



Territorial Highway – Gillespie Corners

Flood Mitigation and Reconstruction

Draft Environmental Assessment

February 2024

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Subapplicant: Lane County Public Works Department



FEMA

Territorial Highway – Gillespie Corners Flood Mitigation and Reconstruction
Draft Environmental Assessment

Cover photograph: Territorial Highway, view to the northeast of the north overflow channel,
Lane County Public Works Department (2023)

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(FEMA)

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
AADT	Annual Average Daily Traffic
ACM	asbestos-containing materials
ADT	Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
APE	Area of Potential Affect
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
County	Lane County Public Works Department
CWA	Clean Water Act
cy	cubic yard
dBA	A-weighted decibel
DLCD	Oregon Department of Land Conservation and Development
DHS	Department of Homeland Security
DSL	Department of State Lands
EA	Environmental Assessment
EDR	Environmental Data Resources
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FFMRS	Federal Flood Risk Management Standard
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FTA	Federal Transit Authority
GHG	greenhouse gas
HEPA	high efficiency particulate air
HMGP	Hazard Mitigation Grant Program
HUC	Hydrologic Unit Code

in/sec	inch per second
IPaC	Information for Planning and Consultation
LRAPA	Lane Regional Air Protection Agency
Lv	velocity Level
MBTA	Migratory Bird Treaty Act
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MP	Mile Post
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OAR	Oregon Administrative Rules
O ₃	ozone
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODOT	Oregon Department of Transportation
OEM	Office of Emergency Management
Pb	lead
PEM	palustrine emergent
PFO	Palustrine forested
PPV	peak particle velocity
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office
sf	square foot
SO ₂	sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Loads
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Services
USGS	U.S. Geological Survey
VdB	vibration decibels

Glossary

5-year Recurrence Interval: Flood volumes estimated to occur within a frequency of 5 years.

100-year Flood Event: Flood event that has a 1-percent chance of occurring any given year.

Abutment: A retaining wall supporting one end of a bridge span and the embankment.

Average Daily Traffic: Total traffic volume experienced at a given location during a period of time, divided by the number of days in the period, to represent an estimate of traffic volume for an average day of the year.

Bridge Deck: Surface of a bridge that is used for car, bicycle, and pedestrian crossing.

Bridge End Panels: The segment of bridge surface positioned between the wingwall and rest of the bridge surface.

Floodplain: An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.

Scour: Erosion of sediments (e.g., sands, gravel, etc.) surrounding bridge foundations such as abutments and piers.

Undermine: To erode the base or foundation.

Wing Wall: The retaining wall extension of an abutment intended to retain a bridge's side slope.

1. Introduction

The Department of Homeland Security’s (DHS’s) Federal Emergency Management Agency (FEMA) is proposing to provide financial assistance to the Lane County Public Works Department (County) through the Oregon Office of Emergency Management (OEM) for flood hazard mitigation along Territorial Highway at its intersection with Lorane Highway, an area commonly referred to as Gillespie Corners (see **Figure 1**). The Lane County Public Works Department is a municipal department that is responsible for maintaining and improving public infrastructure, facilities, and properties throughout Lane County. The department contains divisions devoted to roads and highways, parks and recreation facilities, and waste management. This portion of Territorial Highway was transferred from the Oregon Department of Transportation (ODOT) to the County in 2019 (apart from a portion that is also designated as Highway 36) and is now maintained by the Lane County Public Works Department. The jurisdictional transfer of this segment of Territorial Highway facilitates the prioritization of County funding for needed maintenance and safety improvements along the corridor. The Proposed Action described below represents the second phase of a four-phase plan to increase safety of Territorial Highway by improving 5.7 miles of roadway (see **Section 4.7, Cumulative Impacts**).

Territorial Highway crosses the floodplain associated with Coyote Creek on a raised embankment. Coyote Creek is a tributary of the Long Tom River in Lane County, Oregon. It meanders generally north and west through Gillespie Corners then north through Crow before entering Fern Ridge Reservoir east of Veneta (Otak, Inc. 2019). Territorial Highway crosses the Coyote Creek channel via two bridges. The relatively small opening beneath the bridges results in channel flows that regularly exceed their hydraulic capacity, overwhelming the bridge and overtopping the roadway during storm events. The County is proposing to elevate a 2,000-foot-long segment of Territorial Highway – including the two bridges – by approximately 3 feet above the existing grade. In addition to this roadway work, the County is also proposing a series of channel modifications to provide additional hydraulic connectivity, improve flood flows, and increase capacity during storm events. Proposed channel modifications would include:

- An additional culvert and overflow channel north of the existing bridges
- Two side channels that would run parallel to the road between the existing south overflow channel and the proposed north overflow channel
- Re-grading and widening the creek channel under the north bridge

The Proposed Action would also install of scour countermeasures and other stormwater features at crossings to reduce the likelihood of safety-related issues and public infrastructure damage from flooding.

The County applied for a sub-grant under FEMA’s Hazard Mitigation Grant Program (HMGP). The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency

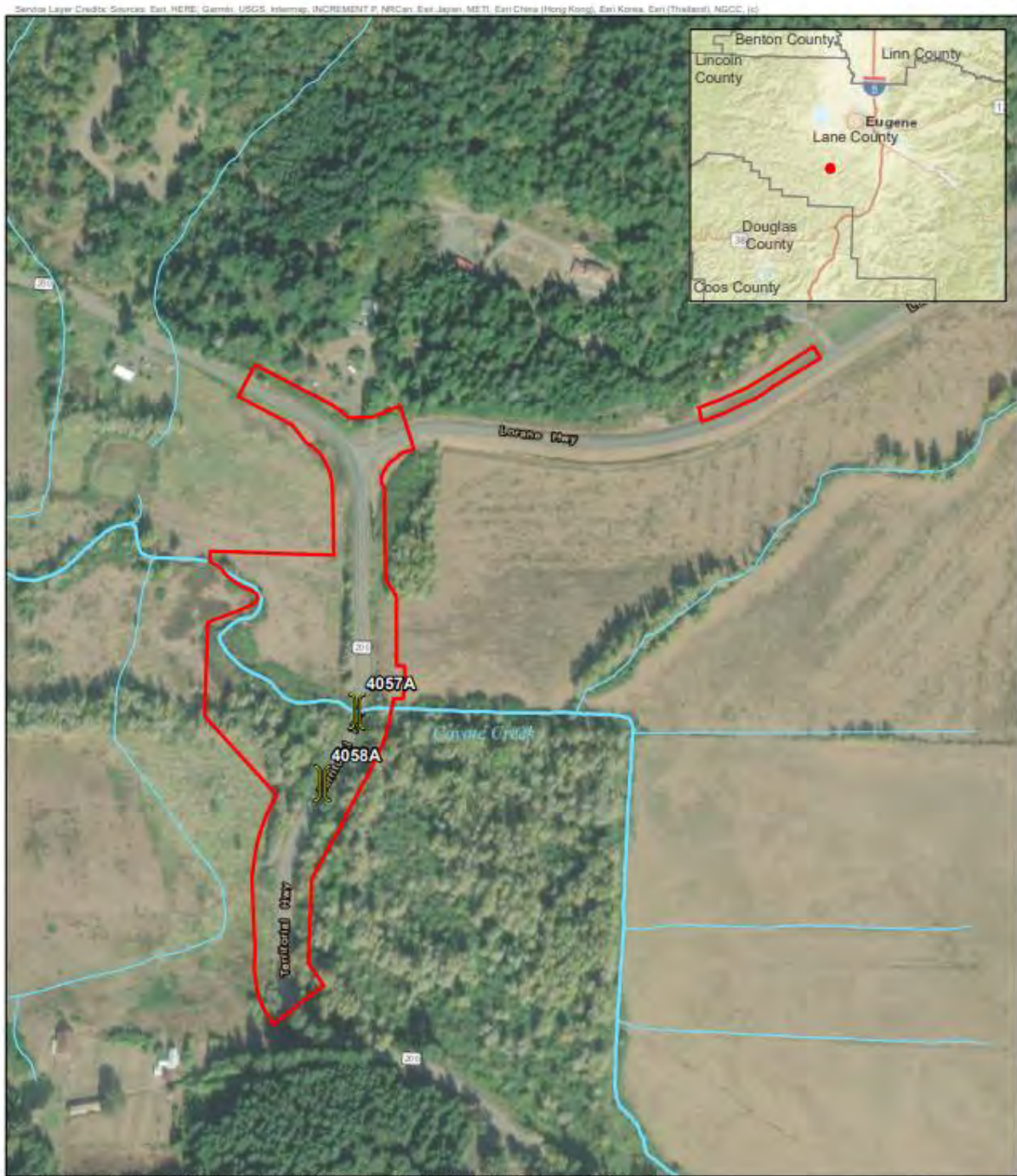
Assistance Act. As stipulated by the HMGP, a portion of the project cost must come from non-federal funds; however, this Environment Assessment (EA) accounts for and evaluates the entire project. If awarded, the Oregon OEM would be the direct recipient of the grant, and the County would be the subrecipient. The HMGP funds were made available via a Presidential disaster declaration (FEMA 4562-DR-OR) on September 15, 2020.

FEMA has prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969; the President’s Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508); DHS Instruction 023-01-001; and FEMA Instruction 108-01-1, NEPA implementing procedures.

This EA, prepared using information from the County’s HMGP application package, analyzes and discloses the potential environmental impacts of the proposed project and alternatives. FEMA must consider potential environmental impacts before funding or approving federal actions and applicant-proposed projects. Therefore, FEMA will use the findings in this EA and associated public comments to determine whether to prepare an Environmental Impact Statement (EIS) or to issue a Finding of No Significant Impact (FONSI). This EA conforms to the CEQ regulations in place as of April 2023.



Additionally, on August 8, 2023 FEMA invited the U.S. Army Corps of Engineers (USACE) to be a cooperating agency under NEPA to streamline permitting in accordance with 40 CFR §1501.8, *Cooperating Agencies*. USACE accepted on September 7, 2023 and is providing comments and recommendations to FEMA to the maximum extent practicable. USACE is not a co-preparer of this EA and is not jointly issuing the EA for its own regulatory requirement.

Figure 1: Location and Vicinity Map



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 Bridge
 Project Area

1 inch = 400 feet
0 200 400 Feet

FIGURE 1
Location and Vicinity Map
Territorial Highway – Gillespie Corners
Flood Mitigation and Reconstruction
Lane County, OR

1.1. Project Area

The project area is located along Territorial Highway at its intersection with Lorane Highway, an area referred to locally as Gillespie Corners (refer to **Figure 1**). The approximate geographic coordinates where the highway crosses Coyote Creek, are 43.908132, -123.250680 (Latitude, Longitude); approximately 10 miles upstream of the Fern Ridge Dam and Fern Ridge Lake. The project area includes a 2,000-foot-long segment of roadway and encompasses approximately 5.7 acres of publicly and privately owned land. The project area is surrounded by agricultural land uses (primarily pastures and hay fields) with forested uplands and wetlands adjacent to Coyote Creek and its tributaries (see **Figure 2**).

Territorial Highway is a two-lane road that runs for approximately 42 miles in a north-south direction between the City of Monroe in Benton County and the City of Anlauf in Douglas County. It is one of Oregon's oldest roads, dating to at least 1851, when it was originally constructed to allow travelers to avoid the seasonally flooded Willamette Valley (David Evans and Associates, Inc. 2021). Since its initial construction, the alignment of Territorial Highway has largely remained the same. However, the stream and floodplain have been graded and modified for over a century to support agricultural production and residences in the valley (Otak, Inc. 2019). The construction of roadside ditches which collect, concentrate, a redirect upslope surface runoff have altered natural drainage patterns. Some sections of the roadway act as drainage impoundments and influence surface hydrology in the immediate area (David Evans and Associates, Inc. 2021).

Territorial Highway traverses the 1,500-foot-wide floodplain on a raised road embankment and includes two bridges, which span the Coyote Creek channel. The north bridge (04057A) crosses the main channel, and the south bridge (04058A) crosses a relic channel in the floodplain. Water no longer flows beneath the south bridge except for periods immediately following storm events and during flood conditions. Both bridges, which were originally constructed in 1980, are single-span structures with vertical concrete abutments and precast concrete slab decks. The north bridge (see **Figure 3**) has a 61-foot span that is wider than the channel upstream and downstream of the bridge. However, the under-bridge opening is constricted on both the upstream and downstream sides by high banks and a narrow channel. The south bridge (see **Figure 4**) has a 41-foot span, and the opening is slightly less constricted. A remnant channel exists upstream of the bridge, but high ground and dense vegetation obstruct the flow exiting the bridge (David Evans and Associates, Inc. 2021).

Figure 2: Surrounding Parcels and Zoning

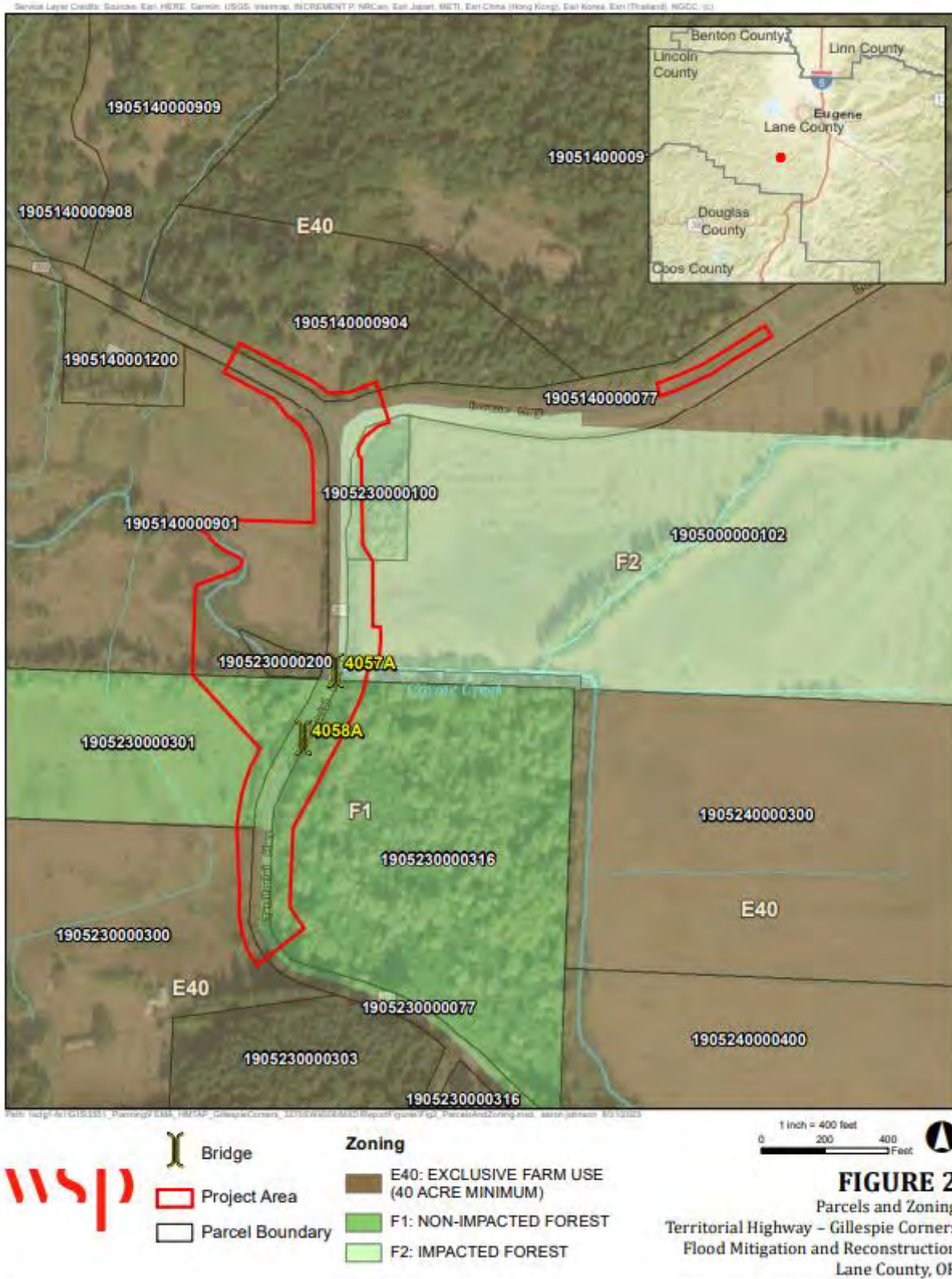




Figure 3: View of existing north bridge (04057A)



Figure 4: View of existing south bridge (04057B)



Figure 5: View of the existing north bridge (04057A) that traverses Coyote Creek during a flood event in April 2019

1.2. Environmental Trends

Reasonably foreseeable environmental trends have influenced the project’s objectives, alternatives, and design, as well as FEMA’s analysis of the future conditions with and without the proposed project. These environmental trends set the context for the chapters that follow.

1.2.1. CLIMATE CHANGE

“Climate change” refers to changes in the Earth’s climate caused by a gradual warming of the atmosphere as exacerbated by greenhouse gas (GHG) emissions, especially carbon dioxide (CO₂) and methane (CH₄). Climate change can affect species distribution, temperature fluctuations, and weather patterns.

Globally, the Earth’s average surface temperature has increased by just over 2 degrees Fahrenheit (°F) (1.1 degrees Celsius [°C]) since 1895), with Oregon temperatures largely following the same trend. Oregon’s average temperature has increased by 2.2°F (1.2°C) since 1895, with rates significantly climbing over the past four decades (Howe 2023). If current trends in global emissions persist, Oregon’s average temperature will increase by 5°F (2.8°C) by 2050 and 8.2°F (4.6°C) by 2080. More specifically, the project area is located within the Willamette Valley Ecoregion, which is characterized by drier summers and a lower precipitation rate than the neighboring Coast Range and Klamath Mountain Ecoregions (Thorson et al. 2003). The project area is located approximately 10 miles south of the City of Eugene, where temperatures range from an average low of 34 °F in December and January to an average high of 84 °F in August (U.S. Climate Data 2023). The City of Eugene receives an average of 47 inches of rain annually (U.S. Climate Data 2023). As described in

the Lane County Climate Action Plan (2020) it is anticipated that average summer temperature may increase by 10-12°F and average winter temperature may increase by 3-5°F by 2100. Streamflow could be reduced by 40 to 60 percent during the dry season by 2040. However, more intense precipitation events and higher stream flows would be anticipated during the wet season as less and less precipitation falls as snow (Lane County 2020).

Western Oregon generally experiences a wet winter season with large precipitation events and a dry summer season with very little precipitation. Climate trends suggests these patterns will intensify. Heavy increases in seasonal precipitation could create more frequent and severe flood events as discussed further in **Section 1.2.2, Flooding**.

1.2.2. FLOODING

Lane County extends from the Pacific Ocean eastward to the Cascade Mountains across a wide range of topographies and climatic conditions. This results in considerable variation in precipitation across, ranging from less than 40 inches in the Willamette Valley to more than 100 inches in the Coast Range and along the west slope of the Cascades. Average precipitation in southwest Lane County is approximately 42 inches, with the majority occurring in November through April (National Oceanic and Atmospheric Administration [NOAA] 2023b). Flooding potential in Lane County is most common during these months when storms from the Pacific Ocean bring steady and occasionally intense rainfall, and soil saturation remains high.

Environmental trends indicate western Oregon will continue to experience warmer, drier summers, and wetter winters. Rising temperatures and changing precipitation patterns are expected to increase the intensity and frequency of large, winter storms, consequently exacerbating flood events. Such flood events across roadways can substantially disrupt access for residents and emergency vehicles.

Heavy precipitation events recently occurred in Lane County during 2012, 2014, 2019, 2021, and 2022 (refer to **Figure 5** and see **Figure 6**), resulting in the issuance of flood watches. Territorial Highway at Gillespie Corners experienced heavy flooding from channel overflow during the precipitation events in 2012, 2014, 2019, and 2022. However, this segment of roadway experiences at least some flooding during most years. Increasingly wet winters are expected to increase the frequency and duration of flooding in this location. **Section 3.2.4, Flood**, of the 2018 Lane County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) recognizes the danger of inundated roadways caused by flooding. MJHMP *Mitigation Action Item 8: Upgrade Culverts and Storm Water Drainage Systems*, specifically calls for locations with repetitive flooding, flood damage, or road closures, to determine and implement mitigation measures such as increasing the size and capacity culverts or storm water drainage ditches.



Figure 6: Example of substantial flooding at the intersection of Territorial Highway and Lorane Highway from February 2014

2. Purpose and Need

FEMA’s HMGP provides funds to eligible state and local governments, federally recognized tribal governments, and nonprofit organizations to help implement long-term hazard mitigation projects after a presidential disaster declaration. The purpose of the HMGP is to reduce the loss of life and property resulting from natural disasters and to enable implementation of risk mitigation during recovery from a declared disaster.

According to the 2018 Lane County MJHMP, Lane County has been designated as having a “High Vulnerability” for flood hazards based on potentially catastrophic impacts, high long-term probability, and presence of populations, infrastructure, and development in flood-prone areas. Inundated roadways can become extremely dangerous to navigate due to the inability of drivers to judge water depth, water current, and the location of road centerline (Lane County 2018).

