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Abbreviations

EIA	environmental impact assessment
TAS	traffic accommodation strategies

16.0 ASSESSMENT OF POTENTIAL EFFECTS ON INFRASTRUCTURE AND SERVICES

The scope of the assessment and existing conditions for infrastructure and services is presented in Volume 3A, Section 16.1 and Section 16.2.

16.1 PROJECT INTERACTIONS WITH INFRASTRUCTURE AND SERVICES

Table 16-1 identifies the interactions of the Project with infrastructure and services during flood and post-flood operations. These interactions are discussed in detail in Section 16.2. in the context of effects pathways, standard and project-specific mitigation, and residual effects. A justification for no interaction is provided following the table.

Table 16-1 Project-Environment Interactions with Infrastructure and Services during Flood and Post-flood Operations

Project Components and Physical Activities	Environmental Effects		
	Change in Infrastructure and Services	Change in Accommodation Availability	Change in Transportation Infrastructure and Services
Flood and Post-Flood Operations			
Reservoir filling	–	–	✓
Reservoir draining	–	–	✓
Reservoir sediment partial clean up	–	–	✓
Drained reservoir	–	–	–
Channel maintenance	–	–	✓
Road and bridge maintenance	–	–	✓
NOTES: ✓ = Potential interaction – = No interaction			

Three assessment scenarios are considered in this environmental impact assessment (EIA): 1:10 year flood; 1:100 year flood; and the design flood (the 2013 flood) (see Volume 2). Of the three scenarios, only the design flood would interact measurably with infrastructure and services.

In the other two flood scenarios, floodwaters would not affect the existing road network, and maintenance operations in the diversion channel and off-stream reservoir can likely be completed without disrupting traffic on public roads. Consequently, these two flood scenarios (1:10 and 1:100) are not further assessed. The presence of the drained reservoir would not interact with infrastructure and services. The workforce required during the flood and post-flood scenarios would be sourced locally and not affect accommodation availability in the RAA.

Project activities will not interact directly with any infrastructure and services located on the Aboriginal reserve within the LAA/RAA. If population-related demands were expected, they would likely occur in the larger service areas within the LAA/RAA, since it is unlikely that Project workers would relocate to smaller communities or an Aboriginal reserve. However, as described above, since workers will likely live within commuting distance of the Project, no additional population-based demands are expected to be placed on any communities within the LAA/RAA, including Tsuu T'ina Nation 145.

