

SR 510 Yelm Loop – New Alignment Phase 2

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

May 2021



Washington State
Department of Transportation

SR 510 Yelm Loop – New Alignment Phase 2

City of Yelm and Thurston County, Washington


SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Submitted pursuant to 42.U.S.C. 4332(2)(c)

By the

U.S. Department of Transportation – Federal Highway Administration
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Abstract:

The **SR 510 Yelm Loop – New Alignment Phase 2** project is located in the City of Yelm, in northeast Thurston County. In accordance with the National Environmental Policy Act, this Supplemental Environmental Assessment evaluates the environmental effects of the proposed Build Alternative and No Build Alternative. The project involves the completion of the Yelm Loop bypass, a two-phased limited access highway intended to provide an alternate route for regional traffic around Yelm's congested downtown core. Phase 1 of the bypass was constructed in 2010, and its environmental impacts were evaluated in a 2000 Environmental Assessment and 2008 NEPA re-evaluation. Phase 2, which was also included in the previous EA, would complete the Yelm Loop bypass, from its existing terminus at Cullens Road to the intersection of 170th Street and SR 507. This Supplemental EA addresses the Phase 2 improvements, including construction of approximately 3 miles of new highway with one travel lane in each direction; a shared-use bicycle and pedestrian pathway; and sidewalks and bike lanes in the more urbanized portion of the corridor.

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ACRONYMS

A

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
APE	Area of Potential Effects
ASTM	American Society for Testing and Materials
AVE	Area of Visual Effects

B

BA	Biological Assessment
BMPs	Best Management Practices
BNSF	Burlington Northern Santa Fe (railroad)

C

CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act

D

DAHP	Washington State Department of Archaeology and Historic Preservation
dB	Decibel
dba	Decibels on the A Scale (human hearing range)

E

EA	Environmental Assessment
EDNA	Environmental Designation for Noise Abatement
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act

F

FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRMs	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact
FWHCA	Fish and Wildlife Habitat Conservation Area

G

GHG	Greenhouse Gas
GIS	Geographic Information System

H

HC	Hydrocarbons
HGM	Hydrogeomorphic

I

I-5	Interstate 5
ICE	Intersection Control Evaluation

J

JBLM	Joint Base Lewis-McChord
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L

LEP	Limited English Proficiency
L _{eq}	Equivalent Sound Level
LWCF	Land and Water Conservation Fund

M

MBTA	Migratory Bird Treaty Act
MSAT	Mobile Source Air Toxic
MTCA	Model Toxics Control Act

N		R		U	
NAAQS	National Ambient Air Quality Standards	RCRA	Resource Conservation and Recovery Act	UGA	Urban Growth Area
NAC	Noise Abatement Criteria	ROD	Record of Decision	USC	United States Code
NEPA	National Environmental Policy Act	S		USFWS	U.S. Fish & Wildlife Service
NHP	Natural Heritage Program	<hr/>		UST	Underground Storage Tank
NMFS	National Marine Fisheries Service	SARA	Superfund Amendments and Reauthorization Act	V	
NO ₂	Nitrogen Dioxide	SEA	Supplemental Environmental Assessment	<hr/>	
NO _x	Nitrogen Oxides	SEPA	State Environmental Policy Act	VMT	Vehicle Miles Traveled
NPDES	National Pollutant Discharge Elimination System	SFHA	Special Flood Hazard Area	W	
NPS	National Park Service	SHPO	State Historic Preservation Officer	<hr/>	
NRHP	National Register of Historic Places	SPCC	Spill Prevention, Control, and Countermeasures	WAC	Washington Administrative Code
O		SR	State Route	WDFW	Washington State Department of Fish & Wildlife
<hr/>		SWPPP	Stormwater Pollution Prevention Plan	WDNR	Washington State Department of Natural Resources
OHWL	Ordinary High Water Line	T		WHPA	Wellhead Protection Area
ORCAA	Olympic Region Clean Air Agency	<hr/>		WISAARD	Washington Information System for Architectural & Archaeological Records Data
OSHA	Occupational Safety and Health Act	TESC	Temporary Erosion and Sediment Control	WISHA	Washington Industrial Safety and Health Act
P		TIP	Transportation Improvement Program	WSDOT	Washington State Department of Transportation
<hr/>		TMP	Traffic Management Plan	Y	
PAHs	Polycyclic Aromatic Hydrocarbons	TRPC	Thurston Regional Planning Council	<hr/>	
PGIS	Pollution Generating Impervious Surfaces	TSCA	Toxic Substances Control Act	YMC	Yelm Municipal Code
PM _{2.5}	Particulate Matter (2.5 microns or less in diameter)	TSS	Total Suspended Solids		
PM ₁₀	Particulate Matter (10 microns or less in diameter)				

GLOSSARY

Active Transportation: Using an active means of travel such as walking or biking to get from one place to another.

Area of Potential Effect (APE): The area within which historic properties, and archaeological resources if they are present, could be directly or indirectly affected by the project.

Attainment Area: An area with concentrations of air quality pollutants that are below the levels established by the NAAQS.

Annual Average Daily Traffic (AADT): The average number of vehicles passing a certain point on a highway, road, or street each day.

Best Management Practices (BMPs): Environmental protection tools that have been determined to be the most effective, practical means of avoiding or reducing environmental impacts.

Build Alternative: A program of improvements for the SR 510 Yelm Loop area as described in Chapter 2 of this environmental assessment.

Compost-Amended Biofiltration Swale: A vegetation-lined channel designed to remove suspended solids from stormwater.

Construction Staging: A staging area is a designated area where vehicles, supplies, and construction equipment are positioned for access and use at a construction site.

Cultural Resource: Any district, site, building, structure, object, person or people, document or traditional place that may be important in American history or prehistory.

Cumulative Effect/Cumulative Impact: An impact on the environment which results from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such action.

Decibel (dB): A logarithmic based unit of measure of sound pressure.

Delay: The increased travel time experienced because of circumstances that impede the desirable movement of traffic.

Demand: The desire for travel by potential users of the transportation system.

De Minimis Impact: Impact that, after taking into account avoidance, minimization, and enhancement measures, results in no adverse effects to activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For historic properties, a *de minimis* impact is one that results in a Section 106 determination of “no adverse effect” or “no historic properties affected.”

Direct Effect/Direct Impact: An effect caused by an action or alternative and occurring at the same time and location. Effects may be transportation-related, ecological, aesthetic, historic, cultural, economic, social, or health-related.

Discharge: Runoff leaving an area via overland flow, built conveyance systems, or infiltration facilities.

Duration: The length of time of an event.

Effect: Something brought about by a cause or agent; a result. May be beneficial or detrimental.

Emission: Pollution discharged into the atmosphere from fixed or mobile sources.

Endangered Species: Any species that is in danger of extinction throughout all or a substantial portion of its range.

Endangered Species Act (ESA): Legislation adopted to prevent the extinction of plants or animals.

Environmental Justice (EJ): The provisions of Presidential Executive Order 12898 that requires each federal agency to address, as appropriate, disproportionately high and adverse health and/or environmental effects of a federal action on minority and/or low-income populations.

Environmental Justice Population: Refers collectively to the low-income and minority populations in a given area.

Floodplain: Any land area susceptible to being inundated by flood waters from any source.

Greenhouse Gases (GHG): Gases that, when released into the atmosphere, contribute to global warming.

Groundwater: That portion of water below the ground surface that is free flowing within the soil particles. Groundwater typically moves slowly, generally in a downhill direction because of gravity, and eventually enters into streams, lakes, and oceans.

Impervious: Pavement, roofs, and other compacted or hardened areas that do not allow the passage of rainfall or runoff into the ground.

Indirect Effect/Indirect Impact: An effect that occurs later in time or is removed in distance from the proposed action, but is still reasonably foreseeable. May include growth-inducing effects or other effects related to the pattern of land use, population density or growth rates, and related effects on air, water, and other natural systems.

Intersection Control Evaluation (ICE): A data-driven, performance-based framework and approach used to objectively screen alternatives and identify an optimal geometric and control solution for an intersection. *(Previously known as an Intersection Control Analysis/ICA.)*

Limited Access Highway: A highway or arterial road for high-speed traffic with a limited number of intersections and prohibited driveway access.

Logical Termini: Rational beginning and end points for a transportation project to result in an improvement that functions efficiently and improves operations of the system, as well as for review of its environmental impacts.

Low-Income: A household income that is at or below the federally designated poverty level for a given household size.

Maintenance Area: An area that has a history of not meeting air quality standards for a particular air pollutant, but is now meeting the standards and has a maintenance plan for monitoring pollutant levels.

Managed Access Highway: A highway that has been designed for high-speed vehicular traffic, with regulation of the location, spacing, and design connections (e.g. driveways, local streets, etc.) to improve safety and roadway efficiency. On managed access corridors, driveway access permits are granted by either WSDOT or the local jurisdiction.

Mobile Source Air Toxics (MSATs): The Clean Air Act identifies 188 air toxics, of which MSATs are the subset emitted by mobile sources.

Modeling: The use of statistics and mathematical equations to simulate and predict real events and processes such as future traffic volumes.

Multimodal: Refers to a transportation system, in whole or in part, that provides for more than one mode or means of transportation.

National Ambient Air Quality Standards (NAAQS): Standards established by the U.S. Environmental Protection Agency under the Clean Air Act for pollutant concentrations in outside air throughout the country.

National Environmental Policy Act (NEPA): Established in 1969, this act requires public disclosure of all environmental, social, and economic impacts for federally funded projects with significant impacts.

National Register of Historic Places (NRHP): Authorized under the National Historic Preservation Act of 1966, this is the nation's official list of properties and other cultural resources that are recognized as deserving protection.

No Build Alternative: The alternative under which the proposed project will not be built. The No Build Alternative is carried through the NEPA process and analyzed as a way to compare the effects of the proposed Build Alternative with what is likely to happen if the proposed project is not constructed.

Noise Wall: A wall designed to serve as a noise buffer between a noise source and affected residences or other sensitive noise receptors.

Non-Attainment Area: An area where concentrations of one or more criteria air quality pollutants are found to exceed the regulated or "threshold" level for one or more of the NAAQS.

PM_{2.5}: Particulate matter 2.5 microns or less in diameter.

PM₁₀: Particulate matter 10 microns or less in diameter.

Particulate Matter (PM): A mixture of extremely small particles and liquid droplets suspended in the air. Components can include acids (e.g., sulfates and nitrates), organic chemicals, metals, and soil or dust particles. Particulate matter is classified according to particle size.

Peak Hour or Peak Period: Informally known as “rush hour,” this term refers to the time of the day when traffic volumes in an urban area are the highest and when travel patterns generate the most traffic, especially in a peak direction.

Right of Way: Land acquired (in fee or by easement) for the purpose of constructing and operating transportation facilities, including ancillary facilities such as noise walls, retaining walls, stormwater facilities, and other project elements.

Riparian Area: The land and habitat adjacent to water bodies that includes the transition area between an aquatic ecosystem and the nearby upland terrestrial ecosystem.

Section 106: That portion of the National Historic Preservation Act that requires federal agencies to identify and evaluate cultural resources and consider how their undertakings affect historic properties eligible for inclusion in the National Register of Historic Places.

Section 4(f): Section 4(f) of the U.S. Department of Transportation Act (49 USC 303) concerns the use of or impacts on any significant public park, recreation area, wildlife or waterfowl refuge, or historic site by a transportation project.

Section 6(f): Section 6(f) of the Land and Water Conservation Fund Act concerns only those parks and recreational facilities that have received funding through this act.

Single Occupant Vehicle: A vehicle having one occupant (i.e., the driver).

SR 510 Spur: Phase 1 of Yelm Loop construction, completed in 2010, between Mud Run Road and Cullens Road.

State Environmental Policy Act (SEPA): Legislation adopted in Washington in 1974 that establishes an environmental review process for all development proposals and major planning studies prior to taking any action.

T3 Freight Corridor: A classification within the Washington State Freight and Goods Transportation System assigned to highways that carry between 300,000 and 4 million tons of freight annually.

Threatened Species: Any species which is vulnerable to endangerment in the near future.

Terminus; Termini (pl): The beginning and end points of transportation projects are known as termini.

Vehicle Miles Traveled (VMT): The number of miles traveled per vehicle multiplied by the total number of vehicles.

Visual Quality: A subjective measure of the character of the visual environment.

Visual Resources: The collection of all features that can be seen in an area.

Water Quality: Refers to the characteristics of the water—for example, its temperature and oxygen levels, how clear it is, and whether it contains pollutants.

Wetland: Areas that are inundated or saturated by water at a frequency and for a duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wetland Buffer: An area adjacent to a wetland that can reduce adverse impacts to the wetland’s ecological functions and values from development or construction activities. Wetland buffers can also provide support functions for species that live in and around wetlands, and reduce the impacts of human disturbance on the wetland.

EXECUTIVE SUMMARY

ES 1 Where is the SR 510 Yelm Loop – New Alignment Phase 2 Project Located?

The **SR 510 Yelm Loop – New Alignment Phase 2** project (Build Alternative) is located in the City of Yelm, in northeast Thurston County. The Build Alternative would complete construction of a two-phased limited access highway bypassing Yelm’s downtown core. Construction of the SR 510 Yelm Loop Phase 1 (also known as the SR 510 Spur) was completed in 2010. Phase 1 extends from the intersection of SR 510 and Mud Run Road southeast to Cullens Road NW. The Build Alternative is generally located between the intersection of SR 510 Spur and Cullens Road NW (terminus of Phase 1) and the intersection of SR 507 and 170th Street SE.

ES 2 Why is the Build Alternative Needed and What is Its Purpose?

Over the past two decades, Yelm’s population has grown significantly – from 2,700 in 1998 to over 9,100 today. Traffic volumes in the City of Yelm have increased roughly 65 percent over the same time period, with SR 510/SR 507 (Yelm Avenue) carrying over 23,000 vehicles per day. The corridor also serves as the main street through Yelm and as an important regional freight route. SR 510 connects to Interstate 5 (I-5) to the west, and serves as one of the region’s few alternative routes to I-5 in the vicinity of Joint Base Lewis-McChord (JBLM). Congestion in Yelm’s downtown core has become commonplace during weekday morning (AM) and evening (PM) peak periods, as well as weekend afternoons during summer months. This congestion contributes to safety concerns, as well, with over 500 crashes occurring along Yelm Avenue in the last five years. Contributors to the traffic demand are both regional and local.

The purpose of Build Alternative construction is to address existing and expected future deficiencies on SR 510 in the City of Yelm. The

proposed Build Alternative would reduce chronic congestion on Yelm Avenue by providing an alternate route for regionally destined traffic, while maintaining access to the commercial core of Yelm for residents and business patrons. The new road would increase capacity, shorten travel times, and reduce the potential for collisions for local and regional traffic traveling through Yelm.

ES 3 What Benefits Would the Build Alternative Provide?

Once completed, the percentage of regional traffic that will use Yelm Loop is expected to increase from 40% to 67%. This increase in regional traffic along Yelm Loop is the result of regional trips shifting away from the SR 510/SR 507 corridor. This shift would allow the SR 510/SR 507 corridor to better serve local traffic within the City of Yelm. The reduction of regional congestion through Yelm’s commercial core would also help reduce the potential for collisions.

The Build Alternative would also work in combination with City-identified local road improvements to enhance existing parallel routes to Yelm Avenue, further helping to increase mobility throughout the City. Additionally, the shared-use path would provide a new route for bicyclists and pedestrians, increasing options for active transportation in Yelm.

ES 4 What is the Purpose of this Supplemental Environmental Assessment (SEA)?

A NEPA reevaluation was conducted in 2008; since then, a number of changes have occurred within the project corridor, including the listing of the Mazama pocket gopher as a threatened species and construction of new development adjacent to the corridor right-of-way. Therefore, a SEA is warranted for this project. This SEA focuses on Phase 2 of the SR 510 Yelm Loop, which would complete the bypass corridor. While Phase 2 was addressed in the 2000 *Y2/Y3 EA* and 2008 *Y2/Y3 NEPA Reevaluation*, the proposed improvements in Phase 2 have been modified to reduce the footprint of the Build Alternative, as well

as to meet regulations that have changed since the completion of the previous environmental work. This SEA addresses the potential effects of the No Build and Build Alternatives of the SR 510 Yelm Loop – New Alignment Phase 2 project.

ES 5 What is the Build Alternative?

The Build Alternative would complete the SR 510 Yelm Loop bypass route around downtown Yelm. Approximately three miles of new highway composed of one travel lane in each direction would be constructed, starting at Cullens Road (at the terminus of Phase 1) and ending at SR 507 near Yelm’s eastern boundary. The highway would be classified limited access between Cullens Road and 103rd Avenue, and managed access between 103rd Avenue and SR 507.

The Build Alternative would construct a shared-use bicycle and pedestrian pathway on one side of the highway within the limited access portion of the project. The shared-use path would include connections to neighborhoods along the highway and a connection to the existing Yelm-Tenino Trail, which would travel under the new highway. Sidewalks and on-street bike lanes would be provided on both sides of the highway within the more urban managed access portion of the project. Where the corridor crosses Yelm Creek, a new bridge would be constructed over the creek, accommodating one travel lane in each direction with shoulders and a shared-use path.

Four existing local roads would be converted to cul-de-sacs where the new highway intersects them to reduce the number of intersections on the highway, in accordance with the limited access designation. The Build Alternative would construct five intersections along the corridor for through traffic access.

Project funding is programmed over several state budget biennia. Funding for final planning and design began in July of 2019 and is programmed for construction through 2023. The funded project is titled **SR 510 Yelm Loop – New Alignment Phase 2**.

ES 6 What Would Happen if the Build Alternative is Not Constructed?

Under the No Build Alternative, congestion within the City of Yelm would continue to increase. The duration of delays would also increase, resulting in longer travel times through the City corridor, exacerbated safety issues, and potential minor increases in air emissions caused by slow traffic speeds and periodic stop-and-go conditions.

ES 7 How Would the Build Alternative Affect the Project Environment?

ES 7.1 Transportation (See Section 3.2)

Construction of the Build Alternative would reduce short-term congestion, while accommodating an increase in travel demand. The shift of regional traffic would reduce congestion in downtown Yelm and reduce pressure on local roads. By allowing regional traffic to bypass downtown, the Build Alternative would increase roadway network capacity and improve the overall efficiency of traffic in Yelm. Regional traffic using the Yelm Loop route in 2043 would experience travel time savings in both directions compared to the No Build Alternative.

A shared use path would be constructed on one side of the road and provide connections to the Yelm-Tenino Trail and Longmire Park. In addition, pedestrian connections to the shared use path would be provided at intersections and new cul-de-sacs to promote walkability.

ES 7.2 Air Quality (See Section 3.3)

The Build Alternative would have no adverse effects associated with air quality. The Yelm area of Thurston County is in compliance with standards for CO, HC, NO_x, O₃, PM_{2.5}, and PM₁₀, so no analysis is required for these pollutants.

The primary air quality pollutants in the study area are Mobile Source Air Toxics (MSATs). Because the Build Alternative’s estimated vehicle

miles traveled (VMT) represents only a small increase over the No Build Alternative, it is expected there would be no appreciable difference in overall MSAT emissions.

The Build Alternative is also expected to help reduce greenhouse gas emissions by reducing stop-and-go conditions, improving speeds, improving traffic flow, and providing for enhanced bicycle and pedestrian connectivity. Potential temporary localized air quality impacts could be experienced related to dust and construction emissions.

ES 7.3 Noise (See Section 3.4)

The 2005 Noise Study modeled predicted peak hour noise levels compared to WSDOT's noise abatement criteria (NAC) to determine if there would be future noise effects associated with the Build Alternative. The analysis identified 24 residential properties that would exceed NAC following construction of the Build Alternative. All 24 affected properties would exceed the 10 dBA increase criteria; four of the 24 properties would also exceed the 66 dBA criteria. Most of the affected properties are between Crystal Springs Street and Rhoton Road and are located both north and south of the proposed corridor. Two properties would be affected along Canal Road between Flume Road and 103rd Avenue. Under the No Build condition, no changes in noise would occur other than those associated with development within the surrounding area.

ES 7.4 Water Resources (See Section 3.5)

Construction of the Build Alternative could have a temporary effect on surface and groundwater resources. Once constructed, there would be an increase in runoff from the addition of paved surfaces. Runoff from new pavement would be infiltrated or similarly managed for quantity control. There would be no encroachment into the floodplain areas near Yelm Creek. Increased stormwater treatment of runoff, where currently there is none, would provide some benefit to surface water bodies and groundwater resources in the Build Alternative corridor.

ES 7.5 Wetlands (See Section 3.6)

There is one wetland (Wetland A) located in the Build Alternative footprint. Portions of Wetland A (0.11 acres) would be permanently shaded by the proposed bridge over Yelm Creek which would, over time, alter the vegetation species composition. In addition, 0.02 acres of temporary impacts to wetland would be altered by post-construction vegetation management.

ES 7.6 Vegetation, Fish, and Wildlife (See Section 3.7)

The Build Alternative would result in the conversion of existing vegetated land cover (which provides or supports habitat for fish and wildlife) to new paved areas, stormwater treatment facilities, or different vegetated land cover types. Approximately 19 acres would be permanently converted to paved/built surfaces, and approximately 5 acres would be permanently converted to different native vegetation types.

The Yelm pocket gopher, an ESA threatened species, is known to be present in the study area. The Build Alternative would affect approximately 19 acres of suitable habitat for this species, with the potential for direct harm to or disturbance of the animals.

ES 7.7 Hazardous Materials (See Section 3.8)

The federal and state contaminated site databases (EPA and Ecology) were consulted to identify potentially contaminated sites in the 1-mile study area. No EPA Superfund sites were identified in the study area, and 59 potentially hazardous waste sites were identified in Ecology records and/or in the 1999 *Hazardous Waste Corridor Site Assessment*. Most of the sites in the immediate vicinity of the Build Alternative footprint were identified as low-risk; two sites were identified as moderate-risk due to the potential for contamination of soils and/or groundwater. Portions of the study area fall within the Tacoma

Smelter Plume, increasing the potential for encountering arsenic and lead contamination in surface soil.

ES 7.8 Visual Quality (See Section 3.9)

The Build Alternative would result in neutral visual impacts. The new two-lane roadway is visually consistent with the surrounding characteristic and other transportation features in the area. The completion of the Yelm Loop from its current end point at Cullens Road to SR 507 would create a more visually consistent driver experience. The proposed noise wall would receive aesthetic treatments to reduce the visual impact of the structures.

ES 7.9 Archaeological and Historic Resources (See Section 3.10)

Forty-three historic-period resources on 20 parcels within the APE were identified, as well as four archaeological sites. One of the archaeological sites is potentially eligible for listing on the National Historic Register in the project area.

ES 7.10 Section 4(f) and 6(f) Resources (See Section 3.11)

There are two qualifying park and recreation resources within the project area (Longmire Community Park and Fort Stevens Elementary School playground), but neither would be used for the project. No Section 4(f) or 6(f) resources would be impacted under the Build Alternative.

ES 7.11 Social and Community Effects (See Section 3.12)

The Build Alternative would result in beneficial and negative impacts. The social and economic aspects of reducing congestion on Yelm Avenue would benefit the entire study area and the region.

The Build Alternative would not require land from community resources such as schools, parks or community centers. Access to community resources would be improved due to reduced congestion in downtown where many of these facilities are located. The Build Alternative's shared use path would provide connections to the Yelm-Tenino Trail and Longmire Park, thus increasing pedestrian and bicycle access and connections.

ES 7.12 Land Use (See Section 3.13)

The Build Alternative would improve traffic operations in support of land use consistent with local, regional, and state plans.

ES 7.13 Utilities (See Section 3.14)

Some potential utility disruptions could occur during transitions between old and new utility connections. Disruptions are anticipated to last only a few minutes.

ES 8 What Mitigation is Proposed to Address the Build Alternative Impacts?

Mitigation is an array of actions that could be implemented to reduce the negative effects or impacts of a proposed project. Gathering environmental information early and integrating it into the design and engineering process makes it possible to avoid some impacts. In other cases, unavoidable impacts can be minimized. When impacts are unavoidable, the Build Alternative evaluates ways to compensate for these impacts. Mitigation measures include:

- » **Transportation (Section 3.2)** Reasonable efforts would be made to ensure traffic flow is maintained, and access revisions are minimized, during construction. Affected residences and businesses would be notified of construction activities in advance, and traveler messages would be deployed during construction of the Build Alternative to alert traffic on SR 510 of any changes to travel lanes such as closures or detours.
- » **Air Quality (Section 3.3)** Measures would be taken during construction to reduce dust for the protection and comfort of motorists or area residents. Equipment and staging areas would be as far from sensitive receptors as practicable. Equipment idling would be minimized near sensitive receptors. The Traffic Management Plan (TMP) would minimize peak traffic delays during construction.
- » **Noise (Section 3.4)** A noise abatement wall is proposed at one location to mitigate noise levels for 20 properties.
- » **Water Resources (Section 3.5)** A Temporary Erosion and Sediment Control (TESC) Plan and a Spill Prevention, Control, and Countermeasures (SPCC) Plan would be implemented and Best Management Practices (BMPs) would be used to protect surface water and groundwater resources.
- » **Wetlands (Section 3.6)** Temporary impacts to wetlands would be rectified by replanting with suitable native vegetation. Shade impacts to wetlands would be partially mitigated by planting shade-tolerant wetland species. Impacts from the construction of a bridge over Yelm Creek and the associated stream and wetland buffers would be mitigated in accordance with applicable state and local requirements. There would be no net loss of wetland, buffer or stream structure or function.
- » **Vegetation, Fish, and Wildlife (Section 3.7)** Clearing limits would be contained to the minimum area necessary and marked with construction fencing. Staging of equipment and materials would be located away from wetlands or streams wherever possible, in accordance with terms and conditions of permits issued by regulatory agencies and local jurisdictions (exact locations to be determined at time of project design). BMPs would be used to control sediments. Additional surveys of Yelm pocket gopher would be completed prior to construction in potentially suitable habitat areas and impacts would be avoided or mitigated. Mitigation for impacts to Yelm pocket gophers would be implemented in consultation with the U.S. Fish and Wildlife Service (USFWS) and local jurisdictions. WSDOT would establish and maintain three sites dedicated to the conservation of pocket gophers and regional biodiversity. Impacts to Oregon white oak habitat would be mitigated by planting new trees in accordance with replacement standards and ratios specified in applicable local codes.
- » **Hazardous Materials (Section 3.8)** During construction, BMPs would be implemented to address/avoid the potential for spills during construction. If hazardous materials are encountered during construction, the effects would be mitigated using measures described in WSDOT's *Guidance and Standard Methodology for WSDOT Hazardous Material Discipline Reports*.

- » **Visual Quality (Section 3.9)** Potential mitigation measures for impacts to visual quality may include minimization of tree and shrub removal needed to construct noise barrier, application of aesthetic treatments to the noise wall. Replanting with native vegetation to maintain visual unity, replacement of trees removed for construction in accordance with the WSDOT *Roadside Policy Manual*, and special planting standards for restoration of wetlands and buffers.
- » **Archaeological and Historic Resources (Section 3.10)** The archaeological site potentially eligible for listing on the NRHP is anticipated to be documented through a Memorandum of Agreement between FHWA, SHPO, WSDOT, and the Nisqually Tribe, which will establish how the site will be managed if determined to be eligible for listing. In the event archaeological deposits are inadvertently discovered during construction in any portion of the APE, ground-disturbing activities would be halted immediately, and WSDOT would be notified. The WSDOT Archaeologist would then contact DAHP and the interested Tribes to determine next steps.
- » **Section 4(f) and 6(f) Resources (Section 3.11)** The archaeological site potentially eligible for listing on the NRHP is anticipated to be documented through a Memorandum of Agreement between FHWA, SHPO, WSDOT, and the Nisqually Tribe, and would not be preserved in place. As such, the site would not be considered to be permanently used by a transportation facility as defined in Section 4(f). Because no impacts to Section 4(f) or 6(f) resources are expected, mitigation measures are not necessary.
- » **Social and Community Effects (Section 3.12)** Scheduling of road closures would be coordinated with police, fire, emergency services, transit agencies, and school districts. A Traffic Management Plan (TMP) would be implemented and ongoing communications would occur with local businesses regarding potential access changes and alternate routes.

- » **Land Use (Section 3.13)** Because no impacts to land use are expected, mitigation measures are not necessary.
- » **Utilities (Section 3.14)** Early and frequent communication with utility companies would occur during Build Alternative design. Relocation and/or mitigation plans for existing utilities would be designed as needed through consultation with the utility provider.

Appendix A provides a summary of commitments related to construction and operations of the Build Alternative.

ES 9 How Can I Learn More?

Questions regarding the project and this SEA can be directed to:

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1 INTRODUCTION / PURPOSE AND NEED / PROJECT SETTING

The **SR 510 Yelm Loop – New Alignment Phase 2** project would complete construction of a two-phased limited access highway located in the City of Yelm. The proposed project would provide a new east-west roadway to reduce congestion in Yelm’s downtown core. The new road would minimize intersections and prohibit driveway access in order to increase capacity, shorten travel times, and reduce the potential for collisions. Construction of the new road was split into two phases due to available funding.

- » **Phase 1** (also known as SR 510 Spur) of this project was constructed in 2010. The environmental impacts of the project were evaluated in the *Y2/Y3 Corridor Revised Environmental Assessment (Y2/Y3 EA; February 2000)*, which resulted in a Finding of No Significant Impact (FONSI). A NEPA re-evaluation was completed in 2008 and documented in the *Y2/Y3 Corridor NEPA Environmental Assessment Reevaluation – SR 510 Yelm Loop (Y3) Project (Y2/Y3 NEPA Reevaluation; August 2008)*. Phase 1 improvements included approximately 1 mile of the new two-lane limited access highway from the intersection of SR 510 and Mud Run Road SE to Cullens Road NW, a shared-use path on each side of the road, and four new intersections.
- » **Phase 2** (Build Alternative) was part of the previous *Y2/Y3 EA* and *Y2/Y3 NEPA Reevaluation*. The proposed improvements in Phase 2 have been modified to reduce the project footprint and address any environmental or regulatory changes since the completion of the previous environmental work.

This Supplemental Environmental Assessment (SEA) addresses the effects of the No Build and Build Alternatives of the new alignment for Phase 2. The project would reduce chronic congestion on Yelm Avenue (designated as SR 510 and SR 507 through downtown Yelm) by providing an alternate route for regionally

destined traffic, while maintaining access to the commercial core of Yelm for residents and business patrons.

1.1 WHERE IS THE PROJECT LOCATED?

The project is located in the City of Yelm in eastern Thurston County. Yelm is surrounded by pockets of unincorporated Thurston County and towns and cities including Rainier, Tenino, Olympia, Lacey, and McKenna. It is near the major transportation routes of I-5, SR 507, SR 510, and SR 702, which connect it economically and socially to the greater Puget Sound Region and provide a gateway to Mount Rainier.

1.1.1 SR 510 and SR 507

SR 507 begins at I-5 in Bucoda and serves as the major transportation corridor through Tenino and Rainier to Yelm. From Yelm, SR 507 travels in a northeasterly direction and serves as the major transportation corridor to McKenna and Mountain Highway (SR 7) near Spanaway.

In the vicinity of Yelm, SR 510 merges with and becomes SR 507 at the intersection of Yelm Avenue and 1st Street. Figure 1.1-1 presents the general location of the project, and the surrounding area.

1.2 WHAT ARE THE PROJECT LIMITS?

The beginning and end points of transportation projects are known as project termini. They must be logical and result in an improvement that functions efficiently. Logical termini are defined as rational beginning and end points for

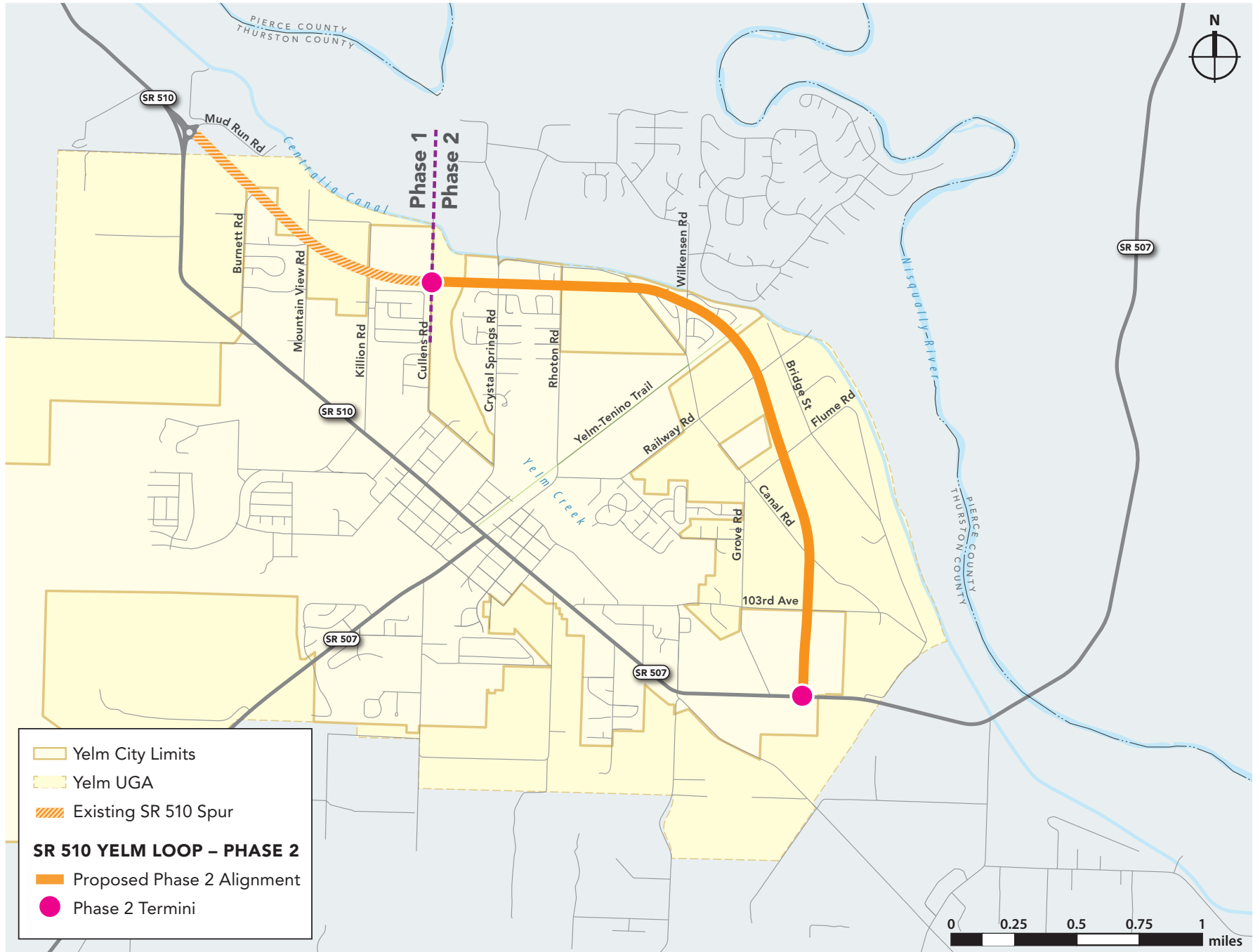


Figure 1.1-1 Yelm Loop Vicinity and Project Termini

transportation projects and review of environmental impacts. Figure 1.1-1 shows the SR 510 Yelm Loop project termini.

Typically, project termini are located at major traffic generation points or at connections that reflect other factors including topography, socioeconomics, or future travel demand and traffic volumes. Project termini for this project were selected to address the need to relieve congestion on SR 510/SR 507 (Yelm Avenue) through downtown Yelm. The northern terminus at Cullens Road and the southern project terminus, the intersection of SR 507 with 170th Street SE, allow regional traffic to bypass the downtown area and relieve congestion for local traffic.

1.3 WHY IS A SUPPLEMENTAL EA BEING PREPARED?

WSDOT and the Federal Highway Administration (FHWA) have determined a SEA is the appropriate level of environmental documentation for the Build Alternative project.

It has been nearly 20 years since the original EA was conducted for the SR 507 (Y2) and SR 510 (Y3) project. The 2000 *Y2/Y3 EA* resulted in a Finding of No Significant Impact (FONSI) by FHWA on February 1, 2000. The design for the SR 510 (Y3) component of the project was subsequently funded, but not the SR 507 (Y2) portion. The *Y2/Y3 NEPA Reevaluation* was conducted for the project in 2008, and Phase 1 of Yelm Loop (Y3) was constructed from the intersection of SR 510 and Mud Run Road to Cullens Road.

Since the 2008 reevaluation was conducted, there have been significant changes within the project corridor, including the listing of the Mazama pocket gopher as a threatened species and construction of new development adjacent to the corridor right-of-way. Therefore, a SEA is warranted. This SEA focuses on Phase 2 of the SR 510 (Y3) Yelm Loop, which would complete the bypass corridor.

A SEA also provides opportunities for agencies and the public to participate in the process and ensures the Build Alternative is evaluated based on current regulations and policies. This SEA is intended to identify the level of significance of the Build Alternative impacts and address both environmental effects and appropriate mitigation measures. Adoption of the NEPA SEA will also fulfill the State Environmental Policy Act (SEPA) requirements.

1.4 WHY IS THE PROJECT NEEDED?

SR 510 connects I-5 in Lacey and SR 507 in eastern Thurston County through the downtown core of Yelm. In the City of Yelm, SR 510 is known as Yelm Avenue, and is the primary arterial within the City's business district. Yelm Avenue is characterized by traditional downtown development, with buildings immediately adjacent to sidewalks and closely spaced driveways supporting commercial areas.

1.4.1 Transportation Demand

Over the past two decades, the City of Yelm's population grew from 2,700 to over 9,100. Traffic levels during this same time increased by roughly 50% on Yelm Avenue in the center of town. Local traffic uses Yelm Avenue to access businesses and residential areas. Regional traffic uses the same corridor to travel through Yelm to destinations and job centers in Thurston and Pierce Counties. Local traffic competes with regional commuter traffic traveling through the City. During peak periods, congested traffic on Yelm Avenue is characterized by stop-and-go conditions, while many have difficulty entering and exiting commercial establishments along the corridor. The traffic congestion also contributes to collisions along Yelm Avenue with over 520 crashes in the last five years, 322 of which were rear-end crashes (61%).

1.4.2 Community Goals

Addressing the congestion caused by heavy regional traffic in the business district is a high priority for the City. The 2017 *Comprehensive Plan and Joint Plan with Thurston County* contains numerous transportation goals and policies identifying the need to disperse traffic throughout the community rather than concentrating it in the urban core. These policies identify the need for enhanced regional transportation corridors, expanded multimodal transportation choices, and the desire to preserve the character of Yelm's business district. Preservation of the rural community character is important to those living in Yelm. Shifting regional traffic out of the downtown core will help to retain Yelm's rural, small town identity.

1.4.3 System Efficiency

In 1992, Yelm adopted a transportation plan that identified future roadways to provide congestion relief to Yelm Avenue and 1st Street (SR 510 and SR 507), including a limited access bypass route (SR 510 Yelm Loop) for regional traffic traveling on the SR 510/SR 507 corridor. The first phase of a bypass route (SR 510 Yelm Loop) was constructed in 2010 between Mud Run Road and Cullens Road, and most of the right of way was purchased for the completion of the second

phase. Extension of the bypass route (SR 510 Yelm Loop) around downtown would allow regional traffic destined for locations outside the city to travel efficiently, avoiding the city’s commercial core. The bypass route would also enhance resiliency of the regional transportation system by providing additional capacity on one of the region’s few alternative routes to I-5.

1.5 WHAT IS THE PURPOSE OF THE PROJECT?

The project would reduce chronic congestion on Yelm Avenue by providing an alternate route for regional traffic, while maintaining access to the business district of Yelm for residents and business patrons. The primary purpose of the proposed action is to address existing traffic congestion on Yelm Avenue in the City of Yelm. The proposed Build Alternative would provide a limited access bypass route (SR 510 Yelm Loop) around the City of Yelm to reduce congestion in the business district, and improve the transportation system for commuters, freight, transit, and active transportation. The construction of the Build Alternative would have transportation benefits, support local planning efforts, and improve system efficiency, as detailed below:

- » Transportation Demand
 - › Reduce congestion on Yelm Avenue.
 - › Reduce travel times within the business district.
 - › Improve traffic safety on Yelm Avenue by reducing congestion.
 - › Reduce travel times for regional traffic and freight traffic through the City of Yelm.
 - › Provide multimodal facilities and improve transit reliability by addressing congestion.

- » Community Goals
 - › Reduce traffic demand on Yelm Avenue to levels consistent with the character of the city’s business district and supportive of multimodal transportation options.
 - › Enhance economic development opportunities in the business district associated with improved access.
- » System Efficiency
 - › Improve local and regional transportation system efficiency and connectivity.
 - › Capitalize on previous transportation investment through establishment of a continuous bypass route around the Yelm business district.
 - › Expand system resiliency to mitigate loss of capacity on Interstate 5 (I-5) through the Joint Base Lewis-McChord (JBLM) area due to catastrophic events.

1.6 WHAT TRANSPORTATION PLANNING HAS BEEN CONDUCTED IN THE PROJECT AREA?

The history of transportation planning for the SR 510 Yelm Loop goes back to the early 1990s, when WSDOT, the City of Yelm, and Thurston County completed a study which identified future corridor alignments. Table 1.6-1 identifies transportation studies that have been completed for Yelm Loop.

Table 1.6-1 History of Transportation Planning in the Yelm Loop Vicinity

Previous Studies & Documents	Relationship to the Project Area
<i>Y2/Y3 Corridor Study – Alternatives Analysis Report, 1999</i>	Completed for the City of Yelm in 1999. Identified the preferred alignment for Y3, now known as the SR 510 Yelm Loop.
<i>Y2/Y3 Corridor Revised Environmental Assessment, February 2000</i>	Environmental evaluation of the Y3 (SR 510 Yelm Loop) proposed improvements. A Finding of No Significant Impact (FONSI) was issued in 2000.
<i>Y2/Y3 Corridor NEPA Environmental Assessment Reevaluation – SR 510 Yelm Loop (Y3) Project, August 2008</i>	Addressed the environmental impacts associated with roadway design modifications proposed in 2007. Approved in 2008.

1.7 WAS THE PUBLIC INVOLVED IN THE PLANNING PROCESS?

Community engagement has been an integral part of the SR 510 Yelm Loop project since the early 1990s. For the Build Alternative, a detailed Community Engagement Plan was developed, and Open Houses were held in the Fall of 2019. Appendix B presents more detail about the public engagement process, comments received regarding the project, and where to obtain more information.

1.8 WERE GOVERNMENT AGENCIES AND TRIBES INVOLVED IN THE PLANNING PROCESS?

Active participation by public agencies has been ongoing since planning for Yelm Loop began in the 1990s. More recently, a Stakeholder Advisory Group (SAG) was established for Phase 2 of the project to ensure relevant agencies stay engaged and informed. In 2018 and 2019, the SAG meetings provided members with project updates, and solicited input on proposed project elements. The Yelm Loop SAG members include representatives from:

- » City of Yelm
- » Thurston Regional Planning Council (TRPC)
- » Thurston County
- » WSDOT
- » Intercity Transit

The SR 510 Yelm Loop corridor is located in the traditional territory of the Nisqually Tribe and near the Nisqually reservation. The Tribe has been included in all project meeting invitations and documentation distribution.

1.9 PERMITS AND APPROVALS NEEDED

The Build Alternative would require permits and approvals from various government agencies before commencement of construction. See Table 1.9-1 for potential required approvals.

Table 1.9-1 Potential Permits and Approvals Needed

Trigger	Permit Application or Review Document	Approval	Issuing Agency
Stream or wetland impacts	Joint Aquatic Resource Permits Application (JARPA)	Section 404 Authorization Section 401 Water Quality Certification and Coastal Zone Management Act Consistency Determination	U.S. Army Corps of Engineers (USACE) Washington State Department of Ecology (Ecology)
	APPS (Aquatic Protection Permitting System)	Hydraulic Project Approval (HPA)	Washington State Department of Fish and Wildlife (WDFW)
	State Environmental Policy Act (SEPA) Document	SEPA Determination and Adoption of NEPA Document	Washington State Department of Transportation (WSDOT)
	National Environmental Policy Act (NEPA) Environmental Assessment	Finding of No Significant Impact (FONSI)	Federal Highway Administration (FHWA)
	Critical Areas Review*	Critical Areas Approval	City of Yelm
Non-exempt government action	SEPA	SEPA Determination and Adoption of NEPA Document	WSDOT
	NEPA Review	NEPA Environmental Assessment and FONSI	FHWA
Disturbance of ≥ 1 acre	Permit Coverage Notice of Intent	National Pollution Discharge Elimination System (NPDES) Construction Stormwater General Permit	Ecology
Fill/grading/building in the floodplain	Floodplain permit	Depends on jurisdiction and impact	Depending on location: City of Yelm, Thurston County
Clearing and grading	Clearing/grading permit	Depends on jurisdiction and impact	Depending on location: City of Yelm, Thurston County
Demolition	Demolition permit	Depends on jurisdiction and impact	Depending on location: City of Yelm, Thurston County
Structures/walls	Building permit	Depends on jurisdiction and impact	Depending on location: City of Yelm, Thurston County
Construction noise	Construction noise variance	Noise variance	Depending on location: City of Yelm, Thurston County
Utility work	Utility coordination	Utility permit – depends on jurisdiction and impact	Depending on location: City of Yelm, Thurston County

* Critical Areas Review for this project will be undertaken by the City of Yelm; depending on the jurisdiction and the degree of impact, a local variance, public agency utility exception, or reasonable use exception may be needed.

2 DESCRIPTION OF ALTERNATIVES

The Build Alternative described in this Supplemental Environmental Assessment (SEA) best meets the need and purpose for the project while avoiding, minimizing, and/or mitigating the effects it may have on the environment. The Build Alternative was identified through an evaluation process completed in 1999. In the early 1990s, WSDOT, the City of Yelm, and Thurston Regional Planning Council (TRPC) completed a route study identifying future corridor alignments for what is now called the SR 510 Yelm Loop. The evaluation process included

TRPC is the regional council of governments that focuses on transportation, growth management, and economic vitality. It serves as a forum for coordination between jurisdictions, citizens, and businesses to plan for the region's future.

weighing the alignment options against the project's purpose, need, and goals. This analysis was followed by an evaluation based on environmental and transportation criteria. Refer to the *Y2/Y3 Corridor Study Alternatives Analysis Report (Y2/Y3 Corridor Study; 1999)* for a description of the alternatives considered. A Finding of No Significant Impact (FONSI) was issued for the Y2/Y3 Corridor in 2000. Due to limited available funding, construction of the project was split into two phases. Phase 1 was funded and built in 2010. In 2015, funding was allocated to complete Phase 2. The proposed Build Alternative is consistent with the alignment previously identified in the *Y2/Y3 Corridor Study*, but the footprint has been modified to respond to current and forecasted future transportation needs as well as current environmental regulations.

weighing the alignment options against the project's purpose, need, and goals. This analysis was followed by an evaluation based on environmental and transportation criteria. Refer to the *Y2/Y3 Corridor Study Alternatives Analysis Report (Y2/Y3 Corridor Study; 1999)* for a description of the alternatives considered.

A Finding of No Significant Impact (FONSI) was issued for the Y2/Y3 Corridor in 2000. Due to limited available funding, construction of the project was split into two phases. Phase 1 was

2.1 WHAT WOULD HAPPEN IF THE PROJECT IS NOT BUILT?

If the project isn't built (the No Build Alternative), the SR 510 Yelm Loop bypass route would remain incomplete. Regional traffic using the existing segment of Yelm Loop to Cullens Road would continue using local roads to connect with SR 507 on the east side of downtown. Regional traffic would continue to travel via SR 510 through the downtown core of Yelm.

The City of Yelm has identified local road improvements to enhance existing parallel routes to Yelm Avenue and increase mobility throughout the city. While these improvements help with local trips, regional traffic would still rely on SR 510/ SR 507 (Yelm Avenue) through downtown Yelm as the primary route through the city. These funded transportation projects, expected to be constructed in the near future, are included in the No Build Alternative analysis presented in this SEA.

2.2 HOW WAS THE BUILD ALTERNATIVE DEVELOPED?

The Build Alternative was identified through an evaluation process conducted as part of the *Y2/Y3 Corridor Study* in 1999. The first phase of the process involved development of a project corridor concept that factored in the regional context and the type of highway that should be considered for implementation. The results of this analysis were documented in the *Y2/Y3 Corridor Revised Environmental Assessment (Y2/Y3 EA; 2000)*. The *Y2/Y3 Corridor Study* and *Y2/Y3 EA* contain a full description of all the alternatives considered.

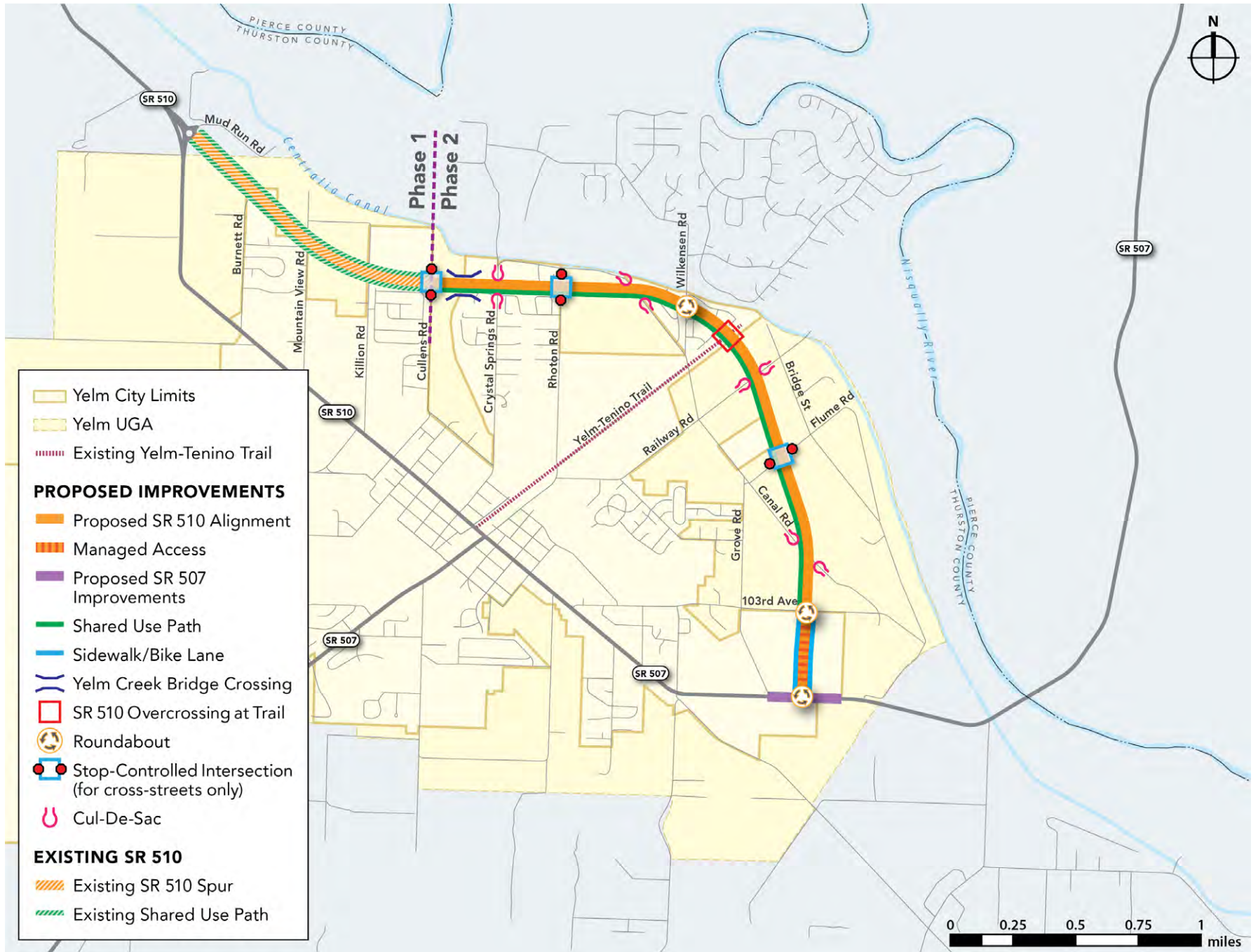


Figure 2.3-1 SR 510 Yelm Loop – New Alignment Phase 2 Improvements

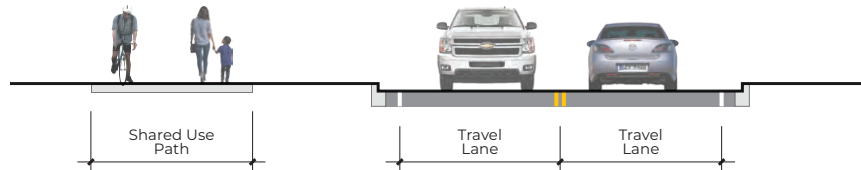
More recently, public outreach identified additional elements to be considered as part of the Phase 2 design development. Following the open house, the project team revisited the plan for access to the shared use path, and the design was revised to allow for active transportation users to access the path from local roads that would be converted to cul-de-sacs.

2.3 WHAT WOULD THE BUILD ALTERNATIVE INCLUDE?

The Build Alternative would complete the bypass route around downtown Yelm. Figure 2.3-1 illustrates the portion of Yelm Loop constructed in 2010 (Phase 1) and the proposed Phase 2 corridor improvements, known as the Build Alternative. The Build Alternative includes the following elements:

- » Construction of approximately three miles of new highway composed of one travel lane in each direction, starting at Cullens Road (at the terminus of Phase 1) and ending at the intersection of SR 507 and 170th Street. The highway would be classified **limited access** between Cullens Road and 103rd Avenue, and **managed access** between 103rd Avenue and SR 507. Typical cross-sections for the limited access and managed access portions of the Build Alternative are illustrated in Figure 2.3-2.
- » Construction of a shared-use bicycle and pedestrian pathway on one side of the highway within the limited access portion of the Build Alternative. The shared-use path would include connections to neighborhoods along the

LIMITED ACCESS (Cullens Rd to 103rd Ave)



MANAGED ACCESS (103rd Ave to SR 507)

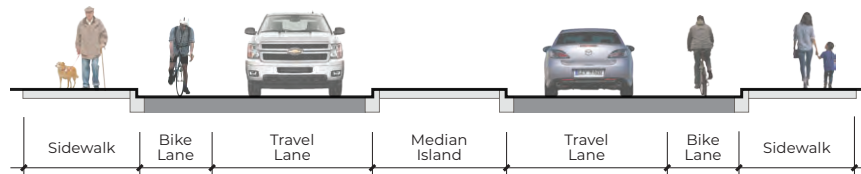


Figure 2.3-2 Typical Yelm Loop Cross-Sections

highway and a connection to the existing Yelm-Tenino Trail, which would travel under the new highway.

