




Green to Cedar Rivers Trail

North Segment Community Meeting

April 27, 2017

Shadow Lake Elementary School

 King County

PARKS

Your Big Backyard



PARKS

Your Big Backyard

200 Parks | 175 Miles of Trails | 28,000 Acres of Open Space

2014-2019 Parks, Trails and Open Space Levy

- **Take care of existing parks and trails,** ensuring they remain clean, safe and open
- **Grow and connect open space and natural lands,** protecting habitat and providing recreation
- **Improve regional trails and non-motorized mobility,** ensuring connections are completed and trails maintained
- **Make parks and recreation opportunities more accessible** for all residents to enjoy

King County's Regional Trails System

Mission

Expand and steward an accessible, interconnected regional trails network.

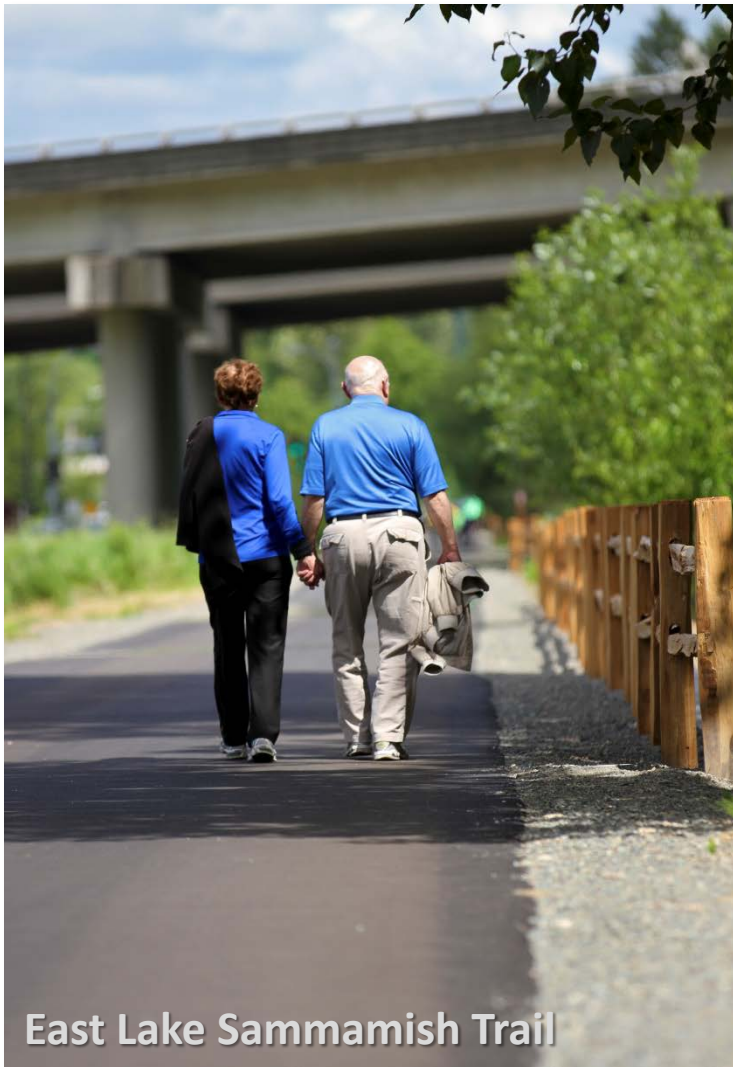
Vision

Regional trails for all ages and abilities that connect communities, inspire healthy living, and support a sustainable future.



Why Invest in Regional Trails?

Expand access and usability for all ages and abilities



Why Invest in Regional Trails?

Promote active recreation for health and well-being



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Why Invest in Regional Trails?

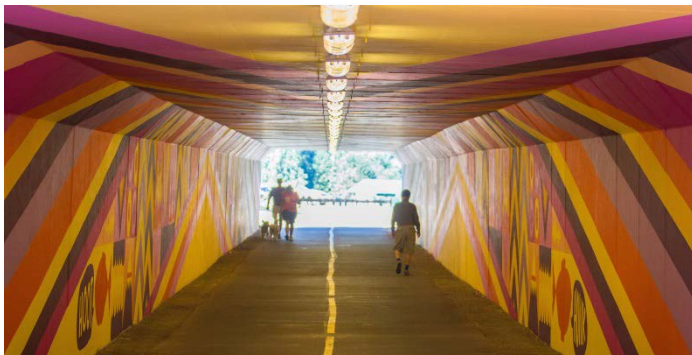
Connect communities



Wilmott Gateway is a community gathering space along Sammamish River Trail



Community plaza along Cross Kirkland Corridor at Google's campus



Volunteers painted colorful mural along Burke-Gilman Trail



Wayfinding signs point people to locations and trail connections

Why Invest in Regional Trails?

Support a sustainable future



Commuter heading to work along Burke-Gilman Trail

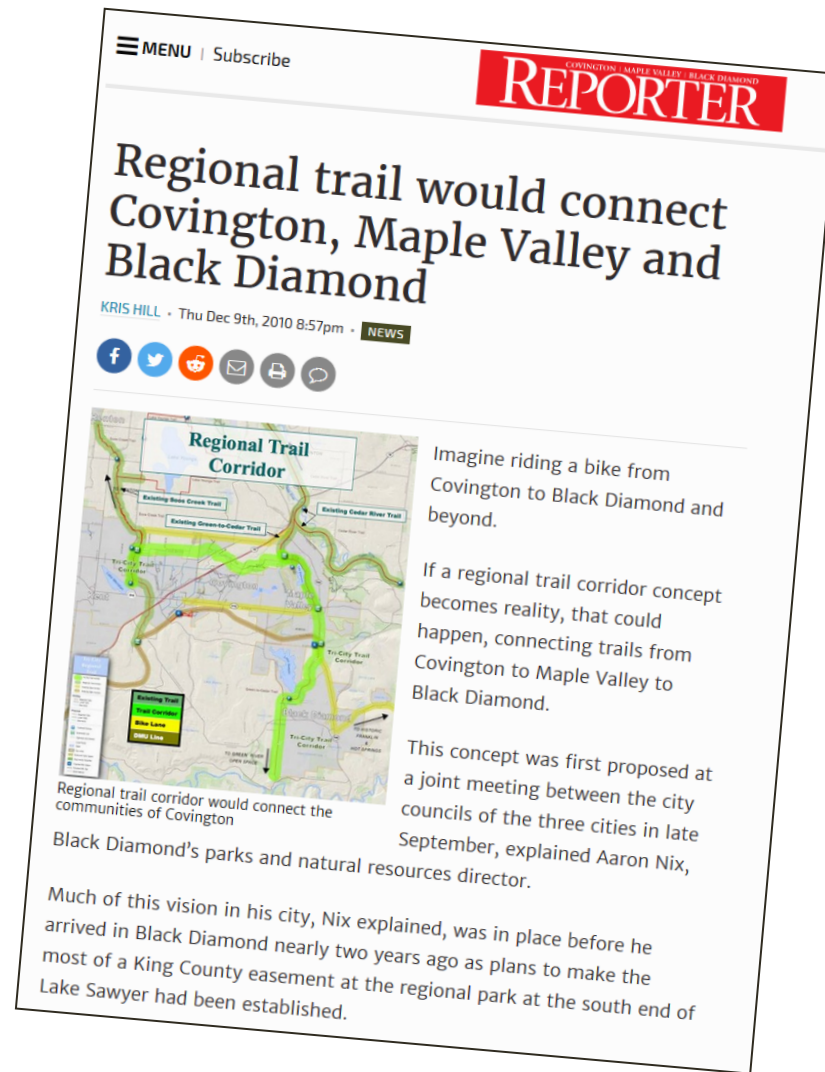
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“...the council members were all very enthusiastic about the concept and provided direction for all three cities to move forward and try to make it reality.”

