LAST CHANCE GRADE FEASIBILITY STUDY

Community Workshop

WELCOME AND INTRODUCTIONS

AGENDA

5:30 p.m.	Sign-in and Open House
5:45 p.m.	Presentation
6:15 p.m.	Small Group Discussion
7:00 p.m.	Small Group Reports
7:25 p.m.	Next Steps and Closing Comments
7:30 p.m.	Adjourn

Presentation Overview

- What's been going on at Last Chance Grade?
  - History and Geology
  - Partnering
- What are we doing about it?
  - Feasibility Study and Preliminary Alternatives
  - Timelines
- What do we need from you?
  - Public Input/Small Group Discussion

HISTORY

TIMELINE

- 1894 County Road
- 1923 State Route 1
- 1933 and 1937 realigned to current Route 101
- Landslides 1-3 times per decade
- 1970’s $ increasing
- 1980’s initiated studies
- 2009 Safety Project
- 2011 Federally Declared Storm Event
- 2012 Federally Declared Storm Event

March 2011 ER Storm Event:

- 3 Slipouts - PM's 15.0 to 15.3
- 1 EO Project & 2 PR Projects

POST MILE 15.1 – MARCH 2011 STORM EVENT

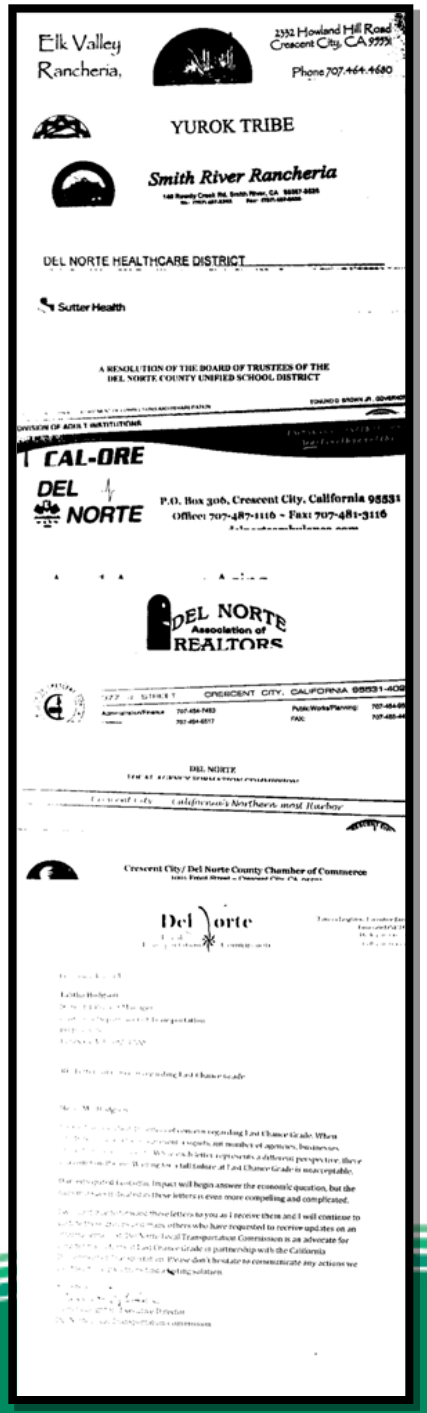
- Spring 2011 Caltrans Closed South Bound Shoulder
- 10/11 FHWA Emergency Relief Funds
- Upcoming Project: Soil Nail Wall 2016/17

March 2012 Storm Event:

- Failure accelerated at PM 15.3 and new slipout at PM 15.0
- 2 EO Project and 1 PR Project
- PM 15.3 EO Wall Project at 15.3 - $4.8 million

POST MILE 15.0 – MARCH 2012 STORM EVENT

- Emergency Soil Nail Project Completed Spring 2012
- 11/12 FHWA Emergency Relief Funds
- Upcoming Project 16/17: Soldier Pile Wall



PUBLIC APPEALS:
"Make LCG Safe & Reliable"

- 16 Letters from North Coast Agencies, Tribes and Businesses
- Congressman Jared Huffman
- State Senator Jim Nielson
- DNLTC Requests Economic Impact Study
- Citizen's Advisory Group Formation

LAST CHANCE GRADE

LAST CHANCE GRADE COST HISTORY

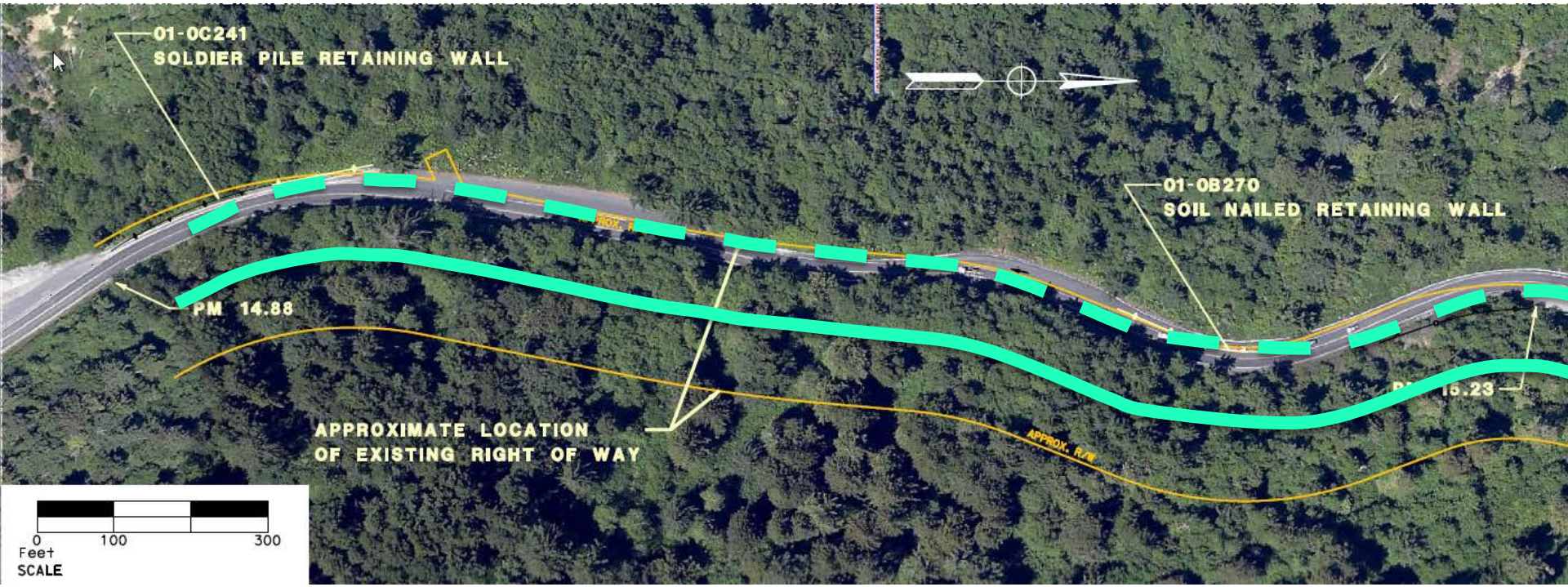
(1981 to Present)

Date	Description	Costs
1981-1996	Corridor Study Yearly Cost Summary	$4,084,000
1981-1996	Field Maintenance Cost	$3,980,000
1997	Wilson Creek Retaining Wall	$100,000
1998	Slipout Repair	$207,802
1998	Washout Repair	$270,740
1999	Last Chance Grade Retaining Wall	$877,446
1999-2000	Wilson Creek Retaining Wall, Drainage	$2,901,165
2000	OGAC	$63,281
2001-2002	Drainage Revisions	$95,718
2009	Reconstruct Roadway and Place OGFC	$13,038,070
2010	Construct Retaining Walls	$13,764,187
2012	Repair Slipouts	$7,157,907
2012	Rubberized HMA Overlay	$1,222,421
TOTAL		$36,192,000

COMPLETED STUDIES AND REPORTS

1987 – Wilson Creek Project Study Report
1992 – Preliminary Geotechnical Report
1993 – Value Analysis
1993 – US Route 101 in Del Norte County: A Corridor Study
1995 – Last Chance Grade Project Study Report
2000 – USGS Landslide Study – Special Report 184
2001 – Preliminary Geotechnical Report
2002 – Value Analysis
2003 – Supplemental Project Scope Summary Report
2007 – Supplemental Project Scope Summary Report