- » Provision of sidewalks and on-street bike lanes on both sides of the highway within the more urbanized, managed access portion of the Build Alternative.
- » Construction of a bridge over Yelm Creek. The bridge would accommodate one travel lane in each direction with shoulders and a shared-use path.
- » Conversion of four existing roadway locations to cul-de-sacs where the new highway intersects. Figure 2.3-1 illustrates the locations of the cul-de-sacs: Crystal Springs Road, Railway Road, and two locations on Canal Road. Converting local roads to cul-de-sacs reduces the number of intersections on the highway, in accordance with the limited access designation.
- » Construction of five intersections along the corridor as shown on Figure 2.3-3 and described below:
 - › **Yelm Loop at Rhoton Road** would be stop sign controlled for vehicles on Rhoton Road. Left-turn lanes would be provided on all legs of the intersection.
 - › **Yelm Loop at Wilkensen Road** would be a single lane roundabout and provide access to and from the Nisqually Pines and North Yelm neighborhoods. Roundabout control at this intersection most safely accommodates the potential for higher numbers of active transportation users with shorter crossings and slower vehicle speeds.
 - › **Yelm Loop at Flume Road** would be stop sign controlled for vehicles on Flume Road. Left-turn lanes would be provided on all legs of the intersection. Active transportation users could access the shared-use path at this intersection.
 - › **Yelm Loop at 103rd Avenue** would be configured as a single lane roundabout with four legs. This intersection would be the transition point from limited access to managed access. The roundabout would facilitate the more urban street configuration with sidewalks and bike lanes on both sides of the road.
 - › **Yelm Loop at SR 507** would be converted from the existing traffic signal control to a multi-lane roundabout, and would provide improved crossings for active transportation users.

For more information about the Build Alternative's design please refer to the engineering plans included in Appendix C.

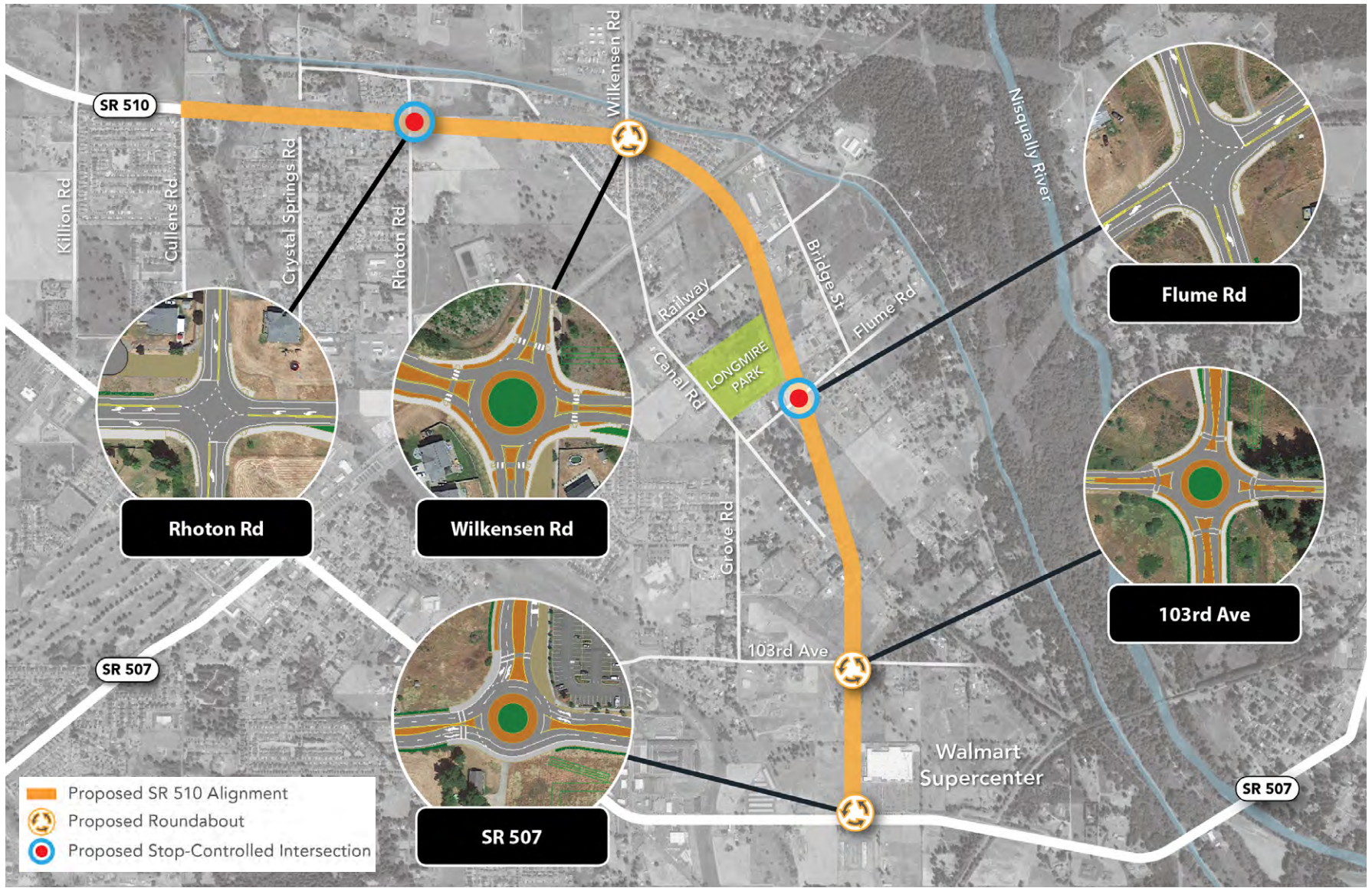


Figure 2.3-3 Proposed Yelm Loop Intersections

3 STUDY AREA ANALYSIS

3.1 INTRODUCTION

This chapter presents an analysis of the potential effects of the Build and No Build Alternatives on the built and natural environment within the study area. Each section in the chapter is devoted to a specific element of the environment, or discipline, that was identified as important for a full understanding of potential impacts. A description of the evaluation methodology used to assess impacts for a given discipline, existing conditions, and potential impacts, as well as proposed measures to mitigate or avoid adverse impacts, are provided for each discipline. Impacts are categorized as:

- » **Direct impacts:** Effects that have a straightforward cause-and-effect relationship to the Build Alternative. These effects include both short-term/construction impacts and long-term/operational impacts. Direct impacts are discussed in the corresponding section for each individual discipline.
- » **Secondary impacts or indirect effects:** Reasonably foreseeable effects of the Build Alternative that could occur later in time or are further removed in distance from the direct effects. Indirect effects are discussed in Section 3.15.
- » **Cumulative effects:** The incremental or additive effects of the Build Alternative in conjunction with other past, present, and future reasonably foreseeable actions, regardless of what agency or person undertakes such actions. Cumulative effects are discussed in Section 3.15.

3.1.1 What Elements of the Environment Are Addressed in This Chapter?

As discussed in Chapter 1, the environmental impacts of the SR 510 Yelm Loop project were first evaluated in the 2000 *Y2/Y3 Corridor Revised Environmental Assessment (Y2/Y3 EA)*, and were re-evaluated in the 2008 *Y2/Y3 Corridor NEPA Environmental Assessment Reevaluation (Y2/Y3 NEPA Reevaluation)*. This SEA addresses the significant changes in the project study area (as identified in Chapter 1) since the previous environmental evaluations were completed, as a supplement to the previous environmental work. The analysis presented in this chapter focuses on Phase 2 of the SR 510 Yelm Loop, which would complete the SR 510 Yelm Loop highway, as discussed in Chapter 2.

The elements of the environment addressed in this chapter include:

- | | |
|----------------------------------|---|
| » Transportation | » Visual Quality |
| » Air Quality | » Archaeological and Historic Resources |
| » Noise | » Section 4(f) and 6(f) Resources |
| » Water Resources | » Social and Community Effects |
| » Wetlands | » Land Use |
| » Vegetation, Fish, and Wildlife | » Utilities |
| » Hazardous Materials | |

3.1.2 How Were Project Effects on the Environment Evaluated?

Based on the changes that have occurred in the study area since the 2008 *Y2/Y3 NEPA Reevaluation*, several disciplines were determined to need further

evaluation. Technical experts on the project team conducted studies and summarized their analysis in Discipline Reports or Technical Memoranda for these elements of the environment:

- » Transportation
 - › *Intersection Control Analysis, SR 510 Yelm Loop New Alignment Phase 2* (SCJ Alliance, July 2018)
 - › *Technical Memorandum: SR 510 Yelm Loop New Alignment Phase 2, City-Wide Analysis* (SCJ Alliance, July 2019)
- » Water Resources
 - › *Water Resources Discipline Report, SR 510 Yelm Loop – New Alignment Phase 2* (Parametrix, September 2019)
- » Wetlands
 - › *Wetland Assessment Report, SR 510 Yelm Loop – New Alignment Phase 2* (WSDOT, December 2018)
- » Vegetation, Fish, and Wildlife
 - › *Vegetation, Fish, and Wildlife Discipline Report, SR 510 Yelm Loop – New Alignment Phase 2* (Parametrix, September 2019)
 - › *Supplemental Biological Assessment, SR 510 Yelm Loop – New Alignment Phase 2* (Parametrix, September 2019)
- » Hazardous Materials
 - › *Technical Memorandum: SR 510 Yelm Loop – New Alignment Phase 2, Hazardous Materials Analysis* (SCJ Alliance, November 2019)
- » Archaeological and Historic Resources
 - › *Draft – Cultural Resources Inventory for SR 510 Yelm Loop, New Alignment Phase 2 Project* (Historical Research Associates, Inc., August 2019)

What is a Discipline Report or Technical Memorandum?

A discipline report focuses on an environmental topic (discipline) of concern, such as air quality, noise, surface water, or other built or natural resources. It presents an analysis of the environment with respect to that discipline, how the project may affect that environment, and offers recommendations on how best to avoid or minimize adverse effects to that environment.

A technical memorandum is typically written in lieu of a discipline report when the potential environmental impacts are minimal for that particular discipline on a specific project.

Appendix D provides additional information on the discipline studies prepared for this SEA as well as links to these documents. In addition, relevant correspondence

with governmental agencies and Tribes as related to these analyses are provided in Appendix E.

For all elements of the environment addressed in this SEA, analysis of effects associated with the Build Alternative includes a comparison with both existing baseline conditions and the No Build Alternative. The No Build Alternative includes the existing transportation system, plus currently-funded improvements as described in Chapter 2. By evaluating conditions with these improvements in place, the potential impacts of a No Build Alternative can be determined. A comparison can then be made between the environmental and social effects associated with the No Build and Build Alternatives.

Due to the specificity of each discipline, the discipline study areas may differ from the overall corridor study area. Therefore, the study area for each discipline is identified in the corresponding section of this document.

3.1.3 How is This Chapter Organized?

This chapter is organized into sections for each element of the natural and built environment that was analyzed. Each section includes the following:

1. Discussion of the relevant regulations, standards, and analysis methods appropriate for evaluating potential impacts associated with the discipline.
2. Description of existing conditions.
3. Summary of impacts that could be associated with the No Build and Build Alternatives.
4. Discussion of possible actions to minimize or mitigate adverse impacts.

A summary of potential indirect and cumulative effects associated with the Build Alternative is provided in the final section of the chapter (Section 3.15).

3.2 TRANSPORTATION

Within the City of Yelm, SR 510 is known as Yelm Avenue. Congestion is commonplace on Yelm Avenue during peak morning and afternoon commute times. This is caused by local traffic traveling to business and residential areas and regional traffic traveling through Yelm to reach destinations in Thurston and Pierce Counties. In 2010, Phase 1 of Yelm Loop was constructed between SR 510 and Cullens Road. Regional traffic using the Phase 1 segment (SR 510 Spur) began using local roads from Cullens Road to points east.

The Thurston Regional Planning Council (TRPC), a regional council of governments with a focus on growth management and transportation, included the SR 510/ SR 507 corridor in the 2019-2022 *Regional Transportation Improvement Program (RTIP)* for the Thurston County Region (TRPC, 2018). The *RTIP* identifies the SR 510 corridor as a priority route to improve mobility for regional traffic that had no alternative route other than through congested downtown Yelm.

Yelm Loop – SR 510 alternate route bypassing downtown Yelm, from the roundabout at Mud Run Road to the SR 507/170th Street intersection

SR 510 Spur – Phase 1 of Yelm Loop construction, completed in 2010, between Mud Run Road and Cullens Road

Build Alternative – Phase 2 of Yelm Loop, proposed to extend from end of SR 510 Spur at Cullens Road to the SR 507/170th Street intersection

Improvements are needed in the linkage of both the local and regional transportation networks to address chronic congestion and frequent collisions in downtown Yelm. The majority of the completed Yelm Loop would be a limited access corridor providing improved travel times for regional traffic, congestion relief in downtown Yelm, system resiliency in the form of an improved alternative route around JBLM, and

a new active transportation route for cyclists and pedestrians in the form of a shared use path along the eastbound side of the new highway. Active transportation refers to walking and bicycling transportation modes. Between 103rd Avenue and SR 507, the road would be located within a commercial zone and would be designated managed access.

The Build Alternative corridor is identified in Figure 2.3-1.

What is limited access?

Limited access corridors control the number of intersections and prohibit driveway access. This benefits travelers by shortening travel times, reducing the potential for collisions, and increasing roadway capacity.

What is managed access?

Access management refers to the regulation of the location, spacing and design connections (e.g. driveways, local streets, etc.) to improve safety and roadway efficiency. On managed access corridors, driveway access permits are granted by either WSDOT or the local jurisdiction.

3.2.1 How Were Traffic and Transportation Data Evaluated?

A traffic analysis was conducted as part of the 2000 Environmental Assessment.

This analysis was based upon land use projections through 2020, using a traffic forecasting and analysis methodology developed in cooperation with TRPC and WSDOT Olympic Region traffic staff. In 2018, the traffic analysis was updated to evaluate changes associated with construction of the SR 510 Spur and extend the planning horizon from 2020 to 2043.

TRPC's travel demand model is a computer generated regional demand model that combines the planned long range transportation improvements with the area's future land use densities and population growth to identify potential growth in peak hour volume.

The 2018 TRPC travel demand model was used to analyze in the study area existing and forecasted traffic to identify how the current transportation system is performing, how traffic levels are expected to grow in the future, and how the proposed Build Alternative would affect traffic conditions. The analysis predicts traffic volumes, operations, person throughput, travel times, and safety performance of both the completed Build Alternative and the existing SR 510/SR 507 corridor (Yelm Avenue) in downtown Yelm. Analysis typically focuses on both the opening year of the project and a long-term planning horizon or design year. The design year for this model was 2040, which is the most current model available. The 2040 traffic forecast showed free flow conditions on Yelm Loop and Level of Service (LOS) C or better at most intersections along the Loop. As the project year of opening has changed from 2021 to 2023 since this analysis was originally prepared, it is necessary to

address 2043 as the project design year. Given the expected good roadway and intersection performance expected at most locations in 2040, it is reasonable to assume that the project would continue to perform well in 2043. One exception would be the stop-controlled intersection of Yelm Loop at NW Rhoton Road where 2040 LOS E could be experienced for north and southbound movements on Rhoton Road, particularly in the PM peak hour. However, the 95th percentile queues for minor street traffic are projected to be at or under 60 feet in length. While LOS for the minor street movement would fall below the standard, based on engineering judgment the low 95th percentile queue indicates there would not be a substantive operational deficiency with two-way stop control in 2043.

3.2.2 What is Traffic Like Today?

In the last two decades, Yelm's population has increased from 2,700 in 1998 to over 9,100 in 2018. With the increase in population and the increases in regional traffic, congestion has worsened within the downtown corridor.

Today, traffic within the downtown corridor remains congested, although a portion of regional traffic bypasses downtown via the SR 510 Spur and local streets (see Figure 3.2-1). When entering Yelm from the west, vehicles can take the SR 510 Spur to its current terminus at Cullens Road and then navigate a series of local streets to bypass Yelm Avenue all the way to the signalized intersection of SR 507 and 170th Street. While this is not an official, signed bypass route, a large portion of regional traffic bypasses downtown Yelm in this manner.

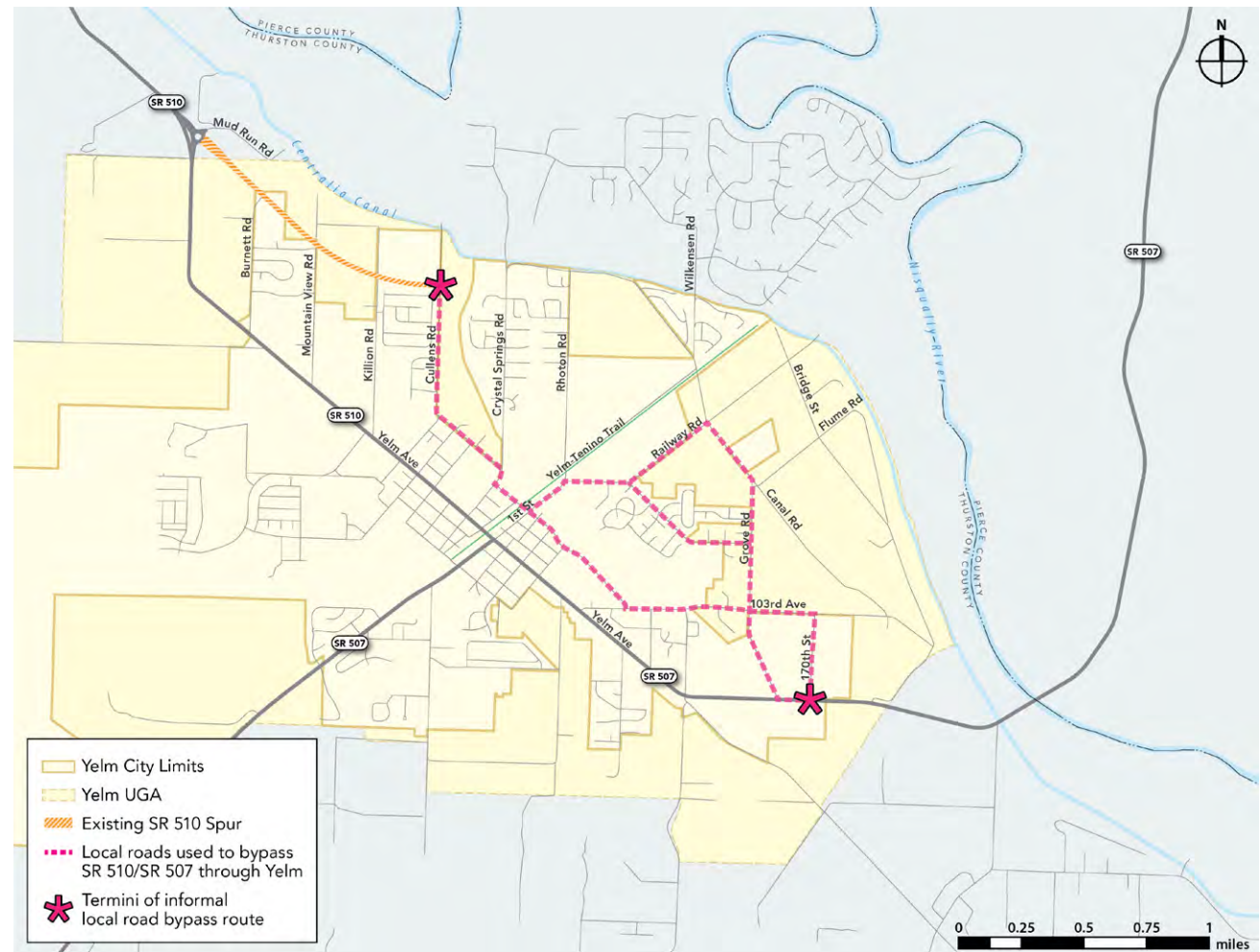


Table 3.2-1 Existing (2017) Regional PM Peak Hour Trips on SR 510 Spur

Travel Direction on SR 510 Spur (east of Mud Run Rd.)	Total Volume on Spur	Regional Volume on Spur	Regional Trips as Percentage of Total
Eastbound	440	130	30%
Westbound	195	125	65%
Total	635	255	40%

Figure 3.2-1 Local Road Network between SR 510 Spur and SR 507

The City of Yelm collected traffic counts during the PM peak hour throughout the City in the fall of 2017. Using these counts, PM peak hour volumes along the SR 510/ SR 507 corridor through the City of Yelm were calculated. As shown in Table 3.2-1, the traffic counts indicate that approximately 635 vehicles use the SR 510 Spur during the PM peak hour, with 40% being regional trips traveling through Yelm.

Because regional traffic uses the SR 510 Spur and the local road network to bypass downtown Yelm, local roads used by regional traffic experience heavier volumes than they were designed for. While the SR 510 Spur was designed to accommodate this type of traffic, the local roadways were not.

Additionally, any regional freight traffic traveling through Yelm during peak periods is currently delayed by traffic congestion in the downtown area. Due to the lack of a full bypass route, most of the regional truck traffic currently travels through downtown Yelm, further exacerbating congestion conditions.

3.2.3 What Would Happen if the Build Alternative is Not Constructed?

As downtown Yelm continues to receive more regional traffic, volumes during peak travel periods are anticipated to increase on the local roads currently being used as a bypass route. These local roads were designed to provide local access and are not suitable for high traffic volumes.

If the Build Alternative is not constructed, traffic using SR 510/SR 507 to travel eastbound through Yelm (between Mud Run Road and Old McKenna Road) is projected to experience a 16-minute increase in travel time between 2023 and 2043. Westbound travel on the same route is projected to experience a 6-minute increase over the same period (see Table 3.2-2).

Table 3.2-2 Projected Travel Time for Traffic Traveling through Yelm – PM Peak Hour under No Build Alternative

Travel Direction on SR 510/SR 507 (between Mud Run Road and Old McKenna Road)	2023 ¹	2043 ²
Eastbound	12 min	28 min
Westbound	11 min	17 min

Notes: 1. Projected opening year for Build Alternative
2. Long-range horizon year

Congestion in downtown Yelm during peak travel times would continue to cause delay for commuters, freight, residents, and business customers. Congested conditions and traffic attempting to access local businesses and cross streets would continue to conflict, resulting in more collisions on Yelm Avenue further exacerbating congestion. Regional traffic congestion through the downtown corridor would discourage shopping downtown and thereby impact local retail activity.

3.2.4 Would the Build Alternative Relieve Congestion in Downtown Yelm?

By completing the Yelm Loop corridor, congestion would be reduced on Yelm Avenue as compared to the No Build Alternative. Regional traffic would experience less delay. An estimated 67% of regional traffic would use the completed Yelm Loop (see Table 3.2-3).

The shift of regional traffic would reduce congestion in downtown Yelm and reduce pressure on local roads. By allowing regional traffic to bypass downtown, the Build Alternative would increase roadway network capacity and improve the overall efficiency of traffic in Yelm.

Table 3.2-3 2023 Regional PM Peak Hour Trips on Yelm Loop under Build Alternative (Based on Existing PM Peak Volumes)

Travel Direction on Complete Yelm Loop (Phase 1 & 2)	Regional Volume	Regional Trips as Percentage of Total
Eastbound	275	50%
Westbound	385	80%
Total	660	67%

Table 3.2-4 Projected PM Peak Hour Travel Times for No Build and Build Alternative

Travel Direction	2023 ¹			2043 ²		
	Yelm Avenue Route*		Yelm Loop Route*	Yelm Avenue Route		Yelm Loop Route
	No Build	Build	Build	No Build	Build	Build
Eastbound	12.0 min	11.5 min	7 min	28.5 min	17 min	12 min
Westbound	11.0 min	10.5 min	6 min	17 min	13.5 min	6.5 min

Notes: 1. Projected opening year for Build Alternative 2. Long-range horizon year

Source: Thurston Regional Planning Council (TRPC) mesoscopic travel demand model

* See Figure 3.2-2 for a map illustrating each route. Travel times are shown for each route between SR 510 roundabout at Mud Run Rd (west terminus) and SR 507/170th St intersection (east terminus).

In the opening year (2023), traffic using the Yelm Avenue route would receive minimal time savings compared to the No Build Alternative, but regional traffic on the Yelm Loop route would see travel times reduced by over 40% (see Table 3.2-4 and Figure 3.2-2).

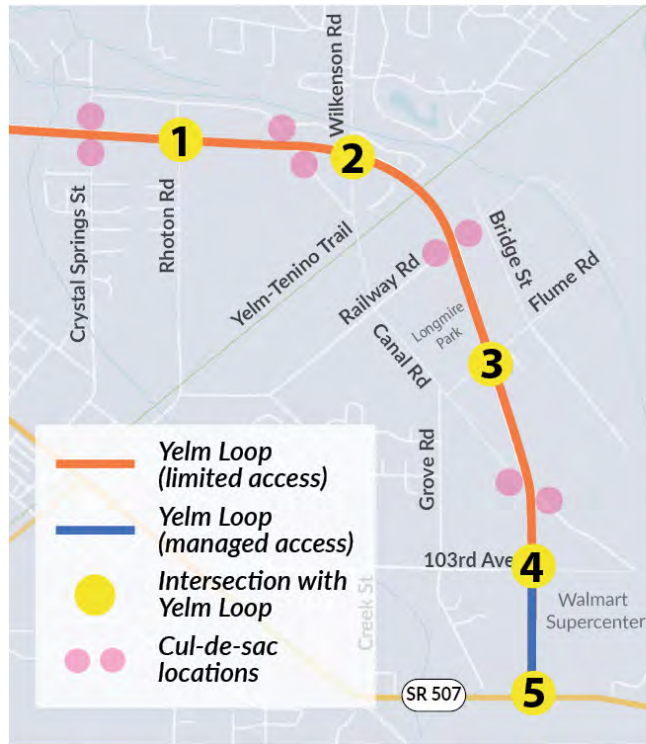
In 2043, traffic is projected to experience more significant improvements compared to the No Build Alternative. Traffic using the Yelm Avenue route would see travel times reduced by approximately 40% in the eastbound direction and 21% in the westbound direction, as compared to the No Build Alternative. Regional traffic using the Yelm Loop route in 2043 would experience travel time savings of approximately 60% in both directions compared to the No Build Alternative (see Table 3.2-4).

3.2.5 Would Access to the New Roadway Be Limited?

Because the majority of the Build Alternative has been designated limited access, intersections would be spaced to facilitate efficient movement of traffic on the corridor. A *Design Validation and Corridor Intersection Control Evaluation (ICE)* report confirmed



Figure 3.2-2 Yelm Loop Route and Yelm Avenue Route through Yelm



1) Rhoton Rd



2) Wilkensen Rd



3) Flume Rd



4) 103rd Ave



5) SR 507

Figure 3.2-3 New Yelm Loop Intersection Locations and Configurations

control recommendations for each of the five study intersections (SCJ Alliance, 2018). A total of five intersections would be constructed to provide connectivity between the Build Alternative and the local street network. Two of these intersections, 103rd Avenue and SR 507, already exist and would be reconfigured; the other three would be newly constructed. The intersections would be controlled with roundabouts or stop signs¹ depending on the volume of traffic expected at each location (see Figure 3.2-3):

1. Stop sign controlled intersection at Rhoton Road
2. Single-lane roundabout at Wilkensen Road
3. Stop sign controlled intersection at Flume Road
4. Single-lane roundabout at 103rd Avenue
5. Multi-lane roundabout at SR 507

¹ Stop signs on minor roads only; there would be no stop signs for SR 510 traffic.

3.2.6 How Would the Build Alternative Affect Local Arterials and Streets?

With completion of the Build Alternative, traffic using local roads to bypass downtown Yelm is expected to be reduced or eliminated. Additionally, downtown congestion would be relieved, though not eliminated. Yelm Avenue would serve predominantly locally destined traffic. Those who commute locally would have shorter travel times, and decreased congestion on Yelm Avenue would reduce the potential for crashes.

The Build Alternative would result in four local roads being converted to cul-de-sacs to reduce the number of intersections consistent with the limited access designation of the corridor (see Figure 3.2-4). Residents living adjacent to the new cul-de-sacs would have to alter their travel routes to access Yelm Loop and the surrounding local road network. The additional travel time residents may experience was evaluated by measuring the distance from each proposed cul-de-sac to the nearest Yelm Loop intersection. As shown in Table 3.2-5, assuming

Table 3.2-5 Potential Travel Time for Local Traffic to Access Yelm Loop from Cul-de-Sac Roads

Cul-de-Sac ID	Cul-de-Sac	Nearest Intersection	Distance (miles)	Travel Speed	Travel Time
A	Crystal Springs Street North	Rhoton Road	0.40	25 mph	58 seconds
B	Crystal Springs Street South	Rhoton Road	0.45	25 mph	65 seconds
C	West Canal Road North	Rhoton Road	0.37	25 mph	53 seconds
D	West Canal Road South	Wilkensen Road	0.51	25 mph	73 seconds
E	Railway Road East	Flume Road	0.60	25 mph	86 seconds
F	Railway Road West	Flume Road	0.77	25 mph	111 seconds
G	South Canal Road East	Flume Road	0.54	25 mph	78 seconds
H	South Canal Road West	103rd Avenue	0.66	25 mph	95 seconds

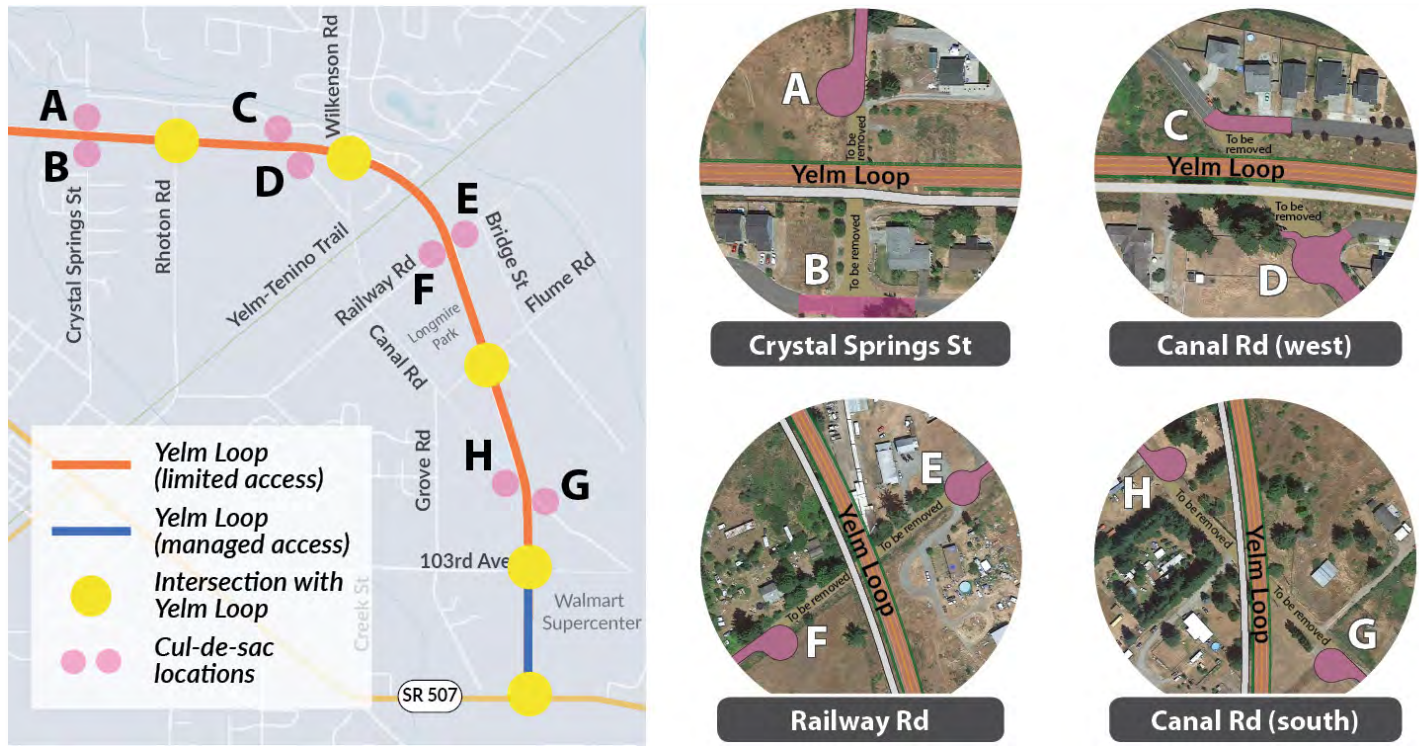


Figure 3.2-4 New Cul-de-Sac Locations and Configurations

a travel speed of 25 miles per hour, the potential travel time to access Yelm Loop from each cul-de-sac would be less than two minutes by vehicle. Travel time between opposite cul-de-sacs would range from about two to slightly over three minutes, which would slightly impact local neighborhood connectivity for vehicular travel. Accessways to/from Yelm Loop would be provided for bikes and pedestrians which could continue to provide more direct, localized connectivity. Public engagement related to the limited access designation of the corridor was conducted in 2006, including a public hearing.

3.2.7 How Would the Build Alternative Affect Freight Operations?

SR 510 and SR 507 are the only designated truck routes in the project area used for transporting goods to and through Yelm. Approximately 4% of the vehicles on SR 507 and 6% of those on SR 510 are trucks that must navigate the intersection of Yelm Avenue and First Street in downtown Yelm. Freight is often delayed due to congestion and difficulty making turning movements. With the completion of the Build Alternative, regionally destined freight traffic would be able to bypass downtown Yelm, making travel times more reliable and removing large trucks from the congested downtown area.

3.2.8 Would the Build Alternative Be Consistent with Goals for Multi-Modal Improvements?

The City of Yelm's 2017 Comprehensive Plan and Joint Plan with Thurston County (Comprehensive Plan) contains goals for multi-modal improvements to the transportation system. Provision of safe and efficient travel through and to neighborhoods and accommodation of future urban growth in a cost-effective manner are identified in the Comprehensive Plan. Goals set forth in the Comprehensive Plan specifically address improved access to public transit, pedestrian and bicycle facilities. The Build Alternative would be consistent with and help implement these goals by including new facilities for bikes and pedestrians. A shared use path would be constructed on one side of the road and provide connections to the Yelm-Tenino Trail and Longmire Park. In addition, pedestrian connections to the shared use path would be provided at intersections and new cul-de-sacs to promote walking and biking.

3.2.9 How Would the Build Alternative Affect Public Transit?

Intercity Transit provides service between Lacey and Yelm via Route 94. This bus uses SR 507 and SR 510 to provide service to Southworth Elementary School, Yelm Middle and High Schools, and downtown Yelm. The Build Alternative would be designed to accommodate buses. However, existing bus service to Yelm is focused on providing access to the ridership generators in downtown on Yelm Avenue and route changes are not currently anticipated by Intercity Transit.

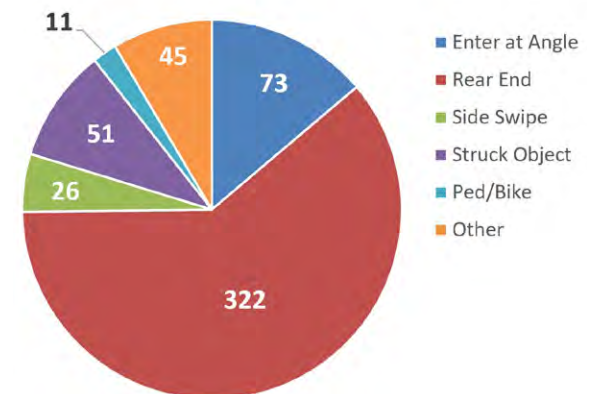
Yelm's Comprehensive Plan identifies the need for a community transit transfer site and expansion of transit service within Yelm. The Build Alternative would provide an opportunity for future alternate routes for regionally destined transit users if such service is offered in the future.

3.2.10 Would the Build Alternative Improve Safety?

A review of previously collected crash data was conducted to determine the general type of crashes currently experienced in the City. This data was provided by WSDOT and covered a five-year period (2013-2017). The crashes on Yelm Avenue within the City limits were isolated and reviewed (see Figure 3.2-5) to evaluate the types of incidents that have occurred. A total of 520 crashes occurred over that period, of which 322 (approximately 61%) involved rear-end collisions. An additional 14% were classified as entering at an angle, which occurs when a vehicle attempting to enter the primary travel way from a minor street approach is involved in a crash.

The data shows that the majority of crashes, approximately 66%, were types associated with congestion, including rear-end and sideswipe collisions. As traffic volumes along Yelm Avenue are expected to be reduced with the completion of Yelm Loop and as no geometric changes along that road are proposed,

Figure 3.2-5 Number of Crashes on Yelm Avenue (2013–2017)



it is anticipated that congestion-related crashes will also be reduced. As these two factors are primary influencers in the safety analysis, it is reasonable to assume that safety along Yelm Avenue will be as good or better than previously experienced.

As the proposed Yelm Loop has not yet been constructed, no safety data is available and safety analysis has not been conducted.

3.2.11 How Would Construction Traffic Impacts Be Addressed?

Because the Build Alternative would be constructed primarily through currently undeveloped right of way, local traffic interruptions would be minimal during construction. Yelm Avenue would be unaffected by construction, except at 170th Street where a new multilane roundabout would be constructed. As existing roads are converted to cul-de-sacs, traffic would be required to use new routes to connect to the local road network. Lane or roadway closures would be minimized and scheduled to occur when there would be the least effect on traffic in the corridor.

Construction vehicles would carry materials to and from construction sites. As such, construction vehicles could add to traffic delay and volume in the study area during the construction period. The delays would occur on Yelm Avenue and arterials identified as haul routes. The exact haul routes and quantity of construction vehicles would not be known until the construction contract is underway; however, most construction vehicles would use SR 510 and SR 507 to bring material to and from the area.

Construction activities may also limit pedestrian and bicyclist movements on local roadways. Safe routes for nonmotorized users would be maintained to the extent possible, with specified detours when needed.

3.2.12 Would the Build Alternative Create Unavoidable Adverse Transportation Impacts?

Reduction of congestion on Yelm Avenue and improved regional traffic mobility would enhance the transportation network in Yelm. Some local residents would experience longer drives to connect to the road network due to the installation of cul-de-sacs on four existing road connections. The longest increase in travel time would be less than two minutes by vehicle. No adverse impacts to transportation would occur as a result of the Build Alternative.

Reasonable efforts would be made to ensure that traffic flow is maintained, and access revisions are minimized, during construction. Affected residences and businesses would be notified of construction activities in advance, and traveler messages would be deployed during construction of the Build Alternative to alert traffic on SR 510 of any changes to travel lanes such as closures or detours.

3.3 AIR QUALITY

The Clean Air Act establishes conformity requirements for metropolitan transportation plans (MTPs), transportation improvement programs (TIPs), and transportation projects. In Thurston County, The Olympic Region Clean Air Agency (ORCAA), the Washington State Department of Ecology (Ecology), and the Environmental Protection Agency (EPA) regulate air pollutants. The EPA designates regions as being in “attainment” or “nonattainment” with respect to National Ambient Air Quality Standards (NAAQS) for certain pollutants. An attainment area is one in which air quality conditions meet the NAAQS. A non-attainment area is one in which air quality conditions exceed the NAAQS.

Roadway projects have the potential to affect air quality by changing traffic volumes and/or vehicle operating characteristics at specific locations. The air quality impacts of roadway projects range from intensifying existing air pollution problems to improving ambient air quality.

What Is a Maintenance Area?

An area that has a history of not meeting air quality standards for a particular pollutant, but that currently meets the standard and has a plan in place to ensure continued conformity to the standards.

In the 1980s, air quality in the urbanized part of Thurston County exceeded the EPA 24-hour standard for particulate matter of ten microns or less (PM₁₀) and was classified as a non-attainment area. Regulations were put in place to reduce this pollutant, and over time levels came back into compliance with the NAAQS. In 2000, Thurston County was designated as an air quality maintenance area for PM₁₀.

3.3.1 What Are the Primary Air Quality Pollutants of Concern?

Motor vehicles are one of the major contributors of air pollutants nationwide. Vehicle-associated pollutants include:

- » **Carbon Monoxide (CO)** – The common sources for CO emissions are mobile (autos, trucks, buses), wood stoves, open burning, and industrial combustion

Who Regulates Air Quality?

The EPA, Ecology, and ORCAA all regulate air quality. The EPA sets air quality standards, which are found in the NAAQS, and has oversight authority over Ecology. ORCAA has local authority for the regulation and permitting of stationary sources and construction emissions. Ecology regulates mobile sources such as cars and trucks.

sources. The Build Alternative is in an area that meets air quality standards for CO, so no conformity determination is required.

- » **Hydrocarbons (HC) and Nitrogen Oxides (NO_x)** – These pollutants can combine in a complex series of reactions triggered by sunlight to produce ozone and nitrogen dioxide (NO₂). Because these reactions take place over a period of several hours, maximum concentrations are often found far downwind of the original source. The Build Alternative is in an area that meets air quality standards for these pollutants, and therefore no conformity determination is required.
- » **Ozone (O₃)** – Ozone is a byproduct of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) reacting in the presence of sunlight and in stagnant air. The EPA standard for ozone is 0.075. Between 2015 and 2017 the Thurston County average was 0.068 and therefore the Build Alternative is in compliance for O₃.
- » **Particulates (PM_{2.5})** – Particles suspended in the air with a diameter of less than 2.5 micrometers are called PM_{2.5}. The Build Alternative is located in a PM_{2.5} attainment area.
- » **Particulates (PM₁₀)** – Particles suspended in the air with a diameter of greater than 10 micrometers are called PM₁₀. The Build Alternative is located within a PM₁₀ maintenance area.
- » **Mobile Source Air Toxics (MSATs)** – In the 2007 report, Control of Hazardous Air Pollutants from Mobile Sources, EPA identified seven compounds with significant contributions from mobile sources: acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter.

3.3.2 Would the Build Alternative Impact Air Quality?

The Yelm area of Thurston County is in compliance with standards for CO, HC, NO_x, O₃, and PM_{2.5} and PM₁₀, so no analysis is required for these pollutants. The pollutants of concern are MSATs, which are described further below.

MSATs

The Build Alternative it is anticipated to carry approximately 18,000 to 20,000 average daily traffic, well below the volume of traffic requiring a quantitative MSAT analysis (<140,000 AADT). The amount of MSAT emitted would be proportional to the vehicle miles traveled (VMT). The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative because it attracts rerouted trips from elsewhere in the transportation network as shown in Table 3.3-1. This increase in VMT would lead to higher MSAT emissions for the Build Alternative along the

Table 3.3-1 Vehicle Miles Traveled (VMT) in the Study Area

Roadway Section	Miles	2023		2043	
		No Build	Build	No Build	Build
SR 510 (Between SR 510 Spur and 1st Street)	2.16	41,688	39,744	48,924	46,872
SR 507 (Between 1st Street and Old McKenna Road)	1.74	39,585	38,280	46,719	45,066
SR 510 Spur	1.15	8,625	14,720	10,120	18,860
Total	5.05	89,898	92,744	105,763	110,798

highway corridor, along with a corresponding decrease in MSAT emissions on Yelm Avenue. The emissions increase is likely offset somewhat by lower MSAT emission rates due to increased speeds; according to the EPA's MOVES2014 model, emissions of all the priority MSAT compounds decrease as speed increases. Because the estimated VMT for the Build Alternative is a small increase over the No Build Alternative, it is expected there would be no appreciable difference in overall MSAT emissions. Additionally, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050². The magnitude of the EPA projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in nearly all cases. Over time and on a regional basis, substantial reductions in region wide MSAT levels in comparison with today are expected as a result of EPA's vehicle and fuel regulations, coupled with fleet turnover³.

3.3.3 What Mitigation Measures Are Proposed for Air Quality Effects?

Construction impacts would be minimized by incorporating mitigation measures into the construction specifications for the project. Fugitive dust and other potential air quality effects would be managed through the following types of actions where warranted by site conditions:

² Updated Interim Guidance Update on Mobile Sourced Air Toxic Analysis in NEPA Documents (FHWA, 2014)

³ Ibid

- » Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris
- » Spray exposed soil with water or other dust suppressant. Use only allowed dust suppressants
- » Plant vegetative cover as soon as possible after grading
- » Minimize dust emissions during transport of excavated or fill materials by wetting loads or by ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks
- » Promptly clean up spills of transported material on public roads
- » Restrict traffic onsite to reduce soil upheaval and the tracking of material onto roadways
- » Construct quarry spall aprons or wheel washes where trucks enter public roads to remove particulate matter from vehicles before it is carried offsite
- » Locate construction equipment and staging areas away from sensitive receptors as practical and in consideration of potential effects on other resources
- » Develop streamlined staging/work zone areas to minimize construction equipment back-ups and idling
- » Minimize hours of operation near sensitive receptor areas
- » Educate vehicle operators to shut off equipment when not in active use to reduce idling

3.3.4 Would the Build Alternative Impact Air Quality?

The Build Alternative would have no significant adverse effects associated with air quality. The Thurston Regional Planning Council (TRPC) must include regionally significant projects in non-attainment and maintenance areas in their approved MTP and federally approved TIP (40 CFR Part 93.114). The Build Alternative is included in TRPC's latest version of the MTIP and TIP.

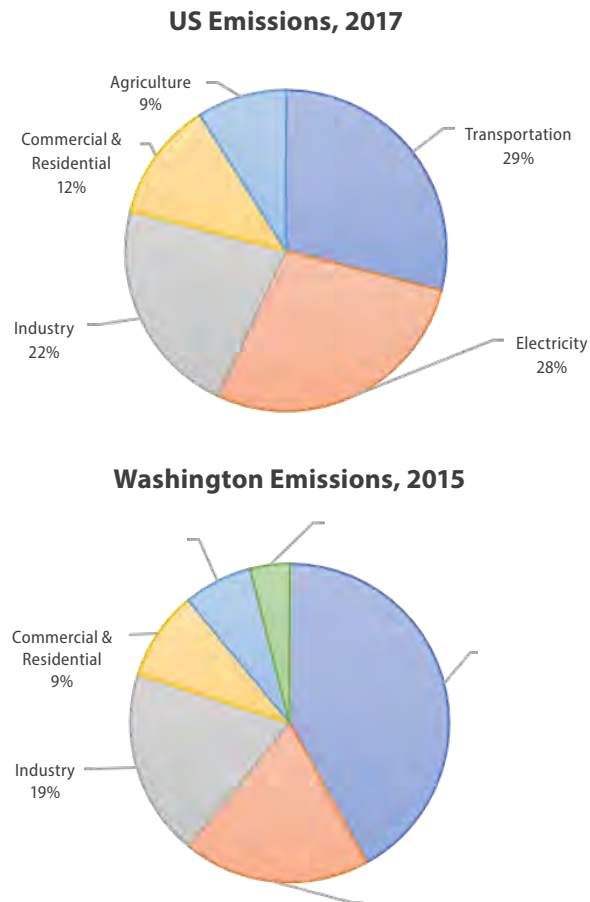
3.3.5 Would the Build Alternative Affect Greenhouse Gas Emissions?

Greenhouse gases (GHG) associated with transportation include carbon dioxide (CO₂), methane, and nitrous oxide. Any process that burns fossil fuel releases CO₂ into the air. Carbon dioxide makes up the bulk of the emissions from transportation. Vehicles are a significant source of GHG emissions and contribute to global warming. National estimates show that the transportation sector

(including on-road vehicles, construction activities, airplanes, and boats) accounts for almost 30 percent of total domestic CO₂ emissions. In Washington State, transportation accounts for over 40 percent of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total GHG emissions in Washington are fossil fuel combustion in the residential, commercial, and industrial sectors.

Figure 3.3-1 shows the gross GHG emissions by sector, nationally⁴ and for Washington State⁵. WSDOT works in partnership with numerous organizations to implement projects that reduce transportation greenhouse gas emissions across the state. Many of these actions reduce emissions, such as providing active transportation alternatives (including bicycle and pedestrian facilities); improving highway system efficiency; or improving access to alternative fuels.

Figure 3.3-1 GHG Emissions by Sector, National (2017) and Washington State (2015)



4 "Inventory of U.S. Greenhouse Gas Emissions and Sinks," US Environmental Protection Agency, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

5 "Washington State Greenhouse Gas Emissions Inventory: 1990-2015 Report to the Legislature," Publication 18-02-043, Washington State Department of Ecology, December 2018

Greenhouse gases are under the jurisdiction of the EPA. The annual CO₂ emissions (in millions of metric tons) recorded in 2014 for Washington State is 97.4; the CO₂ emissions per capita (in metric tons) is 10.40.

Washington's current targets are to:

- » Reduce overall GHG emissions to 1990 levels by 2020.
- » Reduce overall GHG emissions 25 percent below 1990 levels by 2035.
- » Reduce overall GHG emissions 50 percent below 1990 levels by 2050.

What Is WSDOT's Approach to Addressing Climate Change for Each Individual Project?

GHG emissions from a single project action are usually very small. However, overall, users of the transportation system contribute close to half of the state's GHG emissions (see Figure 3.3-1). WSDOT believes that transportation GHG emissions are better addressed at the regional, state, or transportation systems level where multiple projects can be analyzed in the aggregate. Most existing regional or statewide plans do not yet provide the necessary emissions analysis to put the proposed Build Alternative into a larger context.

What Effects Would the Build Alternative Have on GHG Emissions?

State and federal investments in transportation projects are made to improve the multimodal transportation network, and to address expected future needs associated with growing travel demand. In general, project-level actions that can help reduce greenhouse gas emissions include:

- » Reducing stop-and-go conditions
- » Improving roadway speeds to a moderate level
- » Improving intersection traffic flow to reduce idling
- » Creating more safe and efficient freight movement
- » Expanding transit and active transportation options for travelers
- » Increasing the reliability of transit travel times
- » Increasing vegetation density over pre-project conditions to sequester carbon

The Build Alternative would improve traffic operations at study area intersections within the City of Yelm, thereby reducing traffic congestion and the rate of expected collisions. By reducing chronic traffic congestion vehicles would be able to operate at consistent and moderate speeds where they run most efficiently. Fewer collisions would lead to reductions in periodic traffic congestion, thereby also reducing emissions.

3.4 NOISE

Traffic noise is the sound generated by motor vehicles moving on streets and highways. The relative loudness of noise (and all sound) is described in units called decibels (dB), a measure of sound pressure on a logarithmic scale. The human ear does not respond to all frequencies of sound or changes in noise levels equally. As a result, sound levels (measured in dB) are adjusted to better reflect how an average person hears. The adjusted sounds are called “A weighted levels” or dBA. The A-weighted decibel scale begins at zero and represents the threshold of human hearing. Typical sound levels begin as soft as normal breathing at 10 dBA which is barely audible. Normal conversation at a distance of 3 feet is typically about 60 dBA, and typical highway traffic is 70 dBA when heard from 50 feet away. Noise levels above 80 dBA are typically described as annoying. Perception of loudness varies from person to person, so there is no precise definition of loudness. In accordance with WSDOT’s *Environmental Manual*, noise sensitive receptors – like hospitals, schools, elderly housing, and other areas where occupants are more susceptible to the adverse effects of noise exposure – are considered.

3.4.1 How Are Traffic Noise Impacts Identified?

WSDOT has established criteria (consistent with FHWA guidance) for identifying when noise impacts occur and when abatement should be considered for highway projects. These Noise Abatement Criteria (NAC; see Table 3.4-1) are identified for various land use activity categories in WSDOT’s Traffic Noise Policy. Traffic noise impacts are defined as predicted noise levels that “approach” or “exceed” the NAC

for the neighboring land uses shown in the table below, or a substantial increase above existing noise levels.

WSDOT defines “approach” as 1 dBA below the NAC and a substantial increase as 10 dBA or more over existing noise levels, even if it does not approach the NAC. Therefore, residential impacts occur when outside noise levels reach 66 dBA L_{eq} and commercial impacts occur at 71 dBA L_{eq} .

What Is L_{eq} ?

Traffic noise is averaged over peak periods and expressed as an equivalent noise level (L_{eq}). Traffic noise conditions are generally described in terms of hourly average weighted noise levels in decibels, or L_{eq} dBA.

3.4.2 Has a Noise Analysis Been Performed for the Build Alternative and What Noise Standards Apply?

Noise impacts were analyzed as part of the Y2/Y3 EA (2000) and again in 2005 as part of the Y2/Y3 NEPA Reevaluation. The 2005 *Noise Impact & Mitigation Analysis (Noise Study)* updated modeled traffic volumes and utilized an updated traffic noise model which provided improved accuracy in predicting noise levels. WSDOT Noise Policy and Procedures have been updated since the 2005 *Noise Study* was completed. The changes most relevant to this project are the definition of what level of noise reduction a noise abatement wall must provide to be considered beneficial to nearby properties (3 dBA decrease required in 2003 vs 5 dBA decrease under current standards) and updates to the cost per square foot allowance for noise walls to qualify as feasible to account for inflation.

The *Noise Study* used a 2030 design year to project future noise levels. The design year for the Build Alternative has been updated to 2043 due to the passage of time since the SR 510 Spur was constructed. The 2030 traffic volumes used in the *Noise Study* are higher than those anticipated in the 2043 design year. The *Noise Study* used forecasted 2030 evening peak hour traffic volume of 2,650 vehicles. The design year for the Build Alternative is now 2043, and evening peak hour traffic is anticipated to be 2,100 vehicles. WSDOT procedures require new noise analysis

Table 3.4-1 Noise Abatement Criteria (NAC)

Land Use Category	L_{eq}	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance, preservation is essential for the area to serve its intended purpose
B	67	Exterior	Residential (single and multi-family units)
C	67	Exterior	Active sports areas, campgrounds, cemeteries, day cares, hospitals, libraries, schools, playgrounds, etc.
D	52	Interior	Auditoriums, day cares, hospitals, libraries, medical facilities, places of worship, schools, etc.
E	72	Exterior	Hotels, motels, offices, restaurants, developed lands not included in A-F
F	--	--	Agriculture, airports, industrial, maintenance facilities, retail, warehousing, etc.
G	--	--	Undeveloped land

if the design year for a project changes and there is an increase of 10 percent or more in traffic. No new noise analysis was conducted due to the anticipated lower traffic volumes than those used for noise modeling in 2005.

WSDOT policy establishes the “date of official public notification” of a proposed highway project. This date is called the “date of public knowledge” and is important because development that occurs adjacent to a proposed WSDOT road project after this date is not eligible for traffic noise abatement. WSDOT is responsible for considering noise impacts and evaluating abatement only for existing or new development (with an approved building permit) that is adjacent to a proposed project prior to the date of public knowledge. Development that occurs after this date is not required to be evaluated for noise impacts and is not eligible for WSDOT provided noise abatement.

WSDOT defines the date of public knowledge as the original date of approval of the initial National Environmental Policy Act (NEPA) Record of Decision (ROD), Finding of No Significant Impact (FONSI), or State Environmental Policy Act (SEPA) document for a transportation project. For this project, the date of public knowledge is the date the FONSI was published – February 1, 2000. After this date, provision of noise abatement became the responsibility of the local community or private developers.

3.4.3 Would Noise Levels Change as a Result of the Build Alternative?

The 2005 *Noise Study* modeled predicted peak hour noise levels compared to the NAC to determine if there would be future noise effects associated with the Build Alternative. Noise receivers and monitoring locations are shown in Figure 3.4-1. Existing noise levels were measured at 35 locations adjacent to the corridor and ranged from 50 to 64 dBA Leq. Under the No Build condition, no changes in noise would occur other than those associated with development within the surrounding area.

The *Noise Study* identified 24 residential properties that would exceed the WSDOT NAC following construction of the Build Alternative which included properties at 9 receivers: R19 through R21, R23 through R27, and R43. The receivers exceeding NAC are illustrated in Figure 3.4-2. All 24 properties would exceed the 10 dBA increase criteria. Four of the 24 affected residential properties also exceed the 66 dBA criteria (properties at receivers R23 and R24). Most of the affected properties are between Crystal Springs Street and Rhoton Road and are located both north and south of the proposed corridor. Two properties (at R43) were affected along Canal Road between Flume Road and 103rd Avenue.

3.4.4 Is Noise Mitigation Proposed?

WSDOT has established criteria for when noise walls can be included in transportation projects. Properties must have been developed prior to the date of public knowledge for consideration of noise mitigation. Once a location is considered eligible for consideration, the noise wall must meet reasonableness and feasibility criteria. If the wall is determined to be both reasonable and feasible, it can be built as part of a transportation project.

