

How Does an Environmental Assessment Analyze Effects to Social, Economic, and Environmental Resources?

The National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA) require an evaluation of a project's potential positive and negative effects on social, economic, and environmental resources. Typically, a NEPA Environmental Assessment (EA) first analyzes the existing condition of a resource, and then compares this baseline condition to the condition that is expected to result from constructing the project. The EA also describes appropriate measures taken or proposed to avoid, minimize, or otherwise mitigate for negative effects of the project to the resource.

To What Degree Were Social, Economic, and Environmental Resources Analyzed?

Technical reports that support this EA were prepared consistent with the Washington State Department of Transportation (WSDOT) *Environmental Procedures Manual* and Federal Highway Administration (FHWA) **Technical Advisory T 6640.8A**. The level of analysis for each resource is proportional to the expected effect that the Preferred Alternative would have on that resource. The following technical reports, as well as a **Level 1 Environmental Summary** and the Preliminary Alternatives Analysis, are included in Chapter Four References and are provided in electronic format on the CD that accompanies this document:

- Transportation Report (WSDOT 2009k, prepared by David Evans and Associates, Inc. [DEA])
- Geology & Soils Report (WSDOT 2009e, prepared by Golder Associates)
- Air Quality Report (WSDOT 2009a, prepared by Environalysis)

How does the FHWA *Technical Advisory T 6640.8A* relate to the Level of Analysis within this EA?

Technical Advisory T 6640.8A reminds us that the goal of the NEPA process is to make better decisions, not more documentation. Environmental documents should be concise, clear, and to the point. They should focus on the important impacts and issues, with the less important issues only briefly discussed.

What is a Level 1 Environmental Summary?

The Level 1 Environmental Summary is a preliminary, corridor-level review of environmental conditions and potential effects of the project alternatives. This level of analysis is a means of providing the design team with environmental information early in the planning process.

What is the Information in Parentheses following each Report?

The author and year in parentheses after each report provides a cross-index to the bibliographic citation in Chapter Four References.

- Wetlands Report (WSDOT 2009n, prepared by DEA)
- Water Resources Report (WSDOT 2009m, prepared by DEA)
- Biological Assessment (WSDOT 2009o, prepared by DEA)
- Biological Resources Report (WSDOT 2009b, prepared by DEA)
- Habitat Suitability & Highway Permeability Report (prepared by DEA and WSDOT)
- Noise Report (WSDOT 2009h, prepared by Environmental Analysis)
- Land Use & Farmland Report (WSDOT 2009g, prepared by DEA)
- Cultural Resources Report (WSDOT 2009c, prepared by Historical Research Associates, Inc.)
- Socioeconomics & Environmental Justice Report (WSDOT 2009j, prepared by DEA)
- Public Services & Utilities Report (WSDOT 2009i, prepared by DEA)
- Hazardous Materials Report (WSDOT 2009f, prepared by Terra Associates)
- Visual Quality Report (WSDOT 2009l, prepared by DEA)
- Cumulative Effects Report (WSDOT 2009d, prepared by DEA and WSDOT)

For What Area Were Social, Economic, and Environmental Resources Analyzed?

The geographic area that is most appropriate for analyzing effects of constructing the Preferred Alternative differs among the respective social, economic, and environmental resources. For many resources, the right-of-way that WSDOT would need to acquire (**Exhibit 8** in Chapter Two) is representative of direct effects because that area would be converted from current uses to highway uses. Potential effects on other resources like wetlands are limited to footprint of ground disturbance.

The study corridor used in Level 1 studies (**Exhibit 14**) provided an adequate context for evaluating effects on many resources. Effects on air quality required a more regional context for analysis, as did effects on highly mobile wildlife like deer.

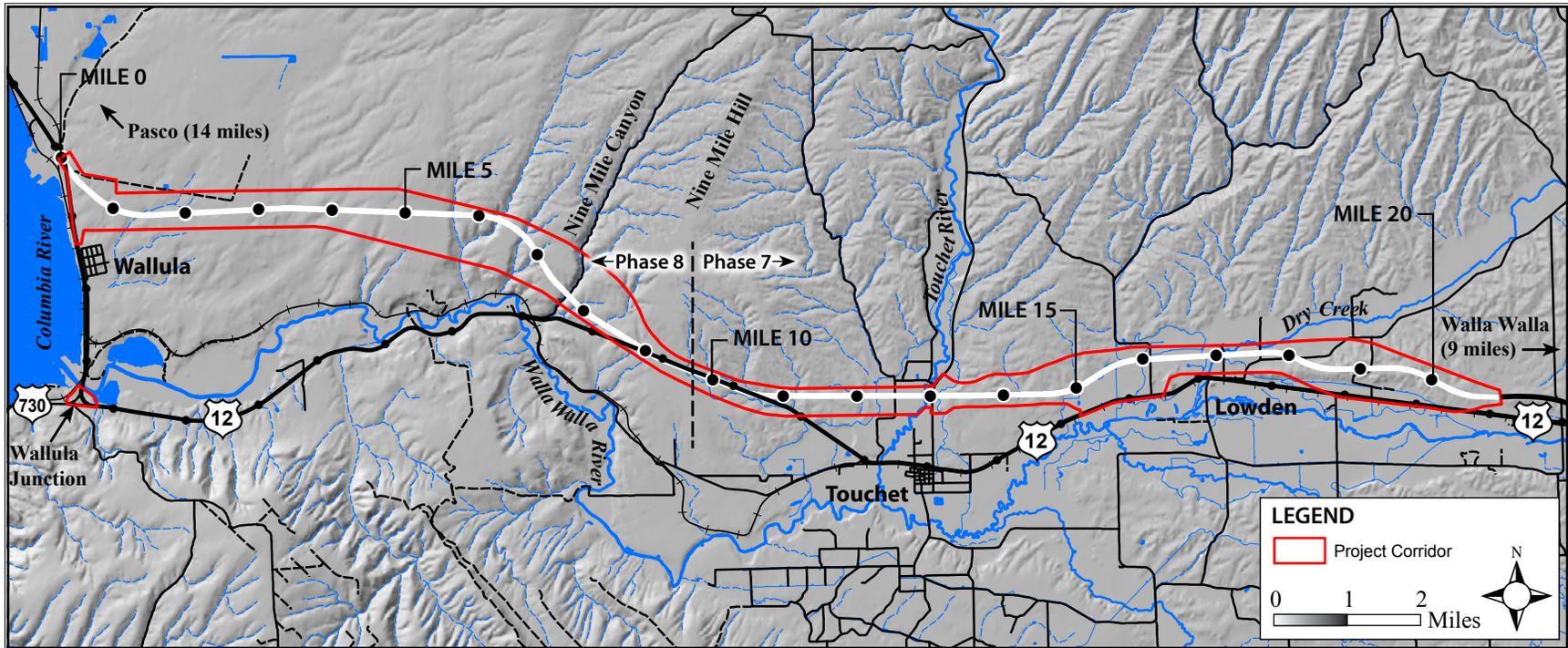


Exhibit 14. Map showing US 12 Phases 7 and 8 Study Corridor.

Which Resources Would Not Be Affected by the Preferred Alternative?

Results from the analysis of social, economic, and environmental resources show that the following resources are either not present within the project area or would not be affected by constructing and operating the proposed project.

Coastal Zones

There are no coastal zones in the project area.

Wild and Scenic Rivers

None of the streams in the project area are designated as Wild and Scenic Rivers.

Public Lands (Section 4(f), 6(f), and Forests)

The Preferred Alternative does not cross or directly affect any historic properties, publicly owned and managed parks, outdoor recreational areas, wildlife refuges, or forests.

Environmental Justice Populations

There are no adverse effects from this project that will be predominately borne by a minority or low-income population and be more severe or greater in magnitude than effects on non-minority or non low-income populations. For detail on how these conclusions were reached, see the Socioeconomics & Environmental Justice Report (WSDOT 2009j).

How Would the Preferred Alternative Affect Traffic and Transportation?

Chapter One summarized the purpose and need for the Wallula to Frenchtown Vicinity Project to improve motorist safety, accommodate increasing traffic volumes, and maintain mobility along this portion of US Highway 12 (US 12) for the design life of the project (2032). The following traffic data supports the purpose and need for the project.

What is the accident history for US 12 in western Walla Walla County?

The increased use of US 12 between the Tri-Cities and Walla Walla has been accompanied by a rise in the number of accidents occurring within the project limits. WSDOT accident records reveal the number and location of these accidents. **Exhibit 15** shows accidents from 1999 to 2007 on US 12 between the Wallula and Frenchtown vicinities. The 286 accidents reported during this 8-year period is ten times higher than an overlapping 10-year study for the portion of US 12 west of the Frenchtown vicinity in

What are Section 4(f) and 6(f) Resources?

Section 4(f) of the U.S. Department of Transportation Act of 1966 applies to projects that directly or indirectly affect publicly owned parks, recreation areas, wildlife or waterfowl refuges, or historic sites.

Section 6(f) of the Land and Water Conservation Funds Act applies to projects that directly or indirectly affect publicly owned outdoor recreation property acquired or developed with moneys from the Recreation and Conservation Office.

What are Environmental Justice Populations?

Under Presidential Executive Order 12898, federally funded projects must attempt to identify, avoid, minimize, and mitigate disproportionate effects to low-income and minority populations.



Eastbound drivers on US 12 need to take extra care at the Wallula Junction stop sign, because the intersection angle limits view of US 730 traffic.

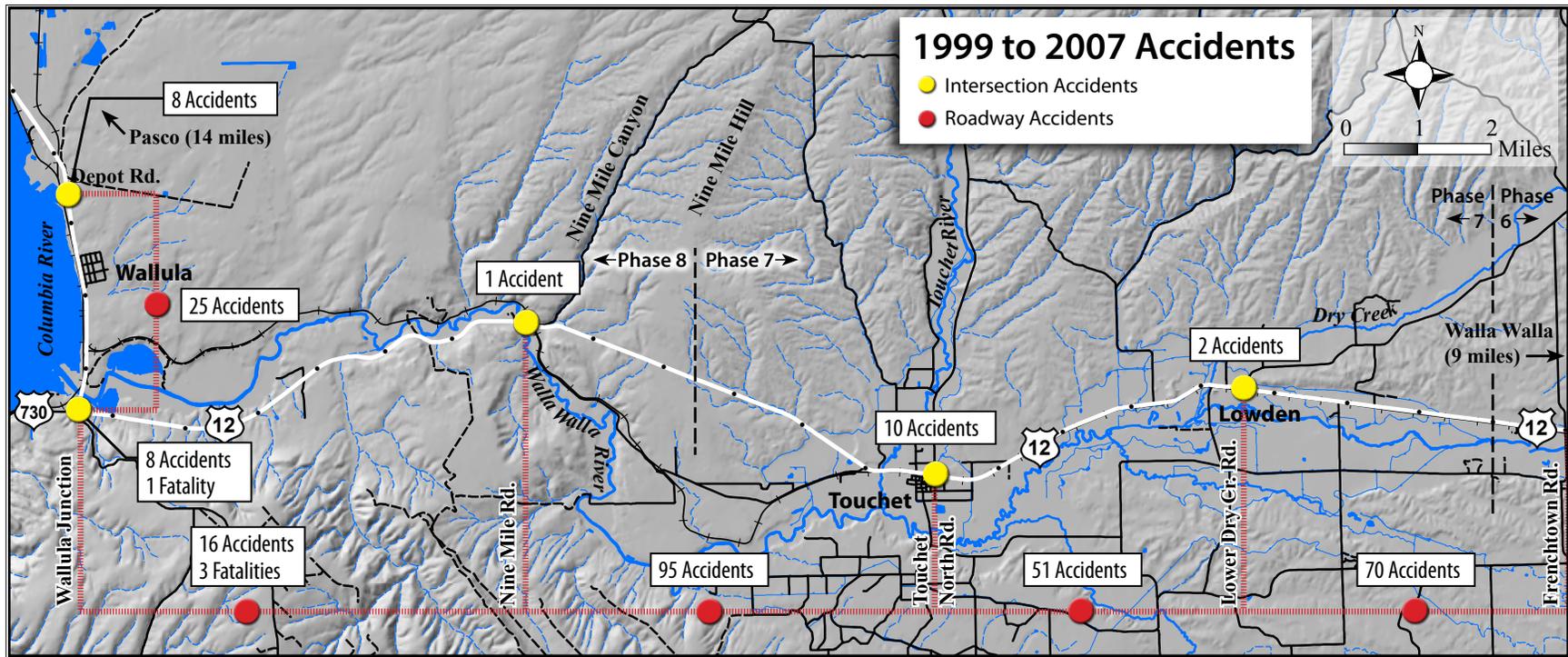


Exhibit 15. Map showing number of accidents at intersections and in road segments of the existing highway.

Walla Walla County. The sharp increase in accidents reflects the increase in traffic on the highway. Other observations include:

- There were twice as many accidents in the Phase 7 portion of the current highway as in the Phase 8 portion.
- There were four fatalities in the Phase 8 accidents, but none in Phase 7.

The accidents demonstrate the location and effect of several **roadway deficiencies** on the safety of the traveling public:

What are Roadway Deficiencies?

Roadway deficiencies refer to conditions that do not fully meet highway access management standards as set by the state of Washington Administrative Code. For example, the number and spacing of intersecting streets, roads, and private drives shall be consistent with the highway classification and designated uses.

- US 12 and US Highway 730 (US 730) intersect at an angle, which limits a driver's line of sight when eastbound traffic on US 12 stops and turns left at Wallula Junction. One fatality accident occurred at this intersection.
- Several curves between Milepost (MP) 311 and MP 315 limit a driver's line of sight while traveling or when turning onto or off US 12. Three fatalities occurred in a single accident west of Nine Mile Canyon when an eastbound vehicle crossed the centerline and struck an oncoming vehicle.
- Spacing between the intersections of US 12 and local roads are less than the standard set by the Washington Administrative Code (WAC) at three places in Phase 8 and at six locations in Phase 7.
- The number of private drives with direct access to US 12 in Phase 7 exceeds the standard set by the WAC.
- Spacing between many of the private drives with direct access to US 12 is less than the standard set by the WAC.
- Acceleration and deceleration lanes are absent for vehicles entering or exiting US 12 from private drives and most intersecting side roads.

If not corrected, the combined effect of increasing traffic volumes and roadway deficiencies will continue eroding the level of safety on this section of US 12. Another safety concern is that the highway currently passes through the communities of Touchet and Lowden, increasing the potential for accidents involving pedestrians and bicyclists, even though speed limits are briefly reduced from 60 miles per hour (mph) to 40 mph (20 mph in Touchet school zone) and pedestrian and school crossings are marked.

How are capacity and mobility evaluated?

WSDOT traffic records show that traffic volumes within this part of the US 12 Corridor have been increasing at approximately 2.0 percent per year since 1993. Additionally, the Benton-Franklin Council of Government's (BFCG) Regional Travel Demand Model also



The sight distance of several curves in Phase 8 make it difficult to see oncoming traffic on the current highway. This is a view west, near Oasis Road.

indicates that volumes will continue rising at an average of 2.0 percent per year through the design life of the project, 2032. This means that the traveling public will experience a 50 percent increase in the number of vehicles driving on this section of US 12 by 2032.

Exhibit 16 presents **average daily traffic** in 2008 and predicted future volumes in 2032. They are based on traffic counts in 2006 and 2007 and use the 2 percent average annual traffic growth from the BFCG Regional Travel Demand Model.

What is Average Daily Traffic?
Average daily traffic is the total number of vehicles passing over a segment of roadway, in both directions, on a typical day.

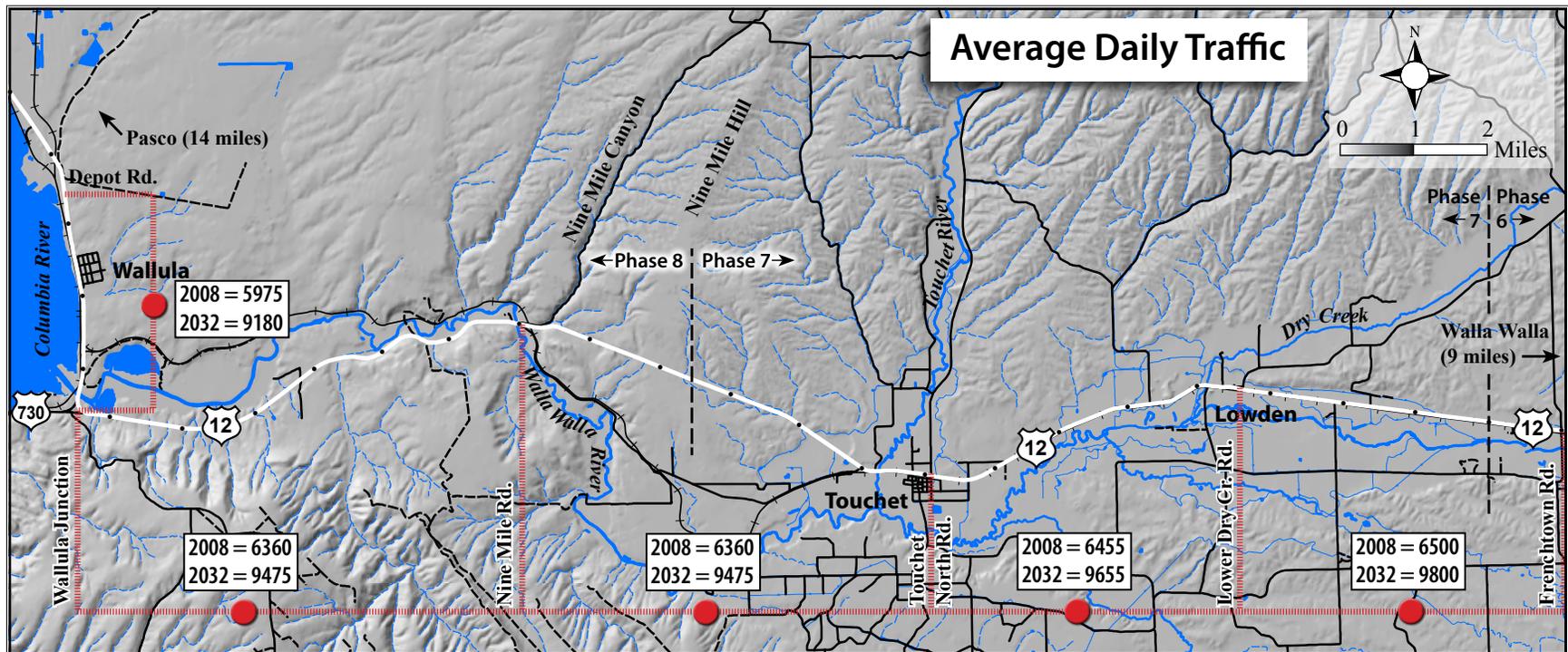


Exhibit 16. Map showing average daily traffic on road segments of the existing highway in 2008 and 2032 for the No Build Alternative.

Comparing the 2008 and 2032 traffic volumes suggests that the effects of substandard roadway conditions on the traveling public will worsen from increasing volumes of traffic if measures are not taken to increase capacity on this highway. Additional capacity would correct substandard features and prevent safety levels from deteriorating further.

Level of Service (LOS) is the principal measure of capacity for a highway and for intersections. Traffic conditions are defined in terms of service grades that range from LOS A (best) to LOS F (worst). The Washington State Highway System Plan and Regional Transportation Plan (RTP) have established a minimum of LOS C for both the current highway and the intersections for the project portion of US 12.

For two-lane highways, LOS is based upon the average amount of time that motorists are delayed by slower moving vehicles. **Exhibit 17** shows the highway LOS for Phases 7 and 8 in 2008 and 2032. The segment between Lambdin Road and Nine Mile Road does not currently meet the LOS C standard. None of the US 12 segments meet the standard in 2032.

For intersections, LOS is based on the most time a motorist has to wait to make a turn. In the Phases 7 and 8 portions of US 12, the greatest delay at intersections is waiting to turn from local roads onto the highway. **Exhibit 18** displays the intersection LOS for the current highway in Phases 7 and 8. All intersections currently meet or exceed the minimum standard of LOS C. In 2032, the intersections of US 12 with Depot Road, US 730, and Touchet North Road fail to function properly.

Since the number of heavy vehicles operating on a highway influence the need for acceleration and deceleration lanes, climbing lanes, and additional capacity, it is important to know what percentage of the total number of vehicles using US 12 falls within this class of vehicle. WSDOT vehicle counts at their permanent traffic recorder on US 12 just east of Wallula Junction indicate that heavy vehicles compose 14 percent of average daily traffic. The actual peak hour truck percentages may differ from this slightly.

Why is 2032 used for Future Conditions?

The year 2032 is the “design year” for Phases 7 and 8, meaning the highway improvements will meet state and regional standards at least until then. WSDOT sets the design year at twenty years after project construction, which for this analysis is assumed to be 2012.

What is Level of Service?

Level of Service is a term that denotes a range of operating conditions which occur on a transportation facility when it is accommodating various traffic conditions. It considers such factors as speed and travel time, freedom to maneuver, traffic interruptions, and the driver’s perception of comfort and convenience.