ROAD MOVEMENT

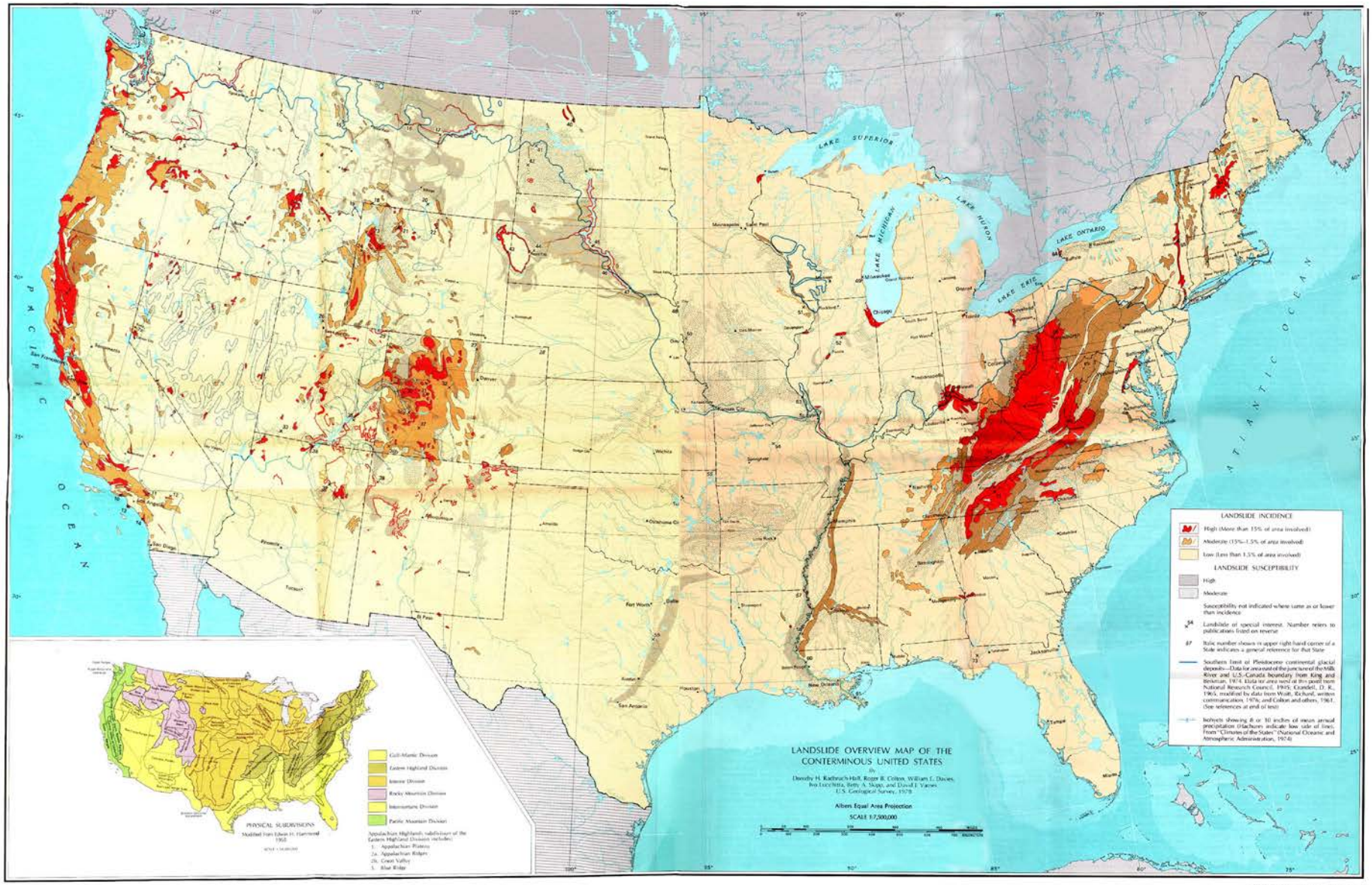


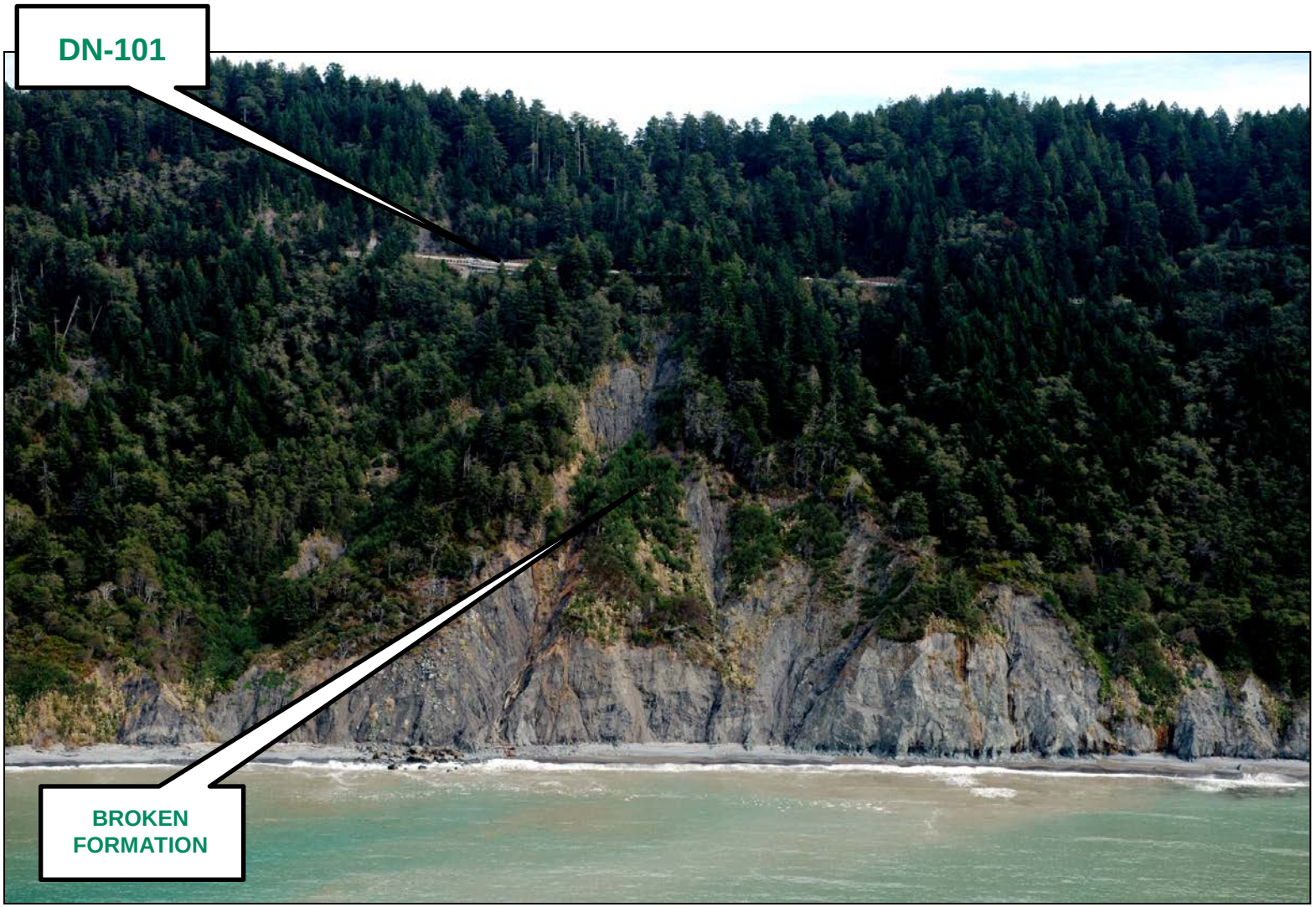
Surface Monitoring Data July 2012 – September 2013

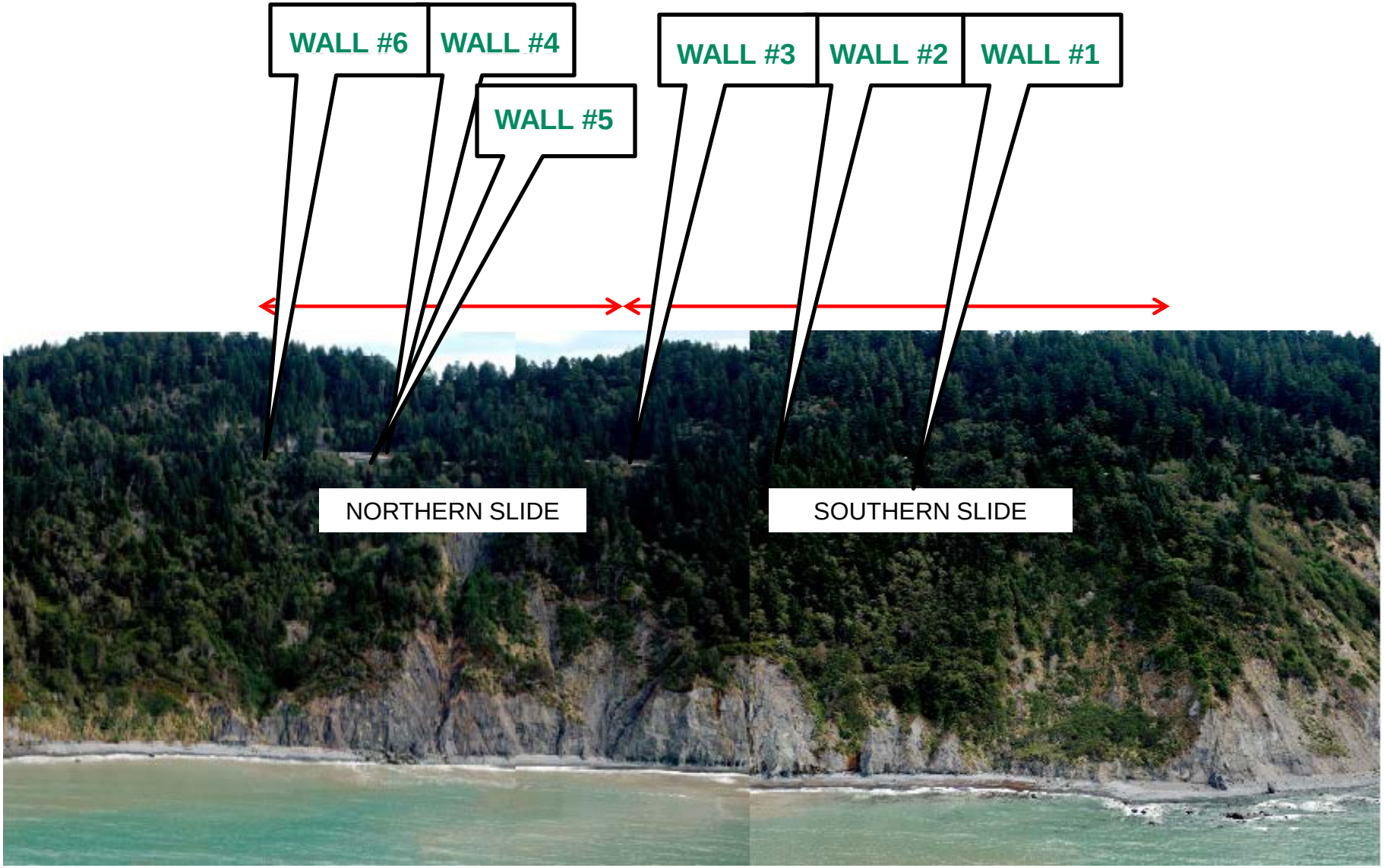
- The Northern LCG slide movement : Vertical ~ 8” Horizontal ~ 11”
- The Southern LCG Slide Vertical ~ 3” Horizontal ~ 4”