Noise mitigation was considered for residential structures in place or issued a building permit prior to the February 1, 2000 date of public knowledge. The View Royale neighborhood was in place prior to this date and thus qualifies for consideration of a noise wall. Construction of a 1,291-foot-long, 12-foot-high noise wall on the south side of the right of way between Crystal Springs Street and Rhoton Road would screen the adjacent properties from noise impacts associated with the Build Alternative. The wall would result in noise reduction levels of 4 to 10 dBA for 20 residential units. The cost of the wall was estimated at \$491,239 for a total cost per benefitted residence of \$24,561¹. Construction costs meet WSDOT’s established reasonableness criteria and it is therefore eligible to be constructed as part of the Build Alternative. The proposed location of this wall is shown in Figure 3.4-3.

Receiver R43 represents two residential properties located on Canal Road between Flume Road and 103rd Avenue. Noise levels at this location would increase from 51 dBA to 63 dBA with the Build Alternative. While this increase is over the 10 dBA WSDOT criterion for consideration of abatement, at 63 dBA it would remain below the NAC of 66 dBA. A noise barrier was considered in this location but the estimated cost exceeded \$100,000 per receiver, which does not meet the WSDOT reasonableness criteria².

Property owners must be involved when traffic noise abatement is recommended. Property owner opinion is considered when making a determination of reasonableness for noise walls. If more than 50 percent of eligible property owners adjacent to a proposed noise wall oppose the proposed noise abatement, it will not be included in the Build Alternative.

What are WSDOT’s Reasonable and Feasible Criteria for Noise Walls?

*To be considered **feasible**, a noise wall must be physically constructible and provide at least 5 dBA of noise level reduction at the majority of first row receivers. To be considered **reasonable**, construction costs must be equal to or less than the established allowed cost per square foot of the wall for each benefitted residence.*

¹ 2005 Noise Impact & Mitigation Analysis

² Ibid



Figure 3.4-1 Noise Receiver and Monitoring Locations



Figure 3.4-2 Noise Receivers Exceeding NAC

The Mountain Sunrise, Mountain Shadow, and Canal Estates neighborhoods, approved in 2005, 2007, and 2001 (April) respectively, were built adjacent to the right of way after the date of public knowledge. WSDOT policy as described above makes these neighborhoods ineligible for noise mitigation consideration as part of the project. As a note, the Mountain Sunrise and Mountain Shadow neighborhoods are in the vicinity of receivers R22, R30, and R35. None of these receivers exceeded the WSDOT NAC following construction of the Build Alternative in the noise study. Longmire Park was also constructed after the date of public knowledge and would not be eligible for mitigation consideration. Longmire Park is in the general vicinity of receiver R40 which did not exceed the WSDOT NAC in the noise study. Therefore, most construction that has occurred adjacent to the corridor after the date of public knowledge did not trigger noise mitigation consideration based on the receiver information in their general vicinity.

3.4.5 How Would Build Alternative Construction Affect Noise?

Construction of the Build Alternative would create temporary noise. Noise levels during construction would depend on the type, amount, and location of construction activities. The most constant noise source at construction sites is associated with internal combustion engines, generators, and compressors. Construction noise is exempt from noise limits during daytime hours, but noise limits apply to construction noise at night. At night, construction noise must meet the Washington State Department of Ecology property line regulations that set limits based on the Environmental Designation for Noise Abatement (EDNA) of the land use: residential (Class A), commercial (Class B), and industrial (Class C) (WAC 173-60-040).

3.4.6 How Would Construction Noise Be Addressed?

Roadway construction noise can be addressed through a combination of standard vehicle equipment such as mufflers on engines, managing time of construction operations, limiting idling time, and locating stationary equipment away from sensitive receivers. Contractors could also be required to minimize durations of equipment idling during periods of nonuse.

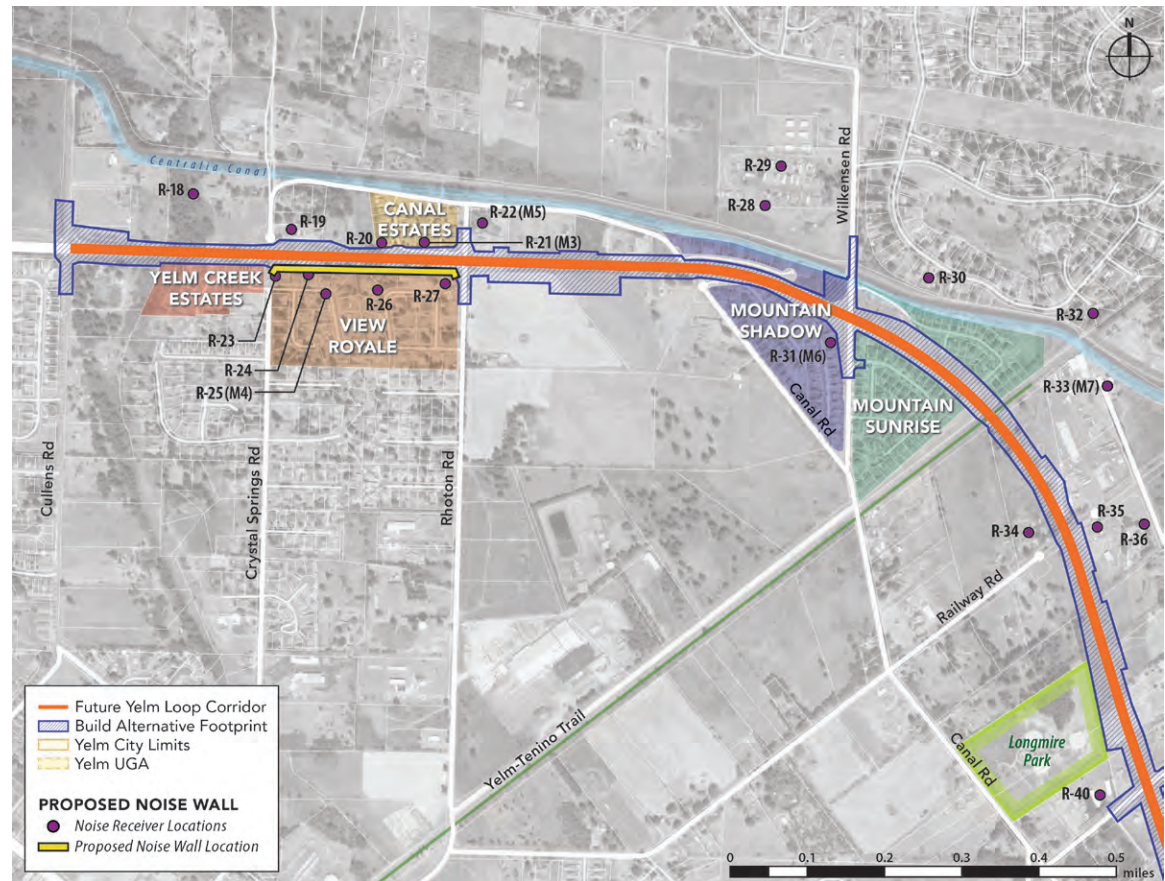


Figure 3.4-3 Proposed Noise Wall Location

3.4.7 Would the Build Alternative Cause Unavoidable Adverse Noise Impacts?

The 2005 *Noise Study* identified 24 total properties that would experience noise level increases resulting from the Build Alternative that exceed the NAC. A 1,291 foot long noise wall is proposed on the south side of the corridor that would benefit 20 properties in the View Royale neighborhood between Crystal Springs Street and Rhoton Road. Several properties located on the north side of the corridor in the Canal Estates would have noise levels increase from an existing 51 dBA to 63 dBA. These properties were constructed after the date of public knowledge and are therefore not eligible for noise mitigation.

3.5 WATER RESOURCES

Water is a beneficial resource essential to agriculture, industry, recreation, human, and ecological health. Water sources are typically subdivided into two types: surface water and groundwater. Surface water resources provide fish and wildlife habitat, support vegetation, and contribute to human health and quality of life. Groundwater resources serve as underground storage of fresh water that can be used for drinking, irrigation, and general water supply. Floodplains are related water resource areas where surface water inundates low-lying ground during a flood event; they also provide essential habitat for wildlife, filtering areas for improving water quality and ground water recharge, and protection against flooding and erosion. The effect of the Build Alternative on water resources is discussed in this section.

3.5.1 How Were Water Resource Impacts Evaluated?

Surface water, groundwater, and floodplains were analyzed using a study area defined specifically to evaluate the potential impacts to each resource. A *Water Resources Discipline Report* (Parametrix, 2019) was prepared in support of this analysis. The study area for each resource is described further below.

Surface Water

The Build Alternative is located within the Nisqually watershed. The study area for surface water encompasses the drainage sub-basins where the Build Alternative is located, and the immediate downstream receiving surface waters (see Figure 3.5-1).

Groundwater

The study area for groundwater encompasses the critical aquifer recharge areas, wellhead protection areas (WHPAs), and high groundwater areas within ½ mile of the Build Alternative footprint (see Figure 3.5-2).

Floodplains

The study area for floodplains was delineated based on the Special Flood Hazard Areas (SFHA) designated on FEMA's Flood Insurance Rate Maps (FIRMs). Floodplains

are cataloged by the adjacent local government boundaries and floodplain ordinances that intersect with the Build Alternative footprint (see Figure 3.5-3).

3.5.2 What Water Resources Currently Exist in the Study Area?

Water resources located in the study area include surface water (including streams and rivers), groundwater, and floodplains. These resources are described below.

Surface Water

The analysis of surface water resources considers water quality in natural water bodies, stormwater runoff, constructed drainage systems, and shorelines.

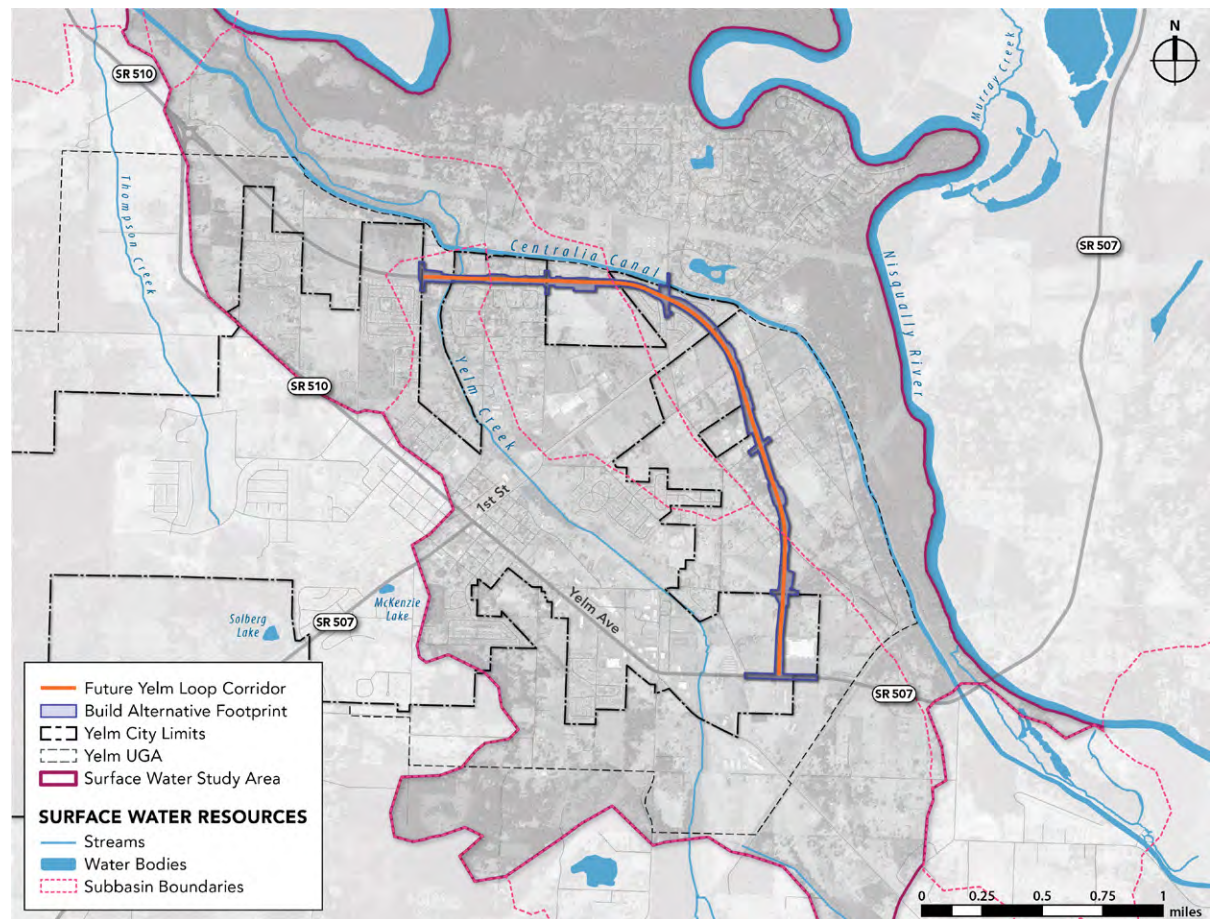


Figure 3.5-1 Surface Water Resources

Wetlands are surface water resources but addressed separately in the Wetlands section (Section 3.6) of this SEA.

The surface water resources located within the study area are shown on Figure 3.5-1 and include Yelm Creek and the Nisqually River. Yelm Creek is a small, intermittent tributary of the Nisqually River with a drainage area of about 30 square miles. The Nisqually River is the major water body in the watershed, with a tributary drainage area of approximately 1,600 square miles.

In general, the surface waterbodies in the study area are somewhat altered from their natural states as a result of residential, commercial, and industrial development and land uses. The soils in the area have high infiltration rates. The majority of runoff from roadways within the study area infiltrates on site in grass side slopes and ditches and does not discharge directly to any natural water bodies.

Groundwater

Sensitive groundwater resources are found in the vicinity of the Build Alternative, as shown in Figure 3.5-2. These resources include:

- » **Critical Aquifer Recharge Areas:** The entire Build Alternative footprint is located within a Category I critical aquifer recharge area, which is classified as having extreme sensitivity due to very rapid infiltration rates.
- » **Wellhead Protection Areas:** Most of the project alignment is located within a 5- or 10-year WHPA.
- » **High Groundwater Area:** A high groundwater hazard area is present near the south end of the Build Alternative footprint, near the proposed intersection of SR 510 and 103rd Avenue. Groundwater in this area is near the surface and limits infiltration.

Floodplains

Floodplains in the vicinity of the Build Alternative are associated with Yelm Creek. The Build Alternative would cross the floodway and 100-year (base flood)

floodplain as mapped by FEMA. Figure 3.5-3 depicts the floodplain resources identified within the vicinity of the Build Alternative.

3.5.3 How Was the Water Resources Analysis Conducted?

This analysis builds on previous analyses and incorporates updates to applicable regulations, summarizes relevant changes to project design, and evaluates potential impacts of the Build Alternative on water resources. In addition, guidance from the WSDOT *Environmental Manual* was used as a basis for this analysis.

The *Water Resources Discipline Report* presents information about existing water resources conditions based on site visits and data obtained from federal, state, and

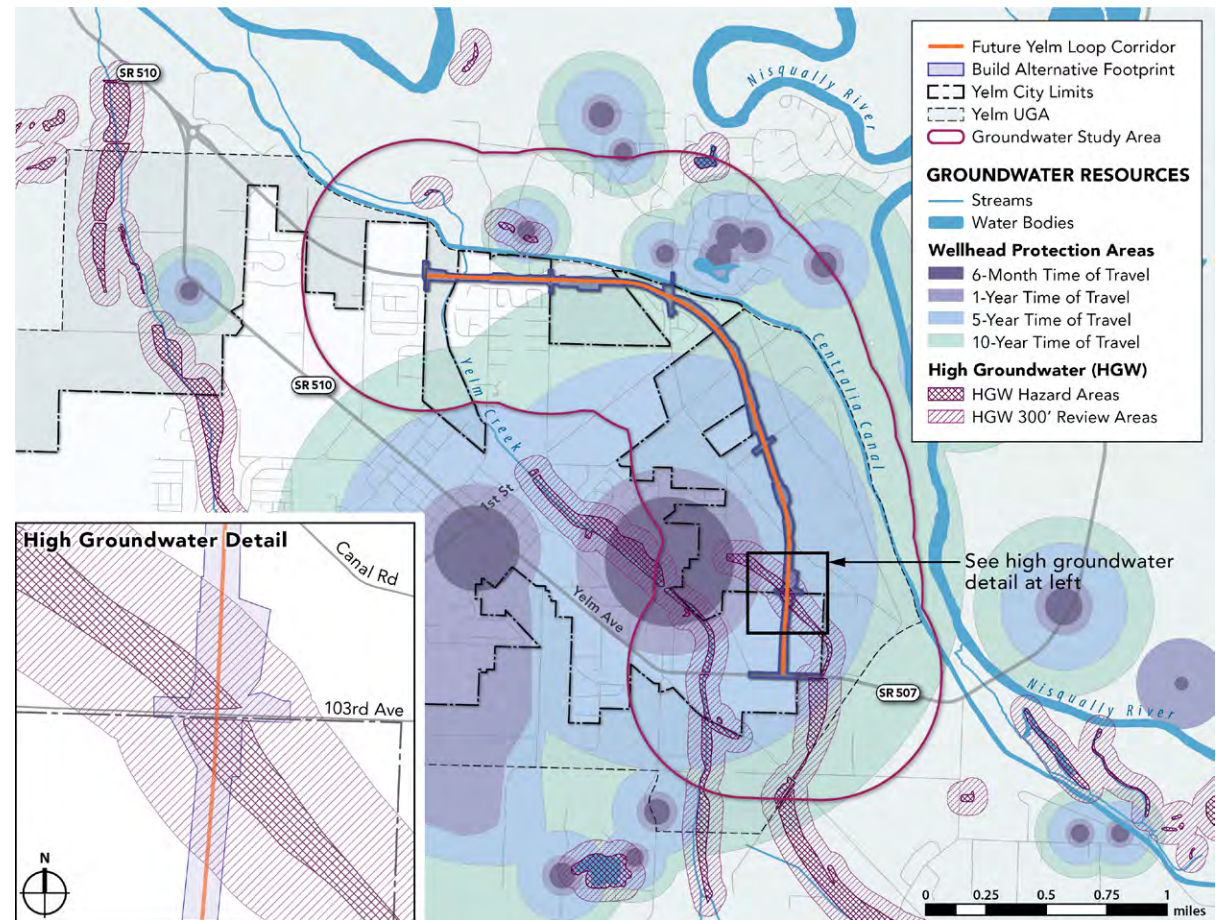


Figure 3.5-2 Groundwater Resources

local government agencies that administer and regulate water resources in the vicinity of the study area.

3.5.4 Would the No Build Alternative Impact Water Resources?

The No Build Alternative assumes that the Build Alternative would not be constructed, and therefore would not result in any modifications to surface water, groundwater, or floodplain resources.

3.5.5 Would the Build Alternative Impact Water Resources?

Under the Build Alternative, water quality of adjacent waterbodies could be temporarily affected by construction activities such as material staging, earthwork and grading, utility placement, and construction of roadway lanes, retaining wall, and other structures.

Surface Water

How Could Construction Activities Impact Surface Waters?

Surface waters may be temporarily impacted by construction activities occurring within or directly adjacent to waterbodies, which may increase turbidity and total suspended solids (TSS) levels by either directly depositing sediments within surface waters or by increasing the amount of erosion that would occur during storm events.

The Build Alternative is expected to add just over 11 acres of pollution-generating impervious surfaces (PGIS) as a result of the addition of new impervious roadway surfaces. Automotive-related pollutants, such as petroleum hydrocarbons and heavy metals, would deposit onto the roadway from daily traffic use. While PGIS would increase relative to existing conditions, both the existing and future PGIS would meet local, state, and federal regulations for stormwater treatment to enhance water quality.

How Could Operational Activities Impact Surface Waters?

Long-term and operational effects resulting from the Build Alternative may include increased runoff due to expansion of impervious areas or changes in infiltration capacity.

Existing stormwater facilities would be upgraded to meet the current standards, while most of the project footprint would have new stormwater facilities constructed. For those areas with existing pavement, water quality of the receiving surface waters would improve, as there would be treatment where currently none exists. The proposed project is not expected to adversely impact surface water resources.

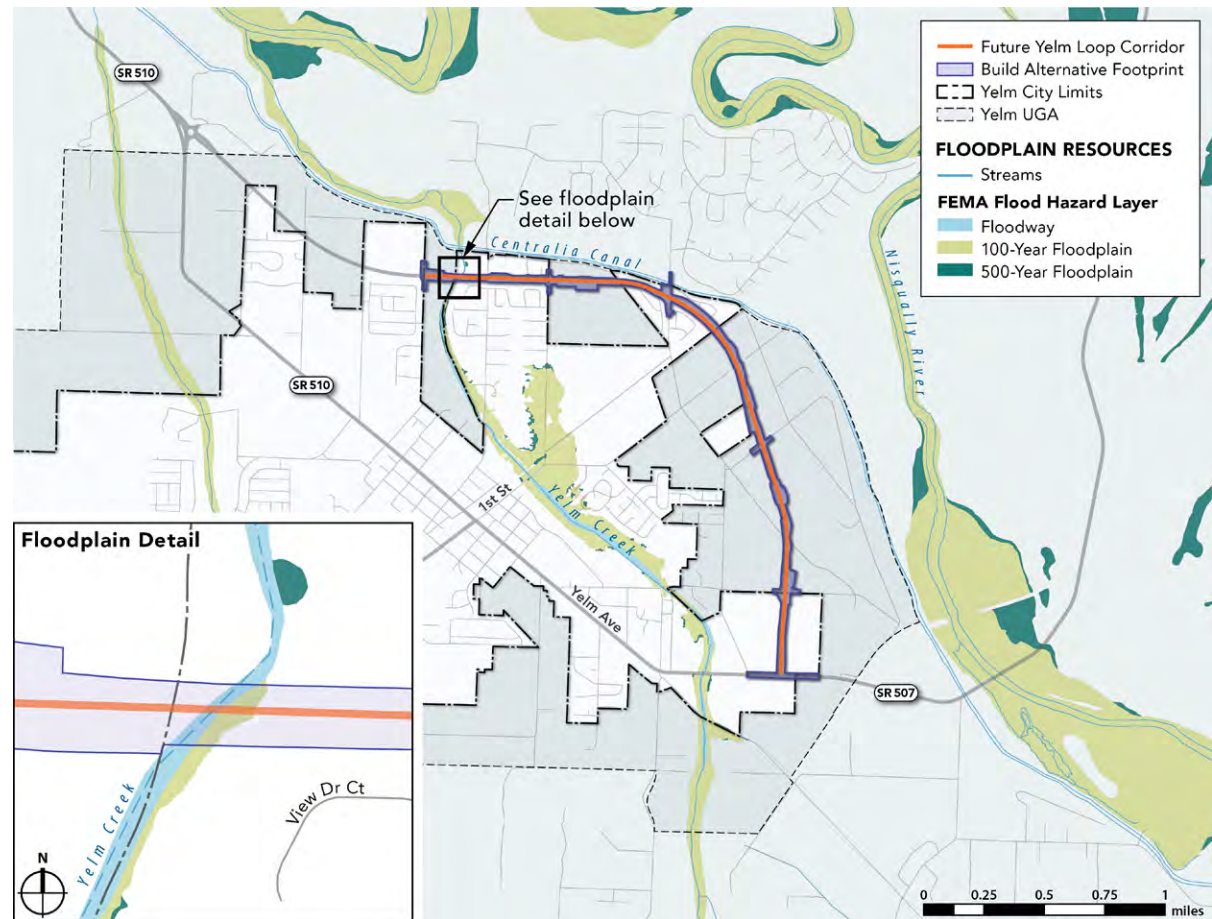


Figure 3.5-3 Floodplain Resources

Groundwater

How Could Construction and Operational Activities Impact Groundwater?

The Build Alternative footprint would be constructed through an identified high groundwater area near 103rd Avenue, as shown in Figure 3.5-2. Without proper treatment, contaminated stormwater runoff that infiltrates into the ground can impact groundwater quality. In addition, the entire project alignment is located in a Category I critical aquifer recharge area, and most of the project alignment is located within a 5- or 10-year wellhead protection area. Uncontrolled activities in the vicinity of the critical aquifer and wellhead protection area, such as spills of hazardous materials or excessive use of water-soluble fertilizers or pesticides, can contaminate groundwater.

Floodplains

How Could Construction and Operational Activities Impact Floodplains?

The Build Alternative's Yelm Creek crossing was assessed for risk of flow and flood elevation increases due to climate change. It is classified as a low to medium risk site, meaning it could experience operational impacts during future flood events. Design of the Build Alternative would incorporate considerations for the potential effects of climate change. The Build Alternative would not fill or otherwise alter areas within regulated floodplains and would design the bridge at Yelm Creek to fully span the channel, floodway, and floodplain; therefore, no long-term effects to floodplains in the study area are expected.

3.5.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

Construction Impact Mitigation

Construction impacts would be minimized through compliance with applicable requirements and implementation of surface water management and source-control best management practices (BMPs).

The Build Alternative would be required to use BMPs during construction and operation to minimize the quantity of pollutants reaching surface waters and groundwater. BMPs serve as mitigation measures by controlling pollution at the source or removing it before stormwater is discharged. All stormwater facilities designed for the project must adhere to the standards set forth in WSDOT's *Highway Runoff Manual* and Ecology's *Stormwater Management Manual for Western Washington*.

Stormwater design would include enhanced runoff treatment BMPs for all new and replaced pollution-generating surfaces created by the project before stormwater flows to infiltration facilities. Through the implementation of BMPs prior to infiltration, in addition to standard spill prevention standards and accommodation

for flow control and base flood connectivity in the high groundwater hazard area, the proposed project is not expected to adversely affect any groundwater resources.

Construction-related impacts on water resources would be prevented or minimized by complying with the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit, which requires the development of a Stormwater Pollution Prevention Plan (SWPPP) to serve as the overall construction stormwater mitigation plan. The SWPPP would include a Spill Prevention, Control, and Countermeasures (SPCC) plan and Temporary Erosion and Sediment Control (TESC) measures, and would be developed in compliance with WSDOT's *Temporary Erosion and Sediment Control Manual*. The SWPPP is required to be implemented throughout construction as part of the NPDES Construction Stormwater General Permit compliance. These plans and permits regulate construction activities on land and in the water to prevent or reduce temporary degradation of water quality or impacts to aquatic organisms from construction activities.

Long-Term Impact Mitigation

In the post-project condition, flow control would be provided for all runoff from impervious surface created or replaced by the Build Alternative. Water quality treatment would be provided for all Build Alternative pollution-generating surfaces prior to infiltration or discharge to protect groundwater quality.

The increase in impervious surfaces and associated runoff would be mitigated by implementing the stormwater management controls required by the *Highway Runoff Manual*. The Build Alternative would be required to maintain existing drainage patterns to existing waterbodies to minimize impacts downstream. In most cases, the runoff would be directed to new infiltration facilities constructed by the project. In the area of known high groundwater near 103rd Avenue, the flows would be managed through infiltration facilities meeting the performance standards of YMC 18.21.070G using the base flood elevation established in the construction plans submitted for Phase 1 of Yelm Loop in 2008.

The Build Alternative design would be developed in consideration of the projected climate-related flow increase in Yelm Creek, and the design of the bridge structure crossing the creek would be sized accordingly.

3.5.7 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

Risks to surface water and groundwater posed by construction of the Build Alternative can be avoided through design and controlled using BMPs. Therefore, no unavoidable direct or indirect adverse effects to these resources are expected.

3.6 WETLANDS

Wetlands improve water quality in streams, rivers, and lakes by filtering pollutants; protect neighboring areas by retaining flood waters; often recharge groundwater; and provide other important ecological functions. Wetlands provide fish and wildlife habitat, and they often host a wider variety of plant and animal species compared to other land types.

3.6.1 What Methods, Assumptions, and Resources Were Considered in the Evaluation of Wetlands?

Wetlands within the Build Alternative right-of-way were delineated in the field. Offsite wetlands beyond the Build Alternative footprint were visually estimated; any wetlands beyond the Build Alternative footprint would not be directly impacted by the project. The wetland and stream assessment focused on three areas in the Build Alternative corridor which were previously identified as having potential wetlands and streams:

- » **Study Sub-Area 1:** Yelm Creek's intersection with the right-of-way; this area includes approximately 1.4 acres of potential wetlands
- » **Study Sub-Area 2:** A depressional area fully within the project right-of-way east of NW Crystal Springs Road, west of Rhoton Road SE, and south of Canal Road SE
- » **Study Sub-Area 3:** A depressional area with mapped wetlands on the National Wetlands Inventory (NWI) IFGDC 2013) at the intersection of NE 103rd Avenue and 170th Street SE

The overall wetlands study area and sub-areas are shown in Figure 3.6-1. No wetlands were identified in sub-areas 2 and 3, and therefore the following discussion focuses on sub-area 1.

How Were Wetlands in the Study Area Identified?

A *Wetland Assessment Report* (WSDOT 2018) describing the wetlands present within the study area was completed in December 2018. Wetlands delineation fieldwork was completed in September and November 2018 to identify aquatic areas protected under local, state, and federal regulations. Wetlands in the study area were originally mapped as part of the previous EA efforts in 2000 and 2005, details of which can be found in the *Y2/Y3 NEPA Reevaluation* (2008). Prior data collection was reviewed and compared to

vegetation and soil conditions to verify wetland boundaries and conditions have not changed since 2008, confirm no additional wetlands are present in the study area, and evaluate potential impacts of the proposed project footprint on wetlands. Additional information on the 2018 delineation effort, including methodology and data sources, can be found in the 2018 *Wetland Assessment Report*.

3.6.2 How is the Value of Wetlands Measured?

Delineated wetlands were classified according to the *USFWS Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee [FGDC] 2013; Cowardin et al. 1979) and hydrogeomorphic (HGM) approach (Brinson 1993). Wetlands were rated using the standards adopted in the Yelm Municipal Code (YMC 18.21.060; City of Yelm 2018) and the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014). Wetland functions were assessed using the *Wetland Functions Characterization Tool for Linear Projects* (Null et al. 2000).

3.6.3 What Wetlands and Other Waters Currently Exist in the Study Area?

The *Wetland Assessment Report* identified one wetland (Wetland A) and one stream (Yelm Creek) within sub-area 1. Wetland A and Yelm Creek are depicted in Figure 3.6-2.

Wetlands

Wetland A is a Category II riverine/slope wetland based on the City of Yelm and Ecology's standards. Wetland A receives seasonal flows associated with Yelm Creek and additional hydrologic inputs from seasonal groundwater upslope. The wetland outlets to Yelm Creek, and the boundary extends beyond the study area to the south. Table 3.6-1 summarizes the delineated wetland and associated buffer within the study area.

Table 3.6-1 Wetlands in the Study Area

Wetland ID	Wetland Classification			Wetland Size		Jurisdiction	Buffer Width
	USFWS ^a	Hydrogeomorphic ^b	Ecology ^c	Sq. Ft.	Acres		
A	PSS/PEM	Slope and Riverine	II	11,760	0.27	City of Yelm	150 feet

^a FGDC 2013; Cowardin et al. 1979. PSS = Palustrine Scrub-Shrub; PEM = Palustrine Emergent

^b Brinson 1993

^c Hruby 2014

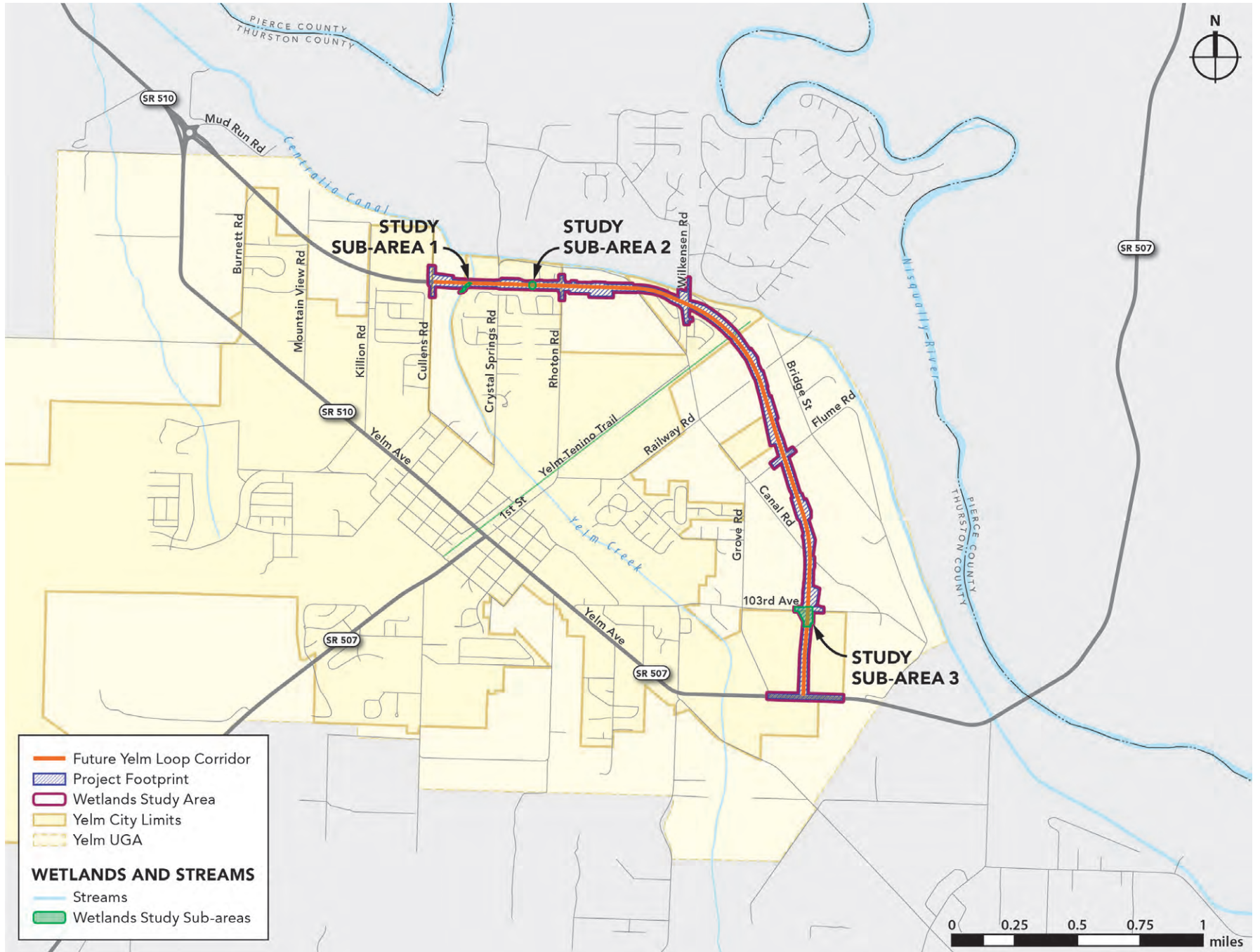


Figure 3.6-1 Wetlands Study Area and Sub-Areas

Streams

Yelm Creek originates from a spring south of Yelm and flows into the Nisqually River north of Yelm. Yelm Creek is documented as a perennial stream; however, sections of the stream flow subsurface during parts of the year, making some stream reaches, including the section crossing the project, seasonal. The creek is designated by Ecology as a fish bearing stream (Type F), and has documented resident cutthroat, sculpin, stickleback (WDFW 2003), winter coho, and steelhead trout (WDFW 2018). The ordinary high water line (OHWL) of Yelm Creek was identified in the *Vegetation, Fish, and Wildlife Discipline Report (VFW Discipline Report, Parametrix 2019)* and is shown in Figure 3.6-2. Table 3.6-2 summarizes Yelm Creek and its associated buffer within the study area.

Buffers

Buffer and riparian vegetation is generally intact adjacent to Yelm Creek and Wetland A, with an oak woodland (WDFW Priority Habitat) bordering the creek. Based on the City of Yelm's Critical Areas and Resource Lands ordinance (Yelm Municipal Code section 18.21), a buffer width of 150 feet is required for the wetland and Yelm Creek (see Figure 3.6-2).

3.6.4 Would the No Build Alternative Impact Wetlands?

No construction would occur with the No Build Alternative so it would not affect wetlands, streams, or buffers.

3.6.5 Would the Build Alternative Impact Wetlands?

The Build Alternative footprint was designed to minimize impacts to wetlands and their buffers. According to the 2019 *VFW Discipline Report*, the Build Alternative would result in unavoidable permanent and temporary impacts to Yelm Creek, Wetland A, and their buffers due to the construction of the proposed bridge crossing of Yelm Creek. The bridge would cast shade and intercept precipitation, modifying the composition of plant communities and reducing the vigor of plants growing beneath the structure. The approximate bridge footprint over Yelm Creek and Wetland A is shown in Figure 3.6-3. The permanent and temporary impacts are discussed below.

Temporary Impacts

Short-term, temporary impacts are those that can be restored over time and would not result in a permanent change or alteration of the wetlands or associated

Table 3.6-2 Yelm Creek and Buffer

Stream Name	DNR Water Type ^a	City of Yelm ^b Buffer Width
Yelm Creek	Type F	150 feet

^a DNR Water Types: Type F – fish bearing (WDNR 2018a). Water Type derived from personal communication (2018).

^b City of Yelm buffers applied (City of Yelm 2018).

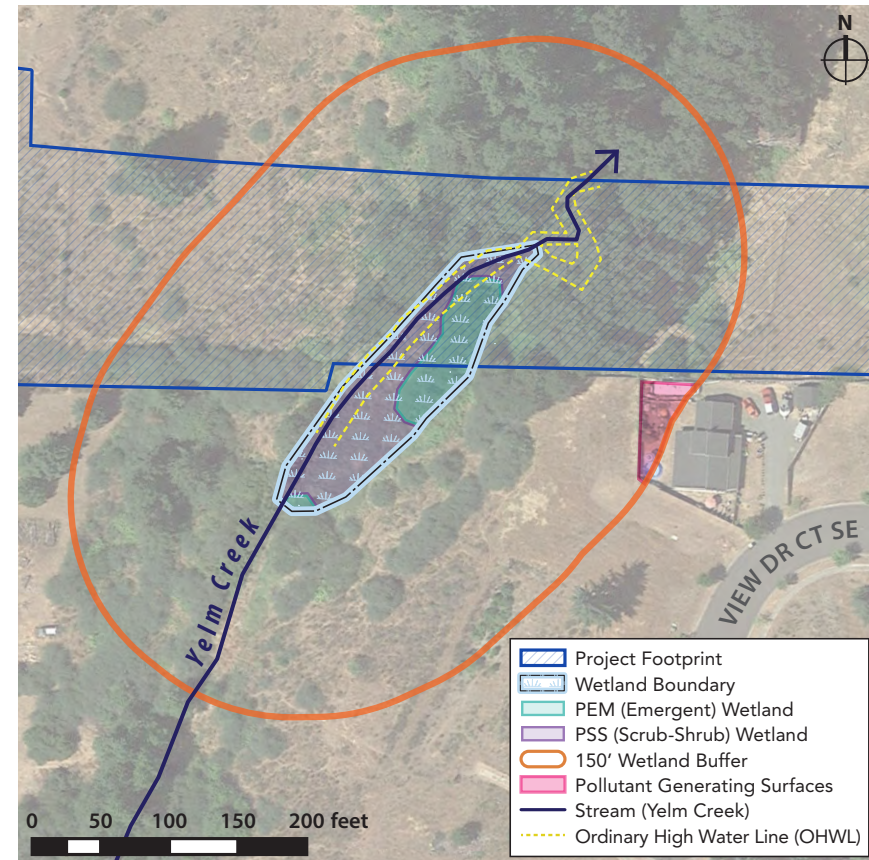


Figure 3.6-2 Wetland A and Yelm Creek Detail

buffers. Short-term impacts last for a finite period of time and the impacted wetland function generally returns. Examples of temporary impacts include vegetation removal or temporary fill or excavation associated with construction of support structures located within the wetland.

Temporary impacts of the Build Alternative are shown in Table 3.6-3. There would be a total of 0.71 acres of temporary impacts to Wetland A and its buffer, which contain a variety of land cover types including scrub-shrub and emergent wetlands vegetation, riparian forest, and oak woodlands. Within the Wetland A buffer, vegetation affected by temporary impacts consists primarily of high-quality native forested habitats, composed of Douglas-fir, Oregon white oak, black cottonwood, Oregon ash, and native shrub and herbaceous understory. These buffer conditions provide high-quality wildlife habitat, as well as hydrologic and water quality functions that protect the wetland from stormwater surges, erosion, and pollution from overland runoff. Due to the forested nature of the buffers, it will take time to replace the structural and functional elements.

Permanent Impacts

There would be no placement of fill in wetlands or stream channels. Bridge supports would be constructed outside of the stream OHWL and wetlands.

The Build Alternative would permanently impact 0.11 acres of Wetland A, resulting from permanent shading and post-construction vegetation management. The Build Alternative would result in 0.06 acres of permanent impact to riparian forest and 0.43 acres of permanent impact to oak woodlands adjacent to Yelm Creek in the Wetland A buffer (see Figure 3.6-3). These buffer conditions provide high-quality wildlife habitat and provide hydrologic and water quality functions that protect the wetland from stormwater surges, erosion, and pollution from overland runoff.

Table 3.6-3 summarizes permanent and temporary impacts to Wetland A and its buffer.

3.6.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

The Build Alternative would impact wetlands and wetland buffers within Thurston County and the City of Yelm. Although impacts to the stream and wetland could not be avoided due to the shading from the bridge, the Build Alternative was designed to minimize these impacts.

Temporary impacts to wetlands would be rectified by replanting with suitable native vegetation. Shade impacts to wetlands would be partially mitigated by planting shade-tolerant wetland species. The City of Yelm will make the determination of mitigation requirements for shading, if necessary. No temporary or permanent fill of wetlands is anticipated. Temporarily affected wetland buffers would be restored. If the construction of a bridge over Yelm Creek and the associated stream and wetland buffers triggers mitigation requirements,

Table 3.6-3 Permanent and Temporary Impacts to Land Cover in Wetland A and Buffer

Habitat Type	Permanent Conversion to Paved/ Built Surfaces (acres)	Permanent Conversion to Other Vegetation Types (acres)	Temporary Impacts ^a (acres)
Oak Woodlands	0.29	0.14	0.68
Riparian Forest (wetland buffer)	< 0.01	0.06	0.01
Wetlands (scrub-shrub and emergent)	0.00	0.11 ^b	0.02
Total	0.30	0.31	0.71

^a Approximately 2.27 acres of grassland habitat would be converted to stormwater facilities, retaining many of the structural and functional characteristics of the existing vegetation cover. As such, these areas are included in the calculation of temporary impacts to grasslands.

^b Impacts to the wetland habitat type would result from shading and vegetation management at the Yelm Creek bridge.



Figure 3.6-3 Build Alternative Impacts to Wetland A Vegetation

mitigation would be implemented in accordance with applicable state and local requirements. At this time, it is assumed that mitigation, if required, would consist of planting native trees and shrubs along Yelm Creek south of the proposed new bridge.

Generally, the Build Alternative would avoid and minimize impacts to listed species given the following efforts:

- » Impacts to wetlands have been avoided and minimized during development of the proposed Build Alternative, including wetlands potentially containing listed fish species.
- » Upland and riparian vegetation removal would be limited to the minimum necessary to construct the Build Alternative, and areas to be protected will be clearly identified. The stumps of any trees removed from the Yelm Creek riparian zone would be retained on site.
- » The Build Alternative would implement a project specific SWPPP and TESC plan during construction to manage all disturbed soils and minimize their potential for reaching sensitive waterbodies.
- » No equipment would be allowed to operate below the OHWL of waters that have a surface connection to fish-bearing waters.
- » Management of stormwater runoff from the completed project would avoid altering hydrology or reducing water quality in any waterbodies directly or indirectly connected to the Build Alternative footprint.
- » The Build Alternative would be constructed in accordance with regulatory permits, including the Hydraulic Project Approval issued by the Washington Department of Fish and Wildlife (WDFW) for the Yelm Creek Bridge.
- » No wetland fill would result from the project. The amount of Build Alternative-related wetland shading is unlikely to limit salmonid rearing or overwintering habitat. The project is expected to have no effect on the flood-storage capacity of Yelm Creek and would not adversely affect peak or base flows.

Mitigation for Wetland and Riparian Buffer Impacts

The proposed mitigation for wetland and riparian buffer impacts would occur, resulting in no net loss of wetland and stream structure or function.

The dominant vegetation in Wetland A is a near monoculture of reed canary grass. The proposal would likely include the removal of reed canary grass within the wetland study area and replanting of native species. Many native habitats found under or adjacent to bridges are adapted to periods of low-light conditions, and especially those plant species commonly found in the understory. Most wetland vegetation communities are highly tolerant of the dynamic hydrology that bridge structures span. Additionally, some native wetland vegetation communities can passively re-establish in areas that may be identified as permanent impacts.

The proposed plant community for the wetland and riparian buffer re-establishment and enhancement areas would meet the City of Yelm's code requirements.

3.6.7 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

Impacts to wetlands can be avoided and minimized through design; where unavoidable, they can be mitigated through replanting and enhancement efforts. Therefore, no unavoidable direct or indirect adverse effects to wetlands are expected.

3.7 VEGETATION, FISH, AND WILDLIFE

NEPA requires the evaluation of project-related impact on the environment, which includes vegetation, fish, and wildlife. The federal Endangered Species Act of 1973 (ESA) provides programs for the conservation of those species and the prevention of extinction of plants and animals.

Any project using federal funds, occurring on federal lands or obtaining a federal permit must adhere to the requirements of the ESA regarding consultation with appropriate federal agencies. The law is administered by the United States Fish and Wildlife Service (USFWS) and the Commerce Department's NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), and must also adhere to the requirements of the Migratory Bird Treaty Act (MBTA). Therefore, as part of the SEA, the presence of and potential impacts to protected vegetation, fish, and wildlife were evaluated.

The analysis focused on mapping and characterizing habitat, and evaluating the potential for protected vegetation, fish, and wildlife to be present. The full project (including the segment that is the subject of this review) underwent ESA consultation in 2007 and 2008. Since 2008, species that may use habitats in the study area have been added to the list of threatened or endangered species under the jurisdiction of USFWS. No species that have been added to the list of threatened or endangered species under the jurisdiction of NMFS are known or expected to use habitats in the action area. To support reinitiation of ESA consultation with the USFWS and NMFS, a *Supplemental Biological Assessment – SR 510, Yelm Loop New Alignment Phase 2 (Supplemental BA; Parametrix 2019)* was prepared as a part of the environmental documentation for the Build Alternative and used as a resource document for this analysis.

3.7.1 What Methods, Assumptions, and Resources Were Considered in the Evaluation of Vegetation, Fish, and Wildlife?

The Build Alternative corridor lies entirely within the existing SR 510 Yelm Loop right-of-way, which crosses through incorporated areas of the City of Yelm and the City's UGA. Portions of the corridor that lie within the Yelm city limits are under the City's jurisdiction; portions lying in the UGA but outside the city limits

are under Thurston County's jurisdiction. The Vegetation, Fish, and Wildlife study area includes all the vegetation communities likely to be affected within 300 feet of the Build Alternative footprint (see Figure 3.7-1). This represents a conservative estimate of the area in which Build Alternative construction could affect vegetation cover and habitat quality for terrestrial wildlife. Potential noise associated with construction and operation of the Build Alternative could disturb wildlife species of concern during vulnerable life stages (e.g., breeding or roosting areas). The study area for potential noise impacts to wildlife is 2 miles from sites where impact pile driving may be needed during construction and approximately 0.5 mile from other portions of the Build Alternative corridor.

Applicable Plans, Policies, and Regulations

The following policies and regulations were reviewed to inform the vegetation, fish, and wildlife analyses:

Federal

- » National Environmental Policy Act (NEPA)
- » Section 7 of the ESA
- » Magnuson-Stevens Fishery Conservation and Management Act
- » Clean Water Act (CWA)
- » Migratory Bird Treaty Act (MBTA)
- » Bald and Golden Eagle Protection Act

State

- » Washington State Hydraulic Code (WAC Chapter 220-660)
- » State Environmental Policy Act (SEPA)
- » WSDOT Executive Order E 1031.02, Protections and Connections for High Quality Natural Habitats

Local

- » The City of Yelm's Critical Areas and Resource Lands ordinance (YMC Chapter 18.21)

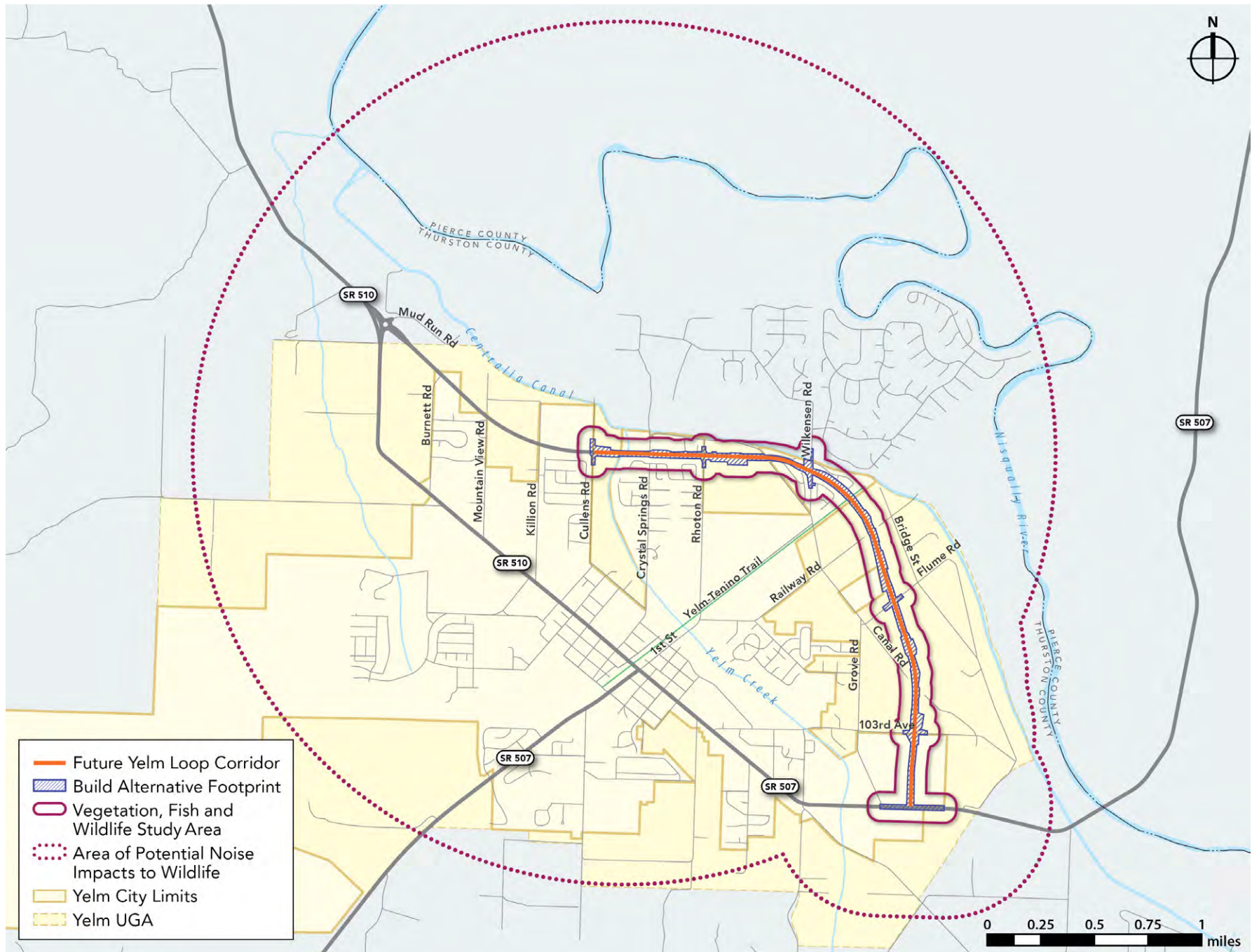


Figure 3.7-1 Vegetation, Fish, and Wildlife Study Area

Background Research and Previous Documentation

The *Vegetation, Fish, and Wildlife Discipline Report – SR 510, Yelm Loop New Alignment Phase 2 (VFW Discipline Report; Parametrix 2019)* and the *Supplemental BA* are the basis for the information provided within this chapter. Updated data from the sources listed below was used to develop descriptions of existing conditions in the study area and map vegetation communities.

- » Threatened and endangered species lists provided by USFWS and NMFS
- » Washington Department of Fish and Wildlife (WDFW) Species of Concern list
- » WDFW SalmonScape database
- » Washington Department of Natural Resources (DNR) Washington Natural Heritage Program (WNHP) rare plant distribution data
- » Thurston County GeoData Center mapping of critical areas
- » Aerial imagery
- » Personal communications with staff at the City of Yelm, WDFW, and the South Puget Sound Salmon Enhancement Group

Additional sources of information reviewed to support the effects analysis include the following:

- » *Wetland Assessment Report – SR 510/Yelm Loop New Alignment Phase 2* (WSDOT 2018)
- » Bird species maps and sighting data (eBird 2019)
- » Locations and typing of streams and other watercourses in the study area data from the DNR Forest Practices Application Mapping Tool (DNR 2019)
- » Interactive maps of water type assessments performed by Wild Fish Conservancy Northwest (2019)

A comprehensive list of the documents previously prepared for this project and reviewed for this analysis can be found in the *VFW Discipline Report*.

Site Visits

Field investigations were conducted to confirm the location and condition of streams, wetlands or other waterbodies in the study area, and vegetation communities. Field observations also included areas with high potential to provide suitable habitat for species of concern or rare plant populations. Specific tasks conducted during site visits included:

- » Rare plant surveys, conducted in June and August 2019 to coincide with optimal identification periods
- » Identification of the ordinary high-water line (OHWL) of Yelm Creek within the study area
- » Documentation of vegetation communities
- » Observation of wildlife species and evidence thereof
- » Review of areas containing potentially suitable habitat for rare species and species of concern

3.7.2 What Vegetation, Fish, and Wildlife Currently Exist in the Study Area?

Vegetation

The study area consists of suburban and rural residential areas. The undeveloped right-of-way contains a mixture of pastures, areas of shrubs, and tree stands, with local road crossings. Adjacent areas include landscaped yards, houses, and commercial developments. The vegetation types mapped within the study area and their characteristics are summarized in Table 3.7-1. The existing locations of the various vegetation types within the Build Alternative study area can be found in Figures 3.7-2 through 3.7-4.

One wetland (Wetland A) is located within the study area. Vegetation in the wetland is predominantly reed canarygrass, black hawthorn, meadow foxtail, and red deadnettle. Vegetation within the buffer includes black hawthorn, Oregon white oak, and quaking aspen. Wetlands are addressed in Section 3.6 of this SEA.

