TECHNICAL MEMORANDUM #7

DATE: March 10, 2025

TO: Thomas Guevara | ODOT

FROM: Garth Appanaitis, PE | DKS Associates
Joel Rabinovitz, PE | DKS Associates
Hallie Turk, EI, RSP$_1$ | DKS Associates

SUBJECT: OR 42-US 101 Passing Lanes Study DKS P#22129-004
TM#7: Corridor Concepts

INTRODUCTION

The Passing Lanes Study focuses on two key transportation corridors in southwest Oregon, OR 42 (Coos Bay-Roseburg Highway No. 35) and US 101 (Oregon Coast Highway No. 9). These highways are important freight and tourism routes for travelers in Oregon and are expected to see increased traffic in the next twenty years. As such, improvements are needed on these corridors to accommodate future growth and aid in safe, efficient travel in Oregon's southwest region.

The goal of the OR 42-US 101 Passing Lanes Study is to determine where additional passing lanes would improve vehicle capacity and safety conditions on OR 42 and US 101 and identify specific projects for funding and implementation. In previous stages of the study, the project team analyzed the existing and future operational conditions and safety performance along the corridor, identifying segments with deficiencies. The purpose of this memorandum is to summarize the initial feasibility screening of segments with projected deficiencies for potential passing lanes. The project team will conduct additional evaluation and analysis for those segments that are advanced beyond the initial feasibility screening in the next stage of the project (TM# 8).

STUDY AREA

The project study area consists of eleven segments, denoted by study segment names as well as facilities.

- Study segment names (42-A through 42-C and 101-A through 101-H)
  - Created to show highway number
- Facility (A through K) plus directions (EB/WB or NB/SB)
  - Created to perform operational analysis

Table 1 lists the study segments by segment name and facility.

TABLE 1: PASSING LANES SEGMENTS BY STUDY SEGMENT NAME AND FACILITY

HWY	DESCRIPTION	STUDY SEGMENT	FACILITY
US 101	Douglas County Line to Reedsport MP 198.59-211.07	101-A	D
US 101	Reedsport to Lakeside MP 213.45-221.35	101-B	E
US 101	Lakeside to North Bend MP 222.10-233.93	101-C	F
US 101	US101-OR42 Junction to Bandon MP 245.00-260.63	101-D	G
US 101	Bandon to Port Orford MP 276.71-298.32	101-E	H
US 101	Port Orford to Gold Beach MP 303.30-326.21	101-F	I
US 101	Gold Beach to Brookings MP 331.29-352.20	101-G	J
US 101	Brookings to CA Border MP 361.52-363.11	101-H	K
OR 42	West of Coquille MP 7.10-9.38	42-A	A
OR 42	Myrtle Point to OR 542 Junction MP 22.09-23.44	42-B	B
OR 42	OR 542 Junction to OR 42 Couplet MP 23.72-47.75	42-C	C

EVALUATION PROCESS AND CRITERIA

The screening process was conducted on the 177 subsegments that compose the full extent of the corridors and individually range from 0.17 to 2.14 miles in length. This segmentation was used for the prior safety evaluation. All 177 segments were evaluated based on evaluation criteria established and summarized in Tech Memo #2.[1] **Table 2** lists the evaluation criteria, which were split into two tiers to efficiently screen potential project locations for consideration. These screening tiers included:

[1] Technical Memorandum #2: Evaluation and Prioritization Criteria, OR 42-US 101 Passing Lanes Study. DKS Associates. April 1, 2024.

- Tier 1: Identify locations that may need a passing lane due to operational and/or safety deficiencies
- Tier 2: Screen (remove) project locations from consideration if they did not meet minimum feasibility

TABLE 2: PASSING LANES SEGMENT EVALUATION CRITERIA

CRITERIA	CONSIDERATION	EVALUATION TIER
OPERATIONS	Does the project location have existing operational deficiencies that will be improved with implementation of a passing lane?	Tier 1
SAFETY	Does the project location have existing safety deficiencies or a history of head-on or sideswipe crashes that will be improved with the implementation of a passing lane?	Tier 1
GAPS	Does the project location provide an opportunity for vehicles to pass within five miles of an urban growth boundary (UGB)?	Tier 1
STRUCTURES	Does the location not include any structures (bridges) that could be impacted and would not need any new/replaced structures?	Tier 2
ACCESS	Are potential passing lane project boundaries located over 2,500 feet from significant driveways or public streets?	Tier 2
RIGHT OF WAY	Can the proposed project be implemented without impacting right of way (including parks) that will require displacement or impacting railroad right of way?	Tier 2
POTENTIAL RISKS	The proposed project is not located near high-risk geotechnical factors that may introduce project risks?	Tier 2
ENVIRONMENTAL RISKS AND FEASIBILITY*	The project location could be widened without requiring significant cut/fill that could be at risk of movement and is not located adjacent to a river, hillside, or mountain.	Tier 2

Notes: * This additional Tier 2 screening criteria was added following an ODOT worksession to reflect additional environmental feasibility considerations that could significantly impact project cost or risk.

