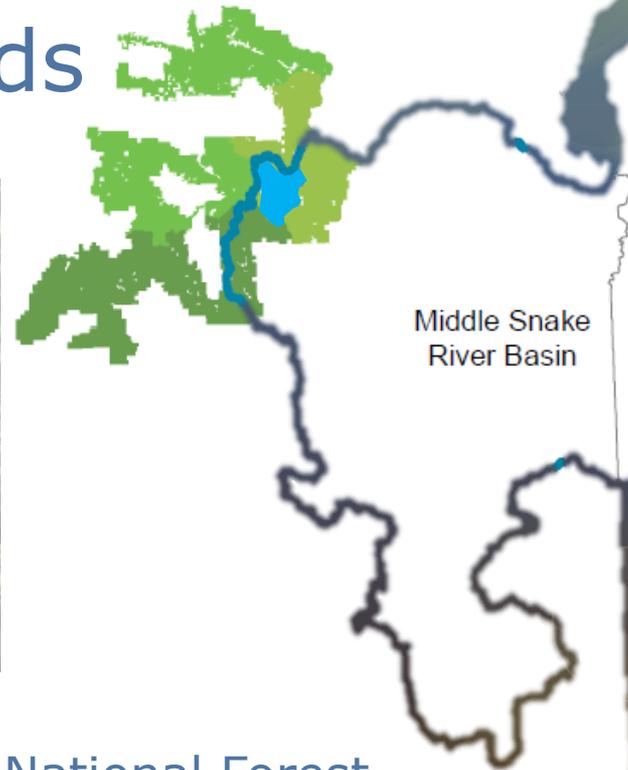
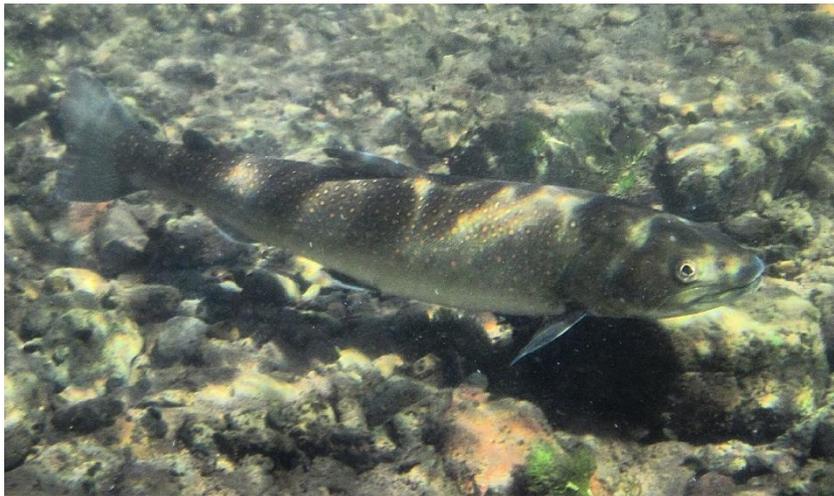


Malheur River Subbasin: Habitat Condition and Restoration Needs



○ Kate Olsen, Fish Biologist, Malheur National Forest



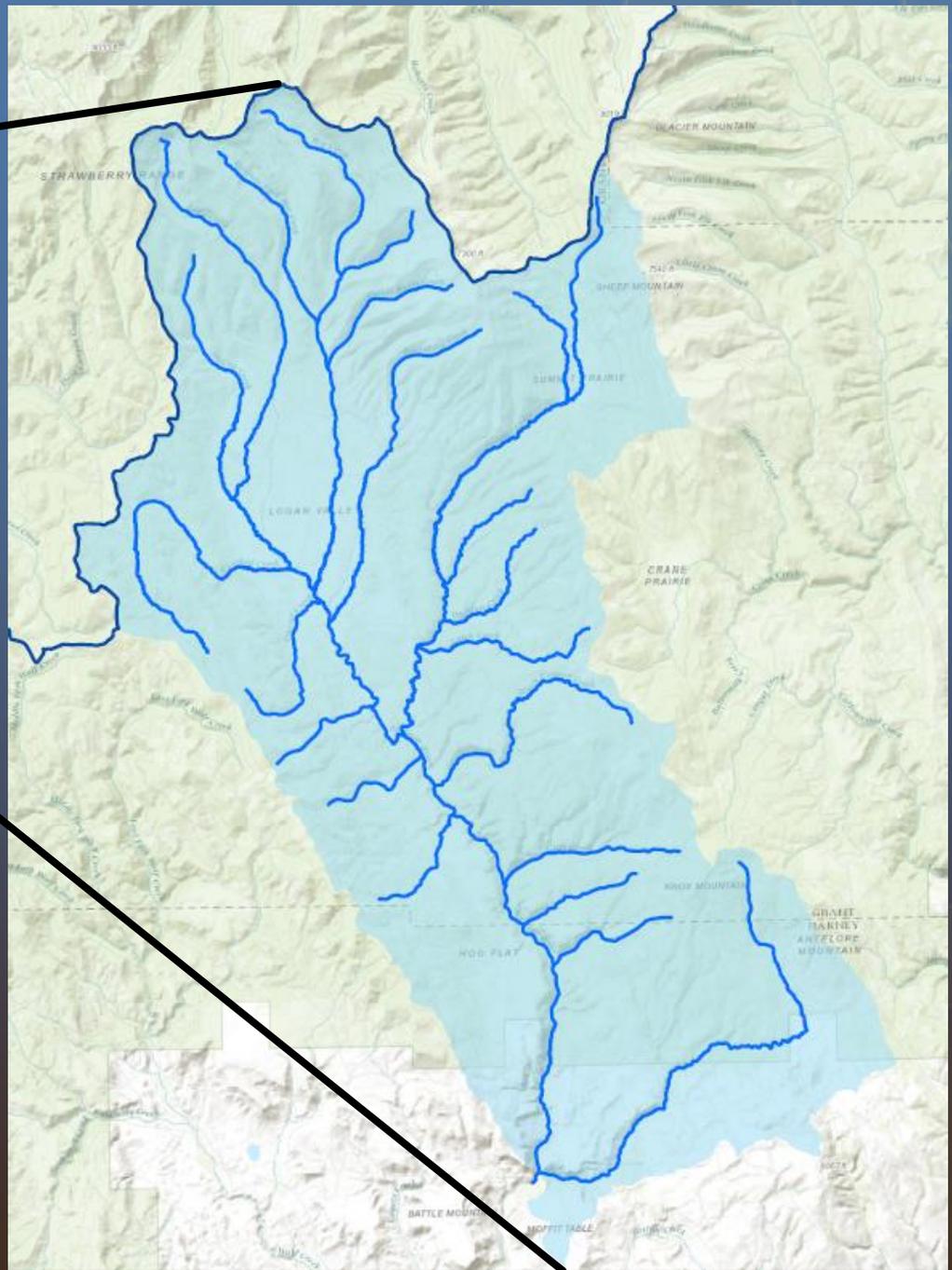
9000'