Fish Habitat and Presence

The only watercourse in the study area is Yelm Creek, a small tributary to the Nisqually River. The stream bed is dry for much of the year. Perennial flows are present in the 0.5-mile reach of the creek beginning with its confluence with the Nisqually River and extending upstream. The Supplemental BA describes the potential use of Yelm Creek by ESA-listed Chinook salmon, steelhead, and bull trout. Based on low flows, extensive urbanization and road building, and poor water quality (elevated water temperatures in particular), Yelm Creek in the study area does not provide high-quality habitat for any of these species. The study area does not include any designated critical habitat for any ESA-listed fish species. Yelm's Municipal Code identifies the riparian habitat area width along Yelm Creek as 150 feet. According to DNR, the portion of Yelm Creek in the study area is a fish-

Table 3.7-1 *Vegetation Types in the Study Area*

Vegetation Type	Description	Dominant Plants	Acres in Study Area
Native Conifer Forest	Forested areas dominated by native species	Douglas fir, Oregon white oak, big-leaf maple	3.11
Oak Woodlands	Forested areas dominated by Oregon white oak	Oregon white oak	1.27
Riparian Forest	Forest along Yelm Creek	Oregon white oak, big-leaf maple, cherry, willows, and other native and non-native shrubs	0.13
Non-native Forest	Planted forests or those dominated by invasive trees	Non-native and horticultural trees	2.01
Shrubs (native)	Areas dominated by native shrubs (<15% invasive shrub cover)	Black hawthorn, Oregon grape, oceanspray, beaked hazelnut	2.39
Shrubs (invasive)	Areas dominated by invasive shrub species (>15% cover)	Scotch broom, Himalayan blackberry, European hawthorn	36.62
Grasslands	Areas dominated by grasses, including mown areas and pastures	Bromes, fescues, and other primarily non-native grasses; mixed with native and non-native forbs	20.53
Wetlands	Wetlands (scrub-shrub and emergent) along Yelm Creek	Black hawthorn, reed canarygrass; willows and red twig dogwood on the stream bank	0.13
Developed	Paved and gravel surfaces and buildings	Minimal, limited to parking island landscaping and other small patches of vegetation	11.23
Total Acreage in Study Area			77.43

bearing stream. Table 3.7-2 summarizes WDFW's presumed or known fish species present in Yelm Creek within the study area.

Wildlife Habitat and Presence

The study area is characterized by vegetation communities common in semi-rural areas of Thurston County. Wildlife habitat types in the study area include native conifer forest, oak woodlands, riparian forest, non-native forest, grasslands, shrubs (native and invasive), and wetlands.

The WDFW Priority Habitats and Species database does not identify any mapped priority habitat types in the study area (WDFW 2019b), although riparian habitats and stands of Oregon white oak (both of which are WDFW priority habitat types) are present. Oak trees and stands of oak trees provide an important source of food, cover, nest sites, and arboreal movement routes for more than 200 species of vertebrate wildlife, including several species that are protected by state or federal law, such as the western gray squirrel (Larsen and Morgan 1998).

The Yelm pocket gopher, a federally protected (threatened) species, is present in the study area. Yelm pocket gophers are strongly associated with well-drained glacial outwash soils in the lowlands around Puget Sound. Such soils are found

Table 3.7-2 *Streams within the Build Alternative Footprint*

Stream Name	Associated Wetlands	Fish Presence ¹	Stream Type ²	Jurisdiction	Stream Buffer
Yelm Creek	A	Chinook salmon* Sockeye salmon Cutthroat trout Steelhead* Coho salmon Chum salmon Pink salmon	F	Thurston County/ City of Yelm	150 feet

Source: *Vegetation, Fish, and Wildlife Discipline Report (Parametrix 2019)*

¹ WDFW *Salmonscape Mapping (2019a)*; WDFW *Priority Habitats and Species data (2019b)*

² Based on DNR *stream typing definitions (2019a)*. N = Non-fish-bearing; F = Fish-bearing.

* ESA listed – Threatened

throughout the study area. In much of the study area, dense cover by trees or other woody species, Scotch broom in particular, has rendered areas with suitable soils inhospitable to pocket gophers.

Habitats in the study area also provide breeding habitat for species protected under the Migratory Bird Treaty Act (MBTA). This statute prohibits the pursuit, capture, taking, or killing of most avian species or their nests.

Other wildlife species that use habitats in the study area include various species of birds, rodents, and feral cats and dogs, as well as deer, raccoons, opossum, and coyotes; amphibians may be found in wetland habitats. WDFW priority wildlife species potentially present in the study area are: band-tailed pigeon, Vaux's swift, pileated woodpecker, western gray squirrel, slender-billed white-breasted nuthatch, Leschi's millipede, roosting concentrations of big-brown bat or bats, Oregon vesper sparrow, Columbian black-tailed deer, Townsend's big-eared bat, Puget blue butterfly, valley silverspot, Taylor's checkerspot, and Mardon skipper.

Plant and Animal Species of Concern in the Study Area

For this analysis, plant and animal species of concern are those with a regulatory status that prompts individual attention through federal, state, and/or local permitting processes. Species of concern include the following:

- » Species listed or proposed for listing as threatened or endangered under the ESA
- » Species for which Fish and Wildlife Habitat Conservation Areas (FWHCAs) are established under the City of Yelm's critical area regulations, including:
 - › State-designated endangered, threatened, or sensitive species
 - › State priority species, as identified by WDFW
 - › Rare plant species identified by DNR WNHP

Table 3.7-3 lists species of concern that have been documented in the study area. Of these, two are federally listed—Chinook Salmon and Yelm pocket gopher. Columbian black-tailed deer, a State priority species, have also been seen in the study area.

3.7.3 Would the No Build Alternative Impact Vegetation, Fish, or Wildlife?

No impacts to vegetation, fish or wildlife would occur with the No Build Alternative because no construction would take place.

3.7.4 Would the Build Alternative Have Impacts to Vegetation, Fish, or Wildlife?

The Build Alternative would result in permanent and temporary impacts to vegetation, fish, and wildlife, and to the habitats used by those species. Permanent

Table 3.7-3 Species of Concern Documented in the Study Area

Species	Status
PLANTS¹	
Columbian white-topped aster (<i>Sericocarpus rigidus</i>)	State Sensitive
FISH^{2,3}	
Cutthroat trout (<i>Oncorhynchus clarki</i>)	State Priority
Sockeye salmon (<i>O. nerka</i>)	State Priority
Chinook salmon (<i>O. tshawytscha</i>)	State Priority, Federal Threatened
WILDLIFE³	
Yelm pocket gopher (<i>Thomomys mazama yelmensis</i>)	State Threatened, Federal Threatened

¹ DNR WNHP rare plant distribution data

² WDFW Salmonscape Mapping

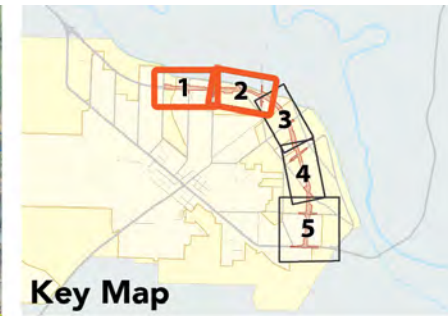
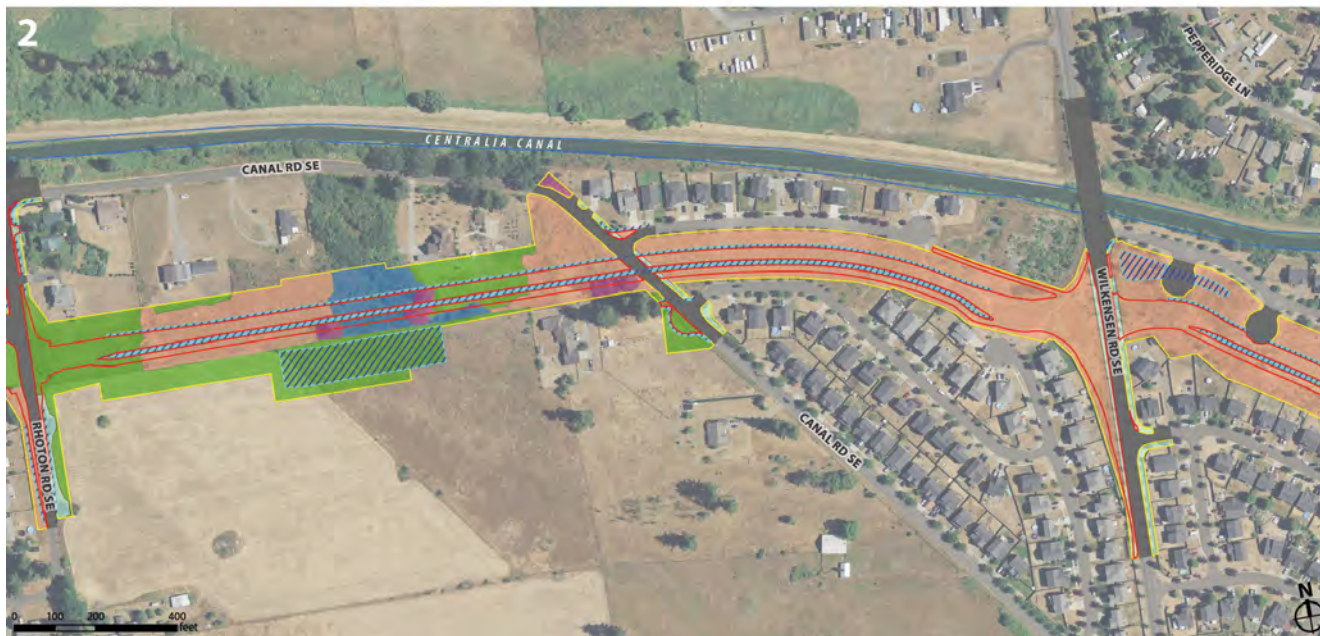
³ WDFW Priority Habitats and Species data

impact areas are those where existing habitats would be converted to pavement, stormwater facilities, or other related features. Permanent impacts also include the long-term alteration of vegetation (e.g., forest converted to grassy roadside areas).

Vegetation

Current vegetation conditions would be affected by roadway construction which would permanently convert existing vegetated areas to impervious surfaces. Some areas would be permanently converted to different vegetation types from what exists today. For example, stormwater facilities would be maintained in a grassland condition, and the maintenance of sightlines may require periodic mowing of roadside vegetation. In addition, trees would not be allowed to grow underneath or within 10 feet of the proposed bridge over Yelm Creek, but low-growing shrubs and other vegetation would persist at that site. Vegetation communities within the Build Alternative footprint are illustrated in Figures 3.7-2 through 3.7-4.

A summary of the permanent and temporary impacts to vegetation types is presented in Table 3.7-4. A substantial proportion of the permanent impact area consists of disturbed habitats dominated by invasive shrubs and non-native grass species. Less than 34 percent of the permanent project-related impacts would occur in areas dominated by native species.



Key Map

- Stream (Approx)
- ▨ Drainage Facilities
- Existing Unvegetated/ Impervious (No Impact)

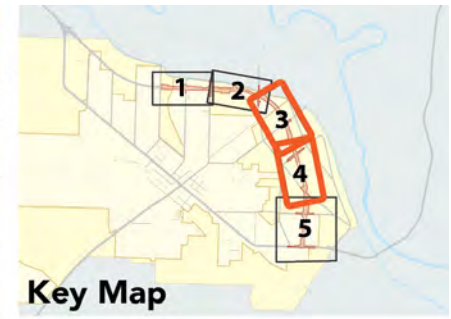
IMPACT AREAS

- Permanent – Impervious Conversion
- Permanent – Vegetation Conversion
- Invasive Shrub

VEGETATION TYPES

- Grasslands
- Invasive Shrub
- Native Forest
- Native Shrub
- Non-Native Forest
- Oak Woodland
- Wetland
- Riparian Forest

Figure 3.7-2 Vegetation Impacts in the Build Alternative Footprint, Cullens Road to Wilkensen Road



- Stream (Approx)
 - /// Drainage Facilities
 - Existing Unvegetated/ Impervious (No Impact)
- IMPACT AREAS**
- Permanent – Impervious Conversion
 - Permanent – Vegetation Conversion
 - Invasive Shrub
- VEGETATION TYPES**
- Grasslands
 - Invasive Shrub
 - Native Forest
 - Native Shrub
 - Non-Native Forest
 - Oak Woodland

Figure 3.7-3 Vegetation Impacts in the Build Alternative Footprint, Wilkensen Road to Canal Road



Key Map

- Stream (Approx)
- /// Drainage Facilities
- Existing Unvegetated/ Impervious (No Impact)

IMPACT AREAS

- Permanent – Impervious Conversion
- Permanent – Vegetation Conversion
- Invasive Shrub

VEGETATION TYPES

- Grasslands
- Invasive Shrub
- Native Forest
- Native Shrub
- Non-Native Forest

Figure 3.7-4 Vegetation Impacts in the Build Alternative Footprint, SE 103rd Avenue to SR 507

Table 3.7-4 Permanent and Temporary Impacts to Vegetation Land Cover Types

Habitat Type	Permanent Conversion to Paved/Built Surfaces (acres)	Permanent Conversion to Other Vegetation Types (acres)	Temporary Impacts ^a (acres)
Native Forest	0.98	0.20	1.81
Oak Woodlands	0.29	0.14	0.68
Riparian Forest	< 0.01	0.06	0.01
Non-native Forest	0.59	0.11	1.32
Native Shrub	0.80	0.15	1.44
Invasive Shrub	11.12	3.73	18.90
Grasslands	5.32	0.00 ^a	13.27
Wetlands (scrub-shrub and emergent)	0.00	0.11 ^b	0.02
Total for Project	19.11	4.50	37.45

^a Approximately 2.27 acres of grassland habitat would be converted to stormwater facilities, retaining many of the structural and functional characteristics of the existing vegetation cover. As such, these areas are included in the calculation of temporary impacts to grasslands.

^b Impacts to the wetland habitat type would result from shading and vegetation management at the Yelm Creek bridge.

**Figure 3.7-5** Vegetation Impacts in the Build Alternative Footprint – Yelm Creek Bridge Detail

The project area is in the type of prairie setting that was traditionally extensively utilized by the Nisqually Tribe for gathering plant foods, such as camas. The Nisqually Tribe continues to harvest camas in the area and, in consultation with WSDOT, have requested access to the project area for the purpose of gathering camas. WSDOT has agreed to permit the Nisqually access to the project area for this purpose.

Wetlands and Streams

There would be no placement of fill in wetlands or stream channels. Bridge supports would be constructed outside of the Yelm Creek OHWL and wetlands. Approximately 0.09 acres of Wetland A would be permanently shaded by the proposed bridge over Yelm Creek. Over time, this may alter the vegetation species composition. In addition, 0.02 acres of wetland vegetation would be altered by post-construction vegetation management (maintaining clearance from bridge deck). Figure 3.7-5 shows vegetation communities in the vicinity of the proposed bridge.

Oregon White Oak Habitats

Oregon white oaks and woodlands are WDFW priority habitats and have special protection in the City of Yelm. As a result, impacts to these locally important species are assessed separately from other habitats.

Construction of the Build Alternative would result in permanent impacts to 0.43 acres and temporary impacts to 0.68 acres of Oregon white oak habitats. The oak woodlands present in the Build Alternative study area are generally small pockets within a landscape extensively developed for residential and commercial use and provide minimal habitat for priority wildlife species. For more detailed information, refer to the *VFW Discipline Report*.

Fish Species and Habitat

Construction of the Build Alternative would increase the area of impervious surfaces by approximately 17 acres. All runoff from impervious surfaces created or replaced by

the Build Alternative would be directed to infiltration facilities located in uplands. In addition, the amount of impervious surface area being directed to such facilities would increase by more than 22 acres. As a result, there would be no potential for project-related runoff to adversely affect water quality or flows in Yelm Creek.

The Build Alternative would construct a new bridge spanning Yelm Creek. Although there are fish species of concern in the vicinity of the Build Alternative footprint, there are low-quality aquatic habitats in Yelm Creek in and upstream of the study area, as well as a lack of water in the channel during substantial portions of the year. Therefore, the likelihood for the presence of the bridge to adversely affect migrating salmonids or other fish is extremely low. In addition, construction work at and near the bridge site would be performed in accordance with the provisions of a Hydraulic Project Approval (HPA) issued by WDFW. It is expected that work near the stream would occur only during summer low flow period, when the Yelm Creek channel at and upstream of the bridge crossing site is typically dry. No work would occur in the channel or below the OHWL of the stream, and all bridge structures would be located outside the OHWL. Implementation of erosion control and spill control best management practices (BMPs) would minimize or eliminate the possibility of construction-related impacts to water quality. Stormwater from the project would not be directly discharged to Yelm Creek, but rather would be infiltrated into upland areas. Construction of the Build Alternative would have no direct impacts to Yelm Creek.

Bridge construction would entail some vegetation clearing within the riparian area along Yelm Creek. Mature forest habitat would not develop in these areas, reducing the potential for the recruitment of large woody debris to the stream. Approximately 7,800 square feet of riparian habitat would be affected by bridge construction and maintenance. Existing trees and other vegetation in undisturbed portions of the Yelm Creek riparian zone would continue to provide riparian functions. In addition, implementation of mitigation measures, including the planting of native trees and shrubs in riparian areas immediately south of the bridge, could compensate for these losses over the long term.

Water Quality Impacts

The Build Alternative could have adverse effects on water quality and aquatic life if construction-related stormwater runoff discharged to stream and wetland systems without proper control and treatment. Generally, stormwater from the Build Alternative would be discharged into the ground via stormwater infiltration facilities. The proposed stormwater runoff from the new bridge crossing Yelm Creek would receive enhanced runoff treatment from a compost amended

biofiltration swale. Runoff would then flow into a stormwater infiltration pond, which would be sized to infiltrate contributing runoff. One proposed stormwater facility (located near the intersection of SR 510 and 103rd Avenue) may require discharge to an existing conveyance system, due to this area mapped as high ground water hazard area. The facility would be designed to provide flow control and discharge to the existing conveyance channel that flows westward along 103rd Avenue.

Wildlife Species and Habitat

Previous NEPA analyses completed for the Yelm Loop project concluded that impacts to wildlife habitat resulting from the revised project footprint would be negligible. The current project design entails less habitat disturbance than the design that was previously analyzed. As such, it is unlikely the project would affect any of the species or critical habitats previously consulted on in a manner or to an extent not previously considered.

Clearing, grading, and construction of the Build Alternative would impact ESA-listed Yelm pocket gophers and their habitat in three ways:

- » Direct harm to or disturbance of animals.
- » Conversion of suitable habitat to impervious surfaces or structures.
- » Damage to suitable habitat through compaction, vegetation loss, or other disturbance that interferes with health and survival of pocket gophers.

The Build Alternative would affect approximately 19 acres of suitable habitat for Yelm pocket gophers. Burrow systems would be destroyed and animals in those burrows would be injured or killed. Approximately 5 of those 19 acres would be converted to roadways and other impervious surfaces and would be permanently unusable by Yelm pocket gophers. The remaining approximately 14 acres would be disturbed by construction activities but not converted to impervious surfaces. Soil compaction and removal would render much, and possibly all, of this area permanently unusable by Yelm pocket gophers. Over the long term, however, some temporarily disturbed areas could become suitable habitat.

The potential for adverse effects on Yelm pocket gophers is substantially lower, or possibly zero, in areas where dense cover by Scotch broom and other woody species renders habitat unsuitable under current conditions. Under the Build Alternative, approximately 44 acres of currently unsuitable habitat in the study area would be converted to impervious surfaces or disturbed by construction activities.

Operational Impacts

No negative effects on vegetation, fish, or wildlife habitat are expected during operation of the completed Build Alternative. Some of the vegetated areas that would be impacted during construction of the Build Alternative would be included in routine future vegetation maintenance to meet safety and operation standards as set forth by WSDOT. By removing invasive Scotch broom and other woody plants, these activities would likely contribute to the long-term persistence of suitable habitat for Yelm pocket gophers in portions of the right of way.

3.7.5 What Would Be the Short-Term or Construction Impact of the Build Alternative?

Temporary impact areas are those that would be restored to current conditions or better after construction. All temporarily disturbed areas would be restored in accordance with the WSDOT *Roadside Policy Manual*. Habitat suitability and foraging opportunities would be reduced in areas where vegetation is cleared. Construction-related noise could disturb sensitive wildlife species, and vegetation clearing would reduce the availability of forage. Affected animals may respond by exhibiting symptoms of stress or by leaving the area while construction is underway. Species displaced by construction noise would likely return after construction is complete.

3.7.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

The Build Alternative would have direct and indirect effects on vegetation, fish, and wildlife habitat as described in the sections above. Impacts could be mitigated by avoiding and minimizing disturbance to habitat areas through design where feasible, restoration of temporary construction impacts, and compensating for permanent impacts.

Conservation measures and BMPs would be implemented during construction of the Build Alternative to minimize impacts to vegetation, fish, and wildlife resources. The Build Alternative design has been modified to reduce the extent of project-related impacts. The following mitigation measures for the Build Alternative focus on minimization of impacts:

- » The shared use path that was originally planned to be located on both sides of the new roadway has been reconfigured to be only on one side to reduce vegetation disturbance and soil compaction impacts.

- » Impacts to oak woodlands would be avoided or minimized wherever feasible. Compensation for the loss of oak woodlands could be achieved by restoring oak woodlands on approximately 2.21 acres of low-quality oak and shrubland habitat approximately 1 mile west of the Build Alternative's western terminus. A plan for mitigating unavoidable impacts to oak woodlands would be developed in accordance with the critical areas code requirements of the local jurisdiction.
- » Construction effects would be confined to the minimum area necessary to complete the Build Alternative and clearing limits would be clearly marked by staking completed by the contractor's surveyor. Areas of landscape or vegetative preservation would be protected with construction fencing.
- » Removal of native vegetation would be minimized to the greatest extent possible.
- » Clearing limits would be surveyed and marked to help ensure only planned areas are cleared.
- » All temporarily cleared areas would be replanted with suitable native vegetation following construction.
- » Permission for the Nisqually Tribe to utilize the project area to harvest camas will be respected prior to and after project construction.
- » A Temporary Erosion and Sediment Control (TESC) Plan and Stormwater Pollution Prevention Plan (SWPPP) would be developed and implemented. The BMPs in the plans would be used to control sediments from all vegetation- or ground-disturbing activities.
- » When feasible, staging areas would be at least 300 feet from Yelm Creek and associated wetlands, unless site-specific review indicates that no effects on the sensitive resource areas would occur due to topography or other factors.
- » Temporarily disturbed areas would be restored to an equivalent or better condition over time consistent with WSDOT's *Roadside Policy Manual*.
- » Additional surveys of Yelm pocket gopher would be completed prior to construction in potentially suitable habitat areas.

Mitigation Plan Elements for Yelm Pocket Gopher

To offset project related losses of ecological functions and wildlife habitat values, with a specific goal of mitigating impacts to Yelm pocket gophers, WSDOT would establish and maintain three conservation sites. The sites would be dedicated to the conservation of Yelm pocket gophers and regional biodiversity through

the restoration, enhancement, protection, and management of the natural communities upon which Yelm pocket gophers depend.

One of the conservation sites would be established on three WSDOT owned parcels and an adjoining portion of the project right of way that would not be disturbed by project construction. The other two would be established on WSDOT-owned parcels along Leitner Road in south central Thurston County. Suitable habitat is present and Yelm pocket gophers have been documented at all three sites.

WSDOT is preparing a long-term management plan for the conservation sites. The plan is designed to ensure the conservation sites are managed, monitored, and maintained in perpetuity to provide habitat for Yelm pocket gophers. In addition to complying with the requirements of the ESA Section 7 consultation between USFWS and FHWA for this project, implementation of the plan would be consistent with WSDOT's commitment to environmental stewardship.

Guided by the long-term plan, WSDOT would permanently manage the conservation sites in a manner compatible with the persistence of Yelm pocket gophers. To reduce the threat of further habitat loss and fragmentation, future subdivision and development of the conservation sites would be prohibited. Management of the conservation sites would include control of unauthorized access and activities on the property, as well as vegetation management to minimize cover by Scotch broom and other woody species known to degrade habitat quality for Yelm pocket gophers. WSDOT would employ adaptive management to identify other measures necessary to ensure ongoing benefits to the species. Management obligations and requirements would be perpetual and would run with the land.

Long-term management of the conservation sites would include actions to maintain habitat conditions suitable for Yelm pocket gophers. Preventing encroachment by trees, Scotch broom, and other woody species is especially important. Options for vegetation management would include prescribed fire, mowing, and managed grazing. The management plan would specify guidelines for implementing these options in a manner that minimizes the risk of adverse effects on Yelm pocket gophers.

In the biological opinion prepared for the ESA Section 7 consultation process, USFWS determined that successful implementation of the long-term management plan, the conservation sites would continue to support resilient, local populations of Yelm pocket gophers and provide inherent benefits for all Yelm pocket gophers in the action area.

3.7.7 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

The Build Alternative would result in unavoidable adverse impacts to Yelm pocket gophers. WSDOT and FHWA have initiated consultation with USFWS to ensure compliance with the ESA.

3.8 HAZARDOUS MATERIALS

Hazardous materials are substances that can potentially cause harm to humans, animals or the environment. For a construction project, these materials may already be present at a project site in the form of contaminated groundwater or soil. Hazardous materials could also be present in structures such as buildings that might be demolished as part of a construction project. When performing construction where potentially hazardous materials are present, there is a risk of spreading the contamination if proper construction procedures are not followed. Assessment for the potential of contamination is necessary to ensure that proper measures are taken during construction to prevent further contamination, and that contaminated materials are properly handled and disposed of.

3.8.1 What Methods, Assumptions, and Resources Were Considered in the Evaluation of Hazardous Materials?

The hazardous materials study area includes the Build Alternative footprint and areas within one mile of the footprint. The general vicinity of the study area is shown in Figure 3.8-1.

Environmental conditions in the study area were evaluated to identify existing and potential locations where hazardous materials are or may be present. These locations were evaluated to assess their potential impact on construction of the Build Alternative; the results of this assessment are described in the *Hazardous Materials Analysis Technical Memorandum* prepared for the Build Alternative (SCJ Alliance, 2019). A *Hazardous Waste Corridor Site Assessment* (SCA Engineering, 1999) was completed in support of the previous EA and was also consulted as part of this assessment.

3.8.2 How Are Hazardous Materials Regulated?

The federal, state, and local policies and regulations that apply to hazardous materials include:

- » Federal Regulations:
 - › Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
 - › Superfund Amendments and Reauthorization Act (SARA)
 - › Resource Conservation and Recovery Act (RCRA)
 - › Toxics Substance Control Act (TSCA)
 - › Occupational Safety and Health Act (OSHA)
 - › Clean Air Act (CAA)
 - › Clean Water Act (CWA)
 - › National Environmental Policy Act (NEPA)

- » Washington State Regulations:
 - › Model Toxics Control Act (MTCA) Cleanup Regulations (revised 2013)
 - › Dangerous Waste Regulations
 - › Solid Waste Regulations
 - › Washington State Environmental Policy Act (SEPA)
 - › Water Pollution Control Act
 - › Washington Industrial Safety and Health Act (WISHA)
 - › WSDOT *Environmental Manual* (August 2018)

3.8.3 How Was the Assessment Performed?

The assessment was performed using the methods identified in ASTM International (ASTM) E1527-13, which included conducting the following:

- » Review of applicable federal and state regulatory databases
- » Review of available documentation from Thurston County
- » Review of Washington State Department of Ecology (Ecology) Facility/Site Database, map search tool, and available environmental files

Regulatory Review

Federal and state databases were researched to identify properties with records of environmental enforcement; past or present underground storage tanks (USTs); and the generation, transpiration, and storage of hazardous materials.

Records Review

A land use profile was developed for the study area based upon review of historical records. Records reviewed include the following sources:

- » Historical aerial photographs (1969, 1981, 1990, 2002, 2009, 2014, and 2018)
- » Thurston County assessor records, current and historic
- » Current topographic maps

Washington State Department of Ecology

Selected records from sites identified using Ecology's available online databases were reviewed for types of contamination, site cleanup status, and pertinent soils and groundwater sampling data. Additional information on data sources can be found in the *Hazardous Materials Analysis Technical Memorandum*.

Additional Database Review

An environmental database research service, Environmental Data Resources, Inc. (EDR), collected information for listed sites located within 1 mile of the project corridor, in accordance with the ASTM International search radius guidance. EDR collected environmental database information on November 18, 2019. The EDR results were not independently verified.

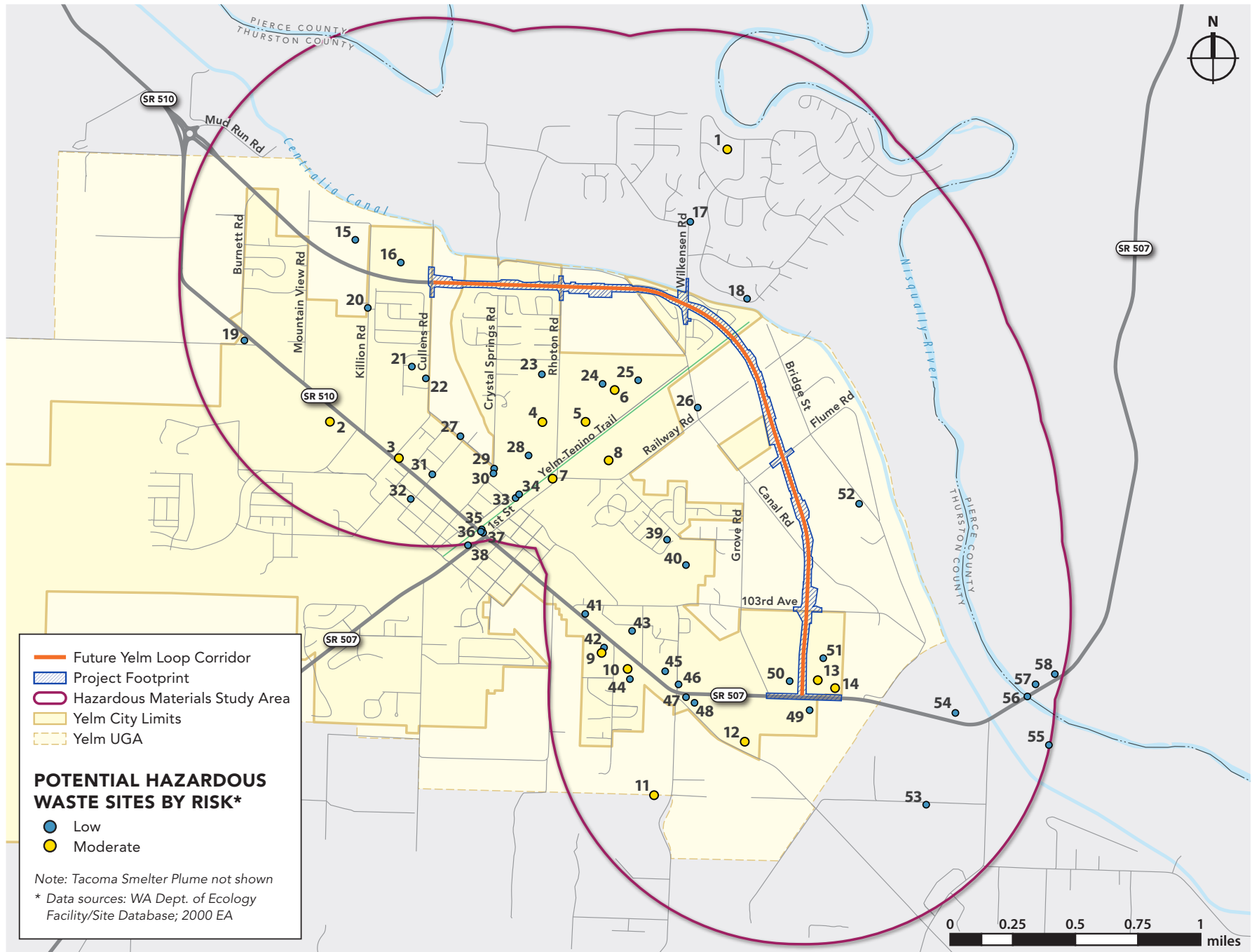


Figure 3.8-1 Hazardous Materials Study Area

3.8.4 What Existing Hazardous Materials Are in the Study Area?

Site Screening

Based on historical records and regulatory database review findings, a list of potential sites of concern was compiled (see *Hazardous Materials Analysis Technical Memo* for full list of sites). The sites of concern were then ranked as posing a low, moderate, or high potential risk to the Build Alternative, in general accordance with the *Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Report* (WSDOT 2019). As allowed under this methodology, the risk rankings were modified to include liability associated with potentially acquiring a site of concern. These rankings are described below.

- » **Low-Risk Sites** are sites where a potential concern exists because of current or historical activities, but likelihood for the site to impact the Build Alternative is low due to its distance/location from the Build Alternative corridor.
- » **Moderate-Risk Sites** are sites where potential concern exists because of current or historical activities, and disposal of excavated soils and groundwater is considered relatively complicated due to the type of likely contaminants to be encountered. Moderate risk sites also include sites that have a potential to be contaminated and would be acquired by WSDOT, but remediation of contamination, if present, is considered relatively straightforward.
- » **High-Risk Sites** are sites with a known concern because of historical activities, contamination is known and extensive, and/or site contamination will likely impact the Build Alternative. No high-risk sites were identified in the study area.

Suspected and Known Hazardous Materials Sites

The federal and state contaminated site databases (EPA, Ecology and EDR) were consulted to identify potentially contaminated sites in the study area. No EPA Superfund sites were identified in the study area, and 59 potential hazardous waste sites were identified in Ecology records or in the 1999 *Hazardous Waste Corridor Site*

Assessment report. Most of the sites in the study area were identified as low-risk; 14 sites were identified as moderate-risk due to the potential for contamination of soils and/or groundwater. Portions of the study area fall within the Tacoma Smelter Plume (generalized over the entire study area; site not mapped), increasing the potential for encountering arsenic and lead contamination in surface soil. The Tacoma Smelter Plume was included among the low-risk sites in the study area.

The Tacoma Smelter Plume is associated with the former Asarco copper smelter that operated near Tacoma for approximately 100 years. Large quantities of contaminants were emitted in the form of air pollution during operations. Particles in the air settled in surface soils in an area stretching north to Seattle and south to Lacey. Review of the available mapping indicates there may be a low risk of contaminated soil based on the nearest recorded concentrations of arsenic.

Table 3.8-1 lists the moderate-risk sites in extremely close proximity (within 1/8 mile) of the Build Alternative footprint and which therefore warrant further investigation to confirm the potential to encounter contamination during construction. Sites located greater than 1/8 mile from the Build Alternative corridor do not require further investigation, as the likelihood of contamination migrating from this distance to the Build Alternative corridor in concentrations exceeding cleanup levels is low. Figure 3.8-2 illustrates all potential moderate-risk sites within the study area, and highlights those within 1/8 mile of the Build Alternative footprint.

3.8.5 Would the No Build Alternative Have Hazardous Materials Impacts?

No construction would occur under the No Build Alternative; therefore, no impacts would occur.

3.8.6 Would the Build Alternative Have Hazardous Materials Impacts?

Operation of the Build Alternative is not expected to generate any hazardous wastes. Maintenance of vehicles or other equipment that would be used along

Table 3.8-1 Moderate-Risk Sites within 1/8 Mile of the Build Alternative Footprint

	Facility/Site Name	Location	Interaction Description	Risk
13	17020 Hwy 507 SE*	17020 Hwy 507 SE	Potential Hazardous Waste Site	Moderate
14	Wal Mart Supercenter 3705**	17100 SR 507 SE	Hazardous Waste Generator; Hazardous Waste Planner	Moderate

Sources: *Site identified in 2000 Environmental Assessment; **WA Dept. of Ecology Facility/Site Database

Note: Portions of the study area fall within the Tacoma Smelter Plume. The Plume is considered as having low potential for risk in the vicinity of the Build Alternative.

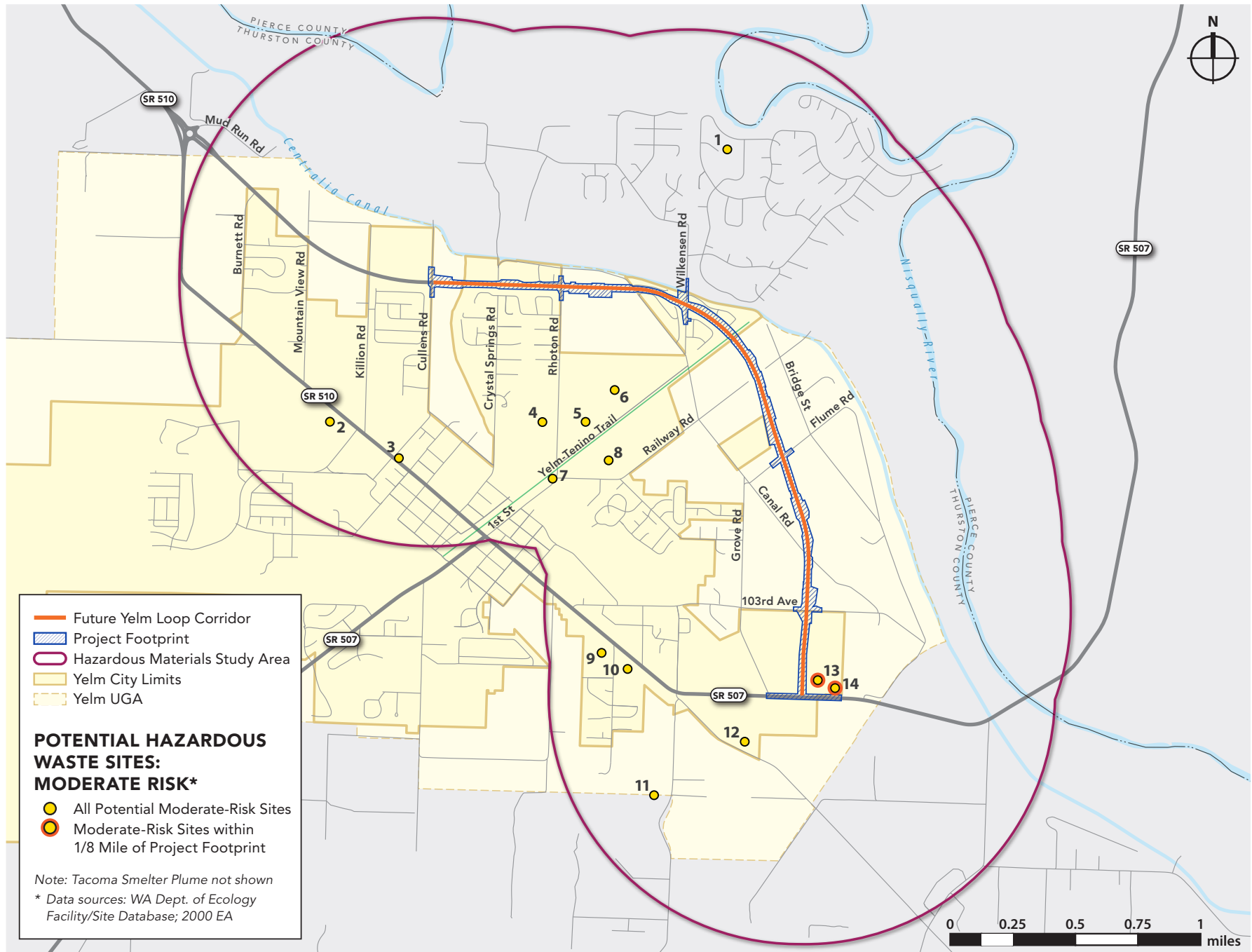


Figure 3.8-2 Moderate-Risk Sites in the Study Area

the route would occur at maintenance facilities, and any wastes that might be generated at those locations would be managed and disposed of in accordance with WSDOT's existing environmental management system and operational procedures. Figure 3.8-2 illustrates two sites (#13 and #14) directly adjacent to the proposed alignment where the potential for hazardous materials has been identified. Depending on the nature and extent of potential contamination, contaminants could be encountered, although this is not anticipated.

While not anticipated, potential long-term and operational effects resulting from the Build Alternative may include:

- » **Soil and Groundwater Contamination** – Environmental impacts may result if contaminated soils and groundwater are not properly managed and are allowed to spread to clean soil, surface water, and/or groundwater.
- » **Contamination due to Spills** – Environmental impacts may result if spills occur and are not properly managed and allowed to spread to adjacent surface waters or seep into groundwater.

Soil and/or groundwater contamination is unknown to be present within the study area.

Except for bridge footings, the majority of excavation associated with Build Alternative construction is expected to be no greater than ten feet deep. These types of excavations would not be expected to encounter groundwater or affect migration of contaminants.

3.8.7 Would There Be Construction Impacts from the Build Alternative?

Proposed construction activities within the Build Alternative footprint and in areas around the intersections may include cut slopes, overexcavation of unsuitable soils, and installation of stormwater features, utility lines, and footings for the Yelm Creek crossing. While construction itself is not expected to generate any type of hazardous waste, pre-existing contaminated material may be encountered during site grading or subsurface work. Figure 3.8-2 illustrates the sites directly adjacent to the proposed alignment where the potential for hazardous materials has been identified.

3.8.8 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

To reduce the potential for hazardous materials being released to the environment during construction and operation, construction plans can be prepared that would include procedures to help mitigate, avoid, control, and manage hazardous materials where encountered. These plans can provide Best Management Practices (BMPs)

to help prevent or minimize environmental risks and would be employed during construction of the Build Alternative. Construction plans would include direction for a Spill Prevention, Control, and Countermeasure (SPCC) Plan, Temporary Erosion and Sedimentation Control (TESC) Plan, Stormwater Pollution Prevention Plan (SWPPP), and Build Alternative-specific hazardous material management plans for handling and disposal of known and unanticipated contamination.

Environmental impacts could potentially be associated with unanticipated releases or spills that may occur during construction or are related to construction activities, equipment and materials associated with the Build Alternative. Prior to the start of construction, an SPCC Plan would need to be prepared following requirements outlined in Section #1-07.15(1) of WSDOT's *Standard Specifications for Road, Bridge, and Municipal Construction* (2018).

Potential hazardous materials associated with construction may include, but are not limited to, diesel, motor oil, gasoline, hydraulic oils, brake, and transmission fluids. Based on WSDOT requirements, the SPCC Plan is a living document and must be updated to reflect any changes in site conditions and construction practices as the Build Alternative proceeds.

Mitigation measures can be implemented during stages of development and construction to help avoid and/or reduce effects associated with environmental concerns, construction issues, and/or potential property acquisition.

With respect to portions of the Build Alternative within the Tacoma Smelter Plume, areas of soil disturbance would be screened for arsenic and lead content. Results of soil analysis will inform appropriate worker health and safety measures, and solid waste handling and disposal procedures.

3.8.9 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

No significant, unavoidable adverse effects are expected to result from the Build Alternative. Soil and/or groundwater contamination may be encountered based on current and historic land uses adjacent to the Build Alternative footprint. However, contamination may be avoided through design of the Build Alternative, or mitigated through soil and groundwater remediation efforts, and is therefore not considered a significant, unavoidable adverse effect.

3.9 VISUAL QUALITY

People's primary experience of an environment is through what they see. Visual resources are an important aspect of environmental quality; they can influence a viewer's perception of an area, provide a sense of community, and contribute to overall quality of life. Potential visual changes resulting from road construction include changes to vegetation, new features in the visual landscape, light and glare, and night sky impacts.

3.9.1 How is Visual Quality Evaluated?

A project's visual impact is influenced by how compatible it is with the surrounding area, how sensitive viewers are to the changes associated with the project, and the degree of the impact. FHWA's *Guidelines for the Visual Impact Assessment of Highway Projects* (2015) characterize the degree of visual impact of a road project as either beneficial, neutral or adverse. A project may benefit the visual character of an area by creating better views of visual resources or it may adversely affect visual quality by degrading visual resources, obstructing or altering desired views.

Transportation projects can change a person's view from the road, as well as the view towards the road. The area that may be affected by visual changes associated with the Build Alternative is called the Area of Visual Effect (AVE). For this visual analysis, the AVE is the area adjacent to and a quarter mile from the edge of the Build Alternative footprint.

The process for identifying and assessing visual impacts is divided into four components:

- » Identification of existing conditions.
- » Assessment of visual character and quality of visual resources in the AVE.

There are three types of visual resources: natural (landforms, trees, vegetation, water), cultural (manmade elements such as roadways, bridges, buildings), and project (the Build Alternative's features such as paving, pathways, light fixtures, stormwater ponds).
- » Analysis of visual quality impacts from the perspective of neighbors to the project and travelers (users of the roadway).
- » Identification of potential design measures and mitigation.

A detailed visual assessment was completed in September 1999 as part of the analysis for the 2000 Y2/Y3 EA. Since that time, changes have occurred in the area, primarily construction of suburban style neighborhoods and a large commercial development at the intersection of 170th Street SE and SR 507.

3.9.2 What Existing Visual Resources Are in the AVE?

The Yelm Loop corridor runs through an area transitioning from rural to suburban. Natural features of the area include flat to rolling topography and grassy prairies with scattered stands of trees.

The AVE is predominantly vegetated with invasive shrubs (Scotch broom, Himalayan blackberry, European hawthorn), grasslands, and areas developed with roads and buildings. Small areas of native forest, oak woodlands, native shrubs and riparian/wetland vegetation also occur in the study area. Yelm Creek crosses the corridor just east of Cullens Road and is vegetated with dense shrubs and trees. The predominant views are of Mount Rainier.

Cultural features include suburban homes typically constructed between 1970 and 2018, scattered hobby farms with homes, livestock and outbuildings, and a commercial area at the southern end of the corridor.

3.9.3 Would the No Build Alternative Have Visual Impacts?

Because construction would not take place, there would be no visual changes to the area in the No Build Alternative.

3.9.4 Would the Build Alternative Have Long Term Impacts on Visual Resources?

The Build Alternative would convert an undeveloped right of way characterized by fields vegetated with grass, Scotch broom, and scattered trees to a new two-lane roadway with a shared use path on one side. Grass, shrubs, and trees growing within the right-of-way would be removed and replaced with the Build Alternative.

Most of the roadways within the AVE are also two lanes and many have sidewalks on one or both sides. The scale of the roadway is consistent with development in the area. The primary viewers of the Build Alternative would be the residents of the homes adjacent to the corridor and people who drive, walk, or cycle on the new roadway. Residents adjacent to the roadway would have the highest level of exposure and awareness of the visual changes associated with the project. Residents also would have the closest proximity, thus being the most sensitive to the changes associated with construction of the Build Alternative. Existing views from adjacent homes of undeveloped grassy areas with scattered trees would change to views of a two-lane highway. The roadway would cross through a suburban area predominantly developed with single family homes resulting in a moderate number of viewers who would be exposed to the changed view



Existing SR 510 Spur and adjacent Cherry Meadows neighborhood

for an extended duration. Over time, residents adjacent to the corridor are likely to become less sensitive to the visual changes as the altered visual character of the area becomes routine. Views of the existing SR 510 Spur from the adjacent Cherry Meadows neighborhood are representative of what neighbors to the Build Alternative would see following construction. Far more viewers would be exposed to the visual changes associated with the Build Alternative via use of the new roadway for transportation purposes. These viewers would experience shorter durations of exposure and would be less sensitive to the visual changes. Users of the new roadway are more likely to notice its compatibility with the surrounding transportation system and the beneficial change associated with commanding views of Mount Rainier when traveling east.

The Build Alternative would result in neutral visual impacts. The new two-lane roadway is visually consistent with other transportation features in the AVE and the suburban characteristics of the area. No iconic views would be degraded and the project is compatible in scale with surrounding development. Completion of the Yelm Loop from its current end point at Cullens Road to SR 507 would create a more visually consistent driver experience. The existing Yelm Spur has visual features of a modern limited access highway. This road ends abruptly at Cullens Road where it connects into an older and more visually rural road network.

3.9.5 Would the Build Alternative Have Short Term Visual Impacts?

Visual impacts are typically highest during the construction phase of any project. Construction activities typically detract from visual quality because construction

sites often appear visually dynamic and hectic. Construction activities that are anticipated to occur would include:

- » Clearing and grading that would diminish the natural character of the undeveloped right of way.
- » Heavy construction equipment that would be visible to adjacent residents and users of the adjacent road network.
- » Staging areas for the storage and preparation of construction materials. Construction staging areas would be identified during final design.

3.9.6 How Can Impacts Be Minimized or Mitigated?

Potential mitigation measures for impacts to visual quality could include:

- » Minimizing the removal of vegetation including trees where possible.
- » Revegetating areas disturbed during construction.
- » Implementing tree replacement in accordance with the standards WSDOT's Roadside Policy Manual.
- » Implementing roadside landscaping including the use of native vegetation to provide visual unity.
- » Roadway lighting designed to direct light and glare downward and minimize light and glare in adjacent areas.
- » Use of aesthetic treatments and low-sheen/non-reflective surfaces on retaining and noise walls.

3.9.7 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

No significant, unavoidable adverse effects are expected to result from the Build Alternative. The Build Alternative will temporarily decrease the visual quality in the corridor during construction, but the decrease will not be significant. Impacts from vegetation removal will be kept to a minimum and native vegetation will be replanted on all disturbed roadside areas.

3.10 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Construction of the Build Alternative is subject to approval by the Federal Highway Administration (FHWA) and it must comply with Section 106 of the National Historic Preservation Act (NHPA), as amended, and the implementing regulations in 36 CFR Part 800. Section 106 requires federal agencies consider the effects of federally funded or permitted projects on historic properties. A historic property is typically aged 50 years or older, and includes prehistoric or historic districts, sites, buildings, structures, objects, and properties of traditional religious and cultural importance that are listed or are eligible for listing on the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. If historic properties are identified within the Area of Potential Effects (APE), then the potential for adverse effects on the historic properties must be assessed, and a resolution of any such effects addressed.

3.10.1 What is an APE and How Was It Defined?

An APE is a specific geographic area established for analysis of historic properties. The extent of the APE is dependent upon the location of potential historic or archaeological resources in the general vicinity of the Build Alternative, for which the project may directly or indirectly cause alterations in the character or use of historic properties.

The APE for the Build Alternative consists of the area that would be directly impacted by ground disturbance (Area of Direct Impacts) and a one-parcel buffer along the Area of Direct Impacts to account for visual effects to buildings over 50 years of age (see Figure 3.10-1).

Research methods included an archival desktop review, map and record reviews, pedestrian survey, and shovel probe testing. The desktop review used a research radius of 0.5 miles from the APE. The Washington Department of Archaeology and Historic Preservation (DAHP) online Washington Information System for Architectural and Archaeological Records Data (WISAARD) was searched for archaeological site records, cultural resources survey reports, and cemetery records. WISAARD was also reviewed for archaeological resource probabilities and listed historic-period properties or properties eligible for listing in the NRHP.

Map and records reviews included previous cultural resources studies, historical maps, aerial and historical photographs, tax assessor's data, field book records, Google Earth historical imagery, newspapers, historic period plats, historic period maps and atlases, and ethnographic sources. Records reviewed came from Thurston County, Northwest Digital Archives, Library of Congress, Washington State Library's Washington Rural

Heritage Digital Archive, U.S. Surveyor General Land Office, U.S. Department of Interior Bureau of Land Management, Natural Resource Conservation Services, City of Yelm, and WSDOT Cultural Resource Program, as well as other sources.

A pedestrian survey was conducted across the entire APE during April, May, and June of 2019. The pedestrian survey included 203 shovel probes. Shovel probes were typically excavated to depths of 70 to 100 centimeters below the ground surface. Sediments were screened through ¼ inch mesh and returned to the probe area upon completion. Observations included, but were not limited to, sediment grain size, presence of gravels, evidence of disturbance, and presence of cultural materials.

3.10.2 How Are Properties Determined to Be Historic?

The National Park Service (NPS) administers the NRHP, which is the official list of the nation's historic places worthy of preservation. In order to be eligible for listing on the NRHP, a historic property must be significant in American history, architecture, archaeology, engineering or culture. Additionally, to be considered eligible, a historic property must meet one or more of the four NRHP criteria:

- » Criterion A: Be associated with events that have made a significant contribution to the broad patterns of our history.
- » Criterion B: Be associated with the lives of persons significant in our past.
- » Criterion C: Embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- » Criterion D: Have yielded or may be likely to yield information important to prehistory or history.

The integrity of a historic property is a key consideration in NRHP eligibility. Integrity is the ability of a historic property to convey its significance through historic qualities such as location, design, setting, materials, workmanship, feeling or association. The degree of integrity is taken into consideration when evaluating resources under the NRHP criteria:

- » If eligible for historic associations under Criterion A, a resource should retain substantial aspects of its overall integrity, although design and workmanship may not weigh as heavily as those aspects related directly to its historic associations.
- » To be eligible for association with a prominent person under Criterion B, the resource should retain some aspects of integrity although design and workmanship may not be as important as the other considerations.

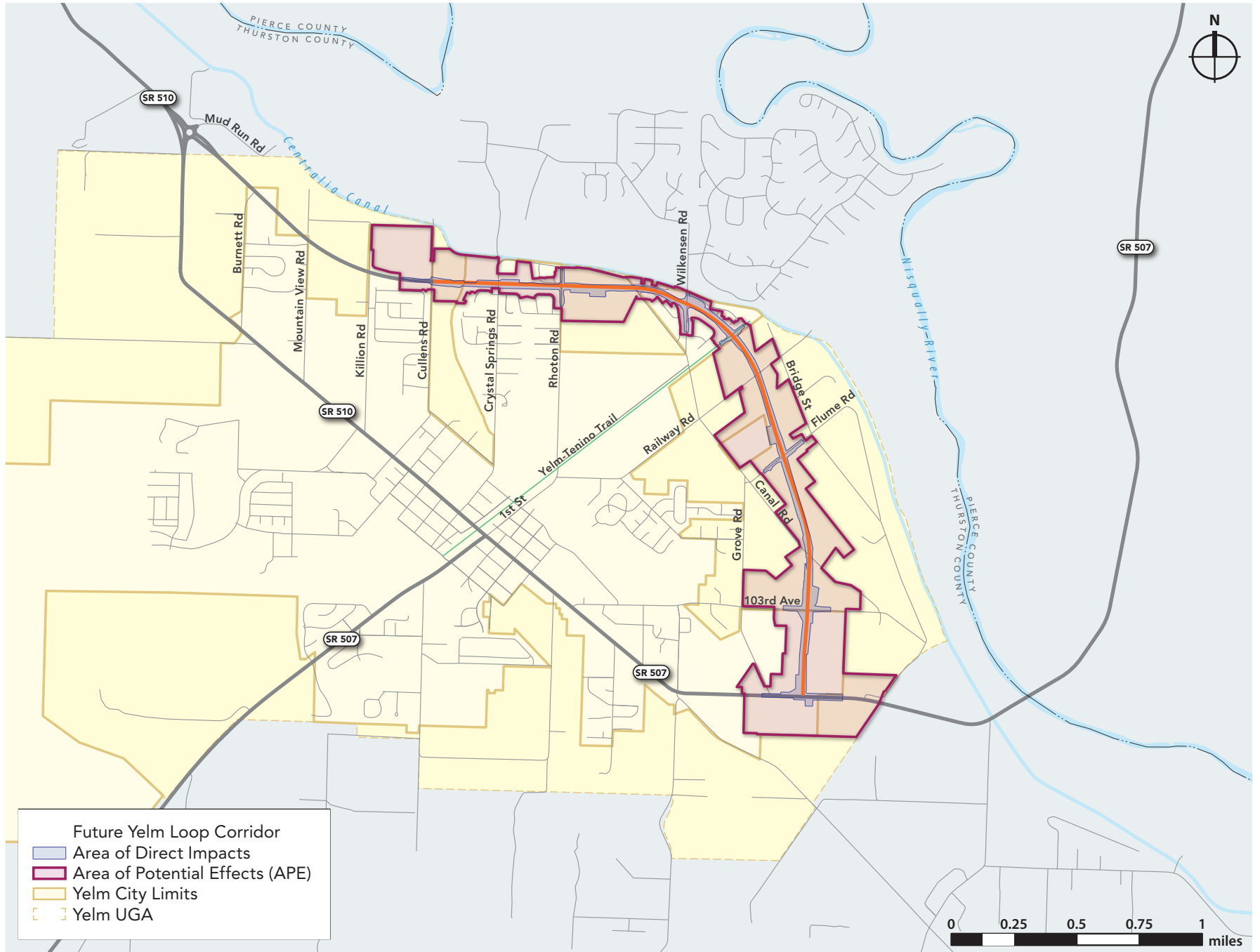


Figure 3.10-1 Area of Potential Effects for Archaeological and Historic Resources

- » To be eligible for architectural merits under Criterion C, a resource must retain its physical features that constitute a significant construction technique or architectural style. Critical aspects of integrity for such properties are design, workmanship, and materials. Location and setting would also be important for those resources whose design reflects their immediate environment.
- » Resources significant under Criterion D may not have the type of integrity described under the other criteria. Location, design, materials, and workmanship are generally the most important aspects of integrity for Criterion D resources.

