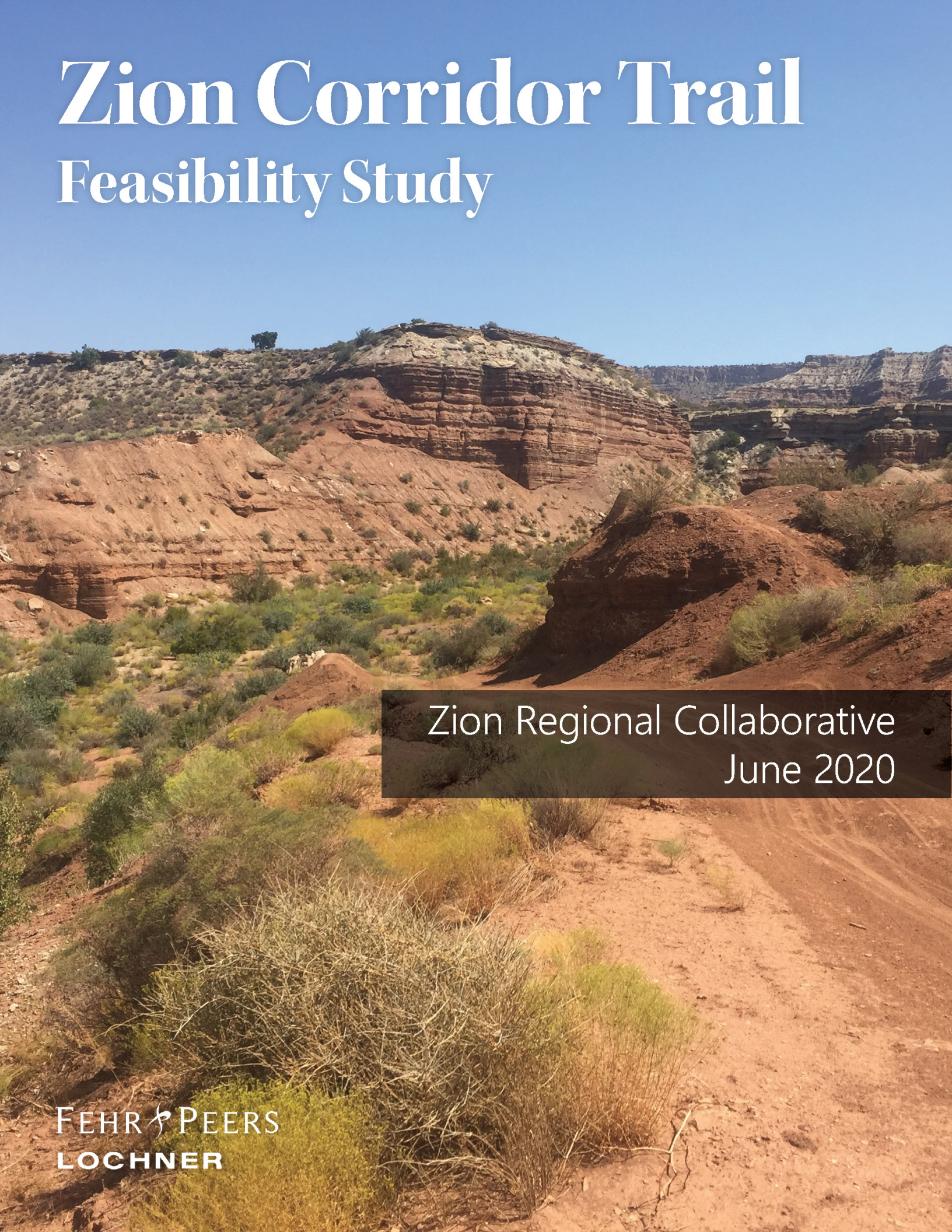
Zion Corridor Trail
Feasibility Study



Zion Regional Collaborative
June 2020

FEHR & PEERS
LOCHNER

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Chapter 1

Introduction

The Zion Regional Collaborative (ZRC) is a group of stakeholders throughout Washington County seeking to work together and proactively plan for the future of the region. In 2018 the ZRC Transportation Subcommittee met and discussed the idea of a regional trail spanning from Hurricane / La Verkin to Springdale, a distance of 22 miles. The vision of the regional trail as established by the ZRC in 2018 was to provide a paved trail for everyone, including commuting employees, to support alternative transportation opportunities to access all the communities from Hurricane / La Verkin to Springdale and Zion National Park, while also creating a regional trail "backbone" to connect to existing trails and trailheads or be a destination trail in itself. At that time, the ZRC also recognized the opportunity to explore how an e-bike share system could support the regional trail and help address some of the vehicle congestion issues surrounding Zion National Park. With a unanimously supported

Figure 1: Zion Corridor Trail Feasibility Extents

motion, in 2018, the ZRC decided to move forward with a feasibility study to explore alignment options within the Zion Corridor.

In the summer of 2019, the project team got started on the Zion Corridor Trail Feasibility Study. The general approach to the study is outlined in Figure 2.

Figure 2: Feasibility Study Process Diagram

Chapter 2

Context

To begin, the project team explored the existing conditions in the Zion Corridor region in order to establish a baseline for exploring the trail feasibility. There were three major components of the existing conditions evaluation which will be outlined in this chapter:

- A Peer Trails Analysis
- A Geographic Analysis
- A Public Opinion (Survey 1)

Each of these components helped establish the context, constraints, and opportunities for a regional pathway.

Peer Trails Analysis

Towards the onset of the project, the project team worked with the ZRC to develop a list of three peer trails throughout the country to evaluate. The goal of this assessment was to determine the timeline and steps taken to build the trail in order to provide the ZRC with some lessons learned and recommendations for the Zion Corridor Feasibility Study. The ZRC selected the Loop Trail in Tucson, Arizona, the Jackson to Moose County Pathway in Jackson, Wyoming, and the Rail Trail & McLeod Creek Pathway in Park City, Utah. The project team developed a questionnaire to discuss with

representatives for each of the peer trails. An overview of the finding can be found here, with the full interview transcripts available in the Appendix of this report.

The Loop, Tucson, Arizona

The Loop Trail Overview Information

1. Trail length: ~130 miles
2. Contact: John Spiker, Pima County Regional Flood Control District
3. Project Location: Eastern Pima County, connects to Tucson, Marana, and Oro Valley, AZ
4. Surface Type: PAG 3 asphaltic concrete mix (high oil content with a lower aggregate spec for a softer path)
    - Recommends Holbrook Asphalt Co., in St. George, UT, for pathway surface material
5. Construction Cost: N.A. – phases of construction roughly 35-year period
6. Funding Sources: Bonds, secondary taxes, state DOT funds (Transportation Partial federal grants and programs.
    - Constructed within the FEMA floodplain district – limits the type of development along a pathway
7. E-Bike policy: No motorized vehicles allowed (this includes E-bikes and E-scooters due to safety and liability issues)
8. Construction timeline: 35 years – in phases

Interview Take-Aways for Zion Corridor Trail

- Maximize coordination with fire and police for quicker emergency responses – this includes well-established/clearly marked pathway access points (GIS map with local emergency departments)
- Add the Zion Corridor Trail to any applicable Long-Range Plans (ex. UDOT LRP)
- Define a consistent regional "vision" for the Zion Corridor Trail – the pathway should look and feel seamless changing between jurisdictions
- The pathway project should be viewed as an opportunity to build/strengthen relationships between stakeholders

Jackson to Moose County Pathway, Jackson, Wyoming

Jackson to Moose Trail Overview Information

1. Trail length: ~13 miles
2. Contact: Brian Schilling, Teton County Pathways and Trails
3. Project Location: Town of Jackson to Moose, WY – crosses two jurisdictions Teton County and Grand Teton National Park.

- Also, it requires coordination with the Elk Refuge and Federal Fish and Wildlife
- The pathway follows alongside Highway 89

4. Surface Type: Paved with asphalt and striped 10' width pathway
5. Construction Cost: Estimated $750,000 per mile for construction
6. Funding Sources: 2 federal grants, stimulus funding, and local tax option approved on the ballot – completed pathway in 3 phases over three years
7. E-Bike policy: No motorized vehicles allowed (this includes E-bikes and E-scooters due to safety and liability issues)
8. Construction timeline: 3 years – in 3 phases

Interview Take-Aways for Zion Corridor Trail

- Used infrared and inexpensive cameras to count cyclist use on the highway. Post pathway construction counts have "increased 50-fold" due to creating more equitable conditions for users ("Brino" cameras and "Eco-counters" with data packages have worked well)
- Advises about providing enough separation between highway and pathway for debris maintenance and lower sweeping costs
- The pathway project should be approached as an opportunity to develop valuable relationships and future partnerships between jurisdictions and community stakeholders

Rail Trail & McLeod Creek Pathway, Park City, Utah

Rail Trail & McLeod Creek Pathway Overview Information

1. Trail length: ~28 miles (plus ~5 miles to Kimball Junction)
2. Contact: Heinrich Deters, Park City Trails and Open Space
3. Project Location: Park City to Coalville, UT – crosses three jurisdictions (Park City, Utah State Parks, and Basin Recreation)
    - Follows old railroad lines (federal "Rails to Trails" program) along Interstate-80
4. Surface Type: Average 8' width paved with "soft surface" asphalt and small sections of compacted road base
5. Construction Cost: N.A. – phases of construction roughly 30-year period
6. Funding Sources: Partial federal grants and programs plus partial construction through development.
    - Required ROW and easement acquisition during construction phases
    - Bonding through Basin & Recreation
7. E-Bike policy: Electric bike share program (Summit Bike Share) with station hubs located along the trail
8. Construction timeline: 30 years in phases

Interview Take-Aways for Zion Corridor Trail

- Locate a utility line (ex. gas line, fiber optic cable, waterline) along the Zion corridor to gain easements to run pathway adjacent to the utility.
- Potentially use abandoned aqueduct conduits for possible locations for pathway placement.
- Publicize and market the benefits of a pathway to the community for local support.
- Create strong branding and wayfinding signs/markings for easy user navigation.

Geographic Analysis

Understanding the geography and land ownership of the Zion Corridor is a critical step in the Feasibility Study. While there is technology that can allow for trails to be constructed in areas where they may not have been able to be constructed in the past, costs can go up substantially in construction areas with steep grades or near riparian areas. Landownership also plays a key role in appropriate trail planning and construction. Within the study area there is land belonging to Zion National Park, private landowners, incorporated communities, the Bureau of Land Management (BLM), State Institution Trust

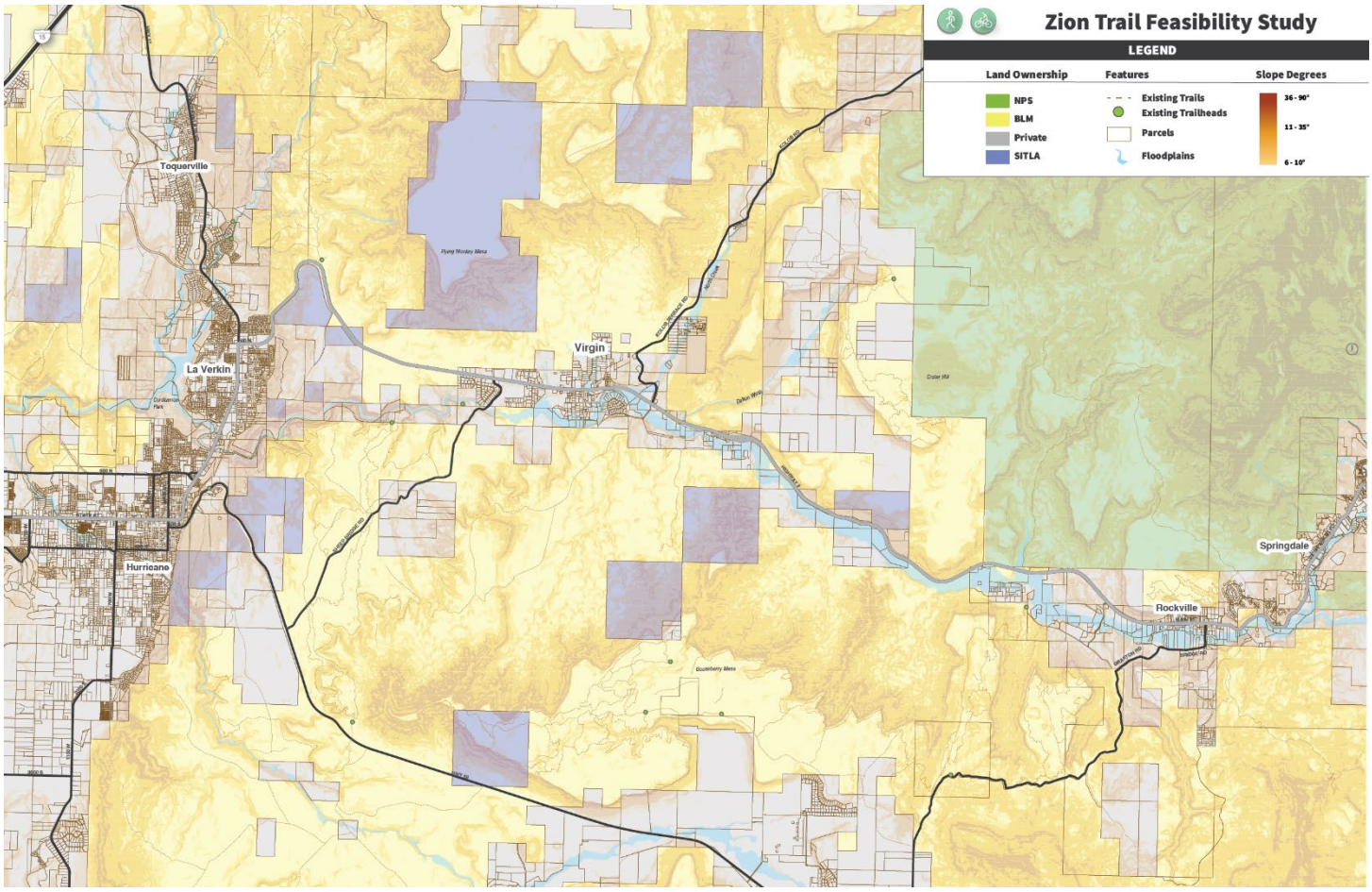


Figure 3: Geographic Analysis of the Zion Corridor Study Area

Lands (SITLA), and Utah Department of Transportation (UDOT). Different processes may be required for trail construction on the various types of land, so consideration was paid at the onset of the planning process to the various landowners who could be impacted by trail construction. Additionally, it was important to the ZRC that the alignment options make connections to existing or planned trails and trailheads, as appropriate. Therefore, the location of those trails and trailheads were evaluated as part of the geographic analysis. The figure below outlines the results of the geographic analysis created by the project team.

Notable outcomes of the geographic analysis include:

- Most of the land near and adjacent to the Virgin River is privately owned.
- BLM has the greatest amount of land in the study area.
- The steep grades are primarily located near the "La Verkin Twist" (the west end of SR-9 between Sheep Bridge Road and La Verkin), areas adjacent to Kolob Terrace Road, areas to the southeast of SR-9, "the Gorge," and areas immediately north of SR-9 between Kolob Terrace Road and Rockville.
- The northeast portion of the study area is primarily National Park lane – Zion National Park (NPS).
- There are many trails throughout the study area, but most of the major trailheads are located within 5 miles of SR-9 and SR-59.

Public Opinion – Survey 1

Towards the beginning of the project, the project team and ZRC developed an initial public survey (Survey 1) to understand the public's opinions on the design elements of a multi-use trail within the study area. The goal of this survey was to assess how important various trail attributes are for those who would consider using the trail to inform the alignment options. The survey was available on the project website and was pushed out by a member of the ZRC to the following locations and listserves:

- Southern Utah Bicycle Alliance (SUBA) listserve
- Bike Utah listserve
- Cycling Utah listserve
- City of Hurricane social media sites
- Town of Springdale social media sites
- Town of La Verkin social media sites
- Washington County social media sites

The survey was available for two months, and by October 15th, 2019, the survey had collected over 510 total responses. While a full list of the questions and responses are available in the Appendix, key take-aways are summarized here:

- The majority of respondents indicated that they live in Washington County. However, there were responses from residents all over the state. Figure 4 outlines the survey responses according to zip code.
- Over 70% of respondents indicated that they would use a multi-use trail from Hurricane to Springdale.
- 68% of respondents indicated they would enter the trail in the Hurricane / La Verkin area, and 16% of respondents indicated they would enter the trail in Springdale.
- Half of the respondents indicated they would like to access the trail by riding or walking from their house, while the other half reported they would access the trail by driving to a trailhead.
- The top-ranked uses of the trail respondents indicated were recreational riding at a leisurely pace, and sight-seeing or animal viewing.
- Walking, mountain biking and road biking were the top three modes of travel respondents indicated they would use on the trail.
- Asphalt was called out as the preferred pathway surface.
- Restrooms, trailhead amenities like benches, trashcans, and water bottle filling stations, distance markers, trailhead parking, and connections to other trails in the area were the top-ranked amenities for respondents.
- Most respondents indicated that they would use the trail as a group.
- Most respondents indicated that they would use the trail for some amount of time between 30 minutes and 3 hours.
- Respondents indicated that their "ideal" trail would be (in order of ranking) scenic, away from major roadways, and next to waterways.
- Many comments that were written in were related to adding opportunities for equestrians to access the trail with a separate soft-surface side path.

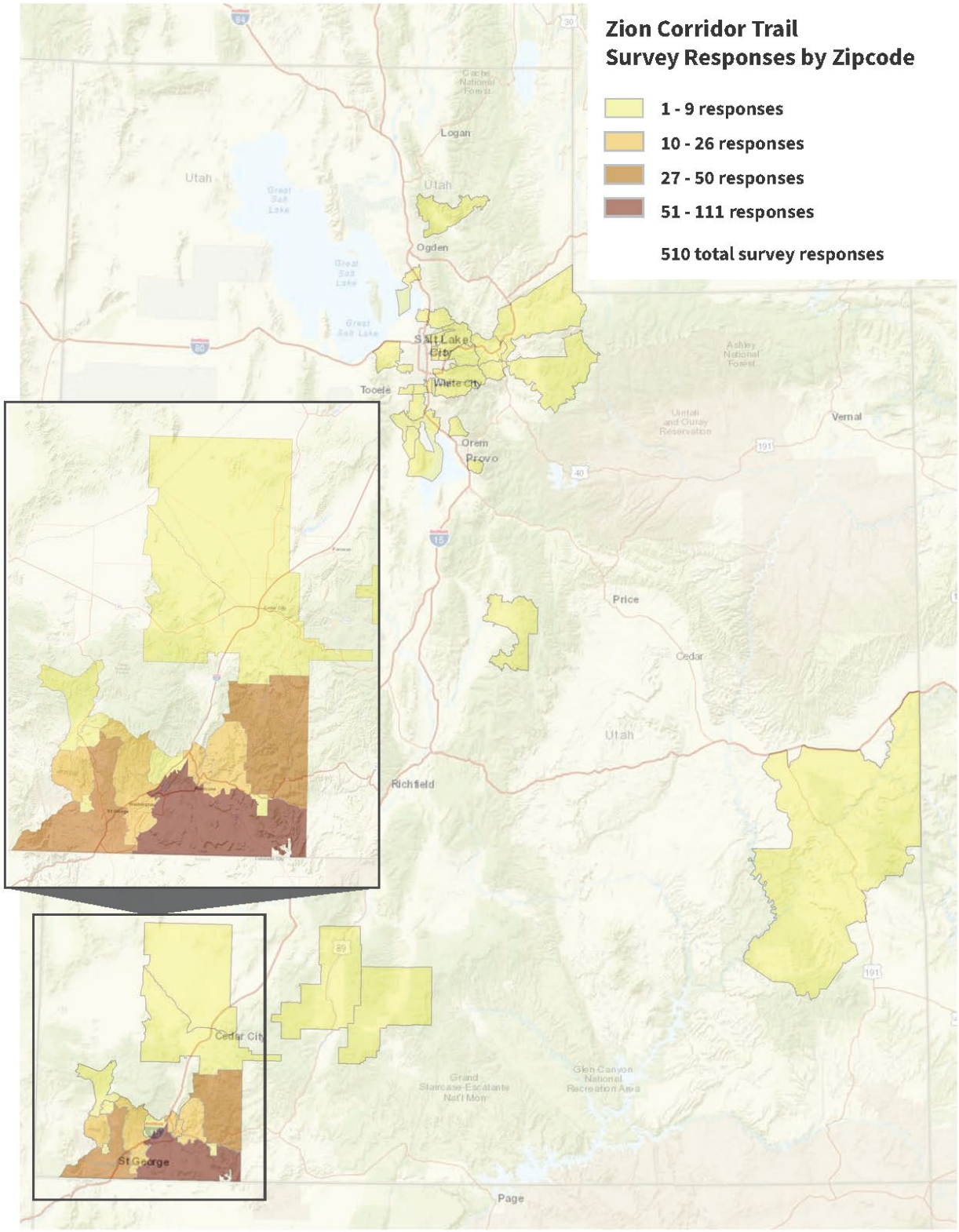


Figure 4: Survey 1 Responses by Reported Zip Code

Alignment Options Exploration

Using the information gleaned from the Peer Trails Analysis, Geographic Analysis, and Public Opinion (Survey 1), the project team and ZRC brainstormed, developed, and refined potential trail route alignments from Hurricane / La Verkin area to Springdale. This process was broken down into two phases, phase one being brainstorming and phase two being alignment route refinement.

Phase 1: Brainstorming

In mid-September 2019, the project team did a comprehensive site visit with the ZRC to the study area. During the site visit, the project team and ZRC did a mobile tour of the study area, conducted a brainstorm alignment charrette, and surveyed residents/visitors about the prospect of a regional trail. Following the site visit, the project team worked with the ZRC to develop evaluation criteria to use to assess each of the proposed alignments.

Mobile Tour

ZRC members and the project team took an opportunity to visit key destinations within the study area and discuss opportunities and concerns with a trail in specific locations. The group started at the City offices in Springdale and made four stops within the study area. Those stops and the concepts discussed at the stops are outlined below.

Stop 1: Rockville Town Center

The group stopped in Rockville at the historic town hall. The Rockville Mayor indicated to the group that Rockville residents have some concerns about a regional trail going on either private property, Grafton Road, or on the City's Main Street (SR-9). Rockville residents have expressed concern with how a trail would impact the aspects of the community that residents would like to protect such as, the riparian corridor, viewsheds, the culturally significant Grafton Heritage site, and the desire to minimize the growth and development impacts of ZNP. However, the Mayor indicated that residents would be interested in a regional trail if it were accessible.

That this location, the group also discussed and experienced a regional trail next to a major state highway. The group observed the noise and smells associated with a close proximity to many vehicles.

Stop 2: Kolob Terrace Road & SR-9

Next, the group stopped at the junction of SR-9 and Kolob Terrace Road. At this location, the group discussed SUBA's eventual plans to develop the area into a "trailhead" for cyclists. Kolob Terrace Road is an important road cycling destination, so SUBA is looking to create a parking area and cycling fix-it station in the area to support cyclists in the area.

At this location, the group also discussed the importance of the regional trail, making a connection to the town of Virgin, in order to support economic development. The group also discussed e-bikes and the importance of designating the trail and designing it in a way that supports all users, including e-bikes.

Stop 3: Virgin Dam Trailhead

Next, the group stopped at the Virgin Dam Trailhead, off Sheep Bridge Road. At this location, the group discussed the opportunities associated with staying near the river through the "Gorge" from the standpoint of there being a less steep grade and the benefits of being closer to the water during the hot summer months. The group also discussed how the Water Conservancy District owns the land, and any trail would need to be approved by the organization.

Figure 5: Photo of the "Gorge" from the Virgin Dam Trailhead (Photo Credit: Stephanie Tomlin)

The group also discussed the recent work the BLM has done in the area to manage the dispersed camping near the trailhead.

Stop 4: SR-9 Bridge Near River Rock Roasting Company

The last stop was at the look-out near the SR-9 bridge over the Virgin River in La Verkin. At this location, the group again discussed a trail alignment that utilizes the existing dirt roads in the "Gorge" that support the functions of the Water Conservancy District. Confluence Park, which is immediately west of the bridge, was also discussed as a potential tie-in. However, it was noted that the Park could only have soft-surface trails, so if a tie-in were to occur, it would need to be on soft-surface trails.

The group also discussed the importance of creating safe and comfortable connections to the regional trail. SR-9 in this area was mentioned as a constraint due to its high speeds, lack of cycling infrastructure, and multiple travel lanes. Coordination with UDOT was proposed as a critical step moving forward.

Figure 6: SR-9 Bridge (Photo Credit: Stephanie Tomlin)

Alignment Charette

On the second day of the site visit, the project team hosted a route alignment charette with the ZRC. The goal of the charette was to work together as a group to lay out some potential regional trail alignments that the project team could evaluate further. The session was hosted at the Hurricane City offices and involved a brief presentation at the beginning, then an open session for groups to draw out potential route alignments.