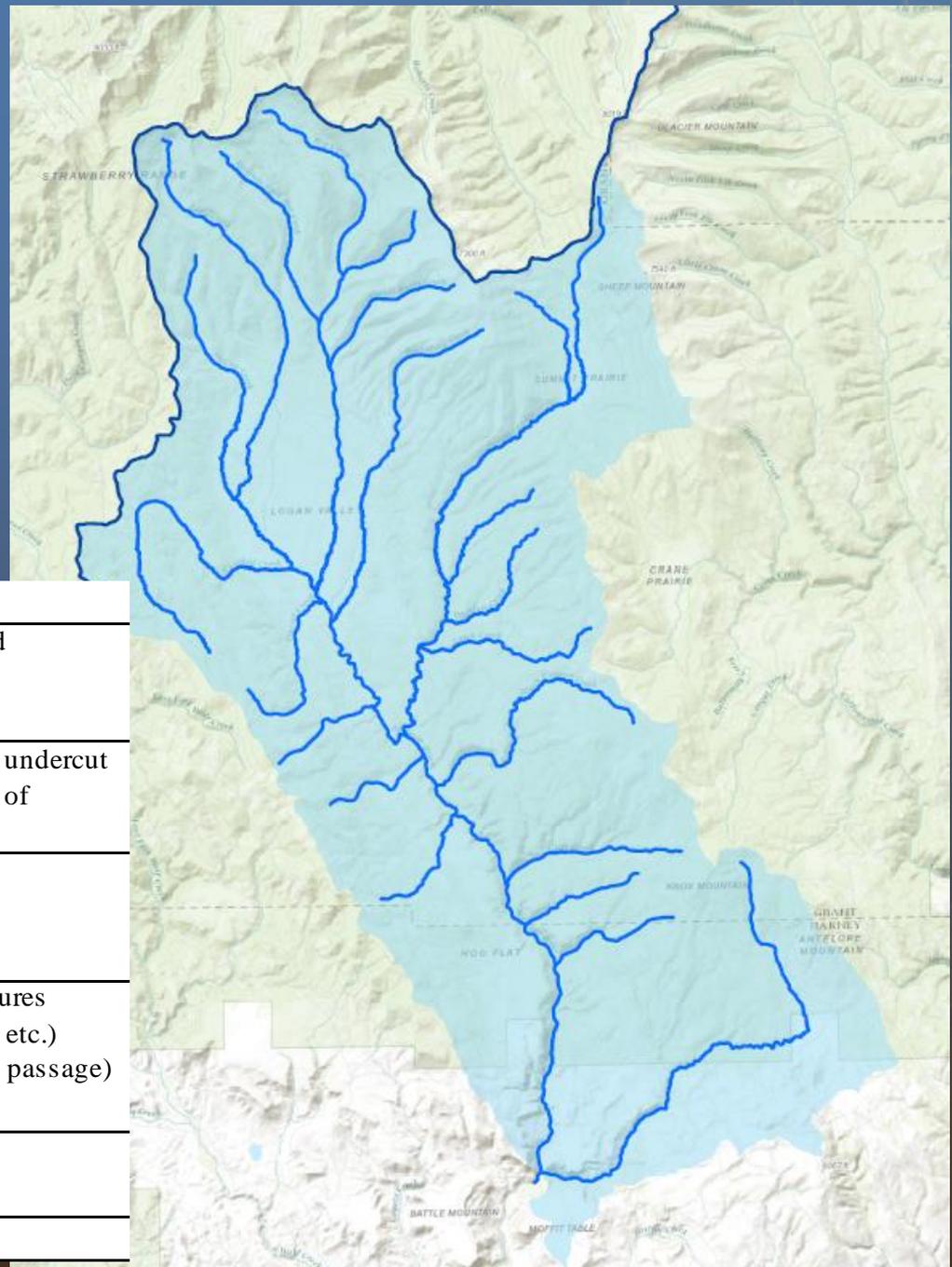
5000'



3000'



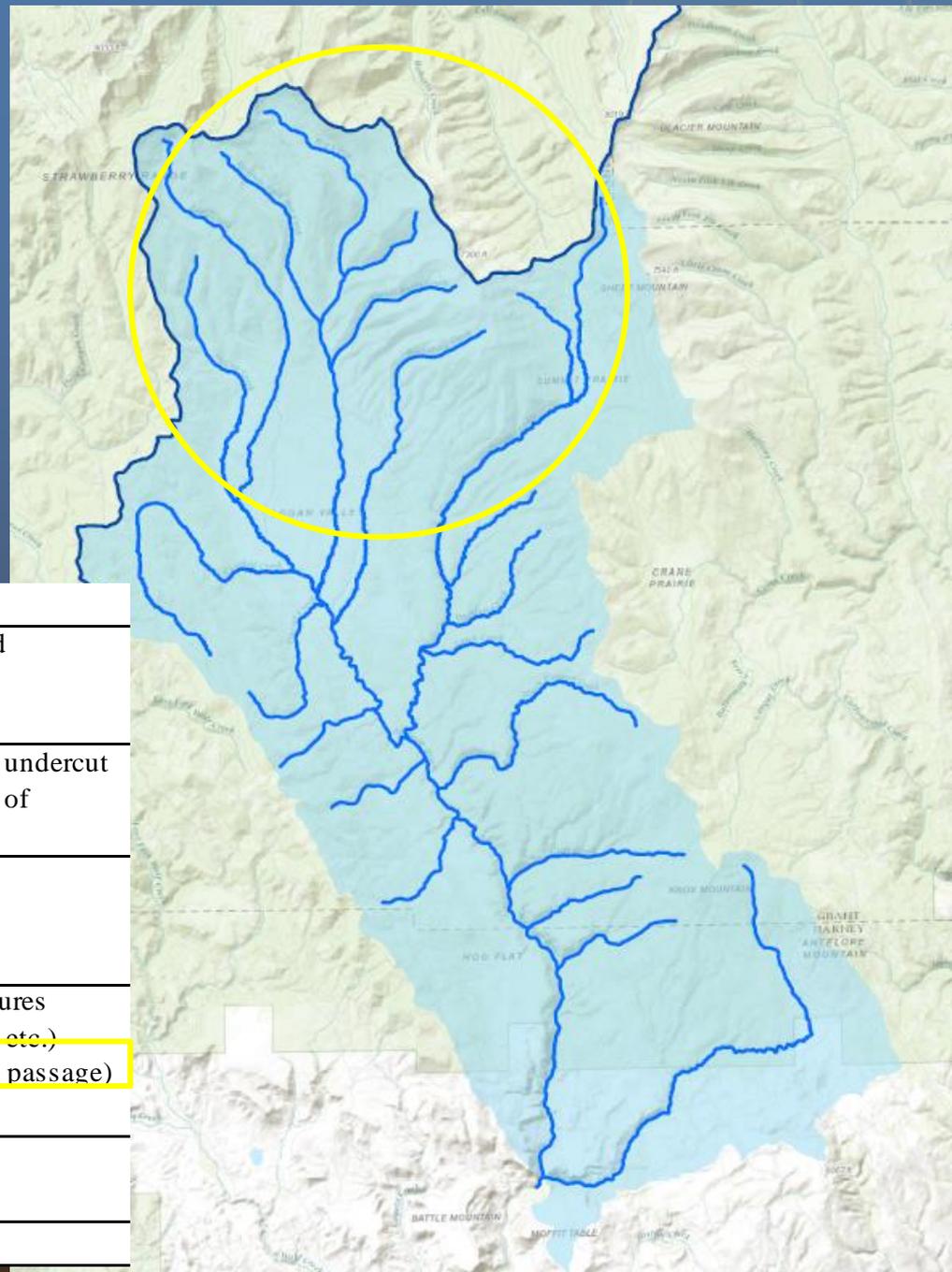
Habitat threats identified within the Bull Trout Recovery