3.10.3 What Are the Existing Archaeological and Historic Resources in the APE?

The Yelm Prairie, in which modern-day Yelm is situated, was originally occupied by the Nisqually Indian Tribe. The area was first settled by Euroamerican homesteaders in 1853, who were friendly with Nisqually Chief Quiemuth and his brother Chief Leschi. With Donation Land Claims and additional purchased land, many settlers to the Prairie farmed and raised cattle, utilizing the native prairie grasses for feed.

The Northern Pacific Railway (NP) built its Prairie Line through Yelm in 1873, opening up markets for the agricultural products grown on the Yelm Prairie. Rail traffic increased enough by 1912 that the NP constructed a depot and ticket agency in Yelm. Like most railroad lines, traffic on the Prairie Line increased during the 1920s, slowed during the Depression, and then picked up again during World War II. Due to a reroute of rail traffic between Tenino and Tacoma, the Prairie Line became a local line, and in 1959, the Yelm railroad depot and ticket agency closed.

Since the 1950s, the Yelm area and Thurston County as a whole have seen a 75 percent decrease in farm activity and many of the former agricultural lands have been taken out of production. Farmers sold their large parcels to developers, who split the parcels into smaller lots and developed them as residential tracts. Today, while some Yelm farmers continue to make their living through small-farm agriculture, including berry farming, egg production, organic produce, and tree farming for local farmers markets, historic-period farmland is within the City of Yelm UGA and is predominantly occupied by residential and commercial development.

Archaeological Resources

Background research, pedestrian survey, and shovel probing resulted in the identification of four locations recorded as archaeological sites within the APE. Three of these sites were identified during the 2019 pedestrian survey: a deposit of historic-period and modern debris (Site 45TN507), a scatter of historic-period

artifacts and associated rock pile feature (Site 45TN506), and a rock wall with associated historic-period artifacts (Site 45TN508). The fourth site, previously recorded precontact site 45TN345, is located in a previously surveyed portion of the APE. Subsequent to the pedestrian survey additional field investigation was conducted to determine the eligibility of these sites for listing on the NRHP. This investigation identified additional artifacts within site 45TN345 with characteristics that make it eligible for listing in the NRHP. Site 45TN506 was determined to be not eligible for listing on the NRHP (see Section 3.10.5 for additional information).

Historic Resources

Forty-three historic-period resources on 20 parcels within the APE were identified. One resource, a shed constructed in 1970 (Thurston County Parcel ID 64300201301), is not visible from the right of way and remains unevaluated. The remaining 42 resources are recommended not eligible for listing in the NRHP.

3.10.4 What Would Be the Impact of the No Build Alternative?

There would be no construction and thus no impacts to archaeological and historic resources under the No Build Alternative.

3.10.5 Would the Build Alternative Have a Long-Term Impact on Historic Properties?

Two types of effects on register-eligible historic properties may occur during construction: 1) direct physical effects and 2) indirect effects due to noise, mud, vibration, traffic congestion, construction traffic, loss of parking, visual changes to the setting, and limited access. As there are no eligible historic properties within the APE, there would be no effects from the Build Alternative; a finding of No Adverse Impact is recommended.

Archaeological resources located in the Build Alternative footprint would be directly impacted by construction activities. Site 45TN345 is eligible for listing in the NRHP and would be directly impacted by the Build Alternative.

In February of 2020, HRA conducted archaeological testing at 45TN506 involving the excavation of two 1x1-meter test units and the disassembly of a portion of a rock feature at the site that appeared to potentially have been significant as a historic-period or precontact burial or related to historic-period or precontact Native American spiritual practices. The results of the excavations and rock feature investigation identified historic-period and temporally non-diagnostic artifacts

confirming that the site was the location of periodic refuse disposal dating from the early to mid-twentieth century to more recent times. These artifacts were also embedded within and underneath the rock feature, confirming that it was likely created during the process of clearing the property of rocks and other debris. As a common mid-twentieth century to modern debris scatter with no characteristics that would make it eligible under NRHP criteria A, B, C, or D, HRA recommended that 45TN506 was not eligible for listing in the NRHP after completing the testing work.

In June and July of 2020, HRA conducted archaeological testing work at precontact site 45TN345 to confirm its western boundary and evaluate its eligibility for listing in the NRHP. The testing revealed artifacts that may qualify the site for listing in the NRHP. The site is within the area proposed for ground disturbing construction and would be adversely impacted as a result. WSDOT is working with FHWA, SHPO, and the Nisqually Tribe to prepare a Memorandum of Agreement that will establish how the site would be managed if determined to be eligible for listing in the NRHP.

3.10.6 What Would Be the Short-Term Impact of the Build Alternative?

As there are no eligible historic properties within the APE, no historic properties would be affected by construction of the Build Alternative. NRHP-eligible archaeological resources could potentially be affected by Build Alternative construction activity in the short term in the event that they are inadvertently discovered during construction within the APE.

3.10.7 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

Under the Build Alternative, no adverse impacts to historic properties are anticipated and no mitigation necessary.

Archaeological resources located in the Build Alternative footprint could be directly impacted by construction activities. It was recommended that archaeological sites 45TN345 and 45TN506 were potentially eligible for listing in the NRHP after HRA completed the initial survey work. HRA recommended avoidance of the sites or archaeological testing to determine their eligibility for listing in the NRHP if they could not be avoided by the Build Alternative footprint.

HRA's recent evaluative archaeological testing work at 45TN345 has resulted in the collection of large numbers of precontact lithic artifacts. Analysis of these artifacts is on-going and therefore an exact determination of eligibility for 45TN345 is

pending. However, for the purposes of this draft the preliminary determination is that the site is eligible for listing in the NRHP. WSDOT is working with the Nisqually Tribe and the Washington State Department of Archaeology and Historic Preservation to determine next steps with regard to this site.

In the event that archaeological deposits are inadvertently discovered during construction in any portion of the APE, ground-disturbing activities would be halted immediately, and WSDOT would be notified. The WSDOT Archaeologist would then contact DAHP and the interested Tribes to determine next steps.

3.10.8 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

Construction of the Build Alternative would adversely impact Site 45TN345. If it is determined to be eligible for listing in the NRHP, and it is determined disruption of the site cannot be avoided, a Memorandum of Agreement between FHWA, SHPO, WSDOT, and the Nisqually Tribe would be prepared to identify how the parties agree to manage and mitigate the impacts.

3.11 SECTION 4(F) AND 6(F) RESOURCES

Section 4(f) refers to a section of the Department of Transportation Act of 1966 that restricts transportation projects from using land in significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, or public or privately-owned historical and archeological sites that are on or considered eligible for the National Register of Historic Places. Section 23 CFR 774.17 defines what constitutes use of an eligible Section 4(f) property. A project has a 4(f) property use if it permanently incorporates Section 4(f) eligible land into a transportation facility, temporarily uses Section 4(f) eligible land for project construction-related activities, or creates proximity impacts that are so severe the protected activities, features or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

Section 4(f) properties cannot be used for a transportation project unless the following conditions apply:

- » There is no feasible and prudent alternative to the use of the property.
- » The action includes all possible planning to minimize harm to the property resulting from such use.

- » The use of the property, including measures to minimize or mitigate impacts, will have a *de minimis* impact.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act protects recreational lands purchased or improved with Land and Water Conservation Act funds.

3.11.1 How Were Section 4(f) and 6(f) Resources Evaluated?

Historic and archaeological resources were identified and evaluated in the *Draft – Cultural Resources Inventory for SR 510 Yelm Loop, New Alignment Phase 2 Project, Thurston County, Washington (CRI; HRA 2019)*. As described in the Archaeological and Historic Resources section (Section 3.10), no historic or archeological sites would be impacted. For other types of Section 4(f) and 6(f) resources, a study area within ½ mile of the Build Alternative footprint was identified. This study area is presented in Figure 3.11-1. As noted, no Section 6(f) properties are located within the study area.

Documents and data sources reviewed as part of the 4(f) analysis include:

- » City of Yelm Parks and Recreation Plan (July 2017)
- » Thurston County GIS data (2019)
- » Department of Archaeology and Historic Preservation (DAHP) GIS data (2019)

3.11.2 What Section 4(f) Resources Are in the Study Area?

There are two qualifying park and recreation resources within the Section 4(f) study area: Longmire Community Park and Fort Stevens Elementary School playground, as shown in Figure 3.11-1. Longmire Community Park is a 13.37 acre active recreation facility owned by the City of Yelm. The park includes three Little League regulation-size baseball fields, one soccer/football field, a paved parking lot with approximately 135 spaces, and restrooms to serve the needs of park users. Picnic areas and a trail system are being phased in as part of the park’s expansion. The Fort Stevens Elementary School recreation area is comprised of two Little League size baseball fields, one open play field (used for soccer), one dirt surface walking track, one playground with multiple play apparatus and swing sets, and one full-sized gymnasium.

Archaeological site 45TN345 is anticipated to be documented through a Memorandum of Agreement between FHWA, SHPO, WSDOT, and the Nisqually Tribe, and would not be preserved in place. As such, the site would not be considered to be permanently used by a transportation facility as defined in Section 4(f).

3.11.3 What Would Be the Impact of the No Build Alternative?

There would be no use of Section 4(f) resources under the No Build Alternative.

3.11.4 Would Section 4(f) Properties Experience Long-Term Impacts Under the Build Alternative?

No long-term impacts would result from the Build Alternative. Longmire Community Park is immediately adjacent to the Build Alternative right of way. No land within the park would be used to construct the Build Alternative, and noise analyses indicate a minimal increase in noise would result from the Build Alternative. Fort Stevens Elementary school is located near the edge of the study area. No land associated with the school would be used for the Build Alternative, and noise levels near the school are projected to remain unchanged following construction of the new roadway.

3.11.5 Would There Be Short-Term Construction Impacts from the Build Alternative?

Construction noise would occur within the study area which could result in minor short-term impacts at Longmire Community Park. Construction would comply with the City of Yelm and Thurston County noise ordinances, and time of day limitations. Construction noise would not substantially impair the qualities and attributes that qualify the park for Section 4(f) protection.

3.11.6 How Could Temporary Construction Impacts of the Build Alternative Be Mitigated?

Temporary construction impacts would be minimized by limiting construction access to the minimum area needed for Build Alternative construction; implementation of best management practices; provision of cultural resource training to contractor staff, including cultural resource monitoring requirements during construction in the contract; and restoration of impacted areas to pre-use condition.



Figure 3.11-1 Section 4(f) and 6(f) Resources Study Area

3.12 SOCIAL AND COMMUNITY EFFECTS

The assessment of social and community effects considers potential impacts and benefits of proposed transportation projects to communities or neighborhoods, especially those with concentrations of minorities, low-income populations or people with limited ability to speak and read English. The analysis includes economic, health, and demographic considerations.

Transportation projects must demonstrate that impacts do not disproportionately discriminate against protected populations; every effort has been made to provide:

- » Equal access to benefits and services for all groups
- » Minimization of displacement
- » Equal access to information and meaningful involvement in the decision-making process
- » Opportunities for persons with Limited English Proficiency to participate
- » Compliance with Title VI via documenting inclusive public involvement

3.12.1 How Were Social and Community Effects Evaluated?

The evaluation of social and economic characteristics of the study area focused on community context, employment opportunities, and the demographics of the area. The environmental justice analysis was conducted in accordance with federal and state policies and plans that guide the evaluation of effects on social resources and environmental justice, including Executive Order 12898. This order directs federal agencies to identify and address disproportionately high adverse human health or environmental effects of a project's activities on minority and low-income populations. Guidance for the analysis was also taken from Chapter 458 of the WSDOT *Environmental Manual*, "Social and Community Effects." Data from the U.S. Census Bureau's American Community Survey (ACS)¹ were used to update the

What is Environmental Justice?

This term refers to the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income when developing, implementing or enforcing environmental laws, regulations, and policies.

demographic information presented in the 2000 Y2/Y3 EA and the 2008 Y2/Y3 NEPA Reevaluation.

Demographic information was evaluated to determine if minorities or low-income populations in the study area would be disproportionately

¹ ACS 2014-2018 5-Year Estimate Data

impacted by the Build Alternative. The transportation analysis provided information regarding potential traffic, access, and mobility changes within the study area that would result from construction of the Build Alternative. Demographic information was used to determine if any benefits or adverse effects would disproportionately affect environmental justice populations, and if so, whether those effects would be high or severe.

To help identify the Build Alternative's potential impacts or benefits to the community, in particular Environmental Justice (EJ) populations in the study area, a review was also conducted of the following information:

- » *Environmental Justice Determination Memorandum* (SCJ Alliance, 2021)
- » *Cultural Resources Inventory for SR 510/Yelm Loop, New Alignment Phase 2 Project* (Historical Research Associates, Inc., 2019)
- » *SR 510 Yelm Loop Highway NEPA Reevaluation, Air Quality* (Parametrix, 2008)
- » *Noise Technical Memorandum* (Parametrix, 2007)
- » *Noise Impact and Mitigation Analysis, SR 510 – Yelm Loop Y3 Corridor* (Michael Minor and Associates, 2005)
- » *SR 510 Yelm Loop – New Alignment Phase 2 City-wide Analysis* (SCJ Alliance, 2019)
- » *SR 510 Yelm Loop – New Alignment Phase 2 Intersection Control Evaluation* (SCJ Alliance, 2018)

3.12.2 How Was the Study Area Defined?

Because the potential social, economic, and environmental justice effects of the Build Alternative likely extend beyond its physical limits, the study area extends ½ mile beyond the Build Alternative footprint in all directions. The study area includes school districts, neighborhoods and commercial areas in the vicinity of the Build Alternative, and areas with potential noise, visual and traffic effects resulting from the proposed Build Alternative. Data from the four census block groups that intersect the study area were used to identify the potential impacts associated with the Build Alternative (see Figure 3.12-1).

Census Block Groups

Block groups are geographic units used for data collection by the U.S. Census Bureau. A block group generally has a population of 600 to 3,000 and is the smallest geographic unit for which the Census Bureau publishes sample data.

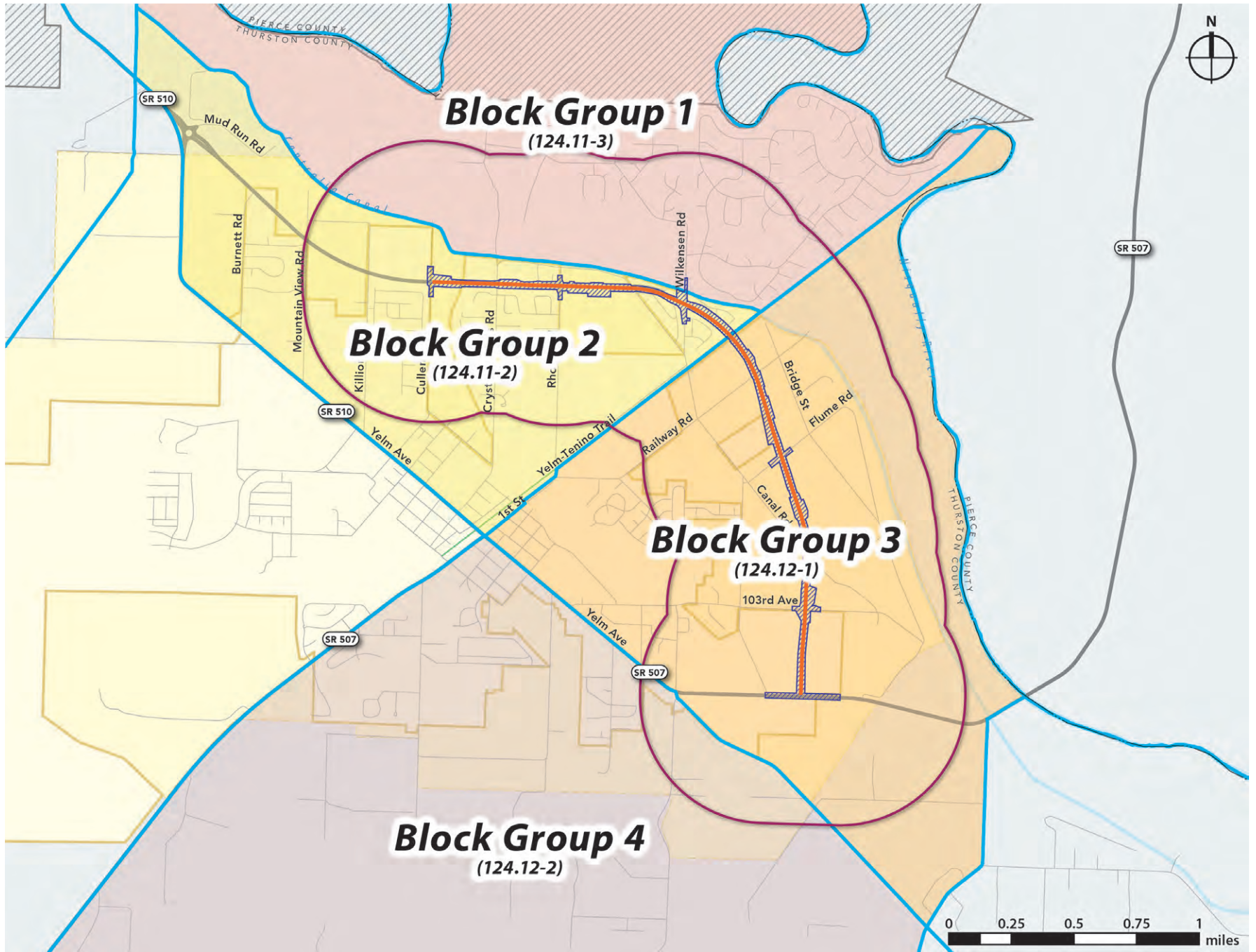


Figure 3.12-1 Social and Community Effects Study Area

3.12.3 What Are Environmental Justice Populations?

Federal orders, regulations, and guidance address the fair treatment of low-income and minority populations. New projects must assure public involvement is inclusive, and potential project impacts are not disproportionately burdensome to those populations. If the impact to Environmental Justice (EJ) populations is disproportionately high and adverse, possible mitigation measures for the impacts are considered. The EJ population groups include:

- » **Minority:** Individuals who identify themselves as Black, Hispanic, Asian/Pacific Islander, or American Indian/Alaska Native.
- » **Low-Income:** Individuals whose household income falls below the federal poverty guidelines as defined by the U.S. Department of Health and Human Services.

Demographic statistics on race and poverty status, as well as overall study area characteristics, are used to evaluate environmental justice effects. If there are Limited English Proficiency (LEP) populations – people who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English – public outreach efforts are tailored to provide assistance as needed, including translation of written materials and provision of interpreters at public meetings regarding the project.

3.12.4 What Are the Existing Social and Community Conditions?

Review of existing social and economic characteristics of the study area focused on understanding the general community context, community resources, employment opportunities, demographic characteristics, and EJ populations within the study area. These are described below.

Community Context

The City of Yelm is the primary community within the study area and is characterized by its history and a sense of small-town pride. The Yelm area offers a high quality of life attributable to its scenic landscape, access to a wide variety of recreational opportunities, proximity to western Washington's major metropolitan areas, and affordability.

As one of Washington's fastest growing cities, Yelm has become a commercial center for rural south Thurston and southeast Pierce Counties. To a large extent, however, Yelm also serves as a bedroom community for residents commuting to work in the surrounding cities of Tacoma, Olympia and Centralia. The area is also

home to a large number of military families currently or formerly stationed at Joint Base Lewis-McChord (JBLM).

The community is heavily influenced by the SR 510/SR 507 corridor and its associated traffic and congestion. Regionally, changes in the level of activity on I-5 or JBLM can affect the City of Yelm with regards to the demand on local roads and traffic volumes on SR 510 and SR 507. The Land Use section (Section 3.13) of this SEA provides additional detail on existing land uses, zoning, and comprehensive plan designations in the study area, and the Transportation section (Section 3.2) describes existing and projected circulation patterns, transit, trucks, and active transportation facilities.

Community Resources

Transportation projects can impact a community's access to public services, which may result in equity impacts. Public services and community resources in the area include:

- » Yelm Community Services is a non-profit organization that provides social services, including a food bank; clothing bank and thrift shop; and apartments for seniors and people with developmental disabilities.
- » The Yelm Community Center is in Yelm City Park and is used for community events.
- » The Yelm Senior Center provides discounted meals, exercise programs, creative arts and entertainment for individuals 50 years of age and older.
- » The Yelm Timberland Library is located downtown.
- » Longmire Community Park serves as the City's Sports Complex.
- » The Yelm-Tenino Trail is a paved pedestrian and bike path within the City of Yelm that connects to several adjacent communities.

Employment

Within the study area, there are few commercial businesses. Most of the study area is comprised of residential subdivisions and larger hobby farms. The main commercial establishment within the study area is the Walmart Supercenter, which is located at the southern end of the Build Alternative, at the intersection of 170th Street and SR 507. Citywide, the most common industries in Yelm are public administration, health care and social assistance, and retail trade.

The study area has a 5% unemployment rate, which is lower than that for the City of Yelm as a whole (8.9%). No businesses in the study area were listed on the Washington State Office of Minority and Women's Business Enterprises database.

For individuals in the workforce, access to transportation, as well as the availability of public transportation, are key components of environmental justice. Most people within the study area use personal, single-occupant vehicles as the mode of transportation to work; only 1.5% of the study area population is transit dependent. In Yelm only 15.6% of residents in the workforce are employed in the city; the remaining 84.4% commute to work outside of Yelm. People living in the study area spend, on average, over seven hours per week commuting to and from work.

Demographic Characteristics

The following general descriptions are drawn from the demographic data. It is important to note that demographic data does not define an area. The Census data are estimates, not actual counts. Census data boundaries often do not align with neighborhood boundaries. The characteristics of residents occupying individual properties are not known nor used for this evaluation. The data used in this analysis provide a general comparison intended to assist in providing fair access and public participation opportunities, and in evaluating the Build Alternative and its potential impacts. Data was gathered at the census block group level; because the study area is comprised of four census block groups, a range is given for each characteristic described below.

Senior Population

The percent of seniors (age 65 and up) living in the study area ranges from 7.5% to 14.4%.

Disabled Persons

The number of disabled people living in the study area ranges from 9% to 14%.

Vehicle Availability

There are relatively few households in the study area without a vehicle, ranging from zero to 3% of the study area's households.

LEP populations include people over five years old who self report that they speak a language other than English and speak English less than well. When statistics show five percent or more of the population in a community is a LEP, translated printed material will be provided in that community, and translators will be available if requested at public meetings.

Limited English Proficiency (LEP) Populations

The percentage of population with Limited English Proficiency (those self-reporting on the census that they “speak English less than well”) is low throughout the study area, with the highest percentage of LEP individuals in block group 4 at 0.4%. Block groups 1 and 2 had no reported LEP populations (see Figure 3.12-2).

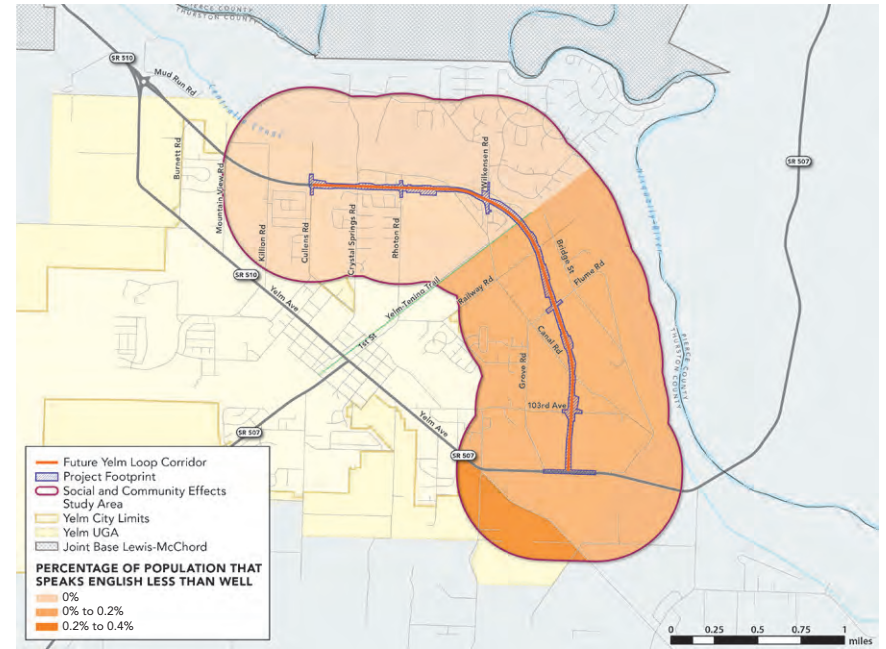


Figure 3.12-2 Limited English Proficiency (LEP) Population by Block Group

EJ Populations in the Study Area

Potential impacts on EJ populations were analyzed in the 2021 *Environmental Justice Determination Memorandum*. This analysis examined project impacts on the EJ populations (minority populations and low-income households) within the study area. Census data for EJ populations was gathered from EPA's Environmental Justice Screening and Mapping Tool (EJScreen)², which uses block group-level census data but is limited to only the population located within the study area. This analysis followed WSDOT guidance³ to determine whether the Build Alternative would have a disparate impact on EJ populations; no disparate impact was identified for minority or low-income populations in the study area.

Minority Populations

Demographic data for race identity includes the following classifications: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian

2 EPA EJScreen Mapping Tool, <https://ejscreen.epa.gov/mapper/>

3 “Determining EJ Effects on Project Populations,” WSDOT, April 2020, <https://wsdot.wa.gov/sites/default/files/2020/04/13/Env-EJ-Tsk458dDetProjEffect.pdf>

Table 3.12-1 Population in the Study Area by Race/Ethnicity

Race/Ethnicity	Estimated population	Percent of Study Area Population
White alone*	3,418	78.8%
Black or African American alone*	38	0.8%
American Indian and Alaska Native alone*	151	3.5%
Asian alone*	113	2.6%
Native Hawaiian and other Pacific Islander alone*	175	4.0%
Some other race alone*	80	1.8%
Two or more races	362	8.3%
Hispanic or Latino**	327	7.5%

Source: U.S. Census American Community Survey, 2014-2018 5-Year Estimates
 (*) Includes persons reporting only one race
 (**) Hispanics may be of any race, so are also included in applicable race categories

or Other Pacific Islander, Some other Race, and Two or More Races. Hispanic populations are a minority population, but Hispanic origin is an ethnicity, not a race. Hispanic persons may identify themselves as any race, or more than one race. The percent of population identifying as one or more minority within the study area is shown in Table 3.12-1, and the percentage of minority population by block group in the study area is illustrated in Figure 3.12-3.

Low-Income Populations

Overall, approximately 17.2% of households in the study area are considered low-income. The portion of the study area with the highest low-income population per capita is census block group 4, with 21.9% of residents categorized as low-income. Block group 3 has the lowest percentage of population categorized as low-income, at 15.6% (see Figure 3.12-4). Citywide, the population of Yelm that is considered low-income is 12.9%.

3.12.5 What Are the Expected Long-Term Effects of the No Build Alternative?

Without capacity improvements, residents and employees in the study area would experience increasing delay and time spent in traffic. These conditions make travel times unpredictable, affecting the quality of life for everyone in the area. The No Build Alternative would result in an increase in congestion, which could also result in concentrations of air pollution from idling traffic through downtown Yelm. Increasing congestion could negatively affect neighborhoods in the study area and could make the area less attractive for residents and businesses.

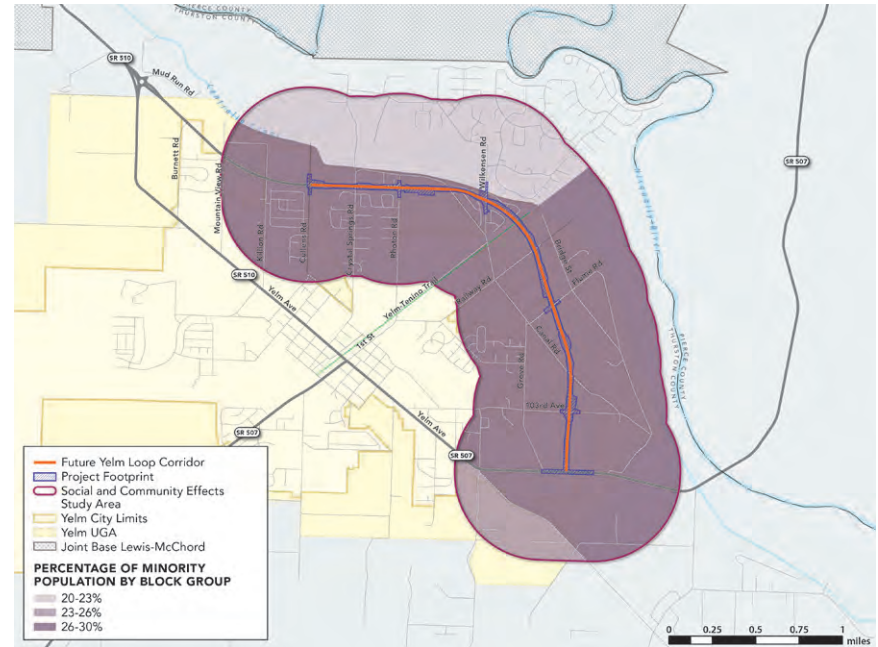


Figure 3.12-3 Minority Population by Block Group

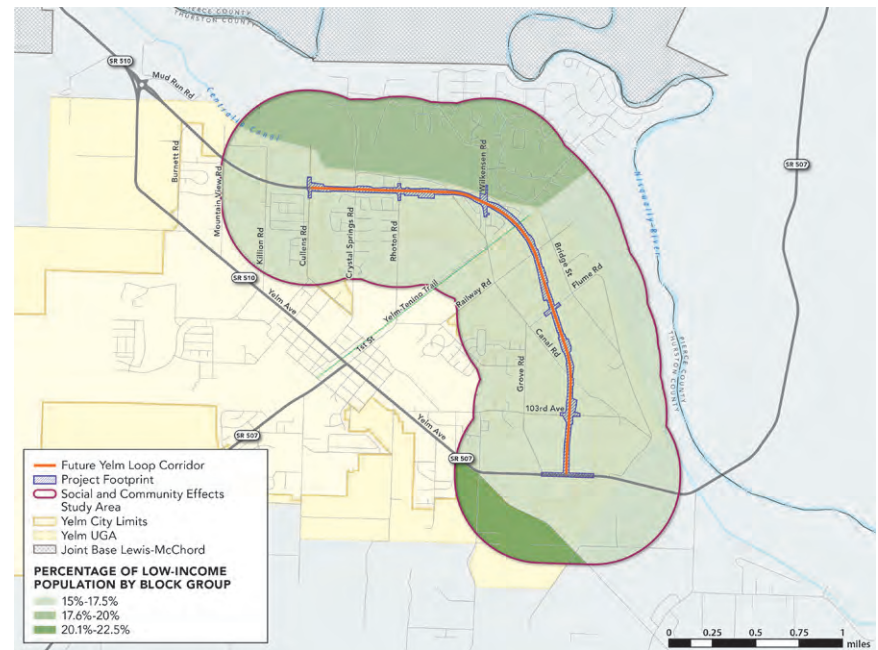


Figure 3.12-4 Low-Income Population by Block Group

3.12.6 What Are the Expected Long-Term Effects of the Build Alternative?

The Build Alternative would result in beneficial and negative impacts. The social and economic aspects of reducing congestion on Yelm Avenue would benefit the entire study area and the region. The expected long-term effects of the Build Alternative on various aspects of the community are described below.

Travel Patterns

With construction of the Build Alternative, all area residents and people who commute through Yelm would benefit from reduced travel delay. Some residents within the study area would experience travel pattern changes associated with the new highway at locations where existing roads would be converted to cul-de-sacs, effectively dividing several existing roadway connections. These roadway conversions would occur on Crystal Springs Street, Canal Road (west), Railway Road, and Canal Road (south). People living at the new cul-de-sac locations would experience increased vehicle travel distances of about 0.4 to 0.8 miles to reach the highway, which are equivalent to approximately one to two minutes of increased vehicle travel time. Travel time for vehicular connections between the ends of opposing cul-de-sacs would increase by about two to three minutes depending on location. Locations and configurations of the proposed cul-de-sacs can be found in Figure 3.2-4 with relevant distances and travel times shown in Table 3.2-5.

Community Cohesion

There are two locations where neighborhoods that are currently separated by the undeveloped right of way will become separated by the new road. The first is the View Royale and Canal Estates neighborhoods, and the second is the Mountain Shadow and Mountain Sunrise neighborhoods, which are shown in Figure 3.4-3. In both instances the neighborhoods are not connected via internal streets. View Royale and Canal Estates were developed approximately twenty years apart and are connected via Rhoton Road. Residents of these neighborhoods who may currently walk across the undeveloped right of way to access the opposite neighborhood will have to cross at the Rhoton Road intersection after the road is constructed. Mountain Shadow and Mountain Sunrise were constructed after the Yelm Loop alignment was established. The layout of these neighborhoods anticipated the new corridor and the plat maps note the future roadway location. Residents of these neighborhoods that may currently cross the undeveloped right of way to access the homes on the opposite side would need to cross the new road at the Wilkensen Road intersection. The configuration of all four neighborhoods as distinct from one another with no road or sidewalk connections that would be bisected by

Yelm Loop minimizes the potential that the new roadway would disrupt the way residents currently interact. Walk times between neighborhoods will not change substantially, but will include the need to navigate traffic when crossing the new road. The walking distance would be longest for people who live at the end of the new cul-de-sacs on the opposite side of Yelm Loop from the shared use path, approximately 0.25 to 0.4 miles to reach a crosswalk and gain access to the path.

Transit and Active Transportation Modes

Yelm's Comprehensive Plan specifically addresses public transit, pedestrian, and bicycle facilities. The City's Safe Streets Action Plan and other programs aim to improve health and safety for walkers, bicyclists, and bus riders. Consistent with these local goals, the Build Alternative would include new facilities for bicycles and pedestrians in the form of a shared use path on one side of the new road. The path would provide connections to the Prairie Line Trail and Longmire Park. In addition, pedestrian connections to the shared use path would be provided at intersections and the new cul-de-sacs to promote walkability. Residents without access to a vehicle living near the new cul-de-sac locations would see an overall improvement in mobility with the shared use path. Residents that live on the same side of Yelm Loop as the shared use path would have to travel approximately 0.2 to 0.25 miles to access it. Because the shared use path is on the south/west side of Yelm Loop (next to eastbound traffic), residents who live on the non-path side of Yelm Loop would have to travel about 0.25 to 0.8 miles to reach a crosswalk and gain access to the shared use path. Transit route options would be expanded by the Build Alternative's ability to accommodate buses. However, existing bus service to Yelm is focused on providing access to the ridership generators on Yelm Avenue and route changes are not currently anticipated.

Proposed Noise Wall

The Yelm Loop improvement project includes construction of a noise wall on the south side of Yelm Loop between Crystal Springs Road and Rhoton Road. This noise wall would be located along the north side of the View Royale neighborhood. WSDOT Noise Policy establishes a date of official public notification or public knowledge which affects the decision to locate a noise wall as part of a roadway improvement project. For this project, the official date of public knowledge is when the FONSI was published, February 1, 2000. As the View Royale neighborhood was in place prior to this date, it is eligible for a noise wall. The Canal Estates neighborhood was developed after the date of public knowledge and therefore, as is described in the Noise section (Section 3.4), is ineligible for construction of a noise wall. Census data for these two neighborhoods was analyzed in the

Environmental Justice Determination Memorandum; this analysis concluded that there would be no disparate impact on EJ communities in the vicinity of the noise wall.

Right of Way, Displacement, and Access

All necessary right of way for the Build Alternative was purchased during the first phase of Yelm Loop. Analysis conducted at that time (2008) indicated that there was no disparate impact on minority populations among the property owners from whom right of way was acquired and relocations required. This analysis was updated in the 2021 *Environmental Justice Determination Memorandum* using demographic data from the 2010 U.S. Census (the earliest readily available data), along with property owner data collected by WSDOT at the time of acquisition. This analysis found that the acquisition of right of way for this project in 2008 did not create any disparate impacts on EJ populations in the study area or on the property owners themselves. The Build Alternative would not require land from community resources such as schools, parks, or community centers. Access to community resources, including emergency medical facilities, would be improved due to reduced congestion in downtown where many of these facilities are located.

EJ Populations

As described in Section 3.12.4, the 2021 *Environmental Justice Determination Memorandum* identified no disparate impact for minority or low-income populations in the study area.

3.12.7 What Are the Expected Effects from Construction of the Build Alternative?

Construction of the Build Alternative would have temporary impacts to the surrounding area, including dust, equipment emissions, noise, and possible traffic interruptions. Other impacts associated with construction would include the establishment of temporary staging areas and possible movement of heavy equipment on local streets. Construction of the proposed Build Alternative would also have beneficial effects in the form of construction jobs that could benefit all populations, including environmental justice populations.

3.12.8 How Could Impacts of the Build Alternative Be Minimized or Mitigated?

If needed, road closures and detour routes would be closely coordinated with police, fire and emergency services, transit agencies, and school districts. WSDOT would implement a Traffic Management Plan (TMP) to manage work zone impacts

for the duration of the construction phase. The TMP would address planned temporary traffic control measures including traffic operations and public information elements. Input from transit providers, emergency response providers, the City of Yelm, and Yelm School District would be incorporated into the TMP.

Revised travel patterns on roads that would be converted due to cul-de-sacs would result in relatively small travel time changes (one to two minutes additional travel time by vehicle to reach the Yelm Loop or two to three minutes to connect adjacent neighborhoods). This increased travel time from cul-de-sac locations would be partially offset by improved mobility into and out of the Yelm area via the completed Yelm Loop. Pedestrian connections to the shared use path at the proposed cul-de-sac locations would improve overall mobility for residents without access to a vehicle.

Proper signage would be provided to direct traffic destined to businesses along Yelm Avenue and to help through-moving drivers navigate the new facility.

Traffic noise impacts to those residential areas that are adjacent to the Build Alternative would be mitigated to the extent allowed by WSDOT policies, as detailed in the Noise section (Section 3.4). The visual impacts of the new roadway and proposed noise barrier would be mitigated with landscaping and possible design features, as described in the Visual Quality section (Section 3.9).

3.12.9 Would the Build Alternative Have a Disproportionate Impact on Environmental Justice Populations?

Based on the social and community effects analysis, the proposed Build Alternative would not have disproportionate impacts on EJ populations.

3.13 LAND USE

Land use designations, plans, and policies guide development within communities. They establish where people live, work, shop, and participate in community activities. In Washington State, land use is controlled by city and county governments through the comprehensive planning process under the Growth Management Act. Transportation projects are required to be consistent with local planning. Land use analysis is conducted to help decision makers understand the effect transportation projects may have on land use and development patterns.

3.13.1 What Methods, Assumptions and Resources Were Considered in the Evaluation of Land Use?

The Build Alternative footprint is located within the City of Yelm and its Urban Growth Boundary. The land use study area encompasses ¼ mile expanse in all directions of the Build Alternative footprint. By sizing the land use study area to encompass a greater area than just the Build Alternative corridor and immediately adjacent land uses, the analysis addresses the potential effects of the Build Alternative on a larger geographic area that reflects the close relationship between land use and the transportation system.

Published information from the City of Yelm and Thurston County was used to identify existing land uses, current zoning designations, and anticipated future land use. Transportation planning documents including city, state, and regional plans were also reviewed. Other sources included online mapping and GIS information, adopted comprehensive plan documents, and aerial photos.

3.13.2 What Types of Land Uses Currently Exist in the Study Area?

The study area is characterized by a mix of rural residential, low density residential and heavy commercial development. Over the past 20 years, Yelm has experienced substantial population growth and associated residential development. A few neighborhoods have been constructed immediately adjacent to the Build Alternative corridor where it intersects with Wilkensen Road. Residential growth in the study area has created demand for commercial development to provide goods and services to the residents of the area. The largest commercial development in the study area is the Walmart located at the intersection of Yelm Avenue (SR 507) and 170th Street SE. Existing land uses in the study area are illustrated in Figure 3.13-1.

In 2002, Longmire Community Park was constructed immediately adjacent to the proposed Build Alternative footprint. The park is located on Canal Road, just north of Flume Road SE and features active recreation facilities such as soccer, baseball, and softball fields. Other recreation facilities in the study area include an American Legion clubhouse and baseball field, and small private parks or open spaces within residential subdivisions.

3.13.3 Would the No Build Alternative Have Land Use Impacts?

The zoning and future land use designations as identified in the local comprehensive plans were reviewed. The No Build Alternative would not be consistent with adopted plans, especially related to what is envisioned for transportation and land use in the study area over time. Provision of safe and efficient travel to and through neighborhoods and accommodation of future urban growth in a cost-effective manner are goals identified in the City's Comprehensive Plan (*Comprehensive Plan and Joint Plan with Thurston County*, City of Yelm 2017). Goals set forth in the Comprehensive Plan specifically address improved access to public transit, pedestrian, and bicycle facilities. The No Build Alternative would be inconsistent with these goals.

The history of transportation planning for the SR 510 Yelm Loop goes back to the early 1990s, when WSDOT, the City of Yelm, and Thurston County completed a study which identified future corridor alignments. In 1992, Yelm adopted a transportation plan that identified future roadways to provide congestion relief to Yelm Avenue and 1st Street (SR 510 and SR 507), including a limited access bypass route (SR 510 Yelm Loop) for regional traffic traveling on the SR 510/SR 507 corridor. The first phase of a bypass route (SR 510 Yelm Loop) was constructed in 2010 between Mud Run Road and Cullens Road, and the right of way was purchased for the completion of the second phase. Extension of the bypass route (SR 510 Yelm Loop) around downtown would allow regional traffic destined for locations outside the city to travel efficiently, avoiding the city's commercial core.

The No Build Alternative conflicts with policies regarding urban growth and transportation system development contained within both regional and local planning documents. The *2019-2022 Regional Transportation Improvement Program (RTIP)* for the Thurston County Region identifies the SR 510 corridor as a priority route to improve mobility for regional traffic that had no alternative route other than through congested downtown Yelm (TRPC 2018).

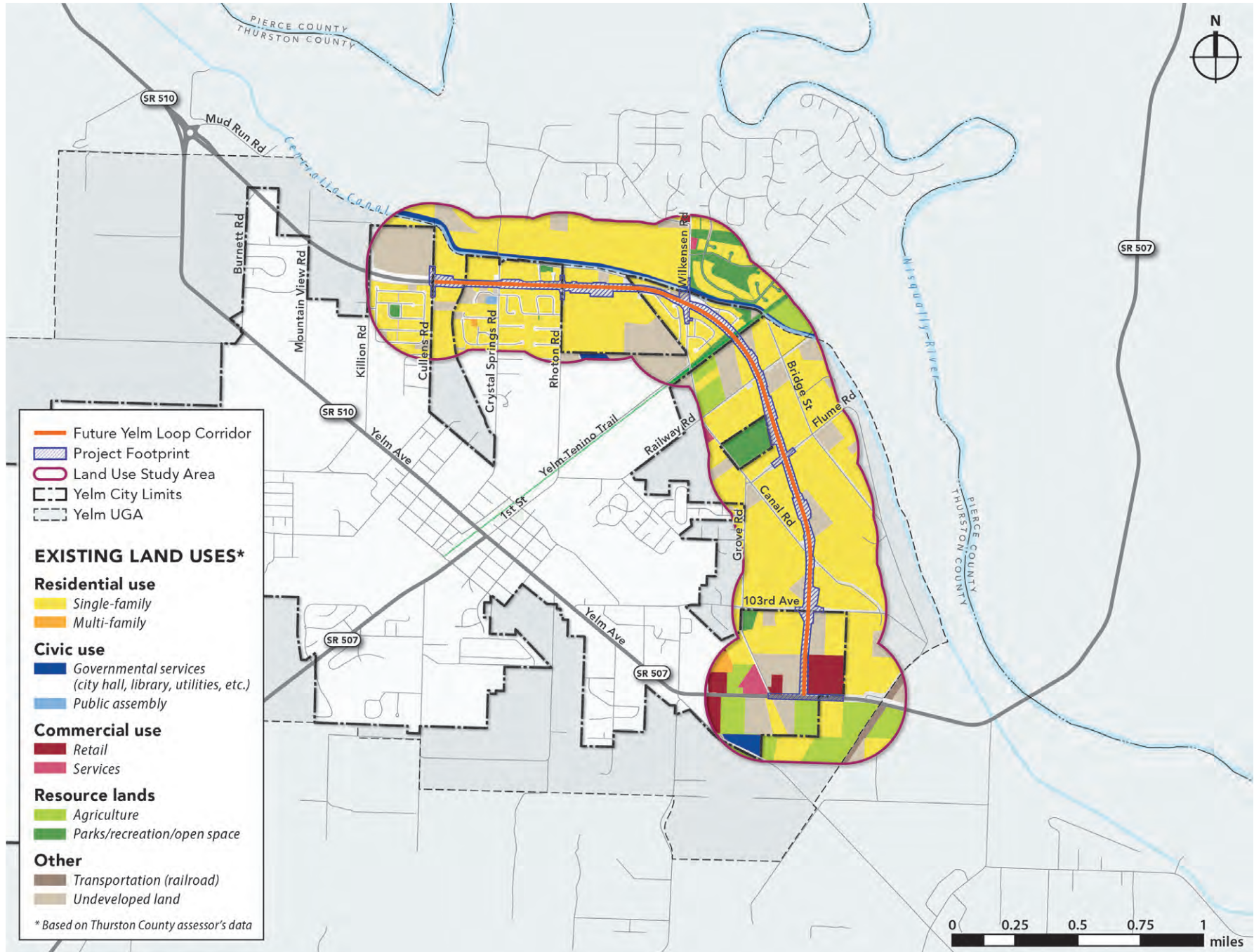


Figure 3.13-1 Land Use Study Area and Existing Zoning

The completed portion of Yelm Loop would remain as-is in the No Build Alternative. The property acquired for right-of-way would not be built upon. The No Build Alternative would result in continued worsening of congestion and degraded mobility within the City of Yelm.

3.13.4 How Would Land Use Be Affected by the Build Alternative?

As proposed, the Build Alternative would provide relief to worsening congestion problems on Yelm Avenue (SR 510/SR 507) in downtown Yelm. Local and regional transportation plans underscore the importance of improving mobility for freight, transit, cars, and active transportation modes in the study area. These plans recognize SR 510 as a corridor of statewide importance in terms of mobility, support for the state's economy, and access to adjacent communities.

Construction of the Build Alternative would result in the conversion of approximately 19 acres of land from vegetated, undeveloped right-of-way to a new roadway corridor. It is consistent with adopted land use and transportation plans and policies at local, regional, and state levels. Because the Build Alternative would be a limited access facility that does not allow driveways or new road connections, it is unlikely to stimulate development adjacent to the corridor. Over time, development in Yelm's UGA is expected to occur with or without construction of the Build Alternative, as property is annexed into the City limits and utilities are extended to the area.

No construction impacts are anticipated to disrupt or prevent development or use of land within the study area. All applicable regulations would be adhered to during the construction process to offset the temporary impacts to surrounding land uses.

3.13.5 Would the Build Alternative Impacts Be Minimized or Mitigated?

The Build Alternative would not result in impacts to land use and therefore minimization or mitigation measures are not necessary.

3.13.6 Would the Build Alternative Have Unavoidable Adverse Effects on Land Use That Could Not Be Mitigated?

The Build Alternative would not have any unavoidable adverse effects on land use. The Build Alternative has been planned for and anticipated at the local and regional level for decades. Local plans that have been adopted reflect the Build Alternative, and land use designations have been established by the City of Yelm and Thurston County with knowledge that the Build Alternative would eventually be constructed. Because the Build Alternative corridor is a limited access facility, and much of the corridor would be in the UGA but is not currently served by City utilities, it is unlikely to induce development in the area.

3.14 UTILITIES

The Build Alternative was evaluated to identify long-term and construction-related impacts on existing utilities in the study area. Existing utilities include public and private providers of electricity, water, sewer, natural gas, telephone, data, fiber optic, and other services that could be affected by construction activities.

3.14.1 Where Were Utility Impacts Evaluated?

Utilities within a ½ mile of the proposed Build Alternative Footprint were evaluated.

3.14.2 What Are the Existing Utilities in the Study Area?

Electrical Service

Electrical service providers within the study area include: :

- » Puget Sound Energy
- » Bonneville Power Administration (BPA)

Communications Facilities

Communications service providers within the study area include:

- » Dish Network
- » Comcast
- » CenturyLink
- » Consolidated Communications

Drinking Water

The study area includes land within the incorporated Yelm city limits and unincorporated areas. Developed properties within Yelm's urban growth boundary, but outside the city limits, are served by private wells. Properties within the City of Yelm are connected to Yelm's public water system.

Natural Gas

Puget Sound Energy is the only natural gas provider in the study area.

Solid Waste Disposal

Solid waste disposal service in the study area is provided by LeMay Pacific Disposal.

Stormwater Management

The City of Yelm provides stormwater management within the City limits. A number of City-owned and maintained stormwater ponds, catch basin inlets, conveyance pipes and ditches exist within the study area. The stormwater system collects and conveys runoff to various treatment facilities. Portions of the stormwater system discharge to surface waters, while other portions of the system infiltrate water directly to the ground. Thurston County provides stormwater management services for the portions of the study area that are outside the City limits.

Sewer Service

The City of Yelm owns, operates, and maintains a Wastewater/Water Reclamation facility. The City's Wastewater Treatment Plant transforms wastewater to reclaimed water used for landscape irrigation, aquifer recharge, and residential and commercial customer re-use. Yelm's wastewater is managed in compliance with the National Pollutant Discharge Elimination System (NPDES), which includes effluent limitations and monitoring requirements.

There are also residences and businesses within the Yelm UGA that are not connected to the municipal sewer system. These depend on private onsite treatment systems, typically septic tanks and drain fields.

3.14.3 What Impacts to Utilities Would Occur with the No Build Alternative?

Because no construction would take place under the No Build Alternative, there would be no impacts on utilities.

3.14.4 What Long-Term Utility Impacts Would Occur with the Build Alternative?

Construction of the Build Alternative may impact some of the existing above-ground utilities along the corridor, particularly in the vicinity of the corridor's three proposed roundabout intersections – Yelm Loop at Wilkensen Road, Yelm Loop at 103rd Avenue, and Yelm Loop at SR 507. Existing above-ground utilities that would likely be impacted include:

- » Puget Sound Energy power lines
- » Comcast aerial service cables
- » CenturyLink communications lines
- » Consolidated Communications

Because the existing roads must be widened at these three intersections to accommodate the proposed roundabouts, existing above-ground utilities would likely need to be relocated, at which time they may be undergrounded. Undergrounding these utilities would likely result in a number of positive long-term outcomes, as underground cables tend to have lower transmission losses, are less susceptible to the impacts of severe weather, and require a narrower area of land for installation. The decision to underground utilities would be made by the utility providers at a later stage of design for the Build Alternative.

Access to the BPA tower near the proposed Yelm Loop/103rd Avenue intersection would be modified from its existing location with construction of the Build Alternative, and a new access road would be built. No impacts to BPA's infrastructure or service capabilities are anticipated.

The Build Alternative could potentially impact an existing stormwater conveyance with outfall from a proposed stormwater facility. Generally, stormwater from the Build Alternative would be discharged into the ground via stormwater infiltration facilities, but one proposed facility may require outfall to the existing conveyance near the proposed intersection of Yelm Loop and 103rd Avenue. Existing stormwater facilities near this intersection currently collect and infiltrate stormwater from the road surface, but construction of the proposed roundabout at this intersection would result in a larger quantity of impervious surface than currently exists. High groundwater in the area may prevent the Build Alternative's proposed stormwater facility from accommodating higher quantities of runoff from the newly constructed impervious surface. If this facility cannot be designed to discharge into the ground via infiltration, then it would be designed to provide flow control and discharge to the existing conveyance channel that flows westward along 103rd Avenue.

3.14.5 How Would Utilities Be Affected During Construction of the Build Alternative?

Because the Build Alternative would be constructed in a mostly undeveloped corridor with limited intersections, there are few utilities within the proposed construction area. Current WSDOT policy requires that all conflicting utilities within the construction boundaries of the Build Alternative footprint be relocated or mitigated prior to the project being advertised for construction bidding. This allows the Build Alternative to be constructed without risks of impacts to those utilities.

Utilities that would likely be impacted and require relocation to accommodate the needs of the Build Alternative include:

- » Puget Sound Energy power and natural gas lines
- » Comcast aerial and underground service cables
- » CenturyLink communications lines
- » Consolidated Communications

As indicated in the previous section on long-term utility impacts, relocation of these utilities would likely occur at the corridor's three proposed roundabout intersections – Yelm Loop at Wilkensen Road, Yelm Loop at 103rd Avenue, and Yelm Loop at SR 507. The existing utilities along these roads would likely need to be relocated at these intersections to accommodate the widened footprint of the proposed roundabouts.

Anticipated Effects to Utility Customers

The adjustments and relocations of utilities would result in minimal service interruptions, typically lasting only minutes. The solid waste provider may need to establish new service routes or alter existing routes to accommodate the new roadway, intersections, and newly cul-de-saced roads, which could minimally affect pickup schedules.

3.14.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

Early and frequent communications with utility companies would occur during the final design phase of the Build Alternative. Utilities affected by construction would be identified as early as possible and utility relocation/mitigation plans would be developed jointly between the design team and the utility to ensure that relocation/mitigation actions meet utility companies' needs, as well as any applicable safety, regulatory, or industry standards.

3.14.7 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

Effects to utilities may include short duration service interruptions to power, water, communications, gas, and other utilities. However, these interruptions would be planned, intermittent, and temporary. No significant adverse impacts to utilities are anticipated.

3.15 INDIRECT AND CUMULATIVE EFFECTS

This section discusses the potential indirect and cumulative effects resulting from the Build Alternative.

3.15.1 What Are Indirect Effects?

Indirect effects are effects that are caused by the proposed project, but are separated from direct effects because they occur later in time or at some distance from the project. The analysis of indirect effects ensures that all project-related impacts are properly discussed during environmental review.

How Were Indirect Effects Analyzed?

Indirect effects often relate to changes in land use. The analysis of indirect effects looks for growth-inducing effects and other effects related to changes in the pattern of land use, population density or growth rate, economy, and related effects on air and water, as well as other natural systems including ecosystems (40 Code of Federal Regulations 1508.8).

Indirect effects result from one project but, unlike direct effects, typically involve a chain of cause and effect relationships that can take time to develop and can occur at a distance from the project site.

Under the Washington State Growth Management Act, land use changes are the direct result of local planning decisions. FHWA and WSDOT do not control this process. However, indirect impacts may be associated with a transportation project if the project affects the rate and pattern of land use development by adding a new access or a bypass route.

To determine whether something might be an indirect effect, WSDOT asks: would the effect occur but for the transportation project? If the transportation project is necessary for the impact to occur, then it is either a direct impact or an indirect effect.

This analysis included the consideration of potential indirect effects along with direct effects throughout all of the discipline studies. The study area for each resource was used to assess the potential for indirect effects on each resource. Analysts also sought regional data and studies prepared by the City of Yelm, Thurston County, and TRPC. The method for assessing the potential for indirect effects on each resource was similar to the methods for assessing direct effects described in the corresponding discipline reports and technical memoranda.

