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STAFF REPORT: REGULAR CALENDAR

Application No.: CDP 1-18-1078

Applicant: California Department of Transportation
(Caltrans) District 1

Location: A six-mile long segment of Highway 101 between Eureka and Arcata along the east side of Humboldt Bay (Eureka Slough Bridge, Eureka to the 11th St. overcrossing, Arcata).

Project Description: Construction of the Eureka-Arcata Route 101 Corridor Improvement Project including: installation of median crossing closures; construction of new interchange at Indianola cutoff; extensions of highway acceleration & deceleration lanes; replacement of southbound Jacoby Creek Bridge; replacement of bridge rails on northbound Jacoby Creek and Gannon Slough Bridges; replacement of tide gates; and other roadway improvements.

Staff Recommendation: Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

The California Department of Transportation (Caltrans) proposes to undertake the Eureka-Arcata Route 101 Corridor Improvement Project in Humboldt County. The project area is a stretch of Highway 101 running north from the city of Eureka to the city of Arcata, a mostly flat stretch of highway that runs directly alongside Humboldt Bay with two lanes headed south and two lanes north, separated by a mostly grassy median. Caltrans has collected data showing that the majority of collisions resulting in serious injuries or fatalities on Highway 101 between Eureka and Arcata have occurred at the at-grade intersections, with collision rates substantially exceeding statewide averages and with increased rates of fatal or serious collisions. The proposed project seeks to improve safety and reduce fatal and injury accident rates on Highway 101 between Eureka and Arcata by eliminating the uncontrolled left turn moves and highway crossings at the intersections.

The proposed project would not increase the capacity of the freeway segment or the number of through lanes, though it could improve the level of service of the highway's existing carrying capacity. The proposed project comprises development of the individual project components identified above on page 1 and consists of specific, separate improvements to an existing highway rather than a total reconstruction of the highway. Most of the existing travel lanes and other elements of the highway will remain unaltered by the project.

Minimizing Risk to Life and Property and Maximizing Safe Public Access

Given its location directly adjacent to Humboldt Bay, the proposed development is susceptible to flood risks and extremely vulnerable to the impacts of Sea Level Rise (SLR). The flood risks to the highway corridor are from both the bay side to the west and the inland eastern side. Both sides of the highway corridor are protected by existing historical and largely unmaintained protective structures that line the bay and connecting sloughs and streams. Although the dikes and railway berm provide significant protection to the highway corridor, breaching of the unmaintained dikes is a significant and growing problem. Additionally, rising annual maximum tide elevations, commonly referred to as a "king tide," also contribute to occurrences of dike breaching or overtopping. Flooding issues will worsen with SLR.

The new structural improvements (bridge and the interchange) have an expected lifespan of approximately 80 years, or to approximately the year 2100. Significant segments of the corridor will be regularly inundated by 1.5 feet of SLR, which is currently projected to impact the area potentially as early as the 2030 to 2040 period and likely by the 2040 to 2050 timeframe. Regular 10-year storm events will flood segments of the corridor with minimal SLR. While the major structural components of this project (the bridge replacement and interchange) are designed to withstand some levels of SLR, they do not address SLR over the entirety of their design life, inconsistent with the requirements of the Coastal Act to minimize risk to life and property and maximize public access consistent with public safety needs. Moreover, other project components such as the reconfigured Jacobs Avenue/Airport Road intersection, and the larger highway corridor in which the project improvements are integrated, are not being adapted to SLR in this project.

In order to be found consistent with the hazard and public access policies of the Coastal Act, it is critical to assess SLR vulnerabilities over the entirety of a development's design life, especially when the development involves critical infrastructure serving the public, such as a principal highway providing access up and down the coast. Because the proposed project does not ensure consistency with the Coastal Act hazard and public access policies through its design life of 2100, staff recommends that this CDP action authorize the proposed development with limitations requiring a CDP amendment application. Specifically, in the case that Caltrans has not already returned to the Commission to authorize an adaption strategy or amendment to this permit, staff recommends that Caltrans be required to submit a CDP amendment application by specified deadlines to modify, relocate, or remove all or portions of the development authorized under this permit. The CDP amendment application shall be supported by a Phased Adaptation Plan and alternatives analysis.

In order to ensure that Caltrans submits the required CDP amendment application and Phased Adaptation Plan in advance of the time that impacts inconsistent with the Coastal Act can occur, staff recommends that Caltrans be required to submit the CDP amendment application no later than one year after flooding closes any travel portion of the Highway 101 Corridor four times within any twelve-month period. Although the Phased Adaptation Plan is required no later than December 31, 2030, the Phased Adaptation Plan and CDP amendment application will be required earlier if the specified flooding occurs on any travel portion of the Highway 101 Corridor prior to that time. At the same time, monitoring requirements will ensure that the agency will track important SLR metrics and can develop earlier adaptation planning if needed.

As discussed within this report there are different metrics based on mean tidal levels that represent occasional very high tides, or King Tides, more regular monthly flooding, and regular near-daily flooding. The recommended deadline for submittal of the CDP amendment application precedes the time that impacts inconsistent with the Coastal Act can occur because (1) the application must be submitted when water levels are such that Highway 101 Corridor flooding occurs four times per year, which is equivalent to Mean Annual Maximum Water (MAMW) elevations (essentially king tides), and (2) MAMW represents lower-impact nuisance flooding events. Flooding impacts at tidal elevations equivalent to MAMW levels can be addressed by temporary measures and still minimize the risks of flooding to life and property. At this point, the flooding would result in inconvenience to travelers on the highway, but the interruption in travel and risks to the public are generally predictable, manageable, and safe.

In comparison, when the sea has risen to levels equivalent to mean monthly maximum water (MMMW) elevations, flooding will be expected to impact the corridor on a monthly basis. SLR vulnerability assessment efforts on Humboldt Bay have typically selected the MMMW tidal elevation as a baseline, because it provides a standard to judge flooding impacts that are occurring on a more regular and substantial interval and extent. Flood events at the elevation of mean high higher water (MHHW) are more substantial (e.g., potentially occurring every 1-2 days). When flooding of the corridor has reached elevations equivalent to today's MHHW elevation, the impacts will be well beyond any intermediate measures that can protect the highway corridor and well beyond any opportunity to return and authorize an adaption strategy.

By requiring the submittal of a CDP amendment application supported by specified analysis based on the earlier MAMW elevations, an adaptation strategy that addresses SLR over the design life of the bridge and interchange can be authorized by CDP amendment and committed to implementation before impacts occur on either a monthly or on an every other day basis.

Therefore, to address SLR flooding risks and ensure consistency with the hazard and public access policies of the Coastal Act, recommended **Special Conditions 1 and 2** together require Caltrans to: 1) return to the Commission for an amendment to this CDP within one year of the time flooding closes any portion of the travel portion of the Highway 101 Corridor four times over any 12 month period (e.g. before flooding has begun to regularly impact the highway corridor); (2) develop and submit, by 2030 or the deadline for the CDP amendment application, whichever occurs first, a Phased Adaptation Plan for the highway corridor, that includes a plan for adaptation alternatives that address coastal hazards through at least 2100 considering medium-high and extreme risk aversion scenarios; 3) submit bi-annual reports starting in 2020 that will analyze and monitor SLR conditions by specific metrics; and (4) develop a plan to collaborate with local governments and stakeholders to develop adaption strategies for the Highway 101 corridor.

The Phased Adaptation Plan will analyze and develop a range of alternatives for accommodating SLR and a pathway to implement those alternatives along a designated timeline times to updated SLR science, while remaining consistent with Coastal Act policies. The required CDP amendment application must include an evaluation of adaptation alternatives, including alternatives considered within the Phased Adaptation Plan, and shall propose to retain, relocate or remove all or portions of the development authorized by this CDP. **Special Conditions 1 and 2** will ensure that the approved critical safety improvements that are needed in the short term are coordinated with the long-term solution for the corridor before flooding has begun to regularly impact the highway corridor. Though the future adaptation measures are yet to be determined, as conditioned, the approved structures will not preclude the use of alternate adaptation strategies in the future. In addition, coordinating the short-term implementation of the critical safety improvements with the long-term corridor solution is feasible because the approved project, as conditioned, will not foreclose the implementation of alternate SLR adaptation measures in the future.

Caltrans is in agreement with Staff's recommendation to submit a CDP amendment application supported by a Phased Adaptation Plan developing adaptation alternatives in coordination with the long-term solution for the highway corridor.

Wetland Fill

The proposed project would result in the permanent fill of approximately 10.25 acres of wetlands. Staff believes that: (1) the fill associated with the public safety improvements to the existing highway is for an incidental public service purpose, a permissible use under Coastal Act Section 30233(a); (2) there are no less environmentally damaging feasible alternative to the project as recommended to be approved; and (3) the development as conditioned includes all feasible mitigation measures to minimize the environmental impacts of the proposed fill activities. Regarding alternatives, staff recommends the Commission find that there is no feasible less environmentally damaging alternative to the proposed project as conditioned because the

other identified alternatives either result in more wetland fill or fail to accomplish the necessary safety improvements in a manner that maximizes safe public access to and along the coast. Regarding mitigation, Staff has worked with Caltrans to develop a *Spartina* Removal Mitigation Plan under **Special Condition 5**. Historically, Humboldt Bay contained over 10,000 acres of inter-tidal saltmarsh, but approximately 90% of the historic saltmarsh has been lost due to diking and conversion to agriculture. Virtually all of the remaining native saltmarsh in Humboldt Bay has been invaded by *Spartina densiflora*, (*Spartina*) a non-native cordgrass, and much of these areas are densely occupied by *Spartina*. *Spartina* profoundly alters estuarine habitats by replacing native plant species. Where *Spartina* is present, it usually increases over time and where *Spartina* is abundant, the native estuarine habitat essentially disappears. However, with adequate long-term monitoring and protection, *Spartina* removal can enable native saltmarsh to restore.

Therefore, consistent with recommended **Special Condition 5**, Caltrans will direct the removal of 179 acres of *Spartina* thereby clearing the entire Tuluwat Island in Humboldt Bay of the invasive plant species, thereby restoring estuarine productivity. The plan is supported by the City of Eureka and the Wiyot Tribe, who have agreed to protect and hold title to the restored areas of the island, which is known as the “Center of the Wiyot Universe,” and restrict the restored areas from future development. Caltrans has also agreed to commit to indefinite monitoring and removal of the *Spartina* through a non-wasting endowment fund. The non-wasting endowment fund will be an interest-bearing account in an amount sufficient to generate enough yearly income to fund the long term monitoring and removal of *Spartina* in perpetuity .

Potential for Visual Impacts

The proposed development has the potential to impact coastal scenic and visual resources. However, staff believes that the proposed development is consistent with the visual quality requirements of the Coastal Act, in part, because some of the development is proposed on the east side of the highway, Caltrans has designed the improvements to be visually compatible with the character of the surrounding area and minimize the alteration of landforms, and Caltrans is proposing to remove 2,400 square feet of existing roadway signage.

Independent of this CDP application, Caltrans previously removed, or assisted in the removal of seventeen billboards, enhancing the visual quality of the highway 101 corridor. Caltrans was able to accomplish the removal of these billboards by assisting other parties and purchasing relocation agreements. Through an agreement with billboard owners, property purchase, and other actions, Caltrans has secured or assisted in the removal of fifteen billboards in the Highway 101 corridor and 2 more in a nearby area of Humboldt Bay. The removal of these billboards has improved the visual quality of the Highway 101 Corridor. Twelve signs remain in the corridor, all owned by CBS Outdoor Media, who refused to sell the sign rights.

Interested persons are now requesting that the Commission require Caltrans to remove the twelve remaining billboards in the Highway 101 corridor, primarily based on laws relating to the placement of billboards and assertions that the existing billboards are not in compliance with all applicable laws. However, the twelve remaining billboards are existing signs and are not proposed to be newly placed in conjunction with this CDP. In addition, Caltrans has submitted evidence that it is infeasible for them to remove the remaining twelve billboards because they are

owned by another party who is unwilling to sell, are on private parcels, are not located in the Caltrans ROW, and/or have previously been permitted. Finally, to the extent any of the remaining billboards are not in compliance with applicable laws such as the Outdoor Advertising Act, and/or are not legal non-conforming structures under a statute or planning code, staff believes that the remedy for such noncompliance remains available to the relevant agency independent of the CDP application process.

Commission staff recommends **approval** of coastal development permit application 1-18-1078, as conditioned.

PROCEDURAL NOTE: On September 12, 2013, the Commission conditionally concurred with a federal consistency certification submitted by Caltrans pursuant to the federal Coastal Zone Management Act (CZMA) for the Highway 101 Corridor Project as proposed at that time. The submittal was triggered by the need for a federal permit and federal funding for the project. The Commission's conditional concurrence with the consistency certification in 2013 occurred at an earlier stage of the planning and design of the project. After the Commission conditionally concurred with the federal consistency certification submitted by Caltrans, Caltrans completed its design and planning process, identified changes to the earlier version of the project, and applied for the coastal development permit (CDP). To the extent project changes since the Commission conditionally concurred with the consistency certification in 2013 could perhaps trigger the need for a supplemental Consistency Certification, Commission approval of CDP 1-18-1078 for the Highway 101 Corridor project as it is now proposed obviates the need for a supplemental consistency certification. This is because the California Coastal Management Plan (CCMP) specifies that a coastal development permit issued by the California Coastal Commission "will be deemed to be a determination by the State that the proposed Federal license or permit activity is consistent with the management program, and no further certification will be required." Therefore, although the Commission's 2013 action is an indication of what modifications to the project were viewed by the Commission at that time as needed to enable the Highway 101 Corridor project to be found consistent with the Coastal Act, the consistency certification is not the standard of review for the current CDP application, and the Commission is not bound by its previous conditional concurrence. Instead, the standard of review for this consolidated CDP application is the Chapter 3 policies of the Coastal Act.

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APPENDICES

[Appendix A – Substantive File Documents](#)

EXHIBITS

(Please note because of the voluminous number of exhibit pages, these exhibits are not included in printed versions of this report. Copies of the exhibits can be accessed at <https://documents.coastal.ca.gov/reports/2019/8/w11a/w11a-8-2019-exhibits.pdf> or through the Commission’s website at <https://www.coastal.ca.gov/>.)

Exhibit 1 – Regional Overview
 Exhibit 2 – Project Area
 Exhibit 3 – Project Overview
 Exhibit 4 – Project Description
 Exhibit 5 – Project Layouts
 Exhibit 6 – Median Closures Map
 Exhibit 7 – Indianola Interchange Visuals

Exhibit 8 – Existing Indianola Intersection
Exhibit 9 – Indianola Interchange Visual (final modified design)
Exhibit 10 – Jacobs Avenue/Airport Road Interchange Design
Exhibit 11 – Existing Gannon Slough Bridge Bridge rails
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Exhibit 13 – Bridge Rail Replacement Plans
Exhibit 14 – Jacoby Creek Bridge Replacement Plans (excerpted)
Exhibit 15 – Tide Gate Replacements
Exhibit 16 – Off Site Spartina Wetland Mitigation Plan (July 16, 2019)
Exhibit 17 – On Site Mitigation and Monitoring Plan (July 19, 2019)
Exhibit 18 – Jacobs Avenue Commercial Development
Exhibit 19 – Cyclists on Highway 101
Exhibit 20 – Highway 101 Corridor Collision Rates Versus State Averages
Exhibit 21 – Project Construction Transportation Management Plans
Exhibit 22 – CCC Consolidation Letters
Exhibit 23 – Caltrans Memo Re Seismic Design
Exhibit 24 – Caltrans Tsunami Hazard Guidance
Exhibit 25 – Caltrans Engineering Memo Re SLR and Jacoby Bridge
Exhibit 26 – Caltrans/ICF 101 Corridor SLR Assessment (July 8, 2019)
Exhibit 27 – Cable Rails in Median Visual Before and After
Exhibit 28 – Proposed Sign Removals from Corridor
Exhibit 29 – Caltrans Memo Regarding Billboard Removal From Corridor
Exhibit 30 – Humboldt Bay Trail Projects Overview
Exhibit 31 – Flooding Maps of Highway 101 Corridor (Laird 2018)
Exhibit 32 – Dike and Shoreline Vulnerability of Highway 101 Corridor (Laird/Powell 2013)
Exhibit 33 – Wetland Impacts Maps
Exhibit 34 – Dr. Dixon Memo Re ESHA Locations and Tree Removal
Exhibit 35 – FEIR Excerpts Re Safety Analysis
Exhibit 36 – FEIR Excerpts Re Local Traffic Impacts of Project
Exhibit 37 – FEIR Excerpts Re Construction Emissions
Exhibit 38 – FEIR Excerpts Re Greenhouse Gas Emissions
Exhibit 38 – Dr. Dixon Memo Re *Spartina* Removal as Substantial Restoration

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** Coastal Development Permit Application No. 1-18-1078 subject to the conditions set forth in the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in conditional approval of the permit and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution:

The Commission hereby approves coastal development permit 1-18-1078 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

Notes: (1) The term “**the Highway 101 Corridor**,” as used in the special conditions below, refers to the U.S. Highway 101 Corridor located between Eureka and Arcata as generally

depicted in [Exhibit 2](#) of the Commission staff recommendation for CDP Application No. 1-18-1078.

(2) The term “**Project Description**,” as used in the special conditions below, refers to the Permittee’s final project description titled “Eureka-Arcata Route 101 Corridor Improvement Project, Project Information, Project Descriptions,” dated July 2019 (submitted July 25, 2019) and attached as Exhibit 4 to the Commission Staff Recommendation for Coastal Development Permit No. 1-18-1078.

1. **Sea Level Rise and Flooding Impact Monitoring and Reporting.**

A. **Baseline Report.** The Permittee shall submit a baseline report to the Executive Director by May 1, 2020 that:

1. Identifies the following water elevation information at the North Spit Tide Gauge (based on current tidal datums from NOAA and/or other applicable data identified by the Permittee, and referenced to NAVD88): Mean Sea Level, Mean Monthly Maximum, and the highest observed tide.
2. Identifies sites from which to take photographs on an annual basis during King Tides and/or other extreme tidal events to show changing site conditions over time. These sites shall include locations that allow for photo documentation at the most vulnerable areas of each segment of the Highway 101 Corridor. The baseline report shall include photos of the King Tide events occurring during the winter of 2019-2020.

B. **Biennial Reports.** The Permittee shall submit biennial monitoring reports to the Executive Director by May 1st of every other year starting in 2022 and continuing until the CDP amendment required by Special Condition 2 has been acted upon by the Commission. These biennial reports shall document all of the following for the Highway 101 Corridor:

1. **Water Elevation Data:** Using NOAA tides and currents or other applicable data from the North Spit Tide Gauge, document annual and monthly maximum water elevations, the mean monthly maximum, and the mean sea level over the two-year reporting period. Describe how these elevations are different from the baseline report and any previous monitoring reports and identify if any new record maximum elevations have been reached.
2. **Coastal Hazards Impacts:** Provide a description of any temporary or ongoing flood, erosion, or other coastal hazards impacts to highway infrastructure in the Highway 101 Corridor during the reporting term. Include documentation of the dates, duration, and location of any hazards impacts, as well as a description of the conditions causing impacts (*e.g.*, King Tides, storms, overtopping and/or breaching of dikes, tide gate failures, groundwater and/or drainage issues, or any combinations of the same). Reporting should include a qualitative description of impacts, including narratives of events with maps and photos (including photos of

King Tide and other extreme tidal events), as well as quantitative information such as flood depth, as applicable and feasible.

3. **Adaptation and Hazards Response:** Describe any effects on highway function and the actions that were taken to address temporary hazards impacts during the reporting period (*e.g.*, road closures/reroutes; repairs to damaged infrastructure) as well as any repair and maintenance activities performed by the Permittee or known to the Permittee to have been performed by other entities to repair dikes or berms that protect the highway corridor from flooding impacts within the Highway 101 Corridor. Include photographs as well as any information on damage/repair costs.

In addition, describe any planned responses to coastal hazards that may need to be implemented before the next monitoring cycle to address anticipated impacts (*e.g.*, dike repair, temporary detour/contingency plans, or other similar strategies) and include a plan for submitting any necessary amendments to CDP 1-18-1078, or separate CDP applications, that are necessary for those planned responses.

4. **Adaptation Plan Progress:** Document the Permittee's progress in developing the Phased Adaptation Plan including: (a) updates on the actions the Permittee has taken to develop the final Phased Adaptation Plan and compliance with the deadlines required by Special Condition 2; and (b) the actions the Permittee has taken to coordinate with the local governments, relevant public interest groups, and other relevant stakeholders.
5. **Flood Events:** Document every time any travel portion of the Highway 101 Corridor has been closed due to flooding during the reporting period.

- C. **Frequent Flood Event Reports.** Every time flooding causes closure of any travel portion of the Highway 101 Corridor within 12 months of any previous closure of any travel portion of the Highway 101 Corridor due to flooding, the Permittee shall inform the Commission in writing within 30 days of the closure. The frequent flood event report shall be submitted in addition to the documentation of flood events to be included in the Biennial Reports required above.

2. **Long-Term Sea Level Rise Phased Adaptation Plan and Required CDPA.**

- A. **Phased Adaptation Plan.** The Permittee shall submit a Phased Adaptation Plan (PAP) by December 31, 2030 or within one year of the time that flooding closes any travel portion of the Highway 101 Corridor 4 times a year over any 12-month period, whichever comes first. The PAP shall identify a suite of strategies necessary for protecting, relocating, or otherwise adapting the development authorized by CDP 1-18-1078 as necessary to maintain safety from flooding and other coastal hazards in order to minimize risk and assure stability and structural integrity in the long-term (at least through 2100). The PAP shall reflect the coordination with the ongoing long-term planning efforts of Humboldt County and the cities of Eureka and Arcata, and shall also reflect coordination with the Humboldt County Association of

Governments, relevant public interest groups, and other relevant entities. The PAP shall include:

1. An analysis of current and future coastal hazards in the Highway 101 Corridor, including flood and erosion hazards caused by overtopping wave impacts, elevated groundwater and/or reduced or inadequate drainage that: (a) takes into account local sea level rise through at least 2100, considering medium-high risk aversion and extreme risk aversion scenarios, and based on the best available science at the time of plan preparation; and (b) utilizes the data provided in the biennial monitoring reports and flood event reports required by Special Conditions 1(B) and 1(C).
2. An evaluation of CDP amendment alternatives to the development authorized by CDP 1-18-1078 to address any coastal hazard vulnerabilities identified, including but not limited to alternatives involving accommodation strategies (viaducts, overpasses, etc.), protection measures (dikes, living shorelines, or other natural or engineered features), and relocation of the development to an area safe from flooding and other coastal hazards. The evaluation shall describe the specific design elements and adaptation measures, including how different strategies may be used in combination and over time, to ensure the integrity and functionality of the highway system. The information concerning CDP amendment alternatives must be sufficiently detailed to enable the Commission to evaluate the feasibility and Coastal Act consistency of each amendment alternative, including whether the alternatives: (1) minimize risks to life and property of flood and geologic hazards, assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area; (2) ensure the resiliency of the transportation infrastructure; (3) avoid impermissible impacts to wetlands and only involve the feasible least environmentally damaging alternative for any diking, dredging, or filling of wetlands; (4) protect other coastal resources as sea level rise and other natural processes occur; (5) maximize and protect public access and recreation to and along the shoreline in a full multi-modal transportation network; and (6) avoid reliance on hard shoreline armoring. The alternatives evaluation shall include a feasibility analysis that considers all potential constraints, including geotechnical and engineering constraints, project costs, the feasibility of land acquisition and potential funding options.
3. A timetable for implementation of the PAP based on updated projections of SLR and anticipated impacts from coastal hazards. If adaptation strategies would be implemented in response to defined triggers, such as amounts of sea level rise and/or impacts to highway infrastructure, the timetable should identify the time horizons over which such triggers are anticipated to occur. The timetable shall take into consideration expected timeframes for any necessary land acquisition, planning, permitting, design, and construction.

- B. **CDP Amendment Trigger.** The Permittee shall submit to the Commission an application for a CDP amendment within one year of the time that flooding closes any travel portion of the Highway 101 Corridor four (4) times a year over any 12-month

- period. The CDP Amendment application shall propose to either (a) extend the length of time all or portions of the development is authorized by CDP 1-18-1078 and modify its design as needed to ensure consistency with the Coastal Act, and/or (b) relocate all or portions of the development authorized by CDP 1-18-1078 and modify all or portions of the authorized development's design as needed to ensure consistency with the Coastal Act, and/or (c) remove all or portions of the development authorized by CDP 1-18-1078.
1. The required CDP amendment application shall conform to the Commission's permit filing regulations at the time and shall at a minimum include the long-term sea level rise PAP required above.
 2. If the PAP was submitted previously to the Commission pursuant to the deadlines of Part A, above the Permittee shall update the PAP or provide an equivalent document prior to submittal of the CDP Amendment application to include the following: (1) an updated analysis of current and future coastal hazards that considers medium-high risk aversion and extreme risk aversion scenarios based on the best available science at the time of preparation of the updated PAP, (2) an analysis of any additional CDP amendment alternatives identified since preparation and submittal of the original PAP consistent with the requirements of Part A, above, of Special Condition 2; and (3) an updated timeline for implementation of the PAP.
 3. **Visual Impacts Mitigation.** Within 90 days of completing construction activities authorized by this CDP, the Permittee shall submit a final Visual Impacts Mitigation Report that documents the removal of all overhead infrastructure, safety corridor signs and other road signs, and that is at a minimum consistent with the information provided in Exhibit 28, a PDF copy of an excel sheet dated March 25, 2019, which provides a listing and photos of the safety corridor signs that will be removed.
 4. **Coastal Trail Planning.** PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE INDIANOLA INTERCHANGE RELATED DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit for the review and approval of the Executive Director:
 - A. Construction plans showing that the Indianola Interchange construction includes a separated bike and pedestrian connection from Indianola Cut Off to the Humboldt Bay Trail or other separated trail that may be constructed in the future as proposed in the Project Description, or documentation that shows the bike/pedestrian connection is already complete. The plans or documentation shall evidence that the connection pathway will (a) be at least six feet in width (to match the width of the Indianola sidewalk through the interchange), (b) not require wetland fill, and (c) be installed and available for use by completion of any extension of the Humboldt Bay Trail southward past the Highway 101/Indianola Cutoff intersection or interchange.
 - B. The Permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the final approved plan shall be reported to the Executive Director. Changes to the final approved plan shall require an amendment to

the Coastal Development Permit unless the Executive Director determines that no amendment is legally required.