| Area of Concern | Threats |
|---------------------|---|
| Riparian Vegetation | Loss of Riparian Vegetation (reduced shade and increased water temperature) Reduced beaver activity |
| Lack of Habitat | Degraded Stream characteristics; Width/Depth, undercut banks, habitat complexity, incised channel, loss of floodplain connectivity, lack of quality pools |
| Sedimentation | As a result of road networks As a result of past fire As a result of recreation |
| Connectivity | Juvenile fish passage barriers and legacy structures Water diversions (lack of screens, water losses, etc.) Impacts from Railroad Grade (impoundment and passage) Thermal barriers |
| Livestock | Authorized Livestock Grazing Unauthorized Livestock grazing |
| Wildfire | Catastrophic risk of wildfire |

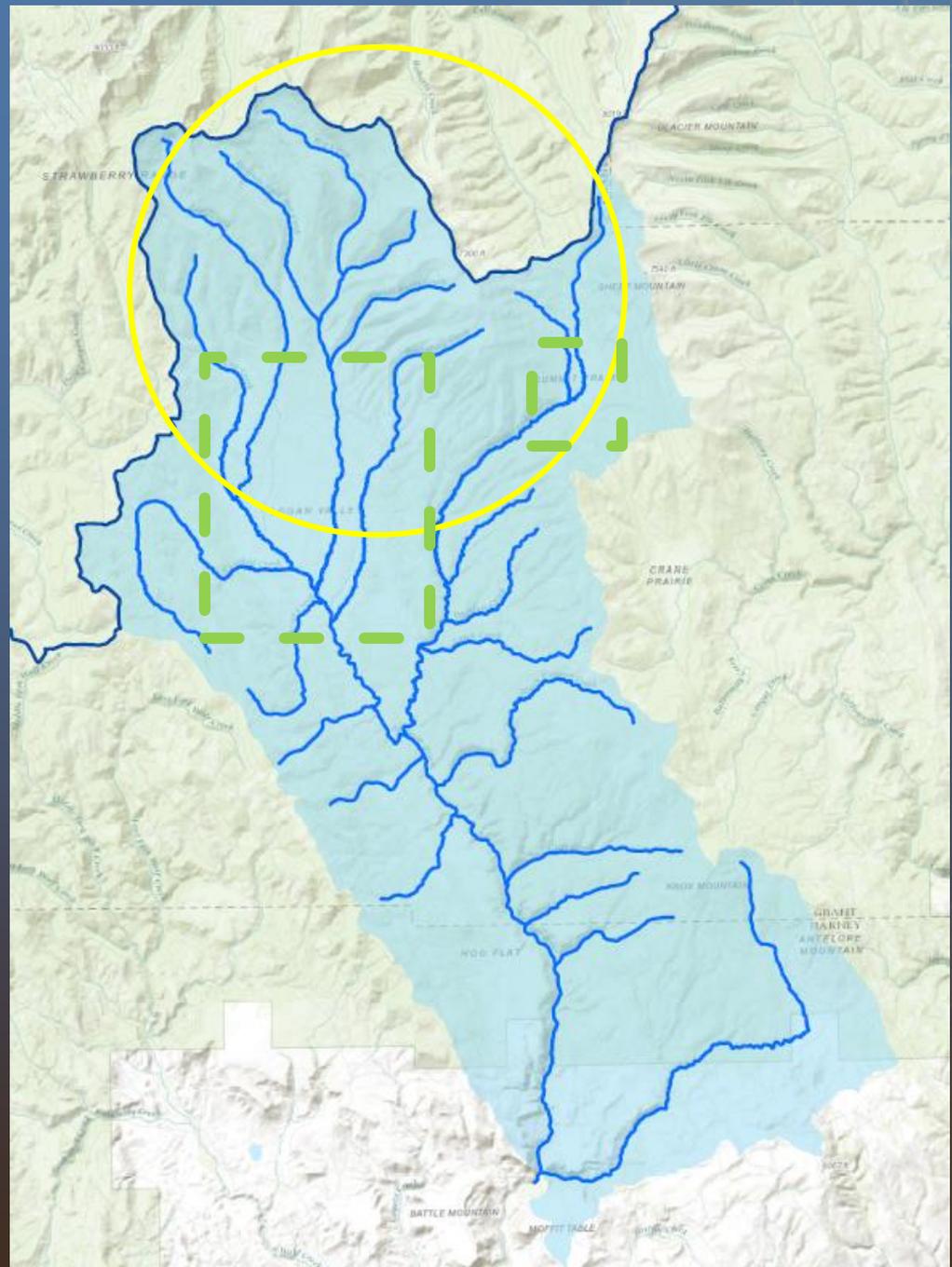
Upper Watershed

- Snowmelt driven