Territorial Highway is classified as a Rural Minor Arterial and in 2018 the roadway had an average daily traffic (ADT) count of approximately 2,000 vehicles within the vicinity of the project area. Territorial Highway serves as a primary access route for emergency services in this part of Lane County. It is also an important route for the local economy, as it is a designated freight route, supporting timber harvest and providing access to various wineries and a brewery in and around the unincorporated community of Lorane. The existing total roadway width at the project location is only 22 to 24 feet. Road widening is necessary to bring the road up to current American Association of State Highway and Transportation Officials (AASHTO) safety standards, which require two 11-foot-wide travel lanes and 7- to 9-foot-wide shoulders for a total width of at least 36 feet. The roadway would vary between approximately 36 and 40 feet in width depending on topographical and other

environmental constraints. As previously described, the project area in the Coyote Creek floodplain is subject to regular flooding during storm events. When this occurs, other longer detours are available. The fastest detour route adds approximately 36 miles and 54 minutes, presenting a dangerous situation regarding the provision of emergency services and increased costs for commercial freight.

In addition to substantially delaying travel times during a flood event, flooding also causes damage to the roadway in a way that limits its use until it can be repaired. This occurs on the western (i.e., downstream) side of the road, where turbulent surface water flows have routinely eroded the road shoulder, requiring repeated repair and maintenance activities. In a severe event, this erosion could undermine the pavement, which could endanger traffic and require long-term closure of the western lane until the pavement section can be reconstructed. An additional concern is the potential undermining of the bridge abutments due to scour. Scour occurs when sediments surrounding bridge foundations are eroded by water flow. Left unmitigated, scour can compromise the structural integrity of bridge abutments. Both bridges are currently rated as “scour critical” (Otak, Inc. 2020), meaning that continued scouring could result in bridge collapse.

The purpose of the proposed project is to maximize safe and reliable year-round transportation where Territorial Highway crosses Coyote Creek and mitigate roadway overtopping up to the 100-year flood event, an elevation of approximately 3 feet above existing conditions. In doing so, the proposed project would maintain access for emergency services during 100-year flood events, mitigate the risk of future damage to the road, and reduce scour potential at both bridges.

The need for the proposed project is to address the routine flooding that results in unsafe conditions and substantial detours for motorists and emergency service providers traveling along Territorial Highway.

3. Alternatives

CEQ regulations require federal agencies to consider a reasonable range of alternatives that meet the purpose of and need for the action in their NEPA review. This section describes the No Action Alternative, the Proposed Action, and other alternatives that were considered but dismissed for further analysis.

This EA defines¹ a *hazard* as something that is potentially dangerous or harmful and is often the root cause of an unwanted outcome. An adverse *impact* is a negative outcome on a human or natural value. A *disaster* is an occurrence of a hazard that causes a negative outcome. For example, flooding (the hazard) that causes severe unsafe conditions or damage to public infrastructure (the impacts). The *risk* is the combination of the hazard and impacts; for example, the potential or probability of the flood causing unsafe conditions of damage to public infrastructure.

¹ FEMA Basic Terminology (https://emilms.fema.gov/is_0559/groups/108.html)

For an alternative to be considered effective at addressing the purpose and need for the Proposed Action, it must meet the following selection criteria:

- Convey 100-year flood flows without road overtopping;
- Convey flows without substantially increasing upstream backwater during the 100-year flood event;
- Avoid altering hydraulic conditions in a way that would negatively affect channel stability; and
- Avoid increasing scour potential at existing bridges or worsen scour critical rating or complicate scour countermeasures.

3.1. No Action Alternative

Under the No Action Alternative, FEMA would not fund the proposed flood hazard mitigation project. While non-FEMA funding may be available, for the purposes of NEPA, this EA assumes that no improvements to elevate the 2,000-foot-long segment of Territorial Highway – including the two bridges – would be implemented. Additionally, the proposed north overflow channel, two side channels, culverts, scour protection and other stormwater features would not be established. Periodic flooding and overtopping of the roadway would continue, and would result in regular roadway closures, impacting provision of emergency services and transport of goods, and resulting in lengthy detours for travelers reliant on the regional road network. For example, a northbound or southbound vehicle unable to pass through Gillespie Corners would have to detour using Hamm Road, OR-99, Dillard Road, and Lorane Highway, adding approximately 36 miles and 54 minutes to a commute. Flooding frequency would continue to rise under the expected future climate conditions, resulting in an ongoing need for maintenance and repair activities. Future maintenance could also potentially require roadway reconstruction if the asphalt pavement is undermined (see **Figure 7**). Further, scouring of the bridge abutments would be expected to continue. As previously described, both bridges are currently rated as “scour critical,” meaning that continued scouring could result in bridge collapse. Additionally, under the No Action Alternative, adverse conditions disrupting hydraulic connectivity and capacity would persist, resulting in adverse effects to the overall health and function of wetlands and floodplains.



Figure 7: Flooding along the western roadway shoulder at north bridge (04057A) resulting in the erosion of the roadway shoulder

3.2. Proposed Action

The County conducted a hydraulic analysis that determined that both elevating the road and constructing an additional flood relief channel north of the bridges would be required to eliminate road overtopping at flows up to the 100-year flood event (i.e., a flood event that has a 1-percent chance of occurring any given year) (Otak, Inc. 2020).

The Proposed Action would include the following elements depicted in **Appendix A**:

- Establishment of a staging area and construction of a temporary detour road (including two temporary 36-inch culverts) (see **Figure 8**)
- Elevating the approximately 2,000-foot roadway segment by up to approximately 3 feet (using approximately 3,400 cubic yards (cy) of native fill material) and widening to a total width between 36 and 40 feet, consistent with AASHTO guidelines
- Elevating both bridges by approximately 3 feet
- New construction of an additional 270-foot-long floodplain overflow channel and two 12-foot by 6-foot culvert box structures north of the bridges with an approximate 108-square-foot (sf) increase in hydraulic capacity

- Improvements to the approximately 325-foot-long overflow channel downstream of the south bridge to increase hydraulic capacity during flood events (involving approximately 840 cy of fill and 260 cy of cut)
- Grading of two side channels (involving approximately 2,400 cy of cut and approximately 1,800 cy of fill) between the proposed north overflow channel and the existing south overflow channel
- Re-grading and widening the channel under the north bridge to increase hydraulic capacity (inlet bankfull flow capacity would increase by approximately 200 sf in cross sectional area and outlet bankfull flow capacity would increase by approximately 90 sf cross sectional area)
- Implementation of scour countermeasures (i.e., riprap revetment) at the bridges and culvert outlets
- Installation of stormwater filter strips (see **Figure 16**)
- Relocation of overhead utilities, which currently pass over the roadway, to the northbound side of the roadway (see **Figures 11 and 12**)

Typical construction equipment would include excavators, dozers, road graders, paving machines, and dump trucks. A crane would be used to remove and place the bridge deck slabs. An impact pile driver would be used to place a total of six steel piles associated with each of the elevated bridges. A cold plane milling machine would likely be used for paving the transitions at the project boundaries (i.e., the ends of the approximately 2,000-foot-long roadway segment), and possibly to pulverize the existing asphalt.

3.2.1. ACQUISITION OF RIGHTS-OF-WAY AND TEMPORARY CONSTRUCTION EASEMENTS

A preliminary analysis of the draft 70-percent design drawings (see **Appendix A**) and the surrounding land ownership (refer to **Figure 2**) indicates that rights-of-way and temporary construction easements would be required within portions of nine separate parcels that border Territorial Highway. These rights-of-way and temporary construction easements would range in area from 1,500 sf (approximately 0.03 acres) to 119,735 sf (approximately 2.75 acres). The County has dedicated right-of-way services specialists that would be responsible for acquiring the rights-of-way and temporary construction easements. Initial coordination with private property owners has already begun; however, formal acquisition of the required rights-of-way would be initiated following the completion of 100-percent design drawings, which is contingent upon FEMA funding.

Figure 8: Construction Staging Area

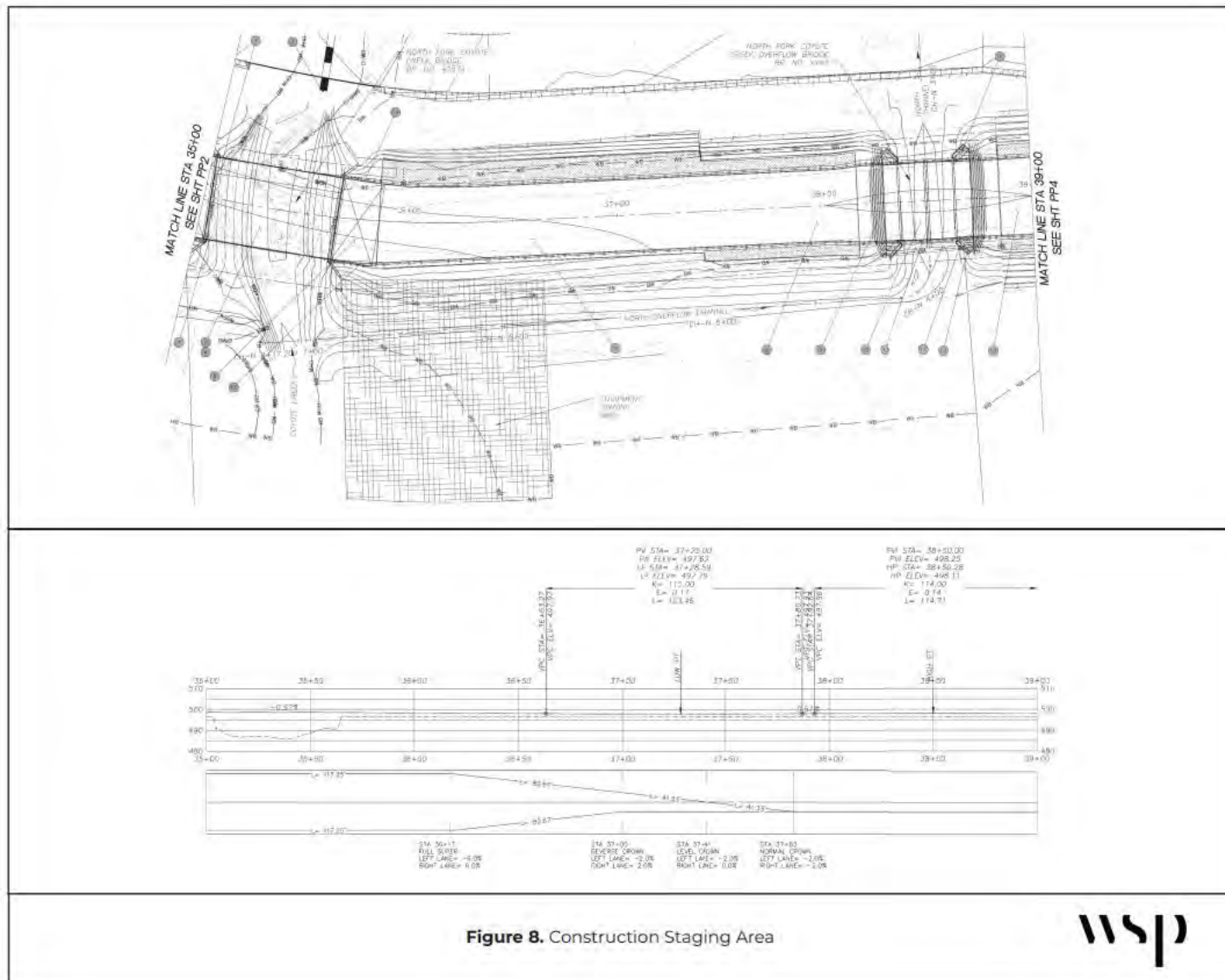


Figure 8. Construction Staging Area



3.2.2. ESTABLISHMENT OF THE CONSTRUCTION STAGING AREA

Under the Proposed Action, the County would establish a small (0.25-acre) construction staging area along Territorial Highway, adjacent to the existing creek channel (see **Figure 7** and **Figure 8**). The construction staging area would provide a laydown area for the bridge deck, steel piles, and guardrails, while the existing bridge abutments are widened (to accommodate the additional increase in roadway width, see **Section 3.2.4, Road Work, Bridge Work, and Channel Grading**) and raised. Vegetation would be cleared and geotextiles (e.g., fabric) would be placed to stabilize the area, followed by fill material and/or rocks. A silt fence perimeter would also be installed to isolate the staging area from adjacent wetlands. At the end of construction, these materials would be removed and the 0.25-acre construction staging area would be replanted/restored. Because the road would be completely closed during construction activities, the existing and new road surface would be used for all other staging requirements.

Three construction access points would be established, including two locations to the north of the north bridge and one location to the south of the south bridge. These construction access points would be constructed and decommissioned as described for the temporary detour road. Two additional construction access points would also be provided at the ends of the approximately 2,000-foot-long project area along Territorial Highway and Lorane Highway



Figure 9: Staging area at the existing south bridge (04057B) located in the clearing in the midground

3.2.3. TEMPORARY DETOUR ROAD

A temporary, 0.5-mile-long detour road would be constructed parallel to the southbound side of Territorial Highway and used to divert traffic during project construction (see **Figure 9**). The detour road would be 28 feet wide, providing one 11-foot-wide lane in both travel directions. Existing utility poles and overhead power lines in the footprint of the detour road would be relocated to the northbound side of Territorial Highway (see **Figures 11 and 12**). Approximately 1.5 acres of vegetation clearing would be required for the detour road. The vegetation would be cleared, then geotextiles (e.g., fabric) would be placed, followed by approximately 2,100 cy of fill material and/or rock. On top of the fill materials, there would be an approximately 1,600 cy, 8-inch layer of base rock and 4-inch layer of asphalt pavement. The construction of the temporary road would also involve the installation of two temporary 36-inch culverts to enable bypass of flows from Coyote Creek along with vehicle crossing. As previously described, in-water work is expected to occur during the dry season between the months of June and October, when the creek channels would not have any flows.

Following reopening of Territorial Highway in October, sections of the temporary detour road that overlap with stream channels – approximately 800 cy, including temporary culverts – would be removed to allow for unobstructed drainage during the wet season. The remainder of the detour road would be protected by stormwater best management practices (e.g., seeding and silt fencing) as required by Oregon Department of Environmental Quality (ODEQ) National Pollutant Discharge Elimination System (NPDES) Construction General Permit required for the proposed project (see **Section 4.3.1, Surface Water and Water Quality**). The sections of the temporary detour road would be removed during the second dry period. All materials would be disposed of at local, permitted, dump sites and the area would be replanted and restored.

Figure 10: Channel, Culvert, and Bridge Reconstruction

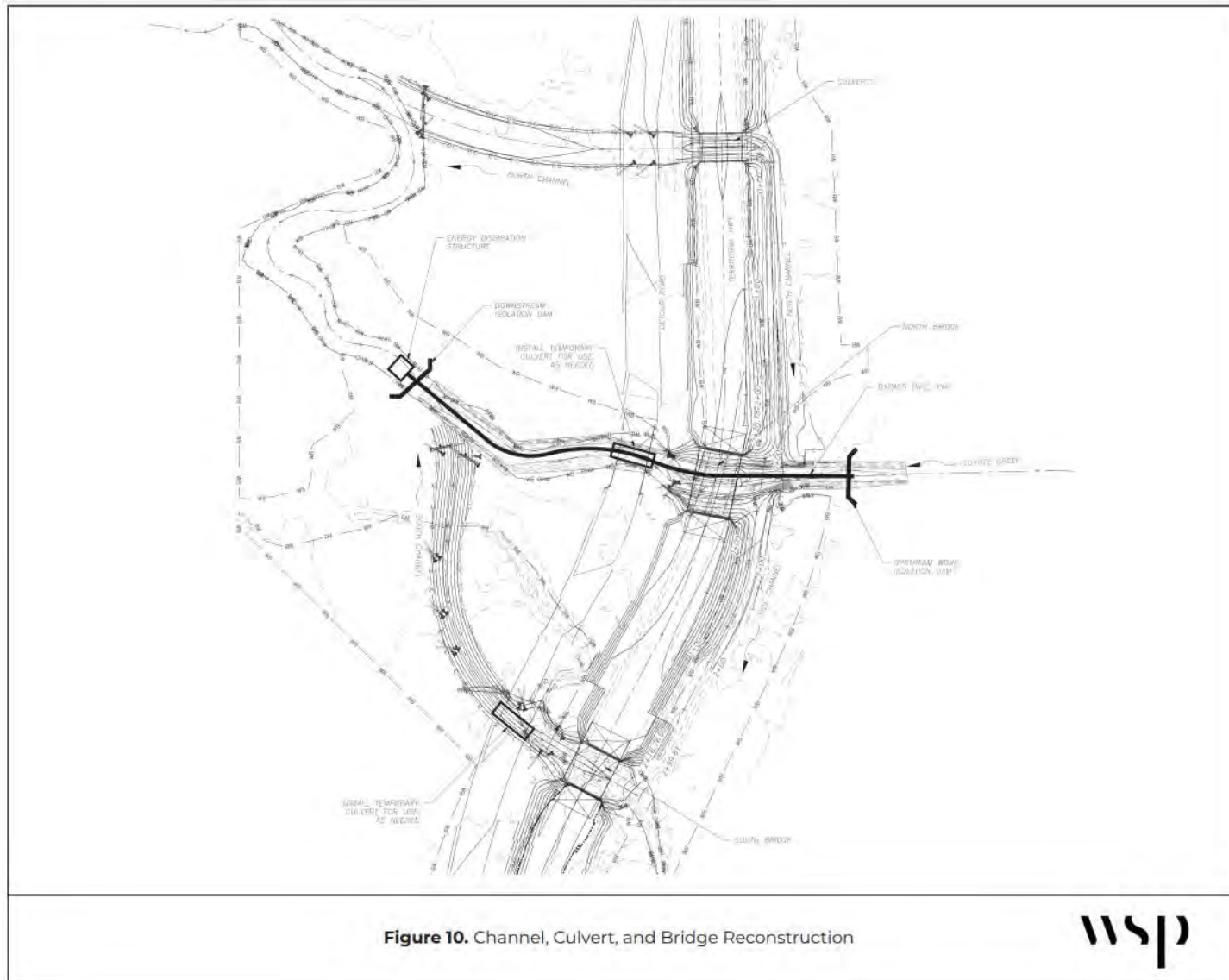




Figure 11 and Figure 12: Overhead utility lines located immediately adjacent to the roadway

3.2.4. ROAD WORK, BRIDGE WORK, AND CHANNEL GRADING

As part of the proposed improvements the existing approximately 2,000-foot-long roadway segment would be elevated 3 feet above existing grade and widened from its current width of 22 to 24 feet to a maximum of 40 feet. (The roadway would vary between approximately 36 and 40 feet in width depending on topographical and other environmental constraints.) This final road width would provide two 11-foot-wide travel lanes and 7- to 9-foot-wide shoulders, consistent with AASHTO guidelines.

The County would remove the existing asphalt and road base and would clear approximately 4.5 acres of existing vegetation – primarily reed canary grass (*Phalaris arundinacea*) – located adjacent to the roadway. The County would use approximately 3,400 cy of native fill material to elevate the Territorial Highway by approximately 3 feet. (The County maintains a large stockpile of native fill material located approximately 2 miles from the project area next to Lorane Highway. This material was salvaged from another road project in the County and stored for future use.)

The proposed bridge work would be divided into three separate stages, each lasting for a duration of 4 to 6 weeks for each bridge. Stage 1 would begin with cutting the bridge deck into individual slabs. Each of these bridge deck slabs (and associated guardrails, where necessary) would be removed and stored in the constructed staging area (refer to **Section 3.2.2, Establishment of the Construction Staging Area**). The existing pilings caps would remain in place; however, the bridge end panels would be demolished. Stage 2 would begin with the demolition of western wingwalls followed by installation of additional steel piles. The resistance of the new piles would be measured during construction, to ensure adequate load bearing capacity. Existing abutments would be extended to accommodate the increased roadway width and widened to raise height of new bridges by approximately 3 feet. Stage 3 would involve the replacement new and existing deck slabs, backfilling behind abutment and wingwalls, construction of new end panels, paving of bridges, and re-installation of guardrail.

Coyote Creek, in the vicinity of the Territorial Highway bridges, is a low-gradient stream with a stream bed that is mostly composed of fine silts and clays. Past degradation (e.g., bed downcutting), has incised the channel and resulted in over-steepened banks that show signs of erosion and bank failures (e.g., woody vegetation has fallen into the channel). The north bridge is at risk of lateral instability due to local bank erosion. Currently, there is no evidence to suggest the channel in the vicinity of the south bridge is at risk of active degradation that would pose a significant threat to road crossing (Otak, Inc. 2020). Additionally, both the north bridge and south bridge have a “scour critical” rating (Otak, Inc. 2020).

