

Carbon River Area Access Management Environmental Assessment

Public Meeting

September 2010





Mount Rainier National Park – Carbon River Public Meeting

Staff Introductions

Mount Rainier National Park Staff

- **Dave Uberuaga** – *Superintendent*
- **Randy King** – *Deputy Superintendent*
- **Roger Andrascik** – *Chief of Natural and Cultural Resources*
- **Karen Thompson** – *Environmental Protection Specialist*
- **Bryan Bowden** – *Community Planner*
- **Susan Dolan** – *Historical Landscape Architect*
- **Scott Beason** – *Geologist*



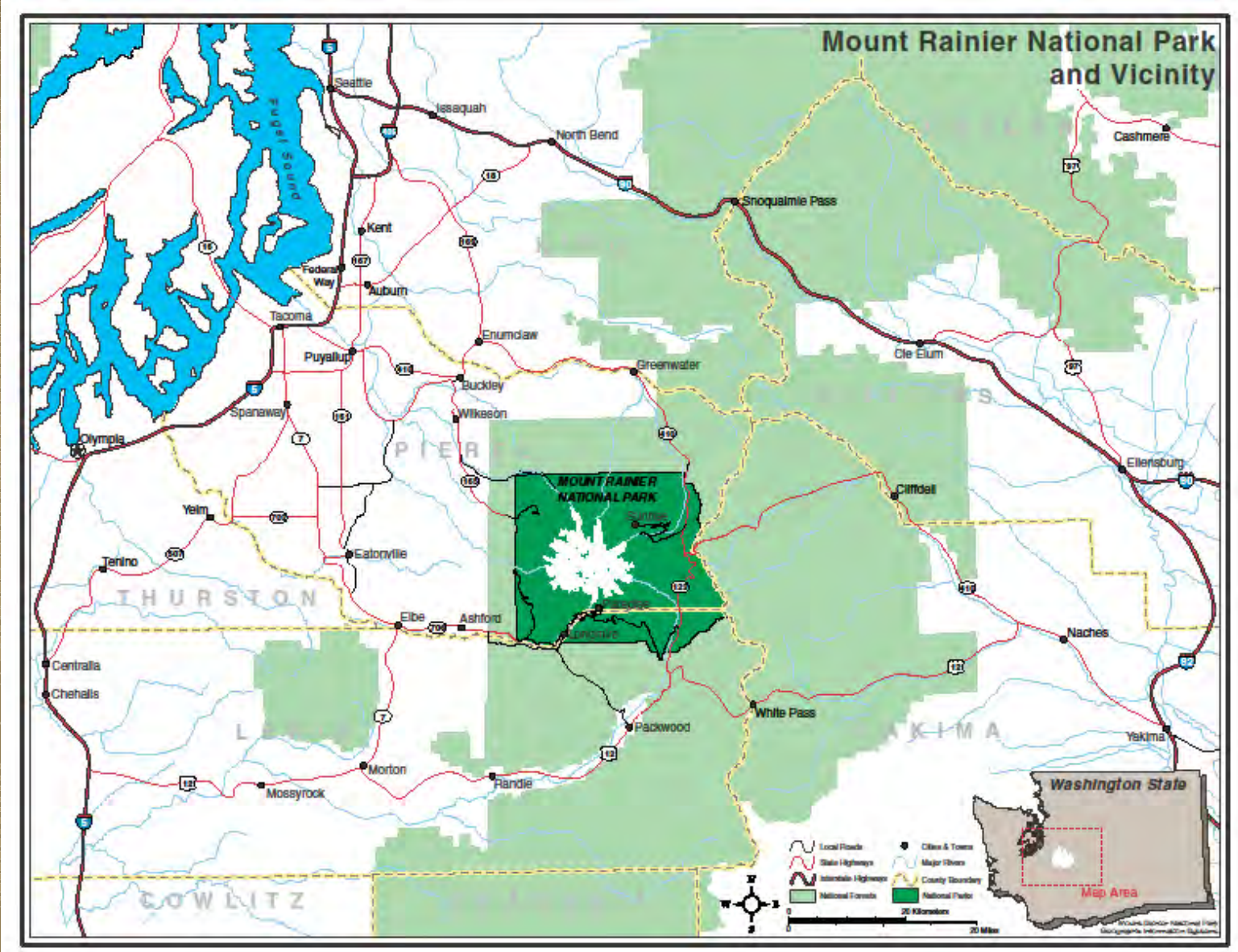
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Meeting Purpose

- ✓ Present Environmental Assessment (EA) Alternatives
- ✓ Share Background Information
- ✓ Gather Public Comment

Public comments will be accepted for a 45-day period, to be submitted online, via email or by U.S. mail. Deadline is November 3, 2010.

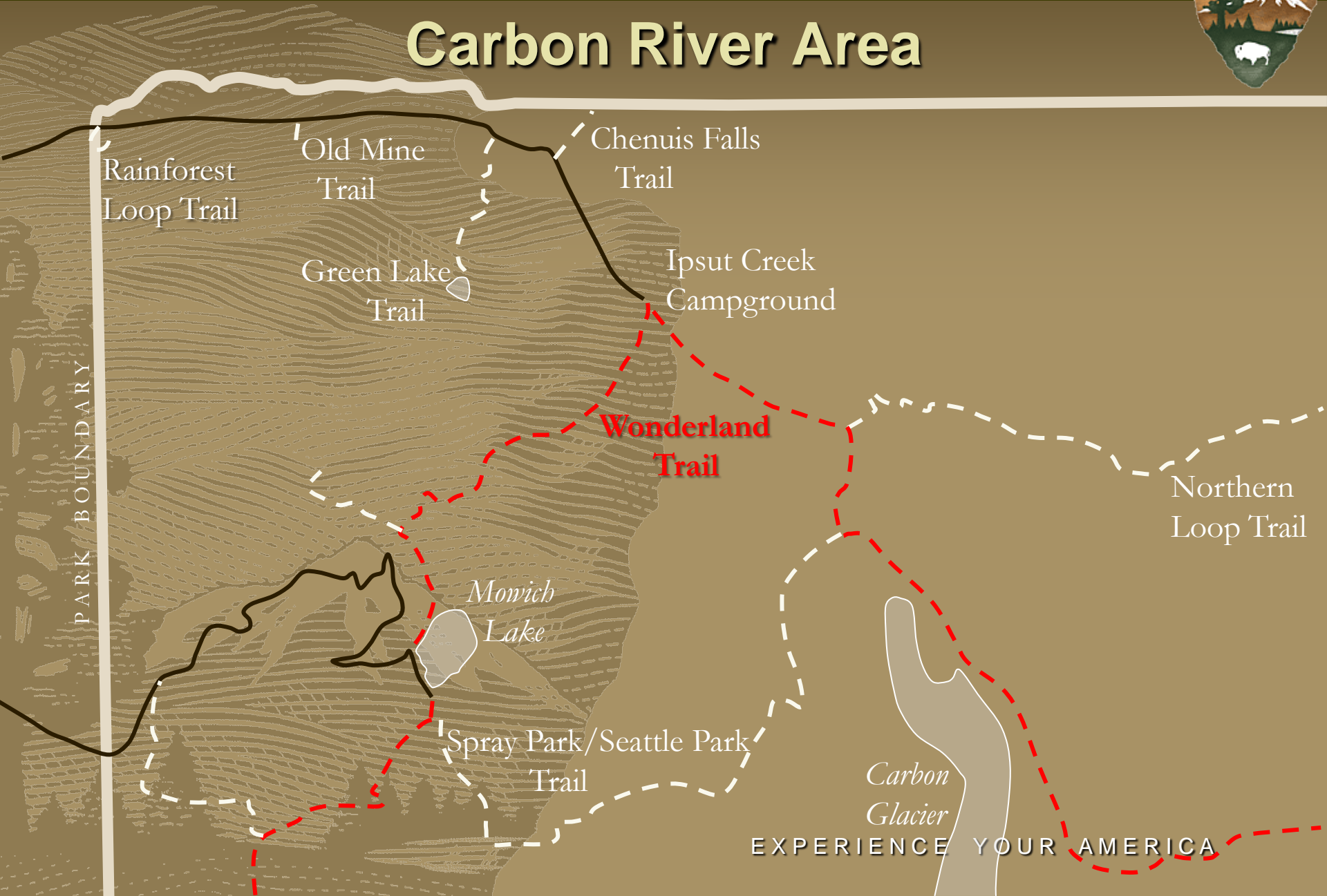
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Carbon River Area





Status of Planning Process

1. Identification of Problem/Need for Action
2. Scoping
3. Analysis
- 4. Documentation (EA)**
- 5. Decision by December 2010**



Decision To Be Made by EA

“How should Mount Rainier National Park provide public access to the Carbon River area for the next 15 years while protecting significant natural and cultural resources?”

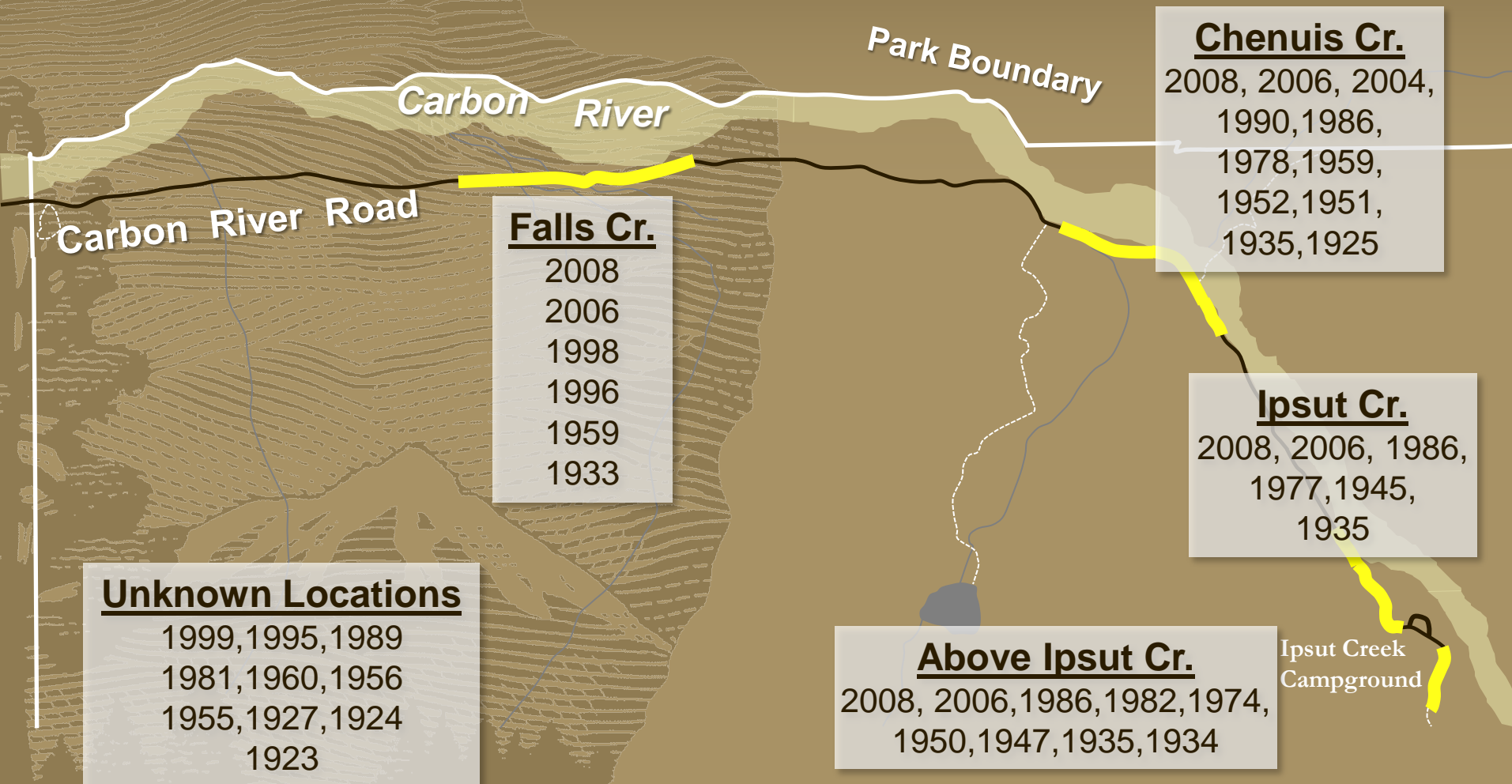


Characterization of 2006/2008 Flooding





History of Carbon River Road Flooding





Carbon River Road Flood Repair and Erosion Protection Costs

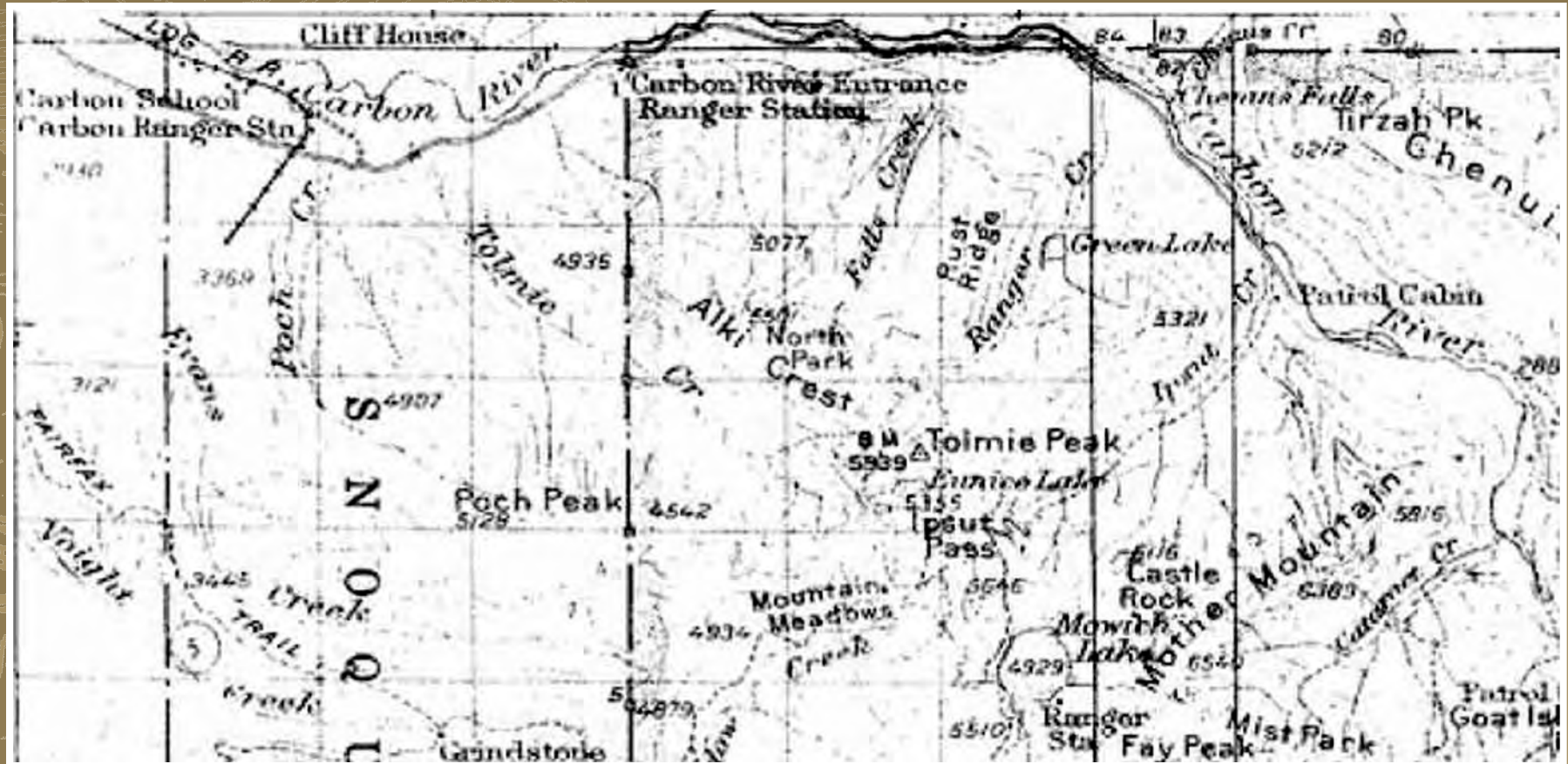
1996	-	\$ 10,500
1997	-	208,333
1998	-	750,000
1999	-	400,000
2005	-	121,615
2007	-	136,472
2008	-	5,764
2010	-	<u>104,413</u>

Total - \$1,737,097



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History of Carbon River Road



Susan Dolan – Historic Landscape Architect



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**Carbon River Road was built
as scenic drive between 1921
and 1925**



Carbon River Road - part of park master plan for rustic-style infrastructure



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“It is gratifying news that the road will follow the river, practically on a water grade.”



NPS Director Stephen Mather was the primary advocate for building Carbon River Road.



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Flood damage to Carbon River Road began to occur during construction



“The road will be flood-prone in perpetuity, due to its location in the Carbon River floodplain.”

Bureau of Public Roads engineers

By late 1920s, Carbon River Road was recognized as challenging for park management.



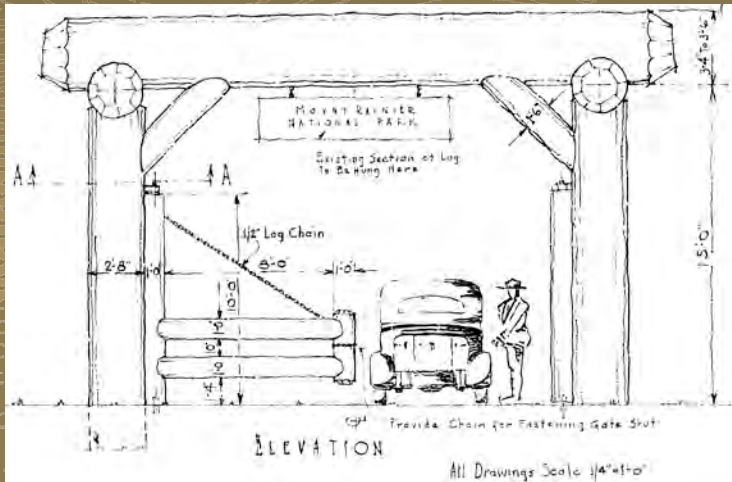
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**Civilian Conservation Corps
added “finishing touches” to
road, 1933-41**



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CCC built Carbon
Entrance Arch
and Ipsut Patrol Cabin



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CCC built log cribbing for flood protection



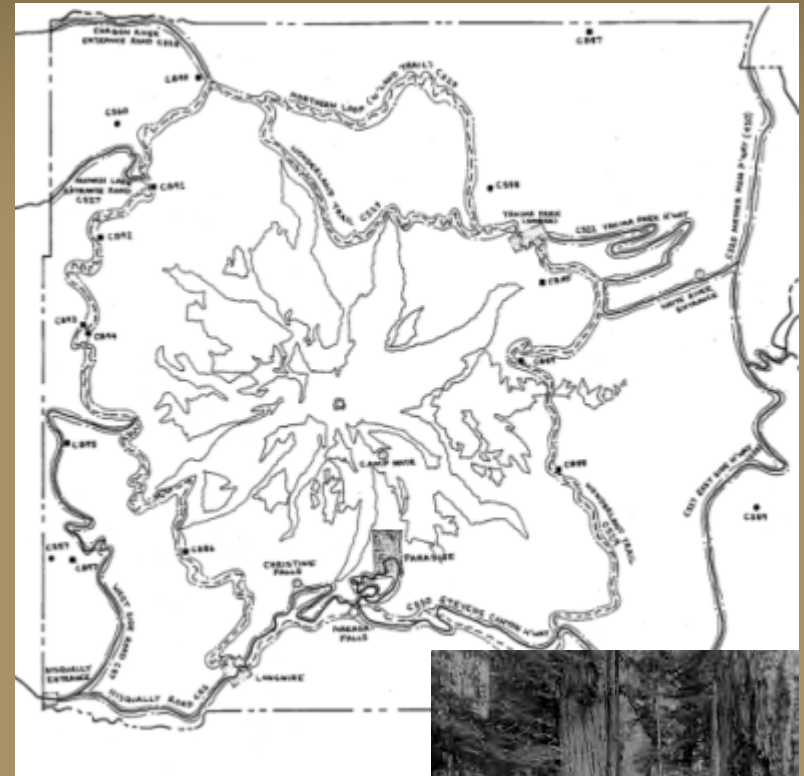
“In our opinion, this particular road, Carbon River Road, is one of the most attractive in the park, due we think, to the heavy forest and abundant moisture which is conducive to the growth of ferns, moss and thick undercover.”