- 5. Spartina Removal Plan as Additional Offsite Mitigation for Permanent Wetland Impact.** PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT THAT MAY RESULT IN WETLAND IMPACTS, the Permittee shall submit for the review and approval of the Executive Director, a final revised *Spartina* Removal Plan for *Spartina densiflora* (*Spartina*) removal and salt marsh restoration, and long-term monitoring and maintenance to provide additional off-site mitigation for 10.25 acres of permanent wetland impacts of the approved development. Mitigation credit will be given for the on-site mitigation required by Special Condition 12 if that onsite mitigation successfully mitigates for 0.87 acres of permanent wetland impact consistent with the requirements of Special Condition 12. The final revised *Spartina* Removal Plan shall substantially conform with the plan dated July 16, 2019 titled “Wetland Mitigation Plan for the Humboldt Bay Area Mitigation (HBAM) Project” and shall include the following components:

- A. Acknowledgement. The plan shall acknowledge that the mitigation being undertaken pursuant to the approved final plan and the calculation of mitigation credits pursuant to the plan shall be subject to the following assumptions, terms, and conditions, in addition to all other conditions of this permit as required herein:
1. Wetland mitigation credits for *Spartina* removal shall be proportional to the density of *Spartina* cover within the mitigation area as follows: One acre of wetland mitigation credit shall be provided by successfully (based on success standards required pursuant to subsection (b) below) removing 1.24 acres of high density (>60% cover) *Spartina*, or by successfully removing 2.33 acres of medium density (26-60% cover) *Spartina*, or by successfully removing 7.69 acres of low density (1-25% cover) *Spartina*. For example, removing *Spartina* from 10 acres of high density infested saltmarsh would provide 8.1 acres of mitigation credit; equivalent credit would be provided by restoring 18.8 acres of saltmarsh infested with medium density *Spartina* cover.
 2. The calculation of mitigation acreages and credits to be awarded based on *Spartina* cover shall be based on mapping by the U.S. Fish and Wildlife Service and reported in the document titled “The Distribution of *Spartina densiflora* in the Humboldt Bay Region: Baseline Mapping.” The mitigation credit scheme to be awarded for *Spartina* eradication shall comply with section A.1, above.
 3. The plan shall provide a minimum of 40.13 acres of mitigation credit to mitigate for 10.25 acres of permanent wetland impacts of the project at a 4:1 mitigation ratio, including mitigation credit for any on-site wetland mitigation within the Highway 101 Corridor pursuant to Special Condition 11. Any additional mitigation credits created may be considered by the Coastal Commission for use in mitigating wetland impacts for the Arcata Bay Trail North project and the Humboldt Bay Trail South project. Mitigation credits for the Bay Trail projects shall only be awarded pending separate approvals by the Coastal Commission of

(1) a CDP for Humboldt County Bay Trail South and (2) a material amendment to the Arcata Bay Trail North CDP (CDP 1-16-0122), with the Commission finding that *Spartina* eradication provides feasible mitigation for wetland impacts resulting from the trail project(s). Whether or not such CDP approvals are granted to the County and/or to the City, the Permittee (Caltrans) acknowledges its responsibility to implement the approved Final Revised *Spartina* Removal Plan, including all required acreages of *Spartina* eradication required under the plan, and no mitigation credits may be used to mitigate any development other than the development authorized by this CDP and the Bay Trail Permits identified herein.

4. Although a Management Entity may implement the *Spartina* Removal Plan through a binding co-operative agreement (or similar agreement), the Permittee (Caltrans) shall remain responsible for implementation of the Removal Plan and compliance with all terms and conditions of this CDP. The Permittee shall also ensure the submittal of the regular monitoring reports required under Special Condition 4 of CDP 1-14-0249 and as required herein.
- B. Final Implementation, Monitoring, and Reporting Plan Components. Consistent with CDP 1-14-0249 (authorization to implement the Humboldt Bay Regional *Spartina* Eradication Plan), the final plan shall include implementation, monitoring, and reporting plan components, including at a minimum, the following:
1. Maps of the total proposed mitigation area(s) that substantially conform with the geographic extent of public- and/or Wiyot-owned lands depicted in Exhibit 16 and which shows polygons of the three cover classes of *Spartina* as described in section A.1 above for that area and the corresponding land ownership of all mitigation lands.
 2. Determinations of mitigation acreages and credits to be provided as calculated consistent with sections A.1 and A.2 above.
 3. All of the plan components required by Special Condition 4 of CDP 1-14-0249 and provisions to insure that the *Spartina* removal activities will satisfy all requirements of Special Conditions 5, 7, 8 and 9 of CDP 1-14-0249.
 4. An executed copy of a Memorandum of Understanding (MOU), cooperative agreement, or similar legally binding agreement, with the Wiyot Tribe and any other landowner of property subject to *Spartina* Removal (for eg. the City of Eureka if it still holds title to some of the land) that provides for: (a) the implementation of the *Spartina* removal, (b) monitoring and maintenance for five years after meeting the removal success criteria, (c) subsequent long term monitoring and maintenance conducted in perpetuity, and (d) the permanent protection of the areas of *Spartina* removal from future development as defined by Section 30106 of the Coastal Act except for the ongoing removal of *Spartina* and other non-native invasive species, maintenance of native vegetation, and habitat restoration. The final MOU or agreement shall be submitted for the review and written approval of the Executive Director prior to its execution to ensure that it provides sufficient guarantees that all elements of

the *Spartina* Removal Plan will be carried out and that the Plan areas are permanently protected consistent with all terms and conditions of this CDP.

5. Executed copies of MOUs, cooperative agreements, or similar legally binding agreements, with a designated “Management Entity” or Entities that will be responsible for the implementation of *Spartina* removal, monitoring and maintenance for five years after meeting the removal success criteria, and the subsequent long term monitoring and maintenance that will be conducted in perpetuity. The entity or entities must have experience in *Spartina* removal and habitat restoration. The final MOUs or agreements shall be submitted for the review and written approval of the Executive Director prior to its execution to ensure that they provide sufficient guarantees that all elements of the *Spartina* Removal Plan will be carried out and that the Plan areas are permanently protected consistent with all terms and conditions of this CDP.
6. A provision that the proposed mapping and estimation of ground cover of native saltmarsh and *Spartina* throughout Tuluwat Island using high resolution aerial imagery obtained by unmanned aerial vehicles shall be accomplished at a minimum: 1) prior to *Spartina* removal, 2) after successful primary removal, and 3) at the end of five years of maintenance when the final success criteria are assessed. The photo-interpreters must be well-qualified with demonstrated experience and approved by the Executive Director.
7. A detailed description of the methods that will be used after primary removal and during long-term monitoring to estimate the ground cover of *Spartina*. After primary removal and during long-term monitoring estimation of *Spartina* ground cover shall include methods for intensively searching for *Spartina* within delineated polygons of known area, visually estimating *Spartina* cover within areas of infestation and the size of the areas infested, and documenting the search tracks with a global positioning system (GPS). The entire treatment area must be visually examined along tracks that are sufficiently narrow that small *Spartina* plants can be recognized. This task could be done in conjunction with the maintenance removal of *Spartina*.
8. A description of the methods that will be employed if on-the-ground sampling is used to estimate ground cover of the native saltmarsh vegetation in order to assess whether the success criterion has been met. The sampling plan must insure more-or-less uniform spatial coverage of the removal areas, randomized placement of the sampling units, and shall include replication sufficient to provide an estimate of mean ground cover of native saltmarsh vegetation with a margin of error of 10% ground cover with 90% confidence. These methods must be described in sufficient detail to enable an independent scientist to apply them in the field.
9. Success criteria for removal of *Spartina* that include: 1) $< 5\%$ ground cover of *Spartina* after primary removal, after five years following primary removal, and during maintenance removal; and 2) $\geq 80\%$ ground cover of native species within five years following primary removal with no unvegetated areas $> 2.5 \text{ m}^2$.
10. Five years of annual monitoring and maintenance following the achievement of the success criteria for primary removal. During this period an accurate record

shall be maintained of annual field efforts and expenditures to aid in the final calculation of the amount of the non-wasting endowment necessary to provide sufficient proceeds to fund long-term monitoring and removal of *Spartina* in all restoration areas in perpetuity.

11. A long-term monitoring and maintenance plan to be implemented after the first five years of monitoring and maintenance following successful primary *Spartina* removal. The Permittee shall establish a non-wasting endowment to fund the long-term monitoring and removal of *Spartina* in perpetuity as is required below by Special Condition 5(C) of CDP 1-18-1078.
12. A Reporting Plan that includes 1) an “initial removal report” after the two years of removal implementation, and 2) a “final monitoring report” for the *Spartina* removal at the end of the subsequent five years of monitoring and maintenance following successful primary removal. The final monitoring report shall include the actual costs of maintenance and monitoring for the five years after successful primary removal. This information shall be utilized to determine the funding necessary for the endowment in Section B.14, below.
13. A provision that consistent with Special Condition 4 (B) of CDP 1-14-0249, if the “final monitoring report” described in Section B.11 above, indicates that the *Spartina* removal project has been unsuccessful, in part or in whole, based on the approved success criteria, the Permittee shall submit a revised or supplemental plan to compensate for those portions of the original plan that did not meet the approved performance standards. The revised plan will complete the full removal of *Spartina* in the area of the initial project or in new replacement areas of Humboldt Bay, such that the plan completes the full removal of *Spartina* from an equivalent amount of acreage. For those areas that did not meet the success criteria, the revised plan shall extend the monitoring period for an additional five years. The revised plan shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
14. If the *Spartina* removal activities of the approved final revised *Spartina* Removal Plan are not completed before the end of the authorization period for *Spartina* removal activities authorized under CDP 1-14-0249, the Permittee shall obtain an amendment to CDP 1-18-1078 to authorize the remaining *Spartina* removal activities.

C. Non-wasting endowment fund.

1. The Permittee shall establish a non-wasting endowment to fund the long-term monitoring and removal of *Spartina* in perpetuity. The long-term monitoring and removal of *Spartina* that will be funded by the non-wasting endowment fund shall commence five years after the Permittee has demonstrated restoration success pursuant to Special Condition 5 of CDP 1-18-1078. Coincident with the Permittee demonstrating restoration success pursuant to Special Condition 5 of CDP 1-18-1078, the Permittee shall submit evidence that within 2 years they will have established a non-wasting endowment to fund the long-term monitoring and

removal of Spartina in all restoration areas in perpetuity as is required by CDP 1-18-1078. The non-wasting endowment that is established shall be consistent with all terms and conditions of Special Condition 5 of CDP 1-18-1078 and shall include the following:

- a) The non-wasting endowment fund shall be held, managed, invested, and disbursed solely for, and permanently restricted to, the long-term monitoring and removal of Spartina in perpetuity as is required by Special Condition 5 of CDP 1-18-1078. The fund shall be operated and administered in accordance with the Uniform Prudent Management of Institutional Funds Act.
- b) The non-wasting endowment fund shall be calculated to include a principal amount that, when managed and invested, generates interest reasonably anticipated to cover the annual costs of the long-term monitoring and removal of Spartina in perpetuity as is required by Special Condition 5 of CDP 1-18-1078. The total annual expenses shall include investment and administration costs/fees. The non-wasting endowment shall be established in a manner that ensures that necessary disbursements are provided three years after the non-wasting endowment fund has been funded.
- c) The entity holding the non-wasting endowment fund shall have the capacity to effectively manage the non-wasting endowment fund, including the capacity to achieve reasonable rates of return. The entity holding the non-wasting endowment shall submit an annual report to the Executive Director at the end of every year detailing the compliance with Special Condition 5 of CDP 1-18-1078. The entity holding the non-wasting endowment also shall use generally accepted accounting practices and provide an annual fiscal report to the Executive Director.

D. The Permittee shall undertake development in accordance with the approved final revised Spartina Removal Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

6. **Jacoby Creek Bridge Tidewater Goby Monitoring and Survey.** Consistent with the Project Description and with the USFW's "Biological Opinion for Proposed Eureka-Arcata Corridor Improvement Project," a qualified biological monitor shall be present during the demolition of the southbound Jacoby Creek Bridge. The Permittee shall follow all other Conservation Measures identified within the Biological Opinion to ensure the protection of the tidewater Goby and its habitat in the project areas.
7. **Jacoby Creek Bridge Demolition Plan.** PRIOR TO COMMENCEMENT OF ANY DEMOLITION ACTIVITIES FOR THE JACOBY CREEK BRIDGE AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit for the review and approval of the Executive Director a final demolition plan for the south bound Jacoby Creek Bridge that complies with the following:

- A. Consistent with (i) the Project Description and (ii) the USFW Biological Opinion, the Final Demolition Plan shall include: (a) a proposed debris containment system to be placed prior to demolition, (b) a provision that all debris shall be removed and disposed of at an authorized disposal site consistent with the debris removal plan approved pursuant to Special Condition 16, (c) a provision for biological monitoring, provisions to limit the amount and extent of construction workers or activities in the wetted channels of Jacoby Creek, including temporary barrier fencing, and (d) a requirement that any demolition activities be scheduled during low tidal flow times to minimize spreading of impacts.
 - B. The Permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
8. **Tide Gate Replacement and Monitoring.** PRIOR TO COMMENCEMENT OF ANY ACTIVITIES TO REMOVE AND REPLACE TIDAL GATES AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit for the review and approval of the Executive Director a Tide Gate Installation Plan that substantially conforms to the Project Description and Caltrans' Biological Assessment and Essential Fish Habitat Assessment dated February 2016 included in the permit file for CDP 1-18-1078, except as modified herein. The Tide Gate Installation Plan shall include the following components:
- A. Type of tide gate to be installed and construction method to be used at each location. The configuration of the fish-friendly tide gates that will be installed where salmonids or tidewater gobies are present shall include a float arm or other self-regulating device to ensure that the tide gate is open at all times for fish passage and that it provides for a continuous tidal flow through the tide gate at moderate water velocities, with a final design to be determined in consultation be determined in cooperation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS).
 - B. Equipment and access to be used at each location. No new roads shall be constructed to provide access.
 - C. A hydrology, water quality, and monitoring plan for locations where salmonids or tidewater gobies are present that substantially conforms with the Project Description in Exhibit 4 to these findings and that includes:
 - 1. Pre-construction monitoring for one season (April 1-November 30) and post-construction monitoring for two years.
 - 2. Specification of the monitoring locations, the data collection methods, and the frequency of data collection at each location during the pre-construction and post-construction periods.

3. A reporting plan.
- D. Conservation Methods. The Plan shall include the following conservation methods, including, but not limited to those methods proposed in the Permittee's Project Description listed below:
1. Construction shall only take place during the summer dry season from July 1 through October 15.
 2. Construction shall only take place during a defined time period around the lowest low tide of the mixed semidiurnal daily tides. The work window for each location shall be defined by the permittee, in consultation with the NMFS and the USFWS, in terms of tidal height relative to Mean Lower Low Water, taking into consideration the channel bed elevation at the tide gate. The intent of the work window is to restrict construction activities to the period when water and fish are not present. For the convenience of contractors, the work window shall be expressed as a specified number of hours before and after each designated low tide.
 3. When feasible, tide gate installation work shall be conducted during periods of low tide when no water or fish are present. A protocol shall be developed in consultation with the NMFS and USFWS for conservation procedures if water and fish are present.
 4. No rock-slope-protection (RSP) or rocks for a weir shall be placed at any of the tide-gate locations.
 5. Site-specific best management practices (BMPs) to minimize impacts to water quality, aquatic habitat, and listed fish species.
- E. The Permittee shall undertake development in accordance with the approved final Tide Gate Installation Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
9. **Pile Driving Protections.** All project activities involving the installation of temporary or permanent piles or sheet-piles shall be undertaken in accordance with the requirements set forth herein. The restrictions of this Special Condition shall apply to any pile-driving activities that could affect the aquatic environment of Jacoby Creek, including but not limited to pile driving associated with the temporary and permanent bridge abutments, cofferdams, testing, and any other such activities that may produce sound, shaking, disturbance of sediments and gravels in the riverbed, or produce other potentially disruptive effects within the aquatic environment, regardless of whether such activities are undertaken outside of the limits of the flowing waters of the river. All such project activities shall be undertaken in full accordance with the following requirements:
- A. Timing & Limitations. To facilitate monitoring, pile-driving shall be 1) limited to daylight hours and shall not be extended through the use of artificial lighting within

- the Jacoby Creek corridor; 2) limited annually to July 1 – October 15 (including those dates); and 3) limited to two piles per day.
- B. Monitoring. Pile-driving activities shall only be undertaken if all of the following conditions are continuously met:
 - 1. At least one authorized fisheries biological monitor is present at the location of the pile-driving;
 - 2. The hydroacoustic monitoring personnel and equipment are in place and ready to commence monitoring; and
 - 3. Pile driving must adhere to the dual metric exposure criteria set forth in Special Condition 10B. Neither criteria of the dual metric exposure criteria set forth in Special Condition 10B below may be exceeded.
 - C. Pile driving may only commence consistent with Special Condition 10. If any of the conditions set forth in Special Condition 10 are not continuously met at any time during pile-driving, pile-driving operations shall be stopped until compliance is restored, and pile-driving shall not re-commence until full compliance with all pertinent conditions has been verified by the fisheries biological monitor and entered into the monitoring records. If pile-driving is stopped because hydroacoustic limits are exceeded, the additional requirements set forth in Special Condition 10B and other special conditions set forth herein shall apply.
 - D. Future Amendment. Project activities shall be conducted at all times in accordance with these provisions. Any proposed changes to these pile-driving requirements and limitations shall be reported to the Executive Director. No changes to the requirements of the special condition shall be made without an amendment to the Coastal Development Permit, unless the Executive Director determines that no amendment is legally required.

10. Hydroacoustic Monitoring Plan. PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit, for the Executive Director's review and written approval, a Hydroacoustic Monitoring Plan. Prior to submitting the plan to the Executive Director, Caltrans shall submit copies of the plan to the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service for their review and consideration. The plan shall include the following components:

- A. The plan shall be based on the "dual metric exposure criteria" set forth below and shall state that exceedance of either criterion shall be deemed injurious or lethal to exposed fish and non-compliant with the Conditions of the Coastal Development Permit. The dual criteria for injury to fish are: 1. a peak Sound Pressure Level (SPL) at or above 206 dB (re 1 μ Pa) from a single hammer strike; or, 2. an accumulated Sound Exposure Level (SEL) at or above 187 dB (re: 1 μ Pa²-sec) for fish > 2 grams and an SEL at or above 183 dB (re: 1 μ Pa²-sec) for fish \leq 2 grams. To estimate the

sound energy to which a fish is exposed during multiple hammer strikes, NMFS uses the simple summation procedure where $\text{Total SEL} = \text{Single Strike SEL} + 10 \log (\text{number of strikes})$. At a minimum, the Plan shall include all of the following:

1. Establish the field locations of hydroacoustic monitoring stations that will be used to document the extent of the hydroacoustic hazard footprint during pile-driving activities.
2. Describe the method of hydroacoustic monitoring that will continuously assess the actual conformance of the proposed pile-driving with the dual metric exposure criteria up- and down-stream of the pile-driving locations on a real-time basis, including relevant details such as the number, location, distances, and depths of hydrophones and associated monitoring equipment.
3. For all pile-driving activities that may produce measurable acoustic affects in the aquatic environment of Jacoby Creek, include provisions to continuously record pile strikes in a manner that tracks the time of each strike, the number of strikes, and the interval between strikes to be determined.
4. Include provisions for real-time identification and reporting of any exceedance of the dual metric exposure criteria, clear action and notification protocols to stop pile-driving in case of such exceedance, including the authority of the fisheries biological monitor to order pile-driving to stop immediately, and procedures to notify pertinent parties including the Executive Director and other pertinent state and federal agencies immediately after any exceedance of the dual metric exposure criteria.
5. Include a monitoring and reporting program that will be coordinated with the fisheries biological monitor and will include provisions to provide daily summaries of the hydroacoustic monitoring results to the Executive Director and to other agencies requesting such summaries, as well as more comprehensive summary reports on a monthly basis during the pile-driving season.

B. Compliance with the Dual Metric Exposure Criteria.

1. At Jacoby Creek, the Permittee shall avoid hydroacoustic noise at or above 183 dB cumulative SEL, the level the U.S. Fish and Wildlife Service finds will result in “take” of fish ≤ 2 grams, such as the endangered tidewater goby, due to direct physical injury.
2. During pile-driving, the peak sound pressure level (SPL) within the Jacoby Creek aquatic environment shall not exceed 205 dB and the accumulated sound exposure level (SEL) shall not exceed 182 dB at 10 meters distance from pile-driving or at any other location in the river.
3. If the accumulated SEL approaches 183 dB at 10 meters distance from pile-driving, pile-driving will be stopped to avoid exceeding the criterion and will not commence again for at least 12 hours.

4. In the event of an exceedance of either criterion of the dual metric exposure criteria, pile-driving operations shall be immediately stopped and shall not recommence unless the Executive Director, in consultation with the fisheries biologists of the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, so authorizes based on the deployment of additional sound attenuation or other measures deemed likely by qualified technical experts to return the pile-driving to conformance with the dual metric exposure criteria.
 5. If the return to pile-driving after the implementation of the additional measures discussed in Subsection B(3) above results in an exceedance of either criterion of the dual metric exposure criteria, pile-driving shall be stopped immediately and shall not re-commence until or unless the Commission approves an amendment to the Coastal Development Permit that proposes substantial changes to the proposed project that are deemed by the Executive Director to offer a high likelihood of success in preventing further exceedances of the dual metric exposure criteria.
- C. Project activities shall be conducted at all times in accordance with the provisions of the final approved plan. Any proposed changes to the final approved plan shall be reported to the Executive Director. Changes to the final approved plan shall require an amendment to the Coastal Development Permit unless the Executive Director determines that no amendment is legally required.
11. **On-Site Mitigation and Monitoring Plan.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit for the review and approval of the Executive Director a final revised On-Site Mitigation and Monitoring Plan that substantially conforms to the plan dated July 2019, except as modified herein. The Final Revised On-Site Mitigation and Monitoring Plan shall include, at a minimum, the following added components:
- A. Environmental Impact Assessment.
1. Permanent impacts shall include those wetland areas that are to be developed, or that will be frequently disturbed to maintain the development, or where the impact to the habitat lasts longer than one year. Mitigation for all permanent wetland impacts shall be implemented pursuant to the final revised *Spartina* Removal Plan (Special Condition 5), but with mitigation credit also given for 0.35 acres of reestablishment of wetlands impacted for over one year by construction of the southbound Jacoby Creek bridge and for the creation of 0.52 ac of palustrine emergent wetlands in the three areas where median crossings will be removed.
 2. All other impacts are “temporary” and the following procedure shall be employed to confirm that the impacts qualify as such:
 - a. If no impacts are apparent after 90 days, no action is required;
 - b. If impacts persist 90 days after the impact, the habitat shall be restored within 30 days;
 - c. If no impact is apparent after one year, no additional mitigation is required

- d. If, after one year from the date of impact, the habitat has not recovered, the impact is, by definition “permanent,” and must be mitigated. The Permittee shall submit a revised or supplemental mitigation plan to mitigate for these additional permanent impacts. The revised or supplemental mitigation plan shall be processed as an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
 3. Assessment of Recovery. The plan shall include (1) methods for assessing temporary impacts and recovery at 90 days and 1 year after the impact, and (2) restoration methods for those areas that have not recovered in 90 days.
- B. Mitigation and Monitoring for Permanent Wetland Impacts. Although nearly all the mitigation for permanent wetland impacts will be provided off-site as *Spartina* eradication pursuant to Special Condition 5, mitigation credit will also be given for the successful creation of an estimated 0.52 ac and substantial restoration of an estimated 0.35 ac of wetland within the Highway 101 Corridor. A stand-alone section of the plan shall be provided for the establishment (creation) and re-establishment (substantial restoration) areas, with the following components:
 1. The stated goals of the project are to restore 0.25 ac of palustrine emergent wetlands and 0.10 ac of estuarine wetlands adjacent to Jacoby Creek that will be impacted for about two years by the rerouted highway during bridge construction, and to create a total of 0.52 ac of palustrine emergent wetlands in the three locations where the paved median crossings will be removed.
 2. Methods. Specification of the final design and construction methods, including (1) grading or other site preparation; (2) non-native species removal and control; (3) planting design (plant palette, source of material, and installation methods); and, (4) erosion control measures.
 3. Monitoring and Maintenance. The Plan shall include provisions for interim and final monitoring, maintenance and remediation activities, assessment methods, success criteria, schedule and reporting. Monitoring and remediation of the restoration sites shall occur for five years or until the success criteria have been met, whichever is longer. Quantitative monitoring shall take place at least once a year during the period of rapid plant growth and flowering, generally in spring or early summer. Annual reports shall be submitted to the Executive Director for review and approval for the duration of the monitoring period.
 4. Success Criteria. Final success criteria shall include: a) at least 80% ground cover of native wetland plants including those native species present at the chosen reference site, b) less than 10% cover of non-native species, c) no plants of species considered invasive by the California Invasive Plant Council, d) inundation or soil saturation in the upper 12 inches of soil for at least 14 consecutive days during the year, e) delineation as a wetland based on native vegetation and hydrology using the routine methods of the Army Corps of Engineers. Interim criteria shall be specified that serve as benchmarks and guide

adaptive management. The designated reference site shall be identified and sampled, and a quantitative description shall be included in the plan.

