

# **Fish Lake Trail Connection Study**

## **Concept Development Report**

December 2020 | Draft Report



## Acknowledgements

This Concept Development Report is the result of the effort and input of the City of Spokane and the Project Advisory Committee which was comprised of Neighborhood Councils, and Special Interest Groups. A special thanks is extedend to everyone who particiapted in the process to provide input on the study and make this connection the best it can be and to reach its full potential as a valuable asset to the community.

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## **Concept Development Report**

#### December 2020

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## 1. Executive Summary

The City of Spokane Parks and Recreation is proposing to extend the Fish Lake Trail to formalize the connection to the Spokane River Centennial State Park Trail (Centennial Trail) and the Peaceful Valley Trail. In its entirety, the Fish Lake Trail will extend over 6.5 miles from Queen Lucas Lake in the south to the Centennial Trail on the north side of the Spokane River. There exists a gap in the alignment where the trail crosses two BNSF rail lines. These projects have been designed and are currently pending funding for construction. The proposed connection would begin at the current northern *termi*nus of Fish Lake Trail, located at South Lindeke Street near the I-90 and US 195 interchange, ending at the Sandifur Bridge and People's Park trailhead off along Clarke Avenue. The study will also evaluate options for providing a connection to the trail from Tope Road. This Concept Development Report (CDR) documents the preliminary planning and alternative improvement evaluations considered to make this connection.

Fish Lake Trail is a key component of the City's network of regional trails, which are shared-use paths, providing access for both pedestrians and bicyclists, and are part of the regional transportation plan. Shared use paths are designed to American Association of State Highway and Transportation Officials (AASHTO) standards.

Users are anticipated to be a combination of recreational users as well as commuters. A goal of this project is to provide improved access to other trails and State Parks, but this connection will also provide a more direct connection to the commercial and business districts of downtown Spokane for the communities of West Hills, Latah/Hangman, Vinegar Flats and Grandview/Thorpe neighborhoods.

The study reviewed existing documentation including previous studies, historical ownership, traffic data, asbuilt documents of structures and utilities, GIS data and available topographic information. The topographic information was supplemented in critical areas with field survey to validate the accuracy of the information. Field reconnaissance was performed to validate the concepts and collect information regarding existing conditions, utilities, and environmentally sensitive areas.

Environmental and Cultural Resources were reviewed using available databases, existing reports and by conduct. A field survey was conducted to identify natural or potential cultural resources or historic property concerns that should be considered in the alternatives analysis.

This study evaluated four routes:

- 1. Routing the trail north along the existing Government Way shared-use path, then building a new path easterly through park land along the south side of Riverside Avenue to Latah Creek.
- 2. Traversing the hillside beneath the Railroad Bridge and High Bridge and continuing north through High Bridge Park to Riverside Avenue on the west side of Latah Creek.
- 3. Traversing the hillside underneath the railroad and High Bridge, then turning north and through High Bridge Park on the existing road.
- 4. Traversing the hillside underneath the railroad and High Bridge south, then crossing the 11th Avenue Bridge and following the existing gravel sewer easement north to Riverside Avenue on the east side of Latah Creek.

Factors were considered in determining the best solution for the connection. Among these were

• User Experience (connections, grades, safety, interpretive opportunities)

- Environmental Impacts
- Cultural Resource Impacts
- Constructability
- Construction Costs

The preferred alignment has been identified as ....

Priorities as the City moves forward with this project include development of the preferred concept to a 30percent design level and refining the cost estimate. It is likely that implementation of the project may need to be further defined as smaller projects based on available funding. Developing an implementation plan will need to consider fully-developed sections of the trail that cover a shorter distance versus longer distances that have less developed sections. A discussion over the priorities will be needed with City staff and stakeholders to identify limits and define the scope of a phased implementation.

## 2. Introduction

#### **REPORT OBJECTIVES**

The objective of this CDR is to evaluate and document the decision criteria and methodology used to evaluate the alignment alternatives for the connection between the Fish Lake Trailhead, located near the I-90 / US 195 interchange, and the Centennial Trail on the north side of the Spokane River. Additionally, the project will provide a connection from Fish Lake Trail to Thorpe Road in order to improve accessibility to the Canyon Bluffs and Vinegar Flats communities.

Factors considered in the evaluation process include, but are not limited to: effectively making connections to the existing network, user experience, grades, safety, impacts to cultural resources and environmentally critical areas, constructability considerations and costs.

#### PROJECT FUNDING AND SCHEDULE

The project proponent is the City of Spokane Department of Integrated Capital Management. The City received a grant in the form of TAP funding from the Spokane Regional Transportation Committee (SRTC) to perform this study. Upon the selection of the preferred alternative, preliminary design will be funded through the City. Funding for construction has not been identified at this time.

#### **EXISTING TRAILS AND CONNECTIONS**

The network of existing trails in the region includes:

- The Centennial Trail which is located along the north side of the Spokane River and accessed via the Sandifur Bridge.
- Fish Lake Trail that extends south to Queen Lucas Lake and north providing access to Spokane Falls Community College. Continuous access to Queen Lucas Lake is interrupted by two crossings over two active BNSF rail lines. This missing link has been designed and is pending funding of \$5-6 million to construct the bridge crossings.

- Peaceful Valley Trail has a trailhead on Clarke Avenue at the intersection of Riverside Avenue near the south end of the Sandifur Bridge. The trail leads east from the trailhead along the south side of the Spokane River to Riverfront Park creating a loop with the Centennial Trail on the north side of the river.
- Trolley Trail in the Grandview/Thorpe neighborhood is currently an unimproved trail used by runners and mountain bikers. It is managed by the City of Spokane Parks and Recreation.

#### **PREVIOUS STUDIES**

Previous planning efforts of several groups and agencies have recommended similar improvements to regional parks, recreational areas and the non-motorized transportation network and has informed elements of this concept study.

- The Great Spokane River Gorge Strategic Master Plan (2005)
- Latah Valley Hangman Creek Trail Corridor Trail Concept Study (2018)
- Parks and Recreation Roadmap to the Future (2010)
- Spokane County Regional Trail Plan (2014)
- Peaceful Valley Neighborhood Action Plan (2015)
- Spokane Comprehensive Plan (2017)

#### **PROJECT GOALS**

The project goals are to provide a connection between the Fish Lake and Centennial Trails while at the same time improving access and connections to the neighboring communities. An Additional goal is improving the experience of High Bridge Park by making the park more accessible and increasing park use

The design alternatives proposed in this report have been evaluated using the following criteria:

- User Experience
- Environmental Compliance and Critical Area Impacts
- Cultural Resources Avoidance and Compliance
- Constructability
- Construction Costs

#### **RELEVANT STANDARDS AND DESIGN CRITERIA**

The alternatives developed for this study are based on the following guidance manuals and design standards:

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- AASHTO Green Book: A Policy on Geometric Design of Highways and Streets, 5th Edition (2011)
- NACTO Urban Bikeway Design Guide
- AASHTO Geometric Design of Very Low-Volume Local Roads (2001)

- AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, 2<sup>nd</sup> Edition (December 2009 with Interim Revisions
- AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition (2011 with Interims through 2015)
- AASHTO LRFD Bridge Design Specifications, Eight Edition (2017)
- WSDOT Design Manual (2019)
- WSDOT Bridge Design Manual (2019)\

Fish Lake Trail Connector			
Trail Width	10 feet min, 14 feet desired 12- feet proposed 16 to 18 feet along switchbacks		
Shoulder Width	2 feet		
Railings and Fall Protection	54" height		
Design Speed	18 to 22 mph		
Grade	5% maximum		

#### Table 2-1: AASHTO Trail Design Guidelines

The design speed of the trail will be selected based on the final alternative chosen. Some of the alternatives have longer segments of sustained grade approaching the maximum allowable of 5%. In these cases, a higher design speed will be selected to account for cyclists traversing downhill

Due to the challenging grades, design deviation may become necessary. If topographic challenges present a situation where horizontal curve radii are smaller than needed for the proposed design speed, warning signs will be implemented to help alert the user. It may also be beneficial to widen the trail in these challenging areas, similar to the widening required for switchbacks.

Roadway crossings may occur beyond the calculated vehicular sight distance at Riverside Drive. If this is found to be the case, mitigating pedestrian signals and signage will be installed to alert drivers of the crossing.

#### STAKEHOLDER AND PUBLIC ENGAGEMENT

A Community Involvement Plan was prepared for this project to establish timely, transparent, understandable, and objective communications and create ample opportunities for public and stakeholder engagement throughout the alternatives analysis and preliminary design process.

The Community Involvement Plan (Plan) included the following elements:

**Project Advisory Committee (PAC):** The PAC was established of stakeholder groups to help guide the study on behalf of key stakeholders and was comprised of the following Neighborhood Councils and Special Interest Groups:

- Neighborhood Councils
  - o Grandview/Thorpe
  - o Latah/Hangman
  - Peaceful Valley
  - o West Hills
- Special Interest Groups
  - Spokane Tribe of Indians
  - Friends of the Fish Lake Trail
  - Inland Northwest Trails Coalition
  - o Bicycle Advisory Board
  - Friends of the Bluff
  - Friends of the Centennial Trail
  - Washington State Parks
  - Spokane Bicycle Club
  - o Disc Golf Club
- City Departments
  - Integrated Capital Management
  - o Pedestrian and Bicycle Planning
  - Traffic Planning
  - Parks Department

#### **Public Outreach:**

The outreach efforts included engagement opportunities with the PAC as well as the general public. All events were held virtually. The outreach events include three meetings with the PAC with two outreach events to the public. The three Phase 1 PAC meetings are summarized as follows:

#### PAC Meeting No. 1 - Study Goals, Issues, and Opportunities

The intent of this initial meeting which was intended to be held upon completion of the baseline conditions studies was to affirm the study goals and objectives, discuss preliminary baseline conditions findings, and discuss issues, opportunities, and solution ideas with the PAC.

#### PAC Meeting No. 2 - Initial Alternatives, Evaluation Process

The second meeting with the PAC was held upon completion of the alternatives development tasks. The purpose of this meeting will be to review initial alternative solutions and review evaluation process and criteria with the PAC.

#### PAC Meeting No. 3 - Evaluation Results, Preferred Solution

The third and final PAC Meeting was held upon completion of the alternatives evaluation. The purpose of this meeting will be to review evaluation process results and the preferred solution with the PAC. Refinements to the preferred solution will be incorporated into the 30% design upon the completion of the study.

The two Phase 1 public meetings are summarized as follows:

#### Public Meeting No. 1 - Study Objectives, Initial Alternatives, Evaluation Process

Public Meeting No. 1 was held following completion of the alternatives development tasks and after PAC Meeting No. 1. The purpose of this meeting will be to introduce the project, review goals and objectives, explore issues and opportunities, introduce initial alternative solutions, and review evaluation process and criteria with the community. Initial feedback gathering will focus on user acceptability/preference of the possible alternatives.

#### Public Meeting No. 2 - Evaluation Results, Preferred Solution

Public Meeting No. 2 was held upon completion of the alternatives evaluation and after PAC Meeting No. 2 The purpose of this meeting will be to review evaluation process results and the preferred solution with the community and to gather feedback to enhance the user experience for the preferred solution. Refinements to the preferred solution will be incorporated into the 30% design.

#### Transportation Subcommittee and Transportation Technical Committee

The project was presented to the City's Transportation Subcommittee on October 6, 2020 and the Transportation Technical Committee (TTC) on November 3, 2020. The presentations provided a general overview of the project but was specifically to inform the Subcommittee and Commission of changes being considered to South Government Way and the closure of High Bridge Park Road to traffic permanently.

## 3. Resource Inventory and Compliance

An environmental review of the project war prepared by Anderson Consulting in order to provide a comparison of the potential impacts associated with each of the alternatives to the natural and built environment. A Cultural Resource review was prepared by Historical Research Associates, Inc. to specifically provide a review of the archaeological and historical issues associated with the trail alignments.

#### NATURAL RESOURCES

There is a variety of protected resources and critical areas within the project vicinity. These include aquatic resources, shorelines of the State, riparian habitat, flood plains, geological hazards, a sole source aquifer and the presence of priority habitat and species.

There are no wetlands identified or delineated through the City of Spokane GIS. However, a formal aquatic resource delineation has not been conducted, and a potential hillside seep wetland may exist between I-90 and Sunset Boulevard over Latah Creek.

The aquatic resources within the study area include Latah Creek, Garden Springs Creek, the Spokane River and wetlands associated with these water bodies. They are regulated under the City's Critical Areas Ordinance and the Clean Water Act. A single potential seep wetland was identified by Anderson Consulting in their site visit in June of 2020 located along the steep slope adjacent to High Bridge Park Road which the design of the trail should take efforts to avoid. New pedestrian bridges associated with three of the four alternatives may result in direct impacts to Latah Creek.

Latah Creek and the Spokane River are both within the jurisdiction of the City of Spokane's Shoreline Management Plan (SMP) which includes associated wetlands, floodways, and the 100-year floodplain. The Project must incorporate and comply with the requirements of the SMP related to the shoreline buffer, shoreline districts and designations, design standards, and the requirements for recreational uses. The two water bodies are also within the Urban Conservancy Environment environmental designation, which extends the shoreline jurisdiction and buffer 200 feet landward from the ordinary high-water mark. Recreational development, such as this trail, is allowed within the shoreline jurisdiction under a conditional use permit with a habitat management plan.