**Halsey Davidson
CCC Landscape Architect, 1934**

Carbon River Road was very popular with visitors



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**Carbon River Road remains part of the
Mount Rainier National Historic
Landmark District**





EA Purpose and Need

- Defines the nature and extent of public and administrative access to the Carbon River area, including for hikers, bicyclists, vehicles, camping, parking and trails
- Evaluates the ability to protect endangered species and the National Historic Landmark District (NHLD) consistent with the Mount Rainier General Management Plan (GMP)
- Implements the Mount Rainier GMP



Park Management Objectives

- Optimize public access and use opportunities
- Create a 15-year transition plan for public access, services and park operations
- Protect park resources and use of the historic road corridor for as long as possible
- Retain park flexibility to respond to changing conditions over time
- Implement the 2002 GMP decision to phase-out public vehicle access after major washout



GMP Direction for Carbon River Area

- Recognized maintaining vehicle access to Ipsut Creek Campground was largely unsustainable
- Expand park boundary in the Carbon River area to replace services and facilities in a sustainable location



GMP Direction for Carbon River After “Major Washout”

“..Close the Carbon River Road to private vehicles when there is a major washout of the road and convert the Ipsut Campground to a walk-in/bike-in camping area”

“..Carbon River Road eventually would be converted to a multi-use, non-motorized trail”

“..The existing historic road corridor would be maintained in a manner consistent with the NHLD designation”

General Management Plan Record of Decision



The 2006 fall flood *is the major washout*
referred to in the GMP





Carbon River Planning Public Scoping Comments

Public scoping comments and letters (575) were received. Comments were used to modify preliminary alternatives. The comments are part of the public record.

Public opinion in the GMP planning processes for the Carbon River Road was relatively evenly split between a strong desire to see the road fully open to those advocating permanent closure to vehicles.

In this EA scoping process, public comments were nearly 2:1 against road closure to vehicles.



Issues Considered but Dismissed

- Construct road on the north side of the Carbon River
- Reroute flood prone sections - Carbon River Road
- Modify the Wilderness Boundary
- Road reconstruction options
- Reestablish car camping
- Allow electric bikes, motor bikes, scooters and ATVs
- Provide vehicles on the other side of the washouts for access
- Allow parking along the first 1.2 miles of intact road (up to the Old Mine Trailhead)



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Carbon River Studies

- LiDAR imagery acquisition and analysis
- ENTRIX - Topographic survey, hydrologic modeling and design assessment
- Geomax – Site assessment and design of flood reduction measures
- ENTRIX – Road emergency flood protection measures
- River aggradation, river profiles and bank erosion rates
- Threatened and endangered species, mitigations and formal consultations
- Other resource assessments (e.g. archaeological, wetlands, etc)



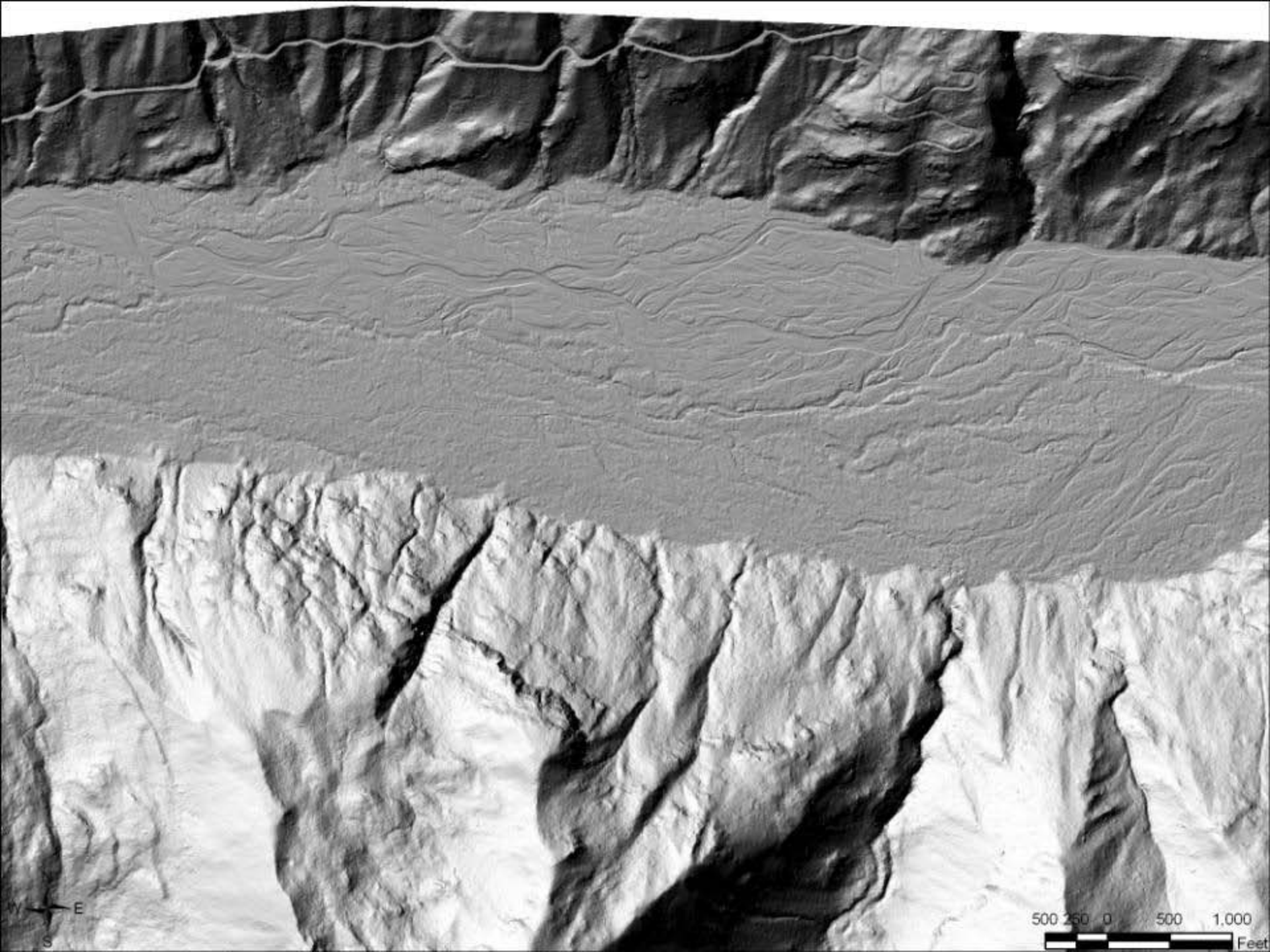
Constraints

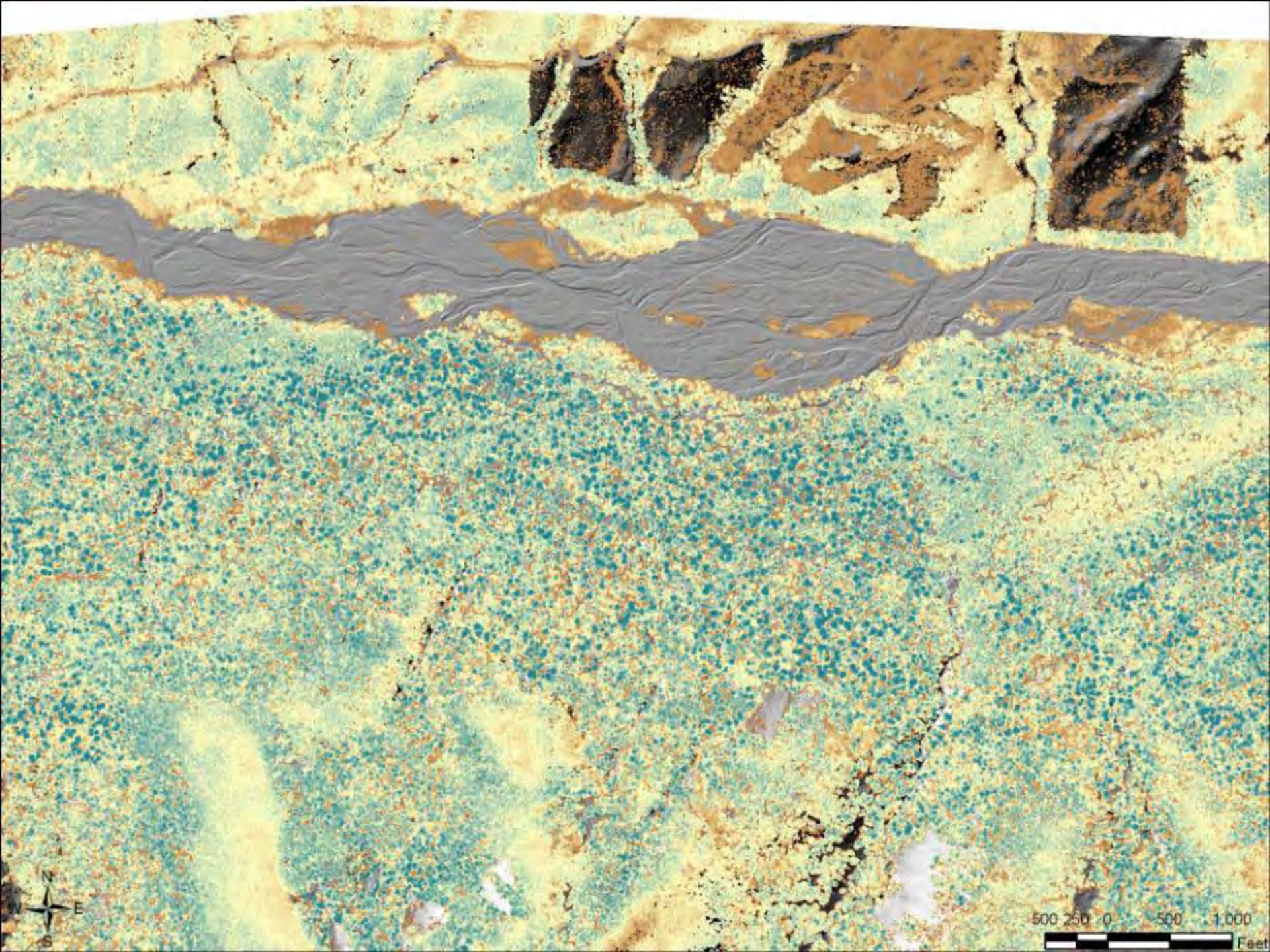
- Dynamic flood plain subject to continued channel migration, flooding, damage and aggradation
- Protection of NHLD Road within the floodplain and bounded by designated wilderness, wetlands and old growth forest
- Design stage requirements for Biological Assessment (threatened and endangered species), Corps of Engineers (COE) permitting, EA analysis, cost estimates, contracting
- COE permits required for in-water work
- GMP did not anticipate cost and difficulty of sustaining hiker/biker access within the road corridor
- Consultants/engineers would not guarantee a repair solution through Falls Creek