5. Evaluation. The method by which success will be judged, including: (1) type of comparison (relative to fixed criteria or to reference sites); (3) how similarity will be evaluated (e.g., single sample t-test); and, (4) the field sampling design and methods described in sufficient detail to enable an independent scientist to apply them in the field. Sampling shall be based on estimating cover of each species within sampling units arrayed more-or-less uniformly throughout each restoration area with a random component to the placement of the sampling units. There shall be sufficient replication at each restoration area to estimate the mean ground cover of native species with a margin of error no more than 10% ground cover with 90% confidence.
 6. Final Monitoring Report. A final monitoring report shall be submitted for the review and approval of the Executive Director at the end of the performance monitoring period. Final monitoring for success shall occur no sooner than three years after the end of all remediation and maintenance activities except weeding, or the end of the monitoring period, whichever is later.
- C. Lyngbye's Sedge. A stand-alone section of the Plan shall be provided for documenting and mitigating at 1:1 ratio by area any impacts to Lyngbye's sedge from construction at Jacoby Creek with the following components:
1. Monitoring. Methods of estimating ground cover of Lyngbye's sedge shall be described. This may be based on sampling using spatially stratified, random placement of sampling units. Alternatively, since the area at risk of impacts is small, ground cover in contiguous quadrates covering the entire area could be visually estimated, essentially a "census" providing a single estimate of cover rather than an estimated mean. Evaluation of recovery within the impacted area and establishment at mitigation areas shall be based on the same methods as used for the baseline study.
 2. Salvage. If Lyngbye's sedge is documented during baseline studies to be within the construction area, the plants that are at risk from construction shall be salvaged and planted in bare areas in nearby estuarine locations at soon as is feasible.
 3. Reestablishment and mitigation. If Lyngbye's sedge is impacted by construction, areas of equivalent size (in the aggregate) shall be identified and planted with Lyngbye's sedge. Following construction, the impacted area shall be replanted. The Plan shall include planting methods and provision that roots and rhizomes will be collected from no more than 20% of a source area, i.e. will not reduce ground cover to less than 80% of the initial cover.
 4. Success Criteria. The final success criteria for recovery within the impact area and for establishment in the mitigation area(s) shall be ground cover of 80% of that observed in the construction area prior to impact.

5. Final Monitoring Report. Interim reports describing progress shall be submitted annually. A final monitoring report at that assesses whether the success criteria have been met shall be submitted for the review and approval of the Executive Director at the end of the performance monitoring period.
 - D. Provision for Possible Further Action. Acknowledgement that if the final monitoring report indicates that the restoration project has been unsuccessful, in part, or in whole, based on approved success criteria, the Permittee shall submit within 90 days a revised or supplemental restoration program to compensate for those portions of the original program which did not meet the approved success criteria. The revised restoration program shall be processed as an amendment to this CDP unless the Executive Director determines that no amendment is legally required.
 - E. The Permittee shall undertake development in accordance with the approved final revised On-Site Mitigation and Monitoring Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
12. **Construction Responsibilities.** The Permittee shall comply with the following construction-related best management practices (BMPs) and avoidance and minimization measures:
- A. All construction-related BMPs and avoidance and minimization measures included in the subsections of the “Water Quality Impact Description” section on pages 19-26 of the Project Description titled, “Avoidance of Direct Water Quality Impacts,” “Avoidance of Indirect Impacts,” “Short Term Construction Site BMPs,” “Temporary Construction Site BMPs,” “Staging Areas,” “Conservation of Riparian Habitat,” “Prevention of Spread of Invasive Species.
 - B. All construction-related BMPs and avoidance and minimization measures included in the section of the Project Description dated July 2019 (Exhibit 4) titled, “Jacoby Creek Bridge Replacement,” including, but not limited to (i) containment of all excavated material to prevent sediments from entering waterways, or the placement of all excavated material directly into dump trucks and carried to an approved disposal site, (ii) removal of all drilling spoils as drilling progresses, (iii) placement of a temporary concrete washout facility on-site for concrete clean-up, (iv) staging of all pile-driving equipment outside the banks of Jacoby Creek, (v) installation of a debris containment system consistent with the final Jacoby Creek Demolition Plan approved pursuant to Special Condition 7, and (vi) the presence of a biological monitor during all in-stream activities associated with removal of the existing SB Jacoby Creek Bridge and piers.
 - C. Only wildlife-friendly 100% biodegradable erosion control products that will not entrap or harm wildlife shall be used. Erosion control products shall not contain

- synthetic (that is, plastic or nylon) netting. Photodegradable synthetic products are not considered biodegradable.
- D. Prior to the commencement of construction, workers shall be educated about the construction related BMPs that must be employed during construction.
13. **Erosion and Sediment Control and Pollution Prevention Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit, for the review and written approval of the Executive Director, an erosion and sediment control and pollution prevention plan. The plan shall comply with the following requirements:
- A. The plan shall demonstrate that temporary construction impacts to the biological productivity and quality of coastal waters and wetlands shall be minimized during project construction consistent with the provisions of Special Condition 12.
- B. The plan shall include a construction site map and a narrative description addressing, at a minimum, the following required components:
1. A map delineating the construction site, construction phasing boundaries, and the location of all temporary construction-phase BMPs.
 2. A description of the BMPs that will be implemented to minimize erosion and sedimentation, control runoff and minimize the discharge of other pollutants resulting from construction activities.
 3. A schedule for the management of all construction-phase BMPs (including installation and removal, ongoing operation, inspection, maintenance, and training).
 4. The plan shall specify that copies of the signed Coastal Development Permit (CDP) and the approved Erosion and Sediment Control and Pollution Prevention Plan be maintained in a conspicuous location at the construction job site at all times, and be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the CDP and the approved Erosion and Sediment Control and Pollution Prevention Plan, and the public review requirements applicable to them, prior to commencement of construction.
- C. The Permittee shall notify planning staff of the Coastal Commission's North Coast District Office at least three working days in advance of commencement of construction or maintenance activities, and immediately upon completion of construction or maintenance activities.
- D. The Permittee shall undertake development in accordance with the approved final Erosion and Sediment Control and Pollution Prevention Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal

development permit unless the Executive Director determines that no amendment is legally required.

14. Herbicide Management Plan. AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT USING HERBICIDE, the Applicant shall submit, for the review and approval of the Executive Director, an Herbicide Management Plan. The plan shall be prepared and submitted in conjunction with the Revised Onsite MMP required by Special Condition 11. The plan shall demonstrate the following:

- A. Managed Herbicide Control. Herbicides shall be applied directly to plants during the summer dry season to minimize the potential application of herbicide directly to standing or flowing water. Herbicides shall be applied by a certified applicator and in accordance with application guidelines and the manufacturer label. The Control Program shall obtain coverage under the statewide General NPDES Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States (SWRCB 2004). The specific measures that will be required are not known at this time.
- B. Minimize Herbicide Spill Risks. The mixing and application of herbicides must be conducted by or under the direct supervision of trained, certified or licensed applicators. Storage of herbicides and surfactants on or near project site shall not be allowed.
- C. Worker Injury from Accidents Associated with Herbicide Application. A health and safety plan shall be developed to identify and educate workers engaged in herbicide application. Appropriate safety procedures and equipment, including hearing, eye, hand and foot protection, and proper attire, shall be used by workers to minimize risks associated with herbicide treatments. Workers shall receive safety training appropriate to their responsibilities prior to engaging in treatment activities.
- D. Worker Health Effects from Herbicide Application. Appropriate health and safety procedures and equipment, as described on the herbicide or surfactant label, including PPE as required, shall be used by workers to minimize risks associated with chemical treatment methods.
- E. Herbicides shall not be applied unless the predicted chance of rain is less than 40 percent for the Redwood Coast segment of the National Weather Service's forecast for Northwestern California.
- F. Herbicide use shall not occur when winds are in excess of 10 miles per hour.
- G. A description of the type of equipment and application techniques to be used to reduce the amount of small droplets that could drift into adjacent areas.
- H. Provisions for posting warning/notification signs at potential points of access to herbicide application sites a minimum of one week prior to treatment.

- I. A site plan depicting the primary treatment area, designated access routes, location of any sensitive resources (e.g., rare plants) and locations of relevant mitigation measures (e.g, staking or fencing for rare plant protection; and,
 - J. A schedule for timing of work.
 - K. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
15. **Final Lighting Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit, for the review and written approval of the Executive Director, a final lighting plan for all proposed new permanent outdoor night lighting along the highway project corridor.
- A. The plan shall demonstrate that all new outdoor night lighting shall be minimized, directed downward, and shielded using the best available dark skies technology and pole height and design that minimizes light spill, sky glow, and glare impacts.
 - B. The Permittee shall undertake development in accordance with the approved final Lighting Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
16. **Debris Removal Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the Permittee shall submit, for the review and written approval of the Executive Director, a plan for the disposal of excess construction related debris, including the following provisions:
- A. The plan shall identify a disposal site that is in an upland area where materials may be lawfully disposed and describe the manner by which the material will be removed from the construction site.
 - B. The Permittee shall undertake development in accordance with the approved final Debris Removal Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
17. **Protection of Archaeological Resources.** As agreed to by the Permittee in its consultation with relevant tribal entities, the Permittee shall provide a qualified (archeologist or cultural resources specialist) on-site monitor at the specified (confidential) locations during

specified construction activities including grading and earthmoving as requested by the tribes. If an area of cultural deposits or human remains is discovered during the course of the project, all construction shall cease and shall not re-commence until:

- A. A qualified cultural resource specialist, in consultation with the Tribal Historic Preservation Officers of the Wiyot Tribe, the Bear River Band of Rohnerville Rancheria, and the Blue Lake Rancheria, analyzes the significance of the find.
- B. The cultural resource specialist submits a supplementary archaeological plan for the review and approval of the Executive Director.
 - 1. If the Executive Director approves the Supplementary Archaeological Plan and determines that the Supplementary Archaeological Plan's recommended changes to the proposed development or mitigation measures are de minimis in nature and scope, construction may recommence after this determination is made by the Executive Director.
 - 2. If the Executive Director approves the Supplementary Archaeological Plan but determines that the changes therein are not de minimis, construction may not recommence until after an amendment to Coastal Development Permit 1-18-1078 is approved by the Commission.

18. Final Construction Plans. PRIOR TO COMMENCEMENT OF CONSTRUCTION OF EACH PHASE OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT 1-18-1078, the permittee shall submit for the review and written approval of the Executive Director, final site and construction plans that are consistent with the Project Description and plans submitted to the Commission in the permit application, and consistent with all special conditions of Coastal Development Permit 1-18-1078. The plans shall include, at a minimum:

- A. Plan and profile architectural drawings for all elements of construction.
- B. Identification of the specific location of all construction areas, all staging areas, and all construction access corridors in site plan view.
- C. Specification of all visual elements, including design and colors, of the project including cable rail barriers, guardrails, bridge rails, aesthetic treatments, signage and any other visual elements.
- D. Demonstration that the final plans are consistent with the identified seismic design criteria and tsunami design criteria as discussed in Exhibits 23 and 24.
- F. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission approved amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

19. **Public Access During Construction.**

- A. Consistent with the Project Description, the Permittee shall maintain public access for bicyclists through the work corridor at all times by providing designated adequate space adjacent to the open traffic lane to safely traverse through the work zone except if necessary during construction of the bridge rails on North Bound Jacoby Creek and Gannon Slough Bridges, when traffic is reduced to one lane, and bikes will be accommodated with a shuttle vehicle service (currently scheduled as 2-4 weekend closures). The use of vehicle transportation to transport cyclists or pedestrians through the work corridor shall be avoided to the maximum extent feasible. Installation of the bicycle lane and provision of shuttle vehicle service shall be consistent with the final plans approved pursuant to Special Condition 18.
- B. The Permittee shall follow all provisions in the Project Description dated July 2019 (page 27) (Exhibit 4) and the submitted Transportation Management Plans (Exhibit 21), dated September 17, 2018, November 7, 2018, November 20, 2017, January 28, 2019, regarding lane closures and roadway closures, including no complete closures of vehicle travel north bound or south bound on Highway 101 shall occur except for the two brief night-time closures necessary to relocate the new Jacoby Creek Bridge, and no lane closures during weekday daytime hours.

20. **Final Tree Planting Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT 1-18-1078, the Permittee shall submit, for the review and written approval of the Executive Director and consistent with the On Site Mitigation and Monitoring Plan dated July 16, 2019 (Exhibit 17) a plan to govern the restoration tree planting in the corridor. The Plan shall include specifications that all restoration tree planting shall maintain existing coastal views and inland views, specifically that all restoration tree planting shall be:

- A. Limited to the inland side of the highway.
- B. Limited to areas either where there are existing trees or buildings.
- C. Limited to the vicinity of the intersection of Highway 101 and Airport Road/Jacobs Avenue, along Jacobs Avenue, the east side of Highway 101 north of Mid-City Motors, the intersection of Highway 101 and Indianola Cutoff proposed, the east side of Highway 101 north of Bracut, the intersection of Highway 101 and Bayside Cutoff, the vicinity of Jacoby Creek Bridge.
- D. The Permittee shall undertake development in accordance with the approved final Tree Planting Plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

21. **Seasonal Limitations for Authorized Development.** Consistent with the Project Description, the Permittee shall adhere to the following seasonal limitations for the authorized development:
 - A. Consistent with Special Conditions 8, 9, and 12, in-stream work (work within a bed, bank, or channel of a watercourse) shall be restricted to the period between July 1 and October 15. Construction activities confined to this timeframe shall include all tide gate replacements, pile installation on the banks of Jacoby Creek for the new bridge and the detour bridge, and all activities associated with workers potentially walking in Jacoby Creek to install/maintain the debris containment structure and remove the old bridge piers.
 - B. Clearing of trees or shrubs that may provide nesting habitat for avian species shall take place outside of the nesting season (March 1 to September 1).
 - C. No proposed changes to the timing of development set forth in this condition may occur without an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.
22. **State Lands Commission Approval.** PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT 1-18-1078, the Permittee shall provide to the Executive Director a written determination from the State Lands Commission that: (a) no State or public trust lands are involved in the development; or (b) State or public trust lands are involved in the development and all permits required by the State Lands Commission have been obtained; or (c) State or public trust lands may be involved in the development, but, pending a final determination, an agreement has been made with the State Lands Commission for the approved project as conditioned by the Commission to proceed without prejudice to that determination.
23. **Assumption of Risk, Waiver of Liability, and Indemnity Agreement.** By acceptance of this permit, the Permittee acknowledges and agrees (a) that the site may be subject to hazards from geologic and flood hazards, including but not limited to ground shaking, liquefaction, tsunami inundation, and flooding; (b) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (c) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (d) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.
24. **U.S. Army Corps of Engineers Approval.** PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL

DEVELOPMENT PERMIT NO. 1-18-1078, the applicant shall provide to the Executive Director a copy of a permit issued by the Army Corps of Engineers, or letter of permission, or evidence that no permit or permission is required. The applicant shall inform the Executive Director of any changes to the project required by the Army Corps of Engineers. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

25. **Encroachment Permit.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OF THE DEVELOPMENT AUTHORIZED BY COASTAL DEVELOPMENT PERMIT NO. 1-18-1078, the applicant shall submit to the Executive Director for review and written approval, evidence that any needed encroachment permit has been obtained from the City of Eureka for the development or evidence that no such encroachment permit is required. The encroachment permits or exemption shall provide evidence the ability of the applicant to develop within City and County properties, including public street rights-of-way, as conditioned herein.
26. **Evidence of Legal Ability of Applicant to Undertake Development on Property Owned by Others and Comply with Conditions of Approval.** PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT 1-18-1078, the Applicant shall submit, for the review and approval of the Executive Director, evidence that clearly demonstrates that the legal owner(s) of APNs 014-151-008, 014-151-009, 501-241-030, 501-241-031, 501-241-033, the County of Humboldt owned right-of-way at Jacobs Avenue and Airport Road, and the lands on Indian Island where Spartina Removal will occur pursuant to Special Condition 5 have agreed in writing that the Applicant may undertake development on their property pursuant to Coastal Development Permit 1-18-1078 and as conditioned by the Commission herein. The agreements of the City of Eureka and the County of Humboldt shall be signed by authorized representatives of the City and County, respectively.
27. **Liability for Costs and Attorneys' Fees.** By acceptance of this permit, the Applicant/Permittee agrees to reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys' fees that the Coastal Commission may be required by a court to pay that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Applicant/Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this permit. The Coastal Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT, the Permittee shall enter into a separate written agreement with the Executive Director agreeing to reimburse the Coastal Commission for all court costs and attorney's fees, consistent this condition.

IV. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION

The California Department of Transportation (Caltrans) proposes to undertake the "Eureka - Arcata Route 101 Corridor Improvement Project" along a six-mile stretch of Highway 101

directly adjacent to Humboldt Bay between the cities of Eureka and Arcata in Humboldt County. The project corridor is a vital highway providing the primary connectivity between the cities of Eureka and Arcata and connecting areas of California south of Eureka with areas of California to the north. ([Exhibit 1.](#)) The project area, hereinafter the “the Highway 101 Corridor,” runs from the Eureka Slough Bridge in Eureka to the 11th St. overcrossing in Arcata along the side of Humboldt Bay (Postmile (PM) 79.9 to 86.3). ([Exhibit 2.](#))

The Highway 101 Corridor in the project area is approximately six miles of expressway and one mile of freeway, and regularly carries a high volume of traffic. The expressway section has six at-grade intersections with other roads and property entryways, usually along the inland side of the highway. These six intersections have with uncontrolled median crossings at the intersections. At most of these intersections, traffic coming from the roads and entryways on the inland side of the highway cuts across two lanes of high-speed northbound traffic to make a left turn and merge with southbound Highway 101 into the left, fast lane. Traffic from the southbound Highway 101 crosses two lanes of high-speed northbound highway 101 traffic to enter into local east-bound roads and entryways. As described further below, the uncontrolled intersections create numerous safety issues and traffic delays.

The purpose of the project is to improve safety in the corridor by eliminating the left turn movements and highway crossings at the intersections. The project aims to replace or rehabilitate aging and deteriorated elements of the corridor, including through bridge replacement, bridge rail replacements, and constructing other roadway improvements. (See [Exhibit 3](#) for a visual project overview.)

Project Components

The project consists of a number of specific, separate, improvements to the existing highway. Although a number of improvement projects are proposed, the highway is not proposed to be reconstructed in its entirety. Most of the existing travel lanes and other elements of the highway will remain unaltered by the project.

The proposed project has eight specific project components.¹ See [Exhibit 4](#) for a full Project Description by the applicant. [Exhibit 5](#) provides a full set of layouts for the construction aspects of the project.

1) Median Crossing Closures. With the exception of the two intersections described below, the project would close all 101 median crossings in the project corridor, including specifically intersecting roads at Mid-City Motor World, California Redwood sawmill, Bracut, and Bayside Cutoff ([Exhibit 6](#)). Caltrans also proposes to use the closed medians for on-site wetland creation and mitigation. The closure work would include removal of asphalt-concrete paving, excavation to sufficient depths to create a combined total of 0.51-acre of new wetlands, and restoration of the median areas with native species.

2) Interchange at Indianola Cutoff. The intersection of Highway 101 and Indianola cutoff (which connects Highway 101 to old Arcata Road and inland communities) is the busiest intersection in the project corridor. Rather than close the intersection, Caltrans proposes to construct a new “compact diamond grade separation” in which Highway 101 would be raised on a graded slope to a bridge 25 feet higher than the existing road that would cross over Indianola Cutoff. (See [Exhibit 9](#) for final design and [Exhibit 7](#) for other visuals.) The proposed grade separation would eliminate the primary conflicting paths of vehicles turning left and crossing Highway 101 under existing conditions. ([Exhibit 8.](#)) The bridge would be a single-span slab 70 feet in length and 94-feet wide, and the total length of the affected roadway approaches rising to the bridge are approximately 2,000-feet-long both north and south of Indianola Cutoff, for a total length of approximately 4,000 feet. The new bridge would include new bridge rails matching those described below in Section 5 on Bridge Rail updates (dull gray ST70/ST75).

The compact design would nevertheless involve placement of 380,000 cubic yards of fill for the interchange. To minimize wetland impacts, the fill slope along the highway and ramps would be placed at a slope ratio of 1.5:1, which is steeper than standard. The bridge abutments would extend down to the street level of Indianola Cutoff in the form of near vertical retaining walls to provide a wider view towards the bay from Indianola Cutoff. Construction of the interchange will require staged construction with temporary shifts of traffic lanes at different stages.

Landscaping and abutment treatments are included in the project to visually enhance the interchange. ([Exhibit 9.](#)) Lastly, the shoulders on Indianola Cutoff would be widened to provide designated cycling access and a sidewalk will be installed for pedestrians. Caltrans will also ensure a connection is connected from the improved bike access on Indianola Cutoff to the Humboldt Bay Trail when the county completes that trail. This connection will provide improved public access to reach a separated bike and pedestrian trail along Humboldt Bay that will run parallel to the highway that Caltrans is funding in conjunction with this project.

3) Intersection Improvements at Jacobs Avenue and Airport Road. Rather than fully close the intersection of 101 and Airport Road/Jacobs Avenue, a “half signal” is proposed at the intersection. ([Exhibit 10.](#)) The signal would stop northbound 101 traffic to allow for southbound left turns east onto Airport Road/Jacobs Avenue, and left turns from Airport Road/Jacobs Avenue to a southbound acceleration lane. Southbound 101 through traffic would not be stopped. Caltrans is installing this half-signal at this location rather than closing the intersection to better serve the substantial commercial, industrial, and residential (including an Environmental Justice community) area along Jacobs Avenue and provide continued service to the County airport. The large population there, as well as the airport users, require southbound access to Highway 101 to reach Eureka. Without the traffic light, motorists from this area would incur significant out of direction travel to reach Eureka by first traveling 1.9 miles north in the opposite direction to the Indianola Interchange before reversing direction at the interchange and traveling 1.9 miles back to the south to reach the Airport Road/Jacobs Avenue intersection on the way to Eureka.

The half-signal light would also require an additional lane to be constructed along northbound 101 extending from 800 feet south of the intersection with Airport Road north to Mid-City Motor World, a total distance of over 3,000 feet. (See [Exhibit 5](#) for project layouts.) Caltrans states the additional lane before the stop light is necessary for traffic queuing to minimize traffic backups

for the traffic signal and to minimize traffic diverting to other routes to avoid backups. The additional lane after the stop signal is necessary to ensure vehicles have adequate merging distance between the Airport Road and Mid-City Motor World intersections.

The Airport Road/Jacobs Avenue intersection would include a slight realignment of the northern end of Jacobs Avenue to the east (within City of Eureka and County of Humboldt Right of Way), to accommodate a second northbound lane to allow immediate access for northbound traffic to enter Route 101 northbound. The project also proposes to widen the intersection of Jacobs Avenue and Airport Road to better accommodate egress and access with US 101, especially for trucks. Widening of the roadway will also result in the relocation of some infrastructure and fencing, and the modification or installation of new culverts. An existing 150-foot-long by 4-foot wide roadside drainage would be realigned to modify the current drainage through a culvert (approximately 50 feet long) under Jacobs Avenue. The remaining 100 feet of the drainage is an open ditch along the Airport Road shoulder, which would be eliminated and realigned into a 130-foot long, 24-inch diameter culvert.

4) Extension of Existing Acceleration and Deceleration Lanes. The project also proposes to modify acceleration lanes and deceleration lanes in the project corridor to reduce operational conflicts along the US 101 corridor, improve safety, and reduce delays at intersections. (See [Exhibit 3](#).) Acceleration lanes and/or deceleration lanes would be extended at main intersections including Mid-City Motor World, the former California Redwood Mill, Bracut (east side of highway), and Bayside Cutoff intersections. At Cole Avenue, the existing acceleration lane onto Route 101 would be closed and the existing northbound deceleration lane would be extended 800 feet. At Mid-City Motor World, the northbound acceleration lane would extend 1600 feet. At the California Redwood Mill the southbound lanes would be realigned for 3,600 feet to avoid impacts to existing eucalyptus trees. At Bracut, the southbound deceleration lane would extend 800 feet and the southbound acceleration lane would extend 1600 feet. At Bayside, the northbound deceleration lane would extend 700 feet and the acceleration lane would extend 1600 feet. The acceleration/deceleration lanes typically would include 4-foot-wide right-side shoulders, except at the Indianola Cutoff, where 8-foot-wide right-side shoulders would be provided.

