

FHWA Office of Federal Lands Highway

West Yellowstone Connector Trail

Planning and Design Study: Final Report



South Fork of the Madison River, Custer Gallatin National Forest

Prepared for:
Town of West Yellowstone, Montana

Prepared by:
**Federal Highway Administration
Western Federal Lands Highway Division**

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Project Information

The West Yellowstone Connector Trail Planning and Design Study is a collaborative project between the Town of West Yellowstone, US Forest Service Custer Gallatin National Forest, and FHWA Western Federal Lands. The project was funded through the Federal Lands Access Program (Project ID: MT FLAP WYELLS 2021(1)).

Project Team

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- Dan Walker, AICP | Town Manager | Town of West Yellowstone
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Technical Support

Additional technical support provided by the following staff:

- Ellen Butler | Earthquake Lake Visitor Center Manager | USFS Custer Gallatin National Forest
- Jamie Lemon, AICP | Transportation Planner | FHWA Western Federal Lands
- Sean Kilmartin, PE | Highway Safety Engineer | FHWA Western Federal Lands
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U.S. Department
of Transportation
**Federal Highway
Administration**

Introduction

Project Background

The Town of West Yellowstone, Montana, has several separate trails that the town would like to see connected. West Yellowstone seeks to design and construct a trail network system through its town to connect the currently separate Yellowstone Shortline, Frontier, Boundary, Rendezvous Nordic Ski, and Riverside Trails to create a complete network for users to recreate or commute on. Indeed, West Yellowstone serves as the nexus of multiple trail systems currently and even provides an unofficial path to connect trails through town on posted signs (see Figure 1).

This study therefore proposes conceptual designs and cost estimates for the proposed trail through the Town of West Yellowstone, known as the West Yellowstone Connector Trail.

Study Area

The study area includes the Town as well as the trail network connecting to the Town from adjacent US Forest Service and National Park Service lands. Figure 2 below shows the study area, existing trails, and proposed trail route the project team started with based on current Town preferences, such as the sign in Figure 1.

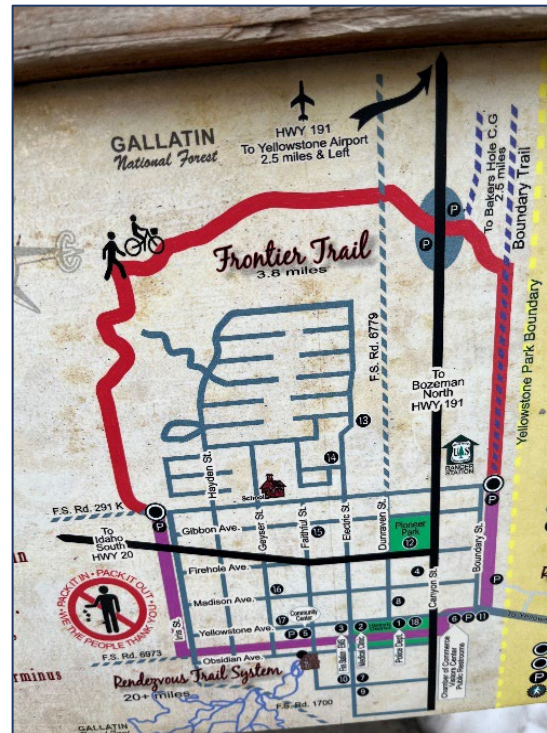


Figure 1. Posted sign in West Yellowstone at Alley A and Canyon Street showing a recommended path in purple to connect existing trails.