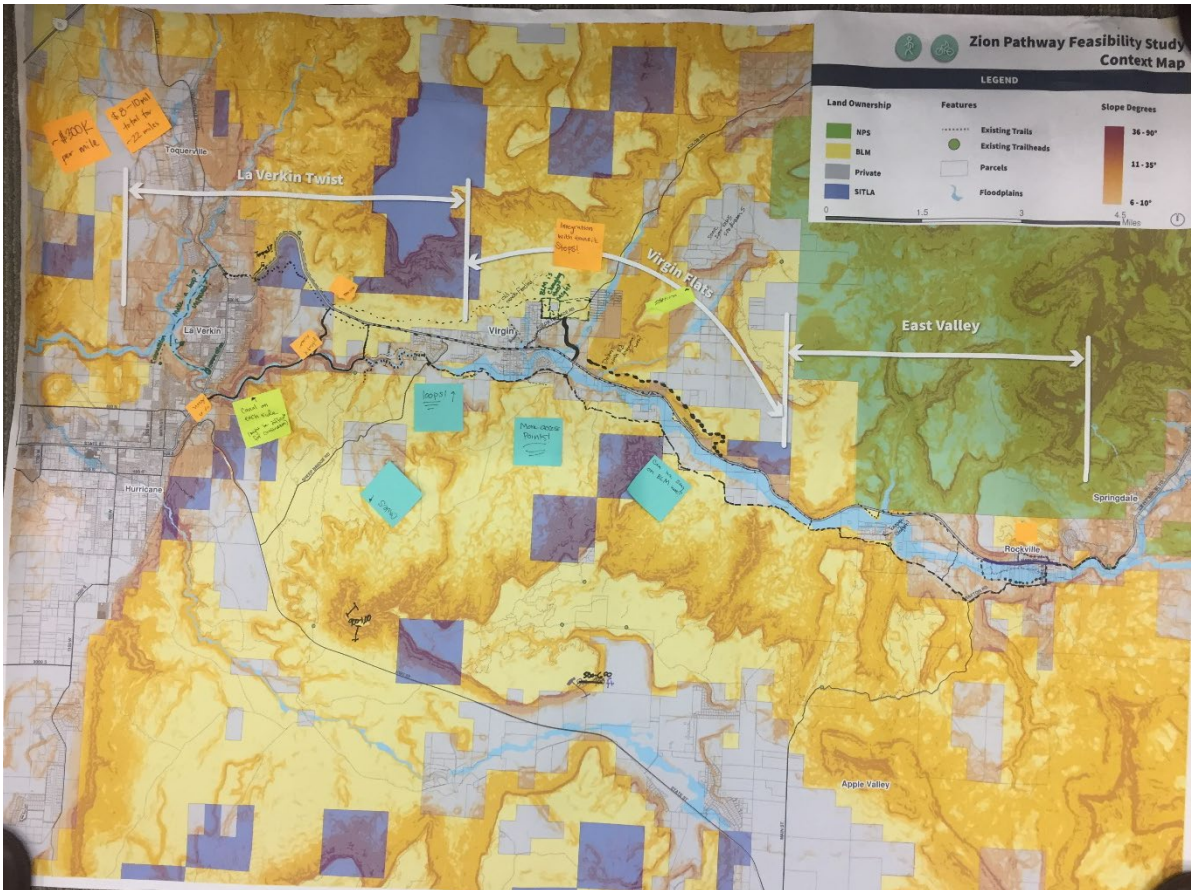


Figure 7: Outcome of the Alignment Charette

The group sketched out and discussed several ideas and concepts:

- A route following the Virgin River the entire way would be very enjoyable from a user standpoint, but it could be difficult to acquire the land to construct it. It would also be at risk of flooding during certain parts of the year. There is also concern for the wildlife with a route so close to the river: animals, birds and fish rely on the river and introducing people at a closer proximity could have a negative impact on the species in the area.
- A route to the south of the Virgin River could be an option, and it would be preferable to have it stay on BLM land as much as possible to avoid the need to acquire private land.

- The steep grades of "the Fault" (east of Hurricane / La Verkin) are going to be a challenge to design a trail through.
- Generally, there is enough right-of-way along SR-9 for a trail, except in the "La Verkin Twist" area where the right-of-way is limited to the steep grades on both sides of the roadway.
- There is an old highway roadway bed near the "La Verkin Twist" area that may be able to serve as an alignment. However, accessing it would be difficult due to the steep grades.
- There are opportunities on the north side of SR-9 between La Verkin and Virgin. In that area, the grades are relatively mellow, and the land is primarily owned by the BLM. The area north of SR-9 between Virgin and Rockville is more constrained due to steep grades and private property.
- This study should consider how different trail alignments could be built to create a looped trail system as opposed to an out-and-back exclusively.

Resident / Visitor Surveying

During both days of the project team site visit, a project team staff member conducted in-person surveying of residents and visitors to the area to understand their perspective on a regional trail in the area. One the first day, the staff member asked people in the Springdale area, and on the second day, they asked people in the Hurricane area. They also provided those interested with a link to the project's Survey 1.

Figure 8: Surveying Flyer

The feedback the project team received regarding the trail was mixed. Many people that were interviewed at the Springdale shuttle stops were unsupportive or indifferent to the idea of a regional trail. A common sentiment that was expressed was that they wouldn't use it because they don't come to the area very often. Feedback received at the Hurricane City Park tended to be more supportive, people expressed that they would be interested in a trail if it were available, but that it would need to be easily accessible.

Evaluation Criteria

After the project team and ZRC site visit, the group worked together to establish metrics by which to evaluate the route alignments once they were more refined. The team used information and sentiments discovered through the planning process up until that point to inform the evaluation criteria in order to create a process where feedback could directly impact results or ranking. The ZRC and project team agreed upon the following evaluation criteria (Table 1):

Table 1: Evaluation Criteria

Criteria	Metric for Evaluation
Trail grade	The slope of the trail segment
Connectivity	Connections to existing trails or trailheads Connections to SR-9 and surrounding communities
Scalable	Ability to construct in phases
Scenic Quality	Scenic viewpoints or overlooks Proximity to non-scenic or scenic features
Opportunities for Partnerships	Public versus private land
Public Feedback	Preferences expressed during Survey 1 and Survey 2
Environmental Impacts	Effects on the environment
Construction Costs	Planning level costs for construction

Phase 2: Alignment Route Refinement

Once the brainstorming phase was complete, the ZRC and project team worked to refine the route alignments and evaluate them based on the evaluation criteria. This phase generally followed four steps:

- Route Refinement
- Survey 2 / Public Pop-Up Events
- ZRC Group Meeting
- Route Alignment Evaluation Scoring
- Preliminary Environmental Analysis

Route Refinement

The outcome of the brainstorming phase of the study was a map of route ideas. The project team worked to simplify those routes into easily identifiable options. In this step, the project team also defined

and called out themes for the different route alignments that would assist with conveying them to the general public. While the routes were displayed with dotted lines on maps, the exact location and routing cannot be considered final – further study is necessary to move these ideas from concept to design. In refining the routes, the project team determined that four distinct routes were evident. Those routes and their themes are as follows and are displayed in Figure 9:

- Northern Route: A route that generally follows along the north side of SR-9
- SR-9 Route: A route that stays within the right-of-way of SR-9
- River Route: A route that is immediately adjacent to the Virgin River as much as possible
- Southern Route: A route that generally follows along the south side of SR-9

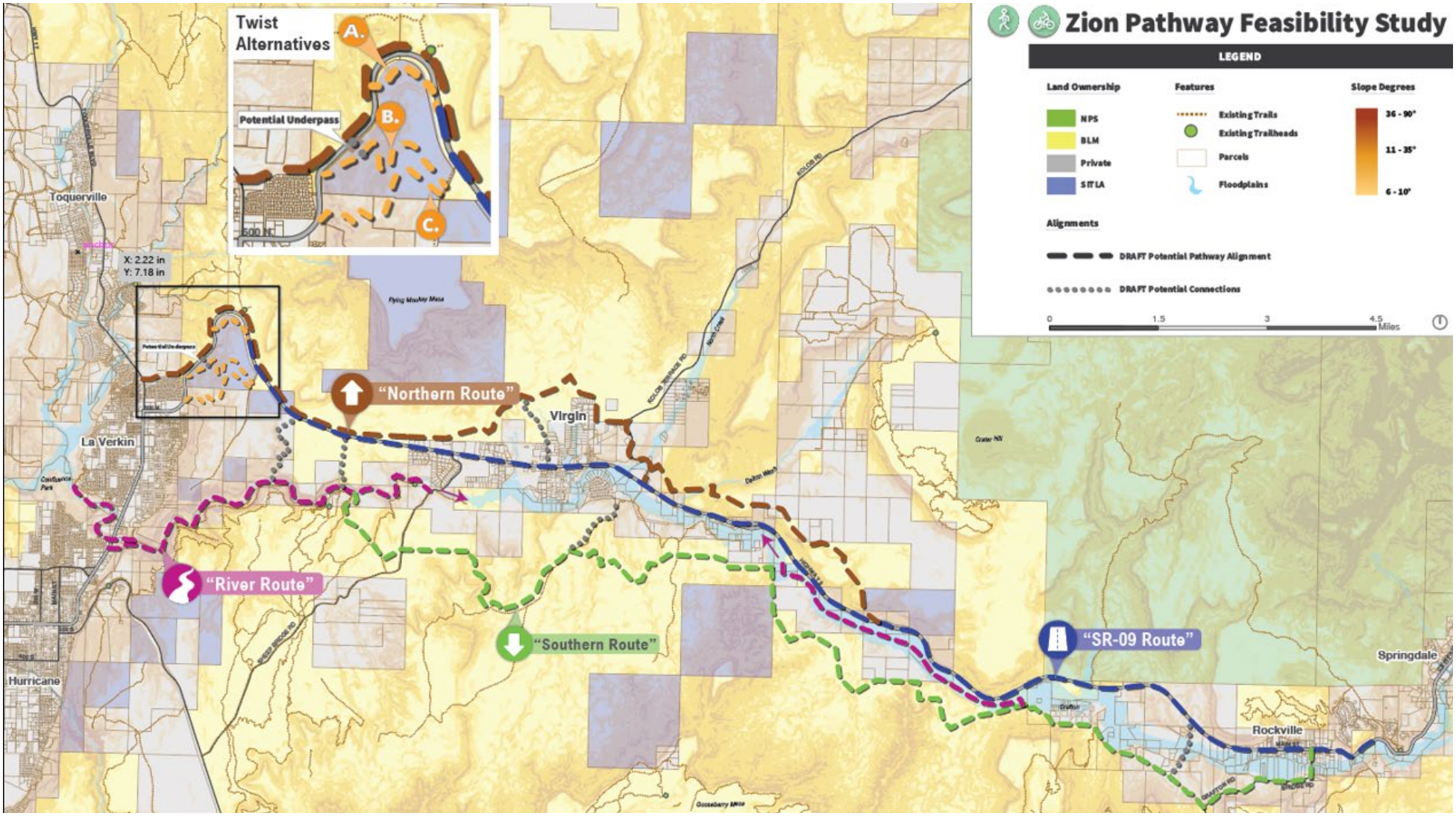


Figure 9: Refined Routes

Survey 2 / Public Pop-Up Events

Survey 2

In November 2019, the project team and ZRC developed the second public survey, which asked respondents to comment directly on the refined route alignment options. This survey was much more specific in asking respondents to comment on the four route alignment options, expressing opinions and considerations about them directly. The survey was open to the public for roughly two months from November 2019 to January 2020 and had 308 responses. A summary is shown in Table 2. The full survey results are available in the Appendix. Key takeaways from this survey include:

Respondents expressed the greatest preference towards the Southern Route and the least preference towards the SR-9 Route. However, the results were relatively close, as displayed in Table 1.

- Many written comments indicated an acknowledgment that the SR-9 might be less preferable from an aesthetic standpoint, but that it may be the more feasible route in the short-term.
- Many of the written comments suggested that the River Route would be nice, but there was concern about how it would impact wildlife.
- Trail grade steepness was commented on often in the written comments – preference towards an option that minimized grade was preferred.
- Grafton Road was called out as needing protection and enhancements if a trail were to be located there.

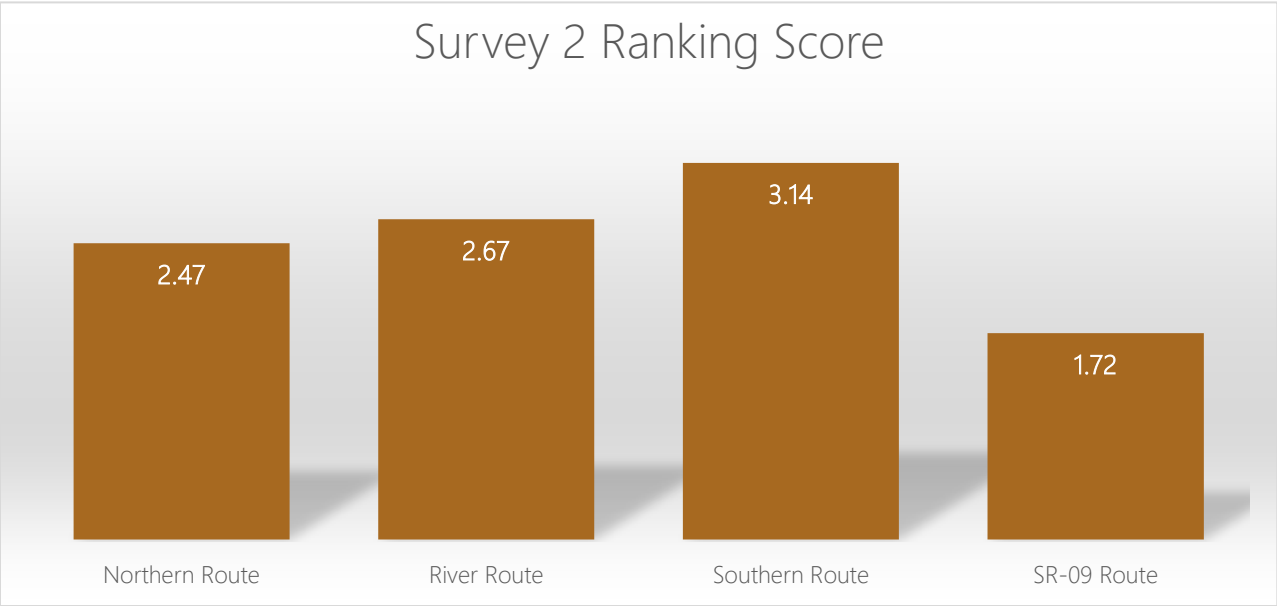


Figure 10: Route Alignment Preference Ranking

Public Pop-Up Events

In November 2019, the project team staff hosted two pop-up engagement events to gather feedback from residents and visitors on the refined route alignments. These pop-up events were an opportunity for the project team to take the project to the people and hear unbiased comments from people already attending an event or frequenting a shop. On November 7th, project staff attended the Butch Cassidy Fun Run and set-up a booth at the finish line to ask for comments regarding the refined route alignments. Additionally, on November 8th, project staff set up a booth at the River Rock Roasting Company SR-9 store to gather feedback on the refined route alignments.

Figure 101: Butch Cassidy Fun Run Participant Indicating Route Preference (Photo Credit: Stephanie Tomlin)

At both pop-up engagement events, respondents demonstrated a preference towards the Southern Route over the other three route alignments. Respondents were also interested in the Rive Route option. However, that option was divisive in that some expressed adamant opposition to it because of the potential damage it could cause to the riparian area.

ZRC Group Meeting

Early in 2020, members of the ZRC met with the larger ZRC group to gather additional feedback on the route alignments. A full report of comments received can be found in the Appendix.

Route Alignment Evaluation Scoring

Will all the qualitative assessment of the route alignments complete, the ZRC and the project team applied the evaluation criteria to each segment of each route to determine how well each route "scored. Figures 11 through 13 display the route alignments and their scoring. High level costing evaluations can be found in the Appendix.

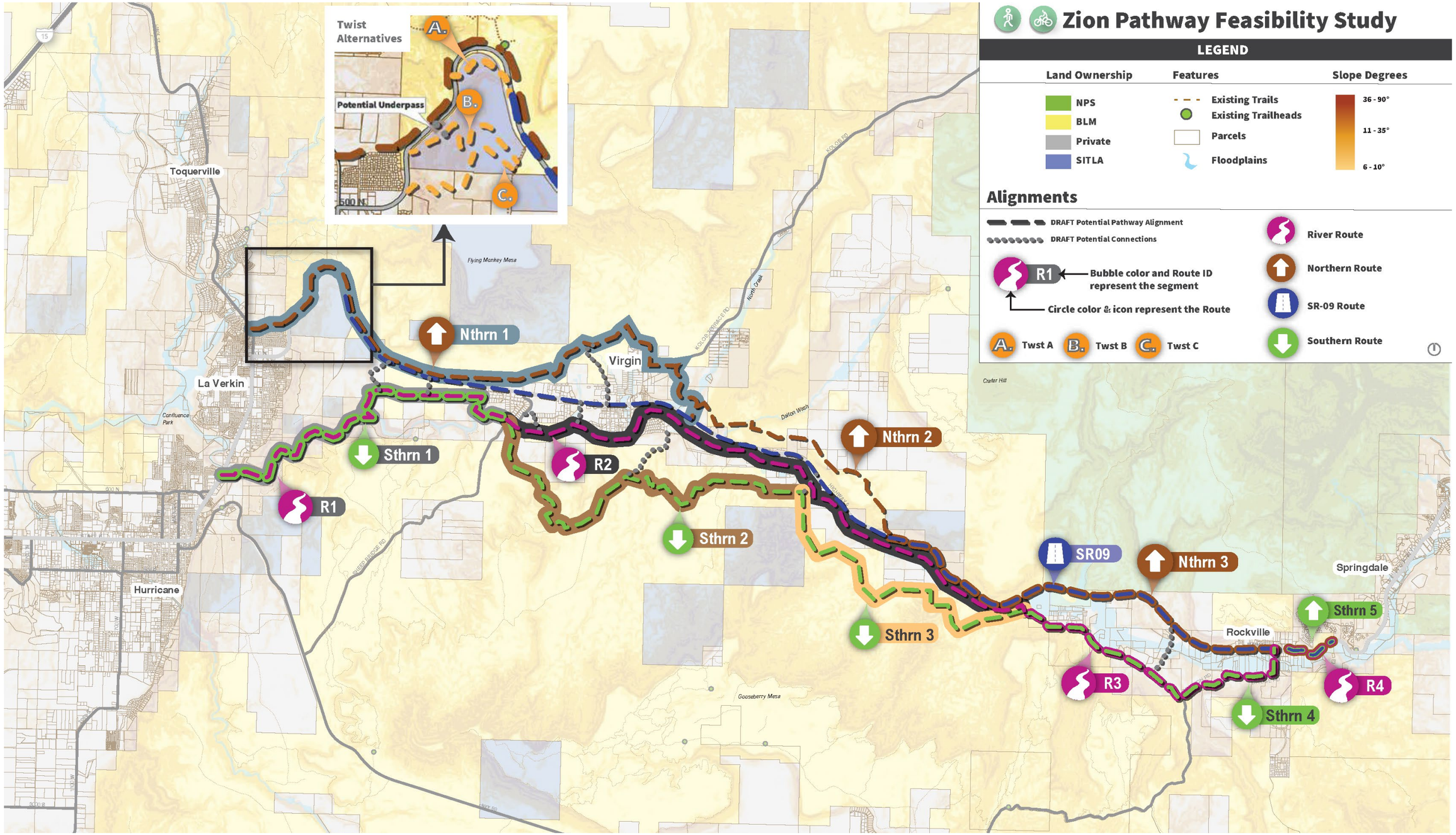


Figure 112: Route Alignments Displayed According to Route ID

Table 2: Route Segment Evaluation Scoring

		Planning Considerations						Engineering Considerations		TOTAL	
Route ID	Trail Segment	Trail Grade	Connectivity (with multiplier)	Segment is scalable / "phase-able"	Scenic Quality (with multiplier)	Opportunities for partnerships	Public Feedback	Low Environmental Impacts	Estimated Construction Cost	SEGMENT TOTAL	ROUTE TOTAL (Average)
R1	River Route - Paw Tempe to Southern Route	2	6	4	10	3	3	2	1	31	31.3
R2	River Route - Southern Route to Grafton	4	6	2	10	1	3	2	1	29	
R3	River Route - Grafton to SR-09	3	8	4	6	2	1	3	3	30	
R4	River Route - SR-09 to Existing Trail	5	6	2	4	5	3	5	5	35	
SR09	SR-09 - East end to Existing Trail	5	8	5	1	5	1	5	3	33	33.0
Sthrn1	Southern Route - Paw Tempe to Southern Route	2	6	4	10	3	3	2	1	31	
Sthrn2	Southern Route - Diversion Dam to East of Virgin	2	6	2	10	5	5	2	3	35	
Sthrn3	Southern Route - East of Virgin to Grafton	2	4	3	10	5	5	2	4	35	33.2
Sthrn4	Southern Route - Grafton to SR-09	3	8	4	6	2	1	3	3	30	
Sthrn5	Southern Route - SR-09 to Existing Trail	5	6	2	4	5	3	5	5	35	
Nthrn1	Northern Route - Twist to Kolob Terrace Road	1	8	3	8	4	2	3	3	32	29.3
Nthrn2	Northern Route - Kolob Terrace Road to Milemarker 22	2	1	2	10	3	2	2	3	25	
Nthrn3	Northern Route - Milemarker 22 to Existing Trail on SR-09	2	7	2	7	5	2	3	3	31	
TwstA	Twist Alternative A	1	4	1	6	3	1	2	2	20	20.0
TwstB	Twist Alternative B	1	4	1	6	3	3	3	1	22	22.0
TwstC	Twist Alternative C	1	4	1	5	3	5	1	1	21	21.0

Table 3: Route Segment Evaluation Scoring (continued)

METRICS		Value	Multiplier	Highest Possible score
Trail Grade	The slope of the trail segment. Better score with the lower overall slope	5		5
Connectivity (with multiplier)	The more connections that are made to existing trails or trailheads, the better the score. Better score for segments that make connections back to SR-09 to the transit line	5	X2	10
Segment is scalable / "phase-able"	If the segment is "phase-able" it will receive a better score	5		5
Scenic Quality (with multiplier)	Better score for segments that have more scenic viewpoints or overlooks. Better score for distance away from non-scenic features (e.g., highways, quarries, powerlines, junkyards, etc.). Better score for closer proximity to scenic features.	5	X2	10
Opportunities for partnerships	Better score for segments that will involve partnerships for construction or are on public land verse private land	5		5
Public Feedback	Higher score for higher surveyed preference from the public survey #2	5		5
Low Environmental Impacts	The fewer environmental considerations to contend with on the trail segment the better the score	5		5
Estimated Construction Cost	Lower cost will be a better score	5		5
		HIGHEST POSSIBLE SCORE TOTAL		50

As is evident by the evaluation criteria, all the route alignments score similarly, with the "La Verkin Twist" alternatives scoring lower. Notably, the Southern Route and the SR-9 Route are the highest scoring, followed by the River Route then the Northern Route.

Preliminary Environmental Review

Four proposed trail alignments were reviewed, at a high level (no field work), to gauge potential environmental impacts and to recommend an environmental Class of Action (COA). Environmental resources reviewed include wetlands, threatened and endangered (T&E) species, and cultural resources. Resources utilized for this analysis include:

- Wetlands and Waters of the U.S. – U.S. Fish and Wildlife Service (USFWS): National Wetlands Inventory (NWI)
- T&E – USFWS: Information for Planning and Conversation (IPaC)
- Cultural – Utah Division of State History (UDSH) Historical Data Management System: PreservationPro

Paleontological data is not readily available; however, future surveys may identify paleontological resources within the study area. In addition, impacts to the built environment and social resources were also considered; however, the proposed alignments are primarily located on undeveloped lands. Species protected under the Threatened and Endangered Species Act are listed below. Due to the size of the study area and limited scope for actual field work, species listed could apply to each proposed trail route.

- California Condor
- Mexican Spotted Owl – Critical Habitat located within the study area
- Southwestern Willow Flycatcher
- Yellow-billed Cuckoo
- Desert Tortoise
- Dwarf Bear-poppy
- Gierisch Mallow
- Jones Cycladenia
- Shivwits Milk-vetch – Critical habitat located within the study area
- Siler Pincushion Cactus

Northern Route:

The proposed Northern Route could potentially impact over 20 ephemeral washes. Ephemeral washes are typically considered waters of the U.S. In addition, the Northern Route is in an area where over 40 archaeological sites have been identified. Further analysis would be required to determine the exact

number of sites potentially impacted, the eligibility of each site identified, and whether they date to prehistoric or historic time-periods. No historic architectural properties were identified adjacent to this route.

SR-9 Route

Like the proposed Northern Route, the proposed SR-9 route could potentially impact over 20 ephemeral washes (assuming the trail is located outside of the existing roadway prism). Approximately 50 archaeological sites and 30 historic architectural properties are located within or adjacent to the proposed alignment (potential impacts within the property boundary of a historic architectural resource were considered) Given that a greater number of cultural surveys have occurred within and adjacent to this route than the other routes, more cultural resources data is available.

While these issues may initially appear to be substantial, in a subsequent discussion with UDOT Environmental staff it was clear that the environmental issues along the SR-9 corridor are relatively minimal. If this is the initial project, it is very likely that the COA would be a Categorical Exclusion.

Virgin River Corridor Route

The proposed River Route follows the Virgin River and includes over 30 crossings of the Virgin River, drainages (ephemeral washes), and associated wetlands. Over 50 cultural sites have been identified within and adjacent to the proposed route. However, compared to the Northern and SR-9 Routes, there have been fewer cultural resources surveys performed in this area; therefore, there is a higher probability of identifying additional cultural resource sites.

Southern Route

The proposed Southern Route crosses over 30 potential ephemeral washes and the Virgin River along with associated wetland impacts. Approximately 15 cultural resource sites are located within or adjacent to the corridor; however, the fewest cultural resource surveys have been performed along this route compared to others, resulting in far less information about this area.

Future Actions

The future actions will depend in large part on which of the alignments the community wishes to pursue. SR-9, for example, will be relatively straightforward from an environmental and design perspective (assuming it stays within the current UDOT right-of-way) while other alignments into federal and/or private lands could be more complicated. For example, going along the river will likely elevate more

ecological concerns than something along SR-9. Additionally, how the project is funded (federal, state or local – or combinations) makes a difference in terms of level effort. Generally, the more agencies and and their respective funding involved, combined with a project outside of existing right-of-way, the more complicated and likely costly the pre-construction activities will be.