The riparian habitat areas (RHA) are area-protected under the Spokane Municipal Code as wildlife habitat bounding aquatic resources that support fish and other wildlife. The width of these areas are defined in the code as the outer edge of the 100-year floodplain or 130 feet from the ordinary high-water mark, whichever is greater. Latah Creek within the Project Area is within riparian zone 5 and the Spokane River is within riparian zone 2. Trails are allowed within these zones but require a habitat management plan.

Any new bridges that have piers or abutments placed within the Zone A designated floodplain will require a Floodplain Development Permit from the City. Use of existing bridges, such as is proposed as part of the Green Alignment using 11th street bridges to cross Latah Creek, would avoid impacts to the floodplain.

A single geological hazard has been identified which is along the slope beneath the I-90 and Sunset Boulevard Bridges. This slope, along which three of the alignments will traverse, has been identified as being comprised of erodible soils. The slope along the right bank of Latah Creek, along the toe of which the Green Alignment will traverse, is also identified as an erodible slope. See Figure 3-1 for a depiction of all critical areas near the project area.



FIGURE 3-1: CRITICAL AREAS

#### **CULTURAL RESOURCES**

A Cultural Review of the alternatives was conducted by Historical Research Associate, Inc. (HRA) in July of 2020. The study provided high level information on potential cultural resource or historic property concerns for each alignment and the Thorpe Road Connector. While the alignments have evolved slightly since that time to address site-specific challenges or other improvements to the trail, the changes do not affect the findings of this review. A full assessment of NRHP eligibility will be conducted for the selected Option during the design process.

Background research identified previously recorded cultural resources located near or adjacent to each of the alignment alternatives. The DAHP predictive model, which is used to establish probabilities for precontact cultural resources, depicts all three alignment alternatives as within a Very High-Risk area, primarily due to the proximity of the Spokane River and Hangman (Latah) Creek, and the use history throughout the precontact and historic periods. The research also identified data gaps in the vicinity of and adjacent to all three alignments, as discussed in each option below.

The DAHP predictive model places the Thorpe Rd. Connector within a Very High-Risk area for archaeological resources. In addition, two archaeological sites lie within the Thorpe Rd. Connector.

The Thorpe Rd. Connection may affect a historic-period resource with any changes to the existing tunnel beneath the BNSF alignment. The tunnel was built in 1913 and is a board-formed poured concrete, closed-spandrel arch railroad viaduct over Thorpe Rd. on the BNSF Spokane Subdivision (DOT Crossing Inventory No. 095928U). This historic-period resource has not been surveyed or recorded and has no determination of NRHP eligibility.

HRA reviewed archaeological and architectural site records, previous cultural resources studies, and DAHP's predictive model for the three alignments alternatives. As noted above, 1. There are two archaeological sites within the Thorpe Rd. Connector (45SP569 and 45SP570), but both have been determined not eligible for listing in the NRHP. While the connector is located in a Very High-Risk area, the entire alignment has been previously surveyed for archaeological resources, and no other resources have been identified. All options utilize the Thorpe Rd. connector, which travels through the BNSF Spokane Subdivision viaduct tunnel (DOT Crossing Inventory No. 095928U). The viaduct is an historic-period resource associated with the growth of Spokane County's transportation infrastructure, which may need to be evaluated for listing in the NRHP depending on the potential for Project effects.

The Red Alignment is located in a Very High-Risk area for archaeological resources, and, although no archaeological resources have been previously recorded within the alignment, most of it has not been surveyed. The alignment is located within 10 m of unevaluated site 45SP551, which includes the structural remnants of an unknown commercial operation. There are no NRHP-listed resource located within or adjacent to the alignment, though one park (the 1908 High Bridge Park) may be eligible for NRHP listing. Option 3 also aligns adjacent to historic-period residential resources associated with the West Hills neighborhood, which may need to be evaluated for listing in the NRHP depending on the potential for Project effects. Additionally, Option 3 would construct a new bridge atop the relic piers of the no longer extant High Bridge, which may need to be evaluated for listing in the NRHP depending on the potential for project effects.

Additionally, the Red Alignment would construct a new bridge atop the relic piers of the no longer extant High Bridge, which may need to be evaluated for listing in the NRHP depending on the potential for project effects.

The Blue and Purple Alignments is located in a Very High-Risk area for archaeological resources and is within 70 m of an unevaluated precontact archaeological site (Site 45SP16); most of the alignment has not been surveyed for archaeological resources. One NRHP-listed resource (the 1911 Sunset Boulevard Bridge) is located within these alignments. The alignment is proximate to two additional historic-period bridges (the 1920 Riverside Avenue Bridge and the 1972 BNSF Hangman Creek [Latah Junction] Bridge) and one park (the 1908 High Bridge Park), all of which may be eligible for NRHP listing.

Blue and Purple also align adjacent to historic-period residential resources associated with the West Hills neighborhood, which may need to be evaluated for listing in the NRHP depending on the potential for Project effects.

The Green Alignment is located in a Very High-Risk area for archaeological resources, includes the locations of two known archaeological sites (Sites 45SP266 and 45SP713), and is within approximately 60 m of two additional archaeological sites (Sites 45SP17 and 45SP438). One of these sites (45SP266) is eligible for the NRHP, while the others are unevaluated. Only a portion of the alignment has been surveyed for archaeological resources. One NRHP-listed resource (the 1911 Sunset Boulevard Bridge) is located within the Option 2 alignment. The alignment is proximate to three additional historic-period bridges (the 1927 11th Avenue Bridge, 1920 Riverside Avenue Bridge, and the 1972 BNSF Hangman Creek [Latah Junction] Bridge), all of which may be eligible for NRHP listing. Portions of the Option 2 alignment are adjacent to two NRHP-listed historic

districts (the Ninth Avenue Historic District and the Browne's Addition Historic District). Option 2 also aligns adjacent to historic-period residential resources associated with the West Hills neighborhood, which may need to be evaluated for listing in the NRHP depending on the potential for Project effects.

#### NEIGHBORHOOD IMPACTS, EQUITY AND SOCIAL JUSTICE

Pro-equity practices, processes, and outcomes are reviewed throughout the project lifecycle. A public Communications and Outreach Plan was developed for this project that identified project stakeholders and provided an outreach strategy to inform the public of the status and scope of the project and to receive input and feedback on the alternatives. There exist minority and low-income populations are present within a one-mile radius of the study area. The stated goals of this project are to improve connections from adjacent neighborhoods to trails that can connect users to downtown and other areas of the city. It is anticipated that this project will be a benefit to the local community. No residential relocations are required for the project.

Depending on the alternative selected, construction of the project may result in impacts to traffic on South Government Way. Changes to the channelization on South Government Way may result in traffic impacts which will need further study to assess the impacts to level of service.

There are a number of residential properties near some of the proposed alternatives. The project will increase pedestrian traffic which may raise privacy and safety concerns with these property owners. These properties include residences near Milton Street and 8th Avenue, and at West 11th Avenue and High Bridge Park Road.

Minority and low-income populations are present within close proximity of the Project area. The Project is expected to be beneficial to any populations present in the area. Displacements or significant acquisitions are not anticipated as part of the project.

There exists unauthorized camping by homeless populations along the shoreline of Latah Creek and within High Bridge Park. The increased public use and maintenance of the trail could discourage this activity and displace some of the homeless population but would also improve public safety.

High Bridge Park, the Fish Lake Trail and the Centennial Trail are publicly owned parks or recreational areas that are 4(f) resources, and as such will require approval from the agency with jurisdiction, whether that is FHWA or WSDOT, for impacts to these areas, public involvement and potentially mitigation.

#### PERMITS, REVIEWS, AND APPROVALS

Anticipated permits and approvals are listed in the table below. This list will be updated as necessary as the design of the selected alternative is developed. During the subsequent design phase, as the project develops and those elements can be better defined, all applicable permits and approvals will be pursued. In addition, the project design will be reviewed by the Spokane Nation of Tribes. Descriptions of the necessary and potential permits, approvals, and environmental review processes that may be needed for this project include the following:

Funding for the Project is provided through a Transportation Alternatives Program (TAP) grant provided by the Federal Highway Administration (FHWA) and administered by administered by the Washington State Department of Transportation (WSDOT). Therefore, the project is subject to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800).

Environmental Review Process/Product, or Permit/Approval	Responsible Agency	Overview of Permit/Approval Trigger	Permit/Approval Regulatory Code and Pertinent Information
FEDERAL			
National Environmental Policy Act	FHWA/SDOT Local Programs	Federal Nexus: funding	Approved NEPA Categorical Exclusion (CE) evaluating full range of disciplines
Threatened and Endangered species	USFWS and/or NMFS	Federal Nexus: USACE permit.	Endangered Species Act (1973), Section 7 and Section 4(d); 50 CRF, Part 402 Biological Assessment or No Effect determination required for CE/NEPA approval and 404 permits
Magnuson –Stevens Fishery and Conservation Act	NMFS	Federally funded or permitted projects that may adversely affect designated essential fish habitat (EFH).	The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267)
Section 106 Review	City of Spokane coordinates with the State Department of Archeology and Historic Preservation (DAHP) and the Spokane Tribe	Projects are screened for potential cultural resources, regardless of funding, which will determine if a survey is required to comply with Section 106 and Spokane Historic Preservation Program requirements.	Section 106 of the National Historic Preservation Act of 1966
Section 4f	City of Spokane, Spokane Tribe & DAHP	Federally funded or permitted projects that may impact parks or recreational areas.	Section 4(f) the National Historic Preservation Act of 1966
Clean Water Act Section 404 Nationwide Permit	USACE	Any discharge of fill in the waters of the U.S. (includes tidal, lakes, streams and wetlands). Includes temporary discharges such as sandbags or incidental fallback during dredging. Threshold for using Nationwide Permit 14 (Linear Transportation Projects) is < 1/2 acre loss of freshwater, < 1/3 acre loss of tidal water.	Clean Water Act 1972 Discharges requiring a permit 33 CFR 323.3
Floodplain	DEMA and City of Spokane	Impact to 100 yr floodplain and no rise certification	JARPA and No Rise Certification and Hydraulic Analysis if applicable

#### Table 3-1: Environmental Permit Matrix

STATE			
State Environmental Policy Act (SEPA)	Ecology and the City of Spokane	Work over or within water	SEPA Checklist and Determination of Non- significance
Hydraulic Project Approval (HPA)	WDFW	Working within waters of the state. This also includes work that has the potential to impact waters of the state occurring landward within 200 feet of the OHWM	Chapter 75.20 RCW Chapter 220-110 WAC
CWA-NPDES/Non-point source pollution	Ecology and City of Spokane	Greater than 1 acre and potential to discharge to waters of US	Clean Water Act, Section 401 Chapter 173-225 WAC NPDES Notice of Intent for coverage under Construction General Permit and Stormwater Pollution Prevention Plan/Temporary Erosion and Sediment Control Plan
LOCAL			
Shoreline Master Program	City of Spokane and Ecology	Work within 200 feet of OHWM	Shoreline Conditional Use Permit/Shoreline Substantial Development Permit. Habitat Management Plan. Public Process (community meeting, hearing, and notices).
Critical Areas Ordinance	City of Spokane, Ecology, USACE	Impact to wetlands and/or buffers	JARPA for 404, 401 and CAO Checklist for City permit Habitat Management Plan
Environmental Justice	City of Spokane	Low income and minority populations	Communication and signage with low income and minority populations
Grading Permit	City of Spokane	Earth moving activities	Grading Permit and plans

#### UTILITIES

The following utilities have been identified within the project limits:

- Sanitary Sewer, Interceptor, gravity and pressure mains
- Water Transmission and Distribution Main
- Gas Line
- Overhead Electrical Lines in north end of the park near Riverside

Coordination with all utilities will occur during the subsequent design phases and construction process. Measures will be taken during the design phase to avoid any conflict with the identified utilities. The most significant challenge may be avoidance of the 36-inch water distribution which traverses the valley between the Sunset Boulevard Bridge and the BNSF Rail Bridge. Routing and grading design consideration should be taken to avoid cut over this line. A 42-inch concrete sewer interceptor is located underneath the gravel path along the east bank of Latah Creek, which shares an alignment with the proposed Green alternative. Subsequent design will need to assess possible impacts from fill over the main or impacts due to wall construction. Solider Pile Walls will need to be offset to avoid the utility.

Downstream of the Marne Bridge is a series of three parallel sanitary sewer siphons that run beneath Latah Creek. Assuming the existing piers are in suitable condition to be used for the new bridge, there will be no impacts to these lines.

The storm conveyance system along Government Way will need to be relocated in line with adjusted curb line in the Red Alignment.

#### COMPETING USES IN HIGH BRIDGE PARK

The alignments have been developed with consideration of the existing uses in High Bridge Park. These include a dog park located near the northeastern corner of the park and is fenced in. There is also a Disc Golf Course that is well used within the park. The course is located in the northern limits of the park and extend from Avenue A to the riparian areas adjacent to Latah Creek. As a part of this study, the Disc Golf Course representatives were reached out to understand planned changes. There are no specifics at this time and any changes to the course will be within its existing footprint.