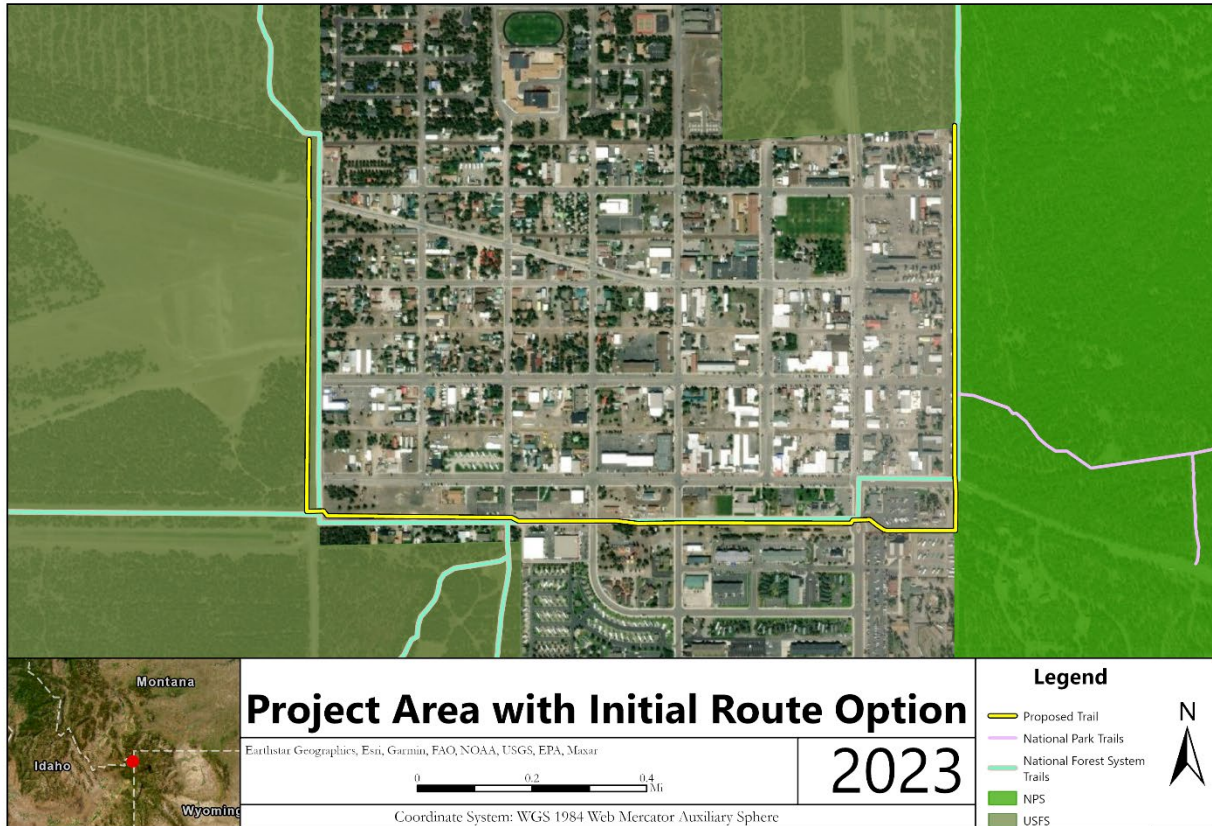


Figure 2. Study area, including the Town, adjacent federal lands, existing trails, and proposed trail route.

Study Goals

This study develops conceptual designs for a trail that connects the different trails in the Town of West Yellowstone into a cohesive trail network. The specific project goals are to:

1. Identify a proposed trail route connecting existing trail and recreation facilities in the Town of West Yellowstone
2. Produce conceptual designs and cost estimates for future design and construction grant applications
3. Ensure proposed trail route, design, and other considerations reflect the interest of Town residents, visitors, and stakeholders

Structure of Report

The study Final Report is structured as follows. First, we summarize the study approach used by the project team. Second, we synthesize stakeholder and public feedback received throughout the study development process and how it informed final recommendations. Third, we outline the project findings and recommendations, including the proposed trail route, design recommendations, and associated costs. Lastly, we identify additional considerations and future work collected during the study development process.

The Final Report serves as the synthesis of all study development work completed and final recommendations. For more information on any aspect of the study development process or decision making, see the relevant appendices included at the end of this report.

Study Approach

Overview

The project team developed the study in four phases with stakeholder and public feedback at key milestones: Study scoping, existing conditions, conceptual design alternatives, and report development. This section summarizes each phase of the study

Study Scope Development

The project team conducted a site visit in May of 2022 to understand the study scope, site conditions, and any major stakeholder or public concerns that could influence the study's development. The site visit included the project team as well as representatives from the National Park Service, Yellowstone Shortline Trail, and Museum of West Yellowstone. Other organizations that had written letters of support for the study to be funded by FHWA were invited but unable to attend. Figure 3 below shows the project route taken while Appendix A provides complete details of the initial site visit.



Figure 3. Initial project site visit route and stops, May 2022. Attendees conducted the site visit on bicycle and foot to better understand how both users experience the route currently.

Existing Conditions

Beginning in Fall of 2022, the project team developed a (1) study engagement strategy to structure stakeholder and public engagement and a (2) existing conditions memo to provide foundational information on the study contexts and considerations.¹ The engagement strategy outlined the applicable federal regulations, project goals, key stakeholders, and engagement activities planned by study milestone. At each study milestone, the project team updated the engagement strategy with activities conducted, feedback received, and how the feedback was addressed within the study.