This evaluation only considers locations for potential passing lane projects and does not consider slow-moving vehicle turnout projects. Feedback from the project team suggested that slow-moving vehicle turnouts be considered as a worst-case option in later steps of the project.

TIER 1 EVALUATION

All 177 segments, totaling 142.65 miles, were analyzed as part of the Tier 1 Evaluation to determine locations where a passing lane could be considered due to operational and/or safety deficiencies.

OPERATIONAL DEFICIENCIES

PASSING OPPORTUNITIES NEAR SMALL COMMUNITIES

The project team noted that travel time delays within small communities may be improved by passing opportunities just outside of urban growth boundaries. Because of this, a segment advanced to Tier 2 Evaluation if a project could reduce the distance from an urban growth boundary to the nearest passing opportunity.

The nearest passing opportunities outside urban growth boundaries are listed below in Table 3. Distances above three miles were advanced to Tier 2 evaluation.

TABLE 3: DISTANCE FROM COMMUNITIES TO NEAREST PASSING LANE

SEGMENT	DESCRIPTION	DIRECTION	LOCATION	TOTAL DISTANCE FROM STUDY SEGMENT EDGE TO NEAREST PASSING LANE (MILES) *
101-A	Dunes City to Reedsport	SB		0.99
101-B	Reedsport to Lakeside	SB		2.32
101-C	Lakeside to North Bend	SB		1.37
101-D	OR 42 Junction to Bandon	SB		2.57
101-E	Bandon to Port Orford	SB	MP 276.71 to 284.89 (8 segments)	8.18
101-F	Port Orford to Gold Beach	SB		1.04
101-G	Gold Beach to Brookings	SB		0
101-H	Brookings to CA Border	SB		No SB Passing Opportunity
101-H	CA Border to Brookings	NB		No NB Passing Opportunity
101-G	Brookings to Gold Beach	NB		0
101-F	Gold Beach to Port Orford	NB	MP 316.75 to 326.21 (11 segments)	9.46
101-E	Port Orford to Bandon	NB		1.34
101-D	Bandon to OR 42 Junction	NB	MP 254.57 to 260.63 (6 segments)	6.06
101-C	North Bend to Lakeside	NB		2.68
101-B	Lakeside to Reedsport	NB		0.14
101-A	Reedsport to Dunes City	NB		2.69
42-A	Lampa Lane to Coquille	EB		0
42-B	Myrtle Point to OR 542	EB		No EB Passing Opportunity

SEGMENT	DESCRIPTION	DIRECTION	LOCATION	TOTAL DISTANCE FROM STUDY SEGMENT EDGE TO NEAREST PASSING LANE (MILES) *
42-C	OR 542 to OR 42 Couplet	EB	MP 23.72 to 37.57 (22 segments)	13.85
42-C	OR 42 Couplet to OR 542	WB	MP 38.07 to 47.75 (12 segments)	9.68
42-B	OR 542 to Myrtle Point	WB		No WB Passing Opportunity
42-A	Coquille to Lampa Lane	WB		0.43

* Yellow highlight = Move segment to Tier 2 evaluation

As shown, five locations have a distance greater than three miles from the edge of a study segment to the nearest passing opportunity.

V/C STANDARD

A segment advanced to Tier 2 Evaluation if its future operational conditions did not meet the segment mobility standard, which is based on a v/c ratio target. None of the segments showed a v/c deficiency.[2]

SAFETY DEFICIENCIES

A segment advanced to Tier 2 Evaluation due to safety deficiencies if:

- The calculated crash rate met or exceeded its critical crash rate, *AND*
- The segment has a history of passing-related crashes.

In total, 10 segments advanced to Tier 2 evaluation due to safety deficiencies.

Table 4 summarizes segments according to v/c deficiency and safety deficiency.