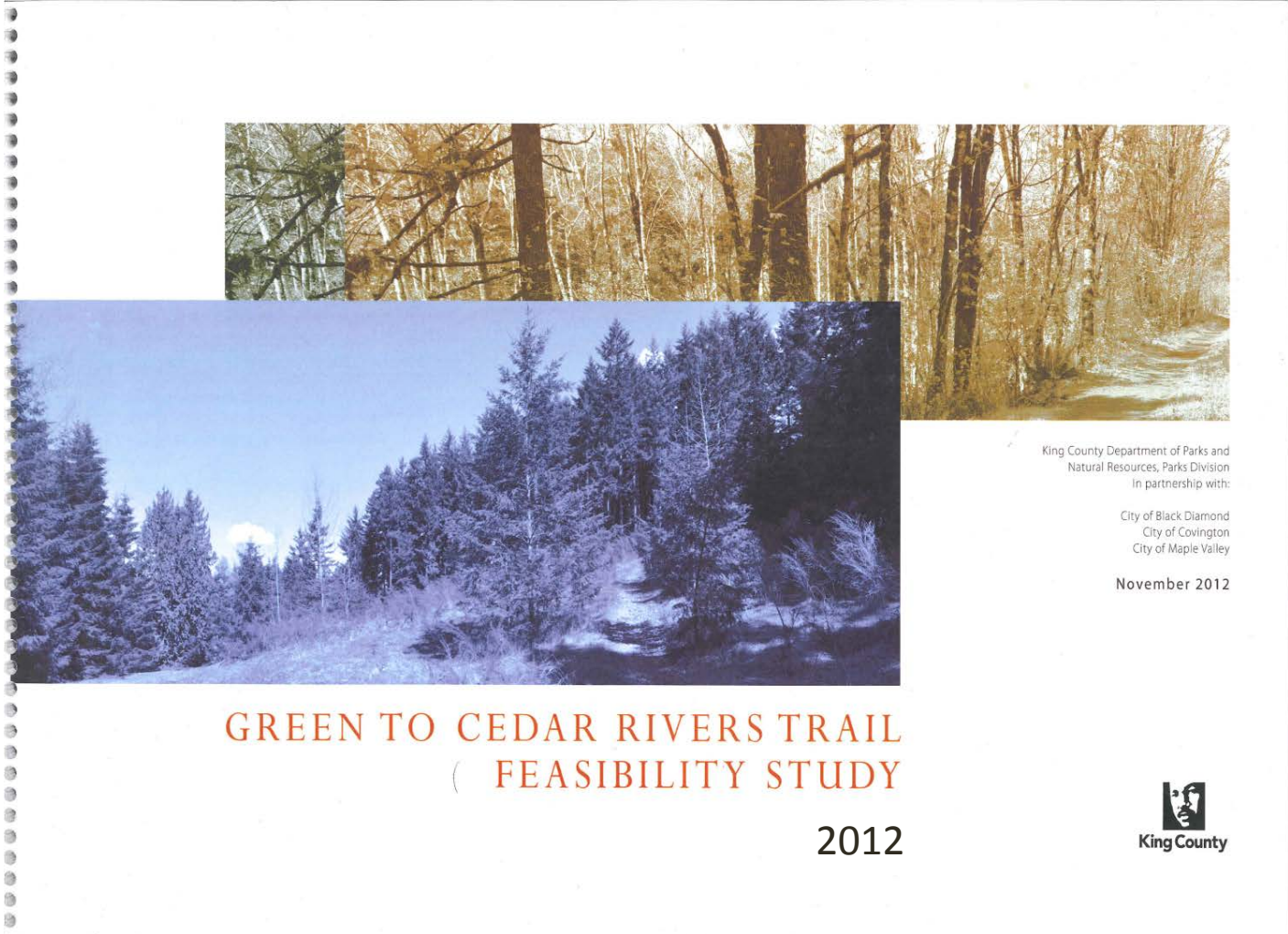
– Covington | Maple Valley | Black Diamond Reporter, Dec 9, 2010



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Green to Cedar Rivers Trail



King County Department of Parks and
Natural Resources, Parks Division
In partnership with:

City of Black Diamond
City of Covington
City of Maple Valley

November 2012

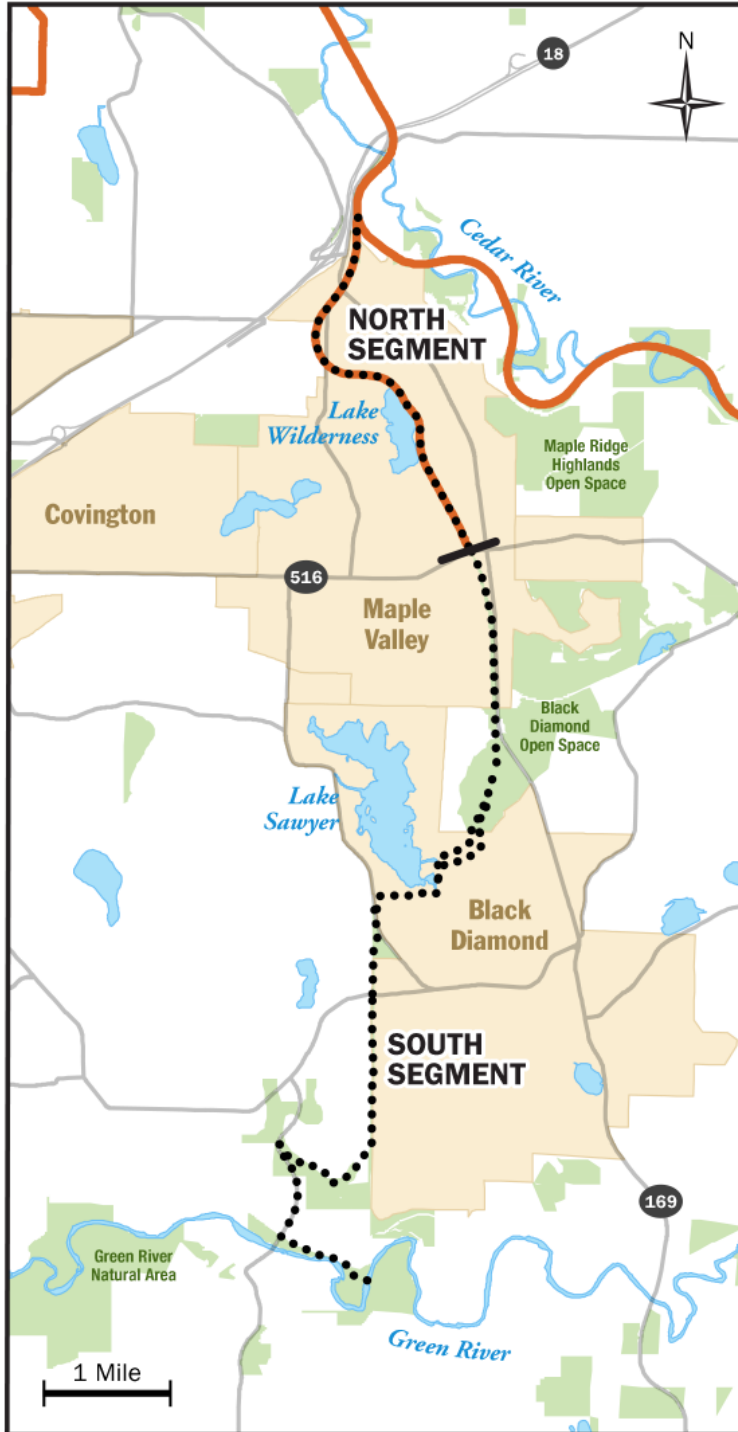
**GREEN TO CEDAR RIVERS TRAIL
(FEASIBILITY STUDY**

2012

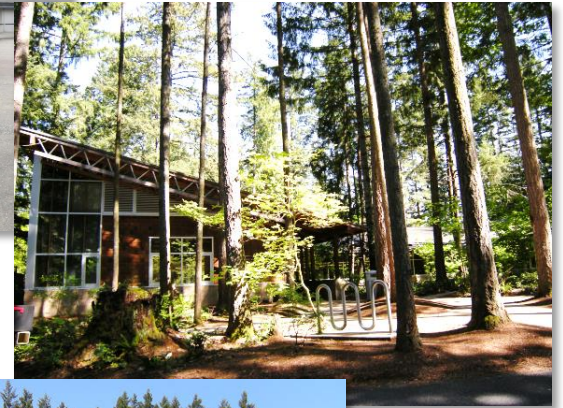
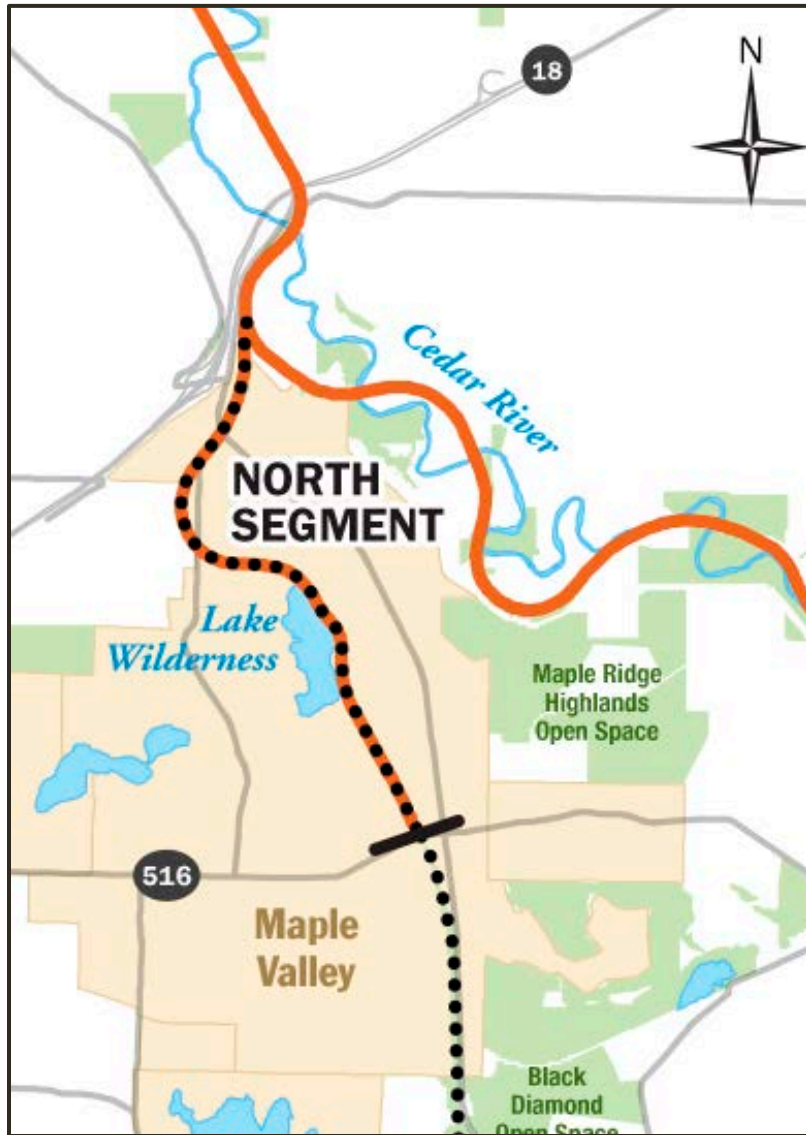