3.15.2 What Indirect Effects Are Expected from the Build Alternative?

Indirect effects are tied to the direct effects described in early sections of this SEA. WSDOT looked at interactions between the Build Alternative's effects to identify ways in which it would contribute to effects further removed in time or place.

The possibility of indirect effects related to all the Build Alternative's direct impacts were examined. The Build Alternative would extend an existing section of SR 510 to complete the SR 510 Yelm Loop. The Build Alternative is expected to reduce congestion within the City of Yelm, while accommodating more demand from regional through traffic. As described in Section 3.2, mobility would be improved with the construction of the Build Alternative for area residents, regional travel, and freight service. Compared to the No Build Alternative, with the completion of the SR 510 Yelm Loop improvements, transit service and freight service would be more reliable and have shorter travel times.

No indirect effects were identified for: air quality, noise, water resources, hazardous materials, visual quality, section 4(f), or land use. In these resource areas, very little difference was found in development or land use patterns between the No Build and the Build Alternatives. The Build Alternative does not encourage changes in land use beyond those disclosed as direct property impacts (areas where WSDOT is converting land to transportation use).

Indirect effects to wetlands were reported in the *Supplemental BA* as direct impacts to wetland buffers. The use of the phrase "indirect effects to wetlands" should not be confused with the NEPA indirect effects. These effects are fully accounted for in the analysis of direct effects. The Build Alternative would also have indirect effects on vegetation, fish, and wildlife habitat as identified in the *VFW Discipline Report*. Impacts to vegetation, fish, and wildlife would be mitigated by avoiding and minimizing disturbance to habitat areas where feasible, restoration of temporary construction impacts, and compensation for permanent impacts.

The Build Alternative would result in neutral visual impacts as described in Section 3.9 (Visual Resources). The new two-lane roadway is visually consistent with other transportation features in the Area of Visual Effects and the suburban characteristics of the area. No iconic views would be degraded, and the project is compatible in scale with surrounding development.

The Build Alternative would not directly or indirectly change the residential or commercial character of the area. The project corridor is within the City of Yelm's urban growth area, and the City has no plans to change existing comprehensive

plan designations or zoning as a result of the SR 510, Yelm Loop – New Alignment Phase 2 project. Section 3.2 (Transportation) describes where some local residents would experience longer drives to connect to the road network due to the cul-de-sacing of four roads. The Build Alternative would enhance the transportation network in Yelm by reducing congestion on Yelm Avenue, improving regional traffic mobility, and constructing an active transportation path, thereby yielding positive indirect effects. These changes may facilitate planned community improvements, such as residential and commercial redevelopment.

Temporary, beneficial indirect economic effects may accrue from the hiring of vendors and purchasing of materials and supplies required for project construction, leading to increased employment throughout the relevant parts of the supply chain in the short-term. The Build Alternative would not result in any adverse indirect effects.

3.15.3 What Are Cumulative Effects?

Under NEPA, cumulative effects result from the incremental effects of the Build Alternative when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Past and present actions affecting environmental resources are reflected in the existing conditions discussion for the Build Alternative. Reasonably foreseeable future actions include those that are being implemented or have been implemented recently, including planned and funded transportation improvements, and other local and regional infrastructure proposals.

The analysis of cumulative effects helps decision makers and the public know whether or not there are incremental changes to a given resource which could, if left unmitigated, reach significant proportions.

How Were Cumulative Effects Analyzed?

WSDOT's *Environmental Manual* (Chapter 412, Indirect and Cumulative Impacts, 2019) was consulted in the identification and analysis of potential cumulative impacts. This chapter provides guidance for addressing indirect and cumulative impacts to comply with the overarching NEPA analysis and complies with the 2008 *Guidance on Preparing Cumulative Impact Analyses* issued jointly by WSDOT, FHWA Washington Division, and the U.S. EPA Region 10. The guidance outlines eight steps for identifying and assessing cumulative impacts:

- » Identify the resources that may have cumulative impacts to consider in the analysis;
- » Define the study area and timeframe for each affected resource;
- » Describe the current status and historical context for each;
- » Identify direct and the indirect impacts that may contribute to a cumulative impact;
- » Identify other historic, current and reasonably foreseeable actions that may affect resources;
- » Assess potential cumulative impacts to each resource; determine magnitude and significance;
- » Report the results; and
- » Assess and discuss potential mitigation issues for all adverse impacts.

For the cumulative effects analysis, effects within spatial and temporal boundaries were considered. In framing the historic and future context, analysts looked at the land use and transportation development patterns since the early 1800s.

Study areas were defined for each resource. The cumulative effects evaluation used the same study areas used in assessing direct effects. In addition, information provided in the *SR 510 Yelm Loop (Y3) Project, Phase 1* study (WSDOT, 2008) were considered, in addition to regional data and studies prepared by the City of Yelm, Thurston County, and TRPC. With regard to traffic congestion on Yelm Avenue, operations in Thurston County and traffic passing through the study area were also included. See the Transportation and Land Use sections (Sections 3.2 and 3.13) of this SEA for more information.

The analysis relied on the information in the discipline studies and the regional and local studies referenced in Section 3.13. Information provided in the affected environment and direct effects analysis helped to characterize current conditions and future trends.

The analysis considered the potential for cumulative effects to all resource areas analyzed in this SEA. In addition, the measures to minimize direct effects of the Build Alternative were evaluated in making the cumulative effect determination. For example, temporary construction effects that are fully mitigated during construction are not likely to contribute to a cumulative effect. In general, the study focused on construction and operational effects of the proposed Build Alternative.

Consistent with the *Environmental Manual*, the study of cumulative effects only focused on the resource areas where potential direct and indirect effect was identified. If there are no project impacts on a particular resource, then that resource was not included in the cumulative effects analysis.

3.15.4 Historical and Present Context (Including Reasonably Foreseeable Projects)

This analysis considered how this project, in combination with past, present, and future actions is likely to affect the natural and built environment.

The SR 510 Yelm Loop – New Alignment Phase 2 project would complete construction of a two-phased limited access highway located in the City of Yelm. The proposed project would provide a new east-west roadway to reduce congestion in Yelm’s downtown core. The new road would minimize intersections and prohibit driveway access in order to increase capacity, shorten travel times and reduce the potential for collisions. Construction of the new road was split into two phases due to available funding.

Phase 1 of this project was constructed in 2010. The environmental impacts of the project were evaluated in the 2000 *Y2/Y3 Corridor Revised Environmental Assessment*, which resulted in a Finding of No Significant Impact (FONSI). A NEPA re-evaluation was completed in 2008. Phase 1 improvements included approximately 1 mile of the new two-lane limited access highway from SR 510 to Cullens Road, a shared-use path on each side of the road and four new intersections.

Phase 2 was part of the previous EA and NEPA re-evaluation. The proposed improvements in Phase 2 have been modified to reduce the project footprint and meet regulations that have changed since the completion of the previous environmental work. This SEA addresses the effects of the No-Build and Build Alternative of the new alignment for Phase 2.

History of the Study Area

The Yelm Prairie was originally inhabited by members of the Nisqually Indian Tribe, who have lived in the Build Alternative’s watershed for thousands of years. In 1853, the first permanent American settlers came to the area, and in 1924 the City of Yelm was officially incorporated. The lumber and agriculture industries shaped Yelm’s development in the early 20th century. The closure of the Yelm Irrigation Company in the late 1940s brought about a demographic shift as local farmers were replaced by commuters.

The history of trails and roads throughout the area provides insights into how people historically moved between where they lived and worked, and neighboring communities. SR 510 is a 13-mile long highway that extends southeast from an interchange with I-5 in Lacey to SR 507 in Yelm. The roadway was built by 1916 as a connector from Saint Clair Lake to the Northern Pacific Railway station in Yelm and was designated as Secondary State Highway 51 in 1937. The original route of SSH 51 ran from Tumwater east to Yelm, following the present-day Yelm Highway. In 1959, the highway was realigned to serve a new freeway, later I-5 in Lacey; SSH 51 was replaced in the 1964 highway renumbering by SR 510. The Yelm-Tenino Trail was built over the Northern Pacific line, which was acquired by Thurston County in 1993. Historically it operated as a railroad from about 1869 through the late 1980s. The trail is 14.5 miles long and connects the communities of Yelm, Rainier, and Tenino in southern Thurston County.

A large portion of the Puget Sound region has been heavily urbanized over the past 100 years, while the Build Alternative corridor has maintained much of its rural landscape. However, natural areas have been somewhat altered. Waterways have been impacted, wetlands filled or drained. Only a fraction of the populations of native animals, birds, and fish exist that existed prior to the European settlers’ arrival. Development has also deforested some of the area, decreased water and air quality, increased noise levels, and contaminated soils.

The past 100 years have defined much of the present land use and development trends. Today, growth throughout Thurston County is directed by the comprehensive plans and other land use policies developed by the County and local jurisdictions.

Future Projects in the Study Area

Individual elements of the Build Alternative have been evaluated to ensure their consistency with regionally-adopted policies and priorities and are included on the financially-constrained project list in TRPC’s long-range *2040 Regional Transportation Plan*. They are also included in the highway system plan and the six-year transportation improvement program (TIP) of the City of Yelm.

In addition to the Build Alternative, planned future transportation projects were identified, to be evaluated, as part of this cumulative effects analysis. Table 3.15-1 lists these future projects located with the general study area.

3.15.5 What Were the Results of the Cumulative Effects Analysis?

The Build Alternative is designed to meet WSDOT and FHWA environmental stewardship guidance, as well as to comply with all environmental laws. It extends an existing segment of SR 510 which was built in 2010. All reasonable measures to minimize adverse effects have been incorporated into the Build Alternative design. The measures combine avoidance, minimization, mitigation, and enhancement. An example of enhancement included in the Build Alternative is a shared use bicycle and pedestrian pathway adjacent to the Build Alternative and connecting to the existing Yelm-Tenino Trail as part of SR 510 Yelm Loop construction. Pedestrian crossing signals and crosswalks would be provided to facilitate movement of active transportation users across the Build Alternative. The improved connections provided by the Build Alternative would allow persons living in adjacent neighborhoods the opportunity to walk or bicycle to work activities or to patronize nearby businesses.

The cumulative effects analysis finds that the Build Alternative, together with the past, present, and foreseeable future projects, would have only minor contributions to cumulative effects on the natural and community resources in the study areas. The results of the analysis for each resource or discipline area are on the following pages.

Transportation

The Build Alternative directly benefits local and regional transportation. With the Build Alternative there are beneficial cumulative effects on transportation. By allowing regional traffic to bypass downtown, the Build Alternative would increase roadway network capacity and improve the overall efficiency of traffic in Yelm. Future planned transportation projects that could also affect traffic conditions in the Build Alternative were considered for the cumulative effects analysis. The Build Alternative would contribute a positive cumulative effect on local and regional transportation.

Table 3.15-1 Recent and Proposed Development Proposals in the Vicinity of the Build Alternative

Project Description	Lead Agency
Update City of Yelm Unified Development Code in response to changing legislation and current events	City of Yelm
Construct a private fixed pier recreational dock to measure 8 feet wide by 50 feet long	Thurston County
Construct a 50-unit apartment development and associated features	City of Yelm
Construct a single family residence (5,557 sq ft) and repair existing 12-foot by 12-foot float dock	Thurston County
Construct a new roundabout and associated stormwater improvements at the intersection of SR 507 and 170th St SE	City of Yelm
Subdivide 40.4 acres into 6 lots; construct access road	Thurston County
Subdivide 27.7 acres into 5 lots; construct access road	Thurston County
Subdivide 19.48 acres into 118 single-family residential lots, including the construction of stormwater facilities, interior streets, and street improvements to Mt. View Road	City of Yelm
Subdivide 30.97 acres into 5 lots of 2.0 acres or larger and resource lot of 20.14 acres	Thurston County
Subdivide 42.4 acre parcel into 6 lots, 5 acres or larger	Thurston County
Construct a private recreational dock consisting of a 4-foot wide by 40-foot long fixed pier dock and a 10-foot by 20-foot floating section at the end; total length of the dock will be 50 feet	Thurston County
Redevelop/improve Lake Lawrence public access, including pavement of the gravel parking area; installation of concrete launch; removal and installation of 6' chain-link fence on property line; installation of ADA parking spaces; installation of one 6'x20' concrete abutment, three 6'x20' floats, and two 8' steel pilings; and stormwater improvements	WDFW

Source: SEPA Register Searches conducted November 2019, personal communication with City of Yelm

Visual Quality

The transformation of the visual landscape began with the arrival of non-indigenous settlers in the mid-19th century. Over a century- and-a-half, people harvested forests, created farms, and built transportation routes for trade and access to resources, steadily developing the Puget Sound region. Urban centers in the area were built and connected through rail and roadways, which over time became significant features of the visual landscape.

The Build Alternative would connect to the existing Yelm Spur to create visual consistency of a modern limited access highway, resulting in a neutral visual impact. In the context of the existing and future roadway network, the visual elements of the Build Alternative would not contribute to a cumulative visual impact.

Archaeological and Historic Resources

Past and present development has removed or altered the character of many cultural resources in the greater Puget Sound region during the last 150 years. The development and subsequent loss of character or integrity of historic properties follows a national trend, which led to the passage of federal and state regulations to protect these resources. Although many resources have already been lost, the rate of attrition is slowing because of federal, state, and local protections and an increasing public interest in preserving the nation's cultural heritage for future generations.

Based on the cultural resources analysis and coordination with the Tribes and DAHP, the Build Alternative is not expected to significantly impact cultural resources. Cultural resources coordination requirements include measures to address inadvertent discoveries.

Social and Community Effects

The analysis considered the Build Alternative's anticipated direct and indirect effects on social elements including environmental justice populations to evaluate whether it contributes to any adverse cumulative effects. The Build Alternative does not cause any displacements, nor would it impact any community resources. The social and economic aspects of reducing the congestion through downtown Yelm would generally benefit the entire study area.

Land Use

Land use trends were established within a short period after the greater Puget Sound region was settled by non-indigenous people in the mid-19th century. Over the past century-and-a-half, the area has been steadily developed.

3.15.6 What Mitigation Measures Were Considered?

The Build Alternative would result in long-term improvements to transportation and would further the goals of regional and local land use and transportation plans. Overall, operations of the Build Alternative would not contribute to adverse cumulative impacts and no mitigation would be necessary.

3.15.7 How Were Potential Climate Change and Extreme Weather Risks Considered and Addressed?

All of WSDOT's major capital projects undergoing environmental review consider climate change and extreme weather events as part of the agency's strategic plan commitment. The project team examined available information about climate trends and the results of WSDOT's assessment of vulnerable infrastructure. WSDOT is aware that past trends for a specific resource (water, habitat, air) may not be accurate predictions for the future; instead, we need to look at scientifically-based projections of the changing climate as part of our analysis of cumulative effects.

The results of WSDOT's vulnerability assessment (WSDOT, 2011) show the section of I-5 through the Project area to be of low vulnerability to climate-related threats and resilient to future climate-related effects. The Build Alternative may experience extreme wind, rain, and snow storms and more days of extreme heat; however, this segment of I-5 is not prone to severe flooding, and is out of the zone for potential impacts from sea-level rise. The Build Alternative would include elements that address stormwater flow to reduce the likelihood of localized flooding.

The construction and operation of the Build Alternative would consume energy and emit GHGs into the atmosphere. Operation of the Build Alternative would not be measurably different from the No Build Alternative and thus would not contribute to a cumulative effect. Construction of the Build Alternative would have temporary release of emissions. WSDOT has taken steps to minimize fuel use during construction to reduce GHG emissions by construction equipment by setting up construction areas, staging areas, and material transfer sites in ways that reduce equipment and vehicle idling. Considered with the effects of past, present, and reasonably foreseeable future actions, the Build Alternative would have a negligible contribution to cumulative effects on energy and GHG emissions. WSDOT is active in the statewide and regional efforts to reduce VMT and GHG emissions.

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APPENDICES

- A. Preliminary Commitments
- B. Public Engagement
- C. Build Alternative Engineering Plans
- D. Discipline Studies and List of Preparers
- E. Agency and Tribal Correspondence
- F. Distribution List
- G. References

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A PRELIMINARY COMMITMENTS

The following preliminary commitments are listed to “assist with agency planning and decision making” and to “aid an agency’s compliance with NEPA when no environmental impact statement is necessary” [40CFR 1501.3(b) and 1508.9(a)(2)]. The number after the title in each area of effect refers to the section of Chapter 3 in this Environmental Assessment in which it is contained.

1. **Transportation (Section 3.2)** A Construction Traffic Management Plan would be developed to manage traffic through the project’s work zones during each construction phase.
2. **Air Quality (Section 3.3)** Measures would be taken during construction to reduce dust for the protection and comfort of motorists or area residents.
3. **Noise (Section 3.4)** A noise abatement wall is proposed at one location to mitigate modeled existing and future noise levels. Construction noise levels could be mitigated by using best management practices (BMPs) such as use of mufflers and engine enclosures on heavy equipment, use of the quietest equipment available near sensitive receivers, and/or limiting equipment idling time.
4. **Water Resources (Section 3.5)** A Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control and Countermeasures Plan would be implemented to protect surface water and groundwater resources. BMPs such as controlling sediment-laden runoff from entering streams or drainage inlets near work areas, and use of filter fabric downstream of all exposed slopes, would be used. Stormwater treatment facilities such as swales and infiltration ponds would also be constructed to treat runoff. If floodplain areas are impacted, compensatory flood storage would be provided. Work near surface water bodies may also be limited to dry weather periods to minimize impacts to streams and floodplains.
5. **Wetlands (Section 3.6)** Mitigation would occur to compensate for the 0.11 acres of permanent wetland impacts. Types of mitigation that may be used include restoration of disturbed wetland and buffer areas, or compensatory mitigation.
6. **Vegetation, Fish, and Wildlife (Section 3.7)** Clearing limits would be limited to the minimum area necessary and marked with construction fencing. Staging areas would be a minimum of 300 feet from wetlands or streams wherever possible. Removal of Oregon white oak habitat would be mitigated by replanting in accordance with replacement standards and ratios specified in applicable codes. Mitigation for impacts to Yelm pocket gophers would be implemented in consultation with U.S. Fish and Wildlife Service (USFWS) and local jurisdictions. WSDOT would establish and maintain three sites dedicated to the conservation of pocket gophers and regional biodiversity.

7. **Hazardous Materials (Section 3.8)** During construction, BMPs would be implemented to address the potential for spills. If hazardous materials are encountered during construction, the effects would be mitigated using measures described in WSDOT's Standard Hazardous Materials Impacts and Mitigation Measures table.
8. **Visual Quality (Section 3.9)** Mitigation measures for impacts to visual quality will include some of the following: minimization of tree and shrub removal needed to construct the noise barrier, application of aesthetic treatments to bridges and walls, replanting with native vegetation to maintain visual unity, replacement of trees removed for construction in accordance with the *Roadside Policy Manual*, and special planting standards for restoration of wetlands and buffers.
 - Specific details regarding landscape improvements will be determined during final design of the project in consultation with the City of Yelm.
9. **Archaeological and Historic Resources (Section 3.10)** If archaeological site 45TN345 is determined to be eligible for listing in the NRHP, and it is determined disruption of the site cannot be avoided, a Memorandum of Agreement between FHWA, SHPO, WSDOT, and the Nisqually Tribe would be prepared to identify how the parties agree to manage and mitigate the impacts.
10. **Utilities (Section 3.14)** Early and frequent communication with utility companies would happen during design of the Build Alternative. Relocation and/or mitigation plans for existing utilities would be designed as needed between the project team and utility provider(s).

B PUBLIC ENGAGEMENT

Community engagement has been an integral part of the SR 510 Yelm Loop project since the early 1990s. Creating real and meaningful venues for participation has been vital to the success of this project. For the Build Alternative, a detailed Community Engagement Plan was developed, and Open Houses were held in the Fall of 2019. A summary of the public engagement process for the Build Alternative is presented here.

Website

The primary vehicle for providing ongoing information to the public is a project website hosted by WSDOT (<https://www.wsdot.wa.gov/Projects/SR510/YelmLoopNewAlignPh2>). Designed to be easily navigable, visitors to the site can obtain project details from easy-to-understand content on the project home page. Those looking for more detailed information can readily access maps, schedules, and other project-related items. Website visitors are invited to sign up to receive project updates via email.

Media

Media outreach has been an important tool for raising awareness about the project and promoting community engagement. This outreach includes Facebook and Twitter posts, as well as press releases for key project milestones and events.

Open Houses

Two open house forums were held to present the proposed project, providing an in-depth opportunity for broad community engagement. The September 27, 2018 open house was attended by over 50 participants, who were provided an updated project overview including the history of the project, transportation design, project benefits, environmental impacts, and project schedule. Additionally, an online open house was held between October 28, 2019 and December 2, 2019 to solicit input more broadly. WSDOT received over 130 public comments during the online open house.

In advance of the September 2018 in-person open house:

- » WSDOT sent a mailer to 12,212 residents and businesses of Yelm, McKenna, and Roy. The mailer was provided in English and Spanish.
- » A news release was sent to local media announcing the open house, and the Nisqually Valley News newspaper provided coverage.
- » Fliers announcing the project, project overview, and methods to receive additional information were made available for distribution at the Yelm Library and City Hall.
- » The City of Yelm advertised the open house on City Hall's electronic message board.
- » A Spanish-speaking WSDOT representative was available during the open house. This translator was not certified, but no translation services were requested.

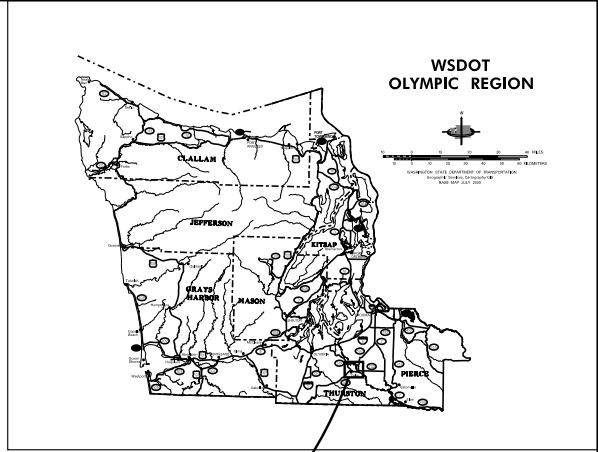
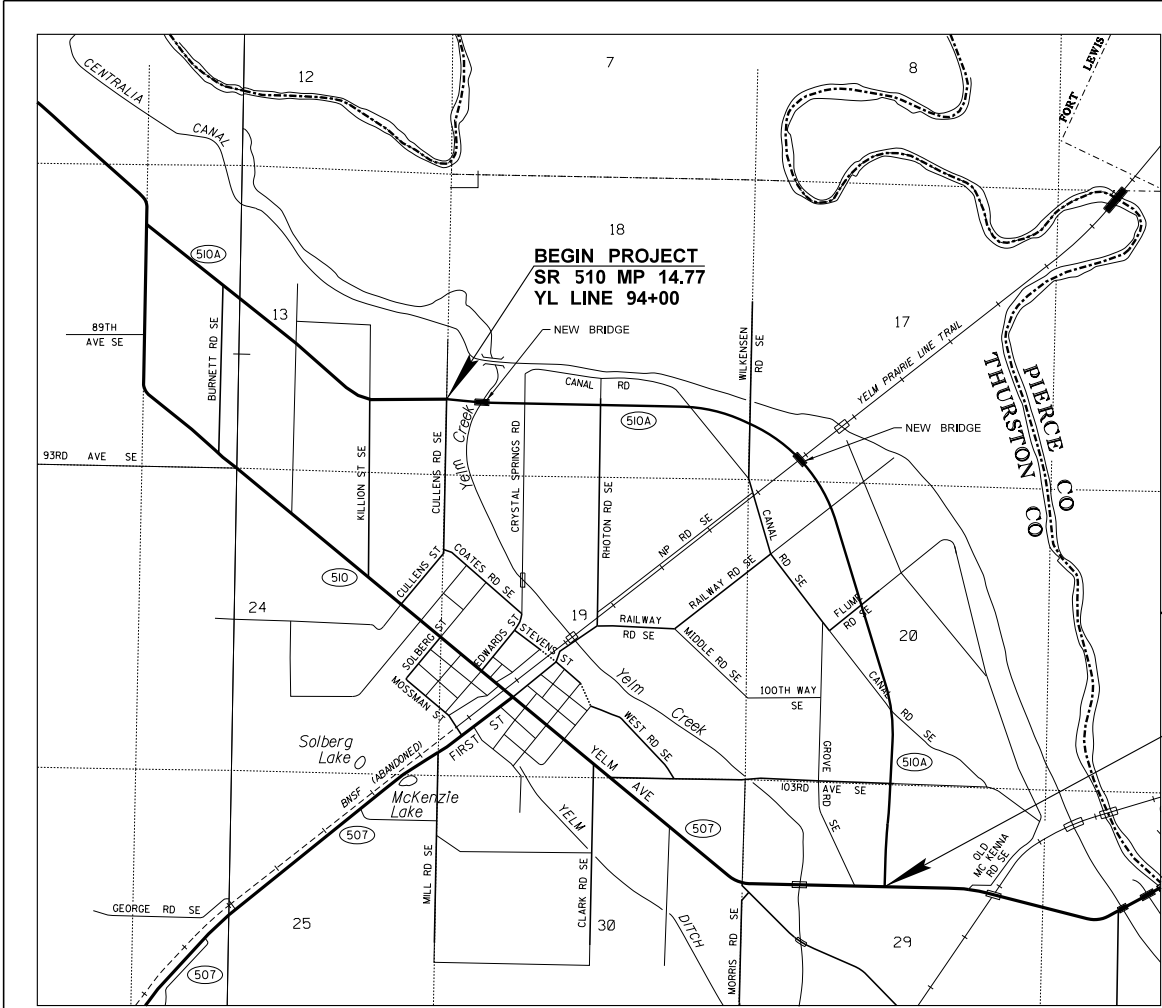
Major Messages and Themes

Attendees from both open houses provided feedback on how they use the existing segment of Yelm Loop (Phase 1) and how they anticipate they would use the Build Alternative (Phase 2). Several of the comments received addressed congestion issues outside the project’s physical scope, which is limited by the stated need and purpose as described in Sections 1.4 and 1.5 of the SEA.

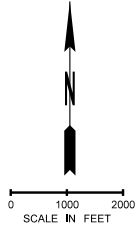
Within the project’s scope, two primary areas of concern were raised by attendees – transportation and the environment. Transportation concerns included changes in travel patterns and safety, as well as access to pedestrian and bicycle facilities on the corridor. Environmental concerns were largely focused on noise levels associated with the corridor. Other comments focused on impacts to air quality, local wildlife, and vegetation. Based on feedback received from the open houses, the project team revisited the plan for access to the shared use path, and the design was revised to allow active transportation access to the path from local roads that would be converted to cul-de-sacs.

C

BUILD ALTERNATIVE ENGINEERING PLANS



END PROJECT
 SR 510 MP 17.48
 YL LINE 237+95



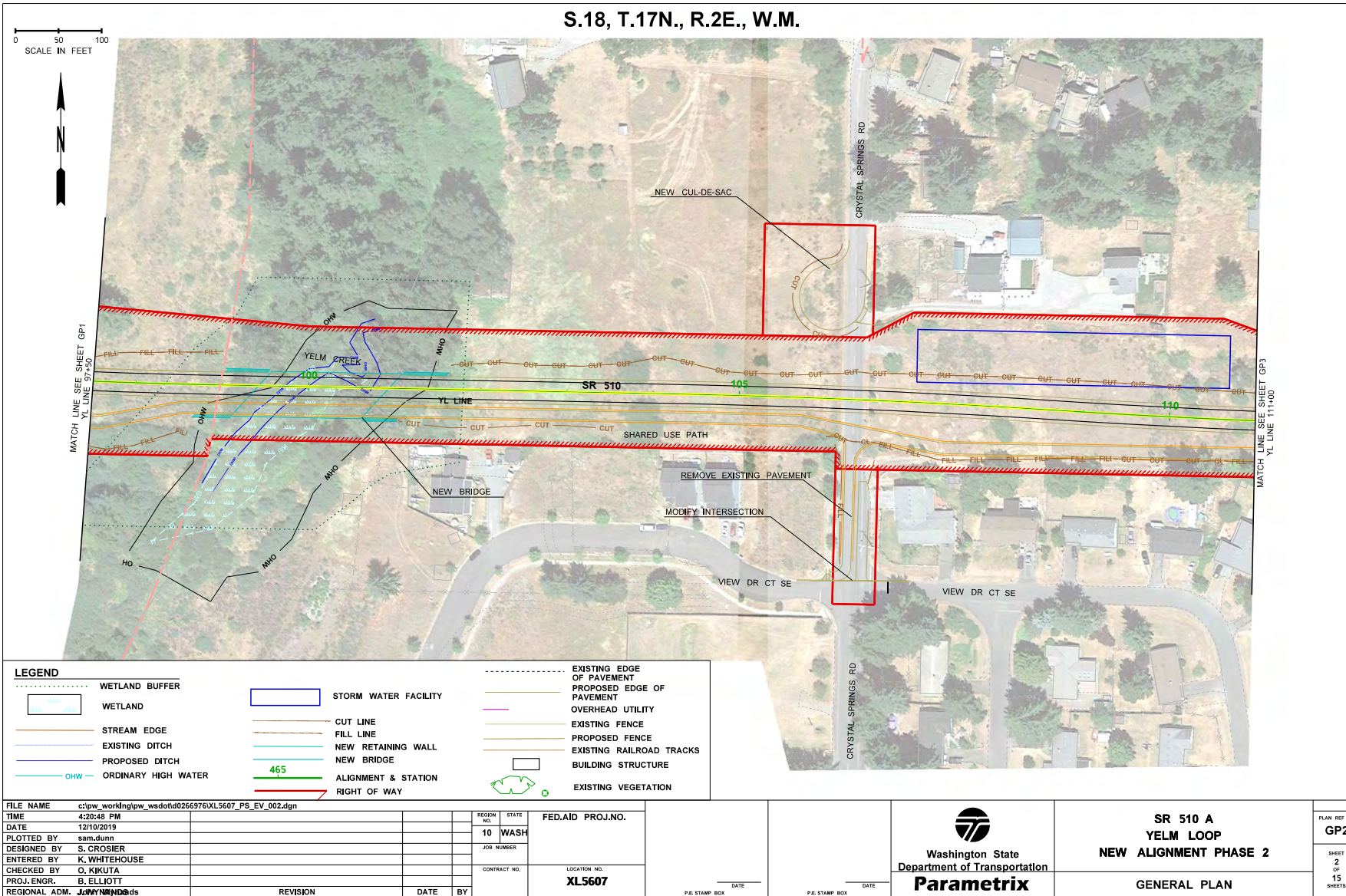
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CHECKED BY	O. KIKUITA		
PROJ. ENGR.	B. ELLIOTT		
REGIONAL ADM.	John Wynands	REVISION	DATE BY

REGION NO.	STATE	FED.AID PROJ.NO.
10	WASH	
JOB NUMBER		
CONTRACT NO.	LOCATION NO.	
	XL5607	
P.E. STAMP BOX	DATE	P.E. STAMP BOX

Washington State
 Department of Transportation
Parametrix

SR 510 A YELM LOOP STAGE 2	PLAN REF NO VM1
VICINITY MAP	SHEET OF SHEETS

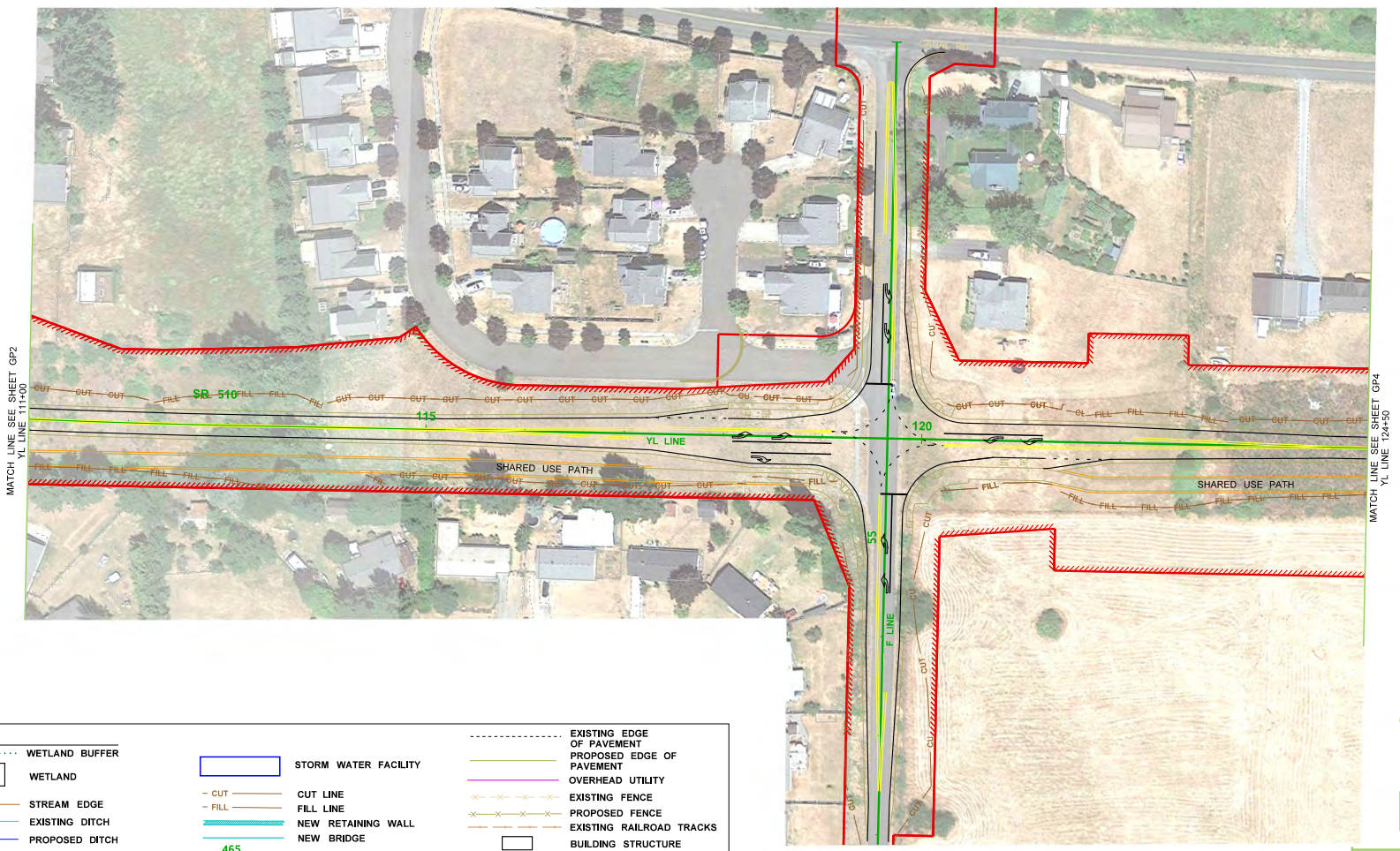
S.18, T.17N., R.2E., W.M.



LEGEND	
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	WETLAND
	STREAM EDGE
	EXISTING DITCH
	PROPOSED DITCH
	OHW - ORDINARY HIGH WATER
	STORM WATER FACILITY
	CUT LINE
	FILL LINE
	NEW RETAINING WALL
	NEW BRIDGE
	ALIGNMENT & STATION
	RIGHT OF WAY
	EXISTING EDGE OF PAVEMENT
	PROPOSED EDGE OF PAVEMENT
	OVERHEAD UTILITY
	EXISTING FENCE
	PROPOSED FENCE
	EXISTING RAILROAD TRACKS
	BUILDING STRUCTURE
	EXISTING VEGETATION

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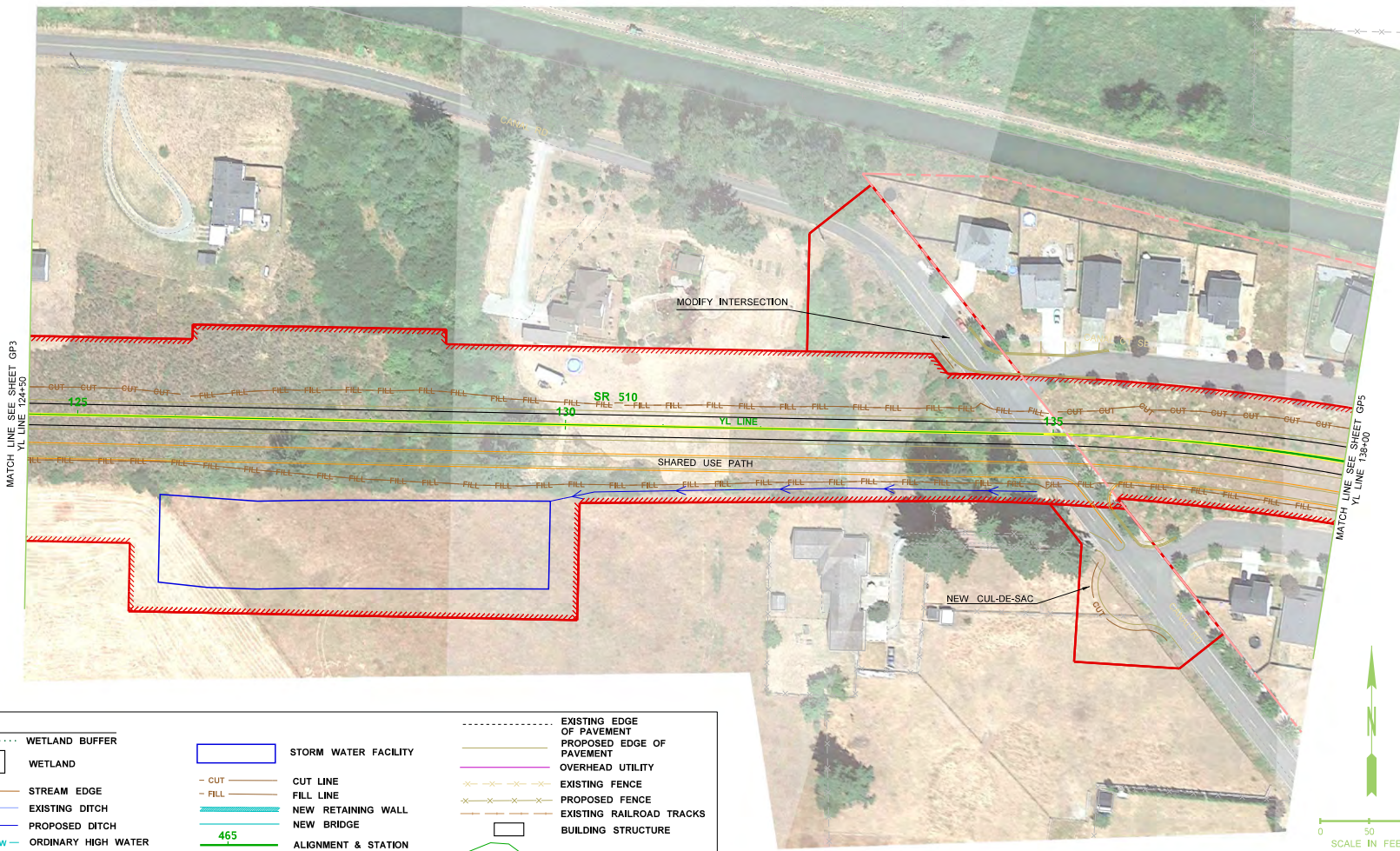
S.18, T.17N., R.2E., W.M.



LEGEND	
.....	WETLAND BUFFER
	WETLAND
—	STREAM EDGE
—	EXISTING DITCH
—	PROPOSED DITCH
—	ORDINARY HIGH WATER
	STORM WATER FACILITY
—	CUT LINE
—	FILL LINE
—	NEW RETAINING WALL
—	NEW BRIDGE
—	ALIGNMENT & STATION
—	RIGHT OF WAY
—	EXISTING EDGE OF PAVEMENT
—	PROPOSED EDGE OF PAVEMENT
—	OVERHEAD UTILITY
—	EXISTING FENCE
—	PROPOSED FENCE
—	EXISTING RAILROAD TRACKS
—	BUILDING STRUCTURE
—	EXISTING VEGETATION

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REGIONAL ADM.	J. WOODS								
REVISION		DATE	BY						

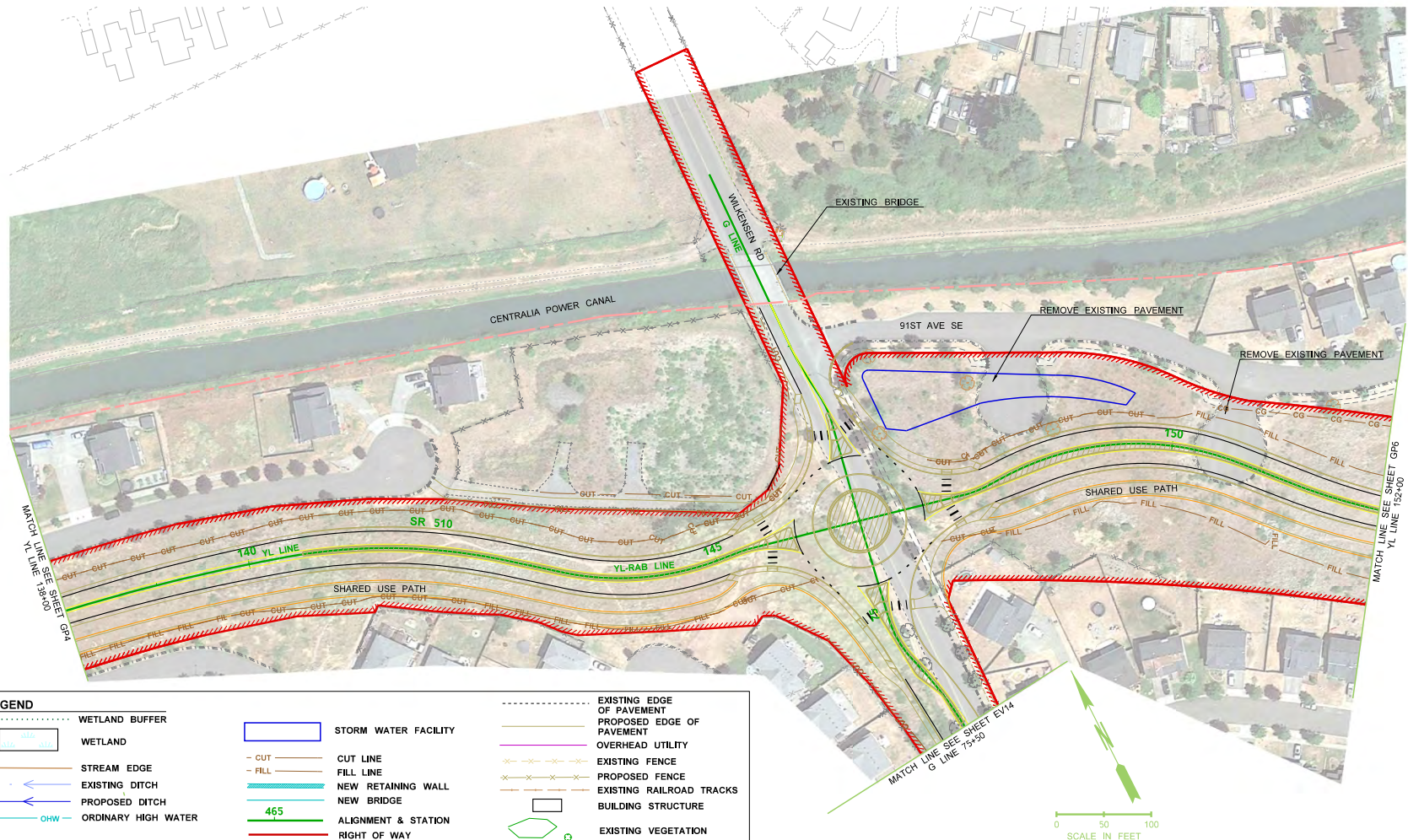
S.18, T.17N., R.2E., W.M.



LEGEND			
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	WETLAND		CUT LINE
	STREAM EDGE		FILL LINE
	EXISTING DITCH		NEW RETAINING WALL
	PROPOSED DITCH		NEW BRIDGE
	ORDINARY HIGH WATER		ALIGNMENT & STATION
			RIGHT OF WAY
			EXISTING EDGE OF PAVEMENT
			PROPOSED EDGE OF PAVEMENT
			OVERHEAD UTILITY
			EXISTING FENCE
			PROPOSED FENCE
			EXISTING RAILROAD TRACKS
			BUILDING STRUCTURE
			EXISTING VEGETATION

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PROJ. ENGR.: B. ELLIOTT	REGIONAL ADM.: John Wynands												

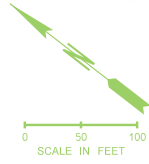
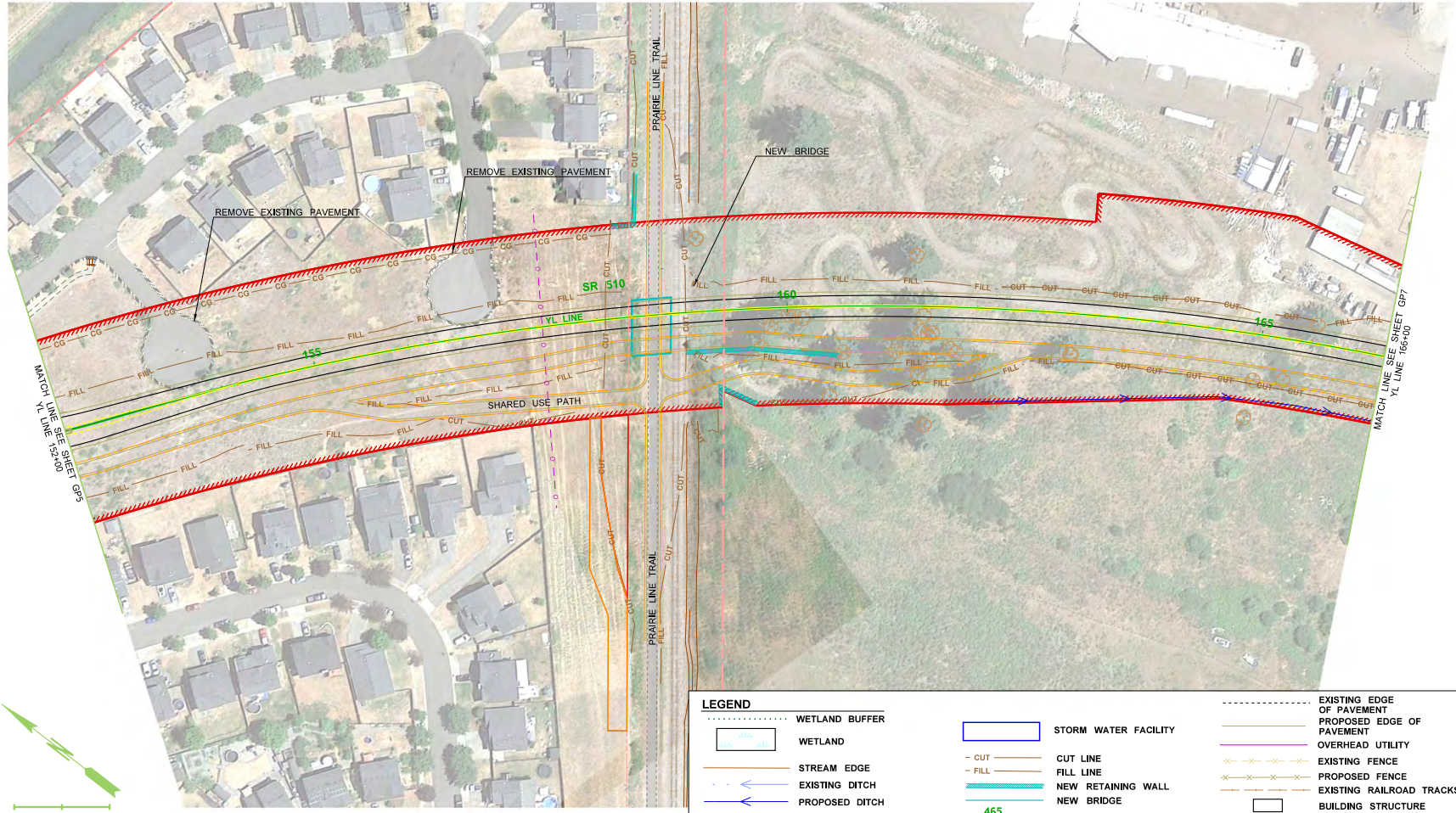
S.17, T.17N., R.2E., W.M.



LEGEND					
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	WETLAND		CUT LINE		PROPOSED EDGE OF PAVEMENT
	STREAM EDGE		FILL LINE		OVERHEAD UTILITY
	EXISTING DITCH		NEW RETAINING WALL		EXISTING FENCE
	PROPOSED DITCH		NEW BRIDGE		PROPOSED FENCE
	ORDINARY HIGH WATER		ALIGNMENT & STATION		EXISTING RAILROAD TRACKS
			RIGHT OF WAY		BUILDING STRUCTURE
			EXISTING VEGETATION		

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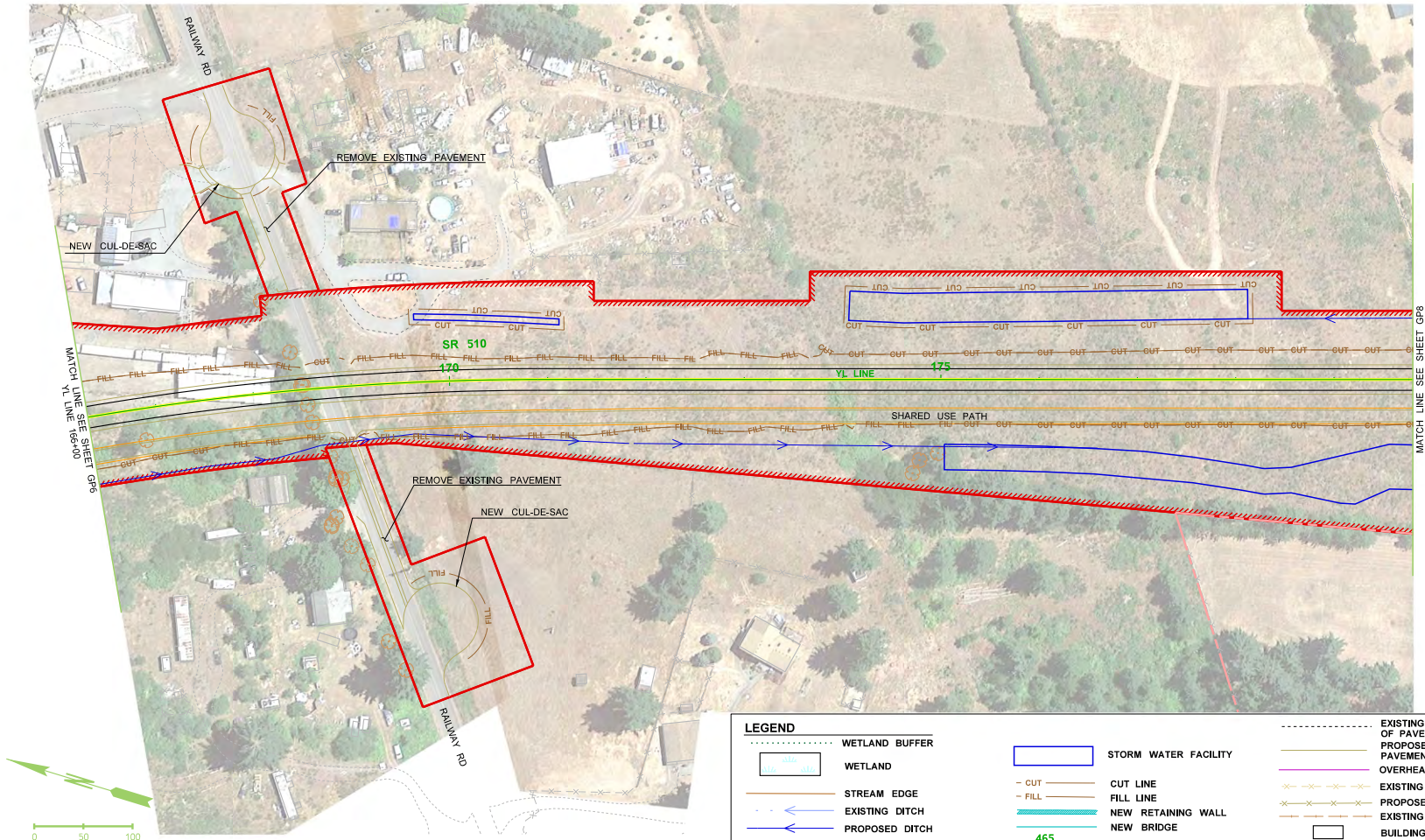
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LEGEND	
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	WETLAND
	STREAM EDGE
	EXISTING DITCH
	PROPOSED DITCH
	ORDINARY HIGH WATER
	STORM WATER FACILITY
	CUT LINE
	FILL LINE
	NEW RETAINING WALL
	NEW BRIDGE
	ALIGNMENT & STATION
	RIGHT OF WAY
	EXISTING EDGE OF PAVEMENT
	PROPOSED EDGE OF PAVEMENT
	OVERHEAD UTILITY
	EXISTING FENCE
	PROPOSED FENCE
	EXISTING RAILROAD TRACKS
	BUILDING STRUCTURE
	EXISTING VEGETATION

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S.17, T.17N., R.2E., W.M.



