

Section 8 Technical Reports

8.c Natural Hazard Mitigation Plan

This section addresses *Larimer County Procedural Guide for 1041 Permits*, Item 8.c, and the criteria and standards described in LUC Sections 8.3, 14.10.D.3, 14.10.D.4, 14.10.D.6, 14.10.D.7, and 14.10.D.11.

Based on Larimer County GIS data downloaded in August 2016 from Larimer County's GIS Digital Data and shown in **Figure 8.c-1**, the TWP corridor is located outside of designated wildfire hazard areas. With the exception of the source water pump station and water tank, the majority of the TWP is underground including the water pipeline and underground appurtenances that would not be susceptible to wildfires.

Based on Larimer County GIS data downloaded August 2016 from Larimer County's GIS Digital Data and shown in **Figure 8.c-2**, the majority of the TWP corridor is located in a low geologic hazard category. The TWP corridor crosses two Moderate Class 3 and 4 geologic hazard areas: one just south of Timnath Reservoir and the other south of the Cache la Poudre River. The area south of Timnath Reservoir can generally be described as marshy with wetlands. A mitigation measure that could be implemented at this location includes installing the water pipeline using trenchless construction methods. The area south of the Cache la Poudre River is located in a bluff area with sandy soils and increased sloughing. Mitigation measures in this area may include, but are not limited to, the following:

- Stream and bank stabilization methods such as riprap protection or concrete mats
- Imported backfill material such as low-strength concrete
- Revegetation
- Soil erosion blankets during construction
- Trenchless construction methods
- Locating the final alignment outside of the geohazard area if possible, but still within the TWP corridor

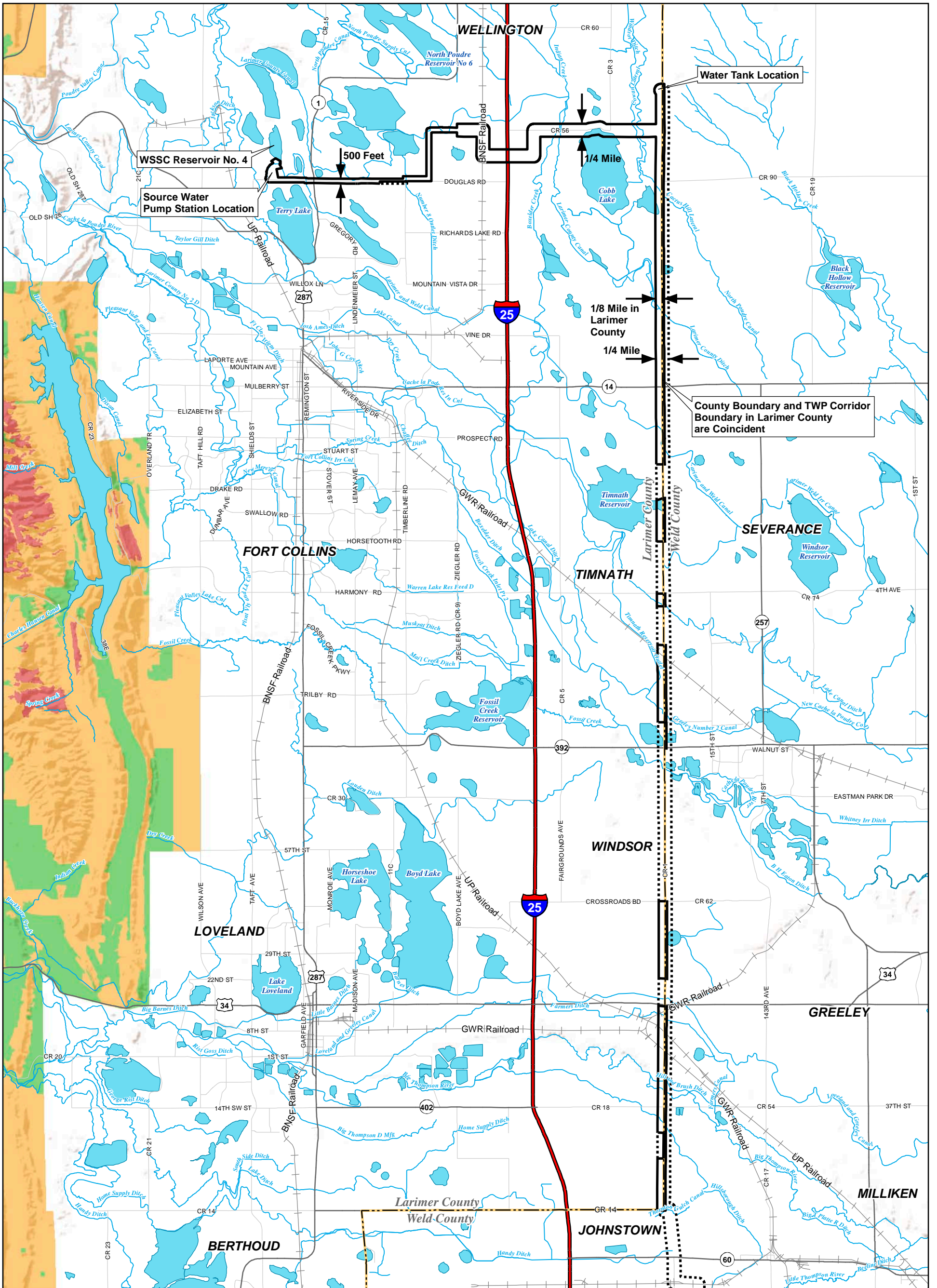
Mitigation measures will be implemented in areas outside of any jurisdictional waters.