16.2 ASSESSMENT OF RESIDUAL ENVIRONMENTAL EFFECTS ON INFRASTRUCTURE AND SERVICES

16.2.1 Analytical Assessment Techniques

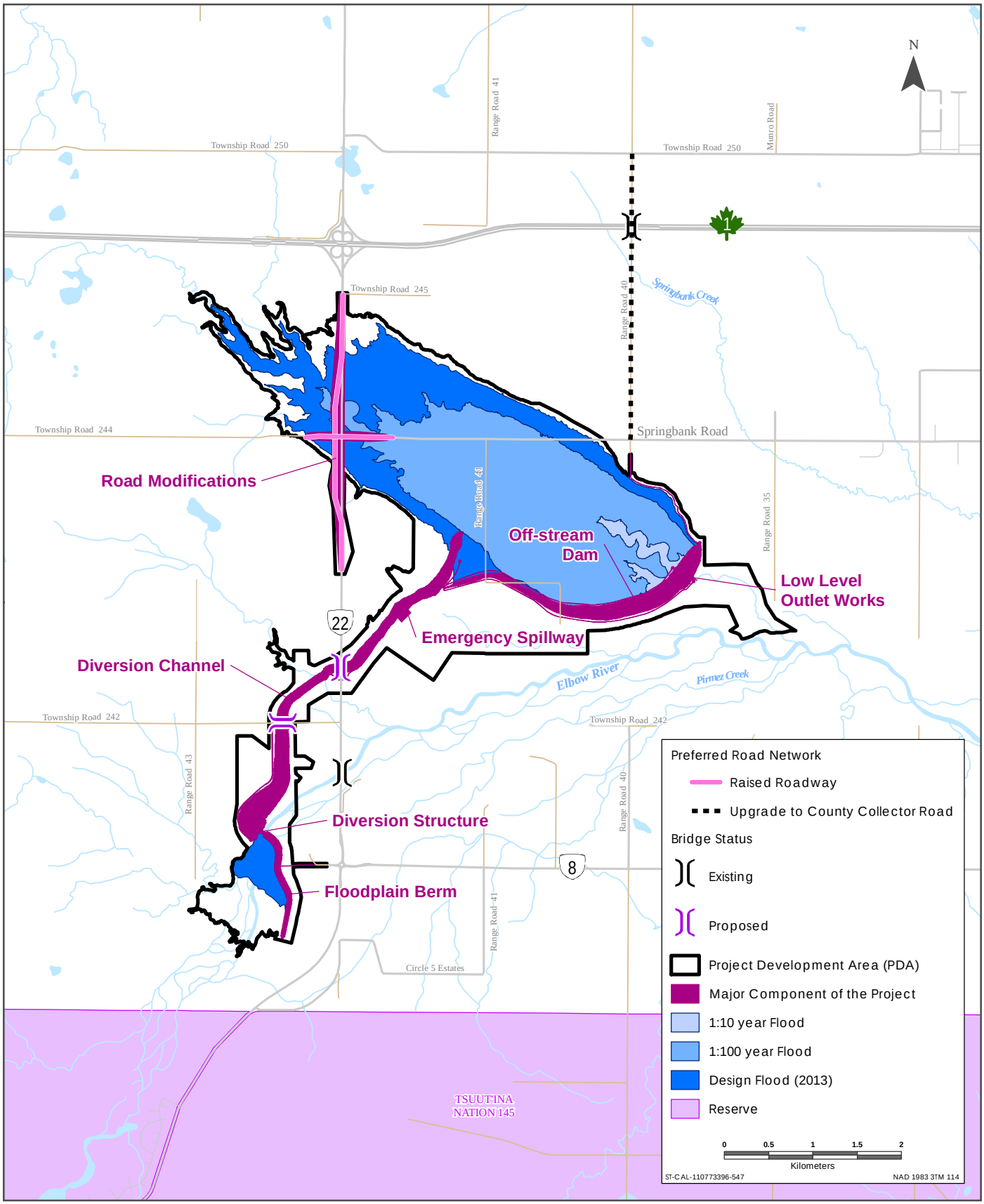
Effects are characterized using the same definitions as presented in Volume 3A, Table 16-2 with the exception that duration is defined as the time following flooding (reservoir filling and draining) for infrastructure to return to pre-flooding conditions. Duration is defined as: Short-term –effect lasts for up to one year; Medium-term effect extends through several years up to 10 years; and Long-term effect that extends longer than 10 years.

16.2.2 Change in Transportation Infrastructure and Services

16.2.2.1 Project Pathways

Flood Operations

During a design flood (see Figure 16-1), 3.1 km of Springbank Road east of Highway 22 would be submerged and traffic would be rerouted to Range Road 40 and Township Road 250, potentially causing traffic disruptions and placing additional demands on transportation infrastructure and services.



Sources: Base Data - Government of Alberta, Government of Canada, Thematic Data - Stantec Ltd.

Area Covered by the Flood Scenarios

Post-flood Operations

Once floodwaters have receded sufficiently, affected roadways and bridges would be inspected for damage. If repairs were necessary, Springbank Road would remain out of service until repairs were completed. Highway 22 might sustain minor wave damage to the roadway sideslopes, requiring single-lane closures during repairs.

Following the design flood, accumulations of sediment and debris would be removed from the diversion channel and, possibly, the off-stream reservoir to restore to their original level of functionality (sediment would be removed if it risks impairing water flow during a future flood event). The waste sediment and debris would be trucked to a suitable landfill facility and this would create additional traffic.