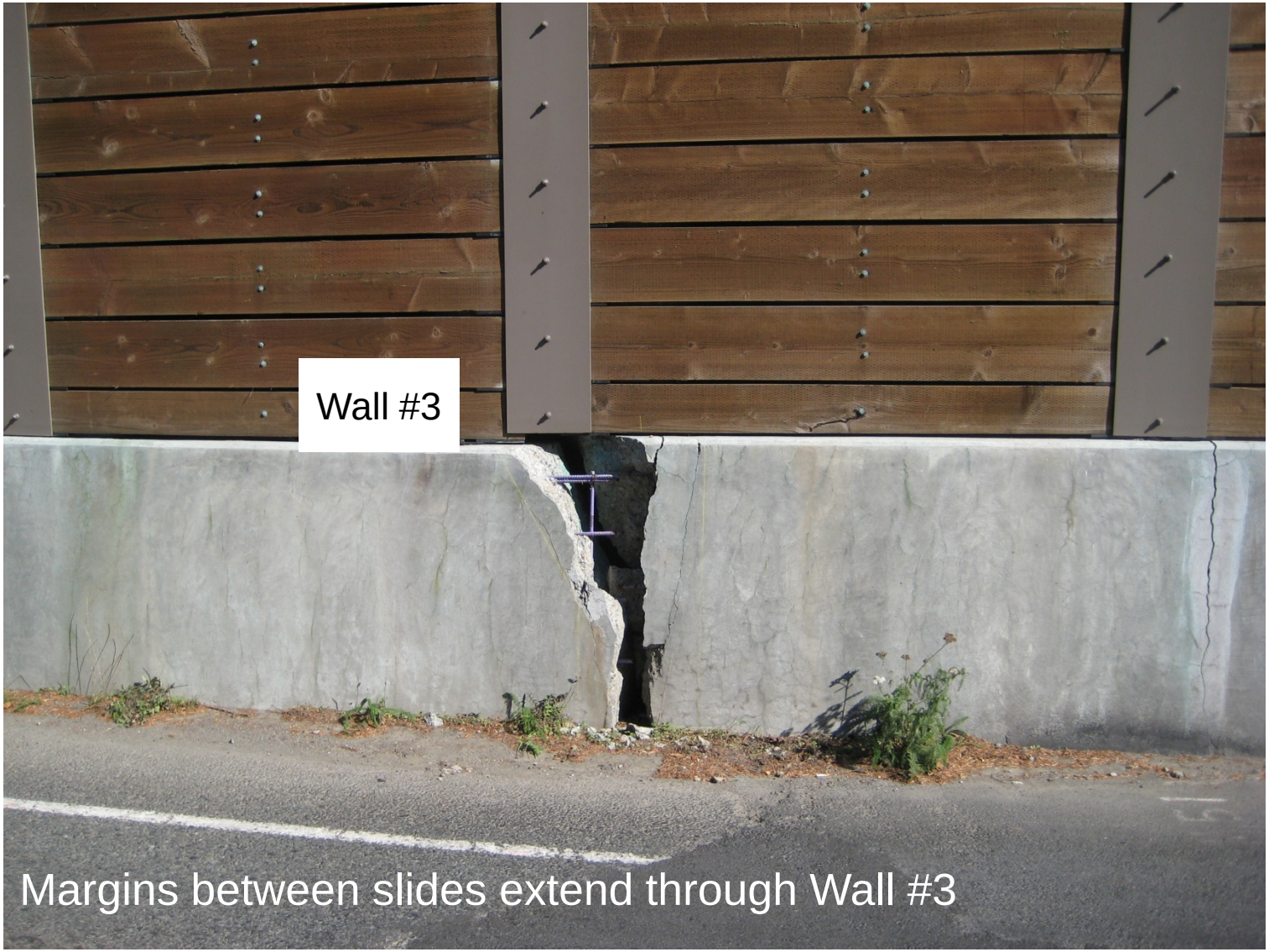
GEOLOGY

US LANDSLIDE OVERVIEW MAP

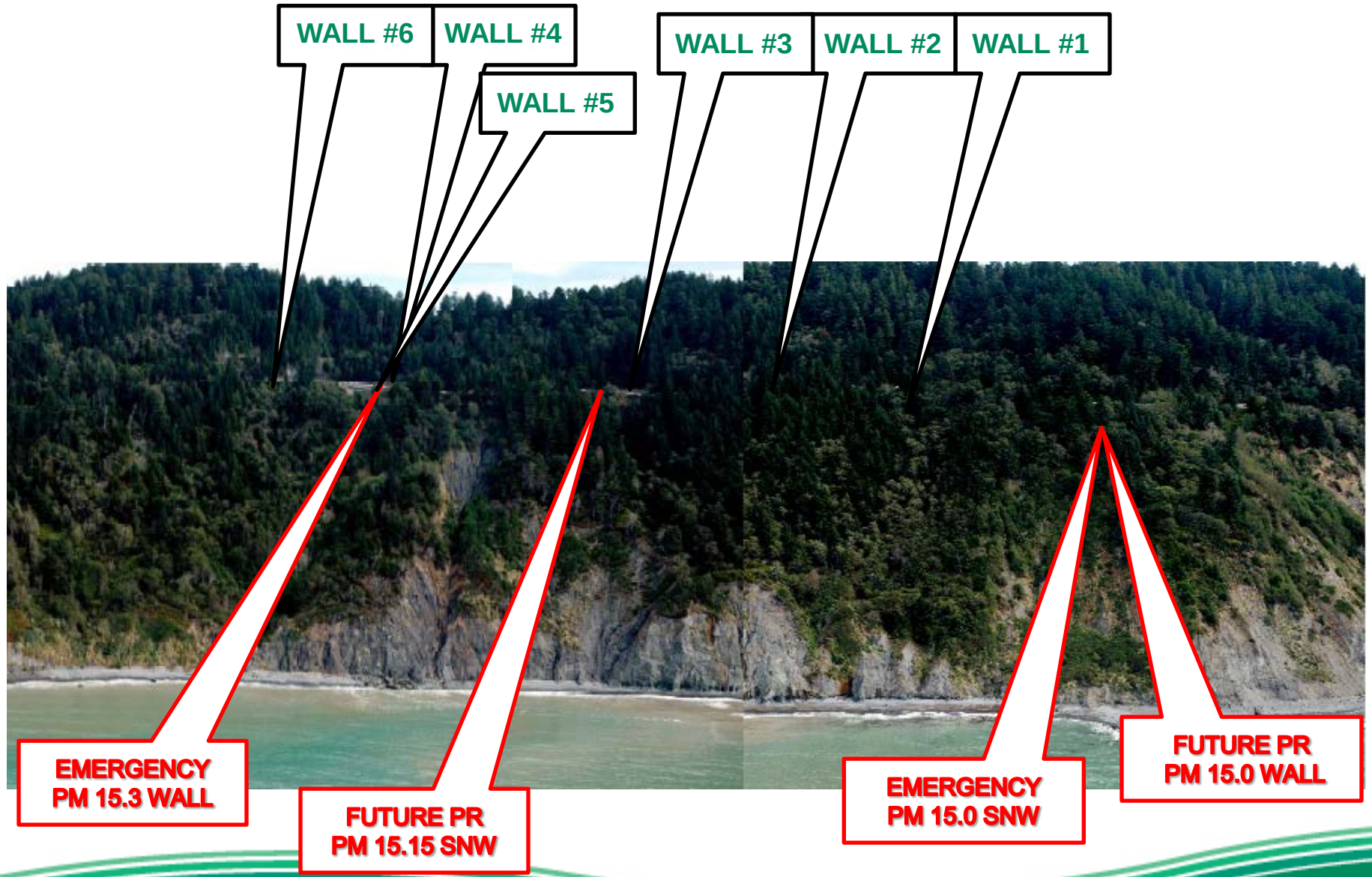


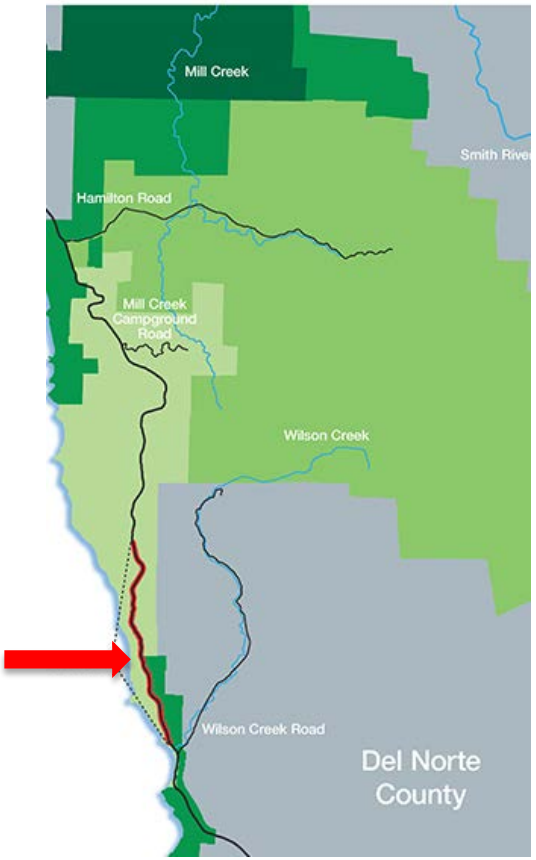

DN-101
BROKEN FORMATION


WALL #6
WALL #4
WALL #5
WALL #3
WALL #2
WALL #1
NORTHERN SLIDE
SOUTHERN SLIDE



Margins between slides extend through Wall #3


WALL #6
WALL #4
WALL #5
WALL #3
WALL #2
WALL #1
EMERGENCY
PM 15.3 WALL
FUTURE PR
PM 15.15 SNW
EMERGENCY
PM 15.0 SNW
FUTURE PR
PM 15.0 WALL



Last Chance Grade is also…

- Adjacent to an Internationally Unique Biosphere and World Heritage Site
- In an Area of Cultural Importance
- Vital to Community Connectivity and the County Economy

IN SUMMARY…

- Project/Closure History
- Geology
- Increasing Costs and Storm Event Frequency
- Public Concern
- Potential Community and Economic Impacts
- Environmental and Cultural Sensitivity

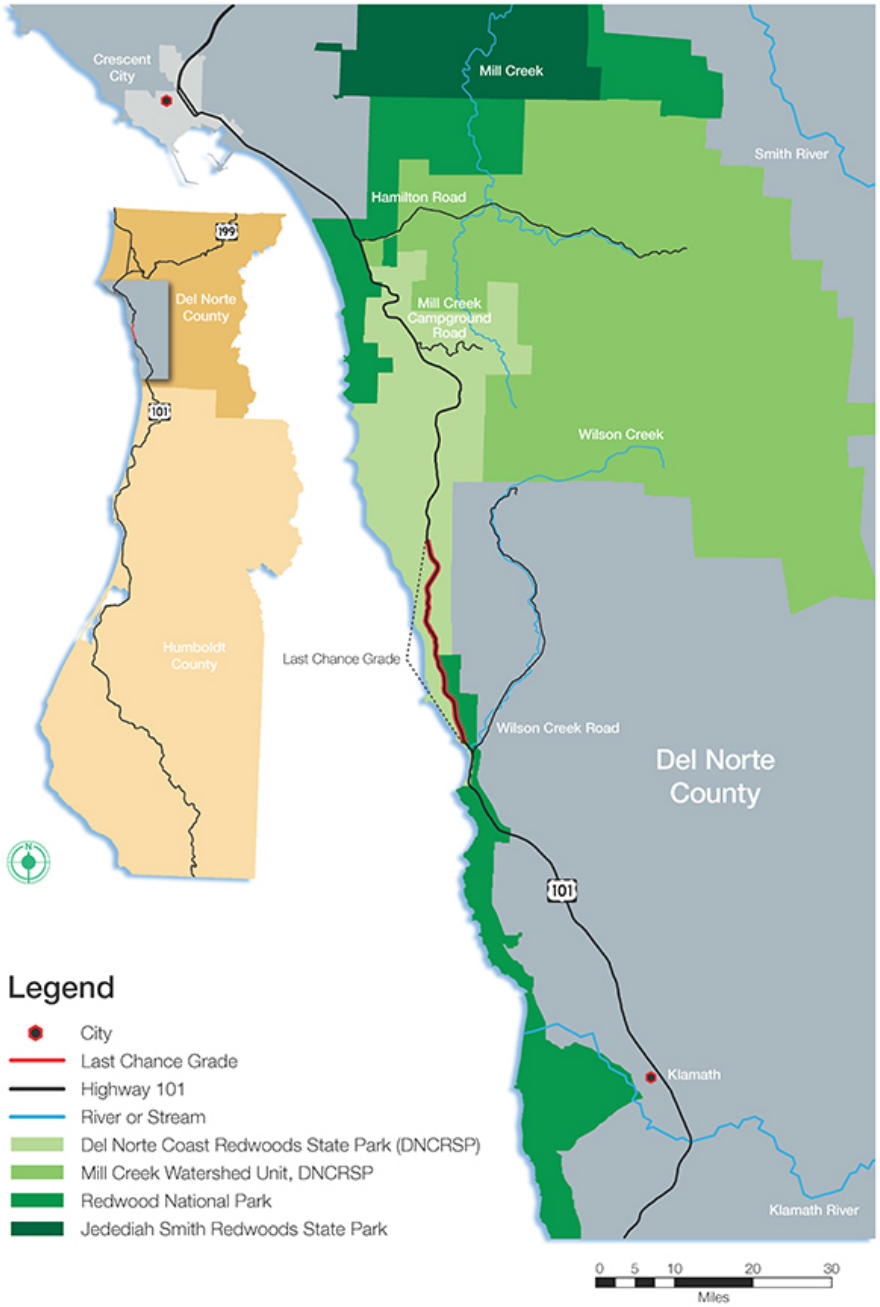
… COMPLEX PROBLEM

LAST CHANCE GRADE PARTNERS

- Caltrans District 1
- California Department of Parks and Recreation
- National Park Service
- Yurok Tribe
- Smith River Rancheria
- Elk Valley Rancheria

LAST CHANCE GRADE FEASIBILITY STUDY

LOCATION MAP



PURPOSE

- Study sustainable alternatives for a permanent solution to instability and potential roadway failure
- Consider alternatives that:
  - Reduce maintenance costs
  - Provide a more reliable connection
  - Protect economic, environmental, and cultural resources

NEED

- Landslides and road failures are an ongoing problem for decades
- 2000 CA Geological Survey study mapped 200+ historical and active landslides between Wilson Creek and Crescent City
- Caltrans has conducted many construction projects and maintenance activities in the area
- Cost of landslide mitigation projects since 1980—over $36 million
- Need for a long-term solution

DESCRIPTION

- Will investigate and assess a range of alternatives to address segment of Hwy 101 impacted by landslides and increasing instability
- Partnership formed to study and develop feasible solutions fully integrating environmental and cultural resources considerations

FEASIBILITY STUDY PROCESS TIMELINE

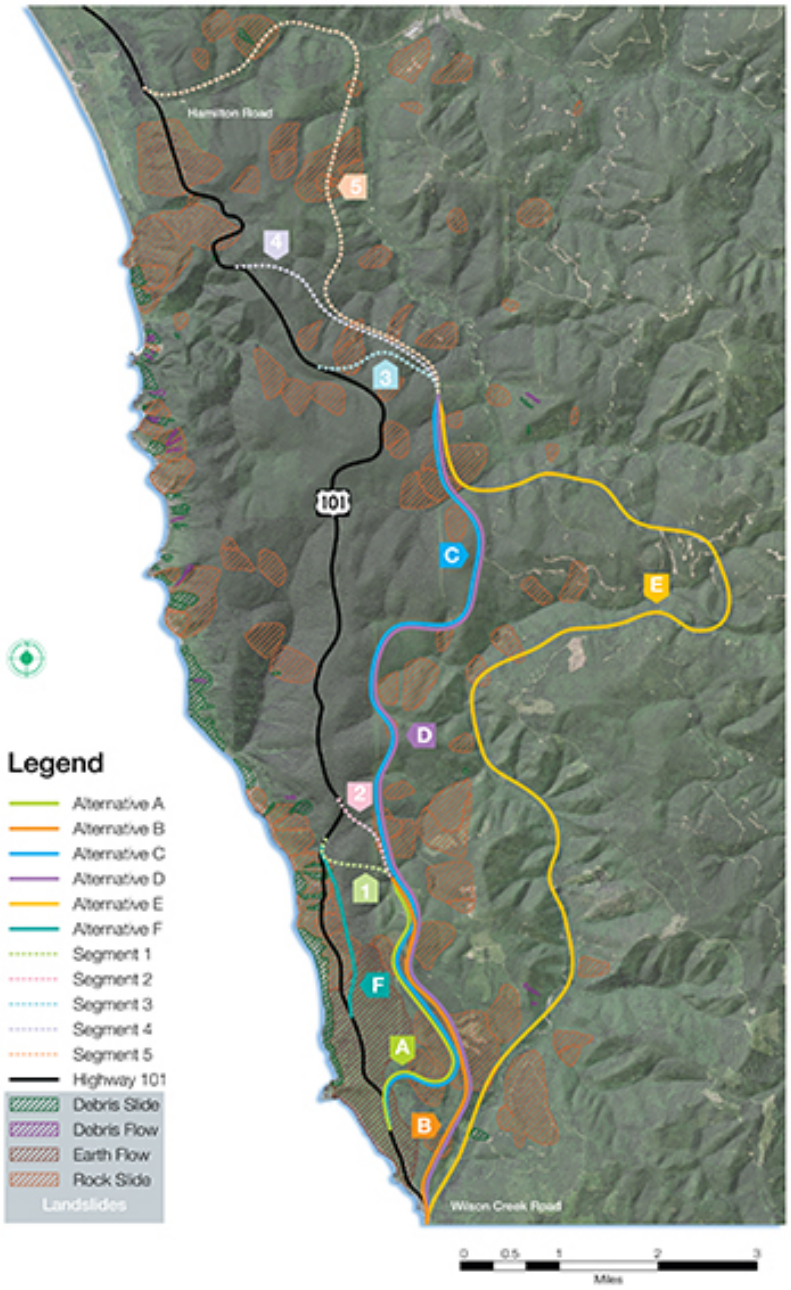
ALTERNATIVES

FACTORS CONSIDERED

- Overall Roadway Length
- Added Roadway Length and Travel Time
- Construction Footprint and Schedule
- Roadway excavation and fill
- Structures Included (Bridges, Culverts, Tunnels)
- Cost
- Protection of Cultural, Environmental and Scenic Resources
- Old-Growth Redwood Trees
- Length of Roadway within State/National Parks
- Watershed Crossings

