Animal Vehicle Collision (AVC) Study and Mitigations

Photo: Tony Clevenger

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Overview

1. History and Intent of the Animal Wildlife Watch Program (AWWP)
2. Provincial Wildlife Site Sensitivity Rating (WSSR)
3. Methodology Used by WSP

Animal-Vehicle Collision Prone Locations (AVCPLs)

Background

Cost to society

$300 000/day (TEC 2023)

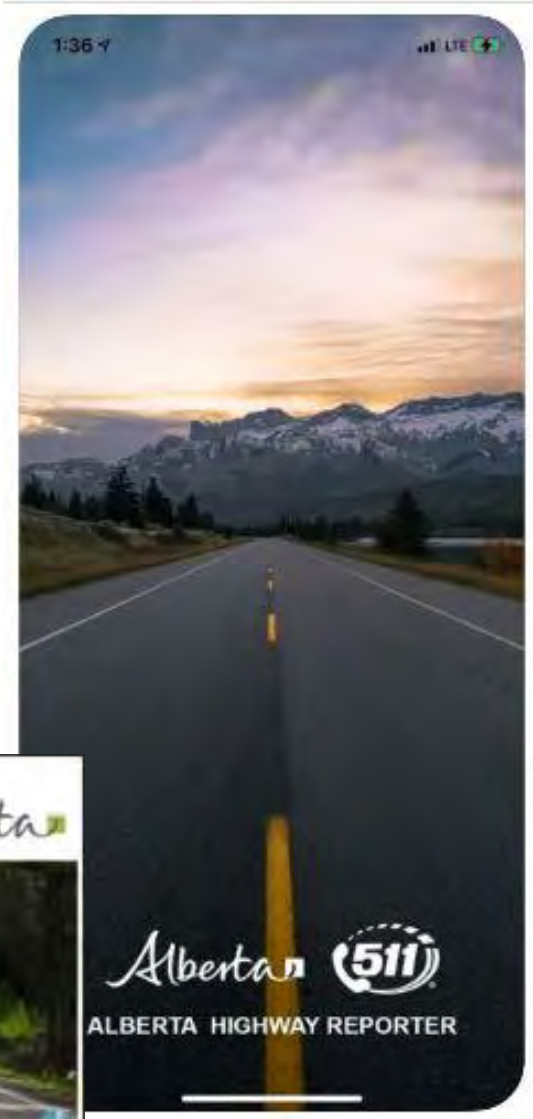
Average of five human fatalities each year (2019)

60% of all reported vehicle accidents on provincial rural highways are AVCs (2020)

Animal Wildlife Watch Program

Application and website tool

1. Identify AVCPLs
2. High-quality data for effective decision making (in real time)
3. Develop departmental policy & standards
4. Allows for innovation and evaluation of long term mitigation effectiveness



Wildlife Site Sensitivity Rating

Professional Biologist verifies each of the hotspots

1. Determines contributing factors
2. Ensures the site is suitable
3. Current land-use
4. Area Structure Plans

Ensure that a newly installed mitigation won't be compromised later

Wildlife Site Sensitivity Rating

1) Validate
2) Disqualify
3) Influence wildlife mitigation planning
4) Prioritize mitigation planning