#### STORMWATER DESIGN

Stormwater mitigation will be required to address increased runoff the new impervious surfaces associated with the selected alternative. The stormwater mitigation will be addressed in the subsequent preliminary design of the preferred alternative. For the purpose of evaluating the alternatives in this study, a qualitative approach has been taken. Those alternatives with a greater project footprint of new paved areas will require more mitigation. The Red Alignment, for example, will share the existing footprint of Government Way, and therefore will require less mitigation.

## 4. Overview of Alignments

#### **BEGINNING AND ENDPOINTS AND ELEVATIONS**

Several alignments had been sketched in previous reconnaissance. All alignments begin at the Fish Lake Trailhead and end in the People's Park parking lot south of the Spokane River. The Red alignment is adjacent to Government Way and parallels Riverside Boulevard as it passes through High Bridge Park crossing Latah Creek with a new pedestrian bridge located north of the Marne Bridge. The Blue alignment crosses the creek via a new bridge located south of the Marne Bridge and passes directly through High Bridge Park, under the Sunset Boulevard Bridge before coming out of the valley at West 8<sup>th</sup> Avenue. The Green passes beneath the I-90 and BNSF bridges, crosses Latah Creek via the West 11th Street Bridge and follows the right bank of Latah Creek to reach the People's Park parking lot. During the course of this study, changes and refinements have been made to the initially defined options and a fourth – the Purple alignment – that follows the Green Alignment from the point of beginning and down the steep slopes beneath the bridges. Once at High Bridge Park Road, the Purple heads north through the park following the existing roadway until crossing the creek at the same location as proposed for the Blue.

All alignments run downhill from the 1900-foot elevation of the Fish Lake Trailhead to the 1750-foot elevation of the People's Park parking lot. In addition, this area slopes towards Latah Creek. Most of the alignments: Blue, Purple, and Green, utilize new wall structures to allow the trail to navigate the change in elevation and traverse across the hillside. The length of trail and steepness of the hillside results in walls of significant length and height. The Red alignment is the exception. It minimizes the number of new walls required by utilizing S Government Way,

Utilizing consistent wall types throughout the project facilitates efficiency in construction. It also allows for the direct comparison between alignment alternatives. For those reasons, the number of wall types considered for this evaluation were minimized. In general, a cut wall type was chosen that could be used for most cut walls on the project, and a fill wall type was chosen for most fill walls on the project. In subsequent design phases, once a preferred alignment is chosen and site-specific geotechnical information is available, additional wall types can be evaluated.

For the fill walls, the maximum wall heights vary from nine to 35 feet. There are two unique applications. The first is where there are no specific site constraints. This is applicable for the majority of the project area. The second application is for fill walls located under existing bridges. This second application is seen on the Green and Purple alignments that have trail switchbacks under BNSF and I-90 bridges. These two applications are distinct enough from a structural and cost perspective that they require the use of two different wall types.

For fill walls with no specific site constraints, possible wall types include concrete or metal crib walls and mechanically-stabilized earth (MSE) walls. These walls require a base with of 50-70% of their height. They are economical as long as there is not near surface bedrock that must be excavated to accommodate the base width. Excavating bedrock or adopting an alternative wall type, such as fill behind soldier piles or cast-in-place concrete walls, would add to the project's construction cost. Geotechnical investigations in the preliminary design phase will help to determine the probability of this risk being realized. In the absence of more information, MSE walls were assumed for the fill walls due to their economy, ability to accommodate soil settlement, and availability of different facing options. MSE walls can utilize sculpted shotcrete rock, precast concrete fascia panels, or rock-filled gabion baskets for facing to achieve different aesthetic goals.

For fill walls located under existing bridges, adding loads to the existing bridge foundations is a concern. One way to minimize the load from fill is to use a lightweight fill material, such as geofoam. The geofoam would be placed on top of a MSE or cast-in-place concrete base and, since this material is self-supporting, it would not require a wall structure to contain it. It is simply covered by a membrane to increase its durability and faced with precast concrete panels. In addition to minimizing loads on the existing bridge foundations, using lightweight fill in the multi-tiered walls would reduce demands for the geotechnical global stability analysis on this steep hillside.

Similar to the fill walls, there are two applications for cut walls: locations with no specific site constraints and under existing bridges, in particular the I-90 Bridge. The maximum wall heights vary from five to 27 feet. Soil nail and soldier pile walls are the preferred wall types for cut walls because during construction they do not require temporary shoring or excavation. However, soldier pile walls would not be feasible under the I-90 Bridge because overhead clearance is required for the installation of the piles. To facilitate a direct comparison between the alternatives, soil nail walls are assumed for all cut walls on the project. In future design phases, walls for the chosen alignment will be examined in further detail and additional wall types will be considered, particularly for walls with maximum heights less than 12 feet.

Three options for crossing Latah Creek were considered: a new bridge using the relic High Bridge foundations; a new bridge upstream of the Marne Bridge; and reconfiguration of the 11th Avenue Bridge at Vinegar Flats. A reconfiguration of the Marne Bridge was not considered due to the geometric constraints and safety considerations.

The Red, Blue and Purple alignments could mix and match bridge alternatives. The Green alignment stays east of Latah Creek to the 11th Avenue Bridge.

A key consideration for each alignment is creating a safe trail crossing of Riverside Avenue. Rough terrain, roadside vegetation, intersections, vehicle speeds, and roadway curvature present visibility challenges for all options. Riverside Avenue crossing options include a grade-separated overcrossing and two locations for on-grade crossings that could feature a pedestrian refuge and rectangular rapid flashing beacons (RRFB).

#### **CROSSING LATAH CREEK AND RIVERSIDE AVENUE**

All alternatives will cross Latah Creek at some point, and all alternatives need to cross West Riverside Avenue. Like all waterbodies in Washington, Latah Creek is subject to a Shoreline Management Program. In addition to municipal policies and regulations, trail and bridge construction near and crossing Latah Creek is regulated by the state Department of Ecology and the US Army Corp of Engineers. Latah Creek, with a history of flooding in this reach, is approximately 60-miles long, draining more than 670 square miles of Washington and Idaho, entering the Spokane River at the study area. The Latah Creek floodplain is constrained by the existing Marne Bridge which carries W Riverside Ave over Latah Creek.

Three options for crossing Latah Creek were considered: a new bridge using the relic High Bridge foundations (Bridge ST-2 and ST-3); a new bridge east of the Marne Bridge (Bridge ST-1); and reconfiguration of the W 11th Avenue Bridge at Vinegar Flats. A reconfiguration of the Marne Bridge was not considered due to the geometric constraints and safety considerations.

The Blue, Red, and Purple alignments could mix and match bridge alternatives (ST-1, ST-2, ST-3). All three alignments have the majority of their trail length on the west side of Latah Creek and cross the creek in the vicinity of W Riverside Avenue. The Green alignment is unique in that the majority of the trail length is on the east side of Latah Creek, and it crosses Latah creek further south, on the W 11th Avenue Bridge.

A key consideration for alignments primarily on the west side of Latah Creek: Blue, Red, and Purple, is creating a safe trail crossing of W Riverside Avenue. W Riverside Avenue carries a relatively modest average of 2,270 motor vehicles per day and has a posted speed of 30 miles per hour. Observed speeds can be much higher though there are no reported collisions resulting in fatalities or serious injuries. Collisions in general in the Marne Bridge vicinity of W Riverside Avenue are not out of line with similar locations in the city, perhaps as a result of the caution motorists, cyclists, and pedestrians exercise due to obvious challenges of the alignment. Rough terrain, roadside vegetation, intersections, vehicle speeds, and roadway curvature present visibility challenges.

W Riverside Avenue crossing options include an at-grade crossing (Red Alignment, Bridge ST-2) and a gradeseparated overcrossing (Red Alignment, Bridge ST-3). The at-grade crossing could feature a pedestrian refuge and rectangular rapid flashing beacons (RRFB). The Blue and Purple alignments avoid crossing W Riverside Ave by staying south and east of the roadway. For simplicity and to allow direct comparison between the trail alignment alternatives, all new bridge structures are assumed to be weathered steel through trusses with a concrete deck. The cost for that type of structure is around \$450 per square foot. If there is interest, signature bridge structure types such as suspension or cable-stayed can be investigated further in the next design phase. For planning purposes, a cost of \$900 per square foot can be used for those bridge types. The bridge cost estimates include the bridge and associated approach walls.

On the Blue and Purple alignments, at the location of Bridge ST-1, east of the Marne Bridge, the creek channel is shallow, resulting is a wide floodplain. To avoid placing fill in the floodplain, the bridge is assumed to span it. This results in a bridge length of 310 feet. For a steel through truss structure, this would be comprised of three, approximately 100-foot spans, two new bridge piers, and two new abutments with approach walls. Providing adequate clearance from the flood elevation to the bottom of structure will need to be considered. The critical clearance location is on the north side of the creek.

On the Red alignment, Bridge ST-2 and ST-3 cross Latah creek at the same location. Bridge ST-2 has an atgrade crossing of W Riverside Ave. Bridge ST-3 has a grade separated crossing, resulting in a higher, longer bridge. Both bridges provide the opportunity to use existing, relic piers. An inspection and geotechnical evaluation is required to determine if the relic piers can be used for a new bridge structure. The addition of a concrete column and cap would be required to bring the relic piers to the elevation of the trail. Assuming they can be used, the longest span between relic piers, over the center of Latah Creek, is approximately 80 feet. To reduce construction cost and minimize work within the creek, it is assumed those two piers will be utilized for the new bridge.

To efficiently use a consistent superstructure type and depth, an 80-foot span is adopted as the typical bridge span and used to determine the location of the remaining piers for both Bridge ST-2 and ST-3. The total bridge length is determined by considering the typical span length and limiting walls to about 15 feet tall. For Bridge ST-2 this results in a 285-foot bridge consisting of four spans, one new bridge pier, and two new abutments with approach walls. For Bridge ST-3, a 400-foot bridge consisting of five spans, two new bridge piers, and two new abutments with approach walls. All new bridge piers are anticipated to be single concrete columns with a cap..

## 5. Detailed Description of Alignment Alternatives

#### **RED ALIGNMENT**

Beginning at the Fish Lake Trailhead at South Lindeke Street, the Red Alignment proceeds north along South Government Way crossing Sunset Boulevard and continues along the South Government Way alignment. Today there is a 10-foot wide asphalt path on the east side of the road. The proposed 12-foot wide shared-use path would use this footprint and reconstruct the path, the condition of which is deteriorated. A five-foot separation from traffic would be required at a minimum which would be included in the form of a planter strip. Other elements of the concept include adding bike lanes in the existing shoulders of the roadway. Bicyclists would still be allowed to use the shared-use path separated from the roadway, but for those that are more comfortable driving in a dedicated bike lane next to traffic that would be an option available to them.



A grade-separated option of a pedestrian bridge had been considered for the crossing of Sunset Boulevard, but ultimately a suitable location could not be found. The ability to construct a pedestrian bridge on an alignment that would achieve the required 17-foot clearance from the roadway posed feasibility and cost issues and property impacts that ruled it out. An at-grade crossing of Sunset Boulevard will require minor modifications to the existing signal. A pedestrian refuge and lane narrowing on Sunset Boulevard would reduce the long crossing distances

South Government Way is a four-lane arterial with an average daily traffic volume of 8,055 vehicles per day (vpd) and is classified as a truck route. This study looked at modifications to the channelization of the roadway to accommodate a shared-use path within the existing right of way which would convert the four-lane roadway to a single lane in each direction with a dedicated left-turn lane. The existing

roadway is 45 feet wide from face of curb to face of curb with a 10-foot-wide paved path on the east side. A 5foot sidewalk is located on the west side between Sunset Boulevard and West 5th Avenue where it terminates. A retaining wall is located on the east side beginning approximately 175 feet north of West 5th Avenue. The widened path maintains its 10-foot width through this section, while there is no sidewalk on the west side.

The concept is illustrated in the graphics below which would provide a 12-foot path on the east side of the roadway where the widened path exists today with a 5-foot separation from the roadway. Bikes would be accommodated within the roadway with dedicated buffered bike lanes to provide commuters or other riders who are more comfortable riding with traffic an option from sharing the path with other users where speeds may not be compatible.



Figure 5-1: South Government Way Channelization

Within the limits of the retaining wall, the northbound bike lane would transition to a shared lane with traffic due to the constrained space. A shared lane is best used on a long downhill gradient such as exists here, where the differential speeds between bikes and cars would be lower as opposed to the west side of the road where bicyclists will be travelling uphill. The roadway width would be reduced to 40 feet. A buffered bike lane would be provided for the southbound bicyclists.



Figure 5-2: South Government Way Channelization at Retaining Wall

As the trail approaches Riverside Avenue, it will turn right and enter High Bridge Park approximately 500 feet south of the Riverside Avenue intersection. It had been considered to place the trail along Riverside Avenue, but the narrow width and steep slopes along the south made it impractical. The route through the park will provide an improved experience for users and will traverse the slope down into the park with a sinuous

alignment following the northern boundary and to a crossing at Riverside Avenue. Walls will be needed to accommodate the alignment as it traverses the slope.