DESIGN CONSIDERATIONS

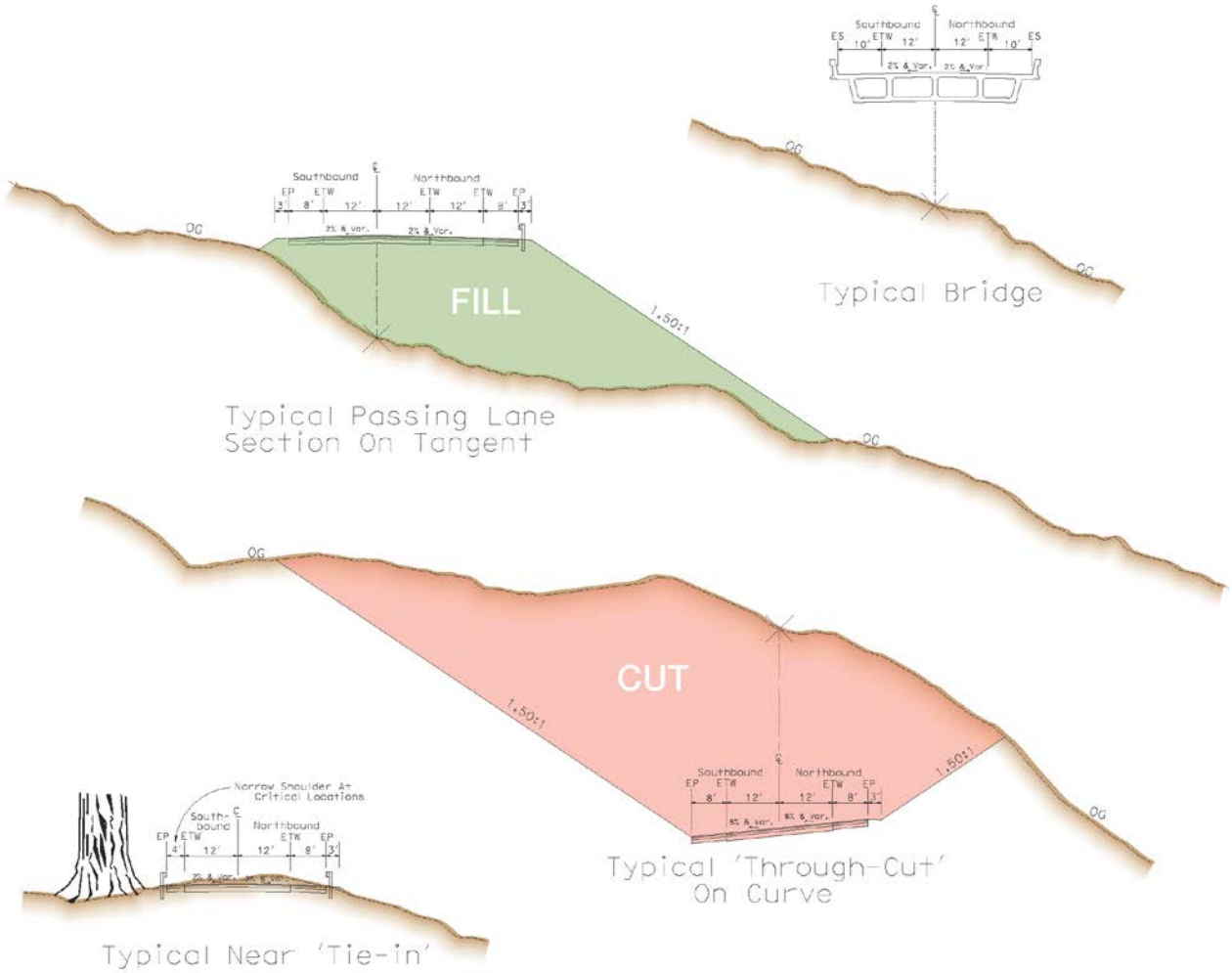
- 7% maximum grade
- Route Concept
  - 2 Lane conventional highway with truck passing lanes
  - 12 ft. lanes, 8 ft. shoulders
- Design Speed—55 MPH
- Turning Radius—1,100 ft. minimum
- Structures limited to maximum 200 ft. height
- Cut/fill 200 ft. maximum height
- Cut slopes 1.5/1 ratio
- Maximize protection of sensitive cultural, environmental and scenic resources



GEOLOGICAL SURVEY

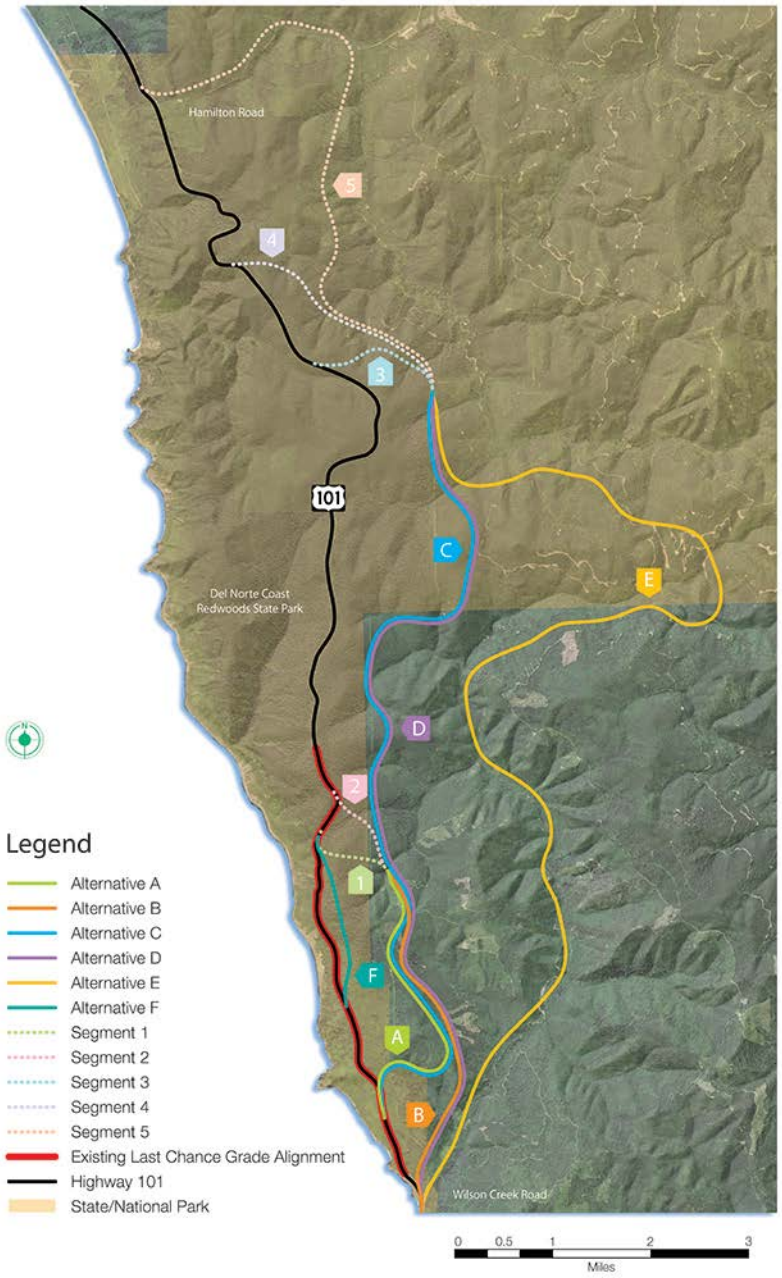
Note: Landslides shown were derived from USGC study of the 101 corridor along Last Chance Grade. Landslides have not been fully mapped along Alternative E.

ROADWAY CROSS SECTION



PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1

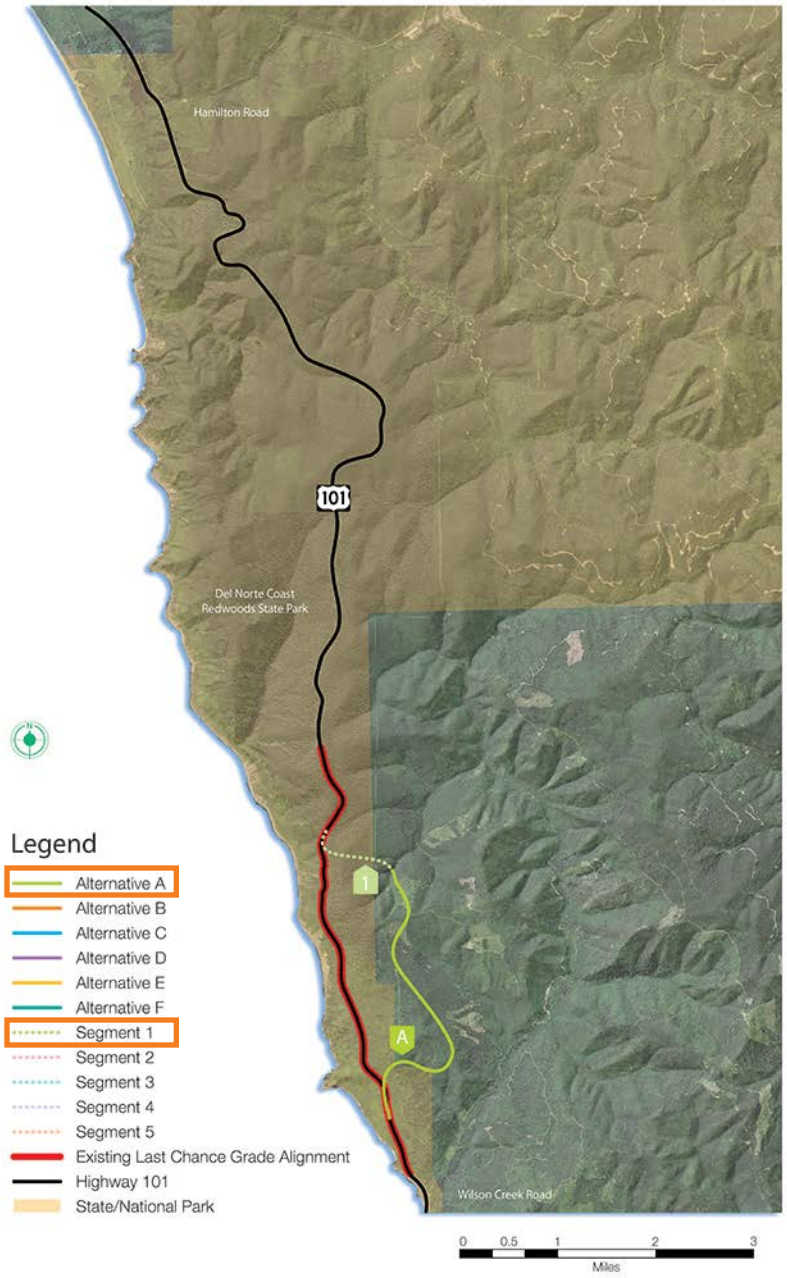


PRELIMINARY ALTERNATIVES FOR STUDY

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1 A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE A1

Rudisill Road to LCG Tunnel

(Includes 2,010 ft. tunnel)

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 11.1 mi
- Added Time: 1.2 min

New Construction

- Length: 3.3 mi
- Footprint: 76 acres
- Schedule: 3 years

Cost (in Millions)

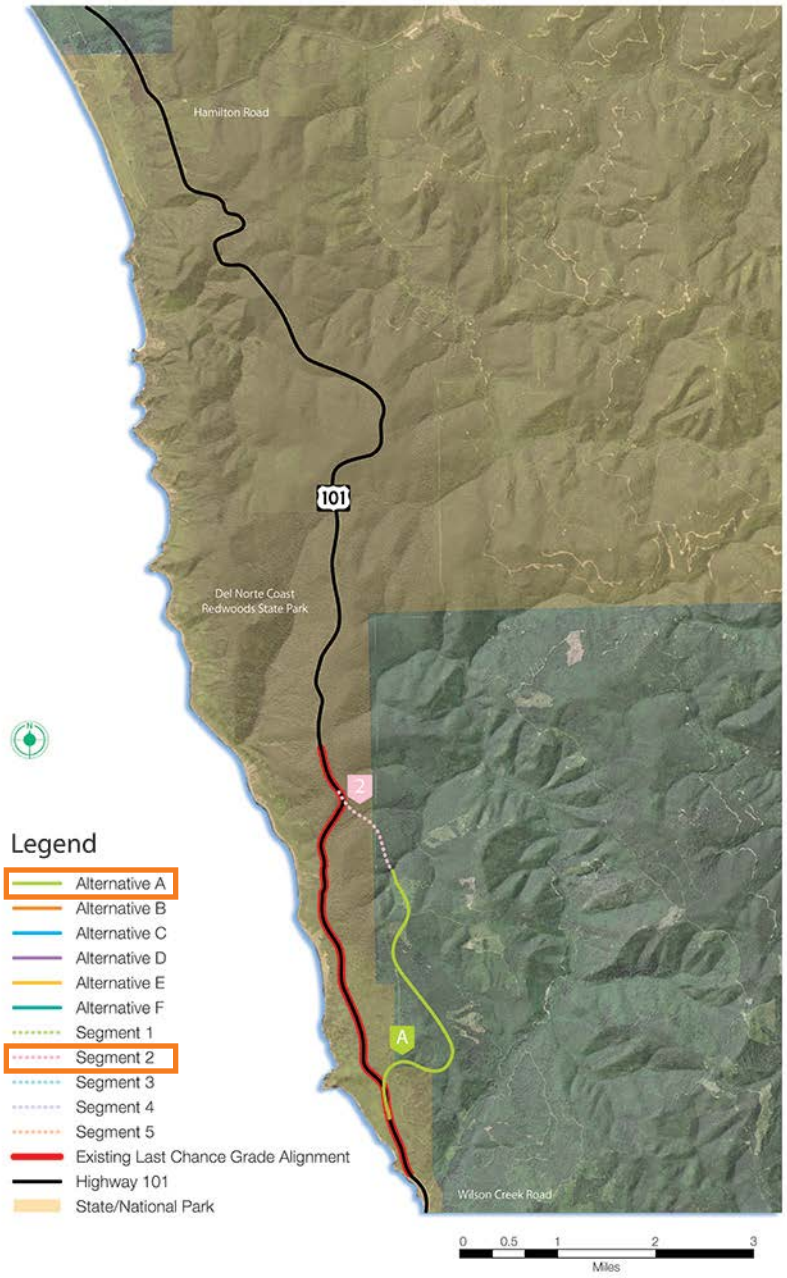
- Minimum: $340M
- Maximum: $460M

Existing Habitat Type:

- Coastal scrub/grassland /spruce: 7 acres
- Riparian: 1 acre
- Clear cut: 13 acres
- Young Redwood Forest: 54 acres
- Mature Redwood Forest: 0 acres
- Old Growth Redwood Forest: 1 acre

PRELIMINARY ALTERNATIVES

A1, A2 B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE A2

Rudisill Road to Damnation Trailhead

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 10.9 mi
- Added Time: 0.9 min

New Construction

- Length: 3.3 mi
- Footprint: 80 acres
- Schedule: 2 years

Cost (in Millions)

- Minimum: $210M
- Maximum: $250M

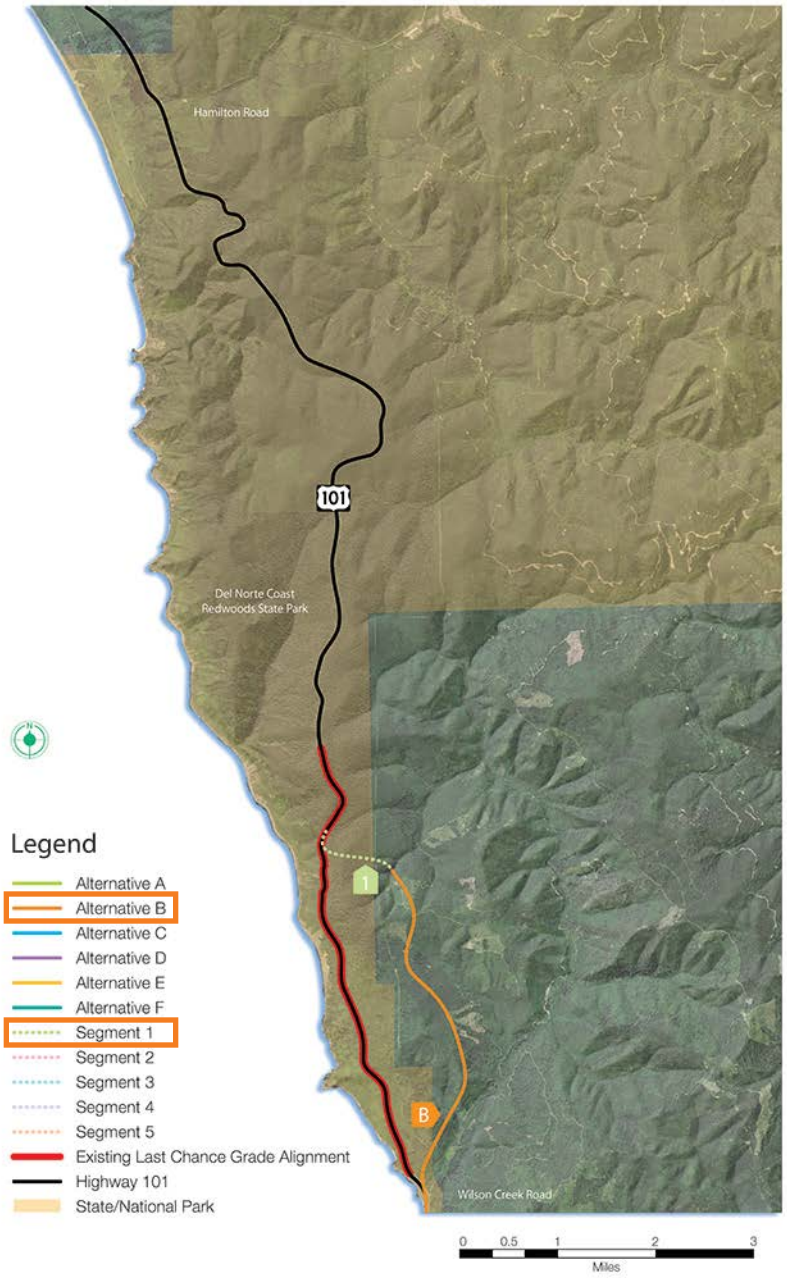
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 7 acres
- Riparian: 1 acre
- Clear cut: 13 acres
- Young Redwood Forest: 56 acres
- Mature Redwood Forest: 0 acres
- Old Growth Redwood Forest: 3 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE B1

Wilson Creek Bridge to LCG Hill Tunnel

(Includes 2,010 ft. tunnel)

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 10.6 mi
- Added Time: 0.5 min

New Construction

- Length: 3.6 mi
- Footprint: 89 acres
- Schedule: 2 years

Cost (in Millions)

- Minimum: $360M
- Maximum: $480M

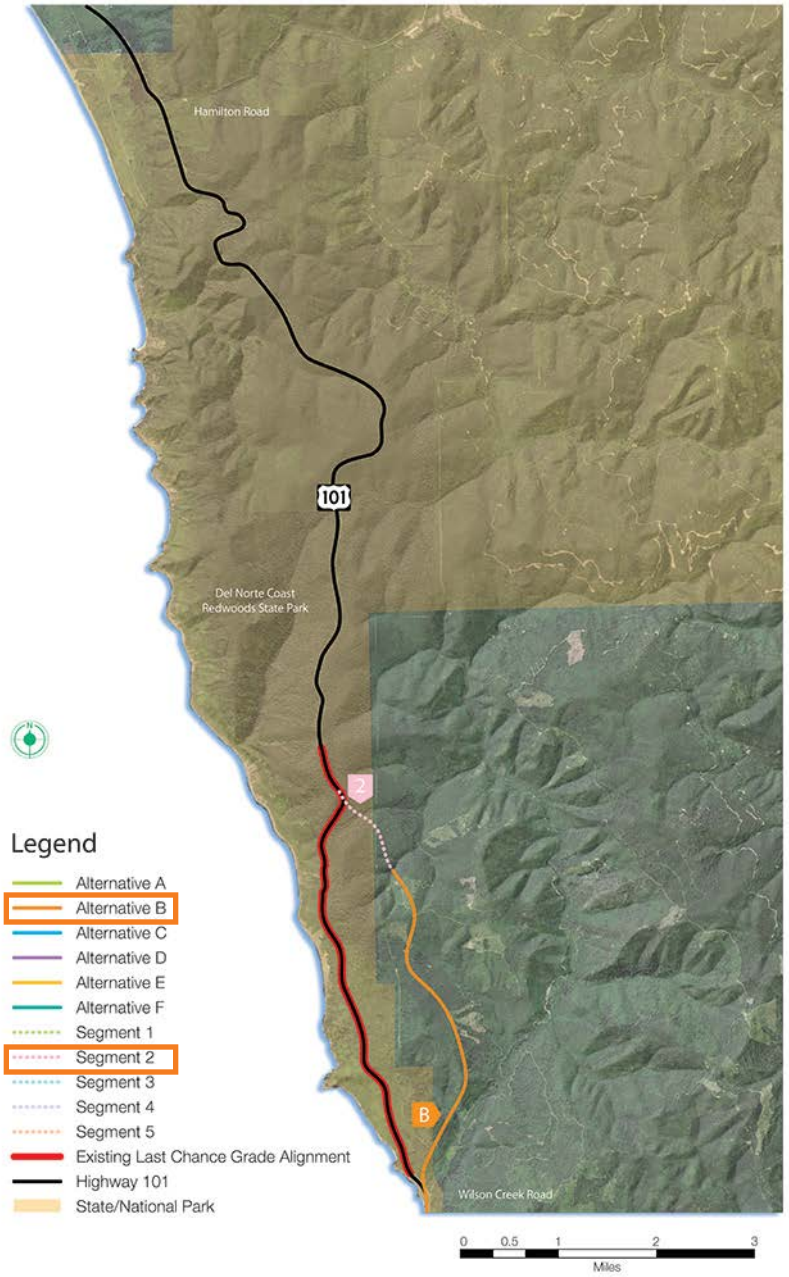
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 12 acres
- Riparian: 1 acre
- Clear cut: 10 acres
- Young Redwood Forest: 65 acres
- Mature Redwood Forest: 0 acres
- Old Growth Redwood Forest: 1 acre

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, **B2** C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE B2

Wilson Creek Bridge to Damnation Trailhead

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 10.3 mi
- Added Time: 0.2 min

New Construction

- Length: 3.6 mi
- Footprint: 93 acres
- Schedule: 2 years

Cost (in Millions)

- Minimum: $220M
- Maximum: $260M

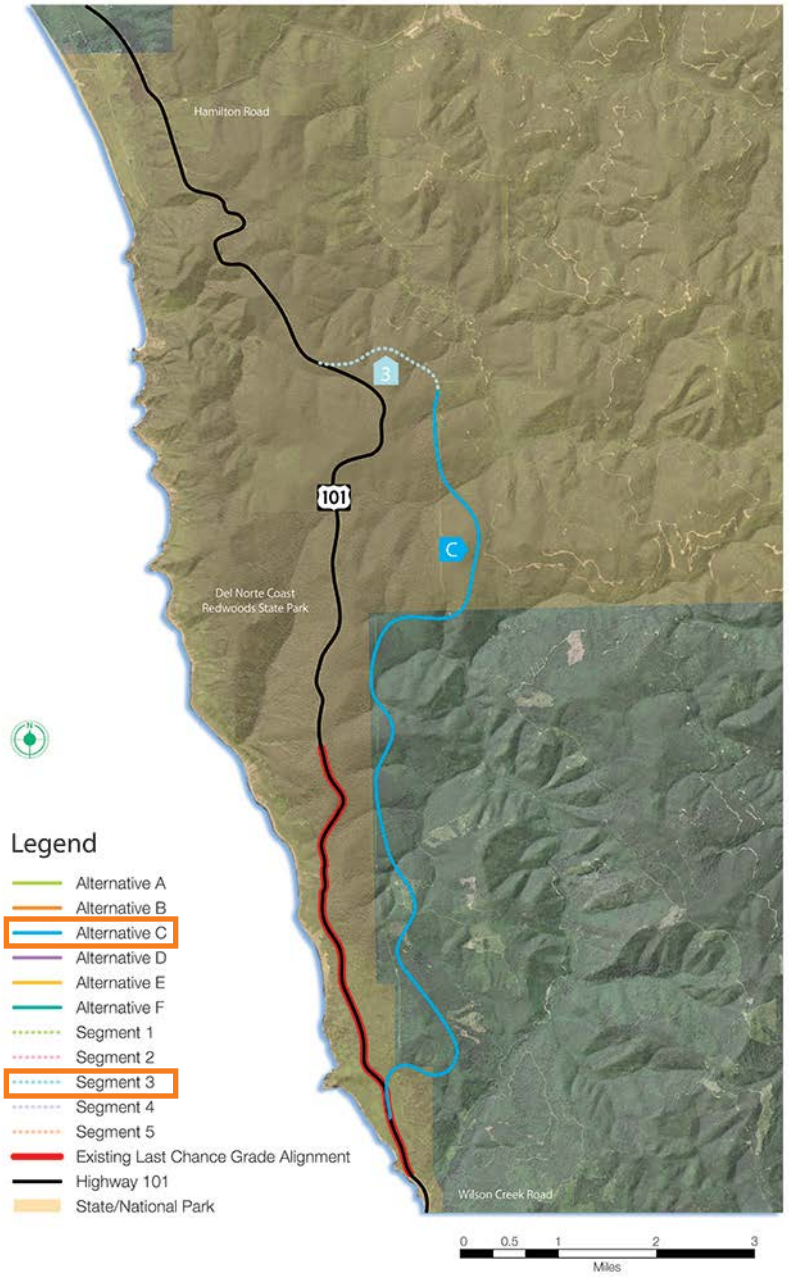
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 12 acres
- Riparian: 1 acre
- Clear cut: 10 acres
- Young Redwood Forest: 67 acres
- Mature Redwood Forest: 0 acres
- Old Growth Redwood Forest: 3 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE C3

Rudisill Road to South of Mill Creek Access

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 11.9 mi
- Added Time: 2.1 min

New Construction

- Length: 8.1 mi
- Footprint: 249 acres
- Schedule: 3 years

Cost (in Millions)