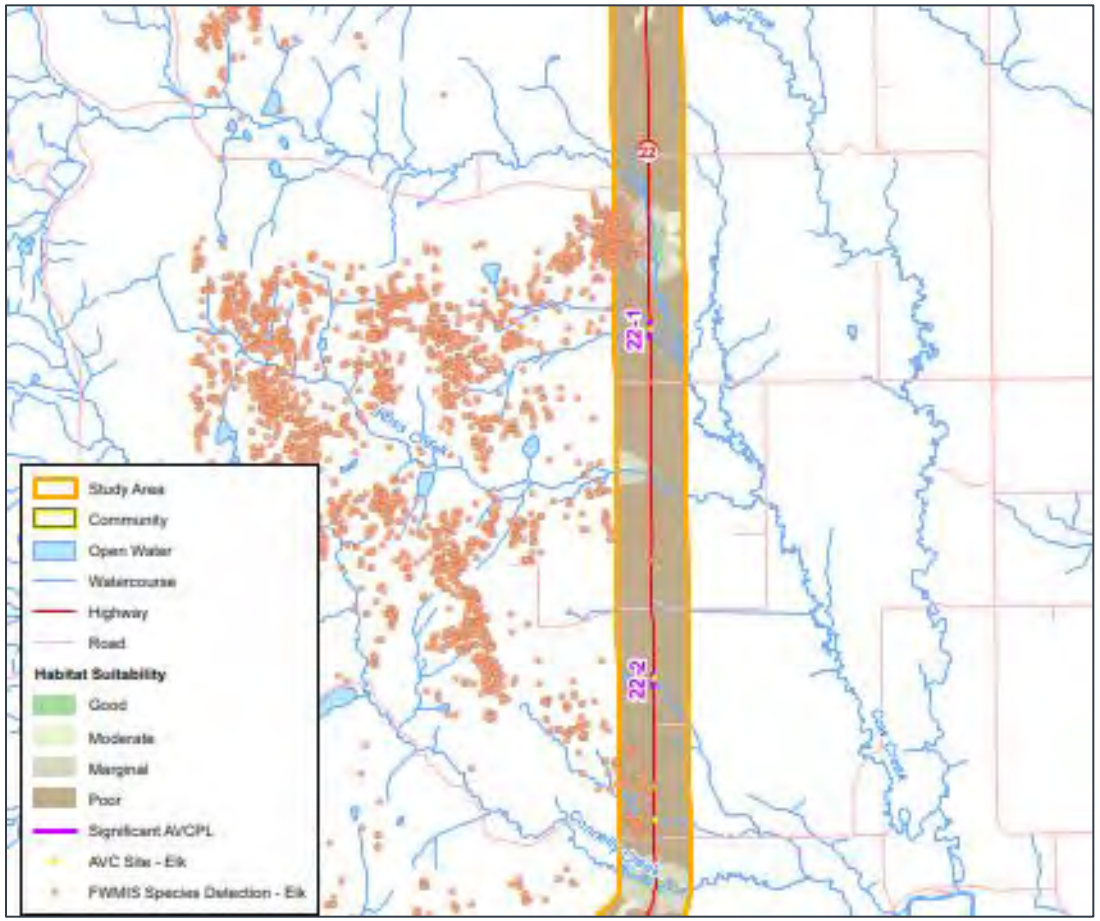
AVC mitigation planning is initiated once an AVCPL is identified and validated.

Score = Proceed OR Do Not Proceed
Or relative low cost <$100,000

How does WSP determine AVCPLs?

Collect site specific data and use segments to better understand collisions on a local scale:

- AWW
- Police Carcass Data;
- Key Wildlife Biodiversity Zones
- Species at Risk Reports