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Green to Cedar Rivers Trail



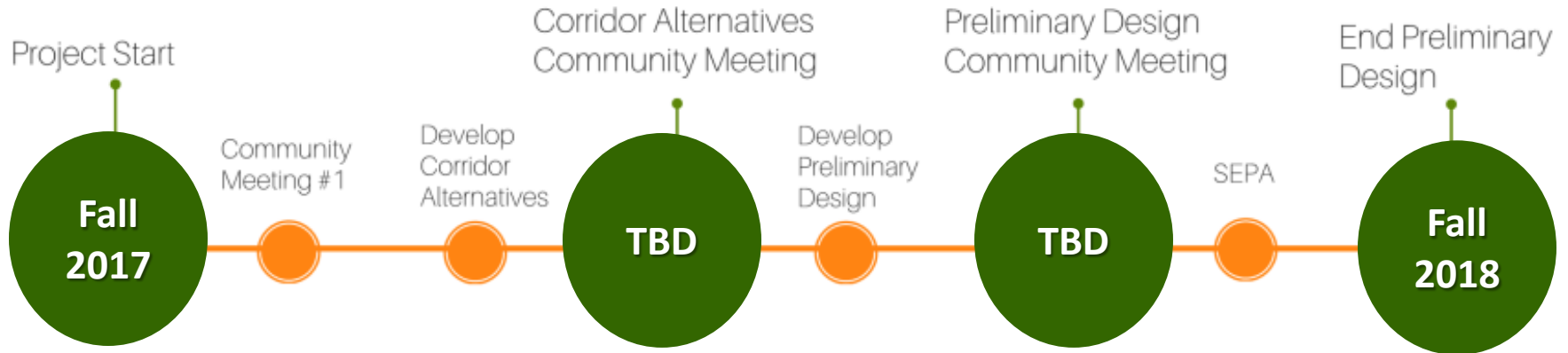
G2C Rivers Trail - North Segment



North Segment Project Timeline



South Segment Project Timeline





Cedar River Trail



Why a 12-foot-wide paved trail?

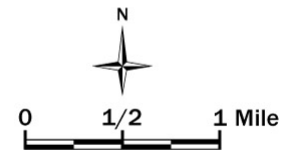
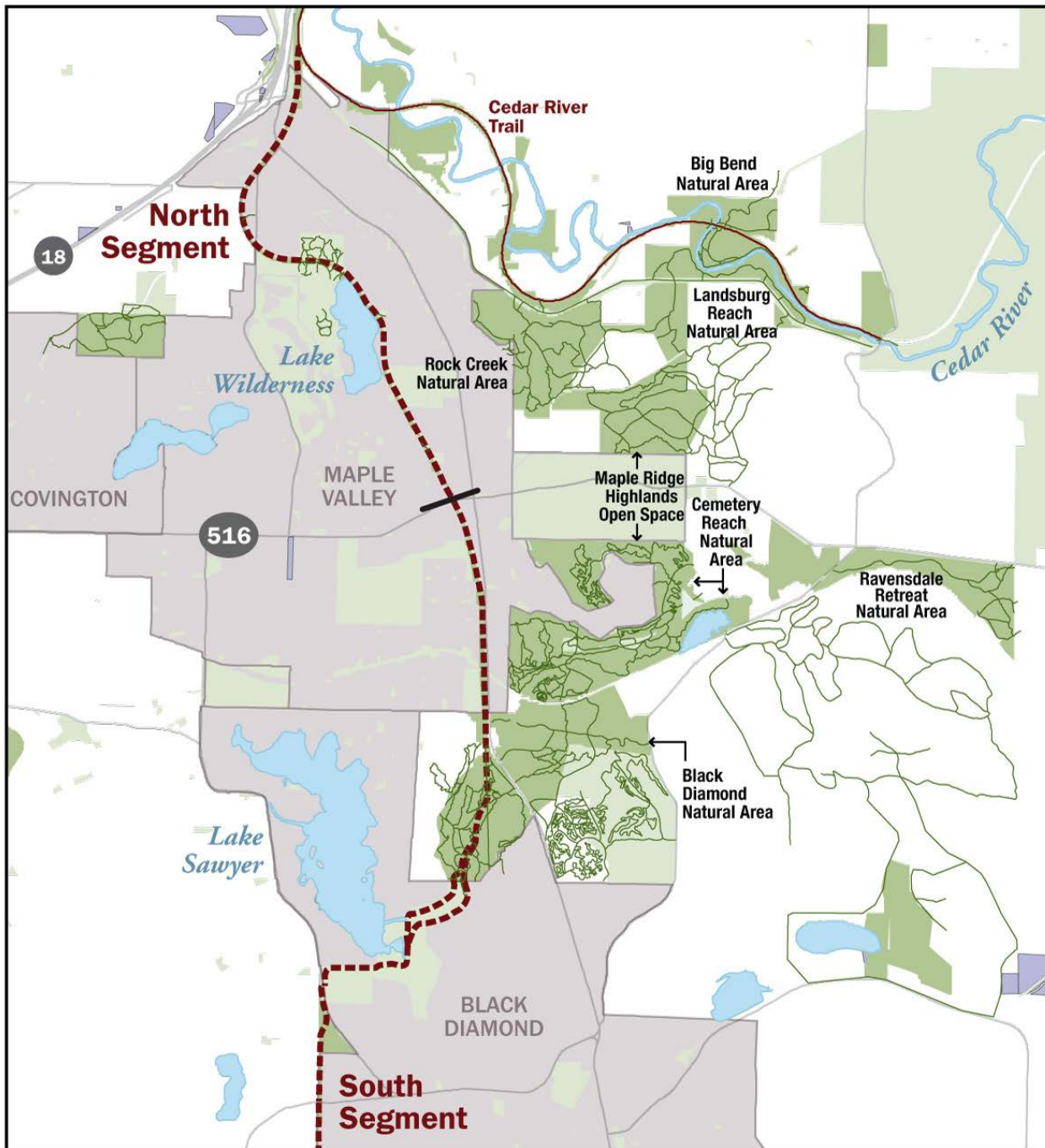
- Builds to nationally-recognized standards
- Increases access for all ages and abilities
- Improves safety
- Anticipates future growth

North Segment - Design Process



G2C Rivers Trail – North Segment Community Meeting at Lake Wilderness Lodge, Jan 11, 2017

Trails in Maple Valley Area



April 2017

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Map created by: KCIT eGov Unit
Data: King County Datasets
File: 1704_8405w_G2C_backcountry_trails.ai

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North Segment – Key Questions

- What is the cost of the project and how is it funded?

Estimated cost is \$10 million and funded through the voter-approved 2014-2019 Parks Levy

- How is the decision regarding development of the trail made?

G2C trail has been part of long term plan for trails since 1992. It was approved for development as part of 2014-2019 Parks Levy

- How long will trail be closed during construction?

