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EXECUTIVE SUMMARY

The Dry Creek Greenway Multi-Use Trail consists of a 4.25 mile multi-use pathway between the existing Saugstad/Royer Park trail, near Darling Way/Riverside Avenue on the west, to the City limits, just past the Old Auburn Road/South Cirby Way intersection on the east. The trail will serve as an alternative to using busy City streets, as well as an important recreational amenity for residents and will ultimately provide an important regional connection for the greater South Placer/Sacramento area.

During the feasibility study phase of the project completed in 2009, a recommended alignment was developed for the majority of the trail. There were two segments of the trail where the Stakeholder Working Group did not reach a consensus on a recommended alignment. These were referred to as Segment #1 and Segment #5 in the feasibility study.

Summary of 2013 Updated Feasibility Analysis

Each of the alignment options were evaluated using a based on criteria developed during the Feasibility Study Phase of this project, in conjunction with the Stakeholders Representative Group, and based on the ability of each option to meet the project goals and objectives as well as the selected criteria. The matrix was used to compare benefits, constraints, advantages and disadvantages of each option.

Key Findings

Based on the performance of the options as measured against the established criteria, the key findings of the evaluation are as follows:

➤ *Segment 1:*

- **Preliminary Hydraulic Analysis:** None of the options will adversely affect the water surface elevation (WSE) for the 100-year design storm.
- **Biological Resources:**
 - Option 1A will result in substantial native oak tree removal and greater effects on the riparian woodland habitat that supports anadromous fish habitat of Cirby and Dry Creek compared to Options 1B and 1C.
 - Options 1B and 1C are in close proximity to elderberry shrubs (that serve as habitat for the Valley Elderberry Longhorn Beetle) compared to Option 1A.
 - The relative effect of Option 1A upon biological resources is anticipated to be greater than Options 1B and 1C.
- **Construction Costs:** Option 1A has a higher construction cost than the other two options.
- **Right of way:** Option 1C requires the least property acquisition.
- **Access and Connectivity:** Option 1C provides a continuous off-street path for trail users. The other options include a circuitous alignment across Darling Way Bridge.
- **Community:** Option 1C is located directly adjacent to residential properties along Hernandez Lane.
- **Constructability:**

- A portion of Option 1C is located in an extremely confined area between residential property boundaries and the steep creek bank.
- Portions of Option 1A will be challenging to construct due to the steep terrain.
- Construction of Option 1B is anticipated to be less challenging than Option 1A.
- **Aesthetics/Compatibility:**
 - Options 1A includes one bridge whose soffit will be located 3 ft above the 200-yr WSE. This bridge and approach fills will be visible from properties located on the west side of Dry Creek and may be partially visible from property owners along Hernandez Lane and Machado Way.
 - Options 1B and 1C include two bridges whose soffits will be located 3 ft above the 200-yr WSE. These bridges and approach fills will be visible from properties located on the west side of Dry Creek and less visible from the majority of property owners along Hernandez Lane and Machado Way.
- **Segment 5:**
 - **Preliminary Hydraulic Analysis:**
 - None of the options will adversely affect the WSE for the 100-year design storm.
 - Options 5B and 5C will include a bridge located within the Floodway and will, therefore, require mitigation for any impact to the WSE.
 - **Biological Resources:**
 - Option 5A will have greater effects upon oak woodland habitat due to tree removal and grading that will be required along the unimproved southern bank.
 - Options 5B and 5C would potentially affect a greater area of an existing planting mitigation site.
 - **Construction Costs:** Construction costs for Options 5B and 5C will be less than Option 5A, because the existing maintenance bench will be utilized and it will not include the cost of Bridge #14.
 - **Right of way:** Option 5B would require the most right of way acquisition compared to Option 5C and 5A.
 - **Access and Connectivity:**
 - Portions of Options 5B and 5C will be located at or below the 2-year WSE.
 - Option 5A will provide full access to Sunrise Ave, Option 5B will provide partial access, and Option 5C will not provide access.
 - Option 5C will not be readily accessible from Sunrise Ave raising safety concerns.
 - **Community:** Portions of Options 5A and 5B will be located in close proximity to commercial properties.
 - **Constructability:**

- Construction of Option 5A will be more challenging than the others Option 5B and 5C.
- **Aesthetics/Compatibility:**
 - Option 5A will include Bridge #14, which will be visible from adjacent residential and commercial properties.
 - The portions of Options 5A and 5B located in close proximity to commercial properties will likely require fencing or screening.

Project Development Team Conclusions

Based upon the results of the evaluation, the project development team concludes that the Draft EIR incorporate a proposed alignment and alternatives as follows:

- Segment 1:
 - Option 1B – proposed alignment.
 - Option 1C – this option is to be carried forward as an alternative alignment in the environmental document.
 - Option 1A – this option is to be carried forward as an alternative alignment in the environmental document.
- Segment 5:
 - Option 5B - proposed alignment.
 - Option 5A – this option is to be carried forward as an alternative alignment in the environmental document.
 - Option 5C – this option is considered and rejected as a viable alternative since it does not meet the objectives of the project.

