

East West Corridor Project

Submitted to Yakima County
Department of Public Services

Yakima, Washington

Alignment Alternatives Study – Supplemental Report

East West Corridor Project

Submitted to

**Yakima County Department of Public Services
Yakima, Washington**

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Submitted by

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**Final Alignment Alternatives Study
East West Corridor
Supplemental Report
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EXECUTIVE SUMMARY

This report is a supplement to the Berger ABAM, Corridor Alternatives Study report of August 2011. The purpose of this report is to document the refinements in alignment in response to the comments received during the Board of County Commissioners public hearing. This supplement refines the proposed alignment of the Lowlands route and provides a comparison between the Lowlands route identified in the Berger report and the proposed alignment identified in this supplemental report. The analysis presented in this supplemental report is limited to the section of the Lowland Corridor proposed for modification.

The modified alignment begins at an acute angle under I-82 which provided a better crossing of the Yakima River than the Lowlands alignment. The modified alignment continues on a route that is farther south than the Lowlands alignment. The reasons the southerly route is preferable to the original Lowlands alignment include the following: it has a shorter crossing of the Yakima River, it is more compatible with non-motorized uses, it has fewer impacts on developed properties, it has fewer sections of grade greater than 6%, and the duration of construction is expected to be shorter due to less earthwork, walls and less structures. It is also the most compatible alternative with future flood plain restoration.

For the purposes of this supplement, the comparison of Alternative 4 (Lowlands) and the modified alignment begins at I-82 and ends at Butterfield/Keys Road. The remaining section of corridor from Butterfield/Keys Road to 57th Street in Terrace Heights and from I-82 to Fruitvale Blvd in Yakima remains unchanged from the larger transportation corridor identified in the Berger report and a 2001 Terrace Heights Corridor Study prepared by Harding ESE Inc. The corridor will ultimately be completed in numerous phases as funding allows.

The Berger report identifies and evaluates potential issues and impacts in the corridor. As such, this supplemental report does not re-evaluate many of the issues contained in that report, but rather supplements that work only for the issues and impact of the change to the proposed alignment

In addition to this documentation, this report provides a summary of the entire corridor in the conclusions, providing a final route from Fruitvale in the City of Yakima on the west to 57th in Yakima County, Terrace Heights, on the east.

Lochner prepared this supplement with information gathered in the field, from the Berger and Harding reports, and from discussion with County staff.

1.0 INTRODUCTION

1.1 Purpose and Need

The Purpose and Need statement provided in the Berger report is unchanged in this supplement.

1.2 History

This supplement follows the 2001 Terrace Heights Corridor Study completed by Harding ESE, Inc. and supplements the 2011 Berger report, which is located in appendix A. The 2001 study only examined two alignments (the North Alternative and the South Alternative) but did not provide a recommendation for either. The 2011 Berger report utilized the 2001 report to develop the four alternatives. Following the 2011 report, the County Commissioners eliminated alternatives 1, 2, and 3 from further consideration in a Resolution dated January 24, 2012 (see Appendix C). This left Alternative 4, Lowlands, as the preferred alignment. Comments submitted to the County by the City requesting an alternative south of the railroad bridge, are the basis for development of this supplement.

1.3 Project Limits

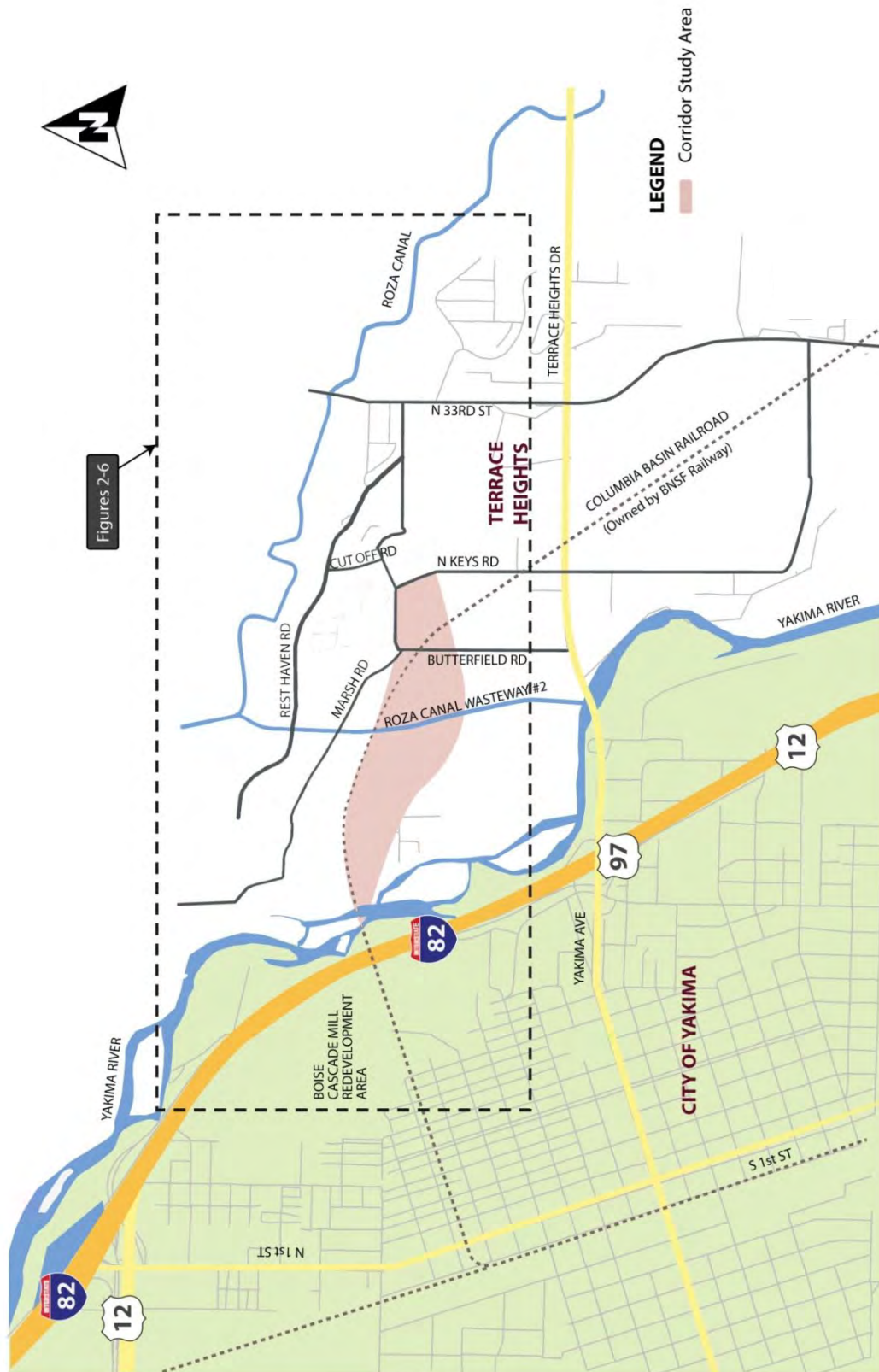
As outlined in the Berger report, the East-West Corridor is part of a larger transportation corridor that would connect Fruitvale Boulevard in western Yakima to 57th Street in Terrace Heights. The 2001 Study described that the East-West Corridor would include a new connection to Fruitvale Blvd near W Quincy Street and then proceed to the N 5th Avenue/Fruitvale Blvd roundabout. The Berger report then states that the western segment from Fruitvale to the Boise Cascade Mill Redevelopment Area (BCMR) will be completed by collaboration of the City and the BCMR consortium. Various real estate developers will likely deliver the eastern segment from 33rd Street to 57th Street. Refer to Figure 3 for the entire transportation corridor.