Grading of the channels at each bridge along with installation of riprap revetment would be used to protect the abutments from scour and increase channel stability, thus removing the scour critical rating for the bridges. More specifically, grading at the inlet and outlet of the bridges would increase hydraulic capacity and provide for a smooth transition into required grades for the scour countermeasures. Scour countermeasure at each bridge is described below:

Figure 13: Coyote Creek North Bridge (4057A) Cross Section

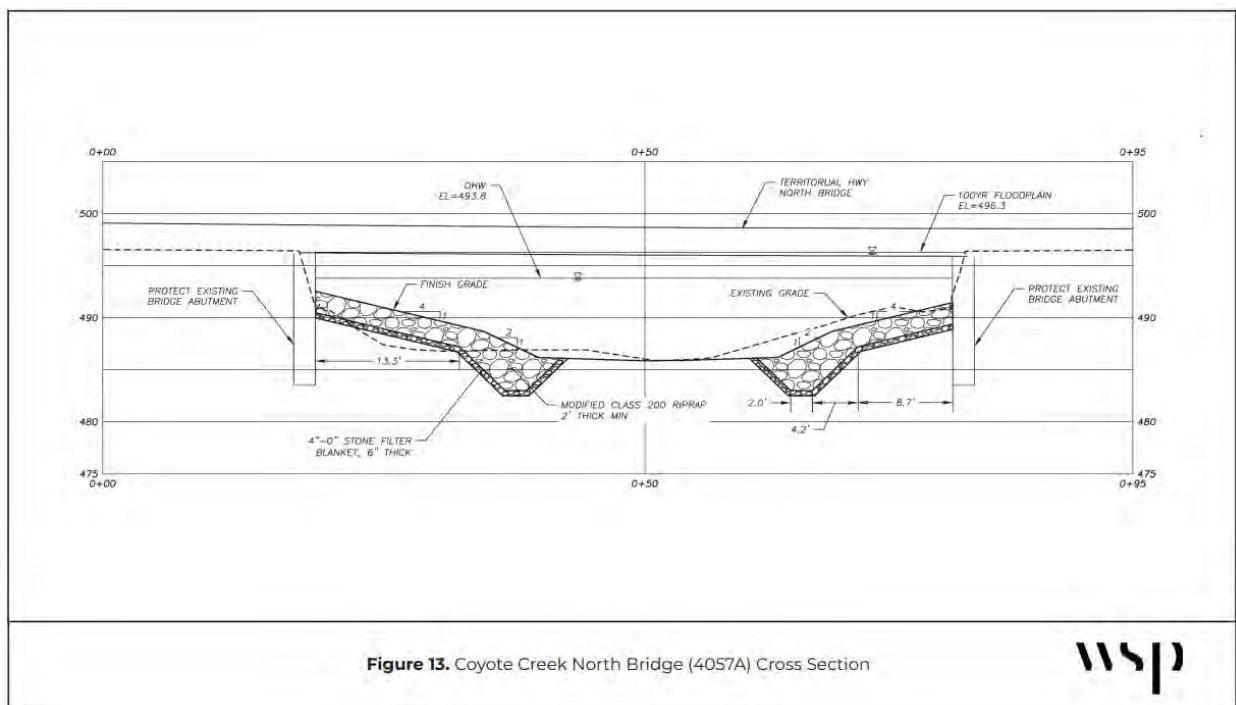
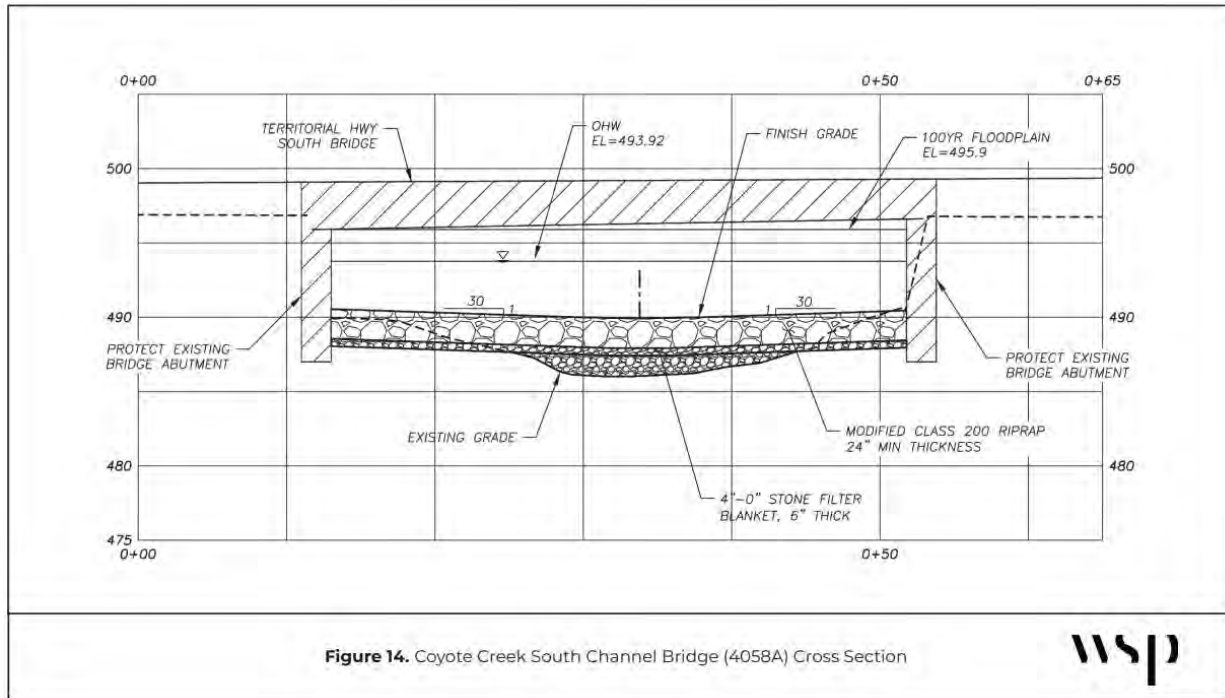


Figure 14: Coyote Creek South Channel Bridge (4058A) Cross Section



- North Bridge – A riprap revetment would be installed as shown in **Figure 13**. This revetment would be comprised of ODOT Class 200 riprap D50 (average rock diameter 11 inches), D100 (maximum rock diameter 1.4 feet). Approximately 450 cy of riprap would be installed at this site across an approximately 4,700-sf area. Live willow stakes would be installed, except for the area under the bridge, resulting in vegetated riprap across 65-percent of the revetment. Channel grading and installation of the revetment at this bridge would involve approximately 400 cy of excavation and approximately 100 cy of fill.
- South Bridge – A riprap revetment would be installed as shown in **Figure 14**. This revetment would be comprised of ODOT Class 200 riprap. Approximately 475 cubic yards of riprap would be required at this site across an approximately 5,000-sf area. Live Willow stakes would be installed, except for the area under the bridge, resulting in vegetated riprap across approximately 48-percent of the revetment area.

In order to complete this work in dry conditions, the work area would be isolated from flowing water during construction. Upstream and downstream isolation dams would be installed approximately 450 feet away from each other to allow for the work area to encompass the confluence of the south channel with the main Coyote Creek channel. A bypass pipe system would transfer flow through the work area.

3.2.5. OVERFLOW CHANNELS AND CULVERT STRUCTURES

As previously described, the existing bridges are hydraulically limited, causing routine overtopping of the roadway. Raising the road and lengthening the bridges alone will cause the surrounding floodplain backwater condition to increase floodplain water surface elevations. Additional grading of overflow channels and installation of a new culvert crossing structure north of the bridge was determined to provide enough hydraulic capacity to maintain existing base floodplain elevations at 100-year event without overtopping.

A new floodplain overflow channel is proposed to increase hydraulic capacity by providing over 100 sf of flow area under the newly raised and widened roadway. This would be achieved by installing two 12-foot-wide by 6-foot-high concrete box culverts side by side, approximately 300 feet north of the north bridge (see **Figure 15**). The culverts would be 40 feet long (i.e., the width of the roadway) and would be constructed with precast concrete elements with tapered wingwalls extending straight out from the ends of the box culverts.

Due to bank slumping, there is currently no clear flow path for water exiting the downstream opening at the south bridge (Otak, Inc. 2020). To improve the hydraulic connectivity of this bridge, the County would re-grade the south overflow channel from the downstream side of the bridge to the downstream main channel (refer to **Figure 10**). Including the grading at the bridge, this would involve 840 cy of cut and approximately 260 cy of fill with native material. This channel would be stabilized using a biodegradable matting and revegetated with native plants. Additional side channels would be graded along an approximately 650-foot stretch located immediately east of Territorial Highway to connect the overflow channels associated with the north and south bridges (refer to **Figure 10**). Grading of these channels would involve 2,400 cy of cut and approximately 1,800 cy of fill.

Modeling indicates that during high flow events new culverts would experience pressurized flow causing increased floodplain velocities at the culvert outlets. To prevent erosion of floodplain soils in the vicinity of the culverts, the County would install ODOT Class 700 riprap (approximately 300 cy) to stabilize the downstream channel directly within the area of increased velocity. Willow live stakes would be installed throughout this riprap area to increase channel stability and provide habitat for terrestrial and aquatic species depending on flow conditions. Downstream of the north overflow channel riprap, a dry-season vehicle crossing would be installed for the landowner to maintain vehicle access across their fields. The crossing would only be accessible when the soils are dry; when saturated there would be no stable access. This crossing would be designed with withstand modeled velocities up to the 100-year flood event. Downstream of the vehicle crossing the channel would be graded to reconnect low flows back into the main Coyote Creek channel. This portion of the channel would be stabilized using a biodegradable matting and revegetated with native plants.

Approximately 40 wood habitat structures (i.e., downed logs) would be installed along both channels to assist with maintaining the grading of the new channels and providing fish habitat. These structures would create scour points throughout the channel to increase localized velocities and maintain the channel connectivity. The intent of the channel is to provide for a more direct connection to the north channel at lower flow events.

Figure 15: North Channel Box Culverts Cross Section

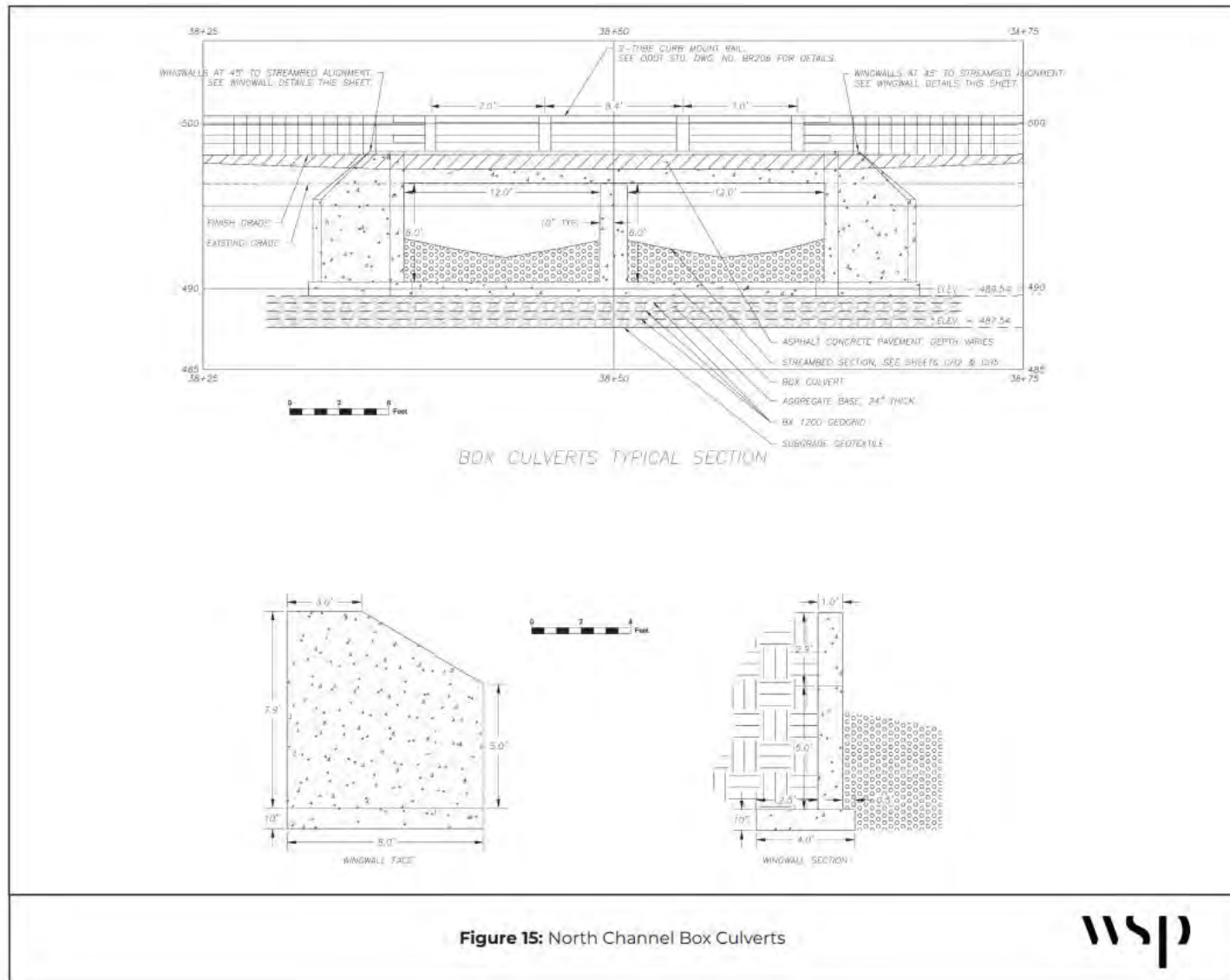


Figure 15: North Channel Box Culverts



3.2.6. STORMWATER FEATURES

Per direction from the ODEQ, vegetated filter strips would be installed immediately adjacent to the improved roadway on Territorial Highway as well as an approximately 1,375-foot segment located on Lorane Highway. Filter strips are flow-through water quality features located along the right-of-way parallel to the road. They are designed to passively treat sheet flow from adjacent impervious surfaces and consist of a relatively flat cross slope to maintain sheet flow over the entire width of the strip. Construction of filter strips would involve regrading of existing slopes along roadways and using grass, soil surface, and/or compost materials to slow stormwater runoff flows and promote infiltration.



Figure 16: Filter strips would be installed along Territorial Highway and a small segment of Lorane Highway

3.2.7. LONG-TERM MAINTENANCE

Long-term maintenance of the roadway would include annual inspection and pavement condition rating every 2 years. Pavement treatments would be applied as needed to maintain satisfactory condition. Road sweeping, striping, vegetation management, and renewal of shoulder rock would occur annually, as needed. The bridges would be inspected every 2 years per Federal Highway Administration (FHWA) requirements. Concrete surfaces would be cleaned and sealed every 5-10 years, and expansion joints would be re-sealed or replaced as necessary. The overflow culverts would be included in the bridge inspection program and maintained as needed. Stormwater filter strips maintenance would follow practices provided by Lane County Public Works Department Road Maintenance Division's Stormwater Quality Facility Operation & Maintenance Guidelines. The stormwater filter strips would be inspected annually for vegetation coverage, accumulation, erosion

and damage and would perform maintenance (e.g., re-seeding) as needed. Gravel shoulder maintenance would ensure no vegetation or sediment accumulation prevents even flow across filter strips.

3.2.8. SCHEDULE

Construction of the Proposed Action would occur over four stages that span across two construction seasons. Construction activities would begin with the establishment of the detour road (used to bypass Territorial Highway during construction) and would conclude with re-opening of Territorial Highway. Stage 1 would occur over an approximately 2-month period and would involve clearing and grubbing, in-water work isolation and construction of the detour road. Stage 2 would occur over an approximately 4-month period and would involve construction of the proposed bridges. Stage 3 would occur over an approximately 4-month period and would involve installation of culverts and filter strips, construction of channels, road grading and paving, and planting and seeding. Stage 4 would occur over an approximately 1-month period and would involve removal of the temporary detour route and (removal a stream isolation) and demobilization.

The Oregon Department of Fish and Wildlife (ODFW) has an established in-water work window that extends from July 1 through October 31. The County would request an extension to begin work in June, so that all in-water work could be completed by October 31. Following the reopening of the road, portions of the detour road would be removed (i.e., within the established creek channels) to allow for hydraulic connectivity / drainage. The rest of the detour road would be removed during the second dry season (July 1 through October 31), which would mark the completion of the project.

3.3. Alternatives Considered and Dismissed

Other alternatives were considered as a part of the Bridge Concept Report prepared by ODOT (2015); however, these alternatives were not retained for further consideration as described further below.

3.3.1. CONSTRUCTION OF VIADUCT

Similar to the Proposed Action, this alternative would raise and widen the two existing bridges; however, this alternative would also construct an approximately 150-foot-long viaduct bridge (i.e., a bridge that consists of a series of arches, piers or columns) between the two existing bridges. The ground below the viaduct bridge would be excavated to a greater depth to increase hydraulic capacity of Coyote Creek during flood events. During the evaluation of alternatives, the County determined that increasing the hydraulic capacity of Coyote Creek would have the potential to increase the downstream flood elevation and, by extent, flood hazard risks to downstream properties. Because this alternative would create potential for new, adverse flood hazards (Lane County Public Works Department 2022), it does not meet the purpose and need of the project and is therefore not carried forward for analysis in this EA. This alternative would also result in a longer construction schedule and additional disturbance to wetlands and floodplains.

3.3.2. BRIDGE DEMOLITION AND REPLACEMENT

This alternative would involve the demolition of the two existing bridges, the construction of a new, single viaduct bridge approximately 400-feet in length, and raising of the adjacent roadways. The ground below the viaduct bridge would be excavated to a greater depth to increase hydraulic capacity of Coyote Creek during flood events. The increased hydraulic capacity, due to deeper excavation of the channel, under this alternative would be great enough that the adjacent roadways could be raised to a lower elevation than under the Proposed Action (i.e., less than 3 feet). However, as previously described, increasing the hydraulic capacity beneath Coyote Creek creates the potential to increase downstream flood elevation and, by extent, flood hazard risk to downstream properties (Lane County Public Works Division 2022). Because this alternative would create potential for new, adverse flood hazards, it does not meet the purpose and need of the project and is therefore not carried forward for analysis in this EA. This alternative would also result in a longer construction schedule and additional disturbance to wetlands and floodplains.

3.3.3. ROADWAY DECOMMISSIONING

Similar to the No Action Alternative, under this alternative no improvements to elevate the 2,000-foot-long segment of Territorial Highway would be implemented and overflow channel, side channels, culverts, scour protection and other stormwater features would not be established. The length of roadway would be abandoned and closed to vehicle traffic. Impacts to emergency services and transport of goods and resulting in lengthy detours for travelers reliant on the regional road network would continue. Maintenance and repair costs would cease, however costs associated with roadway closure and detour (see **Section 4.6.5, Economics**) would continue along with costs associated with roadway decommissioning. Because this alternative would not resolve safety or economic concerns associated with lengthy detours, it does not meet the purpose and need of the project and is therefore not carried forward for analysis in this EA. This alternative would not resolve the lack of hydraulic connectivity within existing channels which in turn results in limits overall health and function of wetlands, floodplains, and water quality.

3.4. Summary

As described in **Section 3.3.1, Construction of Viaduct**, **Section 3.3.2, Bridge Demolition and Replacement**, and **Section 3.3.3, Roadway Decommissioning**, each of these alternatives was rejected due to the potential to create new, adverse flood hazards downstream of the project area. Under the No Action Alternative, FEMA would not fund the proposed flood hazard mitigation project. While the No Action Alternative would avoid any construction-related impacts, periodic flooding and overtopping of the roadway would continue, and would result in regular roadway closures, impacting provision of emergency services and transport of goods, and resulting in lengthy detours for travelers reliant on the regional road network. Flooding frequency would continue to rise under the expected future climate conditions, resulting in an ongoing need for maintenance and repair activities. Future maintenance could also potentially require roadway reconstruction if the asphalt pavement is undermined. Further, scouring of the bridge abutments would be expected to continue. As previously described, both bridges are currently rated as “scour critical,” meaning that continued scouring could

result in bridge collapse. Therefore, as discussed in and supported by the analysis in **Section 4**, Affected Environment, Potential Impacts, and Mitigation, the Proposed Action is FEMA’s preferred alternative.

4. Affected Environment, Potential Impacts, and Mitigation

This section describes the existing setting for each of the resource categories and evaluates the potential impacts for each of the alternatives identified in **Section 3**, *Alternatives*. Potential impacts are evaluated based on the criteria listed in **Table 1**. The project area includes the length of roadway to be widened, the bridges, the channels, where filter strips would be installed, the area through which the detour route will be placed, and access and staging areas necessary to implement the Proposed Action (refer to **Section 3.2**, *Proposed Action*). The section begins with a discussion of methodology, impact criteria, and environmental trends.

4.1. Methodology

The NEPA compliance process requires agencies to consider direct and indirect effects or impacts on the environment. NEPA Regulations define effects as “ecological...aesthetic, historic, cultural, economic, social, or health.” For each of these resource categories, the impact analysis follows the same general approach in terms of impact findings. For most resources, the methodology included gathering data on the current condition of the resource from existing data sources (including trends), and limited field investigations, evaluating how each alternative would or would not change existing conditions, and determining whether any identified change would remain within acceptable parameters established by the regulatory setting and associated policies/guidance.

4.1.1. IMPACT CRITERIA

When possible, quantitative information is provided to evaluate and describe impacts. Qualitatively, these impacts will be measured as outlined in **Table 1**.

Table 1: Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
Negligible (No Impacts or No Change is often used to indicate Negligible)	The resource area would not be affected, or changes or benefits would be either nondetectable or, if detected, would have impacts that would be slight and local.
Minor	Changes to the resource would be measurable, although the changes would be small and localized. Adverse impacts would be within or below applicable regulatory thresholds.