1.0 INTRODUCTION

The Dry Creek Greenway Multi-Use Trail is a proposed 4.25 mile multi-use pathway extending from the existing Saugstad/Royer Park trail near Darling Way/Riverside Avenue, eastward to the City limits just past the Old Auburn Road/South Cirby Way intersection (see Appendix A for Vicinity Map). The Dry Creek Greenway Planning & Feasibility Study (DCGPFS) analyzed the potential for development of a paved pathway along this alignment using a community-based public participation planning approach. In March 2010, the City Council accepted the DCGPFS and directed staff to conduct more detailed feasibility analysis for two segments of the pathway, additional public outreach, environmental review and preliminary engineering.

The purpose of this report is to present further analysis of the two unresolved segments of trail, and provide the City with the information it needs to identify a preferred route within each segment. The preferred alignment will become the proposed project that will undergo environmental review for California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) compliance.

2.0 BACKGROUND

2.1 Bicycle Master Plan

The City of Roseville's (City) 2008 Bicycle Master Plan (BMP)² includes a plan for development of over 28 miles of Class I trails in Roseville, including the Dry Creek Greenway Multi-Use Trail. This project is identified as a priority project in the BMP because of its potential to provide a safe, comfortable, and convenient bicycle route in an area of the City with limited options for bicyclists.

2.2 Dry Creek Greenway Planning and Feasibility Study

The City prepared the Dry Creek Greenway Planning & Feasibility Study (DCGPFS) in 2009. The study outlines the existing conditions, opportunities and constraints, alignment options, evaluation criteria and a recommended alignment for a paved path from Riverside Avenue and Darling Way to the City limits just south of Old Auburn Road. The study also included design treatment options, cost estimates, and a phasing plan.

Public Participation: During the feasibility study phase of this project, the City used a community based planning approach with an emphasis on public outreach. The City convened a group of Stakeholders, known as the Stakeholders Representatives Group (SRG), to represent a broad array of community interests. The purpose of this effort was to develop a locally preferred alternative for trail routing and road crossings that fit within the context of the surrounding neighborhoods and adequately addressed the challenges of trail development.

The public outreach efforts included:

- Mass mailing to over 900 property owners along the open space corridor
- An online public opinion survey completed by 216 people
- Two public open houses
- Six Stakeholder Representatives Group meetings
- Field walks with interested groups and persons, including the Stakeholder Representatives Group and neighborhood associations

- Attendance at several neighborhood meetings

The Stakeholders' Representative Group (SRG) selected a preferred alignment presented based on criteria that included consideration of property owners, path users, public safety, environmental concerns and municipal operations. However, consensus could not be reached for two segments, namely:

- Segment 1 (Hillcrest): This segment is the first segment of the proposed trail between the end of the Saugstad/Royer trail at Darling Way to the area south of Machado Lane, before the I-80 underpass (see Appendix A for Location Map).
- Segment 5 (Sunrise Avenue): This segment is located in the Cirby Side neighborhood and begins near the Cirby Creek/Linda Creek confluence to just east of the Sunrise Ave bridge near the Meadow Gate connection.

The City Council considered and accepted the DCGPFS at a meeting in March 2010. At this meeting, they directed City staff to proceed with more detailed feasibility analysis, additional public outreach, environmental review and preliminary engineering.

3.0 PURPOSE AND NEED

During development of the 2009 Dry Creek Greenway Planning & Feasibility Study, the Stakeholders Representative Group (SRG) drafted the project Purpose and Needs Statement as follows:

“The Dry Creek Greenway multi-use path is envisioned as a paved, off-street path along Dry, Cirby, and Linda Creeks that will provide residents a place for bicycling, walking, running, and dog-walking, for fun, education, recreation, health, and transportation.

The Dry Creek Greenway pathway is a vital component of the City of Roseville Bikeway and Trail system because it will provide a safe, comfortable, convenient, and highly connected bike route as an alternative to using City streets in an area of the City that is underserved by bicycle facilities. The Dry Creek Greenway path will connect schools and businesses to residential neighborhoods. The path will also provide important regional connections as it is part of a series of existing and planned paths that will form a loop around the greater South Placer/Sacramento area.

Challenges for the project include neighborhood compatibility, limited availability of right-of-way, roadway crossings, existing utilities, and environmental factors. To address these challenges, the City convened a group of Stakeholders to represent a broad array of community interests. In addition, the City hosted public workshops and other public meetings to give the public an opportunity to provide input. The purpose of this effort was to develop a locally preferred alternative for trail routing and road crossings that adequately addresses the challenges and fits within the context of the neighborhoods.”

The purpose of this updated analysis is to further identify opportunities and constraints, consider additional stakeholder input, and provide a more detailed feasibility analysis for Segments 1 and 5. The Updated Feasibility Study contained herein is drafted in context with the 2009 study's Purpose and Needs Statement.

4.0 CONFIRMATION OF OPPORTUNITIES AND CONSTRAINTS

The 2009 DCGPFS identified opportunities & constraints along the trail study area. These were identified in consultation with the SRG and the broader community as previously described.

The City initiated this Updated Feasibility Study by confirming with the SRG the opportunities and constraints for the project. This included two SRG meetings held on May 29, 2012 and February 27, 2013 at the Maidu Community Center and a field meeting held on August 11, 2012 to review each of the alignment options for Segment 1 (Hillcrest) and Segment 5 (Sunrise). AIM Consulting also completed one-on-one interviews with the SRG representatives.