16.2.2.2 Mitigation

Mitigation measures to reduce the Project's effects on transportation infrastructure and services are:

- A project specific traffic accommodation strategy will be developed for the Project.
- Road modifications will protect roadways and reduce effects on transportation infrastructure and services during a flood event and post-flood operations.
- AEP will consult regularly with Rocky View County to provide flood updates, and to identify and address project-related traffic problems during flood and post-flood operations.

16.2.2.3 Project Residual Effects

Short-term duration for effects during the flood and post-flood operations phases is less than two months.

Flood Operations

During a design flood, the rerouted traffic from Springbank Road to Range Road 40 and Township Road 250 would cause traffic disruptions and place additional demands on transportation infrastructure and services. The project design incorporates upgrades of Range Road 40 and Township Road 250 to accommodate extra traffic. Highway 22 and Township Road 244 are raised above the design flood elevation where they intersect. RR 40 and Township Road 250 have the capacity to handle additional traffic created by the detour. Because the new Highway 22 would be constructed alongside and prior to closure of the existing one, access to the area would be uninterrupted and existing infrastructure would be able to accommodate Project-related traffic increases.

Post-flood Operations

After floodwaters have receded sufficiently, affected roadways and bridges will be inspected and repaired, if required.

Following a design flood, it is estimated that the truck-haul traffic volumes created by the trucking of sediment and debris will be well within the capacity of the existing road infrastructure, or the future infrastructure in place at the time of the flood.

16.2.3 Summary of Project Residual Effects

Table 16-2 characterizes the residual environmental effects on infrastructure and services during flood and post-flood operations, for the design flood.The residual adverse effects of the Project on transportation infrastructure and services during flood and post-flood operations are predicted to be low in magnitude and to occur as a single event, lasting for the short-term. Timing isnot applicable because effects from Project activities would be similar regardless of season or other timing characteristics. Effects would be reversed following the completion of post-flood activities and occur in a socio-economic context of high capacity.

The residual effects for a change in transportation infrastructure and services apply to all users (Aboriginal and non-Aboriginal).

Table 16-2 Project Residual Effects on Infrastructure and Services during a Design Flood and Post-flood Operations

Residual Effect	Residual Effects Characterization								
	Project Phase	Timing	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Ecological and Socio-economic Context
Change in transportation infrastructure and services	F, PF	N/A	A	L	LAA	ST	S	R	HC

KEY

See Volume 3A, Table 16-2 for detailed definitions; Duration is defined in Section 16.2.1 in this section

Project Phase

F: Flood Operation

PF: Post-flood Operation

Timing Considerations

S: Seasonality

T: Time of day

R: regulatory

Direction:

P: Positive

A: Adverse

N: Neutral

Magnitude:

N: Negligible

L: Low

M: Moderate

H: High

Geographic Extent:

PDA: Project Development Area

LAA: Local Assessment Area

RAA: Regional Assessment Area

Duration:

ST: Short-term

LT: Long-term

N/A: Not applicable

Frequency:

S: Single event

IR: Irregular event

R: Regular event

C: Continuous

Reversibility:

R: Reversible

I: Irreversible

Ecological/Socio-Economic Context:

LC: Low Capacity

MC: Moderate Capacity

HC: High Capacity

16.3 DETERMINATION OF SIGNIFICANCE

The Project would not result in:

- an exceedance of available capacity or
- a substantial decrease in the quality of a service provided, on a persistent and ongoing basis, which cannot be mitigated with current or anticipated programs, policies, or mitigation measures

Therefore, residual effects on infrastructure and services are not significant for the flood and post-flood phases.

16.4 PREDICTION CONFIDENCE

The level of confidence in the predictions is high because of the

- mitigation strategies incorporated into the project design
- readily understood effects of the planned activities
- capacity of the local transportation network

16.5 CONCLUSIONS

16.5.1 Change in Transportation Infrastructure and Services

Flood and post-flood operations during a design flood would affect existing roadways, but residual adverse effects on transportation infrastructure and services are predicted to be not significant.