



Washington State
Department of Transportation



Central Kittitas Valley Integrated Resiliency Planning

Ellensburg, Washington
4th Congressional District

Planning Project (Rural)

Submitted to:

U.S. Department of Transportation
TIGER Discretionary Grants Program
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Submitted by:

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Application for 2014 TIGER VI Discretionary Grants Program
\$500,000 TIGER Funds Requested

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Executive Summary

The Washington State Department of Transportation (WSDOT) is transforming as an agency. At all levels, we are pursuing strategies that emphasize return on investment while encouraging flexibility, innovation, and multimodal solutions. We place high importance on engaging local stakeholders at the earliest stages in our processes to ensure their input is carefully considered in moving Washington forward. An important reform we are undertaking at WSDOT is Least Cost Planning (LCP). LCP is an approach to planning that considers a variety of investments on an equal basis. It analyzes the costs and benefits of various strategies, including direct and indirect costs, and includes the public in the planning process. The approach identifies an optimum mix of practical investment and policy options to address system performance that support communities, the economy, and the environment. Each of the three Planning applications submitted by WSDOT for the TIGER VI planning grant competition will employ an LCP approach. We look forward to working with USDOT to make Every Day Counts applicable to planning and capital projects.

Central Kittitas Valley Integrated Resiliency Planning

The Washington State Department of Transportation, Kittitas County, and the City of Ellensburg are seeking \$500,000 in TIGER VI planning grant funding. This funding will allow WSDOT and our partners to complete preliminary engineering, final environmental and flood analysis, NEPA documentation, permitting, and mitigation for five interdependent and interrelated planning activities located in central Kittitas Valley. The planned improvements will enhance the area’s economic and environmental resiliency and build upon the almost \$9.5 million worth of improvements that are underway or have already been accomplished in the area. WSDOT, Kittitas County, and the City of Ellensburg will determine actions critical to achieving this resiliency by proactively addressing and planning for changing environmental and economic conditions at multiple levels. This strategy is possible through combating increased flooding and loss of habitat by restoring floodplains and flood function, reducing flood impacts and disruptions to the transportation network, and improving traffic movement through the economic gateway of the central Kittitas Valley. Interstate-90 (I-90), which carries more than 80 percent of Washington’s east-west freight, is the centerpiece of the plan. The plan is supported by the Yakama Nation, local, state, and federal agencies, and conservation and business organizations.

The planning activities begin at the farthest upstream flood risk location (near I-90 mile post (MP) 103) and end just past the first Ellensburg interchange (Exit 106) at the farthest downstream planning location (near I-90 MP 106.5). Paramount to this effort is a robust public outreach effort utilizing LCP principles, including hosting events involving key community members, stakeholders, and partners.

Planning Activity	Secured Funding	TIGER Funds Requested	Planning Activity Cost	Anticipated Start Date	Anticipated Completion Date
Planning Activity A:	\$7,500	\$7,500	\$15,000	08/10/2015	11/16/2015
Planning Activity B:	\$5,000	\$172,500	\$177,500	09/14/2015	12/11/2015
Planning Activity C:	\$5,000	\$62,500	\$67,500	12/14/2015	03/14/2016
Planning Activity D:	\$150,000	\$250,000	\$400,000	08/10/2015	11/09/2016
Planning Activity E:	\$2,500	\$7,500	\$10,000	07/01/2015	03/14/2016
Totals:	\$170,000	\$500,000	\$670,000		

Table 1: Summary of Planning Activities

The planning effort has secured **\$170,000** of the necessary **\$670,000**: a **25.4 percent** match (*Table 1*).

<u>Outreach:</u>	Perform public outreach and education, including hosting open houses and workshops on flood risks (to both the state and local infrastructure), climate resiliency (highlighting increased flood frequency), the US 97/Dolarway Road intersection, and other topics as determined necessary during the planning work.
<u>Planning Activity A:</u>	Develop plans to rebuild the levee near Thorp, north of the I-90 bridges over the Yakima River (bridge# 090/154).
<u>Planning Activity B:</u>	Develop plans to strategically breach levees and build bioengineered bank revetments for borrow pits 1 through 5.
<u>Planning Activity C:</u>	Develop plans to strategically breach levees and build bioengineered bank revetments for borrow pits 6 and 7.
<u>Planning Activity D:</u>	Develop plans to replace the current four-way stop at the US 97/Dolarway Road intersection with a two-lane roundabout; add a right turn lane on the I-90 westbound off-ramp; and add a right turn lane on the northbound lane of US 97.
<u>Planning Activity E:</u>	Purchase real estate property or a flood easement on the right river bank (west of the river) at confluence of Manastash Creek and Yakima River.

While actual planning has not begun on any of these activities, the basic concepts are outlined in the draft *Yakima River: Thorp to Thrall Site and Reach Assessment* (Appendix C). This document is a joint LCP effort between WSDOT and Kittitas County, with substantial input from several area stakeholders. The recommendations of the reach assessment align with the planning elements and allow for TIGER VI planning grant funds to be used immediately to begin designing and preparing PS&E (plans, specifications, and cost estimates) for each planning activity.

Overall, this effort is a continuation of a watershed-based approach that includes considerable progress through work completed or underway in this area by WSDOT and our partners, with the same goals of creating environmental, economic, and transportation resiliency. These projects have undergone substantial analysis to ensure they are the most cost-effective solutions possible.

Background – The central Kittitas Valley is located between the eastern foothills of the Cascade Mountains and the rich agricultural areas of eastern Washington. Washington’s mountainous terrain and limited east-west transportation facilities make the central Kittitas Valley an integral transportation hub for accessing the Puget Sound area and its international ports, especially for the majority of agricultural products grown and processed in eastern Washington.

The area is primarily rural, but it is growing. It attracts permanent residents and recreational enthusiasts with its natural beauty, state university, and seasonal climate. Ellensburg is also increasingly becoming a bedroom community for the valley residents who must commute west (Seattle, Tacoma) or south (Yakima, Kennewick, Richland, Walla Walla) for employment.

The planning area (*Figure 1*) parallels I-90, the primary east-west freight route in Washington, and the Yakima River, a major source for agricultural irrigation in the valley and throughout south central Washington. In this area, the transportation network’s hub provides the primary access

east of the Cascade Mountain Range to the south (Yakima Valley and Oregon) via I-82, north (Wenatchee and Canada) via US 97, and east (Spokane and ultimately the east coast) via I-90.



Figure 1: Central Kittitas Valley Integrated Resiliency Planning Vicinity

Ensuring the transportation network is resilient to natural events and pressures of a growing area is essential for the community’s life, health, and safety. WSDOT, together with our numerous partners, will seek environmentally sustainable solutions to create a plan for a resilient local and state transportation system, while pursuing green

infrastructure network improvements to promote sustainable economic vitality for the Kittitas Valley. The effort will include planning circulation improvements for this transportation hub to promote the economic gateway into the community of Ellensburg at the junctions of the primary routes in the valley.

I. Planning Grant Description

WSDOT, Kittitas County, and the City of Ellensburg are seeking \$500,000 in TIGER VI planning grant funding to complete the Central Kittitas Valley Integrated Resiliency Planning effort.

For almost two decades, members of these agencies and other local, state, federal, and tribal partners have been meeting to discuss issues related to flood risk reduction and infrastructure development in the planning area. From 2012 through 2014, utilizing LCP principles, the group and several additional stakeholders collaborated on a draft of the *Yakima River: Thorp to Thrall Site and Reach Assessment*. This report outlines a series of planning activities that are critical to lower flood risk to commercial business areas and key freight routes, allow for planned development, and enhance the natural environment.

This planning effort and the subsequent improvements are part of the community vision, and are vital to the economic resiliency and environmental health in this region. WSDOT, Kittitas County, and the City of Ellensburg developed these planning elements within the context of the Quad County (QUADCO) Regional Transportation Plan, the City of Ellensburg’s comprehensive

plan, the Yakima and Kittitas Counties Regional Comprehensive Economic Development Plan, and The Kittitas County Flood Hazard Management Plan.

From Quad County Regional Transportation Plan (2007):

On the Growth of Kittitas County and Need for Improvements:

“Although the QUADCO region is known best for agricultural production, there are areas within the region that are experiencing challenges due to population growth. Kittitas County is not far removed from the Seattle Metropolitan area and has many visitors in the mountainous areas in the northern and western portions of the County...

The City of Ellensburg, with Central Washington State University, is growing and has need for a third interchange with I-90. Growth has been seen in recent years of those who live in Ellensburg and commute to the Seattle area. As such, demand for additional developable lands is being considered and the City council is investigating ways to improve access to adequately zoned property near the west interchange of I-90...”

An October 2008 study analyzed interstate access in the Ellensburg vicinity and the potential for adding another interchange along I-90. The study concluded it was more cost-effective to make improvements to the existing interchanges, including improvements to the US 97/Dolarway Road Intersection (Appendix D).

From Ellensburg’s Comprehensive Plan:

THERE ARE SEVERAL AREAS OF INTEREST WITHIN ELLENSBURG’S UGA [URBAN GROWTH AREA] THAT WARRANT SPECIAL CONSIDERATION IN ELLENSBURG’S ECONOMIC DEVELOPMENT STRATEGIES.

Dolarway Road: “Ellensburg is craving industrial development, and many participants in this planning process noted that the most likely area for industrial development is along Dolarway Road. Unfortunately, much of that land is also within the flood plain, making it less attractive to potential users than land elsewhere. If land along Dolarway is to develop with job-rich industrial uses, something will need to be done to make the land easier to develop.”

West Interchange: “The I-90 west interchange is located approximately two miles from the city’s center. The triangle of land there includes nearly 200 acres, with the city limit line weaving between various parcels. All of these parcels lie within the UGA. The land use element identifies this area for increased commercial activity.”

Protecting the transportation network from flooding is of particular importance in the Kittitas Valley, as the highways, rivers, and community are so closely tied. In the late 19th century, homesteaders in the central Kittitas Valley located near precious water resources provided by the Yakima River and its tributaries. Over the next 150 years, people in the area continued to make

use of the relatively flat floodplain terraces to build transportation corridors and other infrastructure near the river and streams. The hydrology for the Yakima River and its tributaries is largely based on winter/spring snowpack and precipitation. As changes have occurred to the regional climate, flood frequency, due to rapid snowmelt and run-off, has increased, which in turn increases flood risk to nearby infrastructure and habitat.