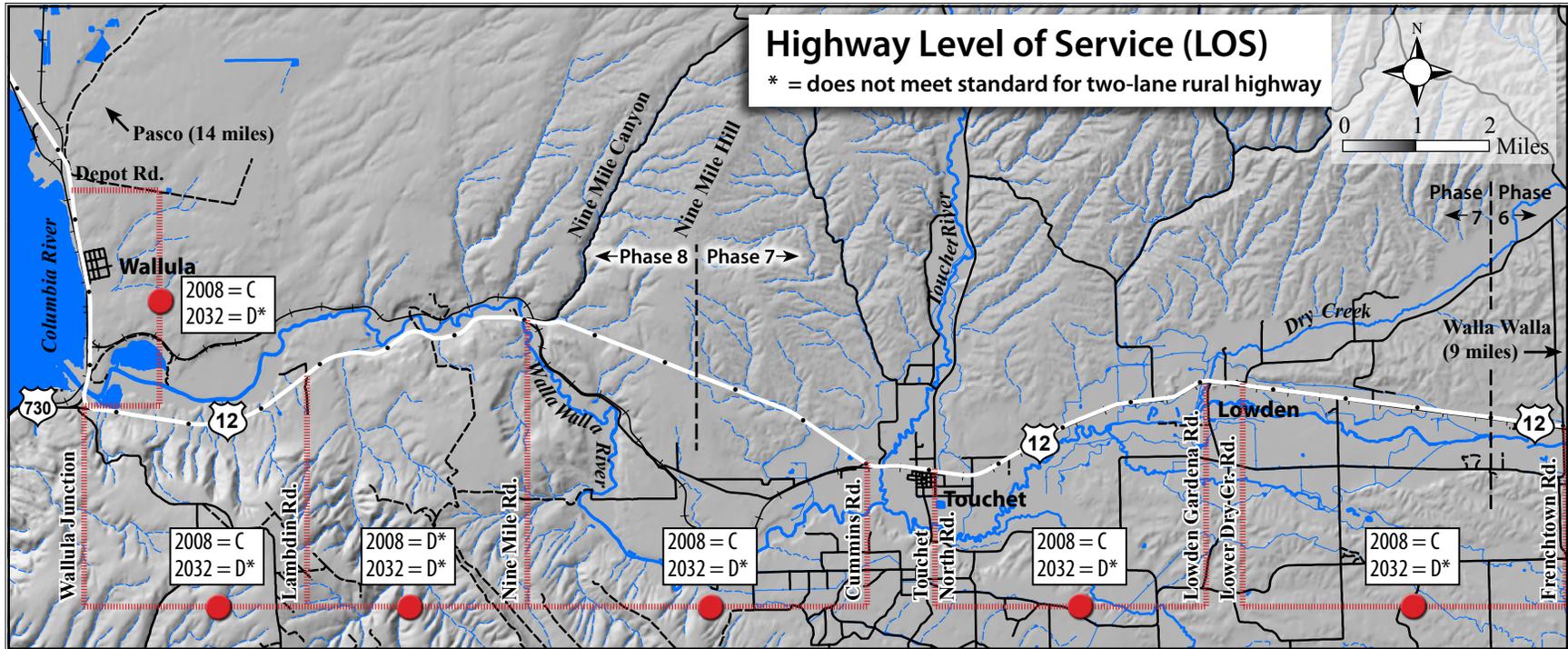


Exhibit 17. Map showing rural roadway Level of Service on road segments of the existing highway in 2008 and 2032 for the No Build Alternative.

As traffic volumes increase into the future, the number of heavy vehicles using US 12 will rise proportionally. If not improved to meet projected future demand, a lack of capacity will ultimately lead to longer travel times for passenger and freight traffic, associated economic impacts, and an increase in accidents and injuries. When taken together with driver behavior problems such as excessive speed, crossing the centerline, failure to yield the right-of-way, failure to stop, and driving under the influence, the safety of the traveling public is further jeopardized.

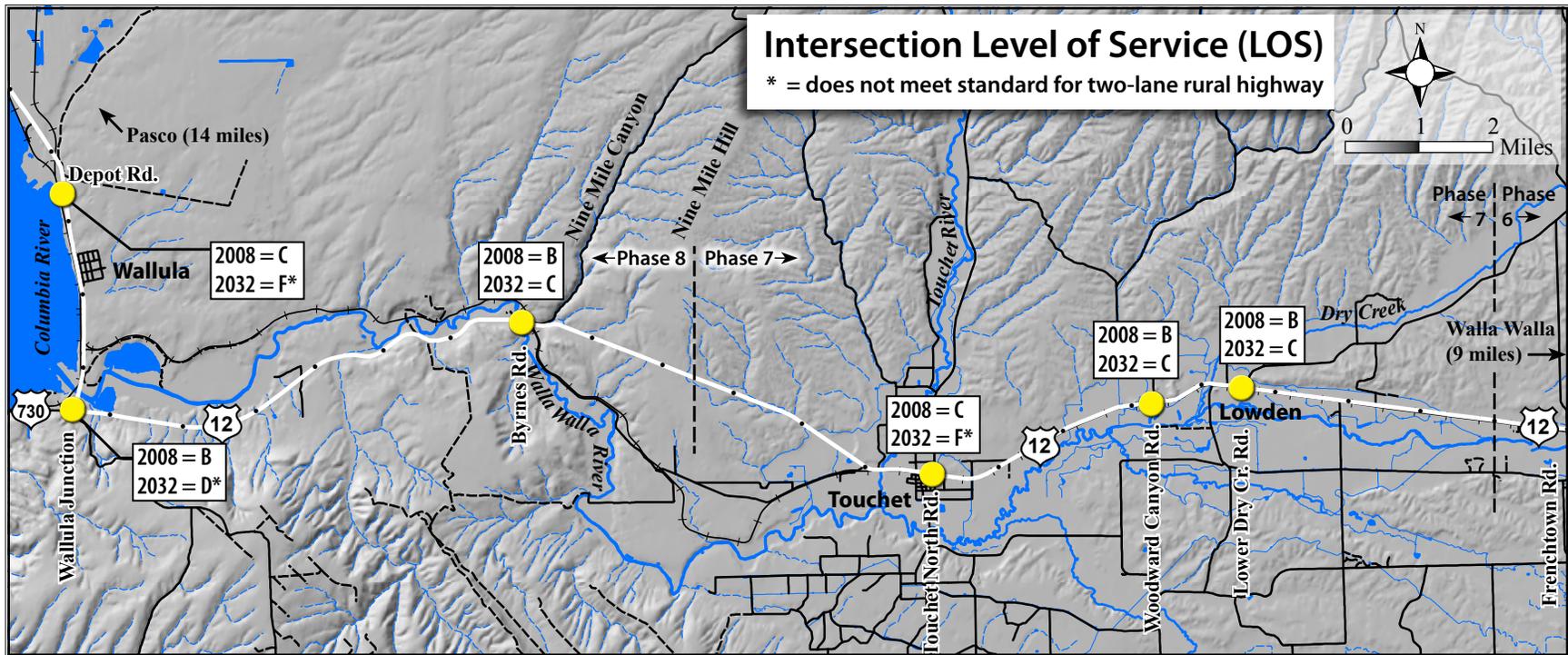


Exhibit 18. Map showing intersection Level of Service on road segments of the existing highway in 2008 and 2032 for the No Build Alternative.

How will local traffic be affected during construction of the Preferred Alternative?

Construction activities for a new US 12 in Phases 7 and 8 would have very few effects on local traffic. Conflict points would generally be located at the new Wallula Interchange, new intersections, and where the new highway crosses Cummins Road and Nibler Road, both of which will eventually be cul-de-sacs. Cummins Road will have a culvert that will allow for farm equipment access. Traffic control is expected to minimize effects on local traffic operations.

The greatest effect on local traffic is expected on Nine Mile Hill where the current two-lane US 12 would become the two westbound lanes of the new highway. Incorporating a segment of the current highway into the new alignment will complicate traffic control and may result in detours and delays for local traffic while work is ongoing in this area. Constructing the proposed frontage road to the south first is expected to minimize these effects.

How will local traffic be affected after construction?

Local traffic using the existing US 12 would enjoy substantial improvement because more than 90 percent of current traffic is expected to shift to the new alignment. Traffic on Nine Mile, Touchet North, and Lower Dry Creek roads should be unaffected because the new highway would cross them on bridges.

Local traffic using Cummins Road and Nibler Road would be most affected because both roads will end in cul-de-sacs, so vehicles needing to travel across the new alignment will have to drive to one of the local roads that have an intersection or that crosses under the new highway. Currently, the traffic on these roads is very limited, and so this alteration of local routes is expected to have only a minor effect. Public vehicles such as school busses and emergency responders will need to modify their routes as needed. Discussions with schools and emergency responders indicate this is not seen as an inconvenience and that the new routes will quickly become the norm.

Farmers whose fields or pastures are bisected by the new alignment will also need to find alternate routes to mobilize farm equipment across the new alignment. Cummins Road will have a culvert that will allow passage of typical farm equipment.

Woodward Canyon and Buckley roads would cross the four-lane highway at grade, so drivers will need to be aware of the traffic moving at the speed limit. The 100-foot-wide medians planned for all at-grade intersections should allow vehicles to safely wait for traffic to clear after crossing one direction of traffic before proceeding across the other



The new alignment will shift traffic away from the town of Touchet, shown here.

lanes. Likewise, the acceleration and turn lanes proposed for all at-grade intersections would allow local traffic to safely enter and leave the new highway.

WSDOT identified a number of reasonable and foreseeable future actions related to turning back existing US 12 to Walla Walla County. These actions will be included in a Memorandum of Understanding to be negotiated between the State and Walla Walla County. However, because the exact nature, location, and funding of these future projects are not known, they can not be analyzed at this time. They include, but are not limited to, the following:

- Repair or replace bridges based on sufficiency ratings, year of construction, and bridge replacement schedules.
- Repair or replace culverts that have deteriorated or are failing.
- Upgrade guardrail that does not meet current standards.
- Repave roadways where the Pavement Management System indicates they are due.
- Transfer utility franchises, easements, and agreements.

Which Resources Would Be Affected and What Commitments and Mitigation Would Occur?

Geology and Soils

How were geologic and soil resources evaluated for the proposed project?

Information on the geology and soil conditions likely to be encountered along the proposed US 12 Phase 7 and 8 alignments was compiled from a variety of sources including field reconnaissance conducted by geologists and engineers, publicly available data, aerial photographs, and previously published reports. Following compilation of this information, potential environmental effects were evaluated along the study alignment. Detailed discussion of this information and the potential effects is available in the Geology & Soils Report (WSDOT 2009e) for this project.



A typical view of the erosion-prone area underlain by dune sand. This is a view south, along the Bonneville Power Administration high voltage transmission line east of Wallula.

How would geologic and soil resources be affected?

The assessment in the Geology & Soils Report shows that no substantial effects to geologic or soil resources are expected from construction or operation of the proposed project. However, sections of the project cross areas susceptible to wind and water erosion that may be at risk during construction. A large area of Phase 8 is underlain by dune sand as shown in **Exhibit 19**, which is susceptible to wind erosion. Throughout Phases 7 and 8 there are wide sections of Touchet Sediment, which is susceptible to water erosion.

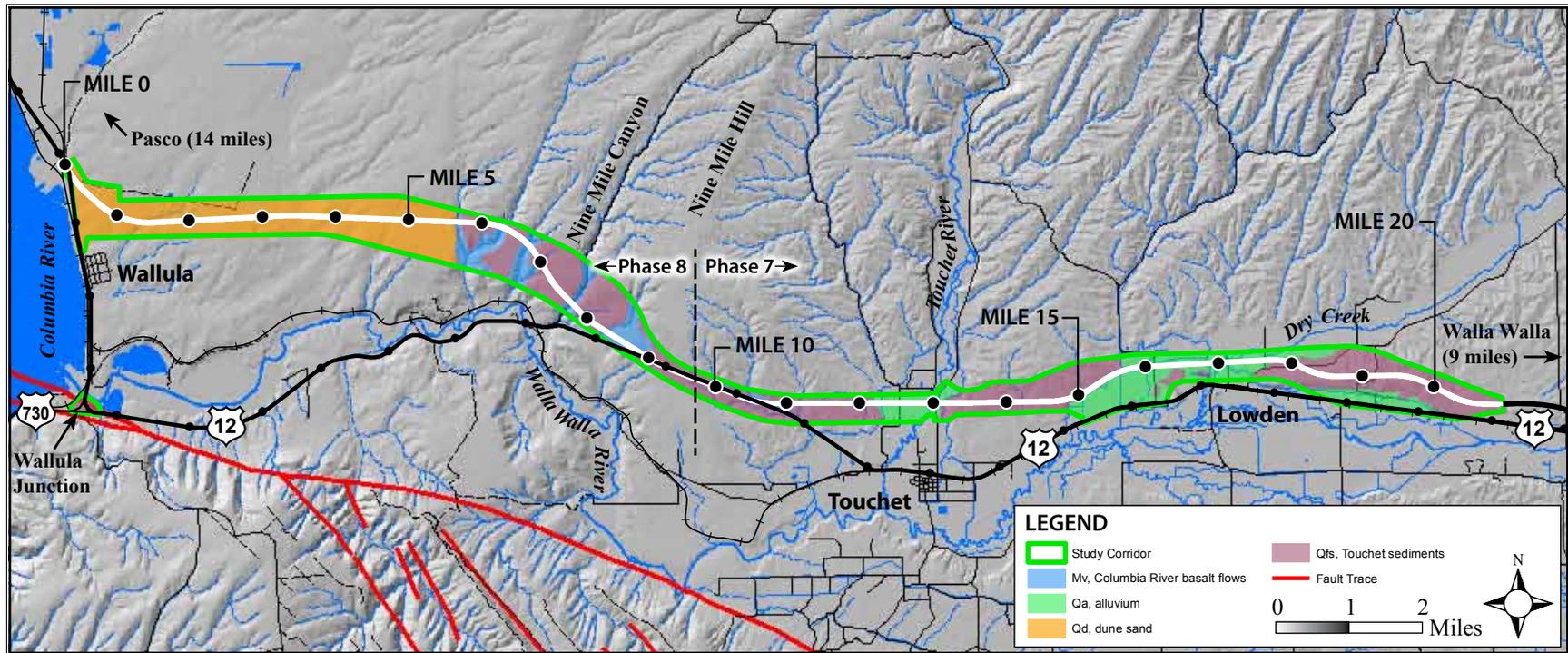


Exhibit 19. Map showing geologic units in the study corridor.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to geologic and soil resources?

The proposed alignment of US 12 has been selected during the planning process to avoid areas prone to **liquefaction** and landslides. Areas of potential liquefaction that cannot be avoided will be minimized using appropriate geotechnical designs implemented through construction practices.

Heights of the proposed bridges across the canyons in Phase 8 were lowered to reduce the potential for damage should there be an earthquake. Additional geotechnical studies during the design phase will ensure appropriate seismic measures will be incorporated into all bridges and structures.

While erosion cannot be completely eliminated, the potential adverse effects of erosion can be minimized through the implementation of measures in the **Loess Design Guide** (WSDOT 1988) and preparation of a Temporary Erosion and Sediment Control (TESC) plan. The Loess Design Guide recommends shallow cut slopes when possible or benched cuts when necessary, as well as seeding cut slopes to stabilize them. A TESC plan includes operational and structural measures to control the transportation of sediment. WSDOT will require the contractor to use **Best Management Practices** (BMPs) in their TESC plan. Should any BMP not function as intended, WSDOT will take additional action to minimize erosion during construction.

In addition, a Roadside Master Plan (RMP) will be developed during design of Phases 7 and 8 and implemented during construction. At a minimum, the RMP will address:

- highly erodable soils
- revegetation of unstable slopes
- establishment of native plant species in disturbed areas of the ROW
- control of invasive non-native plants

What is Liquefaction?

Liquefaction is the transformation of a granular soil from a solid state to a liquefied state, often as a consequence of strong earthquake shaking.



Soils in the western portion of Phase 8 are susceptible to wind erosion, as shown by the remaining fence corner.

What is Loess?

Loess soils are composed of mixed accumulations of fine-grained clay and silt. They are created by glaciers and deposited by the wind.

What are Best Management Practices?

Best Management Practices, commonly referred to as BMPs, are methods used to minimize or avoid environmental effects. The term 'BMP' is widely used to refer to a variety of common management techniques. These practices represent the most practical methods available and are continually being improved.

After construction, the roadside will be maintained long term by WSDOT's **Integrated Vegetation Management (IVM)** Program.

What would happen if the Preferred Alternative were not built?

If the proposed new alignment of US 12 is not built, the geology and soils in the project area will not be exposed, moved, or altered.

Air Quality

How was air quality evaluated for the proposed project?

The Air Quality Report (WSDOT 2009a) utilized guidance from the Environmental Protection Agency (EPA) and FHWA along with monitoring data collected by the Washington State Department of Ecology (Ecology) to assess air quality in the study area. The project region was formerly found to be exceeding air quality standards for particulate matter (PM), primarily wind-blown dust, but now is considered to have good air quality, meeting state and federal standards for all regulated pollutants.

How would air quality be affected?

Project effects to air quality from the construction and operation of the new highway are expected to be minimal. The greatest potential for air quality impacts is during construction when earth-moving, paving, and demolition tasks will generate fugitive dust, PM, and other pollutants from the use of heavy machinery. Phase 8 lies within the Wallula PM₁₀ Maintenance Area where special attention must be taken to minimize particulate emissions.

After construction, the project will not generate emissions of pollutants of concern in excess of national air quality standards. Completion of this project will have a secondary effect of reducing emissions along the old US 12 alignment by shifting a substantial number of vehicles away from the homes and businesses that border it. In addition, the new alignment will reduce emissions because it is a more direct route between Wallula

What is Integrated Vegetation Management?

Integrated Vegetation Management is the establishment of low-maintenance beneficial vegetation and the suppression of unwanted vegetation, thereby lowering long-term maintenance cost. Chemical controls are used only when needed.



The good air quality of the region will not be diminished by this project. This is a view of the Walla Walla Valley from the hills southeast of Lowden.

and Walla Walla and it will permit vehicles to travel at a steady speed unimpeded by slower traffic, traffic entering from driveways, and slowing down through the towns of Touchet and Lowden and then accelerating back up to the speed limit. Slower traffic that stops and starts produces higher emissions.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to air quality?

The new highway avoids creating air quality impacts to residences in the corridor by being located a substantial distance from them. The use of best available construction practices, such as adjusting construction schedules to avoid traffic backups and avoiding tracking dirt off site, will greatly minimize air quality impacts. Additional mitigation measures are recommended and include a prohibition on the burning of any woody debris from clearing the new right-of-way. A **Source Permit** will be required for any rock crushers, concrete, or asphalt batch plants used for the project. The project will also follow soil stabilization and revegetation requirements described in the RMP (as defined on p. 3-14), which will minimize fugitive dust.

What would happen if the Preferred Alternative were not built?

Not building the new highway avoids any negative effects of constructing or operating it, but also fails to meet the purpose of reducing corridor congestion and improving public safety. Vehicles will continue to be impeded by slower traffic, resulting in increased emissions.

Additionally, not building the project would continue the existing condition of emissions along the current US 12 alignment near homes and businesses. If the Preferred Alternative is not constructed, then air quality will likely deteriorate as capacity and mobility continue to worsen due to higher traffic volumes.

What is a Source Permit?

The Washington State Department of Ecology issues Source Permits when rock crushers, concrete, or asphalt batch plants are used at a project location. These permits are required by Title V of the Federal Clean Air Act in accordance with 40 CFR Part 70.

Wetlands and Water Resources

How were wetlands and water resources evaluated for the proposed project?

The Wetlands Report (WSDOT 2009n) for the project summarizes background data, field studies, and mapping used to identify potential effects to these resources. Wetlands were evaluated by first reviewing existing information from the National Wetland Inventory, the National Resource Conservation Service (NRCS), and soil surveys for Walla Walla County. These landscape level data sources helped in identifying likely areas where wetlands may exist. Biologists then investigated these sites to locate and delineate project area wetlands. They determined potential environmental effects by comparing the project design with the delineated wetland boundaries.

The Water Resources Report (WSDOT 2009m) summarizes existing literature and scientific data which were reviewed at the watershed scale and in the project vicinity to document existing water resource conditions and issues. Water resources specialists augmented the literature and internet research by visiting the project area and talking to landowners and local water resources professionals.

Are there areas of special concern?

Wetlands

There are no wetlands in the Phase 8 corridor.

Biologists delineated a total of 3.79 acres of wetlands in the Phase 7 corridor. These wetlands are associated with the Touchet River and Dry Creek and are found within a highly degraded riparian area surrounded by agriculture. Habitat diversity in these wetlands is limited and invasive species are abundant.



Linear riparian wetlands in the Phase 7 corridor, like these on the Touchet River, would be spanned by new bridges. This is a view downstream (south) from the Hawley Bridge on Cummins Road.

Surface Water

In the Phase 8 study corridor, there are four **ephemeral** streams and no **perennial** streams. Surface waters in the project area are shown on **Exhibit 20**. No other open waterbodies are present in this area. In the Phase 7 study corridor, the Touchet River and Dry Creek are the main perennial waterbodies. These two water courses are listed on **Ecology’s 303(d) list** as Category 4a, because these waters have approved implementation plans to restore water quality. The 303(d) list documents that the Touchet River has been impaired by high temperature, low pH, low dissolved oxygen, and an abundance of fecal coliform bacteria. Dry Creek has been impaired by low dissolved oxygen and fecal coliform bacteria. Several additional ephemeral creeks are also present in Phase 7.