SRG Meeting (May 29, 2012)

Twenty two stakeholders and community members attended the 7th Stakeholder Representative Group (SRG) Meeting for the Dry Creek Greenway Multi-Use Trail Project.

The City provided the following information at this meeting:

- Background information on the trail including goals and objectives
- Overview of the roles and responsibilities of the SRG (description included at the end of this meeting summary)
- Overview of the public engagement process
- Brief details regarding the proposed project alignment

Attendees at the meeting including the SRG confirmed community values, concerns, support and expectations.

Field Review Meeting (August 11, 2012)

Seventeen stakeholders and community members attended the stakeholder site tour held on August 11, 2012 (SRG Meeting #8).

The site tour allowed the project team to develop a shared understanding of existing conditions, identify site constraints and opportunities and afford the stakeholders an additional forum to discuss their concerns, approval and suggestions.

- **Segment 1 (Hillcrest):** It was noted that both sides of the creek were being considered as options for the trail route. The City confirmed that both sides of the creek are subject to flooding and that the trail will be designed to withstand any seasonal flooding. Concerns were raised regarding the proximity of the trail to adjacent residences as well as the visual aspect of the proposed alternatives with proposed bridges and retaining walls.

The project team noted that the new requirements imposed by the State's Central Valley Flood Protection Plan would require that the bridges be placed 3-feet above the 200-year base flood elevation.

Questions were raised regarding maintenance and security funding for trails within the City. It was noted that while park maintenance funds come from the general fund, funding for trails maintenance is largely from the transportation fund. The project team will continue to evaluate this and it was noted that the Police Department will be invited to speak to the Stakeholder Representative Group.

- **Segment 5 (Sunrise):** It was noted that both sides of the creek were being considered as options for the trail route.

There was discussion regarding the importance of access to Sunrise from a trail users and City perspective. The City identified the City owned property lines, in relationship to the proposed trail alignments, and existing buildings.

A stakeholder noted concern for commercial property values when the trail is so close to buildings. The City noted that a trail can often have a positive effect on property values and can offer tenants a place to walk and enjoy nature during lunch breaks.

There was a discussion regarding trail access and parking locations, it was noted that the City will provide public parking locations along the trail to discourage people parking on private property.

The City noted that preliminary cost estimates were being developed for all options and would be available at the next stakeholder meeting.

Concerns were raised regarding transients on the trail after hours and vandalism that already occurs to properties along Sundown Way, may increase with the proposed trail. The City noted that the trails are closed from 1 hour after sun down to sun rise and that the Roseville Police will have better access to the creek alignment with a paved trail. There was discussion whether the trail could potentially reduce vandalism since legitimate trail users could keep an eye on the area.

SRG Meeting (February 27, 2013)

Twenty one stakeholders and community members attended SRG Meeting #9.

This meeting consisted of the following elements:

- The City provided the results of the technical analysis
- The Stakeholder Representative Group provided feedback to the City
- The City discussed the next steps and upcoming Community Workshop

4.1 Opportunities and Constraints - Segment 1 (Hillcrest)

Darling Way Bridge – The width of the existing bridge is 35 ft which may necessitate widening of the bridge. See Appendix G for Darling Way Bridge options.

Proximity of Properties Adjacent to the Trail – The proximity of property boundaries (residences and businesses) including existing parking lot improvements for businesses adjacent to the trail alignment, restricts the available area for the trail alignment.

Floodplain – The majority of the proposed trail is within the 100 yr floodplain as defined by the FEMA map⁴. Any improvements within the floodplain will require mitigation if these improvements result in a net rise in the 100 yr water surface elevation of more than 0.1 ft.

Floodway – The Central Valley Flood Protection Board requires all bridge structures to have a vertical clearance of 3 ft (freeboard) above the 200 yr storm event within the limits of the floodway.

Topography/Terrain – The existing terrain along the south bank of Cirby Creek (east of the Dry Creek confluence), and on the east bank of Dry Creek is very steep.

Biological Resources – The areas within the limits of this segment include mixed riparian forest, valley oak woodland, annual grassland, several elderberry shrubs (which are habitat for the valley elderberry longhorn beetle, a Federally listed species), and isolated areas of mitigation area plantings (i.e., areas restored as part of prior commitments to mitigation of habitat impacts).

Neighborhood Connection – There is an existing neighborhood connection to the open space from the Hernandez/Machado intersection.

Vacant Commercial Parcels - The vacant commercial properties on Riverside Avenue north of the confluence of Dry and Cirby Creeks provide an opportunity for a trailhead parking lot that is conveniently located in proximity to Interstate 80 from the Riverside Avenue interchange.

4.2 Opportunities and Constraints - Segment 5 (Sunrise)

Sunrise Avenue – Sunrise Avenue is a busy 4-lane arterial. The 2025 General Plan indicates this roadway is to be widened to a 6-lane arterial. An at-grade trail crossing is not feasible in this location. The trail alignment is required to pass underneath Sunrise Ave utilizing the existing bridge overcrossing.

Floodwalls – Flood control improvements were completed along this segment of Linda Creek in the year 2002 and included floodwalls on the north side of Linda Creek, rock slope protection, interlocking cellular confinement system, and mitigation plantings. The 10-14 ft bench (maintenance path) in front of the floodwalls, on the north side of Linda Creek, was constructed at an elevation equivalent to the 2 yr water surface elevation. The bench creates an opportunity for trail development. However, the floodwalls restrict access to Sunrise Avenue, and also restrict the effective width of a trail on the north side of Linda Creek.