This planning activity is part of a collaborative effort to protect public investments in transportation, while also improving habitat. It is also part of an effort between county, city, and local conservation groups to provide a watershed-based solution that is sufficient to produce the overall desired improvements to safety, growth, and ecosystem functionality within the upper Yakima River watershed near Ellensburg.

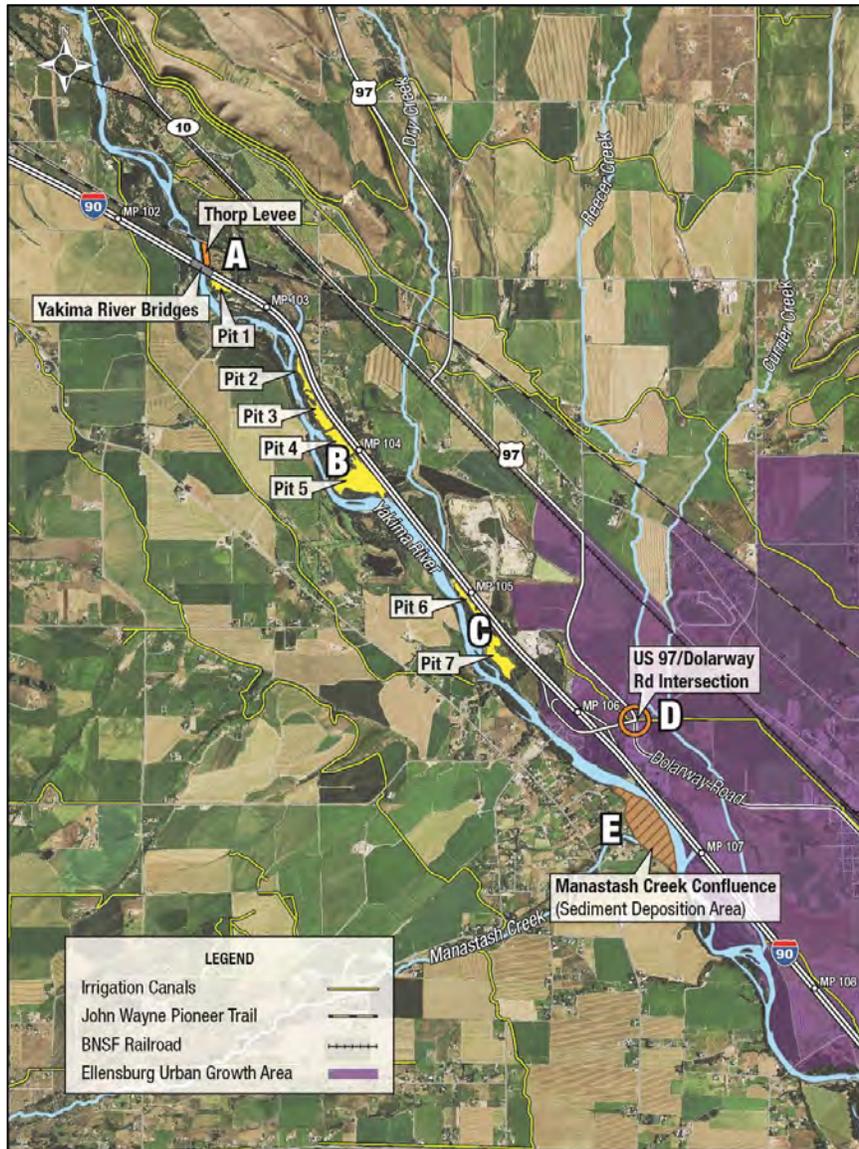


Figure 2: Planning Area 2014. Letters A, B, C, D, and E correspond to the planning activities outlined in this grant application.

Scope, Challenges, and Benefits – The TIGER VI planning grant funding will allow WSDOT and our partners to complete preliminary engineering, environmental analysis, flood risk reduction cost-benefit analysis, NEPA documentation, permitting, and mitigation for five interdependent and interrelated planning activities, as shown above in **Figure 2**. Throughout the process, WSDOT and our partners will host a variety of public outreach events that will involve the community in the overall plan. These planning activities are discussed on the following pages, beginning at the farthest upstream flood risk location (near I-90 mile post (MP) 103) and ending at the farthest downstream planning location (near I-90 MP 106.5):

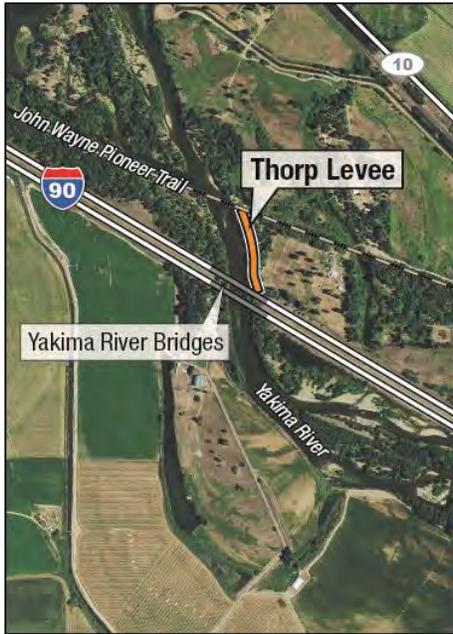


Figure 3: Planning Activity A

Planning Activity A – Develop Plans to Rebuild the Levee near Thorp, North of the I-90 Bridges 090/154

Planning Activity A (Figure 3) is critical to protect the proposed improvements to the US 97/Dolarway Road intersection (Planning Activity D). Site assessments indicated this levee, which stretches between I-90 and the John Wayne Pioneer Trail, is in poor condition and likely to be compromised during Yakima River flood events. LiDAR analysis shows such a catastrophic breach of this structure could trap the Yakima River between the unarmored, northern portion of the I-90 road prism and the John Wayne Pioneer Trail, directing the flow at the proposed roundabout, the Ellensburg industrial area, and residences in west Ellensburg. Reconstructing the levee will also help alleviate concerns outlined in Ellensburg’s Comprehensive Plan associated with the floodplain adjacent to the industrial sector.

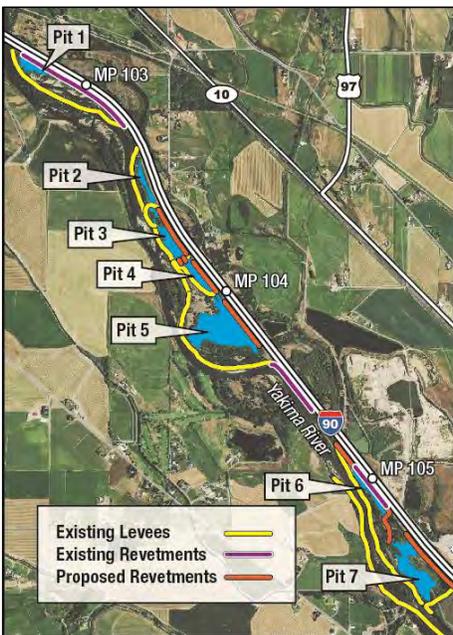


Figure 4: Planning Activities B and C

Planning Activity B – Develop Plans to Strategically Breach Levees and Build Bioengineered Bank Revetments for Borrow Pits 1 Through 5

During the construction of I-90 in the 1960s, a series of gravel borrow pits were excavated in the Yakima River floodplain between MP 102.5 and MP 107.5, to provide fill and surfacing material for the I-90 highway prism. The pits eventually filled with water, and a series of large riprap levees were constructed between each pit and the river. These levees were built to provide protection from the river cutting a new channel into the pits during high-flow events. In such situations, suspended sediment in the river serves to constrain its flow; as the water enters the pits, which provide a natural depression, the sediment load drops out, allowing the river to exit the pits at an even greater and more destructive velocity.

While initially a successful strategy, the levees have not been maintained since the 1960s, and the river has overtopped and, in some cases, breached them numerous times in the last

15 to 20 years. Aerial photographic evidence shows several levees have experienced significant overtopping during flood events and have partially or catastrophically failed, as demonstrated by alluvial deltas from flood stage bed load that have formed within the otherwise confined pits.

These periodic catastrophic levee failures cause damage to I-90, requiring emergency action to reduce the risk to commerce. Should I-90 be disabled due to a catastrophic breach, the primary detour would be US-97, accessed through the west Ellensburg interchange. Without improvements, the four-way intersection near that location quickly would be overwhelmed.

Bank armoring and stabilization along the I-90 eastbound embankment in the area has been expanding incrementally since construction of the highway, both in response to emergencies and through planned actions; however, much is left to be accomplished to permanently improve the resiliency of the system and its surrounding area.

Through a comprehensive planning partnership between WSDOT and the Kittitas County Flood Control Zone District, the increased flood risk represented by the outdated and deteriorating levee system along this reach can be corrected. The plan (*Figure 4*) is to employ a strategy that designs and implements controlled breaching of the levees during periods of low flow and placement of bioengineered bank revetments. These actions will be designed to prevent closures of I-90 from future emergency actions, while increasing flood storage capacities, improving aquatic and riparian habitat for fish and wildlife, intensifying groundwater recharge, and protecting local communities and infrastructure from flood damage.

Planning Activity C – Develop Plans to Strategically Breach Levees and Build Bioengineered Bank Revetments for Borrow Pits 6 And 7

The benefits and challenges of this planning activity are similar to work on levees surrounding borrow pits 1 through 5, with the primary distinction being logistics. Pits 6 and 7 are adjacent to one another (*Figure 4*) and located at the eastbound off-ramp of the west Ellensburg interchange. The same process of strategic levee breaching and bioengineered structures will be used to protect I-90 and surrounding infrastructure; however, careful planning needs to be employed, as there is an old solid waste dump to the east of pit 7.