Approximately 18 months

North Segment - Design Process



Equestrians on the Centennial Trail in Snohomish County

North Segment - Design Process



G2C Rivers Trail Stakeholder Meeting, March 28, 2017

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North Segment - Design Process



G2C Rivers Trail Stakeholder Trail Walk, April 10

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Task

Option 1

- Standard trail design identified in feasibility study
- 12' paved trail; 2' shoulders; separated path



Task

Option 1

- Standard trail design identified in feasibility study
- 12' paved trail; 2' shoulders; separated path

Option 2

- Meets criteria for Regional Trail Design
- Responds to public input
- Responds to site conditions



Public Input

Themes

- Safety
- Soft surface
- Access/Linkages
- Environmental and aesthetic impacts of trail development

Cedar River Trail just
north of the project



Site Conditions

Topography

- Wide trail bed



Site Conditions

Topography

- **Narrow trail bed**



Site Conditions

Topography

- Steep side slopes - ravine



Site Conditions

Topography

- Steep side slopes – cut/fill



Site Conditions

Topography

- Steep side slopes - embankment



Site Conditions

Topography

- Slope failure



Site Conditions

Topography

- Slope failure



Site Conditions

Topography

- Slope failure



Site Conditions

Vegetation

- Mature vegetation



Site Conditions

Vegetation

- **Shrubby vegetation**



Infrastructure

■ Utilities



Site Conditions



Site Conditions

Infrastructure

- Drainage facilities

**Stormwater
Storage
Pond**

This pond is in our care.
Runoff is stored and slowly returns
to the land area. The pond retains
sediment, floating and erodes and
catches debris and litter. Please do not
discard any garbage. Call the City of
Blaine, Public Works Dept.
at (425) 453-8300.

Public Works
Department

234720, Lake Forest Estates

Site Conditions

Infrastructure

- Drainage facilities



Site Conditions

Infrastructure

■ Tunnels



Site Conditions

Infrastructure

■ Tunnels



Site Conditions

Infrastructure

- **Narrow corridor width**

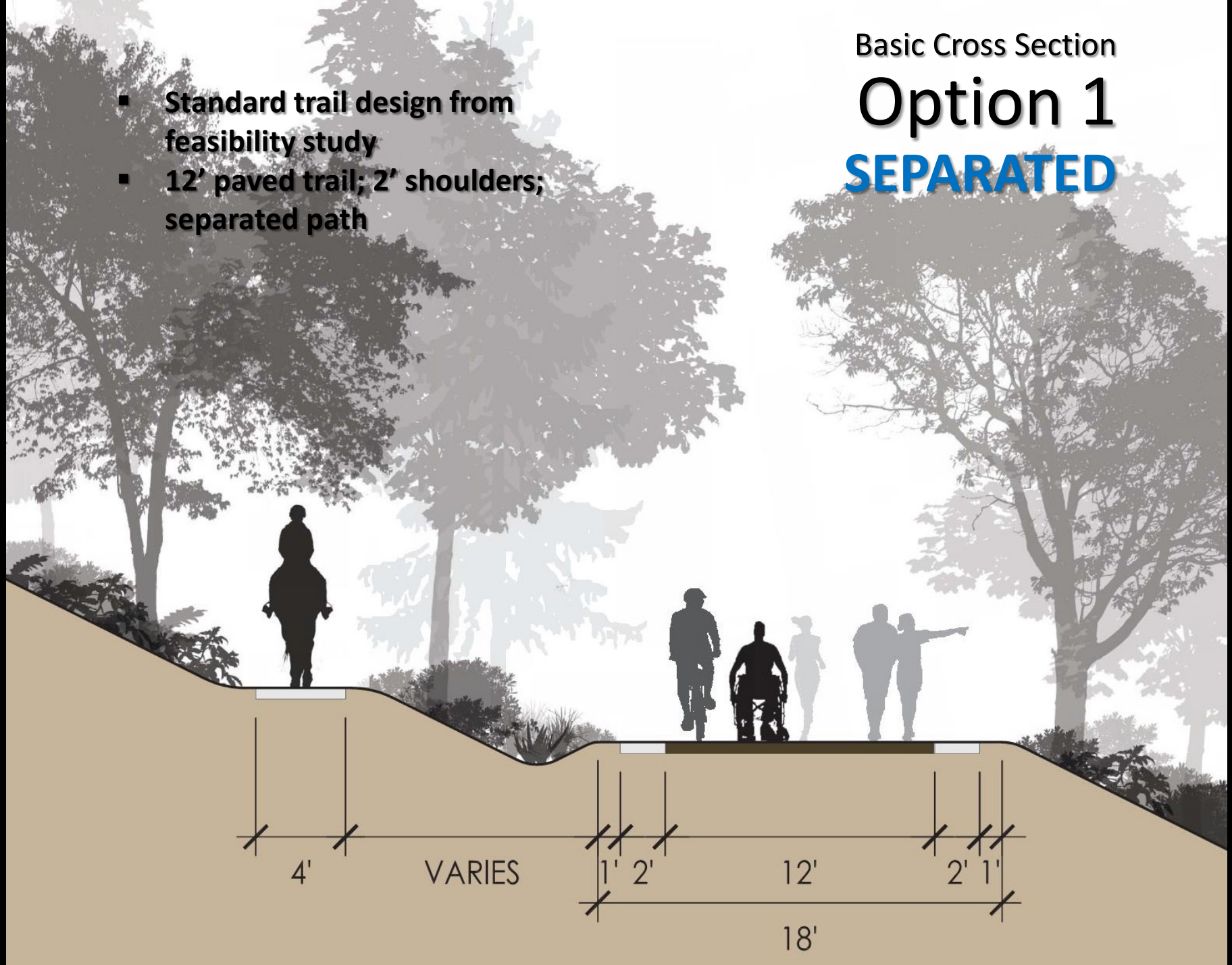


Basic Cross Section

Option 1

SEPARATED

- Standard trail design from feasibility study
- 12' paved trail; 2' shoulders; separated path

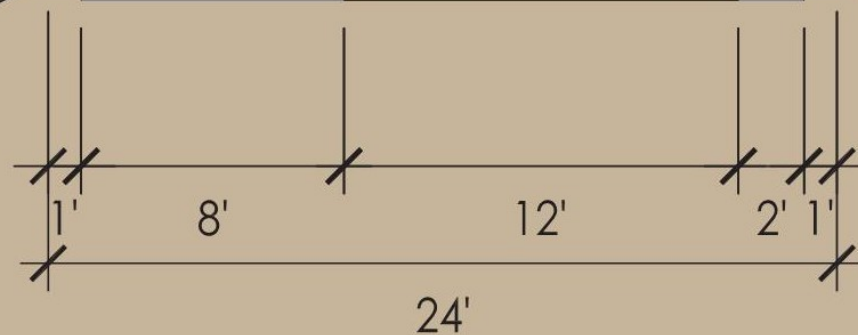


Basic Cross Section

Option 2

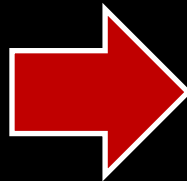
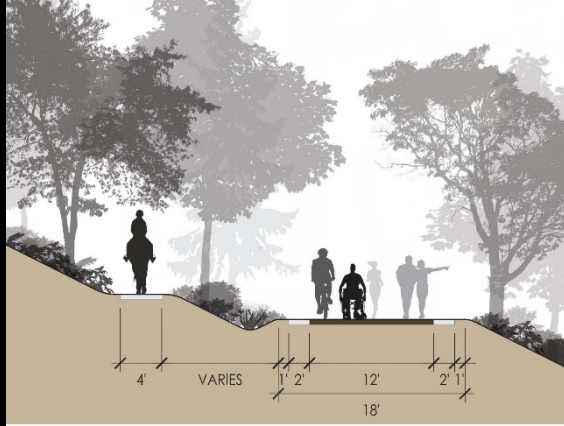
COMBINED