Impact Scale	Criteria
Moderate	Changes to the resource would be measurable and have short- or long-term adverse or beneficial localized or regional impacts. Adverse impacts would be within or below applicable regulatory standards. Mitigation measures may reduce any potential adverse impacts.
Major	Changes would be readily measurable and would have substantial consequences on a local or regional level. Adverse impacts that exceed regulatory standards could be significant if mitigation measures do not offset the adverse impacts.

4.1.2. SCOPING

NEPA Regulations require agencies to use “the scoping process, not only to identify significant environmental issues deserving of study, but also to deemphasize insignificant issues, narrowing the scope of the environmental impact statement process accordingly” (40 CFR §1500.4[i]). FEMA has determined that the following resource areas would not be affected by the Proposed Action and, therefore, they are not evaluated further in this EA:

Wild and Scenic Rivers: No wild and scenic rivers are located in the project area. The nearest designated Wild Scenic River is Wasson Creek, located more than 30 miles west of the project area; therefore, the Proposed Action would have no effect on Wild and Scenic rivers (National Wild and Scenic Rivers System 2023).

Coastal Resources: The Proposed Action appears to be consistent with the State’s coastal plan. The County will need to secure a Coastal Zone Management Act Consistency Review from DLCD as a part of the process of applying for a CWA permit. Consistency with the CZMA enforceable policies of a State’s federally approved coastal management program will be required before the project construction can commence (Oregon Coastal Program 2020).

Recreation: The project area is not located within or near a park and does not offer recreational opportunities. For example, there are no sidewalks, trails, or other designated pedestrian facilities. Additionally, the roadway width does not include any striped (i.e., Class III) bicycle lanes. Therefore, the Proposed Action would have no impact on recreational resources. In fact, widening the roadway may result in a minor beneficial impact with respect to cyclists given that the Proposed Action would provide for 7- to 9-foot-wide road shoulders, consistent with AASHTO guidelines. (The roadway would vary between approximately 36 and 40 feet in width depending on topographical and other environmental constraints.)

Land Use and Zoning: The project area includes the County-owned roadway as well as adjacent publicly and privately owned land, comprised of forested areas and agricultural land uses. Aside from the rights-of-way and temporary construction easements described in **Section 3.2.1, Acquisition of Rights-of-way and Temporary Construction Easements**, the Proposed Action would not change

existing land ownership or land use activities. The implementation of the Proposed Action would be consistent with current zoning.

Sole Source Aquifers: According to the U.S. Environmental Protection Agency's (USEPA's) sole source aquifer map (USEPA 2023a), one designated sole source aquifer, the North Florence Dunal Aquifer, is located in Lane County. However, this aquifer is located more than 40 miles west of the nearest fuel reduction site; therefore, the Proposed Action would have no effect on sole source aquifers.

4.2. Physical Resources

This section describes anticipated impacts on physical resources in the project area. For this assessment, physical resources address: geology and soils; and air quality and climate change.

4.2.1. GEOLOGY AND SOILS

Territorial Highway is located in central Lane County in the Willamette Valley bottom. Similar to the western portion of the county, geological formations in this area are sedimentary, but consist primarily of relatively unconsolidated alluvial materials like sands and gravels overlying shales (Smith and Ruff 1938).

As with much of Lane County, the project area is surrounded by agricultural land uses (primarily pastures and hay fields) with forested uplands and wetlands adjacent to Coyote Creek and its tributaries (refer to **Figure 2**). The soils north of Coyote Creek are deep, poorly drained, silty clay loam sediments that developed in depressional areas on floodplains or low terraces. Soils south of Coyote Creek are fluvents, which are deep, well-drained to poorly drained soils on islands or low floodplains and in overflow channels, oxbows, and sloughs. The water table is high in both these soil units from fall to spring and they are occasionally flooded from January to April (Patching 1987).

The project area is generally characterized by flat terrain with some rolling hills in the vicinity. Ditches along the road gently slope and carry stormwater toward Coyote Creek. As described further in **Section 4.3.3, Floodplains**, portions of the project area are located in the 100-year flood zone (FEMA 1999).

The Farmland Protection Policy Act requires federal agencies to minimize or avoid unnecessary conversion of farmland into nonagricultural uses. According to the Natural Resources Conservation Service (NRCS) (2023), 33 of 222 mapped acres within the project area, or 14.9 percent, are prime farmland. However, as confirmed during a site visit conducted in June 2023, the project area is not located within any areas that are actively being used in support of agricultural operations.

No Action Alternative

Under the No Action Alternative, there would be no impact to the underlying geology at the project area. However, the existing channels associated with Coyote Creek – including the main channel – would continue to be limited in terms of hydraulic connectivity and capacity. As a result, continued flooding within the project area would be expected to result in additional scouring of the north and

south bridge abutments. Over the long-term, this could lead to damage or collapse of one or both of the bridges. It is also expected that under the No Project Alternative, flooding would continue to erode the existing road base and asphalt, leading to moderate adverse impacts to soil.

Proposed Action

As described in **Section 3.2, Proposed Action**, implementation of the Proposed Action would involve the construction of a temporary detour road, construction of new channels, and construction of a new road, raised by approximately 3 feet using native fill. Additionally, the Proposed Action would involve the installation of filter strips and other miscellaneous improvements (e.g., utilities relocation). Each of these construction activities would involve heavy grading activities – including channel excavation and the addition of thousands of cubic yards of fill material (refer to **Section 3.2.4, Road Work, Bridge Work, and Channel Modifications**) – that would temporarily disturb soils. However, compliance with required permit conditions (see **Section 4.3.1, Surface Water and Water Quality**) would ensure temporary, adverse impacts related to erosion during construction would be minor. Additionally, following the completion of construction, the County would return disturbed areas to their original condition as described in **Section 4.4.1, Vegetation**.

None of the proposed rights-of-way or temporary easements required for construction are currently used as active agricultural lands. Implementation of the Proposed Action would not permanently affect prime farmland soils. The detour road that would be constructed parallel to the existing southbound lanes of Territorial Highway would be temporary. This temporary detour road would be constructed on geotextiles (e.g., fabric) to stabilize the area and maintain underlying soils. Following removal of the temporary detour road, including fill and temporary culverts, existing soils would remain in place.

This alternative would have a minor, temporary impact on soil during construction activities. However, over the long-term, following the completion of construction activities, there would be a minor beneficial impact on soil associated with the proposed channel improvements (e.g., related to reduced scour and reduced downstream siltation). There would be no impact on geology or farmland soils.

4.2.2. AIR QUALITY AND CLIMATE CHANGE

The Clean Air Act, amended in 1990, requires the USEPA to establish National Ambient Air Quality Standards (NAAQS) for six pollutants harmful to human and environmental health, including ozone (O₃), particulate matter, nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and lead (Pb). Clean Air Act Amendments of 1990 define a “non-attainment area” as a locality where air pollution levels persistently exceed NAAQS or that contribute to ambient air quality in a nearby area that fails to meet standards. Maintenance areas are those areas that had a history of non-attainment but are now consistently meeting the NAAQS. According to the USEPA Green Book (2023b), Lane County is not located within an area that is designated as a non-attainment or maintenance area. Therefore, activities associated with the Proposed Action would not require a General Conformity Analysis.

The Lane Regional Air Protection Agency (LRAPA) was established under Oregon Statute 449 (now 468.A) and approved by the Oregon Sanitary Authority (now the ODEQ). LRAPA implements the County’s air quality regulations through its rules and related programs. LRAPA’s rules closely align with those from the ODEQ (LRAPA 2023).

General climate change trends in Western Oregon are discussed in **Section 1.2.1, *Climate Change***.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. As such, there would be no construction-related criteria air pollutant or GHG emissions associated with heavy construction equipment. However, while somewhat unpredictable, it is also expected under the No Action Alternative that flooding would continue to erode the existing road base and asphalt. This would drive a need for more frequent repairs by the Lane County Public Works Department Road Maintenance Division. This work would involve the use of heavy construction equipment and associated criteria air pollutant and GHG emissions. Therefore, there would be minor, long-term adverse impacts related to air pollutant and GHG emissions.

Proposed Action

The Proposed Action would generate short-term, temporary construction-related dust, criteria pollutant emissions, and GHG emissions during the establishment of staging areas; construction of the temporary detour road; and demolition, grading, and construction activities associated with the proposed road work, bridge work, and channel modification. Criteria air pollutant and GHG emission sources would include exhaust emissions from off-road construction equipment, pile-driving equipment, on-road haul trucks, and construction worker commute vehicles. Additionally, fugitive dust emissions would result from demolition work, earthmoving activities, and repaving work. Earthmoving activities that could generate dust include grading, bulldozing, and materials-handling activities. Additional stationary equipment (e.g., pumps and generators), the pouring of concrete, and preparation of the hot-mix asphalt would also generate emissions.

The County would incorporate measures to ensure compliance with the following ODEQ requirements:

- All construction activities will comply with Oregon Administrative Rules (OAR) 340-208, which include requirements related to visible emissions (e.g., diesel-related opaque emissions), and fugitive emissions (e.g., dust from road grading, excavation, and transport of soil to and from the project area).
- Construction contractors and subcontractors would be required to use reasonable precautions to minimize fugitive dust emissions and comply with OAR 340-208-0210 (e.g., water application, spraying water in work areas, washing truck wheels and using gravel driveways at construction and staging access points, covering piles, minimizing traffic and

traffic speeds on bare soils, covering of open bodied trucks, daily clean-up, and minimizing idling of diesel-powered equipment).

Additionally, the County would follow LARPA Rules and Regulations including Title 48, *Rules for Fugitive Emissions*.

Overall, implementation of the Proposed Action would result in short-term, temporary construction-related criteria air pollutant and GHG emissions occurring over two distinct 6-month construction periods. Adverse construction-related air quality and climate change impacts would be minor. Long-term criteria air pollutant and GHG emissions associated with long-term maintenance activities (e.g., inspections, pavement treatments, vegetation management, gravel shoulder maintenance, etc.) and roadway repairs would result in no impact compared to existing conditions. In fact, roadway repair activities following flooding are anticipated to occur at a lower frequency following implementation of the Proposed Action. Given that the Proposed Action would improve an existing roadway and would not increase the number of travel lanes or otherwise encourage additional vehicle travel, implementation of the Proposed Action would not result in any additional mobile source emissions.

4.3. Water Resources

This section describes the water resources affected environment and potential effects on surface water, water quality, wetlands, and floodplains for each alternative. Federal protections for addressing water resources include but are not limited to: CWA; EO 11990, *Protection of Wetlands*; and EO 11988, *Floodplain Management*. Other federal, state, or local permits may be required, as identified in **Section 6.1, Permits**.

4.3.1. SURFACE WATER AND WATER QUALITY

The project area is located within the North Coyote Creek Valley in Upper Coyote Creek watershed (Hydrologic Unit Code [HUC] 171002060302), and the Willamette River Basin. The CWA establishes requirements for states and Native American tribes to identify and prioritize Waters of the U.S. that do not meet water quality standards. Under Section 303(d) of the CWA, ODEQ is required to develop a list of the surface waters in the state that do not meet water quality standards developed for protection of beneficial uses. Water bodies listed as impaired must have Total Maximum Daily Loads (TMDLs) developed for each pollutant for which that waterbody is “listed” (ODEQ 2006).

Proposed improvements would involve in-water work within Coyote Creek. According to the ODEQ, Coyote Creek is listed as water quality limited for *E. coli*, dissolved oxygen, and dissolved oxygen spawn (ODEQ 2023). The USEPA classifies Coyote Creek as impaired for bacteria and other microbes and low oxygen (USEPA 2022b).

To address water quality concerns, ODEQ developed a Willamette Basin TMDL and Water Quality Management Plan for temperature, bacteria, mercury, dieldrin, dissolved oxygen, and turbidity (ODEQ 2006).

No Action Alternative

Under the No Action Alternative, there would be no construction activities and associated changes to existing water quality conditions in the Upper Coyote Creek Watershed and the Willamette River Basin. However, continued and potentially increased flood events (refer to **Section 1.2.1, Climate Change** and **Section 1.2.2, Flooding**) would continue to have adverse impacts on the water quality of Coyote Creek depending on the frequency and magnitude of flooding events and potential sources of pollution present along the floodplain. As described in **Section 4.2.1, Geology and Soils**, the existing channels associated with Coyote Creek – including the main channel – would continue to be limited in terms of hydraulic connectivity and capacity. As a result, continued flooding within the area would be expected to result in additional scouring of the north and south bridge abutments and sedimentation downstream. It is also expected that under the No Action Alternative, flooding would continue to erode the existing road base and asphalt. Continued sedimentation (including the introduction of road base and asphalt) within Coyote Creek would continue to degrade water quality over the long-term in several ways. For example, suspended sediments increase the turbidity of the water, which causes the water to be cloudy, obstructs sunlight and limits photosynthesis of aquatic plants, reduces biologically available oxygen, and increases water temperature (PennState Extension 2021). Therefore, the No Action Alternative would result in moderate long-term adverse impacts to water quality.

Proposed Action

Implementation of the Proposed Action may temporarily impact surface water quality during demolition and construction activities within the immediate vicinity of Coyote Creek. As described in **Section 3.2, Proposed Action**, construction activities would generally occur within the dry season, beginning with the construction of the temporary detour road. Construction activities would include vegetation clearing, placement of geotextiles, and the addition of fill material, rock, and asphalt. Construction of the temporary detour road would also involve the installation of two temporary 36-inch culverts. The proposed detour road would traverse the stream channels, but would be designed to withstand 100-year flows. While portions of the detour road overlapping with stream channels would be removed during wet season, the rest of the detour road would remain in-place and could pose risk of releasing sediments into surrounding waterways. Proposed road and bridge work would involve similar in-water construction activities. The channel improvements – including the construction of a new overflow channel and side channels as well as installation of new culverts – would involve excavation within the waterway. These activities would all involve the use of heavy construction equipment within the floodplain and would increase the risk that harmful substances (e.g., fuel, lubricants, hydraulic fluids, or coolants) may enter Coyote Creek.

To address the potential construction-related impacts associated with the temporary detour road and the permanent improvements, the County would be required to obtain an ODEQ NPDES Construction General Permit, which authorizes the discharge of stormwater from construction sites that disturb 1 or more acre of land. As described further in **Section 4.3.2, Wetlands**, a total of 12 wetland and non-wetland water resources were identified during the wetlands delineation (David Evans and Associates, Inc. 2021). Temporary and permanent impacts to jurisdictional wetlands and non-

wetland waters would also require a CWA Section 404 permit from USACE, a CWA Section 401 Water Quality Certification from ODEQ, and a Removal-Fill Permit from the Oregon Department of State Lands (DSL). With a Stormwater Pollution Prevention Plan (SWPPP), a requirement for the NPDES Construction General Permit, as well as compliance with permit conditions imposed by USACE, ODEQ, and DSL, temporary, adverse impacts related to erosion during construction activities would be moderate. With the proposed channel improvements and associated increases in hydraulic connectivity and capacity, it is expected that long-term scour beneath the bridges and siltation of Coyote Creek downstream would be reduced from a scour depth of 1 foot to 0.4 feet for the 100-year flood event (and 2 feet for the 500-year flood event) at the North Bridge. Scour depth at the South Bridge would be reduced from 2 feet to 3 feet to 1.9 feet for the 100-year flood event (and 3.8 feet for the 500-year flood event) (Otak, Inc. 2020).

Increases in hydrologic connectivity would reduce sedimentation and stagnant water within Coyote Creek. As described in **Section 3.2.6, Stormwater Features**, the Proposed Action would include installation of vegetated filter strips – flow-through water quality features – immediately adjacent to the improved roadway on Territorial Highway as well as an approximately 1,375-foot segment located on Lorane Highway (refer to **Figure 1**). Filter strips are designed to passively treat sheet flow from adjacent impervious surfaces and consist of a relatively flat cross slope to maintain sheet flow over the entire width of the strip. The increase in hydrologic connectivity as well as the installation of the filter strips to remove contaminants from surface water runoff would be expected to help reduce periods of low dissolved oxygen, a listed TMDL pollutant in Coyote Creek, thereby creating a minor benefit to water quality.

Long-term maintenance activities associated with the Proposed Action would be similar to existing maintenance activities (i.e., vehicle trips to the site, clearing channels of debris, road and bridge inspection/repair, routine cleaning of catch basins and stormwater system maintenance). However, roadway repair activities following flooding would be anticipated to occur at a lower frequency following the completion of the proposed roadway and channel improvements. Therefore, following the completion of construction activities, there would be less in-water disturbance, resulting in a minor long-term beneficial impact on surface water and water quality.

4.3.2. WETLANDS

EO 11990, *Protection of Wetlands* requires federal agencies to consider alternatives to work in wetlands and to limit impacts on wetlands if there are no practicable alternatives. FEMA regulation 44 CFR Part 9, *Floodplain Management and Protection of Wetlands*, sets forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding activities in a wetland unless no practicable alternatives are available. FEMA’s regulations include an eight-step decision-making process for actions that may impact wetlands. Wetlands are defined by USACE as, “...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a

prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR §328.3[b]).² USACE has the authority to regulate jurisdictional wetlands as Waters of the U.S. under Section 404 of the CWA; however, EO 11990 provides guidance concerning how to mitigate or minimize any net loss of both jurisdictional and non-jurisdictional wetlands.

David Evans and Associates, Inc. (2021) conducted a wetland delineation at the project area across three separate field visits in February 2020, May 2020, and on June 2, 2021. Areas where wetland hydrology, hydric soils, and hydrophytic vegetation were all present were considered wetlands, in compliance with the Level 2 Routine Delineation Method described in the USACE Wetlands Delineation Manual and further supported by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. A total of 12 wetland and non-wetland water resources were identified during the wetland/waters delineation. As summarized below, these resources consist of two streams (i.e., Coyote Creek and the south channel), seven wetlands, and three potentially jurisdictional ditches that meet wetland criteria totaling approximately 8.5 acres.

- Wetland 1 is an approximately 2.7-acre palustrine emergent (PEM) wetland connected to Coyote Creek and consists mainly of non-native grasses. Wetland 1 is located immediately west of Territorial Highway and runs approximately 1,180 feet between the Lorane Highway and Territorial Highway intersection and the south bridge. Hydrology sources include surface runoff, groundwater seepage, and annual flooding from adjacent stream.
- Wetland 2 is an approximately 0.7-acre PEM / palustrine forested (PFO) wetland connected to Coyote Creek and consists of a thin layer of soil and grass over gravel in a ditch. Wetland 2 is located immediately east of Territorial Highway and extends from the south bridge to the Lorane Highway Culvert. Hydrology sources include surface runoff, groundwater seepage, and annual flooding from adjacent stream.
- Wetland 3 is an approximately 0.5-acre PFO wetland connected to Coyote Creek consisting of ash forested wetland. The wetland is located immediately east of Territorial Highway, just north of Coyote Creek. Hydrology sources include surface runoff, groundwater seepage and annual flooding from adjacent streams.
- Wetland 4 is an approximately 0.8-acre PEM/PFO wetland connected to Coyote Creek and consists primarily of ash forested wetland, with an understory of emergent wetland in various places. It is located immediately east of Territorial Highway, south of Coyote Creek. Hydrology sources include surface runoff, groundwater seepage, and annual flooding from adjacent streams.

² The USFWS (1993) defines wetlands as “lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.”

- Wetland 5 is an approximately 2.2-acre PEM/PFO wetland connected to Coyote Creek and consists of ash forested wetland and pasture wetland, which extends to the base of slope to the south and to a patch of upland forest along Coyote Creek. It is located immediately west of Territorial Highway south of Coyote Creek. Hydrology sources include surface runoff, groundwater seepage, and annual flooding from adjacent streams.
- Wetland 6 is an approximately 1.2-acre PEM wetland connected to Coyote Creek located on the south side of Lorane Highway. Hydrology sources include surface runoff, groundwater seepage, and annual flooding from adjacent streams.
- Wetland 7 is an approximately 0.01-acre PEM wetland consisting of a mowed grassy swale that collects water from areas upslope and outside the study area as well as groundwater. Wetland 7 extends approximately 50 feet from the north side of Lorane Highway. The wetland drains to a culvert under Lorane Highway into Wetlands 2 and 6. Hydrology sources include surface runoff, groundwater seepage, and annual flooding from adjacent streams.
- Ditch 1 is a roadside ditch that meets PEM wetland criteria connected to Wetland 2. Ditch 1 is located approximately 25 feet from the eastside of Lorane Highway. Hydrology sources include roadside runoff and groundwater seepage.
- Ditch 2 is a roadside ditch that meets PEM wetland criteria connected to Wetland 2. Hydrology sources include roadside runoff and groundwater seepage.
- Ditch 3 is a roadside ditch that meets PEM wetland criteria, consisting of a thin layer of soil and grass over gravel. Ditch 3 is located approximately 25 feet from where Lorane Highway and Territorial Highway intersect. Hydrology sources include groundwater and road runoff. This ditch drains to Ditch 1 and Wetland 2.



Figure 17: Wetlands located immediately adjacent to Territorial Highway where work would occur

No Action Alternative

Under the No Action Alternative, there would be no construction activities and no related activities within existing jurisdictional wetlands. However, continued and potentially increased flood events (refer to **Section 1.2.2, Flooding**, and **Section 4.2.2, Air Quality and Climate Change**) would continue to impact water quality depending on the frequency and magnitude of the flooding events and sources of pollution present along the floodplain (see **Section 4.3.1, Surface Water and Quality**). Additionally, the lack of hydraulic connectivity within existing channels would continue to limit downstream wetland functions such as provision of habitat for native species, flood protection, sediment capture, and water filtration. Therefore, the No Action Alternative would result in moderate long-term adverse impacts to wetlands.