Proximity of Properties Adjacent to the Trail – The proximity of property boundaries of businesses and residences adjacent to the trail alignment restricts the available area for the trail alignment without having to acquire right of way.

Floodplain – The proposed trail will be within the 100 yr floodplain as defined by the FEMA map⁴. Any improvements within the floodplain will be considered an adverse effect and requires mitigation if these improvements result in a net rise in the 100 yr water surface elevation of more than 0.1ft.

Floodway – The Central Valley Flood Protection Board requires all bridge structures to have a vertical clearance of 3 ft above the 200 yr storm event within the limits of the floodway. When the clearance requirements above the design floodplain result in the bridge approach fill in the floodway, the clearance requirements may be reduced to the extent that reasonably balances clearance and fill that would obstruct flow, so as to maintain maximum channel capacity. The majority of the trail along this segment will fall within the floodway.

Topography/Terrain – The existing terrain along the southern bank of Linda Creek east of the Cirby Creek confluence toward Sunrise has some fairly steep slopes at specific locations, as shown in Appendix D.

Biological Resources – The areas within the limits of this segment include valley oak woodland, annual grasslands, wetlands, mitigation plantings, and a few elderberry shrubs.

Neighborhood Connection – On the south side of Linda Creek east of Sunrise Avenue, there is an existing neighborhood connection to the open space from Meadow Gate Drive.

5.0 DESCRIPTION OF ALIGNMENT OPTIONS

5.1 Segment 1 - Hillcrest Segment

This segment of the proposed trail extends from the Saugstad/Royer trail at Darling Way to the area south of Machado Lane, before the I-80 undercrossing.

Three trail alignment options were considered for this segment and can be seen in Appendix C – Alignment Options for Segment 1.

➤ Option 1A

This option would begin at the existing terminus of the Saugstad/Royer trail, travel across Darling Way bridge (potentially requiring widening of the bridge) and loop under the bridge on the west side of Dry Creek. The alignment would continue south for approximately 900 ft, crossing Dry Creek via Bridge # 3 to the southern bank of Cirby Creek, from where it would traverse the existing steep slope down to the existing bench located above the 2-year WSE, and continue within the floodplain along the south side of Cirby Creek toward the I-80 undercrossing. Prior to Bridge # 3 (on the north side of Dry Creek), access would be provided to the proposed trail-head parking area at Riverside Avenue and to the future trail extension to Vernon Street.

➤ Option 1B

This option would begin at the existing terminus of the Saugstad/Royer trail, travel across Darling Way bridge (potentially requiring widening of the bridge) and loop under the bridge on the west side of Dry Creek. The alignment would continue south toward the confluence for approximately 700 ft and cross Dry Creek via Bridge # 2, travel along the east side of Dry Creek and Cirby Creek for approximately 400 ft before crossing Cirby Creek via Bridge # 4 to the southern bank of Cirby Creek, from where it would continue within the floodplain along the south side of Cirby Creek toward the I-80 undercrossing. Prior to the Bridge # 2 crossing, access would be provided to the proposed trail head parking area at Riverside Avenue and future trail extension to Vernon Street.

➤ Option 1C

This option would begin just before the existing terminus of the Saugstad/Royer trail, travel under the bridge on the east side of Dry Creek and continue south for approximately 700 ft. A spur to the west would provide access to the proposed trail head parking and future trail extension toward Vernon Street, via Bridge # 2 over Dry Creek. The trail alignment would continue along the east side of Dry Creek and Cirby Creek for approximately 400 ft before crossing Cirby Creek via Bridge # 4 to the southern bank of Cirby Creek, from where it would continue within the floodplain along the south side of Cirby Creek toward the I-80 undercrossing.

5.2 Segment 5 - Sunrise Segment

This segment of the proposed trail extends from the confluence of Cirby and Linda Creeks, west of Sunrise Avenue, to just east of the Meadow Gate Drive connection

Three alignment options were considered for this segment and can be seen in Appendix D – Alignment Options for Segment 5.

➤ Option 5A

This option would begin just south of the confluence of Cirby Creek and Linda Creek and remain on the south side, following the southern bank of Linda Creek within City owned property. The trail would travel eastward and pass beneath Sunrise Avenue Overcrossing. Connecting ramps would provide access to both sides of Sunrise Avenue. The alignment would continue to just east of the existing drainage outfall structure at which point it would cross to the north side of Linda Creek via Bridge #14, before continuing further east toward Oak Ridge Drive.

➤ Option 5B

This option would begin just south of the confluence of Cirby Creek and Linda Creek and cross Linda Creek via Bridge #13 and follow the northern bank of Linda Creek within City owned property. The trail would tie into the existing maintenance path in front of the floodwalls on the north side of Linda Creek and travel eastward beneath Sunrise Avenue overcrossing. A connecting pathway beginning just east of Bridge #13 would follow an alignment to the north of the floodwalls, within private property, providing access to the west side of Sunrise Avenue. The main trail alignment would continue east, using the existing maintenance ramp in the vicinity of the existing drainage outfall structure, before continuing further east toward Oak Ridge Drive.