- Elevations above 5000'
- Steep Gradients



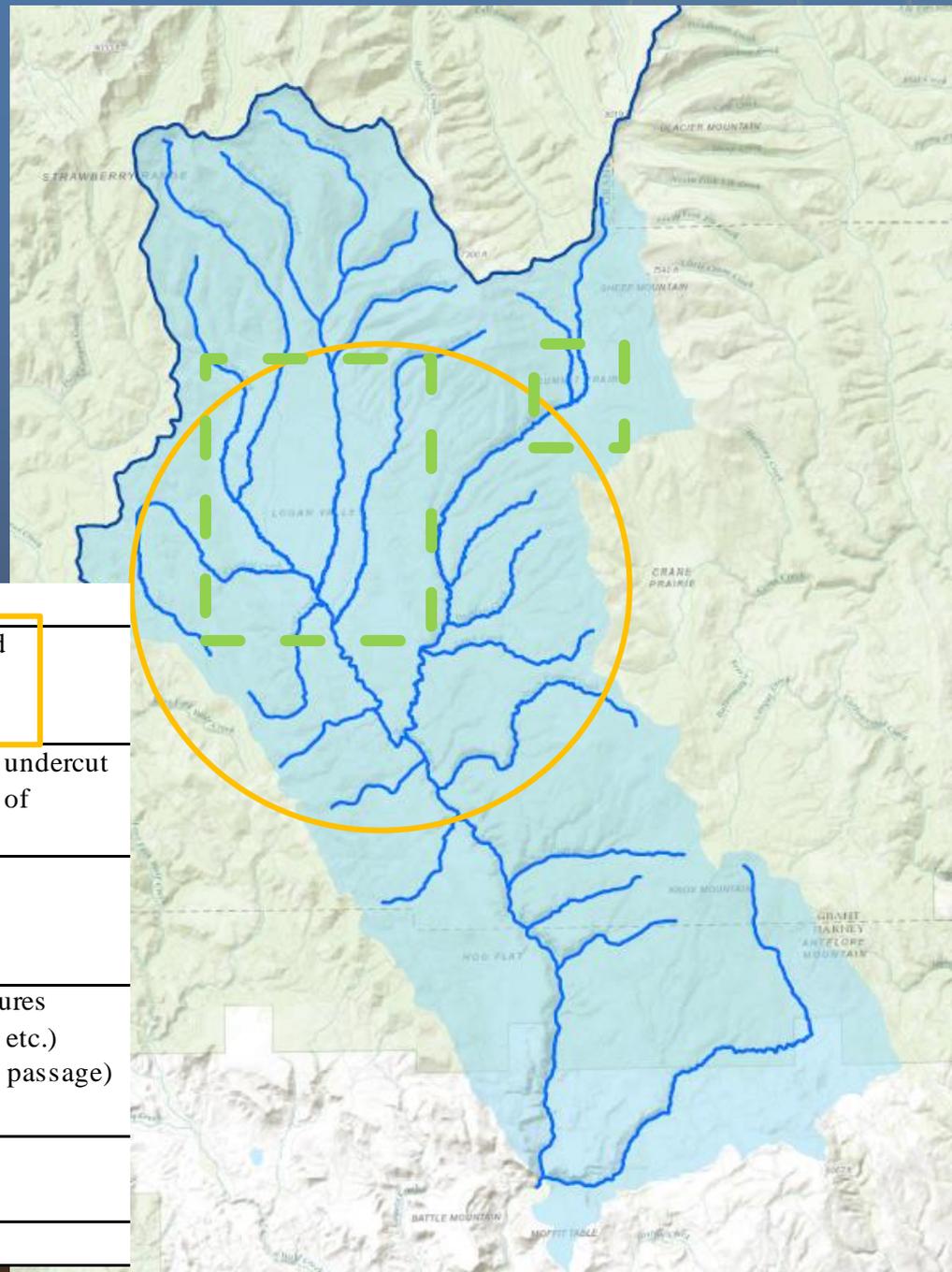
| Area of Concern | Threats |
|---------------------|---|
| Riparian Vegetation | Loss of Riparian Vegetation (reduced shade and increased water temperature) Reduced beaver activity |
| Lack of Habitat | Degraded Stream characteristics; Width/Depth, undercut banks, habitat complexity, incised channel, loss of floodplain connectivity, lack of quality pools |
| Sedimentation | As a result of road networks As a result of past fire As a result of recreation |
| Connectivity | Juvenile fish passage barriers and legacy structures Water diversions (lack of screens, water losses, etc.) Impacts from Railroad Grade (impoundment and passage) Thermal barriers |
| Livestock | Authorized Livestock Grazing Unauthorized Livestock grazing |
| Wildfire | Catastrophic risk of wildfire |