Numerous irrigation ditches are present in the Phase 7 study area, including Old Lowden Ditch, Touchet East Side Ditch, and Touchet West Side Ditch. The Walla Walla County Conservation District (WWCCD) is leading efforts to convert these open channel ditches into piped systems to reduce water loss from evaporation and retain in-stream flow. Most fields in Phase 7 are sprinkler-irrigated with surface water from the irrigation ditches or from shallow wells. Many fields west of Dry Creek that are served by Old Lowden Ditch are flood-irrigated. Most of the center pivot irrigation systems in the western portion of Phase 8 use water pumped from the Columbia River (specifically Lake Wallula).

What is an Ephemeral Stream?

An ephemeral stream only carries flowing water during and shortly after rain events. There is no supplemental source for stream flow.

What is a Perennial Stream?

A perennial stream carries flowing water year-round.

What is Ecology’s 303(d) List?

Section 303(d) of the federal Clean Water Act requires Washington State to periodically prepare a list of all surface waters in the state for which beneficial uses are impaired by pollutants such as temperature, fecal coliform bacteria, nutrients, and toxic substances.



Ephemeral streams, like this one in the study area, are dry except during extreme storm events. Pictured here is the current US 12 crossing of Vansycle Canyon.

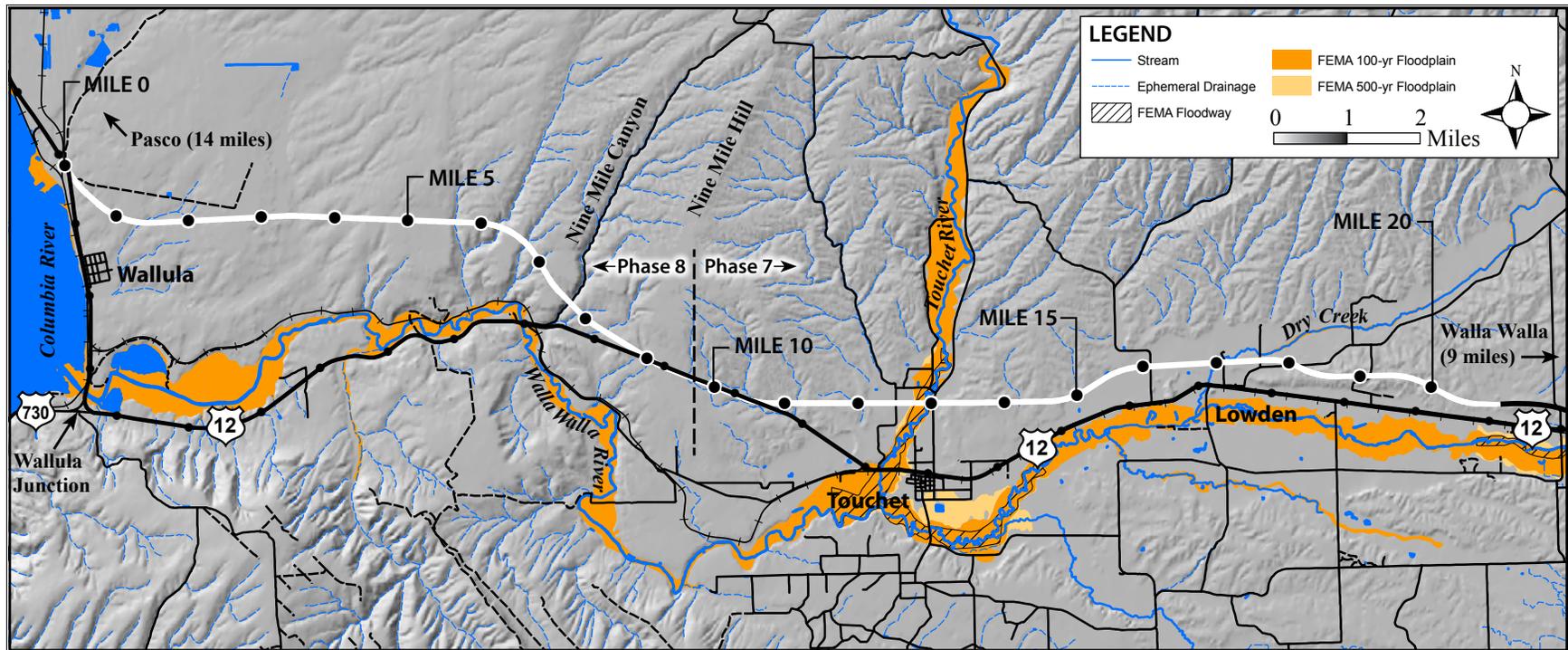


Exhibit 20. Map showing surface waters and floodplains in the project vicinity.

Groundwater

There is one **Group A** well roughly 100 feet from the Phase 8 study corridor boundary, and its well protection zone (WPZ) extends into the study corridor near Wallula. There is a second Group A well within the study area at Wallula Junction. There are no Group A wells in the Phase 7 study area. Three Group A wells are present in the community of Touchet, but none of the WPZs associated with these wells overlap with the study area. There are three **Group B** wells within the study area in the vicinity of Lowden. No Group A or B wells will be affected by this project. Well locations are shown on **Exhibit 21**.

What are Group A and B Wells?

Group A groundwater supply wells serve 15 or more households. Group B groundwater supply wells serve between 2 and 14 households.

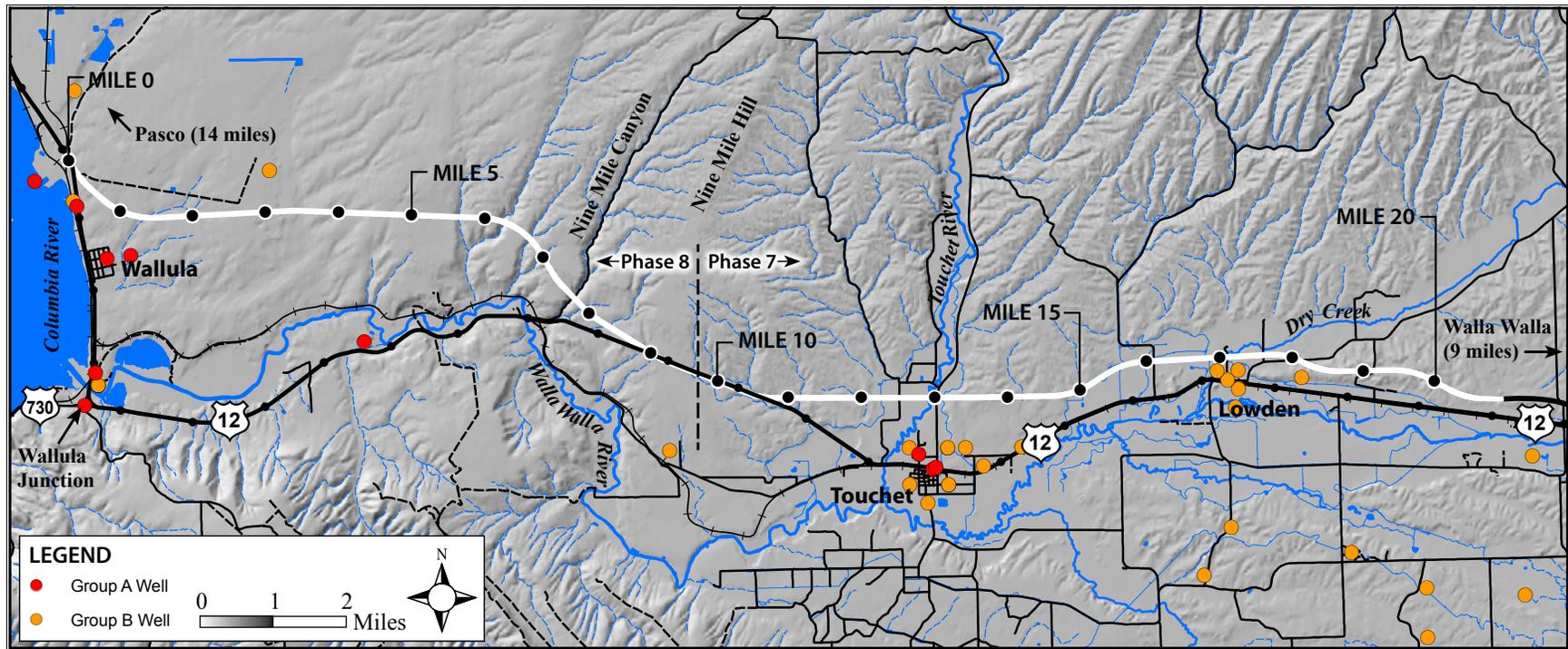


Exhibit 21. Map showing groundwater wells in the project vicinity.

Water from deep wells drilled into the basalt aquifer are used for vineyards, center-pivot irrigation on Nine Mile Hill, and occasionally elsewhere. The shallow gravel aquifer underlying the Touchet and Lowden vicinity is also used for irrigation in areas not served by irrigation ditches.

This water will not affect any sole source aquifers or critical aquifer recharge areas, because none of these exist in the project area. This project is also not expected to discharge stormwater or other materials in quantities sufficient to produce a substantial adverse impact to groundwater.

Floodplains

Both the Touchet River and Dry Creek have Federal Emergency Management Agency **(FEMA) floodplains** that cross the Phase 7 study area. In addition, the Touchet River has a mapped floodway. The floodplains in the project area are shown on **Exhibits 20, 22, and 23**. Historically, substantial flooding has occurred near Touchet and Lowden. **Exhibit 24** is an aerial photograph of flooding near Touchet in February 1996.

The project crosses approximately 1,000 linear feet of floodway and 1,500 linear feet of floodplain adjacent to the Touchet River. The floodplain of Dry Creek is contained entirely within its incised ravine.

Stormwater

Stormwater infiltrates very rapidly in the project area. Currently, there are only negligible amounts of impervious area along the proposed alignment.

How would wetlands and water resources be affected?

Wetlands

No direct impacts are expected within wetlands on any part of this project. Some minor buffer impacts are expected to affect less than 0.01 acre of wetland buffer. These buffer impacts will be direct effects of the placement of bridge piers and fill placed in wetland buffers along Touchet River and Dry Creek.

Increased levels of light and glare and increased noise may reduce habitat function of wetlands within the study area. No significant impacts to wetlands are anticipated.

What is a FEMA Floodplain?

The FEMA maps and regulates floodplains as part of their National Flood Insurance Program. Any floodplain mapped by FEMA as part of this program is a "FEMA floodplain."

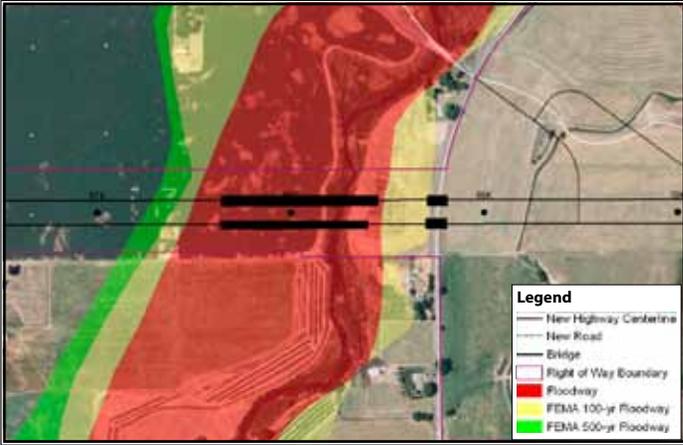


Exhibit 22. Map showing Touchet River floodplains and floodway crossed in Phase 7. Note: Bridge lengths will be determined during design.

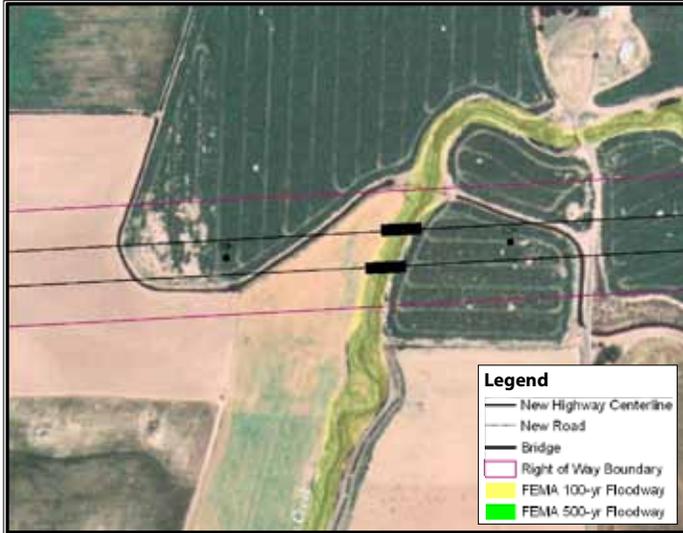


Exhibit 23. Map showing Dry Creek floodplains crossed in Phase 7.

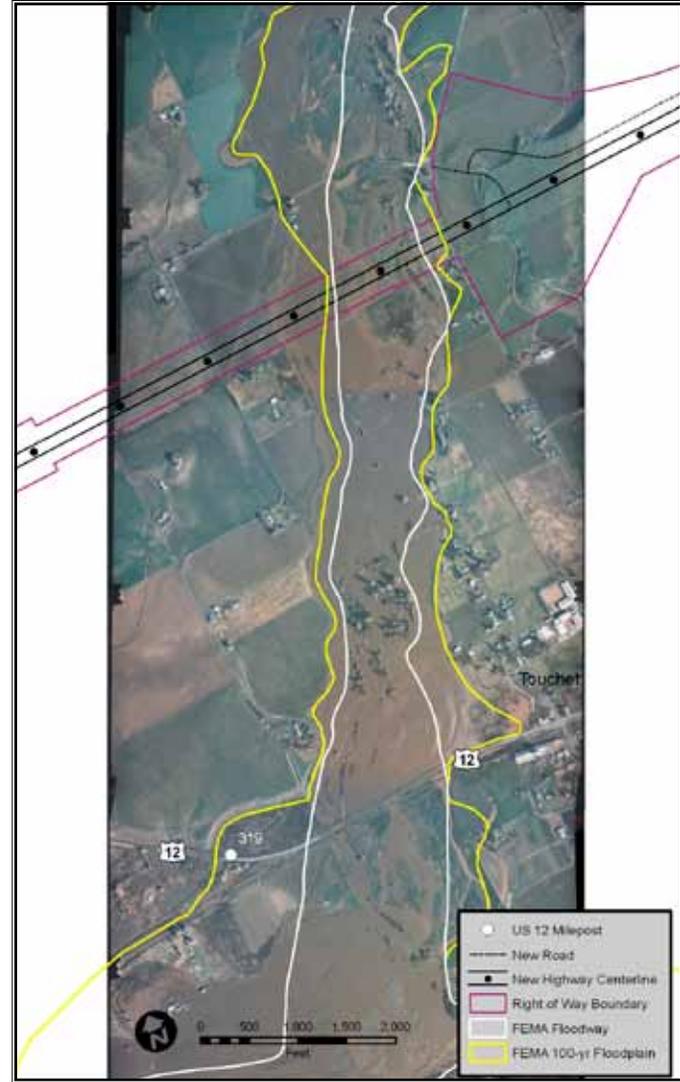


Exhibit 24. Aerial photo of Touchet River during February 1996 flood.

Surface Water

Because Phase 8 is so far removed from seasonal or perennial water resources, there are no anticipated effects from this project on water quantity or water quality. The proposed US 12 alignment moves the highway away from areas where planned improvements are being implemented on the Walla Walla River. This is a benefit to the effort to improve in-stream flow and water quality in the Walla Walla River because it eliminates the need to increase impervious surface area adjacent to the river. In addition, because roadway runoff will all be infiltrated, there will be no negative effects to 303(d)-listed waterbodies.

Groundwater

Although there are two WPZs within the Phase 8 study corridor, the construction of the project will not occur within the WPZs. WSDOT does not expect groundwater or drinking water supply wells to be affected in either Phase 7 or 8 by the proposed alignment.

Floodplains

The proposed Phase 7 alignment will require construction of new bridges over the Touchet River and Dry Creek. The two bridges over the Touchet River will, at minimum, span the active channel. However, because the Touchet River **floodway** and floodplain are very wide, bridge piers and fill in the river's floodway and floodfringe will likely be required to construct the bridges. The bridge design will ensure that there is no increase in the base flood elevation.

The bridges over Dry Creek will span both the active channel and the floodplain.

Stormwater

The proposed highway will infiltrate stormwater runoff at the sides of the road. Runoff from bridges will be collected and infiltrated away from streams to prevent direct discharge of road runoff into waterways.

What is a Floodway?

A floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to wetlands and water resources?

Wetlands

The selected north alignment avoids impacts to many high quality wetlands associated with the Walla Walla River that would have been affected by widening the current highway in the Phase 8 corridor. Bridges spanning over the Touchet River and Dry Creek minimize impacts to wetland buffers. Because the project does not directly impact wetlands, WSDOT does not anticipate providing **compensatory mitigation** for wetlands. WSDOT will continue to verify that there are no direct wetland impacts as they finalize the project.

Surface Water and Groundwater

The proposed Phase 8 alignment avoids several stream channel crossings including the Walla Walla River. The Phase 7 alignment decreases the number of irrigations ditches crossed by the highway. No special mitigation is needed for surface water, water quality, or groundwater in either phase because there are little or no impacts associated with the proposed alignment. The bridges over the Touchet River and Dry Creek will be designed to protect water quality in these water bodies by routing highway runoff away from the open channel and infiltrating it at a distance.

Floodplains

The proposed alignment is expected to require some fill material within the Touchet River floodplain and floodway. Walla Walla County prohibits encroachments and obstructions in the floodway unless a registered professional engineer can demonstrate “that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.” Therefore, this project will require an analysis of the effect the fill will have on the floodway. If the analysis shows an increase in base flood levels, the bridge design over the Touchet River will need to be modified or mitigation measures will need to be developed.

What is Compensatory Mitigation?

Compensatory mitigation is an action to offset or compensate for unavoidable project impacts.

For wetlands, this could include creation or enhancement of wetlands elsewhere.

How does Walla Walla County protect Floodways?

The Walla Walla County Code “Prohibits encroachment and obstructions, including fill, new construction, substantial improvement and other uses unless certification by a registered professional engineer or architect is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.”

The bridges over the Touchet River will be designed to minimize obstruction to the flow of floodwater. WSDOT will provide compensatory mitigation to a level commensurate with Walla Walla's County Code to ensure that this project will not affect the base flood elevation. Typically floodplain mitigation measures provide compensatory storage volume within the same floodplain and at the same one-foot elevation as the fill material. The compensatory storage is generally provided at least at a 1:1 ratio with the fill material.

Stormwater

WSDOT will design the roadway to meet the requirements of the 2008 WSDOT *Highway Runoff Manual* (HRM), or a future updated HRM. Runoff from the proposed alignment will be infiltrated at the edge of the roadway, including runoff from the proposed bridges in Phase 7 that will be collected and conveyed to infiltration areas. The new impervious surface area added by the new roadway is not expected to affect water quality or water quantity because the potential pollutant loading normally associated with impervious surfaces will not reach receiving waters. The project will also follow soil stabilization and revegetation requirements described in the RMP (as described on p. 3-14).

What would happen if the Preferred Alternative were not built?

If this project is not built, the minor impacts to the Touchet River or Dry Creek wetland buffers identified in this report would be avoided. However, if US 12 remains along its existing alignment, a high potential for impacts to wetlands along this corridor during future maintenance and bridge replacements exists.

If this project is not built, there will be no new bridges over the Touchet River or Dry Creek, and no associated fill within the floodplain. However, although floodplain effects would be avoided if the project were not built, the purpose of improving motorist safety, accommodating increased traffic volumes, and maintaining mobility along this portion of US 12 would not be met.

Fish, Wildlife, and Vegetation

How were fish, wildlife, and vegetation identified and analyzed for the proposed project?

Biologists identified fish, wildlife, and vegetation resources within the Phase 7 and 8 study corridors. These findings were presented in the Biological Resources Report (WSDOT 2009b) using a combination of literature review, Geographic Information System (GIS) analyses, and field surveys between 2005 and 2008. They mapped existing habitat over all of the designated study corridors, totaling more than 11,300 acres. Biologists walked approximately 5,000 acres of mapped survey areas within the study corridors looking for rare plants, sensitive wildlife species, and to verify habitat mapping. Aerial counts of wintering deer herds were conducted using a small fixed-wing aircraft flown over a larger deer analysis area, extending from the Oregon state line north to State Route (SR) 124 and east from the Columbia River to the city of Walla Walla.

Are there species and habitats of special concern?

Threatened and Endangered Species

Two species of fish—bull trout and steelhead—are listed under the federal Endangered Species Act (ESA) and occur within the study area. No plant or wildlife species listed as threatened or endangered are documented in the study area. Two wildlife species listed as threatened or endangered by the state are documented in the study area—American white pelican (State Endangered) and ferruginous hawk (State Threatened). American white pelicans are common winter migrants in the study area. They use the large open water habitats in McNary National Wildlife Refuge and the near-shore areas of the Columbia River to rest and feed. Badger and Crescent Islands in the Columbia River west of Wallula are two of only three known nesting colonies of American white pelicans in Washington. A pair of ferruginous hawks was documented nesting on an artificial platform located at the top of the hill east of Nine Mile Canyon, north of the proposed Phase 8 alignment. This pair fledged two young in 2006. Individual ferruginous hawks



Bull trout and steelhead trout are found in the Walla Walla and Touchet rivers. Both are listed as threatened by the federal government. (Photo not taken in project area.)