➤ Option 5C

This option would begin just south of the confluence of Cirby Creek and Linda Creek and cross Linda Creek via Bridge #13 and follow the northern bank of Linda Creek within the City owned property. The trail would tie into the existing maintenance path in front of the floodwalls on the north side of Linda Creek and travel eastward beneath the Sunrise Avenue Overcrossing. The alignment would continue east, using the existing maintenance ramp in the vicinity of the existing drainage outfall structure, before continuing further east toward Oak Ridge Drive. No access will be provided to Sunrise Avenue.

6.0 **UPDATED OPTIONS ANALYSIS**

6.1 Evaluation Criteria

This section includes an analysis of the trail options in relation to established criteria. The evaluation criteria were developed with the original Feasibility Study and in consultation with the SRG. Some of the criteria are subjective (qualitative) and others are tangible (quantitative). The criteria listed in Table 6-1 below are categorized by stakeholders and user groups.

TABLE 6-1: EVALUATION CRITERIA

EVALUATION CRITERIA		
Constituency		Criteria Description
Property Owners	Property owners adjacent near to trail alignment	Compatibility with nearby property
		Parking and traffic
		Right of way – property acquisition
Path Users	Walkers, Runners and Bikers	Transportation system performance – interconnectivity and access points
		Recreation facility performance – several access points and off-street facility
Public Safety	Property Owners and Path Users	Natural surveillance - visibility
		Emergency response – accessibility
Environmental	Flora and Fauna, Property Owners and Path Users	Adverse Biological Effects
		Adverse Visual Impacts (aesthetics)
Municipal Operations	City of Roseville	Utility impacts
		Construction costs
		Maintenance costs
		Floodplain impacts (WSE)
		Constructability

Some evaluation criteria that were considered in the 2009 DCGPFS are not listed in the above matrix. This is because, in these topic areas, no substantive variations between trail alignment options were identified when evaluating the different options. These include:

- Path User Comfort – Minimize exposure to busy roadways
- Environmental Interpretation – natural resource interpretation
- Exposure to Hazards –air pollution
- Consistency with Local Plans – consistency with adopted plans

6.2 Technical Analysis

Each of the alignment options were evaluated using the criteria listed in Table 6-1. To support the evaluation, the Psomas Consulting team conducted additional technical analysis of the alignment options. The technical analysis that the Psomas team conducted include:

6.2.1 *Topographic Surveys*

Existing topography was mapped using LiDAR data. Surveying was also conducted at critical locations to supplement the LiDAR data. Topographic information is shown on the alignment options maps (Appendices C & D). Contour lines that are closer together signify steeper terrain, while contour lines farther apart signify flatter terrain. The survey data are used in the preliminary hydraulic analysis, preliminary engineering plans and layout, and preliminary structural analysis (bridges and retaining walls).

6.2.2 Preliminary Hydraulic Analysis

Psomas has completed a preliminary hydraulic analysis for the project. This analysis was used to identify potential adverse effects to the floodplain from improvements proposed by each alignment option, and in particular bridge and retaining wall structures. The results of this analysis are summarized in Table 6.2 and Appendix K. As shown in Table 6-2, the preliminary analysis concludes that all of the alignment options will not adversely affect the floodplain since the resultant water surface (WSE) elevations rise less than 0.10 feet.

TABLE 6-2: RESULTS OF PRELIMINARY HYDRAULIC ANALYSIS FOR BRIDGE STRUCTURES

Alignment Option #	Net Change in 100 YR Water Surface Elevation (WSE)				
	Bridge 2 ¹	Bridge 3 ¹	Bridge 4 ¹	Bridge 13 ²	Bridge 14 ¹
1A	N/A	0.01	N/A	N/A	N/A
1B	0.08	N/A	0.03	N/A	N/A
1C	0.08	N/A	0.03	N/A	N/A
5A	N/A	N/A	N/A	N/A	0.06
5B	N/A	N/A	N/A	0.06	N/A
5C	N/A	N/A	N/A	0.06	N/A

Notes :

1. Bridge soffit elevation set at 200 yr WSE + 3ft
2. Bridge soffit elevation set at 10 yr WSE

Constructing Bridge 13 with a soffit elevation just above the 10-year storm event does not cause a substantial increase in water surface elevation during any of the storm events modeled, however since the bridge is located within the floodway, any increase in WSE would require mitigation.

6.2.3 Bridge Structures

Psomas has completed a preliminary design for bridge structures. The preliminary designs are used in the hydraulic analysis, visual analysis and cost estimates.

With the exception of Bridge #13, all new bridges are proposed to be pre-fabricated steel truss bridges supported on abutments located outside the floodway. The proposed dimensions of each bridge are shown in Table 6-2 below.

TABLE 6-2: BRIDGE DIMENSIONS

Bridge #	Width (ft)	Span (ft)	Truss Height (ft)	Soffit Elevation	Design Storm + Freeboard
2	16.0	110.0	8.0	135.0+3.0ft	200 yr +3ft
3	16.0	160.0	14.0	135.0+3.0ft	200 yr +3ft
4	16.0	160.0	14.0	135.2+3.0ft	200 yr +3ft
13	16.0	80.0	4.0 ¹	136.4ft	10 yr
14	16.0	100.0	8.0	144.1+3.0ft	200 yr +3ft

Note 1: Concrete barrier for reinforced concrete slab bridge

The pre-fabricated steel bridge structures are proposed to be a weathered steel finish to blend into the natural environment. See Appendix F for renderings of Bridges #2 and #4.