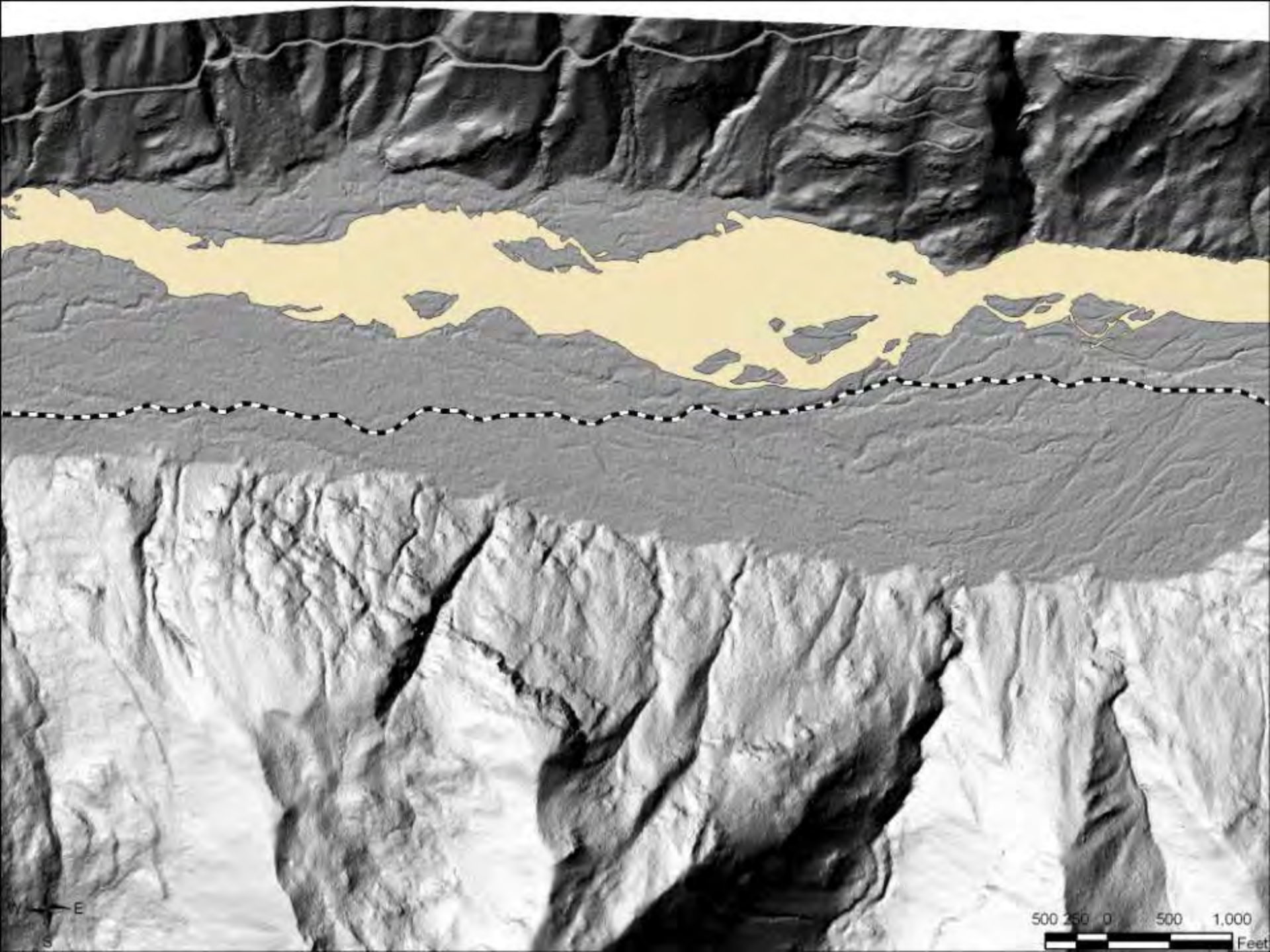


GEOLOGY AND GEOMORPHOLOGY OF THE CARBON RIVER AREA

Scott Beason – Park Geologist

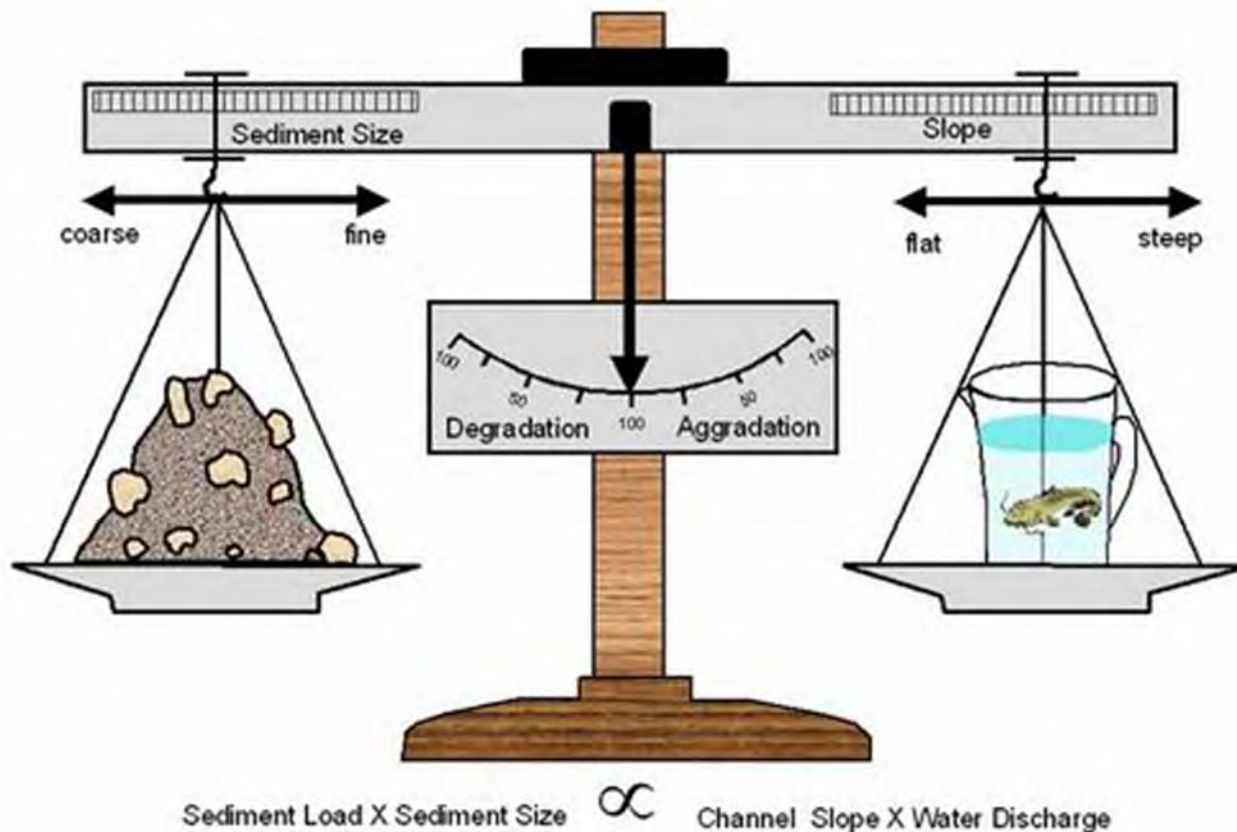


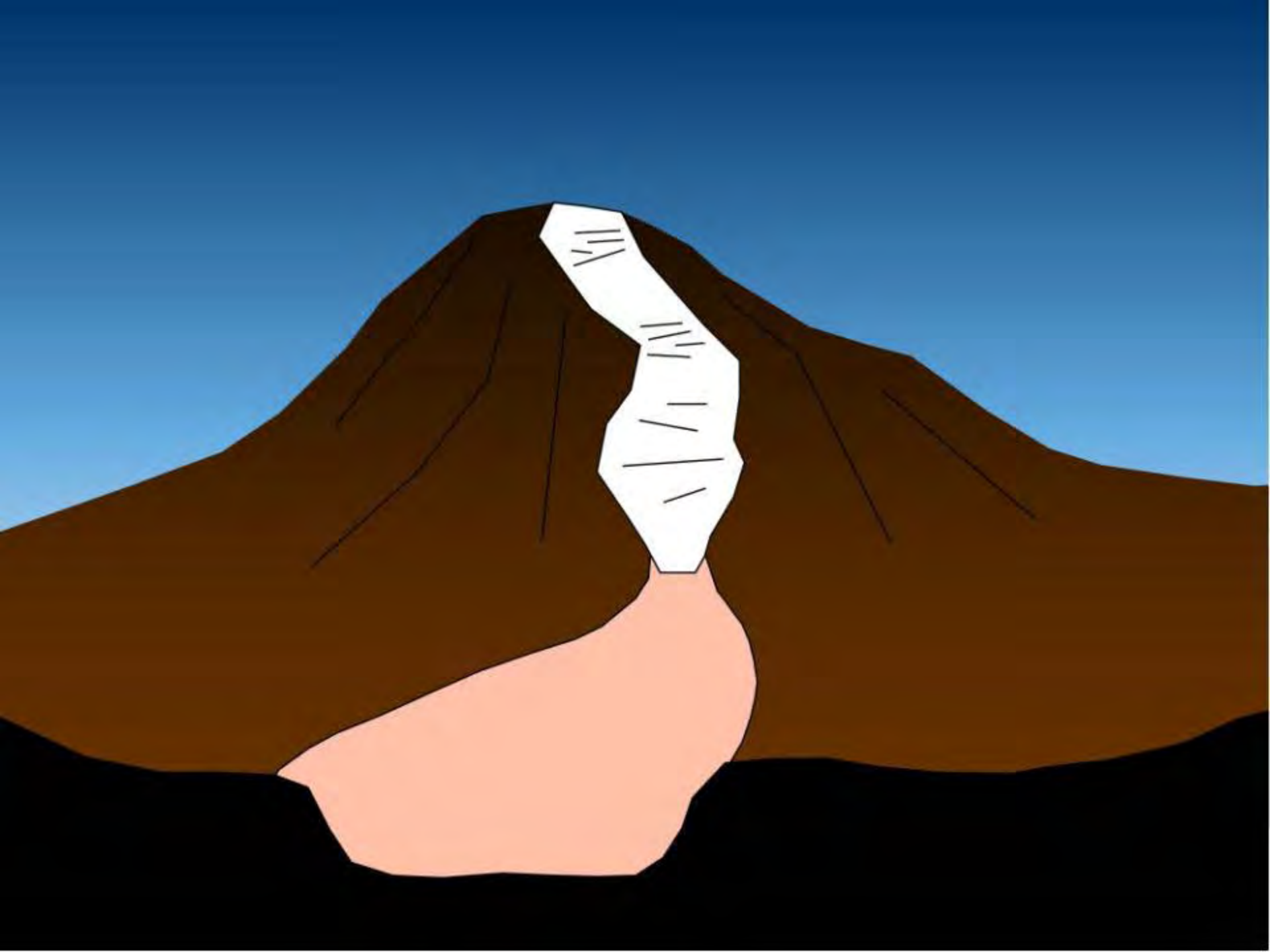


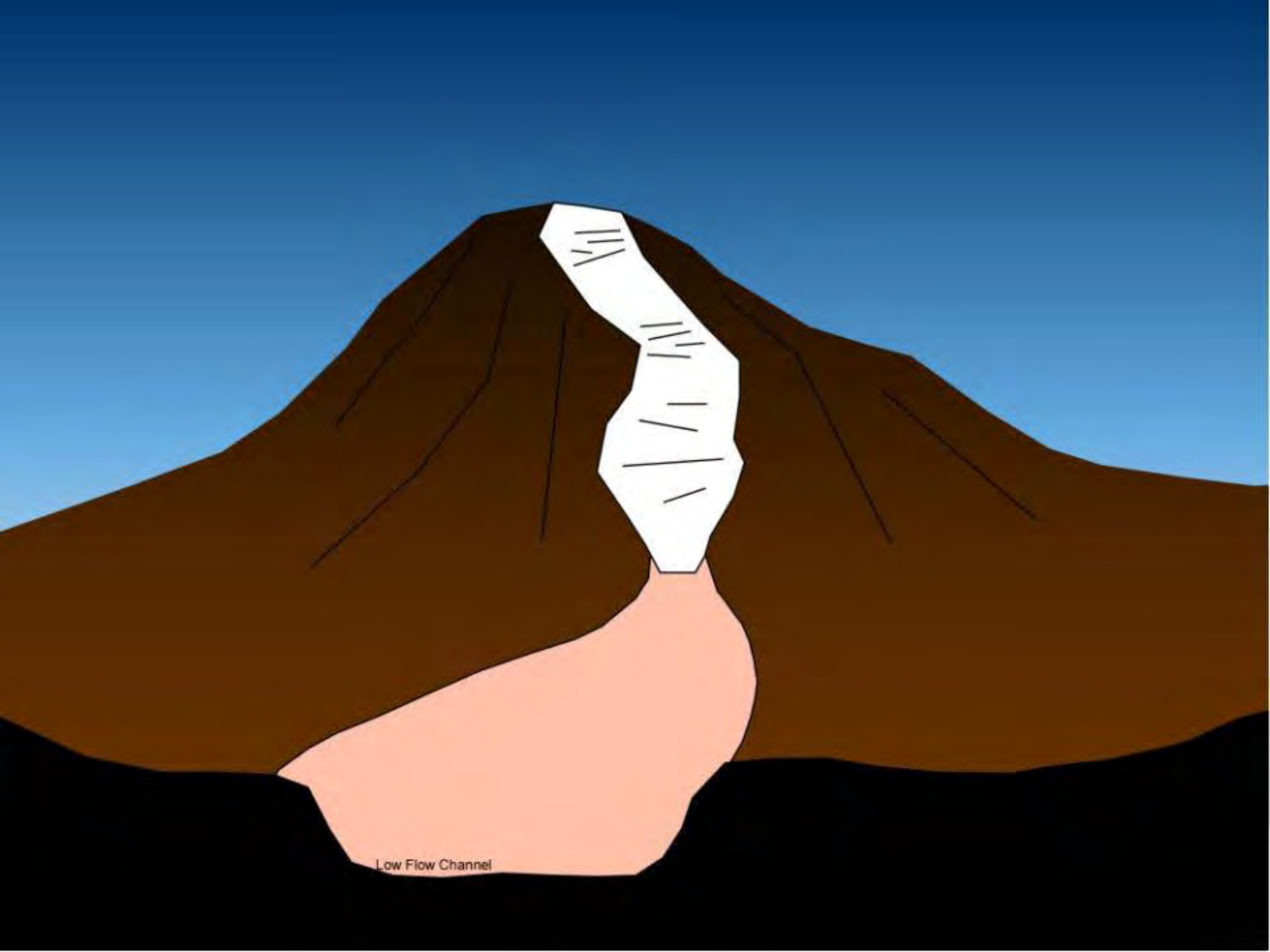




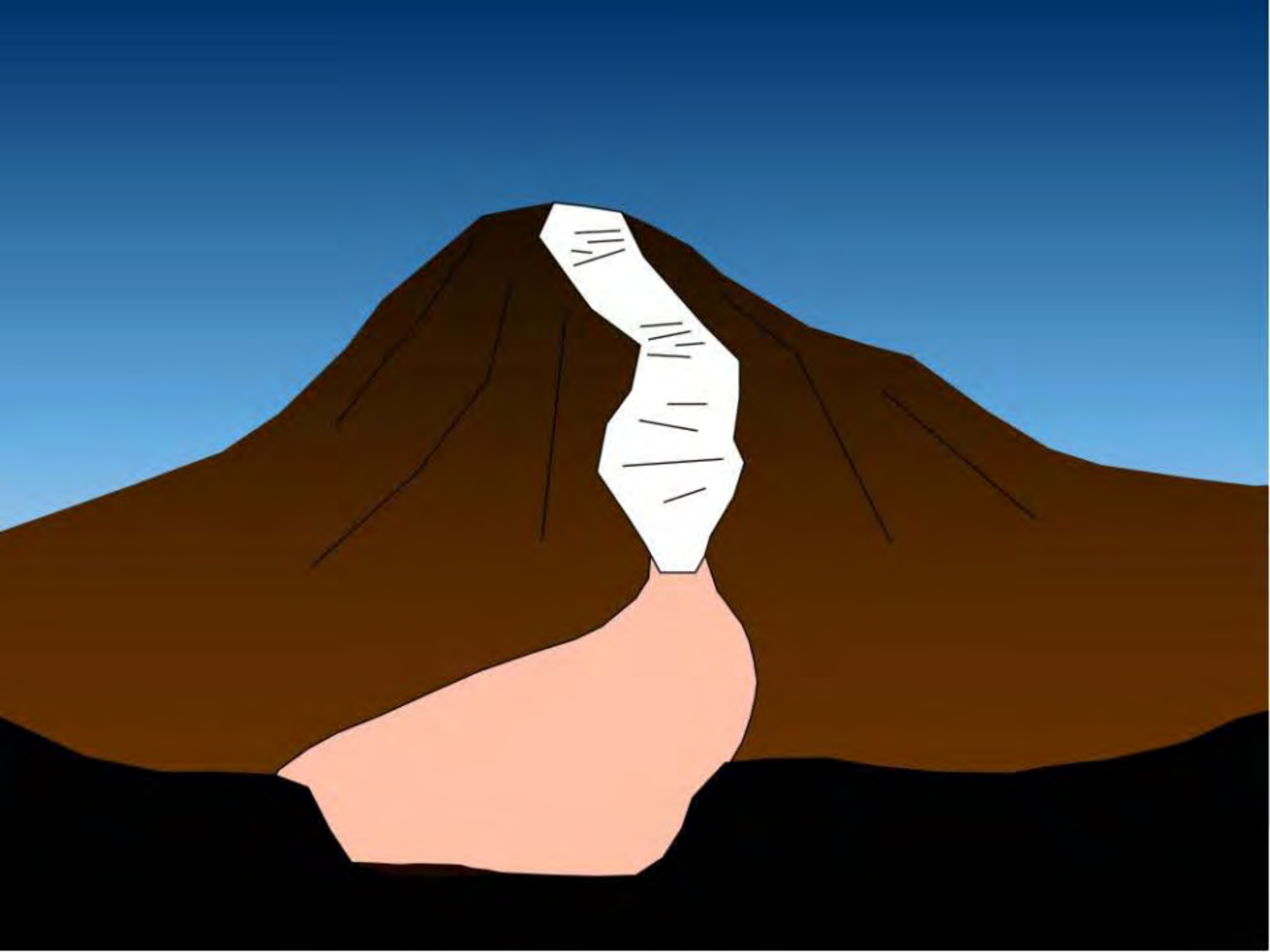
River Dynamics: Lane's Balance

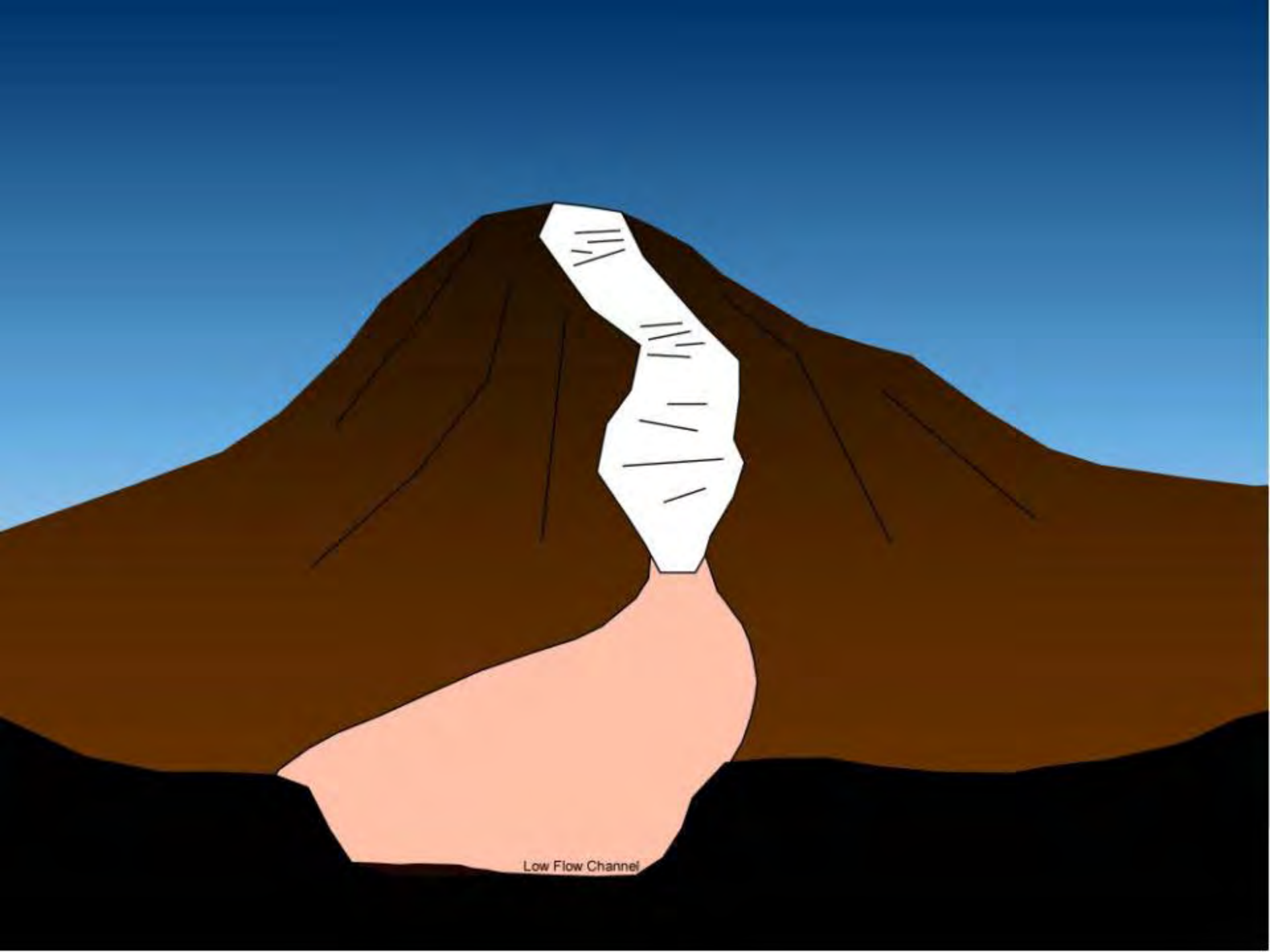




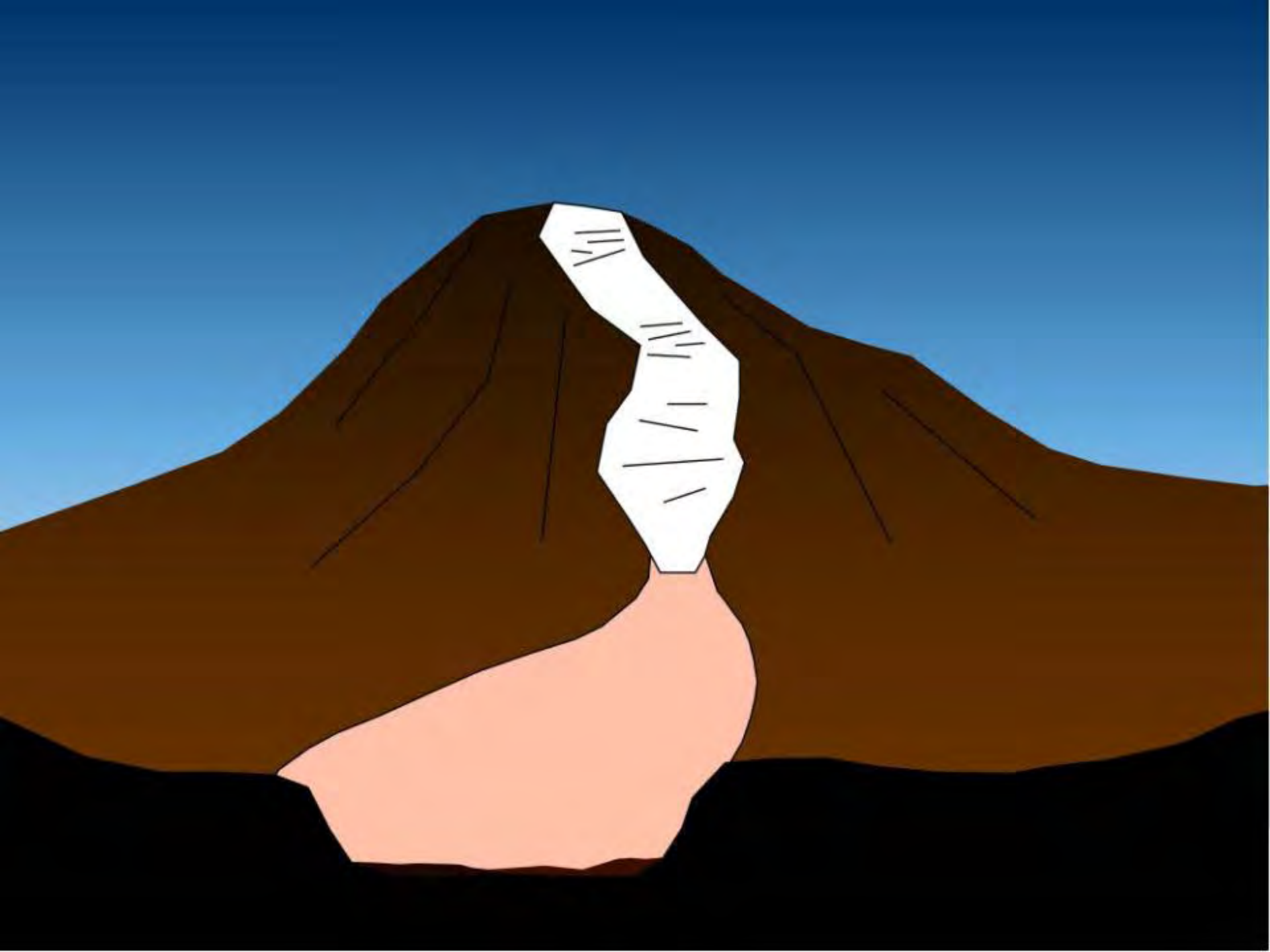


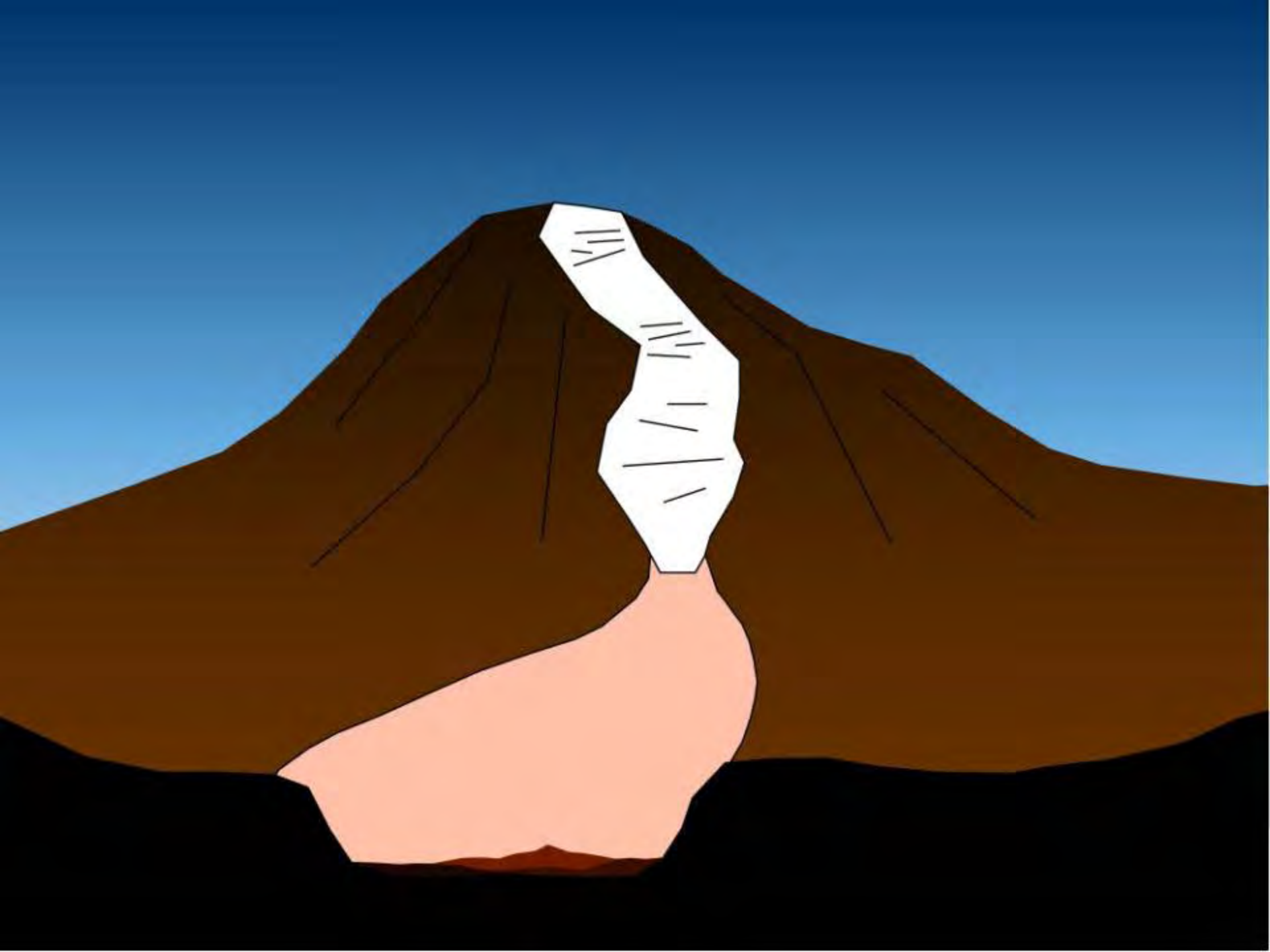
Low Flow Channel

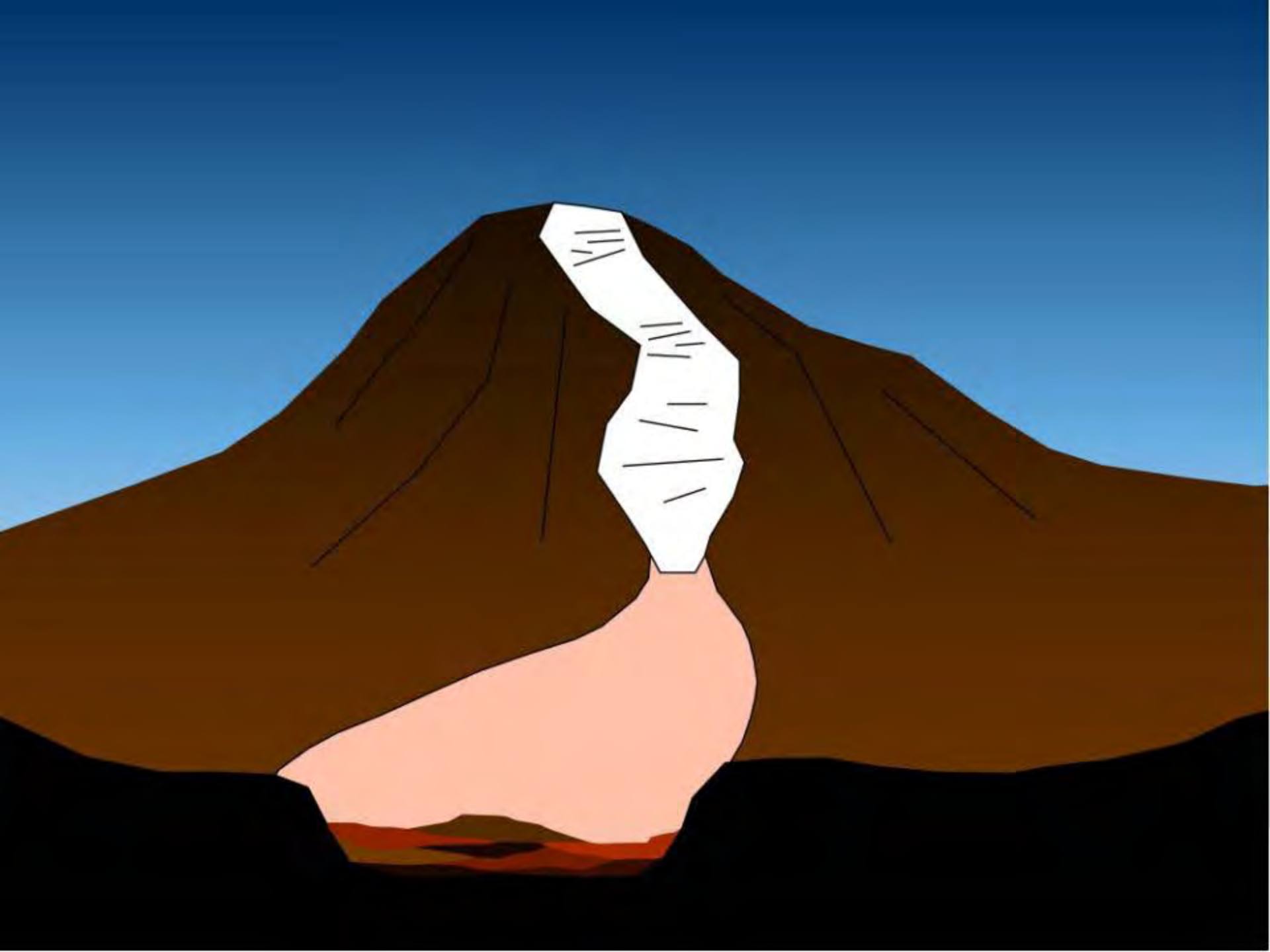


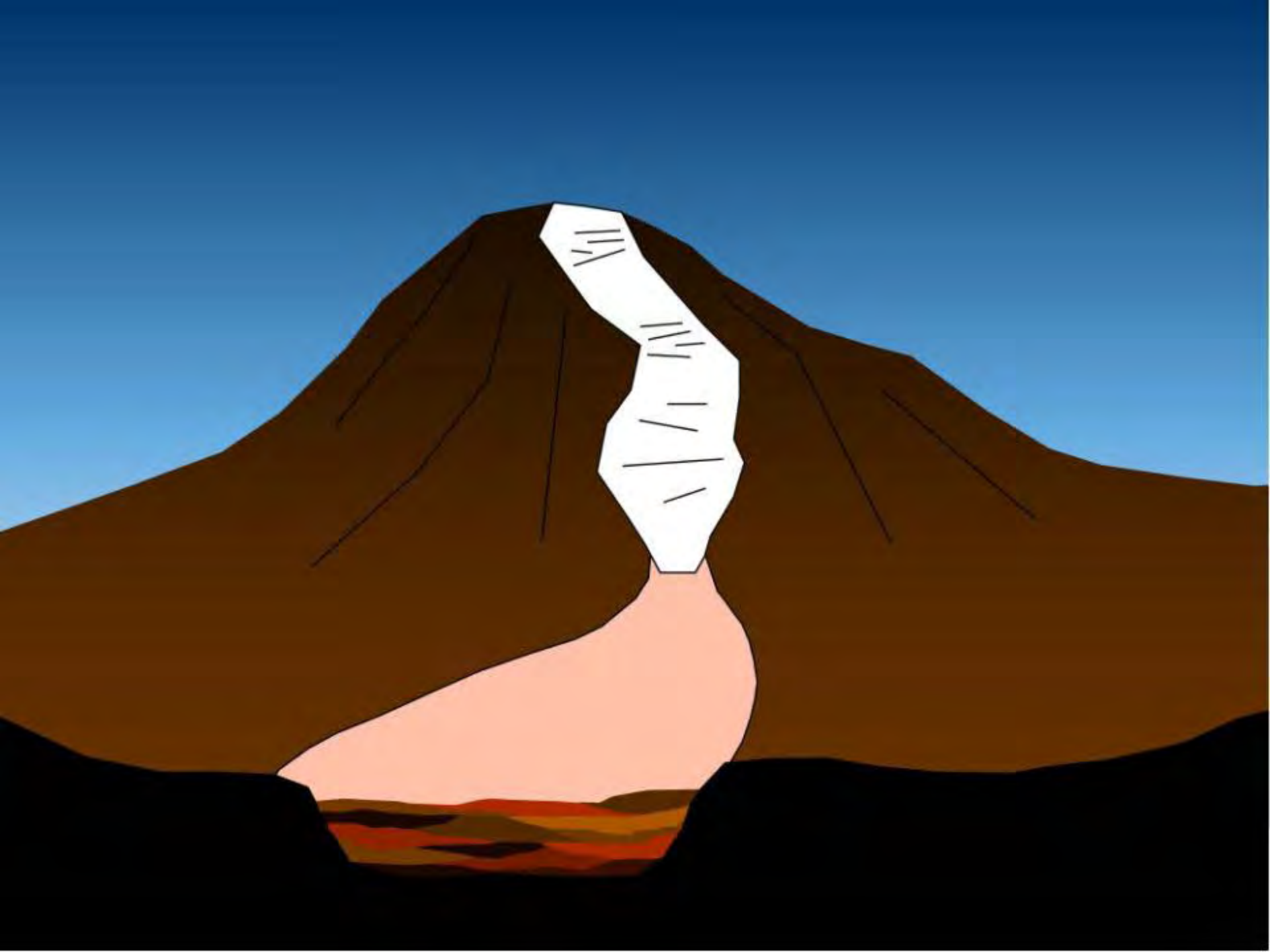


Low Flow Channel









Canyon Creek, WA
March, 2005



Canyon Creek
November 8, 2006

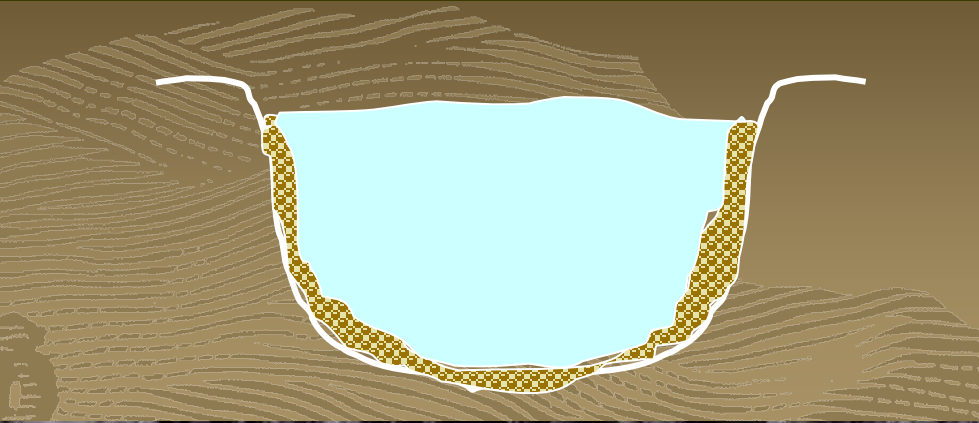


Glacial Recession on Mount Rainier

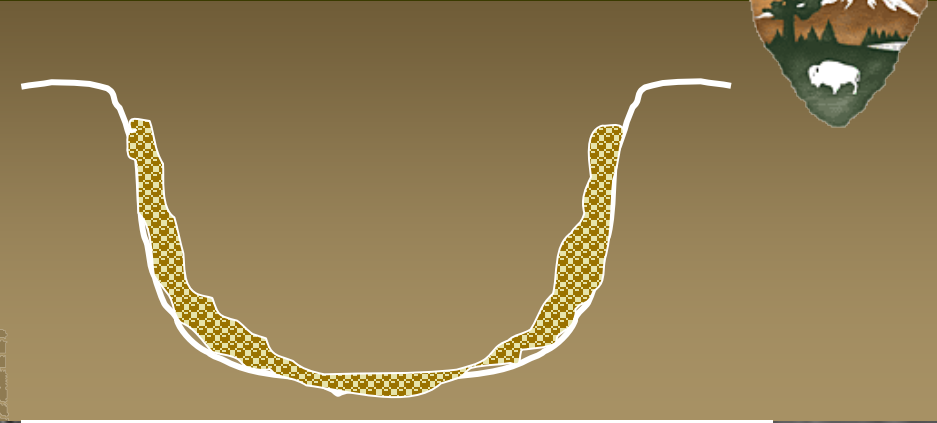
- Mass balance has been negative every year since measurements began in 2003
 - = More snow/ice melting than accumulating each winter
- All 26 glaciers receding and thinning
- Volume loss park-wide:
 - 1910-1994: 0.9 billion cubic feet per year
 - 2003-2009: 3.8 billion cubic feet per year