The American white pelican is listed as endangered by the state of Washington.

have been observed foraging in a number of habitats during field surveys, including agricultural fields and grassland.

The absence of many **shrub-steppe obligate species**, including Washington ground squirrel and greater sage-grouse, is not unexpected given the degraded and fragmented condition of **shrub-steppe habitat** in the Phase 7 and 8 study corridor. Observations of horned larks, grasshopper sparrows, and long-billed curlews are consistent with observations made at other disturbed sites in the shrub-steppe zone dominated by grasses (Vander Haegen et al. 2000; Pampush and Anthony 1993).

Habitats of Concern

Together, crop production and grazing have dramatically affected riparian and upland native vegetation and wildlife habitats in the Phase 7 and 8 study corridors. Irrigated crops that include corn, potatoes, alfalfa, mint, sod grass-seed, fruit crops, and poplar plantations are grown by industrial-size corporate farms within the western portion of the Phase 8 alignment. Cattle graze on non-irrigated rangeland that extends both north and south of the current highway. Large areas have been overgrazed, and are now dominated by non-native plant species such as cheatgrass, knapweed, Russian thistle, goathead, and kochia. The agricultural landscape within Phase 7 of the project is farmed or ranched by local landowners or family operations. Here, a mix of irrigated crops and fruit crops are grown using water diverted from the Walla Walla and Touchet rivers. In areas not under irrigation, dryland wheat and grazing have been ongoing for more than a century. Much of the riparian gallery forest that existed along the Walla Walla and Touchet rivers, and Dry Creek are gone; their stream flows dramatically reduced by irrigation withdrawals.

Despite widespread conversion of native habitat to agricultural production, the study area still supports a range of biological resources, including native fish, wildlife, and plant habitats. The least disturbed habitat found within the project area is the Wallula Habitat Management Unit (HMU) of the McNary National Wildlife Refuge located at the mouth of the Walla Walla River (**Exhibit 8**). This 1,500-acre tract of land supports a

What is a Shrub-steppe Obligate Species?

A shrub-steppe obligate species is any wildlife species that must have the component of shrub-steppe habitat to survive.

What is Shrub-steppe Habitat?

Shrub-steppe habitat is a type of low rainfall environment common across much of the western U.S., dominated by sagebrush, shrubs, and perennial bunchgrasses.



The largest intact patches of shrub-steppe habitat are found in the Phase 8 study corridor. They are often surrounded by cropland, like this 200-acre patch near project Mile 4.

mixture of native riparian forest, wetlands, and grass and sagebrush upland habitats used by waterfowl, shorebirds and songbirds, upland game birds, raptors, and small and large mammals, including mule and white-tailed deer.

A concern raised during preliminary design of the proposed project was that constructing a new alignment north of existing US 12 would isolate habitats within and adjacent to the Wallula HMU between the two roadways. To address this concern, WSDOT convened an interdisciplinary team of regional and local experts. The team considered the potential impacts, and the possible opportunities and constraints for avoiding and minimizing impacts to wildlife and wildlife habitat. Results of this effort are described below in the section on measures to avoid, minimize, and mitigate construction and operation effects.

Wildlife/Vehicle Collisions

WSDOT maintenance crews removed a total of 278 mule deer and whitetail deer carcasses between 2000 and 2007 along the approximately 40 miles of existing US 12 between Burbank and Walla Walla. During this seven year period, a majority (60 percent) of the deer kills were observed in the fall and winter. This number is likely higher, since these data do not include animals that are injured during **wildlife/vehicle collisions** (WVC), but die away from the road and remain undetected. Additionally, the WVC data only record where animals are not crossing the road successfully. No data are available on successful crossing locations, which are more important when trying to identify focal areas of ecological connectivity.

The WSDOT Deerkill database shows the location of several medium-to-high density WVC sites on US 12 within the project area. The data is well-distributed along the highway, with the highest totals near the mouth of the Walla Walla River at the Wallula HMU. Other WVC sites include the area west of Touchet near the Touchet River, and the area near Nibler Road east of Lowden (**Exhibit 25**). Mule deer comprise a higher percentage of animals killed in Phase 8, while whitetail deer make up a larger percentage in Phase 7. This pattern may indicate that mule deer attempt to cross the highway

What are Wildlife/Vehicle Collisions?

Wildlife/vehicle collisions (WVC) is the term used to describe where wildlife is struck by moving traffic, often resulting in death to the animal and significant property damage.

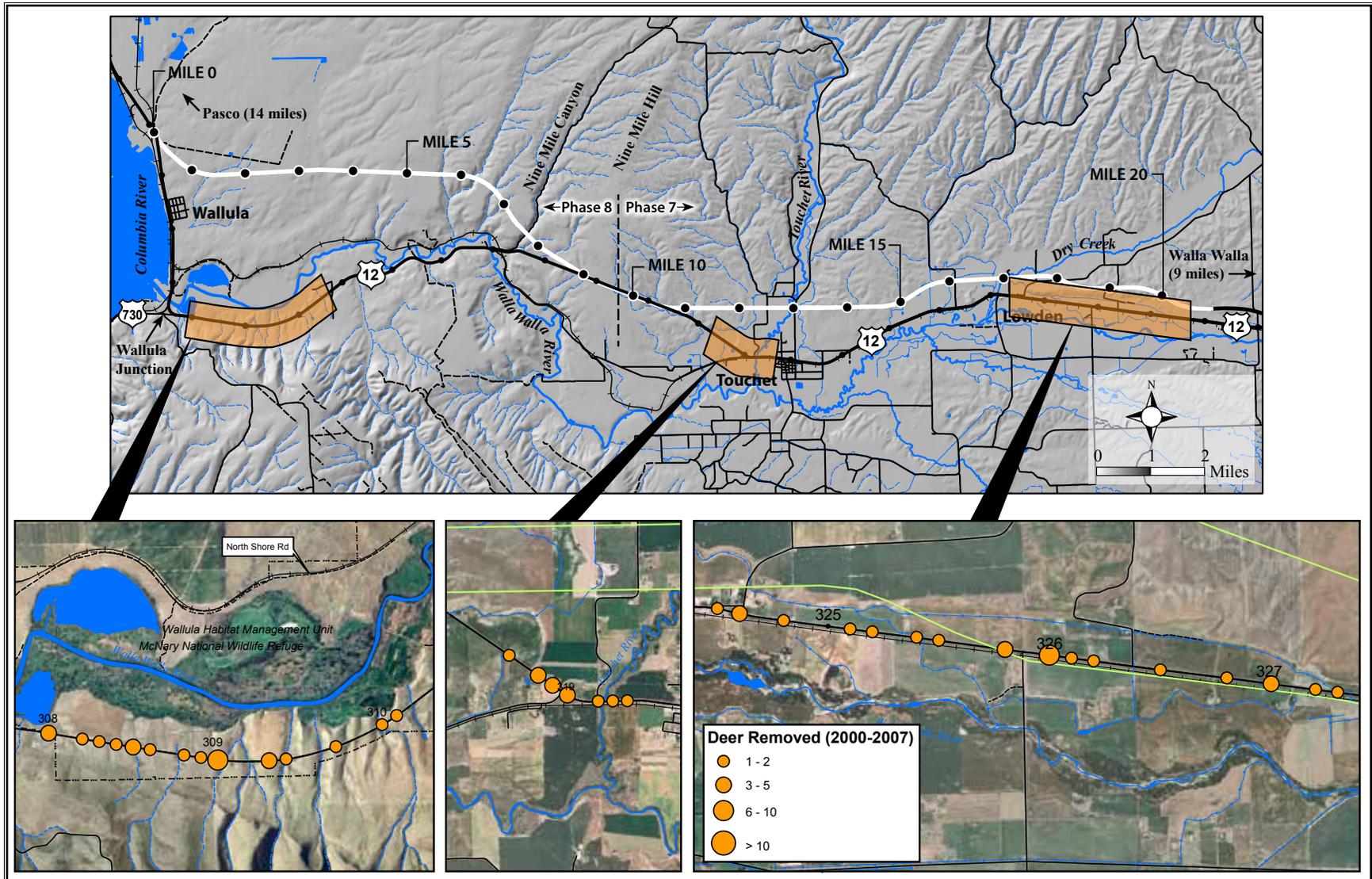


Exhibit 25. Wildlife/vehicle collision hot-spots along the existing highway from 2000 to 2007.

more frequently in Phase 8 than Phase 7. It could also indicate that whitetail deer are more closely associated with the riparian and irrigated cropland habitats in Phase 7 (Christensen et al. 1995; Thomas 1979). Specific locations where documented WVC is higher in Phases 7 and 8 include MP 309, MP 319, and MP 326. Each of these locations is near a major water source—the Wallula HMU of the McNary Wildlife Refuge, the Touchet River, and the Walla Walla River, respectively. Deer may be killed more often at these locations due to increased amounts of daily and seasonal movements between forage areas and water sources, which also tend to have more cover than adjacent crop fields and open range.

The cost to the public for each WVC is approximately \$8,000 on average. This total includes a loss of \$2,000 per animal as estimated by WSDOT biologists, and a \$6,000 loss from property damage to vehicles, higher insurance costs, highway cleanup, and impact on travel times. This means that from 2000 to 2007, total social costs from WVC within the project corridor were at least \$2,224,000.

How would fish, wildlife, and vegetation be affected?

As determined through an Endangered Species Act consultation with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service, the project is not likely to adversely affect any state- or federally-listed fish, wildlife, or plant species.

No fish habitat would be affected by the proposed project. A large amount (approximately 200 acres) of new impervious surface will be created by the proposed project, but all runoff from the project will disperse and infiltrate prior to reaching any perennial water bodies, including runoff from the bridges over Dry Creek and the Touchet River; therefore, WSDOT does not anticipate any negative water quality impacts.

The proposed project will directly affect wildlife species adjacent to construction activities. Increased noise, dust, and generally higher levels of human activity will



Mule deer, like the one shown here, are frequently killed along existing US 12 by large trucks and passenger vehicles traveling at highway speeds. These wildlife/vehicle collisions further contribute to deteriorating levels of safety along this part of the US 12 corridor.

discourage wildlife from using habitats near active construction sites. Noise from construction will be detectable by wildlife several miles distant from the project. Most medium to large mammals, as well as birds, are expected to move away from active construction areas.

Constructing the project would directly affect vegetation and wildlife habitat in two primary ways—habitat removal and disturbance. Construction of the new highway would remove a total of approximately 871 acres of various habitat types, of which approximately 323 acres (37 percent) is some type of native habitat (i.e., grassland or shrub-steppe). Approximately 20 acres of native habitat would be temporarily removed by construction, but then restored.

Additionally, compared to the existing highway, the proposed project would be wider, with two lanes of traffic in each direction separated by a wide median. This creates the potential for impacts to wildlife movements and could increase the number of WVC within the study corridor. Recommendations by an interdisciplinary team of biology and planning experts for avoiding and minimizing impacts to wildlife and wildlife habitat are described in the next section.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to fish, wildlife, and vegetation?

The Preferred Alternative avoids impacts to state- or federally-listed fish species and their critical habitats. Impacts to wetlands are also avoided, as are impacts to the Wallula HMU of the McNary National Wildlife Refuge, a 4(f) resource.

Constructing a new roadway would increase **highway permeability** on existing US 12 and reduce the number of WVC on the new alignment within Phases 7 and 8. According to the traffic report for this document, approximately 94 percent of all traffic currently using US 12 would use the new roadway. The WSDOT Traffic Office projected hourly traffic volumes on existing US 12 between Wallula and the town of Touchet. Results show that the elapsed time between a vehicle passing a given point from either direction

What is Highway Permeability?

The term “highway permeability” refers to the ability of wildlife to cross a highway safely. For example, crossing structures such as bridges or tunnels, or reducing traffic volumes, provide opportunities where wildlife can cross safely and increases highway permeability.

would vary from a low of approximately 5:45.00 (five minutes and forty-five seconds) during winter twilight, to a high of 20:00.00 (twenty minutes) during summer twilight. These hourly volumes are reported because deer and elk are more active during morning and evening twilight hours. The peak hourly traffic volumes projected for existing US 12 would occur at 4:00 p.m., and estimates show that one vehicle would pass a given point every 3:18:00 (three minutes and eighteen seconds) at this time.

These data suggest that moving traffic away from habitats found within and adjacent to the Wallula HMU and the confluence of the Touchet and Walla Walla rivers would minimize the existing barrier to wildlife movement and reduce the number of WVC occurring in these areas on existing US 12.

What are the goals for increasing highway permeability and preserving habitat?

Even though the new roadway would be located one to four miles north of the current highway and the habitats frequented by deer and elk, it could still act as a barrier to wildlife movement and generate WVC. Therefore, WSDOT developed a habitat suitability and highway permeability study that utilized information shared by regional resource managers.

The WSDOT identified the following goals for designing a more permeable transportation facility and protecting and preserving habitats within areas of the proposed project.

- Identify existing suitable habitat for **high-mobility and low-mobility wildlife species** within the landscape that encompasses Phases 7 and 8 of the proposed project.
- Increase highway permeability for high-mobility and low-mobility wildlife species.
- Preserve or restore native upland shrub-steppe habitat where possible.
- Incorporate additional wildlife-friendly elements into the proposed project design.
- Define measurable objectives for each of the above goals and determine the effectiveness of each for meeting the associated goal over the long-term.



Mule and White-tailed deer move within the riparian corridors of the Touchet and Walla Walla rivers east of Nine Mile Hill. This young mule deer was moving upstream in the Walla Walla River south of Lowden.

What are High-mobility and Low-mobility Species?

High-mobility species are animals with large home ranges or whose life cycles occur over a large geographic area. Examples of high-mobility species include migratory animals like deer and elk, and carnivores such as bear and coyote.

Low-mobility species are animals with small home ranges or whose life cycles occur in relatively small geographic areas. Small mammals, reptiles, and amphibians are examples of low-mobility species.

The Habitat Suitability & Highway Permeability Report (WSDOT 2010) provides details on these goals and objectives, and the methods used to address them.

What habitats are found within the study area and where are they located?

Two different geographic scales were used to identify and assess suitable habitat types, and where objectives for increasing highway permeability may be more likely to succeed. The first scale includes lands within and outside of the proposed project that are used by both high-mobility and low-mobility species. This landscape was divided into a number of Ecological Core Areas identified by the predominant land use, land cover, and the topographic characteristics they exemplify (**Exhibit 26**). They include the following:

- Riparian Core Area
- Canyon-Ridge Upland Core Area
- Conservation Reserve Program (CRP) Core Area
- Industrial Agricultural Core Area

Several important Riparian Core Areas exist within the study area. One of these is the large riparian community associated with the mouth of the Walla Walla River within the Wallula HMU of the McNary National Wildlife Refuge. It extends upriver to varying degrees, depending on the associated land use. The second riparian core follows the Touchet River starting from its confluence with the Walla Walla to its headwaters in the Blue Mountains. Both areas are dominated by cottonwood, white alder, willow, and a mix of riparian and upland shrubs. These areas have been altered to varying degrees by agricultural development; nevertheless, these remnant riparian corridors provide the best remaining substantial wildlife habitat in western Walla Walla County.

Two large upland areas characterized by a canyon-ridge landscape are found in the lower left and upper right portions of **Exhibit 26**. Stands of native shrub-steppe vegetation that include big sage/bluebunch wheatgrass and bluebunch wheatgrass/Idaho fescue plant communities are found within Canyon-Ridge Upland Core Area. However, in many



Photo of typical habitat in the Riparian Core Area.



Photo of typical conditions in the Canyon-Ridge Core Area.

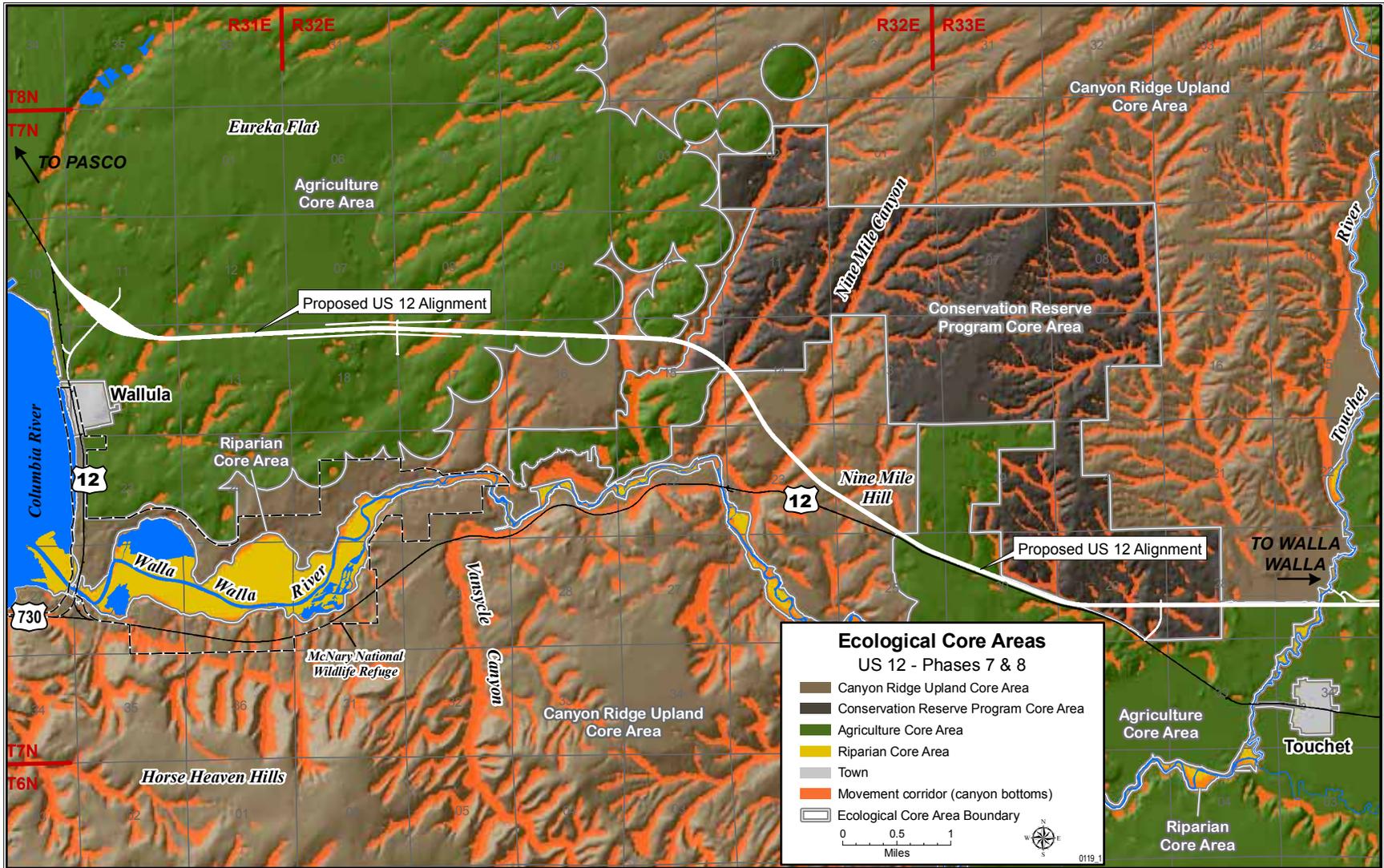


Exhibit 26. Map showing core habitats within the project area.

places, years of overgrazing and an increased fire occurrence have led to replacement of native plants by non-native invasive species such as cheatgrass, knapweed, Russian thistle, yellow star thistle, and goathead.

Imbedded within the Canyon-Ridge Upland Core Area is a habitat referred to as the **Conservation Reserve Program (CRP) Core Area**. Topographically, the CRP core is equivalent to the Canyon-Ridge Upland Core; however, its land cover has changed from native vegetation to agriculture crops, to planted grass-seed mixes used for stabilizing soil and to provide browse for wildlife.

The remaining core habitat shown is the Industrial Agriculture Core Area. It encompasses most of the land starting from just north of the Walla Walla River along the eastern shore of the Columbia up to the Snake River, and to the east, varying distances for up to seven miles in places. It is the southern terminus of an area known as Eureka Flat, and its land cover was once dominated by native shrub-steppe plant and animal species. Now, agricultural crops that include winter and spring wheat, corn, potatoes, sod grass-seed, mint, alfalfa, and poplar plantations, dominate this landscape. Diamond-shaped remnants of shrub-steppe vegetation still occur between many of the large one-half mile-wide irrigated crop circles.

Wildlife Movement Corridors were identified along canyons where the slope of the canyon bottom is neither overly flat nor steep relative to the surrounding terrain. These areas provide pathways for high-mobility species like elk, mule, and white-tailed deer moving within and between the different Ecological Core Areas.

Overlaying the footprint of the proposed project onto the landscape depicted in **Exhibit 26** shows where it crosses various Ecological Core Areas and probable Wildlife Movement Corridors. Consequently, the type of habitat that occurs at any point along the length of the project can be assessed at the project scale to help identify where designing permeability features within specific areas of the proposed project may facilitate wildlife movement through the project once constructed.

What is the Conservation Reserve Program?

