nelson Creek to Function Junction
- Excl. Culliton Creek to Cheakamus Canyon

Project Description

- Horseshoe Bay to Sunset Beach
- Two Options were considered
  - Option 1: 1km Tunnel from Nelson Creek to Pasco Road
  - Option 2: 2 New Northbound lanes

Project Description

- Furry Creek to South Stawamus
  - 3 lanes alternating passing
- Lions Bay to Furry Creek
  - 2,3,4 lanes exist - upgraded for safety
- Sunset Beach to Lions Bay
  - Upgraded and widened from 2 to 4 lanes

- South Stawamus to Depot Road
  - 4 lanes plus centre turning slots
- Depot Road to Culliton Creek
  - 2 lanes with 4 lane segments
- Culliton Creek to Cheakamus
  - 2 to 3 lanes underway
- Cheakamus to Function Junction
  - 3 lane with alternating passing

Air Quality Assessment

- Characterized Airshed / Climate
- Emissions – CACs and GHGs
- Modelling - CALMET and CALINE
- 2000, 2010, 2025 projected emissions; tunnel options; winter olympics; construction impacts

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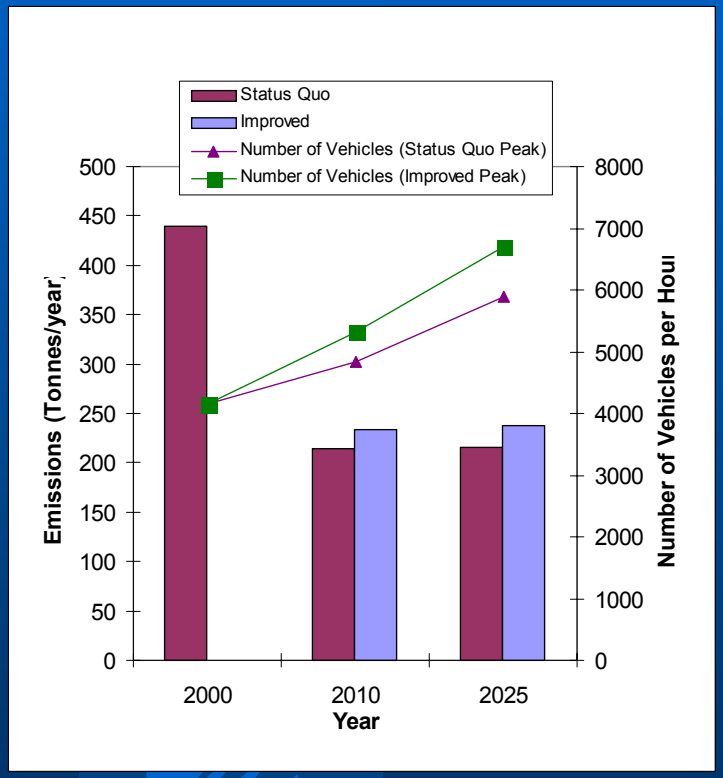
Emissions



Pollutant	2000 Baseline (tonnes)	2010 Status Quo (tonnes)	2025 Status Quo (tonnes)	2010 Improved (tonnes)	2025 Improved (tonnes)
SO2	12.7	2.1	2.7	2.3	2.9
VOC	440	214	216	234	237
NOX	477	233	190	252	206
PM	12.1	8.1	10	8.7	10.9
PM10	12.1	8.1	10	8.7	10.9
PM2.5	8.9	4.5	5.5	4.8	6
CO	4019	1996	2090	2177	2293
NH3	19.4	25.5	31.9	27.9	35
CO2E	104252	115436	136331	125506	149178

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Emission Highlights

- **Emissions Improving – vehicle and fuel regulations**
- **Ammonia**
- **Greenhouse Gases**
- **Transportation Demand Management**