TABLE 4: PASSING LANES TIER 1 EVALUATION RESULTS

SEGMENT (FACILITY)	MP START	MP END	LENGTH (MILES)	EB/NB V/C DEFICIENCY?	WB/SB V/C DEFICIENCY?	SAFETY DEFICIENCY?	PASSING-RELATED CRASHES?
42-C (C)	24.24	24.83	0.59	No	No	Yes	No
42-C (C)	24.83	25.17	0.34	No	No	Yes	No
42-C (C)	25.17	26.41	1.24	No	No	Yes	**Yes**
42-C (C)	28.24	29.46	1.22	No	No	Yes	**Yes**
42-C (C)	31.84	32.31	0.47	No	No	Yes	No

[2] Although level of service is not the applicable mobility standard, the project team noted that some segments showed a level of service (LOS) D or worse, including a northbound section of 101-C (MP 232.55 to 233.93) and a southbound section of 101-C (MP 233.27 to 233.93).

SEGMENT (FACILITY)	MP START	MP END	LENGTH (MILES)	EB/NB V/C DEFICIENCY?	WB/SB V/C DEFICIENCY?	SAFETY DEFICIENCY?	PASSING-RELATED CRASHES?
42-C (C)	41.03	41.53	0.50	No	No	Yes	**Yes**
42-C (C)	42.99	43.39	0.40	No	No	Yes	No
42-C (C)	43.39	43.65	0.26	No	No	Yes	No
101-A (D)	201.95	202.33	0.38	No	No	Yes	**Yes**
101-A (D)	205.68	206.45	0.77	No	No	Yes	**Yes**
101-B (E)	215.78	217.31	1.53	No	No	Yes	**Yes**
101-C (F)	228.73	230.16	1.43	No	No	Yes	No
101-C (F)	232.17	232.55	0.38	No	No	Yes	**Yes**
101-C (F)	233.27	233.93	0.66	No	No	Yes	**Yes**
101-D (G)	245.00	245.91	0.91	No	No	Yes	No
101-D (G)	251.30	252.28	0.98	No	No	Yes	**Yes**
101-E (H)	277.70	278.40	0.70	No	No	Yes	**Yes**
101-E (H)	279.94	281.01	1.07	No	No	Yes	No
101-F (I)	306.50	308.07	1.57	No	No	Yes	No
101-F (I)	310.56	311.41	0.85	No	No	Yes	No
101-F (I)	316.75	317.62	0.87	No	No	Yes	**Yes**

* Yellow highlight = Move segment to Tier 2 evaluation

TIER 1 EVALUATION SUMMARY

Gap locations shown in **Table 3** and deficient segments shown in **Table 4** were both advanced to Tier 2 screening. This resulted in 66 total segments advancing to Tier 2 Evaluation. Adjacent segments were combined and evaluated together, resulting in 11 unique segments.

Table 5 lists the 11 locations, totaling 51.93 miles, that advanced to Tier 2 Evaluation along with the operational or safety deficiency.

TABLE 5: SEGMENTS ADVANCED TO TIER 2 EVALUATION

SEGMENT (FACILITY)	MP START	MP END	LENGTH (MILES)	V/C DEFICIENCY	SAFETY DEFICIENCY	GAP LOCATION
42-C (C)	23.72	37.57	13.85		x	EB
42-C (C)	38.07	47.75	9.68		X	WB
101-A (D)	201.95	202.33	0.38		X	
101-A (D)	205.68	206.45	0.77		X	
101-B (E)	215.78	217.31	1.53		X	

SEGMENT (FACILITY)	MP START	MP END	LENGTH (MILES)	V/C DEFICIENCY	SAFETY DEFICIENCY	GAP LOCATION
101-C (F)	232.17	232.55	0.38		X	
101-C (F)	233.27	233.93	0.66		X	
101-D (G)	251.30	252.28	0.98		X	
101-D (G)	254.57	260.63	6.06			NB
101-E (H)	276.71	384.89	8.18			SB
101-F (I)	316.75	326.21	9.46		X	NB
TOTAL			**51.93 miles**			

TIER 2 EVALUATION

The locations advancing from the Tier 1 evaluation (Table 5) were then screened for the Tier 2 evaluation, which included reviewing if there are any structures along a segment that would make widening prohibitively costly, would impact access or require ROW acquisition, or would have other potential risks (such as geotechnical conditions indicating a high risk of landslides). These segments are shown in **Figure 1**.