The CRP is a program for agricultural landowners to establish long-term, resource-conserving covers on eligible farmland. Landowners receive annual rental payments based upon the agriculture rental value of the land, in addition to cost-sharing assistance for establishing approved conservation practices.



Photo of typical habitat in the CRP Core Area.

How was suitable habitat identified?

The WSDOT Environmental Design Group developed a GIS-based Habitat Suitability Model to help determine where implementing strategies for increasing highway permeability would be more likely to succeed within the project footprint. Typically, the first step in assessing habitat suitability for a variety of species is to identify blocks of habitat and the linkages that connect them. As already shown, the existing landscape found within and surrounding the proposed project supports a range of land use activities that include the town sites of Wallula and Touchet, public recreation lands, large-scale irrigated agriculture, ranchland, conservation lands, commercial wind energy, and public transportation facilities.

Three different indices were created for the habitat suitability analysis. They include the following:

- A High-Mobility Species Analysis
- A Low-Mobility Species Analysis
- A Preservation and Restoration Analysis

It should be understood that relating the common needs of an animal (food, water, cover, and breeding sites) to GIS factors (land use, land cover, topographic position, distance to water) is naturally ambiguous. Nevertheless, the methods described are frequently used since the factors are typically the only relevant data that exist for an entire planning area.

High-Mobility Species Analysis

The habitat suitability and roadway permeability analysis of high-mobility species intentionally focused on the habitat requirements for elk and deer (Rocky Mountain mule deer and white-tailed deer). They are the high-mobility species most affected by WVC in this area.



Photo of Industrial Agricultural Core Area in western Phase 8.



Mule deer, a high-mobility species, have been observed frequently in harvested crop fields like this one in Phase 8. This herd was photographed in a harvested wheat field north of Nine Mile Ranch.

The analysis suggests that a combination of permeability treatments, from the area of Nine Mile Hill west through the canyon-ridge landscape to the vicinity of Eureka Flat, would be the best area to facilitate the movement of elk, deer, and other high-mobility species through the proposed project. It is less likely that permeability treatments for high-mobility species would succeed from the Eureka Flat area west to the Columbia River without fencing the entire area. Nevertheless, local experts have noted that herds of elk and deer currently inhabit the poplar plantation at the western end of the project near the area of the proposed Wallula interchange. This fact must be considered to reduce the likelihood of WVC as detailed design plans are developed.

Low-Mobility Species Analysis

The focus for the low-mobility species was small mammals. More specifically, the analysis included habitat requirements for species like the great basin pocket mouse, Ord’s kangaroo rat, sagebrush vole, eastern cottontail, and the black-tailed jackrabbit.

The analysis suggests that a combination of permeability treatments from Nine Mile Hill to just east of Nine Mile Canyon, and within the Eureka Flat area would facilitate the movement of many species that make up the prey-base for coyote, bobcat, badger, weasel, and prey birds within the area of the proposed project.

Preservation and Restoration Analysis

The entire landscape within Phase 8 of the project was evaluated for potential preservation and restoration activities outside of WSDOT right-of-way for the new highway. Results of both the high-mobility and low-mobility analyses were considered, as were differences between publicly-owned land, private lands that are adjacent to public lands, and privately-owned lands.



Ord’s kangaroo rat is a low-mobility species. It is abundant in the industrial agricultural lands of western Phase 8.

The analysis suggests that opportunities for restoration activities exist within the Wallula HMU and on sections of Washington Department of Natural Resources (DNR) land. Properties adjacent to existing public lands may have a greater chance of remaining undisturbed should future development occur; therefore, they are candidates for preservation and, if necessary, restoration efforts. This is not to say that other privately held lands within the analysis area should not be considered for preservation and restoration activities too. However, whether or not to expend resources on these lands would have to be carefully considered and would in part depend on their existing condition, surrounding land use, the amount of available property, and the landowner's willingness to negotiate conservation easements. WSDOT would also consider the extent to which surrounding land uses are protected from future changes that are contrary to the goals and objectives of this analysis.

How will the goals for preserving wildlife habitat and increasing highway permeability be met?

- The goal of identifying existing suitable habitat within the landscape that encompasses Phases 7 and 8 of the proposed project has been met by the Habitat Suitability & Highway Permeability Report.
- Increasing highway permeability for high- and low-mobility wildlife species will be accomplished by moving traffic away from habitats found within and adjacent to the Wallula HMU and the confluence of the Touchet and Walla Walla rivers. Additionally, a combination of design elements such as bridge crossings and bottomless culverts, exclusionary fencing, and wildlife escape structures would help facilitate the safe passage of wildlife through the proposed project.
- Where possible, the goal of preserving and restoring native upland shrub-steppe habitat will be met by minimizing the footprint of the proposed project. For areas disturbed by the project, WSDOT will develop and implement a project-specific RMP (as defined on p. 3-14) using IVM techniques. At a minimum, the plan will be sufficient to ensure the reestablishment of native vegetation that was present prior



Crop circles that are bisected by the new roadway, as well as adjacent rangeland, may be good candidates for future restoration projects where it crosses or lies adjacent to DNR land.

to ranching and agricultural development. Additionally, results from the habitat suitability model will be used to help determine where land exists within the project area that would benefit from preservation and restoration activities. The WSDOT will work with local authorities to explore the potential for placing conservation easements on select land parcels.

- To incorporate additional wildlife-friendly elements into the proposed project design, WSDOT will design roadside slopes that discourage use by burrowing birds or mammals, re-establish and relocate nesting platforms for use by bird species prior to construction, and design bridges to allow for bat roosting.
- Determining the effectiveness of each prior objective for meeting the associated goals over the long-term will be realized by establishing a monitoring plan that measures the effectiveness of designed structures for passing high- and low-mobility species through the proposed project. Additionally, the degree of success for preserved and restored upland shrub-steppe habitats will also be monitored. The monitoring plan will build upon the baseline data already collected within the project area for this document. At a minimum, the monitoring plan will consist of the following:
 - Identify and secure funding sources
 - Identify the locations, duration, and frequency of monitoring to occur
 - Describe the monitoring methods to be used
 - Review and discuss evaluation methods of collected data (pilot project)
 - Develop strategy for revising the monitoring plan if unsuccessful

All of these activities will require monetary and management commitments.

What would happen if the Preferred Alternative were not selected?

Not building the new highway avoids the effects of construction or operation of the highway on the landscape, but also fails to meet the purpose of reducing corridor

congestion and improving public safety. Foregoing construction of the project would avoid the potential for fragmenting remnant shrub-steppe habitat, which could reduce habitat permeability north and south through the study area.

Conversely, not constructing the proposed project would mean that US 12 would continue to act as a barrier to wildlife movement through the project area. As traffic volumes continue increasing, the social costs associated with WVC on US 12 will continue to rise proportionately. Similarly, benefits from the reduction in automobile-related contaminants in stormwater runoff from the existing road would not be realized. Noise and traffic impacts to vegetation and wildlife would continue to worsen along the current US 12 alignment.

Under the No Build Alternative, land in the study area would still be subject to development. Existing roadways would be incrementally improved, and new roadways would be added as land development continues. Although the total impact is not known at this time, piecemeal improvements would adversely affect wildlife and vegetation, particularly in the absence of a comprehensive evaluation and plan. These impacts would include incremental losses to cover, forage, and breeding habitat for a wide range of species, as well as a gradual increase in habitat fragmentation.

Under the No Build Alternative, currently planned projects would continue. Continued development in the study area will increase impervious surfaces, which may increase contaminant loads in area streams and reduce base flows, depending on the level and type of stormwater treatment employed by individual projects.

Noise

How were noise levels evaluated for the proposed project?

The noise analysis follows the federal guidelines (23 CFR 772) for **Type 1** projects to analyze project-related noise impacts and to determine if noise abatement measures are required to mitigate these impacts. The Noise Report (WSDOT 2009h) includes the following components:

- Inspecting the project area, categorizing existing land use, and identifying sensitive receptors
- Measuring the existing area sound levels
- Calculating the project-related future sound levels
- Determining traffic noise impacts
- Examining and evaluating alternative noise abatement
- Discussing construction noise impacts

The noise analysis identified existing activities along the project corridor and the extent of these activities in order to assist in evaluating the noise impact on those living near the project. A reconnaissance of the study area located all **sensitive receptors** within 500 feet of the edge of pavement and within the project endpoints on US 12 (**Exhibit 27**). Field measurements were taken at these locations as part of the noise analysis.

What is a Type 1 Project?

A Type 1 project is a federally-funded, proposed highway project that will construct a highway in either a new location, or will significantly alter an existing highway's vertical and horizontal alignment, or increase the number of lanes.

What is a Sensitive Receptor?

Sensitive receptors represent all land use categories where FHWA noise abatement criteria specify exterior and interior noise levels. They include residences, hospitals, schools, churches, libraries, hotels, and recreation areas.

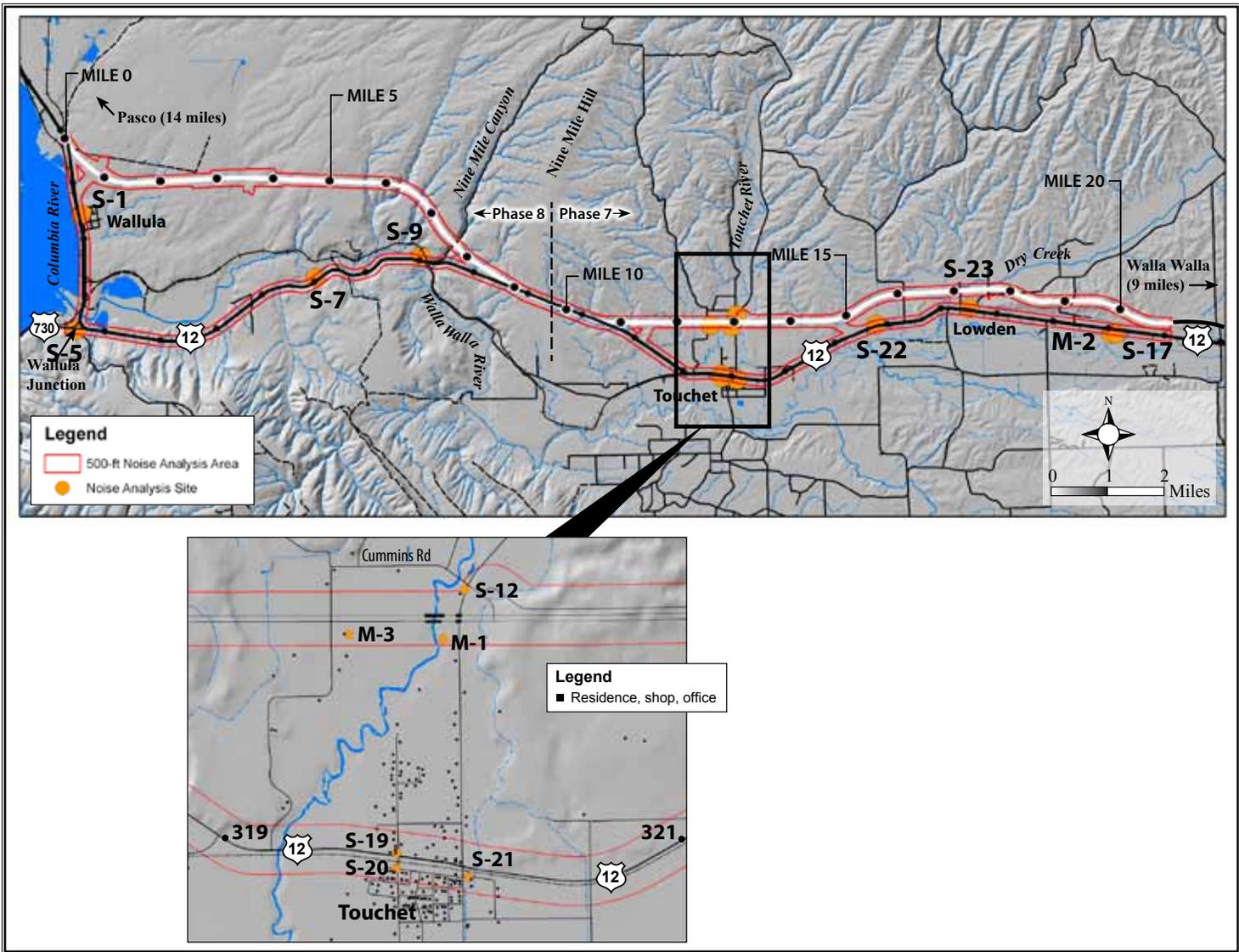


Exhibit 27. Sensitive Noise Receptors in the Project Vicinity.

Sound levels were modeled at various locations using the FHWA Traffic Noise Model (TNM). The TNM was also used to quantify noise at locations where noise was predicted to change as a result of the project. To determine noise caused by the project, three models were run: an Existing Conditions model, a Design Year No Build model, and a Design Year with Project model. The modeled noise levels for each receptor were compared to the appropriate Noise Abatement Criteria level (**Exhibit 28**). A traffic noise impact occurs when the modeled sound levels approach or exceed the FHWA Noise Abatement Criteria or when the predicted traffic noise levels (design year) substantially exceed the existing noise levels. WSDOT defines approach as within 1 **A-weighted decibel (dBA)**, or at 66 dBA, and defines a substantial increase as a 10 dBA increase above existing sound levels.

Exhibit 28. FHWA Noise Abatement Criteria

Activity Category	Leqhr	Description of Activity Category
A	57 dBA (exterior)	Lands on which serenity and quiet are of extraordinary significance
B	67 dBA (exterior)	Residences, motels, schools, churches, parks, play fields, hospitals
C	72 dBA (exterior)	Developed lands not included in A or B (agricultural lands, commercial, retail uses)
E	52 dBA (interior)	Residences, motels, schools, libraries, hospitals, auditoriums

Source: FHWA Traffic Noise Abatement Criteria (23 CFR Part 772, July 1997)

How would noise levels be affected?

During construction, sound levels will temporarily increase near construction sites due to heavy equipment use and construction material transport. Daytime road construction is exempt from federal, state, and local noise regulations. Construction may sometimes be scheduled for the nighttime to minimize the disruption of traffic. When this occurs, a noise variance must be obtained from Walla Walla County.

What is dBA?

Noise is measured using decibels (dB) and A-weighting is applied to the dB measurement to better represent the range of human hearing. A change in sound of 3 dBA is the minimum difference audible by the human ear.

What is meant by Leqhr?

Leqhr is the equivalent sound level measured over a period of one hour.



Noise measurements were taken at existing locations throughout the study corridor and along existing US 12. Site S-5 at the Wallula Junction is pictured here.

One receptor (S-20) is predicted to approach the FHWA Noise Abatement Criteria during Existing PM Peak conditions. This same receptor, and receptor S-22, are projected to exceed the FHWA Noise Abatement Criteria in 2032 under the No Build scenario. Because of the proposed alignment, the project reduces traffic volumes and traffic noise at receptors S-20 and S-22 to below the Noise Abatement Criteria.

The project will lower noise levels along the current US 12 corridor by 4 to 14 dBA as most of the through-traffic shifts to the new alignment. The project increases traffic noise from 2 to 9 dBA at three receptors closest to the new US 12 alignment (S-12, M-1, M-3) (**Exhibit 28**). None of these increases approach or exceed the FHWA Noise Abatement Criteria.

What abatement measures are proposed to avoid, minimize and mitigate effects from noise?

Construction Noise Abatement

Construction noise could adversely affect some nearby residents during construction activity periods. However, the noise would be temporary and limited to the duration of the construction in any one location. The following measures are often incorporated into the contract specifications to minimize construction noise impacts.

- All construction equipment will be maintained in good working order, with mufflers in proper operating condition.
- Construction will be limited to the hours of 5 a.m. to 10 p.m., to the extent feasible, to reduce nighttime noise. When nighttime construction is planned, the contracting agency will notify the public, and obtain a noise variance from the County.
- To the extent feasible, the noisiest operations will be scheduled to occur together in the construction program to avoid prolonged periods of annoyance.

Operation Noise Abatement

Since no traffic noise impacts are expected to occur from the project, mitigation is not recommended.

What would happen if the Preferred Alternative were not selected?

Not building the new highway avoids any negative effects of noise associated with construction or operation of the highway, but also fails to meet the purpose of reducing corridor congestion and improving public safety. Under the No Build Alternative, only the usual highway maintenance tasks such as mowing of vegetation, asphalt patching, repairing, or lane re-striping would occur. By the 2032 design year, these activities would generate noise levels only slightly different from existing noise levels from these activities. There are no beneficial effects aside from avoiding effects of new highway construction and operation.

Traffic volumes are estimated to increase substantially by 2032. If the project is not built, two receivers along the current US 12 will approach or exceed the FHWA Noise Abatement Criteria in the year 2032 due to predicted increases in traffic volumes.

Land Use

The project area is located in unincorporated Walla Walla County, which is dominated by agricultural uses (**Exhibit 29**). The study corridor passes through Wallula, Touchet, and Lowden, but the Preferred Alternative avoids these rural communities.

How was land use evaluated for the proposed project?

The Phases 7 and 8 study corridors were used to assess potential impacts on land use. Most information on existing conditions was collected in 2005 during preliminary environmental studies of the Phases 7 and 8 corridors.

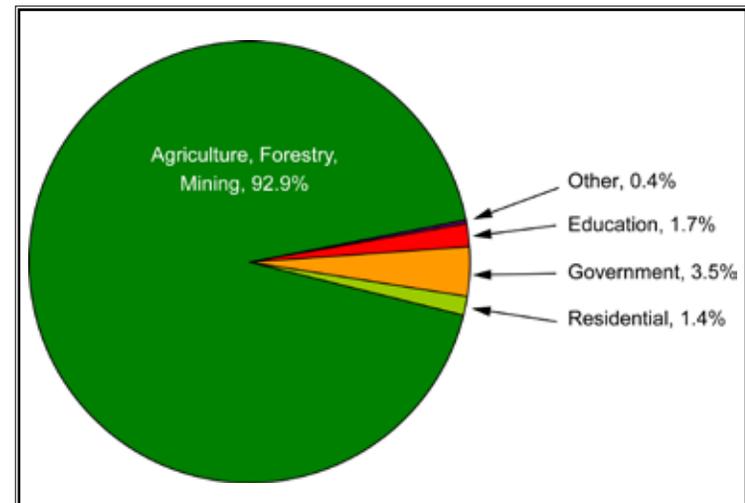


Exhibit 29. Agriculture constitutes approximately 93 percent of unincorporated Walla Walla County.

The Land Use & Farmland Report (WSDOT 2009g) utilized more recent data from 2007 and 2008 to reflect changes in existing conditions and identify potential effects to land use resources. This data included aerial photographs, GIS, site visits, county and state planning documents, and personal communications with local officials.

Are there areas of special concern?

Right-of-Way Acquisition

Conceptual design plans show that the proposed project would require the acquisition of approximately 1,400 acres of right-of-way. All right-of-way acquisitions are made under the Relocation Assistance and Real Property Acquisition Policy Act of 1970 (84 Stat. 1894; 42 U.S.C. et. seq. Pub. L. 91-646, and appropriate WAC. The amount of affected acreage by zoning type is as follows:

- Primary Agriculture – 1,115 acres
- Agriculture Residential – 167 acres
- Industrial – 86 acres
- Rural Residential 5 – 14 acres

A total of 1,115 acres of land zoned for agricultural use and 267 acres of land zoned for residential and industrial use would be acquired for the proposed project’s right-of-way. The acquisitions will result in the relocation of one single-family home within the Phase 7 study corridor, northeast of Lowden.

How would land use be affected?

Results from the Land Use & Farmland Report show that no substantial temporary or long-term effects to existing land uses will occur from constructing the proposed project. The right-of-way acquisition will convert 1,115 acres of agricultural land and 267 acres of industrial and residential land to land used for transportation. Relative to the amount of



Irrigated agriculture and dryland farming represent the majority of land use activities within the study corridors. This is a view south of tree plantations (foreground), Wallula, and the mouth of the Walla Walla River (arrow).

land available for these uses, the conversion of this land is not a significant change to the area's land use.

The project is compatible with the Land Use, Transportation, Economic Development, Shorelines, and Critical Areas elements of the Walla Walla County Comprehensive Plan. The project is also listed in the RTP for the Tri-Cities Metropolitan Area and is, therefore, considered compatible with the goals and policies of the Benton-Franklin-Walla Walla RTP Organization. The Preferred Alternative will improve vehicular circulation and safety on US 12.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to land use?

The current highway passes by or through the communities of Wallula, Touchet, and Lowden; the Wallula HMU of the McNary National Wildlife Refuge; and Madame Dorion Memorial Park. The new highway alignment to the north of the current US 12 avoids impacts to these communities and recreational areas. The removal from the conceptual design of one optional tie-in between the new alignment and current US 12 avoids the displacement of a home and several farm buildings along US 12.

Since the project is consistent with the Walla Walla County Comprehensive Plan and the RTP, undesirable effects on land use resources are considered minimized.

Right-of-way will be purchased from land owners in compliance with federal and state regulations related to property acquisition and relocation. A booklet prepared by the WSDOT Real Estate Services Office helps to explain the acquisition and relocation processes (WSDOT 2009). The booklet is available in hard copy and on WSDOT's website.

What would happen if the Preferred Alternative were not selected?