Darling Way Bridge Widening: The existing bridge at Darling Way is a flat slab concrete bridge supported on piles and is 35 ft wide and approximately 130 ft long. For Options 1A and 1B, it is proposed to widen the bridge by 8 ft on the north side to accommodate a 10 ft multi-use pathway and full lane widths across the bridge. The bridge widening would require adding a single row of 3-15” diameter concrete piles matching the existing bent layout. The abutment would be widened and also supported on piles. The existing 6-inch gas line attached to the north side of the bridge would need to be relocated as part of the bridge widening. The existing 12-inch water line, supported on the south side of the bridge may need to be raised to provide better clearance for the path users. Various bridge options are shown in Appendix G. A second option being considered is to restripe the existing bridge to provide two 10 ft travel lanes with 2 ft shoulders, and place a barrier on the north side to separate the 10 ft wide sidewalk/trail from vehicular traffic.

6.2.4 Retaining Wall Structures

Psomas has completed a preliminary design for retaining walls. The preliminary designs are used in the hydraulic analysis, visual analysis and cost estimates .

Several retaining walls are included for the trail alignment options. The potential wall types include gravity walls (reinforced concrete or mechanically stabilized earth walls) and anchored walls (soil nail walls). The type and extent of the proposed walls are shown in Table 6-3 below. This data was used in the evaluation of costs for each option.

Along the steep slopes, south of the Cirby/Dry Creek confluence (for Alt 1A), soil nail walls are considered the most feasible option due to the steepness of the terrain. Access to the site would be gained through the private property above the wall locations. The walls will receive an architectural finish using a concrete facing to blend into the natural environment.

Where the alignments pass beneath existing bridge structures, tie-back retaining walls are proposed. This would maintain the integrity of the existing bridges.

Concrete cut-off walls are proposed on steep cross slopes and where the trail alignment is adjacent to the creek (inboard side) and there is a potential for undermining the trail.

TABLE 6-3: RETAINING WALLS

Alignment Option #	Retaining Wall Type			
	Reinforced Concrete ¹	Tie-Back Retaining Wall ¹	Soil Nail Wall ¹	Concrete Cut-Off Wall
1A	2,190 ft ²	840 ft ²	4,610 ft ²	390 ft ²
1B	2,800 ft ²	840 ft ²	N/A ft ²	390 ft ²
1C	2,890 ft ²	2,690 ft ²	N/A ft ²	1,650 ft ²
5A	5,420 ft ²	560 ft ²	N/A	1,670 ft ²
5B	270 ft ²	N/A	N/A	5,840 ft ²
5C	270 ft ²	N/A	N/A	5,840 ft ²

Note 1: Includes architectural treatment

Depending on the type and location of these walls an architectural facing may be applied to the walls to improve the aesthetic quality of the walls and allow them to blend more naturally into the surrounding environment.

6.2.5 Biological Resources

The Biological Resources Study Report for the Dry Creek Greenway Multi-Use Trail Planning and Feasibility Report (ICF Jones & Stokes 2009) describes the existing condition for biological resources in the study area for the Dry Creek Greenway Multi-use Trail project. Several sensitive biological resources were identified including:

- Riparian woodland communities
- Valley oak woodland and individual native oak trees
- Perennial streams and wetland communities
- Central Valley steelhead and fall-run Chinook salmon
- Federally designated critical habitat for Central Valley steelhead
- Valley elderberry longhorn beetle
- Western pond turtle
- Swainson’s hawk, white-tailed kite, and other nesting birds
- Pallid bat, Yuma myotis, and western red bat
- Compensatory mitigation and restoration sites

For several of the above sensitive biological resources the potential effect would be similar for all alignment options, because the resources are widespread. These include potential effects upon perennial creeks, wetlands, aquatic habitat, individual native trees, nesting birds, and roosting bats. Potential effect upon aquatic habitat would be similar for the alignment options with the exception of Options 1A and 1B. These options could result in greater effect upon aquatic habitat if the Darling Way bridge is widened.

Potential effect upon riparian woodland, oak woodland, habitat for valley elderberry longhorn beetle (elderberry shrubs), upland nesting habitat for northwestern pond turtle, and existing mitigation sites were qualitatively

assessed for differences between the alignment option based on aerial photo interpretation and a reconnaissance field visit. Table 6-4 below summarizes which resources would be affected by each alignment option.