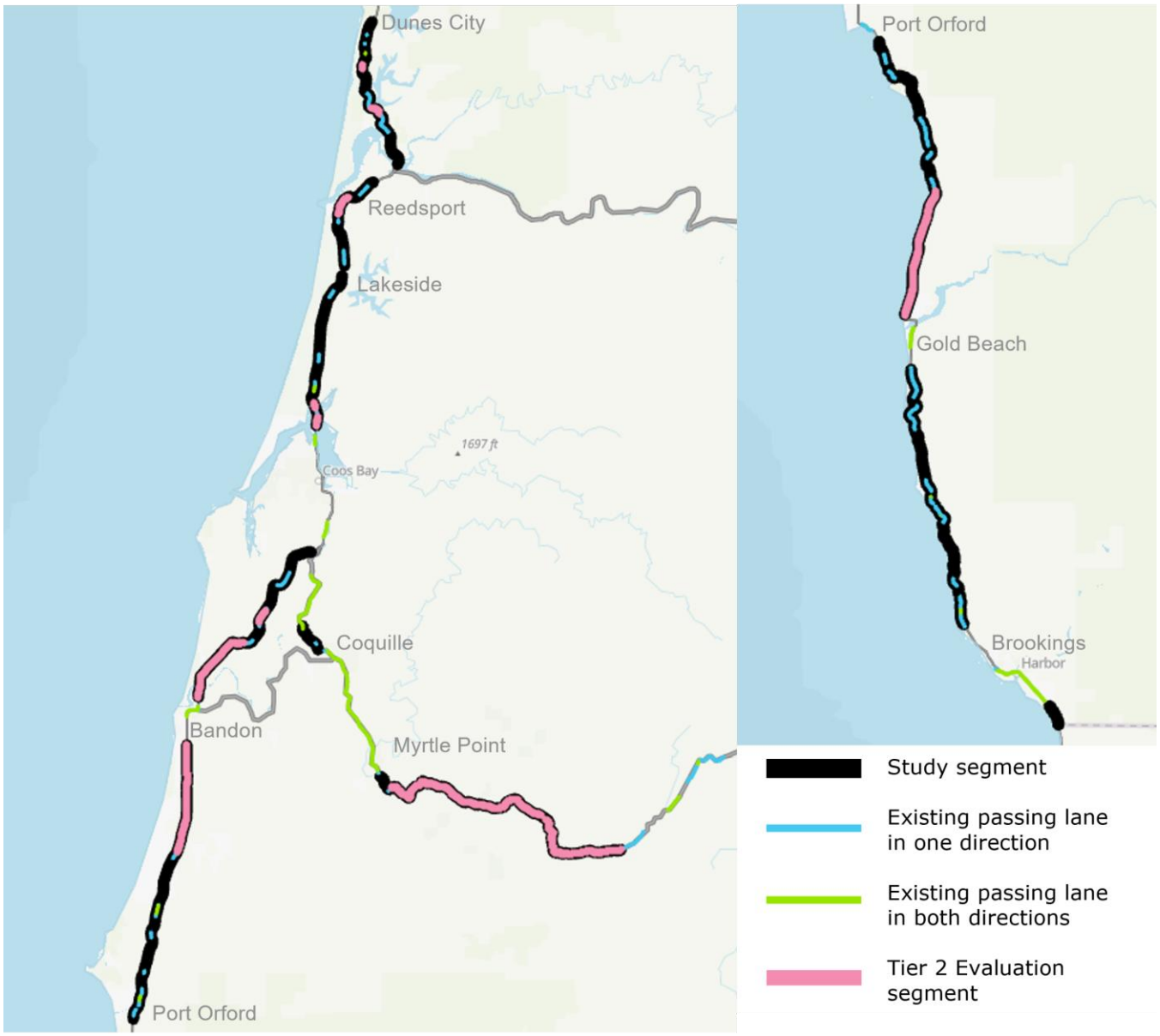

FIGURE 1: TIER 2 EVALUATION SEGMENTS

Each of the 17 segments were scored for each Tier 2 criterion using the following scale:

- 5 – low concern (e.g., high benefit or low cost)
- 4 – some concern (e.g., some benefit)
- 3 – neutral outcome
- 2 – moderate concern (e.g., low benefit)
- 1 – strong concern (e.g., no benefit or high cost)

Each segment was examined for passing lane feasibility both within and beyond its milepoint boundaries using the highest possible score for each criterion. For example, if a segment would score 1 for "Structures" within its boundaries but a nearby location outside the segment would score 5, then the segment would be given a 5 for "Structures". This approach avoided overly

eliminating segments because operational or safety deficiencies along a segment could also be addressed with a passing lane before or after it.