The trail will need to negotiate the presence of overhead power lines and avoid the dog park that is located in this corner of the park.

Two crossings of Riverside Avenue have been evaluated for the Red Alignment. The first is an at-grade crossing to the west of South A Street. The primary issue with an at-grade crossing at this location is the limited sight distance available to drivers due to the horizontal curvature of the roadway and the trees on the inside of the curve. If this crossing is selected it would require advanced warning for motorists, speed control, view clearing and vegetation management, and active crossing control such as a Rectangular Rapid Flashing Beacon (RRFB). In addition to the RRFB and conventional crosswalk striping, a pedestrian refuge island would enhance active transportation safety at this crossing. Once on the north side of Riverside Avenue, the trail would cross Latah Creek on an active transportation (pedestrian) bridge aligned with the relic piers in Latah Creek, using the historic foundations of the High Bridge which was demolished in 1978. Similar to the federally funded construction in 2004 of the nearby Sandifur Bridge, this repurposing could reduce construction costs as well as resource damage, permitting, and mitigation. New construction to complete the bridge and trail connections could necessitate excavation and potential cultural resource disturbance.

An alternate crossing would be a grade-separated option of a bridge that would follow the same alignment of the bridge described above but with an abutment up the slope from Riverside Avenue in the park. The pedestrian bridge would cross the roadway with a minimum clearance to the underside of the bridge of 17 feet, placing the deck surface approximately 20 feet above the elevation of Riverside Avenue. This bridge would be considerably longer but would eliminate the safety issues associated with the at-grade crossing. Depending upon the location of the intermediate piers, it would also have fewer shoreline issues and reduce the risk of encountering historical artifacts.

Once on the right bank of Latah Creek, the trail will follow existing informal paths and other previously disturbed areas to connect to the existing trail and the Sandifur Bridge. Excavation within People's Park should be avoided due to the cultural sensitivity of the area.

#### **BLUE ALIGNMENT**

From the Fish Lake Trailhead, the Blue Alignment proceeds from the parking lot toward South Milton Street and then east along West 8th Avenue toward the park. 8th Avenue is bound by the I-90 interchange to the south and a commercial property and five residential properties to the north. It is a low volume roadway as it serves only these five homes and terminates at the east end in a cul-de-sac. The cul-de-sac could be removed and another configuration provided as a means for vehicles to turn around as there is not outlet to Sunset Boulevard. A shared-use path would be constructed on the east side of Milton and the south side of West 8th Avenue as illustrated in Figure 5-3. Routing the trail along the perimeter of the I-90 loop ramp, within the WSDOT right of way was considered, but ultimately found to be impractical given the topography and constrained space.



Figure 5-3: South Milton Street and West 8th Avenue

The boundary of High Bridge Park is located at the east end of West 8th Avenue, and the steep slope down into Latah Creek Valley. The alignment continues with long switchbacks in order to descend in elevation as soon as possible. The presence of a 30-inch water main has dictated the alignment in this area to avoid cut over the pipe. The trail traverses the slope initially to the south crossing beneath the BNSF trestle before turning back 180 degrees and heading north beneath West Sunset Boulevard. Longitudinal grades are 4.3 percent, which meets ADA requirements, but is a challenging grade over a distance of 1,800 feet. There is a combination of both fill and cut walls through these limits. As it traverses the steep slope and crosses beneath the bridge through the arched segment, the trail has been laid out to balance the cut and fill. Refer to the cross sections included in Appendix A. Beneath the West Sunset Boulevard bridge there will be both cut and fill walls to avoid impacts to the structure. Continuing north, the trail will continue to follow the slope at a 4.3 percent grade until matching the grade of an existing gravel road in the park.

From this point, an effort has been made to build the trail on the existing gravel roads and other previously disturbed areas to minimize the risk of encountering historical or cultural artifacts. It is proposed to route the trail through the existing lawn area that is landscaped with mature trees but will be constructed at grade to the extent possible, routing back on to High Bridge Park Road before crossing Latah Creek via a new bridge proposed upstream of the Marne Bridge at Riverside Avenue.

Once on the east side of the creek, the trail will work its way up to an at-grade crossing of West Riverside Avenue near the intersection with Clarke Avenue. The Clarke Avenue intersection is more heavily traveled on each leg (meaning motorists are more likely to observe caution) and presents good sightlines from most approaches. A trail



crossing at Clarke Avenue would be improved by installing an RRFB in addition to signing and striping. Further study is required to determine if a pedestrian refuge can be used where the eastbound Riverside to Clarke left turn traffic crosses the alignment.

A new pedestrian bridge across Latah Creek would require permitting for shoreline, floodplain and critical area impacts. The abutments will be set beyond the limit of the 100-year floodplain, but an intermediate pier may be required within the ordinary high water (OHW).

#### PURPLE ALIGNMENT

The Purple Alignment is similar to the Blue from the point of beginning to the point where it enters High Bridge Park and must make its way down the steep slope beneath the BNSF and WSODT bridges. Instead of heading north beneath the West Sunset Boulevard bridge, however, this alignment will head south and navigate its way down the slope via series of switchbacks passing beneath the BNSF trestle, and then the I-90 bridge. The walls needed to accommodate this alternative are significant, reaching heights as much as 30 feet, but more typically between 5 and 10 feet in height. If selected as the preferred alignment, subsequent design refinements can be made to incorporate reinforced slopes and other measures to reduce some of the more extreme walls.

WSDOT and BNSF input will be solicited for feedback on alignments that intersect their rights of way and incorporated into the study for the final evaluation.



Trail construction beneath and adjacent to their structures will need to consider impacts on the existing structures as well as for additional loads that may be applied to the existing foundations.

The trail touches down at High Bridge Park Road 500 feet south of the I-90 Bridge crossing and from that point the trail follows High Bridge Park Road until it crosses Latah Creek. By building on the existing road, risks associated with encountering cultural artifacts are minimized and eliminates any conflicts with the Disc Golf

Course are eliminated. The existing road is gravel surface and nearly 40 feet in width. The gravel surface could remain for runners and walkers, with a dedicated asphalt-paved path for cyclists.

High Bridge Park Road is maintained by the Spokane Parks and Recreation. It is gated at either end – at the intersection A Street to the north and at 11th Street to the south. It is periodically closed by their maintenance staff and has been closed during the pandemic. Discussions to permanently have been initiated and Parks and Recreation is open to this. The selection of this alternative is not dependent upon that closure, but the closure would be a positive development.

#### **GREEN ALIGNMENT**

The Green Alignment is the same as the Purple from the point of beginning to the point where it touches down on High Bridge Park Road. Instead of heading



north at this point, the Green will head south toward the West 11th Avenue Bridge and cross Latah Creek. West 11th Avenue is a low volume roadway which serves two residences on the west side of Latah Creek. On the east side of the creek is the Vinegar Flats neighborhood. The concrete arch bridge was constructed in 1927 and is 25 feet in width railing to railing; 20 feet is roadway and 5 feet sidewalk located on the north side. The bridge has a sufficiency rating of Good, although there is evidence of recent repairs for spalling of the concrete railings. Serving so few properties, and the often-closed road through High Bridge Park, trail use of this bridge would require simple signing and striping as a shared use facility. With almost no motorized traffic and with adequate sight lines, traffic could be managed as single lane bridge with drivers yielding to each other in the event more than one car approaches at a time.



Figure 5-4: West 11th Avenue Bridge Modifications

At the east end of the bridge, the trail turns left heading north following the right bank of Latah Creek along an existing gravel path constructed over a 42-inch sanitary sewer interceptor line. The interceptor runs the full length to West Riverside Avenue where it crosses at Clarke Avenue and then continues along the south bank of the Spokane River. The gravel path is approximately 15 feet wide in the southern limits of this study. It is located in a overbank area of the creek but beyond the 100-year floodplain. Grading of the trail can follow the existing grade without the need for much earthwork. To the north as the trail approaches the I-90 overpass, the trail begins to approach the steep slopes of the bluff beneath the Browne's Addition neighborhood and narrows in width. A retaining wall will be needed for a length of 3,250 linear feet with heights generally in the range of 5 to 10 feet, but at times taller. Within the reach that contains the steep bluff with erodible soils, the trail alignment needs to avoid fill toward the creek to avoid fill within the 100-year floodplain, which results in cut into the slope to build the trail. The trail section is the same as for the rest of the study with a 12-foot path and 2-foot shoulders. In addition, the wall has been offset from the trail to provide space for a ditch to convey drainage runoff.

The existing path along the east bank had been previously identified in the Latah Valley Hangman Creek Trail Corridor Concept Study as a potential location for a narrower width nature trail. This study had recommended a share-use path trail to be installed on the west side of the creek, similar to what is proposed for the Purple Alignment.

#### THORPE ROAD CONNECTION

Thorpe Road is an Urban Minor Arterial located one mile south along the Fish Lake Trail, connecting the Grandview/Thorpe neighborhoods and beyond to SR195. It is a two-lane roadway with an ADT of 2,370 vpd and posted speed of 20 mph. Thorpe Road passes through a tunnel beneath the trail which is situated on a former railroad berm approximately 40 feet in height. Thorpe Road passes through a similar tunnel under the active BNSF line 370 feet to the west of the Fish Lake Trail. The Thorpe neighborhood is located west of this tunnel. The Thorpe Road Connection will provide an access for the community to the Fish Lake Trail from a vacant WSDOT-owned parcel between the tunnels.

The connection would traverse the west slope of the Fish Lake Trail embankment at a grade of less than 5 percent. There is an opportunity to reduce the earthwork associated with this element by extending the connector trail further north, approximately 300 feet, to take advantage of the rise in grade. The limits of the WSDOT parcel will determine how much the earthwork can be reduced.

The tunnels each have 9' travel lanes, and a four-foot concrete sidewalk providing passage for pedestrians. Options to improve the tunnel for trail users are limited, but they include improvements to the accessibility of the sidewalk for pedestrians. There are currently no ramps and the sidewalk is blocked by a lane edge warning sign and begins abruptly with no approach or transition.

At a minimum, improved signage and lane markings are recommended to alert drivers to the presence of bicyclist sharing the travel lanes. A user-activated beacon, such as that shown at right, could provide a measure of safety as people walking or riding bicycles travel through the tunnel.

Stop or signal protected, alternating, single lane, one-way configurations could provide safer passage for motorists, trucks and people walking or riding bicycles.

Providing new, separate dedicated tunnels would remove active transportation traffic completely from the roadway.







## 6. Evaluation of Alternatives

#### **EVALUATION CRITERIA**

Evaluation criteria were developed amongst the Project Team based on the defined goals and objectives of the project. This section defines each of these criteria and how the benefits or impacts were interpreted as good or poor. The criteria are listed in order of relative importance. Relative importance was a subjective decision that considered the County's priorities.

#### **User Experience**

Through the Project Advisory Committee and Public Outreach process, six criteria were established for evaluating he alignments based on what was deemed important to the community. Those criteria were, traffic stress, local access and connections to the community, scenic views, interpretive opportunities, grades and distance.

#### Traffic Stress

An alignment reduces exposure to vehicular traffic and provides separation from roadways and vehicular traffic is preferable as it provides both safety and an improved experience. Along South Government Way, the Red Alignment will provide design features to mitigate for the proximity to a relatively busy traffic route, such as providing physical separation, but an alignment that reduced exposure to traffic would be viewed as preferable.

The other alignments my share the roadway along 8th Avenue and 11th Avenue, however, these are a very low-volume residential streets and the stress would be considerably less. The Blue and Purple Alignments may share some of the existing roadways in High Bridge Park including High Bridge Park Road, but there have been discussions with the Parks Department, which maintains the road, about the possibility of closing the road to traffic permanently.

All four alignments will have to cross West Riverside Avenue. An at-grade crossing must be designed to provide adequate sight distance for approaching cars. Some alignments are better suited for safe crossings. The location of the Red Alignment has significant deficiencies for sight distance due to the horizontal curve west of the Marne Bridge and large trees that would obstruct the views of approaching drivers.

#### Local Access / Connections

The ability of the trail connection to improve access to the trail and connections beyond is a primary goal of the project. The qualitative measure of this would be the proximity of the trail alignment to residential areas of density. The more residents that live or work that are closer to the trail would be a positive feature. That said, there is limited integration of residential properties, community resources, or commercial uses. For options that run near residences, the trail connection would benefit residents providing direct access to the trail system; however, some landowners could consider an increase in pedestrian traffic as a privacy or security concern.

The Red Alignment arguably provide the most opportunities for access and connections as it parallels the West Hills neighborhood along S Government Way and would provide an improvement to the connection to Spokane Falls Community College to the north.

The Blue, Purple and Green Alignments are located directly adjacent to several residential properties near the intersection of South Milton Street and West 8th Avenue. The Green Alignment passes near residences where it crosses Latah Creek over the West 11th Avenue Bridge. Outreach to affected owners may be warranted

regarding privacy or safety concerns. Maintaining the trail and trail use by the community could reduce unauthorized camping and increase security.