TABLE 6-4: EFFECTS ON SENSITIVE BIOLOGICAL RESOURCES

Alignment Options		Riparian Woodland	Oak Woodland	Elderberry Shrubs (habitat for VELB)	NW Pond Turtle Potential Nesting Habitat	Mitigation Site
Sheet 1	1A	xx	-	x	x	x
	1B	x	x	xx	xx	x
	1C	xx	x	xx	xx	x
Sheet 2	1A	xx	xx	-	-	-
	1B/1C	x	x	x	-	x
Sheet6	5A	-	x	-	x	x
	5B	-	x	-	x	xx
	5C	-	x	-	x	xx
Sheet 7	5A	-	x	-	x	x
	5B	-	-	-	x	xx
	5D	-	-	-	x	xx

Source: Based Updated Feasibility Analysis (Psomas 2012), Biological Resource Study (ICF Jones & Stokes 2009), and reconnaissance site visit in October 2012.
 - =effect upon resource not likely
 x=effect upon resource likely
 xx=effect upon resource likely, greater in magnitude relative to other alignments

On sheet 1, locating the trail on the west side of Dry Creek (Alignment Option 1A) would avoid potential adverse effects to oak woodland and would likely affect fewer elderberry shrubs and a smaller amount of annual grassland that could be used as nesting habitat by pond turtles. Alignment Options 1B, and 1C are very similar in their effect upon biological resources; a slight difference is that Alignment Option 1C may result in a greater effect upon riparian woodlands compared to Alignment Option 1A and 1B.

On sheet 2, Alignment Options 1B, and 1C are identical and cross the creek from east to west. Resources potentially affected include riparian woodland, an elderberry shrub, and a mitigation site. Alignment Option 1A differs in that it follows the west side of the creek and avoids an elderberry shrub and a mitigation site, however has substantial effect upon riparian woodland and oak woodland habitat.

On sheet 6, the Alignment Option 5A would have a greater effect upon oak woodland habitat. Alignments 5B and 5C would potentially affect a greater area of an existing mitigation site, whereas Alignment 5A would affect a smaller portion of the site.

Likewise, on sheet 7 Alignment Options 5B and 5C would potentially affect a greater area of an existing mitigation site than Alignment Option 5A.

6.2.6 Visual Assessment

Portions of the trail alignments are visible from public and private viewpoints. Private viewpoints include residences and businesses that are adjacent to the trail. Public viewpoints include local streets. Construction of new project elements, including bridges, retaining walls, and the path could modify viewsheds. The pre-fabricated steel bridge structures may be constructed with a weathered steel finish to blend into the natural environment; however they would still introduce new human-made elements to the existing undeveloped environment. Retaining wall structures would receive an architectural finish using a concrete facing. Depending on the proposed height of the retaining walls, they could introduce a substantial, new built element in the landscape that would be prominently visible to private residences and businesses. All options for Segments 1 and 5, include cut and fill work and construction of retaining walls. Option 1C would place retaining walls closer to existing residential uses east of Dry Creek and Cirby Creek. Options 5A and 5B would include more retaining walls than 5C, with retaining walls proposed east and west of Sunrise Avenue.

Lighting that is limited to locations where the trail passes under bridge overcrossings is not likely to impact the surrounding area.

6.2.7 Noise

Noise from project construction could occur in proximity to existing residences and businesses. The level of noise experienced is largely dependent on proximity to construction activity. For the options, substantial differences were not identified. Noise effects will be studied further during the preparation of Draft Environmental Impact Report (DEIR).

6.2.8 Right-of-Way

The majority of the trail along the two segments being evaluated as part of this options analysis, are located within the City of Roseville owned property. Portions of the trail will require the acquisition of right of way or permanent easements as shown in Table 6-5 below for each alignment option. Additional details are provided in Appendix I.

TABLE 6-5: RIGHT OF WAY/EASEMENT ACQUISITION

Alignment Option #	Zoning Type		
	Commercial	Residential	Other
1A	4.32 acres	N/A	0.15 acres
1B	4.00 acres	N/A	0.09 acres
1C	2.64 acres	0.04 acres	0.11 acres
5A	0.02 acres	0.04 acres	N/A
5B	0.35 acres	0.01 acres	N/A
5C	0.08 acres	0.01 acres	N/A

6.2.9 Cost Estimates

Appendix J includes preliminary cost estimates for each of the project options. The estimated costs for trail construction (including retaining walls), bridge construction, utility relocation and right of way for the options considered for Segments 1 and 5 are summarized in Table 6-6 below. Costs for trail maintenance and safety are considered similar for each option and would not substantially differentiate the alignment options.

TABLE 6-6: PRELIMINARY COST ESTIMATES (SEGMENTS #1 AND #5)

Item Description	Alignment Option						
	1A	1B	1C		5A	5B	5C
Construction (Trail)	\$2.1	\$1.4	\$1.8		\$1.30	\$0.95	\$0.82
Construction (Bridges)	\$0.5	\$0.65	\$0.4		\$0.15	\$0.25	\$0.26
Right of Way/Utilities	\$0.5	\$0.5	\$0.3		\$0.05	\$0.05	\$0.02
Total Capital	\$3.1	\$2.55	\$2.5		\$1.50	\$1.25	\$1.10
Maintenance (annual)	Similar for each				Similar for each		
Safety (annual)	Similar for each				Similar for each		

Note: Costs are in 2013 \$ in millions

6.3 Key Findings

Based on the performance of the options as measured against the established criteria, the key findings of the evaluation are as follows:

➤ Segment 1:

- **Preliminary Hydraulic Analysis:** None of the options will adversely affect the water surface elevation (WSE) for the 100-year design storm.
- **Biological Resources:**
 - Option 1A will result in substantial native oak tree removal and greater effects on the riparian woodland habitat that supports anadromous fish habitat of Cirby and Dry Creek compared to Options 1B and 1C.
 - Options 1B and 1C are in close proximity to elderberry shrubs (that serve as habitat for the Valley Elderberry Longhorn Beetle) compared to Option 1A.
 - The relative effect of Option 1A upon biological resources is anticipated to be greater than Options 1B and 1C.
- **Construction Costs:** Option 1A has a higher construction cost than the other two options.
- **Right of way:** Option 1C requires the least property acquisition.
- **Access and Connectivity:** Option 1C provides a continuous off-street path for trail users. The other options include a circuitous alignment across Darling Way Bridge.