In this supplement, the east-west corridor modifies the segment from I-82 to the vicinity of Butterfield/Keys Road. All other portions of the corridor will remain as identified in the Berger report. Figure 1 shows the corridor study area analyzed by this supplement.

1.4 Route Termini

The route termini remain unchanged from the Berger report, which was from I-82 until 33rd Street.

Figure 1: Supplemental Corridor Study Area



1.5 Connection to Existing Roadway Network

This supplement recommends that the modified alignment tie into the City of Yakima on the previously identified west end of the alignment and to the existing street system at the Butterfield/Keys Road intersection on the east end of the alignment. From there, it will follow the Lowlands route to 33rd Street.

2.0 EXISTING CONDITIONS

2.1 Topography

The Berger report details the topography of the project area.

2.2 Yakima River and Floodplain

The western tangent for the Lowlands alignment follows a 100-foot parallel offset to the north of the existing railroad bridge across the Yakima River and floodplain. Identified most recently is a modified alignment, beginning under I-82 that provides a skewed rail crossing and a slight angle crossing of the Yakima River south of the Railroad Bridge. At this location, the Yakima River is the narrowest in the vicinity of the alternatives. Discussion with the Bureau of Reclamation (BuRec) in December 2011 revealed that there are several planned modifications to the floodway in this area.

One adjustment is the removal of a curved levee southwest of Hartford Road. The purpose is to enhance fish habitat and open the floodway. In cooperation with BuRec, the alignment would be located in the northeast corner of the proposed habitat area and the proposed road would be constructed as the new levee. The road alignment for the Lowlands South route would follow a natural bench south of Hartford Road and just south of several homes, minimizing both the impact on the floodway and impact on homes from the BuRec modifications.

The proposed bridge for the modified alignment is assumed to consist of a multiple span concrete bridge. Total length of the bridge from the trail on the west bank to the edge of the floodway on the east is approximately 950 feet in length. This would leave the floodway open its entire width in this area.

2.3 Irrigation Canals

The Alternative 4, Lowlands alignment alternative, and the modified alignment cross only one canal, the Roza Canal Wasteway #2, managed by the Roza Canal Irrigation District. Continued coordination with the Canal authority will address desired crossing enhancements.

2.4 Geology and Geologic Hazards

A 2010 draft geotechnical engineering conceptual design supplement by Shannon & Wilson presented a discussion of geology and geologic hazards along the project corridor (Shannon & Wilson, 2010). The project corridor for that study extended from west of I-82 and north of the Columbia Basin Railroad, east across the Yakima River, into and/or around North Terrace Heights, and terminated north of the Roza Canal at North 33rd Street. The project corridor limits encompassed alternatives that generally lie north of Lowlands and the currently proposed modified alignment. The geologic conditions discussed in the 2010 Shannon &

Wilson report are summarized here, and extrapolated to address geology and geologic hazards for Alternative 4 and the proposed modified alignment.

The 2010 Shannon & Wilson report summarizes findings of a visual reconnaissance performed from public rights-of-way, and a review of available geologic maps, literature, and readily available existing subsurface information. The following descriptions of geology and geologic hazards at the Lowlands alternative and the proposed modified alignment rely on the sources described above. In addition, surficial geologic maps in the vicinity of Alternative 4 and the proposed modified alignment were reevaluated and existing well logs available from the Department of Ecology website were reviewed.

The corridor study area is underlain by Tertiary volcanic and sedimentary rocks and Quaternary-age alluvium, loess, alluvial fan, and terrace deposits (Schuster, 1994). Tertiary bedrock is mapped on the slopes generally north of Rest Haven Road, except where it is locally overlain by Quaternary alluvial fan deposits. Bedrock consists of the Saddle Mountains basalt (Pomona member), and continental sedimentary deposits of the Ellensburg Formation. Faulting and folding of the Tertiary bedrock and deposits in this area has resulted in a series of generally east-west oriented valleys and ridges (including Yakima Ridge).

Quaternary alluvium, loess, and terrace deposits cover bedrock south of Rest Haven Road, in the lower-slope areas of the corridor. Quaternary alluvium also covers the valley floor along the corridor southwest of Hubbard Canal. The alluvium consists of loose to very dense sand and gravel with cobbles and boulders. Locally, these coarse deposits are overlain by as much as 5 feet of soft to stiff organic silt and clayey silt. Borings drilled in the alluvium have encountered groundwater typically at depths of 4 to 20 feet.

Quaternary terrace and loess deposits are mapped along the margin of the river valley, generally between Hubbard Canal and Rest Haven Road. The terrace deposits consist of indurated silt, sand, and gravel, and are locally interlayered with fine-grained lake, marsh, and/or loess deposits. Loess deposits along the corridor consist of a relatively thin (less than 10 feet) veneer of windblown silt and sand, locally with caliche and tephra layers.

Areas of fill locally underlie the corridor study area. Fills include I-82 roadway embankments, roadway embankments in the valley floor east of I-82, and canal embankments. Small fills typically are present near residential construction. Wood chip fill and organic soils are present near the Columbia Basin Railroad on both sides of the I-82 undercrossing. Unsuitable subgrade soils such as these were excavated during the construction of I-82, and were reportedly disposed of along the east side of the highway.

West of the intersection of North Keys Road and Butterfield Road, the mapped geology along the Lowlands alignment and the proposed modified alignment is alluvium. The alluvium likely consists of loose to medium dense coarse-grained soil (including cobbles and boulders), and may contain shallow fine-grained or organic-rich layers. Non-engineered fills may be present at various locations on the valley floor. East of the intersection, the Lowlands alternative alignment and the proposed modified alignment cross terrace deposits, loess, and Thorp gravels consisting of poorly indurated gravel and coarse sand. North of the Roza Canal,

Alternative 4 and the proposed modified alignment cross bedrock of the Ellensburg formation. Potential geologic hazards in the vicinity of the Alternative 4 alignment and the proposed modified alignment include slope instability, river scour, and earthquake-related hazards. Earthquake-induced geologic hazards that may affect a given site include seismically-induced landslides, liquefaction, and ground surface fault rupture.