 - Rate of recession is 4.2 times faster in the last 6 years than the historic period
 - 49.8% of the ice/snow park-wide remains from 1913
- Retreat between 1913-1994 has exposed 8.9 square miles of loose, unconsolidated sediment on the mountain



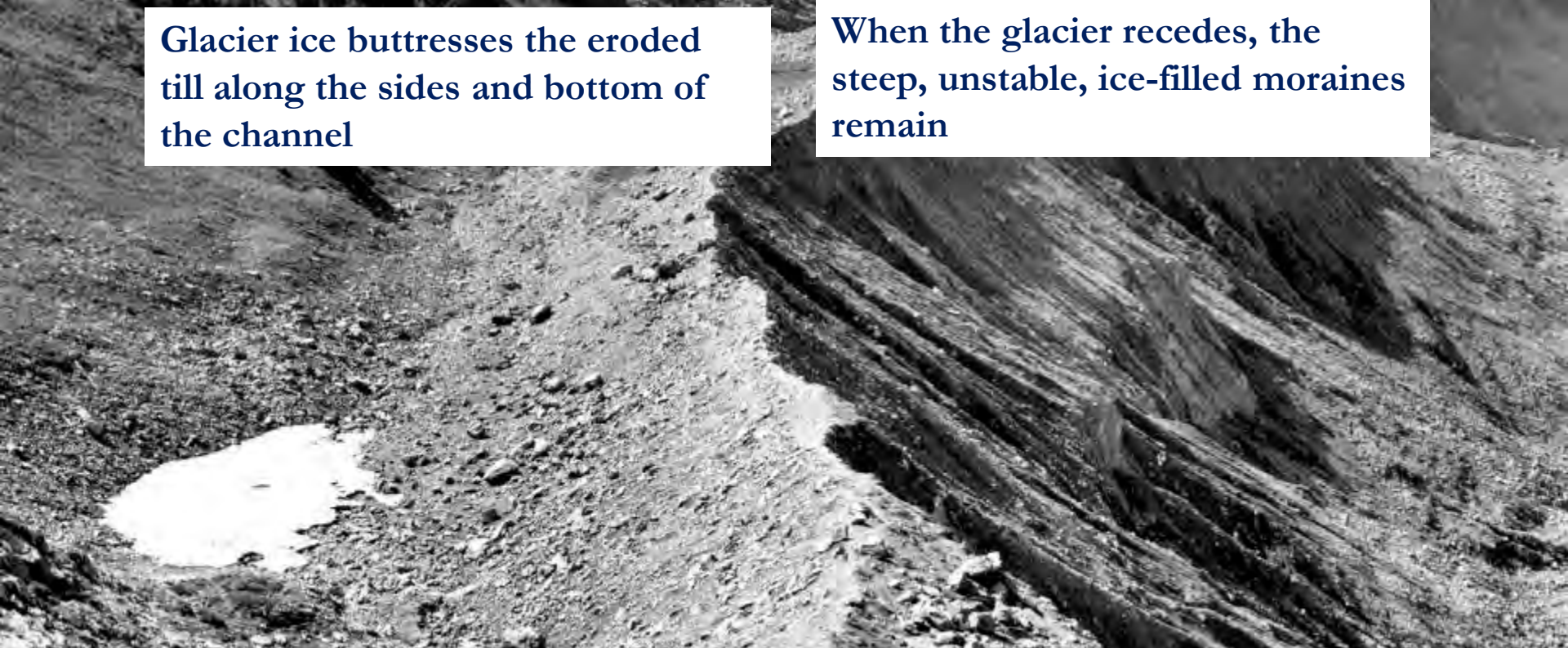
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Glacier ice buttresses the eroded till along the sides and bottom of the channel



When the glacier recedes, the steep, unstable, ice-filled moraines remain



As the glaciers melt, their moraines become exposed and erode into the rivers as well.



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Park Aggradation Rates

- **Park Historical Rate:**
 - 2.3 in/decade in the last 230 years
 - 4 in/decade since 1910
- **In the Last Decade:**
 - 6 in/decade, locally up to 50 in/decade
 - 10x the historic rate
- **Carbon River:**
 - 0.56 ft/year since 1910
 - 31.3 ft across the channel from the terminus to park entrance
- **Debris Flows:**
 - > 5 ft in a single event
- **2006 Floods:**
 - Despite peak flows, > 1 ft accumulated in a single year