Any segment that resulted in a "1" response under any category would not advance to the prioritization stage because it would be too costly to implement a passing lane on or near the segment. **Table 6** lists the Tier 2 evaluation results. As shown, 8 potential locations totaling 7.16 miles will advance to the prioritization stage.

TABLE 6: TIER 2 EVALUATION RESULTS

SEGMENT (FACILITY)	MP START	MP END	LENGTH (MILES)	STRUCTURES	ACCESS	RIGHT OF WAY	POTENTIAL RISKS	ADVANCE TO ENVIRONMENTAL SCREENING?
42-C (C)	23.72	37.57	13.85	**5**	**5**	**5**	**3**	**Yes**
42-C (C)	38.07	47.75	9.68	**5**	**5**	**5**	**4**	**Yes**
101-A (D)	201.95	202.33	0.38	**5**	**5**	**5**	**3**	**Yes**
101-A (D)	205.68	206.45	0.77	**5**	**5**	**5**	**2**	**Yes**
101-B (E)	215.78	217.31	1.53	**5**	**2**	**1**	**4**	No
101-C (F)	232.17	232.55	0.38	**1**	**1**	**1**	**5**	No
101-C (F)	233.27	233.93	0.66	**1**	**1**	**1**	**5**	No
101-D (G)	251.30	252.28	0.98	**5**	**5**	**5**	**5**	**Yes**
101-D (G)	254.57	260.63	6.06	**5**	**4**	**4**	**5**	**Yes**
101-E (H)	276.71	284.89	8.18	**5**	**1**	**5**	**5**	No
101-F (I)	316.75	326.21	9.46	**5**	**5**	**5**	**5**	**Yes**

Following discussions with the ODOT project team, additional considerations were added to the Tier 2 evaluation to consider environmental risks and feasibility. Each location was reviewed to determine if it could be widened without requiring significant cut/fill that could be at risk of movement and is not located adjacent to a river, hillside, or mountain. This additional criterion recognized that these locations would require more significant engineering and project cost that would be more difficult to implement. Table 7 summarizes the review for each of the remaining seven locations that advanced from the prior table. There are three remaining segments that would be advanced for additional evaluation and prioritization.

TABLE 7: TIER 2 EVALUATION RESULTS

SEGMENT (FACILITY)	MP START	MP END	LENGTH (MILES)	ROAD WIDENING FEASIBILITY SUMMARY	ADVANCE TO PRIORITIZATION STAGE?
42-C (C)	23.72	37.57	13.85	The river is generally located along the southern edge with hills along the northern edge. The flat areas that do exist have bridges and/or intersections and clear segments are relatively short (1/4 mile).	No
42-C (C)	38.07	47.75	9.68	The segment between MP 45 and MP 46 may include an area that could be widened on the north side.	**Yes**
101-A (D)	201.95	202.33	0.38	Existing geotech hazard and presence of the adjacent hill and water features limit opportunities for widening a meaningful distance.	No
101-A (D)	205.68	206.45	0.77	There may be potential to extend the southbound passing lane to the north.	**Yes**
101-D (G)	251.30	252.28	0.98	The existing southbound passing lane that begins at MP 251.3 has a road adjacent to it. The areas further north drop off on both sides. The northbound passing lane does currently extend past and intersection and could potentially be extended further north.	**Yes**
101-D (G)	254.57	260.63	6.06	The most ideal location along a straight tangent has limited distance (about ¾ mile) due to the presence of intersections.	No
101-F (I)	316.75	326.21	9.46	There is lots of access through the area but it could be a candidate for a vehicle turnout.	No

SUMMARY

To determine where additional passing lanes would improve vehicle capacity and safety conditions on OR 42 and US 101, the project team completed an initial feasibility screening of segments in two phases, a Tier 1 evaluation and Tier 2 evaluation. **Table 8** lists the resulting number of unique segments and road miles considered after each stage of the evaluation.

TABLE 7: PASSING LANES STUDY SEGMENT EVALUATION PROCESS

SEGMENTS	NUMBER OF UNIQUE SEGMENTS	ROAD MILES
ENTIRE STUDY CORRIDOR	177 segments	142.65 miles
RESULT OF TIER 1 EVALUATION	11 segments	51.93 miles
RESULT OF TIER 2 EVALUATION	7 segments	41.18 miles
RESULT OF TIER 2 ENVIRONMENTAL EVALUATION	3 segments	11.43 miles
ADVANCING TO PRIORITIZATION	**3 segments**	**11.43 miles**

Modifications to the screening process could result in additional or fewer locations advanced to the next stage of evaluation.