The existing conditions memo outlined the information available about the study area that may influence study recommendations. The memo summarizes relevant plans and studies, economic generators, site design and use conditions, safety issues, and the proposed route. The information from the existing conditions were shared with stakeholder and the public in January and February of 2023 through an in person and virtual public meeting and virtual public comment period. The existing conditions memo and revisions from the engagement activities found that, among other considerations, the study needed to address:

- How the trail would cross applicable highways safely
- Whether the trail would go through the 80-acres of undeveloped land west of Town
- Whether the trails could connect to the school and Madison Addition trail
- Whether snow mobiles would be allowed on the trail

Snowmobile use is regulated outside the scope of the study and was therefore easily addressed in the final existing conditions memo. Winter uses of the trail should align with existing winter recreation trails that it connects to, subject to Town code for when and where snowmachines are allowed. Motorized use of the trail during winter months is governed by the West Yellowstone Municipal Code under sections 10.12 (Snowmobiles) and 12.20 (Snow Removal). In summary, snowmobiles would be allowed on the proposed trail during the winter months when enough snow has accumulated to allow snowmobiles to operate on the trail without damaging the underlying trail infrastructure, similar to the Town regulations for snowmobiles on roadways.²³

Conceptual Design Alternatives

The conceptual design alternatives task examined (1) trail route alternatives and design considerations and (2) alternatives to safely cross US20 and US191 based on the findings of the existing conditions work and the project goals.⁴

¹ See Appendices B and C for detailed information on both tasks.

² Town of West Yellowstone Municipal Code, Chapter 10.12 (Snowmobiles).
<https://www.codepublishing.com/MT/WestYellowstone/#!/WestYellowstone10/WestYellowstone1012.html#10.12>

³ Town of West Yellowstone Municipal Code, Chapter 12.20 (Snow Removal).
<https://www.codepublishing.com/MT/WestYellowstone/#!/WestYellowstone12/WestYellowstone1220.html#12.20>

⁴ See Appendix D for further details on the conceptual design work.

The trail route work illustrated the primary route as examined in the initial site visit, alternative connections around the 80-acre area and connecting to the school, and design and material considerations for stakeholder and public discussion. The alternative for the trail to cross the applicable highways included four alternatives with associated costs for stakeholder and public discussion:

- Striped bicycle and pedestrian crossing with pedestrian-activated Rectangular Rapid Flashing Beacons (RRFBs)
- Pedestrian-activated hybrid beacons
- Roundabouts
- Grade-separated crossings (i.e., tunnels)

All trail and crossing work was shared with stakeholders and the public at an all-day open house on May 8th, 2023 at the Povah Community Center in the Town. Attendees discussed alternatives and considerations with the project team and one another, provided comments and questions on study posters, and followed up with an online public comment period through May 22nd, 2023. The key preferences heard from attendees were (among others):

- A roundabout at the intersection of US20 and Iris Street
- A RRFB crossing at US191 and Yellowstone Avenue
- Trail route as originally proposed, with opportunities for future connections

Final Report Development

The final task for the project team was to compile and synthesize study development materials, stakeholder and public input received, additional considerations identified, and final recommendation into a Final Report. This report is submitted to the project team for final review and comment before publishing on applicable media and distributing to all interested parties.

Stakeholder and Public Perspectives

Stakeholder and public perspectives on the study were gathered throughout the the project as outlined in the previous section. This section summarizes the activities conducted, what the project team heard, and how it informed the study’s recommendations.⁵ Engagement activities for this study were organized around key project milestones and consisted of a stakeholder site visit before starting the study, a public meeting and webinar with associated virtual public involvement, and an in person open house with associated virtual public involvement.

Stakeholder Site Visit

The key themes from the site visit are summarized as follows, along with how they were addressed in the study.

Table 1. Summary of Site Visit themes

Theme	Response
Focus on network completeness between Town, US Forest Service, National Park service, and other partner trail systems	All trail alignments and designs connect to all USFS and NPS trailheads adjoining the Town
Ensure consistent signage, design, and wayfinding for proposed trail and connections	All signs shall be consistent with AASHTO Bicycle and Pedestrian Guide standards and Shortline Trail designs
Ensure ADA accessibility	All trail designs shall be in accordance with AASHTO designs standards, including ADA accessibility
Ensure parallel education and infrastructure efforts pursued, such as trail education and bicycle maintenance	Where identified, these opportunities are gathered in the Additional Considerations section of the Final Report
Evaluate grade separation for bicycle and pedestrians from vehicles	Evaluated through the Conceptual Designs work and open house feedback.
Ensure continuous and comprehensive engagement with public and stakeholders throughout project	Accomplished through engagement strategy and related activities
Align trail improvements with Shortline Trail improvements	Accomplished through Shortline Trail volunteer member participation and alignment with Shortline Trail design concepts

⁵ For complete details of the engagement activities and all comments received, see Appendix B.