#### Scenic Views

High Bridge Park offers commanding views of both the natural and built environment. Alignments that offer more opportunities take advantage of the vistas and create spaced for uses to linger and appreciate them would be a positive attribute.

#### Interpretive Opportunity

Latah Creek Valley and High Bridge Park offer the potential for creating a truly experiential trail. The vision behind this segment of the Fish Lake Trail is to create something more than just a corridor for passing through and making connections, but to create opportunities to stop and take in the vista and the history of this location. Those histories include Native American, rail, industrial and geologic stories of the Latah Valley. Alignments that offer more opportunities to create these elements to recognize the history of the park or to take advantage of the vistas would be seen as favorable.

#### **Distance and Grades**

The elevation gain from Latah Creek to the Fish Lake Trailhead is approximately 180 feet. Most of the climb is concentrated in the basalt bedrock and talus river bluff geologic feature that defines the gorges of the Spokane River and Latah Creek. The steep slopes from Latah Creek up to Government Way from the central challenge these alternatives work to solve.

Direct routes, to the extent possible, are preferable for reducing the distance users must travel to make the connection between the Fish Lake Trailhead and the Centennial Trail. On the other hand, providing some variety to the alignment can make for a more interesting experience for users, so there is a balance to be struck. In order to make the trail grades both compliant with respect to ADA requirements, but also more comfortable so that users won't be deterred from using it, distance must be added. The alternatives have been designed to achieve a target maximum grade of less than 5 percent.

#### Safety

The trail design needs be designed for all users of all abilities. Design of the trail in areas of the hill climb and the incorporation of switchbacks will create environments of differing speeds for bicyclists as those less comfortable with tight turns and those climbing uphill will be travelling at slower speeds than those travelling downhill and more comfortable with the tight corners.

Safety issues associated with the trail include traffic and roadway crossings as discussed above, but there also exist perceived safety issues the built environment. Design elements that improve the perception of safety among users include improved visibility and lines of sight, creating open spaces. Crime Prevention Through Environmental Design (CPTED) is an approach to urban design that applies strategies to reduce opportunities for criminal acts and address people's fear of the potential for dangerous situations. Elements that could create environments that feel less safe include tunnels, high walls and limited sight distance. Design should work to minimize the impacts associated with these elements.

#### **Environmental and Critical Area Impacts**

The objective is to develop an alignment that avoids or minimizes impacts to the natural environment. Environmentally sensitive areas within the project area include Latah Creek, associated wetlands and buffers and geological hazard areas.

#### **Cultural Resource Considerations**

All alignments, as well as the Thorpe Road connection, are located in high-risk areas for encountering cultural artifacts. As the design progresses the City should coordinate with the Spokane Nation of Indians to confirm the design is making the right choices to reduce the risk of impacts.

#### Constructability

The wall and bridge structures represent the primary constructability concerns for the project. For the walls, the construction risks include the proximity to existing structures and the site's geological conditions. The Blue, Green, and Purple alignments include switchbacks beneath a BNSF rail bridge. In addition, the Green and Purple alignments include switchbacks under an I-90 bridge. The trail's proximity to these structures will require coordination with BNSF and WSDOT during the design and construction.

All alignment alternatives include fill and cut walls, which each have unique risks tied to the site's geologic conditions. For this evaluation, the fill walls have been assumed to be mechanically-stabilized earth (MSE) walls. This wall type typically requires a base width of about 70 percent of its height. When near surface bedrock is present, it must be excavated to achieve that base width. This can be costly and time consuming.

Cut walls for all alignments have been assumed to be soil nail walls. The construction of this wall type requires the soil behind the wall to stand up, without support, until a temporary shotcrete facing can be applied. General knowledge of the project area indicates that loose soils may be present where the trails pass under the BNSF and I-90 bridges and on the Green alignment on the north side of Latah Creek. There are methods to install soil nail walls in loose soil conditions, but they result in more costly and slower construction.

Geotechnical investigations during preliminary design is the main way to mitigate the risks of near surface bedrock and loose soils, though it cannot be eliminated. With information regarding the location and extent of these conditions, the design and cost estimate can be tailored to the project's circumstances. For fill walls, different wall types such as, fill behind soldier piles or cast-in-place concrete walls, may be incorporated. For cut walls, the presence and extent of loose soils would be clearly communicated in the contract so that the contractor can anticipate the need for mitigating measures such as adding vertical elements to stabilize the wall face during construction.

The project's exposure to risks associated with wall construction is roughly proportional to the quantity of walls included in each alternative.

In addition to wall construction, the construction of a new bridge adds to the complexity of the project. All alignments, except the Green alignment, include construction of a new bridge. Though it adds complexity, a new bridge is considered to add less constructability risk than walls because of its small foundation footprint. Geotechnical data can be collected at each pier location, while it is impractical to collect information at short intervals for the entire length of the walls.

#### **Construction Cost**

A quantitative comparison of the alternatives was made using preliminary cost estimates developed for each alternative considering only those items that would differ in quantity between the two. Note that the estimates provided do not present a total construction cost. That will ultimately be developed for the preferred alternative only. For the purpose of evaluating the alternatives, a comparative approach was used to assess the relative cost (low, medium, high). Where estimated construction costs are within 10 percent, the alternatives were considered equivalent in this regard. These estimates include costs for earthwork, structures, shoring, paving,

stream and habitat improvements, and other work incidental to construction (temporary erosion and sediment control, pollution control, traffic control, etc.).

#### ALTERNATIVES EVALUATION

#### **Public Input**

Through our public outreach process described in Section 2 of this report, we gathered feedback from neighborhood councils, interest groups and others. Feedback was collected through an online presentation of the project and its alternatives. The public was also encouraged to provide their comments directly to the City as well as on a WikiMap page and Conceptboard which were accessible through the City's project website.

Approximately 100 comments were received between the live presentation and subsequent follow up through the online tools. We have analyzed these comments categorizing them by route, evaluation criteria and specific design elements.

The breakdown of comments by alignment found that the Green Alignment was most commented upon with 44 comments followed by Red. Blue and Purple we commented upon more or less equally. Those comments were further categorized as positive, negative or neural. Green received by far the highest number of positive comments at 18 and the ratio of positive to negative was 3 to 1. The Red by comparison, received a total of 10 positive comments but also had 10 negative comments for a ratio of 1 to 1.

The comments specific to each route were analyzed to see what the primary concerns were with each alignment. The following were found to be the most commented upon elements of each route.



Table 6-1: Comments Type by Route

#### Red Alignment

- Riding adjacent to Government Way is not an ideal trail condition
- Access to West Hills and Spokane Falls Community College; neighborhood connections
## **Blue Alignment**

- Compatible and works well with Latah Creek Nature Trail plan
- Park area is not presently comfortable for lone female riders

### Purple Alignment

- In large part this alternative already exists
- Could include a spur to 11th Avenue Bridge for a connection to Vinegar Flats

## Green Alignment

- Preferred by most for safety and scenic value, despite being the longest
- Conflicts with the Latah Creek Nature Trail plan

Comments were also provided on elements related to user experience or specific issues associated with the transportation network, such as the crossings at Sunset Boulevard and Riverside Avenue. In total, over 100 comments were provided on the topics of making connections, creating experiences and taking advantage of the vistas, safety and grade of the trail. The compilation of comments is included in Appendix C.

# Red Alignment - Riverside / Government Way

Following South Government Way, this alignment received low marks for user experience largely due to the anticipated traffic stress. While this can be mitigated by dedicating more of the right of way to the non-motorized uses and providing separation from traffic, of the four alignments this will certainly have the highest exposure to traffic.

On the other hand, being located adjacent to the roadway offers the best opportunities for access to local neighborhoods and connections to the north including Spokane Falls Community College. The routing through the north end of High Bridge Park provides improved access to the park and from a perceived safety standpoint, this may offer the best of the four alternatives as it will have the best sightlines do to the lack of cut walls and does not pass beneath the bridges.

The route is 6,475 linear feet – 3,300 of that is along West Sunset Boulevard. The long consistent grade helps to ameliorate the climbs by providing more consistent moderate grades. At the same time, it does not provide area of rest. Compared to the other alternatives that all address the grade change along the steep slopes beneath the I-90 and BNSF bridges, the hill climb would be less intimidating along this route.

View opportunities are limited to that portion of the alignment that is within the park and for the bridge crossing of Latah Creek. As compared to the others, the Red Alignment has less to offer and the engagement with the park is more limited. I

This alternative would cross the shoreline jurisdiction perpendicularly for approximately 740 feet on a proposed new pedestrian bridge located west of the existing Marne Bridge. This would require a shoreline conditional use permit and a Habitat Management Plan (HMP). Latah Creek is a jurisdictional water body as are its associated wetlands and it would travel through approximately 680 feet of potential wetland buffer along Latah Creek. This would require appropriate permitting under Section 404 of the Clean Water Act, i.e. a joint application for permits with the USACE and Washington Department of Ecology, as well as compliance with the City's Critical Areas Ordinance (CAO) on wetlands and wetland buffers.

This alignment reduces the risks of encountering culturally significant sites by following South Government Way for a large extent of the trail. Once in the park, the risks are considerably higher, and in particular because the trail follows a course that has not been previously disturbed and does not follow existing roads.

Of the four alternatives, the Red Alignment is considered the easiest to construct. Though it includes the construction of a new bridge, it includes minimal new walls and avoids the steep and erodible slopes associates with the valley. It has less than one half the amount of wall as the next closest alternatives (Blue and Purple) and one fifth as much wall as the Green alignment.

The estimated construction cost of the Red Alignment is \$7.5 million for the alternate that includes an at-grade crossing with Riverside Avenue. If the longer span that separates the trail users from Riverside Avenue, the cost would increase by \$1.4 million for a total of \$8.9 million. It is the lowest cost alternative evaluated.

## Blue Alignment – Through High Bridge Park

Leaving the parking lot at the Fish Lake Trailhead and following South Milton Street and West 8<sup>th</sup> Avenue, The Blue Alignment provides an improvement with respect to exposure to traffic as compared to the previous alternative. At the end of 8<sup>th</sup> Avenue, as it drops down into the park along the bluff, there are other safety considerations to consider – the comfort of users of different abilities to negotiate the tight alignment with switchbacks and to provide a sense of comfort as it travels beneath he BNSF Bridge. Design for this alignment will need to address the environment which today has occasional homeless encampments.

This alternative will provide great opportunities to allow users to interact with the park with improved opportunities for interpretative elements and viewpoints. While this is an improvement over the Red in terms of connecting the users with the park, is it less effective in making connections to the adjacent neighborhoods and destinations beyond.

As the alignment works its way through High Bridge Park, it will avoid impacts tot other uses – primarily the Disc Golf Course and the dog park.

This alignment has a total length of 6,900 linear feet and does a reasonable job of balancing the grades between the trailhead and the Latah Creek crossing with minimal use of switchbacks. As the trail departs the trailhead, subsequent design will need to add length to the trail to obtain compliant grades before reaching South Milton Street. There is a stretch of 1,800 linear feet from the end of 8<sup>th</sup> Avenue until the trail reaches the existing roads in High Bridge Park where the trail has a grade of 4.3 percent, but beyond that grades are relatively flat.

The bridge crossing upstream of the Marne Bridge would cross the shoreline jurisdiction of Latah Creek perpendicularly for approximately 765 feet. Depending on the amount of impact/ground disturbance required to either expand the bridge or construct a new one, a shoreline conditional use permit with a Habitat Management Plan (HMP) would be required.

It would travel approximately 690 feet through wetland buffers along Latah Creek and may impact the wetland buffer of the small hillside seep located between the Sunset Boulevard Bridge and I-90 Bridge depending on final alignment and cut/fill lines. The hillside seep is likely non-jurisdictional under Section 404 of the Clean Water Act due to no connectivity to a water of the US. Compliance with the City's CAO wetlands and wetlands buffers may require an HMP and CAO permit.

To the extent practicable, the Blue Alignment will follow the existing roads within the park to reduce the risk of cultural impacts.

Constructability: From a constructability perspective the Blue Alignment has more construction risk than the Red Alignment but less than the other two due to the avoidance of the series of switchbacks located beneath the I-90 Bridge.

The estimated construction cost of the Blue Alignment is \$11.8 million.

# Purple Alignment – Through High Bridge Park

Where the Purple Alignment deviates from the Blue is at the descent into the park beneath the bridges. Traversing the slopes south beneath the trail descends via a series of seven switch backs to negotiate the slope down to High Bridge Park Road. The grades along these switch backs is 4 percent, and the trail width is wider than the minimum to make more comfortable and safer for users. This additional width comes at the expense of higher walls which are as high as 30 feet in places. Subsequent design would need to refine the alignment to reduce the size of these walls.

The Purple is comparable to the Blue Alignment in terms of separating from traffic and reducing traffic stress. From the perspective of safety, it is perhaps less effective. The Purple alignment has a higher number of switch backs and has a longer footprint as it negotiates the steep slopes beneath the existing bridges.

The Purple is also less effective than Red and making connections to the neighborhoods, but does provide increased access to the park.

The length of this alignment is 9,500 linear feet. Once at the base of the bluff, the trail follows the existing road through the park which has moderate grades.