At the intersection of California Redwood Company and Highway 101 (PM 81.8), the two southbound 101 lanes would be realigned 8 feet towards the median to avoid removing any eucalyptus trees while extending the acceleration/deceleration lanes. No eucalyptus trees would be removed in this project.

5) Bridge Rail Updates at Northbound Jacoby Creek and Gannon Slough Bridges. The existing northbound Jacoby Creek and northbound Gannon Slough bridges were originally constructed in 1955 and are reinforced concrete slabs resting on concrete piles. ([Exhibit 11](#).) Caltrans proposes to replace existing concrete rails with new bridge rails that will be cantilevered from the existing bridge. The new bridge rails would be the ST-70 or ST-75 model which are an aesthetic see-through design similar to designs previously approved by the Commission. ([Exhibit 12](#).) The bridge rails would be steel and utilize a dull gray color to minimize visual impacts of the rails. The construction work would also require the replacement of the existing asphalt deck with a 4-inch thick reinforced deck surface to avoid placing piers within the watercourses. The

new bridge rails would widen the bridge by 12 inches on either side, 24 inches in total, though the lane widths will remain at their existing widths. (See [Exhibit 13](#) for project plans.) This would also slightly increase the extent of bridge shading on Jacoby Creek and the slough.

6) Replacement of the Southbound Jacoby Creek Bridge. The existing southbound Jacoby Creek Bridge was constructed in the 1920s as a two-lane highway in both directions, and modified in 1956 with the construction of the northbound bridge. Caltrans proposes to replace this bridge because of deteriorated condition and the need for more frequent and costly maintenance given its age. The new bridge would be single span with no piers in the channel (the current bridge is a three-span structure with pier supports within the creek channel). (See [Exhibit 14](#) for an excerpt of project plans.) The bridge would be supported on new abutments involving the pile-driving of twelve 36-inch diameter cast-in-steel shell (CISS) piles along the banks of Jacoby Creek about 15 to 20 feet from the active wetted channel. The new bridge would carry southbound highway 101 traffic and be approximately 73-feet long and 43-feet wide, approximately four feet wider than the existing bridge. The additional width would provide for standard road shoulders and new bridge rails. The bridge would also be raised two-feet higher than the existing bridge in anticipation of future sea-level rise issues. The new bridge would also include new bridge railings matching those described above.

Construction of the new bridge would require the construction of a temporary bridge just east of the existing bridge in the highway median area. The installation of the temporary detour bridge would require pile-driving of twelve 36-inch diameter CISS piles along the banks of Jacoby Creek. In addition, construction of the detour would require the removal of four large non-native Monterey pine (*Pinus radiata*) trees and two years of temporary paving in approximately 0.35 acre of wetland. Although this area would be restored once construction has been completed, the 0.35-acre impact will be considered a permanent impact due to the extended duration of loss of wetland habitat value at this location. After the temporary bridge is completed, traffic would be detoured onto the temporary bridge. The old Jacoby creek bridge would be demolished and its piers cut to below water level. New bridge abutments and piles would be built, and the new bridge would be moved into the current alignment using a jack-and-slide method. Once the new bridge is operational, the approaches and deck of the temporary bridge would be removed and the 0.35-acre wetland impact area restored. The abutments of the detour bridge would remain in place, to be utilized for traffic staging for future replacement under a separate project of the northbound bridge when it reaches the end of its useful life. The abutments would be covered with topsoil and planted in the meantime as part of the current project.

7) Tide Gate Replacements. Currently, nine tide gates exist at six locations adjacent to the Highway 101 roadway. Tide gates function as a connection between former tidelands that have been diked for agricultural or other uses and the existing tidelands on the un-diked side on the bay or estuary. The tide gates function to reduce flooding of the converted tidelands by allowing water to drain out to the remnant tidelands during lower stages of the tide. A large pipe or culvert passes through the dike. On the tidewater side of the pipe there is a hinged door which opens outwards towards the bay or estuary. When water levels are higher on the diked side, the water flows into the pipe and the weight of the water holds the door open, allowing water to flow out into the bay or estuary. When the tide rises on the tideland side, the level of water on the

tidewater side becomes higher than on the drained area side, holding the door closed so water does not flow back into the drained area.

The tide gates were installed in 1954, are aging and in poor condition, and require emergency repair at an increasing rate. The tide gates and their associated culverts work to minimize inundation of surrounding pasturelands from tidal waters while allowing freshwater to drain. Caltrans proposes to replace these tide gates. In January 2019, Caltrans had to perform emergency work to repair the dual tide gates off Airport Road where the 101 Slough outlets at Eureka Slough behind the Farm Store on Jacobs Avenue. This work was authorized as a waiver that was reported to the Commission at the July hearing (1-19-0334-W). Under that waiver, Caltrans has already replaced the dual tide gates in this location. Caltrans now proposes to replace six tide gates at four different locations, including: (1) the tide gate south of Mid-City Motor World that connects to a roadside ditch at California Redwood Company; (2) a tide gate at Brainard Slough north of Bracut; (3) a tide gate at Old Jacoby Creek; and (4) a triple tide gate at Gannon Slough, north of the northbound Gannon Slough Bridge. (See [Exhibit 15](#).)

In consultation with the California Department of Fish and Wildlife, National Marine Fisheries Service, and the U.S Fish and Wildlife Service, Caltrans has identified three of the remaining locations as locations where federally-listed fish such as salmonids and the tidewater goby may be present (Old Jacoby Creek, Brainard Slough, and Gannon Slough). At these locations, a fish-friendly design would be installed to facilitate fish passage. Traditional tide gates only allow the interchange of water when the water on the converted, drained tidelands is higher than the remnant tidelands in the bay or estuary, which is often only in short bursts. Fish can be trapped on drained side and injured or die. Fish friendly gates utilize several different designs with floats that ensure some water continually flows through the tide gates and fish can move freely from between the estuary and the drained tidelands.

The final tide gate design selection will be determined with technical assistance requested from the NMFS, USFWS, and CDFW. Caltrans states that they will work with regulatory agencies and adjacent landowners to ensure the development and implementation of adaptive management strategies for operation of the newly installed fish-friendly tide gates to balance the habitat and fish passage needs of listed salmonids and tidewater goby with suitable land uses.

All replacement gates would make use of existing headwall structures and will be installed at the same level as the existing gates. The California Redwood Company ditch and the Jacobs Avenue ditch have no upstream fish habitat, so those replacement gates would not have a fish-friendly design.

Caltrans also states that future operation of the tide gates and future subsequent habitat enhancement around the tide gates, will likely be linked to further restoration activities unrelated to this project, likely when the tide gates and the entire headwall structures have to be replaced in approximately 20-25 years, or when SLR begins to significantly impact the tide gate functioning.

8) Median Cable Rails and Guardrails. As part of the overall safety upgrades the project would add a cable rail safety barrier with a four-foot-wide concrete pad would be installed in the Highway 101 median in two stretches. The first stretch would be between the Eureka Slough

bridges and Airport Road, and the second extending from South G Street to the 11th Street overcrossing in Arcata. In the second stretch, the cable rails will replace existing older existing three-beam guardrail at that location. (See [Exhibit 3](#).) In the first stretch, all of the median will remain mostly grass. For the majority of the second stretch from South G Street into downtown Arcata, the cable rail's four-foot-wide concrete pad in combination with standards to protect maintenance workers will result in the removal of all vegetation from the median. At one location within the Project, PM 81.84 existing metal beam guardrail (MBGR) will be replaced to meet current guard rail design standards.

9) Tree Removal. In conjunction with the construction work for the Indianola Interchange, the acceleration and deceleration lanes, and the Jacoby Creek Bridge replacement, Caltrans will be required to remove vegetation in riparian areas, including approximately 95 trees and shrubs (and up to 106) from areas totaling 1.56 acres. These impacts are described in specific detail in the On Site Mitigation and Monitoring Plan, dated July 19, 2019. ([Exhibit 17](#).) The final number will be determined during actual construction. However, the tree removal activities do not include any trees on the west side of Highway 101 or any Eucalyptus stands of trees on the west side of Highway 101. In some cases, the tree removal is necessary for the fill placement of the new acceleration and deceleration lanes and Indianola Interchange, or for construction activities related to those project components. The temporary placement of the new Jacoby Creek Bridge will also require the removal of trees. Lastly, some trees are being removed in order to ensure a 30-foot-wide clear recovery zone (a highway safety standard that requires a safety zone within which there are no large fixed objects) adjacent to the highway. The changes to the acceleration and deceleration lanes result in a narrowing of the clear recovery zone, in some cases down to ten-feet.

All of the trees and shrubs are in delineated wetlands. Caltrans describes all the areas of habitat impacted as "riparian" because they are within 100 feet from some water body. However, Caltrans did not undertake any environmental study to determine if the areas are ESHA. However, Commission staff reviewed the proposed locations and determined that two of the impacted areas would qualify as ESHA – the 101 Slough just north of Mid-City Motor World and an area of riparian forest adjacent to the Brainard Slough north of Bracut. Caltrans has taken several measures to reduce the amount of trees being removed, and, as discussed directly below, will plant riparian areas with native trees and shrubs in the same areas of the corridor riparian habitat is impacted. Almost all trees initially planned for removal will now remain, although some will be limbed, that is trimmed of significant low branches. Five trees remain scheduled for removal in the 101 Slough area north of Mid-City Motor World in an area staff recommends be designated as ESHA.

10) Construction BMPs.

The proposed Caltrans project also includes numerous BMPs to protect water quality, control stormwater runoff, prevent erosion, avoid spills and leaks, and other actions to avoid impacts to habitat and water quality. These are described in the Project Description. ([Exhibit 4](#), pp.17-28.) Although these BMPs extend throughout the project's proposed work, they are particularly necessary for the Jacoby Creek Bridge replacement will construction will be taking place directly adjacent to a coastal stream with potential impacts to coastal waters and sensitive fish species. The tide gate replacements also involve work directly adjacent to coastal waters with potential

impacts to sensitive fish species. The BMPs include that any in-stream work be restricted to July 1 to October 15, to avoid vulnerable life cycles of sensitive fish species. BMPs also restrict worker movements that are necessary in-stream to low-tide and low-flow periods to minimize disruption. The BMPs also include numerous measures to contain debris from construction activities, barrier fencing to prevent accidental impacts to sensitive species or habitat, standard Pollutant, Sediment and Erosion Control Measures, and a biological monitor for all in-stream activities associated with the Jacoby Creek Bridge replacement.

11) Mitigation Projects. Caltrans also proposes to provide mitigation for the project's wetland impacts through an on-site mitigation and monitoring plan and an additional offsite Wetland Mitigation Plan for the removal of *Spartina densiflora* from designated areas of Humboldt Bay. ([Exhibit 16](#).) The majority of the impacted wetlands are located off of the highway shoulders and within the highway medians, with additional impacts along the inundated channels or banks of Jacoby Creek, Old Jacoby Creek, Gannon Slough, Brainard Slough, and the southern end of 101 Slough.

As discussed in detail below in Findings [Section G](#), The *Spartina* removal mitigation would provide the majority of the mitigation for 10.25 acres of wetland impacts through the removal of the invasive non-native *Spartina densiflora* from 179 acres of land at Tuluwat Island (Indian Island) in Humboldt Bay. This effort is intended to completely remove *Spartina* from the island and eliminate a major source of *Spartina* seed from the bay. The removal of *Spartina* will enable native saltmarsh to restore. As discussed below, given the importance of the removal of *Spartina* from Humboldt Bay, Staff recommends the mitigation project be considered substantial restoration. Most of the island lands are currently owned by the City of Eureka (who support the mitigation project) and the Wiyot Tribe. The city is in the process of transferring ownership of the City-owned lands to the Wiyot Tribe, as it is home to ancestral Wiyot tribe village sites, the site of the tribe's "World Renewal Ceremony," and considered to be the "Center of the Wiyot Universe." As discussed below, using a sliding scale of mitigation credit that considers the different levels of *Spartina* infestation density, the 179 acres of *Spartina* removal provides the equivalent of 80.18 acres of mitigation.² The *Spartina* Mitigation project includes two-years of implementation, a subsequent five-years of maintenance and monitoring including success criteria for the removal of *Spartina* and return of native salt marsh species, and a non-wasting endowment to fund the maintenance of the *Spartina* removal in perpetuity.

The On-site Mitigation and Monitoring Plan ("On-site MMP") proposes to provide onsite in-kind mitigation for all temporary and some permanent impacts through establishment, re-establishment, rehabilitation, and enhancement. ([Exhibit 17](#).) The On-site MMP proposes to provide on-site mitigation for all temporary impacts to wetlands and provide a total of approximately 0.87 acre of on-site wetland creation and substantial restoration of existing wetlands that will be affected by the project to partially mitigate for permanent impacts to wetlands. The On-site MMP includes removal of non-native plants, revegetation through hydro-seeding, or in some cases planting, with native vegetation, the planting of native trees to replace lost riparian habitat, and a five-year monitoring and maintenance period with designated success criteria.

Construction Scope and Management

Caltrans hopes to begin construction work almost immediately, with work proposed to start in 2020. Caltrans proposes to first begin work on the median barrier closures and guardrails, and also begin work to extend the acceleration and deceleration lanes in 2020 and lasting until 2022. Caltrans plans to begin work on the Jacoby Creek Bridge replacement and bridge rail replacements in 2020 and will last until 2024. The Indianola Interchange and Airport Road half-light would follow in 2021 and last through 2026.

Most construction work would take place within the Caltrans Right of Way (ROW) for the highway. The interchange improvements at Jacobs Avenue and Airport Road would require temporary construction activities on three neighboring private parcels, primarily staging, temporary fence placement, and culvert relocation work. Caltrans has acquired Temporary Construction Easements (TCE) from the private owners and an encroachment permit from Humboldt County for this temporary work. The acceleration lane work at Bracut also requires a single TCE, which Caltrans obtained.

Additionally, despite the location adjacent to lands designated as agricultural lands under the LCP, no proposed project components involves the conversion of agricultural land to a non-agricultural use. All of the construction work would occur within a highway ROW that is separated from agricultural lands by sloughs or drainage ditches that parallel the highway on the inland side, and west of the ROW is bay, ocean or developed industrial/commercial parcels.

Caltrans has developed “Traffic Management Plans” (TMPs) for the project components. ([Exhibit 21](#).) According to these TMPs and the Project Description, with two exceptions, no aspects of the project would close Highway 101 for any period and at all times, a “minimum of 16 ft of paved roadway in each direction of travel must be open for use by public traffic.” The first exception to the “no closure plan” would be the closure of the southbound highway for two six-hour periods at night during the replacement of the Jacoby Creek Bridge when the new bridge is moved from its temporary to final alignment. Although there will be single lane closures in both directions to accommodate construction work, all single lane closures would also be limited to nighttime periods during off-peak times. The second exception to the “no closure plan” would be a four-weekend period when weekend daytime closures of one lane of northbound 101 may occur during the replacement of the Jacoby Creek and Gannon Slough bridge rails. Otherwise, there would be no weekday daytime lane closures and during weekends, Caltrans would keep both highway lanes open during weekend days,

Given the TMP requirements to keep Highway 101 open except for the two night-time closures noted above, the Caltrans FEIR indicates the construction activities are not expected to impact regular traffic flow and therefore, there are no anticipated diversions of traffic to State Route 255 or Old Arcata Road. (See FEIR Excerpts, pp. 171-172, ([Exhibit 36](#)).)

Additionally, according to these TMPs and the Project Description, bike and pedestrian accommodation provisions mandate that bicyclists must be accommodated throughout the work zone and provided adequate (4-foot wide) delineated space to safely traverse through the work zone. Caltrans states that all bicycle and pedestrian accommodation would be through protected

delineated space; passenger and safe transportation via a separate vehicle equipped for passengers with storage for the bicycle would only be used during the 2-4 weekend single lane closures at northbound Jacoby Creek and Gannon Slough Bridges during construction of the bridge rail replacement project on those bridges.

B. BACKGROUND, ENVIRONMENTAL SETTING, AND PROJECT PURPOSE

Project Setting

The Highway 101 Corridor is set on along the shore of Humboldt Bay. ([Exhibit 2.](#)) Humboldt Bay is one of California's most important wetland complexes, the second largest natural bay in California, and the largest estuary between San Francisco Bay and Coos Bay, Oregon. The Bay and its surrounding wetland complexes provide habitat for over 300 species of birds, 40 species of mammals, and over 100 species of fish and marine invertebrates, many of which contribute to sport and commercial fisheries, including steelhead, Coho and chinook salmon, and Dungeness crab.

The estuaries of Humboldt Bay, the Eel River, and the Mad River include a diverse array of habitats, including subtidal and deep-water habitats, tidal channels and flats, intertidal mudflats, eelgrass beds, salt marsh, and brackish marsh. These habitats support an abundance of marine organisms and species associated with the marine environment, including many rare, threatened, and endangered species such as salmonids, green sturgeon (*Acipenser medirostris*), longfin smelt (*Spirinchus thaleichthys*), several rare plants discussed above, and numerous species of birds. Together the estuaries of the bay and the Eel and Mad rivers comprise the "Humboldt Bay Complex," a site designated of "international importance" by the Western Hemisphere Shorebird Reserve Network and designated "globally important" by the National Audubon Society. Many of the fish and invertebrate species that occur in the project area estuaries are commercially valuable species.

Along with other non-native species that have invaded Humboldt Bay, dense-flowered cordgrass (*Spartina densiflora*) has invaded approximately 90% of the salt marsh habitat of the Humboldt Bay region. The *Spartina* displaces native indigenous plants, alters and reduces habitat for local land and marine species, allows other non-natives to increase, displaces foraging habitat for shorebirds, and decreases estuarine productivity.

The highway corridor itself is located in a low-lying stretch of land adjacent to Humboldt Bay. The project area historically was comprised of tidelands marked by a diverse system of tidal and freshwater sloughs with a variety of meandering streams and estuaries that drained directly to Humboldt Bay at various locations. However, the margins of Humboldt Bay were largely diked and filled in the late 1800s to reclaim land for agricultural uses. Humboldt Bay adjoins the highway to the west, and agricultural lands and wetlands on former tidelands adjoin the highway to the east. Various sloughs historically drained directly into the bay, but now drain into Humboldt Bay through highway culverts or narrow, embanked openings the highway crosses with bridges.

Although it has rarely happened in the past, the highway corridor is exposed to potential coastal flooding from the bay to the west during extreme tides. When flooding of the highway has

happened, it was because of a combination of the two – an extreme El Nino tide and extreme rainfall event. Flooding from the east side of the corridor can include storm runoff from extreme precipitation events that overwhelm these water control and drainage structures and flood areas, which typically result from a succession of intense winter rainstorms. On top of the tidal flooding from the bay side and from the surrounding sloughs due to storm events, there are also rising groundwater issues which can cause flooding, especially in areas with poor drainage. Tide gates in the culverts control tidal water flow back into the sloughs while allowing fresh water to drain out to the bay. During high water events, the tide gates are closed and fresh water that would otherwise flow through to the bay raises the water elevations which could potentially breach existing levees along the slough channels and creeks and cause flooding of the adjacent lands.

Both sides of the highway corridor are protected by existing historical and largely unmaintained protective structures, primarily historical agricultural dikes and a railway berm. These structures sit on both private and public land. Immediately west of the highway, there are several sections of an unmaintained railroad raised berm that currently function as a dike and provide some protection to the highway from tidal inundation, coastal flooding and wave-induced erosion because it sits slightly above, in most stretches, the highway elevation. To the east, several miles of earthen, agricultural dikes provide some degree of flood protection to Highway 101 from tidal inundation and flooding from the eastern watersheds and storm runoff. These earthen dikes are barrier-like structures/embankments that prevent daily tidal inundation of low-lying former tidelands. Like the railway prism, no single entity maintains these dikes, which also vary in height and extent of protection.

The Highway 101 Corridor

Highway 101 is a critical interregional highway connecting communities along the northern California coast. Highway 101 also serves an important role as the principle route to many North Coast recreational areas, including state and national parks, rivers, and beaches. Although the corridor segment between Eureka and Arcata is in a largely rural setting with surrounding wetlands, according to Caltrans it is the most heavily traveled roadway in Humboldt County.

The first road connecting Eureka and Arcata was created in 1861-62, soon after the cities began to develop in the 1850s.³ During the late 1800s, several small communities developed (Sunny Brae, Bayside, Indianola) along the roadway, which tracked present-day Old Arcata Road. Several railway enterprises also grew between the two cities in the late 1800s. The California & Northern Railway connecting the two cities in 1901. The railway followed a path along the shore of Humboldt Bay and directly north from Eureka at Bracut, skipping the inland towns along Old Arcata Road. In 1918, the state Division of Highways constructed a direct road between Eureka and Arcata that skirted along the railway tracks along Humboldt Bay. Outside of the Bracut area (a natural ridge), the new highway ran through tidal flats of Humboldt Bay. In the post-war era, with additional urban growth, the Division of Highways expanded the highway into a two-lane highway in the north and southbound directions in 1954-1955. (While the original highway

³ For the background information in this section, See JRP Historical Consulting Services/Caltrans District 1, “Route 101 Eureka-Arcata Corridor Highway Improvement Project: Historic Resources Evaluation Report” (2004), pp. 9-19).

followed the bay north of the Gannon Slough into Arcata, the new highway went directly north on its present course.)

Today, the combined population of the cities of Arcata and Eureka is approximately 45,000. However, the larger population that uses the corridor is about 90,000 and includes residents of the unincorporated areas near Eureka, Arcata and McKinleyville, and the cities of Eureka and Arcata. Caltrans anticipates increasing growth along the corridor, and states that most of Humboldt County's growth is occurring in and around cities and communities along the Route 101 corridor between Fortuna, 20 miles south of Eureka, and McKinleyville, 15 miles to the north.

Despite the region's growth, the land on either side of the highway has remained primarily as agricultural land or undeveloped tidelands. The Fay Slough Wildlife Area is adjacent to the corridor near the Jacobs Avenue/Airport Road intersection and agricultural lands along Gannon Slough, Jacoby Creek, Eureka Slough Washington Slough, and Brainard Slough also adjoin the corridor. Several small areas of industrial, residential, and commercial development also emerged over time, including development at Bracut, the Indianola Cutoff road, Brainard, and the Jacobs Avenue. At Jacobs Avenue, an airport was privately developed in the 1920s, purchased by the county in the 1930s, and expanded in the 1940s.⁴ With the expansion of the highway in the 1950s, the Jacobs Avenue area expanded greatly as an industrial area, with largely auto- or equipment-related businesses and a trailer park. (See [Exhibit 18.](#))

As the principal connection between Eureka and Arcata, Highway 101 also functions to allow bicycle access between the two cities and in the area generally. Bicyclists currently use the shoulder of the Highway, which presently is 10-feet wide. ([Exhibit 19.](#)) Some residents of the communities east of Highway 101 also use the medians and the highway shoulders to travel in the corridor by bicycle. After the Commission conditionally concurred with Caltrans' consistency certification in 2013, Caltrans facilitated the development of a separated bicycle/pedestrian section of the California Coastal Trail parallel to the Highway 101 Corridor. The northern part of that trail is now complete and the southern part of that trail, which will complete a full link between the two cities, is being planned by the County with construction set for 2020, and is funded and assisted in large part by Caltrans. When the trail is completed, cyclists and pedestrians will be able to use the separated trail along Humboldt Bay rather than the highway shoulders, though the shoulders will continue to be available for cycling use. A connection is planned at the Indianola Cut-off to link to the public access trail, but residents south of that road and north of Eureka will have to travel north to reach Indianola and access the coastal trail.

Project Purpose

The primary purpose of the Corridor Improvement Project consists of improving traffic safety by eliminating potential traffic conflicts at the uncontrolled intersections to reduce the number and severity of collisions. The potential for collisions occurs when vehicles turn left across Route 101, starting from either a crossroad or from Route 101. Bicyclists also use the median crossings

⁴ Humboldt County, "Murray Field Airport, Master Plan Update Initial Study (April 2008), p. 50.

to access or leave the Highway 101 shoulders and are exposed to potential collisions with turning cars and highway traffic.

Collision rates at the intersections exceed the statewide averages for similar highway intersections and the number of collisions was statistically significant. (See generally FEIR Excerpts re Safety Issues for the 101 Corridor, [Exhibit 35](#).) Between 1997-2002 out of 85 total collisions, five were fatal and 44 caused injury. The collision rate, and the fatal plus injury collision rate, exceeded the statewide average at all of the public median locations (Cole Avenue, Airport Road, Indianola Cutoff, and Bayside Cutoff) and at one of three private access locations (Mid-City Motor World). ([Exhibit 20](#).)

In May 2002, due to the increasing frequency of injury and fatal collisions, Caltrans formally established the Eureka–Arcata “Safety Corridor,” which it considered to be an interim solution/safety enhancement to reduce the hazards. This Safety Corridor included doubling fines for speeding violations, instituting headlights-on requirements and reduced speed limits (from 60-mph to 50-mph), and installing warning signs, actual speed traveled signs, , and flashing light warnings at intersections.