Public Meeting, Webinar, and Virtual Public Involvement

The key themes from the public meeting, webinar, and virtual public involvement are summarized as follows, along with how they were addressed in the study.⁶

Table 2. Summary of Public Meeting and related feedback

Theme	Response
Address trail options on Iris Street and through 80-acres parcel. Comments received expressed interest in the trail route running through the 80-acres parcel rather than along Iris Street.	Project team presented an alignment option that goes around the 80-acres property, including costs, safety considerations, and related challenges opportunities to stakeholders and public. Responses were split, but the prevailing perspective was to maintain the original proposed alignment and allow for future addition as the 80-acres develops.
Highway crossing designs. Comments received expressed support for addressing highway crossing safety for the proposed trail, especially at US 20 and Iris Street. Many comments requested grade-separated designs, which may or may not be the appropriate option for the trail base on design, cost, and safety issues addressed.	Project team developed and presented four highway crossing options of increasing safety benefit and total cost for public and stakeholder discussion. While the feedback was not uniform, the prevailing theme was in favor of a roundabout at US20 and Iris Street and a Rectangular Rapid Flashing Beacon at US191 and Boundary Street.
Connections to school and Madison Addition. The proposed trail ends at Iris Street and Alley D/D Parkway, with users continuing on to USFS Trails around the northern boundary of the Town. Comments received suggested extending the trail route to connect with the West Yellowstone Elementary and Junior/Senior High schools as well as to the Madison Addition Walking Path.	The project team presented an addition to the trail alignment that connected to the school for stakeholder and public discussion. The Town perspective was that unpaved alleys serve as low speed, multi-use trails currently and further trail improvements over the unpaved surface is no preferred.
Additional Park Features. Comments received recommended additional design features to support bicycle and ski equipment storage along the route and improving the Shortline Railbed segment to become a linear park.	While these elements are not within the design scope of this project, the project team gathered recommendations like these for Town consideration and implementation.

⁶ For further detail and complete feedback, see Appendix B.

Open House and Virtual Public Involvement

The key themes from the open house and virtual public involvement are summarized as follows, along with how they were addressed in the study.⁷

Table 3. Summary of Open House and related feedback

Theme	Response
Allow for phasing of trail alignment construction, including: <ul style="list-style-type: none"> • Possible future trail additions • Park features • Drinking water • Parking needs 	Project team has included all elements that could be added post-study in the Findings and Additional Considerations sections of this report.
Split perspectives on concrete, asphalt, or unpaved trail surfaces	To ensure ADA accesibility and long-term use, the project team proposes maintaining a paved surface. Both contrete and asphalt ae viable options, but the project team and many open house attendees seem to prefer the lower impact of asphalt on pedestrian users over the possibly longer lifespan of a concrete facility.
For highway crossings and cost estimates, preferences for : <ul style="list-style-type: none"> • High visibility • Low cost • Improved safety • Low maintenance needs • ADA accessibility • Roundabout at US20 and Iris Street 	The preferences noted favor RRFBs (lowest cost, high visibilty option) at US191 and Boundary Street and a roundabout (highest safety and traffic improvement relative to cost) at US20 and Iris Street.
For highway crossings and cost estimates, preferences against : <ul style="list-style-type: none"> • Roundabouts generally (from student drivers) • High cost, low feasibility options • Multiple maintenance considerations • Tunnel option 	The preferences noted favor the least complex options overall, with different improvements at each location.
Evaluate and address additional parking needs	Project team has included all elements that could be added post-study in the Findings and Additional Considerations sections of this report.

⁷ For further detail and complete feedback, see Appendix B.

Develop trail alongside a linear park in former rail bed	Project team has included all elements that could be added post-study in the Findings and Additional Considerations sections of this report.
Evaluate other traffic and crossing needs in Town	Project team has included all elements that could be added post-study in the Findings and Additional Considerations sections of this report.

Figure 4. Attendees at the May 8th, 2023, open house event



Findings and Recommendations

Following the existing conditions, conceptual design options, and engagement efforts, the project team proposes the following improvements based on public and stakeholder perspectives and project team analysis, as shown in Figure 5 and Table 4 below.