The interpretive and storytelling opportunities with this alignment are similar to that of the Blue and are good. The switchback descent into the Park, if nothing else, does provide an opportunity to take in the vistas of the valley.

This alternative would parallel Latah Creek on the west side and then cross the creek on or adjacent to the existing Marne Bridge. Approximately 1,195 feet of the alignment would be within the shoreline jurisdiction. A shoreline conditional use permit with a Habitat Management Plan (HMP) would be required.

It would also impact the potential hillside seep wetland described above and travel approximately 1,240 feet through wetland buffers near the seep and at the Marne Bridge crossing. The hillside seep is likely non-jurisdictional under Section 404 of the Clean Water Act due to no connectivity to a WOTUS. Compliance with the City's CAO wetlands and wetlands buffers may require an HMP and CAO permit.

Along the hillside, there is risk of encountering cultural artifacts, although less so as might be expected near the creek. Once at the bottom of the slope, the alignment largely follows High Bridge Park Road reducing the potential impacts to cultural sites.

From a constructability perspective, the Blue and Purple alignments are very similar. They both cross Latah Creek on a new bridge and have similar amounts of walls. They have more construction risk than the Red alignment but less than the Green alignment. However, the switchbacks under I-90, result in higher construction risk with the Purple Alignment as compared to the Blue.

The estimated construction cost of the Purple Alignment is \$14.3 million.

### Green Alignment – East of Latah Creek

The Green alignment is the same as the Purple Alignment from the trailhead to High Bridge Park road and has the same positive attributes of separation from traffic and the drawbacks of neighborhood access, grades and perceived safety.

The length of this alignment is comparable to the Purple at 9,400 linear feet. From High Bridge Park Road, the trail crosses the West 11<sup>th</sup> Avenue Bridge and follow the east bank of the creek with gentle grades until the approach to the crossing at Riverside Avenue.

The interpretive and storytelling opportunities are reduced with this alternative as compared to Blue and Purple which are in the heart of High Bridge Park. Along the east bank, it is a longer and more direct route with increased exposure without the shade of the trees that are in the park. That exposure, however, allows for impressive views of the valley.

The Green alignment would cross the shoreline jurisdiction perpendicularly on the existing West 11th Avenue Bridge, and then parallel Latah Creek on the east side. Approximately 4,992 feet of the alignment would be within the shoreline jurisdictional area. A shoreline conditional use permit with a Habitat Management Plan (HMP) would likely be required.

Similarly to Purple, Green could impact the small hillside seep buffer, although it would likely be nonjurisdictional under Section 404, and therefore would only require compliance with the City's CAO on wetlands and wetland buffers. Although this alignment would not be likely to directly impact the wetlands along Latah Creek, it would travel through approximately 4,842 feet of wetland buffer as it parallels the creek on the east side, and mitigation would be required.

Constructability: The Green alignment has the most construction risk. It does not include a new bridge, but it has substantially more walls than the other alternatives. It has twice as much wall as the Blue and Purple alignments, and six times as much as the Red alignment.

The estimated construction cost of the Purple Alignment is \$21.9 million.

### **Thorpe Road Connection**

The connection to Thorpe Road and make safety improvements to the existing tunnel is approximately \$900,000. The alternate to install a new tunnel parallel to the existing tunnel will cost an additional \$1.6 million.

### **Evaluation Matrix**

The quantitative ranking was used to evaluate the alternatives in the table below for the established criteria. The rating applied to each criterion was the higher value being a positive interpretation of the criteria and the lower value an unfavorable ranking. Each criteria was provided a ranking that was based on feedback from stakeholders and the public.

		RED	BLUE	PURPLE	GREEN
User Experience	Weight 1-5 (least important to most)	Riverside/ Government Way	Through High Bridge Park	Through High Bridge Park	East of Latah Creek
Traffic Stress	5	1	4	4	5
Local Access / Connections	3	4	2	4	5
Scenic Views	4	1	3	4	5
Interpretive Opportunity	2	2	4	3	4
Grade	3	4	3	1	1
Distance	1	4	4	2	1
Safety	4	4	3	3	2
Environment	4	5	3	4	3
Cultural Resources	5	4	2	3	3
Constructability	3	5	2	3	2
Construction Cost	2	5	3	3	4
	unweighted	3.5	3.0	2.6	2.5
Average:	weighted	2.5	2.2	2.1	2.1

### Table 6-2: Alternatives Evaluation Matrix

# **Recommended Alternative**

# Appendix A

**Concept Alignment Plans** 







RED











10 20 1 inch = 20 feet

















RED

0 10 20 40 1 inch = 20 feet





RED

0 10 20 1 inch = 20 feet 40



























































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1780 <sub>I</sub>

BLUE 0 10 20 40 1 inch = 20 feet























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STA. 40+00

0 10 20 1 inch = 20 feet

GREEN



**GREEN** 0 10 20 1 inch = 20 feet

40



GREEN 0 10 20 1 inch = 20 feet



GREEN 0 10 20 1 inch = 20 feet









**GREEN** 0 10 20 1 inch = 20 feet



**GREEN** <u>10 20</u> <u>1 inch = 20 feet</u>






















GREEN 10 20 1 inch = 20 feet 0





GREEN

10 20 1 inch = 20 feet

0







GREEN 0 10 20 1 inch = 20 feet

## 12 OF 12



## FISH LAKE TRAIL CONNECTION STUDY THORPE ROAD CONNECTION





**Public Comments** 

#### Fish Lake Trail Connector Study Feedback

Person	Original Comment	Source
Datti Warlay	south, past 11th Avenue, then crosses the creek and heads north towards High Bridge Park. Why does it not cross the creek at the 11th Ave bridge? The way it is drawn, it crosses private property and protected watershed needlessly. I hope this is not in the plans	
Patti woney	Should provide access to this neighborhood either by Green Line or by spur trail if	VVIKI
Levi Basinger	another option is chosen.	Wiki
Seth R	Often run along Inland Empire way and would love a safe option to access Sandifur/Centennial + Fish Lake Trail without dealing with heavy traffic.	Wiki
Seth R	Usually avoid the unpaved section east of latah due to homeless camps	Wiki
Phil Larkin	The area along the Green Line is in need of attention and care. Having an well traveled trail in this area will help to keep it clean.	Wiki
	This trail connection provides access to 30 miles of trails that extend south to w 57th. It would be great to someday connect the paved network further south onto the Bluff	\
Phil Larkin	and south nill.	WIKI
Phil Larkin	This section provides an amazing view of the bridges and creek. The Green Line provides many benefits. It is the furthest from car travel, closest to	Wiki
	nature, and provides access to more trails to the south.	WIKI
Jeff Corkill		Wiki
	The switchback down into the valley will need to be "gentle" for walkers and	
Jeff Corkill	bikers to get up.	Wiki
	The green and purple tracks already exit (Fused them ) & don't really	
Jeff Corkill	require any new preparation.	Wiki
	Do we really need those bridges at the Marne Bridge?Use exist bridge with	
Jeff Corkill	barricades from traffictraffic need calming here anyways.	Wiki
BAB	Potential for Traffic Calming on Govt. Way	PAC CB
BAB	Likely the best use of existing infrastrucure	PAC CB
BAB	Strong safety concerns about crossing Riverside on the curve.	PAC CB
	Assuming that the bridge would utilize existing supports. Currently Herons	
BAB	roost on the supports	PAC CB
	Section along Government Way has the potential to be a snow-deposit zone	
BAB	during winter plowing	PAC CB
BAB	Shortest route	PAC CB
BAB	Possibly the best multiple use of resources with the proposed Latah Creek	PAC CB
BAB	Longer and more complex switchback section.	PAC CB
BAB	Utilizes Marne Bridge which is on the Bloomsday Route.	PAC CB
BAB	Most extra elevation change (Hills that must be climbed twice).	PAC CB
	Most potential for connections to underserved communities, notably,	
BAB	Vinegar Flats	PAC CB
BAB	Best potential for interactions/views of Latah Creek	PAC CB
BAB	Best potential for views of the three high bridges.	PAC CB
BAB	Only potential for viewing/interacting with the 11th Ave bridge.	PAC CB
BAB	Likely the best complimentary route to the proposed Latah Creek Trail.	PAC CB
	Potential for routing switchbacks through the western arches of the Sunset	
BAB	Blvd Bridge	PAC CB
BAB	Offers rare views of the three high bridges	PAC CB

BAB	Longest	PAC CB
BAB	Potentially most expensive	PAC CB
	Questions about winter maintenance/snow removal, specifically if different	
BAB	maintenance schedules would exist depending on which route was	PAC CB
BAB	Concerns about price variations between routes were raised	PAC CB
	Overall, the Green route was deemed to be the best option as the safest	
BAB	and most scenic route.	PAC CB
Karen Carlberg	Could put flashing lights on Riverside to warn drivers of crossing	PAC CB
Ũ	Sharp Switchback turns are hard to navigate on a bike, especially on a steep	
Karen Carlberg	uphill or downhill	PAC CB
	path along Hangman Creek there was quite a bit of neighborhood (West	
	Hills, Browne's Addition, Westwood/Thorpe, West Central, Cliff/Cannon,	
	Latah/Hangman including Fagle Ridge) interest A charette was held in	
	which alternative routes were explored and commented on This report is	
	available through the City Parks and Recreation department. The relevant	
	noints for this ELT/CT project include:	
	That report envisioned a nature nath, which could be accomplished fairly	
	unobtrusively on the east side of Hangman Creek leaving the west side for	
	hickele travel. The west side once renaved, would be less costly than	
	naving the east side, and a nature nath would connect to Browne's Addition	
	hank trail as well as the foot naths in People's Park. Thus, I recommend any	
	naved trail be on the west side of the creek so the ontion of a nature nath	
	would remain on the east side. This keeps the bike/walk ontion available	
	There is a drawing of a notential river crossing on the old bridge foundation	
	in Hangman Crook in that report and a suggested way to address the	
	crossing	
	Libra lad biguela trins through this area as well as walking trins and the	
	nature not hideo was the basis for sold out Parks and Pas programs	
	including: Dick Colf. Coology, Skotching, Birdwatching, History, Flora and	
	Found and Native Diante. This is an example of additional regreational	
	Fauna, and Native Plants. This is an example of additional recreational	
	activities that align with washington State Recreational research.	
	EWO History Professor was very helpful in securing research for an	
	inventory of historic sites in the area, as well as pointing us to materials of	
	We meet with Calleng Tribe Culturel Descurses and Tribel leaders whe	
	we met with spokane Tribe Cultural Resource and Tribal leaders who	
	provided some background on this area. INIC was looking at appropriate	
	signage for this culturally rich land and should be incorporated in wayfinding	
Lunell Haught	and interpretation. Whatever signage should be in a theme that references	email
Grant Shipley	Improve access to Thorpe/Grandview neighborhood.	Wiki
Grant Shipley	Improve access to Vinegar Flats neighborhood.	Wiki
Grant Shipley	I would like to see the 11th Avenue bridge utilized.	Wiki
	Instead of connecting right at the Fish Lake Trailhead, can the trail connect	
	somewhere south of the trailhead using the purple or green routes.	
	Trailhead is for parking while connection is for continuous route riding and	
Steven D Johansen	not riding through a parking area.	Wiki
Grant Shipley	Maximize views of and interactions with the Sunset Blvd. bridge.	Wiki

R. Young	Currently this area isn't comfortable when I'm alone as a female bike rider. Alternative route tame the grade along A Street. Construct new sidewalk & install a bike escalator on west side of A Street. Escalator would be a magnet for Spokane in attracting bicycle tourists and the only one in North America. https://www.citymetric.com/transport/norway-contains-worlds-only-bike-escalator-and- it evelopt 555"	Wiki
Gerald Schuldt	Additional bridge doesn't seem the best use of public funds when there's	WIKI
R. Young	plenty of room across creek on existing bridge. This would be a highly undesirable crossing due to speed and roadway geometrics	Wiki
R. Young	for cars coming from either direction I have ridden, walked and studied all three of these proposed routes. Overall, I prefer the Green option, primarily for it's connections to more neighborhoods and stunning	Wiki
Grant Shipley	views of some of Spokane's best and most underappreciated bridges.	Wiki
R. Young	connection.	Wiki
Grant Shipley	Riverside has poor visibility, and vehicle traffic tends to be fairly fast.	Wiki
	Existing route is cost effective with upgrades: 1. widen south shoulder along south side of W Riverside Ave. to Government Way intersection. 2. min. striped crossing across W. Riverside Ave. in alignment of future foot bride 3. Construct bridge across Latah Creek. 4. Improve on grade pedestrian/bicycle crossing at W. Sunset Blvd/S. Govt. Way. 5. Construct New (red) path. Other routes: Blue, Green & Purple have	
Gerald Schuldt	more scenic vistas of historical bridges and valley, concern with qty of switchbacks	Wiki
Gerald Schuldt		Wiki
R. Young	Use this route a lot to access Riverside S.P. Difficult to cross over Government Way to bike path. Bike path not well marked so many think its just a wide sidewalk. Noisy and lots of car emissions	Wiki
Jessica Engelman	Side-street access into Vinegar Flats	Wiki
	Vinegar Flats to downtown route. Ideally it would continue north on Maple for one block, then connect to the existing bike lanes on 4th via a physically-protected bikeway on Freeway Ave (two-way jersey-barrier protected bike lane on the south side of the street?) Improving this route would also improve south-of-the-river access to the new Fish Lake Trail connector.	\ <b>A/i</b> Li
Jessica Eligennan	Sunset Blvd could be a connection route to the Fish Lake Trail, but is an	VVIKI
Jessica Engelman	uncomfortable place to be. Cycling shoulder is covered in glass and debris, and needs physical protection from fast-moving traffic. Also needs several robust crossing improvements to provide access into neighborhoods.	Wiki
	Switchbacks are simply no fun, and create conflict between users with their tight curves and large speed differences between uphill and downhill users. They should be creatively avoided where possible, and made with as minimal a grade as feasible. The existing swithchbacks from the Sandifur Bridge to the Centennial Trail are too	
Jessica Engelman	Another one of the ways to access the new Fish Lake Trail connector from western downtown. The separated path is nice, where it exists, but needs to be completed. I really don't enjoy the steep climb up the sidewalk on Main Ave; while the altitude gain	WIKI
Jessica Engelman	is inevitable, a dedicated bike facility would make it more comfortable.	Wiki
Jossico Engolmen	One of the most direct ways to access this new Fish Lake Trail connector from Browne's Addition and western downtown. I do not like the current cycling conditions: the hill is too steep and visibility too poor for a cycling facility that isn't physically separated from auto traffic	\ <b>A</b> /:L:
	Poor visibility at the bend	
Jessica Engelman	What's the justification for a new bridge here? Seems like an unnecessary cost	۷۷۱KI ۱۸/۱レ:
JESSICA LIIBEIIIIAII	mate the judinouter for a new shage hole: Ocente into an annoucedary tool.	VVINI