Proposed Action

As part of the Proposed Action, the existing approximately 2,000-foot-long roadway segment would be elevated 3 feet above existing grade and widened from its current width of 22 to 24 feet to a maximum of 40 feet. Construction-related impacts to wetlands would be similar to impacts described for water resources in **Section 4.3.1, Surface Water and Water Quality**. Implementation of the Proposed Action would result in dredge (i.e., excavation of material from waterbodies) and fill (i.e., deposition of material into a waterbody) activities within a portion five identified wetlands and two ditches. Approximately 1.3 acres of wetlands and ditches would be temporarily adversely impacted by such activities (see **Table 2**). However, per USACE definition, impacts that last longer than 6 months may not be considered temporary. As such, temporary installation of the detour route, which would remain in place, in part, for up to 18 months, may not be considered temporary. Road work, including roadway widening, bridge work, in-channel work, and installation of stormwater features,

under the Proposed Action would result in permanent impacts to 1.6 acres of wetlands adjacent to the existing roadway width including Wetlands 1, 2, 3, 4, 5, and Ditches 1 and 2 (see **Table 2**).

Table 2: Wetlands Potentially Impacted by the Proposed Action

Wetland	Temporary Impacts	Permanent Impacts
Stream 1	0.04	0.17
Stream 2	0.02	0.18
Wetland 1	0.59	0.56
Wetland 2	0.12	0.29
Wetland 3	0	0.10
Wetland 4	0	0.06
Wetland 5	0.53	0.23
Total	1.33	1.61

Sources: Lane County Department of Public Works 2023.

Construction work resulting in the fill of wetlands (i.e., roadway widening, detour road) would use native fill. However, the Proposed Action would also improve wetlands with the construction of the proposed north overflow channel within Wetland 1, improvements to the south overflow channel within Wetland 5, and construction of the connecting side channels within Wetland 3. The creation of these channels would provide additional hydraulic connectivity and capacity resulting in an overall improvement to local wetland functions.

As a result of the unavoidable temporary and permanent impacts to wetlands within the project area, the County would be required to obtain CWA Section 404 permit, CWA Section 401 Water Quality Certification, and a Removal-Fill Permit. Following the completion of construction activities, disturbed riparian slopes would be re-seeded/replanted with native species. Permanent impacts to wetlands would be mitigated by the County purchasing wetland mitigation credits from a nearby mitigation bank within the Long Tom River watershed, in accordance with 33 CFR §332.4. With permit conditions imposed by USACE, ODEQ, and DSL adverse impacts to wetlands would be moderate. **Appendix D** details FEMA’s eight-step decision-making process, concluding there is no practicable alternative to wetland impacts and mitigation measures would be incorporated into the Proposed Action implementation.

Long-term maintenance activities, including vehicle trips, operation of hand-held equipment, and to a lesser extent, heavy construction equipment, could pose source of fuel leaks such as oil or gasoline. However, this risk would be managed by proper use and storage of equipment. Additionally, as described in **Section 3.2.6, Stormwater Features**, the Proposed Action would involve the installation of vegetated filter strips immediately adjacent to the improved roadway on Territorial Highway as well as an approximately 1,375-foot segment of Lorane Highway (refer to **Figure 1**). The installation of the

filter strips would be expected to result in long-term improvements to water quality within the adjacent wetlands.

4.3.3. FLOODPLAINS

Floodplains are environmentally sensitive, ecologically diverse, and hydrologically important areas within a watershed. Naturally functioning floodplains help moderate flood events through storage and infiltration of runoff, as well as filtering some of potential nutrients and pollutants therein before reaching surface waters. Floodplains also help reduce sedimentation of surface waters, as they slow surface water flow which allows pollutants and fine sediments to settle out before entering a watercourse (e.g., creek, river, etc.).

EO 11988, *Floodplain Management*, requires federal agencies to avoid, to the extent possible, short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. FEMA regulations (44 CFR §9.7) use the 100-year flood (1-percent chance of occurring any given year) as the minimal area for floodplain impact evaluation. Additionally, EO 13690, *Establishing a Federal Flood Risk Management Standard* to help increase community resiliency to flooding and EO 14030, *Climate Related Financial Risk*, directs federal agencies to implement this new standard through their programs. While new rules are developed, FEMA issued a partial implementation policy for the Federal Flood Risk Management Standard (FFMRS) that applies to its hazard mitigation assistance programs and covered projects within the floodplain.

To satisfy the requirements of EO 11988, the Water Resources Council developed an eight-step process that agencies are expected to carry out as part of their decision making on projects that have potential impacts to or are within a floodplain. The eight steps reflect the decision-making process required in Section 2(a) of the EO and are reflected in FEMA regulations at 44 CFR §9.6. The combined floodplains and wetlands eight-step process is documented in **Appendix D**. The portion of Territorial Highway where the Proposed Action would occur traverses the 1,500-foot-wide floodplain associated with Coyote Creek. As described in **Section 2, Purpose and Need**, the Proposed Action would increase the hydraulic capacity of the bridges where Territorial Highway crosses Coyote Creek and mitigate roadway overtopping up to the 100-year flood event (1-percent annual chance).

Lane County participates in FEMA's National Flood Insurance Program (NFIP), which, among other provisions, works with communities to map Special Flood Hazard Areas (SFHA) and establishes minimum standards for community floodplain development. The Project area is divided between FEMA Flood Insurance Rate Map (FIRM) Floodplain Panels 41039C1600F and 41039C1625F (effective June 2, 1999) (see **Appendix C**). The project area is in an SFHA because the proposed north bridge improvements, south bridge improvements, and north channel culvert improvements, as well as Territorial Highway roadway widening, are in areas identified on the FIRM as FEMA Zone A (100-year floodplain).

No Action Alternative

Under the No Action Alternative, there would be no construction activities within existing floodplains. However, continued and potentially increased flood events (refer to **Section 1.2.1 Climate Change** and **Section 1.2.2, Flooding**) would have adverse impacts on floodplain functions. Under existing conditions, there is no clear flow path for water exiting the downstream opening of the south bridge (04058A). This lack of hydraulic connectivity prevents overflows from rejoining the floodplain and limits overall health and function of downstream floodplain. Under the No Action Alternative, negative conditions disrupting hydraulic connectivity and capacity would persist. The long-term impact of the No Action Alternative on floodplains would be moderate and adverse.



Figure 18: View of the upstream side of south bridge during a flood event

Proposed Action

As part of the Proposed Action, the existing approximately 2,000-foot-long roadway segment would be elevated 3 feet above existing grade and widened from its current width of 22 to 24 feet to a maximum of 40 feet. Therefore, the Proposed Action would result in permanent development within the 100-year floodplain. However, the Proposed Action would also involve the construction of an additional overflow channel north of the existing bridges and two side channels that would run parallel to the road between the south overflow channel and the north overflow channel. As described in **Section 2, Purpose and Need**, these improvements are intended to increase the hydraulic capacity of the bridges where Territorial Highway crosses Coyote Creek and avoid flooding and temporary roadway closures. The County conducted a hydraulic analysis that determined that elevating the road and constructing an additional flood relief channel north of the bridges would eliminate road overtopping at flows up to the 100-year flood event (i.e., a flood event that has a 1-percent chance of occurring any given year) (Otak, Inc. 2020).

Additionally, as described in **Section 3.2.6, Stormwater Features**, the Proposed Action would involve the installation of vegetated filter strips immediately adjacent to the improved roadway on Territorial

Highway as well as an approximately 1,375-foot roadway segment located on Lorane Highway (refer to **Figure 1**). The installation of the filter strips would assist in recapturing stormwater runoff and result long-term moderate beneficial impacts to floodplain function.

Construction-related impacts to floodplain functions would be similar to the moderate long-term impacts described for water resources in **Section 4.3.1 Surface Water and Water Quality**. In addition to the CWA permits and Removal-Fill Permit described in **Section 4.3.2, Wetlands**, the County would be required to obtain a Floodplain Development Permit, per its NFIP floodplain ordinance. Compliance with all required permit conditions would ensure that adverse impacts to floodplains during construction would be moderate.

Over the long-term, the proposed channel improvements described in **Section 3.2.5, Overflow Channels and Culvert Structures** would decrease frequency of flooding. As shown in **Figure 19**, the base flood elevation during the 100-year flood event would decrease on the upstream side of the bridges between 0.0 and 0.1 feet and increase on the downstream side of the bridges generally less than 0.1 feet. The downstream increases are due to changes in the flow distribution, in particular the increase in flow through the North Bridge, however they would not increase upstream backwater or create flooding risk to downstream development. This demonstrates that water would flow more freely during flood events and would avoid overtopping the roadways. Over the long-term, the reduced flood hazards from the proposed improvements would benefit nearby residents, businesses, and public and private infrastructure. Long-term maintenance activities associated with proposed improvements would have no impacts to floodplains. **Appendix D** details FEMA's eight-step decision-making process, concluding there is no practicable alternative to the floodplain in particular since bridges are functionally dependent to the floodplain and based on mitigation measures that would be incorporated into the implementation of the Proposed Action.

Figure 19: Change in 100-Year Water Surface Elevation³

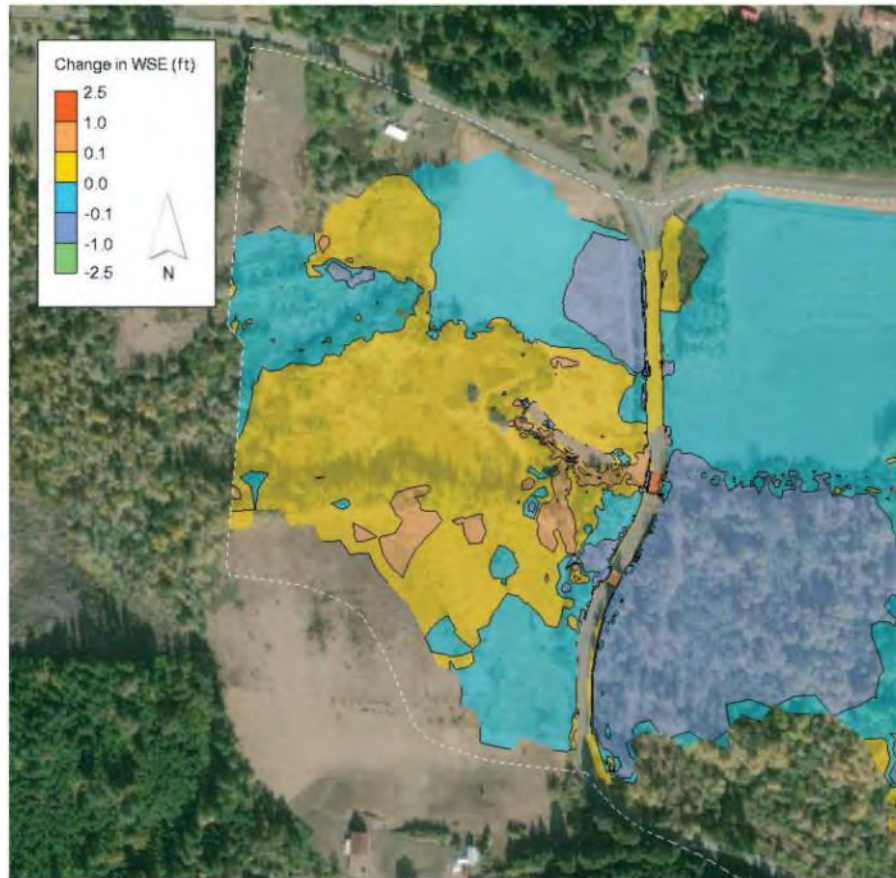


Figure 19. Change in 100-Year Water Surface Elevation Between Existing and Project Conditions



Adapted with Otak (2020)

³ Water Surface Elevation grids are used to map riverine flooding sources at various annual-chance flood events. For the purposes of this analysis, the Water Surface Elevation measures the 100-year flood event and is effectively synonymous with the base flood elevation.

4.4. Biological Resources

This section describes potential impacts on vegetation, fish, birds, and other wildlife including federally listed species and their federally designated critical habitat. The Endangered Species Act (ESA) gives the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) authority for the protection of threatened and endangered species. This protection includes a prohibition on direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat). The ESA defines the action area as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action” (50 CFR §402.02). Therefore, the action area where effects on listed species must be evaluated may be larger than the project area where proposed activities would occur. Section 7 of the ESA requires federal agencies, in this case FEMA, to consult with the Services, as appropriate, regarding species protected under the ESA.

4.4.1. VEGETATION (INCLUDING THREATENED AND ENDANGERED AND THEIR HABITAT)

Vegetation is important for wildlife habitat, wetland, and floodplain functions, and for protecting water quality and air quality. Changes in vegetation composition and density can affect these other resources. Gillespie Corners is located within the in the Valley Foothills in the Willamette Valley Ecoregion of Oregon. The Willamette Valley Ecoregion supports foothills, wetlands, coniferous forests, deciduous riparian forests, fluvial terraces, and floodplains (Thorson et al. 2003).



Figure 20: Example of typical herbaceous habitat near project area

A botanical survey was conducted within the project area by David Evans and Associates, Inc. in June 2020. Agriculture is the predominant land use in the valleys, mainly pastures and hay fields. Hill slopes at the western valley edges are mixed agricultural and forested. Herbaceous habitats within the project area are dominated by medium- to tall-stature non-native grasses and forbs such as meadow foxtail (*Alopecurus pratensis*), tall oatgrass (*Arrhenatherum elatius*), tall orchardgrass (*Dactylis glomerata*), Queen Anne’s lace (*Daucus carota*), velvetgrass (*Holcus lanatus*), reed canary

grass, tall fescue (*Schedonorus arundinaceus*), and several vetch species (*Vicia* spp.) (David Evans and Associates, Inc. 2020; see **Figure 20**). Cusick’s checker-mallow (*Sidalcea cusickii*), Nelson’s checker-mallow (*Sidalcea nelsoniana*), and Bradshaw’s desert-parsley (*Lomatium bradshawii*) are also present within the project area (David Evans and Associates, Inc. 2020). Nelson’s checker-mallow and Bradshaw’s desert-parsley have been delisted by the USFWS, but remain protected by the Oregon Department of Agriculture (ODA) as state-listed species (ODA 2023).

Table 3: Federally Listed Flowering Plants and Federally Designated Critical Habitat with Potential to Occur in the Action Area

Species	Federal Status	Presence	Federally Designated Critical Habitat
Kincaid’s lupine (<i>Lupinus sulphureus</i> ssp. <i>Kincaidii</i>)	Threatened	No	No
Willamette Daisy (<i>Erigeron decumbens</i>)	Endangered	No	No

Source: David Evans and Associates, Inc. 2020

The botanical survey was conducted during the flowering season of the federally listed species identified in **Table 3** and concluded that no ESA-listed plant species were present in the project area (David Evans and Associates, Inc. 2020). Therefore, the Proposed Action would have no impact on federally listed plant species.

EO 13112, *Invasive Species*, requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. As described in the wetland delineation report prepared by David Evans and Associates, Inc. (2021), much of the vegetation within the project area is comprised of pasture grass or weedy invasive plants such as Armenian or Himalayan blackberry (*Rubus armeniacus*) and reed canary grass.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. As such, there would be no vegetation removal. It is anticipated that existing vegetation would continue to persist with succession (continual and gradual change) driven by annual flooding. The Lane County Public Works Department Road Maintenance Division would continue to maintain vegetation within the public right-of-way consistent with its existing maintenance plan. As such, there would be no impact as compared to existing conditions.

Proposed Action

The Proposed Action would involve ground-disturbing construction-related activities including vegetation clearing and grading. Additionally, the use of heavy construction equipment and the

increased presence of construction workers could result in trampling of existing vegetation at the project area. The Proposed Action would clear approximately 1.5 acres of vegetation associated with the temporary detour road, approximately 0.25 acres of vegetation associated with the construction staging area, and approximately 4.5 acres of vegetation associated with existing roadway widening. The addition of new overflow channels and culverts would also result in the removal of vegetation. Following the completion of construction activities, the temporary detour road would be removed, and the area would be replanted / restored using native species. Additionally, the overflow and side channels as well as the filter strips would be planted with native vegetation. Irrigation would not be required, as planting would occur in the fall to ensure successful establishment. However, seeding may need to occur multiple times to ensure soil stabilization during construction and through the winter.

Much of the herbaceous vegetation proposed for removal is dominated by reed canary grass, an invasive species. The Proposed Action would replant these areas with a native herbaceous and shrub seed mix with the intent of reducing the seed source for this invasive grass species. Therefore, while the Proposed Action would result in minor adverse impacts on vegetation during construction, it would result in minor beneficial long-term impacts associated with the removal of invasive species and re-seeding / re-planting with native vegetation. Long-term maintenance activities (e.g., inspections, pavement treatments, vegetation management, gravel shoulder maintenance, etc.) and roadway repairs would result in no impact compared to existing conditions. In fact, these roadway repair activities following flooding are anticipated to occur at a lower frequency following implementation of the Proposed Action.

4.4.2. BIRDS (INCLUDING THREATENED AND ENDANGERED AND THEIR HABITAT)

This subsection discusses impacts on birds protected under the current regulatory setting. In addition to the ESA described above, the Migratory Bird Treaty Act of 1918 (MBTA) provides protection for migratory birds while the Bald and Golden Eagle Protection Act (BGEPA) prohibits the take, possession, sale, or other harmful action of any gold or bald eagle, alive or dead, including any part, nest, or egg, except under the terms of a valid permit issued pursuant to federal regulations.

The USFWS Information for Planning and Consultation (IPaC) database (2023) was used to identify federally listed species with the potential to occur within the action area. **Table 4** presents the ESA-listed threatened or endangered birds and their designated critical habitat. Both these species are also State-protected species.

Table 4: Federally Listed Birds and Federally Designated Critical Habitat within Project Area

Species	Federal Status	Federally Designated Critical Habitat
Marbled Murrelet (<i>Brachyramphus marmoratus</i>)	Threatened	No

Species	Federal Status	Federally Designated Critical Habitat
Northern Spotted Owl (<i>Strix occidentalis caurina</i>)	Threatened	No

Source: USFWS 2023

Marbled murrelets are predominately found in near-shore marine waters feeding on small fish and invertebrates, normally at dawn and dusk. Nesting occurs inland in large-diameter trees found in low-elevation forests with several canopy layers. The project area is located near the eastern extent of the species' range (USFWS 2023). However, while there have been instances of marbled murrelets being found on rivers and inland lakes, the project area lacks old growth forests with large trees and moderate to high canopy closures. Additionally, the project area is not characterized by unfragmented stands that appear to provide the highest quality habitat for marbled murrelet nesting (USFWS 2023).

The northern spotted owl is the largest of three subspecies of spotted owls, and inhabits structurally complex forests from southwestern British Columbia, through Washington and Oregon, and into northern California. Northern spotted owls prefer old-growth forests, particularly Douglas fir (*Pseudotsuga menziesii*) forests. These types of forests have high canopy layers, snags (i.e., standing dead trees), and open spaces for flying underneath and between trees (USFWS 2004). While forested land does occur in the vicinity of the project area, no such habitat occurs at the project area.

According to the USFWS IPaC database (2023), migratory bird species that may occur in or near the project area includes evening grossbeak (*Hesperiphona vespertina*), olive-sided flycatcher (*Contopus cooperi*), Rufous hummingbird (*Selasphorus rufus*), and wrentit (*Chamaea fasciata*). The migratory bird nesting season for these species is from March 15 to August 31. Nesting and/or foraging bald eagles (*Haliaeetus leucocephalus*) may also occur within the vicinity of the project area. The nesting season for this species is from January 1 to September 30.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. As such, there would be no direct habitat removal or indirect impacts associated with construction-related noise. No impacts to protected birds would occur as a result of the No Action Alternative.

Proposed Action

The implementation of the Proposed Action would result in vegetation removal – including grasses, small shrubs, and some trees – as well as temporary construction-related increases in noise. As described in **Section 3.2.8, Schedule, Stage 1** involving vegetation removal would occur over a 2-month period. To comply with the MBTA, the County would be required to remove shrubs and trees outside of the migratory bird nesting season (March 15 to August 31) and the bald eagle nesting

season (January 1 to September 30). If removal of shrubs and trees or the use of heavy construction activities that could otherwise affect nesting activities must occur during this period, the County would be required to conduct pre-construction nesting bird surveys to identify and avoid active nests. The County would be required to coordinate with the USFWS to acquire necessary permits if impacts to nesting birds cannot be avoided. For example, if there is the potential for a nesting pair to be disturbed by project-related construction activities or habitat modifications within 330 feet of an active bald eagle nest, an incidental eagle take permit⁴ would be needed from USFWS prior to the initiation of any work (2023).

As previously described, no federally designated critical habitat occurs within the project area for marbled murrelet or northern spotted owl. The nearest federally designated habitat for these species is located more than 5 miles and more than 2.5 miles from the project area, respectively. Additionally, the forested areas within the project area do not provide high quality roosting or foraging habitat. The nearest documented northern spotted owl location is located more than 2 miles west of the project area (Bureau of Land Management [BLM] 2023b). Similarly, the nearest activity center is located more than 4 miles to the west of the project area (BLM 2023a). Therefore, implementation of the Proposed Action would have no effect on the federally threatened marbled murrelet or northern spotted owl.