The Yakima area slope stability map (Campbell, 1976) shows that Alternative 4, Lowlands, and the modified alignment are located in areas that are considered “stable” south of Rest Haven Road. As the Alternative 4 alignment and the modified alignment approach and cross north of the Roza Canal, the slopes are mapped as “unstable”. North of Roza Canal and west of their crossing, the Alternative 4 alignment and the modified alignment enter into an area mapped as “stable under natural conditions”. These areas could become unstable if disturbed. As the Alternative 4 alignment and the proposed modified alignment continue east to North 33rd Street, the slope is mapped as “stable”.

River scour may present long-term stability issues for structures constructed adjacent to the Yakima River. Alternative 4 and the proposed modified alignment cross the Yakima River near the Columbia Basin Railroad.

Soil susceptible to liquefaction is typically loose to medium dense, saturated, and cohesionless deposits, such as sand. Such deposits may be present in the Quaternary alluvium. The entire length of the Alternative 4 alignment and the proposed modified alignment cross areas that may be susceptible to liquefaction.

The potential for ground surface rupture at the site is expected to be low. The nearest mapped potentially active faults identified by the U.S. Geological Survey (USGS, 2008) are the east-west trending Ahtanum Ridge and Rattlesnake Hills structures located about 5 miles south of the site.

2.5 Hazardous Materials

A corridor-level environmental site assessment dated June 2010 summarizes the findings of a visual reconnaissance from public rights-of-way, as well as a review of available literature, maps, and databases held by the County, the U.S. Department of Agriculture (USDA), the U.S. Environmental Protection Agency (EPA), the Washington State Department of Ecology (Ecology), and the Yakama Nation.

The assessment focuses on identifying potential sources of contamination in the corridor study area, both past and present. Aboveground and underground storage tanks are present in the study area, along with old equipment, inoperable vehicles, and the like, which may be potential sources of contamination.

A more recent search of the Ecology’s database shows that both the previously preferred alternative 4 alignment and the proposed modified alignment cuts across the old Boise Cascade Mill site. This site is listed as a State Cleanup Site on the Confirmed and Suspected Contaminated Site List (CSCSL) with confirmed soil and groundwater contaminants including: arsenic, inorganic conventional contaminants, organic conventional contaminants, metals, and

non-halogenated organics in the air. The Skyline Mobile Estates is referred to in the SAWPT Report. A site assessment and soils tests will be required at the Skyline Mobile Estates if the corridor is to be extended in the future. Selection of the southern Lowlands option eliminates the Bureau of Reclamation property, listed on Ecology's database, from being within the project limits and thus one less potential hazardous materials facility in the project area.

2.6 Cultural Resources

A corridor level preliminary Archeological Review was completed dated May 23, 2011. This review's study area covered all four currently rejected alternatives including Lowlands. It did not extend southward to include the selected modified alignment. The report included a background review of published historic and ethnographic resources, a preliminary field survey to identify any potential areas of archaeological concern within the study area that covered all four previous alignment alternatives. The report also included a summary of records that were reviewed from the Department of Archaeology and Historic Preservation (DAHP) of previously recorded cultural resources within one mile of the study area. Five cultural resource surveys have been previously conducted within a one mile radius.

While we do not anticipate significant findings, a detailed Cultural Resources Assessment specific to the selected modified alignment will be required to fulfill Section 106 of the National Historic Preservation Act (NHPA) in which a determination of potential impacts to cultural resources will be recommended.

2.7 Other Regulatory Oversight

A corridor-level Environmental/Permitting Issues Memorandum was completed and dated May 17, 2011. The memo looked at the corridor in the context of relevant state and federal statutes to determine what permits, reports, or agency concurrences will likely be needed over the course of the project's design and construction. The following permits and documentation were necessary to comply with various regulations for the Alternative 4 alignment and the selected modified alignment.

Under the National Environmental Policy Act (NEPA) further consideration by the federal agencies involved including the Federal Highway Administration (FHWA) will determine whether a Documented Categorical Exclusion (DCE) or an Environmental Assessment (EA) will be required. It is anticipated that the level of environmental documentation required will be a DCE and an Environmental Classification Summary (ECS) must be prepared.

As stated in the previous section, a cultural resources assessment will be required under Section 106 of the NHPA.

The FHWA will require a noise discipline report under the Federal Aid Highway Act. This will address potential noise abatement measures.

A number of actions will be required for the project to comply with the Clean Water Act. A Section 401 water quality certification permit would need to be obtained from the Department of Ecology since the project will have impacts to the Yakima River and fill may be needed in the associated wetlands with any alignment. In addition, a Section 404 permit would need to

be obtained from the US Army Corps of Engineers since work involves the placement of fill materials in waters of the US. Other necessary documentation associated with the Section 404 permit is the completion of a wetland delineation report. Both the Section 401 and 404 permits can be obtained with the submittal of a Joint Aquatic Resources Permit Application (JARPA). The JARPA will also be used to obtain a Hydraulic Project Approval from the WDFW as well as a floodplain development permit from the City of Yakima. Finally, a NPDES construction stormwater permit will be required from the DOE since construction activities will disturb more than one acre.

The U.S Army Corps of Engineers would also require Section 408 & 208 permits since either alignment of the project would involve work over Federal levees.

To comply with Section 7 of the Endangered Species Act, a biological assessment will be required. This document will assess the project's possible impacts on listed species and will be submitted to the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service.

An environmental justice survey will need to be completed in compliance with the Environmental Justice Executive Order which supplements the existing requirements of the Title VI Civil Rights Act of 1964. The assessment will address how the project will avoid, minimize or mitigate disproportionately high and adverse impacts on minority and low income populations. Public outreach activities such as open houses and newsletters have already been conducted for this project and will continue to be conducted as the project progresses. All public outreach materials have been/will be issued in both English and Spanish.

Under the Clean Air Act, an air conformity analysis is required since Yakima County is listed as a maintenance area for carbon monoxide and PM10 and the project does not meet any of the exemptions listed under 40 CFR 93.126.

Yakima County will also require a SEPA checklist be submitted for review and approval. The project will likely qualify for a Mitigated Determination of Non-Significance. A shoreline development permit must also be obtained from the City.

3.0 DESIGN CONSTRAINTS

Design constraints are described in the Berger report and reflect the modifications presented within this supplement for the modified alignment.

4.0 DESIGN CRITERIA

Design criteria are described in the Berger report and reflect the changes presented within this supplement for the modified Lowlands alignment.

5.0 ALIGNMENT MODIFICATION CONSIDERATIONS

Until the October 25th 2011 Public Hearing, it had been assumed that all alternatives would cross the Yakima River north of the existing railroad bridge. At the Public Hearing it was

requested that an alternative be evaluated that crossed that river south of the railroad bridge.