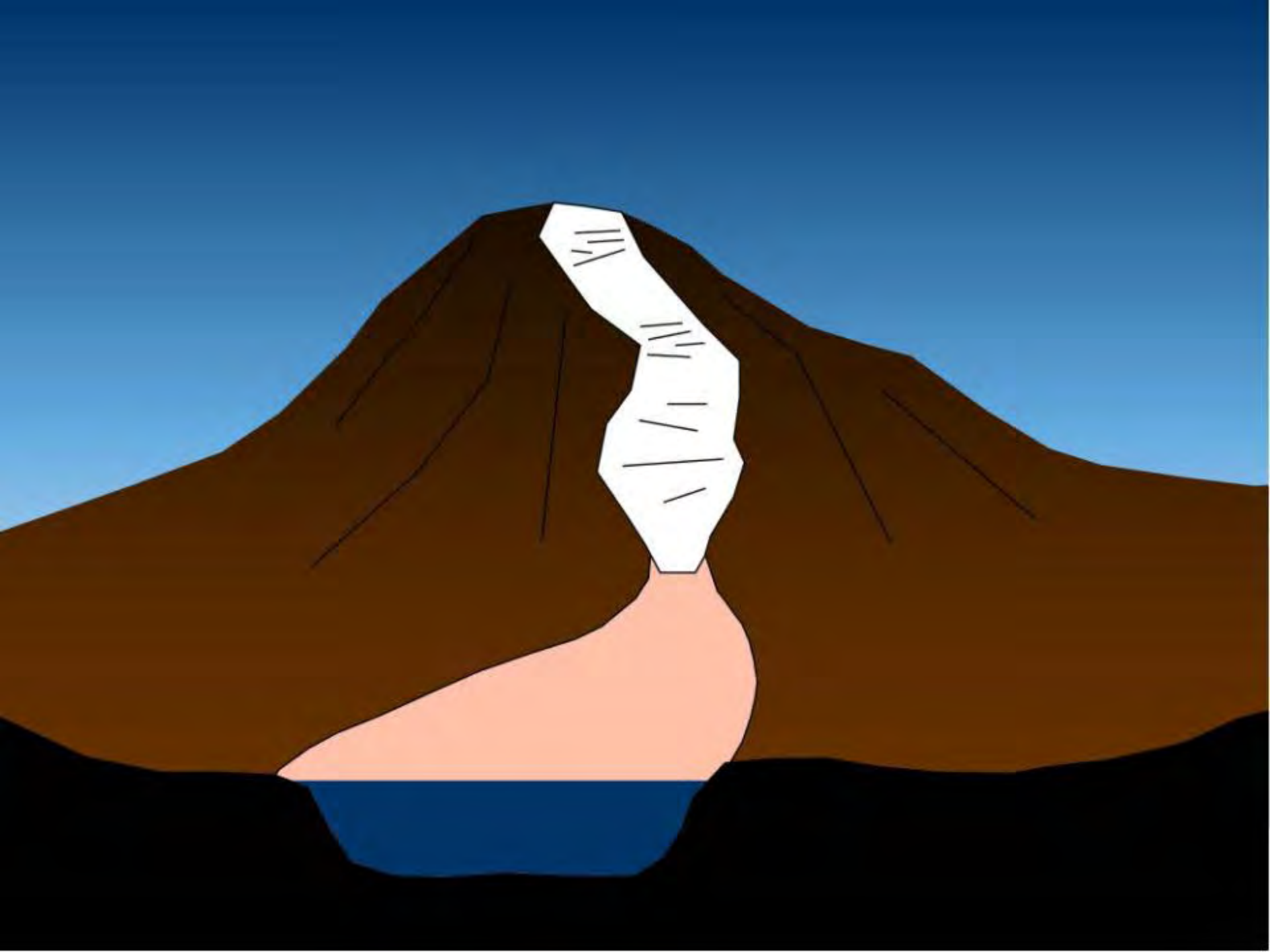


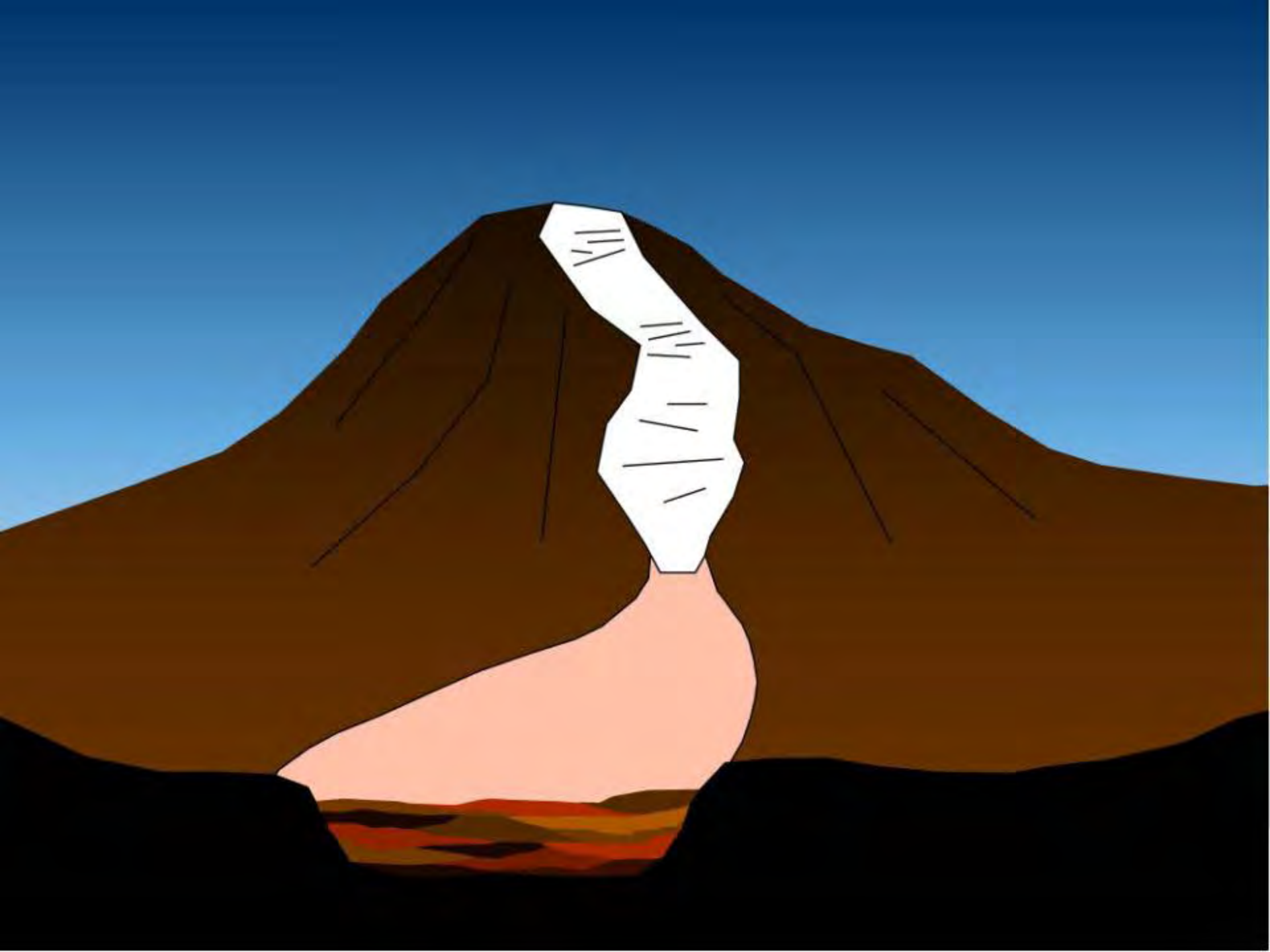
Forest

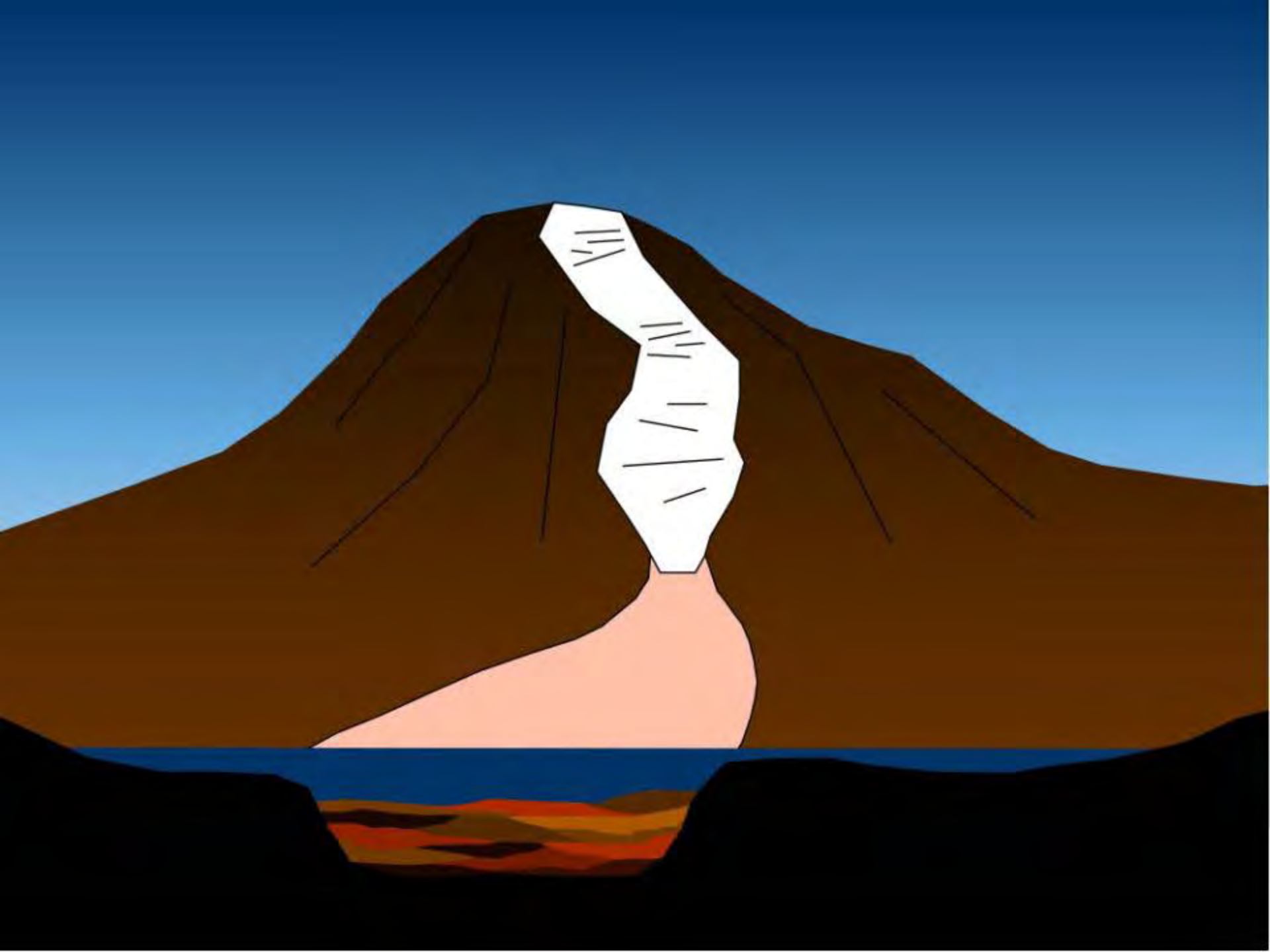
Channel

Tahoma Creek

Photo: Scott Beason

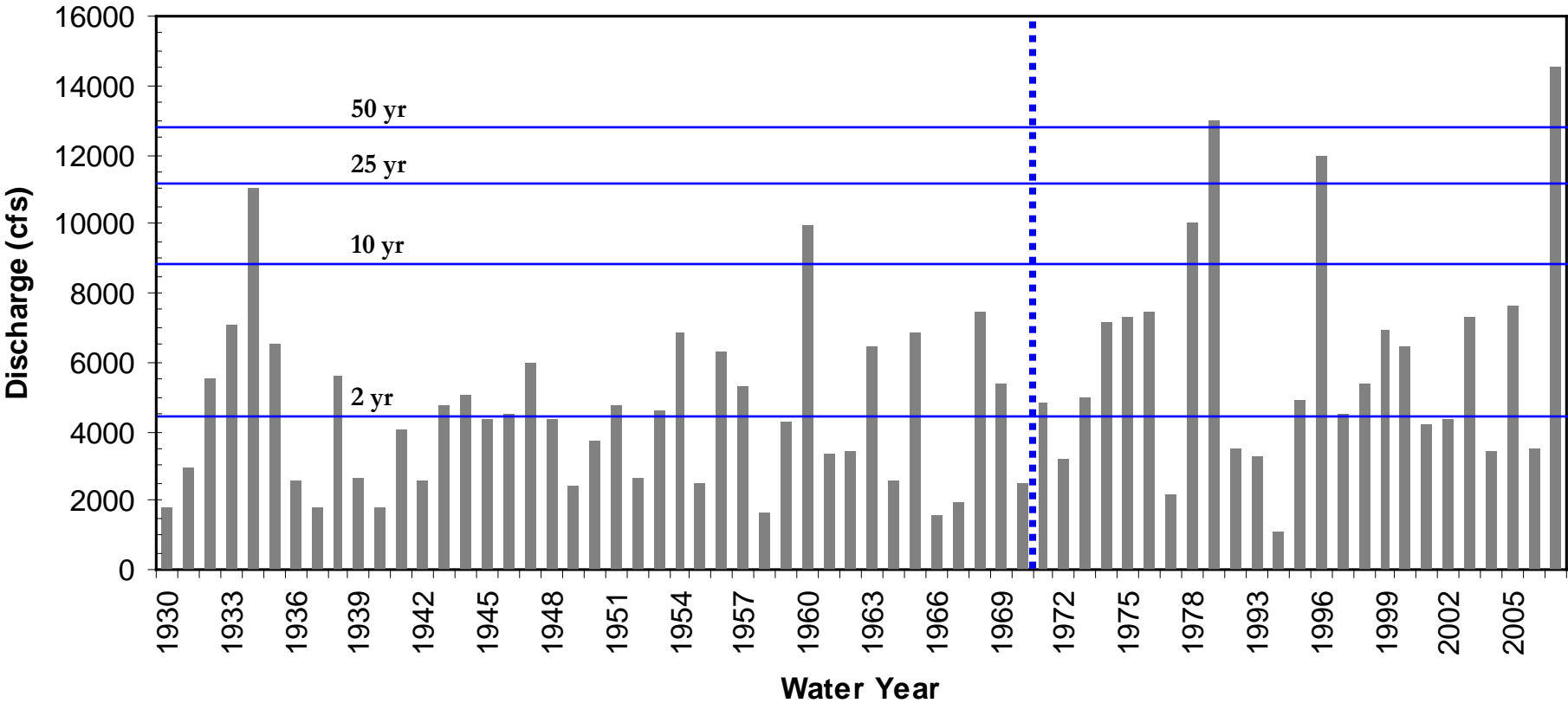








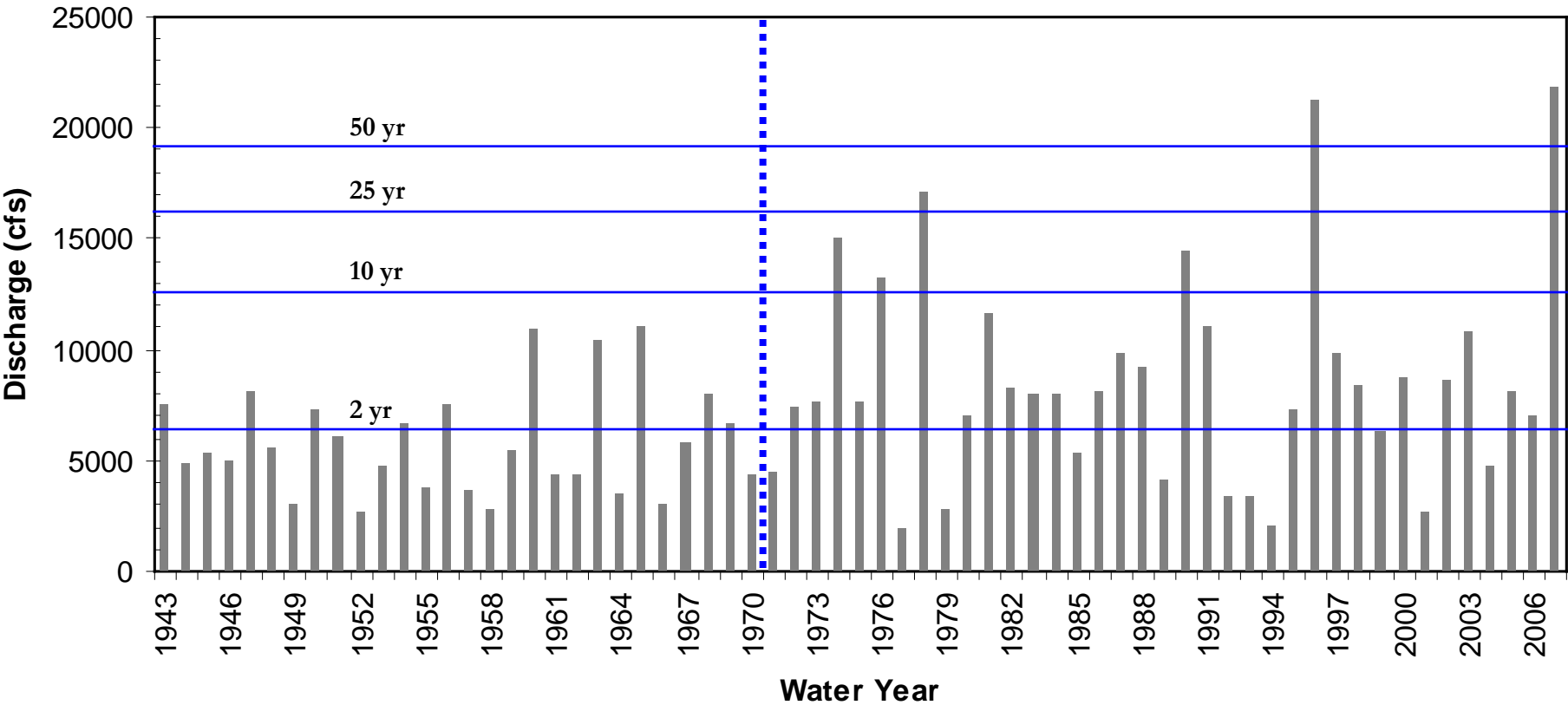
Annual Peak Flows
USGS 12094000 Carbon River at Fairfax, WA



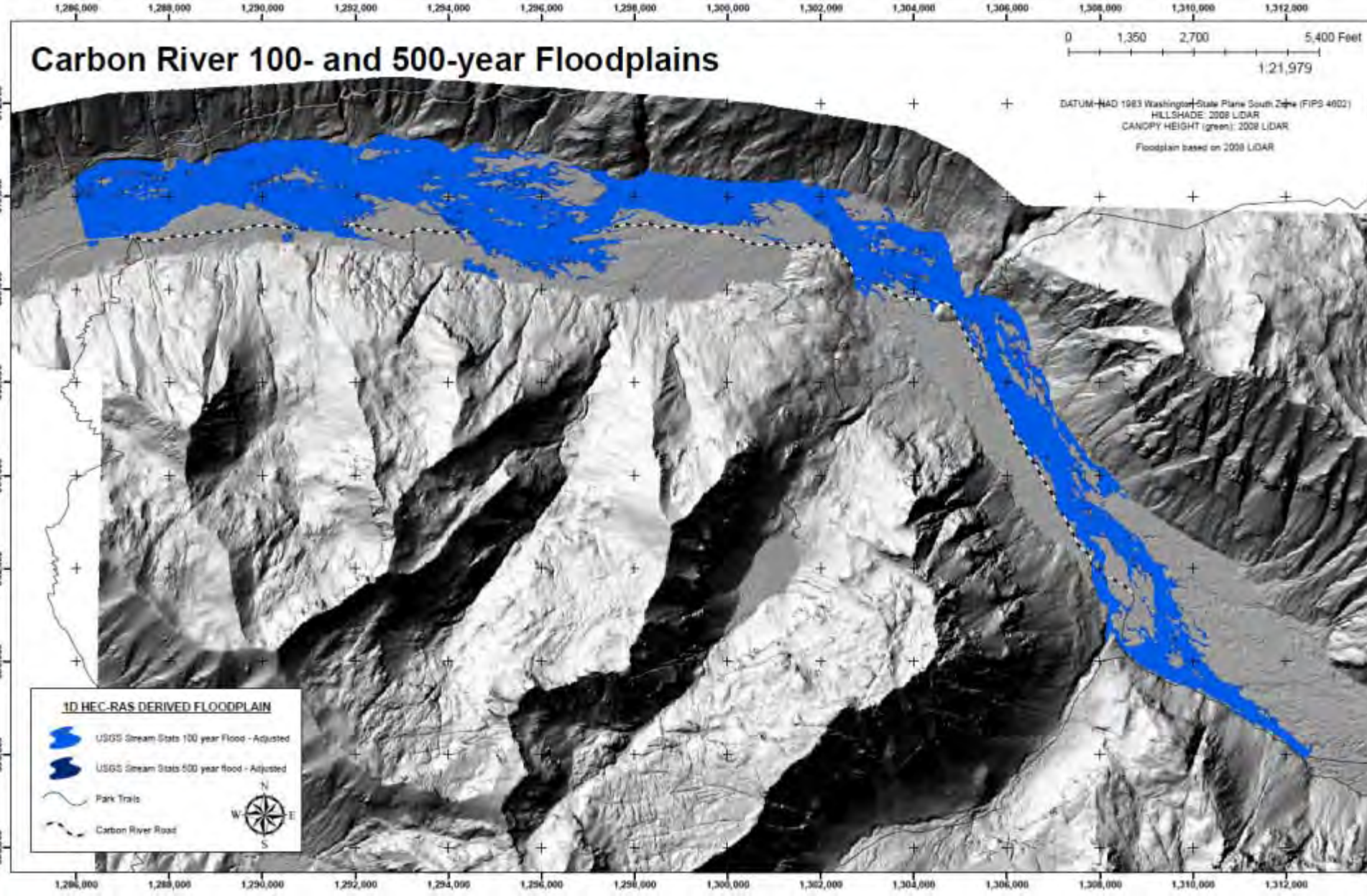
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Annual Peak Flows
USGS 12082500 Nisqually River near National, WA