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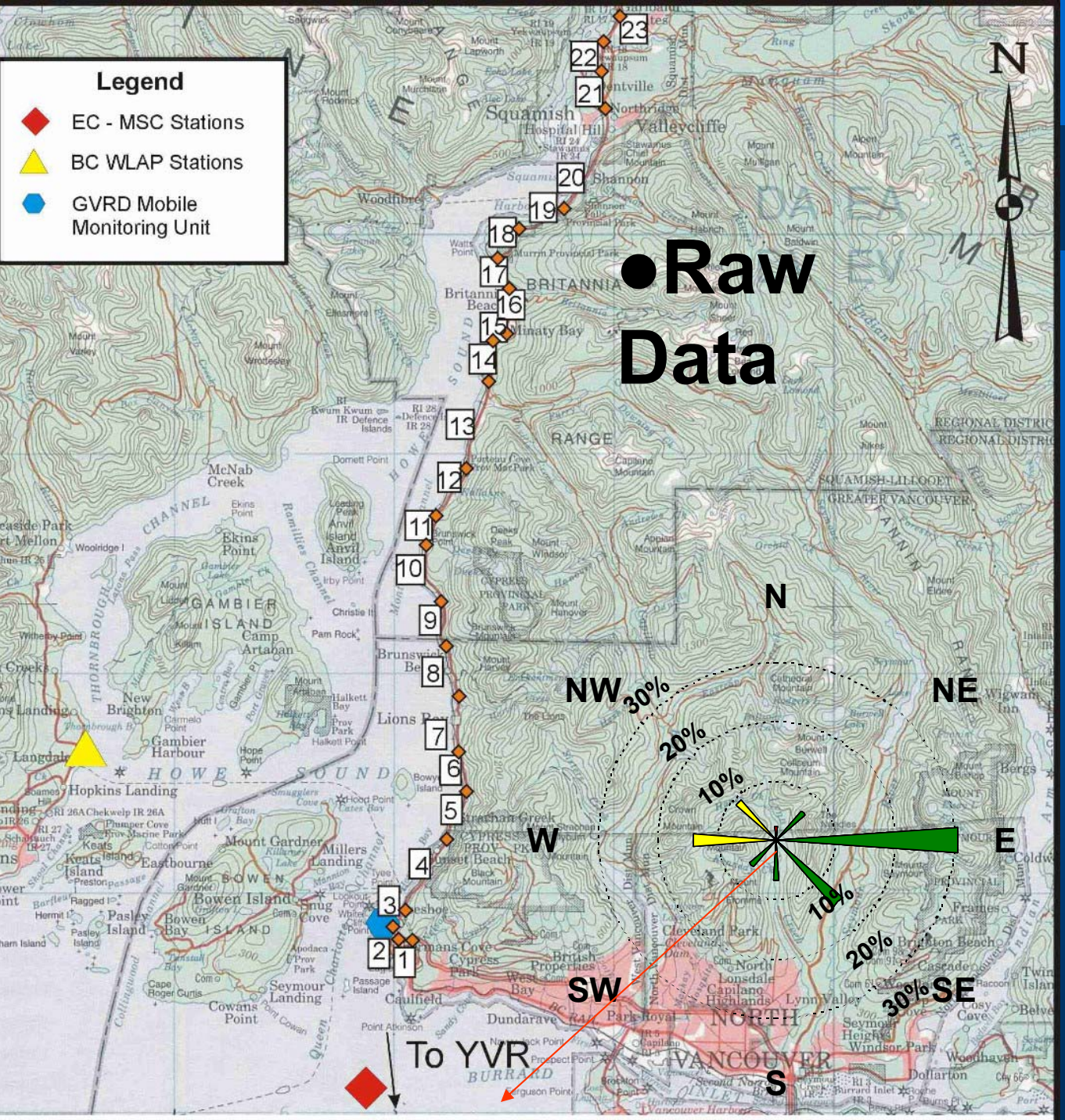
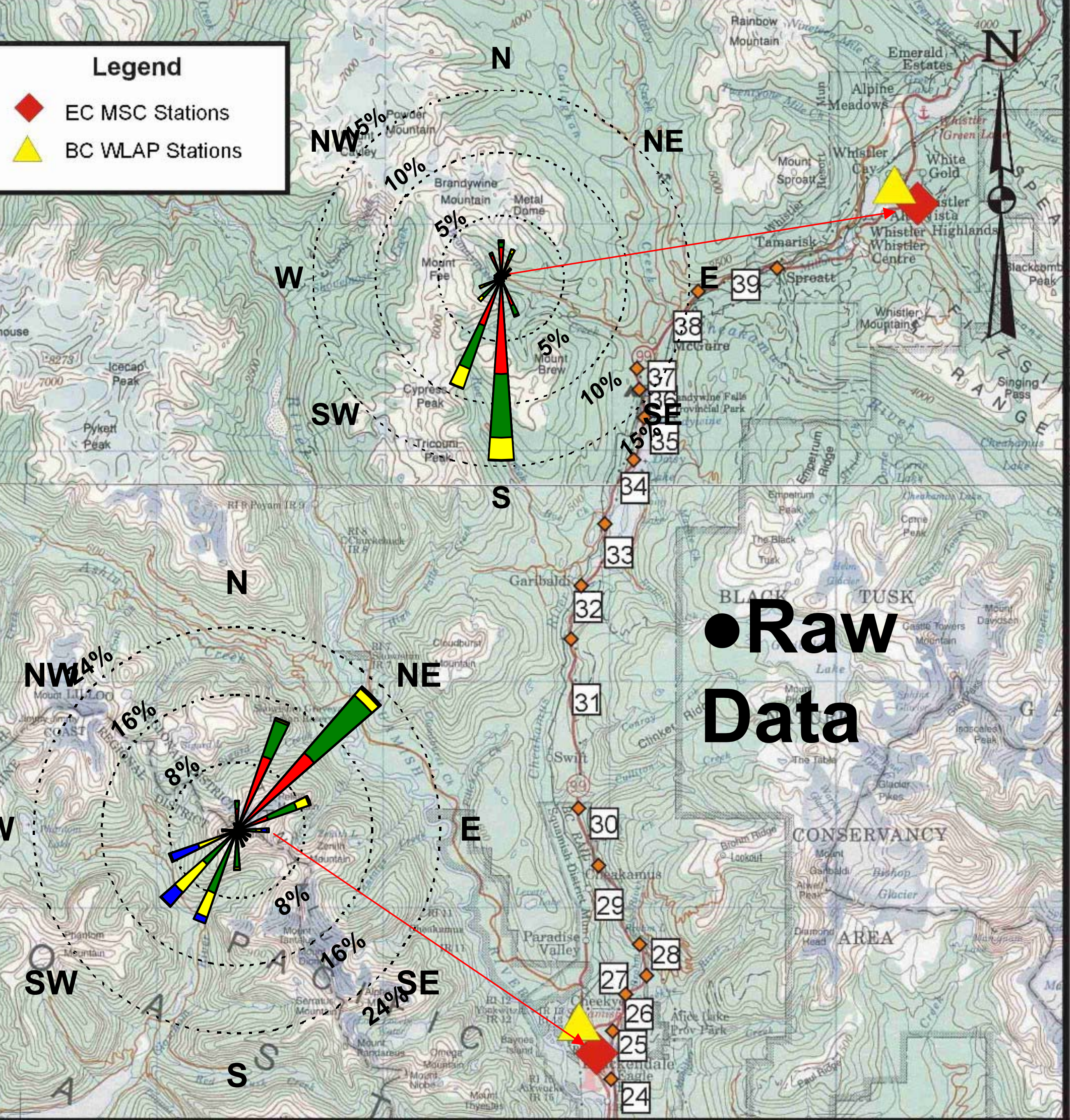