- Meets criteria for Regional Trail Design
- Responds to public input

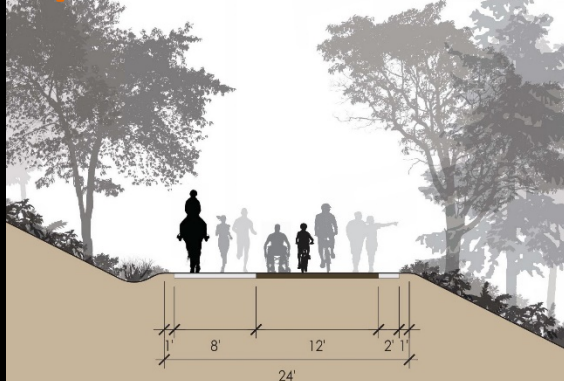


Responding to site conditions

Option 1 - Separated



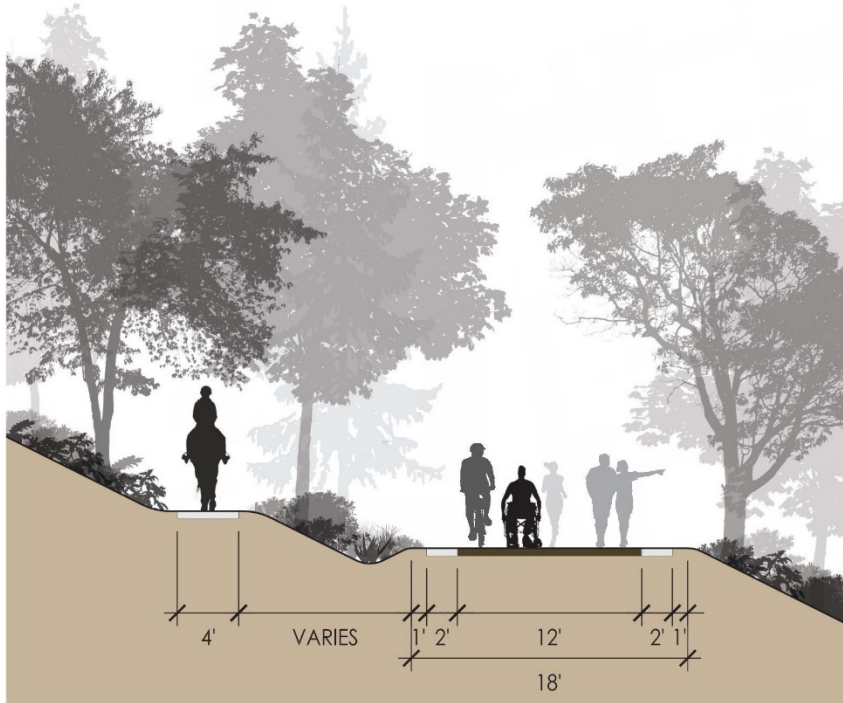
Option 2 - Combined



- Topography
- Vegetation
- Infrastructure

Unconstrained & Constrained Option 1

SEPARATED



UNCONSTRAINED



CONSTRAINED

Unconstrained & Constrained

Option 2

COMBINED



UNCONSTRAINED



CONSTRAINED

Option 1 SEPARATED



1 Ravine



2 Steep Cross Slope



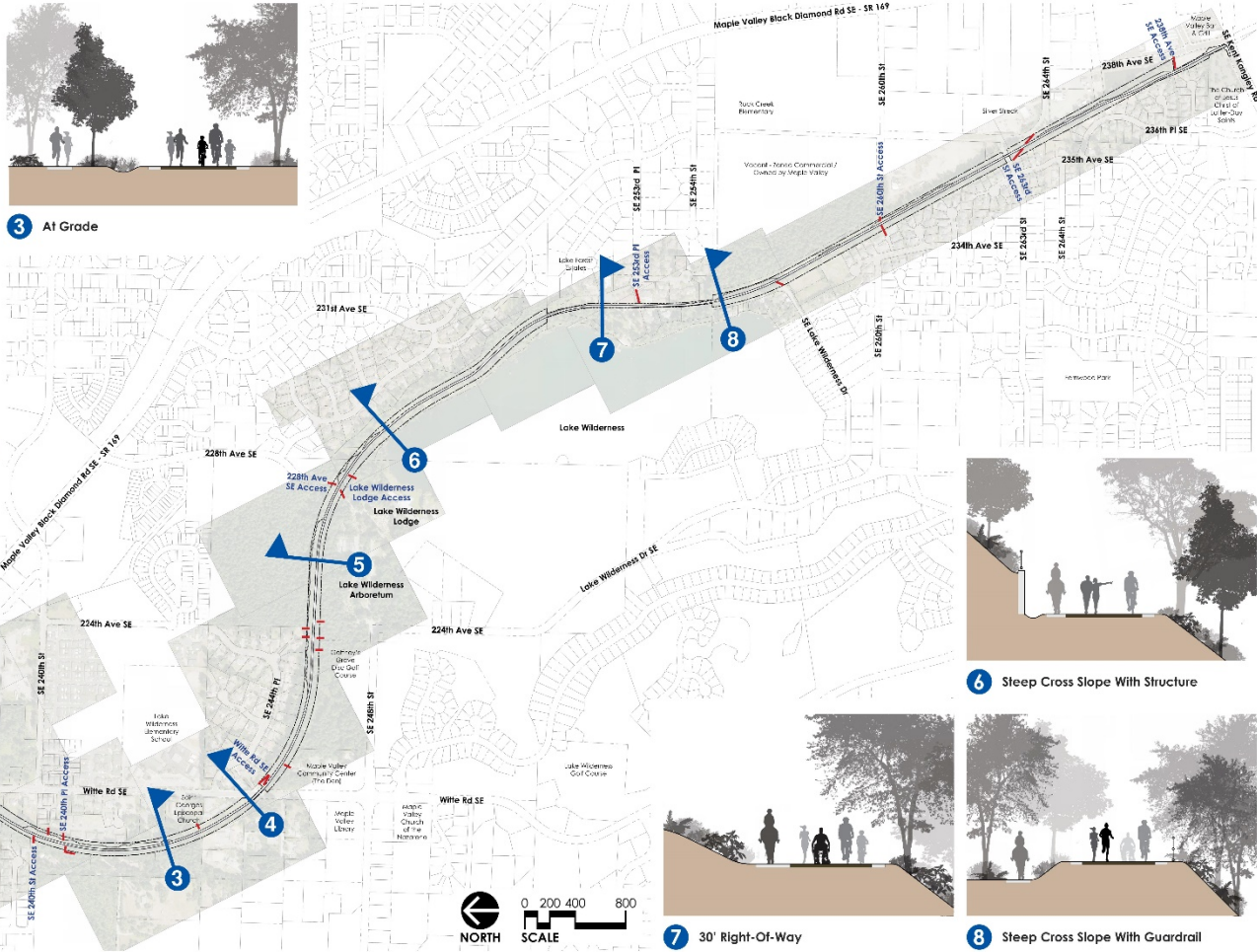
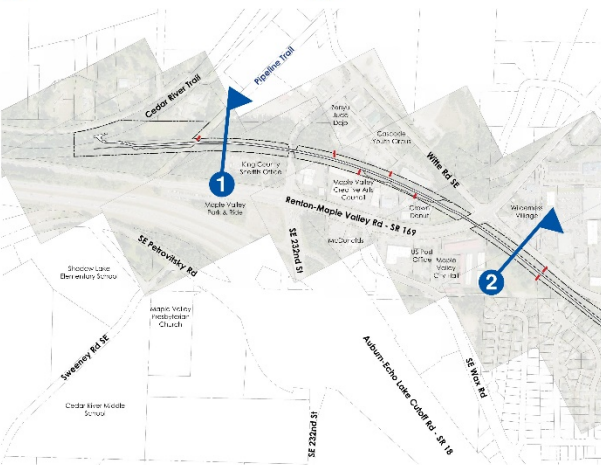
3 At Grade