Transition from high gradient mountain streams to meadows



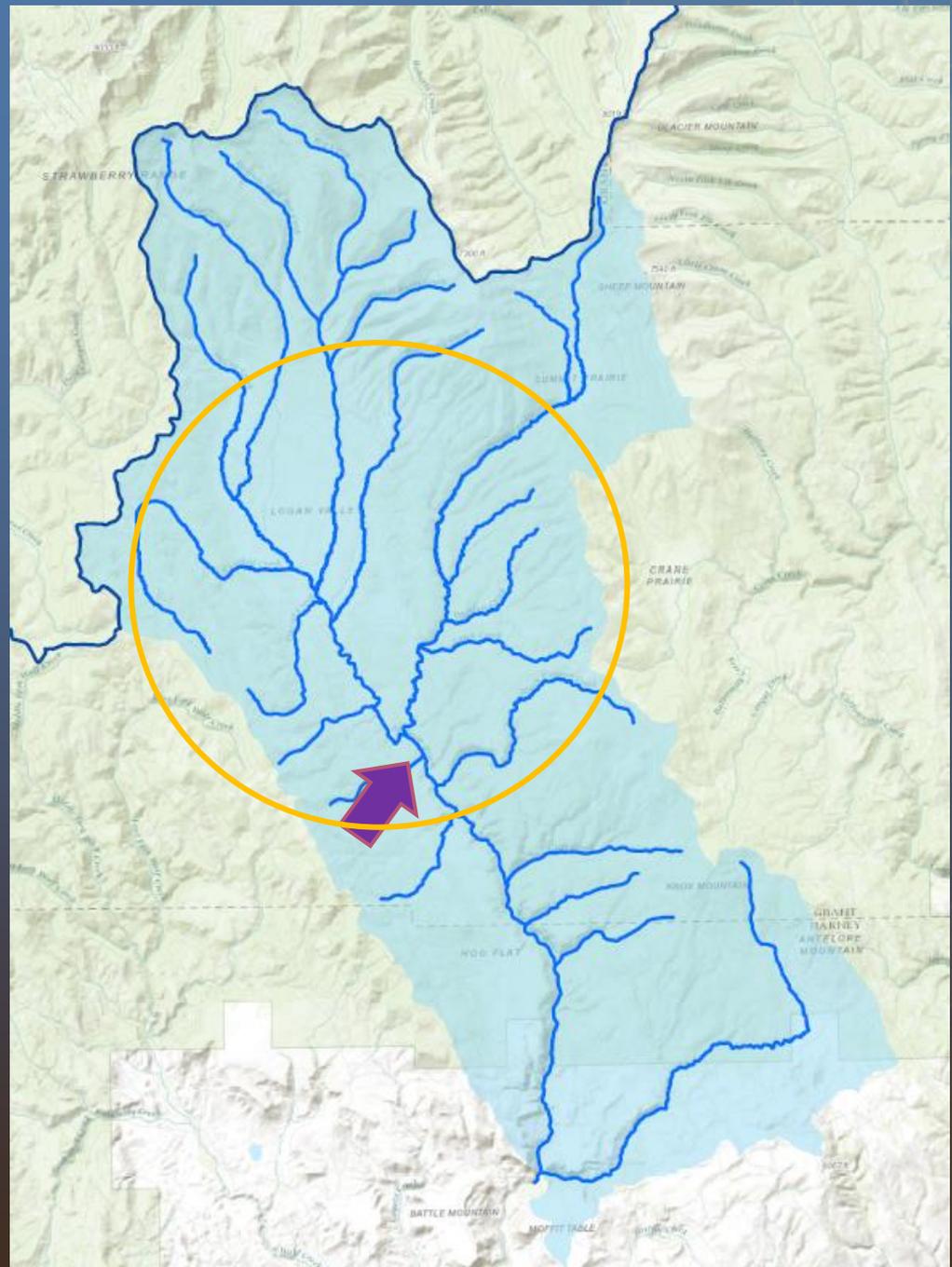
Middle Watershed

- Fewer tributaries– springs
- Meadow and fen systems
- Low resistance, high resilience



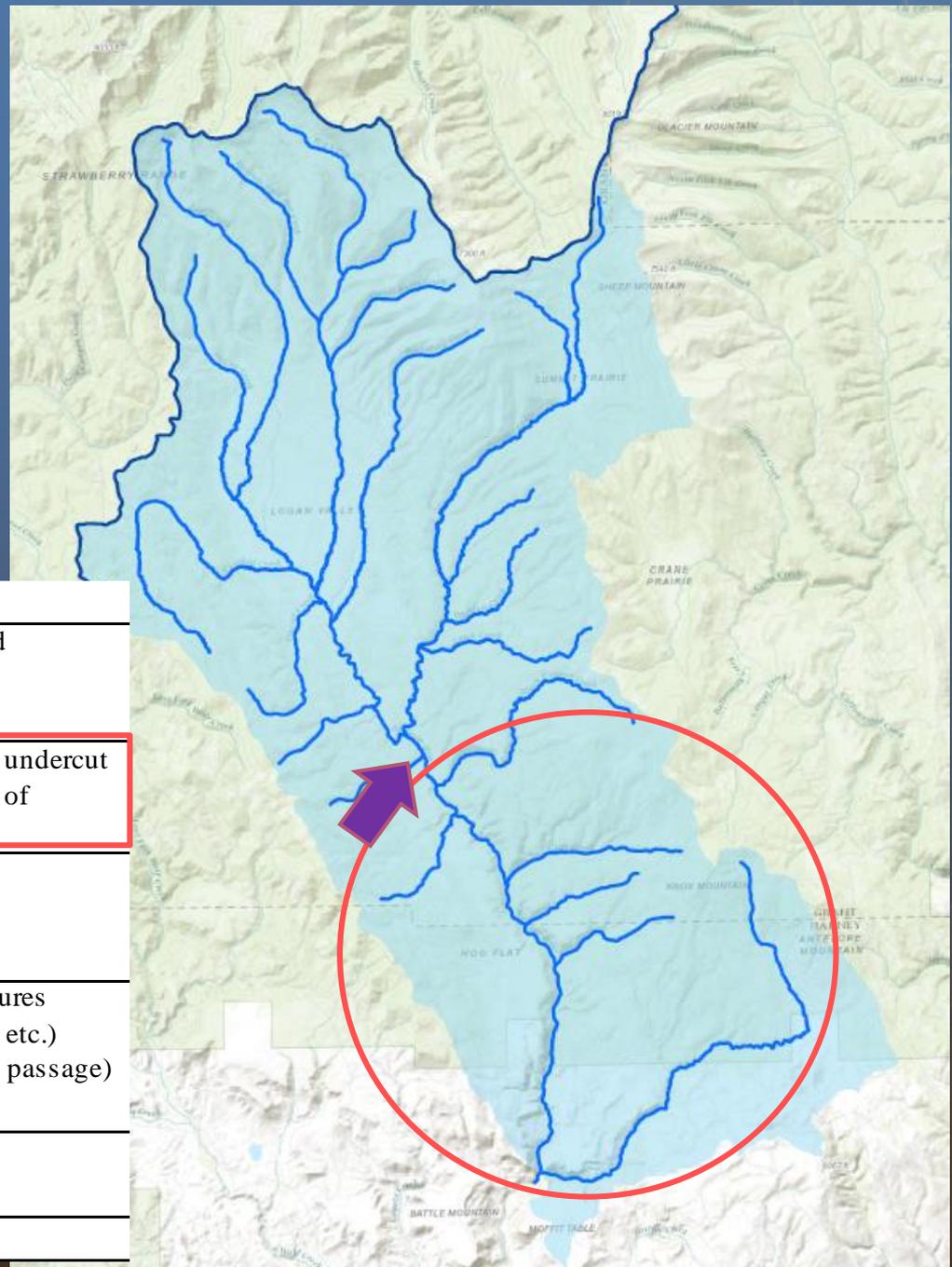
| Area of Concern | Threats |
|---------------------|---|
| Riparian Vegetation | Loss of Riparian Vegetation (reduced shade and increased water temperature) Reduced beaver activity |
| Lack of Habitat | Degraded Stream characteristics; Width/Depth, undercut banks, habitat complexity, incised channel, loss of floodplain connectivity, lack of quality pools |
| Sedimentation | As a result of road networks As a result of past fire As a result of recreation |
| Connectivity | Juvenile fish passage barriers and legacy structures Water diversions (lack of screens, water losses, etc.) Impacts from Railroad Grade (impoundment and passage) Thermal barriers |
| Livestock | Authorized Livestock Grazing Unauthorized Livestock grazing |
| Wildfire | Catastrophic risk of wildfire |