Ultimately, however, Caltrans concluded that even though the Safety Corridor enhanced safety overall, the possibility of severe collisions from left turn movements remained and collision rates above statewide averages continued to occur at two of the intersections: Mid-City Motor World and Indianola Cutoff. Caltrans collected accident data from 2002-2008 that still showed significant collision rates over state averages, and that over 70 percent of the collisions involved cross-median movements. The problem of left turns across traffic also leads to substantial additional traffic issues and back-ups, which in turn increases the problem of collisions as drivers rush to make turns across traffic. Caltrans estimates that traffic on the corridor will continue to increase, further worsening the collision issue if it is not remedied.

The project will also rehabilitate aging infrastructure to current design standards or replace deteriorating infrastructure that have passed their theoretical design life. Thus, the project will replace the 1920s southbound Jacoby Creek bridge, which has exceeded its design lifespan, replace tide gates installed in the 1950s, add new bridge rails to the northbound Jacoby Creek and Gannon Slough bridges, and make other roadway improvements to current standards.

Consistency Certification

On September 12, 2013, the Commission conditionally concurred with a federal consistency certification submitted by Caltrans pursuant to the federal Coastal Zone Management Act (CZMA) for the Highway 101 Corridor Project as proposed at that time. The submittal was triggered by the need for a federal permit (U.S. Army Corps of Engineers) and federal funding Federal Highway Administration (FHWA) for the project.

As has historically occurred for Commission review of Caltrans projects that receive federal funding and also require an EIR/EIS, the FHWA requested that Caltrans obtain a Commission consistency concurrence before FHWA would certify the Final EIS, sign the Record of Decision (ROD) for the project, and release federal funding. As noted during the Commission’s review, these consistency reviews do not supplant the need for subsequent coastal development permits (CDPs) by the appropriate jurisdictions. When the Commission conducts these types of “pre-

coastal development permit” phase federal consistency reviews, the Commission reviews the concept, goals and objectives of the proposed project. At that stage in the review process, the information submitted may not include final project plans or final mitigation and monitoring plans. To the extent the project elements and mitigation measures have been described, the Commission determines whether the project is generally consistent with the applicable Coastal Act policies, and where details may not have been finalized, identifies the mechanism the Commission will rely on to assure that the final details will be consistent with the Coastal Act. The Commission also generally uses this procedure to indicate to Caltrans what modifications and/or assurances, if any, are needed to enable the project to be found consistent with the Coastal Act.

In its action of September 12, 2013, the Commission conditionally concurred with the consistency certification submitted by Caltrans on the grounds that if modified as conditioned, the project would be consistent with the policies of Chapter 3 of the Coastal Act. The Commission concurred with four conditions, and Caltrans subsequently indicated that it agreed with the conditions.

The Commission found that there was the potential for public access impacts from the earlier project reviewed at that time and adopted Special Condition 1 (Coastal Trail Planning) suggesting the project be modified to include a commitment that project construction would not commence until adequate commitments were in place to assure construction of a separated Class 1 bicycle and pedestrian path parallel to the highway that would connect Eureka and Arcata. Caltrans’ efforts to carry out the intent of this condition are discussed as background below in Finding I, “Public Access and Recreation.”

The Commission found that there was the potential for visual impacts from the earlier project reviewed at that time, especially the proposed Indianola Interchange, with its raised elevation and large amount of grading. The Commission adopted Special Condition 2 (Visual Impact Mitigation) requesting that the project be modified to mitigate for visual impacts through (a) the removal, to the maximum extent feasible, of all billboards and other overhead infrastructure along the corridor, and (b) widening of the view towards the bay through the Indianola interchange. Caltrans efforts to carry out the intent of this condition are discussed as background below in Finding H, “Visual Resources.”

The Commission found that the off-site mitigation proposed at that time to restore wetland habitat values on diked agricultural lands would be inconsistent with the Coastal Act’s agricultural conversion policies, but could be approved notwithstanding this inconsistency to avoid a conflict with other policies of the Coastal Act if it were demonstrated that there were no other feasible alternatives to avoid the conflict, and if certain changes were made to the specific restoration proposal to including increasing the degree of tidal restoration. The Commission adopted Special Condition 3 (Wetland Mitigation) which recommended that these demonstrations and changes be provided. As noted above, Caltrans has since abandoned plans to provide off-site mitigation involving restoring a dike agricultural wetland off of Mad River Slough in favor of preparing and implementing a plan to remove invasive *Spartina* from Humboldt Bay tidelands to restore salt marsh habitat. The proposed off-site mitigation plan for *Spartina* removal is addressed in Finding G below.

Finally, with regard to flooding hazards related to sea level rise (“SLR”), the Commission adopted a Special Condition requiring Caltrans to complete a pilot study Caltrans had begun titled, “Climate Change Adaptation Pilot Strategy for Critically Vulnerable Assets in Northwest California,” and expressing the expectation that the CDP application to be submitted for the Highway 101 Corridor project reflect the findings of that study and include any necessary redesign to incorporate feasible sea level rise-related adaptation strategies. Consistency of the project as currently proposed with the flood hazard policies of the Coastal Act is discussed in Finding F, Geologic and Flood Hazards.

After the Commission acted on the consistency certification, Caltrans completed its design and planning process and applied for the CDP. Caltrans made a significant change to the project mitigation commitments, abandoning plans to restore wetland habitat on diked agricultural lands in favor of preparing and implementing a plan to remove invasive *Spartina* from Humboldt Bay tidelands to restore salt marsh habitat. Such changes raising Coastal Act policy concerns that were not previously identified could independently trigger additional federal consistency review under the “reopener” provisions of Section 930.66(b) and/or Section 930.100(b) of the federal consistency regulations (15 CFR Part 930), which provide for re-review, based on “changed circumstances,” of federally permitted and federally funded activities in which the Commission has previously concurred (i.e., based on a determination that the project is having coastal zone effects that are substantially different than originally proposed and, as a result, the project is no longer consistent with the applicable coastal management program policies). However, to the extent the project changes after the Commission conditionally concurred with the consistency certification in 2013 could perhaps trigger a need for a supplemental consistency certification, additional federal consistency review will not be needed in this case, because it would be duplicative of the Commission’s CDP determination as to the project’s consistency with the Coastal Act. The CCMP specifies that a coastal development permit issued by the California Coastal Commission “will be deemed to be a determination by the State that the proposed Federal license or permit activity is consistent with the management program, and no further certification will be required.” Commission approval of CDP 1-18-1078 for the Highway 101 Corridor project in its current form obviates the need for a separate supplemental consistency certification.

As noted above, the Commission’s conditional concurrence with the consistency certification in 2013 occurred at an earlier stage of the planning and design of the project. Although the Commission’s 2013 action is an indication of what modifications to the project were viewed by the Commission at that time as needed to enable the Highway 101 Corridor project to be found consistent with the Coastal Act, the standard of review for the current CDP application remains the same standard as contained in the federal consistency regulations (15 CFR §§ 930.66(b) and 930.100(b)) for a supplemental consistency certification. In its previous conditional concurrence the Commission anticipated that the subsequent phase of the project would be reviewed in the context of a coastal development permit application. For example, on page 40⁵ of its findings on CC-016-13, the Commission noted:

⁵ Similar expectations are expressed on page 47 of the Commission’s findings in the same document.

In conclusion, for the reasons discussed above, the Commission finds that the project will be consistent with the allowable use, alternatives, and mitigation tests of Section 30233(a) of the Coastal Act, if the project is modified in accordance with Conditions 1-4 (and with future Commission review of the details of these conditions at the coastal development permit stage).

As discussed in finding C below, the standard of review for the current CDP application is the Chapter 3 policies of the Coastal Act.

C. STANDARD OF REVIEW

The proposed project includes development that is located within both the retained CDP jurisdiction of the Coastal Commission and the CDP jurisdiction of Humboldt County, the City of Arcata, and the City of Eureka, each of which has a certified Local Coastal Program (LCP).

Under Coastal Act section 30601.3, when a project requires a CDP from both a local government with a certified local coastal program and the Commission, the Commission may process a consolidated CDP application for the proposed development when the applicant, the local government, and the Commission's Executive Director agree to process the CDP as a consolidated CDP. In this case, Humboldt County, the City of Arcata, the City of Eureka, and Caltrans have all requested that the Commission process a consolidated CDP for this project, and the Executive Director has agreed. See [Exhibit 22](#) for copies of the correspondence requesting a Consolidated CDP.

The policies of Chapter 3 of the Coastal Act provide the legal standard of review for a consolidated permit application submitted pursuant to Section 30601.3. The local government's certified LCPs may be used as guidance.

D. OTHER AGENCY APPROVALS

The other regulatory approval/permits needed for this project include the following below..

U.S. Army Corps of Engineers (ACOE).

ACOE has regulatory authority over the proposed project under Section 404 of the Clean Water Act which regulates the discharge of dredged or fill material in waters of the United States. A Section 10 permit for the construction of any structure in or over any navigable water of the U.S. is also possibly required. Caltrans has submitted an application for its Section 404 permit, which is expected to be approved in late June. Special Condition 24 requires Caltrans to submit a copy of this permit prior to commencement of construction.

North Coast Regional Water Quality Control Board (Regional Board).

The Regional Board requires a water quality certification for projects involving dredging and/or filling activities under Section 401 of the Clean Water Act. The North Coast Regional Water Board approved a certification for the project on June 24, 2019.

U.S. Fish and Wildlife Service.

A Section 7 Consultation is required for incidental take of any federally listed species under the Endangered Species Act. The Fish and Wildlife Service issued a "No Jeopardy" opinion and

Incidental Take Statement for the tidewater goby on May 28, 2008, and again on November 22, 2010 and April 2019 following Reinitiations of Formal Consultation due to changes to the project. Conservation measures are required to protect the tidewater goby and its habitat.

National Marine Fisheries Service (NMFS).

An Endangered Species Act Concurrence and Essential Fish Habitat Consultation under the Magnuson-Stevens Act is required. On April 29, 2016, NMFS issued a letter concurring with Caltrans that the project as designed may affect, but is not likely to adversely affect federally listed sensitive species. NMFS noted that the action would negatively affect Essential Fish Habitat but that there are no conservation measures beyond those proposed by Caltrans that would further minimize or avoid those effects. On February 15, 2019, NMFS issued a letter responding to the addition of pile-driving to the project and concluded that the change to the project does not alter the NMFS's 2016 concurrence.

U.S. Coast Guard.

Under the General Bridge Act of 1946, it is required that an applicant obtain approval from the U.S. Coast Guard on the location and plans of bridges prior to start of construction (33 U.S.C. 525). On November 30, 2016, the U.S. Coast Guard issued a letter stating that no permit was required for the Jacoby Creek bridge replacement.

Section 106 Compliance Coordination with the State Historic Preservation Officer (SHPO).

Section 106 compliance is required under the National Historic Preservation Act for protection of significant archaeological and historical resources, and for procedures for dealing with previously unsuspected cultural resources discovered during construction. Section 106 process was finalized and a letter of concurrence from the SHPO was received November 29, 2006.

California Department of Fish and Wildlife (CDFW).

California Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW before beginning any activity that will substantially modify a river, stream or lake. If CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement must be prepared. Additionally, a California Endangered Species Act (CESA) consistency determination may also be required for effects on Coho salmon. On February 1, 2017, CDFW issued a letter stating that an Incidental Take Permit pursuant to FGC Section 2081(b) was not required for the project with its proposed avoidance and minimization measures. On June 25, 2019, CDFW and Caltrans entered into a Lake or Streambed Alteration Agreement pursuant to Section 1602 of the California Fish and Game Code.

Humboldt Bay Harbor Recreation and Conservation District. A permit from this agency is required for replacing the southbound Jacoby Creek Bridge. Caltrans obtained this permit on May 24, 2019.

Humboldt County. An encroachment permit is necessary for construction work on Humboldt County property at the Jacobs Avenue and Airport Road Intersection. The County has already granted a right-to-enter authorization for the project. Special Condition 25 requires Caltrans to submit a copy of this permit prior to commencement of construction.

California State Lands Commission. Portions of the project area may be subject to the public trust. The California State Lands Commission has jurisdiction and management authority over public trust lands, including all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The state has granted authority over the subject state public trust lands to the local governments of Eureka, Arcata and the Humboldt Bay Harbor, Recreation, and Conservation District). Even so, the State Lands Commission retains review authority over public trust lands legislatively granted in trust to local governments. To ensure that Caltrans has a sufficient legal property interest in the site to carry out the project consistent with the terms and conditions of this permit, the Commission attaches **Special Condition 22**. This condition requires that Caltrans submit evidence that either any necessary authorization from State Lands has been obtained prior to issuance of the CDP or that no such authorization is necessary.

E. PERMIT AUTHORITY FOR REPAIR & MAINTENANCE

Although almost all of the development authorized in this permit is new development, the replacement of the proposed tide gates in this project qualifies as repair and maintenance. The evaluation of the consistency of the project with Coastal Act policies is affected by whether the project qualifies as a repair and maintenance activity. When considering a permit application for a repair or maintenance activity, the Commission reviews whether the proposed *method* of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act (e.g. least environmentally damaging alternative). The Commission's evaluation of such repair and maintenance projects does not extend to an evaluation of whether the existing development conforms to the Coastal Act.

As indicated in the below-cited governing statute and regulation, although Coastal Act Section 30610(d) generally exempts from Coastal Act permitting requirements repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities, the Commission retains authority to review certain extraordinary methods of repair and maintenance that involve a risk of substantial adverse environmental impact, as enumerated in Section 13252 of the Commission regulations.

Section 30610 of the Coastal Act provides, in relevant part (emphasis added):

Notwithstanding any other provision of this division, no coastal development permit shall be required pursuant to this chapter for the following types of development and in the following areas: ...

(d) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities; provided, however, that if the commission determines that certain extraordinary methods of repair and maintenance involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained pursuant to this chapter.

Pursuant to Section 30610, the Commission adopted Section 13252 of the Commission's regulations to establish which extraordinary methods of repair and maintenance involve a risk of

substantial adverse environmental impact. Section 13252 of the Commission administrative regulations (14 CCR 13000 *et seq.*) provides, in relevant part (emphasis added):

(a) For purposes of Public Resources Code section 30610(d), the following extraordinary methods of repair and maintenance shall require a coastal development permit because they involve a risk of substantial adverse environmental impact:

. . .

(3) Any repair or maintenance to facilities or structures or work located in an environmentally sensitive habitat area, any sand area, within 50 feet of the edge of a coastal bluff or environmentally sensitive habitat area, or within 20 feet of coastal waters or streams that include:

(A) The placement or removal, whether temporary or permanent, of rip-rap, rocks, sand or other beach materials or any other forms of solid materials;

(B) The presence, whether temporary or permanent, of mechanized equipment or construction materials.

All repair and maintenance activities governed by the above provisions shall be subject to the permit regulations promulgated pursuant to the Coastal Act, including but not limited to the regulations governing administrative and emergency permits. . . .

(b) Unless destroyed by natural disaster, the replacement of 50 percent or more of a single family residence, seawall, revetment, bluff retaining wall, breakwater, groin or any other structure is not repair and maintenance under section 30610(d) but instead constitutes a replacement structure requiring a coastal development permit.

The replacement of the tide gates qualifies as repair and maintenance under Section 30610(d) of the Coastal Act because the repairs (a) do not involve an addition to or enlargement or expansion of the subject structure, and (b) do not involve replacement of 50% or more of the entire structure. In this case, the tide gates Caltrans will replace are hinged metal flaps attached to a larger structure of a concrete headwall at the end of a culvert. The object of repair is the larger structure, and the metal flap actually being replaced is less than 50% of that structure. However, because the proposed work involves repair and maintenance to a structure within ESHA (wetlands), within 20 feet of coastal waters, and includes the placement of solid materials and the use of mechanized equipment and construction materials. Therefore, the proposed work requires a CDP under Sections 13252(a)(3) of the Commission regulations.

As stated above, in considering a permit application for a repair or maintenance project pursuant to the above-cited authority, the Commission reviews whether the proposed method of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act (e.g. least environmentally damaging alternative). However, the Commission's evaluation of such repair and maintenance projects does not extend to an evaluation of whether the existing development confirms with the Coastal Act.

If not properly undertaken with feasible mitigation, the necessary tide gate replacement activities could have adverse impacts on coastal resources, including impacts on the biological productivity and quality of surrounding wetlands, agricultural productivity, and impacts to sensitive species. As such, the applicable provisions of Sections 30230, 30231, and 30233 of the Coastal Act cited above require that the method of proposed repair and maintenance: (1) use the least environmentally damaging feasible alternative; (2) provide feasible mitigation measures to minimize adverse environmental effects; (3) protect the biological productivity and the quality of coastal wetlands and waters; and (4) protect adjacent environmentally sensitive habitat areas against any significant disruption of habitat values. The project's proposed tide gate repair activities and the consistency of that work with these Coastal Act provisions is discussed below in [Section G](#). As conditioned in these findings, the Commission finds that the proposed method of repair and maintenance is consistent with all applicable Chapter 3 policies of the Coastal Act.

F. GEOLOGIC AND FLOOD HAZARDS

Section 30253 of the Coastal Act states, in applicable part:

New development shall do all of the following:

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...*

The proposed project entails development of critical infrastructure in an area subject to high geologic and flood hazards including strong earthquake shaking, liquefaction, differential settlement, tsunami inundation, and flooding.

Seismic Hazards

Based on its record of historical earthquakes and its position near the Mendocino Triple Junction (the intersection of three crustal plates including the North American, Pacific, and Gorda plates), northwestern California is one of the most seismically active regions in the continental United States. The Humboldt Bay region, in particular, occupies a complex geologic environment characterized by very high rates of active tectonic deformation and seismicity.

There are no known active faults crossing Highway 101 in the project corridor. However, the project corridor is at risk of substantial seismically-induced ground shaking from nearby faults. There are several other local sources capable of producing strong seismic shaking at the project site, including the Gorda plate, the Mendocino fault, the Mendocino triple junction, the northern end of the San Andreas fault, faults within the North American plate, and the Cascadia Subduction Zone (CSZ). Caltrans has identified several faults in the near vicinity of the site thought capable of producing earthquakes of magnitudes between 6.0 and 7.0. (Caltrans FEIR, p.251.) However, a seismic event on the Cascadia Subduction Zone (CSZ) could exceed a magnitude 9.0. Therefore, a large earthquake on one of the active faults in the region has the potential to cause high intensity ground-shaking at the project site during the lifespan of the proposed development.

A strong earthquake in the region could also result in liquefaction in the project corridor. Liquefaction is the loss of support strength that can occur in loose, saturated soil during or following seismic shaking. Liquefaction can produce a number of ground effects, including lateral spreading, boils, ground lurching, and settlement of fill material. Certain sites are more susceptible than others to the secondary effects of strong ground shaking as a result of the character of the surface substrates and depth to groundwater. For example, loose, water-saturated granular sediments and unconsolidated, compressible materials have a greater susceptibility to liquefaction and differential settlement, respectively. The length of the project construction limits, except in the vicinity of Bracut, where the roadway was graded through a former natural ridge, consists mostly of unconsolidated, coarse-to-fine-grained sand and silt (alluvium) typically found on coastal plains, valley bottoms and along river flood plains. (Caltrans FEIR, p.250.) The character of the surface substrates in the project area indicate a high potential for liquefaction and differential settlement. In a seismic event, liquefaction can produce a number of ground effects, including lateral spreading, ground lurching, and settlement of the fill material.

Therefore, structural components of the proposed development remain at risk to strong earthquake shaking and liquefaction, which can result in the cracking, spreading, and settlement of embankment material; the failure of embankments and natural slopes; and structural distress to bridges, retaining walls, and culverts.

Caltrans has prepared a memoranda describing how the project components have been designed to meet the standard Caltrans seismic criteria in this area. ([Exhibit 23](#).) Based on an evaluation of the local fault lines, Caltrans determines a Maximum Credible Earthquake (MCE) for the project area. Caltrans then uses its engineering criteria to ensure that the structural project components are designed to withstand the seismic hazards, including ground-shaking and liquefaction, associated with the MCE. Caltrans applies these seismic design criteria only to the structural components of the project; bridge rails, guardrails, median barriers and fills for the acceleration and deceleration lanes do not rely on the seismic design criteria.

The seismic design criteria for the proposed bridge and interchange are intended to ensure both non-collapse and serviceability when subjected to ground motions during a seismic event. The intensity of ground shaking in response to an earthquake is governed by the size and geometry of the fault rupture, the amount of energy released, the distance to the epicenter, the duration of shaking, and the nature of the geologic materials at a site.⁶ Once the potential seismic ground-shaking intensity for a particular site has been determined, a proposed structure can be

⁶ Seismic hazards are often discussed in terms of the strength or intensity of ground shaking rather than earthquake magnitude. Measures of ground-shaking account for the attenuation of seismic waves due to distance from a rupture and amplification or damping due to substrate types (e.g., soft sediments vs. hard rock) and thus provide a better estimate of the amount of damage that may occur at a given site. Ground shaking is often expressed as the *acceleration* experienced by an object during an earthquake. The *spectral acceleration* occurs at different oscillation frequencies, which can be plotted to form a ground shaking *response spectrum*. The *peak ground acceleration* (PGA) is a measure of is the maximum force (expressed as a % of the acceleration of gravity, *g*) experienced by a small mass located at the surface of the ground during an earthquake. PGA is often used in seismic design as a hazard index for short, stiff structures.

designed to withstand or accommodate the horizontal and vertical ground accelerations that could occur during a major earthquake.

Caltrans states that it used modeling to determine the potential ground-shaking intensity at the site from seismic events along various faults in the project vicinity. The modeling analysis, used to determine a design response spectrum for the proposed structure, considers both a probabilistic spectrum (based on a ground-shaking intensity with a 5% in 50 year probability of exceedance, or 975-year return period event) and a deterministic spectrum (based on the maximum rupture of any fault in the vicinity of the project site), as well as a “minimum event” (M6.5 earthquake on a fault located 12 km from the site). For the project site, the probabilistic response spectrum yielded the more conservative estimate of the ground-shaking hazard at the site, with a PGA of 0.74g (5% in 50-yr chance of exceedance). Lower probability, higher magnitude earthquakes could result in greater ground-shaking hazards. The deterministic analysis suggested that high intensity ground-shaking at the site could occur during magnitude 7.0 or greater earthquakes on local faults (e.g., Fickle Hill fault within 1 mile of the site) or during a much larger, but more distant earthquake of up to magnitude 9.0 on the Cascadia Subduction Zone. Each of these potential “sources” contributed to the seismic hazard in the probabilistic analysis.

Caltrans designed the Jacoby Creek Bridge Replacement and the Indianola Interchange Bridge and abutments consistent with the Caltrans Seismic Design Criteria 2.0 (2019) and based on the seismic ground shaking analyses described above. Seismic design criteria for the proposed grade separation structure are intended to ensure both non-collapse and serviceability when subjected to ground motions during a seismic event. The structural elements of the project would also be designed to withstand liquefaction hazards at the site.

Tsunami Hazards

Most of the section of Highway 101 between Eureka and Arcata is in both the 100-year flood Zone and in an identified tsunami inundation zone. (FEMA Flood Plan Maps and California Office of Emergency Services California Geological Survey and University of Southern California, Tsunami Inundation Map for Emergency Planning, Arcata South Quad, June 2009; https://www.conservation.ca.gov/cgs/Documents/Tsunami/Maps/Tsunami_Inundation_ArcataSouth_Quad_Humboldt.pdf) Along with flooding, the large flow of water in a tsunami over and around foundations as the water rushes in and then recedes can lead to significant scour. Scour effects may be intensified if the bridge is located over a creek, river or other site where the return flow from a watershed area is concentrated due to local topography.

As a result, Caltrans has designed the structures of the project (specifically the Jacoby Creek Bridge and the Indianola Interchange) in compliance with its standard criteria in anticipation of Tsunami dangers. Although the American Society of Civil Engineers recently developed tsunami-related design standards that can be used for many types of buildings, design standards for bridges are not well developed at this time. Accordingly, Caltrans relies on its 2010 guidance memo ([Exhibit 24](#)), which notes that “bridge design details typically required to address seismic ground motion will provide a relatively high level of protection.” The 2010 guidance memo also provides some general structural guidance for bridges that might be subject to tsunami loads,

such as continuity of the superstructure, deep foundation to protect from scour, strong connections and tiedowns or vents to alleviate buoyancy effects.

As described in the a seismic hazards memo prepared by Caltrans for the proposed development ([Exhibit 23](#)), the design of the Jacoby Creek Bridge and Indianola interchange incorporate recommended design features for tsunami events. Regarding the Jacoby Creek bridge, the bridge elevation ranges from 9.6 feet at the soffit to 13.8 feet at the roadway and sits over a waterway connected to the bay. According to the Caltrans seismic memo, the Jacoby Creek bridge is designed to tsunami guidelines because the superstructure is continuous; the precast box girders are securely tied together; abutments are supported on deep 3-foot diameter CISS piles; the abutments are securely attached to the piles making the structure monolithic; the weight of the superstructure is greater than the buoyant force should the bridge become submerged; and the bridge uses open barrier rails. Also appended to the Caltrans Memo is a Final Hydraulics Report for the replacement bridge showing its resistance to scour from 50- and 100-year storm events. In addition, the Jacoby Creek Bridge will remove existing bridge piles from the waterway expanding the floodway and reducing slightly both the water elevation and flood velocity. Though the bridge abutments will be outside of the 100-year floodway, the CISS piles supporting the abutment will be 74 to 77 feet deep and will provide substantial resistance to water velocity and scour impacts if they are within the tsunami inundation zone. Regarding the Indianola Interchange Bridge, the bridge deck itself is approximately 30 feet high on dry land but exposed to the bay. The interchange rises on fill from an elevation of approximately 10 feet, while Indianola Cut Off road and the on- and off-ramps will be at an elevation of approximately 12 feet. The Indianola Interchange Bridge is also consistent with Caltrans Tsunami guidelines, namely that it is a continuous superstructure; built on abutments supported by deep piles; and the abutments are securely attached to the piles making the structure monolithic.