Chapter 4

User Assessment

Introduction

An important consideration for any trail is assessing how much it will be used. Trails and pathways are often more difficult to assess or predict future use than say, a road or transit route. Still, one way of evaluating the use is by determining its "comfort" level or induced stress level and applying some assumptions based on current research. By doing this, we can begin to have a sense of potential demand on the trail.

There is a large body of research comparing bicycle facility types and bicycling demand (both existing and induced demand). The latest variation of this research links bicyclists (and potential bicyclists) with levels of facility stress they are likely to tolerate. The way the link is made is through the bicyclist's skill level. The bicyclists with the most skill and riding confidence tend to tolerate the highest amount of facility stress. In contrast, the bicyclists with the lowest skill and experience on a bicycle likely have a much lower facility stress tolerance. This is important because consistently validated research also suggests that most people (51 – 56% of a statistically significant survey) consider themselves "Interested but Concerned" when it comes to bicycling, interested in bicycling but only in situations where they perceive they are safe. Figure 14 is a graphical representation of the skill and stress tolerance spectrum.

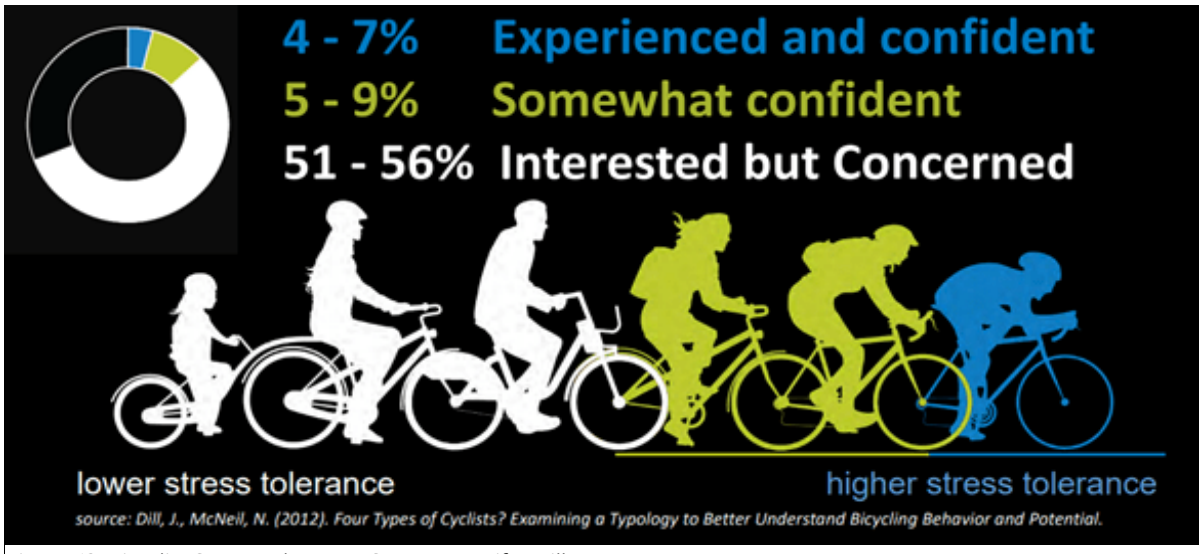


Figure 13: Bicyclist Stress Tolerance (Source: Jennifer Dill)

The breakdown of all the skill levels includes:

- Strong and fearless bicyclists will typically ride anywhere regardless of road or weather conditions, ride faster than other user types, prefer direct routes. They will usually choose to ride on the road, even if shared with vehicles, over separate bikeways like shared-use trails. This type of cyclist represents less than 1% of people.
- Experienced and confident bicyclists are relatively comfortable riding in dedicated bikeways but usually choose low traffic streets or shared-use trails when available.
- Interested but concerned bicyclists comprise most of the population and are typically those who only ride on low traffic streets or shared-use trails in fair weather. This demographic would like to bike more but have concerns such as safety.
- "No way, no how" are people will not ride a bicycle under any circumstances.

"Stress" as a concept in these terms is the relationship between the bicycling facility and an assortment of metrics associated with the adjacent vehicle facility. "Level of Traffic Stress" (LTS) is a widely accepted scale used to evaluate the bicycling facility stress. Figure 15 graphically demonstrates LTS.

Figure 14: Level of Traffic Stress (Source: Fehr & Peers)

Zion Corridor Application

In the case of the Zion Corridor Regional trail, we can apply some of the level of traffic stress (LTS) principles and use them. In Table 5, each route is assigned an LTS rating based on the conditions that would be present. Also considered is the potential to attract commuting versus recreational trips. Directness, accessibility, and access to job centers were used as a proxy for commute trips, while indirectness and scenic quality were a proxy for recreational trips. That rating is then used to create a high-level assessment of predicted use.

Table 4: Level of Traffic Stress

Route	LTS Rating	Conditions	Predicted Use
Northern Route	1	High level of physical separation from vehicles. The steep grades on the "La Verkin Twist" may deter potential "interested but Concerned" riders or walkers. A mix of commute and recreational trip use because of direct access from Hurricane / La Verkin to Virgin.	Medium
SR-9 Route	2	The route is very accessible and visible, attracting potential riders and walkers. However, the proximity to the highway is a deterrent. Higher commuting trip usage because of directness. Easier access to proposed transit and park and rides along the highway.	Medium to Medium/High
River Route	1	Very scenic route with many amenities to make it appealing even in the hot summer months (water and shade). More mellow grades up the "Gorge" would support a more diverse subset of riders and walkers. Higher recreational usage because of indirect routing and limited access to job centers.	High
Southern Route	1	Greater distance to and from the trail might deter some potential riders and walkers who seek accessibility. Good scenic quality. A high mix of recreational trips and a lower mix of commuting trips due to proximity to amenities and job centers.	Medium to Medium/High

Table 4: Level of Traffic Stress

Chapter 5

E-Bike Share Evaluation

Bike Share Best Practices and Considerations for the Zion Corridor

As the Zion Regional Collaborative (ZRC) moves into subsequent phases of planning and development of the Zion Corridor Trail (ZCT), consideration should be given for a shared e-bike system to support the regional trails, local communities, and access to Zion National Park. This memo serves as an overview of e-bike share best practices for the ZRC to consider moving forward.

Introduction

Bike Sharing Systems (BSS) are shared bicycles and supporting infrastructure provided by various private sector providers for a cost to a municipality, organization, university, company, or other entity. An agreement is made between the provider and the receiving entity on the system type, the number of bikes available, maintenance and fees.

From the user's perspective, a BSS is a fleet of bicycles available to use for periods of time for a charge or for free. Typically, there is an opportunity to subscribe to an ongoing membership to the system, as well as opportunities to be a one-time or day user. The system may have docks that the user is required to check-in and check-out bikes from (a "docked" system), or it may be "dockless," meaning the bicycles can be unlocked from any location. The bicycles available to use are typically either a homogenous fleet

or mixed fleet of standard bicycles with anywhere between one gear and seven gears and brakes, or electric-assist bicycles, or e-bikes, which typically have between one and seven gears and a pedal-assisted electric motor (governed to not-to-exceed a certain miles per hour), and brakes.

E-bike systems require charging. Therefore the system either needs to be a docked system with charging occurring at the docks, or, if the system is dockless, the company and receiving entity need to develop a system for retrieving bikes, charging them, then redeploying them. Most of the systems provide a smartphone app that users can download to more seamlessly check-out and check-in bikes. In the case of a dockless system, this app is required for use. However, if the system is "docked," it can have all the rental information at an electronic kiosk at the dock. Therefore an app is not required.

A mode of shared mobility that is also available in the dockless system gaining popularity in many urban areas is the e-scooter systems. The e-scooter system is not considered in this memo and evaluation due to battery range and rural context. Still, it is necessary to note it here in the introduction because often, the BSS companies offer both bicycles and e-scooters (among other types of devices).

There are many standard and e-bike and docked and dockless BSS companies operating in the U.S. at the time of this memo. Throughout Utah, at least six separate systems are operating; five in Salt Lake County and additional systems in Summit County, St. George, Ogden, and Provo. The vendors and types of devices include:

- Lime (e-scooters, e-bikes, and standards bikes - dockless)
- Spin (e-scooters- dockless)
- Razor (seated e-scooters - dockless)
- Bird (e-scooters - dockless)
- GREENbike (standard bikes, e-bikes – docked)
- Bewegen Summit Bike Share (e-bikes – docked)

There are currently no systems in the study area.

The Context for a BSS in the Zion Corridor

After developing a basis of understanding of what a BSS is, it is essential to understand if and how a system could work and be successful in the Zion region. In this section, the Zion region context is presented in relationship to research on BSS to demonstrate opportunities and barriers for a BSS.

Length

The proposed ZCT extent is roughly 22 miles from Hurricane to Springdale. And that distance is likely longer depending on the exact location and circuitousness of the trail. This distance, according to research, is greater than the median recreational bicycle trip length in the U.S., 8.5 miles, and much greater than the median "other" bicycle trip length in the U.S. for any purpose, 2.8 miles[1]. This is relevant because it would be unreasonable to assume that a high number of Zion area residents or visitors would bike the 22 miles between Hurricane to Springdale or the 44-mile distance of an out-and-back trip. However, there is evidence to suggest that the average trip length increases on e-bikes versus standard bikes. One recent study found that the average trip length of e-bike trips was closer to 9.3 miles[2]. This expansion of the travel shed presents a compelling argument for implementing an e-bike share system along the ZCT as opposed to a standard bike-share system. In addition to the length, the ZCT will likely include substantial grades at certain locations. E-bikes can make those grades more manageable.

However, even with an e-bike system, the 22-mile length is too far for many potential users of a system, which underscores the need for supporting amenities throughout the corridor, such as shade areas, water stations, opportunities to stop for food, and perhaps a shuttle system. These amenities will be discussed in greater depth in subsequent sections of this memo.

Weather

The Zion region experiences hot and dry summers, warm to hot shoulder seasons, and cold to cool winters. The cooler months are generally December – February, with highs in the 60's and lows in the 30's. June – September are typically considered hot with highs around 105 and lows in the 70's. The region averages 14 inches of rain per year. Research on the topic of how weather affects cycling can be summarized in the following statement:

> *Precipitation, temperature, and humidity had significant effects on bicycle ridership. After other factors were controlled for, when the temperature doubled, a 43% to 50% increase in ridership*

[1] *Understanding and Measuring Bicycling Behavior: A Focus on Travel Time and Route Choice*. 2012. Oregon Transportation Research and Education Consortium (OTREC). Accessed: https://nacto.org/wp-content/uploads/2012/02/Dill-and-Gliebe-2008.pdf

[2] *A North American Survey of Electric Bicycle Owners*. 2018. Transportation Research and Education Center. Accessed: https://www.calbike.org/wp-content/uploads/2019/02/A-North-American-Survey-of-Electric-Bicycle-Owners.pdf

> *could be expected; however, the temperature had a negative effect when it was higher than 82°F, and humidity was greater than 60%*[3].

To take that further, a study conducted on the effects weather has on e-bike share usage had a similar discovery; within the warm temperature range, bike share ridership increased as temperatures increased, whereas at higher temperatures, the effect of temperature changes on ridership was reduced. When temperatures reached a specific threshold value (81°F), ridership began to decrease[4].

Most relevant to the Zion region is the effect higher temperatures have on cycling and BSS use. The research suggests that an e-bike share system may experience a decrease in usage at times when the temperatures are in the mid to upper eighties. During the summer months, this may mean that BSS would have less usage and be used most often during the early morning or later evening hours, the times when the temperature dips into the mid-seventies. This information is useful for the ZRC when considering when to have the system in operation versus when to shut it down.

Tourist Versus Local Use

Since 2016 Zion National Park has experienced roughly 4.5 million visitors a year[5]. While the study team does not have access to the exact breakdown of those visitors in terms of locals versus tourists, it is reasonable to assume a substantial portion of those visits every year are from people visiting from outside the Zion region.

Research into the e-bike share system in Park City offers an interesting insight into possible outcomes of a BSS in the Zion Region as it relates to local versus tourism use. Like the Zion region, Park City experiences an influx of tourists during certain parts of the year, and according to a study on their e-bikes share system, tourism benefits greatly from their BSS. The study suggests that,

> *Most trips (84.51%) were taken by non-regular users who bought a single-trip pass, with only a small portion (15.49%) being taken by users with a weekly, monthly, or yearly pass, whom we refer to as regular users. As Park City has the reputation of being a tourist hotspot in Utah, and*

[3] *Weather or Not to Cycle: Temporal Trends and Impact of Weather on Cycling in an Urban Environment*. 2011. Transportation Research Board. Accessed: https://journals.sagepub.com/doi/abs/10.3141/2247-06

[4] *Factors Influencing Electric Bike Share Ridership: Analysis of Park City, Utah.* 2019. Transportation Research Board. Accessed: https://doi.org/10.1177/0361198119838981

[5] Zion National Park Visitation Numbers. https://irma.nps.gov/STATS/SSRSReports/Park%20Specific%20Reports/Recreation%20Visitors%20By%20Month%20(1979%20-%20Last%20Calendar%20Year)?Park=ZION

there was a considerable number of one-time users in this e-BSS; it is assumed that most of the e-bike users were tourists[6].

If this breakdown of tourist use versus local use is similar in the Zion region, the BSS should be designed to be used seamlessly for the single-time user.

Additional Considerations

When considering a standard BSS versus an e-bike share system, there is research to suggest that users prefer e-bikes to standard bikes in general. The National Association of City and Transportation Officials (NACTO) reported that the e-bikes of the New York Citibike system were used 15 times per day (on average during high use months) versus the standard bikes, which were only used five times per day (on average during high use months)[7]. This trend has caused other BSS around the country to convert their systems to either partial or full e-bikes. As the ZRC considers the type of BSS, this information on recent trends may be helpful.

A BSS in the Zion Corridor

Based on the research and best practice in prior sections of this memo, the following section outlines components of a BBS on the Zion Corridor, and will be called out in two ways, 1) E-bike share use as it relates to Zion National Park and congestion relief thereof, and, 2) E-bike share use as it relates to the ZCT and the rest of the region. These are called out separately because while they are similar, they may serve slightly different needs.

E-Bike Sharing Near Zion National Park

An e-bike share system with the goal of encouraging visitors to Zion National Park to experience the Park by e-bike should focus on having people make the switch to e-bike in Springdale because of the proximity to the Park, the numerous amenities, and available lodging and parking. While Hurricane, La Verkin, and Virgin could also be points of modal switch, their distance to the Park makes it less likely visitors would e-bike the entire trip.

A way to approach this could be to phase the e-bike share system deployment for the region, starting in the east (Springdale) and work west towards Hurricane / La Verkin. An e-bike station, with a large amount of parking, should be considered on the west end of Springdale. This station should have

[6] *Factors Influencing Electric Bike Share Ridership: Analysis of Park City, Utah.* 2019. Transportation Research Board. Accessed: https://doi.org/10.1177/0361198119838981

[7] *Share Use Micromobility in the U.S.: 2018.* 2018. NACTO. Accessed: https://nacto.org/shared-micromobility-2018/

amenities such as a shade pavilion, an informational kiosk with maps and information on riding in the Park, a water filling station and Park information. If the goal is to get people out of their car before they enter the park, this Springdale e-bike station should have ample parking and that parking should be able to accommodate travel trailers and mobile homes. As a method of preparing visitors of this switch location, Virtual Messaging Signs (VMS) should be installed near Hurricane / La Verkin indicating the opportunity to "Skip the Line – Jump on an E-Bike in Springdale," with the number of e-bikes available at the Springdale station at that moment. If visitors are informed before, they are more likely to adjust their travel plans.

Coordination with The National Park is needed, and the Park should provide e-bike charging at some of the more popular trailheads, allowing visitors to charge their e-bike while they are on a hike.

E-Bike Sharing Along the ZCT and in the Zion Region

Knowing that the average trip distance on an e-bike is roughly 9.3 miles and e-bike BSS in the Zion Corridor should have rental/charging stations spaced no more than nine miles apart to cater to the highest number of people possible. While the exact station locations are yet to be determined, appropriate station distances are as follows:

- Hurricane station: This station should be highly visible to people on SR-9, with a large parking area and many bikes available to rent. This station would likely become one of the main stations for people to start a ride.
- La Verkin station (roughly three miles from Hurricane): This station should also be highly visible to people on SR-9, with a large parking area and many bikes available to rent. This station would likely become one of the main stations for people to start a ride.
- West Virgin Station (roughly six miles from La Verkin): This station should be situated on the western edge of Virgin in order to keep the mileage at about nine miles from the Hurricane station. It should be visible from SR-9 and have adequate parking to support both pick-ups of people doing the segment of trail from Hurricane to Virgin, and people starting at Virgin heading to Springdale.
    - A variation of the Virgin station could be the Kolob Terrace Road Station (roughly one mile from West Virgin station): This station could be located near the Kolob Terrace Road planned bicycle fix-it stand and parking area. Since this station is only a mile from the West Virgin station, it could be considered more of a supporting station.
- West Rockville station (roughly seven miles from Kolob Terrace Road station): This station should be placed on the west side of Rockville, potential near the Huber Wash trailhead. This station should incorporate "rest-stop" elements to prepare people for the last stretch of the trail before arriving in Springdale.

- Springdale station (roughly 4 miles from West Rockville station): This station should be located near the center of Springdale Town in order to make amenities for those riding as accessible as possible. This station should be highly visible to people on SR-9, with a parking and pick-up/drop off area and many bikes available to rent. This station would likely serve both as a terminus and starting point for people, so adequate space to support those looking to shuttle the route should be considered.

These station locations are approximate, additional evaluation of these locations is recommended once the ZCT has been constructed and is contingent on which ZCT route is built. Additional stations could be considered as well.

Amenities at the e-bike stations and along the ZCT have the potential to significantly enhance the comfort and safety of all the trail users. Understanding that a large proportion of the e-bike BSS users are likely to be tourists, the supporting amenities should be designed for people who are completely new to the area. Some examples of potential amenities include:

- At each station, there should be an informational kiosk with maps showing that station's location in relation to all the other stations. The kiosks should also have information on preparedness, safety tips, and emergency response contact. Having all the information in multiple languages should be a consideration.
- Stations and trailheads should have a minimal amount of overhead lighting that is "dark-sky" compliant. To further support the dark-sky initiative, the lights could be on a timer and motion-activated.
- The stations should be equipped with shade pavilions, restrooms, and water refilling stations to create a more comfortable experience for those who are new to the area and inexperienced with the heat. If possible, the bike docks should be located under shelters to prevent sun and weather damage.
- Along the trail, there should be mile markers that help people understand where they are along the trail, and any time the trail ends and picks-up at a different location, that deviation should be well marked and signed.

Next Steps

As the ZRC considers a BSS here next steps to consider:

- Initiate the next steps of the ZCT. Since the BSS and the ZCT are intended to support each other, it would be beneficial to begin the next phase of the study of the ZCT. Having a better understanding of the trail location will inform e-bike station locations and other amenities
- Conduct a detailed e-bike share feasibility study. A more detailed investigation into the feasibility of an e-bike share system will help the ZRC evaluate costing (both capital and

operating), maintenance, rebalancing, and system design. The Institute for Transportation and Development Policy has developed the Bikeshare Planning Guide, which could be a valuable resource for future planning.

- Explore funding opportunities and sponsors for the BSS.
- Reach out to BSS providers to begin understanding current market rates of systems and operating requirements.

Chapter 6

Next Steps

This chapter is intended to outline the next steps in the regional trail planning process for the ZRC to consider.

Recommended Route Alignment

This feasibility study represents a thorough planning process that developed and assessed different route alignments according to qualitative and quantitative measures. While each of the route alignments has various aspects that are considered benefits, they each also have elements that are drawbacks or concerns. Each one has a diverse set of challenges associated with implementation but would, in turn, likely become an incredible asset to the local communities and tourists from around the world. Throughout the study, the concept of a regional "backbone" trail surfaced many times.

The idea of creating a regional route that could then be used to build additional spur trails in the future was appealing to the ZRC and survey respondents. The project team recommends that the ZRC move forward with the SR-9 Route in the short term to become that regional "backbone" from which other route alignments (or segments), or other trails could be built. The SR-9 route is likely the most constructible in the short-term due to it being almost exclusively in the UDOT right-of-way and will likely have the fewest environmental concerns. It offers the most direct route from Hurricane / La Verkin to Springdale while providing direct access to local amenities along the way. In the future, it may be parallel to a regional transit route, which would allow users to shuttle for some of the distance. And it will be the most visible out of all the route alignments to many potential users because it can be seen

from the highway. The drawbacks associated with this route alignment is that it is close to the highway, making it, at times loud, noisy, and having a higher perceived sense of unsafety.

Future Phases of Work

If the ZRC chooses to move forward with the SR-9 route in the short term, the group should consider the following phases of future work:

- Ensure there is an ongoing, general consensus among members of the ZRC that there is an agreed-upon preferred alignment.
- Engage with UDOT staff in Region 4, active transportation staff at UDOT Headquarters, and take every opportunity to engage with UDOT leadership.
- Ensure this Study is well-publicized via local city/town councils, by members of the study committee, and by statewide advocates such as the Utah Travel Council.
- Be well-positioned for funding through active and early engagement with funding and grant programs.
- Pursue funding from a variety of resources. More information on these opportunities is provided on the following pages.
    - During the study, we entered into the issues associated with the COVID-19 Pandemic. One early finding is that there is more public desire for outdoor infrastructure, especially associated with cycling. Another opportunity is the potential "stimulus" funds at the state and/or federal level.
- Consider and follow through with the "Next Steps" listed in the E-Bike Share Evaluation chapter of this report.
- Develop a plan for environmental evaluation. If the ZRC concurs with the consultant recommendation of SR-9, then all preconstruction activities, including environmental, can be done in collaboration, or possibly led by UDOT.

Funding Opportunities

As the ZRC looks to move into the next phase of study for the Zion Corridor Trail, there are many funding opportunities available to support those next steps. A detailed table of relevant and applicable funding opportunities is outlined below.

Table 5: Relevant and Applicable Funding Opportunities

Name	Type	Program Purpose	Eligible Infrastructure	Eligible Non-Infrastructure	Key Project Requirements	Process Timing	Local Match Required	Contact	Website	Funding Amount	Status
Federal Lands Access Program (FLAP)	*Trails, Bike lanes*	*To improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands*	*Transportation planning, engineering, preventive maintenance, rehabilitation, restoration, construction, and reconstruction of Federal Lands Access Transportation Facilities; operation and maintenance of transit facilities; and provisions for pedestrians and bicycles*	*Research; acquisition of necessary scenic easements and scenic or historic sites; and environmental mitigation in or adjacent to Federal land to improve public safety and reduce vehicle-caused wildlife mortality while maintaining habitat connectivity*	*Projects providing access to Federal high-use recreation sites, and the project improves safety while improving access to a Federal facility*	*January*	*6.77%*	*Contact local planning organization / UDOT region planner, Jeff Sanders jsanders@utah.gov*	*https://flh.fhwa.dot.gov/programs/flap/ AND https://flh.fhwa.dot.gov/programs/flap/ut/documents/UT-FLAP-2019-Call-For-Projects-Overview-And-Instructions.pdf*	*$9,600,000 in Utah for F.Y. 2016*	*Active*
Washington County Tourism Tax Advisory Board Capital Project Funding	*Trails*	*Washington County created a co-funding program to help secure and support activities that will infuse economic impact and enrich the quality of life for residents.*	*Capital projects that support tourism. Project Funding is intended for projects that will increase/improve tourism within the area, such as tourism facilities, venues, trails, or recreation infrastructure projects. These projects should be submitted by a governmental entity.*	*Marketing Funding is intended to assist an organization/entity with marketing dollars for tourism-related purposes that align with and support the strategic plan, mission, objectives, and goals of the Washington County Tourism Department.*	*1. Create new economic impact 2. Add positive marketing exposure for the area 3. Introduce new audiences/markets 4. Fill hotel rooms during shoulder, off-season and weekdays 5. Fill a critical recreation or tourism-related need*	*March*	*Not specified*	*Leslie Fonger, Destination Development Manager, Leslie@greaterzion.com, 435-986-3371*	*https://greaterzion.com/capital-project-funding-application/*	*Not specified*	*Active*
TIF Active Transportation (UDOT)	*Trails, Bike lanes*	*Provides funding for active transportation infrastructure*	*A paved pedestrian or paved, nonmotorized transportation project. Part of an active transportation plan approved by UDOT. The project mitigates traffic congestion on the state highway system.*	*Not specified*	*Not specified*	*January*	*40% (in-kind is accepted)*	*Contact UDOT region planner, Jeff Sanders jsanders@utah.gov*	*https://www.udot.utah.gov/main/f?p=100:pg:0:::1:T,V:5323,*	*Varies*	*Active*
Transportation Alternatives Program (UDOT)	*Trails, Bike lanes*	*Provides funds for projects or activities related to surface transportation alternatives*	*Construction, planning, and design of ped/bike facilities; bike-share programs, recreational trails, rail trails, turnouts & overlooks, safe routes to schools*	*Historic preservation of transportation facilities, vegetation management, environmental mitigation*	*Not a high amount of funding available*	*Varies*	*Can vary; up to 20%*	*Chris Potter Local Government Program Manager cpotter@utah.gov 801-633-6255*	*https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.cfm*	*Varies depending on federal funding & state allocation*	*Active*
TTIF First & Last Mile (UDOT)	*first/last mile infrastructure to transit*	*Provides funding for active transportation infrastructure that makes connections to transit*	*Pedestrian or nonmotorized transportation projects that provide a connection to a public transit system*	*Not specified*	*Not specified*	*February*	*40% (in-kind is accepted)*	*Contact UDOT region planner, Jeff Sanders jsanders@utah.gov*	*https://www.udot.utah.gov/main/f?p=100:pg:0:::1:T,V:5323,*	*Varies*	*Active*
Recreational Trail Program	*Parks & Recreation (Administered by UT State Parks)*	*Provide grants for nonmotorized and motorized trails*	*Construction and maintenance of trails and facilities, staging areas, trailheads, restroom facilities, trail signing*	*Acquisition of easements, educational programs to promote safety and environmental protection*	*Nonmotorized and motorized trail implementation*	*May*	*50% (cash, in-kind services, volunteer labor, or donations)*	*Chris Haller, chrishaller@utah.gov (801) 349-0487*	*http://stateparks.utah.gov/resources/grants/recreational-trails-program/*	*Depends on federal funding*	*Active*
Land & Water Conservation Fund	*Parks & Recreation (Administered by UT State Parks)*	*Provides federal reimbursement grant program for the acquisition and/or development of public recreation areas*	*Ballfields, sports courts, spray parks, golf courses, public restrooms, swimming pools, skate parks, walking trails, land acquisition for recreation*	*Not specified*	*How well the project relates to the 2009 Utah State Comprehensive Outdoor Recreation Plan (SCORP)*	*May*	*50%*	*Susan Zarekarizi, susanzarekarizi@utah.gov (801) 538-7496*	*http://stateparks.utah.gov/resources/grants/land-and-water-conservation-fund/*	*Depends on federal funding for the program*	*Active*
Utah Outdoor Recreation Grant	*Infrastructure (Administered by UT Office of Outdoor Recreation)*	*The project will enhance recreational opportunities and amenities in Utah's communities*	*Must be used for the building of infrastructure, not the project planning or the purchase of property. Infrastructure must be open and available to the public.*	*Not specified*	*Must offer an economic opportunity for the community with the potential to attract or retain residents and/or increase visitation to the region*	*March*	*Given as a 50/50 match. Up to 25% of the total may be an in-kind match.*	*Tara McKee (801) 538-8686 tmckee@utah.gov*	*https://business.utah.gov/outdoor/uorg/*	*Various tiered grant sizes available from $1,000 up to $500,000*	*Active*