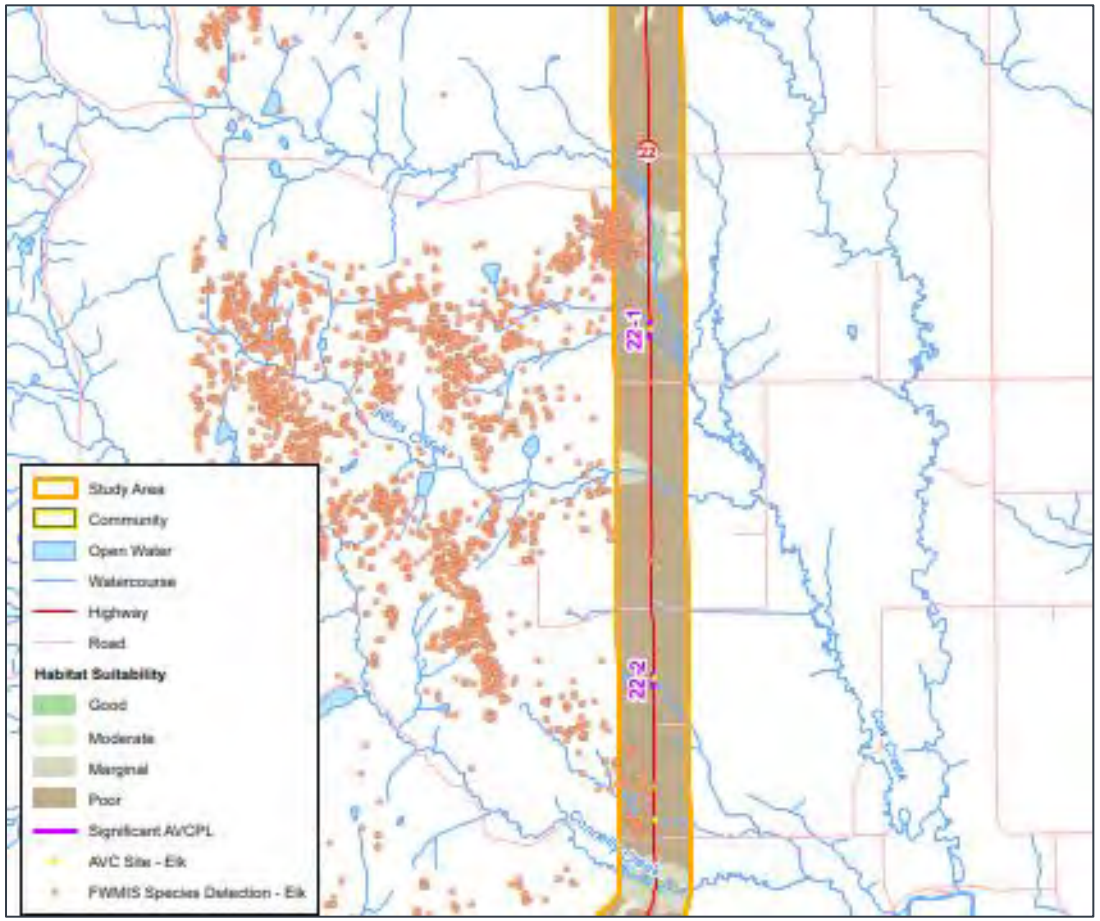


Initial Assessment + Ecological Connectivity

How does WSP determine AVCPLs?

Habitat Suitability Modelling results are overlaid to identify if the collision zones are linked to high suitable habitat.

We then conduct field assessments to verify and confirm the analysis.



How does WSP determine AVCPLs?

A cluster analysis is performed on the data using a Relative Kernel Density Estimation (KDE) analysis.

- Provides information on the ecological connectivity for wildlife species in proximity to each highway segments.
- Takes the information from each accident site and identifies statistically significant accident locations that are of greatest concern

Perform a Monte Carlo repeat random simulation to discern significance within each segment.

- Look for clusters above the 95-percentile to be considered significant.

The strength rating provided by the AWW program is applied to inform identification and prioritization of AVCPLs.

- Significant AVCPLs have a strength score ≥0.6 and with ≥5 carcasses, are considered for mitigations.

Development of Strategies for Cost-effective Mitigation Planning

Prepare:

1. AVCPL Identification Report

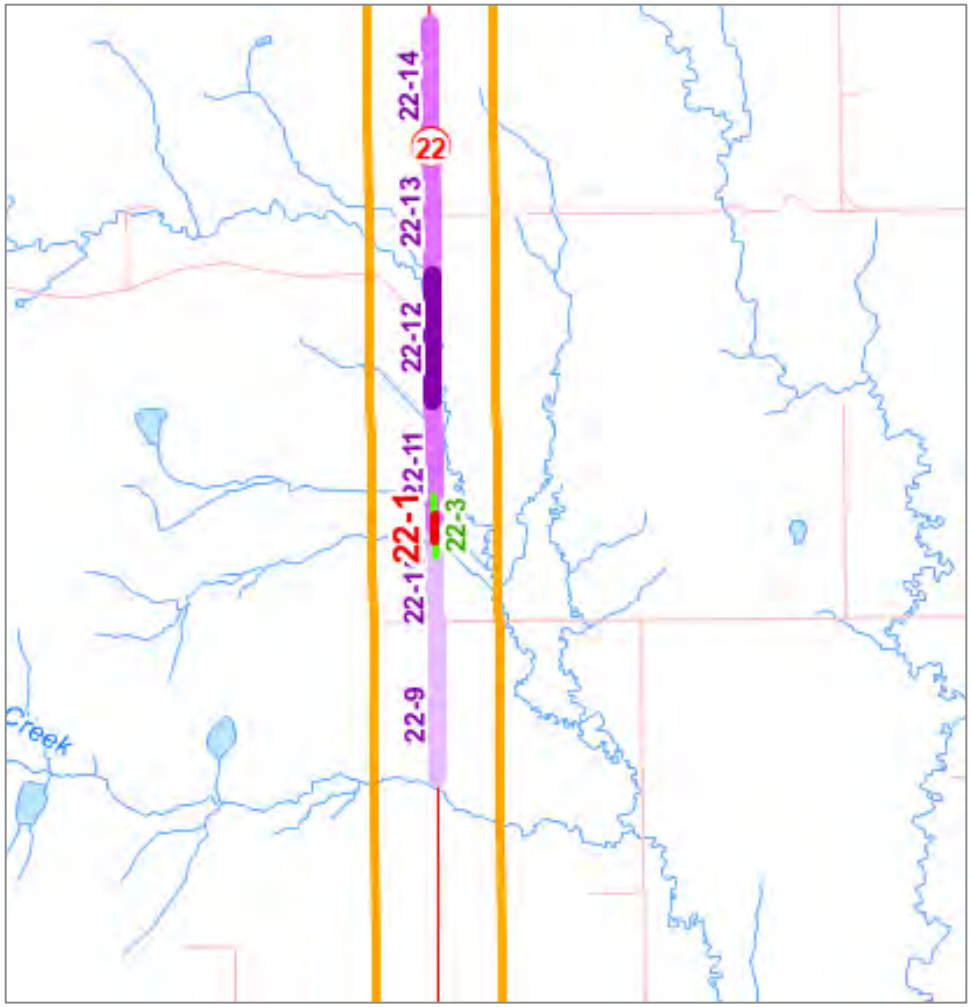
   - Hotspots with their respective strength ratings.