The reason that the original assumption of staying north of the railroad bridge was made, was any crossing south would require two crossing of the Moxee Branch line railroad. The question was then how and where to best cross the tracks. Yakima County working with the City of Yakima and The Washington State Department of Transportation developed a concept where the corridor would cross the tracks under I-82. This configuration provides for a the I-82 bridges to be reconstructed with standard concrete girders, provides for a more direct connection to the Cities "H" street corridor and allows for a more perpendicular crossing of the Yakima River. This then became the basis for modifying the lowlands alternative.

There are two possible choices for modifying the lowlands alternative, the first utilizes the existing Hartford Road. This potential modification would begin at I-82 cross the Yakima River south of the railroad bridge continue southeast to connect to existing Hartford Road. It would follow Hartford Road, cross the railroad tracks and terminate at Butterfield road. The second potential modification would begin at I-82 would proceed southwest, crossing Hartford Road before turning east to cross the Roza Canal approximately 800 feet south of Hartford Road then turning northeast to terminate at Butterfield Road.

The following are the evaluation criteria used to determine which potential modification to take forward for further consideration:

Right-of-Way Acquisition

Hartford Road

Significant right-of-way acquisition from private properties would be required to transition this existing two-lane rural road to the proposed five-lane section. Acquisitions will likely require taking entire properties.

Southern Alignment

Significant right-of-way acquisition from private and governmental properties would be required to construct this new alignment. This potential modification will pass through more land owned by the Federal Government and larger parcels. Few, if any, acquisitions will be required to be total takes.

Access Considerations

Hartford Road

Utilizing Hartford Road as the new East-West Corridor would necessitate providing driveway accesses for each of the fronting properties. These accesses would be "grandfathered" for any redevelopment of the properties into commercial uses. These existing driveways will likely reduce future roadway capacity.

Southern Alignment

The south side of the southern alignment is bounded by the Bureau of Reclamations' flood enhancement property and may not require any driveway accesses. The properties located to the north of this alignment currently obtain access from Hartford Road and will not require any additional driveways.

Local Roadway Connectivity

Hartford Road

Hartford Road currently provides the local access for the properties in this vicinity. The utilization of Hartford Road as the new East-West Corridor will necessitate the construction of additional roadways to provide access from the properties to the corridor.

Southern Alignment

The southern alignment does not disrupt any of the existing local access roadways. Connections will be required at Hartford Road, N 15th Street and Marsh Road. These connections would be able to be made with minimal disruption to the adjoining properties and would establish well defined access points from the corridor to the local roadway network.

Community Compatibility

Hartford Road

The Hartford alignment will have major disruptions to the existing community due to the numerous total takings requires to construct the roadway. This alignment would remove approximately 20 acres from the flood plain to be available to be rezoned as light industrial/neighborhood commercial property.

Southern Alignment

The southern alignment will have minimal disruption to the existing community. This alignment will remove approximately 50 acres from the flood plain to be available to be re-zoned to light industrial/ neighborhood commercial. In addition, this alignment will provide improved recreational access to the river and the areas being enhanced by the Bureau of Reclamation.

Based on the above evaluation the southern alignment was determined to have fewer impacts and provided greater benefits than the Hartford Road alternative. The southern alignment was chosen as the alignment for additional evaluation.

6.0 ANALYSIS OF CORRIDOR ALTERNATIVES

The analysis of past corridor alternatives is described in the Berger report. A summary comparison of the original Low Lands alternative and the proposed modified alignment is provided in Table 1.

6.1 The Lowlands alignment and the modified alignment

The Lowlands Alternative was selected in the Berger report as the preferred alternative. It is the southern-most route of those evaluated, running parallel to the railroad tracks all the way to the existing intersection of Marsh Road and Butterfield Road.

The Lowlands Alternative combines the Marsh-Butterfield and Keys-Butterfield intersections into a system of dual multilane roundabouts.

Despite creating a number of operational changes to roads in the study area, the modified alignment actually requires minimal changes to the existing roadway network, including potential elimination of the roundabouts noted in the previous paragraph, and realizes the BuRec goal of removing Marsh Road. The Lowlands Alternative offers an array of internal termini for staging construction of different roadway segments, either over time or as needed.

This option includes a dual roundabout which is constructed entirely at Butterfield Road. However, adding roundabouts to an arterial highway requires a reduction in proposed speed limit. The speed limit on even higher capacity multilane roundabouts must be dropped to 25 mph.

The alignment modification was considered following the Berger report as the City proposed an alignment of the Lowlands Alternative across the Cascade Mill site that required a skewed crossing under Interstate 82 and thus across the Yakima River. That opened an option not previously considered that minimized impacts across the river and area in general and provided an opportunity to work with the BuRec to consider how this facility would impact their ongoing studies and proposals. It became readily apparent that this route would also serve flood plain protection and delineation purposes and complement the Bureau's work. This route became the proposed modified alignment.

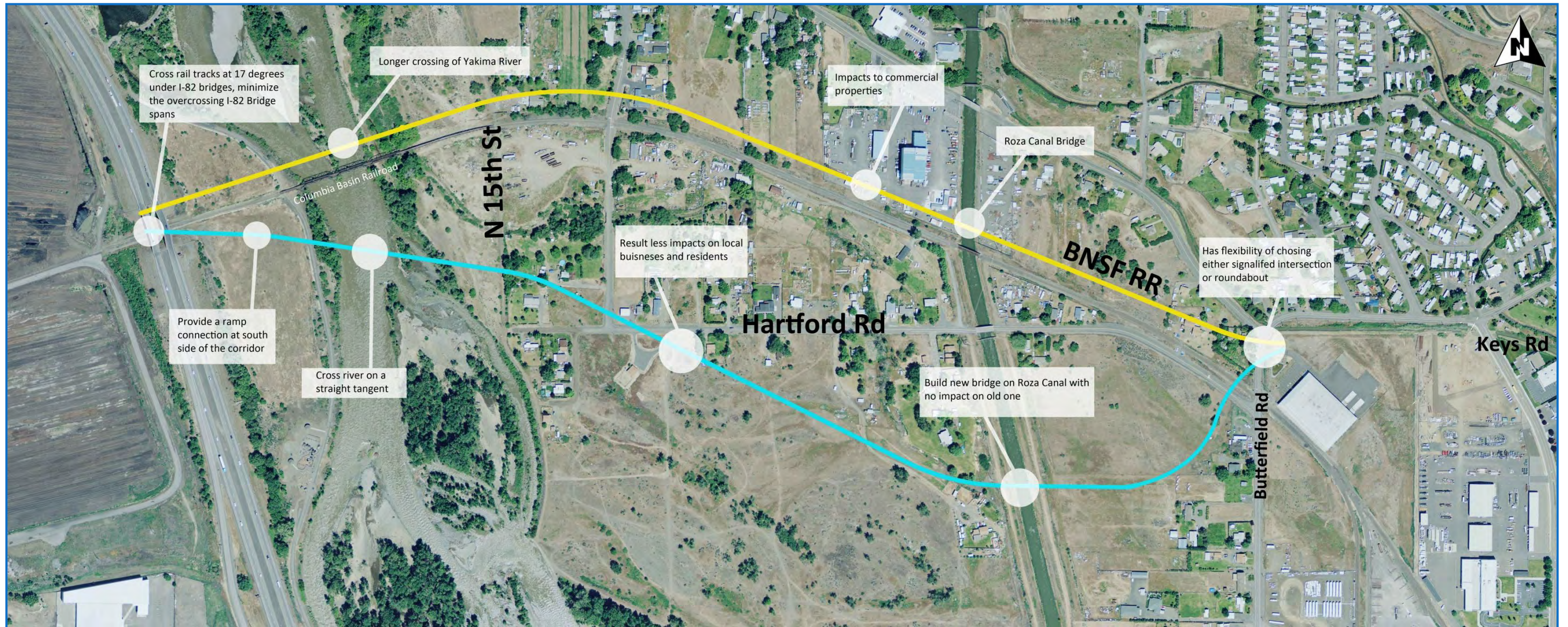
Instead of parallel to the railroad, the proposed modified alignment crosses the railroad track under the I-82 bridges at an acute angle. This arrangement not only shortens the future I-82 over-crossing bridge spans, but also a more perpendicular crossing of the Yakima River.