Name	Type	Program Purpose	Eligible Infrastructure	Eligible Non-Infrastructure	Key Project Requirements	Process Timing	Local Match Required	Contact	Website	Funding Amount	Status
Utah Youth Outdoor Recreation Program	*Youth & Recreation (Administered by UT Office of Outdoor Recreation)*	*The project will increase participation in outdoor recreation among young people*	*Not specified*	*The program must provide outdoor recreation activities for youth (18 & under). Physical activity: The program must have an element of fitness/physical activity.*	*The program must provide outdoor recreation activities for youth (18 & under). Physical activity: The program must have an element of fitness/physical activity*	*July through August*	*Given as a 50/50 match. Up to 25% of the total may be an in-kind match.*	*Tara McKee (801) 538-8686 tmckee@utah.gov*	*https://business.utah.gov/outdoor/ucore/*	*Various tiered grant sizes available from $2500 up to $15,000 (Total amount to be given out=$100,000)*	*Active*
FHWA BUILD Grant	*Construction of projects with regional significance*	*Capital projects which repair bridges or improve infrastructure to a state of good repair; projects that implement safety improvements to reduce fatalities and serious injuries, including improving grade crossings or providing shorter or more direct access to critical health services; projects that connect communities and people to jobs, services, and education; and, projects that anchor economic revitalization and job growth in communities.*	*Capital Projects with regional significance*	*Not specified*	*Regional significance*	*May*	*None in rural areas*	*https://www.transportation.gov/BUILDgrants/resources*	*https://www.transportation.gov/BUILDgrants*	*$1,000,000 minimum in rural areas. $25,000,000 maximum*	
National Park Service Rivers, Trails and Conservation Assistance Program	*Planning to support outdoor recreation amenities*	*Five focus areas: Building healthy communities through parks, trails, and outdoor opportunities*	*Not specified*	*Visioning, planning, consensus building, funding strategies*	*The project has specific goals and results for conservation and outdoor recreation expected in the near future.*	*Due June 30th*	*Not specified*	*Ericka Pilcher, Program Manager rtca_apps_imr@nps.gov, or Betsy Byrne, betsy_byrne@nps.gov, 801-741-1012*	*https://www.nps.gov/orgs/rtca/apply.htm*	*Varies*	*Active*
People for Bikes Community Grants	*Bicycle infrastructure*	*Provides funding for important and influential projects that leverage federal funding and build momentum for bicycling in communities*	*Bike paths, lanes, trails, bridges, rail-trails, mountain bike trails, bike parks, BMX facilities, bike racks, bike parking/storage*	*Large-scale bicycle advocacy initiatives; engineering and design work*	*Bicycle infrastructure and advocacy*	*Rolling*	*None; grant must not amount to >50% of project budget*	*Zoe Kircos zoe@peopleforbikes.org (303) 449-4893 x5*	*https://peopleforbikes.org/grant-guidelines/*	*$5,000 to $10,000*	*Active*
Utah Rural Development Grant	*Planning*	*Assists economic development in rural areas (defined as counties with a population under 30K and an average annual household income under $60K)*	*Not specified*	*Planning, feasibility studies, labor, services*	*The project must increase employment, increase local economic income, or increase knowledge and participation*	*Applications accepted at any time*	*Not specified*	*Nan Anderson nanderson@utah.gov 435-287-4170*	*https://business.utah.gov/rural/*	*Varies*	*Active*
Surface Transportation Block Grant Program (STBG)	*Trails, Bike lanes, Facilities*	*Provides flexible funding to best address State and local transportation needs*	*Bicycle transportation facilities, pedestrian walkways, and recreational trails*	*Environmental mitigation; noxious weed control; inspection of trails, tunnels, and bridges*	*Not specified*	*Varies*	*Can vary; up to 20%*	*Contact local planning organization / UDOT region, Jeff Sanders jsanders@utah.gov*	*https://www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm*	*Varies depending on federal funding & state allocation $11,163,000,000 in Utah for F.Y. 2016*	*Active*
Community Impact Board (CIB)	*Community Infrastructure*	*Provides loans and/or grants to communities which may be socially or economically impacted by mineral resource development on federal lands*	*Planning, construction, and maintenance of public facilities*	*Not specified*	*The request must involve the local planning organization*	*June 1st, October 1st, February 1st*	*50% for planning, study, or design requests*	*Candace Powers (801) 468-0131 cpowers@utah.gov*	*https://jobs.utah.gov/housing/community/cib/index.html*	*Maximum $5,000,000*	*Active*
Community Development Block Grants (CDBG)	*Community Infrastructure*	*Provides grants to cities and towns of fewer than 50,000 in population and counties fewer than 200,000 people*	*Planning, construction, and maintenance of public facilities*	*Not specified*	*Must attend a workshop in your region*	*September*	*None*	*Cheryl Brown, (801) 468-0118 cbrown@utah.gov*	*https://jobs.utah.gov/housing/community/cib/index.html*	*Varies, typically up to $150,000*	*Active*

Name	Type	Program Purpose	Eligible Infrastructure	Eligible Non-Infrastructure	Key Project Requirements	Process Timing	Local Match Required	Contact	Website	Funding Amount	Status
Safe Routes to School (UDOT)	*Transportation (Administered by UDOT)*	*To facilitate the planning, development, and implementation of projects to improve safety, and reduce traffic, fuel consumption, and air pollution near schools*	*Qualification is within 2 miles of school: new sidewalks, off-street bike/ped facilities, pavement markings, connections between locations, bike parking facilities, traffic calming, installing school-related signs*	*Education, encouragement, enforcement evaluation*	*Any public elementary, middle, junior high, or public charter school, or school district, grades k-8. Must conform with schools and have a Student Neighborhood Access Plan (SNAP)*	*Varies*	*None*	*Travis Evans, Active Transportation Safety Program Manager travispevans@utah.gov 801-965-4486*	*http://www.udot.utah.gov/main/f?p=100:pg:0::::T,V:1388*	*Varies according to state allocated funding*	*Active*
USDA Rural Development Community Facilities Grants	*Parks, Trails, Infrastructure*	*Provides grants to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population*	*Essential community facilities for health care, public safety, and community and public services*	*Not specified*	*Projects serving communities under 5,000 in population, low-income*	*Varies*	*25%*	*Varies based on the county; see map: http://offices.sc.egov.usda.gov/locator/app?service=page/CountyMap&state=UT&stateName=Utah&stateCode=49*	*https://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program/ut*	*Amount of grant assistance depends upon the median household income and the population in the community where the project is located and the availability of grant funds*	*Active*
Mormon Pioneer Heritage Area (MPHA)	*Heritage sites*	*Congress allocates funds based on a federal fiscal year for the Heritage Area*	*Planning, design, construction for items consistent with the MPHA Plan*	*Interpretation/Education*	*The request is through the MPHA board; Sanpete, Sevier, Piute, Garfield, Wayne, Washington & Kane Counties*	*Varies*	*50%*	*Monte Bona (801) 699-5065 montebona@hotmail.com*	*http://www.mormonpioneerheritage.org/*	*Varies*	*Active*

Table 5: Relevant and Applicable Funding Opportunities

Acknowledgments

Team Members

Thank you to the ZRC members and the project team for their participation throughout the planning process.

Zion Regional Collaborative Members	
Name	**Organization**
Tom Dansie	Town of Springdale
Sophie Frankenburg	Town of Springdale
Emily Friedman	Zion Regional Collaborative
Patty Wise	Town of La Verkin
Pam Leach	Town of Rockville
Toni Foran	City of Hurricane
Leslie Fonger	Washington County
Scott Messel	Washington County
Dannielle Larkin	SUBA
Keith Rigtrup	BLM
Kevin Voyles	BLM

Consultant Team	
Name	**Organization**
Stephanie Tomlin	Fehr & Peers
Jon Nepstad	Fehr & Peers
Kathrine Skollingsberg	Fehr & Peers
Carrie Modi	Fehr & Peers
Nick Betts	Lochner
Jerry Amundsen	Lochner

Appendices

01 Peer Trail Report

02 Survey 1

03 Survey 2 PowerPoint slide deck

04 ZRC Feb. Trail Alignment Comments

05 Costing

THE LOOP, TUCSON, ARIZONA

JACKSON TO MOOSE PATHWAY, JACKSON, WYOMING

RAIL TRAIL & MCLEOD CREEK PATHWAY, PARK CITY, UTAH

The Loop, Tucson, Arizona

The Loop Trail Overview Information

1. Trail length: ~130 miles
2. Contact: John Spiker, Pima County Regional Flood Control District
3. Project Location: Eastern Pima County, connects to Tucson, Marana, and Oro Valley, AZ
4. Surface Type: PAG 3 asphaltic concrete mix (high oil content with a lower aggregate spec for a softer path)
   - Recommends Holbrook Asphalt Co., in St. George, UT, for pathway surface material
5. Construction Cost: NA – phases of construction roughly 35-year period
6. Funding Sources: Bonds, secondary taxes, state DOT funds (Transportation Partial federal grants and programs.
   - Constructed within the FEMA floodplain district – limits the type of development along pathway
7. E-Bike policy: No motorized vehicles allowed (this includes E-bikes and E-scooters due to safety and liability issues)
8. Construction timeline: 35 years – in phases

Interview Take-Aways for Zion Corridor Trail

- Maximize coordination with fire and police for quicker emergency responses – this includes well-established/clearly marked pathway access points (GIS map with local emergency departments)
- Add the Zion Corridor Trail to any applicable Long-Range Plans (ex. UDOT LRP)
- Define a consistent regional “vision” for the Zion Corridor Trail – the pathway should look and feel seamless changing between jurisdictions
- The pathway project should be viewed as an opportunity to build/strengthen relationships between stakeholders

Jackson to Moose County Pathway, Jackson, Wyoming

Jackson to Moose Trail Overview Information

1. Trail length: ~13 miles
2. Contact: Brian Schilling, Teton County Pathways and Trails
3. Project Location: Town of Jackson to Moose, WY – crosses 2 jurisdictions Teton County and Grand Teton National Park.
   - Also, requires coordination with the Elk Refuge and Federal Fish and Wildlife
   - Pathway follows alongside Highway 89
4. Surface Type: Paved with asphalt and striped 10' width pathway
5. Construction Cost: Estimated $750,000 per mile for construction
6. Funding Sources: 2 federal grants, stimulus funding, and local tax option approved on the ballot – completed pathway in 3 phases over 3-year period
7. E-Bike policy: No motorized vehicles allowed (this includes E-bikes and E-scooters due to safety and liability issues)
8. Construction timeline: 3 years – in 3 phases

Interview Take-Aways for Zion Corridor Trail

- Used infrared and inexpensive cameras to count cyclist use on the highway. Post pathway construction counts have "increased 50-fold" due to creating more equitable conditions for users
  i. "Brino" cameras and "Eco-counters" with data packages have worked well
- Advises about providing enough separation between highway and pathway for debris maintenance and lower sweeping costs
- The pathway project should be approached as an opportunity to develop valuable relationships and future partnerships between jurisdictions and community stakeholders

Rail Trail & McLeod Creek Pathway, Park City, Utah

Rail Trail & McLeod Creek Pathway Overview Information

1. Trail length: ~28 miles (plus ~5 miles to Kimball Junction)
2. Contact: Heinrich Deters, Park City Trails and Open Space
3. Project Location: Park City to Coalville, UT – crosses 3 jurisdictions (Park City, Utah State Parks, and Basin Recreation)
   - Follows old railroad lines (federal "Rails to Trails" program) along Interstate-80
4. Surface Type: Average 8' width paved with "soft surface" asphalt and small sections of compacted road base
5. Construction Cost: NA – phases of construction roughly 30-year period
6. Funding Sources: Partial federal grants and programs plus partial construction through development.
   - Required ROW and easement acquisition during construction phases
   - Bonding through Basin & Recreation
7. E-Bike policy: Electric bike share program (Summit Bike Share) with station hubs located along the trail
8. Construction timeline: 30 years in phases

Interview Take-Aways for Zion Corridor Trail

- Locate a utility line (ex. gas line, fiber optic cable, water line) along the Zion corridor to gain easements to run pathway adjacent to the utility
  i. Also, advises to potentially use abandoned aqueduct conduits for possible locations for pathway placement
- Publicize and market the benefits of a pathway to the community for local support
- Create strong branding and wayfinding signs/markings for easy user navigation

THE LOOP FULL INTERVIEW NOTES

Project Name: The Loop
Contact Name / Email / Phone: John Spiker john.spiker@pima.gov 520-724-4661
Project Location: Eastern Pima County/Tucson, Arizona
Capital Costs: N/A

Length/Location

1. What is the full length of the trail?

   130+ miles of paved asphalt plus 20 or so miles of DG pathway (1989)

2. When the trail was constructed was the whole thing done at once or was it done in phases? How was the phasing determined? What was the timeline on this?

   Phased, based upon funding, ROW, and existing infrastructure. 35 years and counting

   The County Administrator has been a local champion of the pathway for 35 years. Nearly every department in Pima County has supported the pathway. Variances for construction in the floodplain were easy to obtain.

3. What considerations went into deciding where to put the trail? Were there substantial barriers to trying to find a place to put it? If so, what were those barriers?

   Along the wash banks in concert with the maintenance and habitat corridors. Have had to buy lots of acreage to accommodate the Loop, but much of it doubles as floodplain and is of very low value as the development requirements of that type of property are high and pricey to protect from flooding potential. They have essentially stopped using FEMA funding.

Surface Type

4. What type of surface material is used? And, any "lessons learned" here? In retrospect so you wish you would have chosen a different material?

   PAG 3 Asphaltic Concrete Mix (high oil content with a lower aggregate spec giving a softer asphalt) for the paved pathway and decomposed granite, wetted and rolled into place, for the soft path. Concrete is used in the heavy flow (water) areas needing more regular maintenance. Much of the pathway falls on top of our soil cement (low strength concrete) bank protection infrastructure giving a very solid subgrade to pave on.

   $125,000 per mile to put in. High density mineral bond (6 to 7 years) Holbrook company (John to put us in touch with the St. George Rep).

Estimated Users

5. Is there a method/strategy in place for collecting/estimating the number of users on the trail/pathway system? If so, what is it?

   We've estimated we see roughly 750,000 users per year on the Loop

   - Do you have count data that you would be willing to share?

The Pima Association of Governments (PAG) collects the bike counts historically on a yearly basis at pre-determined locations. The County is installing 2 new permanent user counters.
http://gismaps.pagnet.org/BikePedDataExplorer/Map.aspx

- Do you have any sense of the breakdown of recreational trips versus commuting trips?

  PAG attempted to do this very thing, but it is hard to fully judge the user base. Roughly 3% bike commuters

User Types

6. What are the mobility modes allowed on the trail/pathway? What is your e-bike policy on the trail?

   Peds, bikes, horses, roller bladers, wheelchairs; if it doesn't have a motor, you're good to go. No motorized devices allowed on the Loop, including E-bikes and E-scooters, unless you have a medical exemption. For safety, liability, and enforcement reasons we have banned all motorized devices (motorcycles, ATVs, scooters, bikes, hover boards, drones, skateboards, mono wheels, etc.)

   E-devices are currently a struggle in Tucson – working with e-scooters companies and negotiations to geofence the Loop pathway.

7. Are there any type of shared bike systems (pedal- or electric-powered) available in the area?

   TUGO bike share program – pedal powered bike share

8. Were there consideration put into wayfinding, mileage markers, or trailhead/info kiosks oriented for more of a tourist audience?

   *Yes, but we've also included regularly updated digital maps and yearly updated fold up print maps as part of the management plan. We've also found that first responders have a difficult time knowing how to access the Loop or communicate with an injured citizen**. Coordination with fire and police departments is important**. (Doubling up as a maintenance corridor. Pushed the GIS data to the first responders. Has a formal loop committee (designers, planners, first-responders).*

Funding Sources

9. How did you pay for the construction of the trail? (back to the question above, was it done in phases, or all at once)?

   Bonds, secondary taxes, state DOT funds (Transportation Enhancement Program), private developer funds, grants, other agency funds

Public Outreach

10. Was there public or political opposition to the trail? If so, what did you do to overcome the opposition?

    Yes, but as most of the corridors lie within a FEMA and/or local floodplain setback, or the necessary maintenance corridor, the footprint was already in place for the Loop. Public meetings and concessions for security, sound, or aesthetic treatments are common.

11. How did you build public support for the trail / What did you do to involve the community?

    The regional aspect of the Loop is a great selling point. The connectivity to a much larger element helps sell the areas that experience local concerns. We also like to tout the safety of having an agency more actively manage these corridors. Daily maintenance activities keep the corridors clean and ward off potential nefarious activities knowing someone could be just around the corner. Our local visitor's bureau along with many publications, local and national, review and promote the Loop regularly. The County supports Loop events that help keep the Loop in the public's mind. Farmers markets are scattered along the Loop. Memorial Parks can also be found along the Loop giving folks a different

reason to visit. "Safe Routes to School" provides the Loop with yet again another user group. Social media accounts specifically set up for the Loop help the County communicate what is going on and what is coming up.

Pima County did not involve the public in design phases at all – too many opinions. They took the approach to inform rather than ask for public feedback. In early stages asked general question to public: "What would you like to see?"

Maintenance

12. What are the estimated operating and maintenance costs per year?

$30,000 per mile at full build out (restroom, landscaping, pathway, parking lot, utilities) and goes down form there. The County is not the only group maintaining the Loop. The towns of Marana and Oro Valley, as well as the City of Tucson all contribute to maintaining portions of the Loop along with the County.

13. Who does the maintenance? Does that agreement work?

It works well but requires significant coordination. Coordination during planning, design, construction, operation, and maintenance are key to provide a consistent look and feel across the region. Monthly meetings are held between the cooperating agencies with many more project specific meetings taking place. The County is the lead agency, but we have many partners.

Safety Concerns

14. Have you had any safety concerns/issues arise?

Yes, but nothing significant or that targeted enforcement or structural improvements could not fix. We have a Bike Ambassador program as well as a bike safety class the County offers up to help users navigate the Loop and ride more safely

- If so, are there any types that you are consistently seeing more of?

  Vehicles on the path (cars and atvs) and homeless folks sleeping on the path are concerns and then every monsoon season we get a few areas with debris left on the path that we must quickly address

Conclusion

15. What are some of the unintended impacts/consequences (positive or negative)?

Tucson has become a recognized bike city and the perception now is that bikes should be allowed anywhere and everywhere

16. Is this trail "complete", or is there more to come?

No, we are working on infill projects as well as continued expansion

17. If you had to give advice on three things you wish you had considered before starting the project, what would they be?
    1. ***Consider it a program not a project as it takes a long time and a lot of money to build regional infrastructure****. Get some young program champions who will be around to carry the program forward.*
    2. ***Multi-use paths require a lot of ancillary infrastructure to function properly; access to and from the pathway, parking lots, restrooms and water fountains, bike lanes on roads coming into the multi-use paths, under/over passes for major roadways or railroads, destinations, bridges or drainage structures****. Plan accordingly as it is rare that only 1 department is involved in large multi-use pathway projects*
    3. *Establish political capital with the lead agency.* ***Public support with agency long range planning really helps build a case for the desire and need for the program****.*

18. Anything else we should know?

Zion is a beautiful place, but lots of traffic in a tight corridor from the few times I have been there. The Loop in Tucson is something on the order of 95% car free, so we don't make a lot of concessions for vehicular traffic. We have a few at grade roadway crossing and a few more segments that dump the users directly into a roadway bike lane or sidewalk with driveway crossings, but for the most part the Loop is in its own corridor. This makes the Loop safer and avoids the added design elements that come with vehicle interaction.

JACKSON TO MOOSE FULL INTERVIEW NOTES

Project Name: Moose to Jackson Pathway
Contact Name / Email / Phone: Brian Schilling/bschilling@tetoncountywy.gov
Project Location: Teton County, WY
Capital Costs: $750,000/mi

Length/Location

1. What is the full length of the trail?

   13 miles total from Jackson to Moose, WY – crosses two different jurisdictions: Teton County and Teton National Park (flat creek 6 miles (Gros Ventre River). Pathway runs alongside Highway 89.

2. When the trail was constructed was the whole thing done at once or was it done in phases? How was the phasing determined? What was the timeline on this?

   Phases, County was first (2 seasons to construct) 2010 and 2011. Teton NP section was done in 2012. NP Moose to Jenny Lake (6 miles in 2008). Pathway has required extensive coordination with the Elks Refuge, Fish and Wildlife Services, and Park Service (landing the bridge on their property).

3. What considerations went into deciding where to put the trail? Were there substantial barriers to trying to find a place to put it? If so, what were those barriers?

   Pathway planning and construction required extensive and successful partnership with the Elk Refugee (east of the road) and migrating elk populations.

   Pathway was about maximizing user experience – but wildlife issues were a HUGE consideration. Hyper concerned with wildlife in this area.

   This process had a good outcome that lead to more cooperation. Process led to establishing a good working partnerships and relationships.

   An EA was required – Elk Refugee required this for wildlife protection. In order to permit this pathway Compatibility Determination was require for wildlife protect.

Surface Type

4. What type of surface material is used? And, any "lessons learned" here? In retrospect so you wish you would have chosen a different material?

   Seamless transition. Paved asphalt pathway with 10' wide striped lanes. Maintenance is slightly different and different sealcoats used for the two difference jurisdictions. Also, has slightly different signage and inconsistent wayfinding between the two jurisdictions. FHWA engineers designed the NP (so "over built").

   ADA-compliance required: Cross slope needs to be 2 percent or less. 5 percent slope requirements.

Estimated Users

5. Is there a method/strategy in place for collecting/estimating the number of users on the trail/pathway system? If so, what is it?
   - Do you have count data that you would be willing to share?
   - Do you have any sense of the breakdown of recreational trips versus commuting trips?

   Pre-counting (before pathway construction). Only a couple cyclists per day.

Post construction counts. Brino camera – set-up to do interval timed pictures. You get great info, but you must post process. Now they have Eco-counters – uses infrared counting. Data is bundled. Maintenance is a thing to consider with these.

50-fold increase in cycling with the install the path! Now there are SO MANY DIFFERENT RIDERS – the pathway made conditions more equitable for all users.

Cool story about grandma and granddaughter using the trail.

The trail ACTIVATES other areas of the corridor that they wouldn't have known about before.

No marketing was completed – the pathway is advertised mostly through word of mouth. Pathway maps are available at local bike and rental shops.

User Types

6. What are the mobility modes allowed on the trail/pathway? What is your e-bike policy on the trail?

   County currently allows type 1, 2, 3 e-bikes. However, the National Parks / Federal land says no e-bikes whatsoever. Therefore, no e-bikes allowed on this trail at all.

7. Are there any type of shared bike systems (pedal- or electric-powered) available in the area?

   Currently no e-bikes allowed on pathway.

8. Were there considerations put into wayfinding, mileage markers, or trailhead/info kiosks oriented for more of a tourist audience?

   8 wayfinding signs (super expensive) along the pathway. Also, installed local artist murals at couple locations to highlight the cultural setting.

Funding Sources

9. How did you pay for the construction of the trail? (back to the question above, was it done in phases, or all at once)?

   Multiple funding sources. 2 grants through an ATPPL Alternative Transportation in Parks Public Lands – FTA program. 1-million-dollar grant in 2007, 2008 2-million-dollar grant. AIRA funding in 2009 1 million dollars. 3 separate construction phases. Estimated about 750,000 per mile (that includes the bridge). Tunnel and bike racks at the museum.

Public Outreach

10. Was there public or political opposition to the trail? If so, what did you do to overcome the opposition?
11. How did you build public support for the trail / What did you do to involve the community?

    Good political support – local and federal level.

    This is an easy win for officials – don't come out against pathways.

    One thing to change: the design of the bridge could have been less intrusive to the view – currently higher profile than the highway, the County received complaints.

Maintenance

12. What are the estimated operating and maintenance costs per year?
13. Who does the maintenance? Does that agreement work?

    Funded through capital maintenance programs.

The farther distance from the highway the easier in terms of maintenance, because you don't have the debris from the road.