Due to the required compliance with the MBTA and the BGEPA it is anticipated that there would be negligible short-term adverse impacts on migratory birds or bald eagles during construction activities. Additionally, given the lack of suitable habitat, there would be no impact on federally listed marbled murrelets or northern spotted owls.

Long-term maintenance activities (e.g., inspections, pavement treatments, vegetation management, gravel shoulder maintenance, etc.) and roadway repairs would result in no impact compared to existing conditions. In fact, roadway repair activities following flooding are anticipated to occur at a lower frequency following implementation of the Proposed Action.

4.4.3. FISH (INCLUDING THREATENED AND ENDANGERED AND THEIR HABITAT)

The USFWS shares the responsibility for administering the ESA with NMFS. USFWS is responsible for freshwater fish and all other species, while NMFS is responsible for marine species, including anadromous fish.

Additionally, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) designates Essential Fish Habitat (EFH) for certain commercially managed marine and anadromous fish species to protect their habitat from being lost because of disturbance and degradation.

Waterbodies in the entirety of the Upper Willamette Watershed are identified as EFH for Chinook and Coho salmon (NOAA 2023a). However, according to the NOAA Protected Resources App (2023) and

⁴ 3-200-71: Eagle Take – Associated with, but not the Purpose of, an Activity (Incidental Take)

as confirmed by NMFS during a meeting with the County in October 2019, no anadromous fish species (e.g., salmon) are located within the project area. Based on the Conservation Biology Institute's (2021) Oregon Fish Habitat Distribution, the project site is not in the current or historical extents of Chinook or Coho salmon. Due to the presence of downstream dams, including the Fern Ridge Dam, anadromous fish species are excluded from the Coyote Creek watershed. Therefore, the project area is not considered EFH and there are no reasonably foreseeable future plans to reintroduce anadromous fish upstream of the dams.

With a surface area of 9,000 acres at full pool, Fern Ridge is the largest lake in the Willamette Valley and one of several area flood control reservoirs managed by USACE. It is located on the Long Tom River, which still provides a band of deep water down the middle of what is otherwise a very broad and shallow waterbody. Amazon Creek, Coyote Creek, and a number of other smaller tributary streams create many coves and inlets that provide ideal habitat for warmwater fish including largemouth bass, bluegill, brown bullhead, catfish, and crappie (ODFW 2023).

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. As such, there would be no temporary disturbance or long-term changes to in-water habitat. It should be noted that the channel below the south bridge is a fish stranding hazard at low flow due to the deep scour pool in this location. Under the No Action Alternative, this hazard would remain for freshwater fish. Additionally, as described in **Section 4.2.1, Geology and Soils**, and **Section 4.3.1, Surface Water and Water Quality**, existing channels associated with Coyote Creek – including the main channel – would continue to be limited in terms of hydraulic connectivity and capacity. As a result, continued flooding within the area would be expected to result in additional scouring of the north and south bridge abutments and sedimentation downstream. It is also expected that under the No Project Alternative flooding would continue to erode the existing road base and asphalt. Continued sedimentation (including the introduction of road base and asphalt) within Coyote Creek would continue to degrade water quality over the long-term in several ways, which would have a minor adverse impact on resident freshwater fish; for example, turbidity makes it more difficult for fish gills to absorb oxygen and for visual predators to forage (Penn State Extension 2021). Additionally, continued sedimentation has the potential to reduce viable habitat for fish as well as aquatic insects by clogging spaces between larger gravel, cobble, and boulders and ultimately leading to a less diverse aquatic community (Penn State Extension 2021).

Proposed Action

As previously described, due to the presence of downstream dams, including the Fern Ridge Dam, anadromous fish species are excluded from the Coyote Creek watershed. Therefore, while waterbodies in the entirety of the Upper Willamette Watershed are identified as EFH for Chinook and Coho salmon, the Proposed Action would have no effect on EFH or federally listed fish species.

Potential impacts to fish would be limited to common resident freshwater fish species. The Proposed Action would involve in-water work during channel widening, construction of overflow and side

channels, and installation of filter strips. As described in **Section 4.2.1, *Geology and Soils***, and **Section 4.3.1, *Surface Water and Water Quality***, such construction activities have the potential result in erosion and/or the incidental release of pollutants. However, the County would be required to obtain a NPDES Construction General Permit, CWA Section 404 permit, CWA Section 401 Water Quality Certification, and a Removal-Fill Permit. With the implementation of a SWPPP, a requirement for the NPDES Construction General Permit, as well as compliance with permit conditions imposed by USACE, ODEQ, and DSL, temporary, impacts related to erosion and the incidental release of pollutants during construction activities would be minor. Underwater noise impacts associated with pile driving may disturb resident fish in the project area. Fish species are sometimes injured or killed by the impact sounds generated by percussive pile driving. Their hearing may also be affected, or their behavior altered (Popper et al. 2006). However, in-water work is expected to occur during the dry season between June and October, when the north and south overflow channels would not have any flows. The main channel of Coyote Creek would still experience flows during the summer season and require installation of a bypass. Any resident fish remaining in the deep pools would be removed with seine nets and relocated upstream or downstream of the isolation dams. Therefore, the presence of fish, if any, would be limited to pools located upstream and downstream isolation dams. These fish would not be affected by underwater noise associated with pile driving and there would be no impacts to common resident fish species.

Over the long-term implementation of the Proposed Action would improve fish passage and fish habitat. As described in **Section 6.1, *Permits***, the County would obtain ODFW approval of a Fish Passage Plan to ensure that culvert structures, bridges, and channel modifications support fish passage. Additionally, wood habitat structures would be installed downstream of the main channel and the two overflow channels (refer to **Figure 9**). These habitat structures would improvement channel complexity and provided habitat for fish, resulting in minor long-term beneficial impacts to resident fish.

Long-term maintenance activities (e.g., inspections, pavement treatments, vegetation management, gravel shoulder maintenance, etc.) and roadway repairs would result in no impact as compared to existing conditions. In fact, roadway repairs activities following flooding are anticipated to occur at a lower frequency following implementation of the Proposed Action.

4.4.4. WILDLIFE (INCLUDING THREATENED AND ENDANGERED AND THEIR HABITAT)

The USFWS IPaC database (2023) was queried to identify proposed, threatened, and endangered terrestrial species that could occur in the project area. **Table 5** presents the federally listed threatened or endangered terrestrial species and their designated critical habitat. The Pacific marten (*Martes caurina*) and red tree vole (*Arborimus longicaudus*) are also State-protected species.

Table 5: Federally Listed Mammals, Insects, and Designated Critical Habitat within the Action Area

Species	Federal Status	Designated Critical Habitat
Pacific Marten, Coastal Distinct Population Segment (<i>Martes caurina</i>)	Threatened	No
Red Tree Vole (<i>Arborimus longicaudus</i>)	Candidate	No
Fender's Blue Butterfly (<i>Icaricia icarioides fender</i>)	Threatened	No
Monarch Butterfly (<i>Danaus plexippus</i>)	Candidate	No

Source: USFWS 2023

Pacific martens are carnivorous members of the weasel family with a dense coat that varies from pale yellow to dark brown. Pacific martens are closely associated with late-successional, mixed conifer forests with multi-layer stands. They may be found in other forest types, provided there is a high density of snags and logs for denning and foraging (USFWS 2018). The project area does not overlap with existing or proposed critical habitat for the Pacific marten.

Tree voles are endemic to the humid coniferous forests west of the crest of the Cascade Mountains in Oregon and northwestern California. The red tree vole occurs in western Oregon from the Cascade crest to the Pacific Coast, where they are found exclusively in conifer forests or in mixed forests of conifers and hardwoods. Throughout most of their range, they are principally associated with Douglas fir for foraging and nesting (USFWS 2014). The project area does not overlap with existing or proposed critical habitat for the red tree vole.

Fender's blue butterfly is endemic to the Willamette Valley of Oregon and host-specific on Kincaid's lupine (*Lupinus sulphureus kincaidii*). As described in **Section 4.4.1, Vegetation**, Kincaid's lupine was not identified within the project area.

The monarch butterfly is identifiable by its iconic orange and black markings. Monarchs perform annual migration between, Canada and across the U.S. to congregate at a few forested overwintering sites in the mountains of central Mexico and coastal California. Milkweed and flowering plants are needed for monarch habitat. Adult monarchs feed on the nectar of many flowers during breeding and migration, but they can only lay eggs on milkweed plants (USFWS 2023). Neither the botanical survey nor the wetland delineation identified milkweed that would support the candidate monarch butterfly, though this species may occur as a transitory species feeding on the nectar of flowing plants in the project area for short periods of time.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. As such, there would be no direct habitat removal or indirect construction-related impacts.

Proposed Action

The project area does not include dense conifer or mixed forests that would provide high quality habitat for the federally threatened pacific marten or the candidate red tree vole. Additionally, the host plant for the federally threatened Fender’s blue butterfly, Kincaid's lupine, is not located within the project area. Milkweed, which would support the candidate monarch butterfly, is not located in the project area. The implementation of the Proposed Action would have no effect on any of these federally listed or candidate species (see **Appendix B**).

Other common wildlife species (e.g., mammals, reptiles, amphibians, insects, etc.) may be affected during construction-related activities as a result of direct habitat removal, construction noise (including pile driving noise), or human disturbance. However, similar habitat types are available throughout the project area. While smaller, less mobile species may be trampled during construction related activities it is anticipated that many individuals particularly mammals, reptiles, amphibians, and flying insets would move away from the areas where the work is actively occurring. Over the long-term it is anticipated that wildlife species would reinhabit the project area after it has been re-seeded / re-planted. Therefore, adverse impacts to wildlife would be minor and short-term. Long-term maintenance activities (e.g., inspections, pavement treatments, vegetation management, gravel shoulder maintenance, etc.) and roadway repairs would result in no impact as compared to existing conditions. In fact, these roadway repair activities following flooding are anticipated to occur at a lower frequency following implementation of the Proposed Action.

4.5. Cultural Resources and Historic Properties

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that activities using federal funds undergo a review process to consider potential effects on historic properties that are listed in or may be eligible for listing in the National Register of Historic Places (NRHP). This process is completed in consultation with the State Historic Preservation Office (SHPO) and Native American tribes.

Historic properties include prehistoric or historic archeological sites, structures, and districts. Cultural resources may include objects, artifacts, and cultural properties of historic or traditional significance, referred to as Traditional Cultural Properties. These properties may have religious or cultural significance to federally recognized Native American tribes. Cultural resources also include other physical evidence of human activity considered to be important to culture, subculture, or community for scientific, traditional, religious, or other reasons. Important living cultural resources, such as salmon and culturally relevant plants, important for traditional, religious, and other reasons, may also be included.

Pursuant to 36 CFR §800.4(a)(1), an Area of Potential Effects (APE) was defined to include the project area within which the undertaking may directly or indirectly affect cultural resources. Within the APE, impacts on cultural resources were evaluated for both historic structures (i.e., aboveground cultural resources) and archaeology (i.e., below ground cultural resources).

Ethnographic Context

Prior to the arrival of Euro-Americans to the Willamette Valley in the mid-1800s, the broad fluvial terraces of this ecoregion supported oak savanna and prairies, with riparian gallery forests and seasonal wetlands and ponds. Native American populations used periodic burning to manage these habitats and thereby enhancing the growth of bulbs, such as camas, and facilitating the harvest of seeds, acorns, hazelnuts, berries, and insects (Heritage Research Associates, Inc. 2020a). The use of fire by the Native American inhabitants is thought to have changed the pre-fire habitat in the valley from a forested scrub-shrub wetland to a verdant seasonally wet prairie.

At Euro-American contact the native peoples inhabiting the Upper Willamette Valley consisted of populations who spoke related languages belonging to the Kalapuyan language family. Based on linguistic differences, the Kalapuya peoples who occupied the valley were identified as belonging to at least 13 dialectically distinct bands or tribes that correspond with the individual basins of major tributaries of the Willamette River. One of these bands, the Chelamela (or Long Tom) occupied the area encompassed by the Long Tom River watershed in the vicinity of the Gillespie Corners.

Historic Context

The arrival of Euro-Americans into the Pacific Northwest resulted in the spread of infectious diseases to the native peoples of western Oregon, which led to catastrophic declines in populations prior to the 1840s. The earliest settlers included emigrant farming families. The alignment of Territorial Highway closely follows the Road to California/California Trail and was part of the Applegate Trail. Gillespie Corners was named after Walter and Marcellus Gillespie, brothers who owned land on opposite corners of the road intersection (Heritage Research Associates, Inc. 2020a).

Archaeological Resources

An archaeological survey was conducted by Heritage Research Associates, Inc. in 2018. As a part of this survey Heritage Research Associates, Inc. conducted a review of archaeological site records maintained by the Oregon SHPO, which indicated that the nearest recorded archaeological site (35LA1618) is located along Territorial Highway approximately 0.2 miles from the APE. Two additional sites (35LA1619 and 35LA1620) were recorded farther to the south along Territorial Highway. A third site (35LA263) is located just over 1 mile to the west of Gillespie Corners along Simonsen Road. The pedestrian survey of the project area consisted of an archaeologist walking transects within the existing public right-of-way on both sides of the highway as well as both sides of Coyote Creek. Additionally, because of the dense grass and brush cover, 10 subsurface shovel probes were excavated within the APE. However, no prehistoric or historic cultural materials or

deposits were observed on the ground surface during the pedestrian survey or identified in the shovel probes (Heritage Research Associates, Inc. 2020a).

Historic Resources

Based on a review of the Historic Sites Database maintained by the Oregon SHPO, three NRHP-eligible resources are located within 1 mile of the APE: Lorane Christian Church, built in 1889; Lorane Grange Hall, built in 1909; and Lodge #122 Hall, built in 1895. However, of these three, none are currently recommended for listing in the NRHP. The nearest NRHP-listed resource is the John Sutherland House, built in 1907, and located approximately 0.78 miles northeast of the APE. No other NRHP-listed resources are located within a 5-mile radius of the project area.

A Historic Baseline Report was prepared by Heritage Research Associates, Inc. in July 2020. The report assessed eight tax lots within or adjacent to the project's APE and found one tax lot contains resources that appear to be 45 years or older – the historic David Zumwalt House and Barn (now the Blue Rooster Inn Bed and Breakfast), located approximately 350 feet from proposed roadway improvements. This resource was identified as not eligible for NRHP listing by the Oregon SHPO as part of their 2013 inventory of settlement-era dwellings, barns, and farm groups in the Willamette Valley. As this property is located outside of the APE, this proposed undertaking would have neither direct nor indirect effects upon its historic integrity. While more research is necessary to fully evaluate these structures, the actions included in the proposed undertaking would not diminish any of the aspects of integrity of the resources nor their ability to convey significance should they be determined eligible for the NRHP.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. As such, there would be no impacts to previously undiscovered archaeological resources or historic built resources that are eligible for listing on the NRHP within the APE.

Proposed Action

The Proposed Action would involve ground-disturbing construction-related activities including vegetation clearing and grading. As previously described, based on the results of the archaeological survey conducted by Heritage Research Associates, Inc. there are no known archaeological resources within the APE. Nevertheless, the County would include an Inadvertent Discovery Plan in its construction documents to describe procedures for actions to be taken in the event of the discovery of archaeological resources during construction. If previously unknown cultural resource resources are discovered, ground disturbance would cease in that area, the area would be secured, and the County would notify the SHPO and FEMA for further evaluation with the assistance of a professional archaeologist. FEMA sent a 'No Historic Properties Affected' consultation letter to the Oregon SHPO on November 17, 2023 (see **Appendix B**). The SHPO concurred with this finding in a letter dated January 14, 2024. FEMA sent a similar consultation letter to the five federally

recognized Native American tribes with an identified interest in the APE. The five consulted tribes consisted of Cow Creek Band of Umpqua Tribe of Indians, Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of Siletz Indians, and Confederated Tribes of Warm Springs. Consultation with the Oregon SHPO and Native American tribes pursuant to Section 106 of the NHRP was completed on September 15, 2023 (see **Appendix B**). No further comments were received.

Long-term maintenance activities (e.g., inspections, pavement treatments, vegetation management, gravel shoulder maintenance, etc.) would be similar to existing activities and would not result in impacts to cultural resources or historic properties.

4.6. Quality of Life Resources

This section discusses other resources that impact people’s quality of life. Specifically, traffic, noise, vibrations, and visual impacts. The section also discusses environmental justice impacts.

4.6.1. TRAFFIC

Construction projects have the potential to disrupt traffic patterns or increase traffic volumes such that affected roadways would operate at unacceptable levels of service. Gillespie Corners is located at the intersection of Territorial Highway and Lorane Highway. Both these roadways are designated as major collector roadways by ODOT (2022). Territorial Highway runs north to south from the City of Monroe in Benton County to the Douglas Lane County line where it ends. Territorial Highway is a designated freight route and primary access route for emergency services. As a freight route, Territorial Highway supports timber harvest and acts as a primary access route for residents and tourists visiting wineries and breweries in the Lorane area. Lorane Highway extends southeast from southern Eugene to its terminus at Gillespie Corners. Alternate routes to these wineries and breweries include Hamm Road, Siuslaw Road, and Cottage Grove Lane although these routes would be a longer commute.

ODOT does not maintain record annual average daily traffic (AADT) data for Territorial Highway near Gillespie Corners. However, the Lane County Public Works Department conducted traffic counts in 2018 and 2021, and estimated an AADT count of approximately 2,000 vehicles in the vicinity of the project area (Lane County Public Works Department 2022).

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. Therefore, there would be no construction-related transportation impacts associated with the import/export of native fill, delivery of construction equipment and materials, and construction worker commutes. Nevertheless, the existing channels associated with Coyote Creek – including the main channel – would continue to be limited in terms of hydraulic connectivity and capacity. As a result, continued flooding within the area would be expected to result in additional scouring of the north and south bridge abutments. Over the long-term, this could eventually lead to long-term damage or collapse of one or both bridges. It is also

expected that under the No Action Alternative flooding would continue to erode the existing road base and asphalt resulting in prolonged closures of Territorial Highway depending on the availability of the Lane County Public Works Department Maintenance Division to repair the damage. The No Action Alternative would result in major long-term adverse impacts. This alternative would not meet the need for the Proposed Action to address routine flooding that results in unsafe conditions and substantial detours for motorists, freight, and emergency service providers traveling along Territorial Highway.

Proposed Action

The implementation of the Proposed Action would result in a short-term, temporary increase in construction-related traffic associated with heavy haul truck trips, materials delivery, and construction worker commutes. For example, assuming a dump truck with a capacity of 16 cy, import of fill to raise the roadway would result in 375 trips. As a result, if the import of fill occurs fairly evenly across the initial 6-month construction period, heavy haul truck trips may be limited to approximately 5 to 10 trips per day. Additionally, heavy haul truck trips would be required for soil export and construction materials delivery. Construction worker commutes would also contribute to total vehicle trips. Overall, temporary increases in average traffic would represent a less than a 5-percent increase in existing daily trips along Territorial Highway and impacts would be minor.

As described in **Section 3.2.3, *Temporary Detour Road***, the implementation of the Proposed Action would begin with the construction of a temporary detour route parallel to the southbound lanes of Territorial Highway. This temporary detour road would be heavily signed and used to divert and bypass traffic during construction activities. The temporary detour route would remain open for use for the duration of initial 6-month construction period and would be removed during the second dry season following the completion of the proposed improvements to Territorial Highway. When necessary, during periods of fill import/export, delivery of heavy construction equipment, etc. a construction flagger would help slow and direct traffic. Overall, construction activities associated with implementation of the Proposed Action would result in minor short-term adverse impacts related to traffic.

Following the completion of construction, the final road width would provide two 11-foot-wide travel lanes and 7- to 9-foot-wide shoulders, consistent with AASHTO guidelines. Additionally, by elevating the road and constructing an additional overflow channel north of the bridges the Proposed Action would eliminate road overtopping at flows up to the 100-year flood event (i.e., a flood event that has a 1-percent chance of occurring any given year) (Otak, Inc. 2020). This would result in a major beneficial impact related to traffic. Additionally, vehicle trips associated with long-term maintenance of bridge and roadway improvements would be less than under existing conditions since the Proposed Action would reduce flood events, scour damage, and the subsequent need for maintenance and repairs. Therefore, the Proposed Action would have a moderate long-term beneficial impact associated with traffic.

4.6.2. NOISE

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are considered noise. Noise events that occur during the night (10 p.m. to 7 a.m.) are more annoying than those that occur during normal waking hours (7 a.m. to 10 p.m.). The assessment of noise impacts considers the proximity of noise-generating activities to sensitive receptors, which are defined as areas of frequent human use that benefit from a lowered noise level. Typical sensitive receptors include residences, schools, places of worship, hospitals, nursing homes, and libraries. **Figure 20** shows common noise levels, which will be discussed in this section.

The nearest residence is located approximately 270 feet from the north end of the project area along Territorial Highway. Additionally, a bed and breakfast is located approximately 350 feet from the south end of the project area where road work would occur.