4 Underpass



5 Embankment



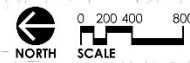
6 Steep Cross Slope With Structure



8 Steep Cross Slope With Guardrail



7 30' Right-Of-Way



SEPARATED TRAIL OPTION
GREEN TO CEDAR RIVERS TRAIL NORTH

Option 2 COMBINED



1 Ravine



2 Steep Cross Slope



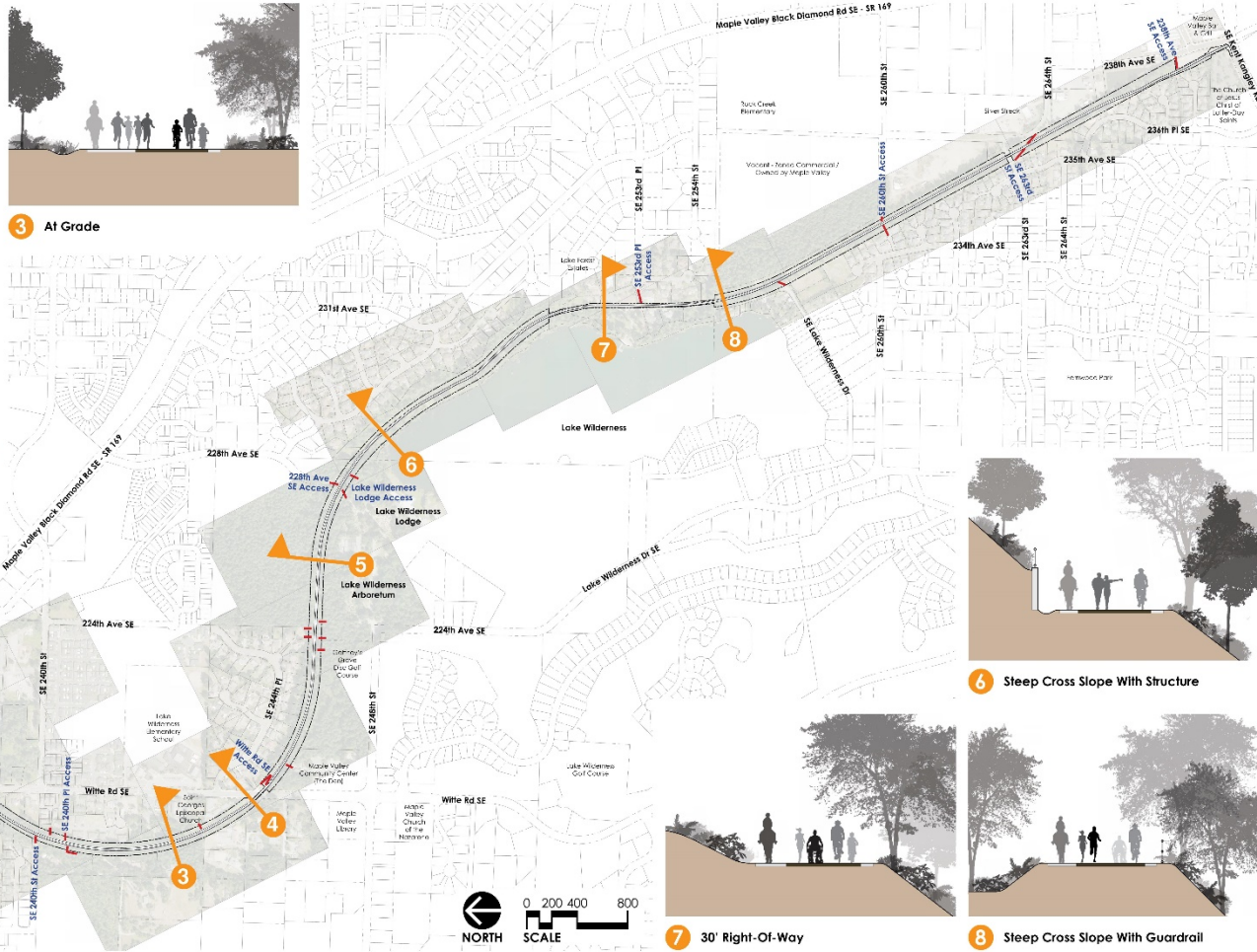
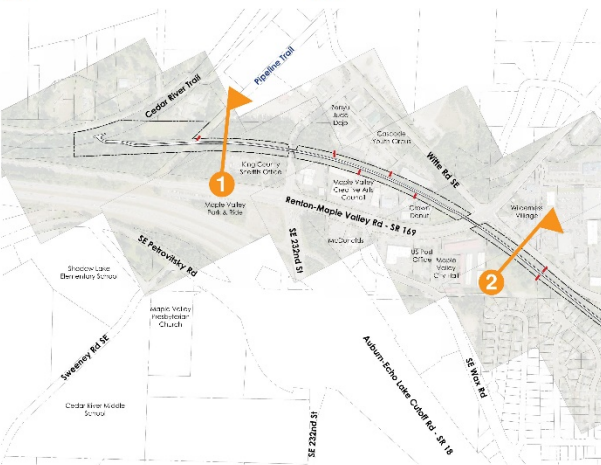
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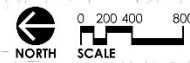
6 Steep Cross Slope With Structure