Safety Concerns

14. Have you had any safety concerns/issues arise?
    - If so, are there any types that you are consistently seeing more of?

Couple access points at the turnouts.

Issue with when you end the trail – no ending facilities, you just dump people out into town without any bike facilities.

Conclusion

15. What are some of the unintended impacts/consequences (positive or negative)?
16. Is this trail "complete", or is there more to come?
17. If you had to give advice on three things you wish you had considered before starting the project, what would they be?
18. Anything else we should know?

Focus on the project to be an opportunity for partnerships and building relationships with land managers – keep those very productive.

Stick up to your end of the bargain

Make sure to continue connections for users at the end of the pathway – connectivity and available facilities are important.

THE RAIL TRAIL AND MCLEOD CREEK PATHWAY FULL INTERVIEW NOTES

Project Name: Rail Trail
Contact Name / Email / Phone: Heinrich Deters/hdeters@parkcity.org/435-615-5205
Project Location: Park City
Capital Costs: NA

Length/Location

1. What is the full length of the trail?

   28 miles (Rail Trail), and ~5 miles from in town (to Kimball Junction)

2. When the trail was constructed was the whole thing done at once or was it done in phases? How was the phasing determined? What was the timeline on this?

   Rail bed ("Rails to Trails" project) – could be transferred back (federal process in 1992). McCloud Creek Trail – primarily a roadbed. Trail planning went through the regulatory process multiple times. Time span of 15 – 20 (total ~30 years) years. Development/infill process is what dictated the time. Some hesitation with ROW / assuring easements for future widening (must plan for future)

3. What considerations went into deciding where to put the trail? Were there substantial barriers to trying to find a place to put it? If so, what were those barriers?

   Creek relocation and wetlands stuff – in the ROW, straight forward. Swaner, board walk, now there is also paved option. Other entity, Basin Recreation – special jurisdiction, they levy a tax – general obligation bonds. 3 or 4 bonds for trails/open space 20 million on the last one. For the user – they don't know that they are on a Basin Rec trail due to the trail maintaining a seamless transition between jurisdictions

Surface Type

4. What type of surface material is used? And, any "lessons learned" here? In retrospect so you wish you would have chosen a different material?

   Asphalt or (road base) Don't do gravel or Mag chloride treatment. ***8 -12 feet in width throughout. International Tourism in Zion! (think about the type of tourist using the Zion trail).*** *Between changes in jurisdiction – make trail as seamless as possible (better for the user) for the surface type*

Estimated Users

5. Is there a method/strategy in place for collecting/estimating the number of users on the trail/pathway system? If so, what is it?
   a. Do you have count data that you would be willing to share?

      Estimated 75,000 annually on the Rail Trail – seasonally depends… Most of the usage is in the first 1 – 2 miles. Surface treatment and usage are very closely tied (broader user group)

   b. Do you have any sense of the breakdown of recreational trips versus commuting trips?

      No delineation between users: permanent infrared counters being installed

User Types

6. What are the mobility modes allowed on the trail/pathway? What is your e-bike policy on the trail?

All types of mobility are allowed on the trail and E-bikes are allowed on paths any width of 8' or wider

7. Are there any type of shared bike systems (pedal- or electric-powered) available in the area?

   The Summit Bike Share system – nation's first fully electric bike share system

8. Were there consideration put into wayfinding, mileage markers, or trailhead/info kiosks oriented for more of a tourist audience?

   Policy – non-motorized trail policy. E-bikes are only allowed on paved pathways greater than 8 feet. (recommendation would be to make it 10 – 12' because 8' is too narrow). Issue of no age restrictions with E-bikes… younger (teenager) treat E-bikes as a novelty, recreation. Their system is already full. There are bad users. You must expect some bad behavior. Make sure to sign and stripe clearly rules, navigation, etc. for users and properly alert people. Steep grades the biggest issue with speed and safety using E-bikes. Use Kiosks – PC has done a complete interlocal kiosk system. Wayfinding must be consistent. Dots on the ground with paint that are clearly marked on with dots on maps. On the ground stencils are also useful.

Funding Sources

9. How did you pay for the construction of the trail? (back to the question above, was it done in phases, or all at once)?

   Trail planning went through the regulatory process multiple times over a time span of 15 – 20 (total ~30 years) years. Development/infill process dictated the timeline for constructing the trail

Public Outreach

10. Was there public or political opposition to the trail? If so, what did you do to overcome the opposition?
    People in Park City really like trails, so there was no opposition to putting in the trail. And from a political standpoint, the citizens here like trails so much, it would not be smart for politicians to appose them.

11. How did you build public support for the trail / What did you do to involve the community?
    See above.

Maintenance

12. What are the estimated operating and maintenance costs per year?
    N/A

13. Who does the maintenance? Does that agreement work?
    7-year cycles for the milling the asphalt. Tack seal every 5 years.

Safety Concerns

14. Have you had any safety concerns/issues arise?
    - If so, are there any types that you are consistently seeing more of?

    There are certainly isolated incidences of bike to walk to roller blade to skateboard to e bike conflicts. But PC takes the approach of not giving those too much attention – they trust that people can manage themselves.

Conclusion

15. What are some of the unintended impacts/consequences (positive or negative)?

    Make sure to preach/highlight the benefits the trail/pathway will bring to community, allows for stronger support from the public

16. Is this trail "complete", or is there more to come?

The trail network is always being built out – but these two trails are "done" for now.

17. If you had to give advice on three things you wish you had considered before starting the project, what would they be?
Identify local champions early and built strong relationships.

18. Anything else we should know?

Find a utility!!! And jump onboard. Examples: gas lines, cables, or water lines specifically

Zion Multi-Use Pathway Survey

Wednesday, October 16, 2019

510

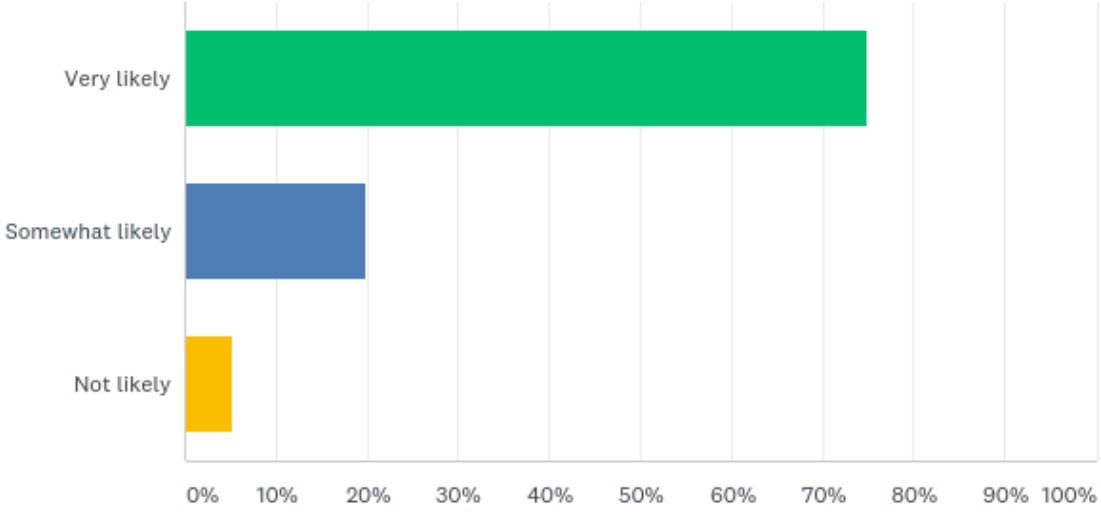
Total Responses

Date Created: Thursday, September 05, 2019

Complete Responses: 457

Q1: How likely are you to use all or parts of a multi-use pathway from Hurricane to Springdale?

Answered: 508 Skipped: 2



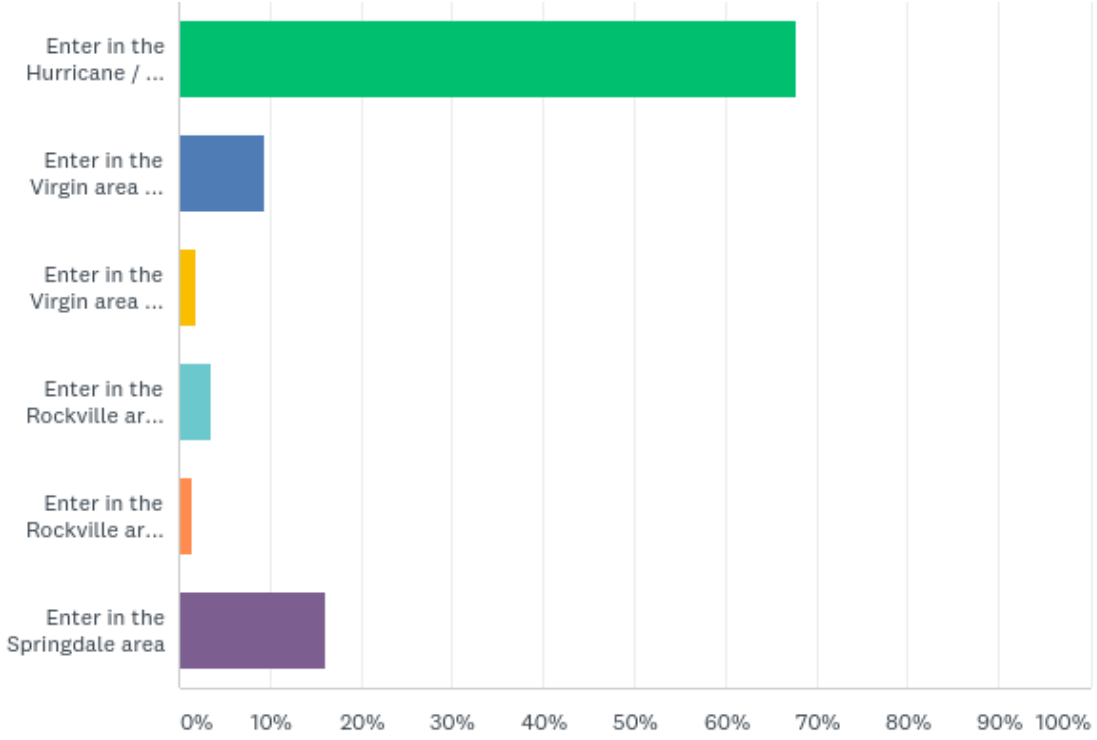
Q1: How likely are you to use all or parts of a multi-use pathway from Hurricane to Springdale?

Answered: 508 Skipped: 2

ANSWER CHOICES	RESPONSES	
Very likely	74.80%	380
Somewhat likely	19.88%	101
Not likely	5.31%	27
TOTAL		508

Q2: Where would you most likely enter the pathway?

Answered: 502 Skipped: 8



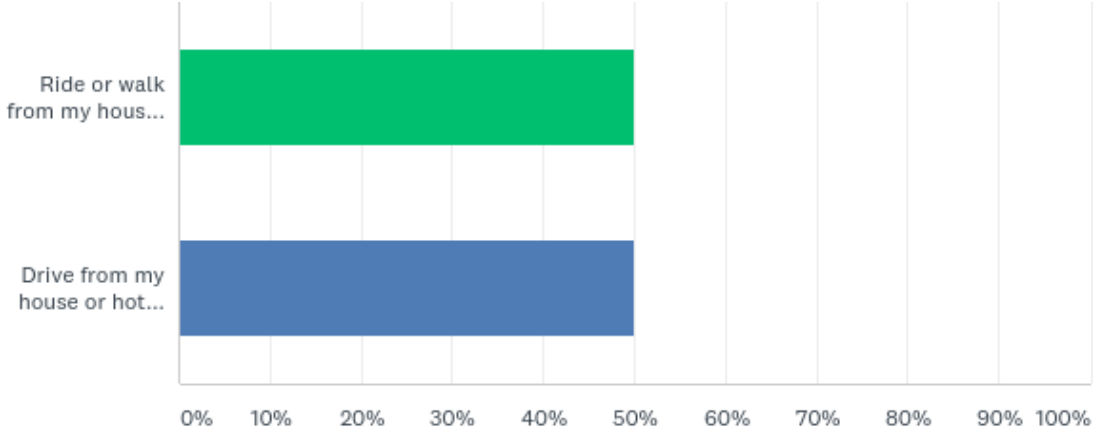
Q2: Where would you most likely enter the pathway?

Answered: 502 Skipped: 8

ANSWER CHOICES	RESPONSES	
Enter in the Hurricane / La Verkin area	67.73%	340
Enter in the Virgin area and head east towards Rockville	9.36%	47
Enter in the Virgin area and head west towards Hurricane / La Verkin area	1.79%	9
Enter in the Rockville area and head east towards Springdale	3.59%	18
Enter in the Rockville area and head west towards Virgin	1.39%	7
Enter in the Springdale area	16.14%	81
TOTAL		502

Q3: What would be your preferred way to access the pathway?

Answered: 503 Skipped: 7



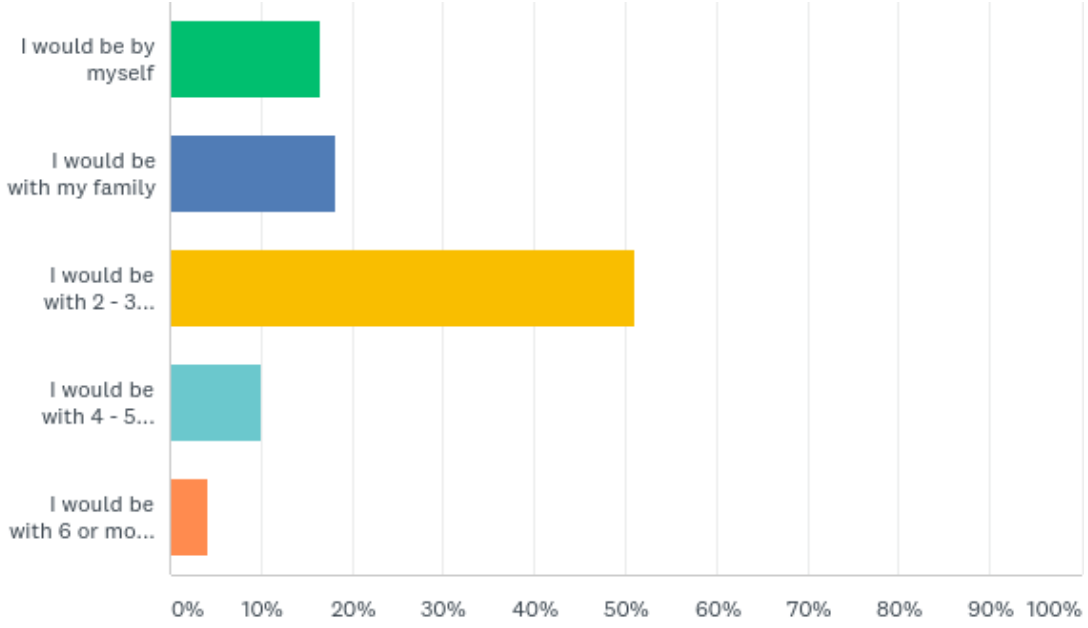
Q3: What would be your preferred way to access the pathway?

Answered: 503 Skipped: 7

ANSWER CHOICES	RESPONSES	
Ride or walk from my house or hotel to the pathway trailhead	50.10%	252
Drive from my house or hotel to a pathway trailhead then start walking or riding from there	49.90%	251
TOTAL		503

Q4: When you use the pathway - how many people would likely be in your group?

Answered: 505 Skipped: 5



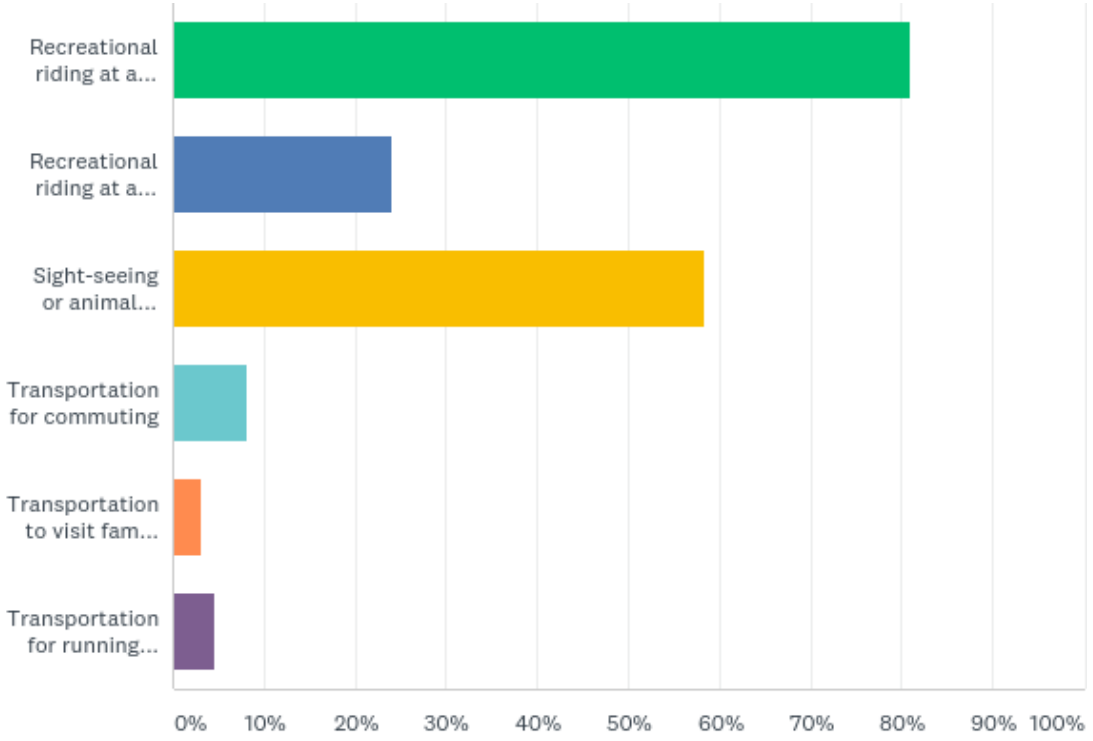
Q4: When you use the pathway - how many people would likely be in your group?

Answered: 505 Skipped: 5

ANSWER CHOICES	RESPONSES	
I would be by myself	16.44%	83
I would be with my family	18.22%	92
I would be with 2 - 3 people	51.09%	258
I would be with 4 - 5 people	10.10%	51
I would be with 6 or more people	4.16%	21
TOTAL		505

Q5: What would be your top two primary uses of the pathway (pick two)?

Answered: 503 Skipped: 7



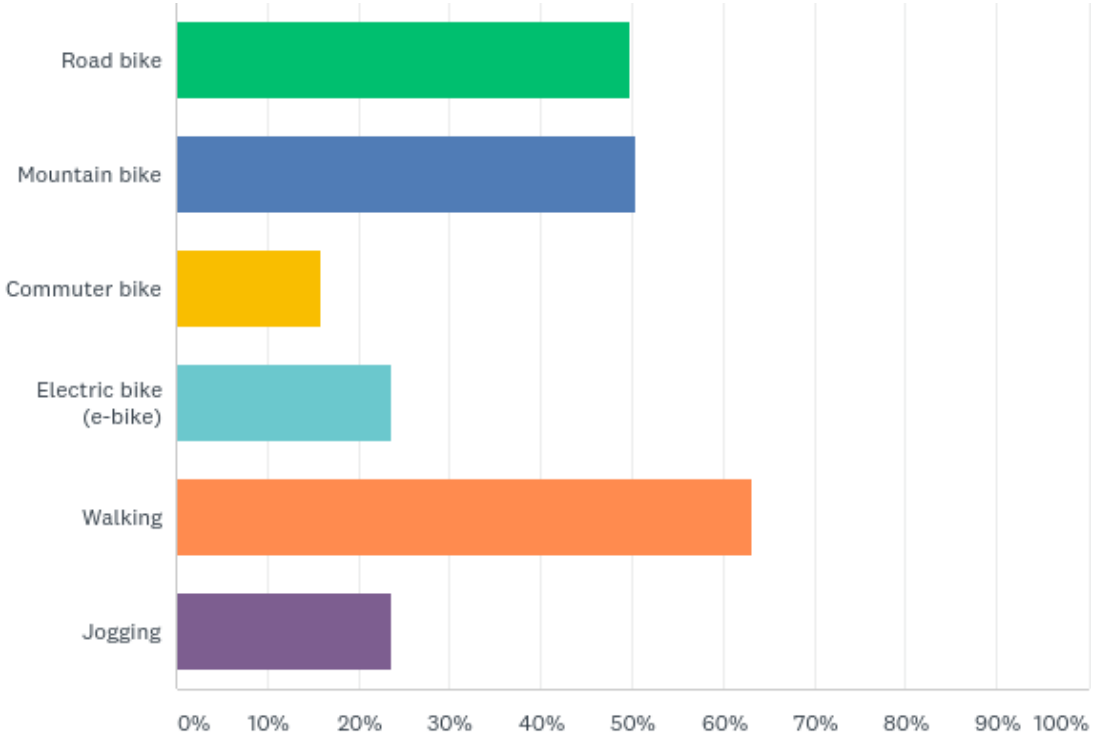
Q5: What would be your top two primary uses of the pathway (pick two)?

Answered: 503 Skipped: 7

ANSWER CHOICES	RESPONSES	
Recreational riding at a leisurely pace	80.91%	407
Recreational riding at a competitive pace	24.06%	121
Sight-seeing or animal viewing	58.45%	294
Transportation for commuting	8.15%	41
Transportation to visit family / friends	3.18%	16
Transportation for running errands	4.57%	23
Total Respondents: 503		

Q6: What modes of travel would you primarily use on the pathway (pick three)?

Answered: 491 Skipped: 19



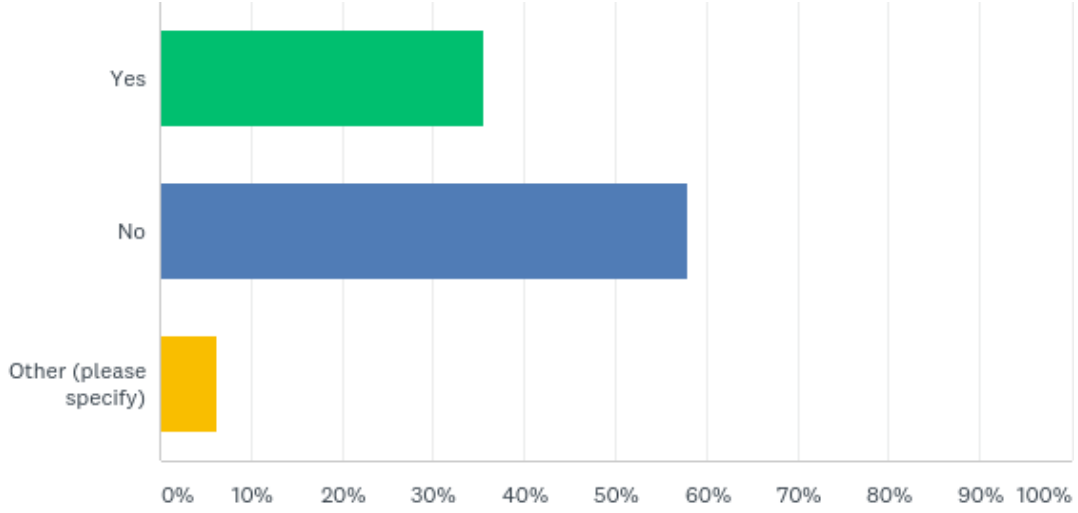
Q6: What modes of travel would you primarily use on the pathway (pick three)?

Answered: 491 Skipped: 19

ANSWER CHOICES	RESPONSES	
Road bike	49.69%	244
Mountain bike	50.51%	248
Commuter bike	15.89%	78
Electric bike (e-bike)	23.63%	116
Walking	63.14%	310
Jogging	23.63%	116
Total Respondents: 491		

Q7: Would you be more compelled to use the pathway if there were an electric bike share along the pathway and at either end with electric bikes available to check-out for a cost?

Answered: 502 Skipped: 8



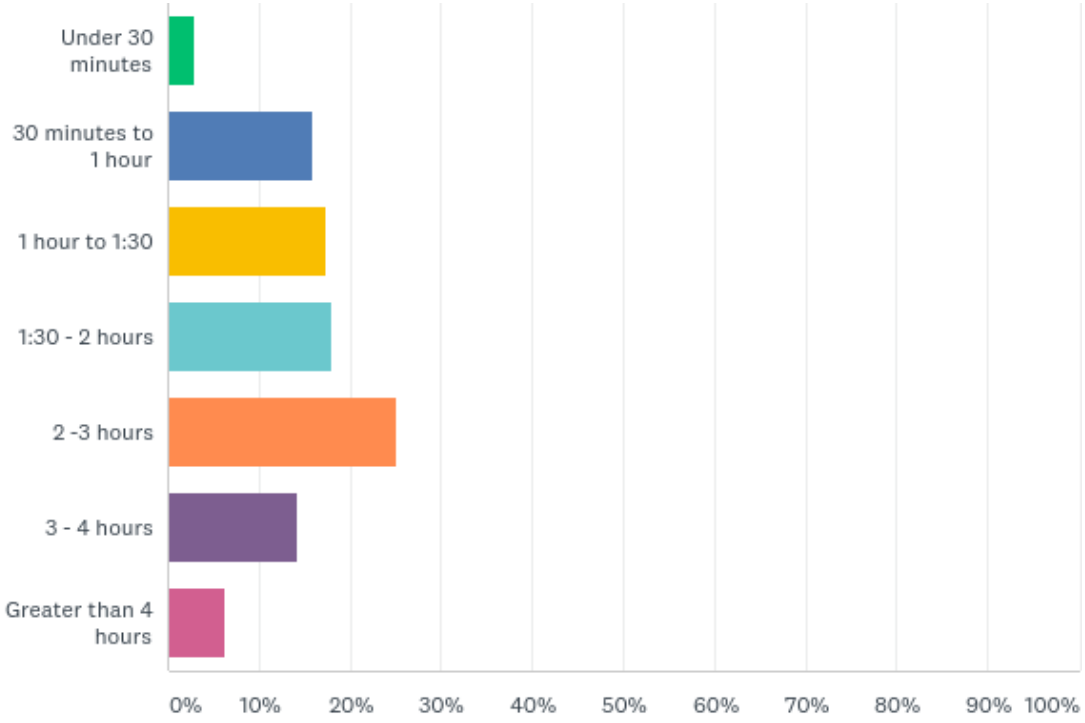
Q7: Would you be more compelled to use the pathway if there were an electric bike share along the pathway and at either end with electric bikes available to check-out for a cost?