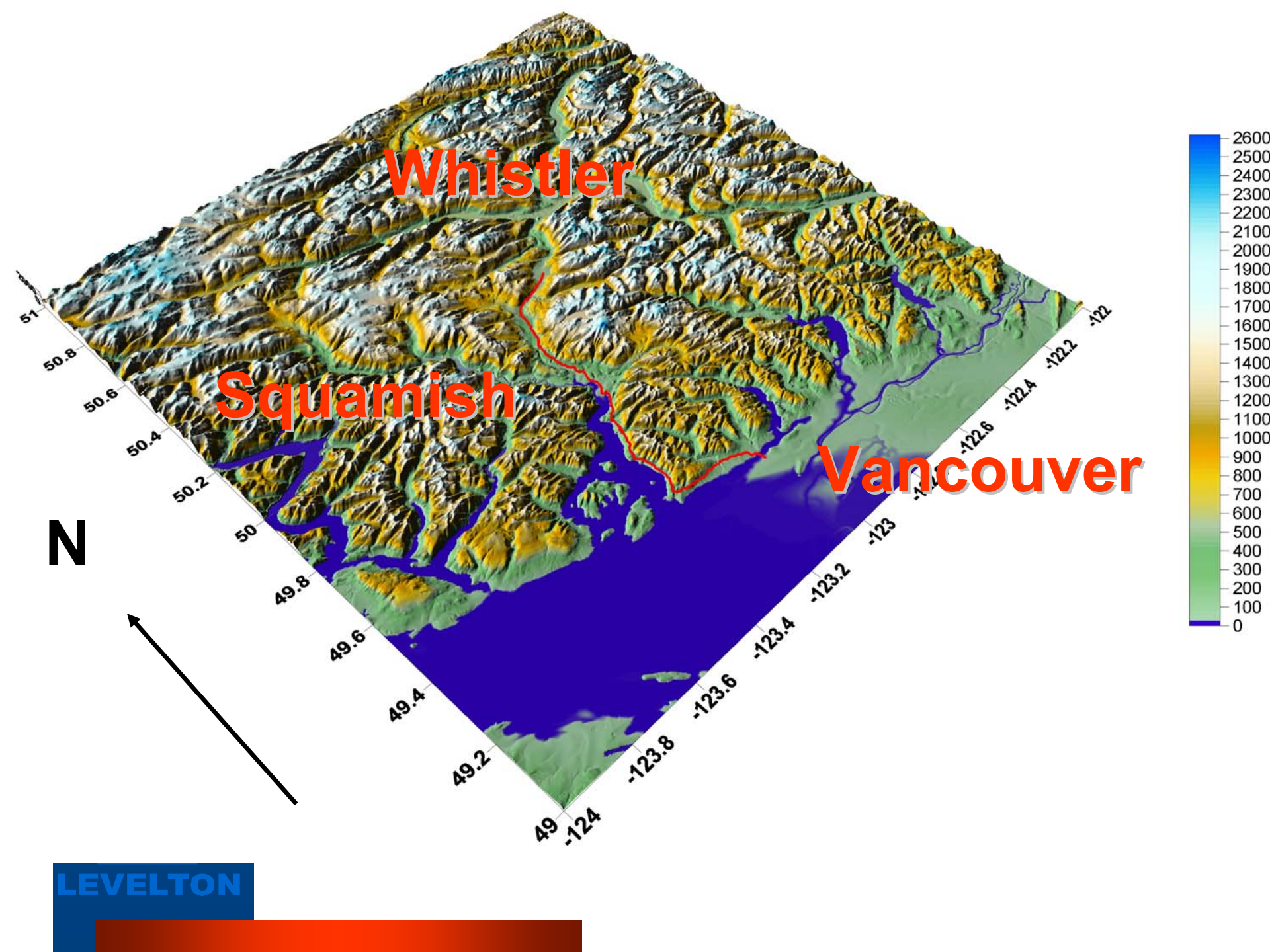