Jessica Engelman Jessica Engelman	Uncomfortably steep climb. The Fish Lake Trail connection should not be any steeper, and ideally should be a lesser grade, even if that means a longer climb. Improved access to SFCC	Wiki Wiki
	I live in the Eagle Ridge area and connecting the trails would allow me to	
Steve Schroeder :	have easier access to Spokane via the trails.	Pub Mtg
Levi Basinger :	Enhancing connections to the larger bike network.	Pub Mtg
marcia :	not too steep of a grade	Pub Mtg
Dana D. :	Connection to Cheney trail	Pub Mtg
	It allow some of us to get to another trail without driving as much. It also	-
Olga Lucia Herrera :	connects neighborhoods that are not currently connected	Pub Mtg
-	I frequently cycle between FLT and CT via Govt Wy & Riverside, would be nice to have alternate away from traffic. Also agree w/Jessica for increased access into neighborhoods (Inland Empire Wy area) Also increase	-
Jeff Sevela :	accessibility for variety of users	Pub Mtg
Olga Lucia Herrera :	Feel free to add Scenic view; and fun activities for visitors	Pub Mtg
Mary's iPad :	safety from autos	Pub Mtg
Olga Lucia Herrera :	I second the emphasis on the communication with neighbors of the trail. I'd just appreciate a continued commitment to expand the bike/run/walk	Pub Mtg
Seth Rima :	network that is grade-separated and accessible	Pub Mtg
	My opinion, Govt Wy overengineered; I cycle it frequently and I don't think	
Jeff Sevela :	I've ever seen traffic levels requiring 4 lanes of car travel	Pub Mtg
Levi Basinger :	A road diet should be implemented on Govt way	Pub Mtg
	Government way probably doesn't need 4 traffic lanes. They very unnatural	
sabrina keckalo :	corners already (lanes feel narrow)	Pub Mtg
	Govt way could do with a road diet and would not lose much efficacy for vehicular traffic - though would obviously be a bit more testy by the "cars	
Seth Rima :	rights" crowd	Pub Mtg
	Govt Way alignment may not be the most scenic but would be the most	
Levi Basinger :	direct and convenient for commuters	Pub Mtg
Olga Lucia Herrera :	Can those lanes have a buffer, be protected?	Pub Mtg
Nigel Davies :	Highbridge park road is never open to traffic	Pub Mtg
	Right-sizing Government Way would greatly improve access to Spokane Falls Community College. Traffic counts don't support the current four-lane configuration, and in fact a two-lane configuration may be sufficient. A	
Jessica Engelman :	traffic study to determine turning patterns might be worthwhile.	Pub Mtg
Bill Bender :	If Gov Way is used, what sort of facility is used to cross Sunset?	Pub Mtg
	Would safety screens need to be installed on the sides of the railway where	
Jeff Sevela :	the trail would cross underneath? (BNSF issue)	Pub Mtg
	Green Trail would provide good connections between the neighborhood	
Levi Basinger :	along Inland Empire Way, the centennial trail, and downtown I think the green route would be the easiest and likely cost effective to	Pub Mtg
Danielle Milton :	implement and would improve that area that is often prone to homeless	Pub Mtg
Danielle Milton :	It's also very scenic (the green route).	Pub Mtg

<ul> <li>Interfaces with the road past the cemetaries. Cyclists presently ride in the Charlie Greenwood traffic lanes often on blind curves.</li> <li>Charlie Greenwood traffic lanes often on blind curves.</li> <li>Pub Mtg</li> <li>Jeff Sevela :</li> <li>Green route would get my vote for scenic and also neighborhood access</li> <li>Also wanted to ask - 1'd read about at some point there may be a trail along</li> <li>Latah Creek with possible canoe/kayak facilities even at Campion Park /</li> <li>Hatch Road. If that is a possibility in the future, it would make sense to get</li> <li>the Green path paved to limit the work needed connecting a future trail to</li> <li>Seth Rima :</li> <li>the north/east of the Creek</li> <li>Pub Mtg</li> <li>Mary's iPad :</li> <li>purple/green is my vote because it more scenic</li> <li>IMO road diets creates dangerous roadways. It is insanity to continue to try</li> <li>to mix trails, particularly for bicycle use with vehicular traffic. Distracted</li> <li>driving is only going to increase. I like enjoying my bike ride/walk, not</li> <li>Gary Rogers :</li> <li>stressing about crazy drivers putting me a risk.</li> <li>Pub Mtg</li> <li>Levi Basinger :</li> <li>have unpaved trail on east side of creek</li> <li>I use green and purple depending on which direction 1'm going and what</li> <li>Charlie Greenwood kind of bike 1'm on.</li> <li>Nigel Davies :</li> <li>To access the south hill the green trail is of greatest appeal</li> <li>If the green or purple routes are not chosen, the city should definitely</li> <li>consectivity off thorpe road would be fantastic it is also prone to</li> <li>camping. That said 1 don't believe that it would create true connectivity to</li> <li>Nigel Davies :</li> <li>the trolley trail but a great start! (Plus all of those condos/apt would have</li> <li>Intersted bike lane/multi-use path along the Maple-through-Jefferson</li> <li></li></ul>		Road diet for Government Way with two or three lanes. Eliminate cubs and gutters along Government Way and replace them with broad shoulders so it	
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Charlie Greenwood corners. Also wildlife, herons fish from the old bridge pillars.       Pub Mtg         sabrina keckalo :       the scenic route along the creek is by far the best!       Pub Mtg         If the trail extension headed east instead of north from the FLT it likely will       Pub Mtg         Nigel Davies :       never be developed       Pub Mtg		The trail should not cross Clarke at the bottom of a hill and around blind	
sabrina keckalo : the scenic route along the creek is by far the best! Pub Mtg If the trail extension headed east instead of north from the FLT it likely will Nigel Davies : never be developed Pub Mtg	Charlie Greenwood	corners. Also wildlife, herons fish from the old bridge pillars.	Pub Mtg
If the trail extension headed east instead of north from the FLT it likely will         Nigel Davies :       never be developed         Pub Mtg	sabrina keckalo :	the scenic route along the creek is by far the best!	Pub Mtg
Nigel Davies :     never be developed     Pub Mtg       La : Davies :     Contemported internet during Disconduction     Disconduction		If the trail extension headed east instead of north from the FLT it likely will	
	Nigel Davies :	never be developed	Pub Mtg
Levi Basinger : Center median could be an issue during Bloomsday Public Public Public	Levi Basinger	Center median could be an issue during Bloomsday	Pub Mtg
Charlie Greenwood Islands are hazards to cyclists.	Charlie Greenwood	Islands are hazards to cyclists.	Pub Mtg
Levi Basinger : Proper wavfinding especially where trails intersect with south gorge trail Pub Mtg	Levi Basinger	Proper wayfinding especially where trails intersect with south gorge trail	Pub Mtg
Olga Lucia Herrera : Yes to way finding!	Olga Lucia Herrera :	Yes to way finding!	Pub Mtg

Centennial. Any paved connection away from roads is a welcome and beneficial improvement to the city infrastructure. Personally I think the connector that goes down by Vineager Flats (marked green on your map) is the most beneficial route. I feel that route will not only help that community access both the FLT and the Centennial, but also, it helps add access to downtown via the Centennial. That route would become more than just a connector, but would also become a path of opportunity.

Eric Hatton

email



**Cost Estimates** 

## **Cost Estimate**

Project Name: Fish Lake Trail Connector Project Phase: Pre-Design Prepared By: PDS/JRG/RL Checked By: PDS

#### **RED ALIGNMENT**

ITEM AND DESCRIPTION	QUANTITY	UNIT	UN	IT COST	ITEM TOTAL	SUBTOTAL
MOBILIZATION (10%)						\$ 519,681
SURVEYING	1	LS	\$	75,000	\$ 75,000	\$ 75.000
DEMOLITION & SITE PREP Clear & Grub (6" depth incl. trees under 8" dbh) Remove Concrete Paving (4" depth) Remove HMA (4" depth) Remove Curb and Gutter Roadway Excavation Remove Misc. Items	12,342 789 2,889 2,600 17,700 1	SY SY SY LF CY ALLOW	\$ \$ \$ \$ \$ \$ \$	3 20 20 25 20 20,000	\$ 37,025 \$ 15,789 \$ 57,778 \$ 65,000 \$ 354,000 \$ 20,000	\$ 549 591
EARTHWORK Earthwork (cut) Earthwork (fill, place, compact) Geofoam (structural fill)	5,225 8,868 0	CY CY CY	\$ \$ \$	24 10 125	\$ 125,400 \$ 88,680 \$ -	\$ 214.080
SURFACING HMA Surface (4" depth) Top Course: Undr HMA, Shldr (6" depth)	1,808 3,840	TN TN	\$ \$	120 80	\$ 216,985 \$ 307,240	\$ 524,225
STRUCTURAL Bridge ST-2 Wall R1 Wall R2 Wall R3	1 1 1	LS LS LS LS	\$ \$ \$ \$	2,132,000 768,098 33,988 28,811	<ul> <li>\$ 2,132,000</li> <li>\$ 768,098</li> <li>\$ 33,988</li> <li>\$ 28,811</li> </ul>	¢ 0.000 807
DRAINAGE Drainage	1	ALLOW	\$	150,000	\$ 150,000	\$ 2,902,897 \$ 150,000
UTILITIES Utility Adjustments	1	ALLOW	\$	50,000	\$ 50,000	¢ 50.000
BARRICADES Fall Protection (Beyond Walls/Bridges) Bridge Railing	410 655	LF LF	\$ \$	50 200	\$ 20,500 \$ 131,000	\$ 151 500
AMENITIES Kiosks, Benches, Picnic Tables	1	ALLOW	\$	50,000	\$ 50,000	¢ 50,000
CHANNELIZATION AND SIGNAGE Paint Stripe Permanent Signing	15,000 1	LF LS	\$ \$	1 15,000	\$ 15,000 \$ 15,000	\$ 30,000 \$ 30.000
ILLUMINATION Trail Lighting	0	LS	\$	-	\$-	\$ -
EROSION CONTROL Erosion and Water Polution Control Measures	1	ALLOW	\$	336,400	\$ 336,400	\$ 336 400
PLANTING Shrubs,Seeding,Grouncover	6,875	SY	\$	15	\$ 103,120	\$ 103,120
ITEM SUBTOTAL Estimating Contingency (30%) SUBTOTAL WSST (8.90%) TOTAL						\$ 5,716,494 \$ 1,143,299 <b>\$ 6,859,793</b> \$ 610,522 <b>\$ 7,470,315</b>

Date: 12/9/2020

\*Alternative option for Red Alignment is a full span bridge over Riverside Avenue and Latah Creek that would replace Bridge ST-2.