Answered: 502 Skipped: 8

ANSWER CHOICES	RESPONSES	
Yes	35.66%	179
No	57.97%	291
Other (please specify)	6.37%	32
TOTAL		502

Q8: What would be your most common trip length on the pathway?

Answered: 500 Skipped: 10



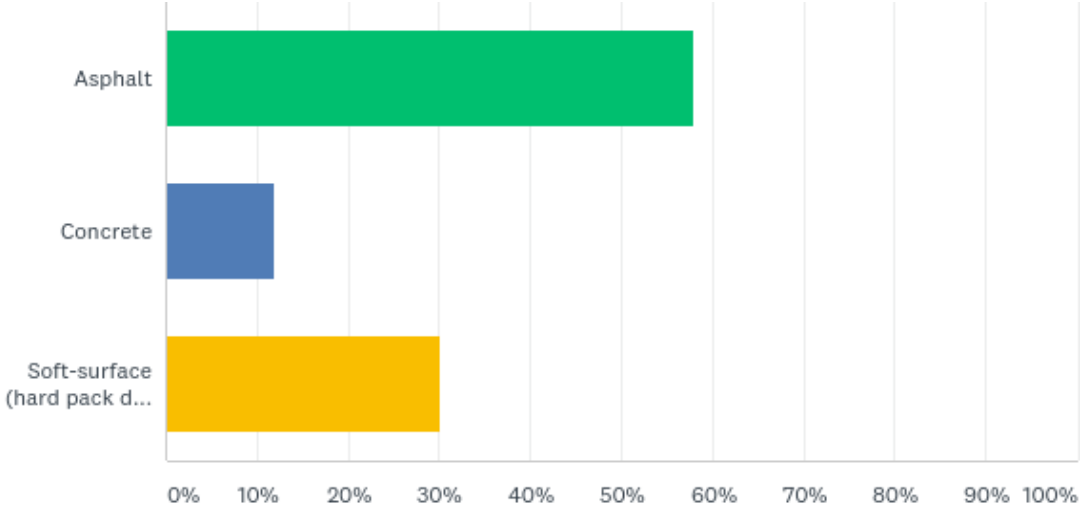
Q8: What would be your most common trip length on the pathway?

Answered: 500 Skipped: 10

ANSWER CHOICES	RESPONSES	
Under 30 minutes	3.00%	15
30 minutes to 1 hour	16.00%	80
1 hour to 1:30	17.40%	87
1:30 - 2 hours	18.00%	90
2 -3 hours	25.20%	126
3 - 4 hours	14.20%	71
Greater than 4 hours	6.20%	31
TOTAL		500

Q9: Which pathway surface type would you prefer?

Answered: 504 Skipped: 6



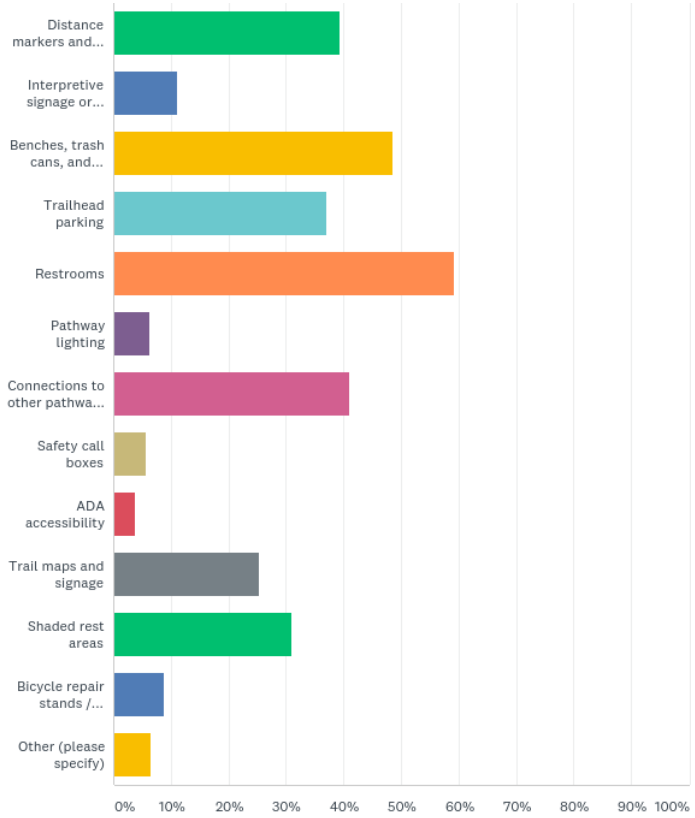
Q9: Which pathway surface type would you prefer?

Answered: 504 Skipped: 6

ANSWER CHOICES	RESPONSES	
Asphalt	57.94%	292
Concrete	11.90%	60
Soft-surface (hard pack dirt / gravel)	30.16%	152
TOTAL		504

Q10: What amenities are most important for you to have available along the pathway (pick top three)?

Answered: 507 Skipped: 3



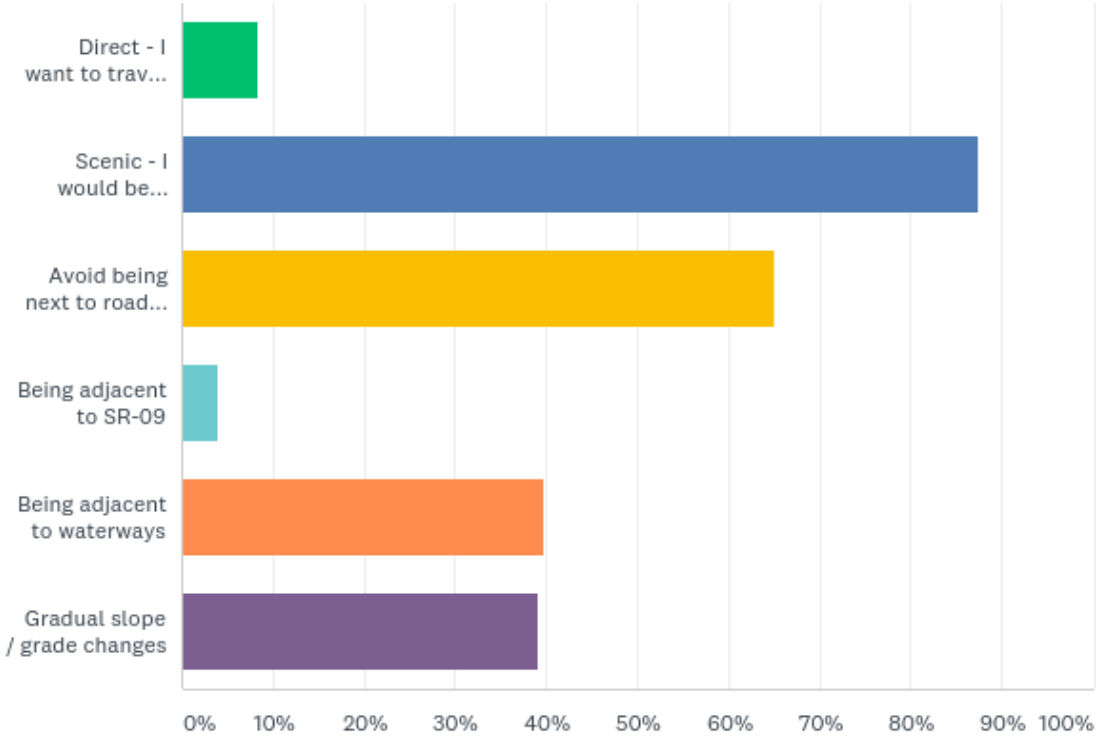
Q10: What amenities are most important for you to have available along the pathway (pick top three)?

Answered: 507 Skipped: 3

ANSWER CHOICES	RESPONSES	
Distance markers and wayfinding along the route	39.25%	199
Interpretive signage or informational kiosks	11.05%	56
Benches, trash cans, and drinking fountains at the trailheads	48.52%	246
Trailhead parking	37.08%	188
Restrooms	59.17%	300
Pathway lighting	6.31%	32
Connections to other pathways or trails in the area	41.03%	208
Safety call boxes	5.72%	29
ADA accessibility	3.75%	19
Trail maps and signage	25.25%	128
Shaded rest areas	30.97%	157
Bicycle repair stands / stations	8.88%	45
Other (please specify)	6.51%	33
Total Respondents: 507		

Q11: How would you describe your ideal pathway from Hurricane to Springdale (pick top two or three)?

Answered: 506 Skipped: 4



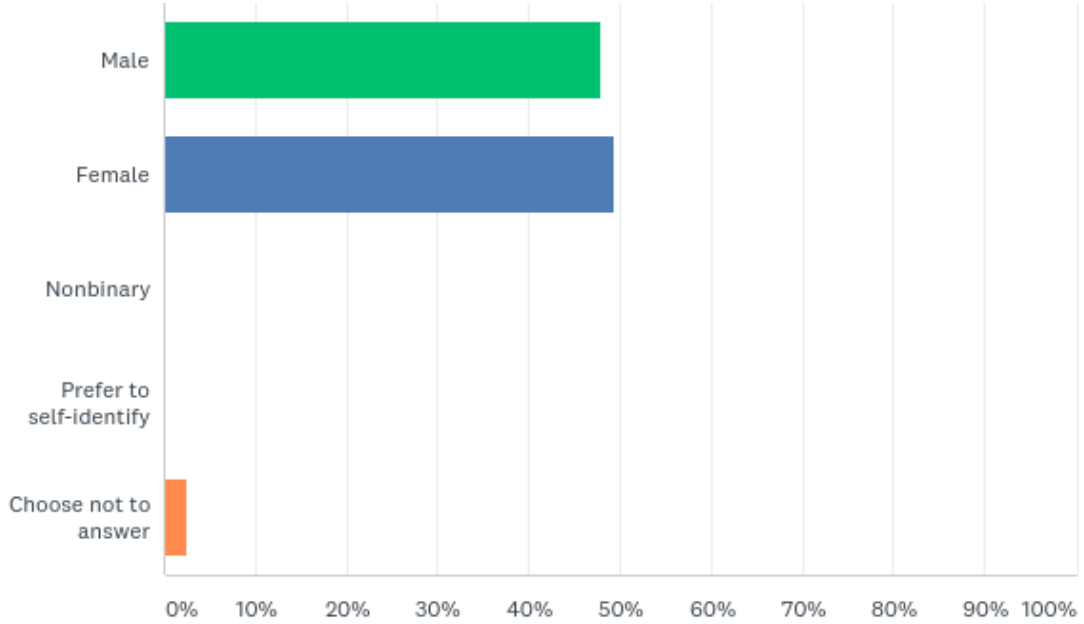
Q11: How would you describe your ideal pathway from Hurricane to Springdale (pick top two or three)?

Answered: 506 Skipped: 4

ANSWER CHOICES	RESPONSES	
Direct - I want to travel on the shortest, most direct route	8.30%	42
Scenic - I would be willing to travel somewhat out of direction for nice views or scenic overlooks	87.35%	442
Avoid being next to roads (including minimizing roadway crossings)	65.02%	329
Being adjacent to SR-09	3.95%	20
Being adjacent to waterways	39.72%	201
Gradual slope / grade changes	39.13%	198
Total Respondents: 506		

Q14: What is your gender?

Answered: 451 Skipped: 59



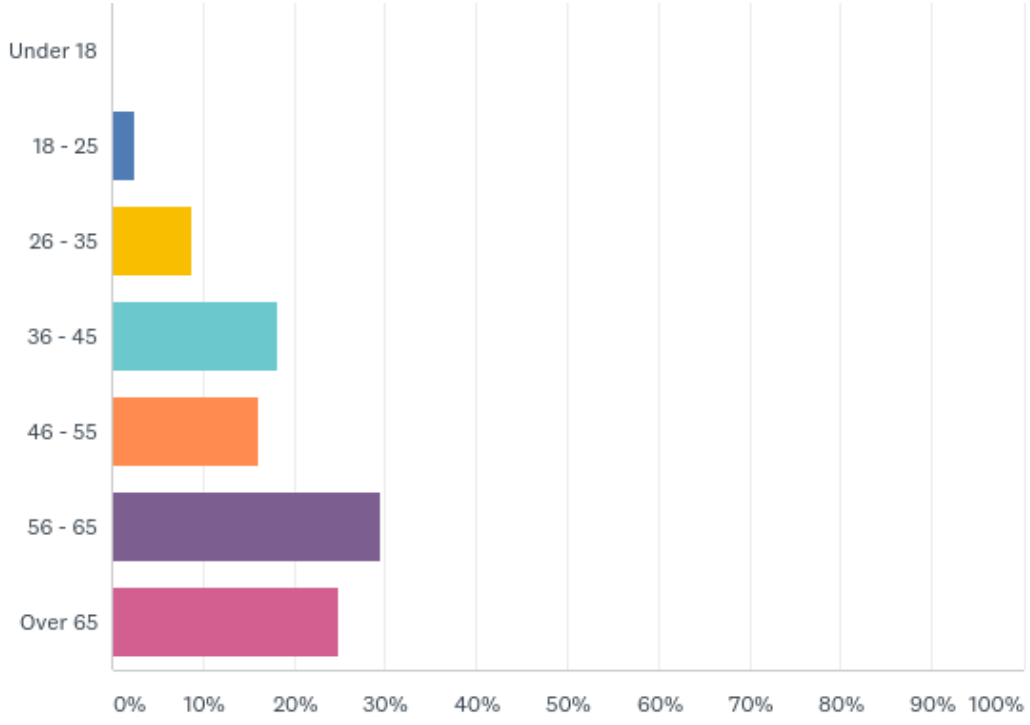
Q14: What is your gender?

Answered: 451 Skipped: 59

ANSWER CHOICES	RESPONSES	
Male	47.89%	216
Female	49.45%	223
Nonbinary	0.22%	1
Prefer to self-identify	0.00%	0
Choose not to answer	2.44%	11
TOTAL		451

Q15: What is your age?

Answered: 454 Skipped: 56



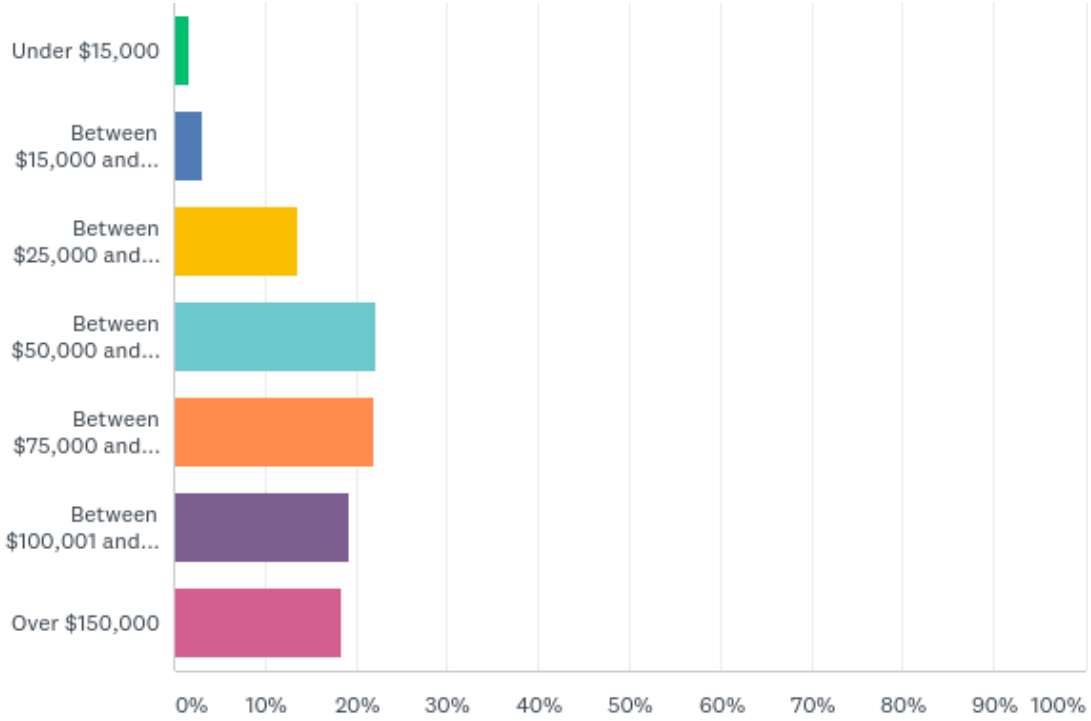
Q15: What is your age?

Answered: 454 Skipped: 56

ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18 - 25	2.42%	11
26 - 35	8.81%	40
36 - 45	18.28%	83
46 - 55	16.08%	73
56 - 65	29.52%	134
Over 65	24.89%	113
TOTAL		454

Q16: What is your household income level?

Answered: 428 Skipped: 82



Q16: What is your household income level?

Answered: 428 Skipped: 82

ANSWER CHOICES	RESPONSES	
Under $15,000	1.64%	7
Between $15,000 and $24,000	3.04%	13
Between $25,000 and $49,999	13.55%	58
Between $50,000 and $74,999	22.20%	95
Between $75,000 and $100,000	21.96%	94
Between $100,001 and $150,000	19.16%	82
Over $150,000	18.46%	79
TOTAL		428

Zion Corridor Trail Survey

Tuesday, January 07, 2020

308

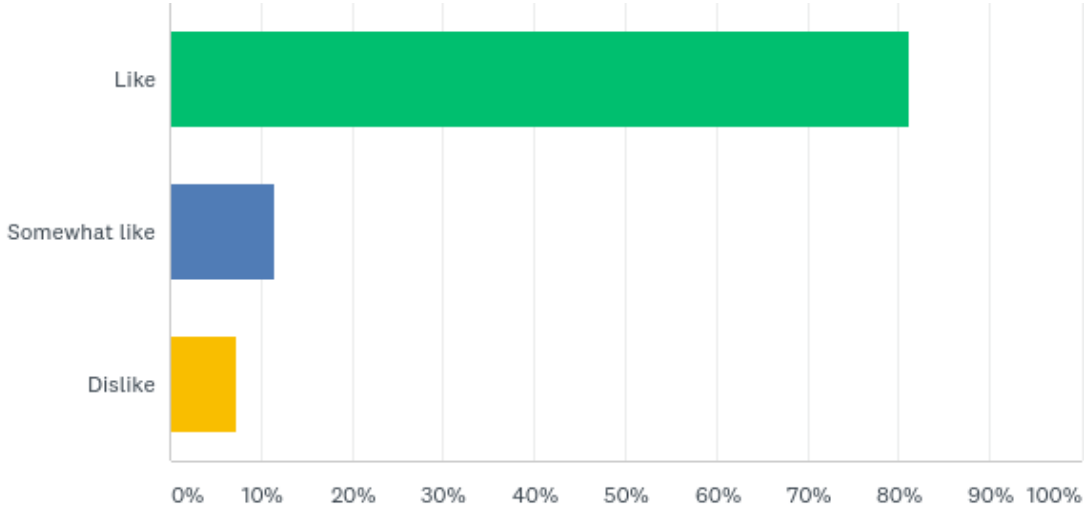
Total Responses

Date Created: Monday, November 11, 2019

Complete Responses: 301

Q1: How do you feel about the "Southern Route" trail?

Answered: 304 Skipped: 4



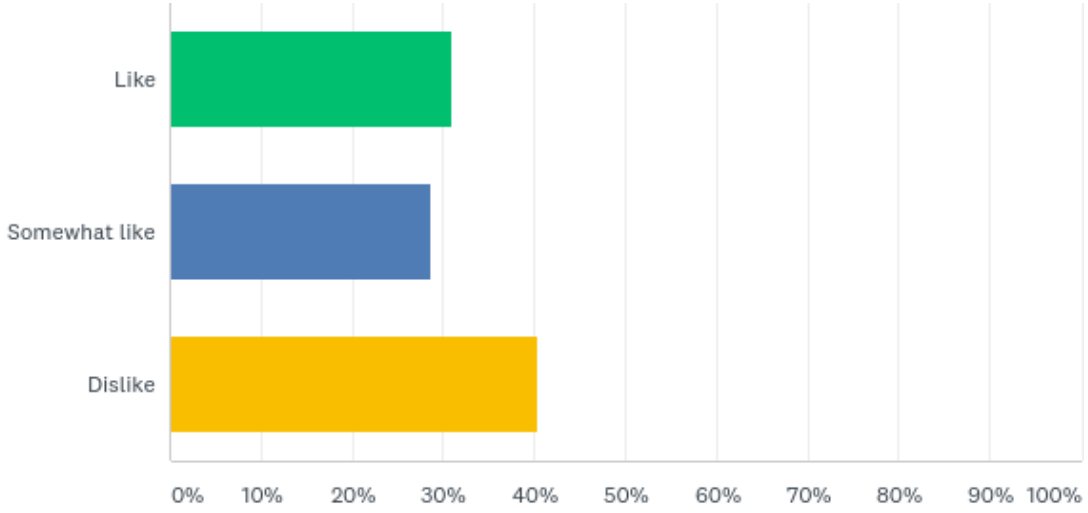
Q1: How do you feel about the "Southern Route" trail?

Answered: 304 Skipped: 4

ANSWER CHOICES	RESPONSES	
Like	81.25%	247
Somewhat like	11.51%	35
Dislike	7.24%	22
TOTAL		304

Q2: How do you feel about the "SR-9 Route" trail?

Answered: 304 Skipped: 4



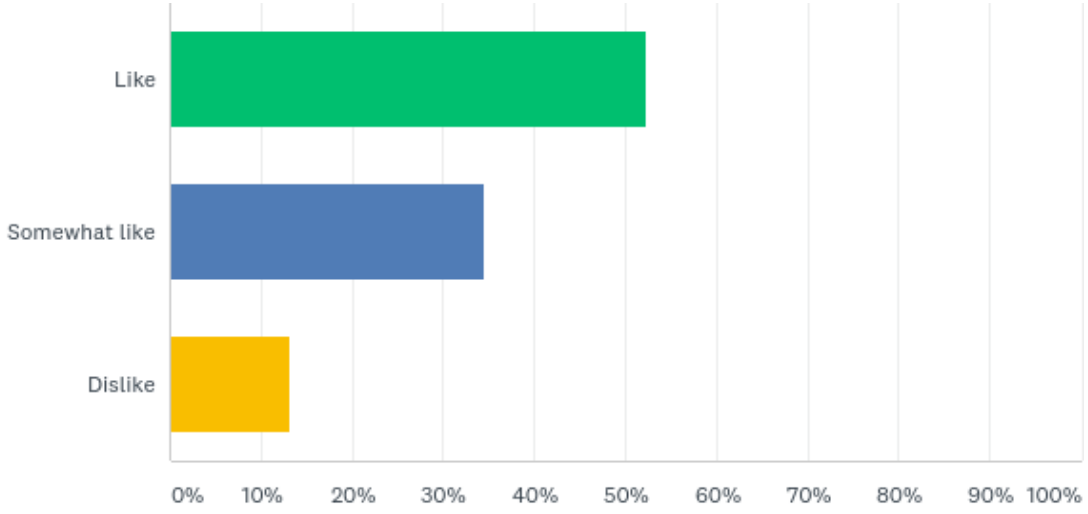
Q2: How do you feel about the "SR-9 Route" trail?

Answered: 304 Skipped: 4

ANSWER CHOICES	RESPONSES	
Like	30.92%	94
Somewhat like	28.62%	87
Dislike	40.46%	123
TOTAL		304

Q3: How do you feel about the "Northern Route" trail?

Answered: 304 Skipped: 4



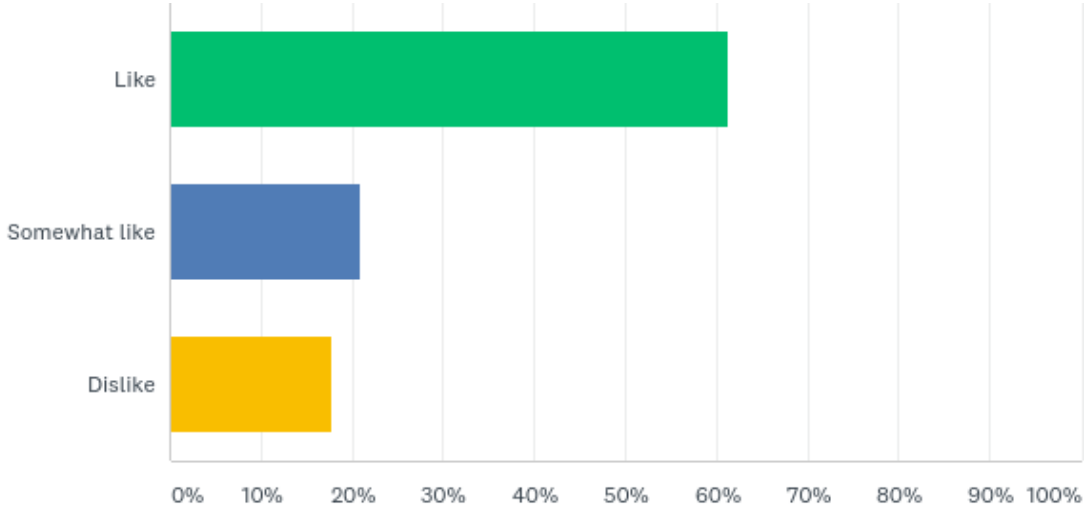
Q3: How do you feel about the "Northern Route" trail?