If the Preferred Alternative were not constructed, there would be no short-term or long-term effects to existing land uses. However, not building the project would likely contribute to existing capacity, mobility, and safety problems on US 12. It would also not be compatible with the Transportation Element of the Walla Walla County Comprehensive Plan, which places high priority on the four-laning of US 12.

Farmlands

How were farmlands evaluated for the proposed project?

The Land Use & Farmland Report (WSDOT 2009g) utilized federal farmlands data and personal communications to identify potential effects to farmlands and farming or ranching operations. On-site visits and interviews with local farmers and ranchers were conducted to verify relevant information collected during the desktop research.

Are there areas of special concern?

The majority of land within the study corridor is zoned Primary Agriculture. However, no unique farmland has been identified along the Preferred Alternative alignment.

How would farmlands be affected?

Results from the Land Use & Farmland Report show that approximately 100 acres of soils supporting **Prime Farmland** and 820 acres of soils supporting **Farmland of Statewide Importance** will be affected by constructing the Preferred Alternative. The total affected acreage is less than one percent of the land farmed within Walla Walla County and, as such, does not warrant protection under the federal Farmlands Protection Policy Act.

What is Prime Farmland?

Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oil seed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

What is Farmland of Statewide Importance?

Other than prime farmland, it is farmland that is of statewide importance for the production of food, feed, fiber, forage, or oil seed crops, as determined by the state agency or agencies, using U.S. Department of Agriculture guidelines.

The new highway would affect farming and ranching operations crossed by the project during both construction and operation. Current agricultural lands will be permanently converted to highway uses, reducing the acreage in agricultural production. Some parcel remnants may be too small to operate efficiently and profitably. Potential effects on economic viability will be greater for the smaller family owned or operated farms and ranches in Phase 7 than on the much larger agricultural operations in Phase 8.

The new highway will increase operating costs for farms and ranches by bisecting agricultural land. Farm equipment, supply deliveries, and crop harvests will need to travel on frontage and county roads to intersections or bridges to get between fields on opposite sides of the new right-of-way. This will, however, make for safer travel. During construction, farm equipment will have to travel along established detours and routes in order to cross the construction corridor. Cattle and other livestock will need to be hauled on trailers to get across the new highway during both construction and operation.

Construction during the growing season could also disrupt irrigation of adjacent crops and pastures. Spray irrigation systems may require modification in fields crossed by the new highway. The alignment will interfere with water dispersion (sheet flow) if fields are flood irrigated, as is currently common in the Old Lowden Ditch service area.

Traffic on the new highway may cause farmers to switch from alfalfa seed to a different crop. Alfalfa farmers rely on **bees for pollination**—preferably alkali bees. High-speed traffic on the new highway is likely to strike these low-flying and relatively slow-flying insects, making it less likely that farmers will maintain existing bee beds or establish new ones within one mile of the new road. Farmers may also be inclined to switch from alfalfa seed to a crop that does not involve burning fields to avoid potential liability if traffic accidents on the new highway were caused by smoke. Smoke from burning fields that blows across roads can impair visibility for drivers and can cause serious traffic accidents.

How do farmers utilize Bees for Pollination?

Alkali bees live underground and farmers culture them in colonies or “beds” to pollinate alfalfa seed fields over a wide area. Farmers also place cultivated nests of leaf-cutter bees (usually purchased) in three-sided “sheds” that are spaced about 500 feet apart to pollinate alfalfa in summer. These sheds make it easy to spot alfalfa seed fields in the project area.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to farmland?

Avoidance

The highway alignment was shifted north to follow a change in topography rather than bisecting a large cattle pasture between the communities of Lowden and Touchet.

Minimization

Based upon discussions with local farmers, effects on irrigated fields in Phase 8 were minimized by limiting the number of crop circles crossed by the new alignment.

WSDOT will collaborate with irrigation districts and service companies to minimize project effects on newly piped irrigation systems. WSDOT will place the major irrigation pipes in casings to facilitate future maintenance of the systems. The casings will be installed outside the irrigation season to minimize effects on agricultural operations.

WSDOT will also consider design ideas that could minimize the proposed alignment's effects on alkali bees. An example of such designs would be to over-excavate the roadbed so the pavement was below grade. Berms could also be constructed on each side of the highway with planted shrubs to add height. This configuration would help direct the bees' flight path above the traffic and, thereby, reduce mortality.

Other Mitigation

Right-of-way will be negotiated and purchased from land owners in compliance with federal and state regulations. The negotiations may include financial compensation for impacts to farming and ranching operations such as separating outbuildings or corrals from the rest of an operation, reduced operational efficiency from travel between fields bisected by the new highway, and modifications to irrigation systems. A large culvert will be provided at Cummins Road for farm access. Short bridges are also provided for farm access at two locations in Phase 8 where the topography is favorable (**Exhibit 9**). The final alignment will be shifted to align with property lines where practical.



Alfalfa seed farmers add moisture and often salt to create soil conditions needed for native alkali bees to develop underground colonies. This bed is near the eastern end of Phase 7.

What would happen if the Preferred Alternative were not selected?

If the Preferred Alternative is not constructed, there would be no short-term or long-term effects to farmlands and farming or ranching operations.

Historic, Cultural, and Archaeological Resources

How were historic, cultural, and archaeological resources evaluated for the proposed project?

The Cultural Resources Report (WSDOT 2009c) utilized primarily literature, federal, state, local government documents, field surveys, and personal communications to identify potential historic properties and archaeological resources within the **Area of Potential Effect (APE)**. The APE for the proposed project encompasses an area approximately 1,000 feet from the proposed right-of-way and totals approximately 3,300 acres.

As required by **Section 106** of the National Historic Preservation Act, WSDOT consulted with the State Historic Preservation Officer (SHPO), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation) regarding the definition of the project’s APE and **Work Plan**.

Are there areas of special concern?

Walúula Cultural Heritage Area

The project is located within the *Walúula* Cultural Heritage Area, an area that is culturally and historically significant to the CTUIR. The area represents traditional Native American use of the Walla Walla and Columbia River valleys and surrounding environments since prehistory. The boundaries of the resource have not been mapped in order to maintain confidentiality of culturally sacred sites and/or areas.

What is the Area of Potential Effect?

The APE is the geographic area in which a project may cause alterations in the character or use of historic properties, or cultural and archaeological resources.

What is Section 106?

The “Section 106 Process” is codified in regulation as 36 CFR 800 and implements Section 106 of the National Historic Preservation Act of 1966. This is a federal review process that ensures the consideration of historic properties during planning and execution of projects with federal involvement.

What is the Work Plan?

The Work Plan for this project outlined the scope of work to identify historic properties and heritage resources within the project corridor.

Why is a *Walúula* spelled differently?

*The *Walúula* Cultural Heritage Area uses the cultural spelling of the native people. Similarly, the cultural spelling of Walla Walla is “Wala-Wala.”*

The project area also coincides with traditional lands of the Yakama Nation, as defined in a recent oral history prepared by the tribe’s Cultural Resource Program. No effects to this area were identified in the Cultural Resources Report, but WSDOT will continue to consult with CTUIR and the Yakama Nation regarding potential impacts from all of the US 12 project phases.

Centennial Farms

There are four **Centennial Farms** located in the vicinity of US 12 near Touchet and Lowden. They represent classic examples of traditional family owned and operated farms. The new highway alignment will require right-of-way from two Centennial Farms—one is located west of Touchet and no longer remains in the same family ownership, and the other is near Lowden and is owned by a descendent of the original settler. However, the Centennial Farm designation is ceremonial and does not confer special status in terms of federal or state historic preservation under Section 106.

How would historic, cultural, and archaeological resources be affected?

Results from the Cultural Resources Report show that no substantial temporary or long-term effects to historic, cultural, or archaeological resources will occur from constructing the Preferred Alternative. WSDOT is currently consulting with SHPO on these effects.

There is a potential that deeply buried archaeological material in the vicinity of the Touchet River and Dry Creek floodplains could be encountered during construction. The bridges will be constructed within alluvial floodplains which have been classified as archaeologically sensitive. No archaeological materials were discovered during project field investigations at the Touchet River and Touchet North Road bridge foundation.

The project may result in a benefit to the historic communities of Touchet and Lowden from a decrease in commercial and freight traffic along the existing highway. Lower traffic volumes along the existing highway may enhance opportunities to encourage tourism of historic sites.

What is a Centennial Farm?

A Centennial Farm is recognized as a farm that has been in production and under the same family ownership for 100 years or more.



Several farms in Walla Walla County were designated “**Centennial Farms**” by the State of Washington in 1989, in honor of the state’s centennial and the important role farmers played in the state’s settlement and development. Several residences and farm buildings within the study corridors are associated with a Centennial Farm, such as this residence in Lowden.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to historic, cultural, and archaeological resources?

Avoidance

The new highway alignment was designed to avoid several archaeological resources identified in preliminary environmental studies. WSDOT will continue consultation with the CTUIR and the Yakama Nation throughout project development to identify and resolve any adverse effects to the *Waluula* Cultural Heritage Area.

Archaeological monitoring is recommended during construction of the bridge structures over the Touchet River, Touchet North Road, and Dry Creek. If archaeological resources are inadvertently discovered during construction, WSDOT will implement their agreement with the CTUIR and the Yakama Nation for the Inadvertent Discovery of Archaeological Resources. WSDOT will continue to coordinate with local tribes throughout construction.

What would happen if the Preferred Alternative were not selected?

If the Preferred Alternative is not constructed, then the potential for disturbing previously unidentified historic, cultural, or archaeological resources from construction activities (excavation) related to the proposed project would not exist.

Social and Economic Resources

How were social and economic resources evaluated for the proposed project?

The social and economic resources study area extended approximately one-half mile north and south of the existing highway, and included the “islands” of land between the study corridor and the existing highway. The Socioeconomics & Environmental Justice Report (WSDOT 2009j) utilized information from federal, state, and local government agencies, farm and business surveys, site visits, and personal interviews to identify potential effects to these resources.



The alluvial floodplains of Lower Dry Creek (pictured here) and the Touchet River are considered archaeologically sensitive because flood deposits over time may have buried prehistoric archaeological sites.



The new highway alignment avoids all previously identified archaeological resources and potentially sensitive areas, including the Walla Walla River and its floodplain. The *Wala-Wala* (many small streams/ rivers) and its surrounding areas have always been an important resource to traditional Native American peoples.

Are there areas of special concern?

Farms

Results from the Land Use & Farmland Report show that approximately 100 acres of soils supporting Prime Farmland and 820 acres of soils supporting Farmland of Statewide Importance would be affected by constructing the Preferred Alternative. The majority of agricultural land to be removed is irrigated land, including crops such as alfalfa, apple and cherry, buckwheat, corn, and a variety of rotating crops. The permanent conversion of farmland is expected to result in a loss of nearly \$4 million for the regional economy. The removal of agricultural land from production may also reduce regional employment, which can affect other aspects of the economy such as retail spending.

There are also farmlands within the study corridors enrolled in the CRP. The project will result in the removal of approximately 130 acres of rangeland enrolled in CRP, resulting in a loss of approximately \$6,300 of annual CRP rental payments.

Walla Walla Valley Wineries

Over the past 30 years, the Walla Walla wine industry has grown from one winery and a few acres of wine grapes to over 90 wineries and more than 1,500 planted acres of wine grapes. The project's economic effects on wineries are an issue of particular concern given the importance of the wine industry on the regional economy. There are two wineries located within the study corridor (**Exhibit 30**), Woodward Canyon and L'Ecole No. 41, which are the two oldest wineries in the Walla Walla Valley. Potential economic effects to these wineries are related to the reduction in drive-by traffic on the existing highway. The estimated annual revenue loss for the two wineries ranges from 3 to 6 percent. The loss is not expected to compromise the viability of the wineries due to their well established customer base. On a regional scale, the project is expected to have an overall positive influence on the development of the wine industry, improving and increasing transportation into the Walla Walla Valley.



The L'Ecole No. 41 Winery is located in the historic Frenchtown Schoolhouse in Lowden.

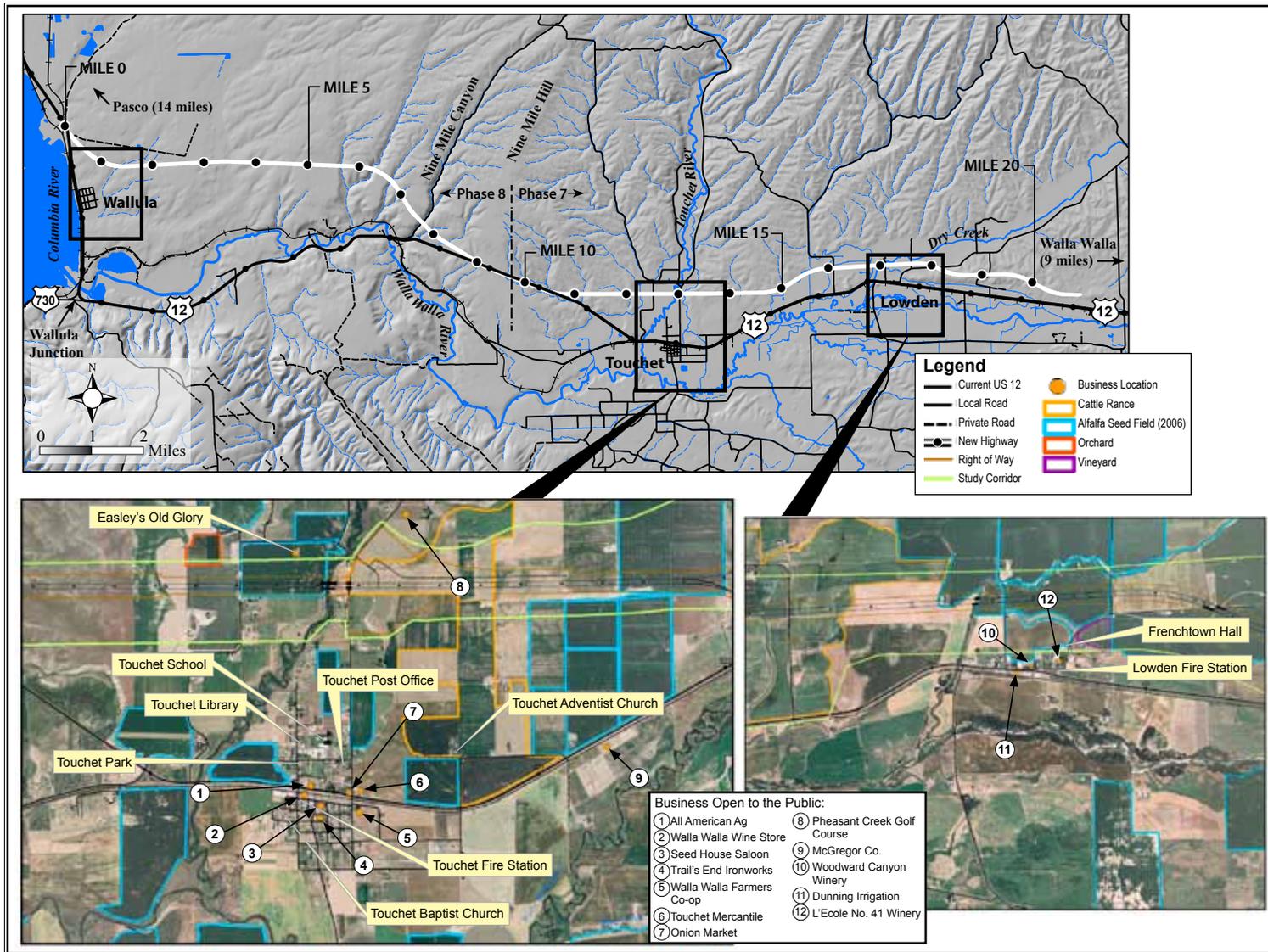


Exhibit 30. Community facilities and businesses in the vicinity of Touchet and Lowden.

How would social and economic resources be affected?

Results from the Socioeconomics & Environmental Justice Report show that constructing the Preferred Alternative will have both positive and negative effects on social and economic resources.

The new alignment will shift traffic north of businesses located on the existing highway, resulting in potential economic losses such as a decline in sales and revenues. Most affected businesses are located in the main Touchet and Lowden business corridors (**Exhibit 30**) and will not be visible from the new alignment. Access to these businesses from the new highway will also be restricted to fewer intersections and routes. Although the shift in traffic to the new highway will significantly reduce traffic volumes on the existing highway, existing US 12 will likely see an increase in tourist traffic upon conversion to a two-lane county road. Tourists are attracted to a more leisurely

recreational route leading to nearby parks, wineries, and bed and breakfasts. Local businesses that are reliant on drive-by traffic may still see a substantial reduction in retail sales.

Residents, business owners, and local drivers will experience a visual improvement along the existing US 12 highway due to a decrease in vehicles and light and glare. However, local residents with existing views of rolling agriculture and rangeland will see a new four-lane highway with large expanses of pavement, light and glare, bridges, and other roadway features.

The new alignment will have a positive effect on pedestrian and bicycle travel along the existing alignment. The anticipated reduction in traffic volumes along the existing highway will decrease exposure to vehicles and improve safety and access for local pedestrians and cyclists. This in turn is a benefit to community cohesion.



The Touchet Mercantile estimates that 99 percent of its business comes from drive-by traffic. The owner of the Touchet Mercantile anticipates that business will drop by 50-60 percent with construction of the new highway.



The new highway alignment avoids potential effects to Madame Dorion Memorial Park and the McNary National Wildlife Refuge (shown here), which are situated along existing US 12.

Right-of-way needed to construct the project is estimated at nearly 1,400 acres and will result in a permanent annual loss of approximately \$14,000 in property tax revenue. The right-of-way needs will result in the displacement of one local residence near Lowden. No businesses will be displaced by construction of the Preferred Alternative.

Construction of Phases 7 and 8 would increase employment and income and stimulate increases in economic activity throughout the region. Phases 7 and 8 will cost within the range of \$296 million to \$633 million to construct, depending on inflation rates and when funding becomes available. WSDOT estimates that nearly 5,000 jobs will be created during project construction, including on-site laborers, specialists, and engineers, as well as material suppliers and off-site construction industry workers such as administrative, clerical, and managerial workers. The funds spent on the project locally will have a positive effect throughout the region as suppliers buy goods and services from other businesses and construction workers spend their wages locally.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects on social and economic resources?

Avoidance

Potential effects to recreational resources, residences, and businesses located along the existing highway were avoided by selecting a new highway alignment to the north rather than widening the existing highway. The new highway alignment also avoids widening through the communities of Wallula, Touchet, and Lowden.

Minimization

Design changes in the preferred highway alignment resulted in an overall reduction in impacts to irrigated farmland, which is more expensive per acre than dryland agricultural property and rangeland.

Service providers affected by construction will be notified in advance of the construction period. Police, fire, and emergency responders; school districts; and solid waste removal will be notified of construction schedules, access restrictions, and possible detour routes prior to access modification. To the extent possible, the scheduling of road closures and detour routes will be coordinated with police, fire, and emergency services; school districts; and businesses dependent on delivery routes in the active construction area to minimize delay times. Traffic control requirements during construction will conform to state and local regulations.

WSDOT will follow guidelines from the Roadside Classification Plan, the RMP (as defined on p. 3-14), and comply with the state requirements for **context sensitive solutions** to minimize unavoidable visual effects.

Right-of-way will be purchased from land owners in compliance with federal and state regulations related to property acquisition and relocation. A booklet prepared by the WSDOT Real Estate Services Office helps to explain the acquisition and relocation processes (WSDOT 2009). The booklet is available in hard copy and on WSDOT’s website.

Other Mitigation

In order to avoid a substantial reduction in retail sales for local businesses, WSDOT will coordinate with the wineries and business owners to post signage along the new highway alignment in accordance with the Manual on Uniform Traffic Control Devices and the Scenic Vistas Act. Signs provided through WSDOT’s Motorist Information Sign Program before key intersections/interchanges on the new highway could mitigate the impact (information can be found at <http://www.wsdot.wa.gov/operations/traffic/signs/requirements.htm>). To limit disruption to the businesses, signs should be installed before the new alignment opens. Signs are recommended at the west end of Phase 8, between Phases 7 and 8, at Touchet North Road, Lower Dry Creek Road, and Woodward Canyon Road to provide opportunities for local business owners to purchase advertising placards.

What are Context Sensitive Solutions?

Context sensitive solutions supplement a road project’s transportation objectives by providing planning for its effects on aesthetic, social, economic, and environmental values, needs, constraints, and opportunities in a larger community setting.



WSDOT’s Motorist Information Sign Program will provide guidance to businesses such as the Walla Walla Wine Store to advertise along the new highway.

What would happen if the Preferred Alternative were not selected?

There would be no negative short-term effects on farm operations, wineries, or other businesses if the Preferred Alternative were not constructed. Not building the Preferred Alternative could hinder future economic development of the Walla Walla Valley. Increasing traffic and congestion may discourage tourism, make it more difficult to move farm equipment, impose additional costs on local farmers, and decrease public safety.

Public Services and Utilities

How were public services and utilities evaluated for the proposed project?

The Public Services & Utilities Report (WSDOT 2009i) utilized aerial photographs, utility location maps, public service boundary maps, and personal communications with public service agencies and utility providers to identify, locate, and determine utility ownership within the study corridor.

How would public services and utilities be affected?