The proposed modified alignment leaves Marsh Road and Butterfield Road mostly untouched, and allows them to continue to function as they are now. A new intersection is added at Butterfield Road providing local access to the new corridor. Final design for the type of connection at this intersection has not been determined. There is flexibility in the selected speed limit depending on the type of intersection control selected.

With the proposed modified alignment, the existing roadway network remains as is, however, Marsh Road is downgraded to a local access road only which benefits BuRec by reducing the traffic going across their property. The current alignment also offers multiple termini for staging construction of different roadway segments as needed.

East of the Keys Road and Butterfield Road intersection, the Lowlands alignment and the modified alignment alternatives are proposed to be the same. Extension of the corridor is considered in the Berger report.

Figure 2: Alternative 4 Lowlands and Modified Alignment with Corresponding Design Highlights



6.2 Evaluation Criteria and Alternative Scoring

6.2.1 Traffic Function

Relieves Congestion on Terrace Heights Drive

It is anticipated the modified alignment will draw a significant level of traffic from Terrace Heights Drive and will serve to relieve congestion much as the Lowlands alignment provides. Completion of the route to the ultimate eastern termini will increase that draw. A detailed traffic analysis of the modified alignment has not yet been completed.

Provides Shortest Trips into Yakima for Future Developments

A substantial number of new homes are platted north and east of the eastern terminus of this project. The benefit to those new homes from this corridor will be partially measured by the directness of the alignment into Yakima. Both the Lowlands alignment and the modified alignment provide similar distance of trips.

Provides Best Connections to the Existing Roadway Network

Both the Lowlands and modified alignments have direct connections between the corridor and Butterfield and Keys roads and are considered equal.

Non-motorized Use

This criterion measures the attractiveness and usefulness of the alternatives for pedestrian and bicycle use. The modified alignment alternative is considered preferable to the Lowlands alternative alignment because it does not have any steep grades or walls.

6.2.2 Property Impacts

Properties Impacted

Fewer properties are impacted by the modified alignment alternative than the Lowlands alignment, Alternative 4. An additional benefit of this route is that it better defines and supports the BuRec plans for the flood plain area.

Residential Relocations

More residential relocations are required for the modified alignment alternative than the Lowlands alternative.

Business Impacts

Both the lowlands alignment and the modified alignment will have some negative impacts on existing business. The largest impact will occur at the intersection of the new corridor and Butterfield road. While the specific intersection design has not yet occurred, at a minimum the intersection will require additional right-of-way and changes to existing access.

The lowlands alternative lies north of the railroad tracks and entirely out of the existing flood plain. This alternative will not provide any significant changes to the land use in the area. The modified alignment will remove approximately 50 acres from the existing flood plain that

would be available for rezoning for business opportunities.

Bureau of Reclamation Benefits

The Bureau of Reclamation desires to remove Marsh road from the middle of their property. The Lowlands alignment, Alternative 4, is preferable under this criterion as it removes Marsh Road and does not bridge over Bureau property. In the modified alignment Marsh Road stays as a local access road. In addition, this alignment better fits long range BuRec plans for defining and mitigating the flood plain, and will become the defacto levee that separates the flood plain from the developed area to the north.

Total New Right-of-Way Area Required

At this stage in the design development of alternatives, it is assumed that both the Lowlands alignment, Alternative 4, and the modified alignment alternative will require comparable right of way acquisition.

6.2.3 Environmental Impacts

Impacts on the Local Population

This criterion is separate from the property impacts discussed above. Its focus is on environmental justice, which is intended to make sure that no disadvantaged population (low income, minority, etc.) is disproportionately impacted by the project. The general area most likely to qualify for this protection is the Skyline Mobile Estates Trailer Park. Refer to the Berger report for impacts to the trailer park since this is the point where the selected modified alignment will follow the original Alternative 4 until its eastern terminus at 33rd Street.

In general, the construction of a new corridor will provide a more convenient route for trailer park residents into Yakima since access to it will run adjacent to the trailer park community.

The selected modified alignment will have fewer impacts to the local population and businesses than the original Lowlands alignment, Alternative 4. It will not cross the Bureau of Reclamation property, unlike the original Alternative 4 alignment. Property will need to be acquired in either alignment. All right-of-way needed for construction will be acquired in accordance with the Uniform Relocation Act and Real Property Acquisition Policies Act of 1970 including compensation and relocation benefits. In the selected modified alignment, the placement of the corridor south of the railroad bridge would minimize local traffic impacts to Interstate 82 as well as accommodate any future improvements to the highway per DOT's long range plans.

The construction of a new corridor will result in increased long term noise and therefore a noise discipline report will need to be conducted to analyze impacts for either of the alignments. However, both alignments are likely to be comparable in terms of noise impacts.

Noise abatement measures will be considered for receptors including the trailer park. Public outreach through newsletters and open houses has already been conducted for this project and will continue to be completed in the future as the project progresses. All public outreach

materials have been and will continue to be offered in both English and Spanish as most of the minority population in the area consists of Spanish speaking individuals.

Impacts on the Natural Environment

This criterion includes plants, animals, water, air, noise, etc. The selected alternative, the modified Lowlands alignment, will have similar impacts to undeveloped land as the previously preferred alternative 4, since the only differences between the two is the segment from Interstate 82 until the intersection of Butterfield Road and Keys Road. The land between these two points consists of similar features and a similar amount of undeveloped land when comparing the two alignments.