Figure 5. Proposed improvements to complete the West Yellowstone Connector Trail

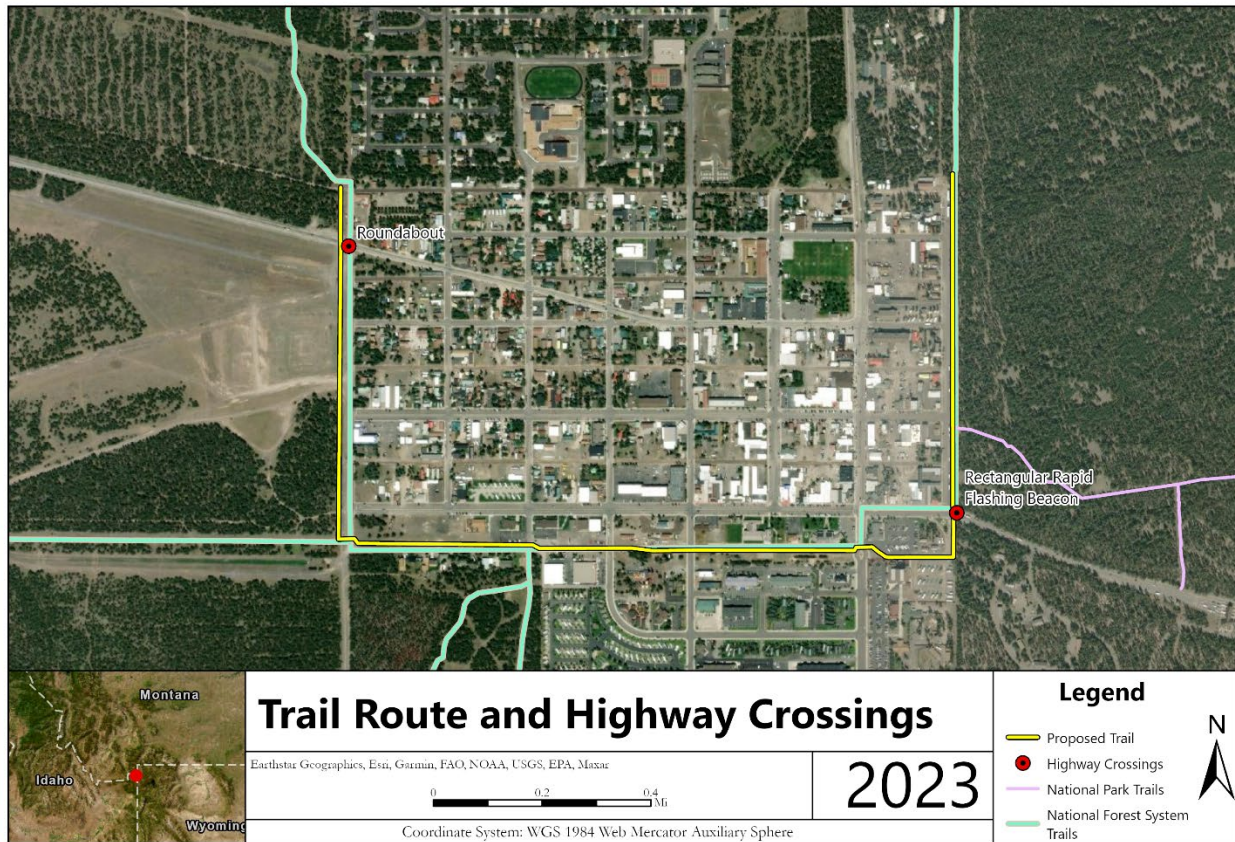


Table 4. Cost estimates for proposed improvements

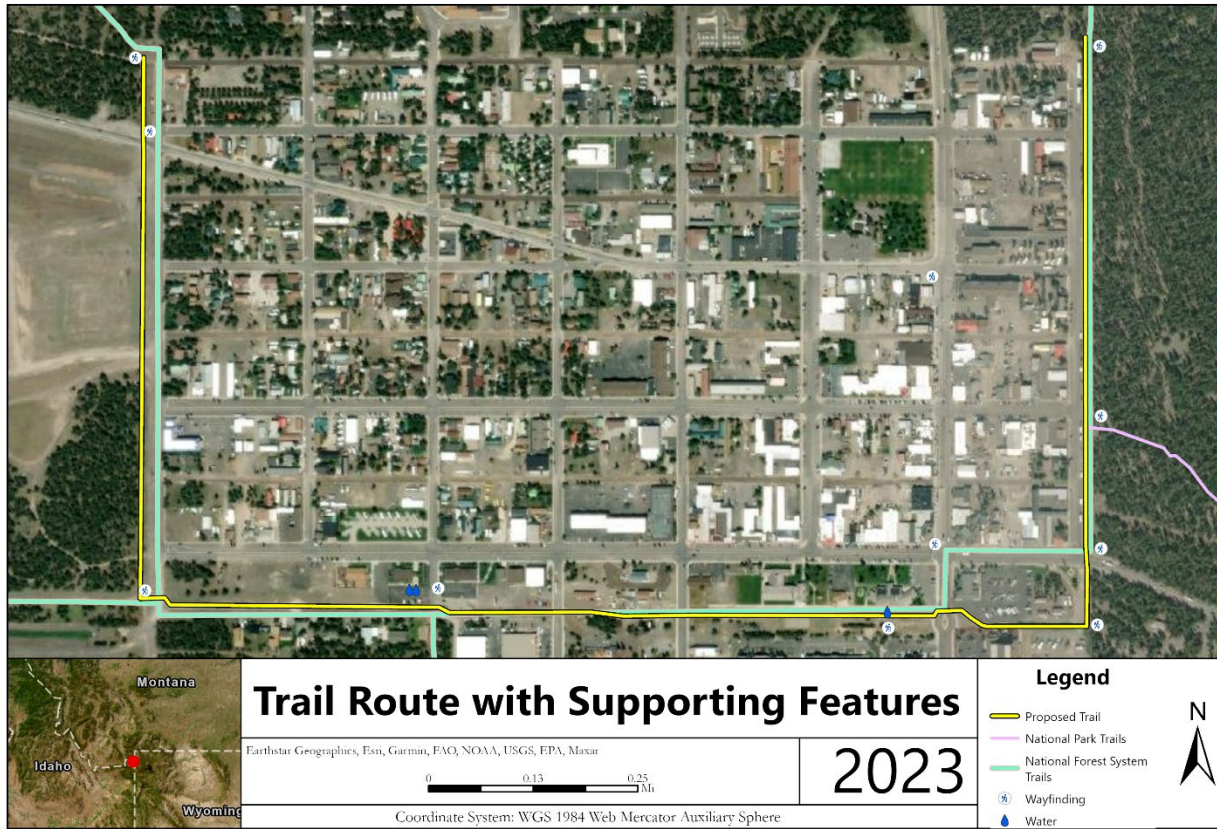
2023 Estimate								
	Feet	Construction	30% Contingency	Total Construction	Design	CE	CM	Total
<i>Expressed in millions</i>					15%	10%	10%	
Trail	10,381	\$1.500	\$0.450	\$1.950	\$0.293	\$0.195	\$0.195	\$2.633
Rapid Flashing Beacon		\$0.015	\$0.005	\$0.020	\$0.003	\$0.002	\$0.002	\$0.026
Roundabout		\$1.500	\$0.450	\$1.950	\$0.293	\$0.195	\$0.195	\$2.633
2028 Estimate (4% inflation)								
	Feet	Construction	30% Contingency	Total Construction	Design	CE	CM	Total
<i>Expressed in millions</i>					15%	10%	10%	
Trail	10,381	\$1.830	\$0.549	\$2.379	\$0.357	\$0.238	\$0.238	\$3.212
Rapid Flashing Beacon		\$0.035	\$0.011	\$0.046	\$0.007	\$0.005	\$0.005	\$0.061
Roundabout		\$1.830	\$0.549	\$2.379	\$0.357	\$0.238	\$0.238	\$3.212
2033 Estimate (4% inflation)								
	Feet	Construction	30% Contingency	Total Construction	Design	CE	CM	Total
<i>Expressed in millions</i>					15%	10%	10%	
Trail	10,381	\$2.165	\$0.650	\$2.815	\$0.422	\$0.281	\$0.281	\$3.800
Rapid Flashing Beacon		\$0.040	\$0.012	\$0.052	\$0.008	\$0.005	\$0.005	\$0.070
Roundabout		\$2.165	\$0.650	\$2.815	\$0.422	\$0.281	\$0.281	\$3.800

Trail Route

The project team recommends the trail route follow the original alignment as shown in Figure 6 below. The trail should be 10 feet wide and constructed of asphalt, per the *AASHTO Guide for the Development of Bicycle Facilities (2012)*. Through analyses completed in the existing conditions task and discussions during engagement activities, the project team also finds the following:

- Ensure ADA accessible infrastructure, markings, and lighting at highway and non-highway crossings
- Consider a consistent wayfinding systems that integrates the new trail with existing trail systems, including a “trail head” located at the Museum of the Yellowstone that incorporates trail maps, trail history, and bicycle and pedestrian education for users
- Ensure any final design aligns with Shortline Trail aesthetics
- Ensure coordination with water and natural gas utilities at applicable locations, per Appendix C – Utilities
- Install public drinking water stations along route, including bottle filling capabilities
- Promote bicycle maintenance facilities at or near trail head
- Consider any new parking demand that may be generated through completing the proposed trail
- Plan for additional trail connections around the 80-acres area, to the school, and to Madison Addition as applicable land use considerations support