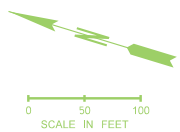
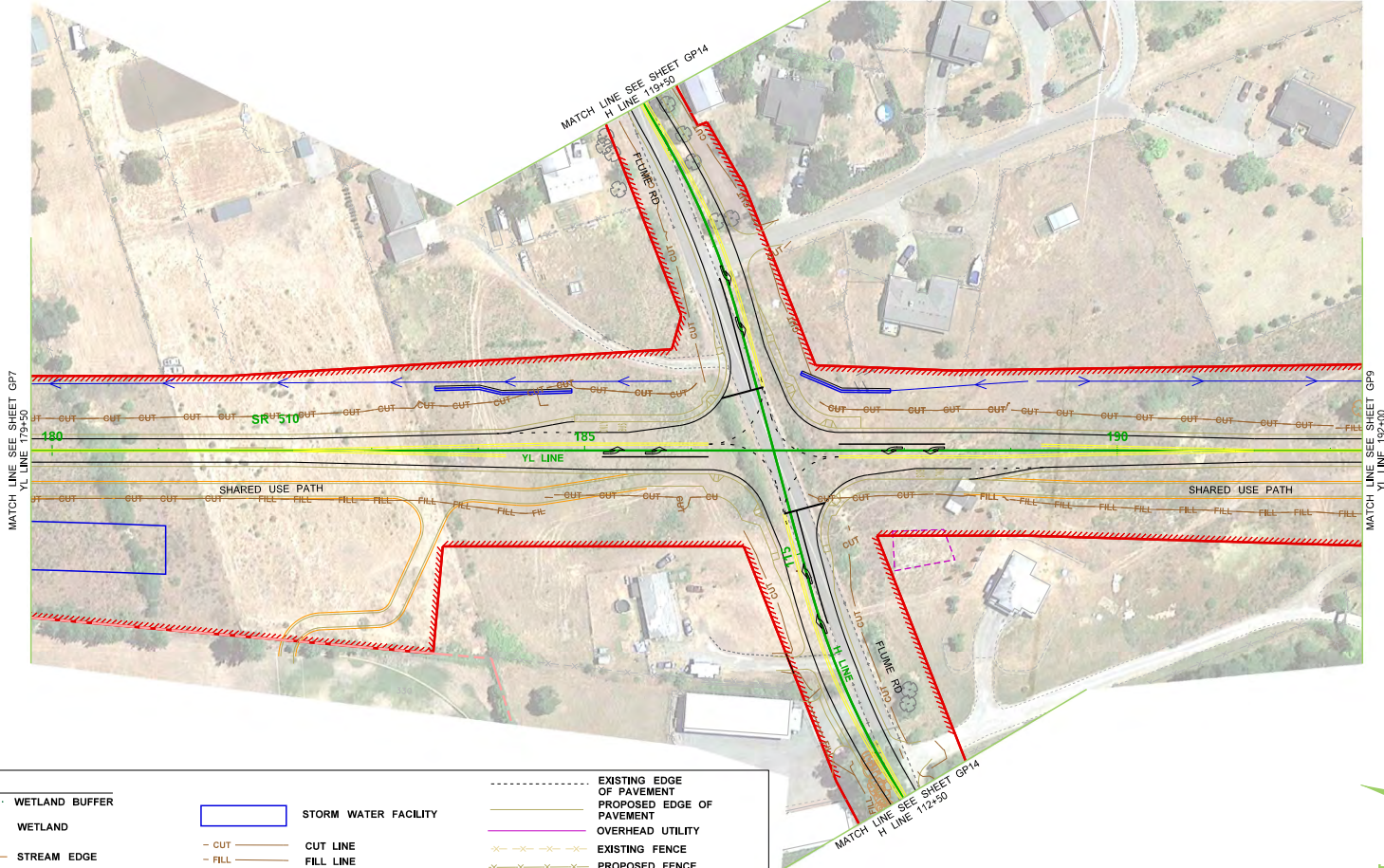
LEGEND

- WETLAND BUFFER
- WETLAND
- STREAM EDGE
- EXISTING DITCH
- PROPOSED DITCH
- ORDINARY HIGH WATER
- STORM WATER FACILITY
- CUT LINE
- FILL LINE
- NEW RETAINING WALL
- NEW BRIDGE
- ALIGNMENT & STATION
- RIGHT OF WAY
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- OVERHEAD UTILITY
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING RAILROAD TRACKS
- BUILDING STRUCTURE
- EXISTING VEGETATION

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PROJ.ENGR.	B. ELLIOTT					
REGIONAL ADM.	JIMMY HIGBBS					
	REVISION		DATE	BY		

<p>Washington State Department of Transportation</p>	<p>SR 510 A YELM LOOP NEW ALIGNMENT PHASE 2</p>	<p>PLAN REF NO GP7</p>
<p>Parametrix</p>	<p>GENERAL PLAN</p>	<p>SHEET 7 OF 15 SHEETS</p>

S.20, T.17N., R.2E., W.M.



LEGEND	
	WETLAND BUFFER
	WETLAND
	STREAM EDGE
	EXISTING DITCH
	PROPOSED DITCH
	ORDINARY HIGH WATER
	STORM WATER FACILITY
	CUT LINE
	FILL LINE
	NEW RETAINING WALL
	NEW BRIDGE
	ALIGNMENT & STATION
	RIGHT OF WAY
	EXISTING EDGE OF PAVEMENT
	PROPOSED EDGE OF PAVEMENT
	OVERHEAD UTILITY
	EXISTING FENCE
	PROPOSED FENCE
	EXISTING RAILROAD TRACKS
	BUILDING STRUCTURE
	EXISTING VEGETATION

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PROJ.ENGR.	B. ELLIOTT								
REGIONAL ADM.	JOMYNNH8ds			REVISION		DATE			



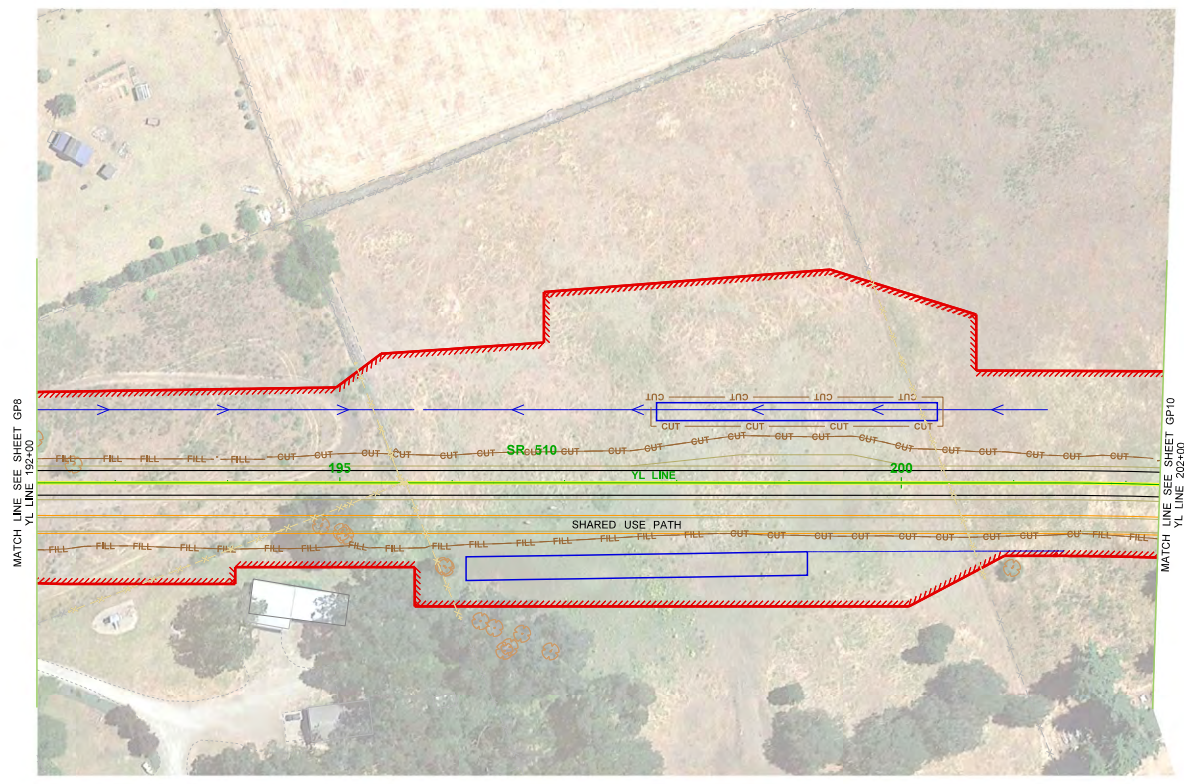
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YELM LOOP
NEW ALIGNMENT PHASE 2**

GENERAL PLAN

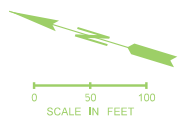
PLAN REF NO
GP8

SHEET
8
OF
15
SHEETS

S.20, T.17N., R.2E., W.M.

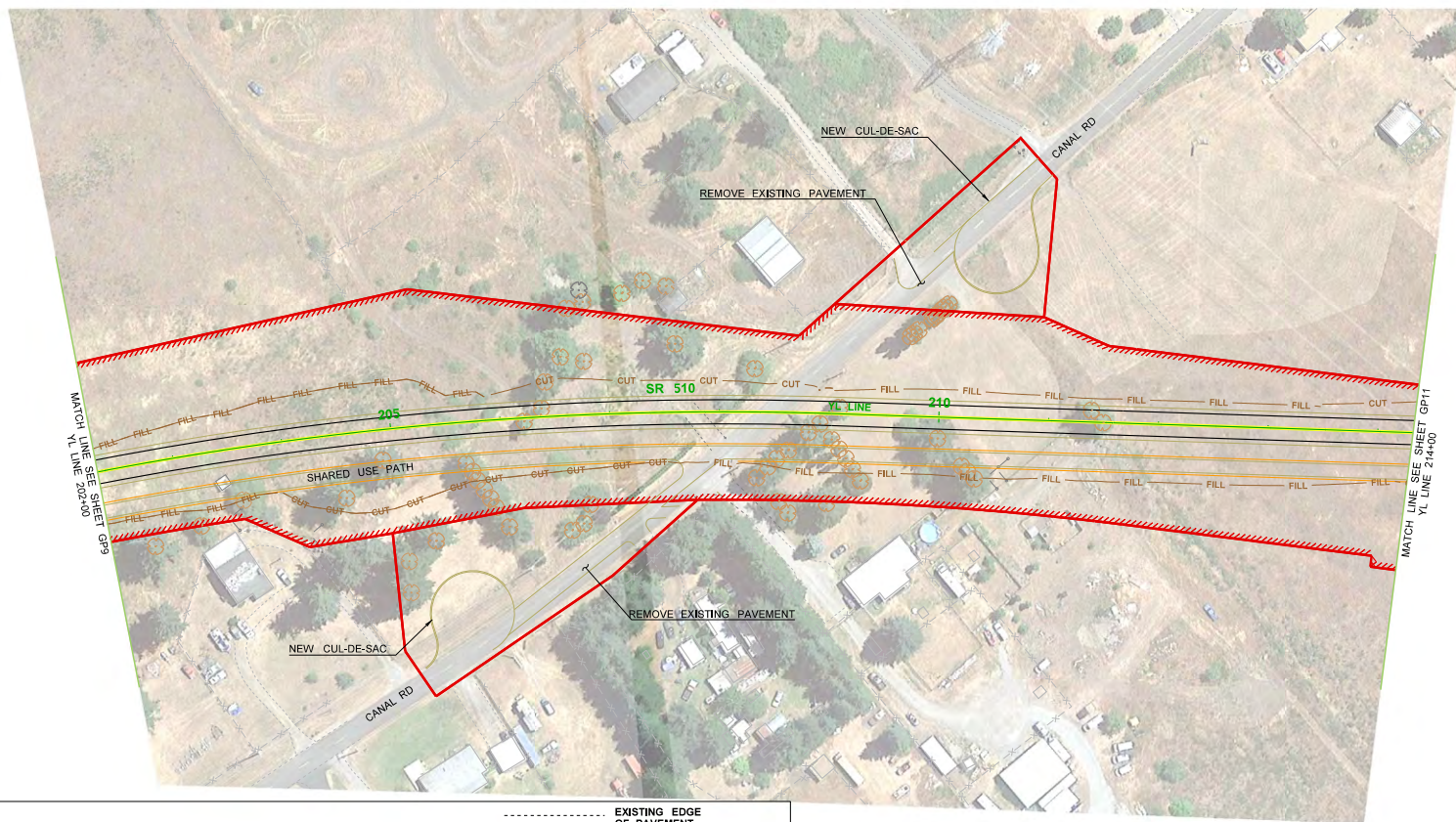


LEGEND	
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-----	EXISTING DITCH
-----	PROPOSED DITCH
-----	ORDINARY HIGH WATER
-----	STORM WATER FACILITY
-----	CUT LINE
-----	FILL LINE
-----	NEW RETAINING WALL
-----	NEW BRIDGE
-----	ALIGNMENT & STATION
-----	RIGHT OF WAY
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-----	PROPOSED EDGE OF PAVEMENT
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-----	BUILDING STRUCTURE
-----	EXISTING VEGETATION

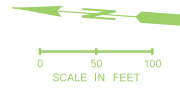


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	DATE										
	BY										

S.20, T.17N., R.2E., W.M.

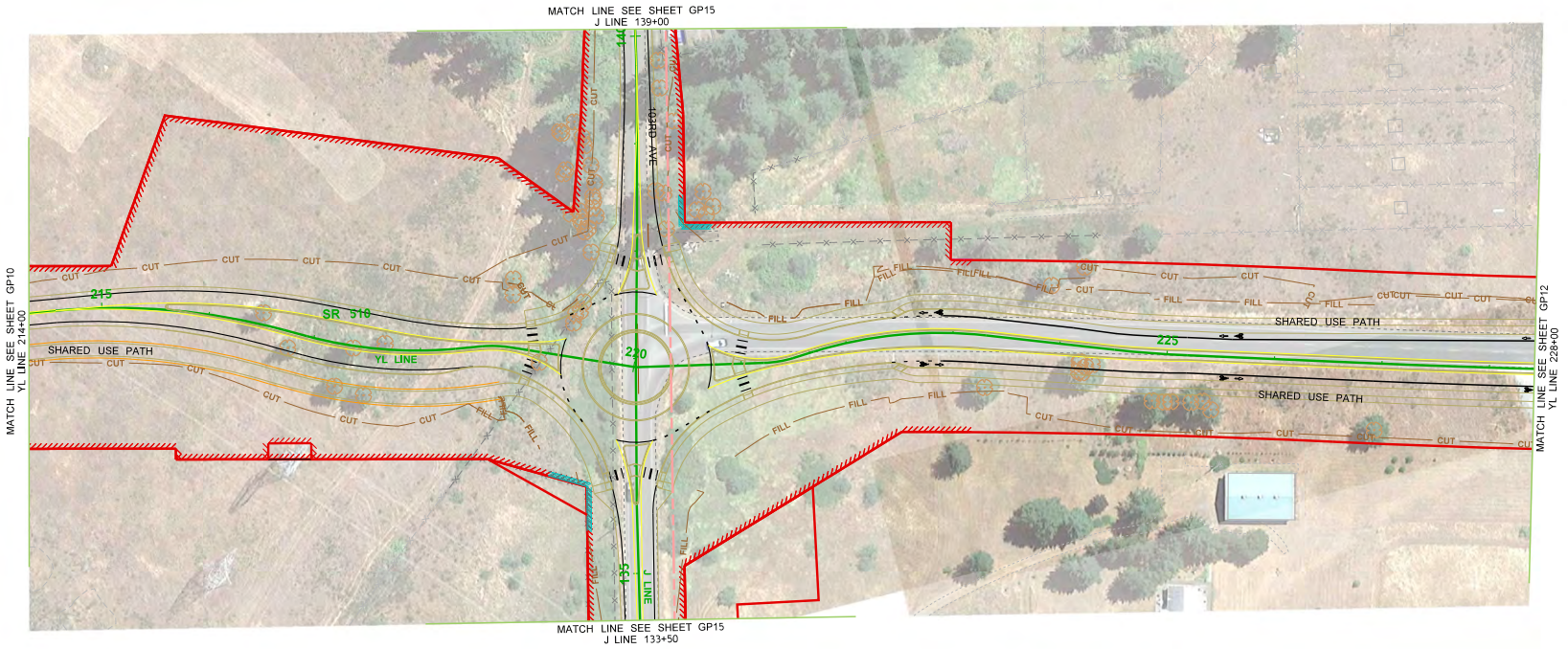


LEGEND	
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	PROPOSED DITCH
	ORDINARY HIGH WATER
	STORM WATER FACILITY
	CUT LINE
	FILL LINE
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	PROPOSED EDGE OF PAVEMENT
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	EXISTING RAILROAD TRACKS
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	EXISTING VEGETATION

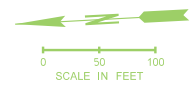


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S.29, T.17N., R.2E., W.M.

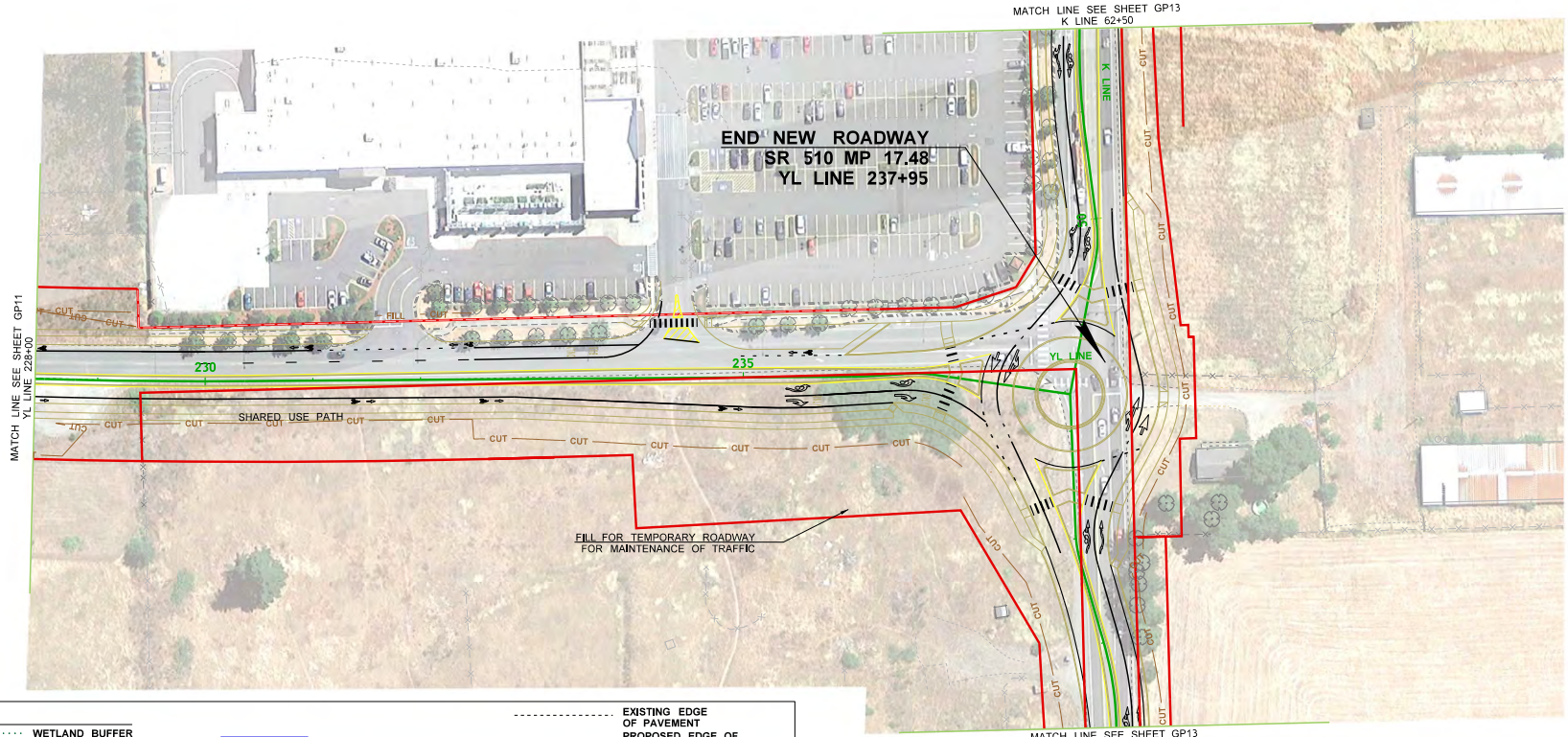


LEGEND	
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	STREAM EDGE
	EXISTING DITCH
	PROPOSED DITCH
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	STORM WATER FACILITY
	CUT LINE
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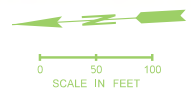


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CHECKED BY	O. KIKUTA							SHEETS	
PROJ.ENGR.	B. ELLIOTT								
REGIONAL ADM.	J. WYNN								
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S.29, T.17N., R.2E., W.M.

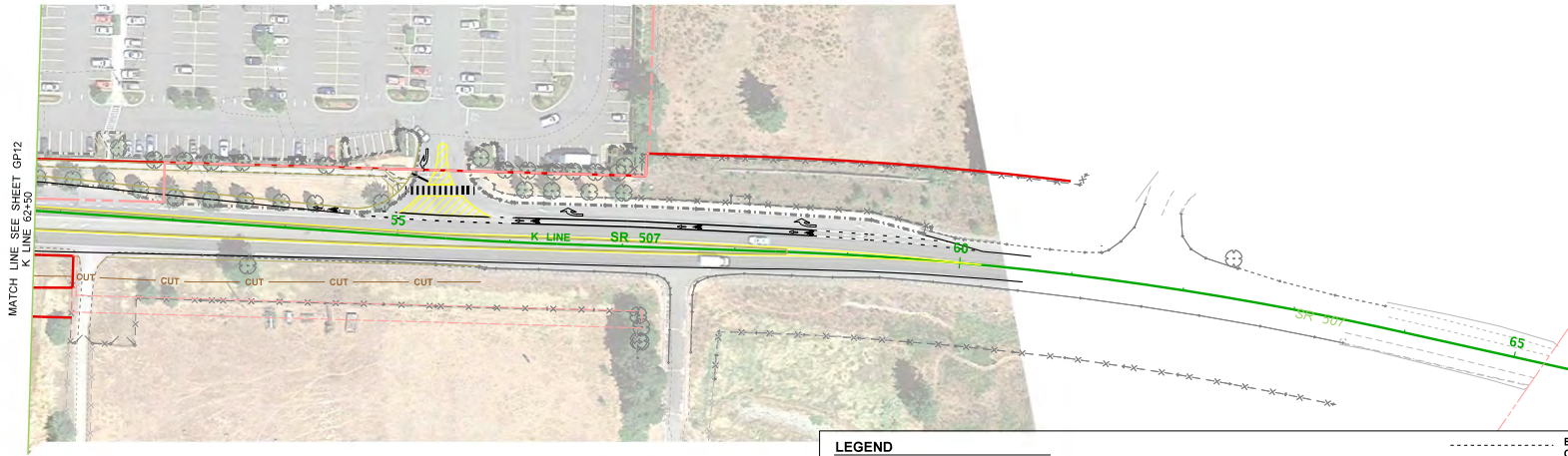


LEGEND	
	WETLAND BUFFER
	WETLAND
	STREAM EDGE
	EXISTING DITCH
	PROPOSED DITCH
	ORDINARY HIGH WATER
	STORM WATER FACILITY
	CUT LINE
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	PROPOSED EDGE OF PAVEMENT
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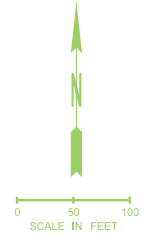
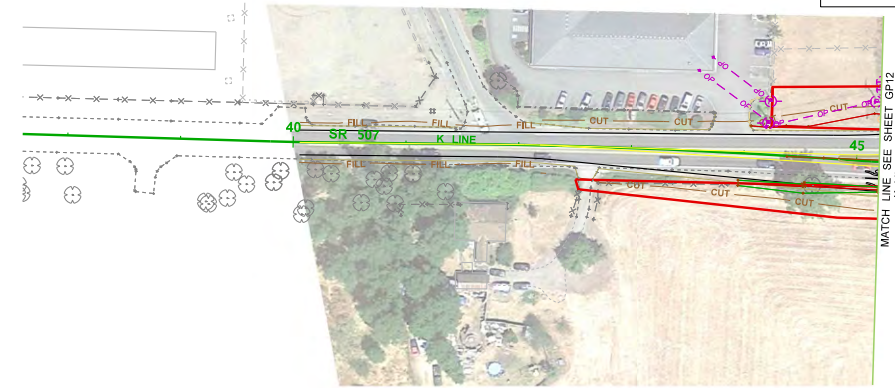


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				PROJECT ENGR.	B. ELLIOTT	REGIONAL ADM.	J. WYNN	DATE					
				REVISION		DATE							

S.29, T.17N., R.2E., W.M.

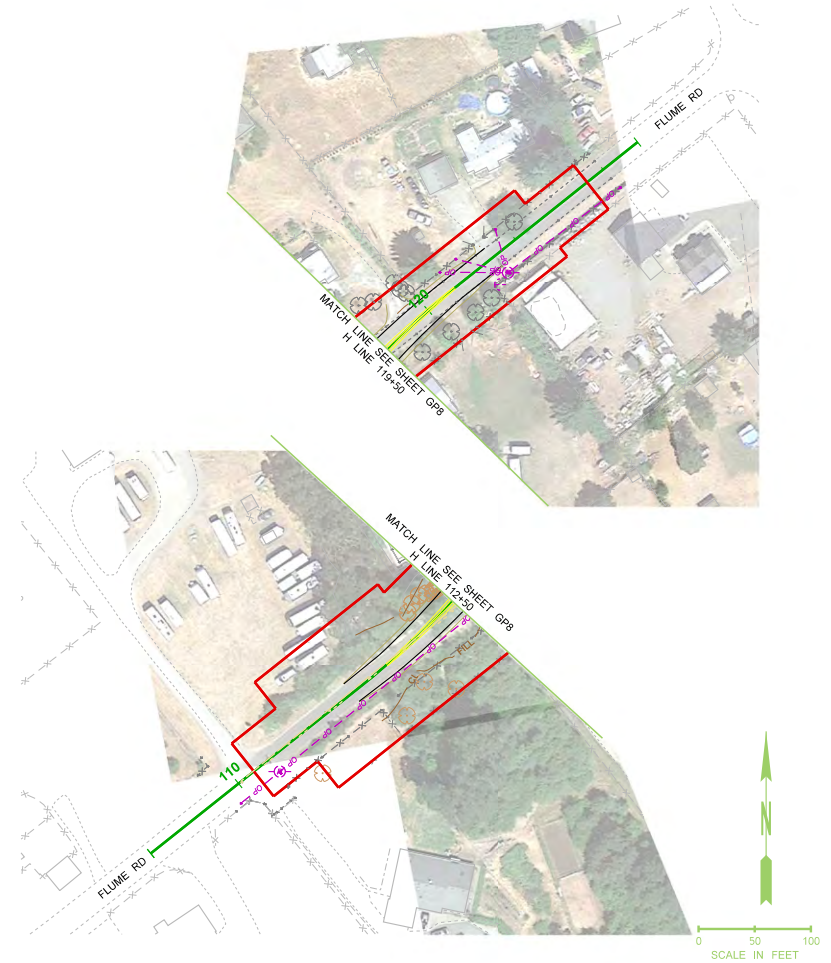
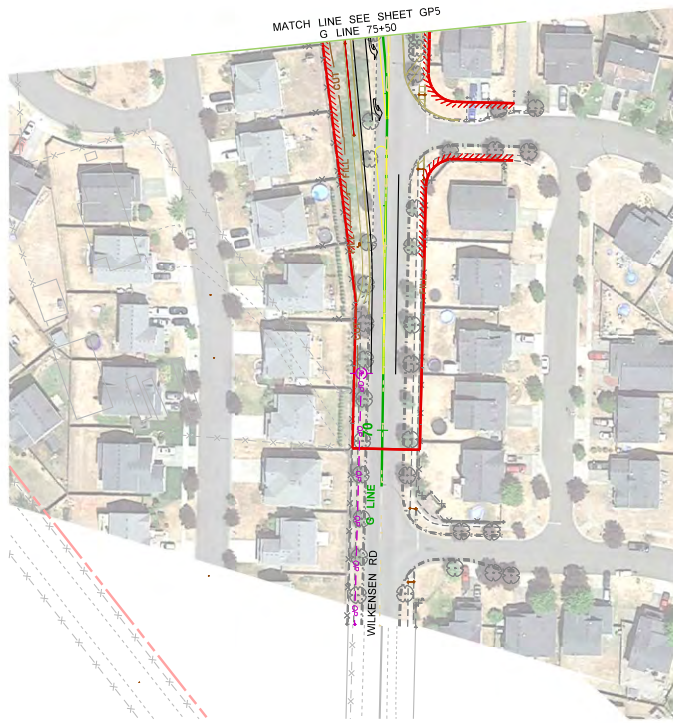


LEGEND	
	WETLAND BUFFER
	WETLAND
	STREAM EDGE
	EXISTING DITCH
	PROPOSED DITCH
	OHW - ORDINARY HIGH WATER
	STORM WATER FACILITY
	CUT LINE
	FILL LINE
	NEW RETAINING WALL
	NEW BRIDGE
	465 ALIGNMENT & STATION
	RIGHT OF WAY
	EXISTING EDGE OF PAVEMENT
	PROPOSED EDGE OF PAVEMENT
	OVERHEAD UTILITY
	EXISTING FENCE
	PROPOSED FENCE
	EXISTING RAILROAD TRACKS
	BUILDING STRUCTURE
	EXISTING VEGETATION



FILE NAME	c:\pw_work\hgw_wsd\td0266976\XL5607_PS_EV_013.dgn	REGION NO.	10	STATE	WASH	FED.AID PROJ.NO.		 Washington State Department of Transportation Parametrix	SR 510 A YELM LOOP NEW ALIGNMENT PHASE 2 GENERAL PLAN	PLAN REF NO	GP13	
TIME	6:07:27 PM	JOB NUMBER		CONTRACT NO.		LOCATION NO.	XL5607			SHEET	13	OF	15
DATE	12/10/2019	REVISION		DATE		BY					SHEETS	
PLOTTED BY	sam.dunn											
DESIGNED BY	S. CROSIER											
ENTERED BY	K. WHITEHOUSE											
CHECKED BY	O. KIKUTA											
PROJ. ENGR.	B. ELLIOTT											
REGIONAL ADM.	JOHN WAGBDS											

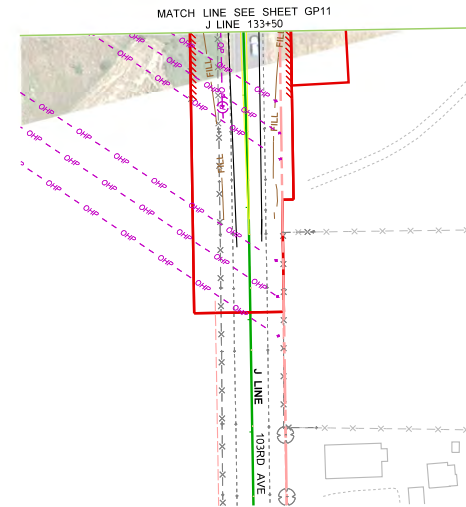
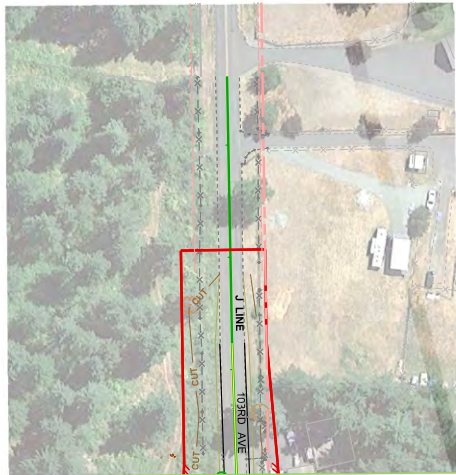
S.17, T.17N., R.2E., W.M.



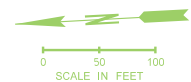
LEGEND			
	WETLAND BUFFER		STORM WATER FACILITY
	WETLAND		CUT LINE
	STREAM EDGE		FILL LINE
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	PROPOSED DITCH		NEW BRIDGE
	ORDINARY HIGH WATER		ALIGNMENT & STATION
			RIGHT OF WAY
			EXISTING VEGETATION
			EXISTING EDGE OF PAVEMENT
			PROPOSED EDGE OF PAVEMENT
			OVERHEAD UTILITY
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			PROPOSED FENCE
			EXISTING RAILROAD TRACKS
			BUILDING STRUCTURE

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TIME	6:00:04 PM			JOB NUMBER		CONTRACT NO.		LOCATION NO.	XL5607			SHEET	14
DATE	12/10/2019											OF	15
PLOTTED BY	sam.dunn											SHEETS	15
DESIGNED BY	S. CROSIER												
ENTERED BY	K. WHITEHOUSE												
CHECKED BY	O. KIKUTA												
PROJ.ENGR.	B. ELLIOTT												
REGIONAL ADM.	J. WYNN			REVISION		DATE							

S.29, T.17N., R.2E., W.M.



LEGEND					
.....	WETLAND BUFFER	.....	EXISTING EDGE OF PAVEMENT	.....	EXISTING EDGE OF PAVEMENT
	WETLAND		STORM WATER FACILITY	.....	PROPOSED EDGE OF PAVEMENT
.....	STREAM EDGE	.....	CUT LINE	.....	OVERHEAD UTILITY
.....	EXISTING DITCH	.....	FILL LINE	.....	EXISTING FENCE
.....	PROPOSED DITCH	.....	NEW RETAINING WALL	.....	PROPOSED FENCE
.....	ORDINARY HIGH WATER	.....	NEW BRIDGE	.....	EXISTING RAILROAD TRACKS
.....		.....	ALIGNMENT & STATION	.....	BUILDING STRUCTURE
.....		.....	RIGHT OF WAY	.....	EXISTING VEGETATION



FILE NAME	ctpw_work\ng\pw_wsdot\0266976\XL5607_PS_EV_015.dgn			REGION NO.	10	STATE	WASH	FED.AID PROJ.NO.		 Washington State Department of Transportation Parametrix	SR 510 A YELM LOOP NEW ALIGNMENT PHASE 2 GENERAL PLAN	PLAN REF NO	GP15
TIME	6:28:18 PM			JOB NUMBER		CONTRACT NO.		LOCATION NO.	XL5607			SHEET	15
DATE	12/10/2019			BY		DATE		P.E. STAMP BOX	DATE		OF	15	
PLOTTED BY	sam.dunn			REVISION		DATE					SHEETS		
DESIGNED BY	S. CROSIER												
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PROJ.ENGR.	B. ELLIOTT												
REGIONAL ADM.	Jomy NGBds												

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D DISCIPLINE STUDIES AND LIST OF PREPARERS

The following individuals contributed to the production of this Supplemental Environmental Assessment:

Name	Company	Role
<i>Jeff Sawyer</i>	<i>WSDOT</i>	<i>EA Reviewer</i>
<i>Victoria Book</i>	<i>WSDOT</i>	<i>EA Reviewer</i>
<i>Lindsay Taylor</i>	<i>WSDOT</i>	<i>Reviewer – Noise, Air Quality</i>
<i>Roger Kiers</i>	<i>WSDOT</i>	<i>Reviewer – Cultural Resources</i>
<i>Tatiana Dreisbach</i>	<i>WSDOT</i>	<i>Reviewer – Fish, Wildlife and Vegetation/BA</i>
<i>Steve Shipe</i>	<i>WSDOT</i>	<i>Reviewer – 4(f) and 6(f) Analysis</i>
<i>Julie Hartwig</i>	<i>WSDOT</i>	<i>Reviewer – Visual Quality Analysis</i>
<i>Jean Carr</i>	<i>SCJ Alliance</i>	<i>Consultant Team Oversight, EA Editor</i>

Studies and technical reports were completed during the environmental and design phases for the SR 510 Yelm Loop – New Alignment Phase 2, as well as for the 2000 EA and 2008 NEPA reevaluation. They contain additional information that supports the conclusions found in this Supplemental Environmental Assessment. They are incorporated by reference into this SEA and listed on the next page. They may be found in their entirety at the locations listed at the end of Appendix D.

Cultural Resources Assessment

Cultural Resources Inventory for SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, Historical Research Associates, Inc., November 2019

Vegetation, Fish, and Wildlife Discipline Report

Vegetation, Fish, and Wildlife – Discipline Report; SR 510, Yelm Loop – New Alignment Phase 2, Parametrix, September 2019

Noise Discipline Report and Technical Memorandum

Noise Technical Memorandum, Parametrix, July 2007

Noise Impact and Mitigation Analysis, SR 510 – Yelm Loop Y3 Corridor, Michael Minor and Associates, April 2005

Water Resources Discipline Report

Supplemental Environmental Assessment – Water Resources Discipline Report, Parametrix, September 2019

NEPA Reevaluation and Biological Assessment – Water Resources, Parametrix, January 2008

Transportation Technical Memorandum

SR 510 Yelm Loop – New Alignment Phase 2 City-wide Analysis, SCJ Alliance, July 2019

SR 510 Yelm Loop – New Alignment Phase 2 Intersection Control Evaluation, SCJ Alliance, December 2018

SR 510 Yelm Loop Environmental Assessment Reevaluation, Traffic Element, Parametrix, May 2005

Wetland Assessment Report

SR 510/Yelm Loop – New Alignment Phase 2, Thurston County, Washington, WSDOT, December 2018

Hazardous Materials Technical Memorandum

SR 510 Yelm Loop – New Alignment Phase 2, Hazardous Materials Analysis, SCJ Alliance, December 2019

Air Quality Technical Memorandum

SR 510 Yelm Loop Highway NEPA Reevaluation, Air Quality, Parametrix, January 2008

Land Use Technical Memorandum

NEPA Reevaluation; Land Use and Related Issues, Parametrix, January 2008

Floodplain Resources Technical Memorandum

NEPA Reevaluation and Biological Assessment – Water Resources, Parametrix, January 2008

Social and Community Effects Technical Memorandum

SR 510 Yelm Loop, Phase 2 – Environmental Justice Determination, SCJ Alliance, April 2021

SR 510 Yelm Loop Environmental Assessment Reevaluation; Environmental Justice, Parametrix, January 2008

Biological Assessment

SR 510 Yelm Loop – Biological Assessment, Parametrix, July 2019

Discipline studies and reports may be obtained at the following locations:

<https://www.wsdot.wa.gov/Projects/SR510/YelmLoopNewAlignPh2>

WSDOT, Olympic Region

Environmental and Hydraulics Services Office

Jeff Sawyer, Environmental and Hydraulic Manager
5720 Capitol Boulevard
Tumwater, WA 98501
360.570.6700

E

AGENCY AND TRIBAL CORRESPONDENCE

- Appendix E-1 Federal Agencies
- Appendix E-2 State Agencies
- Appendix E-3 Tribal Correspondence / Purpose and Scope of Consultation

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FEDERAL AGENCIES

APPENDIX E-1

- E-1.1 Geotech Concurrence Letter from USFWS
- E-1.2 BA Submittal Letter to USFWS
- E-1.3 BA Initiation Letter from USFWS
- E-1.4 BA Submittal Letter to NMFS
- E-1.5 BA Concurrence Letter from NMFS

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United States Department of the Interior
 FISH AND WILDLIFE SERVICE
 Washington Fish and Wildlife Office
 510 Desmond Dr. S.E., Suite 102
 Lacey, Washington 98503



FEB 12 2020

In Reply Refer To:
 01EWF00-2020-1-0427

Jeff Sawyer
 Washington State Department of Transportation
 Olympic Region, Environmental Services
 ATTN: Dave Molenaar
 PO Box 47440
 Olympia, Washington 98504-7440

Dear Mr. Sawyer:

Subject: State Route 510 Yelm Loop Bypass Phase II, Geotechnical Investigations
 (WSDOT Project No. XL5607)

This letter is in response to your request for informal consultation on the above-mentioned project. The Federal Highway Administration (FHWA) has provided funds to the Washington State Department of Transportation (WSDOT) to complete the above geotechnical investigations in advance of the future State Route (SR) 510 Yelm Loop Bypass Phase II project, which will undergo separate consultation. Your letter and Biological Assessment (BA), dated January 10, 2020, were received in our office on January 13, 2020. They provide information in support of a “may affect, not likely to adversely affect” determination for the Yelm pocket gopher (*Thomomys mazama yelmensis*). This informal consultation has been completed in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). It is our understanding that this request has been submitted by the WSDOT, serving as the designated non-federal representative, on behalf of the FHWA.

Since 2018, staff and managers from our office have been providing technical assistance to the WSDOT (Olympic Region) in support of the pending State Route 510 Yelm Loop Bypass Phase II roadway improvement project. Late last year, the WSDOT identified several locations along the proposed Phase II roadway alignment where preliminary engineering and design requires geotechnical investigations of the subsurface conditions: 1) the proposed locations for bridge abutments or foundations at Yelm Creek, 2) along the length of a proposed noise abatement wall,

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Jeff Sawyer

2

and 3) at the locations for abutments or foundations for a pedestrian underpass. Staff from our office have visited these locations on at least two occasions, including earlier this year (January 2020) when we met in the field with the specific purpose of reviewing staging areas, points of entry, and travel paths for the equipment which are needed to complete the work.

The WSDOT proposes to complete the investigations between July 1 and September 30, 2020 (approximately 30 work days). Equipment will travel along existing, developed portions of the right-of-way and traverse previously disturbed areas (e.g., along an existing two-track haul road and fence lines), to the fullest extent practicable. The WSDOT will review the proposed staging areas, points of entry, and travel paths with the contractor or crew prior to commencing the work, and will use high-visibility construction fencing to prevent incursions into sensitive habitats.

The WSDOT made “no effect” determinations for additional species and critical habitat that are known to occur in Thurston County. Your determinations that the action will have no effect on these listed species and critical habitat rest with the federal action agency. The U.S. Fish and Wildlife Service (Service) has no regulatory or statutory authority for concurring with “no effect” determinations, and no consultation with the Service is required. We recommend that the action agency document their analyses, and maintain that documentation as part of their project files.

Sufficient information has been provided to determine the effects of the proposed project to federally listed species and to conclude whether the project is likely to adversely affect those species. Our concurrence is based on information included in the BA, successful implementation of the conservation measures described in the BA, and the following rationale:

Yelm Pocket Gopher

The Yelm Loop Phase II roadway alignment is mostly located on soils mapped as more- and less-preferred suitable Yelm pocket gopher soil types. However, current cover types are highly variable; for example, some portions of the alignment are open and predominantly covered with herbaceous vegetation, while other portions have dense woody cover in the form of native/nonnative shrubs and trees. The right-of-way also includes the above-mentioned, developed and previously disturbed areas.

Staging and gaining access and position to complete the geotechnical investigations will result in little or no impact to soils. There will be no grading and no placement of permanent fill; excavations will be limited to the drill rig bore locations, with only very limited and temporary impacts to the soil horizon.

Staging and gaining access and position to complete the geotechnical investigations will also result in very limited and temporary impacts to vegetation, with no anticipated conversion of cover types. The equipment needed to complete the work (i.e., a tracked or wheeled drill rig and utility trucks) is capable of traversing scrub-shrub cover types, and the proposed travel paths mostly consist of existing fence lines with dense woody cover and existing two-track haul roads. At some locations, woody vegetation may be pruned, but not grubbed or removed entirely.

Jeff Sawyer

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Observations made over the course of two or more site visits to these locations have failed to identify any signs of occupancy by Yelm pocket gophers; no fresh or weathered Yelm pocket gopher mounds have been identified, recently or historically, to a distance of more than 0.5 mile from the project sites. Along the proposed travel paths, and at each of the proposed drill rig bore locations, there is very little suitable habitat, and none that is likely to be currently occupied by Yelm pocket gophers.

Based on the available information, it is extremely unlikely that Yelm pocket gophers will be encountered or exposed to any form of stressor or effects of the project. Because exposure to individuals is extremely unlikely, effects of the project to the Yelm pocket gopher are considered discountable.


The proposed work will not destroy or degrade suitable Yelm pocket gopher habitat. There will be little or no impact to soils, and no significant impacts to vegetation where the current cover types are suitable. Therefore, effects to suitable habitat for the Yelm pocket gopher are considered insignificant.

This concludes informal consultation pursuant to the regulations implementing the ESA (50 CFR 402.13). To expedite the environmental review process, if the FHWA concurs with the effect determination for listed species, then you may consider this action to be in compliance with the requirements of 50 CFR 402.13, thereby concluding the consultation process. This project should be re-analyzed and re-initiation may be necessary if 1) new information reveals effects of the action that may affect listed species or critical habitat in a manner, or to an extent, not considered in this consultation, 2) if the action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this consultation, and/or 3) a new species is listed or critical habitat is designated that may be affected by this project.

If you have any questions about this letter or our shared responsibilities under the ESA, please contact Ryan McReynolds (ryan_mcreynolds@fws.gov; 360-753-6047) or Martha Jensen (martha_jensen@fws.gov; 360-753-9000).

Sincerely,



 Brad Thompson, State Supervisor
Washington Fish and Wildlife Office

cc:

FHWA, Washington Division
WSDOT, Olympia WA (C. Ward)
WSDOT, Olympia WA (D. Molenaar)
WSDOT, Olympia (E. Gower)
WSDOT Olympia (K. McAllister)
USFWS, Lacey (M. Jensen)
USFWS, Lacey, WA (R. McReynolds)
USFWS, Lacey (L. Durham)



U.S. Department of Transportation
Federal Highway Administration

Washington Division

Suite 501 Evergreen Plaza
711 South Capitol Way
Olympia, Washington 98501-1284
(360) 753-9480
(360) 753-9889(FAX)
<http://www.fhwa.dot.gov/wadiv>

February 21, 2020

HFO-WA.1/WA3557E10198

Brad Thompson
United States Fish and Wildlife Service
510 Desmond Drive SE, Suite 102
Lacey, WA 98503

**SR 510, Yelm Loop – New Alignment
Phase 2 Project
Request for Reinitiation of Consultation
USFWS Ref. Nos. 13410-2008-I- 0085**

Dear Mr. Thompson:

Please find enclosed a supplemental Biological Assessment (BA) to support the Federal Highway Administration’s (FHWA) request for reinitiation of consultation for the SR 510, Yelm Loop – New Alignment Phase 2 project. The Washington State Department of Transportation (WSDOT) submitted the BA for this project to the U.S. Fish and Wildlife Service (USFWS) in 2007. The on January 4, 2008, USFWS issued a letter of concurrence (Ref. No. 13410-2008-I-0085) finding that the Yelm Loop project “*may affect but is not likely to adversely affect*” bull trout and bull trout critical habitat.

WSDOT obtained an updated species list for the project action area were from the USFWS website in September 2019. Yelm pocket gopher (YPG) (*Thomomys mazama yelmensis*), was listed as Threatened following completion of informal consultation. There is no designated YPA critical habitat within the action area. FHWA determined that the project “*is likely to adversely affect*” YPG and is requesting formal consultation per section 7(a)(2) of the Endangered Species Act (as amended).

The project design currently under review is not substantially different from the design that was the basis of the consultation in 2008. Since consultation was completed in 2008, critical habitat for bull trout was redesignated, and the extent of critical habitat in the Nisqually River has decreased. Design modifications have reduced the extent of project-related ground-disturbing work. For these reasons, WSDOT believes the effect determinations remain unchanged for bull trout and bull trout critical habitat.

The project will construct approximately 2.7 miles of new two-lane highway, along with a shared-use path for pedestrians and bicycles, partially within suitable YPG habitat. This will complete a bypass of the main commercial area of Yelm for regional traffic. The project ties into Phase 1 (which was completed in 2010) just east of Cullens Road and continues around the northeastern area of Yelm, tying into SR 507 at 170th Street SE.

In May and June, 2018, FHWA and WSDOT met with the USFWS to discuss the project and impact avoidance/minimization, and conservation measures for YPG. Coordination with your office has been on-going since these initial discussions.

It is our understanding that following the completion of formal consultation and receiving a biological opinion (BO), our responsibilities under Section 7(c) of the Endangered Species Act will be satisfied. We request the opportunity to review the draft BO prior to finalization.

Please contact me (360-753-9550) if you require additional information or have any questions about this project.

Sincerely,

DANIEL M. MATHIS, P.E.
Division Administrator

By: Lindsey L. Handel, P.E.
Urban Area Engineer

Enclosure

Cc electronically: Dave Molenaar, WSDOT
Kelly McAllister, WSDOT

E-1.3 | BA Initiation Letter from USFWS



United States Department of the Interior
 FISH AND WILDLIFE SERVICE
 Washington Fish and Wildlife Office
 2510 Desmond Dr. S.E., Suite 102
 Lacey, Washington 98503



March 24, 2020

In Reply Refer To:
13410-2008-F-0085-R001

Daniel M. Mathis
 Federal Highway Administration
 Washington Division Administrator
 711 South Capitol Way, Suite 501
 Olympia, Washington 98501-1284

Jeff Sawyer
 Washington State Department of Transportation
 Olympic Region, Environmental Services
 PO Box 47440
 Olympia, Washington 98504-7440

Dear Mr. Mathis and Mr. Sawyer:

Subject: State Route 510 Yelm Loop, Phase II (HFO-WA.1/WA3557E10198)

We received your cover letter, Biological Assessment (BA), and request for reinitiation of the consultation for Phase II of the State Route (SR) 510 Yelm Loop Corridor Project on February 24, 2020. The Federal Highway Administration (FHWA) and Washington State Department of Transportation, Olympic Region (WSDOT) provided information in support of a “may affect, likely to adversely affect” determination for the Yelm pocket gopher (*Thomomys mazama yelmensis*), and a “may affect, not likely to adversely affect” determination for the bull trout (*Salvelinus confluentus*). The U.S. Fish and Wildlife Service (Service) reference number for this consultation is 13410-2008-F-0085-R001. The Service has determined that these materials are complete and therefore reinitiation of formal consultation began March 2, 2020. This formal consultation will be completed in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The BA and attached appendices, including Appendix E (Mitigation Plan), describe the FHWA’s and WSDOT’s proposal for offsetting and mitigating the action’s unavoidable adverse impacts to Yelm pocket gophers associated with the permanent loss or degradation of approximately 19.43

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Daniel Mathis and Jeff Sawyer

acres of suitable habitat and ground-disturbing activities during construction. On March 9, 2020, we received an email correspondence from the WSDOT (C. Ward pers. comm. 2020) and an additional attachment related to the proposed mitigation (Thurston County Sundry Site Plan, Yelm Loop – Gopher Mitigation Conservation Area). These materials describe additional ongoing work to assess and appraise available opportunities to acquire, through conservation easement(s) or fee title purchase, additional occupied habitat which may contribute to the multi-parcel conservation site(s) that the WSDOT proposes to establish and manage for the Yelm pocket gopher. The FHWA and WSDOT will inform the Service, likely during April or May of this year, if and when it becomes known whether they can and will acquire additional occupied habitat.

In the event that additional occupied habitat cannot be acquired, or if it remains uncertain whether additional occupied habitat is available for purchase, the FHWA and WSDOT will prepare and submit to the Service a memorandum, amending their description of the proposed action, and describing their additional plans and intent to fully offset and mitigate the action’s unavoidable adverse effects to the Yelm pocket gopher and suitable habitat.

The Service will begin preparation of our Biological Opinion (Opinion) addressing the proposed action. Our current schedule includes a target date of June 22, 2020, for submittal of the draft Opinion to the FHWA and WSDOT for your review and comment. In the unlikely event that planned development and/or information sharing between the parties delays further progress with our Opinion, the Service will provide notice to the FHWA and WSDOT, including our revised schedule and target date for completion of the Opinion.

We appreciate the excellent coordination that has occurred to date in support of delivery of this project and proposal. The Service looks forward to continued close coordination, which will provide better predictability for all parties.

If you have any questions about this letter, or our shared responsibilities under the Endangered Species Act, please contact Leslie Durham (leslie_durham@fws.gov; 360-753-9532) or Martha Jensen (martha_jensen@fws.gov; 360-753-9000).

Sincerely,
MARTHA
JENSEN

Digitally signed by MARTHA JENSEN
 Date: 2020.03.24 09:49:25 -0700

for Brad Thompson, State Supervisor
 Washington Fish and Wildlife Office

cc:
 FHWA, Olympia, WA (L. Handel)
 FHWA, Olympia, WA (C. Callahan)
 WSDOT, Olympic, WA (D. Mollenaar)
 WSDOT, Olympia, WA (C. Ward)
 WSDOT, ESO, Olympia, WA (M. Meade)



Olympic Region
Environmental & Hydraulic Services
5720 Capitol Blvd, Tumwater, WA 98501
P.O. Box 47440
Olympia, WA 98504-7440
360-570-6700 / FAX: 360-357-2601
TTY: 1-800-833-6388
www.wsdot.wa.gov

February 21, 2020

Mr. Kim Kratz
Assistant Regional Administrator
National Marine Fisheries Service
Oregon Washington Coastal Office
510 Desmond Dr. SE, Suite 103
Lacey, WA 98503-1263

RE: SR 510/Yelm Loop - New Alignment Phase #2
Milepost 14.72 to 17.48
Thurston County, Washington
Informal Consultation Reinitiation
WSDOT Project No. XL5607
NMFS Tracking No. 2007/07730

Dear Mr. Kratz:

The Washington State Department of Transportation (WSDOT), on behalf of the Federal Highway Administration (FHWA), is planning to complete a mobility project on State Route (SR) 510 in Thurston County, Washington. The project is located in Township 17 N, Range 2 E, sections 17, 18, 20, and 29; WRIA 11 (Nisqually); and 6th field HUCs 171100150302 (Yelm Creek) and 171100150301 (Murray Creek-Nisqually River). Yelm Creek is located within the project limits.

WSDOT previously submitted a Biological Assessment (BA) for this project to the National Marine Fisheries Service (NMFS) on December 2, 1999. NMFS responded on February 29, 2000, with a letter of non-concurrence and requested additional information. Because the project was put on hold, and due to changes in the project scope and species listings, a new BA was submitted on November 30, 2007, with an effect determination of "may affect, not likely to adversely affect" Puget Sound Chinook, Puget Sound steelhead, and critical habitat for PS Chinook. In addition, it was determined that the project will "not adversely affect" Pacific Salmon EFH. NMFS responded on April 2, 2008, with a letter of concurrence.

The project was not fully funded for construction so in 2009/2010 the eastern portion of the corridor (Phase 1) of the project was built. In 2015 Connecting Washington funding was obtained to complete the project (Phase 2). The current ad date for Phase 2 is August 2021 with construction starting in Spring 2022 and ending in Spring 2024.

Since consultation was completed in 2008, critical habitat has been designated in the project action area for Puget Sound steelhead. WSDOT/FHWA has determined that the project activities warrants an effect determination of "may affect, not likely to adversely affect" for PS steelhead critical habitat as documented in the enclosed BA.

Mr. Kim Kratz
February 21, 2020
Page 2

Early coordination was conducted on March 21, 2019, at a pre-BA meeting between WSDOT and consultant staff and NMFS liaisons Michael MacDonald and DeeDee Jones.

The project design currently under review is not substantially different from the design that was the basis of the consultation in 2008. The extent of project-related ground-disturbing work has been reduced and the stormwater treatment concept has been revised from relying on conveyance and ponds to using linear infiltration features. The project was evaluated in the enclosed BA and it was determined that the proposed work would not modify the effect determinations for any of the species or critical habitat previously consulted on in a manner or to an extent not previously considered. There is no change to the EFH determination as well.

It is our understanding that with federal concurrence we have satisfied our responsibilities under Section 7(c) of the Endangered Species Act at this time. We will continue to remain aware of any change in status of these species and will be prepared to reevaluate potential project impacts if necessary.

If you have any questions or require additional clarification please contact Dave Molenaar by phone at 360-570-6702 or e-mail at MolenaD@wsdot.wa.gov.

Sincerely,

Carl W.
Ward

Digitally signed by Carl W. Ward
Date: 2020.02.21 15:01:07 -0800

for Jeff Sawyer
Environmental & Hydraulic Manager
WSDOT Olympic Region

JBS:dm/cw
Enclosure

e-cc: FHWA Washington Division
Michael MacDonald, NMFS
DeeDee Jones, NMFS
Sharon Rainsberry, NMFS
Kerri Wheeler, NMFS
Tara Stone, WSDOT ESO
Kelly McAllister, WSDOT ESO
Victoria Book, WSDOT ESO
Carl Ward, WSDOT OR EHS
Dave Molenaar, WSDOT OR EHS
Bill Elliott, WSDOT OR
Mike Hall, Parametrix

E-1.5 | BA Concurrence Letter from NMFS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
 West Coast Region
 1201 NE Lloyd Boulevard, Suite 1100
 PORTLAND, OR 97232-1274

Refer to NMFS No:
WCRO-2020-00373
 (X-Refer to NMFS Tracking No: 2007/07730)

April 1, 2020

Jeff Sawyer
 Environmental & Hydraulic Manager
 Washington State Department of Transportation, Olympic Region
 5720 Capitol Blvd.
 Tumwater, Washington 98510

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the State Route 510/Yelm Loop - New Alignment Phase 2 Project in Thurston County, Washington (HUCs 171100150302 (Yelm Creek) and 171100150301 (Murray Creek-Nisqually River)).