Results from the Public Services & Utilities Report show that no substantial temporary or long-term effects to public services and utilities will occur from constructing the Preferred Alternative. Temporary delay in response times and temporary detours for emergency vehicles and school busses may occur during construction. Utility lines that cross the project corridor may need to be temporarily or permanently relocated.

After construction, access and response time for public services will improve due to the additional route option provided by the new highway.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to public services and utilities?

The Preferred Alternative avoids potential effects to recreational facilities, public service facilities, utilities, and the communities of Touchet, Lowden, and Wallula.

Service providers will be notified in advance of the construction period. Emergency responders, school districts, and solid waste removal will be notified of construction schedules, access restrictions, and detour routes prior to access modification. Scheduling of road closures and detour routes will be coordinated with school districts and emergency responders on delivery routes within the construction area. Construction activities and road closures will be announced by radio broadcast, television, and newspaper.

WSDOT will coordinate with utility companies to minimize construction impacts. All relocations will occur prior to construction to avoid damage to utility lines.

Utilities that must be relocated or modified will be compensated in compliance with the WSDOT Utility Accommodation Policy. Relocation of private utilities will be addressed with each property owner during right-of-way acquisition.

What would happen if the Preferred Alternative were not selected?

There would be no short-term effects to public services and utilities if the Preferred Alternative was not constructed. However, increasing traffic and congestion on the existing highway may increase the accident rate, increasing the demand for public services. This will increase the response time of emergency service vehicles and decrease the level of safety at which they operate over the long-term.



Every effort was made to identify and avoid utility lines within and near the study corridor. However, the new highway alignment will relocate several lines, such as these in Phase 8 near Project Mile 3.



All major irrigation ditches crossed by the new highway alignment are scheduled to be piped before roadway construction begins.

Hazardous Materials

How were hazardous materials evaluated for the proposed project?

Information from the following sources was reviewed and summarized in the Hazardous Materials Report (WSDOT 2009f) in an effort to identify **Recognized Environmental Conditions (RECs)** within the study corridor.

- Online databases maintained by Ecology and the EPA
- Tax assessor’s records for lands within the corridor
- Field reconnaissance both on the ground and from the air
- Interviews with local property owners
- Topographic maps and historic aerial photos

Analysis followed the American Society for Testing and Materials (ASTM) Test Designation E-1527-00: Standard Practice for Environmental Site Assessments: Initial Site Assessment Process.

How would hazardous material sites be affected?

The investigation of hazardous material sites found that there are no sites with confirmed contamination, nor are there any **brownfield sites**, within the study area of the proposed highway. However, there are several sites that are recognized as having an environmental condition of concern. The locations of these sites are shown on **Exhibit 31** with descriptions listed in **Exhibit 32**. These are sites where known hazardous materials are present on site, or may have been present historically. Four of these sites are within the proposed right-of-way and two are within the Wallula Junction area. The sites in the proposed right-of-way consist of two possible pesticide management areas and two possible former orchard areas. The two sites at Wallula Junction are former gasoline stations.

What is a Recognized Environmental Condition?

A Recognized Environmental Condition refers to the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into the ground, groundwater, or surface water of the property.

What is a Brownfield Site?

Brownfield sites are sites that are underused or abandoned due to confirmed or suspected environmental contamination.



Possible pesticide management area found north of the Phase 7 alignment during preliminary studies in 2005.

None of the identified sites pose a potentially significant impact to the environment or the construction project. Standard mitigation measures can be implemented to address these sites since the methods to manage the identified contamination are reasonably predictable.

Construction of this project could also introduce new hazardous materials concerns to the area. These risks include the demolition of older buildings that may contain asbestos and lead based paint, equipment fueling operations, and the presence of engine fluids on construction equipment.

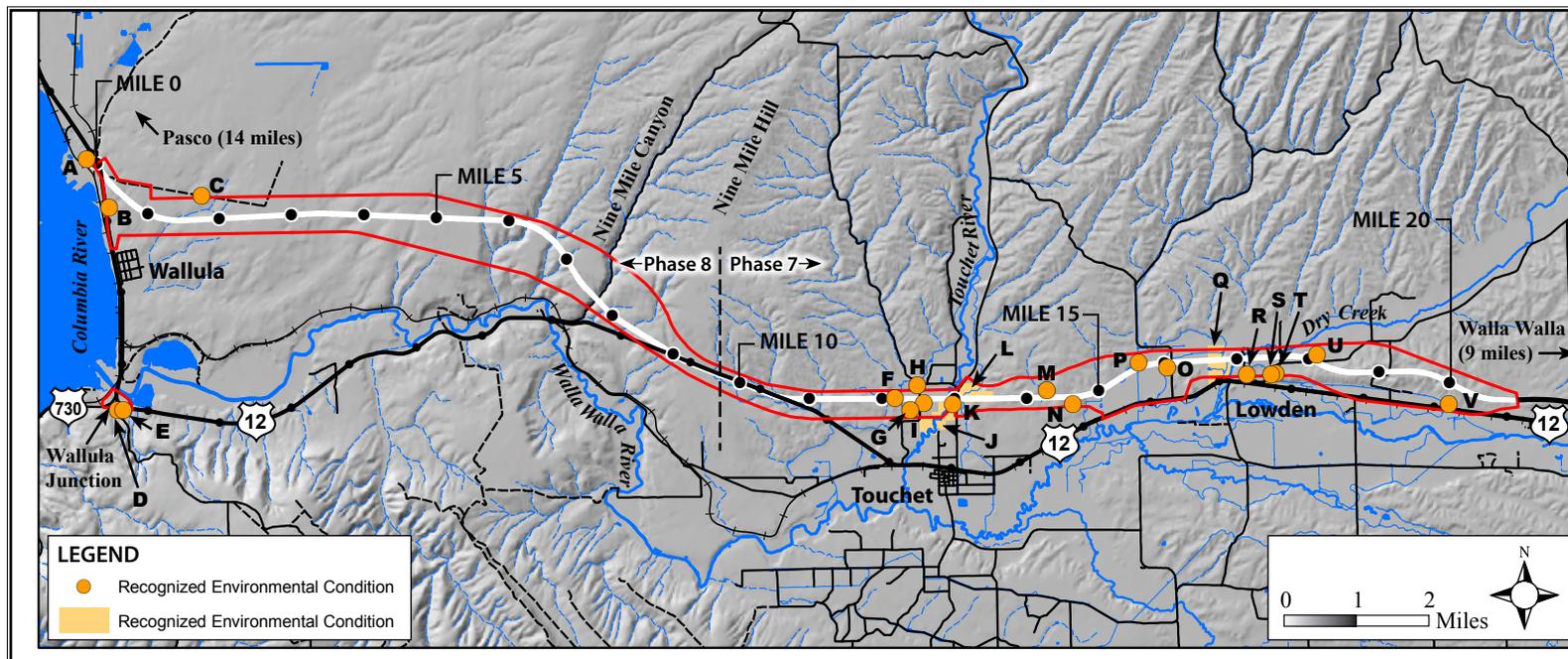


Exhibit 31. Recognized Environmental Conditions for hazardous materials in the study corridor.

Exhibit 32. Descriptions of sites with potential for hazardous materials that are shown on Exhibit 36.

Site Designation	Site Description
A	Previous Hydrocarbon Cleanup
B	Truck Maintenance Shop
C	Possible Pesticide Mixing Area
D	Former Gas Station
E	Former Gas Station
F	Abandoned Farmhouse, Probable Asbestos and Lead-base Paint
G	Possible Pesticide Mixing Area
H	Possible Pesticide Mixing Area
I	Suspected Pesticide Container Disposal Area
J	Possible Former Orchard Area
K	Chemical Drums on Site
L	Possible Former Orchard Area
M	Possible Pesticide Mixing Area
N	Possible Pesticide Mixing Area
O	Possible Pesticide Mixing Area and Older Buildings with Possible Lead-based Paint and/or Asbestos
P	Rubbish Disposal Area
Q	Possible Former Orchard Area
R	Chemical Drums on Site
S	Possible Pesticide Mixing Area
T	Possible Pesticide Mixing Area
U	Possible Pesticide Mixing Area and Older Buildings with Possible Lead-based Paint and/or Asbestos
V	Possible Pesticide Mixing Area

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to hazardous materials?

Every effort was made to identify and avoid all hazardous material sites within and near the study corridor during project design. Existing WSDOT BMPs will be used during demolition and construction to avoid introducing new hazardous materials to the area. The spill prevention, control, and countermeasures plan, that will be written for the project before construction begins, will provide specific details regarding the handling and disposal of hazardous materials. The operation of the new highway will also reduce the potential for traffic accidents that may release hazardous materials into the environment.

Sites that are suspected of having hazardous materials will be tested with soil samples or other measures as appropriate. If hazardous material contamination is discovered at any of the potential sites within the corridor, standard construction practices will be implemented to ensure construction does not spread the contamination. Depending on the nature of the contamination, remedial measures may consist of removal of impacted soils for off site treatment and or disposal, capping, and on site encapsulation or on site treatment.

What would happen if the Preferred Alternative were not built?

If the proposed project were not built, the potential environmental conditions would not be investigated further. If any of these sites do contain contamination, this contamination would not be discovered and reported to Ecology for future cleanup by responsible parties. Contamination encountered within planned excavation areas would not be cleaned up as a result of this project. However, by not building this project, the state would not incur the potential clean up costs.

Visual Resources

How were visual resources evaluated for the proposed project?

Visual quality is inherently subjective. However, the FHWA has developed a methodology that reduces the subjectivity and is repeatable by other experts. This method uses a qualitative and quantitative approach to analyze existing and proposed views of the area.

Three criteria used to perform an evaluation of the landscape’s visual quality are vividness, intactness, and unity. These criteria are quantified and averaged to determine a numerical rating for visual quality. Visual quality ratings were determined for key viewpoints throughout the study area (**Exhibit 33**). Details on this methodology can be found in the Visual Quality Report (WSDOT 2009I) for this project.

How would visual resources be affected?

Visual quality throughout the study area currently ranges from high to low, depending on the view location. In general, visual quality effects will be reduced compared to the existing condition due to encroachment by the new highway. However, views from the highway are expected to improve as a result of this project when comparing the existing US 12 alignment to the proposed US 12 alignment. Views toward the road, from residences or businesses that now overlook rolling agricultural fields, will see the new highway. For these viewers, the project will have some unavoidable negative effects to visual quality.



Current view of Nine Mile Canyon from existing US 12. Visual quality rating is 4.6 (high to moderately high).



Simulated view of Nine Mile Canyon showing the new highway bridge. Visual quality rating is 4.1 (moderately high).

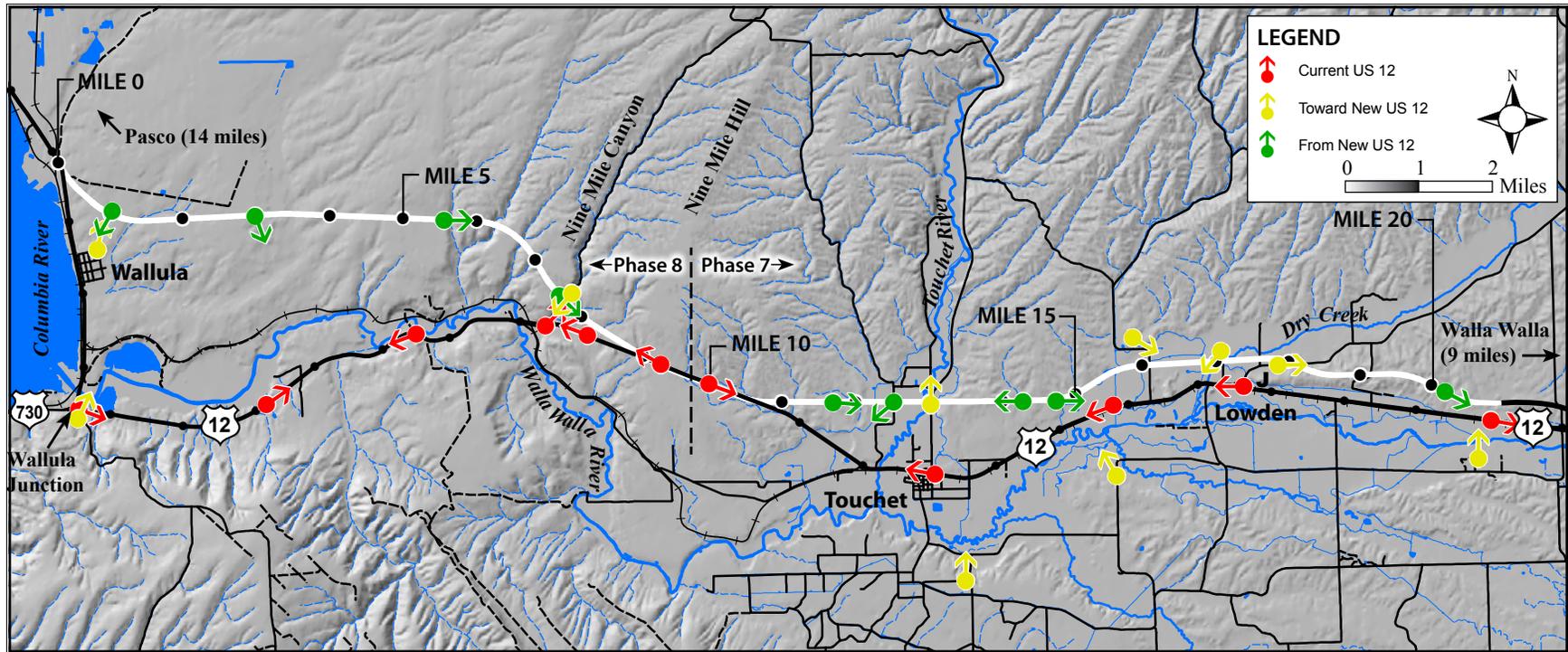


Exhibit 33. View points used to assess visual quality along the corridor.

What measures are proposed to avoid, minimize, and mitigate construction and operation effects to visual resources?

Many visual effects in Phase 8 were avoided by locating the proposed highway in the north corridor instead of widening the current highway. The Phase 8 alignment is the shortest, and reduces visual effects from vegetation removal by avoiding the Walla Walla River, Madame Dorion Memorial Park, and the McNary National Wildlife Refuge.

WSDOT (2006) has adopted IVM for the roads that it maintains. This requires that all maintenance activities should be conducted in a way that minimizes visual impacts. In addition, the RMP (as defined on p. 3-14) developed for this project will also specify

revegetation plans and maintenance. Following construction, roadsides will be restored within the right-of-way and maintained to look as natural as possible throughout the year in accordance with WSDOT's Roadside Classification Plan (WSDOT 2007). WSDOT will also utilize context sensitive solutions (<http://www.wsdot.wa.gov/biz/csd/ExecutiveOrder.htm>) in attempts to mitigate negative visual effects caused by this project. WSDOT will consider implementing the following measures when developing the final project designs:

- Minimizing site disturbance to protect native plant communities and specimen trees
- Using treatments on bridges to provide a natural appearing texture in context with the surrounding landscape
- Blending bridge designs with the natural landscape setting in line, form, color, and texture
- Blending luminaries with natural colors in the corridor, and shielding fixtures to minimize glare and ambient light spillover into adjacent residential areas
- Painting guardrails with natural colors that blend with the corridor
- Using signs that are monotube construction and painted to blend with natural colors in the corridor

However, because of the nature of the open, rolling, shrub-steppe and agricultural land, it is difficult to mitigate for negative effects to views toward the project. As a result, minor adverse visual effects will remain in these areas despite mitigation efforts.

What would happen if the Preferred Alternative were not built?

If this project is not built, views along the existing alignment and the proposed alignment would not change.

Indirect and Cumulative Effects

Under NEPA, cumulative effects result from the incremental effects of the project 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.

Most initial information on existing conditions in the affected environment was collected in 2005 during Level 1 environmental studies of Phases 7 and 8 corridors. Information on specific resources was updated in 2007 and 2008 when project details and preliminary design concepts were developed. After a review of the information collected for technical reports on Phases 7 and 8, the WSDOT South Central Region subsequently decided to prepare this report based on joint guidance issued by WSDOT, FHWA Washington Division, and the U.S. EPA Region 10.

Specifically, each resource specialist followed the 8-step procedure set forth in *Guidance on Preparing Cumulative Impact Analyses* (WSDOT, FHWA, and EPA 2008). Steps 1 through 4 were conducted before and during the direct effects analysis. Steps 5 through 8 focused on potential cumulative effects.

What Resources Were Considered for the Cumulative Effects Analysis?

The resources initially selected for cumulative effect assessments are the same as those for which direct effects were evaluated. The assessments evaluated the anticipated effects of the Build Alternative and the No Build Alternative on each of the following resources:

- Geologic Resources
- Soil Resources
- Air Quality
- Climate

What are Indirect Effects?

Indirect effects occur as a result of a proposed project, but take place later in time or are further removed in distance from the proposed project.

What are Cumulative Effects?

Cumulative effects occur incrementally and are the result of combined effects from the proposed project together with other past, present, and reasonably foreseeable future actions.

- Wetlands
- Surface Water and Groundwater
- Floodplains
- Fish and Fish Habitat
- Wildlife and Wildlife Habitat
- Endangered Species Act -listed species
- Noise
- Land Use, Farms and Farmlands
- Historic, Archaeological, and Cultural Resources
- Social and Economic Resources
- Hazardous Materials
- Visual Quality

What is the Current Health and Historical Context of These Resources?

The landscape encompassing the project area has been substantially modified in the 150 years since the signing of the treaty between the U.S. government and the Cayuse, Umatilla, and Walla Walla Tribes in 1855. The cumulative effects time-line in **Exhibit 34** depicts major public and private events that have changed the social, economic, and environmental landscape of the Walla Walla Valley from the signing of the treaty to 2030, the design year for the proposed project. In general, most of the study area is expected to remain predominately in agricultural landscape, with large areas devoted to dryland wheat production and irrigated crops.

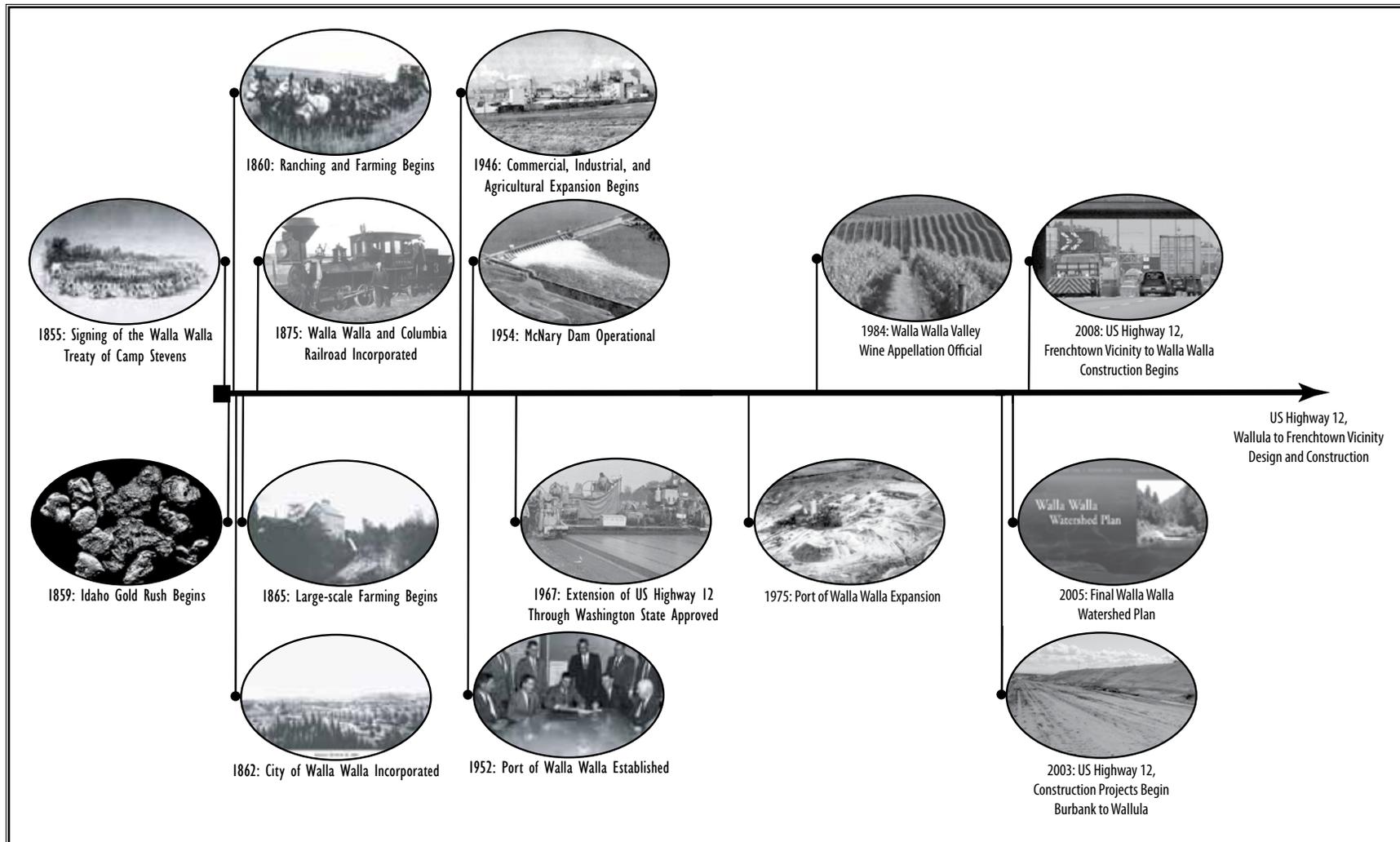


Exhibit 34. Timeline showing major past and present actions within the geographic area of the proposed project that contribute to cumulative effects.