In this case, Caltrans has designed the proposed development in compliance with its standard design criteria to plan for and minimize seismic and tsunami hazards. To ensure that the final construction plans are consistent with the seismic and tsunami design criteria, the Commission includes **Special Condition 18**, which requires final site and construction plans before the start of any project construction component. **Special Condition 18(D)** also requires evidence that the final plans are consistent with the identified seismic and tsunami standards as referenced in [Exhibit 23 and 24](#). Therefore, the Commission finds that with respect to tsunami, seismic ground shaking, liquefaction and ground settlement the project as conditioned will minimize risks to life and property, assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the surrounding area consistent with Section 30253 of the Coastal Act.

Flood Hazards

The proposed project consists of multiple highway improvements that are intended to address highway safety, reliability, and road conditions. The project consists of specific, separate, improvement projects to an existing highway rather than a total reconstruction of the highway. Thus, many parts of the existing highway facility will remain as currently constructed.

Due to its low-lying location along Humboldt Bay, an inherently dynamic and potentially hazardous area, the project site must be examined for the potential for flooding, wave attack and wave run-up hazards and resulting erosion, including consideration of potential impacts due to severe storm events. Given that these hazards may be exacerbated by expected future sea level rise (SLR), an analysis of these hazards under current SLR projections must also be considered. To be found consistent with Section 30253 of the Coastal Act, the proposed development must be sited, designed, and conditioned in such a way that minimizes risks to life and property in an area of high flood risk and despite those flood risks, assures stability and structural integrity and neither creates nor contributes significantly to erosion, geologic instability, or destruction of the site or surrounding area. At the same time, the project must protect coastal resources in a manner consistent with the other policies of Chapter 3 of the Coastal Act.

The project area historically was comprised of tidelands marked by a diverse system of meandering tidal and freshwater sloughs and streams that drained to Humboldt Bay at various locations. However, much of the Humboldt Bay area was diked and filled in the late 1800s to reclaim land for agricultural uses. The late 19th-century construction of a railroad berm along the edge of the Bay predated the highway and also functions as a dike protecting the lower-lying highway from coastal flooding. Various sloughs that historically drained directly into the bay, now drain into Humboldt Bay through culverts or narrow channels that the highway crosses with bridges.

Portions of the project area are located within FEMA's designated 100-year flood zones.⁷ The flood risks to the highway corridor are from both the bay side to the west and the inland eastern side. From the west side, the flooding dangers are coastal waters from the bay and extreme tides. In addition, El Niño events, low pressure systems, stormwater runoff, and storm surges can also increase winter tidal elevations. From the east side, flood risks include tidal inundation from the sloughs that extend throughout the project area and can flood across agricultural land. Additionally, flooding can occur as a result of storm runoff from extreme precipitation events in the adjoining watersheds that overwhelm water control and drainage structures.

In addition to tidal inundation from the tidal sloughs that extend into the largely agricultural areas (created from former tidelands that are within the historic tide range), flooding can include storm runoff from extreme precipitation events in the adjoining watersheds that overwhelm water control and drainage structures. Tide gates in the culverts leading to the bay control tidal water flow back into the sloughs while allowing fresh water to drain out to the bay. During high water events, the tide gates are closed and fresh water that would otherwise flow through to the bay backs up as ground water, raising the water elevations and potentially breaching creek banks and flooding the adjacent lands. The project is in an area with seasonal distribution of rainfall, and the major floods in the Humboldt Bay area typically result from a succession of intense winter rainstorms from November to March. Rising groundwater levels due to sea level rise will exacerbate these flood risks, and may eventually cause additional areas to flood.

Both sides of the highway corridor are protected by existing historical and largely unmaintained protective structures that line the Bay and connecting sloughs and streams. These structures

⁷ FEMA'S 100-year flood maps area available at: <https://msc.fema.gov/portal/home>.

consist primarily of historical agricultural dikes and a railway berm, and are located on both private and public lands forming some 11.26 miles of informal protective shorelines to the west and east of Highway 101. (Laird, 2013.)⁸ Immediately west of the highway, the railway berm is not maintained, is non-uniform in height, and has degraded in several locations resulting in potential breaches. To the east, earthen agricultural dikes provide some degree of flood protection to Highway 101, especially the right bank dikes on Eureka and Fay Slough. Like the railway prism, no entity besides individual property owners maintains these dikes, and the condition and height of these dikes varies.

Given the facts that (1) no flood protection district or governmental agency or other entity maintains the railway prism and the dikes, and (2) they are partially degraded with low elevation gaps, there is an increased risk of flooding by overtopping even if the prism/dikes would otherwise serve to prevent flooding.

Present Day Flood Risks

Most of the Highway 101 Corridor is within the mapped 100-year flood plain and thus in a current flood risk area. Portions of the project are in areas rated Zone A, for areas subject to a 100-year flood, and in Zone Z, which are areas along coasts that are subject to inundation by a 100-year flood event with additional hazards associated with storm-induced waves. Modeling in the *Humboldt Bay Area Plan – Sea Level Rise Vulnerability Assessment* (Laird, 2018)⁹, shows that the southern sections of the corridor can be currently inundated in a 100-year storm event.

To date, however, possibly because of the protection afforded by the dikes, the functioning of the tide gates, and elevation of the highway, the Highway 101 corridor has only closed once due to flooding, during a New Year's Eve storm of 2005. The average King Tide in Humboldt Bay reaches 8.78 feet (NAVD 88) at the North Spit tide gage. However, King Tide on New Year's Eve in 2005 reached 9.55 feet, and combined with a storm surge, resulted in significant shoreline erosion, overtopping, and flooding. The Governor declared a "state of disaster" in response. As discussed below, with roughly 1.8-1.9 feet of SLR, this same tidal elevation would become the "mean monthly maximum water" levels (MMMW), and thereby reached on a monthly basis.

Given that the dikes and railway berm provide significant protection to the highway corridor, breaching of the dikes is a significant and growing problem, and results largely because of deferred dike maintenance. Additionally, rising annual maximum tide elevations, commonly referred to as a king tide, also contribute to occurrences of dike breaching or overtopping. As discussed below, this problem will worsen with SLR.

Sea Level Rise

As is true globally and along California's coast, sea levels in the project area have been rising over time, especially in Humboldt Bay. Increased SLR can lead to greater temporary flooding of

⁸ See the Coastal Conservancy's report prepared by Aldaron Laird "Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment," accessible at: <https://scc.ca.gov/2013/01/22/humboldt-bay-shoreline-inventory-mapping-and-sea-level-rise-vulnerability-assessment/>.

⁹ Available at <https://humboldt.gov/DocumentCenter/View/62872/Humboldt-Bay-Area-Plan-Sea-Level-Rise-Vulnerability-Assessment-Report-PDF?bidId=>.

the Highway 101 Corridor due to increased tidal elevations and elevated coastal water levels during extreme tidal events such as king tides, strong winds, and storm surges; as well as eventual permanent inundation of low-lying areas. Importantly, climate change may lead to increased extreme storm events (in terms of intensity and/or rate of occurrence) and therefore increased events of flooding of the highway through extreme precipitation and storm water runoff events.

The State of California has undertaken significant research to understand how much sea level rise to expect over this century and to anticipate the likely impacts of such sea level rise. In April 2017, a working group of the Ocean Protection Council's (OPC) Science Advisory Team released *Rising Seas in California: An Update on Sea-Level Rise Science*. This report synthesizes recent evolving research on sea level rise science, notably including a discussion of probabilistic sea level rise projections as well as the potential for rapid ice loss leading to extreme sea level rise. This science synthesis was integrated into the OPC *State of California Sea-Level Rise Guidance 2018 Update*. This Guidance document provides high-level, statewide recommendations for state agencies and other stakeholders to follow when analyzing sea level rise. Notably, it provides a set of projections that OPC recommends using when assessing potential sea level rise vulnerabilities for various projects. Taken together, the Rising Seas science report and updated State Guidance account for the current best available science on sea level rise for the State of California, and these projections accordingly have been incorporated into the Coastal Commission's Sea Level Rise Policy Guidance (2018 Science Update).

The OPC Guidance provides sea level rise projections for twelve California tide gauges, and recommends using the projections from the tide gauge closest to the project site. In this case, the North Spit tide gauge in Humboldt Bay is the closest gauge. The Humboldt Bay region is experiencing the greatest rate of relative sea level rise in the State due to active subsidence as the result of both seismic activity and compaction of former tidelands. Relative sea level rise (RSLR), combines rates of both vertical ground movement and regional sea level rise. Humboldt Bay's average rate of relative sea level rise currently is 0.18 inches/year (18 inches per century), which is greater than anywhere else in California (Patton 2017).

The following table depicts the projected SLR at the North Spit under low-risk, medium-high risk, and extreme risk aversion scenarios. The sea level rise projections for the North Spit tide gauge account for regional seismic subsidence.

Year	Projected Sea Level Rise (in feet)		
	Low Risk Aversion	Medium-High Risk Aversion	Extreme Risk Aversion
2040	1.1	1.6	2.0
2050	1.5	2.3	3.1
2100	3.1-4.1	6.3-7.6	10.9

(Table 1: SLR Projections (OPC))

Given the range of many uncertainties incorporated into the models, these projections are not precise, but are intended to reflect a precautionary approach. The low-risk aversion scenario has a 17% chance of being exceeded, and the medium-high risk aversion scenario has a 1 in 200

chance, or a 0.5%, chance of being exceeded. The extreme risk accounts for the extreme ice loss scenario and does not have an associated probability at this time. The physical processes that would lead to the extreme scenario of sea level rise are predicted to be unlikely to occur before the latter part of the century.

As our understanding of sea level rise continues to evolve, it is possible that sea level rise projections will continue to change as well (as evidenced by the recent updates to best available science). While uncertainty will remain with regard to exactly how much sea levels will rise and when, the direction of sea level change is clear and it is critical to continue to assess sea level rise vulnerabilities when planning for future development. Importantly, maintaining a precautionary approach that considers high or even extreme sea level rise rates and includes planning for future adaptation will help ensure that decisions are made that will result in a resilient coastal California. Here, the highway improvements comprise critical infrastructure serving the public where flooding could have significant coastal resource consequences. In such cases, the OPC Guidance and Coastal Commission Guidance recommend that applicants for critical infrastructure understand the risks associated with higher sea level rise projections and develop adaptation pathways for those higher scenarios.

On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore, which will result in increased flooding, erosion, and storm impacts to coastal areas. For fixed structures on the shoreline, an increase in sea level will increase the inundation and flood damage risks to the structures. More shoreline structures generally will be inundated or underwater than are inundated now, and the portions of the structures that are now flooded part of the time will flood more frequently. Structures that are adequate for current storm conditions may not provide as much protection in the future.

Changing conditions could also alter the anticipated impacts of development upon coastal resources. In particular, coastal resources such as beaches and wetlands that are located just inland of the sea could disappear if they are squeezed between rising sea levels and a fixed line of development on the shoreline, thus impacting habitats, public access, recreation, visual, and other coastal resources. Therefore, to be consistent with the Chapter 3 policies of the Coastal Act, proposed development must be sited, designed, and conditioned in such a way that considers the impact of the development upon coastal resources over its full design life, avoiding and minimizing and mitigating those impacts as required by the Coastal Act.

Humboldt Bay and SLR Vulnerability

Multiple SLR Vulnerability Assessments and Reports have been prepared for the Humboldt Bay Area that are relevant to the Highway 101 corridor and this project, including those that were primarily created for LCP updates. In December 2014, Caltrans completed the “District 1 Climate Change Vulnerability Assessment and Pilot Studies: FHWA Climate Resilience Pilot Final Report.”¹⁰ The report rated this section of Highway 101 as the second most vulnerable section in Humboldt County and concluded:

¹⁰ Available at: <https://humboldt.gov.org/DocumentCenter/View/70095/Caltrans-District-1-Climate-Change-Vulnerability-Assessment---Main-Document>.

Much of Highway 101 along Humboldt Bay is only a few feet above the current, average height of King Tides, a twice-yearly extreme tide event. Extreme weather has caused flooding in the highway in the past. It is expected that without management of the dike system, the bay will reclaim its historical footprint, flooding currently reclaimed agricultural lands and some developed areas. Modeling has shown that the southern reach of the project study location will be regularly inundated by 2050, and that by 2100, almost the entire six miles will be under water. These model estimates considered mean monthly maximum water (MMMW) and average King Tide conditions. Should a 100-year storm or other extreme storm event occur, the estimated elevations will be even higher. Dike breaches will also accelerate the occurrence of flooding in the region. [Emphasis added].

In an Appendix to the report, the report analyzed and scored various adaption alternatives specifically to the 101 Corridor. Long-term adaptation strategies for the corridor include a viaduct/causeway to raise the highway above SLR flooding heights, raising the highway by building up the fill prism, protection of the corridor through raised levees, realignment or relocation of the roadway, and the no-build alternative, including with increased maintenance and inspection. Though the future adaptation measures are yet to be decided, the proposed structures do not preclude the use of alternate adaptation strategies in the future.

Another vulnerability assessment that is particularly relevant for the project corridor is Humboldt County's Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment (2018).¹¹ Other relevant SLR vulnerability assessments¹² include the City of Arcata LCP SLR Vulnerability Assessment (2018)¹³; the city of Eureka's LCP Sea Level Rise Assets Vulnerability and Risk Assessment (2016)¹⁴; and Eureka's Adaptation Planning Report (2016).¹⁵

Given the importance of the dikes, railroad berms and similar structures that provide some existing protection to lower-lying segments of the project corridor, additionally important analysis is provided in the "Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment" prepared for the California Coastal Conservancy (2013)¹⁶, which contains an appendix with specific vulnerability rankings for dike sections along the corridor¹⁷,

¹¹ Available at: <https://humboldt.gov/DocumentCenter/View/62872/Humboldt-Bay-Area-Plan-Sea-Level-Rise-Vulnerability-Assessment-Report-PDF?bidId=>. See pages 74-94 for the section directly discussing Highway 101.

¹² See also the materials and data at: <http://www.coastalecosystemsinstitute.org/humboldt-bay-slr-vulnerability-and-adaptation-planning/>.

¹³ Available at: <https://www.cityofarcata.org/DocumentCenter/View/7193/City-of-Arcata-Sea-Level-Rise-Risk-Assessment-04-2018?bidId=>.

¹⁴ Available at: <http://www.eureka2040gpu.com/Links/pdfs/COE%20SLR%20Assets%20Vulnerability-Risk%20Assessment%20Report-Appendix%2006302016.pdf>.

¹⁵ Available at: http://www.eureka2040gpu.com/Links/pdfs/COE%20SLR%20Adaptation%20Plan_Final_161230.pdf.

¹⁶ Available at: <https://scc.ca.gov/webmaster/ftp/pdf/humboldt-bay-shoreline.pdf>

¹⁷ Available at: <http://humboltdbay.org/sites/humboltdbay2.org/files/documents/HB%20Shoreline-Addendum-Vulnerability%20Rating.pdf>.

and the subsequent report “Humboldt Bay Area Plan Diked Shoreline Sea Level Rise Adaptation Feasibility Study.”¹⁸

Taken together, these assessments demonstrate that the highway corridor in this project area is extremely vulnerable to SLR. For instance Laird (2013) analyzed the elevations of dikes, railroad berms, and other structures relative to existing MMMW (defined below). Elevations below 2-feet were assigned a high vulnerability rating (red) because they can already be subject to flooding in extreme tides and to potential over-topping and flooding with SLR less than 2 feet.

Humboldt County’s Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment (2018) also projected flooding of the corridor under projected SLR conditions. As shown there, significant portions of the highway corridor will be flooded with SLR as little as 1.6 feet, which could occur by 2040 under the OPC’s medium high-risk scenario.



(Figure 1: Highway 101 flooding with 1.6 SLR (Laird 2018).)

Given the clear vulnerability of this area to SLR impacts, staff requested Caltrans undertake a more detailed SLR analysis of the project area. Caltrans completed (with their consultant ICF) this analysis in July 2019. ([Exhibit 26.](#)) That analysis, supplemented with information from the above reports, is the basis of the following discussion.

Project Components versus the Entire Corridor

¹⁸ Available at: <https://humboldt.gov.org/DocumentCenter/View/64385/Humboldt-County-Diked-HBAP-Shoreline-Adaptation-Feasibility-Study-PDF>

As discussed above, the project consists of specific, separate improvements to an existing highway rather than a total reconstruction of the highway. As discussed below, Caltrans designed some of the proposed highway improvements to address some levels of SLR. However, the Highway 101 Corridor as a whole is not being adapted for SLR at this time.

Caltrans states that it is not possible to plan for complete SLR adaption of the entire 6-mile stretch of highway corridor with at this time. Caltrans states that while the need to address critical safety concerns is immediate, solving the SLR issues for this entire corridor will involve years of planning with local governments, businesses, landowners, the public, and regulatory agencies. While Caltrans states that they agree with the importance of planning to adapt to SLR and are committed to those efforts, including through incorporating SLR into the design for specific components in this project, but resolution of sea level rise for the entire corridor is not within the scope of the current project. Importantly, Caltrans points out that they designed the proposed improvements to interconnect to future adaptation designs, such as a raised roadway or causeway approach. Though future adaptation strategies are yet to be decided, the proposed structures do not preclude the use of alternate adaptation strategies in the future. Also, coordinating the short-term implementation of these critical safety improvements with the long-term corridor solution is feasible because the approved project would not foreclose the implementation of alternate SLR adaptation measures in the future.

Analyzing Impacts

The following section first provides an analysis of the highway corridor by specific highway segments and then the SLR analysis for each project component.

Using the updated SLR scenarios in the Commission and OPC guidance, Caltrans analyzed expected impacts from SLR for the corridor and the project components based on different tidal and storm scenarios. Specifically, Caltrans assessed the impacts associated with a raise in multiple tide metrics. These include the “mean annual maximum water” (MAMW) (current height of 8.8 feet NAVD88 at the North Spit Tide Gauge), Mean Monthly Maximum Water (MMMW) (currently at a 7.7 feet NAVD88), and “Mean Higher High Water” (MHHW) (currently at a 6.5 feet NAVD88). All of these tidal levels change with changes in Mean Sea Level (MSL, approximately at 3.4 feet NAVD88).

MAMW tides are the highest tidal levels of the year, and thus are essentially king tides or tidal levels associated with storms. Based on the historical analysis of MAMW, it is expected that these events occur approximately four times a year, giving a sense of less common, temporary flooding events. Much of the project area is protected against damage from current MAMW levels due to the existing dikes and other water control measures. As sea level rises, increased flooding impacts on the Highway 101 Corridor from MAMW levels can be addressed by temporary measures to minimize risks to life and property, while also allowing time for additional sea level rise adaptation measures to be developed and implemented.

MMMW is a high tide can occur once every month and gives an indication when flooding will impact the corridor on a monthly basis. In assessing the extent of flooding impacts, MMMW is the standard used in multiple vulnerability assessments because it correlates well with the current upper boundary of tidal vegetation on the shoreline. (Laird 2018.) SLR vulnerability assessment

efforts on Humboldt Bay have typically selected the MMMW as a baseline because it provides a standard to judge flooding impacts that are occurring on a more regular and substantial interval and extent.

MHHW tide levels are more routine, occurring nearly every 1-2 days. If sea level has risen to the extent that the corridor experiences flooding from MHHW, then the impacts will likely be well beyond any intermediate measures that can protect highway infrastructure. Further, daily flood impacts would be well beyond the appropriate opportunity to return and authorize an adaption strategy, as daily flooding of the highway would limit service levels to an unacceptable amount.

Caltrans also provided analysis of flooding from 10-year and 100-year storm events with SLR. The 10- and 100-year events have 10% (1 in 10) and 1% (1 in 100) probability of occurring annually, respectively. For purposes of this analysis, Caltrans assumed the storm events occurred at a MAMW tide. Although the coincidence of a storm event and the MAMW tide would rarely occur, it is important to consider such worst-case scenarios in order to fully assess potential hazard risks.. In addition, given that significant storm events are expected to occur more frequently because of climate change, Caltrans believes this approach will incorporate the potential for 10-year and 100-year storm events occurring more frequently. Using modelling of Humboldt Bay Area Plan – Sea Level Rise Vulnerability Assessment (Laird 2018), the Caltrans analysis projects a 10-year storm event to increase the tidal elevations by 0.6 feet and a 100-year storm event by 1.3 feet.

Corridor Sections

The following section looks at the project corridor by specific sections and identifies flooding risks from SLR as they are known for each segment. This information is summarized in the charts below. The project area is a six-mile stretch of highway that has changes in elevation through the corridor, and is protected to varying degrees by the existing dikes and railway berm.

The project corridor also has different levels of development along its length that can affect the development of an adaptation strategy. The southern part of the corridor and the Bracut area include some industrial and commercial development. At the Highway 101/Indianola Cutoff intersection, the highway has industrial and commercial development east of the highway. The rest of the highway corridor is largely undeveloped with open space west of the highway towards the Bay and agricultural lands inland of the highway.

Commission staff specifically requested that Caltrans analyze SLR vulnerability for the entire highway corridor and its various segments. In its SLR report prepared for this project by ICF Consulting, “Caltrans Eureka-Arcata Corridor: Sea Level Rise Vulnerabilities and Adaptation Solutions” (ICF 2019) ([Exhibit 26](#)), Caltrans describes the project corridor in five sections.¹⁹

¹⁹ The project area also includes a sixth segment at the Highway 101 Corridor’s northern end from G Street at PM 85.0 to the intersection of Highway 101 and Highway 255. This highway section ranges from 11 to 13 feet and veers inland. Given the higher elevation of this segment, Caltrans did not include this as a segment for its SLR analysis.

Segment	Post Mile Range	Elevation Range (ft. above NAVD88)	Dike Elevation Range (ft. above NAVD88)
Eureka Slough to the Old Mill	80 - 81.1	9.1 - 14.5	9.4 – 10.8
Old Mill	81.1 - 81.9	9.0 - 11.4	11 – 12
Indianola Cut-off Area	81.9 - 83.2	9.1 - 10.8	10.5 – 10.6
Bracut	83.2 - 83.6	21.9	N/A
Jacoby Creek and Gannon Slough	83.6 - 85	10.8 - 13.0	10.6 – 11.1

(Table 2: Main segments of the 101 Corridor and elevations. (Caltrans/ICF 2019))

The following discussion incorporates the Caltrans/ICF SLR Analysis Report supplemented with the various Vulnerability Assessments referenced above. The Caltrans SLR analysis assumed that dikes and the railroad berm will provide protection to roadway infrastructure unless these protective features are overtopped. In other words, flooding risks begin at the point when sea level rise would cause overtopping at the lowest elevations of the dike or railroad berm rather than at the elevation of the roadway.

1. **Eureka Slough to the Old Mill (PMs 80.0 to 81.1)**. The development proposed in this corridor section includes cable rail medians, tide gate replacements, a median closure at Cole Avenue, improved acceleration and deceleration lanes, and the alterations at Jacobs Avenue /Airport Road including the new third lane. The highway in this section ranges from 9.1 feet to 14.5 feet in elevation and is paralleled on the west by the railroad berm ranging in elevation from 9.4 to 10.8 feet. The railway berm is almost entirely ranked highly vulnerable. (Laird and Powell 2013.) On the east, the highway is protected by the developed area of Jacobs Avenue and the airport, which are in turn protected by dikes that are mostly ranked with low or moderate vulnerability ranging in elevation from 10.9 feet to over 14 feet. One short segment of the dikes is ranked highly vulnerable and is only 10.3 feet to 10.9 in height (2.5-3.5 feet above current MMMW).

This area is at high risk. A minimal amount of SLR will result in overtopping of the railroad berm (with the lowest point at 9.4ft in elevation) and will result in temporary flooding during MAMW events, which could occur before 2030 under the medium risk and extreme risk scenarios. About 1 foot of SLR, which could occur as early as 2030 to 2040 under the medium-high and extreme risk scenarios, could result in overtopping and flooding during MMMW levels. Routine MHHW flooding events could impact this corridor section with approximately 2 to 2.5 feet of SLR, which the OPC medium-high risk scenario projects by about 2050, or mid-2040s in the extreme risk scenario. This road segment may experience flooding during a 10-year and 100-year storm events with minimal SLR, which could also occur before 2030 under the OPC medium-high risk and extreme-risk scenarios.

2. **Old Mill/Brainard (PMs 81.1 to 81.9)**. The development proposed in this corridor section includes the new third lane extending from the Jacobs Avenue half-signal, median closures at

Mid-city Motor World and the former California Redwood Company Mill, improved acceleration and deceleration lanes, tide gate replacements, and guardrail replacements. The highway in this area ranges from 9.0 to 11.4 feet and is accompanied by an existing dike around the old mill which ranges from 11 to 12 feet high. The mill property and surrounding dike provide protection around this stretch of roadway. To the east the section is surrounded largely by undeveloped agricultural land with the development at Mid-city motors.