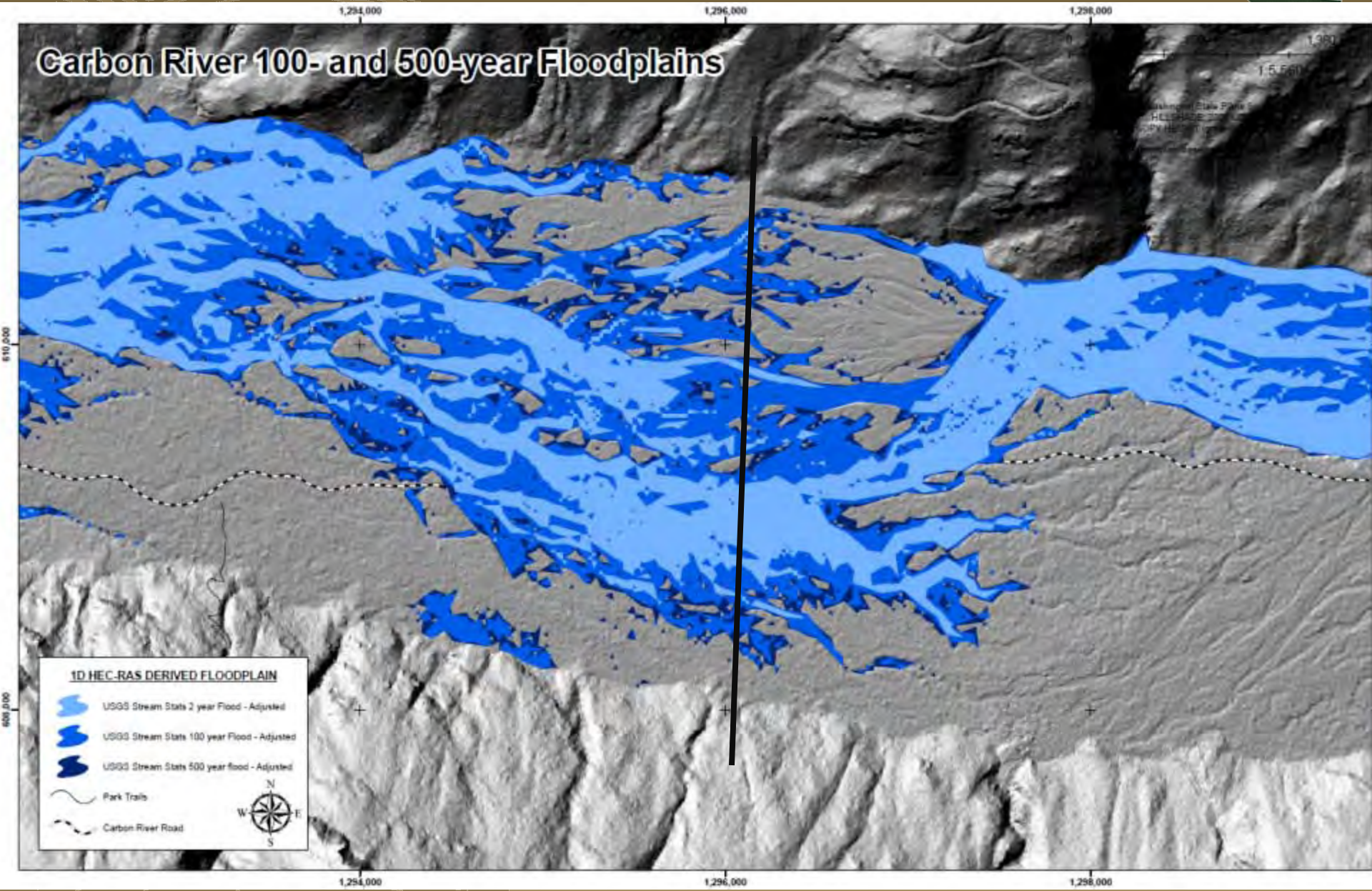


Source: USGS

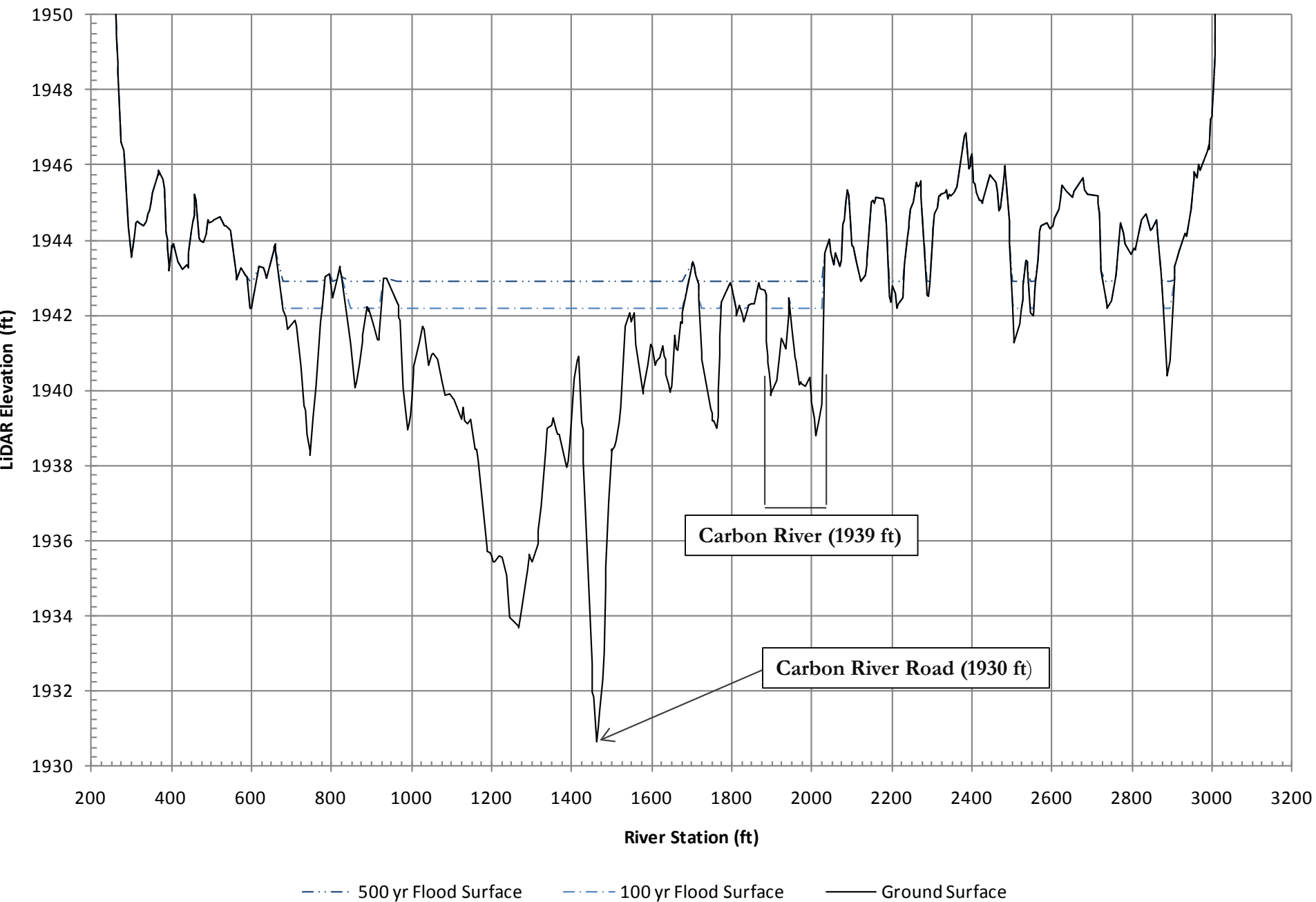


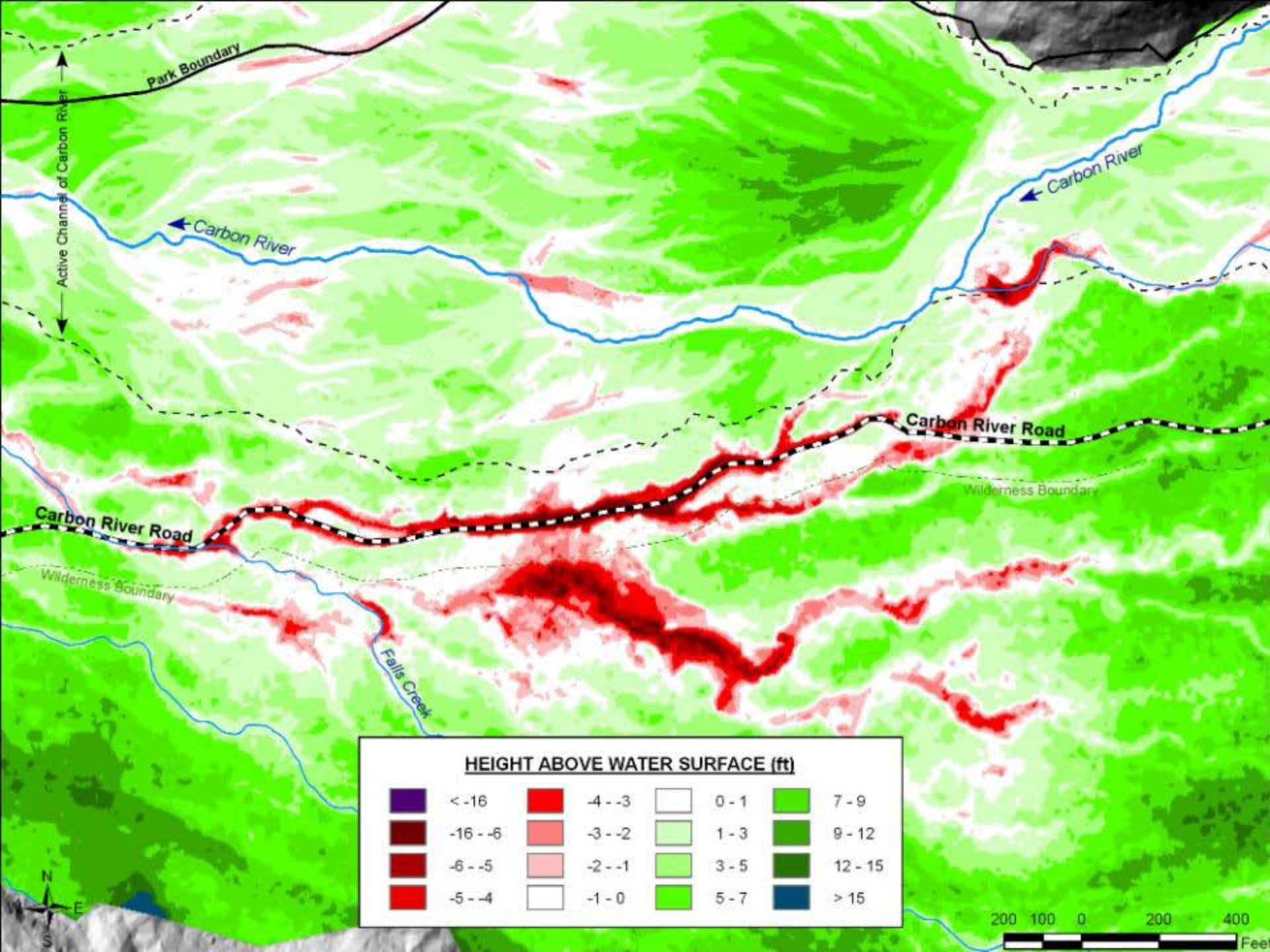


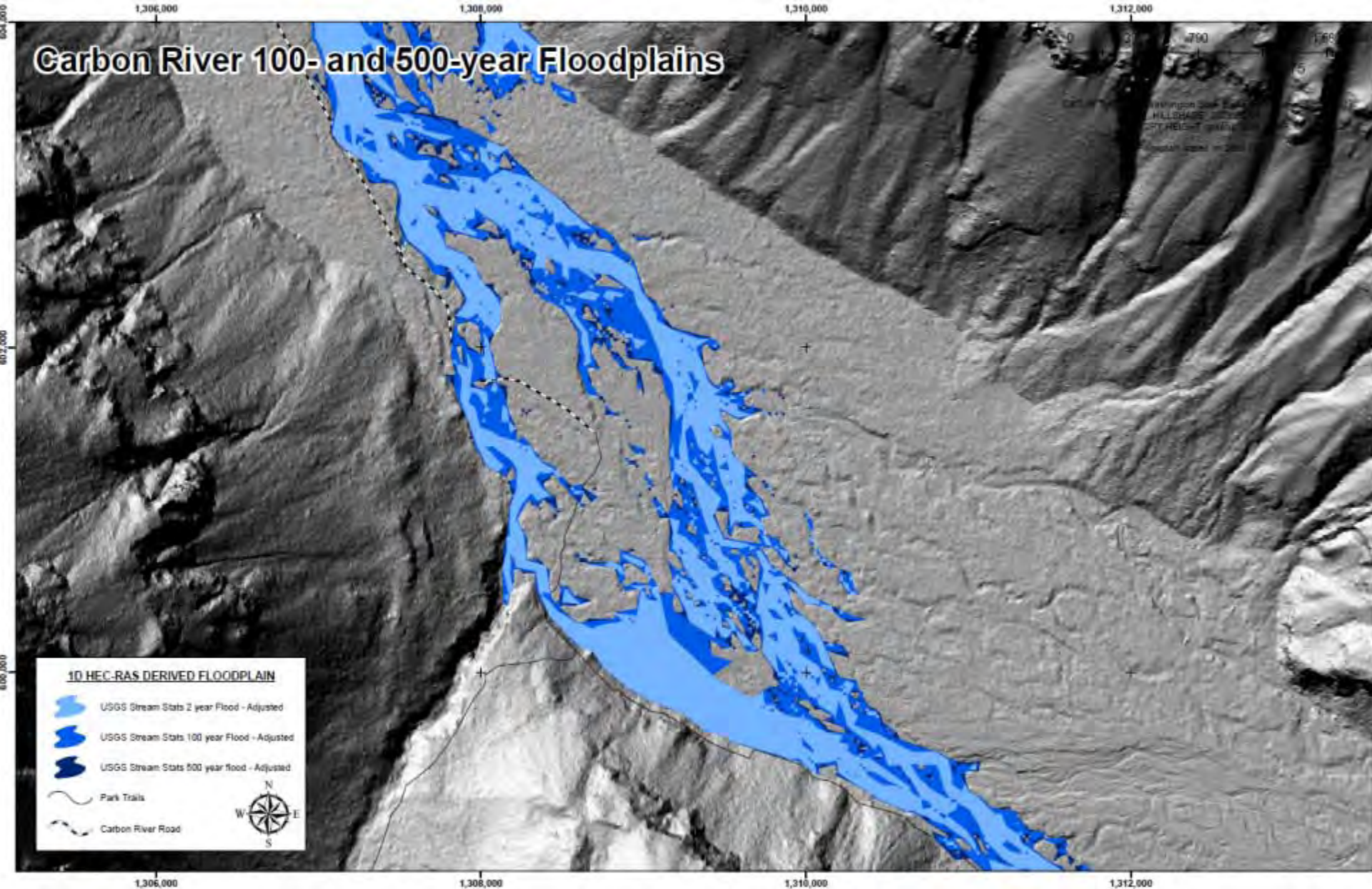
Carbon River 100- and 500-year Floodplains

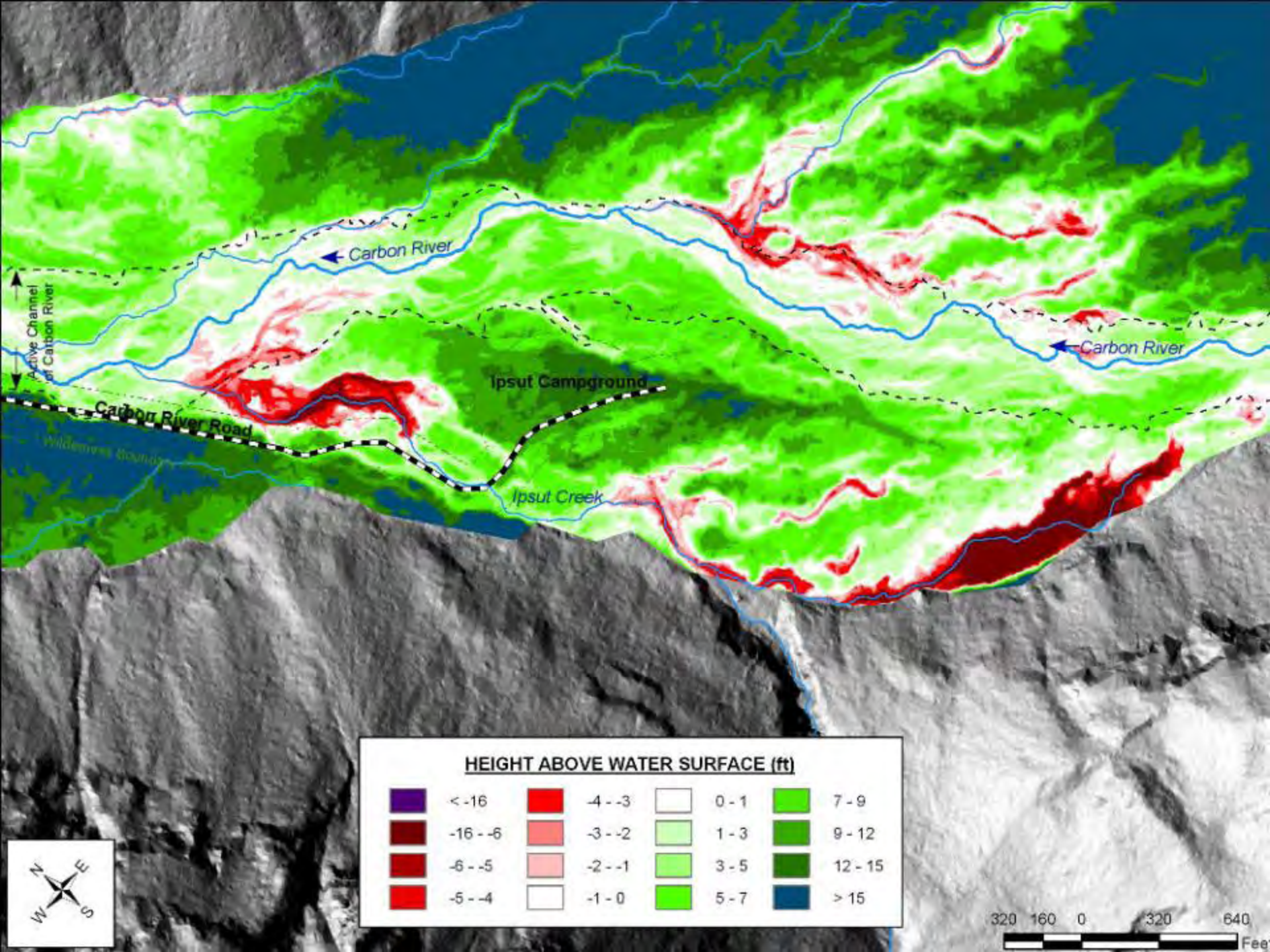


Carbon River at Falls Creek – River Cross Section









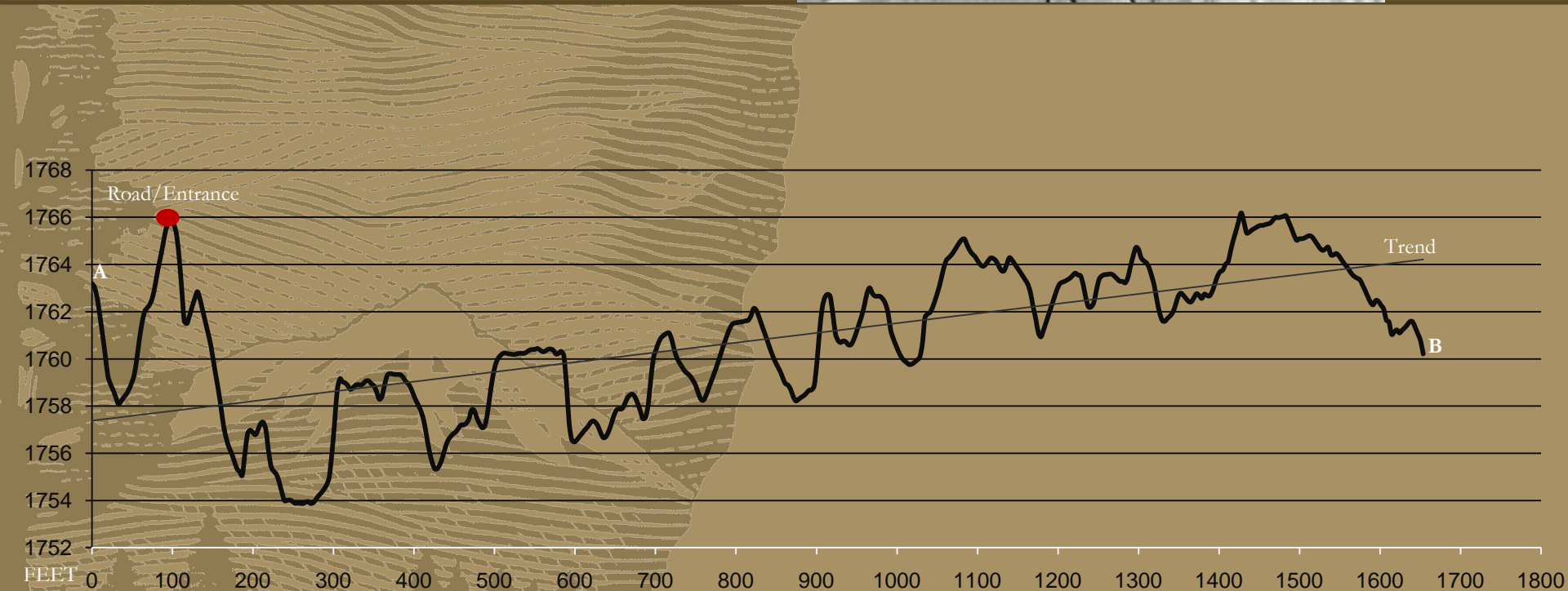
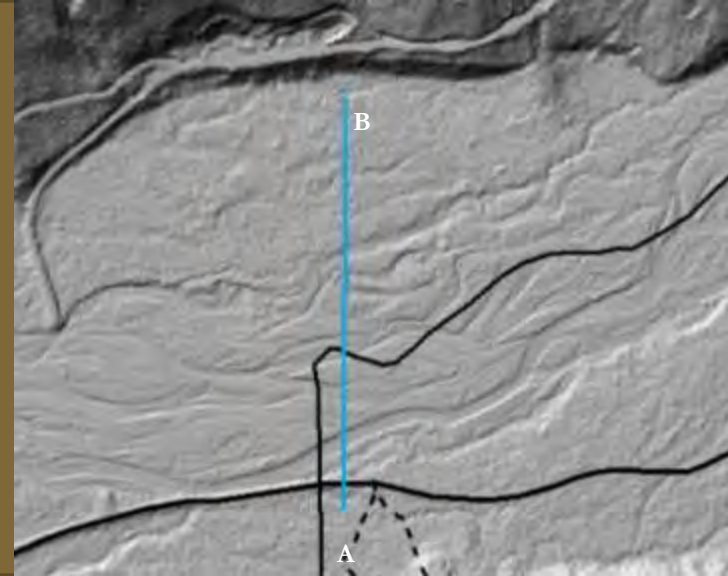
HEIGHT ABOVE WATER SURFACE (ft)



320 160 0 320 640

Feet

Entrance Station Cross Section



Note: lateral gradient exceeds down-river gradient ($>2X$), driving energy to left bank.

Totals:

1989-2009: 3.3 ft./yr.

2006-2009: 15.2 ft./yr.

Site 1

Area used for averaging

PARK BOUNDARY

Entrance Station

Carbon River Road

Legend

Eroded Area

Interval



1989-1996



1996 (2006)-2008



2008-2009

2009 Ortho Image
2008 LiDAR Derived Contours

0 50 100 200
Feet

Created by Ben Diaz



Conclusions

- Over time, the capacity of the river has decreased due to aggradation and excess sediment production, while volume of water has increased due to floods and changing climate.
- The landscape has responded and severely damaged park infrastructure due to elevation disequilibrium (having to walk uphill to get to rivers).
- We anticipate larger, more destructive floods and more sediment being provided to rivers
- The physical processes at work in the river mean the risk to the roadway and associated park infrastructure is high. Future flooding and aggradation will increase this risk.