- Capture effects of terrain near the roadway
- Existing tools do not address all issues
- Applied a different approach



- CALMET using MC2 data
- Points extracted from CALMET
- CALINE run for various scenarios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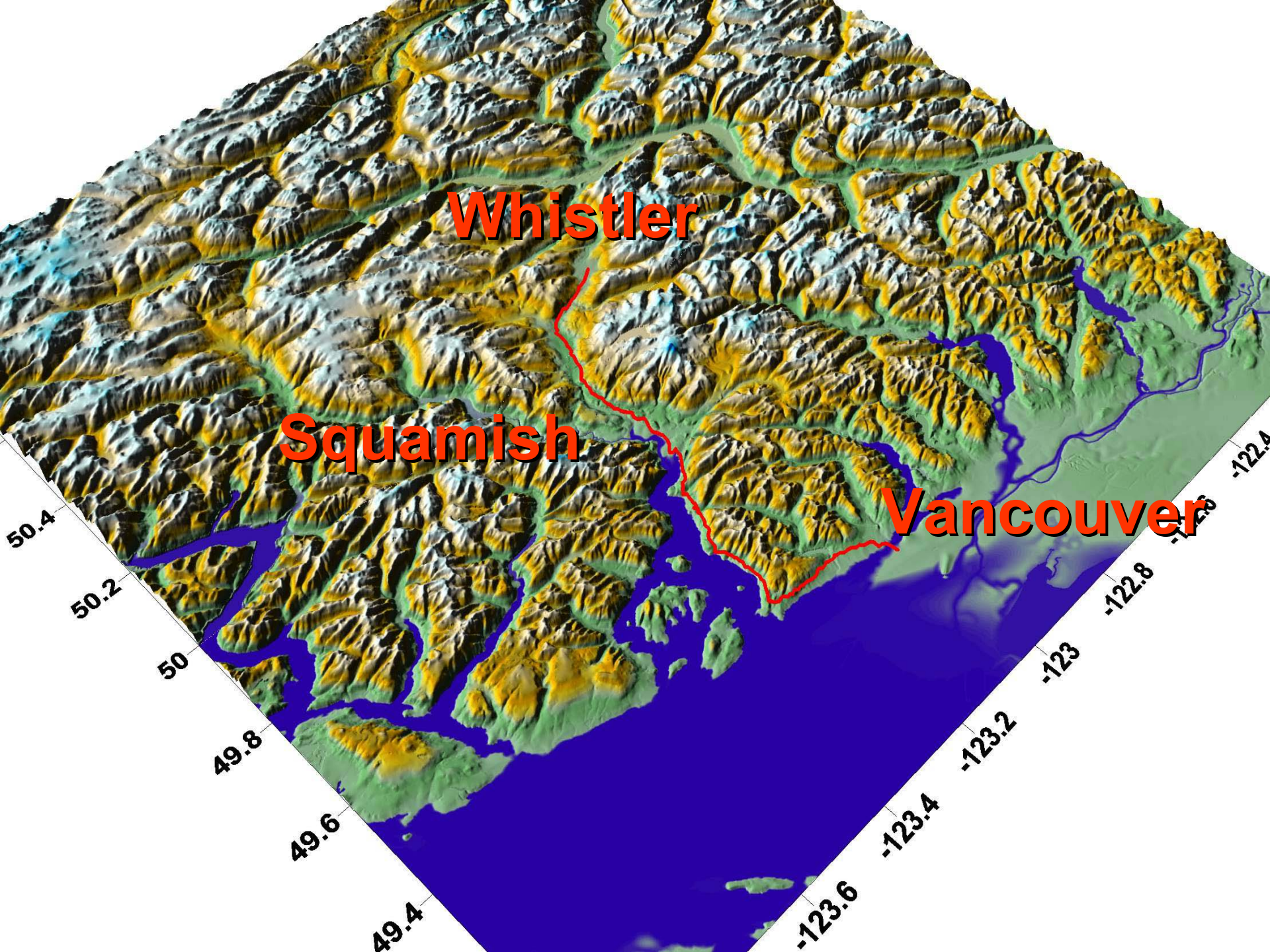
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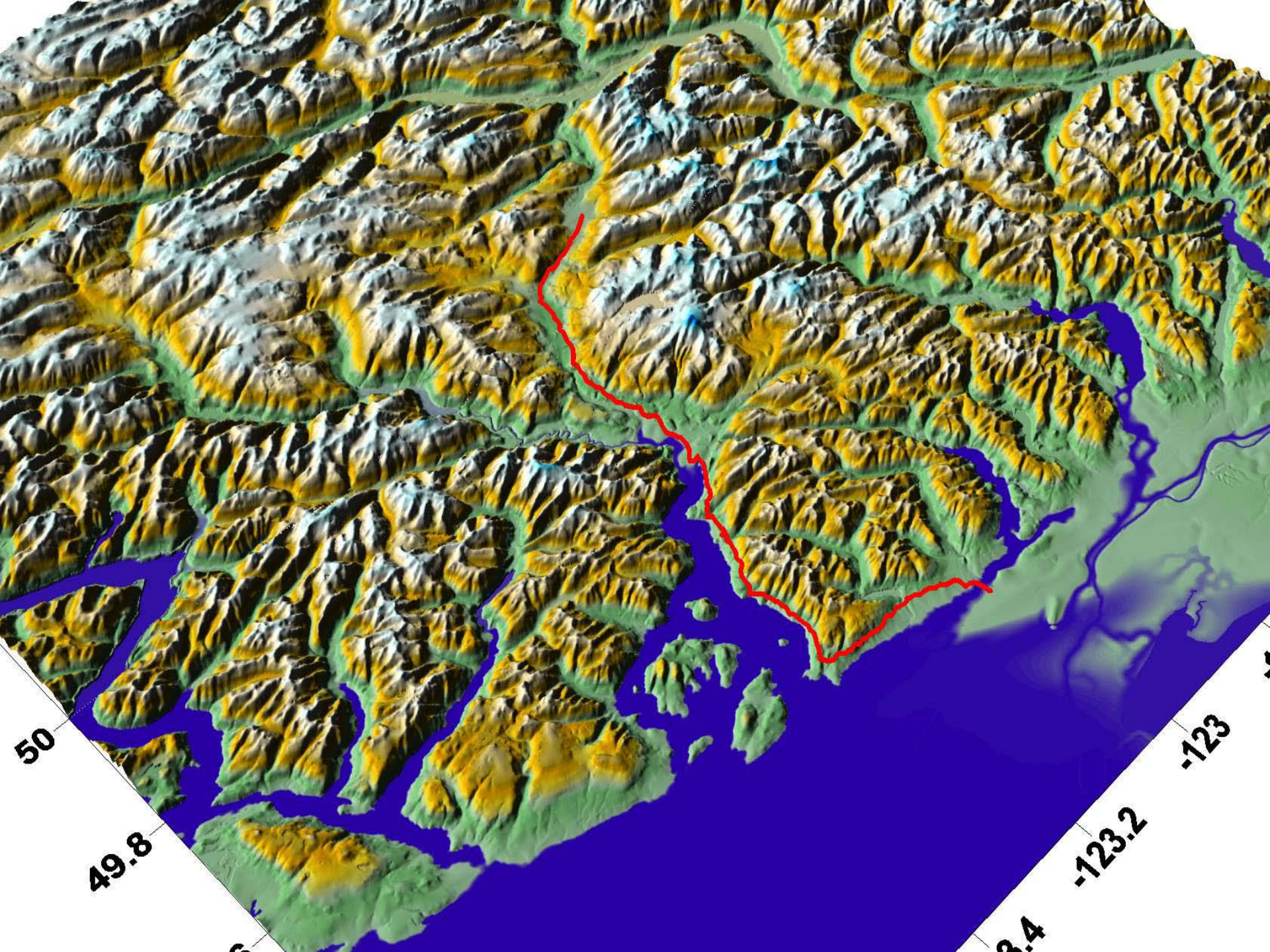
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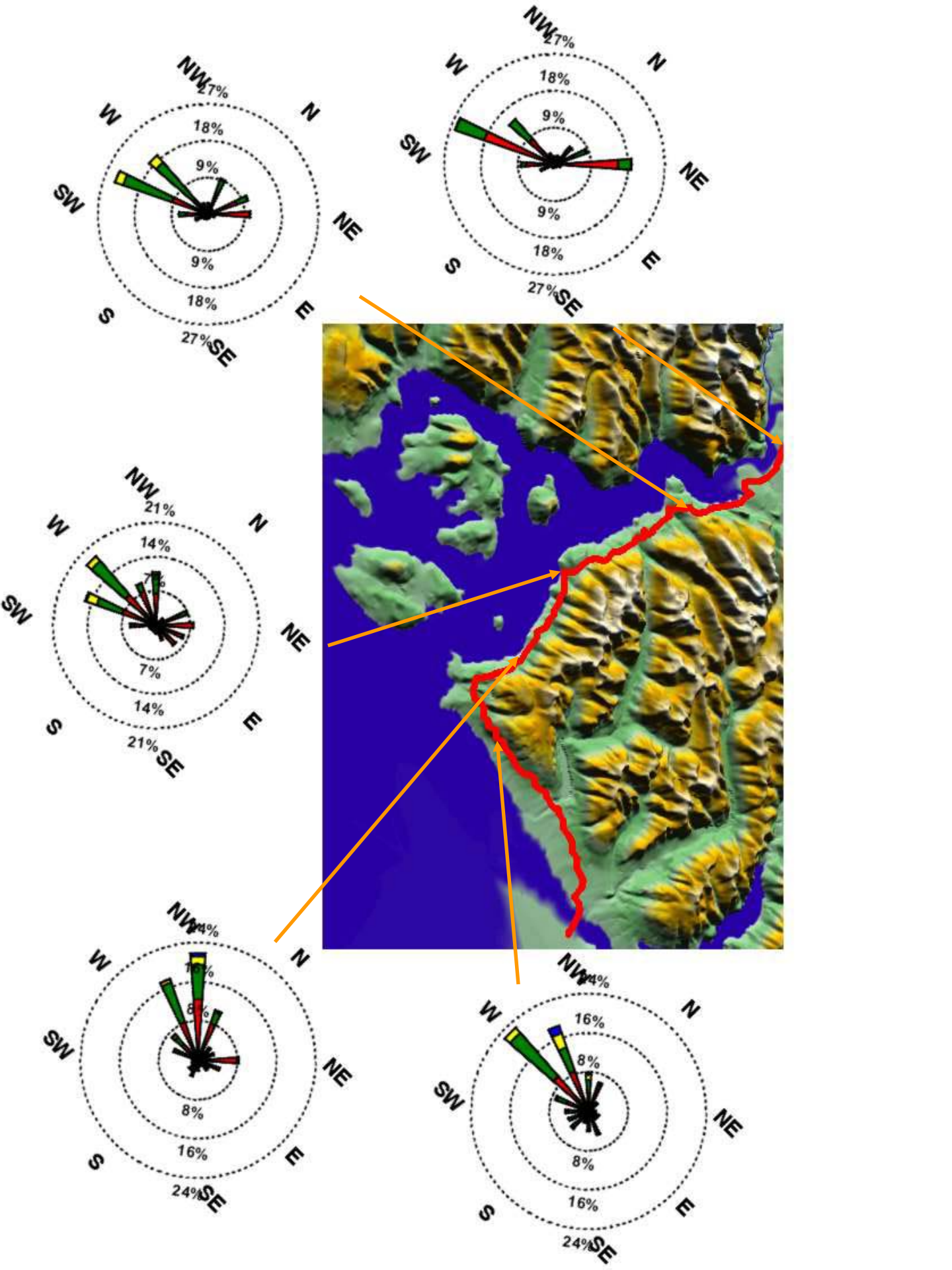
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Air Quality - Operation Phase

- **Projected traffic is expected to increase approx. 20% through 2025**
- **Ambient concentrations predicted to remain below applicable guidelines**
- **Transportation Demand Management presents opportunities to mitigate or improve air quality**

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Air Quality – Construction

- Construction 2004-2009
- Modelled Construction Activities in 1km ‘packets’ along the highway
- Emissions from Asphalt Plants, Crushers, Screeners, Trucks, etc
- StS Particulate matter concentrations are near ambient guidelines / CWS

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Air Quality - Construction

- **Removal and filling of material in one trip (stockpiles)**
- **Watering of surfaces on dry days**
- **Cover haul/dump loads over long distances**
- **Monitor PM_{10} & $PM_{2.5}$ near residences**

Summary

- Air Quality and Construction Mitigation for Highway Improvements
- First time modelling technique applied to Transportation Projects
  - Potential for Further Improvements
- Construction Mitigation and TDM Important - CI/KCAC

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Questions?

Acknowledgements

**StS – A. Buckingham, I. Doyle,
Bio-physical Working Group;
Levelton Staff – R.G. Humphries,
M. Furberg, W. Edwards;
Photos by: A. Schutte, K. Jassak,
erikburd.org, whistlercreek.com;
GVRD – K. Der, J. Jennejohn**