2. AVC Mitigation Plan.

   - Present the Department with mitigation options for each top rated AVCPLs per Hwy segments.

   - Species targeted and site characteristics

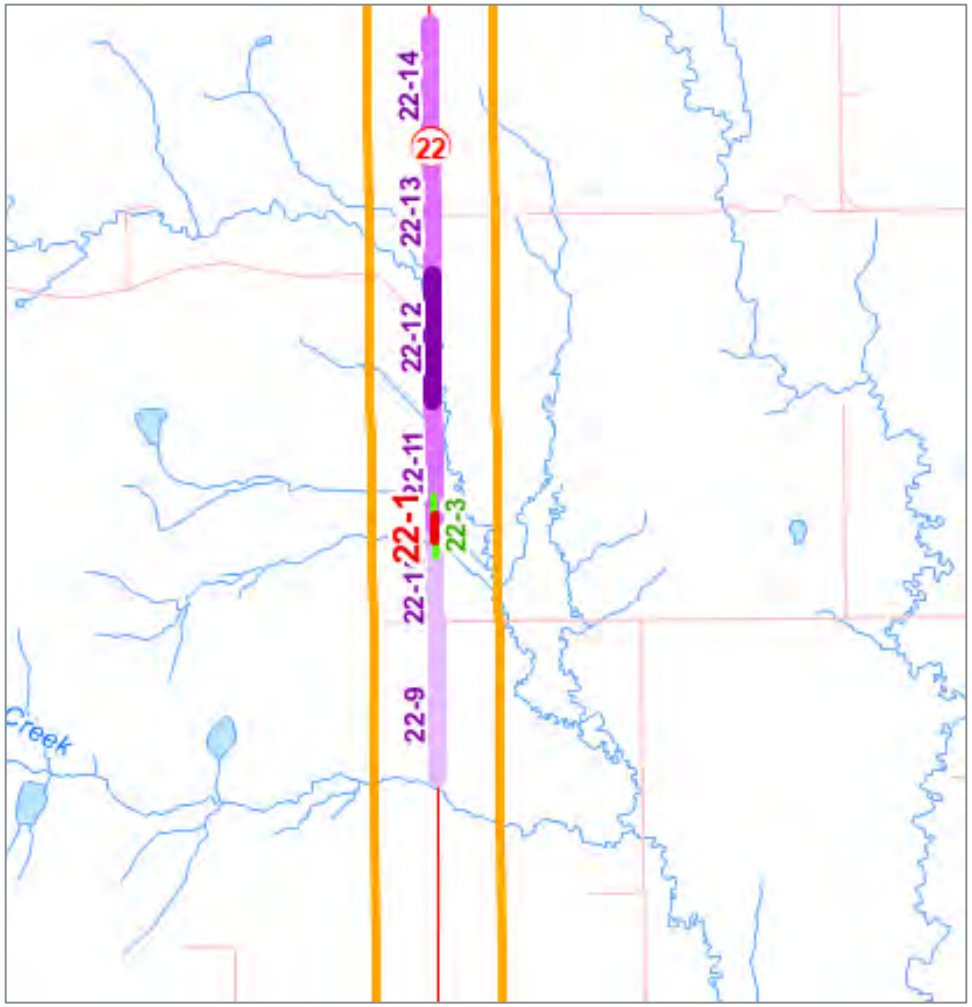
3. AVC Mitigation Construction Plan



Development of Strategies for Cost-effective Mitigation Planning

Mitigations

- Fencing
  - Jump outs
- Animal Detection Systems
  - Currently in trial phases
- Wildlife Overpass or Underpass
  - Cost ranges
  - Up to $18 million – Bow Valley Gap Wildlife Overpass Project