NO
PARKING
ANY
TIME



Environment Affected by EA Decision

- Vegetation
- Federally Listed Species
- Cultural Resources
- Visitor Experience
- Wilderness



Vegetation



Western Hemlock, Silver
Fir & Devil's Club Forest
500–600 years old



Threatened and Endangered Species

- Northern Spotted Owl
- Marbled Murrelet
- Bull Trout
- Chinook Salmon
- Puget Sound Steelhead





Cultural Resources

- Archeology
- Cultural Landscape
- Historic Structures



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Archeological resources are associated with:

- Native Americans
- 19th-century Euro-American settlement and mining
- Early NPS development



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Carbon River Road is a cultural landscape, significant as an early scenic park road





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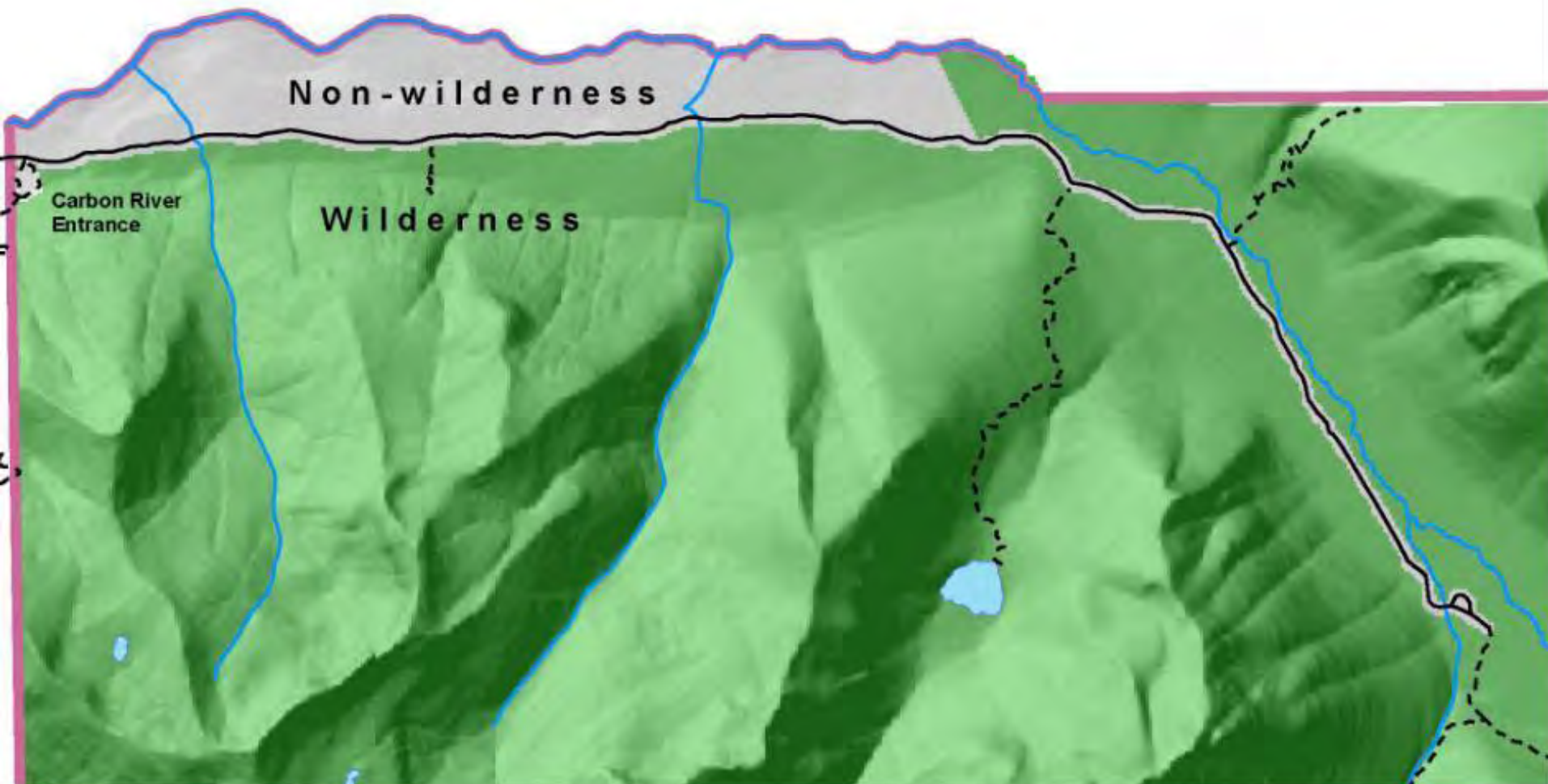


The road's historic structures are the Ipsut Creek Patrol Cabin, and a CCC garage building



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Wilderness





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Visitor Experience

- Prior to flooding, the Carbon River Road provided access to the year-round Ipsut Creek Campground
- Most park visitors (>65%) are day users, including day hiking (73%) and driving to view scenery (63%)
- Mean average recreational visitation to the Carbon River area from 2000-2006 was 57,221. This was approximately 5% of total recreational visitation to the entire park.
- In 2007 (after the flood) recreational visitation to the Carbon River area was 73,563. This increase was probably due to public interest in the flood damage.
- Recreational visitation to the Carbon River area since 2007 has decreased significantly



Visitor Use Before and After Flooding

Post Flood Visitation to the Carbon River Area

2007 - 73,563

2008 - 35,527

2009 - 20,146

*Source: National Park Service Public Use Statistics Office



Carbon River
Entrance

Ipsut Cr.○
Campground

EXPERIENCE YOUR AMERICA



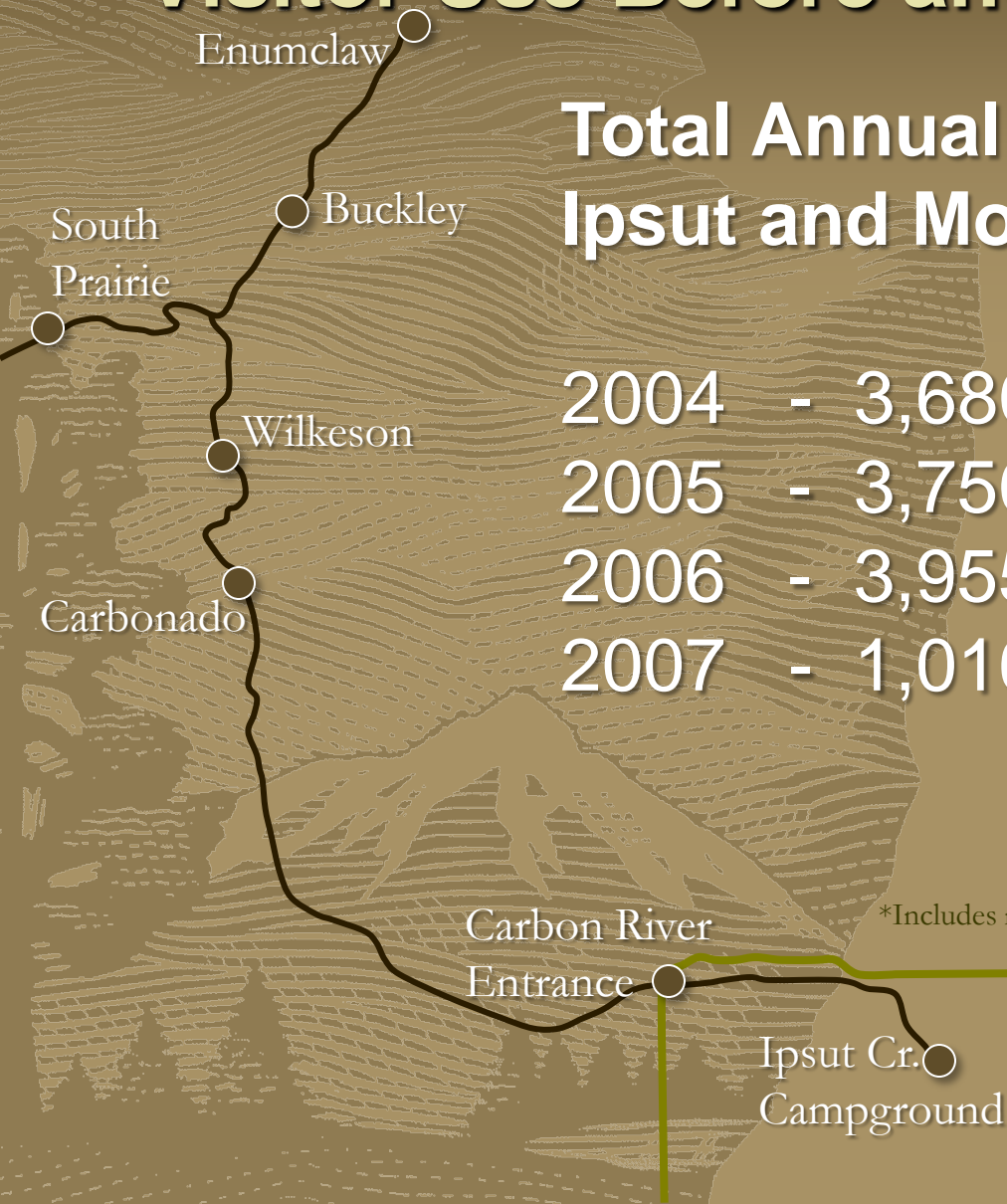
Visitor Use Before and After Flooding

Total Annual Campers at Ipsut and Mowich Lake*

2004	-	3,680
2005	-	3,750
2006	-	3,955
2007	-	1,016*

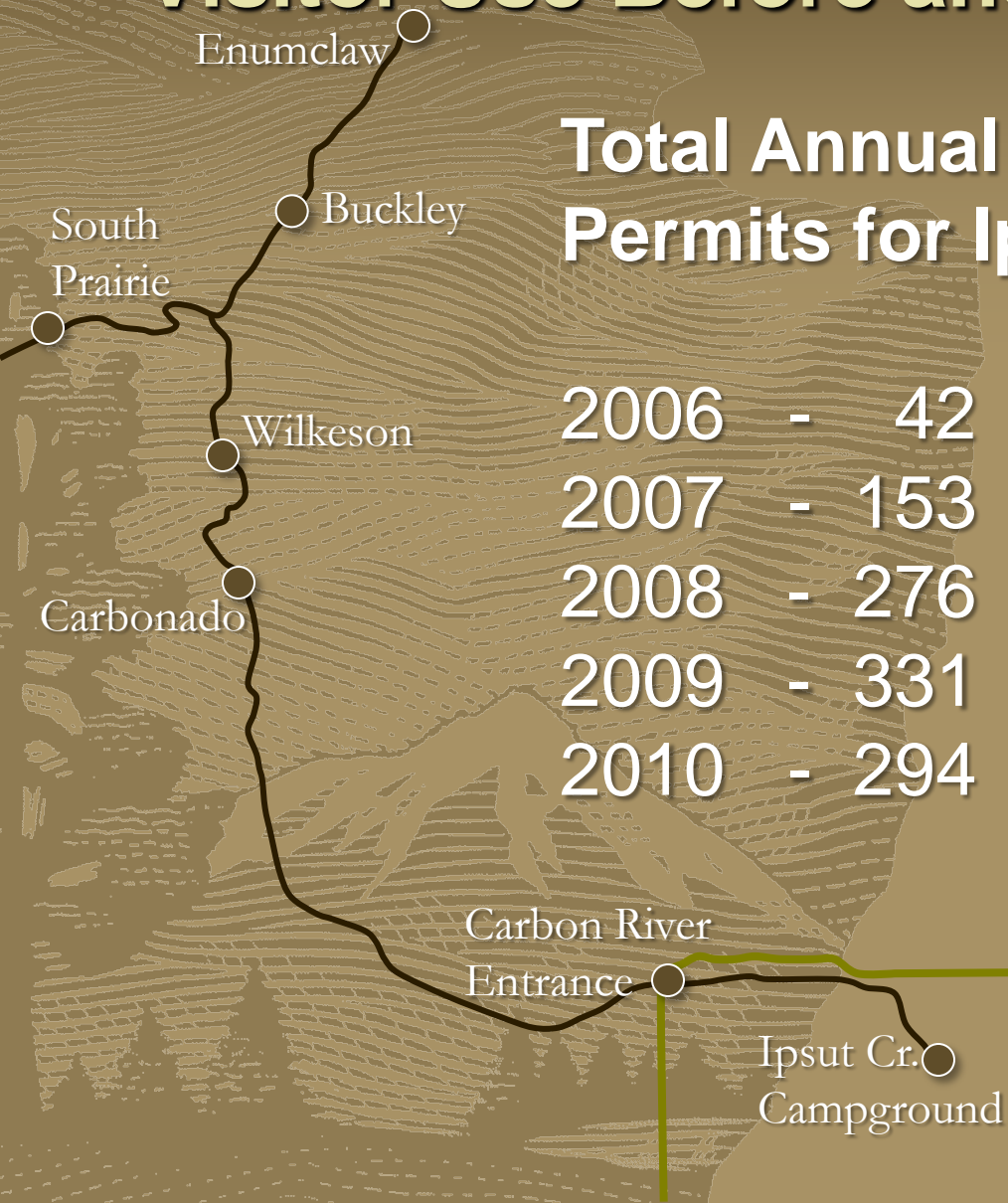


*Includes many SCA and volunteer groups working on flood restoration





Visitor Use Before and After Flooding



Total Annual Backcountry Permits for Ipsut Campground

2006	-	42
2007	-	153
2008	-	276
2009	-	331
2010	-	294



*Source: Mount Rainier backcountry permit system

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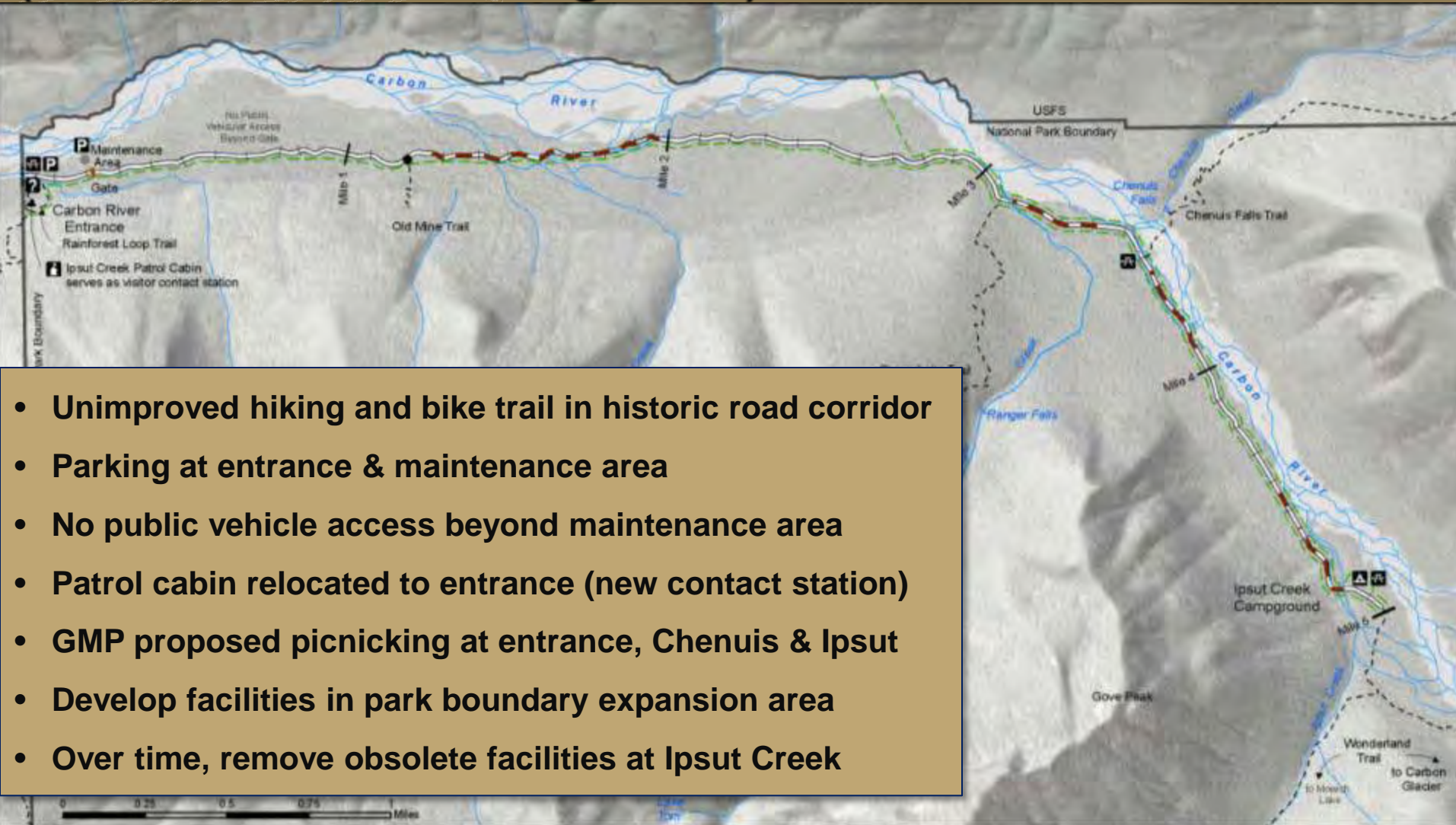
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EA Alternatives

1. No Action
2. Hike and Bike Trail
3. Public Vehicles to Chenuis
4. Shuttle to Milepost 4.4
5. Wilderness Trail Re-Route



Alternative 1 - No Action (Continue Current Management)



- Unimproved hiking and bike trail in historic road corridor
- Parking at entrance & maintenance area
- No public vehicle access beyond maintenance area
- Patrol cabin relocated to entrance (new contact station)
- GMP proposed picnicking at entrance, Chenuis & Ipsut
- Develop facilities in park boundary expansion area
- Over time, remove obsolete facilities at Ipsut Creek



Elements Common to All Action Alternatives



- Provide additional parking outside entrance via partnership agreement.
- Reconstruct former entrance arch.
- Construct logjams between entrance & maintenance area.
- Construct road humps to divert water across road.
- Remove buildings at entrance & maintenance area, except vault toilets
- Construct new entrance contact station.
- Develop parking, picnicking & exhibits at entrance & maintenance area.
- Replace road culverts on streams w/fish friendly culverts or bridges.
- Develop new facilities in park boundary expansion area.
- Remove obsolete facilities at Ipsut Creek





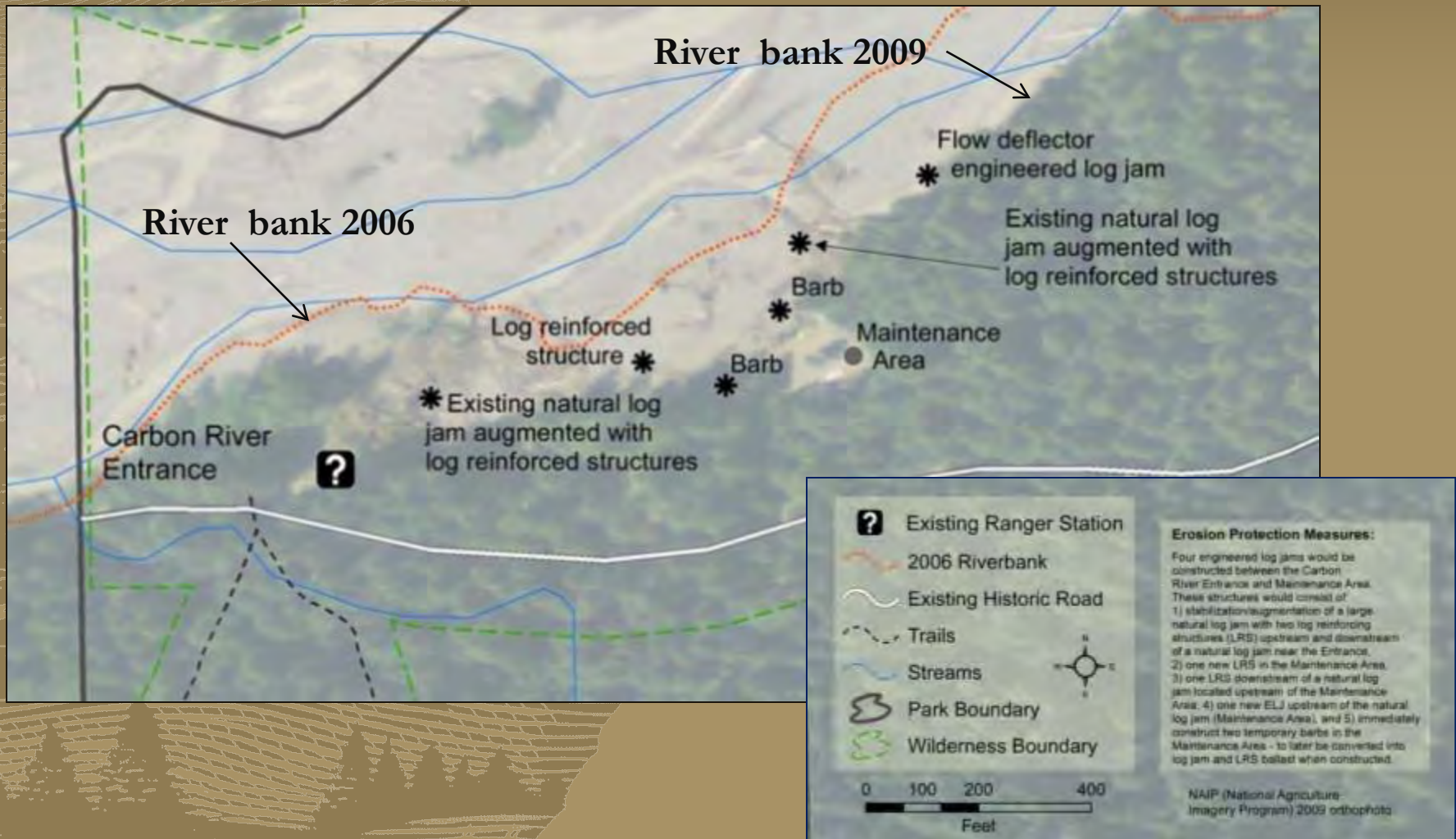
Develop facilities - park boundary expansion area