Transition from
meadow to canyon



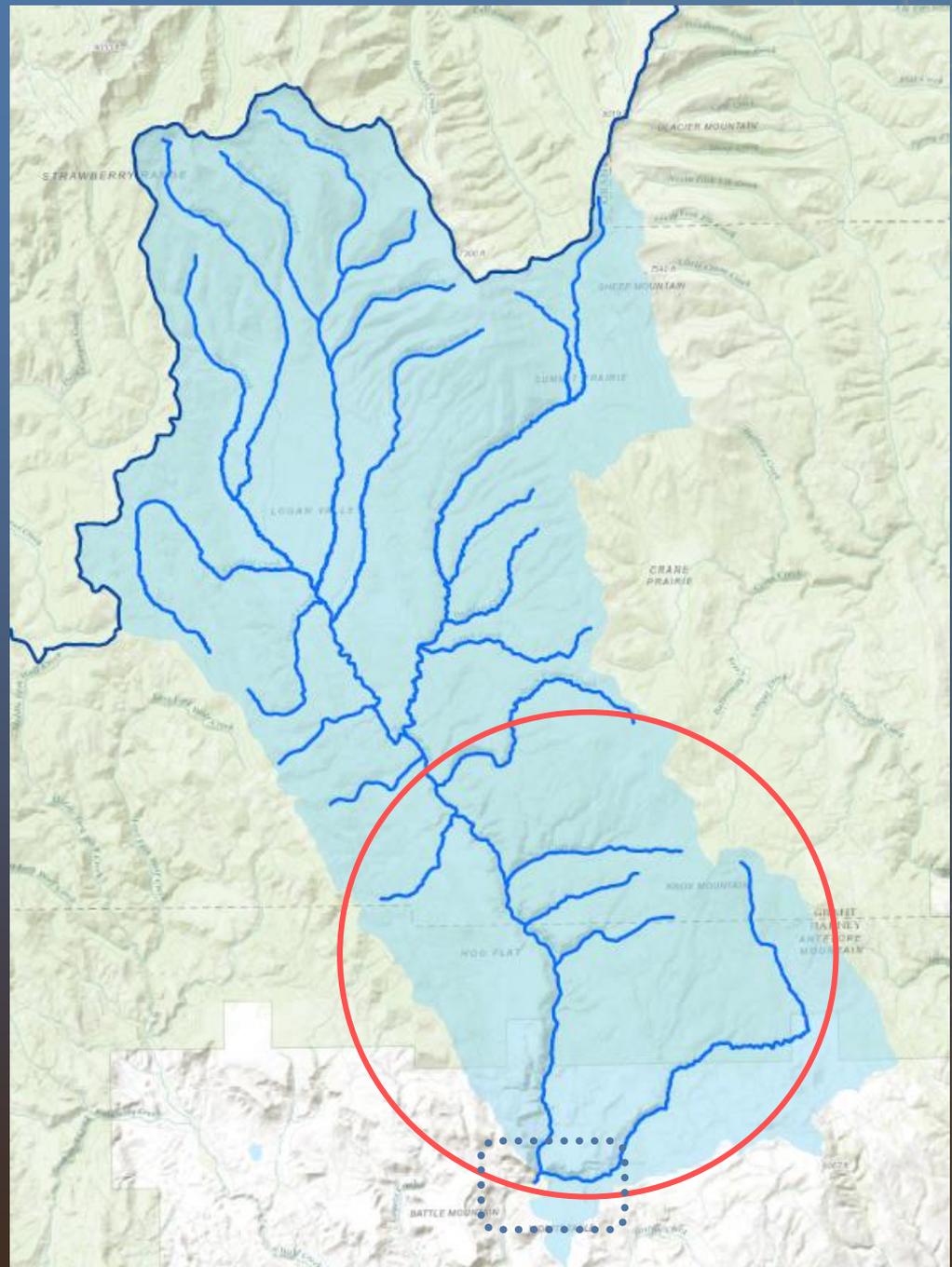
Lower Watershed

- Canyon Reach
- Overwinter habitat
- Lack of pools and large material

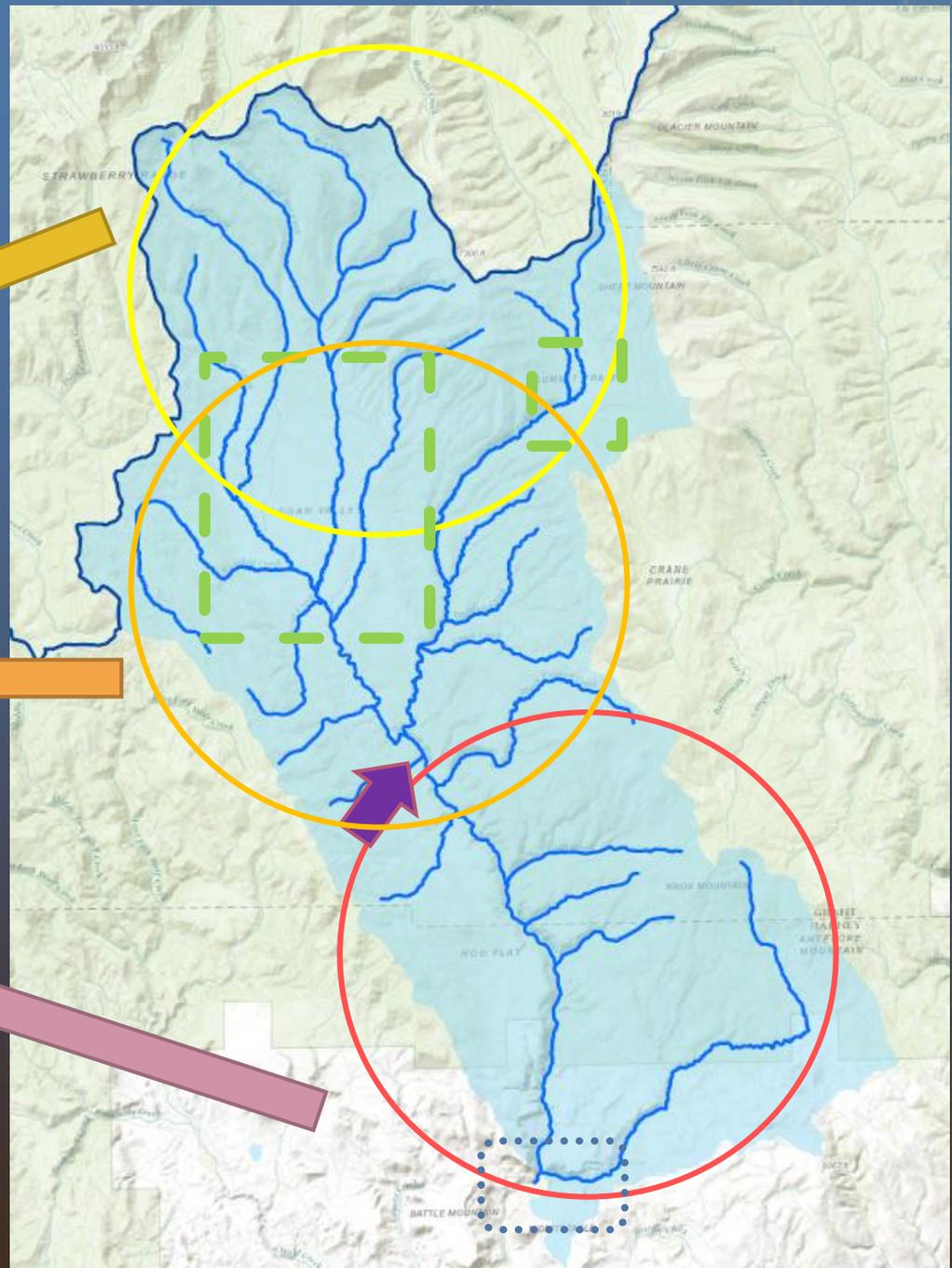
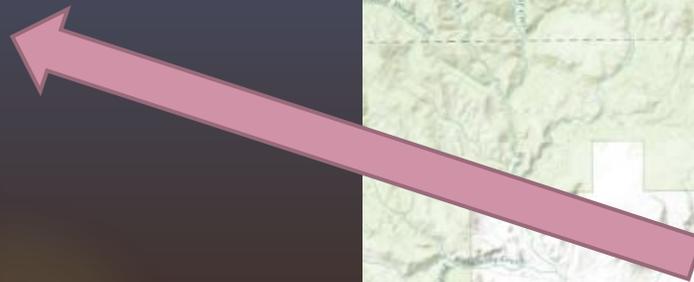
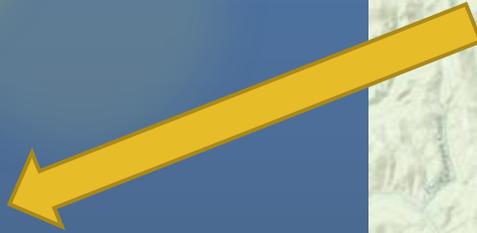