There are no statutory or regulatory thresholds for noise impacts on humans. This EA relies on noise thresholds established by the Federal Transit Authority (FTA) to inform its significance determination under NEPA. Lane County Code Section 6.225.010 prohibits noise that is plainly audible between the hours of 10 p.m. and 7 a.m. to a noise sensitive unit that is not the source of sound or public right-of-way at a distance of 50 or more from the source of the sound. However, Lane County Code 6.255.015 exempts sounds caused by commercial, industrial, agricultural, timber harvesting, utility or construction organizations or workers during their normal operations. from these prohibitions.

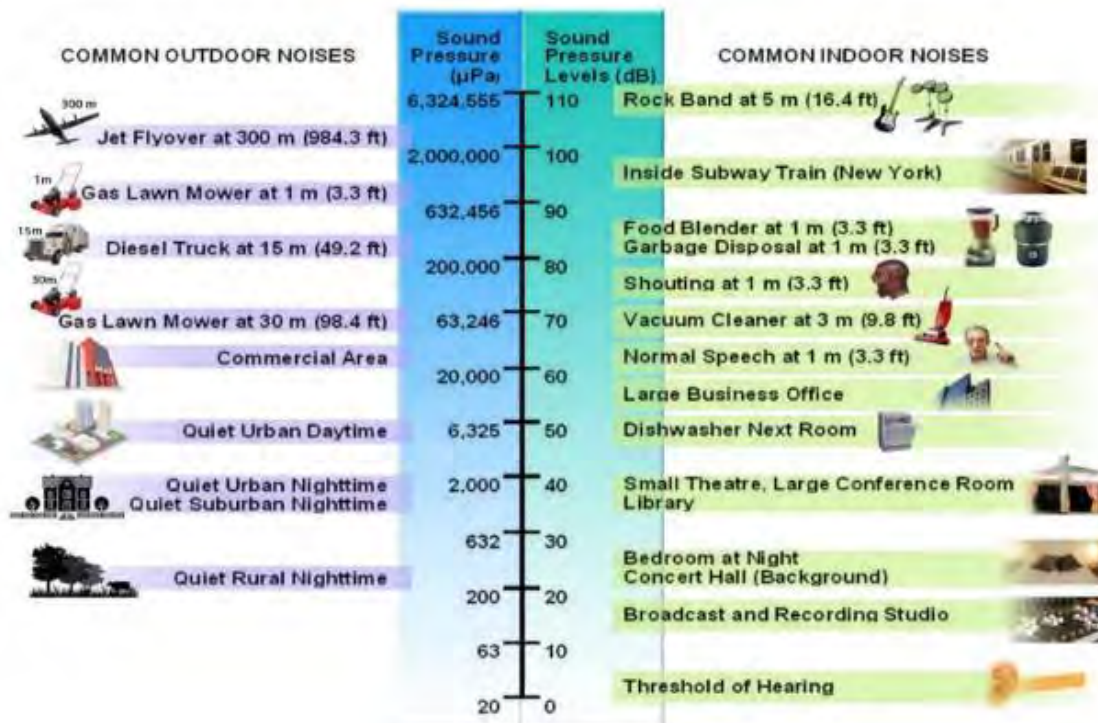


Figure 21: Common Sound Levels

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. In the absence of any construction activities, the No Action Alternative would not generate any new noise and there would be no change in existing conditions. However, continued and potentially increased flood events (refer to **Section 1.2.2, *Flooding***, and **Section 4.2.2, *Air Quality and Climate Change***) would drive a need for more frequent repairs by Lane County Public Works Department Road Maintenance Division. This work would involve the use of heavy construction equipment and associated short-term, temporary increases in noise. Therefore, implementation of the No Action Alternative would have a minor short-term adverse impact related to temporary noise from repairs.

Proposed Action

Existing noise levels within the project area are generally dominated by existing traffic along Territorial Highway. The proposed roadway improvements would not increase the number of travel lanes or otherwise encourage additional vehicle travel. The Proposed Action would add occasional vehicle trips associated with long-term road-maintenance activities. However, the proposed roadway and channel improvements under the Proposed Action reduce the need for maintenance activities in the project vicinity and reducing overall vehicle trips and associated noise. Therefore, the implementation of the Proposed Action would not affect long-term operational noise levels and this analysis is focused instead on construction-related impacts.

Temporary construction-related noise levels would vary with the level of construction activity, types of equipment operating at a particular time and season, and the proximity of the construction equipment to noise sensitive receptors. Construction equipment associated with the proposed action would include excavators, dozers, road graders, paving machines, dump trucks, a crane, and an impact pile driver, with operation of the pile driver producing the loudest noise levels. During use, typical noise levels of an impact pile driver can reach a noise level of 101 A-weighted decibels (dBA) at a distance of 50 feet.

No schools, places of worship, hospitals, or libraries are located within 1,320 feet (0.25 miles) of the project area. Surrounding land uses are generally characterized by forested lands as well as open grassy fields and pastures used for agricultural activities; however, several properties along Territorial Highway do support residential structures or manufactured mobile homes. The nearest residence is located approximately 1,150 feet (0.2 miles) north from the where pile driving would occur along the north bridge. At this distance, exterior noise levels during pile driving activities would reach 74 dBA, which is comparable to noise levels of passing traffic. The nearby bed and breakfast is located approximately 820 feet southwest of where the pile driving would occur at the south bridge. Exterior noise levels at this location would reach 77 dBA. Therefore, noise levels associated with pile driving would not exceed the FTA's threshold of 90 1-hour L_{eq} dBA or 80 8-hour L_{eq} dBA noise threshold for residences. It should also be noted that pile driving would occur over only a small fraction of the total duration of construction; there would only be six new piles between the two bridges and the pile driving work would likely occur over a period of 2 days.

The use of other heavy construction equipment throughout the remainder of the construction activities would also generate a temporary increase in noise levels. For example, of the equipment listed above, a road paver produces the greatest noise level at with a L_{max} of 85 dBA at 50 feet. Assuming a maximum construction noise level of 85 dBA at 50 feet, the nearest residence, located approximately 270 feet from the project area, would experience a maximum exterior noise level of 71 dBA when the road paver is in operation at that location. However, these instances would be short-term and temporary, occurring for a small fraction of the overall construction period. It should be noted that the trees that surround the residence and block the direct line of sight to the project area would further dampen noise (FHWA 2021).

Overall, the implementation of the Proposed Action would result in a moderate short-term adverse noise impact.

4.6.3. VIBRATIONS

Vibration is an oscillatory motion described in terms of the displacement, velocity, or acceleration. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings founded on the soil near the construction site respond to these vibrations with varying results, ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibrations at moderate levels, and slight damage at the highest levels.

Ground-borne vibration caused by heavy construction activities including pile driving is expressed in terms of peak particle velocity (PPV) measured in inches per second. It measures the movement within the ground of molecular particles and not how much the ground surface moves. Because the motion is oscillatory, there is no net movement of the vibration element and the average of any of the motion metrics is zero.

Calculations of vibration rely on the following metrics:

- Vibration Decibels (VdB) is the vibration velocity level in decibel scale. It is used to predict annoyance to humans
- Peak Particle Velocity (PPV) is the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used to monitor construction vibration since it is related to the stresses buildings experience and not to evaluate human response

Figure 21 illustrates common vibration sources and the human and structural response to ground-borne vibration ranging from 50 VdB (below perceptibility) to 100 VdB (the threshold for potential damage). The background vibration velocity level in residential areas is usually 50 VdB or lower, the threshold of perception for humans is approximately 65 VdB and a vibration level of 85 VdB in a residence can result in strong annoyance.

Table 6 shows the thresholds for damage (PPV) and annoyance (Lv) or vibration level in VdB based on the type of building.

Table 6: Construction Vibration Damage Criteria

Building/Structural Category	PPV _{EQUIP} (in/sec)	Approximate Velocity Level Lv (VdB)
I. Reinforced-concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

The vibration levels at sensitive uses can be determined with the following equation from the Federal Transit Authority's (FTA's) Transit Noise and Vibration Impact Assessment Manual:

$$Lv(D) = Lv(25 \text{ feet}) - 30\text{Log}(D/25)$$

Where: Lv = vibration level of equipment, D = distance from the equipment to the receiver,
Lv (25 feet) = vibration level of equipment at 25 feet.

This equation was used to assess vibration calculations with inputs for bulldozer vibration levels from the FTA's Transit Noise and Vibration Impact Assessment Manual. According to the FTA, the ground-borne vibration levels from pile driving 1.518 PPV and 112 VdB at 25 feet. The ground-borne vibration level for a large bulldozer are 0.089 PPV and 87 VdB at 25 feet. This was attenuated for distance to the nearest sensitive receptors.

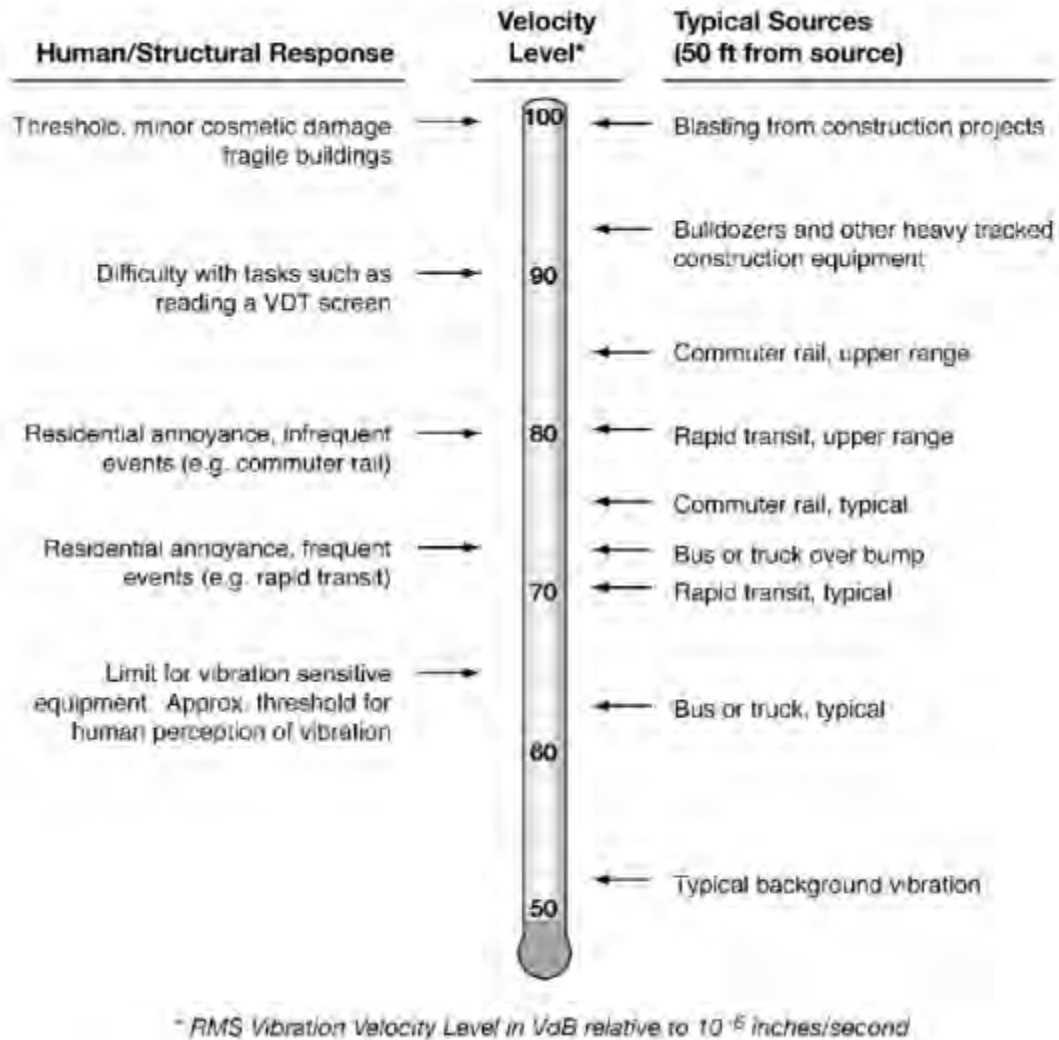


Figure 22: Typical Levels of Ground-borne Vibration

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. In the absence of any construction activities, the No Action Alternative would not generate any new sources of vibration. However, continued and potentially increased flood events (refer to **Section 1.2.2, Flooding**, and **Section 4.2.2, Air Quality and Climate Change**) would drive a need for more frequent repairs by Lane County Public Works Department Road Maintenance Division. This work would involve the use of heavy construction equipment and associated short-term, temporary increases in vibration. Therefore, implementation of the No Action Alternative would have a minor short-term adverse impact related to temporary vibration from repairs.

Proposed Action

During construction, ground-borne vibration would be generated from the use of heavy construction equipment at the project area, which could potentially expose existing sensitive land uses in the vicinity to excessive vibration. Duration and amplitude of vibration can vary widely depending on type of equipment and use. The vibration levels of general construction equipment that would operate during construction activities are identified in **Table 7** below. And range from 0.003 to 1.518 inches per second (in/sec) PPV at 25 feet from the source of the activity. The use of pile driving construction on the bridges would generate the highest vibration levels.

Table 7: Vibration Source Levels

Equipment	Vibration Level (in/sec) at 25 feet	Approximate Lv (VdB) at 25 feet
Loaded Trucks	0.076	86
Small Bulldozer	0.003	58
Large Bulldozer	0.089	87
Impact Pile Driver	1.518	112

Source: FTA 2018

As described in **Section 4.5, Cultural Resources and Historic Properties**, the nearest potential historic structure is located approximately 350 feet from the roadway. At a distance of 350 feet maximum ground-borne vibration associated with pile driving (78 VdB) and large bulldozers (53 VdB) would be well below the threshold for damage to buildings that are extremely susceptible to vibration damage (90 VdB) and well below the threshold for human annoyance (85 VdB).

The nearest residence is located over approximately 1,150 feet (approximately 0.2 miles) from the source of pile driving. At this distance, the residence would experience a maximum ground-borne vibration of 62 VdB associated with pile driving activities. The nearest residence located at 270 feet from the northern extent of the project area could experience vibration from other sources. However, vibration from the next largest piece of equipment, a large bulldozer, would be 56 VdB.

Overall, the Proposed Action would result in a minor temporary impact related to ground-borne vibration. Long-term vibration associated with maintenance activities would be similar to existing conditions and would be negligible.

4.6.4. PUBLIC HEALTH AND SAFETY

Floods can adversely impact public health and safety. Local emergency services may be overwhelmed, evacuation routes may be restricted, and standing water may harbor biological vectors. Construction projects may also adversely impact residents and businesses. Impacts to public health and safety are measured in this section by considering whether implementation of the

alternatives would increase hazards from flooding or whether there would be moderate to major reductions in levels of emergency services and response times.

Firefighting and emergency medical services are provided by Lane Fire Authority District, with sixteen fire stations. As described in **Section 2, Purpose and Need**, Gillespie Corners has historically experienced recurring flooding that results in unsafe roadway conditions and substantial detours for motorists and emergency service providers traveling along Territorial Highway. Additionally, both bridges on Territorial Highway are scour critical and if left unmitigated could result long-term damage or collapse of one or both of the bridges.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. Under this alternative, the existing channels associated with Coyote Creek – including the main channel – would continue to be limited in terms of hydraulic connectivity and capacity. As a result, continued flooding within the area would be expected to result in additional scouring of the north and south bridge abutments. Over the long-term, this could eventually lead to long-term damage or collapse of one or both bridges. It is also expected that under the No Action Alternative flooding would continue to erode the existing road base and asphalt. This would result in continued moderate long-term adverse impacts to public health and safety. This alternative would not meet the need for the Proposed Action to address routine flooding that results in unsafe conditions and substantial detours for motorists and emergency service providers traveling along Territorial Highway.

Proposed Action

As described in **Section 4.3.3, Floodplains**, the elevation of the roadway along with the proposed channel improvements would mitigate roadway overtopping up to the 100-year flood event. In doing so, the Proposed Action would maintain access for emergency services during the vast majority storm events, mitigate the risk of future damage to the road, and reduce scour potential at both bridges. Therefore, the implementation Proposed Action would result in a minor long-term benefit to public health and safety. Long-term maintenance associated with the Proposed Action would not create impacts to public health and safety.

4.6.5. ECONOMICS

Economic effects are evaluated qualitatively to determine short- or long-term impacts on businesses or household income. There are no federal regulations or authorities related to economics. The components of the proposed improvements are located on County owned roadways, public rights-of-way, and adjacent privately-owned properties. The County has dedicated right-of-way services specialists that would be responsible for acquiring the rights-of-way and temporary construction easements. These rights-of-way and temporary construction easements would range in area from 1,500 square feet (approximately 0.03 acres) to 119,735 square feet (approximately 2.75 acres). These properties are not occupied by local businesses or residences.

No Action Alternative

As described in **Section 2, Purpose and Need**, regular flooding along Territorial Highway overtops the existing roadway, resulting in temporary closure of on the region’s most important highways. Each day of lost function has been calculated to result in economic losses of approximately \$117,000 as a result of increased mileage alone (Otak, Inc. 2022). Using the FEMA Benefit-Cost Analysis (BCA) Reference Guide and Supplement the disruption of emergency response was estimated at approximately \$81,944 per day (Otak, Inc. 2022). Under projected climate trends, flood events could occur more often and at a greater severity, resulting in further damage to existing roadways, bridges, and culverts, requiring more frequent maintenance activities and associated costs (refer to **Section 1.2, Environmental Trends**). Further, without proposed improvements, scouring of bridge abutments would remain unmitigated, risking structural failure and costly repairs to the bridges in the future. Based upon the county’s experience with similar events, an 8-year flood event can cause significant erosion, including rock washout, along the west shoulder of the road. The 8-year event generally requires permanent fixes to repair damages to the shoulder as well any intrusion to roadway function costing a total of approximately \$425,994. The effects of roadside scour due to flood waters can cause pavement undermining starting at the 20-year flood event. At the 37.5-year flood event an entire lane could be lost. The impact of a 37.5-year event is expected to be 6 days of two-lane closure as outlined in the loss of function letter provided by the County, costing a total of approximately \$2,055,641 to repair. Permanent fixes would be required in the form of road reconstruction (Otak, Inc. 2022). Under the No Action Alternative residents and businesses would suffer moderate short- and long-term adverse economic impacts that could be exacerbated by significant flood events.

Proposed Action

Under the Proposed Action, the County would use the existing public right-of-way and easements to complete the proposed road work, bridge work, or channel modifications. No business or residential relocations are expected as part of the Proposed Action. Construction activities associated with the Proposed Action may result in short-term, temporary economic benefits associated with construction workers and materials purchasing; however, the implementation of the Proposed Action would not alter the long-term economy, jobs, flood insurance rates, or other economic indicators for the community. Long-term maintenance activities associated with the Proposed Action would not create impacts to economics. The BCA prepared for the Proposed Action determined that costs associated its implementation would total approximately \$4,420,000 while benefits associated with preserving road function during flooding and preventing associated damages and repair costs would total approximately \$5,058,000. This results in a benefit-cost ratio of 1.14, indicating that the Proposed Action would represent a cost-effective solution and would result in moderate long-term beneficial impacts (Otak, Inc. 2022).

4.6.6. VISUAL

As described in **Section 1, Introduction**, Lane County covers approximately 4,700 square miles of densely forested terrain, including mountainous terrain, rivers, and associated drainages. Visual

character of the surrounding project area is comprised of dense forests, pastures, and hay fields. Herbaceous habitats within the project area are dominated by medium- to tall-stature non-native grasses and forbs such as meadow foxtail, tall oatgrass, tall orchardgrass, Queen Anne’s lace, velvetgrass, reed canary grass, tall fescue, and several vetch species (David Evans and Associates, Inc. 2020).

As described in **Section 4.4.1, Vegetation**, the proposed flood mitigation improvements would alter the vegetation within the project area. As such, these activities have the potential to affect the visual character of the area. The assessment of impacts to visual character is a qualitative analysis that considers the visual context of the proposed improvement areas, potential for changes in character or contrast, assessment of whether the proposed improvement areas include any scenic places or features designated for protection, the number of people who can view the affected areas and their activities, and the extent to which those activities are related to the aesthetic qualities of the area.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. In the absence of any construction activities, the No Action Alternative would not result in any short-term visual impacts related to vegetation removal, etc. However, under this alternative roadway overtopping during storm events is expected continued to occur. Erosion and scouring of roadways and bridge abutments would be left unmitigated. Floodways would continue to be overwhelmed, resulting in a minor long-term adverse visual impacts on the roadways and from flood damaged infrastructure.

Proposed Action

The Lane County Rural Comprehensive Plan identifies six areas of major outstanding scenic value in Lane County. These areas include the Coastal Strip, McKenzie Valley, Willamette Highway/Salt Creek Corridor, Coburg Ridge, Willamette Greenway, and any area identified as a scenic resource by ODOT. The project area occurs outside of these identified areas. ODOT identifies 29 scenic byways in the State of Oregon; however, none of these designated byways are located in the proximity of the project area (ODOT 2023). Additionally, six national scenic byways are located in the State of Oregon. These byways generally occur in central and east Oregon and do not occur in close proximity to the project area.