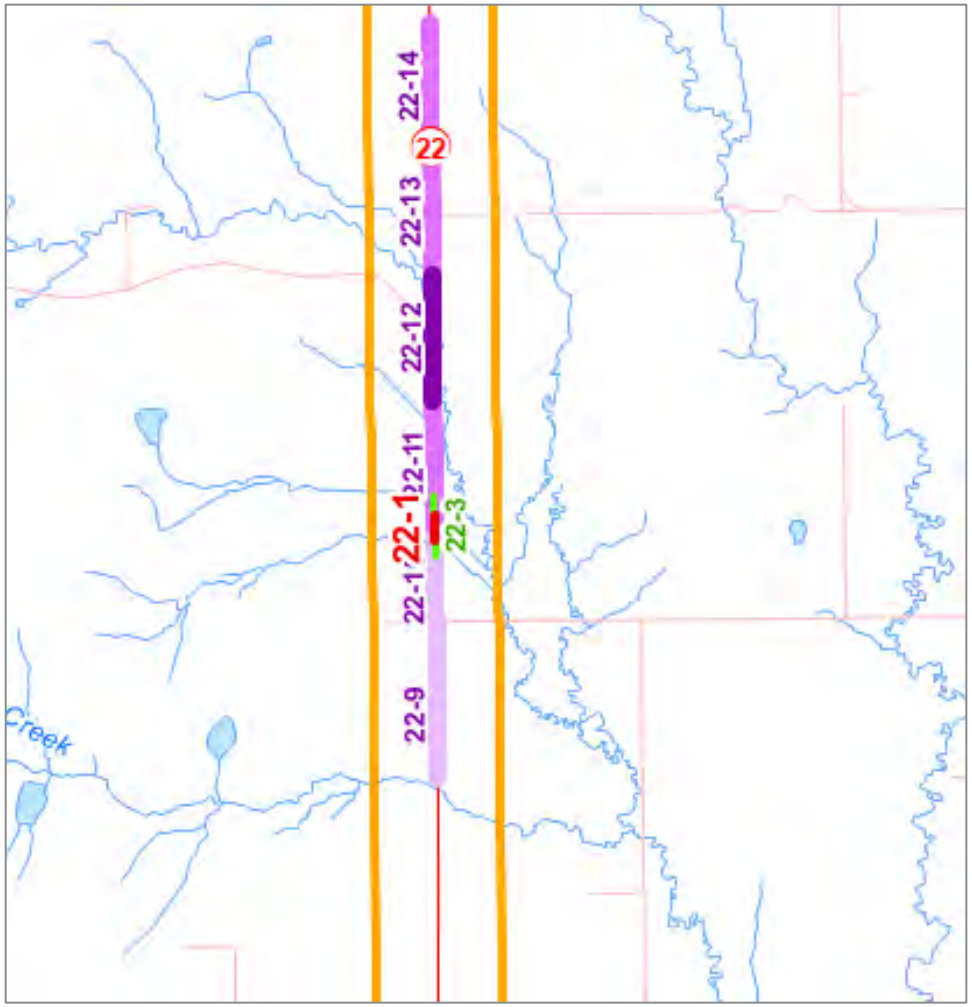
Development of Strategies for Cost-effective Mitigation Planning

Animal Detection Systems

System of warning motorists

- Radar based
- Detect large-bodied mammals such as elk and deer, moose
- Estimated item cost

  ~$ 250 000 per km



Areas Assessed Using this Approach

WSP has worked on 6 different Highways:

- **Hwy 1** (58 km section; 359 collisions; 9 AVCPLs)
- **Hwy 3** (8 km section; 63 collisions; 1 AVCPLs)
- **Hwy 22** (26 km section; 60 collisions; 3 AVCPLs)
- **Hwy 2** (16 km section; 134 collisions; 3 AVCPLs)
- **Hwy 11** (126 km section; 276 collisions; 11 AVCPLs)
- **Hwy 587** (40 km section; 130 collisions; 2 AVCPLs)