Figure 5: Planning Activities D and E

Planning Activity D – Develop Plans to Replace the Four-Way Stop at the US 97/Dolarway Road Intersection with a Two-Lane Roundabout; Add a Right Turn Lane on the I-90 Westbound Off-Ramp; Add Right Turn Lane on the Northbound Lane of US 97

WSDOT performed preliminary analysis for improvements to the US 97/Dolarway Road intersection (*Figure 5*). The analysis determined that a roundabout would be the most effective form of intersection improvement. Constructing a two-lane roundabout will improve the mobility and efficiency of the interstate highway system and local road network, subsequently reducing vehicular emissions and delay. The economy will benefit from improved freight mobility: the US 97/Dolarway intersection is a vital transportation hub that accommodates freight transition between the I-90, I-82, and US 97 corridors, as well as Ellensburg’s industrial zones and international exporters. The proposed roundabout will provide better mobility than a traffic signal, and increase safety by diminishing the

severity of collisions. It will also provide some access control, further enhancing the operation of the intersection and transportation network. Overall, this multimodal plan will improve connectivity and accessibility for pedestrians, bicyclists, and intercity bus passengers.

Planning Activity E – Purchase Real Estate Property or Flood Easement on the Right (West) River Bank at the Confluence of Manastash Creek and Yakima River

The confluence of Manastash Creek and the Yakima River is located near I-90 MP 107, close to the west Ellensburg interchange (*Figure 5*). The creek enters perpendicularly to the Yakima River and I-90 where it deposits sediment and forms an alluvial fan. The fan constricts the Yakima River and impinges it against the I-90 road prism, eroding the interstate embankment. Purchase of a flood easement or property at this location allows WSDOT and Kittitas County to work collaboratively to construct side channels to the Yakima River and Manastash Creek. These side channels would improve flood function, habitat, and reduce flood risk to the I-90 road prism by increasing capacity and sediment transport.

Public Involvement

Public involvement is paramount through all planning activities so we can hear the public's concerns and suggestions. The partner agencies have and will continue to perform public outreach and education, including open houses and workshops on flood risks (both to the state and local infrastructure, to help the local community understand the benefits of the work). Other topics, including climate resiliency and the US 97/Dolarway Road intersection, will also be included.

Previous Actions – The Central Kittitas Valley Integrated Resiliency Planning effort builds on partnerships and progress, commitments, and almost \$9.5 million of work in progress or already completed by WSDOT, Kittitas County, the City of Ellensburg, the Kittitas County Conservation District, Washington State Department of Fish and Wildlife, the Yakama Nation, and others to enhance and protect infrastructure, floodplains, and habitat within the plan area:

- Reecer Creek: Floodplain enhancement completed in 2011 to reduce flood risk to Dolarway Road residents and the Ellensburg industrial area, while increasing floodplain and habitat.
- Dolarway Road: Recently widened to a three-lane roadway (a through lane in each direction with a center two-way left-turn lane) plus a bike lane, sidewalks, curbs, and gutters.
- US 97 Dry Creek: Two 6 foot x 9 foot culverts were replaced with an 80-foot bridge and several smaller culverts at key locations to accommodate flood flows that impact US 97 and the industrial area of west Ellensburg. The project will be completed in April 2014.
- McManamy Bridge at Dry Creek: Immediately downstream of the US 97 crossing, Kittitas County coordinated with WSDOT to expand the McManamy bridge to accommodate flood flows and protect county infrastructure and the west Ellensburg industrial area. This project is scheduled for construction in 2014.
- Private investments in the area of I-90 MP 106 interchange, along Dolarway Road, for new medical, commercial, and retail development.

A portion of the Central Kittitas Valley Integrated Resiliency Planning effort is located within the city limits of Ellensburg, and classified as “rural” according to the FY 2014 TIGER Notice of Funding Availability document.

Expected Users – The beneficiaries of these efforts are the users of the interstate (including businesses and their customers who rely on I-90 and US 97 for freight movement), local area businesses, emergency and medical responders, recreationalists, and the general public.

Ellensburg lies in the central Kittitas Valley and is an economic gateway where the transportation hub of I-90, I-82, and US 97 converge. The city and the rich agricultural areas that surround it are

separated by the Cascade Mountains from Puget Sound (which supports more than 25 million tons of freight movement per year), and its major ports of Seattle and Tacoma. Local, state, national, and international freight rely on I-90 as the primary east-west corridor through the mountain range, and for access to the Puget Sound area. It is the most economically critical and heavily used mountain pass in Washington State (it carries more than 80 percent of Washington State's east-west freight and 75 percent of travelers). US 97 intersects I-90 at west Ellensburg and is a primary route for freight headed to and from Wenatchee, north central Washington, and Canada.

Several local companies that ship internationally are located in the west Ellensburg interchange vicinity. These include Anderson Hay and Grain (hay), Calaway Trading Company (hay, straw), and Twin City Foods (peas, corn, carrots, organic produce). Their success, which relies on I-90 and US 97 remaining open and operating efficiently, makes them major employers in the Ellensburg area, and provides a direct tie between economic resiliency and the development of the local transportation network.

Kittitas Valley Hospital is the primary medical facility serving Ellensburg, Thorp, Cle Elum, Roslyn, Ronald, Easton, and other small communities in the area. Emergency and medical response relies on the I-90/US 97 corridor to serve the upper county. The Washington State Patrol is located at the west Ellensburg interchange because of its logistical importance for efficient access to all of the primary highways. These public services are compromised during flooding.

Finally, the west Ellensburg interchange serves the general public in several ways. In addition to routine use, the interchange eases congestion by providing a more direct route to Central Washington University (CWU) than through the heart of downtown. Recreation and tourism are very important to the Ellensburg area, including such activities as the Ellensburg Rodeo, Jazz in the Valley, the Winterhop Brew Festival, and various outdoor activities, such as floating the river, hiking and fishing trips, and a KOA camping facility. The west Ellensburg interchange provides a key access point for these activities.

II. Planning Grant Parties

Ideology – By incorporating and addressing a range of benefits in the planning area, the Central Kittitas Valley Integrated Resiliency Planning effort has secured the backing of several federal, state, and local government agencies. This support is due to common interests, such as improving economic resiliency through transportation improvements at the I-90/US 97 interchange and reducing flood risk by restoring the environment to more normative conditions. Currently, the plan has the support from eight government agencies, the Yakama Nation, Forterra (a non-governmental conservation organization), Central Washington University, and four state politicians. Many of these supporters have a significant role in the plan (please see entire list under the Partnerships section [Section IV-B-ii]).

WSDOT is the applicant, and Kittitas County and the City of Ellensburg are co-applicants. Even in this smaller group there is an emphasis on several different, but complementary planning activities.

Applicant: **WSDOT**

- **Background:** There is considerable interest in the Thorp to Thrall reach of the Yakima River that supports WSDOT's integrated approach to improving the resiliency of both the transportation network, the environment, and the areas where they interface, as well as improvements at the I-90/US 97 interchange.
- **Previous Investment:** WSDOT sponsored the *Yakima River: Thorp to Thrall Site and Reach Assessment* and the *Dry Creek Site and Reach Assessment* (SRA), and performed emergency flood repair along I-90 and US 97 at levee breach locations. In addition, WSDOT reduced flood risk to the west Ellensburg area by constructing a bridge at the US 97/Dry Creek crossing and removing sediment deposition at the SR 10/Dry Creek crossing to improve flood flow capacities. Lastly, WSDOT worked with the City of Ellensburg on an interchange feasibility assessment that recommended improvements to the I-90/US 97 interchange.

Co-Applicant: **Kittitas County Flood Control Zone District** (District)

- **Background:** The District was established in 2012 through a recommendation from a citizen advisory committee, support of the county commissioners, and approval through a countywide ballot. Since its inception, the District has been an active participant in the *Yakima River: Thorp to Thrall SRA*.
- **Previous Investment:** The District provided support for the *Yakima River: Thorp to Thrall SRA* by extending WSDOT's initial proposal an additional eight river miles downstream. The District is pledging to co-lead any right (west) bank enhancements of the Yakima River including levee reconstruction and/or breaches under their responsibility, and is lead on the Manastash Creek alluvial fan acquisition/easement and side channel development (*Planning Activity E*).

Co-Applicant: **City of Ellensburg**

- **Background:** Ellensburg, as stated in its comprehensive plan, desires to develop economic vitality through improvements in the industrial area near the west Ellensburg interchange, which is a key element and located centrally within the Central Kittitas Valley Integrated Resiliency Planning area.
- **Previous Investment:** Ellensburg has provided support by sponsoring both the Reecer Creek floodplain enhancements to improve flood function and habitat while protecting businesses and infrastructure, and improvements along Dolarway Road (up to the proposed roundabout at its intersection with US 97) to enhance mobility and drainage. Reecer Creek is part of the Yakima River drainage in the central Kittitas Valley and empties into the Yakima River within the planning area. Ellensburg has also pledged **\$150,000** in aid for the US 97/Dolarway Road roundabout (*Planning Activity D*), when the TIGER Grant is received and WSDOT begins work on designing the roundabout.

III. Grant Funds and Sources/Uses of Planning Funds

WSDOT is requesting **\$500,000 (74.6 percent)** in TIGER planning grant funding to complete the total funding package of **\$670,000** necessary to finalize the Central Kittitas Valley Integrated Resiliency Planning effort. The remaining **\$170,000 (25.4 percent)** will be supplied in match funds from our two co-applicants (**\$160,000 / 23.9 percent** in local match) and WSDOT's Chronic Environmental Deficiencies Program (**\$10,000 / 1.5 percent** in state match) (*Table 2*).

WSDOT and Kittitas County funded a comprehensive site and reach assessment (SRA) for a 15-mile segment of the Yakima River from Thorp to Thrall. The report is in final draft status as of spring of 2014. Completion is anticipated near the time of award of the TIGER Grant. This SRA was used to determine the proposed planning activities, as well as the details used to calculate the cost of their design and implementation.