- Minimum: $490M
- Maximum: $570M

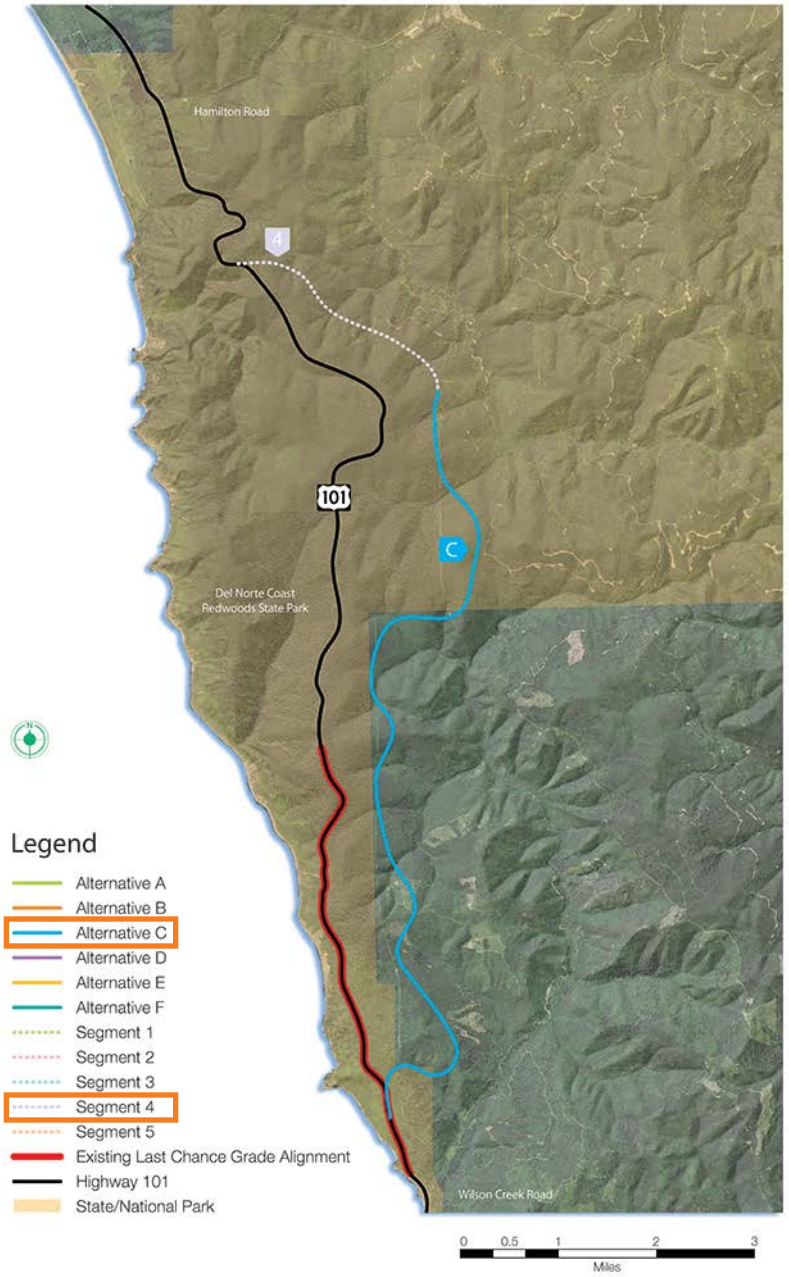
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 7 acres
- Riparian: 1 acre
- Clear cut: 13 acres
- Young Redwood Forest: 205 acres
- Mature Redwood Forest: 23 acres
- Old Growth Redwood Forest: 0 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4 C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE C4

Rudisill Road to North of Mill Creek Access

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 11.7 mi
- Added Time: 1.8 min

New Construction

- Length: 8.9 mi
- Footprint: 269 acres
- Schedule: 4 years

Cost (in Millions)

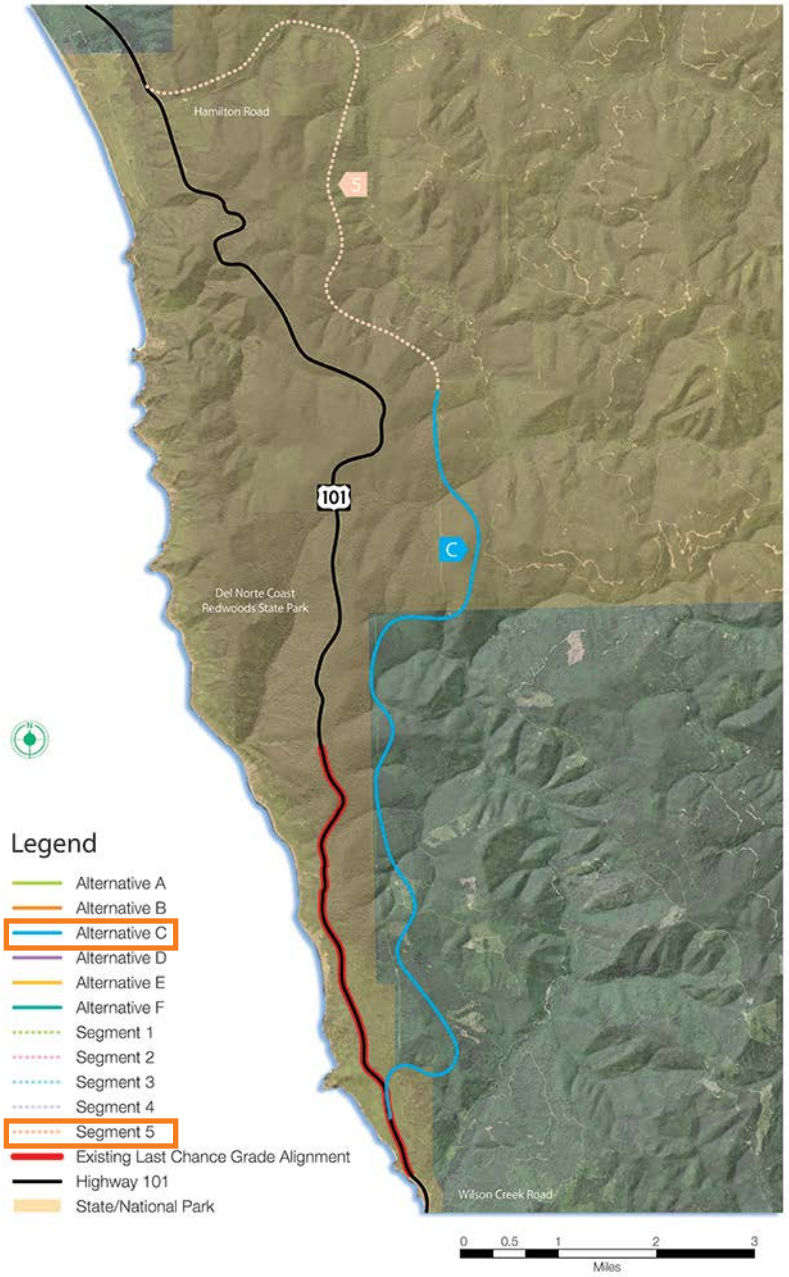
- Minimum: $540M
- Maximum: $630M

Existing Habitat Type:

- Coastal scrub/grassland /spruce: 7 acres
- Riparian: 1 acre
- Clear cut: 13 acres
- Young Redwood Forest: 205 acres
- Mature Redwood Forest: 43 acres
- Old Growth Redwood Forest: 0 acres

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5 D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE C5

Rudisill Road to Hamilton Road

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 12.7 mi
- Added Time: 3.1 min

New Construction

- Length: 11.9 mi
- Footprint: 331 acres
- Schedule: 4 years

Cost (in Millions)

- Minimum: $730M
- Maximum: $850M

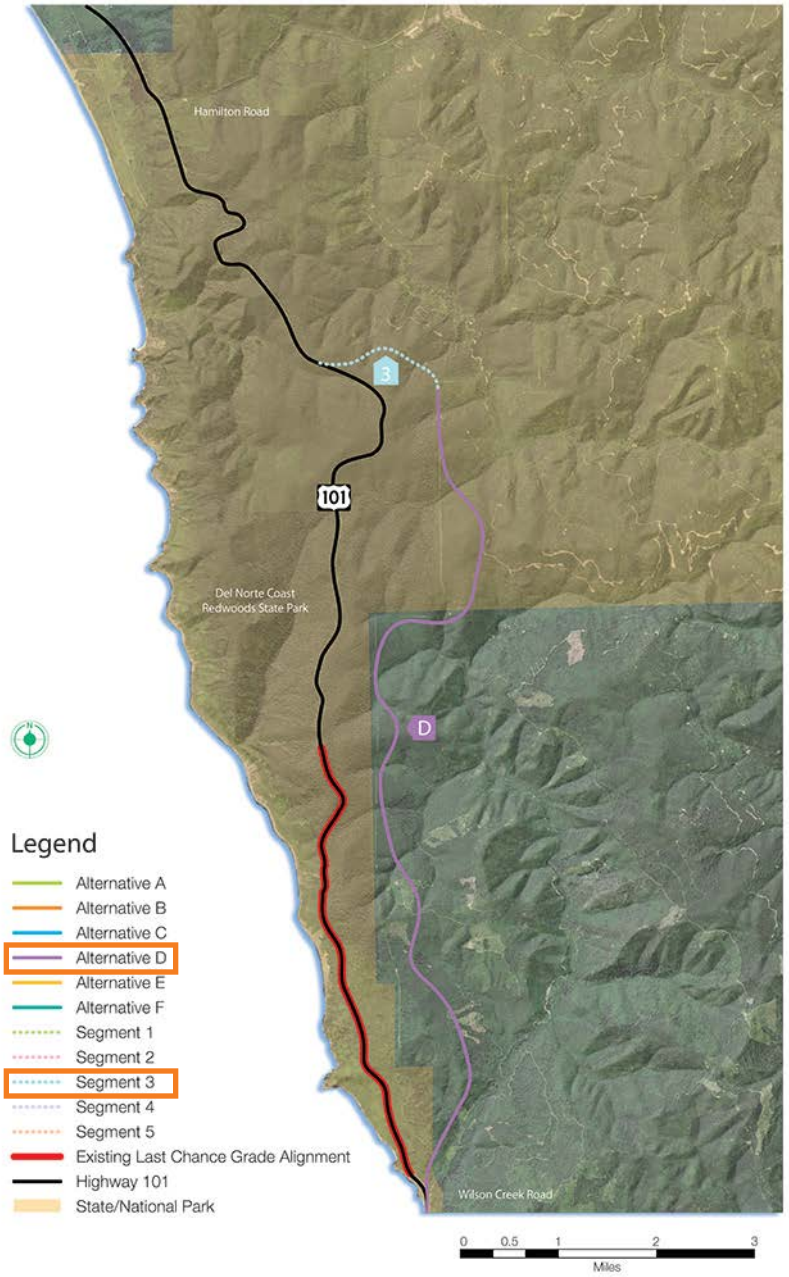
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 7 acres
- Riparian: 1 acre
- Clear cut: 13 acres
- Young Redwood Forest: 217 acres
- Mature Redwood Forest: 93 acres
- Old Growth Redwood Forest: 0 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3 D4, D5, E3, E4, E5, F1



ALTERNATIVE D3

Wilson Creek Bridge to South of Mill Creek Access

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 11.3 mi
- Added Time: 1.4 min

New Construction

- Length: 8.3 mi
- Footprint: 262 acres
- Schedule: 3 years

Cost (in Millions)