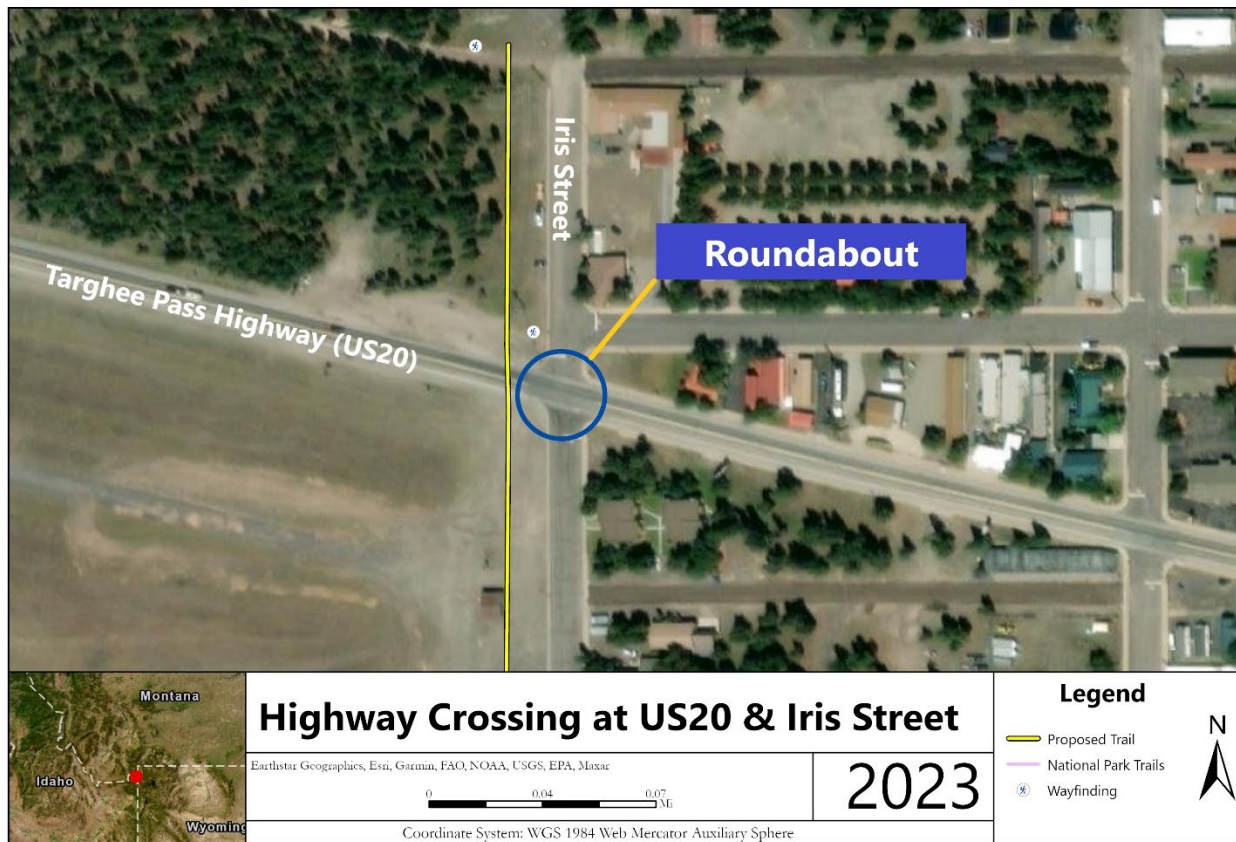
Figure 6. Trail route and supporting infrastructure



Highway Crossing – US20 and Iris Street

The project team recommends a one-lane roundabout facility as the trail crossing improvement for US20 and Iris Street. This improvement balances the needs for traffic calming and safety with cost effectiveness, while also providing a possible entrance feature for the west end of the Town.⁸ Figure 7 below show the approximate location of the roundabout.