Planning Activity and Sub-Tasks	Sub-Task Cost	Planning Activity Cost	Secured Local Funding	Non-Fed. Percentage	Secured State Funding	Fed. Percentage	TIGER Funds Requested	TIGER Percentage	
Planning Activity A: Develop Plans to Rebuild Levee Near Thorp, North of I-90 Bridges (Bridge# 090-154)									
Design Engineering/PS&E	\$10,000	\$15,000	\$7,500	50.0%	\$0	0.0%	\$7,500	50.0%	
Environmental Clearance	\$5,000		* Kittitas County						
Planning Activity B: Develop Plans to Strategically Breach Levees and Build Bioengineered Bank Revetments (Pits 1-5)									
Design Engineering/PS&E	\$140,000	\$177,500	\$0	0.0%	\$5,000	2.8%	\$172,500	97.2%	
Environmental Clearance	\$37,500				* WSDOT HQ CED				
Planning Activity C: Develop Plans to Strategically Breach Levees and Build Bioengineered Bank Revetments (Pits 6-7)									
Design Engineering/PS&E	\$52,500	\$67,500	\$0	0.0%	\$5,000	7.4%	\$62,500	92.6%	
Environmental Clearance	\$15,000				* WSDOT HQ CED				
Planning Activity D: Develop Plans to Replace US 97/Dolarway Road Intersection w/ Roundabout									
Design Engineering/PS&E	\$304,200	\$400,000	\$150,000	37.5%	\$0	0.0%	\$250,000	62.5%	
Environmental Clearance	\$75,800		* City of Ellensburg						
Traffic	\$12,550								
Utilities	\$7,450								
Planning Activity E: Purchase Flood Easement Near Confluence of Manastash Creek and Yakima River									
Environmental Clearance	\$10,000	\$10,000	\$2,500	25.0%	\$0	0.0%	\$7,500	75.0%	
			* Kittitas County						
Totals:			\$670,000	\$160,000	23.9%	\$10,000	1.5%	\$500,000	74.6%

Table 2: Requested Funding Amount and Secured Match Funds

IV. Selection Criteria

Kittitas County is largely rural with transportation being vital to connect people, goods, and services. I-90 and US 97 are key to the economic well-being of the Ellensburg area, general freight mobility within and through Washington State, and access to international markets. The I-90 west Ellensburg interchange and US 97/Dolarway Road intersection are the hubs that ensure efficient traffic flow between these two facilities, as well as direct access to the business and industrial sectors of Ellensburg, connecting points east and west (I-90), north (US 97), and south (I-82). These portions of the transportation network converge in the central Kittitas Valley at an area with an inherent risk of flood damage from the Yakima River and its tributaries. I-90 bisects the Yakima River floodplain and the floodway. Since 1996, two levees have failed catastrophically, and several are in danger of failing. Costs for emergency reparation of the roadway embankment on I-90 have been more than \$1.5 million and more than \$1 million for US 97. Damage to private, city, and county infrastructure has also occurred. In 1996, the Yakima River experienced the third largest flood in its recorded history and the flood of record for many of the river's tributaries. This flood caused widespread damage and resulted in a statewide disaster area being declared by Washington's Governor and a federal disaster area being declared by President Clinton. As a consequence, a planning effort has been underway since 1996 to improve floodplain and transportation infrastructure, with the goals of making it more resilient and meeting planned economic and social needs.

A. Primary Selection Criteria

i. State of Good Repair

Ellensburg's Comprehensive Plan forecasts increased growth and traffic flow in the planning area as a result of its re-zoning efforts. WSDOT has prioritized improvements ensuring adequate capacity is maintained for effective operation of the US 97/Dolarway Road intersection. This will be accomplished both by building a two-lane roundabout that is more efficient than the current four-way stop it will replace, and by protecting the new intersection and the surrounding transportation network from flood damage by rebuilding the Kittitas County levee. Kittitas County and the City of Ellensburg share these goals and have been working proactively to simultaneously improve transportation, floodplain, and habitat infrastructure.

WSDOT has performed preliminary analysis of the US 97/Dolarway Road intersection for both a traffic signal and a roundabout:

- Traffic Signal
 - The proximity of the US 97/Dolarway Road intersection to I-90 makes it difficult to construct adequate left-turn storage without impacting existing businesses.
 - Traffic signals require power that must be installed and maintained.
- Roundabout
 - Roundabouts have proven to be more efficient than traditional intersections.
 - Roundabouts offer more opportunity for unimpeded traffic flow, which can reduce pavement wear from heavy vehicles stopping.
 - Maintenance and operations costs are lower for roundabouts, as there is no need for power.
 - Roundabouts are more resilient during power outages, which can occur during extreme weather events, as no electricity is required to operate the intersection.
 - Roundabouts reduce both the frequency and severity of collisions compared to traffic signals.

In order to sustain the investment in mobility improvements, flood risk must be reduced. The infrastructure within the river reach surrounding this vital hub has been impacted with increased flood frequency over the past two decades. When possible, restoring a river's floodplain to more normative conditions is a preferred approach to reducing flood risk and increasing the resiliency of both natural and transportation infrastructure investments. If left unimproved, or if transportation improvements are made without flood risk reduction, vulnerability to flooding will increase, threatening traffic and freight movements at a potentially unprecedented level.

Our plan has sustainable sources of revenue for ongoing maintenance and operations, as the existing intersection is already and will continue to be maintained by WSDOT, and the local street network will be maintained by the City of Ellensburg. The construction of a roundabout will serve to lower these maintenance costs. Similarly, the flood protection work outlined within the *Yakima River: Thorp to Thrall* SRA reduces long-term maintenance costs compared to catastrophic levee and highway embankment failure. Kittitas County has agreed to maintain the rebuilt levee near Thorp. While it is understood that this structure will protect WSDOT infrastructure as well as county and city investments, Kittitas County is best suited to lead construction and perpetually maintain the structure. When combined, the flood protection and transportation improvements are consistent with local investments and LCP efforts. This allows the state and local systems to be updated, while increasing the ability to keep the transportation infrastructure functioning.

The levees protecting the borrow pits along I-90 from milepost (MP) 103 to the west Ellensburg interchange at MP 106, are in a degraded condition and will continue to fail catastrophically. Strategically breaching the levees during low river flows, in a controlled fashion, reduces risk to I-90, and is less intrusive to the environment. Levee breaching expands and enhances the floodplain and increases flood storage capacity, resulting in less dynamic flows and a lower risk of flood damage to transportation facilities. Riverine revetments are resilient and easily maintained. When working properly, they can capture river debris, which encourages the establishment of vegetation, further protecting the road prism and perpetuating habitat enhancements. These solutions make infrastructure more resilient, reduce maintenance costs, and reduce the chance of adverse impacts to the environment, freight, and the public.

As listed above, this plan contributes in several ways to improvement and overall reliability of the multimodal system serving drivers and non-drivers. While the focus is on the protection of the highways and surrounding roads, the proposed plan also provides substantial benefits to other modes of travel, such as rail and railway facilities, hiking, biking, horseback riding, and recreational boating. There are existing sidewalks and a bicycle lane on Dolarway Road, but they do not continue through the intersection. This plan will construct a ten-foot wide shared use path for pedestrians and bicyclists through the intersection. Currently, pedestrians wishing to travel between businesses and services on either side of the US 97/Dolarway Road intersection must use the shoulders on both sides of the intersection where gaps remain in the existing sidewalk system (180 feet on the north side and 300 feet on the south side).

Finally, the Yakima River is used for recreation and commercial use (e.g., river sport rental shops, fly fishing tours, boat ramps, and riverfront parks and facilities). These businesses, public spaces, and activities will enjoy greater protection and easier access once improvements have been implemented.

ii. Economic Competitiveness

I-90 carries more than 80 percent of the east-west freight tonnage and 75 percent of the traffic crossing the Cascade Mountain Range, making it economically critical for both freight and traffic mobility. Similarly, the US 97/I-82 corridor is the second highest-volume north-south highway corridor east of the Cascade Crest in Washington State. I-90 intersects with US 97/I-82 at Ellensburg. Within the planning area, the Yakima River's 500-year and 100-year floodplains and its floodway impact or extend across these facilities. Seasonal flooding in the area regularly threatens the interstate, disrupting the flow of goods and people, and requiring emergency responses that impact the economic vitality of Kittitas County and the surrounding communities. During I-90 Snoqualmie Pass closures – often caused by avalanches and other severe weather – the US 97/Dolarway Road intersection vicinity functions as a staging area until the pass reopens. US 97 is used as an alternative route over the Cascade Mountains (*Figure 6*). In eastern Washington, most economies are based on agriculture. As the majority of the jobs in agriculture are entry level, many eastern Washington communities are economically disadvantaged. This is evident by the US Census Bureau's information on median household income. The Ellensburg Urban Cluster (EUC) is at only 47% of the median income of the overall state (i.e., \$28,114 for the EUC compared to \$59,374 for Washington State, from 2008 through 2012) and at 53% of the median income of the United States (i.e., \$28,114 for the EUC compared to \$53,046 for the US, from 2008 through 2012). In 2008, to encourage economic development in the area, west Ellensburg was rezoned for commercial business and Ellensburg's Comprehensive Plan was

updated, but traffic issues and the downturn of the economy stalled implementation in this rural community. Since then, enhancements to Dolarway Road and the improving economic forecast are once again providing an opportunity for economic growth and increased resiliency for the economy, the transportation system, and the environment.

Kittitas County is predominantly a rural community with agriculture being the largest component of Ellensburg’s economy. The city provides a considerable amount of services (e.g., Central Washington University, shopping, entertainment, health care) for small to medium communities in the area, including Cle Elum, Roslyn, Ronald, and Easton, all of which primarily access Ellensburg through I-90 and the US 97/Dolarway Road intersection. Disruptions to transportation facilities within the region severely limit that economic activity and access to vital services. In the 2009 flood, large portions of the county were cut off from emergency personnel and other services.