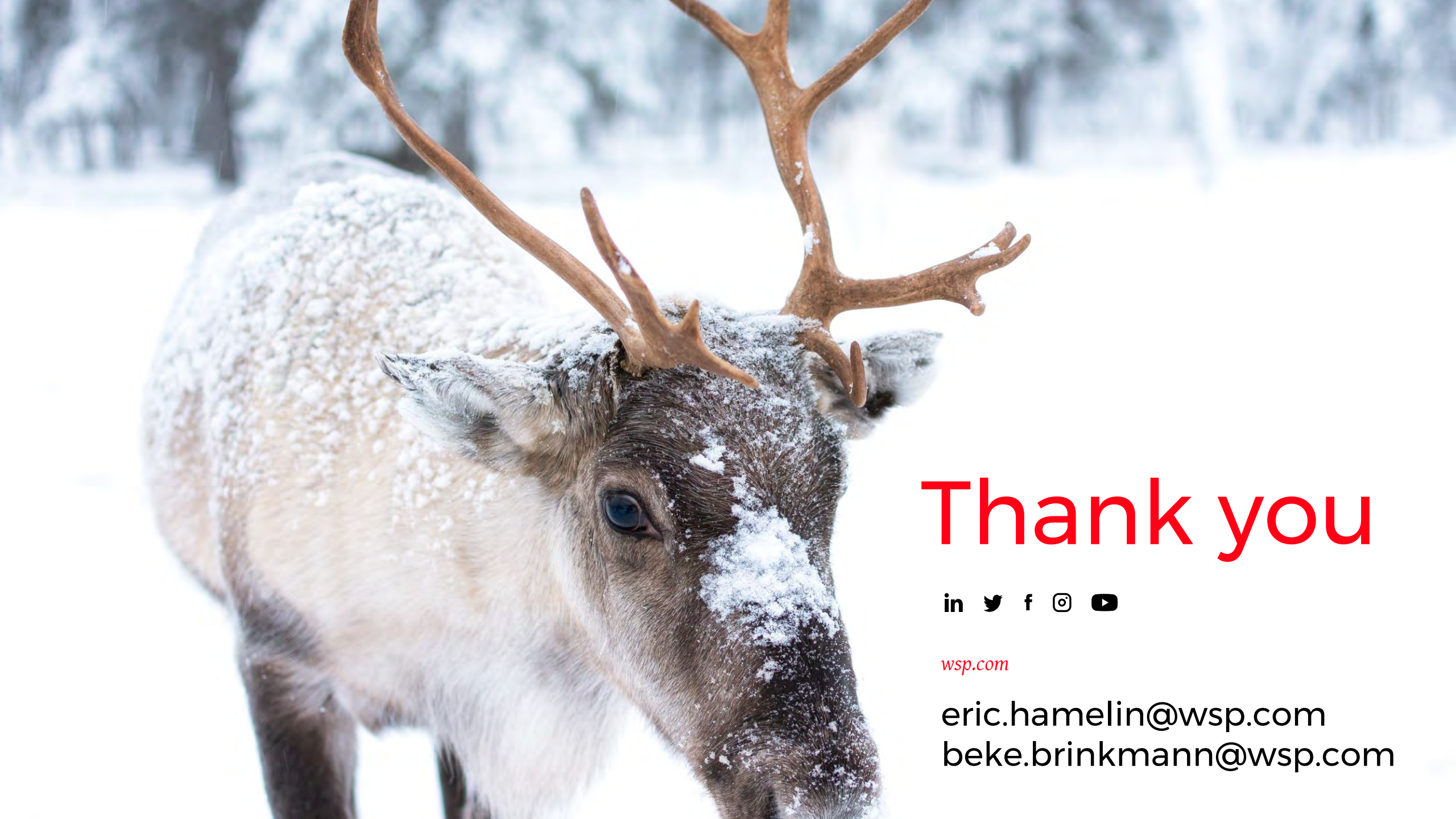
Helpful Resources

Mitigation Planning Guidelines

- TEC has developed and released a series of guidelines to guide through the mitigation planning process.
- With environmental regulator, academic partners and industry experience

Benefit Cost Model User Guide

- Model Output => Benefit Cost Ratio [BCR]



Thank you

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