As opposed to the original Alternative 4 alignment, the modified alignment crosses the Yakima River south of the railroad bridge and therefore crosses a narrower section of the river. The result will be fewer disturbances to the riparian corridor and floodplain. In either alignment, the work done in the floodplain will not result in a greater than one foot rise during a flood event. Both options involve the crossing of the Roza Canal.

Both the Lowlands alignment and the modified alignment will involve in-water work. The modified alignment that is proposed will involve the placement of a pier within the Yakima River for the construction of the proposed bridge and other temporary construction impacts. All stormwater would be treated in accordance with current DOE guidelines or the WSDOT Stormwater Runoff Manual before entering the Yakima River. It is therefore anticipated that project activities would have minimal impacts to the Yakima River since a water quality certification will have been obtained for the project, it will follow the determined BMPs during construction, and in-water activities will be completed within a Washington Department of Fish and Wildlife (WDFW) designated in-water work window.

The proposed modified alignment will have fewer impacts on noise receptors since it is south of most potential receptors whereas the original Alternative 4 alignment follows the railroad tracks and has businesses on both sides of the corridor, including the Bureau of Reclamation. Either alternative will require an air conformity analysis since Yakima County is listed as a maintenance area for carbon monoxide and PM₁₀ and the project does not meet any of the exemptions listed under 40 CFR 93.126.

Impacts on the Historical/Cultural Environment

This criterion is a measure of the likelihood of an alignment to encounter historical and/or cultural resources. In general, the odds of encountering such resources are lowest within the floodplain because past river meanderings have likely washed away any artifacts. Locations with a higher chance of encountering historical/cultural resources include areas up on the ridge which has a lower density of development and disturbed areas. The proposed modified alignment has a low likelihood of encountering cultural resources since it will be within the floodplain, will, for the most part, be above existing ground levels, and within areas of previous

disturbance. In this regard, both alternatives would have an equally low likelihood of encountering cultural/historical resources since they are both within the lower valley and within previous areas of disturbance. In addition, the proposed modified alignment will have lower potential impact to any existing historical properties since it will impact a fewer number of properties than the Lowlands alignment.

Aesthetics

This criterion measures the impact the corridor will have on the view of the ridge from the valley. Since the modified alignment is located even further into the center of the valley than the Lowlands alignment, it has the least impact on ridge visibility. It will also be visible by a fewer number of properties compared to the Lowlands alignment.

Summary

A number of elements are similar between the previously preferred Lowlands alignment and the now proposed modified alignment, since the only modification to the selected alternative is between the I-82 crossing and the Butterfield Road/Keys Road Intersection. All other segments of the corridor will remain the same as the previously preferred Alternative 4 and will therefore have the same impacts previously discussed in the original alternatives study report by Berger.

The modified alignment will have fewer impacts to historical properties since it will impact fewer properties. Both alignments have an unlikely chance to encounter historic/cultural materials since they are both within the floodplain and within previously disturbed areas. The proposed modified alignment will have less impact to the local population in that it will impact fewer properties. The corridor will no longer be adjacent to the Bureau of Reclamation property as it was in the Alternative 4 alignment. Furthermore, the proposed alignment will have fewer impacts to the natural environment since it crosses the Yakima River at a narrower point than the original alternative and thus will disturb less of the floodplain and wetland areas. Since the proposed alignment is south of more properties, it will have less effects in terms of noise and visual impacts. Overall, the proposed modified alignment has slightly fewer impacts to the environment as determined by the preliminary analysis included in this supplement and is therefore recommended as the preferred alternative to proceed with further design and engineering.

6.2.4 Geometry

Meets Desired Design Speed

This criterion is a statement of whether or not the corridor alignment meets the project's design speed of 40 mph. Alternative 4, the Lowlands alignment, does not meet the design speed. By comparison modified alignment meets the desired design speed for the corridor.

Potential to Increase Design Speed

Prior to final design, a higher design speed may be desired. This criterion rates the two alignments based on whether or not their design speed could be reasonably increased. The

design speed for Alternative 4, the Lowlands alignment, already has a lower design speed for the roundabouts and cannot be increased. The modified alignment has minimum curves for a crowned roadway; however, if super elevation can be introduced to the alignment, it may be possible to increase the design speed if desired.

Length of Grade Greater than 6 Percent

Alternative 4, the Lowlands alignment, has grades of 8 percent because of the northerly alignment that is on grade in several areas. It is desirable to minimize grades over 6 percent. The new modified alignment has only two short sections of grade greater than 6 percent at both ends of the Yakima River Bridge.

6.2.5 Constructability

Total Duration of Construction

The amount of earthwork and number of structures will have the biggest impacts on the construction schedule. Alternative 4, the Lowlands alignment, has some sections where earth work will be needed. As well, the Lowlands alignment has more structures than the proposed modified alignment. The area that the modified alignment is crossing is generally flat therefore no large amount of earthwork is anticipated.

Construction Delays

Three potential causes of significant delay during construction are (1) the discovery of historical/cultural resources, (2) the amount of in-ground work (cut and fill and wall/bridge foundations) because of weather and encountering differing soil conditions, and (3) missing in-water work windows in the Yakima River. The Lowlands alignment has approximately 1,500 feet of structures whereas the proposed modified alignment only has 1,030 feet. In addition, the Lowlands alignment is built on some areas of steep grade requiring some cut and fill work and wall foundations. The modified alignment does not have walls because the alignment is generally flat. At this time, not enough information has been collected to compare the discovery of historical resources in each alignment.

Ability to Segment the Project into Multiple Construction Projects

Because of funding constraints, it may not be possible to construct the entire corridor in a single construction project. For this criterion, Alternative 4, Lowlands, is considered good because a functional project can be built from the BCMR east to either Butterfield or Keys roads without impacting Rest Haven Road. The modified alignment is also considered good and is likely has greater flexibility to be built in segments. It can be built to either Butterfield or Keys Road and if needed, it can even be temporarily built only to the east of the Yakima River Bridge and connect to Hartford Road.

Use of Standard Construction Technologies

All else being equal, a project that uses standard construction technologies is less risky than one that requires specialized construction technologies and specialty subcontractors. Both the Lowlands alignment and the modified alignment are considered equal in their use of standard

construction technologies.

6.2.6 Structures

There are two bridges required for the new East-West Corridor east of I-82. The first bridge is required to cross over the Yakima River and the second bridge is required to cross over the Roza Canal.

Yakima River Crossing

The bridge on the modified alignment that is proposed to span the Yakima River will need to clear the floodway as well as Yakima Greenway Trail at the west end. Preliminary evaluation shows the need for a total bridge length of 950 feet. In order to achieve the total length, an economical multi-span bridge was considered.