- **Community:** Option 1C is located directly adjacent to residential properties along Hernandez Lane.
 - **Constructability:**
 - A portion of Option 1C is located in an extremely confined area between residential property boundaries and the steep creek bank.
 - Portions of Option 1A will be challenging to construct due to the steep terrain.
 - Construction of Option 1B is anticipated to be less challenging than Option 1A.
 - **Aesthetics/Compatibility:**
 - Options 1A includes one bridge whose soffit will be located 3 ft above the 200-yr WSE. This bridge and approach fills will be visible from properties located on the west side of Dry Creek and may be partially visible from property owners along Hernandez Lane and Machado Way.
 - Options 1B and 1C include two bridges whose soffits will be located 3 ft above the 200-yr WSE. These bridges and approach fills will be visible from properties located on the west side of Dry Creek and less visible from the majority of property owners along Hernandez Lane and Machado Way.
- *Segment 5:*
- **Preliminary Hydraulic Analysis:**
 - None of the options will adversely affect the WSE for the 100-year design storm.
 - Options 5B and 5C will include a bridge located within the Floodway and will, therefore, require mitigation for any impact to the WSE.
 - **Biological Resources:**
 - Option 5A will have greater effects upon oak woodland habitat due to tree removal and grading that will be required along the unimproved southern bank.
 - Options 5B and 5C would potentially affect a greater area of an existing planting mitigation site.
 - **Construction Costs:** Construction costs for Options 5B and 5C will be less than Option 5A, because the existing maintenance bench will be utilized and it will not include the cost of Bridge #14.
 - **Right of way:** Option 5B would require the most right of way acquisition compared to Option 5C and 5A.
 - **Access and Connectivity:**
 - Portions of Options 5B and 5C will be located at or below the 2-year WSE.

- Option 5A will provide full access to Sunrise Ave, Option 5B will provide partial access, and Option 5C will not provide access.
- Option 5C will not be readily accessible from Sunrise Ave raising safety concerns.
- **Community:** Portions of Options 5A and 5B will be located in close proximity to commercial properties.
- **Constructability:**
 - Construction of Option 5A will be more challenging than the others Option 5B and 5C.
- **Aesthetics/Compatibility:**
 - Option 5A will include Bridge #14, which will be visible from adjacent residential and commercial properties.
 - The portions of Options 5A and 5B located in close proximity to commercial properties will likely require fencing or screening.

6.4 Project Development Team Conclusions

Based upon the results of the evaluation, the project development team concludes that the Draft EIR incorporate a proposed alignment and alternatives as follows:

- Segment 1:
 - Option 1B – proposed alignment.
 - Option 1C – this option is to be carried forward as an alternative alignment in the environmental document.
 - Option 1A – this option is to be carried forward as an alternative alignment in the environmental document.
- Segment 5:
 - Option 5B - proposed alignment.
 - Option 5A – this option is to be carried forward as an alternative alignment in the environmental document.
 - Option 5C – this option is considered and rejected as a viable alternative since it does not meet the objectives of the project.

7.0 REFERENCES

- 1) City of Roseville, CA: Dry Creek Greenway Planning & Feasibility Study, February 2009.
- 2) City of Roseville, CA: 2008 Bicycle Master Plan (BMP).
- 3) City of Roseville, CA: Design and Construction Standards, dated July 2010 and amended January 2012.
- 4) Federal Emergency Management Agency: Flood Insurance Rate Map (FIRM), Revised May 28, 2003.
- 5) City of Roseville, CA: Dry Creek Greenway Multi-use Trail – Preliminary Hydraulics, dated September 2012.

8.0 APPENDICES

Appendix A – Vicinity Map and Location Map

Appendix B – Preferred Alignment Drawing (per Dry Creek Greenway Planning & Feasibility Study)

Appendix C – Alignment Options for Segment 1

Appendix D - Alignment Options for Segment 5

Appendix E – Typical Trail Cross Sections

Appendix F – Renderings for Bridges #2 and #4

Appendix G – Darling Way Bridge Widening Options

Appendix H – Environmental Resource Maps

Appendix I – Potential Right of Way Acquisitions Map

Appendix J – Preliminary Cost Estimates

Appendix K – Preliminary Hydraulics Analysis

Appendix A – Vicinity Map and Location Map

Appendix B – Preferred Alignment Drawing
(Per Dry Creek Greenway Planning & Feasibility Study)

Appendix C – Alignment Options for Segment 1

Appendix D - Alignment Options for Segment 5

Appendix E – Typical Trail Cross Sections

Appendix F – Renderings for Soil Nail Wall and Bridges #2 and #4

Appendix G – Darling Way Bridge Widening Options

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Appendix I – Potential Right of Way Acquisitions Map

Appendix J – Preliminary Cost Estimates

Appendix K – Preliminary Hydraulic Analysis