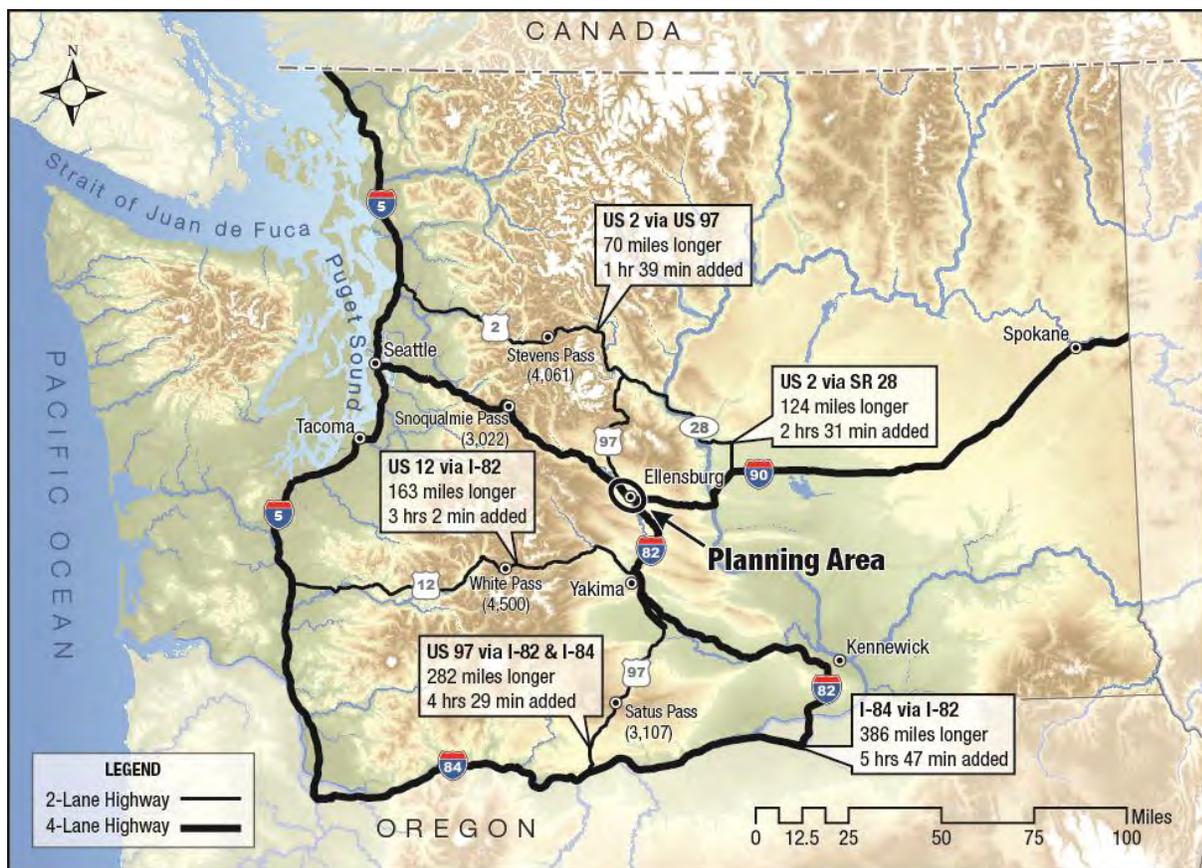


Figure 6: Detour Routes

Beyond the Ellensburg area, diversified high-value agriculture remains the economic focus for the vast majority of eastern Washington. Products of this industry are often highly perishable and require significant transport. These factors considerably increase the importance of the planning area’s ability to keep freight moving east and west along I-90. Any disruption to I-90, including extreme weather, impacts each farm dependent on its ability to get its products over the pass and to the ports in Seattle and Tacoma. Impacts to these small businesses trickle down to their employees and ultimately the communities in which they live. I-90 receives the highest classification as a freight corridor on the Freight and Goods Transportation System with trucks

accounting for 23 percent of the traffic and hauling 35 million tons of freight annually. A study from the University of Washington estimated that closure along the I-90 corridor alone can have an economic impact of \$700,000 per hour. US 97, within the planning area, receives the second highest classification with 30 percent truck traffic and 4.3 million tons of freight annually. I-90, the west Ellensburg interchange, and the US 97/Dolarway Road intersection compose the economic hub handling this international, interstate, and in-state freight, as well as local access needs. A failure in the transportation network in this area can quickly turn disastrous for economies across the state.

iii. Quality of Life

As important as the planning area's network is to the movement of goods, the surrounding geographic area also incorporates several other transportation modes, such as rail, hiking trails along the river, the John Wayne Pioneer Trail (biking, walking, horseback riding), and the use of the river system as a recreation corridor. Two intercity bus companies have a bus stop in the immediate vicinity of the intersection. As such, this multi-modal plan will improve connectivity and accessibility for pedestrians, bicyclists, and patrons of intercity bus service.

As residential areas develop along with businesses, local non-motorized facilities will be able to connect to these commercial areas via the roundabout's shared-use path, which enhances improvements already completed by the City of Ellensburg along Dolarway Road. This will improve transportation choices and access for pedestrian, bicycle, and intercity transit modes. This is especially important for people who often need to rely on alternative modes of transportation: economically disadvantaged individuals, non-drivers, senior citizens, and the disabled.

Water quality, fish and wildlife habitat, clean air, and many attributes of rural life in Kittitas County revolve around the Yakima River and its tributaries. This plan improves connectivity between the established John Wayne Pioneer Trail, the West Ellensburg Park, Irene Rinehart Park, and the newly proposed trail system between Irene Rinehart Park and the Yakima River Canyon, while allowing a seamless transition between existing and planned business and recreation areas.

iv. Environmental Sustainability

This plan reduces flood risk (*Figure 7*) by strategically breaching existing levees that are in danger of catastrophic failure during high-flow events (5-10 year interval), setting bioengineered flood control elements closer to the interstate prism, and reconstructing road fill and levees, where breaching is not an option. These efforts simultaneously enhance environmental conditions by expanding floodplain, increasing floodplain functions such as water filtration and groundwater recharge, restoring habitat, and opening spawning and rearing areas, all of which make these plan elements self-mitigating and efficient to design and permit. Increasing floodplain area spreads out flood water and reduces pressure on lateral river banks and highway embankments. The Central Kittitas Valley Integrated Resiliency Planning effort also allows for improvement of infrastructure that will increase traffic flow efficiencies and reduce idling, while not impacting sensitive areas.

The Yakima River: Thorp to Thrall SRA estimates the planned breaching of the levees opens nearly 44 acres of floodplain. Currently, irrigation in the area removes a considerable amount of water from the riverine system, which lowers river levels, resulting in potentially increased river water temperatures. In addition, return flow or runoff from fields returns relatively warm water to

the system. The contribution of cool groundwater recharge is effectively replaced by warm water recharge from irrigation. Increased river temperatures can negatively impact riparian and aquatic habitat, including fish-spawning conditions and survival of redds (salmon nesting areas). Building levees and other structures to manage river flows and development in the floodplain by private residential and agricultural practices have effectively reduced the floodplain area that can receive flood water, and further compromised the riparian ecosystem. In addition, the old borrow pit ponds, most of which are now disconnected from the river except by the recharge of groundwater, are warm, stagnant, and devoid of oxygen, making them poor-quality habitat. Increasing the floodplain and improving connectivity to the river enhances riparian vegetation coverage, groundwater recharge, and quality of habitat (especially for the ponds), thus improving water quality and temperature.

The larger floodplain improves holding capacity while reducing the intensity and velocities of the flow, allowing bioengineered bank revetments and larger riparian buffers to provide ample flood protection for transportation and related infrastructure. These efforts will reduce the frequency of maintenance and emergency flood abatement action following catastrophic failures.



Figure 7: Flooding in 2009. In the top picture, flooding from Currier Creek has backed up freight along US-97 (red arrow). In the bottom picture, taken from the same vantage point in 2014, Currier Creek has returned to its normal flow stage and is not visible, demonstrating the extent to which the area can flood.

Endangered Species Act (ESA) listed aquatic species, such as Bull trout and Chinook salmon, will benefit from improved spawning conditions, as well as additional high-quality rearing habitat. The expanded riparian area and associated canopy cover will increase food sources and protection for aquatic species as more large woody material is added to the river. The shade this vegetation and woody habitat will provide further cools the water temperatures, improving spawning, rearing, and refuge conditions. These actions in the main stem of the river are directly in line with the efforts that WSDOT's partners have focused on in tributaries to the Yakima River within the planning area. As a result, connectivity at the confluences with Manastash Creek, Reecer Creek, and Dry Creek will improve.

Besides fisheries, terrestrial and aquatic animal species will benefit from restored riverine habitat. Bald eagles frequently winter in the Kittitas Valley and will profit from the improved riparian coverage for nesting and feeding. Other native bird species, deer, and small mammals extensively occupy the riparian area of the Yakima River.

In addition to improved water quality and habitat conditions, the plan has a positive effect on air quality past the benefits of an expanded riparian area. Replacing the four-way stop intersection with a two-lane roundabout allows traffic to flow more freely, reducing or eliminating idling, allowing engines to operate more efficiently. This lowers greenhouse gas emissions and improves energy efficiency. The addition of a right turn lane on the I-90 WB off-ramp will allow a free right turn onto US 97, resulting in similar environmental benefits.

Overall, this plan not only reduces flood risks to critical infrastructure, it does so in a way that has regulatory agencies touting the net benefits as an overall environmental improvement (Appendix B). This is evident in interagency funding proposals and planning support. As the regulatory agencies in the area support *Planning Activity B* (Pits 1-5) and *Planning Activity C* (Pits 6 and 7) because of the improvement to environmental conditions, the entire plan will likely be considered self-mitigating.

Planning Activity A (reconstructing levee) and *Planning Activity D* (roundabout) enhance existing facilities, and the footprint does not impact any high-quality sensitive areas or substantially increase impervious surfaces. In addition, the improvements at the intersection will conform to the most recent highway runoff design specifications, allowing for better treatment of storm water, complying with the federal Clean Water Act and state standards. *Planning Activity A* will ensure protection from floods for this new facility and the surrounding community. Flooding of developed property and emergency abatement have severe negative impacts on water quality.

This plan represents continued improvement and investment in transportation and flood risk reduction infrastructure. As has been outlined throughout this application, the area has been the focus of a balanced approach of improved commercial development, flood risk abatement, and environmental enhancements.

v. Safety

Flood Risk – With the intensity of flood events increasing over the last 20 years, the Yakima River often experiences moderate to severe spring, fall, and winter flooding. Subsequent impacts from flooding are exacerbated in the Thorp to Thrall reach, as the floodplain has been reduced by almost 70 percent since the 1880s. While it is possible to fight each flood event as it happens, it is



Figure 8: Flooding of Local Businesses. Perkins Family Restaurant is inundated with flood water rising to its windows and causing substantial damage during a 2009 flooding event.

costly and dangerous (*Figure 8*). Restoring a portion of the floodplain will allow more normal flood conditions to lessen velocity and flow height, resulting in a substantially reduced threat to the transportation network and surrounding community. WSDOT will use TIGER grant planning funds to determine the best method for breaching levees and restoring floodplain, as well as the design for bank protection, using as many bioengineered and biotechnical components as possible. These elements will be designed using the input of a multi-disciplinary team including planners, engineers, biologists, and fluvial

geomorphologists, as well as other technical experts as needed, to create shovel-ready plans with a focus on increasing safety, improving flood function and habitat, and also improving overall environmental conditions in the most cost-effective way possible.