Regional Condition of Farms and Farmland

Historically, livestock and dairy farming have been essential components of farm life in the Walla Walla Valley. Like other agricultural products, stock and dairy production flourished in the valley after 1860 in response to demand from gold miners.

Commercial wheat growing flourished after the 1880s, spurred on by the hospitable climate and soil conditions, and the rapidly expanding river and rail networks that transport grain to markets nationwide.

Currently, irrigated crops that include corn, potatoes, alfalfa, mint, sod grass-seed, fruit crops, and poplar plantations are grown by industrial-size corporate farms within the western portion of the Phase 8 alignment. Cattle graze on non-irrigated rangeland that extends both north and south of the current highway near Nine Mile Canyon within the eastern portion of Phase 8. Local landowners and family operations farm or ranch the agricultural landscape within Phase 7. Here, a mix of irrigated crops and fruit crops are grown using water diverted from the Walla Walla and Touchet rivers. In areas not under irrigation, dryland wheat and grazing has been ongoing for more than a century.

Future Outlook of Farms and Farmland

The agricultural landscape within the study area is expected to remain largely as is during the foreseeable future. The trend of small family-owned and -operated farms being consolidated into larger operations will likely continue. Even though corporate ownership will likely increase, some large operations will remain family owned, especially in the vicinity of Phase 7.

Additionally, some of the foreseeable projects listed below will convert farmland to other uses. For example, the trend of converting agricultural land to residential and commercial uses along existing US 12 will likely continue. Plans by the Port of Walla Walla to convert the former Boise fiber farm (poplar plantation) to an industrial park are



Bee sheds that are conspicuously spaced across alfalfa seed fields are for leaf-cutter bees, which farmers purchase to supplement pollination by native alkali bees.

highly likely. Conversely, other foreseeable actions will expand farming operations. The increased conversion of existing irrigable land to vineyards, and the upgrades planned for regional irrigation systems, will improve farming operations in the Walla Walla Valley.

Regional Condition of Wildlife Habitat

Historically, the wildlife study area of western Walla Walla County has been subjected to intensive dryland agriculture, primarily for the purpose of growing wheat.

More recently, irrigated crops that include corn, potatoes, alfalfa, mint, sod grass-seed, fruit crops, and poplar plantations are grown by industrial-size corporate farms within the western portion of the Phase 8 alignment. Cattle graze on non-irrigated rangeland that extends both north and south of the current highway near Nine Mile Canyon within the eastern portion of Phase 8. Local landowners and family operations farm or ranch the agricultural landscape within Phase 7.

Cumulatively, grazing and crop production have dramatically affected the native vegetation and wildlife habitat in the Phase 7 and 8 study corridors. Large areas are dominated by nonnative species such as cheatgrass, knapweed, Russian thistle, goathead, and kochia. Most of the riparian gallery forest that existed along the Walla Walla and Touchet rivers during the time of Lewis and Clark is gone, and stream flows in both rivers have been dramatically reduced by irrigation withdrawals. The Dry Creek stream channel was modified extensively by excavation in the 1960s to increase flood storage.

All of these landscape changes have had significant impacts to native fish and wildlife habitat. Many shrub-steppe obligates rarely occur or have been extirpated from the study area. Examples include greater sage-grouse, Washington ground squirrel, and ferruginous hawk.

Future Outlook of Wildlife Habitat

The landscape within the study area is expected to remain as an agricultural landscape interspersed by patches of native habitat during the foreseeable future. The current trend toward larger, more consolidated industrial farms is expected to continue.

Most of the reasonably foreseeable projects listed below will affect only previously disturbed land with little value to wildlife. For example, conversion of actively farmed areas to vineyards, conversion of the existing Boise fiber farm to industrial uses, and conversion of existing agricultural land along the existing alignment to residential or commercial development should very rarely affect isolated remnant stands of sagebrush. Aquatic habitat for fish and wildlife in Walla Walla and Touchet rivers should benefit from piping of local irrigation canals and upgrades to the intake diversions, which should improve instream flows and water quality in the project area.

Currently, the most critical features within the study area for maintaining wildlife populations are Federal HMUs and the CRP. In 2007, Walla Walla County had more than 150,000 acres of arable farmland enrolled in the CRP, ranking it 30th out of more than 2,500 counties nationwide in total acres enrolled (USDA 2007). CRP land is valuable to wildlife because it provides large areas (in this case, approximately 20 percent of Walla Walla County) where native habitats are allowed and encouraged to reestablish. While this number has remained fairly steady over the last several years, future declines are likely if crop prices increase, particularly winter wheat (USDA 2009). Higher crop prices will reduce the likelihood that farmers will enroll their land in this voluntary program.

Use of CRP habitats by a wide range of wildlife that include mule deer, breeding songbirds, and raptors has been documented in the study area. While the CRP is the most important factor in the study area with regards to terrestrial habitat, future enrollment in the CRP is not guaranteed, so this land could return to full agricultural production with less value for wildlife.

What Are the Current and Reasonably Foreseeable Actions Considered for the Cumulative Effects Analysis?

To identify other current and reasonably foreseeable future actions in the study area, each resource specialist reviewed appropriate background documents, including comprehensive land use plans, long-range transportation plans, watershed plans, species recovery plans, etc. In addition, some resource specialists conducted interviews with local land use officials, local and state biologists, and representatives of private companies and organizations. The following criteria were considered when identifying these projects:

- Is the proposed project included in a financially constrained plan?
- Is it permitted or in the permit process?
- How reasonable is it to assume that the proposed project will be constructed?
- Is the action identified as high priority?

In general, most of the study area is expected to remain predominantly as an agricultural landscape, with large areas devoted to dryland wheat production and irrigated crops.

The following future actions, many of which are shown on **Exhibit 35**, are considered reasonably foreseeable to occur in the study area within the project timeframe, and could potentially influence the outcomes described above:

- Conversion of agricultural lands to residential and commercial uses on smaller parcels along the current highway (primarily in Phase 7) (requires local agency actions subject to public comment and environmental review)
- Conversion of irrigated farmland to vineyards in areas close to existing US 12 (requires local agency actions subject to public comment and environmental review)
- Conversion of the former Boise fiber farm owned by the Port of Walla Walla for a future industrial park near Wallula (requires local agency actions subject to public comment and environmental review)



Conversions of rural agricultural lands along the current highway, like this residential subdivision near MP 321, require zoning changes that must be approved by Walla Walla County.

- Expansion of the Pierce RV Park off existing US 12 (requires local agency actions subject to public comment and environmental review)
- PacificCorp Walla Walla to McNary/Boardman 230kV transmission line (requires local agency actions subject to public comment and environmental review)
- Upgrades that add efficiencies to major water diversion intakes in Phase 7
- Expansion of the Conservation Reserve Enhancement Program (CREP) lands adjacent to streams in the study area
- Piping of large irrigation ditches such as Bergevin-Williams and Old Lowden Ditch
- Continued development of wind farms in southeastern Washington that use US 12 for transport of wind turbine components and construction materials



Existing vineyards along the current US 12 are expected to expand in the future, and new ones may be developed.

What Are the Results of the Cumulative Effects Analysis?

Geologic Resources

While there will be minor direct effects to geologic resources from constructing the proposed project primarily in the form of irretrievable borrow material, they will be temporary and will not continue beyond project construction. WSDOT has designed Phases 7 and 8 to balance cuts and fills and to minimize the amount of borrow material for the project. Road-cuts through basalt bedrock near the surface in Phase 8 will produce most of the rock needed to construct this phase. However, since construction of Phases 7 and 8 will likely be sequenced, with Phase 7 constructed prior to Phase 8, some aggregate and rock material will be imported to the project, resulting in a reduction of local resources.

The project design avoids all indirect effects to geologic resources. Because the project design minimizes the fill necessary for the project, and abundant sources of aggregate and rock exist within the project area, WSDOT concludes that no substantial adverse impacts to this resource will occur because of the proposed project. For this reason,

WSDOT concluded that the project will not contribute to a cumulative effect on geologic resources.

Soil Resources

Constructing the project will expose soils to erosion from both wind and rainfall that could produce minor direct effects to soil resources in close proximity of construction activities. However, these effects will be temporary and will not continue beyond project construction. To avoid and minimize negative effects to soils exposed by construction, the project will implement all applicable design, procedural, and physical BMPs as outlined in the project's TESC Plan, and all applicable minimum requirements from the most current HRM. Implementing IVM techniques and development of a project-specific RMP (as defined on p. 3-14) will help prevent soil erosion over the long-term.

WSDOT concludes that no substantial adverse impacts will occur to this resource as a result of the proposed project. The project has been designed to avoid and minimize the potential for soil erosion during both the short- and long-term. Indirect effects to soils will be minimal, localized, and subject to local and state erosion and stormwater requirements. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on soils.

Air Quality

Minor direct effects to air quality will occur from temporary increases in construction traffic, operating construction equipment, and from construction activities that disturb soils. However, these effects will be temporary and will not continue beyond project construction. To avoid and minimize negative effects to this resource, the project will implement all applicable design, procedural, and physical BMPs as outlined in the project's TESC Plan, and all applicable minimum requirements from the most current HRM. Implementing IVM techniques and a project-specific RMP will help prevent soil erosion over the long-term.

Indirect effects from the project include improvements in air quality from fewer vehicle emissions over the long-term. Because the new facility will have the same speed limit and will be three miles shorter than existing US 12, the proposed project will generate fewer vehicle emissions. Additionally, capacity and mobility will increase, and vehicles will not idle as long while waiting to turn onto or off the highway, or be forced to decelerate and accelerate as frequently to pass slower moving vehicles.

Since the project design will avoid and minimize the potential for increasing vehicle emissions and particulate matter during the short-term, and will decrease vehicle emissions over the long-term, WSDOT concludes that no substantial adverse impacts will occur to this resource as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on air quality

Climate

Even though minor direct effects may occur from greenhouse gas emissions during construction, these effects will be temporary and will not continue beyond project construction.

Indirect effects from the project may include a reduction of greenhouse gas emissions over the long-term. Because the new facility will have the same speed limit and will be three miles shorter than existing US 12, the proposed project is likely to generate fewer vehicle emissions over the long-term. Furthermore, capacity and mobility will increase, and vehicles will not idle as long while waiting to turn onto or off the highway, or be forced to decelerate and accelerate as frequently to pass slower moving vehicles.

Because the project design minimizes the potential for increasing vehicle emissions during the short-term, and decreases vehicle emissions over the long-term, WSDOT concludes that no substantial adverse impacts will occur to this resource as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on climate.

Wetlands

The project design avoids direct and indirect impacts to wetlands; therefore, WSDOT concludes that no substantial adverse impacts to this resource will occur as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on wetlands.

Surface Water and Groundwater

No direct or indirect effects to surface water or groundwater will occur from the proposed project. The project design avoids excavation and fills within all surface or groundwater resources. To avoid and minimize negative effects to this resource, the project will implement all applicable design, procedural, and physical BMPs as outlined in the project's TESC Plan, and all applicable minimum requirements from the most current HRM. The project is designed to divert, disperse, and infiltrate runoff from new impervious surface away from all surface water and groundwater resources. Additionally, implementing IVM techniques and a project-specific RMP (as defined on p. 3-14) will help treat runoff over the long-term.

Because the project design avoids direct and indirect impacts to surface water and groundwater, WSDOT concludes that no substantial adverse impacts to this resource will occur as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on water resources.

Floodplains

The project design avoids all direct and indirect effects to the Lower Dry Creek floodplain. Because the project design follows all Walla Walla County critical area and shoreline regulations, effects to the Touchet River floodplain will be minor and temporary, and will not continue beyond project construction. To avoid and minimize negative effects to this resource, the project will implement all applicable design, procedural,

and physical BMPs as outlined in the project's TESC Plan, and all applicable minimum requirements from the most current HRM. Additionally, implementing IVM techniques and a project-specific RMP (as defined on p. 3-14) will help treat runoff over the long-term.

The project design follows all Walla Walla County critical area and shoreline regulations; therefore, it avoids all indirect effects to floodplains. Indirect effects to floodplains over the long-term will be minimal since development along the existing highway within floodplain boundaries is restricted or limited by the Walla Walla County's critical areas components of the comprehensive land use plan, shoreline plan, zoning, and the demand for services.

WSDOT concludes that no substantial adverse impacts will occur to this resource as a result of the proposed project. The project has been designed to avoid and minimize the potential for impacts during both the short- and long-term. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on floodplains.

Fish and Fish Habitat

No direct or indirect effects to fish or fish habitat will occur from the proposed project. The project design avoids excavation and fills within all resources associated with fish and their habitat. To avoid and minimize negative effects to this resource, the project will implement all applicable design, procedural, and physical BMPs as outlined in the project's TESC Plan, and all applicable minimum requirements from the most current HRM. The project is designed to divert, disperse, and infiltrate runoff from new impervious surface away from all resources associated with fish and their habitat. Additionally, implementing IVM techniques and the RMP will help treat runoff over the long-term.

Because the project design avoids direct and indirect impacts to fish and fish habitat, WSDOT concludes that no substantial adverse impacts to this resource will occur as a

result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on fish and fish habitat.

Wildlife and Wildlife Habitat

Compared to past, present, and reasonably foreseeable future actions, the proposed project will not have substantial cumulative effects to wildlife habitat in the study area. Past and ongoing agricultural practices are the primary determinants of habitat patterns in the study area. While the proposed project will remove some vegetation (approximately 400 acres), most of this habitat has been previously disturbed, and much of it is dominated by non-native plant species. The proposed project will contribute to this cumulative loss of remnant shrub-steppe habitat in the study area, which will further reduce breeding, foraging, and cover habitat for shrub-steppe-associated species such as burrowing owl, sage sparrow, sage thrasher, long-billed curlew, and black-tailed jackrabbit. Other species that are more adapted to an agricultural landscape, such as Ord's kangaroo rat, coyote, and northern harrier, are expected to continue to flourish.

The proposed project includes mitigation for direct effects on wildlife in accordance with Executive Order E 1031.00, called "Protections and Connections for High Quality Natural Habitats" from the Secretary of the Department of Transportation for Washington State.

WSDOT convened an interdisciplinary team of local and regional experts to consider issues related to wildlife habitat and roadway permeability. This team met at regular intervals to consider potential impacts and possible opportunities and constraints for measures that could improve roadway permeability within the study area. The project team identified remaining preferred and suitable habitat within the project area, and opportunities to facilitate animal movements across or under the new highway within and between habitat types. WSDOT has committed to implementing the results of these meetings and other data to develop a process for incorporating appropriate mitigation measures during the design phase of the proposed project.

The proposed project, in conjunction with reasonably foreseeable projects, will not have a substantial cumulative effect on wildlife and wildlife habitat in the area. A far greater influence on habitat in the area is the continued success of the local CRP, which currently provides wildlife habitat on more than 150,000 acres of arable farmland in Walla Walla County.

Because the project design avoids and minimizes direct and indirect impacts to wildlife and wildlife habitat, WSDOT concludes that no substantial adverse impacts to this resource will occur as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on wildlife and wildlife habitat species.

ESA-Listed Species

Various species of fish are the only ESA-listed species that occur within the project area. Since the project design avoids direct and indirect impacts to fish and fish habitat, WSDOT concludes that no substantial adverse impacts to this ESA-listed species will occur as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on listed species.

Noise

Minor direct effects to sensitive receivers from increased noise will result from construction traffic and operating construction equipment in proximity to local communities and some rural residences. However, these effects will be temporary and will not continue beyond project construction. The project has been planned to minimize construction traffic through residential areas.

Indirect effects from the project will improve noise levels for sensitive receivers in close proximity to existing US 12. Because the new facility will have the same speed limit as the current highway, and will be located from between one-quarter of a mile and one mile

further from the communities of Lowden, Touchet, and Wallula, noise levels will decrease for receivers located there.

Since the project design avoids and minimizes the potential for increasing noise levels during the short-term, and will decrease noise to sensitive receivers over the long-term, WSDOT concludes that no substantial adverse impacts will occur to this resource as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on noise levels.

Land Use, Farms, and Farmlands

The project's design avoids and minimizes direct effects to existing land use to the greatest practicable extent, and is consistent with locally planned land uses. For example, the proposed project avoids all businesses, and only a single residential relocation will occur as a result of the project. The project minimizes direct effects to farms and farmland around the communities of Lowden, Touchet, and Wallula.

The proposed project includes mitigation for direct effects to farms and farmlands. WSDOT will purchase all necessary right-of-way for the project in accordance with the federal Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, RCW 08.26.010 through RCW 08.26.910, and WAC 468-100. The negotiations also offer the opportunity to resolve other effects on farming operations. Although the project will result in minor impacts to farmland by conversion to right-of-way, these impacts are minor, as verified by a NRCS determination stating that the project will receive no further consideration regarding farmland conversion. Construction activities will be planned to minimize disruptions and ensure continued access to farm operations and businesses where and when feasible during construction. WSDOT will also provide financial compensatory mitigation for reconfiguring irrigation systems and any loss of crops from temporary construction easements.

Additionally, some of the foreseeable projects will convert farmland to other uses. For example, the trend of converting agricultural land to residential and commercial uses along existing US 12 will likely continue. Plans by the Port of Walla Walla to convert the former Boise fiber farm (poplar plantation) to an industrial park are highly likely. Conversely, other foreseeable actions will expand farming operations. The increased conversion of existing irrigable land to vineyards and the upgrades planned for regional irrigation systems will improve farming operations in the Walla Walla Valley. While the potential for future development cannot be fully known at this time, it would be limited by the amount of land adjacent to the existing highway; the demand for services, and Walla Walla County’s comprehensive land use plan, shoreline plan, and zoning regulations.

WSDOT concludes that no substantial adverse impacts will occur to these resources as a result of the proposed project. The project has been designed to avoid and minimize the potential for impacts to existing land use, farms, and farmland during both the short- and long-term. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on land use.

Historic, Archaeological, and Cultural Resources

No direct or indirect effects to historic, archaeological, or cultural resources will occur from the proposed project. The project design avoids all known locations where these resources occur. The FHWA, WSDOT, CTUIR, and the Yakama Nation will abide by the 2004 Programmatic Memorandum for Coordination and Consultation of State Transportation Activities. This memorandum includes a commitment to ongoing consultation and has provisions for “reparation of Ancestral Human Remains and Funerary objects” if these resources are inadvertently discovered during project construction.

Because the project design avoids direct and indirect impacts to historic, archaeological, or cultural resources, WSDOT concludes that no substantial adverse impacts to these resources will occur as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on these resources.

Social and Economic Resources

The project design avoids and minimizes direct effects to socio-economic resources to the greatest practicable extent. The proposed project design avoids businesses, residences, and irrigated farmland in and around the communities of Lowden, Touchet, and Wallula where possible.

For example, the project design requires only one relocation, and WSDOT will purchase all necessary right-of-way for the project in compliance with federal and state regulations related to property acquisition and relocation. Construction activities will be planned to minimize disruptions and ensure continued access to farm operations and businesses where and when feasible during construction. WSDOT will also provide financial compensatory mitigation for reconfiguring irrigation systems and any loss of crops from temporary construction easements. WSDOT's Motorist Information Sign Program will provide and install tourist activity signs that show a business's logo before key intersections and interchanges prior to opening the new facility. These avoidance and minimization measures will further reduce impacts to socio-economic resources during the short- and long-term.

Conversely, constructing the project will cost within the range of \$296 million to \$633 million, depending on inflation and when the project is funded. Project monies spent locally will have a positive multiplicative effect throughout the regional economy. WSDOT estimates that nearly 5,000 jobs will be created during project construction.

WSDOT concludes that no substantial adverse impacts will occur to economic resources as a result of the proposed project. The project has been designed to avoid and minimize the potential for socio-economic impacts during both the short- and long-term. For this reason, WSDOT concluded that the project will not contribute to a negative cumulative effect on social or economic resources.

Hazardous Materials

The project design avoids all known locations where hazardous materials occur. The project will avoid and minimize the spread of contamination by implementing all applicable design, procedural, and physical BMPs during project demolition and construction activities.

Because the project design avoids direct and indirect impacts to hazardous material sites, WSDOT concludes that no adverse cumulative impacts to the environment from hazardous materials will occur as a result of the proposed project.

Visual Quality

The project design avoids and minimizes direct effects to businesses, residences, and recreation areas by avoiding the communities of Lowden, Touchet, and Wallula. Nevertheless, minor direct effects to visual resources from project construction will occur where the proposed project is in close proximity to some rural residences. In contrast, visual quality as viewed from the proposed project would improve. Implementing IVM techniques and the RMP (as defined on p. 3-14) will minimize direct effects to visual quality from construction activities during the long-term.

Indirect effects from the project include minor improvements in visual quality for residences located near the current highway over the long-term. This indirect effect will result from a decrease in the light and glare associated with fewer vehicles travelling on the existing US 12.

Since the project design avoids and minimizes the potential for effects to visual quality during the short- and long-term, WSDOT concludes that no substantial adverse impacts will occur to this resource as a result of the proposed project. For this reason, WSDOT concluded that the project will not contribute to a cumulative effect on visual quality.