| Area of Concern | Threats |
|---------------------|---|
| Riparian Vegetation | Loss of Riparian Vegetation (reduced shade and increased water temperature) Reduced beaver activity |
| Lack of Habitat | Degraded Stream characteristics; Width/Depth, undercut banks, habitat complexity, incised channel, loss of floodplain connectivity, lack of quality pools As a result of road networks |
| Sedimentation | As a result of past fire As a result of recreation |
| Connectivity | Juvenile fish passage barriers and legacy structures Water diversions (lack of screens, water losses, etc.) Impacts from Railroad Grade (impoundment and passage) Thermal barriers |
| Livestock | Authorized Livestock Grazing Unauthorized Livestock grazing |
| Wildfire | Catastrophic risk of wildfire |

Final transition within
the subbasin



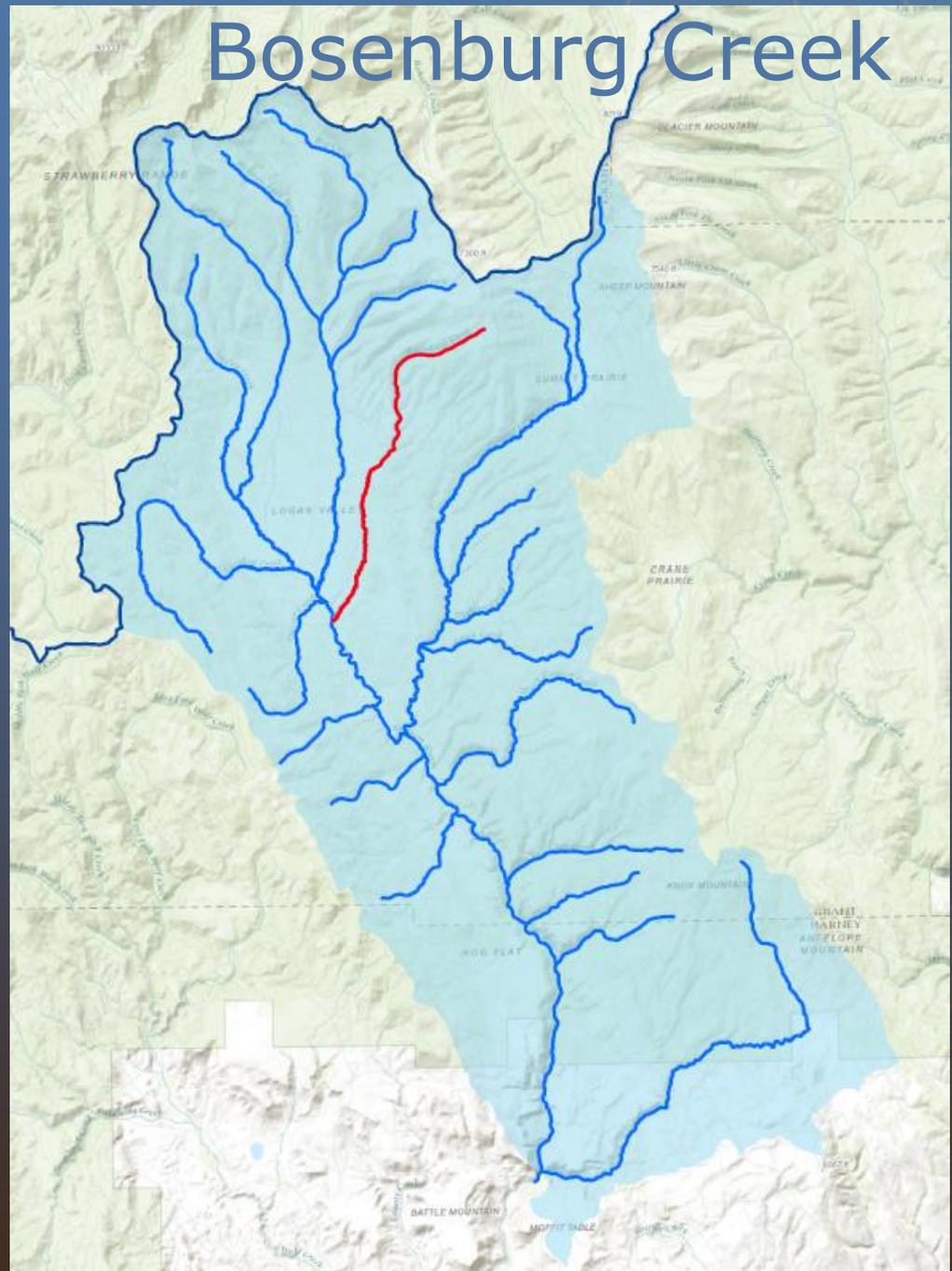
**How do
we move
forward?**

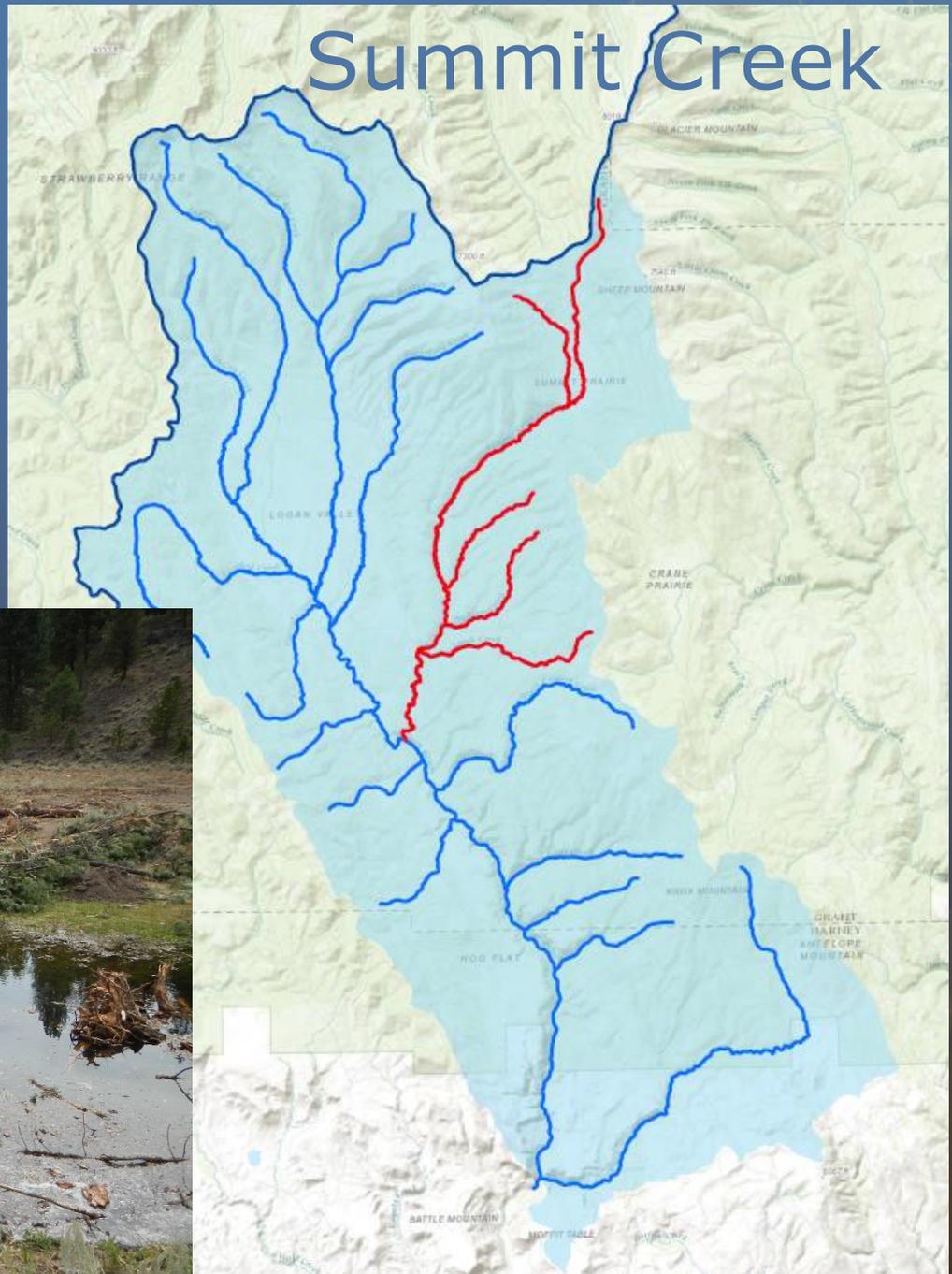


Restoration Opportunities



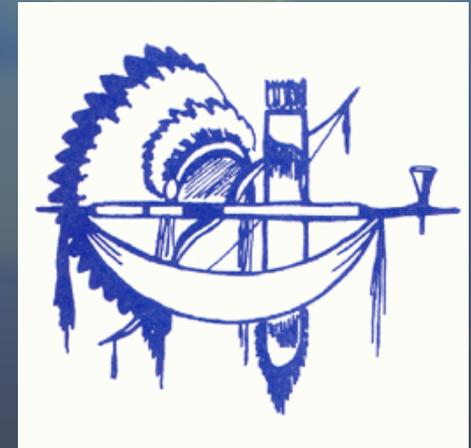


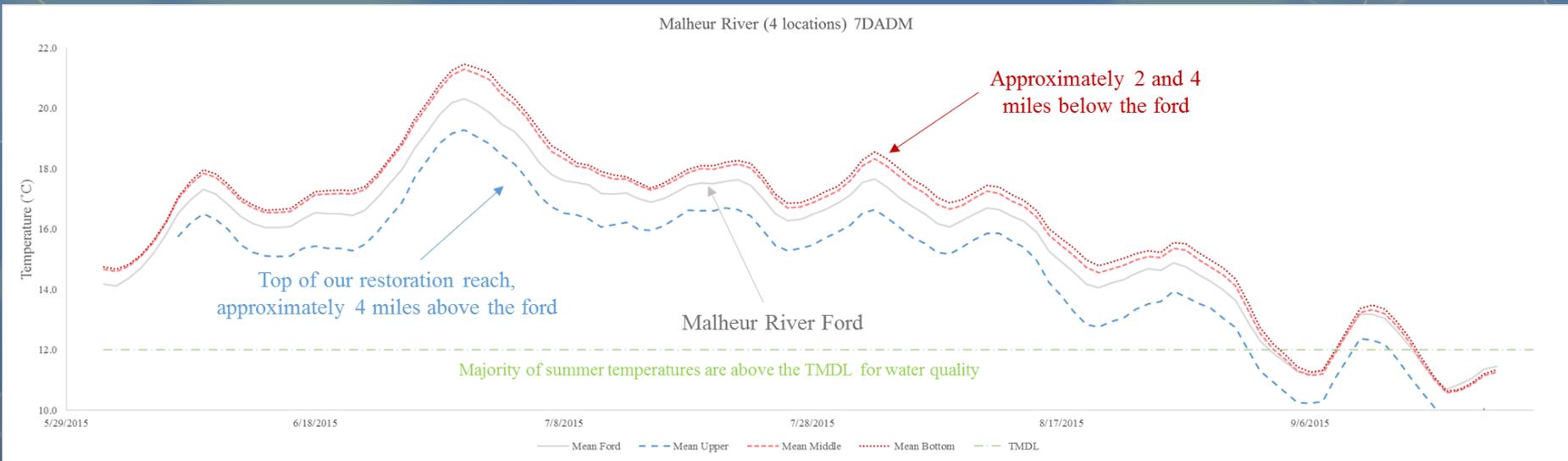




Malheur River







- The majority of warming within the canyon corridor occurs in the upstream 6 miles
- From the upstream end of the proposed work (DS end of the Burn Paiute Tribe Property) to the Malheur River Ford (see map) the water warms approximately 1°C, with an additional degree of warming in the 2 miles below
- From this it is clear that the biggest benefits for water temperature will come from restoration in the upper reaches