Mobility Impacts – Recent LiDAR indicates if a breach occurs at the Thorp levee, the Yakima River could disable I-90 and US 97, flood the commercial district around the west Ellensburg interchange, and reach residential areas in west Ellensburg. Disruption of the I-90 and US 97 corridor at this location will only allow people and freight to be connected to and from Cle Elum, Roslyn, Easton, Thorp, and the Puget Sound area via secondary roads. The only suitable alternate mainline routes add several hundred miles (Quincy-Wenatchee-Cle Elum-Seattle or Yakima-Centralia-Olympia- Tacoma-Seattle). As Kittitas Valley Hospital, the Washington State Patrol, and Kittitas Valley Fire and Rescue serve large portions of the entire county, emergency and medical services for the outlying communities will also be affected.



Figure 9: Freight Stalled by Flooding Along US 97

If a catastrophic failure occurs at one or more of the borrow pit levees, I-90 functionality will likely be diminished or disabled, requiring all east-west traffic to utilize US 97. Predicted traffic volumes in such a scenario will quickly overwhelm the intersection at US 97/Dolarway Road, causing backups of automobiles through the west Ellensburg interchange and on to I-90 (*Figures 9 and 10*). Standing traffic on an interstate is always hazardous, but if the nearby Yakima River is also flooding and threatening the road prism, the danger increases exponentially. Additionally, if flooding is widespread, US 97 may also be compromised, further reducing access to traffic and emergency services on alternative routes. Even outside of a flood event, the traffic at the intersection is expected to increase due to proposed commercial development; this will proportionately increase congestion and collision frequency. Replacing the current four-way stop intersection with a roundabout will reduce the severity of collisions. A roundabout also reduces the frequency of collisions compared to a traffic signal, which would be the other alternative to handle the intensified traffic volume.



Figure 10: Trucks Stranded at Love's Gas Station during 2011 Flood Event

In order to improve safety performance for pedestrian and cyclist travel, the plan is to construct sidewalks and a shared-use path linking both sides of the intersection. The raised splitter islands will give additional protection and security for non-motorized users. The existing intersection has painted islands that are level with the traveled lanes. The raised splitter islands also allow shorter crossing distances and is a refuge if pedestrians and bicyclists are not able to cross all at once. Roundabouts can be easier and safer for non-motorized users to negotiate their way through the intersection. With the shared-used path, pedestrians and bicyclists only need to look in one direction before crossing a lane and reaching a raised splitter island. The island provides a refuge before non-motorized users cross the next lane.

B. Secondary Selection Criteria

i. Innovation

While the standard belief is levees are always important for protecting development around riverine systems, WSDOT and the Kittitas County Flood Control Zone District are proposing a more innovative solution: protecting the surrounding infrastructure and community by breaching certain levees, restoring floodplain, and increasing riparian habitat where possible, and rebuilding levees only where absolutely necessary.

While levees can guard against flood waters, they also channel them, increasing their power and velocity. When a levee is overtopped, the water plunging to the ground behind it creates a head cut/avulsion pit, weakening the base of the levee, and eventually causing it to topple and fail

catastrophically (*Figure 11*). In the planning area of the Central Kittitas Valley Integrated Resiliency Planning effort, this threat is exacerbated by the large pools of standing water in the borrow pits to the south of I-90, directly separated from the river by the levees. The capture of these pits would considerably increase the destructive force of flood water by reducing sediment transport and increasing erosion potential and outflow velocities. Essentially, this increase in flow and velocity, and decrease in sediment transport, cascades downstream impacting the integrity of levees below the catastrophic breach through a domino effect until the water flows back to the Yakima River.

Rebuilding the levees around Pits 1-7 requires costly maintenance, eliminates habitat and riparian improvements, and continues the threat of failure in extreme conditions. The preferred solution is to let nature do the bulk of the work.

Goals associated with this effort:

- Strategically breach levees with construction of bank and flood protection structures in upper and middle reaches, to expand the available active Yakima River floodplain by more than 44 acres. These acres, while behind levees, are currently inactive floodplain managed by WSDOT and the Washington Department of Fish and Wildlife (WDFW). WDFW is in favor of this innovative strategy.
- Eliminate costly emergency actions and risk to the community following catastrophic levee failures.
- Protect a critical freight corridor and intersection at I-90 and US 97 while enhancing traffic efficiencies and accommodating the already planned growth of the surrounding community.

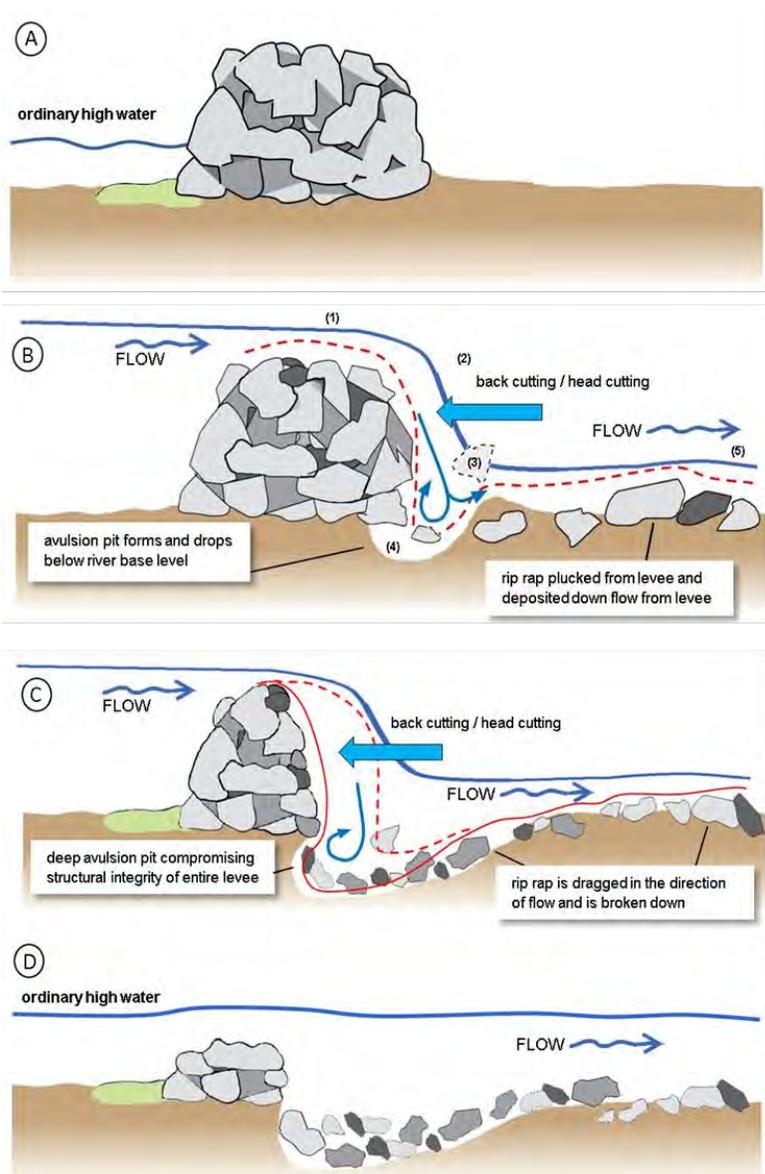


Figure 11: Illustration of catastrophic levee failure, due to head cutting during overflow conditions. The high water level sends water over the top of the levee (1) creating a small waterfall at the back end (2). Subsequent soil erosion leads to erosion of the levee material (3) and forms an avulsion pit (4) that leads to further erosion of the levee via undercutting. Eroded material is carried with the flow of water (5). If sustained, the levee will eventually breach, allowing it to be over-topped by lower flows.

- Reduce maintenance costs by returning the transportation and riverine corridors to a more stable equilibrium.
- Reconstruct the levee near Thorp. This will enhance and guard against a catastrophic river avulsion that would inundate much of west Ellensburg.

The value of this plan is recognized by regulatory agencies and local programs to such an extent that they would like to expedite WSDOT and Kittitas County’s efforts and enhance our plan with additional complementary efforts of their own. Investment in this reach has already begun.

- Dolarway Road drainage upgrades are complete all the way to the US 97 intersection.
- Reecer Creek floodplain enhancements have been made to protect Dolarway Road and the developing commercial area.
- Appropriate zoning changes have been made within the Growth Management Act/Urban Growth Area to encourage development around the I-90/US 97 interchange.
- A bridge is being installed on US 97 at Dry Creek to improve capacity and reduce flood risk near the I-90/US 97 interchange and west Ellensburg.
- A bridge is being replaced with a longer structure on McManamy Road at Dry Creek to improve capacity and reduce flood risk near the I-90/US 97 interchange and west Ellensburg.
- A second phase of floodplain enhancement is scheduled for Reecer Creek between Dolarway Road and University Way.
- A site and reach assessment was prepared for the upper and lower sections of Dry Creek.