Answered: 304 Skipped: 4

ANSWER CHOICES	RESPONSES	
Like	52.30%	159
Somewhat like	34.54%	105
Dislike	13.16%	40
TOTAL		304

Q4: How do you feel about the "River Route" trail?

Answered: 302 Skipped: 6



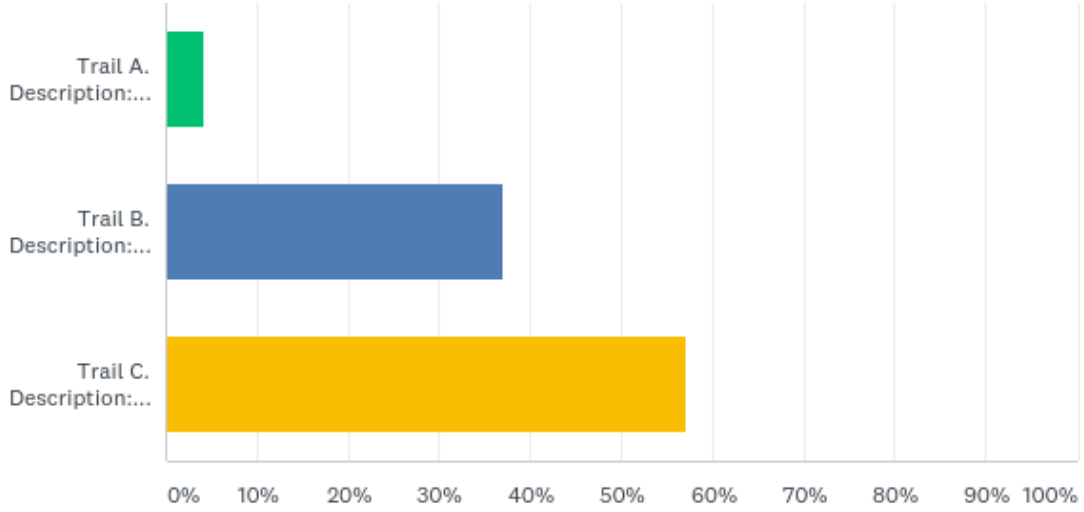
Q4: How do you feel about the "River Route" trail?

Answered: 302 Skipped: 6

ANSWER CHOICES	RESPONSES	
Like	61.26%	185
Somewhat like	20.86%	63
Dislike	17.88%	54
TOTAL		302

Q5: Which La Verkin Twist trail do you prefer?

Answered: 291 Skipped: 17



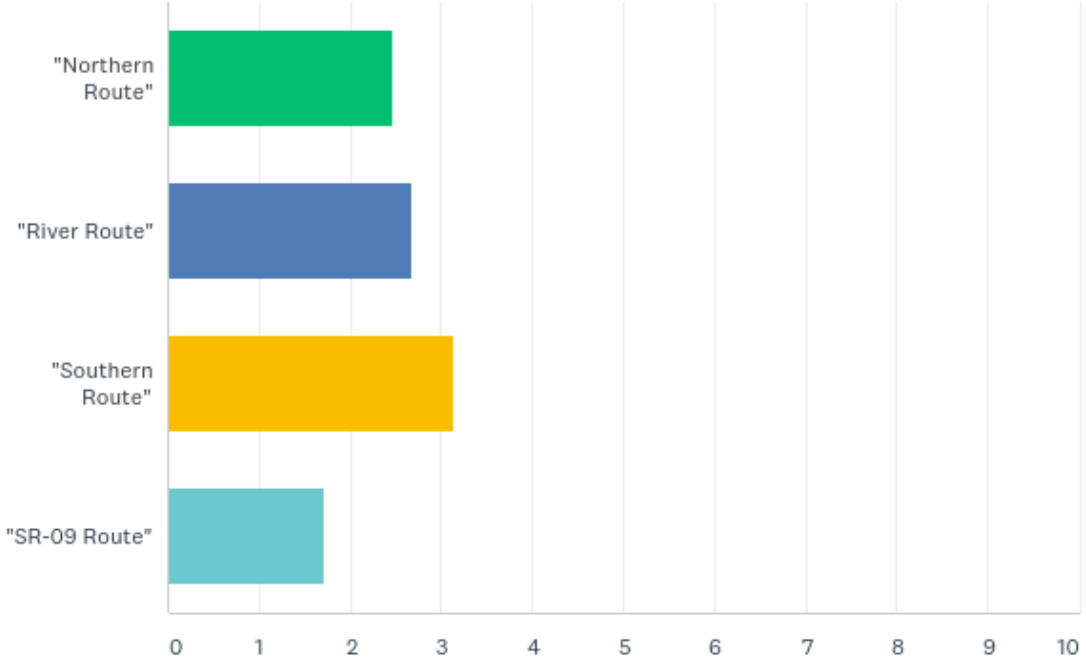
Q5: Which La Verkin Twist trail do you prefer?

Answered: 291 Skipped: 17

ANSWER CHOICES	RESPONSES	
Trail A. Description: Follows a rough double track to get off the road before the last ascent on the twist. Requires being along the road up to that point. Rejoins the highway at the top of the twist.	4.12%	12
Trail B. Description: Follows the old highway alignment (now a rough jeep road). Would require either being along the road to just past the first road cut heading up the hill, or alternatively bypassing this lower section of highway with a potential underpass to the west side of the road.	37.11%	108
Trail C. Description: Ascends the cliffs via a series of switchbacks along the path of an existing social hiking trail.	57.04%	166
TOTAL		291

Q6: Rank the trail alignment routes in order from 1 - 4 (1 being your favorite and 4 being your least favorite).

Answered: 293 Skipped: 15



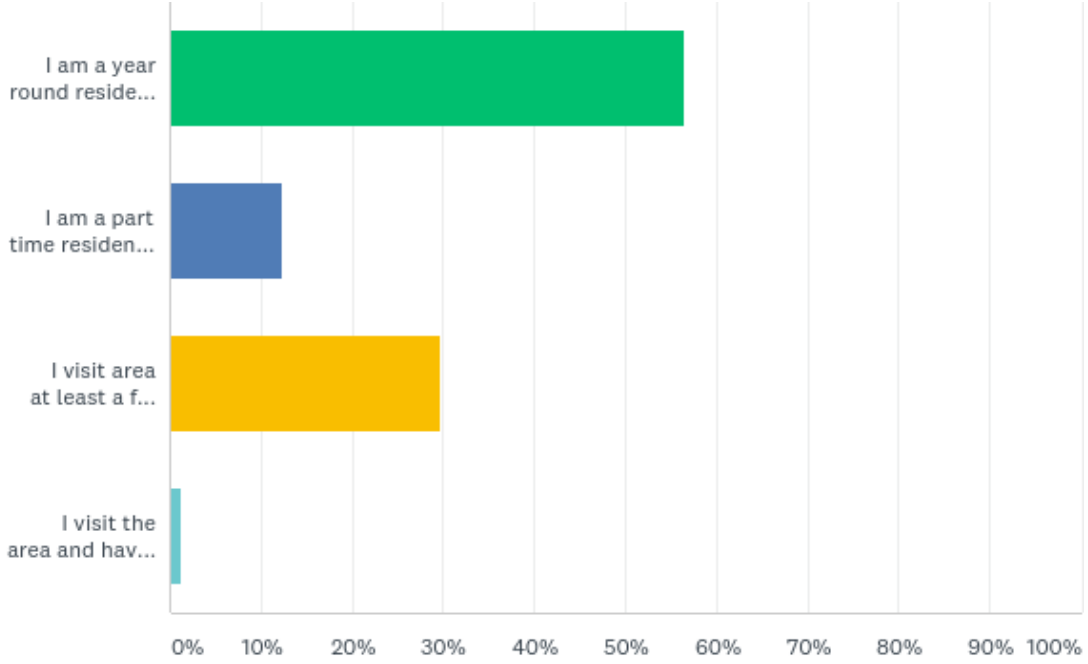
Q6: Rank the trail alignment routes in order from 1 - 4 (1 being your favorite and 4 being your least favorite).

Answered: 293 Skipped: 15

	1	2	3	4	TOTAL	SCORE
"Northern Route"	15.44% 44	29.12% 83	42.46% 121	12.98% 37	285	2.47
"River Route"	30.00% 87	26.90% 78	23.45% 68	19.66% 57	290	2.67
"Southern Route"	44.48% 129	32.07% 93	16.55% 48	6.90% 20	290	3.14
"SR-09 Route"	10.38% 30	11.76% 34	16.96% 49	60.90% 176	289	1.72

Q9: What is your primary relationship with the study area (Springdale to Hurricane / La Verkin)?

Answered: 299 Skipped: 9



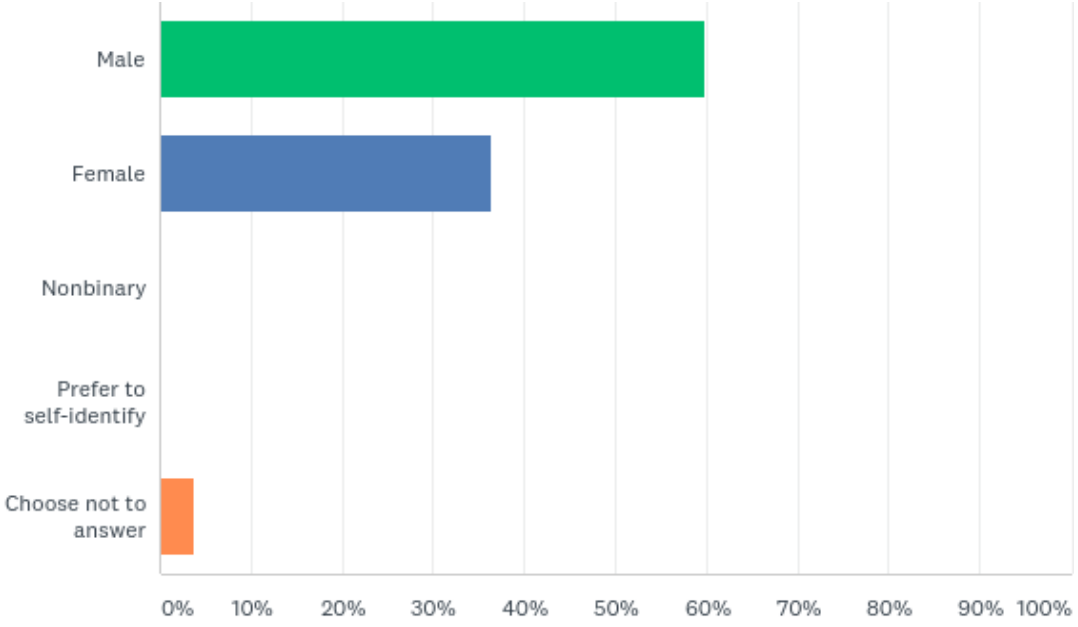
Q9: What is your primary relationship with the study area (Springdale to Hurricane / La Verkin)?

Answered: 299 Skipped: 9

ANSWER CHOICES	RESPONSES	
I am a year round resident of the area	56.52%	169
I am a part time resident of the area	12.37%	37
I visit area at least a few times a year	29.77%	89
I visit the area and have only been once or twice	1.34%	4
TOTAL		299

Q10: What is your gender?

Answered: 297 Skipped: 11



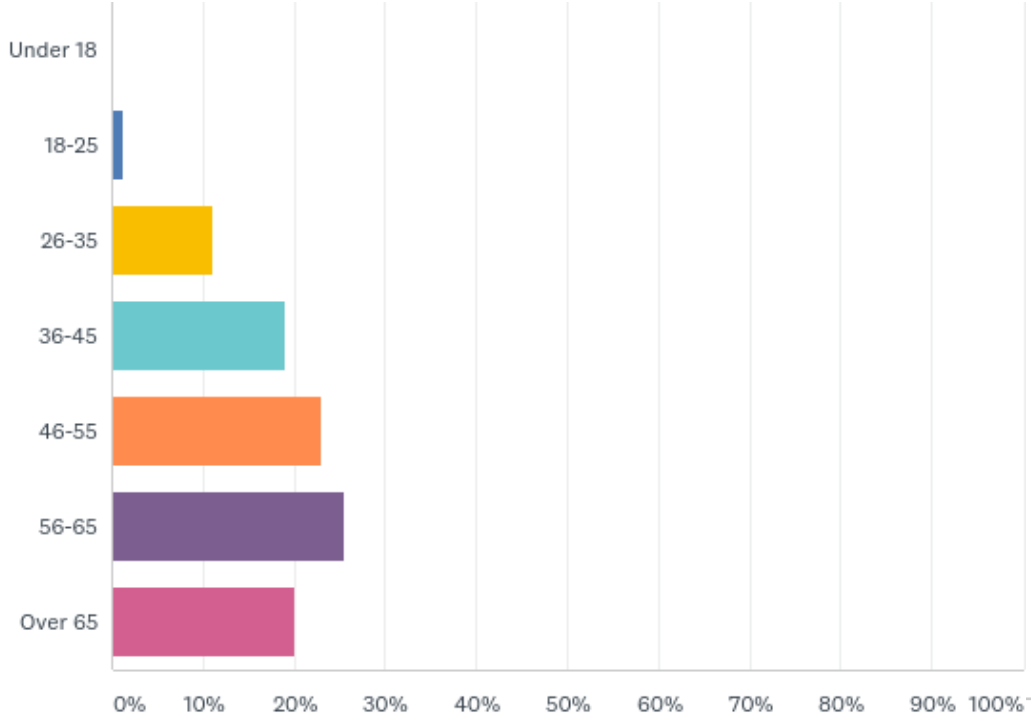
Q10: What is your gender?

Answered: 297 Skipped: 11

ANSWER CHOICES	RESPONSES	
Male	59.93%	178
Female	36.36%	108
Nonbinary	0.00%	0
Prefer to self-identify	0.00%	0
Choose not to answer	3.70%	11
TOTAL		297

Q11: What is your age?

Answered: 295 Skipped: 13



Q11: What is your age?

Answered: 295 Skipped: 13

ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-25	1.36%	4
26-35	11.19%	33
36-45	18.98%	56
46-55	23.05%	68
56-65	25.42%	75
Over 65	20.00%	59
TOTAL		295

SR-09 Route

PROS	CONS
Easiest as alignment is in right of way. Already disturbed land - BLM - easier administration NEPA -	User experience is least desirable per adjustment to traffic - Sound/[illegible] etc..

SR-09 Route

PROS	CONS
Most direct Easiest land acquisition	Needs separation between road and path Not a trail experience it is a destination experience (get you from point A to point B)

Will the trail be paved?

SR-09 Route

PROS	CONS
won't need much wayfinding better for backbone route. ~~less~~ fewer grade/stop issues Good backbone route. Desirability increasee in conjuction with a Northern + southern route	erosion concerns in washes Not friendly for horses to be along the highway

Northern Route

PROS	CONS
Better visitor experience Highway Adjacent	Southern route more desirable experience for users Private land conflicts Too close to Rte 9.

Northern Route

PROS	CONS
More isolated trail route Land acquisition is easier	Steeper grades btwn Virgin and Rockville

Northern Route

PROS	CONS
More Access to Virgin use of public lands ~~Only~~ Northern route would be more desirable in conjunction with SR-9 Route and Southern Route.	erosion concerns in higher elevation N. of Virgin also in washes soil concerns concerns of property owners who border BLM. Don't want it too close to their fence line steep grades.

Northern Route

PROS	CONS
Take Northern to Lakeshore Take Southern from "	Overlook to Sprucedale

Southern Route

PROS	CONS
Avoids private property - generally Concept fits w/ what BLM is working to promote Recreation + Access ~~High quality~~ High quality visitor exp. Awesome E-campgrs	Level of NEPA Survey for cultural resources - ~~High~~ Water distant potential safety issues, bridges - $$ -

Southern Route

PROS	CONS
Plenty of public land More scenic route	River crossings and shared use of Rockville Bridge Use of existing ~~use~~ roads (Grafton et)

Southern Route

PROS	CONS
scenic and away from traffic use of public lands Becomes more desireable if done in conjuction with the Northern + SR-09 route	erosion concerns in washes soil concerns - bypasses Virgin Not as attractive scenery inaccessable for all users, distance, from Virgin. Too far away. More Bicycle friendly than hiker friendly steep grades

River Route

PROS	CONS
Visitor Experience is awesome Stoked	Water conserving district concerns Safety concerns w/ infrastructure - during dam, etc-- Private property issues - potential conflicts Resource impact - Flooding events Infrastructure costs/bridges.

River Route

PROS	CONS
The most scenic recreational route	Private land acquisition River crossings

River Route

PROS	CONS
Scenic, shadier. Might be more available in future years as Property owners change	Private property owners in Virgin that would not want to lose land to the pathway.

PIN: PROJECT # PROJECT NAME: Northern Route Segment 1 La Verkin to Kolob Terrace
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	8.130	miles	42,926 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$2,360,584	
Traffic and Safety		$13,620	
Structures		$275,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$2,649,204	
	Items not Estimated (10%)	$264,920	
	Construction Subtotal	**$2,914,124**	
P.E. Cost	**P.E. Subtotal**	**$233,130**	8%
C.E. Cost	**C.E. Subtotal**	**$291,412**	10%
Right of Way	**Right of Way Subtotal**	$200,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$233,000**		**$233,000**
	Right of Way		**$200,000**		**$200,000**
	Utilities		**$0**		**$0**
	Construction		**$2,914,000**		**$2,914,000**
	C.E.		**$291,000**		**$291,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$22,000**		**$22,000**
	Change Order Contingency	**9.00%**	**$264,000**		**$264,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$3,924,000**	**TOTAL**	**$3,924,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$3,924,000**	**TOTAL**	**$3,924,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11. Assumes there will be a dedicated Right-of-Way for the trails western end in La Verkin
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Northern Route Segment 1 La Verkin to Kolob Terrace

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$175,000.00	$175,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	95,392	square yard	$2.00	$190,784.00	
023167020	Roadway Excavation (Plan Quantity)	40,807	cubic yard	$13.00	$530,491.00	
027217020	Untreated Base Course (Plan Quantity)	11,130	cubic yard	$45.00	$500,850.00	
027417050	HMA - 1/2 Inch	5,295	ton	$143.00	$757,185.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	5,111	foot	$6.00	$30,666.00	
Roadway Subtotal					**$2,184,976**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	2,195	foot	$80.00	$175,607.54	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$175,608**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Northern Route Segment 1 La Verkin to Kolob Terrace

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	454	gallon	$30.00	$13,620.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$13,620**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Northern Route Segment 1 La Verkin to Kolob Terrace

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump	$275,000.00	$275,000.00	Assumed 10 x 10 x 70'
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$275,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Northern Route Segment 1 La Verkin to Kolob Terrace

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	2	Acre	$100,000.00	$200,000.00	
			Acre			
Right-of-Way Subtotal					**$200,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: Northern Route Segment 2 Kolob Terrace to SR-9 MP 22.2
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	3.967	miles	20,947 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,334,985	
Traffic and Safety		$6,660	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$1,341,645	
	Items not Estimated (10%)	$134,165	
	Construction Subtotal	**$1,475,810**	
P.E. Cost	**P.E. Subtotal**	**$118,065**	8%
C.E. Cost	**C.E. Subtotal**	**$147,581**	10%
Right of Way	**Right of Way Subtotal**	$400,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$118,000**		**$118,000**
	Right of Way		**$400,000**		**$400,000**
	Utilities		**$0**		**$0**
	Construction		**$1,476,000**		**$1,476,000**
	C.E.		**$148,000**		**$148,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$11,000**		**$11,000**
	Change Order Contingency	**9.00%**	**$134,000**		**$134,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$2,287,000**	**TOTAL**	**$2,287,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$2,287,000**	**TOTAL**	**$2,287,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 7200 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11. Assumes there will be a dedicated Right-of-Way for the trails western end in La Verkin
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Northern Route Segment 2 Kolob Terrace to SR-9 MP 22.2

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$90,000.00	$90,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	46,549	square yard	$2.00	$93,098.00	
023167020	Roadway Excavation (Plan Quantity)	28,388	cubic yard	$13.00	$369,044.00	
027217020	Untreated Base Course (Plan Quantity)	5,431	cubic yard	$45.00	$244,395.00	
027417050	HMA - 1/2 Inch	2,584	ton	$143.00	$369,512.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	13,874	foot	$6.00	$83,244.00	
Roadway Subtotal					**$1,249,293**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,071	foot	$80.00	$85,691.86	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$85,692**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Northern Route Segment 2 Kolob Terrace to SR-9 MP 22.2

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	222	gallon	$30.00	$6,660.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$6,660**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Northern Route Segment 2 Kolob Terrace to SR-9 MP 22.2

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Northern Route Segment 2 Kolob Terrace to SR-9 MP 22.2

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	4	Acre	$100,000.00	$400,000.00	
			Acre			
Right-of-Way Subtotal					**$400,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: Northern Route Segment 3 SR-9 MP 22.2 to Springdale
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	6.561	miles	34,642 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	20.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,876,026	
Traffic and Safety		$10,980	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$1,887,006	
	Items not Estimated (20%)	$377,401	
	Construction Subtotal	**$2,264,407**	
P.E. Cost	**P.E. Subtotal**	**$181,153**	8%
C.E. Cost	**C.E. Subtotal**	**$226,441**	10%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$181,000**		**$181,000**
	Right of Way		**$0**		**$0**
	Utilities		**$0**		**$0**
	Construction		**$2,264,000**		**$2,264,000**
	C.E.		**$226,000**		**$226,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$17,000**		**$17,000**
	Change Order Contingency	**9.00%**	**$205,000**		**$205,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$2,893,000**	**TOTAL**	**$2,893,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$2,893,000**	**TOTAL**	**$2,893,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11. Assumes there will be a dedicated Right-of-Way for the trails western end in La Verkin
12. Along SR-9 it assumed the trail can be constructed within the existing Right-of-Way
13. For portion along SR-9 items not estimated is set at 20% to account for the potential need to provide barrier for seperation from the road
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Northern Route Segment 3 SR-9 MP 22.2 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$137,000.00	$137,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	76,982	square yard	$2.00	$153,964.00	
023167020	Roadway Excavation (Plan Quantity)	32,932	cubic yard	$13.00	$428,116.00	
027217020	Untreated Base Course (Plan Quantity)	8,982	cubic yard	$45.00	$404,190.00	
027417050	HMA - 1/2 Inch	4,273	ton	$143.00	$611,039.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$1,734,309**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,771	foot	$80.00	$141,717.15	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$141,717**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Northern Route Segment 3 SR-9 MP 22.2 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	366	gallon	$30.00	$10,980.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$10,980**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Northern Route Segment 3 SR-9 MP 22.2 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Northern Route Segment 3 SR-9 MP 22.2 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	0	Acre	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: Northern Route Combined
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	18.658	miles	98,515 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	13.3%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$5,569,349	
Traffic and Safety		$31,260	
Structures		$275,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$5,875,609	
	Items not Estimated (13%)	$778,518	
	Construction Subtotal	**$6,654,127**	
P.E. Cost	**P.E. Subtotal**	**$532,330**	8%
C.E. Cost	**C.E. Subtotal**	**$665,413**	10%
Right of Way	**Right of Way Subtotal**	$600,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$532,000**		**$532,000**
	Right of Way		**$600,000**		**$600,000**
	Utilities		**$0**		**$0**
	Construction		**$6,654,000**		**$6,654,000**
	C.E.		**$665,000**		**$665,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$50,000**		**$50,000**
	Change Order Contingency	**9.00%**	**$603,000**		**$603,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$9,104,000**	**TOTAL**	**$9,104,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$9,104,000**	**TOTAL**	**$9,104,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11. Assumes there will be a dedicated Right-of-Way for the trails western end in La Verkin
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Northern Route Combined

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$400,000.00	$400,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	218,923	square yard	$2.00	$437,846.00	
023167020	Roadway Excavation (Plan Quantity)	102,126	cubic yard	$13.00	$1,327,638.00	
027217020	Untreated Base Course (Plan Quantity)	25,541	cubic yard	$45.00	$1,149,345.00	
027417050	HMA - 1/2 Inch	12,151	ton	$143.00	$1,737,593.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	18,985	foot	$6.00	$113,910.00	
Roadway Subtotal					**$5,166,332**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	5,038	foot	$80.00	$403,016.56	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$403,017**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Northern Route Combined

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	1,042	gallon	$30.00	$31,260.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$31,260**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Northern Route Combined

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump	$275,000.00	$275,000.00	Assumed 10 x 10 x 70'
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$275,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Northern Route Combined

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	6	Acre	$100,000.00	$600,000.00	
			Acre			
Right-of-Way Subtotal					**$600,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	4.447	miles	23,479 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,410,652	
Traffic and Safety		$7,440	
Structures		$2,073,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$3,491,092	
	Items not Estimated (10%)	$349,109	
	Construction Subtotal	**$3,840,201**	
P.E. Cost	**P.E. Subtotal**	**$307,216**	8%
C.E. Cost	**C.E. Subtotal**	**$384,020**	10%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)		2019		2019	
P.E.			**$307,000**		**$307,000**
Right of Way			**$0**		**$0**
Utilities			**$0**		**$0**
Construction			**$3,840,000**		**$3,840,000**
C.E.			**$384,000**		**$384,000**
Incentives			**$0**		**$0**
Aesthetics	**0.75%**		**$29,000**		**$29,000**
Change Order Contingency	**9.00%**		**$348,000**		**$348,000**
UDOT Oversight			**$0**		**$0**
Miscellaneous			**$0**		**$0**
		TOTAL	**$4,908,000**	**TOTAL**	**$4,908,000**