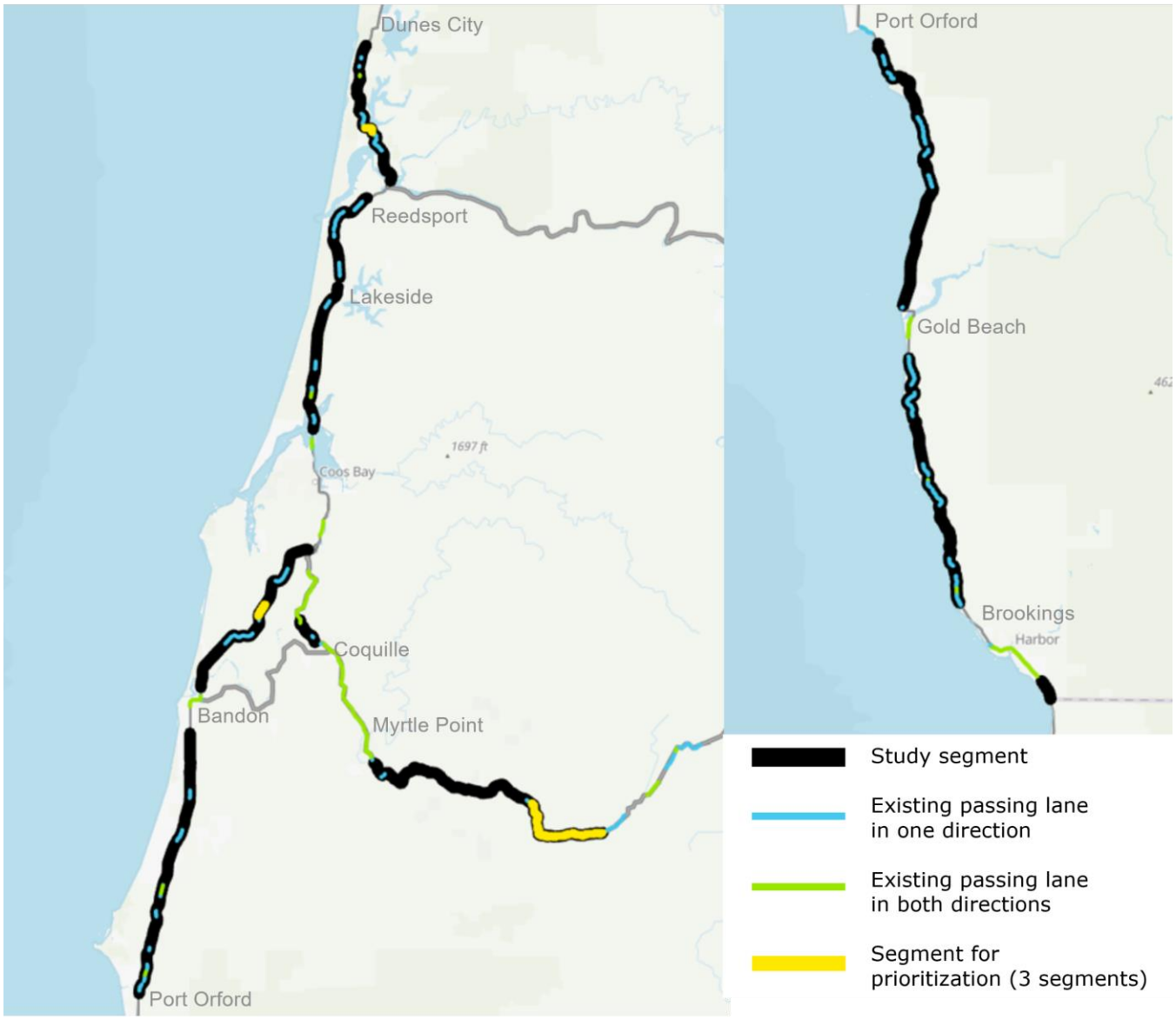

FIGURE 2: POTENTIAL PASSING LANE LOCATIONS FOR PRIORITIZATION

In the next stage of the project, these segments will undergo additional evaluation to determine prioritization based on several factors, including but not limited to quantified operational benefit, quantified safety benefit, and expected cost.