During the two, distinct 6-month construction periods, demolition of construction work would be briefly visible from the temporary detour road and the surrounding properties. As described in **Section 4.4.1, Vegetation**, approximately 0.25 acres of vegetation clearing would be required for the staging area, 1.5 acres for the detour road, and 4.5 acres of vegetation (primarily reed canary grass) located adjacent to the roadway. Incidental vegetation removal would also occur during channel widening. However, all areas impacted by vegetation removal would be revegetated and restored following project completion. Because the existing visual quality of the project area is primarily attributed to adjacent agriculture pastures and surrounding forested lands, which would not be

impacted by the proposed improvements, adverse impacts to visual resources under the Proposed Action would be short-term and minor.

Following project completion, site conditions would be restored similar to existing conditions. Following project completion, long-term changes to the site setting would include elevating the 2,000-foot segment of Territorial Highway as well as two bridges would be an additional 3 feet. Additionally, the project would add a new culvert and overflow channels, and re-grade and widen the creek channel under the north bridge. However, these changes, would not be a substantial alteration from existing visual character. Long-term maintenance activities would require occasional truck trips, operation of hand-held, and in limited instances operation of heavy equipment. However, temporary-presence of such equipment would not alter existing visual character and adverse impacts would be negligible. By eliminating occurrence of roadway overtopping, channel overflows, and correcting erosion and scour damage, the Proposed Action would have long-term minor beneficial impacts on visual resources.



Figure 23: Typical viewshed in the vicinity of the project area

4.6.7. HAZARDOUS MATERIALS

A Hazardous Materials Corridor Assessment was completed for the project area by Valley Science and Engineering in January 2023. This assessment included two reconnaissance visits, during which the project area and adjacent properties were systematically traversed and visually inspected. The Hazardous Materials Corridor Assessment also included review of city directories, aerial photographs, historical maps, as well as federal, state, and Tribal databases using Environmental Data Resources (EDR), the Oregon State Fire Marshal’s database for hazardous material incidents, and Historical Baseline Reports. The Assessment identified the following potential environmental conditions that could impact the proposed construction:

- The upper 1.5 feet of soils located within 30 feet of roadways may not meet the ODEQ clean fill determinations

- The railing supports on the bridges and the utility poles were constructed with treated timbers
- Minor petroleum staining was observed on the shoulder of Territorial Highway.

No Action Alternative

Under the No Action Alternative, the County would not implement any of the proposed road work, bridge work, or channel modifications. In the absence of any construction activities, the No Action Alternative would not disturb any known hazardous materials within the project area or introduce any new sources of hazardous materials.

Proposed Action

Based on the potential environmental conditions identified in the Hazardous Materials Corridor Assessment, the following recommendations were made by Valley Science and Engineering (2023):

- If the upper 1.5 feet of roadside soils are excavated during construction, they may be reused within the public right-of-way (without further testing), they may be disposed of at a municipal solid waste landfill or construction and demolition landfill (testing may be required), or a clean fill evaluation can be performed to determine other beneficial uses per ODOT guidance.
- If treated timbers are removed from the bridge and utility poles, they should be disposed of at a solid waste landfill permitted by the ODEQ to receive such materials.
- The petroleum stains are considered a *de minimus* condition and are unlikely to have an impact associated with the Proposed Action.

Additionally, while no asbestos-containing materials (ACM) were observed, the Hazardous Materials Corridor Assessment notes that the underside of the bridges could not be inspected. The two bridges spanning Coyote Creek have the potential to contain ACM, which could be disturbed during demolition. Prior to demolition, bridges must be assessed to identify and confirm the presence or absence of ACM. Until confirmation, all such material should be treated as presumed ACM in accordance with 29 CFR §1926.1101 and §1910.1001 (Valley Science and Engineering 2023). ODEQ and LRAPA rules require that all ACM be removed from structures before any activity, including demolition and renovation work, that would disturb the materials causing potential release of asbestos fibers, or preclude access to the materials for future removal. In the event that ACM is confirmed, construction and demolition work must comply with ODEQ and LRAPA control measures which include but are not limited to: use of local exhaust ventilation equipped with high efficiency particulate air (HEPA) filter dust collection systems, enclosure or isolation of processes producing asbestos dust, ventilation of the regulated area to move contaminated air away from the employees' breathing zone and toward a filtration or collection device equipped with a HEPA filter, engineering and work practice controls to reduce exposure to the lowest possible levels, supplemented by respirators to reach the permissible exposure limit or lower, proper waste transport and disposal, among others. Adherence to these requirements would ensure that adverse impacts related to the disturbance of hazardous materials would be minor.

Long-term maintenance and roadway repair activities, including vehicle trips, operation of hand-held equipment, and to a lesser extent, heavy construction equipment, could pose source of fuel leaks such as oil or gasoline. However, these activities would result in no impact compared to existing conditions. In fact, roadway repair activities following flooding are anticipated to occur at a lower frequency following implementation of the Proposed Action.

4.6.8. ENVIRONMENTAL JUSTICE

FEMA’s Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements (108-1-1, October 10, 2018) requires FEMA to consider environmental justice pursuant to Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations* and *Environmental Justice Guidance Under the National Environmental Policy Act* and to “[i]dentify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs, policies, and activities in minority populations and low-income populations.”

As discussed in **Section 4.1.1, Impact Criteria**, qualitative impacts are measured as negligible, minor, moderate, and major. Moderate or major impact scale corresponds to a “high” impact for the Environmental Justice analysis, required pursuant to EO 12898. Such a determination requires an affirmative response to the following questions:

1. Are there minority and low-income populations, or Tribes, in the affected area?
2. Based on the analysis presented in the preceding sections, does the proposed project result in human health or environmental impacts on any populations? If yes, would these impacts be high and adverse?
3. If yes, is the high and adverse impact on these populations disproportionate?

This section addresses these sequential questions. If the answer is negative, then the analysis stops as there can be no disproportionate high and adverse impacts on minority or low-income populations.⁵

- Question 1: Are there minority and low-income populations, or Tribes, in the affected area?

An Environmental Justice (EJ) community is established if demographic or environmental indexes indicate the presence of a minority and/or low-income population. A minority and/or low-income population exists if the People of Color Population and/or Low-Income Population equals or exceeds the 50th percentile compared to the average of the county and/or state where the affected environment is located. This means that the minority and/or low-income population as defined by

⁵ For example, if the project does not result in any high adverse impacts, then there can be no disproportionate high and adverse impacts on a particular segment of the population.

EJSCREEN exceeds the countywide and/or statewide average. A minority and/or low-income population also exists based on environmental indicators if one or more EJ indexes equal or exceed the 80th percentile compared to the applicable county and/or state average.

Note that CEQ (1997) defines the term “minority” as persons from any of the following groups: Black, Asian or Pacific Islander, American Indian or Alaskan Native, and Hispanic. Additionally, residents of areas with a high percentage of people living below the federal poverty level may be considered low-income populations.

The project area is located in census blockgroups: 410390008001 and 410390008002. As shown in **Table 8** below, the minority and low-income populations of these block groups do not exceed the statewide average. Additionally, neither of these block groups have or environmental indexes above the 80th percentile (USEPA 2023c). Therefore, these block groups are not classified as environmental justice communities and no short-term impacts associated with construction activities or long-term maintenance activities would affect environmental justice communities as a result of the no-action alternative or the Proposed Action. No additional analysis is required.

Table 8: Census Blockgroup Data

Census Block	People of Color Population	People of Color State Average	Low Income Population	Low Income State Average
410390008001	13%	25%	26%	29%
410390004021	9%	25%	13%	29%

Source: USEPA 2023c

4.7. Cumulative Impacts

Cumulative effects are the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR §1508.7). Cumulative effects can result from individually minor but collectively significant actions taking place over time.

The cumulative effect analysis is bounded by the study area shown in **Figure 1**, encompassing the project area (defined in **Section 4.1, Methodology**) and the adjacent area including the associated floodplain. This study period for this analysis looks 10 years into the future and 10 years into the past as greater periods would be more speculative.

Given the relatively rural nature of the project area, there are few past and ongoing public and private development projects within the study area. However, the County Board of Supervisors has adopted Corridor Plan in 2019, which established a community-preferred design concept for reconstructing the Territorial Highway corridor (Lane County Transportation Planning 2023). This plan provides the design concept that was shaped by a community planning effort which began in 2014.

The design concept would improve the 5.71 miles of Territorial Highway located between Gillespie Corners (Mile Post [MP] 32.06) and the Town of Lorane (MP 37.37), generally following the existing roadway alignment, with the exception of the segment through the slide area (MP 34.09 to 35.3 at Stony Point) and including:

- Widening the road to provide 6-foot shoulders and two 11-foot vehicle travel lanes
- Softening curves to improve access and sight distance
- Replacing culverts and raising and widening bridges to address deficient waterway crossings
- Stabilizing the slide at Stony Point through roadway realignment (completed in 2021)

The Proposed Action would accomplish the goals of the design concept for the northernmost 2,000-foot segment of the Territorial Highway Corridor. The remainder of the corridor would be improved in the future.⁶

As previously stated in **Section 1, Introduction**, the Proposed Action represents Phase 2 of a four-phased project to improve overall safety of Territorial Highway through roadway improvements. Phase 1 consisted of widening and realigning a segment of Territorial Road between Hamm Road and Story Point and was completed in 2021. Phase 3 would involve realignment of a curve between Hamm Road and Easy Acres Drive. Phase 4 would involve widening from Hamm Road to the town of Lorane. Phase 3 and 4 have not yet been initiated. Based on a review of the Current Projects & Plans Under Development (Lane County Transportation Planning 2023) there are no proposed or pending projects along Territorial Highway. However, Lane County has also separately requested a grant under FEMA's HMGP funding for a hazardous tree removal program that would include Territorial Highway. This project would remove dead, diseased, or dying trees within the public right-of-way, including along a segment of Territorial Highway that includes Gillespie Corners. Specific activities would include tree hazard identification and risk assessment, tree removal, vegetation/brush removal, and brush mowing.

These reasonably foreseeable future projects, when considered together with the Proposed Action, would continue to result in minor cumulative impacts on affected resources including physical resources, water resources, biological resources, cultural resources and historic properties, and quality of life. For example, similar to the Proposed Action, construction-related activities associated with the Corridor Plan (2019) and the hazardous tree removal program would be expected to result in temporary increases in criteria air pollutant and GHG emissions, traffic, noise, and the use of hazardous materials. The hazardous tree removal program would leave root balls in place and therefore would not create substantial new potential for erosion. Brush cutting would only prune limbs (8 feet to 12 feet up) facing the roadway while leaving limbs on trees that provide shade to

⁶ The Corridor Plan (2019) suggests that construction could be complete as soon as 2019, but it does not appear that funding has been allocated or that construction has begun in 2020 as anticipated in the plan.

waterways. Tree removal involving trees greater than 12 inches in diameter at breast height (DBH) within riparian buffer zones would be replaced at a 2:1 ratio in order to maintain a shade canopy along waterways and prevent impacts to biological resources. Additionally, construction-related activities associated with these reasonably foreseeable future projects would remove existing vegetation and may result in minor changes to the visual character of the Territorial Highway Corridor. However, future projects would be anticipated to incorporate construction best management practices, minimize sediment run-off, incorporate traffic management, and comply with applicable regulatory requirements. Additionally, over the long-term, these reasonably foreseeable future projects would improve public health and safety within the Territorial Highway Corridor.

Table 9 summarizes the potential impacts by resource. The Proposed Action, when combined with past, present, and reasonably foreseeable projects, will continue to result in a cumulative minor impact on these affected resources. The project will, however, result in a long-term cumulative benefit for the quality of life of the residents in that it would reduce flooding and improve public health and safety.

4.8. Summary of Potential Impacts

Table 9 summarizes the impacts discussed in **Sections 4.3 to 4.7**. None of the impacts would be significant.

Table 9: Summary of Potential Impacts

Section	Resource	No Action	Proposed Action
4.3.1	Geology and Soils	No impact to geology Moderate long-term, adverse impacts related to scour and erosion of soils No impact to farmland soils	No impact to geology Minor short-term adverse impact to soils Minor long-term beneficial impact to soils No impact to farmland soils
4.3.2	Air Quality and Climate Change	Minor long-term, adverse impacts associated with more frequent roadway repairs	Minor short-term adverse impact to air quality and GHG emissions
4.4.1	Water Quality	Moderate long-term, adverse impacts associated with continued water quality degradation	Moderate short-term, adverse impact Minor long-term beneficial impact

Section	Resource	No Action	Proposed Action
4.4.2	Wetlands	Moderate long-term, adverse impacts associated with continued water quality degradation and limitations on downstream wetland function	Moderate short-term adverse impact Moderate long-term adverse impact
4.4.3	Floodplain	Moderate long-term, adverse impacts associated with continued water quality degradation and limitations on downstream floodplain function	Moderate short-term adverse impact Moderate long-term beneficial impact
4.5.1	Vegetation	No impact	Minor short-term adverse impact Moderate long-term beneficial impact
4.5.2	Birds and Habitat	No impact	Negligible short-term adverse impact to migratory birds, bald eagles, and special status bird species
4.5.3	Fish and Habitat	Minor long-term, adverse impacts associated with continued water quality degradation and reduction in habitat quality	No impact to EFH or federally listed species Minor short-term adverse impact Minor long-term beneficial impact
4.5.4	Wildlife	No impact	Minor short-term adverse impact No impact to federally listed species
4.6	Cultural Resources and Historic Properties	No impact to archaeological resources No impact to historic properties	No impact to archaeological resources No impact to historic properties
4.7.1	Traffic	Major long-term adverse impact	Minor short-term adverse impact Moderate long-term beneficial impact
4.7.2	Noise	Minor short-term adverse impact	Moderate short-term adverse impact
4.7.3	Vibrations	Minor short-term adverse impact	Minor short-term adverse impact Negligible long-term impacts
4.7.4	Public Health and Safety	Moderate long-term adverse impact	Minor long-term beneficial impact

Section	Resource	No Action	Proposed Action
4.7.5	Economics	Moderate short- and long-term adverse impacts	Minor short-term beneficial impact Moderate long-term beneficial impact
4.7.6	Visual	Minor long-term adverse impact	Minor short-term adverse impact Negligible adverse and minor long-term beneficial impact
4.7.8	Hazardous Materials	No impact	Minor short-term adverse impact No long-term impact
4.7.9	Environmental Justice	Not disproportionate	Not disproportionate

5. Agency and Tribal Coordination, and Public Involvement

As part of the preparation of this EA, correspondence regarding the Proposed Action was sent to the Oregon SHPO and select federally recognized Native American tribes. Additionally, FEMA invited USACE to be a cooperating agency under NEPA to streamline permitting in accordance with 40 CFR 1501.8, *Cooperating Agencies*. **Appendix B** contains copies of substantive correspondence.

5.1. Public Participation

The County published a public notice on February 9, 2023, to notify the public of potential project impacts. No comments were received. Any federal action located in a wetland, or a regulated floodway requires public notice as per 44 CFR Part 9. EO 11990. In compliance with 44 CFR Part 9, the County published a public notice on February 9, 2023, to notify the public of potential project impacts. No comments were received.

This Draft EA reflects the evaluation and assessment of the federal government, the decision-maker for the federal action. FEMA is releasing this draft EA to the public, Native American tribes, and federal, state, and local agencies for a 30-day public review and comment period. FEMA will incorporate any substantive comments received into the final EA. FEMA will take into consideration these substantive comments to inform the final decision regarding the grant and project implementation. If no significant impacts are identified, FEMA will issue a FONSI and award the grant. If significant impacts are identified, FEMA may require additional mitigation or may prepare an EIS.

6. Permitting, Project Conditions, and Mitigation Measures

This section provides a summary of the permits and mitigation efforts that are required to authorize the project and to offset the adverse impacts of the Proposed Action as described in **Section 4, Affected Environment, Potential Impacts, and Mitigation**.

6.1. Permits

The County will be responsible for obtaining any necessary local, state permits needed to conduct the proposed work. As described in **Section 4, Affected Environment, Potential Impacts, and Mitigation** the County will require or has secured the following permits or authorizations:

Table 10: Permit and Authorizations

Agency	Permit
USACE	CWA 404 Permit
ODEQ	Water Quality Certification
ODEQ	NPDES 1200-CA Permit
DSL	Removal-Fill Permit
ODFW	Fish Passage Plan Approval
Lane County	Floodplain Development Permit

6.2. Project Conditions and Mitigation Measures

Mitigation measures and project conditions of the permits/authorizations shown above in **Table 10** are incorporated by reference. The following conditions apply to the Proposed Action and the County's failure to comply with these conditions before, during, and after project implementation may jeopardize the receipt of FEMA funding:

- A silt fence perimeter shall be installed around the construction staging area to isolate the staging area from adjacent wetlands.
- Because the road would be completely closed during project implementation, the existing and new road surface shall be used for all other staging requirements.
- New or improved overflow and side channels shall be stabilized using a biodegradable matting and revegetated with native plants.

- Vegetated filter strips shall be installed per direction from ODEQ immediately adjacent to the improved roadway on Territorial Highway as well as an approximately 1,375-foot segment located on Lorane Highway. Stormwater filter strips maintenance shall follow practices provided by Lane County Department Road Maintenance Division’s Stormwater Quality Facility Operation & Maintenance Guidelines. Per County standards, the stormwater filter strips shall be inspected annually for vegetation coverage, accumulation, erosion and damage and would perform maintenance (e.g., re-seeding) as needed.
- All areas impacted by vegetation removal shall be reseeded and replanted with native seeding.
- All construction activities shall comply with OAR 340-208, which include requirements related to visible emissions (e.g., diesel-related opaque emissions), and fugitive emissions (e.g., dust from road grading, excavation, and transport of soil to and from the project area).
- Construction contractors and subcontractors would be required to use reasonable precautions to minimize fugitive dust emissions and comply with OAR 340-208-0210 (e.g., water application, spraying water in work areas, washing truck wheels and using gravel driveways at construction and staging access points, covering piles, minimizing traffic and traffic speeds on bare soils, covering of open bodied trucks, daily clean-up, and minimizing idling of diesel-powered equipment).
- The County shall follow LARPA Rules and Regulations including Title 48, *Rules for Fugitive Emissions*.
- The County has an NPDES 1200-CA permit and will follow the conditions of this permit for construction stormwater management.
- The County shall obtain a CWA Section 404 permit from USACE, a CWA Section 401 Water Quality Certification from ODEQ, and a Removal-Fill Permit from DSL and comply with all required permit conditions.
- The County shall obtain a Floodplain Development Permit from Lane County.
- Permanent impacts to wetlands shall be mitigated by purchasing wetland mitigation credits from a nearby mitigation bank within the Long Tom River watershed or as otherwise agreed with USACE, ODEQ, and/or DSL.
- In-water work is expected to occur during the dry season between June and October, when the north and south overflow channels would not have any flows. A bypass would be installed to manage flows in the main channel of Coyote Creek. Any resident fish remaining in the deep pools would be removed with seine nets and relocated upstream or downstream of the isolation dams.

- Shrub and tree removal would occur outside of the migratory bird nesting season (March 15 to August 31) and the bald eagle nesting season (January 1 to September 30) to the extent feasible. If not feasible, the County would be required to conduct pre-construction nesting bird surveys to identify and avoid active nests and coordinate with the USFWS to acquire necessary permits if impacts to nesting birds cannot be avoided.
- The County shall prepare an Inadvertent Discovery Plan. If previously unknown cultural resource resources are discovered, ground disturbance would cease in that area, the area would be secured, and the County would notify the SHPO and FEMA for further evaluation with the assistance of a professional archaeologist.
- The County shall implement the potential environmental conditions identified in the Hazardous Materials Corridor Assessment prepared by Valley Science and Engineering (2023):
 - If the upper 1.5 feet of roadside soils are excavated for construction, they may be reused within the public right-of-way (without further testing), they may be disposed of at a municipal solid waste landfill or construction and demolition landfill (testing may be required), or a clean fill evaluation can be performed to determine other beneficial uses per ODOT guidance.
- Prior to demolition, the County shall assess the north and south bridges to identify and confirm the presence or absence of asbestos containing material.
 - If asbestos-containing material is identified, it shall be treated in accordance with 29 CFR §1926.1101 and §1910.100100.
 - ODEQ and LRAPA rules require that all asbestos-containing materials be removed from structures before any activity, including demolition and renovation work, that would disturb the materials causing potential release of asbestos fibers, or preclude access to the materials for future removal.
 - Construction and demolition work involving asbestos-containing materials shall comply with ODEQ and LRAPA control measures which include but are not limited to: use of local exhaust ventilation equipped with HEPA-filter dust collection systems, enclosure or isolation of processes producing asbestos dust, ventilation of the regulated area to move contaminated air away from the employees' breathing zone and toward a filtration or collection device equipped with a HEPA filter, engineering and work practice controls to reduce exposure to the lowest possible levels, supplemented by respirators to reach the permissible exposure limit or lower, proper waste transport and disposal, among others.

7. List of Preparers

The following is a list of preparers who contributed to the development of this EA:

Federal Emergency Management Agency, Region 10

Science Kilner, Regional Environmental Officer
Galeeb Kachra, Senior Environmental Specialist
Dr. Phillip Fisher, Senior Archaeologist
Jeffery Parr, Senior Biologist

Lane County Public Works

Mauria Pappagallo, Environmental Engineering Supervisor
Olaf Sweetman, Engineering Analyst

WSP USA Environment & Infrastructure Inc.

Doug McFarling, Task Order Manager
Nick Meisinger, Project Manager
Matt Sauter, Senior QA/QC
Ashlyn Navarro, Environmental Specialist
Mia Claridy, Environmental Specialist

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