Dear Mr. Sawyer:

On February 25, 2020, NOAA's National Marine Fisheries Service (NMFS) received your supplemental Biological Assessment (BA) and request for a written concurrence that the Federal Highway Administration (FHWA) approval and funding of the State Route (SR) 510/Yelm Loop – New Alignment Phase 2 Project is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA) since the last consultation for this project in 2007 (2007/07730). It is our understanding that this request has been submitted by the Washington State Department of Transportation (WSDOT) serving as the designated non-federal representative on behalf of the FHWA. This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency template for preparation of letters of concurrence.

NMFS also reviewed the updated action for potential new or revised effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency template for use of the ESA consultation process to complete EFH consultation. In this case, NMFS concluded the action would not adversely affect EFH. Thus, consultation under the MSA is not required for this action.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at the Oregon and Washington Coastal Area Office.



Consultation History

In November 2007, the FHWA submitted a Biological Assessment to NMFS requesting formal consultation for the fully configured build out of the SR 510 Yelm Loop Highway Corridor. On January 3, 2007 the NMFS issued a Biological Opinion (BiOp) (NMFS Tracking No: 2007/07730) and Incidental Take Statement (ITS) for adverse effects to Puget Sound (PS) Chinook salmon (*Oncorhynchus tshawytscha*), PS steelhead (*O. mykiss*) and designated critical habitat for PS Chinook salmon. At that time, it was also concluded that the project would not adversely affect Pacific salmon EFH.

Since the 2007 consultation was concluded and BiOp issued in 2008, the project was not fully funded for construction. In 2009 and 2010 the eastern portion of the corridor (Phase 1) of the project was built. As part of the 2015 Connecting Washington legislative package, WSDOT has the funding necessary complete the project by constructing the western portion of the corridor (Phase 2), starting in spring 2022 and ending in spring 2024. Although full build out of the Yelm Loop Corridor project duration will be longer due to phasing, this is not expected to cause additional effects to listed species or critical habitat that were not considered in the previous consultation.

Phase 2, which will construct approximately 2.7 miles of new two-lane highway, along with a shared-use path for pedestrians and bicycles, fits within the overall scope of the original project, and have reduced the extent of project-related ground-disturbing work; including revisions to the stormwater treatment design, using linear infiltration features with a much smaller footprint. As project refinements were made and new listings under the ESA occurred since the BiOp was issued, a supplemental BA was submitted to NMFS. The supplemental information is provided in order to: 1) describe project refinements that have occurred since the 2007 consultation, 2) evaluate if those refinements have additional impacts to species already consulted on, and 3) assess the project impacts on species and critical habitats listed under the ESA since the original consultation.

On March 21, 2019, a coordination meeting was attended by representatives from NMFS, U.S. Fish and Wildlife Service (FWS), WSDOT, and the consultant team to discuss Phase 2. Since the initial consultation, the FHWA and WSDOT, determined that the project refinements will not change the effect determinations or modify the ITS provided in the original BiOp; therefore, FHWA is not requesting reinitiation of formal consultation for PS chinook, PS chinook critical habitat, or PS steelhead. However, because PS steelhead critical habitat was designated under the ESA in 2016, the WSDOT, on behalf of FHWA, has requested concurrence on a NLAA determination for PS steelhead critical habitat. Sufficient information has been provided to determine the effects of the proposed SR 510/Yelm Loop – New Alignment Phase 2 project (as described in the 2007 BA and updated in the 2020 Supplemental BA) to PS steelhead critical habitat.

The consultation for potential effects to designated critical habitat for PS steelhead from the proposed project was initiated on March 2, 2020, after NMFS determined the BA and request for a written concurrence from WSDOT was complete.

Proposed Action and Action Area

The WSDOT is proposing to construct approximately 2.7 miles of new two-lane highway, along with a shared-use path for pedestrians and bicycles, which will complete a bypass of the main commercial area of Yelm for regional traffic. The project ties into Phase 1 (which was completed in 2010) just east of Cullens Road and continues around the northeastern area of Yelm, tying into SR 507 at 170th Street SE. The Phase 2 corridor will be a limited access highway from Cullens Road to 103rd Avenue (as an extension of the Phase 1 Limited-Access limits from SR 510 to Cullens Road); the segment from 103rd Avenue to SR 507 will be a managed-access corridor (Figure 1).

The project includes five new intersections and four locations where the new roadway will cross existing local roads that will be converted to cul-de-sacs. Project construction will entail approximately 61 acres of clearing and grubbing (19 acres of which will consist of permanent conversion to paved or built surfaces). Associated project work includes excavation, embankment construction, paving, illumination, and signing. A new bridge will be constructed to clear-span Yelm Creek and the adjoining wetland. The new roadway will be grade-separated over the City of Yelm’s Prairie Line Trail, a shared-use path on a former railroad right-of-way. The shared-use path constructed for this project will tie into the Prairie Line Trail.

Post-construction pollution generating impervious surface (PGIS) will increase from 10.6 acres to 21.8 acres. All runoff from impervious surfaces created or replaced by project construction, totaling 28.6 acres, will be directed to infiltration facilities. Stormwater runoff is expected to be treated and infiltrated using linear compost-amended vegetated filter strips (CAVFS). Other stormwater best management practices (BMPs) to be implemented include a combination of compost amended biofiltration swales (CABS), infiltration ponds, and bioretention.

No temporary or permanent fill of wetlands is anticipated. Temporarily affected wetland buffers will be restored, and will be mitigated as required. Bridge construction will entail some vegetation clearing within the riparian area along Yelm Creek and will create a new source of shade over the creek. Approximately 2,300 square feet of the stream channel will be under the bridge. Approximately 7,800 square feet of riparian habitat will be affected by bridge construction and maintenance. Over the long term, vegetation growth under the bridge will be suppressed, and trees within 10 feet of the bridge will regularly be cleared for safety.

Traffic detours will be used during project construction due to necessary temporary road closures. It is assumed impact pile driving will be needed for the Yelm Creek Bridge foundation construction (above ordinary high water) and possibly for the over-land structure at the Yelm Prairie Line Trail crossing. Equipment required for project construction is likely to include, but is not limited to the following: cranes, compactors, excavators, pavers, rollers, dump trucks, and generators.

The WSDOT will implement all applicable and feasible construction BMPs, avoidance and minimization measures, and performance standards as described in the 2007 BA, 2008 BiOp, and 2020 Supplemental BA.



Figure 1: Project overview

This letter contains a summary of the proposed action and potential effects to listed species. A detailed description of the proposed action is contained in the BAs and supporting documentation provided to the NMFS by WSDOT and FHWA.

The action area that was defined for the 2007 BA has been expanded for Phase 2 based on the assumption that impact pile driving will be required. Hence, the action area for the project is defined by the areas affected by elevated in-air sound due to pile driving activities from the source to a point where project generated sound attenuates to background (2.38 miles). Where pile driving is not required, the action area is consistent with the 0.5 mile distance used in 2007. Although no in water work is proposed, portions of Yelm Creek may experience increased sediment delivery extending 100 feet downstream and 50 feet upstream from the bridge footprint due to minor riparian vegetation impacts and work over water.

Background and Action Agency's Effects Determination

The FHWA and WSDOT determined the effects of the proposed action are NLAA designated critical habitat for PS steelhead. The FHWA's NLAA effect determination was based in part on the fact that construction related effects will be temporary, of low intensity and do not directly occur in the water. Additionally, the long-term effects to water quality typically associated with new PGIS will be avoided due to 100% infiltration of stormwater runoff.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

In May 2009, after the initial consultation, WSDOT and the FHWA developed interagency guidance, in coordination with NMFS and the FWS, to determine whether proposed highway projects that create new roads have the potential for future adverse effects to listed species resulting from changes in land use. The results of the land use analysis determined that the proposed action will comply with local and State plans and policies and will be compatible with existing and proposed land uses and will not result in any future species effects related to land use.

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WCRO-2020-00373 (DOT) (FHWA)

The effects of the proposed action include the addition of new PGIS, new over-water shading, and the removal of riparian vegetation within the Nisqually River drainage. The addition of PGIS can potentially cause permanent changes in water quality associated with stormwater runoff by exposing in-stream fish habitat to stormwater pollutants that were not removed by stormwater BMPs. Shade may provide hiding cover for potential predators, increasing juvenile vulnerability to predation. Disturbance to vegetation within the riparian zone has the potential to affect water quality due to increase in temperatures and erosion, and limit recruitment of wood to streams. All runoff from new or replaced impervious surfaces will be directed to infiltration facilities, eliminating the potential for impacts to water quality related to stormwater runoff.

Effects to Critical Habitat

Critical habitat is defined as the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the species, and which may require special management considerations or protection. Critical habitat can also include specific areas outside the geographical area occupied by the species at the time it is listed that are determined by the Secretary to be essential for the conservation of the species. The action area for this consultation contains designated critical habitat. Past critical habitat designations have used the terms primary constituent element (PCE) or essential feature (EF) to identify important habitat qualities. The new critical habitat regulations (81 FR 7214) replace those terms with physical or biological feature (PBF). This shift in terminology does not change the approach used in conducting our analysis, whether the original designation identified PCE, EF, or PBF.

The final rule to designate critical habitat for PS steelhead was published in the Federal Register on February 24, 2016 (81 FR 9251), effective March 25, 2016. Yelm Creek is designated critical habitat for PS steelhead where freshwater PBFs include spawning sites, rearing sites, and migration corridors.

Intermittent flows and lack of riparian cover severely diminish or eliminate the potential for Yelm Creek in the action area to support spawning or rearing by steelhead. However, steelhead have been documented in Yelm Creek approximately 3,000 feet upstream of the project site. Approximately ½ mile upstream water is more consistently present in the stream and may support spawning and rearing. Freshwater migration corridors (PBF 3) of PS steelhead is present in the action area in Yelm Creek. Areas free of obstruction, water quality conditions, and natural cover are essential elements of this PBF.

There will be no ongoing permanent effects to water quality from stormwater discharges. Ground-disturbing activities near the stream have the potential to introduce excess sediments due to erosion from vegetation removal. Temporary and localized sedimentation from project construction activities will be minimized and avoided with BMP's. The duration and spatial extent of turbidity are low and are not expected to measurably interrupt steelhead migration. Therefore, water quality impacts are considered insignificant.

Permanent removal and continued clearing of 0.2 acre of riparian vegetation is necessary to construct and maintain the bridge. Mature forest habitat will not develop in these areas, reducing

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WCRO-2020-00373 (DOT) (FHWA)

the potential for the recruitment of large woody material to the stream. To offset this impact, the stumps of any trees removed from the Yelm Creek riparian zone will be retained on site. This is not expected to have a measurable effect on water quality or cover due to planting of native trees and shrubs in riparian areas immediate south of the new bridge.

The bottom of the new bridge over Yelm Creek will be 8 to 9 feet above ordinary high water. The < 0.1 acre shade area will be darker than waters upstream and downstream, but not entirely without light. Although Shade may provide hiding cover for potential predators such as northern pikeminnow, largemouth bass, or smallmouth bass, although there is no evidence that any of these species are present in Yelm Creek. Therefore, the new bridge is not expected to significantly obstruct normal migration patterns in Yelm Creek. Therefore, we conclude that the overall effects to PS steelhead critical habitat are insignificant.

Conclusion

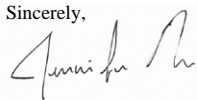
Based on this analysis, NMFS concurs with WSDOT, on behalf of FHWA, that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by FHWA, their non-federal designee, or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

Please direct questions regarding this letter to Jennifer Quan of the Oregon and Washington Coastal Office in Lacey, Washington at 360-753-6054 or by e-mail at Jennifer.Quan@NOAA.gov.

Sincerely,



Jennifer Quan
Oregon/Washington Coastal Area Office
Branch Chief - Central/South Puget Sound

cc: FHWA, Washington Division
Carl Ward, WSDOT
Dave Molenaar, WSDOT

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STATE AGENCIES

APPENDIX E-2

- E-2.1 APE Letter to DAHP
- E-2.2 APE Concurrence Letter from DAHP
- E-2.3 Draft CRI Letter to DAHP
- E-2.4 Testing Plans Letter to DAHP
- E-2.5 Draft CRI Response from DAHP

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March 20, 2019

Allyson Brooks, Ph.D.
State Historic Preservation Officer
Department of Archaeology & Historic Preservation
PO Box 48343
Olympia, WA 98504-8343

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Area of Potential Effects (APE)

Dear Dr. Brooks:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the second and final phase of the subject project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA.

Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately 3 miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

We initially define the APE for the SR 510 / Yelm Loop – New Alignment Phase 2 project to include areas that would be directly impacted by ground disturbance associated with the above improvements, as depicted by the extent of ground disturbance (EOD) in Attachment A of the enclosed memo. The APE also includes a one-parcel buffer out along the EOD to account for visual and other potential indirect effects to buildings over 50 years of age. The proposed APE is located within Township 17 North, Range 1 East, and Township 17 North, Range 2 East, of the McKenna, WA USGS Quadrangle.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project APE. HRA has prepared the enclosed work plan memo for the assessment, which we are inviting you to review. As described in the work plan, several

cultural resource surveys were previously conducted within the APE. HRA will survey the unstudied portions of the APE. The survey will include pedestrian survey and shovel probing to identify archaeological sites, as well as inventory and NRHP evaluation of parcels that include pre-1971 architectural resources.

Previous work in the APE identified archaeological site 45TN345 near the western end of the Phase 2 project. The site has not been evaluated for eligibility for listing in the NRHP. The evaluation of the site will be conducted as part of a separate study once the location has been ground-truthed during this study. We will invite you to review the work plan for site testing when it becomes available.

We invite your review of the project APE and cultural resources work plan. Should you have any questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at kiersro@wsdot.wa.gov.

Sincerely,

Roger Kiers
WSDOT Archaeologist

Enclosures:

Cultural Resources Method Memo with APE, prepared by Historical Research Associates, Inc.

cc: Ed Winkley, WSDOT Olympic Region Environmental

E-2.2 | *APE Concurrence Letter from DAHP*

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

March 28, 2019

Mr. Roger Kiers
Cultural Resource Specialist
WA State Dept. of Transportation
P.O. Box 47332
Olympia, WA. 98512-7332

In future correspondence please refer to:
Project Tracking Code: 2019-03-02283
Property: Thurston County_ SR 510/ Yelm Loop- New Alignment Phase 2
Re: APE Concur

Dear Mr. Kiers:

Thank you for contacting the State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced project. In response, we have reviewed your description and map of the area of potential effect (APE).

We concur with your definition of the APE. Please provide us with your survey methodology before proceeding with any inventories. Along with the results of the inventory we will need to review your consultation with the concerned tribes, and other interested/affected parties. Please provide any correspondence or comments from concerned tribes and/or other parties that you receive as you consult under the requirements of 36 CFR 800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the SHPO in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800. Should additional information about the project become available, our assessment may be revised.

Thank you for the opportunity to review and comment. Please ensure that the DAHP Project Number (a.k.a. Project Tracking Code) is shared with any hired cultural resource consultants and is attached to any communications or submitted reports. If you have any questions, please feel free to contact me.

Sincerely,

Dennis Wardlaw
Transportation Archaeologist
(360) 586-3085
dennis.wardlaw@dahp.wa.gov

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December 3, 2019

Sydney Hanson
Transportation Archaeologist
Department of Archaeology & Historic Preservation
PO Box 48343
Olympia, WA 98504-8343

Tracking Code: 2019-03-02283

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Area of Potential Effects (APE)

Dear Ms. Hanson:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the subject project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting your review of the Cultural Resources Inventory Report prepared for the project.

Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately 3 miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

Historical Research Associates, Inc. (HRA) completed an archival search of archaeological and architectural records, followed by an archaeological survey and a reconnaissance-level architectural survey of the project APE, as described in the report uploaded to WISAARD. One previously-recorded archaeological site (45TN345) is located within a portion of the APE that was investigated during Phase I of the project; the site has not been evaluated for eligibility for listing in the NRHP. WSDOT intends to avoid impacts to Site 45TN345; if the site cannot be avoided, archaeological testing will be undertaken to evaluate the site's eligibility for listing in the NRHP.

HRA identified three previously unrecorded archaeological sites in the Phase 2 APE: one historic debris scatter (45TN507), one historic debris scatter with rock pile feature (45TN506), and one rock wall/historic debris scatter (45TN508). Based on HRA's recommendation, Sites 45TN507 and 45TN508 are not eligible for listing in the NRHP. We request your concurrence with this determination.

Site 45TN506 contains a rock pile feature that is associated with mid-twentieth century historic debris and may be related to field-clearing activities. The site is within a parcel that was owned for much of the twentieth century by individuals with Native American ancestry, most recently by the McCloud family. The archaeological survey was unable to conclusively determine the origin of the rock pile, and interviews with former residents suggest that the pile may be related to cultural practices other than field clearing. WSDOT is reaching out to the Nisqually Tribe to learn more about the feature. Additional archaeological testing of the site appears necessary to evaluate its eligibility for listing in the NRHP, and we have asked HRA to develop a testing plan, which we will share with DAHP and the affected tribes for review and comment.

HRA also completed a reconnaissance-level architectural survey and documented 43 historic-period architectural resources (on 39 historic property inventory forms) within the APE. We invite your review of the historic property inventory forms and request your concurrence with our determination that none of these resources are eligible for listing in the NRHP.

We look forward to further consultation as we continue to evaluate the effects of this undertaking on historic properties and develop a testing plan for 45TN506. Should you have any questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at kiersro@wsdot.wa.gov.

Sincerely,

Roger Kiers
WSDOT Archaeologist

Enclosures (via WISAARD):

Cultural Resources Inventory for the SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, dated November 15, 2019, prepared by Historical Research Associates, Inc.

cc: Jeff Sawyer, WSDOT Olympic Region Environmental

E-2.4 | Testing Plans Letter to DAHP



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January 22, 2020

Sydney Hanson
Transportation Archaeologist
Department of Archaeology & Historic Preservation
PO Box 48343
Olympia, WA 98504-8343

Tracking Code: 2019-03-02283
RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Testing Plans for Sites 45TN345 and 45TN506

Dear Ms. Hanson:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the subject project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting your review of the testing plans prepared for archaeological sites 45TN345 and 45TN506.

The SR 510 Yelm Loop is a new, two-lane limited access highway generally running north and east of the Yelm city limits. The new corridor – identified as the Y3 Alignment in the 1999 Environmental Assessment – connects to SR 510 at Mud Run Rd. (just northwest of the Yelm city limits) and connects to SR 507 at 170th St. SE at Walmart in the southeast corner of the city.

Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately 3 miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

In December 2019, we transmitted the cultural resources survey report prepared for the project by Historical Research Associates, Inc. (HRA) and notified you that we anticipated additional testing at two sites within the project APE: 45TN345 and 45TN506.

Site 45TN345 is located within a portion of the APE that was investigated during Phase I of the project. The site is located on the east side of Yelm Creek and crosses an area where a bridge over Yelm Creek is proposed for the current project. Although no artifacts have been identified within the portion of site 45TN345 that is recorded in the direct footprint of the proposed bridge, previous archaeological work in that portion of the site has been limited and has not systematically verified the site boundary. Therefore, WSDOT is proposing additional testing in this area to delineate the site boundary, as described in the enclosed testing plan prepared by HRA.

The second site, 45TN506, is a historic-period site that was recently identified during the cultural resources assessment for the SR 510/Yelm Loop, New Alignment Phase 2 Project. The site contains a scatter of historic-period artifacts dating to between the 1940s and 1960s, along with numerous modern and non-temporally diagnostic artifacts of glass, ceramic, and metal. In addition to the artifacts, a rock feature of unknown origin and function was identified. The feature appears to have been deliberately constructed in an oval shape and not haphazardly created as a result of field clearing activities. The enclosed testing plan prepared by HRA outlines proposed archaeological test excavations at Site 45TN506 to evaluate the site's eligibility for listing in the NRHP. A critical element of this testing approach will be to determine the function of the rock feature at the site.

We invite your review of the enclosed testing plans. Should you have any questions or comments regarding the proposed plans, you may contact me by phone at 360-570-6638, or by email at kiersro@wsdot.wa.gov.

Sincerely,

Roger Kiers
WSDOT Archaeologist

Enclosures:

Archaeological Site Boundary Definition Methodology for 45TN345, Memorandum from Ron Adams, HRA to Roger Kiers, WSDOT, dated December 12, 2019.

Testing Plan For: Phase II National Register of Historic Places Evaluation of Archaeological Site 45TN506 For the Proposed SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, dated January 10, 2020, prepared by Historical Research Associates, Inc.



Allyson Brooks Ph.D., Director
State Historic Preservation Officer

December 10, 2019

Roger Kiers
Cultural Resource Specialist
WA State Dept. of Transportation
P.O. Box 47332
Olympia, WA98512-7332

In future correspondence please refer to:
Project Tracking Code: 2019-03-02283
Property: Thurston County_ SR 510/ Yelm Loop- New Alignment Phase 2
Re: Comments on Cultural Resources Inventory Report

Dear Roger Kiers:

Thank you for contacting the Washington State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced proposal. In response, we have reviewed the materials you provided for this project. Our comments are as follows:

- DAHP concurs with WSDOT’s recommendation regarding site 45TN345: if the site cannot be avoided, archaeological testing should be undertaken to evaluate the site’s eligibility for listing in the NRHP.
- DAHP concurs that sites 45TN507 and 45TN508 are not eligible for listing in the NRHP.
- DAHP concurs that additional archaeological testing is necessary to evaluate the eligibility of site 45TN506 for listing in the NRHP. We look forward to reviewing the testing plan being prepared by Historical Research Associates, Inc.
- DAHP concurs that the following historic resources are not eligible for listing in the National Register of Historic Places:
 - PROPERTY: #19096 Residence at 8511 Canal Rd NW, Yelm, WA, 98597, USA
 - PROPERTY: #20190 Foster Poultry Farms Poultry Houses at 17041 SE Yelm Hwy, Olympia, WA 98501
 - PROPERTY: #20194 Barn at 16848 Railway Rd SE, Yelm, WA 98597
 - PROPERTY: #20195 Barn at 16824 Railway Rd SE, Yelm, WA 98597
 - PROPERTY: #26076 Barn at 9003 Crystal Springs Rd, Yelm, WA 98597
 - PROPERTY: #483421 Residence at 16722 CANAL RD SE, YELM, WA 98597
 - PROPERTY: #483831 Residence at 16901 STATE ROUTE 507 SE, YELM, WA 98597
 - PROPERTY: #486595 Residence – cabin at 17225 CANAL RD SE, YELM, WA 98597
 - PROPERTY: #490593 Residence at 9144 SE RHOTON RD, YELM, WA 98597
 - PROPERTY: #490739 Residence at 17141 STATE ROUTE 507 SE, YELM, WA 98597
 - PROPERTY: #490759 Residence at 17032 CANAL RD SE, YELM, WA 98597
 - PROPERTY: #491246 Residence at 9419 BRIDGE RD SE, YELM, WA 98597

- PROPERTY: #491336 Residence at 10230 GROVE RD SE, YELM, WA 98597
- PROPERTY: #491632 Residence at 16921 SE 103RD AVE, YELM, WA 98597
- PROPERTY: #492251 Residence at 15644 VIEW DR SE, YELM, WA 98597
- PROPERTY: #51060 Northern Pacific Railway-Prairie Line
- PROPERTY: #718996 Barn at 17213 State Route 507 SE, Yelm, WA, 98597, USA
- PROPERTY: #718999 Residence at 16922 Flume Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719001 Shed at 17010 Canal Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719002 Residence at 10230 Grove Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719005 Barn at 10230 Grove Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719007 Shop - Poultry Building at 10230 Grove Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719008 Barn at 8511 Canal Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719010 Outbuilding – Canopy at 8511 Canal Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719011 Barn at 9144 Rhoton Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719013 Residence at 16824 Railway Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719014 Residence at 16848 Railway Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719015 Shop at 9419 Bridge Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719016 Barn at 16722 Canal Rd SE, Yelm, WA, 98597, USA
- PROPERTY: #719017 Barn at 16921 103rd Ave SE, Yelm, WA, 98597, USA
- PROPERTY: #719018 Outbuilding 1 at 16921 103rd Ave SE, Yelm, WA, 98597, USA
- PROPERTY: #719019 Outbuilding at 16921 103rd Ave SE, Yelm, WA, 98597, USA
- PROPERTY: #719021 Poultry House at 16901 State Route 507 SE, Yelm, WA, 98597, USA
- PROPERTY: #719022 Residence at 17041 State Route 507 SE, Yelm, WA, 98597, USA
- PROPERTY: #719024 Barn at 17141 State Route 507 SE, Yelm, WA, 98597, USA
- PROPERTY: #719025 Barn at 17141 State Route 507 SE, Yelm, WA, 98597, USA
- PROPERTY: #719026 Outbuilding at 17141 State Route 507 SE, Yelm, WA, 98597, USA
- PROPERTY: #718998 Shed at 17120 Canal Rd SE, Yelm, WA, 98597, USA and PROPERTY: #488184 Residence at 16920 FLUME RD SE, YELM, WA 98597 do not meet the 50 year minimum age threshold and therefore were not evaluated.
- Please be aware that DAHP’s concurrence on these Historic Property Inventory forms is based upon their preparation prior to the emailing of our HPI FAQ in August 2019. This HPI FAQ intended to clarify our expectations for HPI forms submitted through the Section 106 consultation process, and that all four criteria are expected to be considered in an evaluation. Therefore, we will not accept HPI forms that do not address all four NRHP criteria that are prepared after that notification. We understand the transitory period that is currently underway, and look forward to consulting on all future projects.

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We appreciate receiving copies of any correspondence or comments from concerned tribes and other parties that you receive as you continue to consult under the requirements of 36 CFR 800.4(a)(4). These comments are based on the information available at the time of this review and on behalf of the SHPO pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800.

Thank you for the opportunity to review and comment. If you have any questions, please feel free to contact me.

Sincerely,



Sydney Hanson
Transportation Archaeologist
(360) 586-3082
Sydney.Hanson@dahp.wa.gov



TRIBAL CORRESPONDENCE/ PURPOSE AND SCOPE OF CONSULTATION

APPENDIX E-3

- E-3.1 APE Letter to Nisqually Tribe
- E-3.2 APE Letter to Squaxin Island Tribe
- E-3.3 APE Letter to Yakama Nation
- E-3.4 Draft CRI Letter to Nisqually Tribe
- E-3.5 Draft CRI Letter to Squaxin Island Tribe
- E-3.6 Draft CRI Letter to Yakama Nation
- E-3.7 Testing Plans Letter to Nisqually Tribe
- E-3.8 Testing Plans Letter to Squaxin Island Tribe
- E-3.9 Testing Plans Response from Squaxin Island Tribe
- E-3.10 Testing Plans Response from Nisqually Tribe

The consultation exchange of letters following is intended to ensure that the Tribal Governments are afforded the opportunity to:

- » Identify any concerns they may have regarding the effects of the proposed undertaking on historic properties;
- » Advise FHWA and WSDOT on the identification and evaluation of historic properties, including those of traditional religious and cultural importance;
- » Express their views on the undertaking's effects on such properties; and,
- » Participate in the resolution of any adverse effects which the undertaking might have on their properties.

The first step in the Section 106 process, prior to the identification and evaluation of historic properties, is to identify the area of potential effect. Area of potential effect means the geographic area or areas within which the proposed undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The participation by the tribes as a consulting party in determining the area of potential effect is critical and is invited. Once this area has been defined, a cultural resources survey will be initiated. If the tribe has information about traditional cultural areas that might be affected by the proposed

undertaking, their input will be a valuable contribution to the cultural resources survey effort.

Once historic properties have been identified and evaluated for their historical significance in accordance with the criteria of the Keeper of the National Register of Historic Places, the effects of the proposed undertaking on any properties determined to be listed in or eligible for listing in the National Register are assessed. The tribe's participation in this effort is invited.

As defined by the Advisory Council on Historic Preservation, consultation means "...the process of seeking, discussing, and considering the views of other participants and, where feasible, seeking agreement with them regarding matters arising in the section 106 process."

Consultation is fundamental to the process of seeking ways to avoid, minimize or mitigate the effects of the undertaking on historic properties. Consequently, the tribe's active participation as a consulting party in the proposed undertaking is encouraged.

The letter exchange to document these consultation efforts follows.



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March 13, 2019

The Honorable Ken Choke, Chairperson
 Nisqually Tribe
 4820 She-Nah-Num Dr. SE
 Olympia, WA 98513

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
 Section 106 Consultation and Area of Potential Effects

Dear Chairperson Choke:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the second and final phase of this project. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA for this final project phase. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

Section 106 consultation with the Nisqually Tribe on Phase 1 occurred in 2007-2008. Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately three miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

We initially define the APE for the SR 510 / Yelm Loop – New Alignment Phase 2 project to include areas that would be directly impacted by ground disturbance associated with the above improvements, as depicted by the extent of ground disturbance (EOD) in Attachment A of the enclosed memo. The APE also includes a one-parcel buffer out along the EOD to account for visual and other potential indirect effects to buildings over 50 years of age. The proposed APE is located within Township 17 North, Range 1 East, and Township 17 North, Range 2 East, of the McKenna, WA USGS Quadrangle.

The Honorable Ken Choke
 March 13, 2019
 Page 2

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project APE. HRA has prepared the enclosed work plan memo for the assessment, which we are inviting you to review. As described in the work plan, several cultural resource surveys were previously conducted within the APE. HRA will survey the unstudied portions of the APE. The survey will include pedestrian survey and shovel probing to identify archaeological sites, as well as inventory and NRHP evaluation of parcels that include pre-1971 architectural resources.

Previous work in the APE identified archaeological site 45TN345 near the western end of the Phase 2 project. The site has not been evaluated for eligibility for listing in the NRHP. The evaluation of the site will be conducted as part of a separate study once the location has been ground-truthed during this study. We will invite you to review the work plan for site testing when it becomes available.

We ask that you comment on the enclosed draft APE and work plan, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts. Should you have any comments regarding the draft APE or work plan, please provide a response by March 29, 2019 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at Sawyer.J@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
 Environmental & Hydraulic Manager
 Olympic Region

JBS:ew:ip

Enclosures: Purpose and Scope
 Area of Potential Effects Map (4 sheets)

cc: Jackie Wall, Nisqually Tribe Cultural Resources, w/enc
 David Trout, Nisqually Tribe Natural Resources, w/enc
 Heidi Thomas, Nisqually Tribe Planning, w/enc
 Bill Elliott, WSDOT Olympic Region Plans Engineer
 Roger Kiers, WSDOT Cultural Resources
 Project File

SR 7913

E-3.2 | APE Letter to Squaxin Island Tribe



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March 13, 2019

The Honorable Arnold Cooper, Chair
Squaxin Island Tribe
SE 10 Squaxin Lane
Shelton, WA 98584

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Area of Potential Effects

Dear Chairperson Cooper:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the second and final phase of this project. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA for this final project phase. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

Section 106 consultation with the Squaxin Tribe on Phase 1 occurred in 2007-2008. Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately three miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

We initially define the APE for the SR 510 / Yelm Loop – New Alignment Phase 2 project to include areas that would be directly impacted by ground disturbance associated with the above improvements, as depicted by the extent of ground disturbance (EOD) in Attachment A of the enclosed memo. The APE also includes a one-parcel buffer out along the EOD to account for visual and other potential indirect effects to buildings over 50 years of age. The proposed APE is located within Township 17 North, Range 1 East, and Township 17 North, Range 2 East, of the McKenna, WA USGS Quadrangle.

The Honorable Arnold Cooper
March 13, 2019
Page 2

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Previous work in the APE identified archaeological site 45TN345 near the western end of the Phase 2 project. The site has not been evaluated for eligibility for listing in the NRHP. The evaluation of the site will be conducted as part of a separate study once the location has been ground-truthed during this study. We will invite you to review the work plan for site testing when it becomes available.

We ask that you comment on the enclosed draft APE and work plan, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts. Should you have any comments regarding the draft APE or work plan, please provide a response by March 29, 2019 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region

JBS:ew:ip
Enclosures: Purpose and Scope
Area of Potential Effects Map (4 sheets)

cc: Rhonda Foster, Squaxin Island Tribe Cultural Resources, w/enc
Andy Whitener, Squaxin Island Tribe Natural Resources, w/enc
Margaret Foley, Squaxin Island Tribe Planning, w/enc
Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

SR 7911



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March 13, 2019

The Honorable JoDe Goudy, Chair
Yakama Nation
P.O. Box 151
Toppenish, WA 98948

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Area of Potential Effects

Dear Chairperson Goudy:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the second and final phase of this project. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA for this final project phase. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

Section 106 consultation with the Yakama Nation on Phase 1 occurred in 2007-2008. Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately three miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

We initially define the APE for the SR 510 / Yelm Loop – New Alignment Phase 2 project to include areas that would be directly impacted by ground disturbance associated with the above improvements, as depicted by the extent of ground disturbance (EOD) in Attachment A of the enclosed memo. The APE also includes a one-parcel buffer out along the EOD to account for visual and other potential indirect effects to buildings over 50 years of age. The proposed APE is located within Township 17 North, Range 1 East, and Township 17 North, Range 2 East, of the McKenna, WA USGS Quadrangle.

The Honorable JoDe Goudy
March 13, 2019
Page 2

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We ask that you comment on the enclosed draft APE and work plan, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts. Should you have any comments regarding the draft APE or work plan, please provide a response by March 29, 2019 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region

JBS:ew:ip

Enclosures: Purpose and Scope
Area of Potential Effects Map (4 sheets)

cc: Johnson Meninick, Yakama Nation Cultural Resources, w/enc
Phillip Rigdon, Yakama Nation Natural Resources, w/enc
Alvin Pinkham, Yakama Nation Planning, w/enc
Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

SR 7912

E-3.4 | Draft CRI Letter to Nisqually Tribe



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November 21, 2019

The Honorable Ken Choke, Chairperson
Nisqually Tribe
4820 She-Nah-Num Dr. SE
Olympia, WA 98513

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Cultural Resources Inventory Report

Dear Chairperson Choke:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the SR 510 / Yelm Loop – New Alignment Phase 2 project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review and comment on the Cultural Resources Inventory Report prepared for the project.

The SR 510 Yelm Loop is a new, two-lane limited access highway generally running north and east of the Yelm city limits. The new corridor – identified as the Y3 Alignment in the 1999 Environmental Assessment – connects to SR 510 at Mud Run Rd. (just northwest of the Yelm city limits) and connects to SR 507 at 170th St. SE at Walmart in the southeast corner of the city.

Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately 3 miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

Historical Research Associates, Inc. (HRA) completed an archival search of archaeological and architectural records, followed by an archaeological survey and a reconnaissance-level architectural survey of the project APE, as described in the enclosed report. One previously-recorded archaeological site (45TN345) is located

The Honorable Ken Choke
November 21, 2019
Page 2

within a portion of the APE that was investigated during Phase I of the project; the site has not been evaluated for eligibility for listing in the NRHP. WSDOT intends to avoid impacts to Site 45TN345; if the site cannot be avoided, archaeological testing will be undertaken to evaluate the site's eligibility for listing in the NRHP.

HRA identified three previously unrecorded archaeological sites in the Phase 2 APE: one historic debris scatter (45TN507), one historic debris scatter with rock pile feature (45TN506), and one rock wall/historic debris scatter (45TN508). HRA recommends that Sites 45TN507 and 45TN508 are not eligible for listing in the NRHP and that no further archaeological work is needed for either site. Site 45TN506 contains a rock pile feature that is associated with mid-twentieth century historic debris and may be related to field-clearing activities. The site is within a parcel that was owned for much of the twentieth century by individuals with Native American ancestry, most recently by the McCloud family. The archaeological survey was unable to conclusively determine the origin of the rock pile, and interviews with former residents suggest that the pile may be related to cultural practices other than field clearing. Additional archaeological testing of the site appears necessary to evaluate its eligibility for listing in the NRHP.

HRA also completed a reconnaissance-level architectural survey and documented 43 historic-period architectural resources on 20 parcels within the APE. Of these, none appear to be eligible for listing in the NRHP.

We ask that you review and comment on the enclosed cultural resources inventory report. WSDOT will follow up with tribal cultural resources staff as HRA develops a testing plan for Site 45TN506, which we will invite the tribe to review prior to any additional work at the site. Should you have any questions or comments on the enclosed report, please provide a response by December 19, 2019 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region

Enclosure (CD) to Cultural Resources staff:

Cultural Resources Inventory for SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, prepared by Historical Research Associates, Inc., dated November 15, 2019

The Honorable Ken Choke
November 21, 2019
Page 3

cc: Brad Beach, Nisqually Tribe Cultural Resources, w/ CD
Annette Bullchild, Nisqually Tribe Cultural Resources, w/ CD
Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

SF 7991

E-3.5 | Draft CRI Letter to Squaxin Island Tribe



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December 5, 2019

The Honorable Arnold Cooper, Chairperson
Squaxin Island Tribe
SE 10 Squaxin Lane
Shelton, WA 98584

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Cultural Resources Inventory Report

Dear Chairperson Cooper:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the SR 510 / Yelm Loop – New Alignment Phase 2 project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review and comment on the Cultural Resources Inventory Report prepared for the project.

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The Honorable Arnold Cooper
December 5, 2019
Page 2

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We ask that you review and comment on the enclosed cultural resources inventory report. WSDOT will follow up with tribal cultural resources staff as HRA develops a testing plan for Site 45TN506, which we will invite the tribe to review prior to any additional work at the site. Should you have any questions or comments on the enclosed report, please provide a response by January 4, 2020 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region

Enclosure (CD) to Cultural Resources staff:

Cultural Resources Inventory for SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, prepared by Historical Research Associates, Inc., dated November 15, 2019

The Honorable Arnold Cooper
December 5, 2019
Page 3

cc w/ enc: Shaun Dinubilo, Squaxin Island Tribe Cultural Resources, w/ CD
Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

SF 7992

E-3.6 | Draft CRI Letter to Yakama Nation



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November 21, 2019

The Honorable JoDe Goudy, Chairperson
Yakama Nation
P.O. Box 151
Toppenish, WA 98948

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Section 106 Consultation and Cultural Resources Inventory Report

Dear Chairperson Goudy:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the SR 510 / Yelm Loop – New Alignment Phase 2 project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review and comment on the Cultural Resources Inventory Report prepared for the project.

The SR 510 Yelm Loop is a new, two-lane limited access highway generally running north and east of the Yelm city limits. The new corridor – identified as the Y3 Alignment in the 1999 Environmental Assessment – connects to SR 510 at Mud Run Rd. (just northwest of the Yelm city limits) and connects to SR 507 at 170th St. SE at Walmart in the southeast corner of the city.

Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately 3 miles (mi) long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

Historical Research Associates, Inc. (HRA) completed an archival search of archaeological and architectural records, followed by an archaeological survey and a reconnaissance-level architectural survey of the project APE, as described in the enclosed report. One previously-recorded archaeological site (45TN345) is located

The Honorable JoDe Goudy
November 21, 2019
Page 2

within a portion of the APE that was investigated during Phase I of the project; the site has not been evaluated for eligibility for listing in the NRHP. WSDOT intends to avoid impacts to Site 45TN345; if the site cannot be avoided, archaeological testing will be undertaken to evaluate the site's eligibility for listing in the NRHP.

HRA identified three previously unrecorded archaeological sites in the Phase 2 APE: one historic debris scatter (45TN507), one historic debris scatter with rock pile feature (45TN506), and one rock wall/historic debris scatter (45TN508). HRA recommends that Sites 45TN507 and 45TN508 are not eligible for listing in the NRHP and that no further archaeological work is needed for either site. Site 45TN506 contains a rock pile feature that is associated with mid-twentieth century historic debris and may be related to field-clearing activities. The site is within a parcel that was owned for much of the twentieth century by individuals with Native American ancestry, most recently by the McCloud family. The archaeological survey was unable to conclusively determine the origin of the rock pile, and interviews with former residents suggest that the pile may be related to cultural practices other than field clearing. Additional archaeological testing of the site appears necessary to evaluate its eligibility for listing in the NRHP.

HRA also completed a reconnaissance-level architectural survey and documented 43 historic-period architectural resources on 20 parcels within the APE. Of these, none appear to be eligible for listing in the NRHP.

We ask that you review and comment on the enclosed cultural resources inventory report. WSDOT will follow up with tribal cultural resources staff as HRA develops a testing plan for Site 45TN506, which we will invite the tribe to review prior to any additional work at the site. Should you have any questions or comments on the enclosed report, please provide a response by December 19, 2019 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region

Enclosure (CD) to Cultural Resources staff:

Cultural Resources Inventory for SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, prepared by Historical Research Associates, Inc., dated November 15, 2019

The Honorable JoDe Goudy
November 21, 2019
Page 3

cc w/ enc: Johnson Meninick, Yakama Nation Cultural Resources, w/ CD
Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

SF 7993

E-3.7 | Testing Plans Letter to Nisqually Tribe



Olympic Region
Environmental & Hydraulic Services
5720 Capitol Blvd
Tumwater, WA 98501
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Olympia, WA 98504-7440

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TTY: 1-800-833-6388
www.wsdot.wa.gov

January 16, 2020

The Honorable Ken Choke, Chair
Nisqually Tribe
4820 She-Nah-Num Dr. SE
Olympia, WA 98513

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
Archaeological Testing Plans for Sites 45TN345 and 45TN506

Dear Chairperson Choke:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the SR 510 / Yelm Loop – New Alignment Phase 2 project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting your review of the testing plans prepared for archaeological sites 45TN345 and 45TN506.

The SR 510 Yelm Loop is a new, two-lane limited access highway generally running north and east of the Yelm city limits. The new corridor – identified as the Y3 Alignment in the 1999 Environmental Assessment – connects to SR 510 at Mud Run Rd. (just northwest of the Yelm city limits) and connects to SR 507 at 170th St. SE at Walmart in the southeast corner of the city.

Phase 1 of the Yelm Loop was built and opened to traffic in 2010. Phase 1 extends from Mud Run Rd. to Cullen Rd. SE. Phase 2 extends from Cullen Rd. SE – at the easterly terminus of Phase 1 – to SR 507 at 170th St. SE. Phase 2 is approximately 3 miles long with five controlled intersections and four locations where the new corridor crosses local roads, which will be converted to cul-de-sacs. Completion of Phase 2 would improve travel times for regional traffic, reduce the volume of regional traffic in downtown Yelm, help reduce the potential for collisions on Yelm Avenue and provide new non-motorized route for cyclists and pedestrians. Phase 2 is proposed to have a shared use path on one side of the proposed new section of highway.

In November 2019, we transmitted the cultural resources survey report prepared for the project by Historical Research Associates, Inc. (HRA) and notified you that we anticipated additional testing at two sites within the project APE: 45TN345 and 45TN506.

The Honorable Ken Choke
January 16, 2020
Page 2

Site 45TN345 is located within a portion of the APE that was investigated during Phase I of the project. The site is located on the east side of Yelm Creek and crosses an area where a bridge over Yelm Creek is proposed for the current project. Although no artifacts have been identified within the portion of site 45TN345 that is recorded in the direct footprint of the proposed bridge, previous archaeological work in that portion of the site has been limited and has not systematically verified the site boundary. Therefore WSDOT is proposing additional testing in this area to delineate the site boundary, as described in the enclosed testing plan prepared by HIRA.

The second site, 45TN506, is a historic-period site that was recently identified during the cultural resources assessment for the Phase 2 project. The site contains a scatter of historic-period artifacts dating to between the 1940s and 1960s, along with numerous modern and non-temporally diagnostic artifacts of glass, ceramic, and metal. In addition to the artifacts, a rock feature of unknown origin and function was identified. The feature appears to have been deliberately constructed in an oval shape and not haphazardly created as a result of field clearing activities. The enclosed testing plan prepared by HIRA outlines proposed archaeological test excavations at Site 45TN506 to evaluate the site's eligibility for listing in the NRHP. A critical element of this testing approach will be to determine the function of the rock feature at the site.

We ask that you review and comment on the enclosed testing plans. Should you have any questions or comments on the enclosed plans, please provide a response by February 16, 2020 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region

Enclosures:

Archaeological Site Boundary Definition Methodology for 45TN345, Memorandum from Ron Adams, HRA to Roger Kiers, WSDOT, dated December 12, 2019.

Testing Plan For: Phase II National Register of Historic Places Evaluation of Archaeological Site 45TN506 For the Proposed SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, dated January 10, 2020, prepared by Historical Research Associates, Inc.

The Honorable Ken Choke
January 16, 2020
Page 3

ecc w/enc: Brad Beach, Nisqually Tribe Cultural Resources
Annette Bullchild, Nisqually Tribe Cultural Resources

cc: Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

E-3.8 | Testing Plans Letter to Squaxin Island Tribe



Olympic Region
 Environmental & Hydraulic Services
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 TTY: 1-800-833-6388
www.wsdot.wa.gov

January 16, 2020

The Honorable Arnold Cooper, Chair
 Squaxin Island Tribe
 SE 10 Squaxin Lane
 Shelton, WA 98584

RE: SR 510 / Yelm Loop – New Alignment Phase 2,
 Archaeological Testing Plans for Sites 45TN345 and 45TN506

Dear Chairperson Cooper:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the SR 510 / Yelm Loop – New Alignment Phase 2 project to address a transportation need in Thurston County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting your review of the testing plans prepared for archaeological sites 45TN345 and 45TN506.

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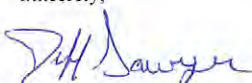
In November 2019, we transmitted the cultural resources survey report prepared for the project by Historical Research Associates, Inc. (HRA) and notified you that we anticipated additional testing at two sites within the project APE: 45TN345 and 45TN506.

The Honorable Arnold Cooper, Chair
 January 16, 2020
 Page 2

Site 45TN345 is located within a portion of the APE that was investigated during Phase 1 of the project. The site is located on the east side of Yelm Creek and crosses an area where a bridge over Yelm Creek is proposed for the current project. Although no artifacts have been identified within the portion of site 45TN345 that is recorded in the direct footprint of the proposed bridge, previous archaeological work in that portion of the site has been limited and has not systematically verified the site boundary. Therefore WSDOT is proposing additional testing in this area to delineate the site boundary, as described in the enclosed testing plan prepared by HRA.

The second site, 45TN506, is a historic-period site that was recently identified during the cultural resources assessment for the Phase 2 project. The site contains a scatter of historic-period artifacts dating to between the 1940s and 1960s, along with numerous modern and non-temporally diagnostic artifacts of glass, ceramic, and metal. In addition to the artifacts, a rock feature of unknown origin and function was identified. The feature appears to have been deliberately constructed in an oval shape and not haphazardly created as a result of field clearing activities. The enclosed testing plan prepared by HRA outlines proposed archaeological test excavations at Site 45TN506 to evaluate the site’s eligibility for listing in the NRHP. A critical element of this testing approach will be to determine the function of the rock feature at the site.

We ask that you review and comment on the enclosed testing plans. Should you have any questions or comments on the enclosed plans, please provide a response by February 16, 2020 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

 Jeff Sawyer
 Environmental & Hydraulic Manager
 Olympic Region

w/o enclosures:
Archaeological Site Boundary Definition Methodology for 45TN345, Memorandum from Ron Adams, HRA to Roger Kiers, WSDOT, dated December 12, 2019.

Testing Plan For: Phase II National Register of Historic Places Evaluation of Archaeological Site 45TN506 For the Proposed SR 510/Yelm Loop, New Alignment Phase 2 Project, Yelm, Thurston County, Washington, dated January 10, 2020, prepared by Historical Research Associates, Inc.

The Honorable Arnold Cooper, Chair
January 16, 2020
Page 3

ecc w/enc: Shaun Dinobilo, Cultural Resources, Squaxin Island Tribe

cc: Bill Elliott, WSDOT Olympic Region Plans Engineer
Roger Kiers, WSDOT Cultural Resources
Project File

E-3.9 | Testing Plans Response from Squaxin Island Tribe

From: [Thatcher, Hannah](#)
To: [Sawyer, Jeff](#); [Ward, Carl](#)
Subject: FW: Yelm Loop Archeological Testing Plans to Squaxin Island Tribe
Date: Wednesday, January 22, 2020 6:01:28 AM

-----Original Message-----

From: Piller, Inge <PillerI@wsdot.wa.gov>
Sent: Tuesday, January 21, 2020 10:35 AM
To: Shaun Dinubilo <sdinubilo@squaxin.us>; Kiers, Roger <KiersRo@wsdot.wa.gov>
Cc: Thatcher, Hannah <ThatchH@wsdot.wa.gov>
Subject: RE: Yelm Loop Archeological Testing Plans to Squaxin Island Tribe

Thank you.

-----Original Message-----

From: Shaun Dinubilo <sdinubilo@squaxin.us>
Sent: Tuesday, January 21, 2020 10:02 AM
To: Piller, Inge <PillerI@wsdot.wa.gov>; Kiers, Roger <KiersRo@wsdot.wa.gov>
Subject: RE: Yelm Loop Archeological Testing Plans to Squaxin Island Tribe

Hi Inge and Rodger,

We concur with the proposed site boundary delineation testing plan for 45TN345. We also concur with the proposed site testing and evaluation for 45TN506.

Please let me know if you have any questions.

Shaun Dinubilo
Archaeologist
CR Department
Squaxin Island Tribe
200 S.E. Billy Frank Jr. Way
Shelton, WA 98584
Office Phone: 360-432-3998
Cell Phone: 360-870-6324
Email: sdinubilo@squaxin.us

-----Original Message-----

From: Piller, Inge [<mailto:PillerI@wsdot.wa.gov>]
Sent: Thursday, January 16, 2020 3:29 PM
To: Shaun Dinubilo <sdinubilo@squaxin.us>
Subject: Yelm Loop Archeological Testing Plans to Squaxin Island Tribe

Yelm Loop Archeological Testing Plans to Squaxin Island Tribe
45TN345_Draft_Boundary_Delineation_Memo_20191212
Testing Plan_Site_45TN506_20200110

Inge Piller
Secretary Senior
Olympic Region, Environmental & Hydraulic Services Washington State Department of Transportation
360-570-6700
pilleri@wsdot.wa.gov



Nisqually Indian Tribe
4820 She-Nah-Num Dr. S.E.
Olympia, WA 98513
(360) 456-5221

January 27, 2020

Jeff Sawyer
Environmental & Hydraulic Manager
Olympic Region
Environmental & Hydraulic Services
5720 Capitol Blvd
Tumwater, WA 98501

Dear Mr. Sawyer,

The Nisqually Indian Tribe thanks you for the opportunity to comment on:

Re: Yelm Loop Archeological Testing Plans

The Nisqually Indian Tribe has reviewed the archaeological testing plans for sites 45TN345 and 45TN506 you have provided for the above-named project and have no further information at this time. The Nisqually Indian Tribe is interested in participating in the archaeological testing and would appreciate advanced notice to accommodate staffing. Please keep me informed if there are any Inadvertent Discoveries of Archaeological Resources/Human Burials.

Sincerely,

Brad Beach
THPO Department
360-528-0680
360-456-5221 ext 1277
beach.brad@nisqually-nsn.gov

Annette "Nettsie" Bullchild
THPO Department
360-456-5221 ext 1106
bullchild.annette@nisqually-nsn.gov

Jeremy "Badoldman" Perkuhn
THPO Department
360-456-5221 ext 1274
badoldman.jp@nisqually-nsn.gov

cc: Annette Bullchild, Nisqually Indian Tribe
Roger Kiers, WSDOT

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F DISTRIBUTION LIST

Wide distribution of the Supplemental Environmental Assessment will continue to foster effective communication between WSDOT, public agencies, tribal governments, and the local community regarding the SR 510 Yelm Loop – New Alignment Phase 2 Project.

Federal Agencies

Office of Environmental Policy and Compliance, Washington, D.C. – Director

Federal Highway Administration

Federal Emergency Management Agency

National Marine Fisheries Service

National Resource Conservation Service

U.S. Environmental Protection Agency, Region 10

U.S. Army Corps of Engineers, Seattle District Office

U.S. Fish and Wildlife Service

State Agencies

Department of Archaeology and Historic Preservation

Department of Commerce

Department of Ecology

Department of Fish and Wildlife

Department of Natural Resources

Washington State Patrol – District 1

Regional Agencies

Intercity Transit Thurston Transit

Puget Sound Regional Council Puget Sound Transit

Thurston Regional Planning Council Thurston County Planning Department

Thurston County SEPA Reviewer

Thurston County Sheriff's Department

Local Agencies

City of Yelm Community Development Department

City of Yelm Public Works Department

City of Yelm Fire Department

City of Yelm Police Department

City of Yelm SEPA Official

Native American Tribes

Nisqually Indian Tribe

Puyallup Tribe of Indians

Squaxin Island Tribe

Libraries

Thurston County Library System

District Legislators

Senator Patty Murray

Representative Denny Heck

Representative J.T. Wilcox

G REFERENCES

Washington State Department of Transportation (WSDOT)

- 2000 *Wetland Functions Characterization Tool for Linear Projects* (Null et al.)
- 2007 *2007–2026 Highway System Plan*
- 2008 *Guidance on Preparing Cumulative Impact Analyses*
- 2009 *Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Reports* (June 2009)
- 2011 *Traffic Noise Policy and Procedures Manual*
- 2016 *2015–2017 Sustainable Transportation Action Plan*
- 2017 *Roadside Policy Manual*
- 2017 *Washington State Freight Mobility Plan*
- 2018 *Guidance for Project-Level Greenhouse Gas Evaluations under NEPA and SEPA*
- 2019 *Environmental Manual, Section 432 Floodplains, Section 470 Hazardous Materials and Solid Waste, Section 459 Visual Impacts*
- 2019 *Highway Runoff Manual*

- 2019 *WSDOT Temporary Erosion and Sedimentation Control Manual*
- 2019 *Biological Assessment Preparation for Transportation Projects Advance Training Manual*
- 2019 *Section #1-07.15(1) Standard Specifications for Road, Bridge and Municipal Construction*
- 2019 *Chapter 24.39(c) Local Agency Guidelines*

Environmental Protection Agency (EPA)

- 2007 *Control of Hazardous Air Pollutants from Mobile Sources* (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007)
- 2008 40 Code of Federal Regulations (CFR) Parts 51 and 93, Transportation Conformity Rule, Parts 1508.7 and 1508.8, Protection of the Environment Terminology and Index
- 2010 Appendix B of EPA's *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas*

Washington State Department of Ecology

- 2001 *Urban Air Toxic Measurements in Seattle*, conducted by the Laboratory for Atmospheric Research, Washington State University, Pullman, Washington
- 2012 *Stormwater Management Manual for Western Washington*
- 2014 *Washington State Wetland Rating System for Western Washington* (Hruby)

Other References

- 1964 Title VI of the Civil Rights Act of 1964
- 1967 Revised Code of Washington (RCW), Chapters 8.25 and 8.26 (as amended)
- 1970 National Environmental Policy Act of 1970 (as amended)
- 1987 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended)
- 1987 Civil Rights Restoration Act of 1987
- 1994 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (February 1994)
- 1998 Transportation Equity Act (TEA-21)
- 2006 Interagency Wetland Mitigation Guidance for Washington State, Part 1 and 2

- 2012 Department of Transportation Updated Environmental Justice Order 5610.2
- 2012 Washington Administrative Code (WAC), Chapter 173-400
- 2013 American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process (ASTM 1527-13)
- 2015 City of DuPont Comprehensive Plan
- 2017 Yelm Comprehensive Plan and Joint Plan with Thurston County
- 2019 Yelm Municipal Code, Chapter 18.21

Websites

- Municipal Research and Services Center (MRSC), Washington City and Town Profiles
<http://mrsc.org/Home/Research-Tools/Washington-City-and-Town-Profiles.aspx>
- Thurston Regional Planning Council (TRPC) Maps and Data
<https://www.trpc.org/31/Maps-Data>
- Department of Ecology – Toxics Cleanup Database
<https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites>
- Washington Department of Fish and Wildlife (WDFW) – Priority Habitats and Species List
<https://wdfw.wa.gov/species-habitats/at-risk/phs/list>