Figure 7. Highway crossing at US20 and Iris Street

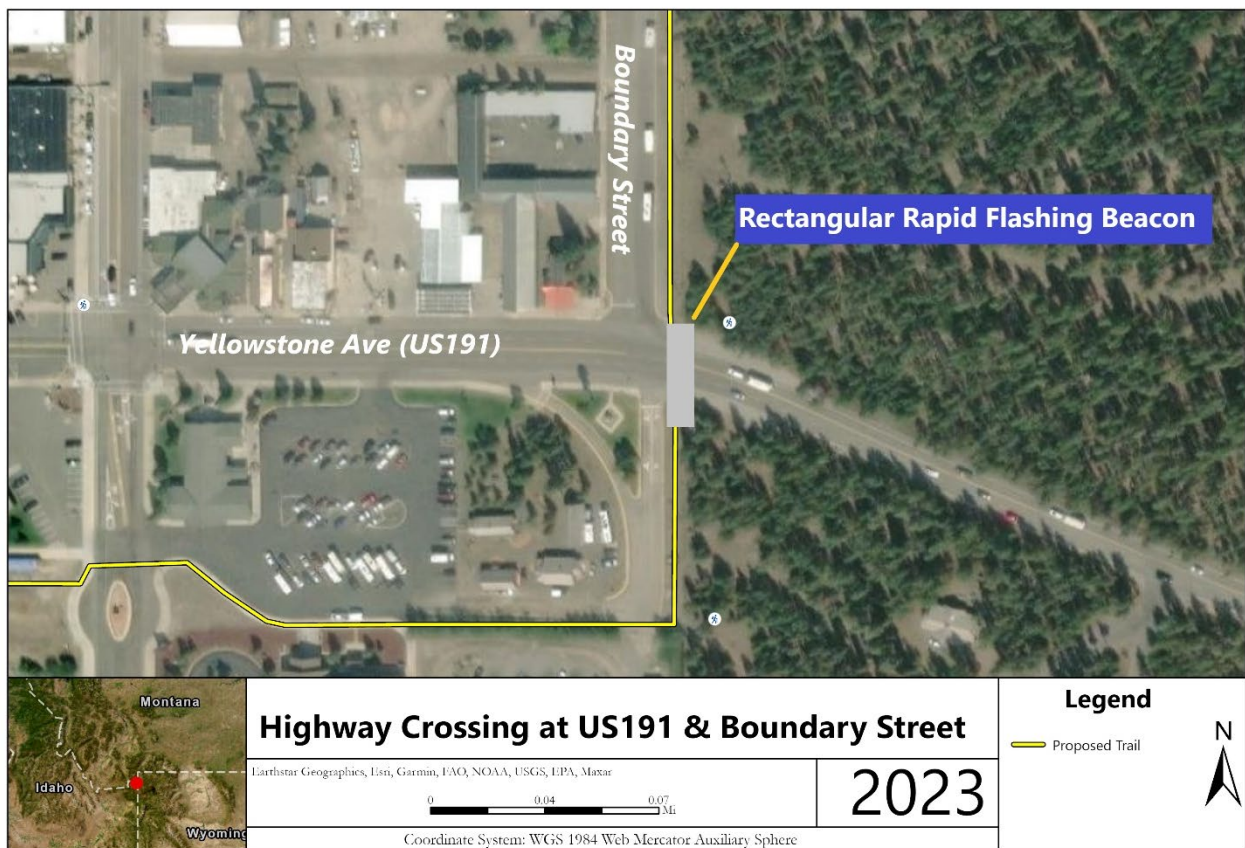


⁸ An additional traffic and engineering analysis may be needed during future preliminary design phases for a roundabout.

Highway Crossing – US191 and Boundary Street

The project team recommends a RRFB facility as the trail crossing improvement for US191 and Boundary Street. Recognizing the stakeholder and public interest in low-cost, high safety improvements, a RRFB provides the most flexible improvement. Unlike the US20 crossing where highway traffic is changing rapidly entering the crossing, traffic at US191 and Boundary Street is much lower and is coming from a nearby traffic signal (west) or the National Park Service gate (east). Figure 8 below shows the approximate location of a RRFB crossing.

Figure 8. Highway crossing at US191 and Boundary Street



Conclusion and Additional Considerations

The analysis and findings of this study provide a foundation for future preliminary engineering design and construction by synthesizing the project team analyses along with stakeholder and public preferences. The study's goals were to (1) identify a proposed trail route connecting existing trail and recreation facilities in the Town of West Yellowstone, (2) produce conceptual designs and cost estimates for future design and construction grant applications, and (3) ensure proposed trail route, design, and other considerations reflect the interest of Town residents, visitors, and stakeholders. The project team accomplished these goals through the work shown in the Appendices with final recommendations shown in this report.

Additional Considerations

In addition to the findings in this report, two additional planning efforts were identified by stakeholders and the public for future Town consideration (both shown in Figure 9 below).

Figure 9. Future planning considerations identified through Open House



The first is a pedestrian access and traffic calming study in the Targee Pass Highway (US20) corridor in Town, including the cross streets connecting to the school (shown in Figure 9 with orange lines). Open house participants noted that, much like US20 and Iris Street, the other crossings of US20 in town can be difficult for pedestrians during peak traffic times and warrant

RRFB crossings or similar interventions. The Town may consider a further traffic study to investigate traffic calming and pedestrian access improvements, including examining existing pedestrian safety resources available through FHWA.⁹

The second consideration is a linear park plan for the former Shortline rail bed on public lands. A linear park refers to any park that is much longer than it is wide, usually due to being built over another former use, such as a railroad. Participants suggested that any trail along the former rail bed should be accompanied by a plan for public park as well. This includes landscaping, benches and tables, and other amenities appropriate to the context. The Town may consider a further planning and design effort to develop a linear park plan. Depending on the goals of the linear park, the Town could review the briefing papers from the American Planning Association's City Parks Forum, which outline parks planning for community engagement, economic development, public health, tourism, and other possible goals.¹⁰

⁹ See: FHWA Pedestrian and Bicycle Safety. <https://highways.dot.gov/safety/pedestrian-bicyclist>

¹⁰ See: APA City Parks Forum: Briefing Papers. <https://www.planning.org/cityparks/>