- Minimum: $510M
- Maximum: $590M

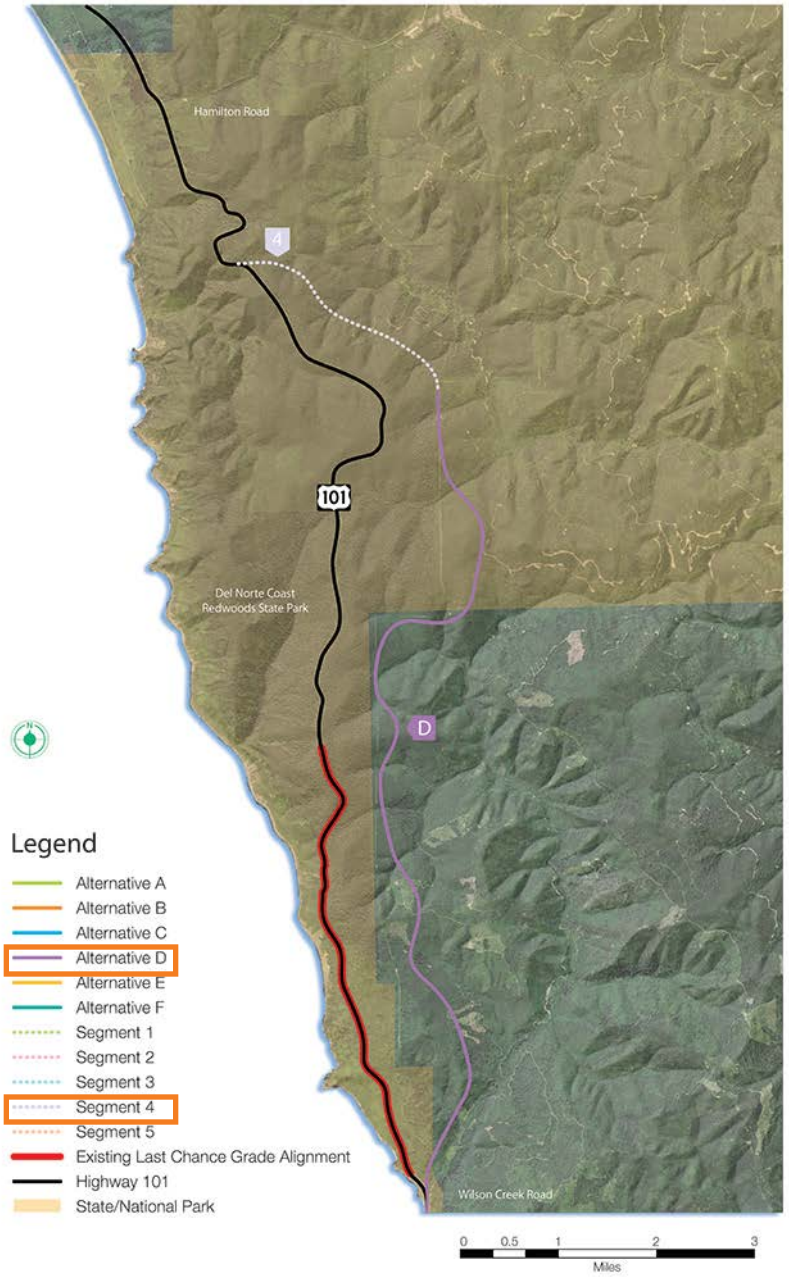
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 12 acres
- Riparian: 1 acre
- Clear cut: 10 acres
- Young Redwood Forest: 216 acres
- Mature Redwood Forest: 23 acres
- Old Growth Redwood Forest: 0 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4 D5, E3, E4, E5, F1



ALTERNATIVE D4

Wilson Creek Bridge to North of Mill Creek Access

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 11.1 mi
- Added Time: 1.1 min

New Construction

- Length: 9.1 mi
- Footprint: 282 acres
- Schedule: 4 years

Cost (in Millions)

- Minimum: $560M
- Maximum: $650M

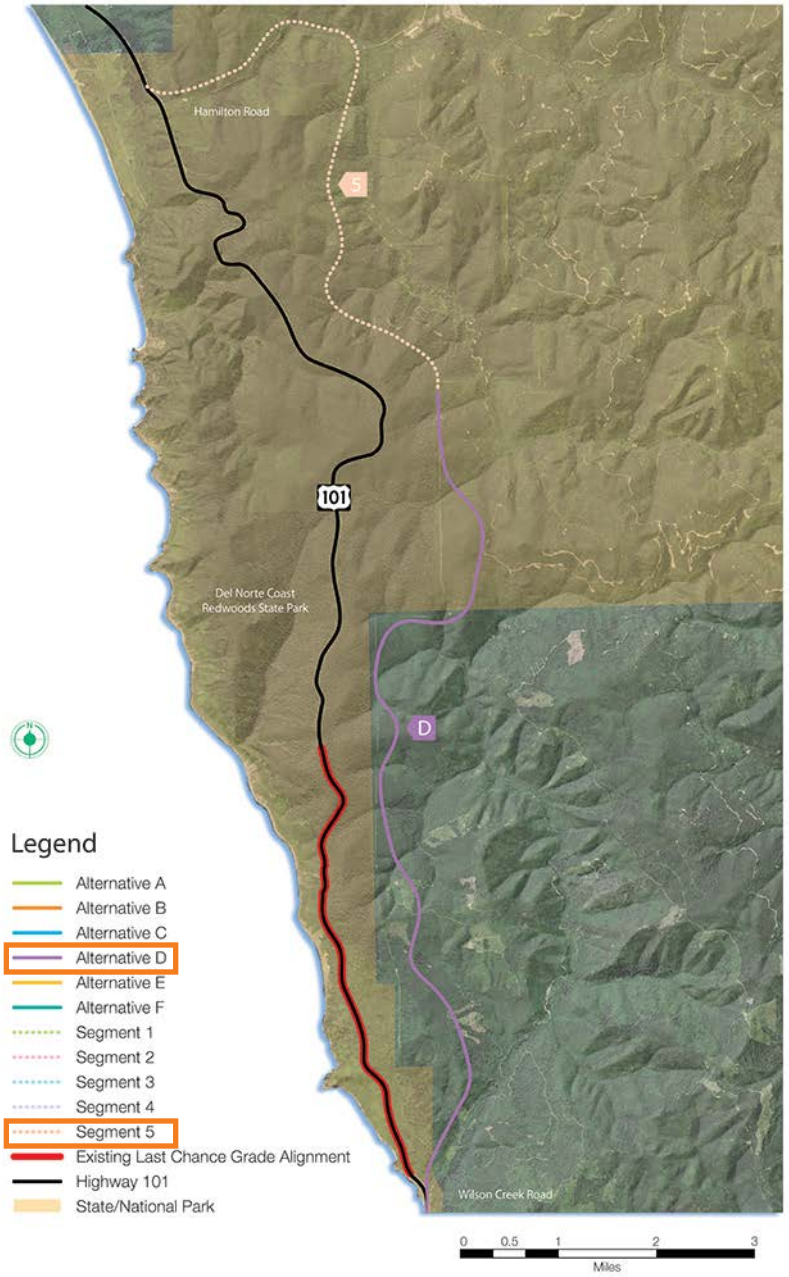
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 12 acres
- Riparian: 1 acre
- Clear cut: 10 acres
- Young Redwood Forest: 216 acres
- Mature Redwood Forest: 43 acres
- Old Growth Redwood Forest: 0 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, **D5** E3, E4, E5, F1



ALTERNATIVE D5

Wilson Creek Bridge to Hamilton Road

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 12.1 mi
- Added Time: 2.4 min

New Construction

- Length: 12.2 mi
- Footprint: 344 acres
- Schedule: 4 years

Cost (in Millions)

- Minimum: $750M
- Maximum: $870M

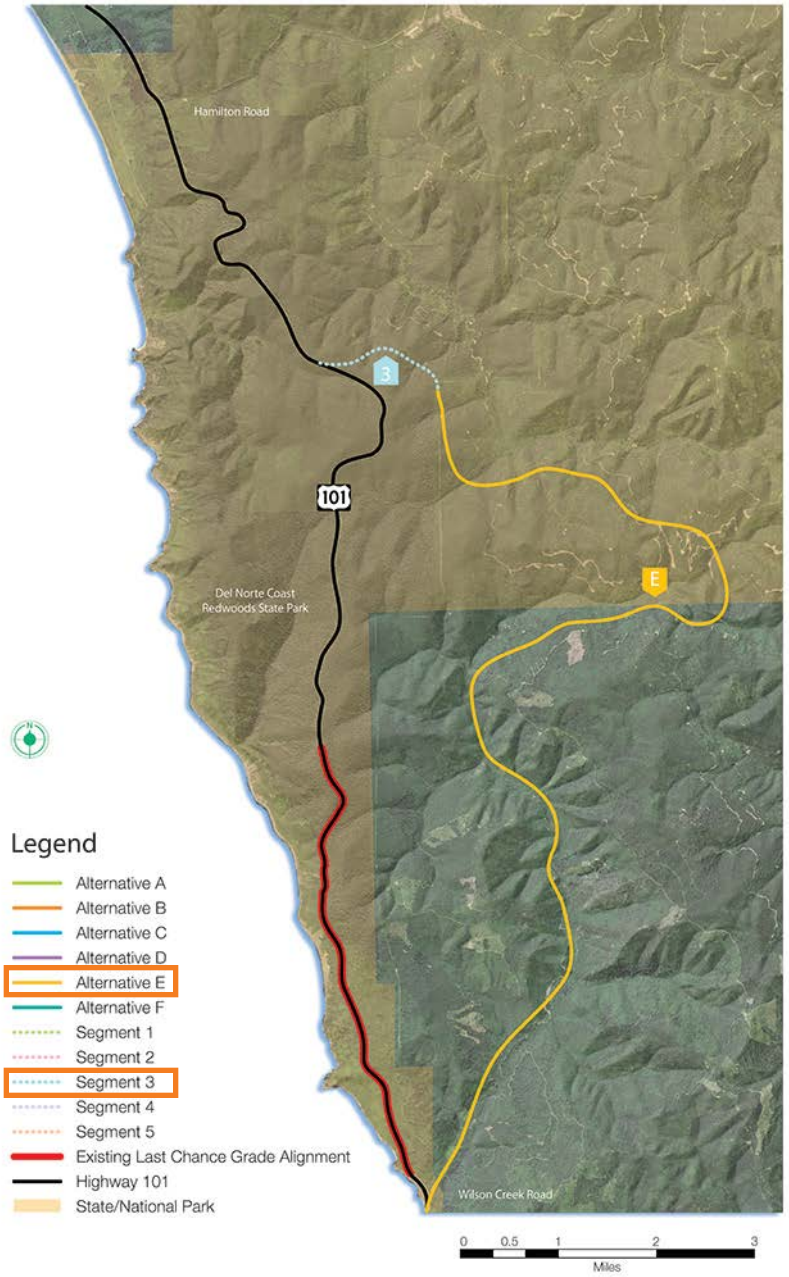
Existing Habitat Type:

- Coastal scrub/grassland /spruce: 12 acres
- Riparian: 1 acre
- Clear cut: 10 acres
- Young Redwood Forest: 228 acres
- Mature Redwood Forest: 93 acres
- Old Growth Redwood Forest: 0 acres

LAST CHANCE GRADE

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE E3

Wilson Creek Road to South of Mill Creek Access

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 14.3 mi
- Added Time: 4.9 min

New Construction

- Length: 11.3 mi
- Footprint: 299 acres
- Schedule: 4 years

Cost (in Millions)

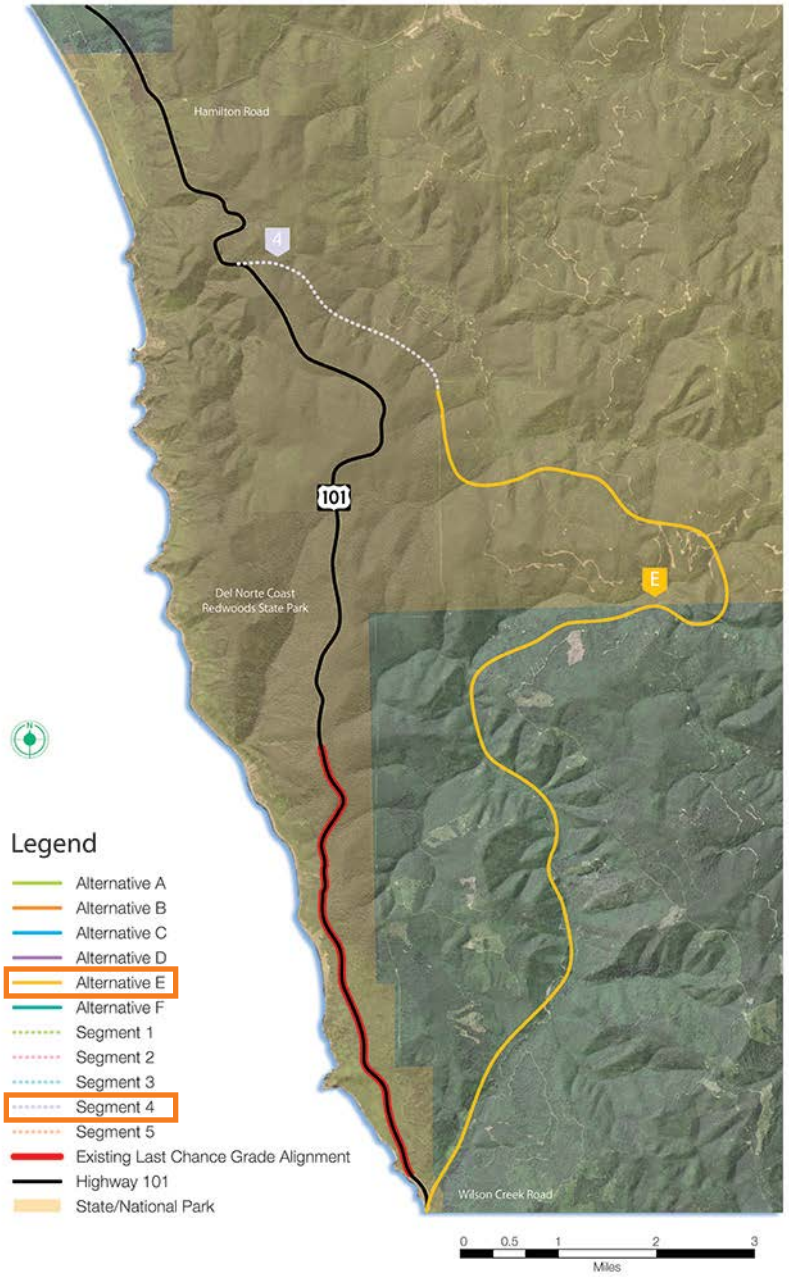
- Minimum: $680M
- Maximum: $790M

Existing Habitat Type:

- Coastal scrub/grassland /spruce: 0 acres
- Riparian: 22 acres
- Clear cut: 0 acres
- Young Redwood Forest: 254 acres
- Mature Redwood Forest: 23 acres
- Old Growth Redwood Forest: 0 acres

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4 E5, F1



ALTERNATIVE E4

Wilson Creek Road to North of Mill Creek Access

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 14.1 mi
- Added Time: 4.7 min

New Construction

- Length: 12.0 mi
- Footprint: 319 acres
- Schedule: 4 years

Cost (in Millions)

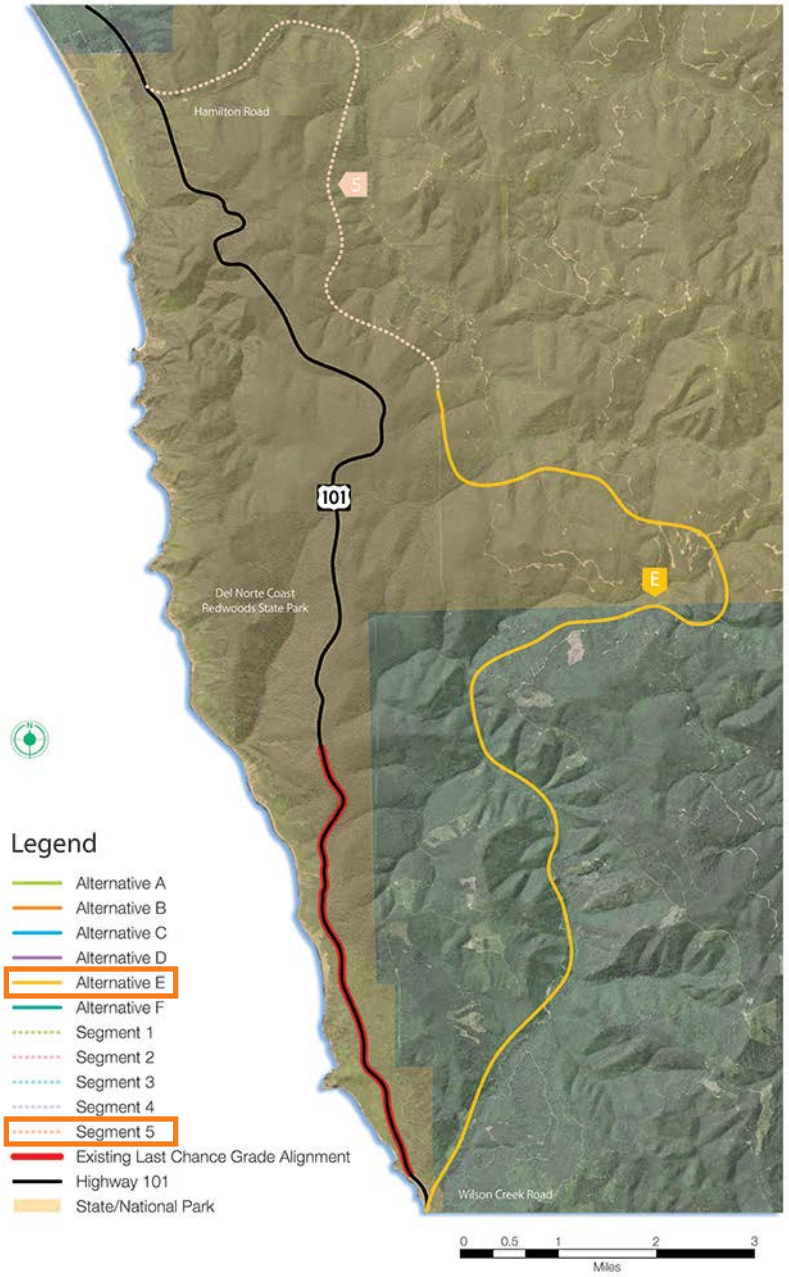
- Minimum: $730M
- Maximum: $850M

Existing Habitat Type:

- Coastal scrub/grassland /spruce: 0 acres
- Riparian: 22 acres
- Clear cut: 0 acres
- Young Redwood Forest: 254 acres
- Mature Redwood Forest: 43 acres
- Old Growth Redwood Forest: 0 acres

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE E5

Wilson Creek Road to Hamilton Road

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 15.1 mi
- Added Time: 5.9 min

New Construction

- Length: 15.1 mi
- Footprint: 381 acres
- Schedule: 4 years

Cost (in Millions)

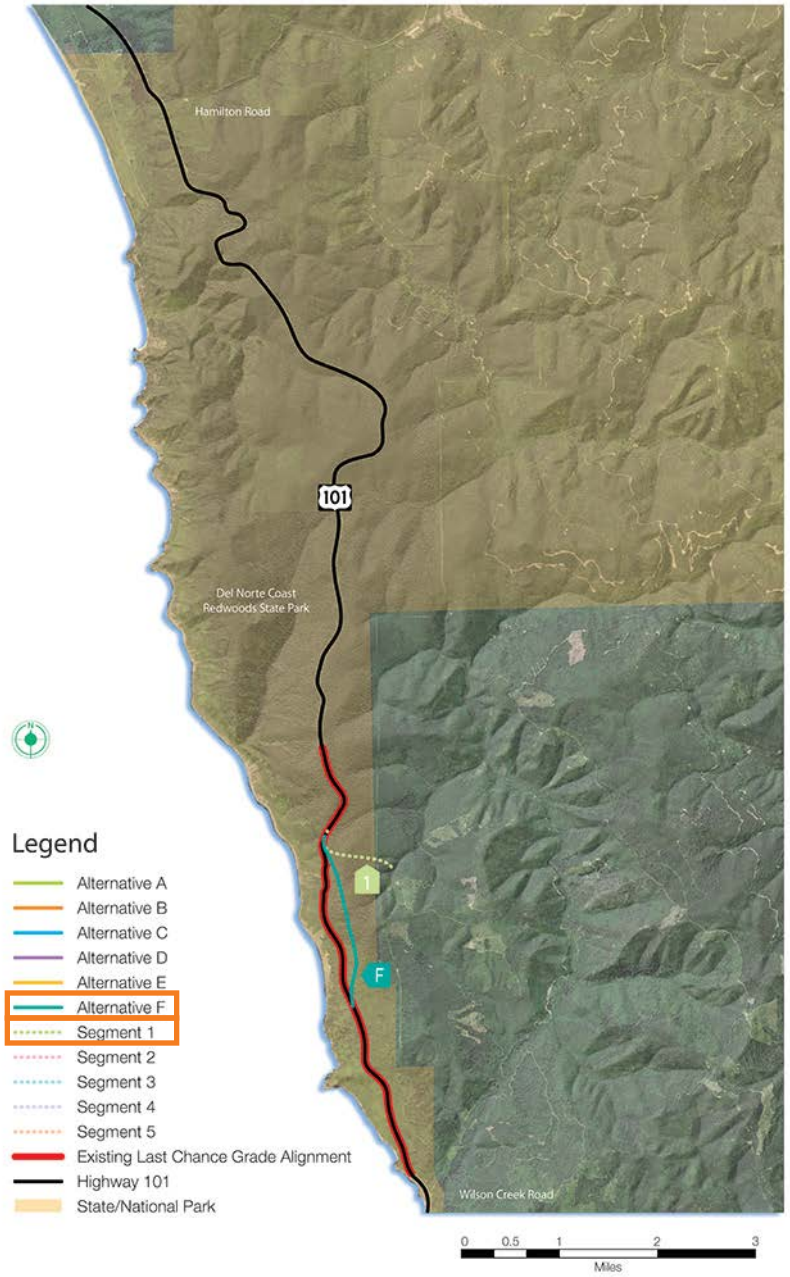
- Minimum: $920M
- Maximum: $1,070M

Existing Habitat Type:

- Coastal scrub/grassland /spruce: 0 acres
- Riparian: 22 acres
- Clear cut: 2 acres
- Young Redwood Forest: 264 acres
- Mature Redwood Forest: 93 acres
- Old Growth Redwood Forest: 0 acres

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



ALTERNATIVE F1

LCG Tunnel - Full Tunnel Parallel to E

(5,422 foot tunnel)

Travel time (Wilson Creek Rd to Hamilton Rd)

- Total Length: 10.0 mi
- Added Time: 0.2 min

New Construction

- Length: 1.3 mi
- Footprint: 4 acres
- Schedule: 6.5 years

Cost (in Millions)

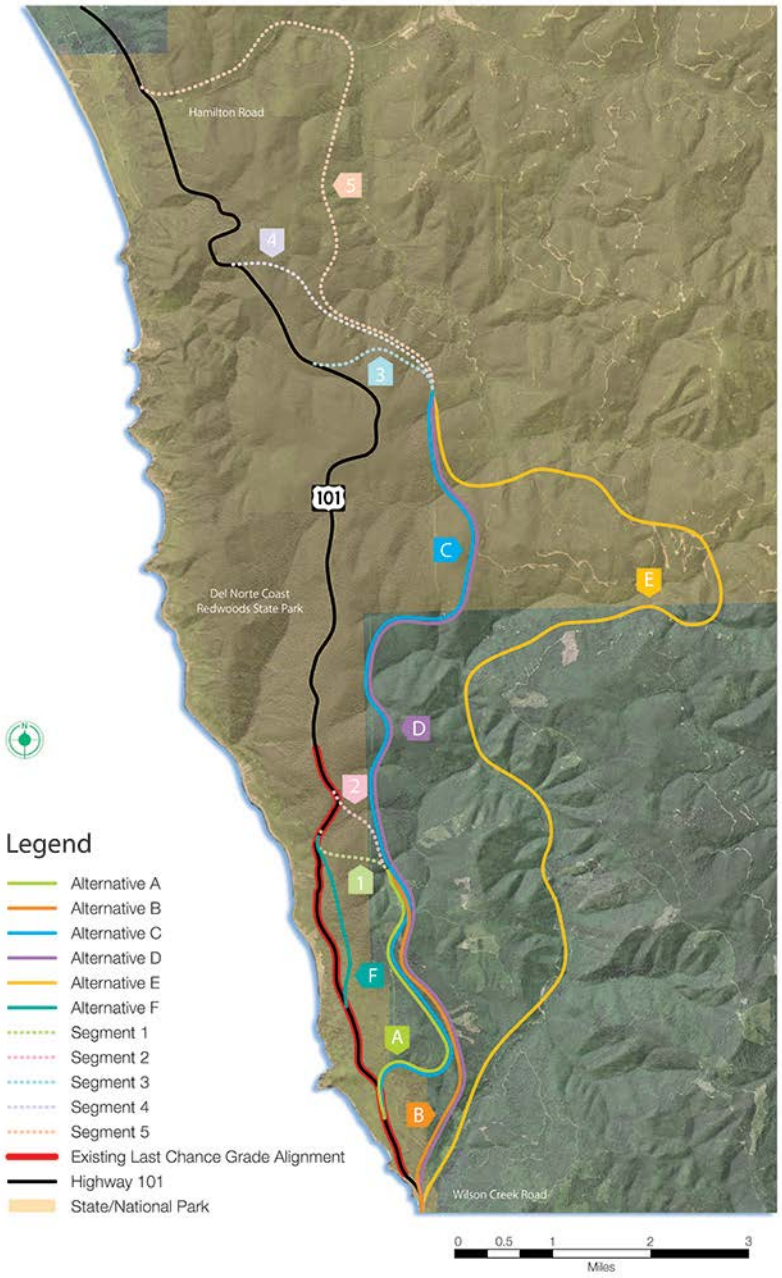
- Minimum: $450M
- Maximum: $700M

Existing Habitat Type:

- Coastal scrub/grassland /spruce: 2 acres
- Riparian: 0 acres
- Clear cut: 0 acres
- Young Redwood Forest: 0 acres
- Mature Redwood Forest: 1 acre
- Old Growth Redwood Forest: 1 acre

PRELIMINARY ALTERNATIVES

A1, A2, B1, B2, C3, C4, C5, D3, D4, D5, E3, E4, E5, F1



PRELIMINARY ALTERNATIVES SUMMARY

LAST CHANCE GRADE

Economic Impact Study

- Travel delays of 320 miles
- Increase in $1.3 mil /day ($450 mil/yr) travel delay & vehicle operating costs
- Reduction in $300 to $400 mil in DN Annual Output
- Loss of 3,000 to 4,000 jobs and $100 to $130 mil/yr. in wages
- Total Potential Impacts = **Sound Investment**

SMALL GROUP DISCUSSION

CONCLUSION AND NEXT STEPS

NEXT STEPS

- Final Feasibility Study
- Begin Project Study Report (July 2015)
- Refine Alternatives
- Complete Project Study Report (July 2016)
- Seek Funding
- Begin Environmental Studies and Documents

FOR MORE INFORMATION

Website:

www.dot.ca.gov/dist1/d1projects/last_chance_grade/

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