Table 7. Projected MAMW, MHHW, and MMMW elevations in project area (above NAVD88) under the CCC SLR scenarios, versus Highway 101 Corridor segment thresholds. Note that in MAMW elevations the Eureka Slough to Old Mill segment dike and road will be inundated before 2030.

Year	Low Risk Aversion				Medium-High Risk Aversion				Extreme Risk Aversion			
	SLR Value	MAMW	MMM	MHW	SLR Value	MAMW	MMM	MHW	SLR Value	MAMW	MMM	MHW
2030	0.7	10.4	9.3	8.1	1.0	10.7	9.6	8.4	1.2	10.9	9.8	8.6
2040	1.1	10.8	9.7	8.5	1.6	11.3	10.2	9.0	2.0	11.7	10.6	9.4
2050	1.5	11.2	10.1	8.9	2.3	12.0	10.9	9.7	3.1	12.8	11.7	10.5
2060	1.9	11.6	10.5	9.3	3.1	12.8	11.7	10.5	4.3	14.0	12.9	11.7
2070	2.4	12.1	11.0	9.8	4.0	13.7	12.6	11.4	5.6	15.3	14.2	13.0
2080	2.9	12.6	11.5	10.3	5.1	14.8	13.7	12.5	7.2	16.9	15.8	14.6
2090	3.5	13.2	12.1	10.9	6.2	15.9	14.8	13.6	8.9	18.6	17.5	16.3
2100	4.1	13.8	12.7	11.5	7.6	17.3	16.2	15.0	10.9	20.6	19.5	18.3
2110	4.3	14.0	12.9	11.7	8.0	17.7	16.6	15.4	12.7	22.4	21.3	20.1
2120	4.9	14.6	13.5	12.3	9.4	19.1	18.0	16.8	15.0	24.7	23.6	22.4

	Eureka Slough segment dike low point (9.4 ft. above NAVD88)
	Jacoby Creek and Indianola segments dike low points (10.5 ft)
	Old Mill segment dike low point (11.0 ft)
	Bracut segment road low point (21.9 ft)

(Table 3: Caltrans/ICF Table of vulnerability for different tidal levels and different risk aversions scenarios.)

Tidal inundation from any deficient levees at Fay Slough could threaten the highway from the landward side, depending on rainfall, drainage rates and tidal level. Caltrans analysis projects temporary MAMW flooding (4 times per year) with approximately 1.5 feet of SLR. Under both the OPC medium-high and extreme risk scenarios, this could occur by 2040. About 3.1 feet of SLR can result in MMMW flooding which can be projected by about 2060 for the medium-high risk scenario and the 2050 for the extreme risk scenario. MHHW temporary flooding would occur with approximately 3.5 feet of SLR. Under the OPC medium-high risk scenario this level could occur between 2060 to 2070, and between 2050 and 2060 under the extreme risk scenario. This road segment may experience flooding during a 10-year and 100-year storm events with minimal SLR, which could also occur before 2030 under the OPC medium-high risk and extreme risk scenarios.

3. **Indianola Cut-off Area** (PMs 81.9 to 83.2). The development proposed in this corridor section includes construction of the Indianola Interchange. The highway in this area ranges from 9.1 to 10.8 feet and is paralleled by the railroad berm, ranging in elevation from 10.5 to 10.6 feet. This section of railway berm was rated highly vulnerable. (Laird and Powell 2013.) This section of the corridor will experience temporary MAMW flooding (4 times per year)

with less than 1 foot of SLR, which under both the OPC's medium-high and extreme-risk scenarios could occur as early as 2030. About 2 feet of SLR can result in MMMW flooding which can be projected by 2050 for the OPC's medium-high risk scenario and 2040 for the extreme risk scenario. This section of the corridor will experience temporary MHHW flooding (every 1-2 days) with 3.1 foot of SLR, which under the OPC's medium-high risk scenarios could occur by 2060 or 2050 under the extreme-risk scenario. This road segment may experience flooding during a 10-year and 100-storm year storm events with minimal SLR, which could also occur before 2030 under the OPC's medium-high risk and extreme-risk scenarios.

4. **Bracut (PMs 83.2 to 83.6)**. The development proposed in this corridor section includes improved acceleration and deceleration lanes, the closure of the Bracut median, and tide gate replacements. This area is the highest point within the corridor; the highway itself peaks at 21.9 feet. This area was originally part of a natural ridge, which extended down from the surrounding hillsides to the Bay. The ridge was excavated in 1918 and again in 1955 to provide fill for the current highway prism. This area is high enough to avoid most impacts until the 22nd century. The area is only threatened by SLR associated with the OPC extreme risk scenario, during MAMW events in 2110 and 2120 for MHHW events.
5. **Jacoby Creek and Gannon Slough (PMs 83.6 to 85.0)**. The development proposed in this corridor section includes the southbound Jacoby Creek bridge replacement, the northbound Jacoby Creek Bridge and Gannon Slough Bridge bridge rails replacements, improved acceleration and deceleration lanes, guardrail replacements, cable rail medians, and tide gate replacements. The highway in this area ranges from 10.8 to 13.0 feet and is accompanied by the railroad berm on the west ranging from 10.6 to 11.1 feet. This section of railway berm was rated highly vulnerable. (Laird and Powell 2013.) There are also exposed openings in the railway berm where Jacoby Creek and Gannon Slough drain into the bay. Much of the land to the east is open agricultural land, but dikes exist along the Jacoby Creek and Gannon Slough. Most of these dike sections were ranked highly vulnerable with large sections ranging in elevation from 9.5 feet to 10 feet (1.7 to 2.4 feet above current MMMW). (Laird and Powell 2013.)

The existing Jacoby Creek Bridge is at an elevation of 11.9 feet. Although the southbound Jacoby Creek Bridge will be raised in elevation, the northbound Jacoby Street Bridge will not be raised. Likewise, the bridges over Gannon Slough, which are at 12.1 and 12.8 feet in elevation, will not be raised, but will merely have their rails replaced. Those bridges are discussed further below. Along with the dike low points, this area is at increased risks because of gaps in the dikes/berms for the drainage of Jacoby creek and Gannon slough. Additionally, natural flows from the creeks may back up during a high tide event, causing high water on the east side of the highway.

Using a highway low point of 10.8 feet, the Caltrans analysis projects MAMW flooding would occur with 1.1 feet of SLR. Under both OPC's medium-high and extreme risk scenarios, this could occur by 2040. About 2 feet of SLR can result in MMMW flooding which can be projected by 2050 for the medium-high risk scenario and 2040 for the extreme risk scenario. This section of the corridor will experience temporary MHHW flooding (every 1-2 days) with 3.4 feet of

SLR, which under OPC's medium-high risk scenario would occur between 2060 and 2070 and under the extreme risk scenario could occur in between 2050 and 2060. This road segment may experience flooding during a 10-year and 100-storm year storm events with minimal SLR, which could also occur before 2030 under OPC's medium-high and extreme risk scenarios.

Specific Project Components

The following section looks at flooding risks by specific project component sections.

Jacoby Creek Bridge Replacement. The proposed new bridge has an expected lifespan of 80 years, to 2100. The existing south bound Jacoby Creek Bridge is 11.9 feet. The new proposed bridge replacement will be raised 2.3 feet to a roadway elevation of 13.8 feet and is being designed to allow for the future raising of the bridge slab and alteration of the bridge supports, if such adaptation is authorized in the future, potentially raising the elevation of the deck without completely reconstructing the bridge.²⁰ Under the analysis provided by Caltrans, the bridge replacement would experience temporary flooding events associated with MAMW levels beginning at 4.1 feet of SLR, which is currently projected to occur between 2070 and 2080 under the medium-high risk scenario (20 years before the end of the bridge's anticipated lifespan). (See Caltrans/ICF 2019, pp. 10-12, [Exhibit 26](#).) Again, however, MAMW events are only expected 4 times a year. Under OPC's extreme risk scenario, the same SLR and associated MAMW flooding are not projected to occur until closer to 2060.

Table 3. Projected MAMW, MHHW, and MMMW elevations in project area (ft. above NAVD88) under the CCC risk aversion SLR scenarios, versus critical infrastructure thresholds for the Highway 101 Indianola Interchange and Jacoby Creek Bridge.

Year	Low Risk Aversion (ft.)				Medium-High Risk Aversion (ft.)				Extreme Risk Aversion (ft.)			
	SLR Value	MAMW	MMMW	MHHW	SLR Value	MAMW	MMMW	MHHW	SLR Value	MAMW	MMMW	MHHW
2030	0.7	10.4	9.3	8.1	1.0	10.7	9.6	8.4	1.2	10.9	9.8	8.6
2040	1.1	10.8	9.7	8.5	1.6	11.3	10.2	9.0	2.0	11.7	10.6	9.4
2050	1.5	11.2	10.1	8.9	2.3	12.0	10.9	9.7	3.1	12.8	11.7	10.5
2060	1.9	11.6	10.5	9.3	3.1	12.8	11.7	10.5	4.3	14.0	12.9	11.7
2070	2.4	12.1	11.0	9.8	4.0	13.7	12.6	11.4	5.6	15.3	14.2	13.0
2080	2.9	12.6	11.5	10.3	5.1	14.8	13.7	12.5	7.2	16.9	15.8	14.6
2090	3.5	13.2	12.1	10.9	6.2	15.9	14.8	13.6	8.9	18.6	17.5	16.3
2100	4.1	13.8	12.7	11.5	7.6	17.3	16.2	15.0	10.9	20.6	19.5	18.3
2110	4.3	14.0	12.9	11.7	8.0	17.7	16.6	15.4	12.7	22.4	21.3	20.1
2120	4.9	14.6	13.5	12.3	9.4	19.1	18.0	16.8	15.0	24.7	23.6	22.4

	Indianola Interchange design elevation (12 ft. NAVD88)
	Jacoby Creek Bridge design elevation (13.8 ft. NAVD88)
	Assets' design lifetime

(Table 4: Caltrans/ICF Table of vulnerability of major project components at different tidal levels and different risk aversions scenarios.)

²⁰ Although the bridge deck is elevated to 13.8 feet, the soffit bottom of the bridge will be much lower and essentially the same as the current bridge at 11.9 feet. Caltrans states that the bridge is designed to withstand flooding below the bridge deck and maintain an open highway in most events.

Based on the analysis provided by Caltrans, the bridge replacement would experience temporary flooding events associated with MMMW levels (once a month) at about five feet of SLR, which is currently projected to occur between 2080 and 2090 under the OPC's medium-high risk scenario. Under the extreme risk scenario, the same SLR and associated MMMW flooding are projected to occur between 2070 and 2080. The bridge replacement would experience temporary flooding events associated with MHHW levels (every other day) beginning at 7.39 feet of SLR, which is currently projected to occur between 2090 and 2100 under the medium-high risk scenario (at the end of the bridge's anticipated lifespan). Under the extreme risk scenario, the same SLR and associated MHHW flooding are projected to occur between 2080 and 2090.

The new bridge will also be at risk from temporary flooding from storm surges during significant storm events. (See Caltrans/ICF 2019, p. 14. [Exhibit 26](#).) Using modelling of Humboldt Bay Area Plan – Sea Level Rise Vulnerability Assessment (Laird 2018), the Caltrans analysis projects a 10-year storm event to increase the tidal elevations by 0.6 feet and 1.3 feet in a 100-year storm event. With those projections, a 100-year storm event could temporarily flood the new bridge with 2.8 feet of SLR, which the OPC's guidance projects in 2050-2060 under the medium-high risk scenario and between 2040 and 2050 extreme risk scenario. A 10-year storm event could occur with 3.5 feet of SLR, which the OPC's guidance projects between 2060 and 2070 under the medium-high risk scenario and between 2050 and 2060 in the extreme risk scenarios.

Indianola Interchange. The new interchange has an anticipated lifespan of 80 years, to 2100. The new interchange will raise the elevation of the highway from its current 9.6 feet to almost 30 feet at the bridge level. Indianola Cutoff, the road that will pass under Highway 101 at the interchange, will be raised about 2 feet to approximately 12 feet in elevation. As stated above, Caltrans has designed the interchange such that it can be raised higher in response to future SLR or adapted to new configurations of the highway if those long-term strategies are adopted for the corridor in the future. The Indianola Cutoff interchange would experience temporary flooding events from MAMW events (4 times a year) with 2.3 feet of SLR. (See Caltrans/ICF 2019, pp. 10-12, [Exhibit 26](#).) Such SLR is projected to occur by 2050 under the medium-high risk scenario and between 2040 and 2050 under the extreme risk scenario. In either case, temporary flooding events from MAMW events (4 times a year) with 2.3 feet of SLR would occur approximately 50 years before the end of the design life of the structure.

Based on the analysis provided by Caltrans, the interchange would experience temporary flooding events associated with MMMW levels (once a month) at about four feet of SLR, which is currently projected to occur between 2070 and 2080 under the medium-high risk scenario. Under the extreme risk scenario, the same SLR and associated MMMW flooding are projected to occur between 2060 and 2070.

MHHW flooding (every other day) could occur with 4.6 feet of SLR, which could occur between 2070 and 2080 under the medium-high risk scenario, or between 2060 and 2070 in the extreme risk scenario.

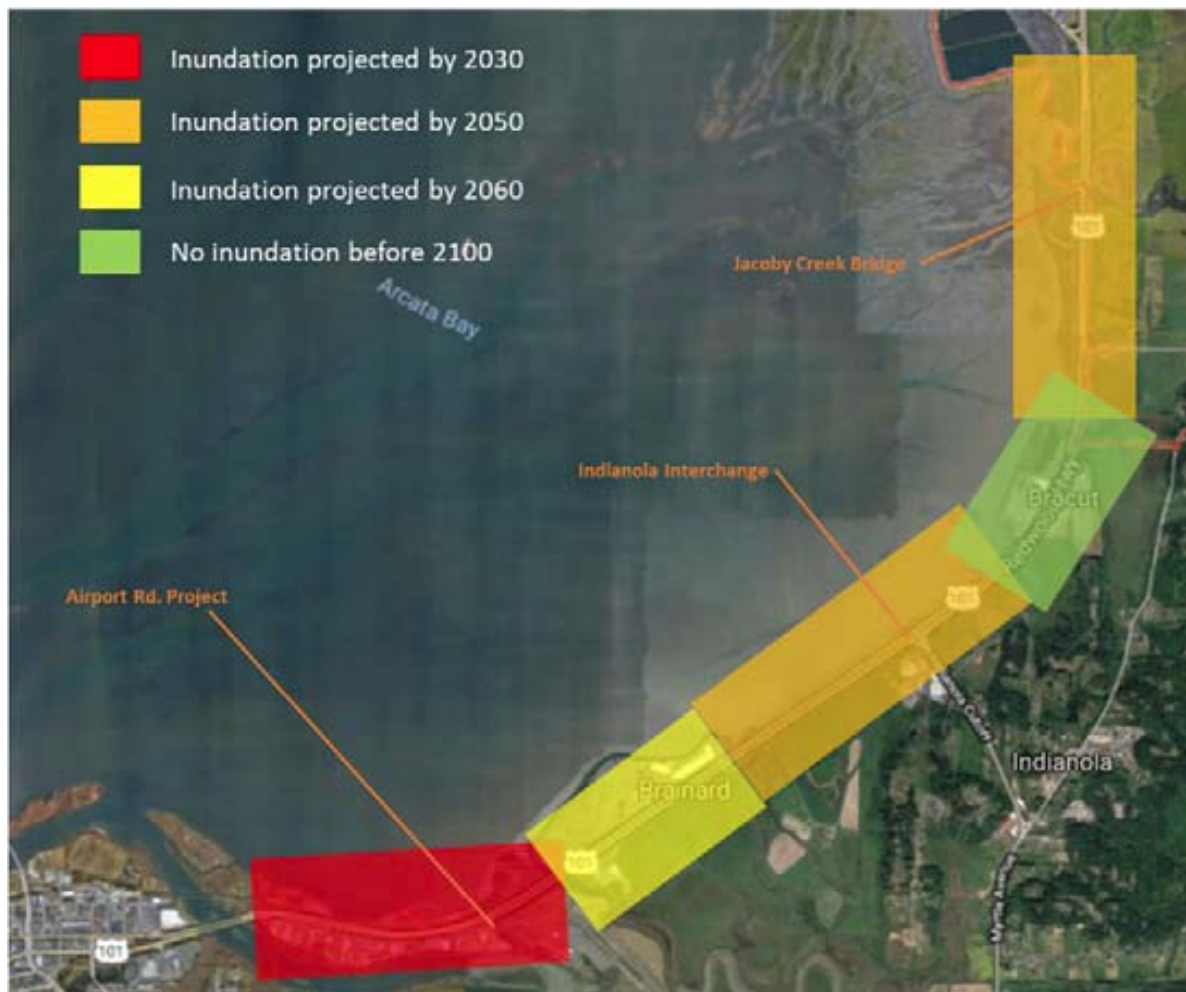
The new interchange will also be at risk from temporary flooding during 10-year storm events with 1.7 feet of SLR, which the OPC's guidance projects between 2040 and 2050 under the medium-high risk scenario, and 2030 and 2040 in the extreme risk scenario. (See Caltrans/ICF 2019, p. 14. [Exhibit 26](#)). The new interchange will also be at risk from temporary flooding in a 100-year storm event with 1 foot of SLR, which is currently projected by 2030-2040 under both the medium-high risk and extreme risk scenarios.

Tide Gate Replacements. The tide gate replacements are expected to have a design life of 25 years. It is expected that at that time, the gates will have to be replaced along with the concrete headwalls and other culvert infrastructure. The tide gates are currently, and necessarily, already below MAMW. However, rising tides will increasingly prevent the gates from opening, which will prevent the gates from allowing upstream freshwater areas to drain, and will increase the frequency and duration of local flooding events. Modifying the tide gates will require a coastal development permit and the Commission will review the proposed modifications for consistency with Section 30253.

Bridge Rails. This component of the project will add new bridge rails to existing northbound (NB) Jacoby Creek and NB Gannon Slough bridges. This project component is essentially an improvement to the existing highway corridor and will be at that elevation. The proposed bridge railings are within the Jacoby Creek and Gannon Slough section of the corridor where MAMW flooding is projected to occur with 1.1 feet of SLR under both the medium-high and extreme risk scenarios by 2040. About 2 feet of SLR would result in MMMW flooding by the 2050s for the medium-high risk scenario and the 2040s for the extreme risk scenario. The Jacoby Creek and Gannon Slough bridges would experience temporary MHHW flooding (every other day) with 3.4 feet of SLR in 2060-2070 under the medium-high risk scenarios and in 2050-2060 under the extreme risk scenarios. Because these bridge rails will be connected to an existing bridge, the bridge rails will not be raised or designed to accommodate SLR at this time. The bridge rails also do not have a specified design life provided by Caltrans but are considered part of the highway infrastructure that can be maintained or replaced indefinitely.

Deceleration/Acceleration Lanes. This component of the project will extend existing highway on-ramps and off-ramps. The lanes are therefore essentially an improvement to the existing roadway and thus will be constructed essentially at the same elevations as the existing roadway. The extension of the lanes occurs at Post miles 80.2, 81.3, 81.8, 83.4, and 83.9. The proposed deceleration/acceleration lanes are proposed in various sections of the corridor, including within the lowest lying Eureka Slough to the Old Mill section, which is the most vulnerable to SLR. The deceleration/acceleration lanes within this section would be affected by a minimal amount of SLR during MAMW events, which would occur before 2030 under the medium risk and extreme risk scenarios. About 1 foot of SLR would result in MMMW flooding of these deceleration/acceleration lanes by 2030 under the medium-high risk and extreme risk scenarios. MHHW flooding events would impact the deceleration/acceleration lanes with approximately 2 to 2.5 feet of SLR by the 2050's under the medium-high risk scenario and by the 2040s in the extreme risk scenario. The deceleration/acceleration lanes within the other sections of the corridor would experience such flooding some years later. The lanes also do not have a specified design life provided by Caltrans but are considered part of the highway infrastructure that can be maintained or replaced indefinitely.

Airport Road Improvements. Like the acceleration and deceleration lanes, this project component, which consists of road widening, a half-light installation, and the addition of a third lane to the highway, will make improvements to the existing highway and will be constructed at the same elevation. The Airport Road improvements are located within the Eureka Slough to the Old Mill section of the corridor. As with the corridor section as a whole, a minimal amount of SLR will result in temporary flooding of the Airport Road improvements during MAMW events, which would occur before 2030 under the OPC's medium-high risk and extreme risk scenarios. About 1 foot of SLR would result in MMMW flooding of the Airport Road improvements by 2030 under the OPC's medium-high risk and extreme-risk scenarios. MHHW flooding events would impact the Airport Road improvements with approximately 2 to 2.5 feet of SLR by the 2050's under the OPC's medium-high risk scenario and by the 2040s in the extreme-risk scenario. The lanes of the Airport Road improvements do not have a specified design life provided by Caltrans but are considered part of the highway infrastructure that can be maintained or replaced indefinitely.



(Figure 2 – Projected Inundation Timelines for Highway 101 Corridor Segments using CCC Medium-high risk aversion scenarios and projected MMMW flooding. (Caltrans/ICF 2019).

Consistency with Section 30253

Evaluating whether proposed development minimizes risks of flood hazards in relation to SLR usually involves examining projected SLR over the design life or anticipated duration of the development, after which one can expect that the development would either be replaced, redeveloped at a different location, or removed. The exact amount of SLR that will actually occur over the design life or duration of the proposed development cannot be projected with certainty. While uncertainty exists, the worsening direction of sea level change is clear and it is critical to assess sea level rise vulnerabilities over the expected duration of the development being approved, especially when the proposals involve critical infrastructure investments aimed at serving the public, such as a principal highway providing access up and down the coast.

The following discussion examines the flood hazard risk of each element of the proposed development in relation to OPC's medium-high risk and high-risk SLR scenarios, per OPC and Commission guidance. Given the Highway 101 corridor's location mostly adjacent or in very close proximity to the shoreline of Humboldt Bay along its entire length, it is particularly useful to examine flood hazards in relation to tide levels. Flooding events associated with MMMW provide a clear metric of flood hazard because MMMW reflects regular monthly flooding. Flooding events associated with MHHW represent nearly every day flooding, a degree of flooding that would render most facilities like a highway unusable.

The replacement south bound Jacoby Creek bridge will involve replacing and raising the bridge deck. The replacement bridge has a design life of 80 years to 2100. Installed at the elevation currently proposed, the Jacoby Creek bridge would not experience flooding events associated with MMMW (once a month) until sometime between 2080 and 2090 under the medium high risk scenario and sometime between 2070 and 2080 under the extreme risk scenario. Flooding events associated with MHHW (every other day) would not occur until sometime between 2090 and 2100 under the medium-high risk scenario and sometime between 2080 and 2090 under the high-risk scenario. Thus, the development currently proposed for replacement of the south bound Jacoby Creek Bridge with a roadway deck elevations of 13.7 feet and a soffit elevation of approximately 12 feet, would not completely avoid projected flooding from SLR (particularly during extreme tides or storm events) under the medium-high or extreme risk scenarios over the entire design life of the bridge.

The Indianola Interchange will elevate the Highway 101 traffic lanes over the end of Indianola Cutoff and the Cutoff itself below the highway lanes will be raised in elevation. The interchange has a design life of 80 years to 2100. Constructed as proposed, the Indianola Interchange would not experience flooding events associated with MMMW (once a month) until sometime between 2070 and 2080 under the OPC medium-high risk scenario and sometime between 2060 and 2070 under the extreme-risk scenario. Flooding events associated with MHHW (every other day) would not occur until sometime between 2070 and 2080 under the medium risk scenario and sometime between 2060 and 2070 under the high risk scenario. Although the bridge deck for the highway interchange will be raised 20 feet to over 30 feet in elevation, the interchange itself (the Cut Off Road and merging lanes) will remain at approximately 12 feet high. Thus, the development currently proposed for construction of the interchange with the surface of Indianola Cut off Road would not completely avoid projected flooding from SLR under both the OPC medium- or high-risk scenarios over the entire design life of the interchange.

As discussed above, both the bridge design and the interchange design would allow for the future elevation of the structure to higher elevations sufficient to avoid flooding of the bridge deck under any of these scenarios through the end of the design life of the bridge in 2100. However, the development associated with the future raising of either structure is not part of the current CDP application, and if ultimately chosen as a future adaptation measure, would require an amendment to this CDP. Though the future adaptation measures are yet to be decided, as conditioned, the approved structures do not preclude the use of alternate adaptation strategies in the future. Also, coordinating the short-term implementation of these critical safety improvements with the long-term corridor solution is feasible because the approved project, as conditioned, would not foreclose the implementation of alternate SLR adaptation measures in the future.

Regarding the other proposed improvements, the proposed replacement of railings at the Gannon Slough Bridge and along the north bound Jacoby Creek Bridge does not involve replacing either of the bridge decks, just the railings. The new acceleration and deceleration lanes that will connect the highway with intersecting roads at various points along the Highway 101 Corridor will flank and merge with the existing roadway and therefore must be constructed at the same elevation as the existing roadway to function. Similarly, the new traffic lights and lanes at the Airport Road intersection that will be added to the existing intersection also must be constructed at the same elevation of these existing road improvements to function. Finally, the tide gates to be replaced will be replaced without reconstruction of the exiting headwalls and culverts to which the tide gates attach. Caltrans indicates that the replacement tide gates have a design life of approximately 25 years, but the bridge railings, acceleration and deceleration lanes, and Airport Road intersection improvements do not have a specified design life and are simply considered part of the highway infrastructure that can be maintained or replaced indefinitely.