Project	Lead Agency/Agencies	Final Cost
Reecer Creek Floodplain Improvement Description: Reduced Reecer Creek flooding along Dolarway Road, restored ~70 acres of floodplain, enhanced riparian area and water quality.	Ellensburg	\$856,973
Dolarway Road Improvement Description: Widened 1.6 miles of Dolarway Road to a three-lane roadway (a through lane in each direction with a center two-way left-turn lane); project also added multi-modal features (e.g., bike lane and sidewalks), curbs, and gutters. A new bridge was built over Reecer Creek. Illumination and a storm water drainage and treatment system were added.	Ellensburg	\$6,047,000
McManamy Bridge at Dry Creek Description: Kittitas County coordinated with WSDOT to expand the McManamy bridge to accommodate flood flows to protect county infrastructure and the west Ellensburg industrial area.	Kittitas County	\$112,000
SR 10 Bridge Dry Creek Description: WSDOT removed sediment underneath SR-10 bridge to increase flow capacity.	WSDOT	\$33,750
US 97 Dry Creek W of Ellensburg - Construct Bridge Description: Two 6' x 9' culverts were replaced with an 80' bridge to accommodate flood flows that impact US 97 and the industrial area of west Ellensburg. A setback levee was constructed to prevent roadway damage and diversion of Dry Creek outside its channel. The project will be completed in April 2014. The project was spurred by the US 97 Dry Creek Site and Reach Assessment, written by WSDOT.	WSDOT	\$2,338,000
US 97 Dolarway Road Intersection Preliminary Analysis Description: WSDOT performed preliminary analysis at the US-97/Dolarway Road Intersection and determined a roundabout was the preferred alternative.	WSDOT	\$29,500
Yakima River: Thorp to Thrall Site and Reach Assessment Description: Site and reach assessment was written for a 15-mile stretch of the Yakima River. Determinations were made to breach levees and increase shoreline revetment to improve habitat, increase environmental functionality, and provide flood protection to transportation network. Final draft of SRA is complete, and the final SRA will be finished by December 2014.	WSDOT & Kittitas Co.	\$54,500
Total:		\$9,471,723

Table 3: Previous Investments in Planning Grant Area

ii. Partnership

Jurisdictional/Stakeholder Collaboration – Several partners are already investing in this reach to improve economic and environmental vitality, restore habitat, and reduce flood risk, including WSDOT, Kittitas County, the City of Ellensburg, Kittitas County Conservation District, and the Yakama Nation. Contributing to these efforts, many other regulatory agencies and interested parties have provided support or pledged future support. Stakeholders and partnerships are summarized below:

Washington State Department of Transportation:

- **Primary Interest:** Maintenance and protection of I-90/US 97 infrastructure within this reach and improved mobility within the corridor.
- **Previous Investment:** 1996, 2009, and 2011 emergency repairs (I-90 milepost 103, 104.5, and 105) due to levee failure; US 97 Dry Creek bridge betterment in 2013-2014; support partner in Reecer Creek floodplain enhancement; support partner for McManamy Road bridge improvement at Dry Creek; site and reach assessment (SRA) for Dry Creek and the Yakima River in conjunction with Washington Department of Fish and Wildlife, Kittitas County Flood Control Zone District, and the Chronic Environmental Deficiencies program; and TIGER Grant application for flood protection/mobility enhancement at I-90/US 97.

Kittitas County/Kittitas County Flood Control Zone District:

- **Primary Interest:** Flood protection for infrastructure, community, and future development.
- **Previous Investment:** Devoted time, staff resources, and has initiated a companion SRA from Ellensburg to Thrall; replaced McManamy Bridge in the area; pledging co-partnering efforts to projects materializing from the TIGER planning grant.

City of Ellensburg:

- **Primary Interest:** Economic vitality for the city, flood protection for community development and infrastructure, and improved mobility within the GMA/Urban Growth Area.

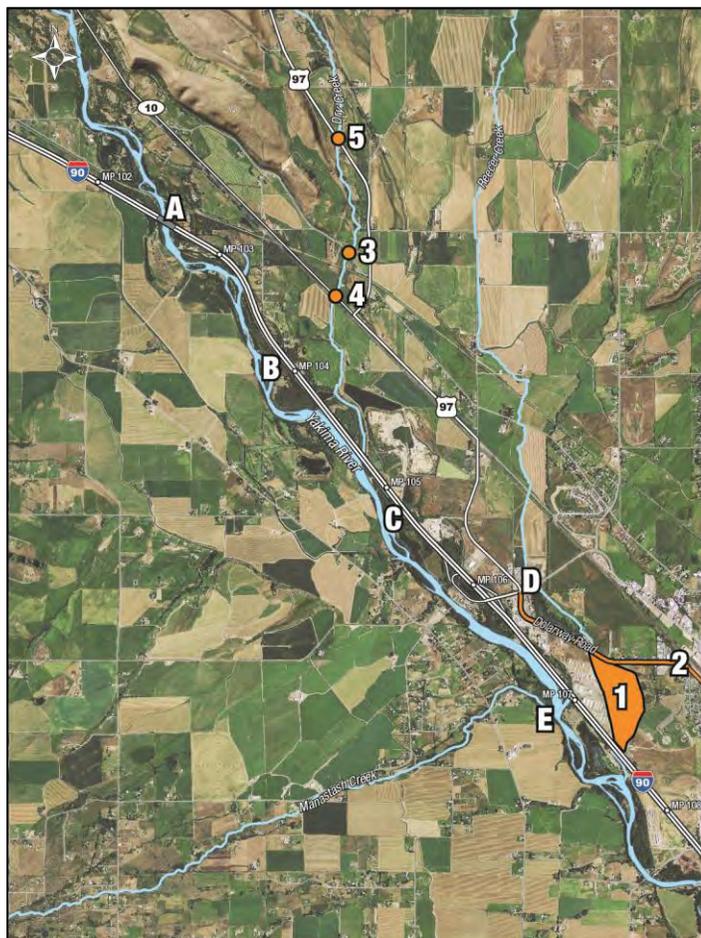


Figure 12: Previous, current, and scheduled investments in the area include: 1) Reecer Creek Floodplain Improvements; 2) Dolarway Road Improvements; 3) McManamy Bridge Construction; 4) Dry Creek Sediment Removal at SR 10; 5) US 97/Dry Creek Bridge Replacement of Culverts.

Letters A, B, C, D, and E correspond to the planning activities outlined in this grant application.

- Previous Investment: Dolarway Road improvements for flood protection and mobility; project lead on Reecer Creek floodplain enhancement for flood protection at the developing west interchange; planning and re-zoning for commercial development at the west interchange (I-90/US 97); coordination with private developers to partner in the intersection improvement; and commitment of **\$150,000** towards designing the US 97/Dolarway Road intersection.

Washington Department of Fish and Wildlife:

- Primary Interest: Preserve, protect, and perpetuate fish, wildlife, and ecosystems within the reach.
- Previous Investment: Co-sponsor of the Chronic Environmental Deficiencies program with WSDOT; support for the Reecer Creek floodplain improvement; and permitting agency for the 1996, 2009, and 2011 emergency repairs to I-90 and bridge betterment on US 97 at Dry Creek in 2013-2014.

Kittitas County Conservation District (KCCD):

- Primary Interest: Working with agriculture within this reach to increase stream flows, reduce pollutant discharge from fields, flood protection of irrigation infrastructure, and opening floodplain to improve recharge areas.
- Previous Investment: Dolarway Road improvements for flood protection and mobility, project sponsor for Reecer Creek floodplain enhancement for flood protection, Manastash Creek improvement project (irrigation siphon), and future Reecer Creek floodplain improvement between Dolarway Road and University Way.

Yakama Nation:

- Primary Interest: Watershed improvements within reach in effort to restore salmon spawning.
- Previous Investment: Completed salmon spawning enhancement projects at the Dry Creek-Yakima River confluence and a supporting partner to the Reecer Creek floodplain improvement. The Yakamas have indicated an interest in contributing funds toward construction of habitat improvements and WSDOT levee failures. This will hinge on the design of the planning elements, which require TIGER planning grant funding to be completed.

United States Fish and Wildlife (USFWS):

- Primary Interest: Habitat enhancement and water quality improvement for Endangered Species Act listed species within the reach.
- Previous Investment: Offered to adjust program goals and is seeking funding to initiate projects within their scope and propose projects to be implemented into scoping estimates for the Yakima Basin Integrated Water Resource Management Plan, and is a sponsor/funding partner for controlled levee breaches.

Central Washington University (CWU):

- Primary Interest: Provide research opportunities and physical access to the university for its students.
- Previous Investment: Has been performing studies within the reach that have helped to develop the SRA, created a research facility at a borrow pit near Thorp, and worked with the Kittitas County Flood Control Zone District.

Forterra (non-profit conservation organization):

- Primary Interest: Land acquisition to protect and restore the natural environment.

National Oceanic and Atmospheric Administration/National Marine Fisheries Services:

- Primary Interest: Habitat enhancement and water quality improvement for Endangered Species Act listed anadromous (fish that live at sea and return to rivers for breeding) species within the reach and possible funding partner for controlled levee breaches.

United States Bureau of Reclamation:

- **Primary Interest:** Increased storage capacity as a result of a more floodplain.
- **Previous Investment:** Acquisition of 285 acres on August 6, 2003, and planned levee setback in the reach between Irene Rinehart and Thrall Road to improve habitat and flood storage, reduce flood risk, and protect other borrow pits.

V. Planning Grant Readiness

The necessary planning activities are outlined in the *Yakima River: Thorp to Thrall Site and Reach Assessment* (SRA). While the actual planning effort for each activity has not begun, the concepts have been developed in collaboration between WSDOT, Kittitas County, and the City of Ellensburg, with input from other stakeholders. WSDOT and our partners are very clear on the desired outcomes and the best course of action to achieve them. This clarity allows WSDOT and our partners to immediately utilize TIGER planning grant funding to design the planning activities, and to prepare plans, specifications, and cost estimates (PS&E) (**Table 4**), which will allow them to be implemented as soon as funding is available for construction/implementation. A portion of this construction funding already exists (**Table 5**).

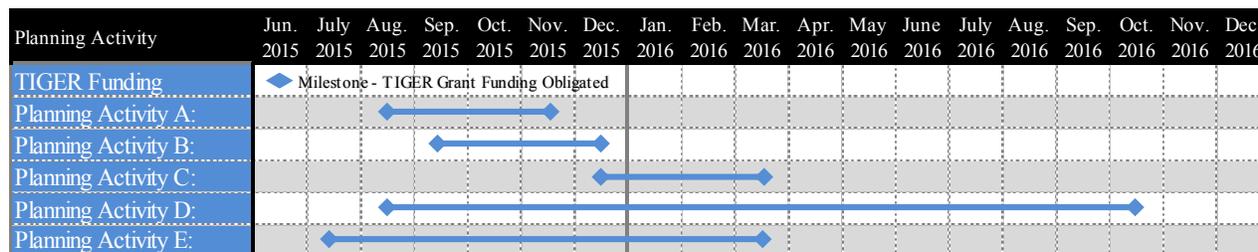


Table 4: Anticipated Start and Duration of Planning Activities

Major Planning Activities

Planning Activity A: Reinforce Thorp Levee North of I-90 Bridges (Bridge# 090/154)

- Planning cost: **\$15,000**
- Tasks: **Clear NEPA/SEPA (National Environmental Policy Act and State Environmental Policy Act) and Prepare PS&E**
- Planning activity leads: **Kittitas County and WSDOT**
- Begin work: **08/10/2015**
- End work: **11/16/2015**
- Duration of work: **3.25 Months**
- Potential mitigation requirement: **None**
- Risks: **None**

Planning Activity B: Strategically Breach Levees and Build Bioengineered Revetments (Pits 1-5)