The proposed bridge for the modified alignment will carry two eastbound lanes plus two westbound lanes. Each traveled direction will have one 12-foot lane and one 14-foot lane. The east and westbound lanes will be divided by a 14-foot median lane. The curb-to-curb width will be 66-feet. In addition, the north side of the bridge will have a 14-foot Pedestrian and Bike Path, and the south side of the bridge will have a 7-foot sidewalk. The total width between bridge rails will measure 87'-0" approximately.

The alignment of the proposed bridge is approximately 27 degrees skewed to the existing railroad crossing upstream. The approach to the layout of the proposed bridge has included reducing the total bridge length as well as reducing the number of piers required. The proposed placement of new piers has included minimizing the total number in the main channel of the river. The west abutment was located just west of the existing Greenway Trail, and the east abutment was located just east of the existing levee on the east side of the river. The bridge deck is proposed to be cast-in-place concrete with cast-in-place concrete bridge rails and sidewalks.

The bridge substructure will likely consist of four columns founded on drilled shafts for the intermediate piers. It is perceived that the drilled shaft foundations will serve best in the event of river scour occurrences, as they will withstand the river cutting without revetments or additional scour protection. The abutment foundations may be similar to the intermediate piers or be pier walls on spread footings.

Yakima River Crossing Summary:

- Multi span, total bridge length = 950-feet
- Two eastbound & two westbound lanes
- 14-foot pedestrian & bike path and 7-foot sidewalk
- Superstructure precast pre-stressed concrete girders
- Substructure with columns drilled shafts

Roza Canal Crossing

In order to span the Roza Canal, a single-span bridge will be required in the proposed modified alignment. Preliminary evaluation shows the need for a total bridge length of 110-feet. In order to achieve the total length, an economical single-span bridge was considered.

The proposed bridge will carry two eastbound lanes plus two westbound lanes. Each traveled direction will have one 12-foot lane and one 14-foot lane. The east and westbound lanes will be divided by a 14-foot median lane. The curb-to-curb width will be 66-feet. In addition, the north side of the bridge will have a 14-foot Pedestrian and Bike Path, and the south side of the bridge will have a 7-foot sidewalk. The total width between bridge rails will measure 87'-0".

The layout of the proposed bridge included reducing the total bridge length required. The proposed abutment setbacks are slightly greater than the Hartford Road Bridge that is upstream from the proposed location. The bridge span includes one 110-foot span.

The bridge substructure will likely consist of pier walls on spread footings.

Roza Canal Crossing Summary:

- Single-span, total bridge length = 110-feet
- Two eastbound & two westbound lanes
- 14-foot pedestrian & bike path and 7-foot sidewalk
- Substructure with pier walls on spread footings

Following is a summary of total length of bridges and a summary of walls for both alternatives:

Alternative 4: Lowlands Alignment

Total Length of Bridges

The total length of bridges in Alternative 4, the Lowlands route is 1,500 feet. This includes the bridge over the Yakima River and the Roza Canal.

Area/Height/Complexity of Retaining Walls

Alternative 4 has retaining walls as its alignment is to the north and in areas that are sloped.

Proposed: Modified Alignment

Total Length of Bridges

The proposed modified alignment has a total of two bridges. The first bridge over the Yakima River is 950 feet in length and the Roza Canal Bridge is 110 feet in length bringing the total length of bridges in this alternative to 1,060 feet. The length of bridges is shorter in the modified alignment because the crossing of the Yakima River and flood basin is further to the south where the crossing is shorter.

Area/Height/Complexity of Retaining Walls

The preferred modified alignment does not have any walls along the roadway section. Any cut

or fill sections will be graded eliminating the need for retaining walls. The only walls that are needed in this alternative are wing walls for the two bridges.

6.3.7 Costs

Additional cost comparisons have not been provided in this supplement, as the relative costs of the Lowlands alignment and modified alignment are considered comparable at the level of estimating used in the original report, with the exception of the length of structures giving an edge to the modified alignment. The alignments have similar uncertainties concerning construction costs. They are traversing similar terrain and have similar environmental impacts.

Table 1. Comparison of Alignments

Evaluation Criteria	Alternative 4 Lowlands	Modified Alignment
Traffic Function		
Relieves Congestion on Terrace Heights Drive	○	○
Provides Shortest Trips to Yakima for Future Development	○	○
Provides Best Connections to the Existing Roadway Network	○	○
Non-Motorized Use	●	●
Property Impacts		
Properties Impacted	● (34)	● (26)
Residential Relocations	● (26)	● (14)
Business Impacts	○	●
US Bureau of Reclamation Benefits	●	●
Total New Right-of-Way Area Required	○	○
Environmental Impacts		
Impacts on the Population	○	○
Impacts on the Natural Environment	○	○
Impacts on the Historical/Cultural Environment	○	○
Aesthetics	○	●
Geometry		
Meets Desired Design Speed	○	●
Possible to Increase Design Speed	○	●
Length of Grade Greater than 6%	○ (1700')	● (0)
Constructability		
Total Duration of Construction	●	●
Probability of Delays During Construction	●	●
Ability to Segment the Project into Multiple Construction Phases	○	○
Use of Standard Construction Technologies	○	○
Structures		
Total Length of Bridges	● (1500')	● (1030')
Area/Height/Complexity of Retaining Walls	●	●
Costs		
Total Project Cost	●	●
Uncertainty of Total Project Cost	○	○

LEGEND

- This Alternative is rated the best by this criterion
- This Alternative is rated in the middle by this criterion
- This Alternative are rated equally by this criterion
- This Alternative is rated the worst by this criterion

7.0 AGENCY OVERSIGHT

No additional formal coordination was determined necessary by the County. The County has worked closely with the BuRec in reviewing and considering the modified alignment, and the BuRec staff has informally stated a preference for this route. The modification also meets the commitment made in the county resolution that adopted the original corridor.

8.0 PUBLIC INVOLVEMENT

Public outreach efforts have been conducted through open houses, newsletters, a project website, and an open meeting. The most recent public event was conducted on October 25th, 2011 by the Board of Yakima County Commissioners in which the Berger study was presented. Details of this hearing and associated responses to comments can be found in Appendix D. The public was invited to provide their opinions and ask questions about the project.

Most of the comments were directed around residential impacts. Some commenters were concerned about the western segment from the Boise Cascade Mill Redevelopment area to First Avenue along H Street. They stated that I street would be the better alternative as it would impact fewer houses and have a more direct connection to Fruitvale Blvd.

A response was provided to say that improvements to I street would also impact a large number of properties, including an elementary school. H Street would connect to Fruitvale Blvd at N 5th Avenue while utilizing W Quince Street. This would provide a new connection rather than adding increased traffic volumes to existing I Street intersections. Using H Street as the corridor route would also be consistent with goals and policies of the Comprehensive Plan which has been amended to support the elimination of the BNSF spur line on H Street.

G Street was not considered for the corridor route since the BNSF line along it is currently operational and provides important economic services in the area. A representative on behalf of BNSF supported the removal of the H Street line since pieces of it have already been removed; they were against the removal of the G Street line.