The TWP corridor crosses several locations defined as Severe Class 5, 6, and 7 geologic hazard areas. These locations are associated with major drainages such as the Cache la Poudre River, Big Thompson River, and their feeder streams, such as Boxelder Creek. These locations generally correspond to areas of greater slope and soil erodibility. These geologic hazard areas could be mitigated by implementing measures similar to those described for Moderate Class 3 and 4 areas depending on specific conditions at each location.

Jurisdictional waters will be crossed using trenchless construction methods.

A subsurface geotechnical investigation of geologic conditions utilizing soil borings will be completed during design to further determine the subsurface soil conditions and associated geological hazards along the TWP corridor. Mitigation measures will be further refined during design to meet site-specific geological hazards.

Thornton Water Project



**CITY OF THORNTON
COLORADO**

12450 WASHINGTON ST
THORNTON, CO 80241-2405

12/29/2017



0 0.9 1.8
Miles

1 in = 1.8 miles

- TWP Corridor in Unincorporated Larimer County
- TWP Corridor outside Unincorporated Larimer County
- County Boundary
- Railroad
- Lake/Reservoir
- River/Stream/Canal/Ditch

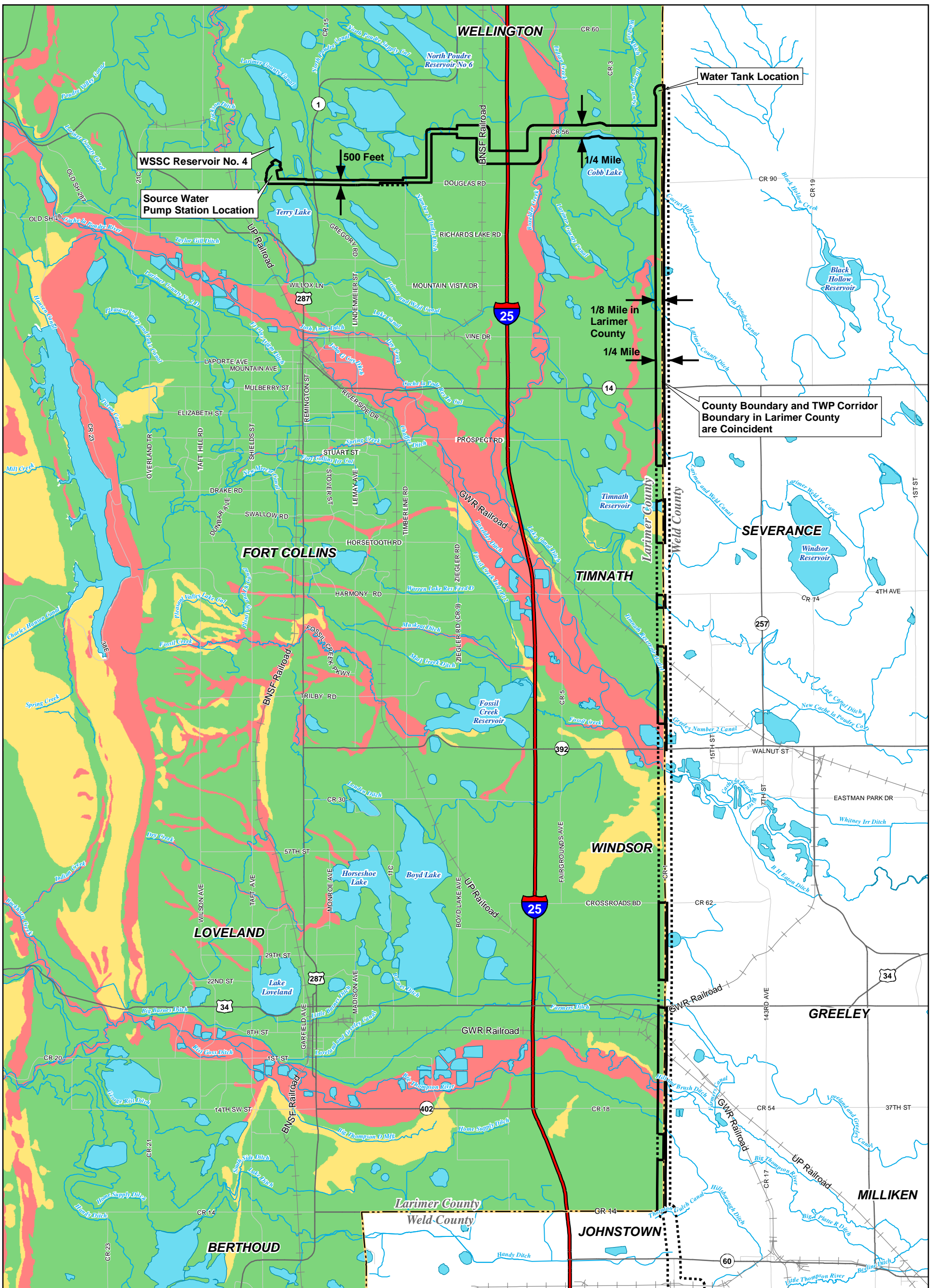
WildFire Hazard Area

- Very High Hazard
- High Hazard
- Moderate Hazard
- Low Hazard
- Outside Hazard Mitigation Area

**Figure 8.c-1
Wildfire Hazards**

Sources: NHD, CDWR, Larimer and Weld Counties, CDOT

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- Geologic Hazard**
- Severe (Class 5, 6, 7)
 - Moderate (Class 3, 4)
 - Low

**Figure 8.c-2
Geologic Hazards**

Sources: NHD, USGS, CDWR, Larimer and Weld Counties, CDOT