PROPOSED COMMISSION REQUEST		**TOTAL**	**$4,908,000**	**TOTAL**	**$4,908,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$232,000.00	$232,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	52,176	square yard	$2.00	$104,352.00	
023167020	Roadway Excavation (Plan Quantity)	22,320	cubic yard	$13.00	$290,160.00	
027217020	Untreated Base Course (Plan Quantity)	6,088	cubic yard	$45.00	$273,960.00	
027417050	HMA - 1/2 Inch	2,896	ton	$143.00	$414,128.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$1,314,600**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,201	foot	$80.00	$96,052.06	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$96,052**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	248	gallon	$30.00	$7,440.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$7,440**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1	190	ft	$3,000.00	$570,000.00	
	Ped Bridge 2	175	ft	$3,000.00	$525,000.00	
	Ped Bridge 3	240	ft	$3,000.00	$720,000.00	
	Bridge Abutments	3	each	$86,000.00	$258,000.00	
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$2,073,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	0	Acre	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 2 Southern Route to Grafton
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	8.232	miles	43,467 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$2,778,903	
Traffic and Safety		$13,920	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$2,792,823	
	Items not Estimated (10%)	$279,282	
	Construction Subtotal	**$3,072,105**	
P.E. Cost	**P.E. Subtotal**	**$245,768**	8%
C.E. Cost	**C.E. Subtotal**	**$307,211**	10%
Right of Way	**Right of Way Subtotal**	$1,514,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$246,000**		**$246,000**
	Right of Way		**$1,514,000**		**$1,514,000**
	Utilities		**$0**		**$0**
	Construction		**$3,072,000**		**$3,072,000**
	C.E.		**$307,000**		**$307,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$23,000**		**$23,000**
	Change Order Contingency	**9.00%**	**$279,000**		**$279,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$5,441,000**	**TOTAL**	**$5,441,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$5,441,000**	**TOTAL**	**$5,441,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 2 Southern Route to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$185,000.00	$185,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	96,594	square yard	$2.00	$193,188.00	
023167020	Roadway Excavation (Plan Quantity)	41,321	cubic yard	$13.00	$537,173.00	
027217020	Untreated Base Course (Plan Quantity)	11,270	cubic yard	$45.00	$507,150.00	
027417050	HMA - 1/2 Inch	5,361	ton	$143.00	$766,623.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	68,658	foot	$6.00	$411,948.00	
Roadway Subtotal					**$2,601,082**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	2,223	foot	$80.00	$177,821.33	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$177,821**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 2 Southern Route to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	464	gallon	$30.00	$13,920.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$13,920**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 2 Southern Route to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 2 Southern Route to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	2	Acre	$7,000.00	$14,000.00	
	Area's with higher development potential	15	Acre	$100,000.00	$1,500,000.00	
			Acre			
Right-of-Way Subtotal					**$1,514,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	3.998	miles	21,110 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,271,383	
Traffic and Safety		$6,720	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$1,278,103	
	Items not Estimated (10%)	$127,810	
	Construction Subtotal	**$1,405,913**	
P.E. Cost	**P.E. Subtotal**	**$112,473**	8%
C.E. Cost	**C.E. Subtotal**	**$140,591**	10%
Right of Way	**Right of Way Subtotal**	$500,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$112,000**		**$112,000**
	Right of Way		**$500,000**		**$500,000**
	Utilities		**$0**		**$0**
	Construction		**$1,406,000**		**$1,406,000**
	C.E.		**$141,000**		**$141,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$11,000**		**$11,000**
	Change Order Contingency	**9.00%**	**$128,000**		**$128,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$2,298,000**	**TOTAL**	**$2,298,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$2,298,000**	**TOTAL**	**$2,298,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$85,000.00	$85,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	46,911	square yard	$2.00	$93,822.00	
023167020	Roadway Excavation (Plan Quantity)	20,068	cubic yard	$13.00	$260,884.00	
027217020	Untreated Base Course (Plan Quantity)	5,473	cubic yard	$45.00	$246,285.00	
027417050	HMA - 1/2 Inch	2,604	ton	$143.00	$372,372.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	21,110	foot	$6.00	$126,660.00	
Roadway Subtotal					**$1,185,023**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,079	foot	$80.00	$86,359.62	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$86,360**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	224	gallon	$30.00	$6,720.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$6,720**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	5	Acre	$100,000.00	$500,000.00	
			Acre			
Right-of-Way Subtotal					**$500,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	0.764	miles	4,033 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	16.0%		
Construction Engineering (% of Construction + Incentives) =	16.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$222,548	
Traffic and Safety		$1,320	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$223,868	
	Items not Estimated (10%)	$22,387	
	Construction Subtotal	**$246,255**	
P.E. Cost	**P.E. Subtotal**	**$39,401**	16%
C.E. Cost	**C.E. Subtotal**	**$39,401**	16%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$39,000**		**$39,000**
	Right of Way		**$0**		**$0**
	Utilities		**$0**		**$0**
	Construction		**$246,000**		**$246,000**
	C.E.		**$39,000**		**$39,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$2,000**		**$2,000**
	Change Order Contingency	**9.00%**	**$22,000**		**$22,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$348,000**	**TOTAL**	**$348,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$348,000**	**TOTAL**	**$348,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$20,000.00	$20,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	8,962	square yard	$2.00	$17,924.00	
023167020	Roadway Excavation (Plan Quantity)	3,834	cubic yard	$13.00	$49,842.00	
027217020	Untreated Base Course (Plan Quantity)	1,046	cubic yard	$45.00	$47,070.00	
027417050	HMA - 1/2 Inch	498	ton	$143.00	$71,214.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$206,050**	
Drainage			25%			
023737010	Loose Riprap		25%			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	206	foot	$80.00	$16,498.23	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$16,498**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	44	gallon	$30.00	$1,320.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
			25%			
Signals			25%			
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$1,320**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	25%			
028917265	Remove Overhead Sign	1	25%			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	25%	$7,000.00	$0.00	
	Area's with higher development potential	0	25%	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route

Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	17.441	miles	92,090 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$5,679,300	
Traffic and Safety		$29,400	
Structures		$2,073,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$7,781,700	
	Items not Estimated (10%)	$778,170	
	Construction Subtotal	**$8,559,870**	
P.E. Cost	**P.E. Subtotal**	**$684,790**	8%
C.E. Cost	**C.E. Subtotal**	**$855,987**	10%
Right of Way	**Right of Way Subtotal**	$2,014,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$685,000**		**$685,000**
	Right of Way		**$2,014,000**		**$2,014,000**
	Utilities		**$0**		**$0**
	Construction		**$8,560,000**		**$8,560,000**
	C.E.		**$856,000**		**$856,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$64,000**		**$64,000**
	Change Order Contingency	**9.00%**	**$776,000**		**$776,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$12,955,000**	**TOTAL**	**$12,955,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$12,955,000**	**TOTAL**	**$12,955,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$518,000.00	$518,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	204,644	square yard	$2.00	$409,288.00	
023167020	Roadway Excavation (Plan Quantity)	87,543	cubic yard	$13.00	$1,138,059.00	
027217020	Untreated Base Course (Plan Quantity)	23,876	cubic yard	$45.00	$1,074,420.00	
027417050	HMA - 1/2 Inch	11,358	ton	$143.00	$1,624,194.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	89,768	foot	$6.00	$538,608.00	
Roadway Subtotal					**$5,302,569**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	4,709	foot	$80.00	$376,731.23	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$376,731**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	980	gallon	$30.00	$29,400.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$29,400**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1	190	ft	$3,000.00	$570,000.00	
	Ped Bridge 2	175	ft	$3,000.00	$525,000.00	
	Ped Bridge 3	240	ft	$3,000.00	$720,000.00	
	Bridge Abutments	3	each	$86,000.00	$258,000.00	
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$2,073,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	2	Acre	$7,000.00	$14,000.00	
	Area's with higher development potential	20	Acre	$100,000.00	$2,000,000.00	
			Acre			
Right-of-Way Subtotal					**$2,014,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	4.447	miles	23,479 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,410,652	
Traffic and Safety		$7,440	
Structures		$2,073,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$3,491,092	
	Items not Estimated (10%)	$349,109	
	Construction Subtotal	**$3,840,201**	
P.E. Cost	**P.E. Subtotal**	**$307,216**	8%
C.E. Cost	**C.E. Subtotal**	**$384,020**	10%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)		2019		2019	
P.E.			**$307,000**		**$307,000**
Right of Way			**$0**		**$0**
Utilities			**$0**		**$0**
Construction			**$3,840,000**		**$3,840,000**
C.E.			**$384,000**		**$384,000**
Incentives			**$0**		**$0**
Aesthetics	**0.75%**		**$29,000**		**$29,000**
Change Order Contingency	**9.00%**		**$348,000**		**$348,000**
UDOT Oversight			**$0**		**$0**
Miscellaneous			**$0**		**$0**
		TOTAL	**$4,908,000**	**TOTAL**	**$4,908,000**

PROPOSED COMMISSION REQUEST		**TOTAL**	**$4,908,000**	**TOTAL**	**$4,908,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$232,000.00	$232,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	52,176	square yard	$2.00	$104,352.00	
023167020	Roadway Excavation (Plan Quantity)	22,320	cubic yard	$13.00	$290,160.00	
027217020	Untreated Base Course (Plan Quantity)	6,088	cubic yard	$45.00	$273,960.00	
027417050	HMA - 1/2 Inch	2,896	ton	$143.00	$414,128.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$1,314,600**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,201	foot	$80.00	$96,052.06	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$96,052**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	248	gallon	$30.00	$7,440.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$7,440**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1	190	ft	$3,000.00	$570,000.00	
	Ped Bridge 2	175	ft	$3,000.00	$525,000.00	
	Ped Bridge 3	240	ft	$3,000.00	$720,000.00	
	Bridge Abutments	3	each	$86,000.00	$258,000.00	
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$2,073,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 1 Hot Springs to Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	0	Acre	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2a Diversion to East of Virgin
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	7.533	miles	39,774 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0 yrs for inflation	
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$2,139,631	
Traffic and Safety		$12,600	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$2,152,231	
	Items not Estimated (10%)	$215,223	
	Construction Subtotal	**$2,367,454**	
P.E. Cost	**P.E. Subtotal**	**$189,396**	8%
C.E. Cost	**C.E. Subtotal**	**$236,745**	10%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$189,000**		**$189,000**
	Right of Way		**$0**		**$0**
	Utilities		**$0**		**$0**
	Construction		**$2,367,000**		**$2,367,000**
	C.E.		**$237,000**		**$237,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$18,000**		**$18,000**
	Change Order Contingency	**9.00%**	**$215,000**		**$215,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$3,026,000**	**TOTAL**	**$3,026,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$3,026,000**	**TOTAL**	**$3,026,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
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14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2a Diversion to East of Virgin

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$143,000.00	$143,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	88,388	square yard	$2.00	$176,776.00	
023167020	Roadway Excavation (Plan Quantity)	37,811	cubic yard	$13.00	$491,543.00	
027217020	Untreated Base Course (Plan Quantity)	10,312	cubic yard	$45.00	$464,040.00	
027417050	HMA - 1/2 Inch	4,906	ton	$143.00	$701,558.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$1,976,917**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	2,034	foot	$80.00	$162,713.66	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$162,714**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2a Diversion to East of Virgin

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	420	gallon	$30.00	$12,600.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$12,600**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2a Diversion to East of Virgin

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2a Diversion to East of Virgin

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	0	Acre	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2b East of Virgin to Grafton
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	4.109	miles	21,695 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,167,080	
Traffic and Safety		$6,960	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$1,174,040	
	Items not Estimated (10%)	$117,404	
	Construction Subtotal	**$1,291,444**	
P.E. Cost	**P.E. Subtotal**	**$103,316**	8%
C.E. Cost	**C.E. Subtotal**	**$129,144**	10%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$103,000**		**$103,000**
	Right of Way		**$0**		**$0**
	Utilities		**$0**		**$0**
	Construction		**$1,291,000**		**$1,291,000**
	C.E.		**$129,000**		**$129,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$10,000**		**$10,000**
	Change Order Contingency	**9.00%**	**$117,000**		**$117,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$1,650,000**	**TOTAL**	**$1,650,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$1,650,000**	**TOTAL**	**$1,650,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2b East of Virgin to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$78,000.00	$78,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	48,211	square yard	$2.00	$96,422.00	
023167020	Roadway Excavation (Plan Quantity)	20,624	cubic yard	$13.00	$268,112.00	
027217020	Untreated Base Course (Plan Quantity)	5,625	cubic yard	$45.00	$253,125.00	
027417050	HMA - 1/2 Inch	2,676	ton	$143.00	$382,668.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$1,078,327**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,109	foot	$80.00	$88,752.59	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$88,753**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2b East of Virgin to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	232	gallon	$30.00	$6,960.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$6,960**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2b East of Virgin to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Southern Route Segment 2b East of Virgin to Grafton

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	0	Acre	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	3.998	miles	21,110 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$1,271,383	
Traffic and Safety		$6,720	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$1,278,103	
	Items not Estimated (10%)	$127,810	
	Construction Subtotal	**$1,405,913**	
P.E. Cost	**P.E. Subtotal**	**$112,473**	8%
C.E. Cost	**C.E. Subtotal**	**$140,591**	10%
Right of Way	**Right of Way Subtotal**	$500,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$112,000**		**$112,000**
	Right of Way		**$500,000**		**$500,000**
	Utilities		**$0**		**$0**
	Construction		**$1,406,000**		**$1,406,000**
	C.E.		**$141,000**		**$141,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$11,000**		**$11,000**
	Change Order Contingency	**9.00%**	**$128,000**		**$128,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$2,298,000**	**TOTAL**	**$2,298,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$2,298,000**	**TOTAL**	**$2,298,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$85,000.00	$85,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	46,911	square yard	$2.00	$93,822.00	
023167020	Roadway Excavation (Plan Quantity)	20,068	cubic yard	$13.00	$260,884.00	
027217020	Untreated Base Course (Plan Quantity)	5,473	cubic yard	$45.00	$246,285.00	
027417050	HMA - 1/2 Inch	2,604	ton	$143.00	$372,372.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	21,110	foot	$6.00	$126,660.00	
Roadway Subtotal					**$1,185,023**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	1,079	foot	$80.00	$86,359.62	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$86,360**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	224	gallon	$30.00	$6,720.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$6,720**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 3 Grafton to SR-9

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	5	Acre	$100,000.00	$500,000.00	
			Acre			
Right-of-Way Subtotal					**$500,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale
Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	0.764	miles	4,033 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	16.0%		
Construction Engineering (% of Construction + Incentives) =	16.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$222,548	
Traffic and Safety		$1,320	
Structures		$0	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$223,868	
	Items not Estimated (10%)	$22,387	
	Construction Subtotal	**$246,255**	
P.E. Cost	**P.E. Subtotal**	**$39,401**	16%
C.E. Cost	**C.E. Subtotal**	**$39,401**	16%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$39,000**		**$39,000**
	Right of Way		**$0**		**$0**
	Utilities		**$0**		**$0**
	Construction		**$246,000**		**$246,000**
	C.E.		**$39,000**		**$39,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$2,000**		**$2,000**
	Change Order Contingency	**9.00%**	**$22,000**		**$22,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$348,000**	**TOTAL**	**$348,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$348,000**	**TOTAL**	**$348,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$20,000.00	$20,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	8,962	square yard	$2.00	$17,924.00	
023167020	Roadway Excavation (Plan Quantity)	3,834	cubic yard	$13.00	$49,842.00	
027217020	Untreated Base Course (Plan Quantity)	1,046	cubic yard	$45.00	$47,070.00	
027417050	HMA - 1/2 Inch	498	ton	$143.00	$71,214.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$206,050**	
Drainage			25%			
023737010	Loose Riprap		25%			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	206	foot	$80.00	$16,498.23	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$16,498**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	44	gallon	$30.00	$1,320.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
			25%			
Signals			25%			
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$1,320**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	25%			
028917265	Remove Overhead Sign	1	25%			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$0**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: River Route Segment 4 SR-9 to Springdale

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	25%	$7,000.00	$0.00	
	Area's with higher development potential	0	25%	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: Southern Route

Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	20.703	miles	109,312 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0	yrs for inflation
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$6,163,827	
Traffic and Safety		$34,740	
Structures		$2,073,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$8,271,567	
	Items not Estimated (10%)	$827,157	
	Construction Subtotal	**$9,098,724**	
P.E. Cost	**P.E. Subtotal**	**$727,898**	8%
C.E. Cost	**C.E. Subtotal**	**$909,872**	10%
Right of Way	**Right of Way Subtotal**	$500,000	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)			2019		2019
	P.E.		**$728,000**		**$728,000**
	Right of Way		**$500,000**		**$500,000**
	Utilities		**$0**		**$0**
	Construction		**$9,099,000**		**$9,099,000**
	C.E.		**$910,000**		**$910,000**
	Incentives		**$0**		**$0**
	Aesthetics	**0.75%**	**$68,000**		**$68,000**
	Change Order Contingency	**9.00%**	**$825,000**		**$825,000**
	UDOT Oversight		**$0**		**$0**
	Miscellaneous		**$0**		**$0**
		TOTAL	**$12,130,000**	**TOTAL**	**$12,130,000**

PROPOSED COMMISSION REQUEST	**TOTAL**	**$12,130,000**	**TOTAL**	**$12,130,000**

Project Assumptions/Risks

1. Limited Access to SR-9 for delivery of construction materials and equipment (Increased material costs)
2. Right-of-Way in areas with limited development potential (Steep slopes) will be in the range of $5k-10k per acre
3. Right-of-Way in areas with higher development potential will be in the range of $75k-125k per acre
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8. Assumes that Right-of-Way Fence will not be required on BLM, or WCWCD property
9. Assumes a Right-of-Way width of 20 ft through private property will be purchased
10. Assumes a Right-of-Way width of 10 ft along existing local roads
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$550,000.00	$550,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump			Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	242,915	square yard	$2.00	$485,830.00	
023167020	Roadway Excavation (Plan Quantity)	103,914	cubic yard	$13.00	$1,350,882.00	
027217020	Untreated Base Course (Plan Quantity)	28,341	cubic yard	$45.00	$1,275,345.00	
027417050	HMA - 1/2 Inch	13,482	ton	$143.00	$1,927,926.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	21,110	foot	$6.00	$126,660.00	
Roadway Subtotal					**$5,716,643**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	5,590	foot	$80.00	$447,184.04	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$447,184**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	1,158	gallon	$30.00	$34,740.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$34,740**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1	190	ft	$3,000.00	$570,000.00	
	Ped Bridge 2	175	ft	$3,000.00	$525,000.00	
	Ped Bridge 3	240	ft	$3,000.00	$720,000.00	
	Bridge Abutments	3	each	$86,000.00	$258,000.00	
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump			
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$2,073,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: Southern Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	5	Acre	$100,000.00	$500,000.00	
			Acre			
Right-of-Way Subtotal					**$500,000**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	

PIN: PROJECT # PROJECT NAME: SR-9 Route

Cost Estimate - Concept Level

Prepared By: Lochner **Date** 12/3/2019

Proposed Project Scope:

Approximate Route Reference Mile Post (BEGIN) =		(END) =	
Project Length =	16.126	miles	85,147 ft
Current FY Year (July-June) =	2019		
Assumed Construction FY Year =	2019		
Construction Items Inflation Factor =	1.00	0 yrs for inflation	
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.25%		
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%		
Items not Estimated (% of Construction) =	20.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items		Cost	Remarks
Public Information Services		$0	
Roadway and Drainage		$4,710,211	
Traffic and Safety		$26,940	
Structures		$275,000	
Environmental Mitigation		$0	
ITS		$0	
	Subtotal	$5,012,151	
	Items not Estimated (20%)	$1,002,430	
	Construction Subtotal	**$6,014,581**	
P.E. Cost	**P.E. Subtotal**	**$481,166**	8%
C.E. Cost	**C.E. Subtotal**	**$601,458**	10%
Right of Way	**Right of Way Subtotal**	$0	
Utilities	**Utilities Subtotal**	$0	
Incentives	**Incentives Subtotal**	$0	
Miscellaneous	**Miscellaneous Subtotal**	**$0**	

Cost Estimate (ePM screen 505)		2019		2019	
P.E.			**$481,000**		**$481,000**
Right of Way			**$0**		**$0**
Utilities			**$0**		**$0**
Construction			**$6,015,000**		**$6,015,000**
C.E.			**$601,000**		**$601,000**
Incentives			**$0**		**$0**
Aesthetics	**0.75%**		**$45,000**		**$45,000**
Change Order Contingency	**9.00%**		**$545,000**		**$545,000**
UDOT Oversight			**$0**		**$0**
Miscellaneous			**$0**		**$0**
		TOTAL	**$7,687,000**	**TOTAL**	**$7,687,000**

PROPOSED COMMISSION REQUEST		**TOTAL**	**$7,687,000**	**TOTAL**	**$7,687,000**

Project Assumptions/Risks

1. Items not estimated is set at 20% to account for the potential need to provide barrier for seperation from the road
2. Assumes there will be a dedicated Right-of-Way for the trails western end in La Verkin
3. Along SR-9 its assumed the trail can be constructed within the existing Right-of-Way
4. No analysis of drainage needs has been performed this estimate assumes 15 crossings per mile
5. Assumes an average of 5000 cu yd. of excavation per mile
6. Assumes 10' wide paved path with 2' shoulders.
7. Assumes trail can be constructed without retaining walls
8.
9.
10.
11.
12.
13.
14.

Roadway and Drainage

PIN: PROJECT # PROJECT NAME: SR-9 Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
015017010	Mobilization	1	lump	$370,000.00	$370,000.00	Usually 7-10% of construction
015547005	Traffic Control	1	lump	$150,000.00	$150,000.00	Usually 3-5% of construction
029127050	Strip, Stockpile, and Spread Topsoil (Plan Quantity)	189,216	square yard	$2.00	$378,432.00	
023167020	Roadway Excavation (Plan Quantity)	80,943	cubic yard	$13.00	$1,052,259.00	
027217020	Untreated Base Course (Plan Quantity)	22,076	cubic yard	$45.00	$993,420.00	
027417050	HMA - 1/2 Inch	10,502	ton	$135.00	$1,417,770.00	
028227030	Right-of-Way Fence, Type D (Metal Post)	0	foot	$6.00	$0.00	
Roadway Subtotal					**$4,361,881**	
Drainage						
023737010	Loose Riprap		cubic yard			
026107386	Drainage Pipe - 18 inch, Smooth, Leak-Resistant	4,354	foot	$80.00	$348,329.62	assumed 15 crossing per mile
026107388	Drainage Pipe - 24 inch, Smooth, Leak-Resistant		foot			
026107391	Drainage Pipe - 36 inch, Smooth, Leak-Resistant		foot			
026337130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		each			
Drainage Subtotal					**$348,330**	
PI						
015407010	Public Information Services	1	lump		**$0**	Usually 0.25% of construction

Traffic, Safety & ITS

PIN: PROJECT # PROJECT NAME: SR-9 Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
027657050	Pavement Marking Paint	898	gallon	$30.00	$26,940.00	
027687105	Pavement Message (Preformed Thermoplastic)		each			
027687110	Pavement Message (Preformed Thermoplastic Stop Line, Crosswalks - 12 inch)		each			
028417070	Midwest 31 Inch W-Beam Guardrail 78 inch Wood Post		foot			
028437036	End Treatment Type G (MASH)		each			
028447010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		foot			
028917028	Sign Type A-1, 12 Inch X 36 Inch		each			
028917270	Remove Sign Less Than 20 Square Feet		each			
028917285	Relocate Sign Less Than 20 Square Feet		each			
Signals						
02892701D	Traffic Signal System	1	lump			
Lighting						
16525701D	Highway Lighting System	1	lump			
Traffic and Safety Subtotal					**$26,940**	
ITS						
135537035	1D Conduit		foot			
135567010	Closed Circuit Television (CCTV) Assembly System	1	Lump			
ITS Subtotal					**$0**	

Structures

PIN: PROJECT # PROJECT NAME: SR-9 Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Bridges						
	Ped Bridge 1		ft	$3,000.00		
	Ped Bridge 2		ft	$3,000.00		
	Ped Bridge 3		ft	$3,000.00		
	Bridge Abutments		each	$86,000.00		
Walls						
	Retaining Wall		sq ft			Assumed LxH (wall area)
Sign Structures						
	Overhead Sign Structure	1	Lump			
028917265	Remove Overhead Sign	1	Lump			
	Remove Existing Overhead Sign Structure	1	Lump			
Hydraulics						
	Extend Box Culvert		ft			
	New Box Culvert	1	Lump	$275,000.00	$275,000.00	Assumed 10 x 10 x 70'
Geotech						
	Geotech Report	1	Lump			
	Drilling	1	Lump			
Structures Subtotal					**$275,000**	

Utilities, Right of Way, and Incentives

PIN: PROJECT # PROJECT NAME: SR-9 Route

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water/Irrigation/Sewer Lines	1	Lump			
	Relocate Gas Line	1	Lump			
	Relocate Power Line	1	Lump			
	Relocate Fiber Optic	1	Lump			
	Relocate Phone	1	Lump			
Utilities Subtotal					**$0**	
Right-of-way						
	Steep Slopes Hillsides	0	Acre	$7,000.00	$0.00	
	Area's with higher development potential	0	Acre	$100,000.00	$0.00	
			Acre			
Right-of-Way Subtotal					**$0**	
Incentives						
00007601*	Pavement Smoothness Incentive	1	lump			
00007602*	Hot Mix Asphalt (HMA) Incentive	1	lump			
00007603*	Stone Matrix Asphalt (SMA) Incentive	1	lump			
00007604*	Open Graded Surface Course Incentive	1	lump			
00007605*	Bonded Wearing Course Incentive	1	lump			
00007606*	Early Completion - Time	0	calendar day			
00007607*	Lane Rental Incentive	0	Hours			
00000608*	Miscellaneous Incentive	1	Lump			
Incentives Subtotal					**$0**	