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COMBINED TRAIL OPTION
GREEN TO CEDAR RIVERS TRAIL NORTH



1 Ravine



2 Steep Cross Slope



3 At Grade



4 Underpass



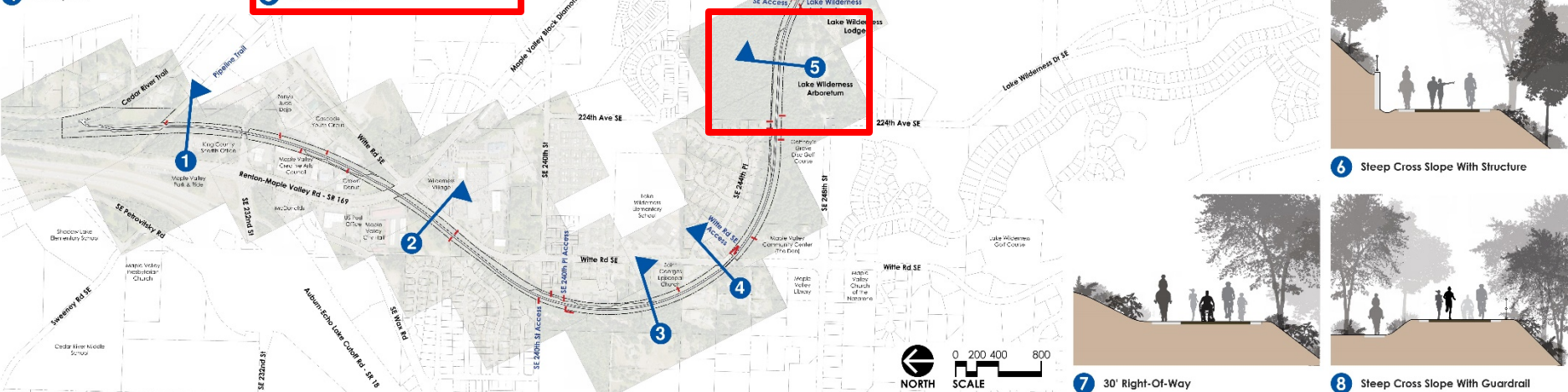
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SEPARATED TRAIL OPTION GREEN TO CEDAR RIVERS TRAIL NORTH



1 Ravine



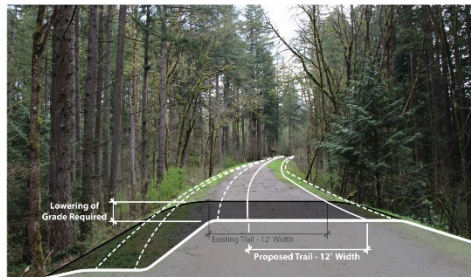
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4 Underpass



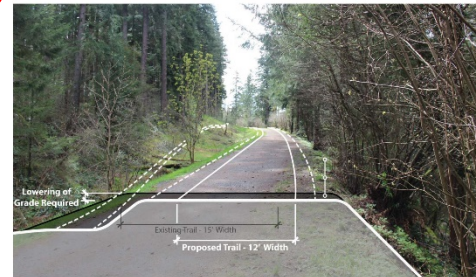
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6 Steep Cross Slope With Structure



7 30' Right-Of-Way



8 Steep Cross Slope With Guardrail

SEPARATED TRAIL OPTION PHOTOS GREEN TO CEDAR RIVERS TRAIL NORTH



Existing Trail - 10' Width

Proposed Trail - 12' Width

SEPARATED

- **Narrower footprint, with impact separated**
 - Less tree removal
 - Less volume and area of grading
- **Variability in proximity to main trail**
- **Conflict between users**
 - Depends on users; separated trail crosses main trail
- **Storm drainage and utilities**
 - Potentially less impervious
- **Two corridors to maintain increases level of maintenance**



COMBINED

- **Wider footprint, combined area of impact**
 - More tree removal
 - More volume and area of grading
- **Variability in width**
- **Conflict between users**
 - Depends on users; soft surface trail is consistently on east side
- **Storm drainage and utilities**
 - Potentially more impervious
- **One corridor to maintain reduces level of maintenance**



TRAIL OPTION COMPARISONS

GREEN TO CEDAR RIVERS TRAIL NORTH

Structural solutions



Rockery

- Cut or fill wall, may be taller in cut situations
- More natural aesthetic
- Settlement sensitive
- Not designed for seismic stability; therefore, not recommended where failure would be considered a significant safety hazard
- Typical Height Up to 12'-0"
- **Unit Cost \$30/SF**



Gravity Block

- Primarily used for fill walls, may be used for cut walls
- Stacked, often staggered, blocks that resist soil pressure with self-weight
- Blocks can be patterned or colored to create higher aesthetic appeal
- Allows for intermittent plants and shrubs with crib wall system
- Settlement sensitive
- Economical for wall heights of about 6'-0" to 12'-0"
- **Unit Cost \$40/SF**



Mechanically Stabilized Earth (MSE)

- Primarily used for fill walls. More space required for cut walls
- Segmental concrete blocks or panels supported by alternating layers of backfill soil and reinforcing geotextile material
- Patterned or colored blocks can enhance aesthetic appeal
- More tolerant of settlement
- Typical Height Up to 20'-0"
- **Unit Cost \$40/SF**



Gabion

- Cut or fill wall
- Wire baskets or cages filled with high-quality angular rock
- Relatively narrow base width in respect to wall height
- Natural aesthetic, variable with type of rock infill
- Can tolerate moderate settlements
- Typical Height Up to 15'-0"
- **Unit Cost \$50/SF**



Cast-in-Place (CIP) Cantilever

- Cut or fill wall, cut wall requires excavation for footing
- Cut walls typically require less excavation than MSE of similar height
- Versatile wall facade. Textures and patterns can be applied to enhance aesthetic appeal
- Settlement sensitive
- Typical Height 4'-0" to 20'-0"
- **Unit Cost \$75/SF**



Soldier Pile

- Typically used for cut walls, but can also be used for fill walls when space constraints limit the use of other wall types
- Steel piles in concrete shafts, typically 6 to 10 feet apart, with timber lagging or concrete facade
- Minimal space requirements and allows trees to remain in place
- Facade may be pattern or design to be more aesthetically pleasing
- Typical Height Up to 15'-0", with tiebacks for greater heights.
- **Unit Cost \$120/SF** exposed height

WALL OPTIONS
GREEN TO CEDAR RIVERS TRAIL NORTH

A person wearing a dark jacket and a yellow backpack is riding a bicycle away from the camera on a paved trail. The trail is surrounded by a dense forest of trees with bare branches, suggesting a late autumn or winter setting. The ground is wet, and the overall atmosphere is quiet and scenic.

Questions?

Cedar River Trail just
north of the project




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