Carbon River
Ranch House

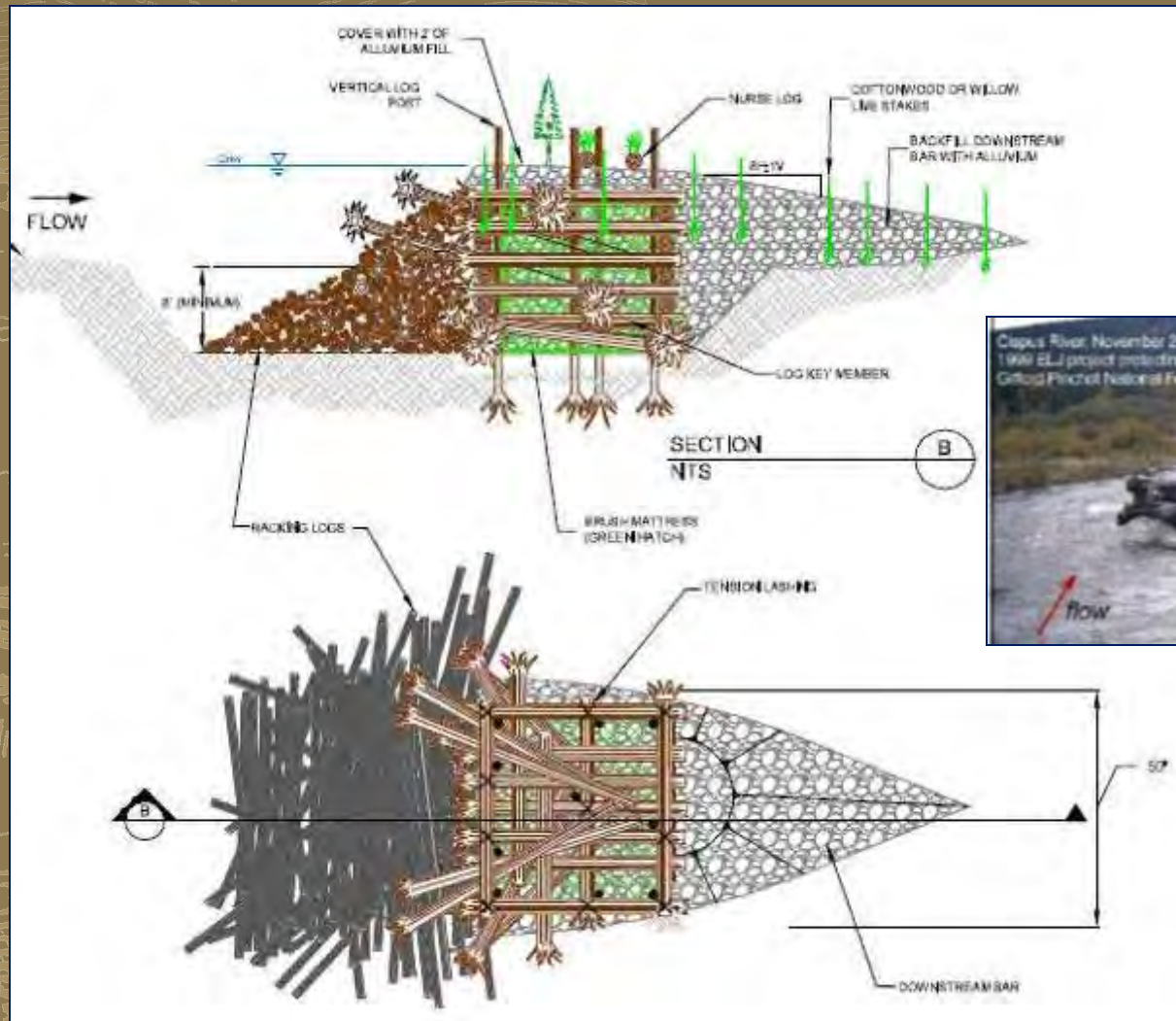


Erosion Protection Measures Carbon River Entrance and Maintenance Area





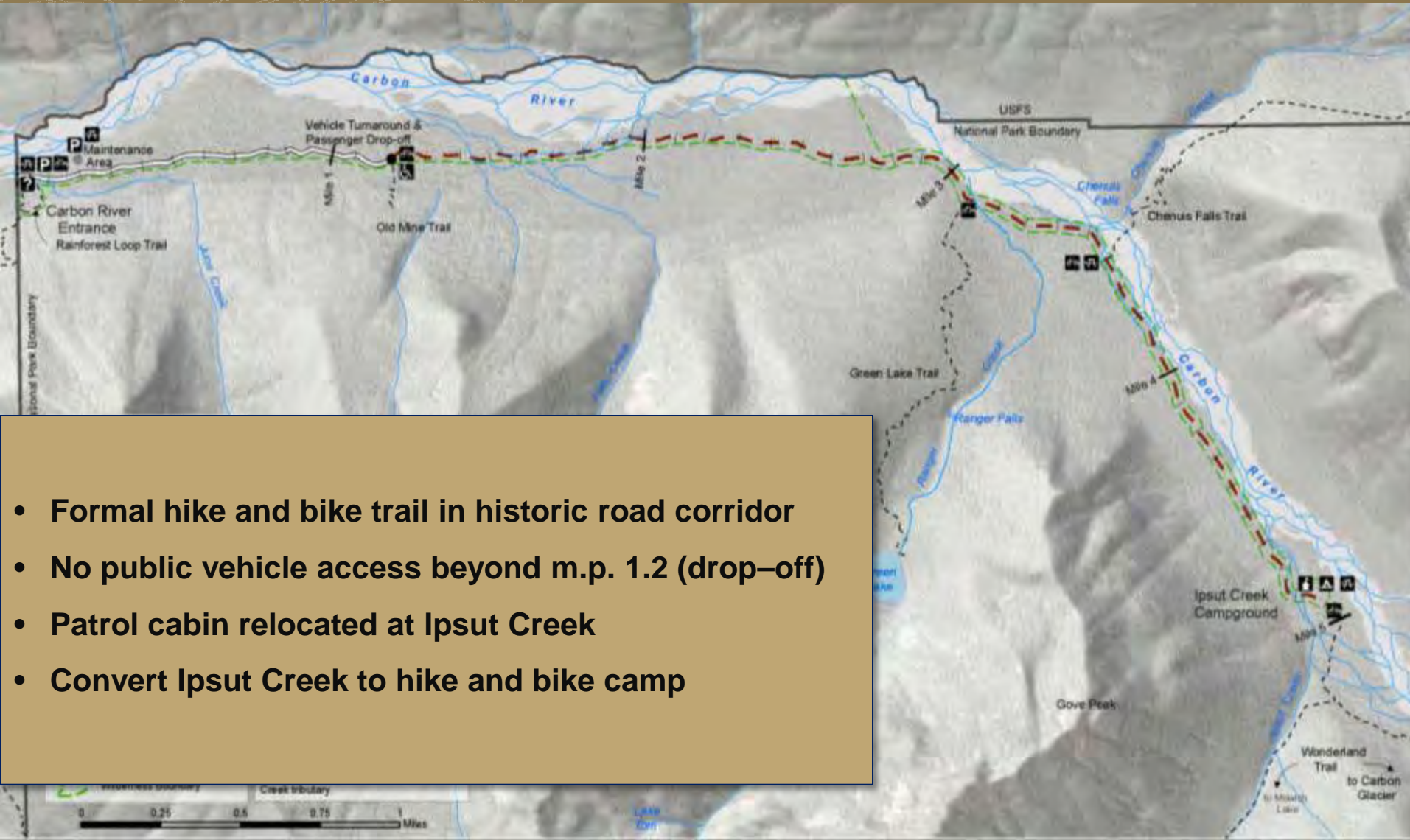
Erosion Protection Measures— Examples



Example of an engineered log jam, Cispus River, WA



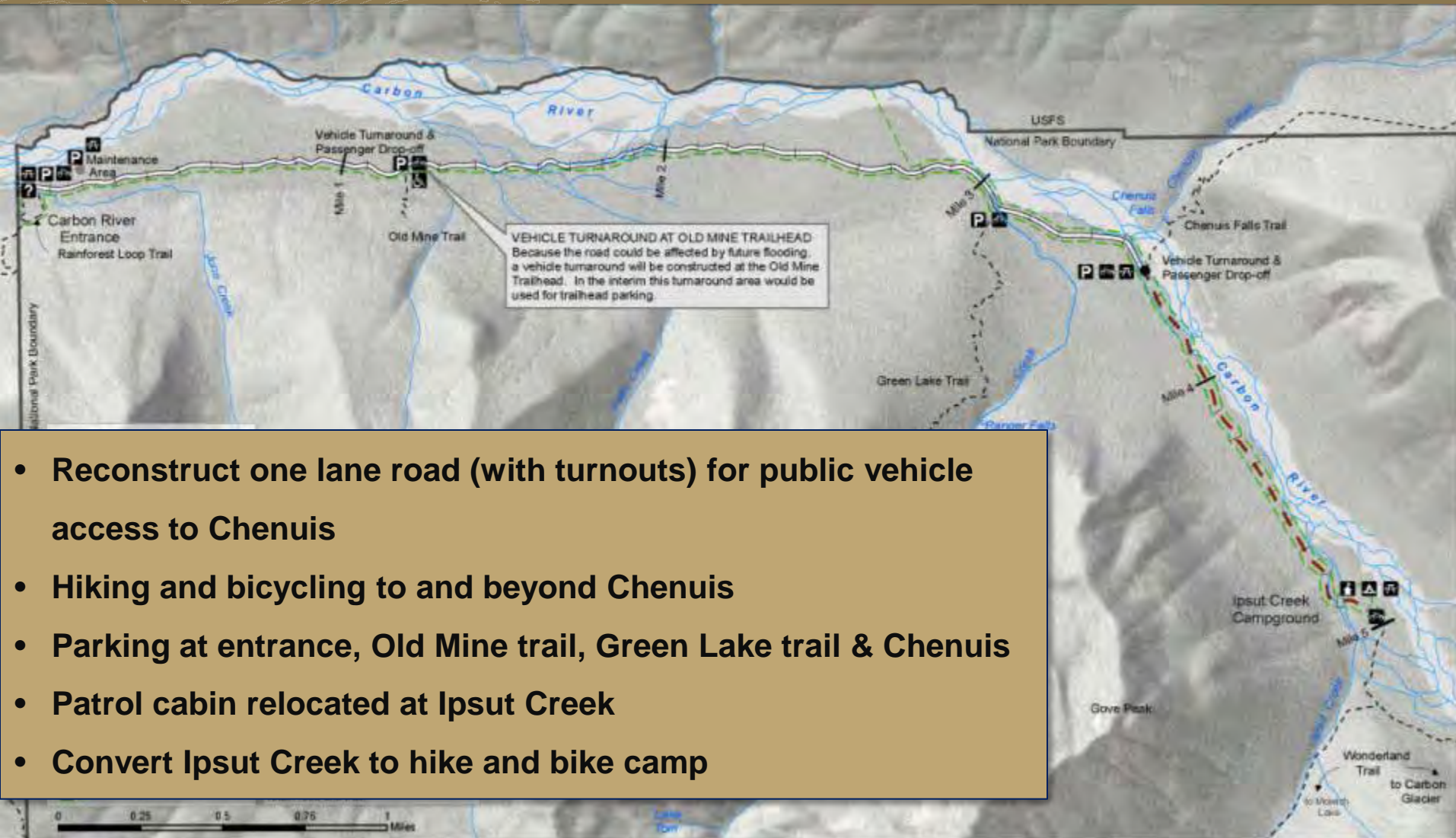
Alternative 2 – Hike and Bike Trail (preferred)



- Formal hike and bike trail in historic road corridor
- No public vehicle access beyond m.p. 1.2 (drop-off)
- Patrol cabin relocated at Ipsut Creek
- Convert Ipsut Creek to hike and bike camp

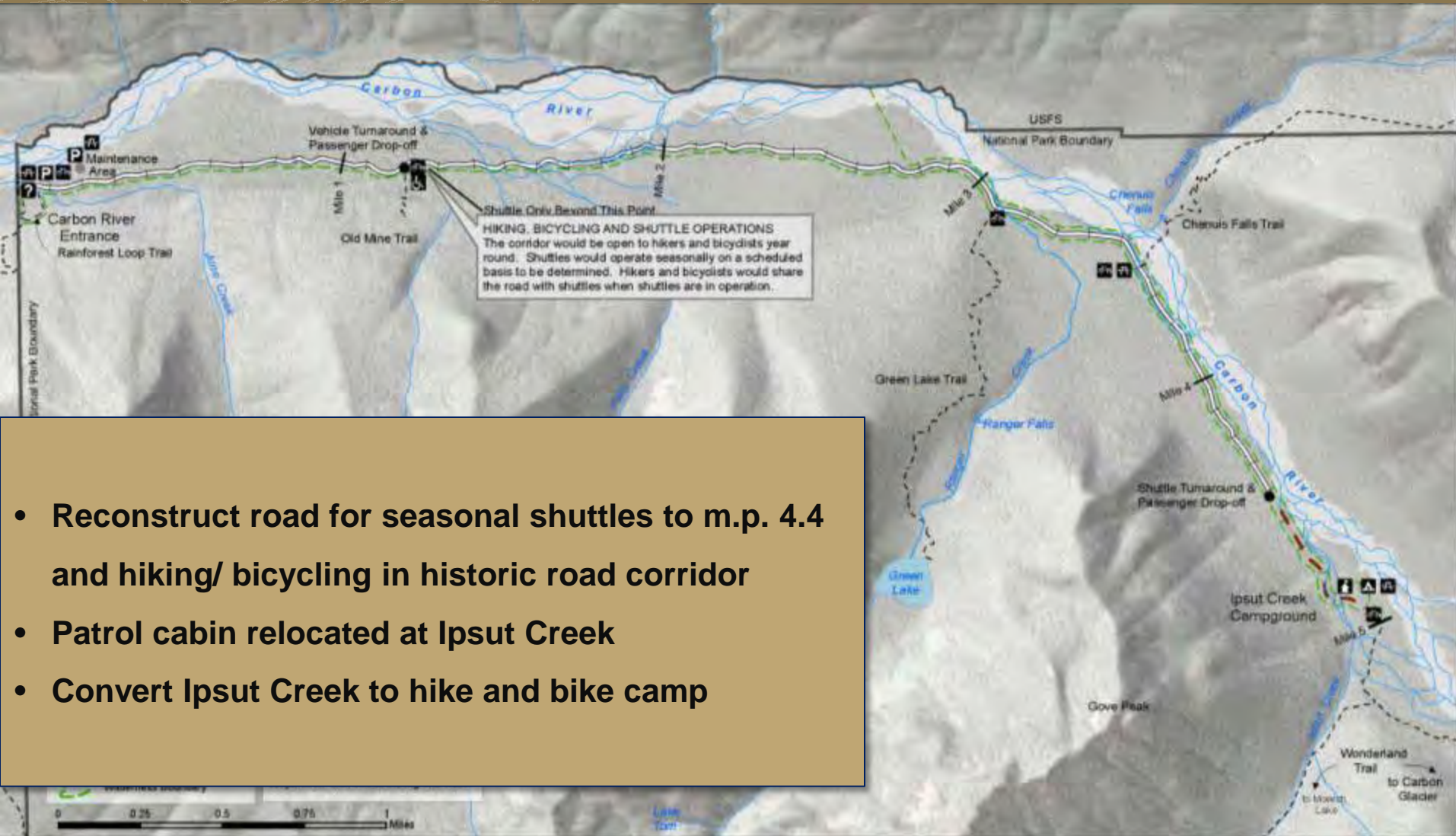


Alternative 3 – Public Vehicles to Chenuis



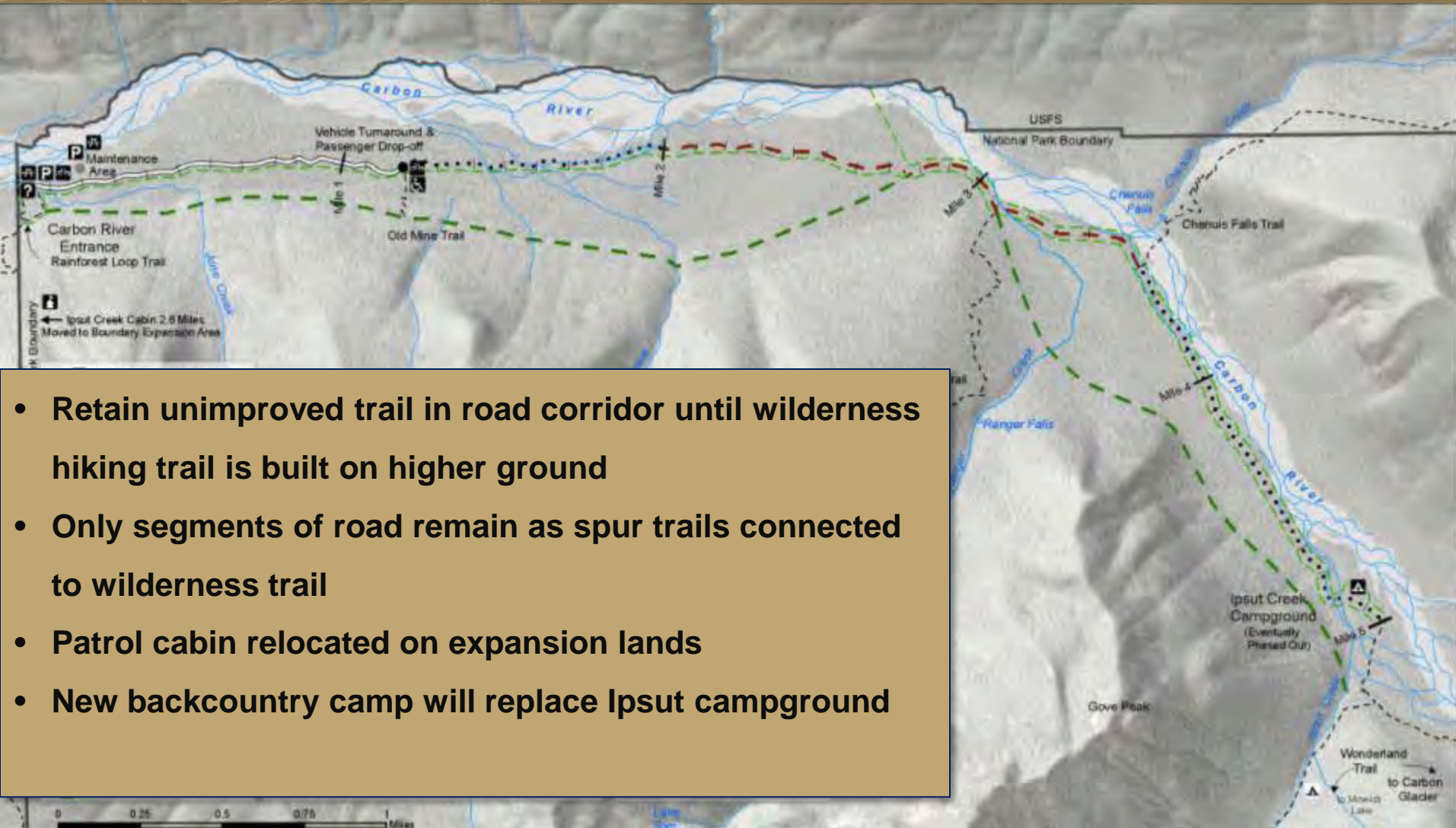


Alternative 4 – Shuttle to Milepost 4.4





Alternative 5 – Wilderness Trail Re-route



- Retain unimproved trail in road corridor until wilderness hiking trail is built on higher ground
- Only segments of road remain as spur trails connected to wilderness trail
- Patrol cabin relocated on expansion lands
- New backcountry camp will replace Ipsut campground



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Alternative Cost Estimates

	Alt. 1 – No Action	Alt. 2 – Hike/Bike Trail (Preferred)	Alt. 3 – Road to Chenuis	Alt. 4 – Shuttle to m.p. 4.4	Alt. 5 – New Wilderness Trail
Erosion Protection, New Facility Construction, Facility Removal	\$1,566,000	\$3,606,000	\$11,293,000	\$10,768,000	\$4,410,500
Annual Costs	\$48,000	\$80,000	\$100,000	\$105,000	\$51,000



Preferred Alternative

- Implements GMP decision and creates a 15-year transition plan
- Provides public access for hikers, bicyclists, limited vehicular use and camping , while considering geomorphologic constraints
- Protects park resources and use of the historic road corridor for as long as possible
- Offers greater flexibility to respond to changing conditions over time while being fiscally responsible to other unsustainable practices



Please submit your comments!

online: *<http://parkplanning.nps.gov/mora>*

via email: *mora_carbon_river_comments@nps.gov*

by U.S. mail: Superintendent
Mount Rainier National Park
55210 238th Avenue East
Ashford, WA 98304