Other events presented in the Berger report included two open houses (June 9, 2010 and November 16, 2010) and the project website: www.yakimaeastwestcorridor.com. The website will continue to be maintained and updated as the project is developed. In addition, all future project flyers and newsletters will continue to be provided in both English and Spanish.

9.0 SUMMARY AND CONCLUSIONS

In summary, both the Lowlands and modified alignment alternative meet the goal of providing improved access from Terrace Heights to the City of Yakima. The following is a summary of findings in this supplement:

- Geologically, both alignments are the same;
- The modified alignment avoids the potential hazard materials on the BuRec property;

- The approach to environmental and permitting is similar for both the Lowlands and modified alignments;
- Alternative 4, the Lowlands alternative, eliminates Marsh Road and the modified alignment keeps Marsh Road for local access;
- The design speed on the Lowlands alignment must be reduced if roundabouts are implemented;
- The length of bridges in the modified alignment is less (1,060 feet) than the length of bridges in the Lowlands alignment (1,500 feet). This should result in lower construction costs for the modified alignment;
- Non-motorized access is better on the modified alignment because there are no steep grades or walls;
- The Lowlands alternative alignment has a greater impact on business properties and the modified alignment has a greater impact on residential properties;
- Noise impacts are expected to be the same for both alignments;
- The modified alignment crosses a narrower section of the Yakima River and therefore will disturb less of the riparian corridor and flood plain;
- Both alignments are anticipated to have a low likelihood of encountering cultural/historical resources as they are both within areas of previous disturbance;
- Aesthetically, the modified alignment is preferable because it will be in the valley and less visible;
- The modified alignment has fewer areas of grade steeper than 8%.
- The duration of construction is likely to be shorter for the modified alignment because there is less earthwork, fewer walls, and less overall amount of bridge to build (the modified alignment has a total of 1,030 feet of bridges and the Lowlands alignment has 1,500 feet).

From the above summary, based on available information, the modified alignment is the preferred alignment for the East West Corridor. Based on analysis from this supplement, the Berger report, the Harding report, and public opinion, a preferred route for the entire East-West Corridor from Fruitvale Boulevard to 57th Street has been identified and is presented in Figure 3. Modifications may occur to certain sections of the corridor as project development continues and funding becomes available.

Full Route Summary

This supplemental report details the East West Corridor Route segment from I-82 on the west to Butterfield Road on the east. The Berger report fully details the segment east of Butterfield. A series of actions since the Harding ESE report in 2001 first identified the total route have continued to identify the west segment from Fruitvale to I-82.

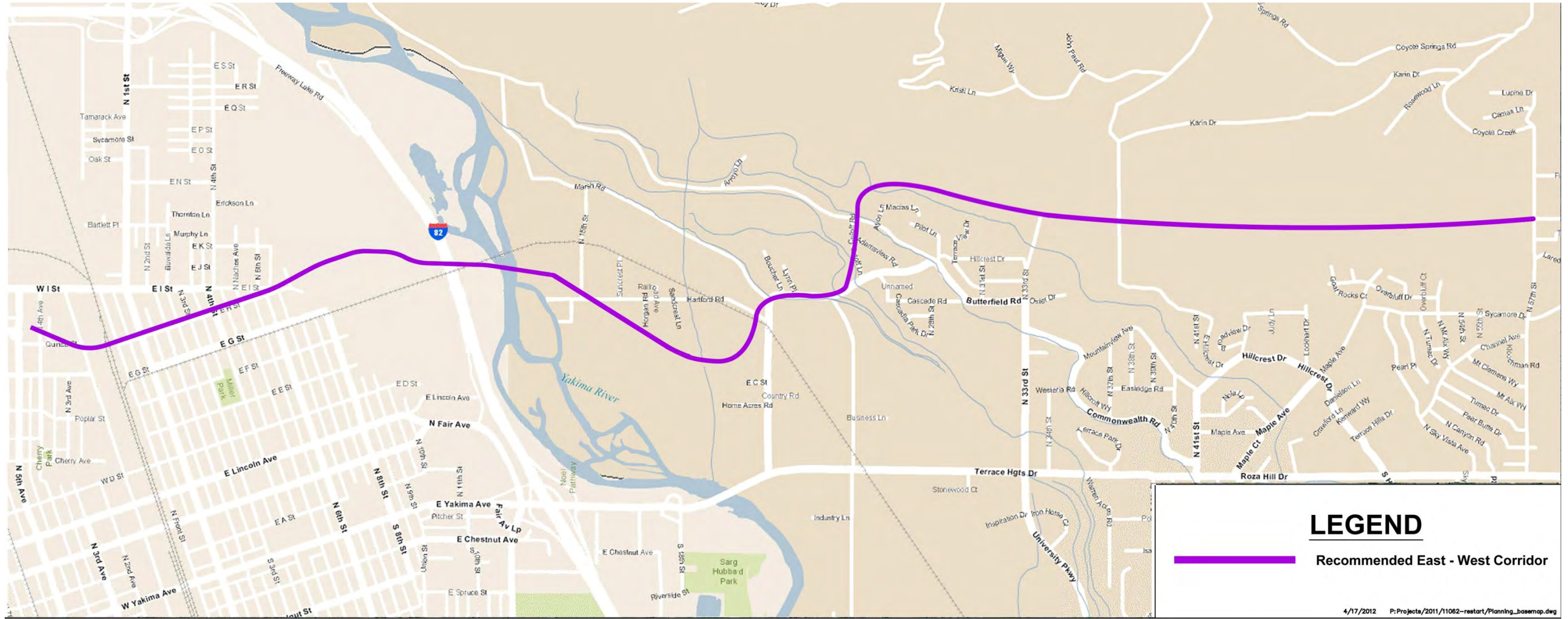
In 2011, Yakima County, in concert with the City, requested reclassification of the East –West Corridor route to an arterial status, recognizing the development level necessary to accommodate the expected use and traffic. On August 22, 2011, Pat Whittaker, WSDOT

Functional Class Manager sent a letter to the Federal Highway Administration supporting the County's request to reclassify the East West Corridor from 1st Street in Yakima to Maple Avenue in the east Terrace Heights area to Urban Minor Arterial status. Jack Lord, FHWA Statewide Planning Manager approved that reclassification on August 29, 2011.

Completing the action to begin design of the corridor, the City of Yakima signed an agreement dated December 2, 2011 with Yakima County to give the County SEPA lead agency status for the East West Corridor.

Figure 3 delineates the entire East West Corridor route, from 1st Street to North 57th Street.

Figure 3: Recommended East-West Corridor



LEGEND

Recommended East - West Corridor

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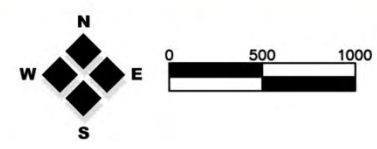


FIGURE 3



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