- Planning cost: **\$177,500**
- Tasks: **Clear NEPA/SEPA, Obtain Permits, and Prepare PS&E**
- Planning activity lead: **WSDOT**
- Begin work: **09/14/2015**
- End work: **12/11/2015**
- Duration of work: **3.0 Months**
- Potential mitigation requirement: **None**
- Risks: **None**

Planning Activity C: Strategically Breach Levees and Build Bioengineered Revetments (Pits 6-7)

- Planning cost: **\$67,500**
- Tasks: **Clear NEPA/SEPA, Obtain Permits, and Prepare PS&E**
- Planning activity lead: **WSDOT**
- Begin work: **12/14/2015**
- End work: **03/14/2016**
- Duration of work: **3.0 Months**
- Potential mitigation requirement: **None**
- Risks: **None**

Planning Activity D: Replace US 97/Dolarway Road Intersection with Roundabout

- Planning cost: **\$400,000**
- Tasks: **Clear NEPA/SEPA, Obtain Minor Permits, and Prepare PS&E**
- Planning activity leads: **WSDOT and City of Ellensburg**
- Begin work: **08/10/2015**
- End work: **11/09/2016**
- Duration of work: **15.0 Months**
- Potential mitigation requirement: **Minor impacts to wetlands**
- Risks: **None**

Planning Activity E: Purchase Real Estate near Confluence of Manastash Creek and Yakima River

- Planning cost: **\$10,000**
- Tasks: **Clear NEPA/SEPA**
- Planning activity leads: **Kittitas County and WSDOT**
- Begin work: **07/01/2015**
- End work: **03/14/2016**
- Duration of work: **8.5 Months**
- Potential mitigation requirement: **None**
- Risks: **None**

Perform Public Outreach and Plan Education Effort

- Planning cost: **Included in other planning activities**
- Tasks: **Coordinate with partners on delivery message**
- Planning activity leads: **WSDOT, Kittitas County, and City of Ellensburg**
- Begin work: **07/01/2015 (Corresponds with Beginning of Planning Activities)**
- End work: **11/09/2016 (Corresponds with End of Planning Activities)**
- Duration of work: **Spans entire planning process**

The total cost of the five planning activities is **\$670,000**, of which WSDOT has secured **\$170,000** in match funds. As shown above, as many of our partners are regulatory agencies, the planning activities are expected to be self-mitigating due to the substantial environmental benefits, considerably reducing the overall cost.

Implementation Activity	Implementation Cost	Secured Funding	Percentage	Remaining Need	Anticipated CN Start
Planning Activity A: Rebuild Levee Near Thorp, North of I-90 Bridges (Bridge# 090-154)					
Construction	\$1,200,000	\$650,000	54.2%	\$550,000	Spring 2016
		* Kittitas County (\$650,000)			*If remaining CN funds are secured
Planning Activity B: Strategically Breach Levees and Build Bioengineered Bank Revetments (Pits 1-5)					
Construction	\$2,650,000	\$1,500,000	56.6%	\$1,150,000	Spring 2016*
		* WSDOT HQ CED/DFW (\$500,000)			*If remaining CN funds are secured
		* USFWS Integrated Plan (\$1,000,000)			
Planning Activity C: Strategically Breach Levees and Build Bioengineered Bank Revetments (Pits 6-7)					
Construction	\$690,000	\$690,000	100.0%	\$0	Summer 2016
		* Kittitas County/KCFCZD (\$690,000)			
Planning Activity D: Replace US 97/Dolarway Road Interchange w/ Roundabout (Preferred Alternative)					
Construction	\$2,680,000	\$0	0.0%	\$2,680,000	Spring 2017*
					*If remaining CN funds are secured
Planning Activity E: Purchase Flood Easement Near Confluence of Manastash Creek and Yakima River					
Real Estate Purchase	\$57,300	\$57,300	100.0%	\$0	Spring 2016
		* KCFCZD (\$57,300)			
Totals:	\$7,277,300	\$2,897,300	39.8%	\$4,380,000	

Table 5: Future Construction/Implementation after TIGER Grant is Received and Planning is Completed

Future Implementation – Having several interested and supportive partners for the potential project work in this area will help WSDOT secure matching funds for construction/implementation. These partners have already provided an immense investment for efforts to these interrelated goals, and will facilitate implementing the plans once they are created by WSDOT and our partners.

In addition to the current funds committed by WSDOT’s partners to aid in the planning effort, approximately \$9,471,723 (*Table 3*) has previously been spent in the plan area towards the same goals as those espoused in the Central Kittitas Valley Integrated Resiliency Planning effort. These efforts are focuses on tributaries to the Yakima River that contribute to flood risk, or on collector-distributor routes that contribute traffic to the I-90/US 97 interchange. The overwhelming investment in this area is indicative of how vital this transportation hub is to the community.

Additional planning funding will complete the process to get shovel-ready projects on the shelf to await financing. It is anticipated the planning recommendations and designs will require approximately \$7,277,300 to implement. *Table 5* shows the desired timeframe to begin construction once the planning activities are completed, and that \$4,380,000 in funding has been secured. As the overall plan may result in one or more stages, this financial commitment allows WSDOT to utilize the planning effort immediately, further increasing the usefulness of the **\$500,000** in requested TIGER planning grant funding. Similarly, the need to complete the planning effort to access the committed implementation dollars makes the TIGER planning grant funding even more important to help achieve the overall safety, environmental, economic, and transportation goals for the area.

VI. Other Environmental Reviews and Approvals

A. National Environmental Policy Act

No NEPA or state SEPA checklist has been completed. It is understood planning activities will trigger a federal nexus, resulting in NEPA evaluation during the design and permitting phases. Below is a summary of how each documentation and permitting activity will be addressed prior to planning activities being constructed.

Federal Nexus

- Federal funds will be used for all planning activities involving construction, which will establish a federal nexus and require NEPA to be cleared.
- An additional federal nexus will be created for *Planning Activity A* (levee reconstruction) by the United States Army Corps of Engineers (Corps) requiring the levee be rebuilt to Corps standards, and *Planning Activities B and C* (levee breaches), as the Corps will require permits on final plans to strategically breach the levees surrounding the old borrow pits.

State Environmental Policy Act

- SEPA will need to be cleared for all planning activities.

National Historic Preservation Act - Section 106

- For all construction components, Section 106 will be a programmatic clearance, as no work will take place in previously undisturbed areas. No acquisition of adjacent property will be necessary.

Endangered Species Act (ESA)

- A biological assessment (BA) will be required to clear ESA for the *Planning Activities B and C* (levee breaches).
- A programmatic BA will be used for *Planning Activity A* (levee reconstruction), as the work will be to an existing structure and outside of the ordinary high water mark, and to *Planning Activity D* (roundabout), as there will be only minor expansion of impervious surface, and the work is within developed right of way.

Permitting

- *Planning Activities A* (levee reconstruction), and *B and C* (levee breaches), will require local shoreline and floodplain permits.
- *Planning Activities B and C* (levee breaches) will require a Corps individual permit, Washington Department of Fish and Wildlife Hydraulic Project Approval, and Ecology 404 (Clean Water Act) permit.
- *Planning Activity D* (roundabout) will require Construction National Pollutant Discharge Elimination System (NPDES) and Municipal Stormwater NPDES permits.
- The acquisition of land or flood easement (*Planning Activity E*) will likely be exempt; however, side channel construction will be subject to consultation.

Mitigation

- Minor mitigation for ditch wetland in *Planning Activity D* may be required; however, the overall project is expected to be self-mitigating, due to considerable environmental improvements built into the plan.

Cumulative Effects

- No negative cumulative effects are expected for *Planning Activities A, B, or C* (levees), or *Planning Activity E* (flood easement); however, the existing condition is detrimental to habitat and increased flood risk.
- For *Planning Activity D* (roundabout), the area is already slated for development within the urban area, so improvements support community goals with no unknown cumulative effects. This combined with existing and planned public and agency outreach should prove effective at managing interagency and/or regulatory risks.

i. NEPA Status of the Plan

As this is a grant application for the Central Kittitas Valley Integrated Resiliency Planning effort, NEPA has not been cleared; however, NEPA documentation will be created, necessary permits will be acquired, and mitigation plans/strategies will be in place within one year of receiving TIGER planning grant funding.

ii. Reviews by Other Agencies

As the focus of this grant is to complete the planning actions to facilitate a future project, a full design is not available for agency review; that being stated, WSDOT draft assessments have generated enough excitement within the regulatory community (the same entities that will be providing permit guidance and in some cases sponsorship funding), that agencies are already pledging support and conceptualizing their own enhancement projects that could bolster our efforts.

iii. Environmental Studies/Documents

Several studies have already been undertaken in conjunction with other projects within the reach and the draft *Yakima River: Thorp to Thrall Site and Reach Assessment* (SRA). While not included with this application, they are available upon request.

- Draft *Yakima River: Thorp to Thrall Site and Reach Assessment* (WSDOT)
- Various studies within the reach sponsored by Central Washington University and used for reference in the SRA (CWU)
- Supplemental SRA addendum to Thorp to Thrall (Kittitas County Flood Control Zone District)
- Reecer Creek flood study (Kittitas County Conservation District)
- Draft *Dry Creek to Yakima River Site and Reach Assessment* (WSDOT)
- Plans, Specifications, and As-Builts for US 97 Dry Creek Bridge (WSDOT)
- As-Builts for Reecer Creek Floodplain Improvements (Kittitas County)
- As-Builts for Dolarway Road Improvements (City of Ellensburg)

iv. Discussions with USDOT Agencies

The Federal Highway Administration (FHWA) was consulted, and provided funding for emergency actions that occurred on I-90 in 1996 (milepost (MP) 103), I-90 in 2011 (MP 103, 104.5, and 105) and US 97 in 2009 (Dry Creek bridge, MP 138 vicinity).

B. Legislative Approvals

The Chronic Environmental Deficiency (CED) program, which is co-sponsored by WSDOT and Washington Department of Fish and Wildlife, requires Washington State legislative approval for funding actions. The SRAs for Thorp to Thrall and Dry Creek-US 97 to Yakima River Confluence have been approved for evaluation. Construction funding through the CED program from the recommendations generated by the SRAs are currently in provisional budgets that will require additional state legislative approval.



Figure 13: Deterrent to Development near West Ellensburg Interchange