Cost = \$3,513,000 LS

## **Cost Estimate**

Project Name: Fish Lake Trail Connector Project Phase: Pre-Design Prepared By: PDS/JRG/RL Checked By: PDS

### **BLUE ALIGNMENT**

ITEM AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL	SUBTOTAL
MOBILIZATION (10%)					\$ 821,102
SURVEYING	1	LS	\$ 75,000	\$ 75,000	\$ 75,000
DEMOLITION & SITE PREP Clear & Grub (6" depth incl. trees under 8" dbh) Remove Concrete Paving (4" depth) Remove HMA (4" depth) Remove Curb and Gutter	16,520 0 0 0	SY SY SY LF	\$ 3 \$ 20 \$ 20 \$ 25	\$ 49,560 \$ - \$ - \$ -	\$ 73,000
Roadway Excavation Remove Misc. Items	0 1	CY ALLOW	\$ 20 \$ 20,000	\$ - \$ 20,000	¢ 60.500
EARTHWORK Earthwork (cut) Earthwork (fill, place, compact) Geofoam (structural fill)	12,873 3,802 0	CY CY CY	\$ 24 \$ 10 \$ 125	\$ 308,952 \$ 38,020 \$ -	\$ 69,560 \$ 346,972
SURFACING HMA Surface (4" depth) Top Course: Undr HMA, Shldr, Con (6" depth)	1,351 2,870	TN TN	\$ 120 \$ 80	\$ 162,180 \$ 229,638	\$ 391,817
STRUCTURAL Bridge ST-1 Wall B1 Wall B2 Wall B3 Wall B4	1 1 1 1	LS LS LS LS LS	\$ 2,260,000 \$ 112,622 \$ 709,069 \$ 2,509,038 \$ 614,587	\$ 2,260,000 \$ 112,622 \$ 709,069 \$ 2,509,038 \$ 614,587	
DRAINAGE Drainage	1	ALLOW	\$ 150,000	\$ 150,000	\$ 6,205,316
UTILITIES Utility Adjustments	1	ALLOW	\$ 50,000	\$ 50,000	\$ 50,000
BARRICADES Fall Protection (Beyond Walls/Bridges) Bridge Railing	0 995	LF LF	\$ 50 \$ 200	\$ - \$ 199,000	\$ 199.000
AMENITIES Kiosks, Benches, Picnic Tables	1	ALLOW	\$ 50,000	\$ 50,000	\$ 50,000
CHANNELIZATION AND SIGNAGE Paint Stripe Permanent Signing	0 1	LF LS	\$ 1 \$ 10,000	\$ - \$ 10,000	\$ 10,000
ILLUMINATION Trail Lighting	0	LS	\$-	\$ -	¢
EROSION CONTROL Erosion and Water Polution Control Measures	1	ALLOW	\$ 534,900	\$ 534,900	\$ 534 000
PLANTING Shrubs,Seeding,Grouncover	8,564	SY	\$ 15	\$ 128,458	\$ 128 458
ITEM SUBTOTAL Estimating Contingency (30%) <b>SUBTOTAL</b> WSST (890%) <b>TOTAL</b>					\$ 9,032,126 \$ 1,806,425 \$ 10,838,551 \$ 964,631 \$ 11,803,182

## **Cost Estimate**

Project Name: Fish Lake Trail Connector Project Phase: Pre-Design Prepared By: PDS/JRG/RL Checked By: PDS

### **PURPLE ALIGNMENT**

ITEM AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL	SUBTOTAL
MOBILIZATION (10%)					\$ 994,513
SURVEYING	1	LS	\$ 75,000	\$ 75,000	\$ 75.000
DEMOLITION & SITE PREP Clear & Grub (6" depth incl. trees under 8" dbh) Remove Concrete Paving (4" depth) Remove HMA (4" depth) Remove Curb and Gutter Roadway Excavation Remove Misc. Items	14,155 0 0 0 0 1	SY SY LF CY ALLOW	\$ 3 \$ 20 \$ 20 \$ 25 \$ 20 \$ 20,000	\$ 42,465 \$ - \$ - \$ - \$ - \$ - \$ 20,000	¢
EARTHWORK Earthwork (cut) Earthwork (fill, place, compact) Geofoam (structural fill)	8,061 15,540 11,180	CY CY CY	\$ 24 \$ 10 \$ 125	\$ 193,464 \$ 155,400 \$ 1,397,500	\$ 02,403 \$ 1,746,364
SURFACING HMA Surface (4" depth) Top Course: Undr HMA, Shldr, Con (6" depth)	1,099 2,334	TN TN	\$ 120 \$ 80	\$ 131,872 \$ 186,724	\$ 318,597
STRUCTURAL Structure ST-1 Wall G1 Wall G2 Wall G3 Wall G4 Wall G5 Wall G6 Wall G7 Wall B4	1 1 1 1 1 1 1	SF SF SF SF SF SF SF	<ul> <li>\$ 2,260,000</li> <li>\$ 72,486</li> <li>\$ 1,028,621</li> <li>\$ 1,621,331</li> <li>\$ 167,291</li> <li>\$ 109,849</li> <li>\$ 219,436</li> <li>\$ 342,174</li> <li>\$ 614,587</li> </ul>	<ul> <li>\$ 2,260,000</li> <li>\$ 72,486</li> <li>\$ 1,028,621</li> <li>\$ 1,621,331</li> <li>\$ 167,291</li> <li>\$ 109,849</li> <li>\$ 219,436</li> <li>\$ 342,174</li> <li>\$ 614,587</li> </ul>	
DRAINAGE Drainage	1	ALLOW	\$ 150,000	\$ 150,000	\$ 6,435,775
UTILITIES Utility Adjustments	1	ALLOW	\$ 50,000	\$ 50,000	\$ 150,000 \$ 50,000
BARRICADES Fall Protection (Beyond Walls/Bridges) Bridge Railing	1,093 1,160	LF LF	\$ 40 \$ 200	\$ 43,720 \$ 232,000	\$ 275,720
AMENITIES Kiosks, Benches, Picnic Tables	1	ALLOW	\$ 50,000	\$ 50,000	\$ 50,000
CHANNELIZATION AND SIGNAGE Paint Stripe Permanent Signing	0 1	LF LS	\$1 \$10,000	\$ - \$ 10,000	\$ 10,000
ILLUMINATION Trail Lighting	0	LS	\$-	\$-	\$ -
EROSION CONTROL Erosion and Water Polution Control Measures	1	ALLOW	\$ 648,400	\$ 648,400	\$ 648,400
PLANTING Shrubs,Seeding,Grouncover	8,187	SY	\$ 15	\$ 122,812	\$ 122,812
ITEM SUBTOTAL Estimating Contingency (30%) SUBTOTAL WSST (8.90%) TOTAL					<ul> <li>\$ 10,939,646</li> <li>\$ 2,187,929</li> <li>\$ 13,127,575</li> <li>\$ 1,168,354</li> <li>\$ 14,295,930</li> </ul>

## **Cost Estimate**

Project Name: Fish Lake Trail Connector Project Phase: Pre-Design Prepared By: PDS/JRG/RL Checked By: PDS

### **GREEN ALIGNMENT**

ITEM AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL	SUBTOTAL
MOBILIZATION (10%)					\$ 1,521,074
SURVEYING	1	LS	\$ 75,000	\$ 75,000	\$ 75,000
DEMOLITION & SITE PREP Clear & Grub (6" depth incl. trees under 8" dbh) Remove Concrete Paving (4" depth) Remove HMA (4" depth) Remove Curb and Gutter Roadway Excavation Remove Misc. Items	21,414 0 0 0 0 1	SY SY LF CY ALLOW	\$ 3 \$ 20 \$ 20 \$ 25 \$ 20 \$ 20,000	\$ 64,242 \$ - \$ - \$ - \$ - \$ - \$ 20,000	
EARTHWORK	14 715	CV	¢ 24	¢ 353.160	\$ 84,242
Earthwork (fill, place, compact) Geofoam (structural fill)	15,728 11,180	CY CY	\$ 24 \$ 10 \$ 125	\$ 333,100 \$ 157,280 \$ 1,397,500	\$ 1 907 940
SURFACING HMA Surface (4" depth) Top Course: Undr HMA, Shldr, Con (6" depth)	2,279 4,841	TN TN	\$ 120 \$ 80	\$ 273,486 \$ 387,243	\$ 660,729
STRUCTURAL Wall G1 Wall G2 Wall G3 Wall G4 Wall G5 Wall G6 Wall G7 Wall G8	1 1 1 1 1 1	LS LS LS LS LS LS LS	<ul> <li>\$ 72,486</li> <li>\$ 1,028,621</li> <li>\$ 1,621,331</li> <li>\$ 167,291</li> <li>\$ 109,849</li> <li>\$ 219,436</li> <li>\$ 342,174</li> <li>\$ 6,987,773</li> </ul>	<ul> <li>\$ 72,486</li> <li>\$ 1,028,621</li> <li>\$ 1,621,331</li> <li>\$ 167,291</li> <li>\$ 109,849</li> <li>\$ 219,436</li> <li>\$ 342,174</li> <li>\$ 6,987,773</li> </ul>	· · · · · · · · · · · · · · · · · · ·
DRAINAGE Drainage	1	ALLOW	\$ 150,000	\$ 150,000	\$ 10,548,961
UTILITIES Utility Adjustments	1	ALLOW	\$ 50,000	\$ 50,000	\$ 150,000
BARRICADES Fall Protection (Beyond Walls/Bridges) Bridge Railing	4,370 1,160	LF LF	\$ 50 \$ 200	\$ 218,500 \$ 232,000	\$ 50,000
AMENITIES Kiosks, Benches, Picnic Tables	1	ALLOW	\$ 50,000	\$ 50,000	\$ 450,500 <b>*</b> 50,000
CHANNELIZATION AND SIGNAGE Paint Stripe Permanent Signing	0 1	LF LS	\$1 \$10,000	\$ - \$ 10,000	\$ 30,000
ILLUMINATION Trail Lighting	0	LS	\$-	\$-	¢ 10,000
EROSION CONTROL Erosion and Water Polution Control Measures	1	ALLOW	\$ 990,200	\$ 990,200	φ -
PLANTING Shrubs,Seeding,Grouncover	15,544	SY	\$ 15	\$ 233,167	\$ 990,200 ¢ 000,467
ITEM SUBTOTAL Estimating Contingency (30%) SUBTOTAL WSST (8.00%) TOTAL					\$ 16,731,812 \$ 3,346,362 \$ 20,078,175 \$ 1,786,958 \$ 21,865,133

## **Cost Estimate**

Project Name: Fish Lake Trail Connector Project Phase: Pre-Design Prepared By: PDS/JRG/RL Checked By: PDS

#### **THORPE ROAD CONNECTION**

ITEM AND DESCRIPTION	QUANTITY	UNIT	UN	IT COST	ITEM TOTAL	SUBTOTAL
MOBILIZATION (10%)						\$ 62,687
SURVEYING	1	LS	\$	25,000	\$ 25,000	¢ 05.000
DEMOLITION & SITE PREP Clear & Grub (6" depth incl. trees under 8" dbh) Remove Concrete Paving (4" depth) Remove HMA (4" depth) Remove Curb and Gutter Roadway Excavation Remove Misc. Items	11,000 0 0 0 0 1	SY SY LF CY ALLOW	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	3 20 20 25 20 5,000	\$ 33,000 \$ - \$ - \$ - \$ - \$ - \$ 5,000	\$ 25,000
EARTHWORK Earthwork (cut) Earthwork (fill, place, compact) Geofoam (structural fill)	1,000 13,000 0	CY CY CY	\$ \$ \$	24 10 125	\$ 24,000 \$ 130,000 \$ -	\$ 154,000
SURFACING HMA Surface (4" depth) Top Course: Undr HMA, Shldr, Con (6" depth)	565 1,201	TN TN	\$ \$	120 80	\$ 67,830 \$ 96,044	¢ 162.975
DRAINAGE Drainage	1	ALLOW	\$	15,000	\$ 15,000	\$ 100,070 \$ 15,000
UTILITIES Utility Adjustments	1	ALLOW	\$	50,000	\$ 50,000	\$ 13,000
BARRICADES Fall Protection (Beyond Walls/Bridges) Bridge Railing	0 0	LF LF	\$ \$	40 200	\$ - \$ -	\$ 50,000
AMENITIES Kiosks, Benches, Picnic Tables	1	ALLOW	\$	10,000	\$ 10,000	\$ 10,000
CHANNELIZATION AND SIGNAGE Paint Stripe Permanent Signing Signalized Improvements	1,000 1 1	LF LS LS	\$ \$	1 10,000	\$ 1,000 \$ 10,000	•
ILLUMINATION Trail Lighting	0	LS	\$	-	\$-	\$ 11,000
EROSION CONTROL Erosion and Water Polution Control Measures	1	ALLOW	\$	24,700	\$ 24,700	\$ -
PLANTING Shrubs,Seeding,Grouncover	9,020	SY	\$	15	\$ 135,300	\$ 24,700
ITEM SUBTOTAL Estimating Contingency (30%) SUBTOTAL WSST (8.90%) TOTAL						\$ 689,562 \$ 137,912 \$ 827,475 \$ 73,645 \$ 901,120
ALTERNATE - New Tunne 250 LF 16-ft Diameter Tunnel Credit Signalized Improvements TOTAL	1 -1	SF LS	\$ \$	1,750,000 130,000	\$    1,750,000 \$    (130,000)	\$ 1,620,000

## Appendix D

Environmental Review – Fish Lake Trail Connection Study

## Appendix E

Existing Utility Information

TO BE INCLUDED IN FINAL



# FISH LAKE TRAIL CONNECTION STUDY UTILITY EXHIBIT

### LEGEND:



STORMWATER GRAVITY MAIN SANITARY SEWER GRAVITY MAIN WATER DISTRIBUTION MAIN WATER DISTRIBUTION LATERAL





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