As discussed above, most segments of the existing low-lying roadway where these roadway improvements are proposed are projected to experience flooding resulting from SLR in the coming decades if no modifications are made to either the roadways or the surrounding dikes and railroad berm located on other properties that provide some protection to the roadway from inundation. The most vulnerable section, the Eureka Slough to the Old Mill is projected to experience MMMW flooding as early as the 2030 to 2040 time frame under both the OPC medium-high risk and extreme risk scenarios and MHHW flooding between 2060-2070 under the medium-high risk scenario and by 2050-2060 under the extreme risk scenario. However, as discussed below, it is MAMW flooding (4x a year) that will trigger the need for a Phased Adaptation Plan and CDP amendment application. Although the Phased Adaptation Plan is required no later than December 31, 2030, the Phased Adaptation Plan and CDP amendment application will be required earlier if MAMW flooding occurs on any travel portion of the Highway 101 Corridor prior to that time.

While the above analysis indicates that the proposed development will minimize flood hazards over the short term. The proposed Indianola Interchange could experience unacceptable (that is MMMW) flooding resulting from SLR within its design lifespan (under the extreme risk scenario), the proposed Jacoby Creek Bridge could experience unacceptable flooding resulting from SLR within its design lifespan (under the extreme risk scenario), and the Jacobs

Avenue/Airport Road intersection improvements and several of the acceleration and deceleration lane extensions could experience unacceptable flooding by the 2030s based on current projections. All of these time frames are within the design life or duration period of the specific elements proposed as part of the project. Thus, as flooding related to SLR would affect the specific project elements before the end of their design life or expected duration, the Commission finds that the proposed project does not ensure consistency with the Coastal Act hazard and public access policies through its design life of 2100. Therefore, the Commission finds that this CDP action will authorize the proposed development with limitations requiring the submittal of a CDP amendment application prior to the time impacts inconsistent with the Coastal Act can occur. That permit amendment application must propose to modify, relocate, or remove all or portions of the development authorized under the permit and ensure consistency with the flood hazard requirements of Section 30253 and related policies of the Coastal Act.

Therefore, to ensure that these longer term flood risks are addressed in a manner consistent with Section 30253 of the Coastal Act, the Commission imposes **Special Conditions 1 and 2**. These special conditions require the Caltrans to undertake SLR adaptation planning in the short term to inform decisions about what changes to the approved highway improvements should be made in the future to minimize the risks of flood hazard in the longer term. In addition, the special conditions require Caltrans, prior to the time impacts inconsistent with the Coastal Act can occur, to apply for an amendment to CDP 1-18-1078 to obtain authorization for, and implement, a long term solution that integrates the adaptation for the development authorized by this CDP with the adaptation for the corridor as a whole. Though the future adaptation measures are yet to be decided, as conditioned, the approved structures do not preclude the use of alternate adaptation strategies in the future. Also, coordinating the short term implementation of these critical safety improvements with the long-term corridor solution is feasible because the approved project, as conditioned, would not foreclose the implementation of alternate SLR adaptation measures in the future.

SLR Special Condition 1 and Special Condition 2

Special Condition 2(A) requires Caltrans to develop and submit a full Phased Adaptation Plan (PAP) for the Highway 101 Corridor that identifies a suite of strategies necessary for retaining, relocating, removing or otherwise adapting the development authorized by CDP 1-18-1078 as necessary to maintain safety from flooding and other coastal hazards in order to minimize risk and assure stability and structural integrity in the long-term (at least through 2100, the design life of the bridge and interchange). The PAP must include an updated analysis of current and future coastal hazards in the Highway 101 Corridor reflecting current conditions in 2030 and utilizing the biennial reports required by Special Condition 1 discussed below. The PAP SLR analysis must evaluate SLR through at least 2100, the design life of the Indianola Interchange and Jacoby Creek Bridge, considering the OPC medium-high risk aversion and extreme risk aversion scenarios, and based on the best available science at the time of plan preparation. The PAP must also include an adaptation alternatives analysis that will enable the Commission to evaluate the feasibility and Coastal Act consistency of feasible alternatives to the development approved under CDP 1-18-1078. The alternatives to be evaluated include, but are not limited to accommodation strategies (viaducts, overpasses, etc.), protection measures (dikes, living shorelines, or other natural or engineered features), and relocation of the development to an area safe from flooding and other coastal hazards. The PAP must also include a timetable for

implementation of the PAP based on updated projections of SLR and anticipated impacts from coastal hazards. In addition, the timetable must take into consideration expected timeframes for any necessary land acquisition, planning, permitting, design, and construction.

Caltrans has begun a long-term planning effort to study SLR adaptation strategies for the corridor and working to coordinate with the local governments, the Commission, and other stakeholders. Besides the highway, there exist other forms of critical public and quasi-public infrastructure, including the railroad currently under the responsibility of the North Coast Railroad Authority, the partially constructed Coastal Trail, and PG&E gas lines. There are also existing commercial and industrial developed areas in the corridor vicinity. All of these facilities are threatened by SLR. The development of these adaptation strategies for the individual highway components and the highway corridor as a whole needs to be coordinated with the other public and semi-public entities owning the other threatened public infrastructure, and in coordination with local governments making land-use planning decisions, including the adoption of Local Coastal Program updates. In short, adaptation strategies need to be developed to protect or adapt these facilities in tandem with other efforts and the development of these various strategies needs to be integrated into a longer term adaptation vision and plan for the area. At the same time, Caltrans must plan an integral role in that process. Special Condition 2(A) therefore requires Caltrans to coordinate with the local governments and other relevant entities in preparation of the plan.

Special Condition 2(A) requires the plan to be submitted no later than December 31, 2030. As our understanding of sea level rise continues to evolve, it is possible that sea level rise projections based on best available science will continue to change as well. SLR could increase more slowly than currently projected, or faster than currently projected. The Special Condition requires that the plan to be submitted within one year of the time that flooding closes any travel portion of the Highway 101 Corridor four times a year over any 12-month period, should that occur prior to December 31, 2030. These flooding conditions would likely occur when the four king tides of the year (MAMW) are at a high enough elevation to cause temporary closures of the highway. At this point, the flooding would result in at least an inconvenience to travelers on the highway, but the interruption in travel and risks to the public are generally predictable and manageable.

Moreover, in order to ensure the PAP is developed and the CDP amendment is authorized prior to the time impacts inconsistent with the Coastal Act can occur, Special Condition 1 and 2 both require Caltrans to submit both a PAP and a permit amendment application to the Commission within one year of when flooding causes a closure of any travel portion of the highway four times within any 12-month period. (This is the same level of flooding that would trigger submittal of the PAP under Part A of Special Condition 2 described above). That permit amendment must propose to either modify, relocate, or remove portions or all of the development authorized under the permit to ensure consistency with the flood hazard requirements of Section 30253 and related policies of the Coastal Act. In the event that the four-times in 12-months trigger occurs before Caltrans has finalized the PAP in 2030, Caltrans will have to complete the PAP and submit it with the required CDP amendment application. In the event that the four-times in 12-months trigger occurs after Caltrans has finalized the PAP in 2030, Caltrans will have to update the PAP to current conditions and submit the updated version with the amendment application.

To inform the preparation and development of the PAP and to track the progress of SLR and the occurrence of flooding events to ensure timely submittal of the PAP and permit amendment, Special Condition 1 requires Caltrans to undertake SLR monitoring and reporting for the Highway 101 corridor. First, the condition requires submittal of a “Baseline Report” by May 1, 2020 that includes essential information related to existing tidal water elevations. Second, Special Condition 1 requires Caltrans to submit biennial reports by May 1, 2022 and every two years thereafter. The biennial reports shall include (1) the water elevation metrics in the Baseline Report and how those elevations have changed in the two-year period, (2) documentation and descriptions of any temporary or ongoing flooding events, erosion, or other coastal hazards impacts to the highway infrastructure in the Highway 101 Corridor that occurred during the reporting term, as well as the conditions causing the impacts (*e.g.*, King Tides, storms, overtopping and/or breaching of dikes, tide gate failures, groundwater and/or drainage issues, or any combinations of the same), (3) descriptions of any actions that were taken to address temporary hazards impacts during the reporting period (*e.g.*, road closures/reroutes; repairs to damaged infrastructure, etc.), as well as any repair and maintenance activities performed by the Caltrans or by other entities to repair dikes or berms that protect the highway corridor from flooding impacts within the Highway 101 Corridor, and, (4) documentation of the progress Caltrans has made towards developing the final Phased Adaptation Plan required by Special Condition 2 described below. Special Condition 1 also requires Caltrans to submit documentation of every instance when any travel portion of the highway is closed due to flooding as part of the biennial reports and more frequently once such flood events start occurring more than once a year.

Finally, considering the aforementioned hazards, the Commission also attaches **Special Condition 23**, which requires the Permittee to assume the risks of flooding and geologic hazards to the property and waive any claim of liability on the part of the Commission. Given that the Permittee has chosen to implement the project despite flooding and geologic risks, the Permittee must assume the risks. Special Condition 23 notifies the Permittee that the Commission is not liable for damage as a result of approving the permit for development. The condition also requires the Permittee to indemnify the Commission in the event that third parties bring an action against the Commission as a result of the failure of the development to withstand the hazards.

Conclusion

Special Conditions 1 and 2 require the Permittee to: (1) prepare a SLR adaptation plan with an analysis of alternative adaptation measures no later than December 31, 2030 and prior to the time significant flooding impacts occur; and (2) submit a CDP amendment application that includes an evaluation of adaptation alternatives, including alternatives considered within the Phased Adaptation Plan, and that proposes to retain, relocate or remove all or portions of the development authorized by this CDP. In order to ensure the PAP is developed and the CDP amendment is authorized prior to the time impacts inconsistent with the Coastal Act can occur, Special Conditions 1 and 2 require Caltrans to both submit a PAP and a permit amendment application to the Commission within one year of when flooding causes a closure of any travel portion of the highway four times within any 12-month period. In the event that the four-times in 12-months trigger occurs before Caltrans has finalized the PAP in 2030, Caltrans will have to complete the PAP and submit it with the required CDP amendment application.

Together, Special Condition 1 and Special Condition 2 will require Caltrans to monitor SLR and SLR flooding impacts to the corridor while it is actively developing an adaptation strategy for the corridor that can protect the highway corridor for the long-term as the impacts of SLR likely increase. Special Conditions 1 and 2 further ensure that the approved critical safety improvements that are needed in the short term are coordinated with the long-term solution for the corridor before flooding has begun to regularly impact the highway corridor. Though the future adaptation measures are yet to be decided, as conditioned, the approved structures do not preclude the use of alternate adaptation strategies in the future. As conditioned, the proposed development will minimize flooding risk and protect coastal resources consistent with the requirements of the Coastal Act. Therefore, for all of the above reasons, the Commission finds that the proposed project, as conditioned, will minimize risk to life and property from hazards, assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the surrounding area consistent with section 30253(a) of the Coastal Act.

G. Wetland Fill & Protection of Coastal Waters & Marine Resources

Section 30230 of the Coastal Act states:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231 of the Coastal Act states:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with the surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233 of the Coastal Act provides, in applicable part, as follows (emphasis added):

- (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
- (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*

- (2) *Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
 - (3) *In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
 - (4) *Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.* [emphasis added]
 - (5) *Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
 - (6) *Restoration purposes.*
 - (7) *Nature study, aquaculture, or similar resource dependent activities. . . .*
- (c) *In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. . . .*

Coastal Act Section 30108.2 defines “fill” as “earth or any other substance or material, including pilings placed for the purposes of erecting structures thereon, placed in a submerged area.” The Commission has long considered grading, excavating, and other ground-disturbing activities in coastal wetlands and estuaries to be a form of dredging.²¹

Wetland delineation field investigations for the subject project were performed in 2002, 2005, and 2006 using both the Corps of Engineers and Coastal Commission wetland definitions. According to Caltrans’ current project estimates, using the Coastal Act wetlands definition, the proposed project would result in 10.25 acres of permanent wetland fill. These impacts result from: replacement of the southbound Jacoby Creek Bridge; construction of the Indianola interchange; extension of acceleration and deceleration lanes; and construction of a (half) signalized intersection at Airport Road. In addition, Caltrans estimates that there will be about 4.2 acres of temporary impacts from dredging and fill, most of which are the result of grading associated with paving. Except for the portion in Jacoby Creek (0.10), all of these wetland impacts are in highway medians or roadway shoulders. For plans depicting the wetland impacts of the proposed project, see [Exhibit 33](#).

Project Component	Project Period	Wetland Type / Cowardin Code	Temporary Wetland Impacts (acres)	Permanent Wetland Impacts (acres)
<i>Jacoby Creek Bridge Replacement</i>	2020-2024	Palustrine Emergent Persistent / PEM1 (.29) & Estuarine Intertidal Emergent / E2EM (.10)	0.42	0.39

²¹ E.g., CDPs [1-06-036](#), [1-08-011](#), [1-08-012](#), [1-08-020](#), [1-09-020](#), [1-09-030](#), and [1-10-032](#).

<i>Guard Rails and Median Barriers</i>	2020-2021	Palustrine Emergent Persistent / PEM1	1.00	1.60
<i>Acceleration / Deceleration Lanes & Lighting</i>	2020-2022	Palustrine Emergent Persistent / PEM1	1.20	0.96
<i>Airport Road Improvements</i>	2021-2026	Palustrine Emergent Persistent / PEM1	1.48	0.87
<i>Indianola Interchange</i>	2021-2026	Palustrine Emergent Persistent / PEM1	0.69	6.51
Totals			4.79	10.25

(Table 4: Eureka/Arcata Corridor Project Wetland Impacts (CCA Criteria)).

The Coastal Act recognizes the importance and scarcity of wetlands. Section 30233 of the Coastal Act limits the fill of wetlands to specific, enumerated uses, and also requires that any project which results in fill of wetlands (a) be the least environmentally damaging feasible alternative, and (b) provide feasible mitigation measures to minimize adverse environmental effects. A project must pass all three tests to be authorized pursuant to Section 30233(a). In addition, Coastal Act Sections 30230, 30231, and 30233 together require that marine resources, the biological productivity and quality of coastal waters, and the functional capacity of wetlands and estuaries be maintained and enhanced.

Allowable Use

As mentioned above, any proposed filling, diking, or dredging in wetlands must be for one of the seven allowable uses listed under Section 30233(a).²² Section 30233(a)(4) authorizes wetland fill for: “Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.” To qualify as an incidental public service purpose, the fill of coastal waters being undertaken must demonstrate that: (a) it provides a “public service” insofar as it confers benefits to the public, either at large, or to those served by the public entity; and (b) is “incidental,” within the meaning of that term as it is used in the Coastal Act (i.e. is ancillary and appurtenant to an existing public service purpose).

The purpose of the Corridor Improvement Project is to improve traffic safety by eliminating potential traffic conflicts at the uncontrolled intersections to reduce the number and severity of collisions. The potential for collisions occurs when vehicles turn left across Route 101, starting from either a crossroad or from Route 101. Bicyclists also use the median crossings to access or leave the Highway 101 shoulders and are exposed to potential collisions with turning cars and highway traffic. Collision rates at the intersections exceed the statewide averages for similar highway intersections and the number of collisions was statistically significant. Between 1997-2002 out of 85 total collisions, five were fatal and 44 caused injury. (See generally, FEIR Excerpt on Safety of 101 Corridor, [Exhibit 35](#).) The collision rate, and the fatal plus injury

²² This limitation does not apply to qualified repair and maintenance of existing development and therefore would not be necessary to demonstrate for the repair of the tide gates, as discussed above in Section IV.E. However, as currently proposed, the tide gate replacements no longer has any wetland impacts and is not discussed here.

collision rate, exceeded the statewide average at all of the public median locations (Cole Avenue, Airport Road, Indianola Cutoff, and Bayside Cutoff) and at one of three private access locations (Mid-City Motor World). ([Exhibit 20.](#))

In May 2002, due to the increasing frequency of injury and fatal collisions, Caltrans formally established the Eureka–Arcata “Safety Corridor,” which it considered to be an interim solution/safety enhancement to reduce the hazards. This Safety Corridor included doubling fines for speeding violations, instituting headlights-on requirements and reduced speed limits (from 60-mph to 50-mph), and installing warning signs, actual speed traveled signs, and flashing light warnings at intersections. Ultimately, however, Caltrans concluded that even though the Safety Corridor enhanced safety overall, the possibility of severe collisions from left turn movements remained and collision rates above statewide averages continued to occur at two of the intersections: Mid-City Motor World and Indianola Cutoff. Caltrans collected accident data from 2002-2008 that still showed significant collision rates over state averages, and that over 70 percent of the collisions involved cross-median movements. ([Exhibit 35.](#)) The problem of left turns across traffic also leads to substantial additional traffic issues and back-ups, which in turn increases the problem of collisions as drivers rush to make turns across traffic. Caltrans estimates that traffic on the corridor will continue to increase, further worsening the collision issue if it is not remedied.

The project aims to maintain the structural safety of the highway by rehabilitating aging infrastructure to current design standards or replace deteriorating infrastructure that have passed their theoretical design life. These infrastructure replacement improvements include replacing the 1920s southbound Jacoby Creek bridge, which has exceeded its design lifespan, replacing tide gates installed in the 1950s, adding new bridge rails to the northbound Jacoby Creek and Gannon Slough bridges, and improving other elements of the roadway to current standards.

The proposed fill in wetlands to make the highway infrastructure improvements is allowable under Section 30233(a)(4) of the Coastal Act because the fill is for an “incidental public service purpose.” First, the proposed fill is being undertaken by a public agency to serve the public, and therefore has a public service purpose. Secondly, the public safety purpose is incidental to the primary transportation purpose of the existing highway.

The Commission has determined that the fill for certain highway safety improvement projects that did not increase vehicular capacity could be considered an “incidental public service” pursuant to the requirements of Coastal Act Section 30233(a)(4). These actions have included road widening, road realignments, and bridge replacements.²³ That such highway safety improvements can be considered for incidental public service purposes under section 30233(a)(4) is supported by the Commission’s 1981 statewide interpretive guidelines (“Statewide Interpretive Guidelines for Wetlands and Other Wet Environmentally Sensitive Habitat Areas” (hereinafter, the “Guidelines”). The Guidelines analyze the allowable uses in wetlands under Section 30233 including the provision regarding “incidental public service

²³ See e.g., CDP 1-07-038, Alton Interchange; CDP 1-07-013, Mad River Bridge Replacement; CDP 1-90-295, Highway 1 Widening and Realignment; CC-007-95 Route 150 Realignment and Bridge Replacements; CC-074-05, Highway 1 Ten Mile River Bridge.

purposes.” In a footnote to that definition (no. 3) the Guidelines state: “When no other alternative exists, and when consistent with the other provision of this section, limited expansion of roadbeds and bridges necessary to maintain existing traffic capacity may be permitted.” This interpretation was upheld by the Court of Appeal in *Bolsa Chica Land Trust et al. v. Superior Court* (“*Bolsa Chica*”) (1999) 71 Cal.App.4th 493, 516, which agreed with Commission’s interpretation in the Guidelines and the footnote definition.

The proposed project consists of safety improvements within the existing highway corridor, including interchange improvements, the replacement of an aging deteriorated bridge and other deteriorating infrastructure, and the extension of acceleration and deceleration lanes are highway safety improvements. These highway safety improvements also do not increase the overall highway service capacity or expand the highway to areas not already served by the existing system. The project includes the extension of existing merging lanes onto and off the highway to meet current safety standards, and the addition of a third lane for a short stretch related to the installation of a half-signal. However, no new highway lanes through the corridor are being added. The interchange would add new merging lanes as well, which will allow a safer entry and exit point on the highway at that location, but would still maintain the two-lane nature of the highway and not expand the highway’s capacity. Although the project states that traffic in the corridor is likely to increase as the population of the region continues to grow, the project is not a roadway expansion intended to accommodate future traffic of new development projects in the area.

By design, the proposed development will make the turning movements to and from Highway 101 to Airport Road and Indianola Cutoff far safer with the reconstruction of these intersections into one regulated by a half-light at Airport and an interchange at Indianola Cutoff. A secondary result of these safety improvements will be to increase the total number of turning vehicles that can be accommodated at these intersections at any given time during periods of heavy traffic use. However, the Commission agrees with Caltrans that, in this situation, it would not be possible in this location to implement needed safety improvements in a manner that would have no effects on turning movements. Given that the design of the intersection is driven by safety needs, combined with the fact that the overall number of lanes is not being increased on Route 101, the Commission finds that the proposed project would not increase overall highway capacity and the fill is for an incidental public service purpose *necessary to safely maintain existing capacity*.

As discussed in the Alternatives Analysis section below, the Commission also finds that the proposed development is consistent with the second test of Section 30233(a) because there is no feasible less environmentally damaging alternative to the proposed project as conditioned. As discussed below, the Commission finds that there is no feasible less environmentally damaging alternative to the proposed project as conditioned because the other identified alternatives result in more wetland fill or fail to accomplish the necessary safety improvements in a manner that maximizes safe public access to and along the coast.

Therefore, the Commission finds here that for the reasons discussed above, the wetland fill for the proposed project is for an incidental public service purpose, and thus, is an allowable use pursuant to Section 30233(a)(4) of the Coastal Act.

Alternatives Analysis

For projects involving diking, dredging, and filling of wetlands, the Commission must ensure that the proposed project has no feasible less environmentally damaging alternative consistent with Section 30233 of the Coastal Act. Coastal Act Section 30108 defines “feasible” as “...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors.”

A number of alternatives to the proposed project (known as Modified Alternative 3A) have been identified in the FEIR for the project and during the Commission’s consideration of the consistency certification for the project in 2013. These alternatives include (a) the “no project” alternative, and (b) several alternatives that would involve different approaches to closing or upgrading the six intersections along the Highway 101 Corridor and relating to the safety of left turn movements to and from the roadway. The latter intersection alternatives include: 1) replacement of bridge rails on the north bound Jacoby creek and Gannon Slough bridges; 2) replacement of the southbound Jacoby Creek bridge; 3) extension and spot widening of deceleration/acceleration lanes; 4) replacement of the tide gates; 5) installation of new median guardrails and cable rail safety barriers; 6) removal of the safety corridor signage; and 7) various other roadway improvements including repaving, shoulder and curb replacement, roadway lighting, and utility relocation.

The intersection alternatives include alternatives known or referred to as: (b) “Alternative 1, Median Closures,” (c) “Alternative 1A, Median Closures and Three Turnarounds with Auxiliary Lanes and a Signal for Southbound Left Turns Only at Airport Road,” (d) “Alternative 2, Median Closures and Grade Separation at Indianola Cutoff,” (e) “Alternative 3: Median Closures, Interchange at Indianola Cutoff, and Signalized Intersection at Airport Road,” (e) “Alternative 3A, Median Closures, Compact Interchange at Indianola Cutoff, and Half Signalized Intersection at Airport Road,” (f) the “Boulevard Facility,” alternative; and (g) an alternative involving installing a signalized intersection at Indianola Cutoff instead of an interchange. In addition to these overall alternatives addressing improved safety at all six intersections along the Highway 101 Corridor there are (h) siting and design alternatives for individual project components such as the proposed fill associated with the median-cable barriers, the Jacoby Creek Bridge Replacement, the acceleration and deceleration lanes, the Indianola Interchange, and the Airport Road/Jacobs Avenue half-signal intersection reconstruction. All of these alternatives are discussed below.

For an overview of the wetland impacts of the selected alternative in plans, see [Exhibit 33](#).

1) General Project alternatives

This analysis will first consider the general project alternatives as considered by Caltrans in developing the final project.

a) No Project Alternative

The “no project” alternative means that none of the project improvements involving wetland fill would be undertaken. The “no project” alternative would essentially mean keeping the non-expired elements of the Safety Corridor (e.g., continuation of a posted 50 mph speed limit and the daylight use of headlights, enhanced public education, and increased traffic enforcement).

Caltrans determined that this “no project” alternative would fail to adequately address safety needs, in part because two of the intersections are already at double the statewide accident average. Caltrans maintains further that future traffic levels here will increase, which will further erode the effectiveness of the safety corridor measures. Moreover, the aging infrastructure, i.e. the bridges, interchanges, and other highway components that Caltrans will replace, will continue to deteriorate and become more susceptible to failure.

In addition, Caltrans states that the increased safety protocols under the “Safety Corridor” approach were insufficient to ensure safety. Caltrans found that even after the existing Safety Corridor and reduced speed limit signs were posted, certain intersections still had accident rates significantly over state averages and that over 70% of the collisions within the corridor were broadside collisions that occurred at the median openings.

The “no project” alternative would not fulfill the basic project purpose to address public safety concerns, from both uncontrolled left turn movements to and from the highway and the need to replace aging infrastructure. As discussed in Finding G below, Public Access and Recreation,” the Highway 101 Corridor links the public to shoreline public access in the immediate vicinity in Eureka and Arcata. In addition, the Highway 101 Corridor is a component of the principal highway providing access to the traveling public to shoreline access and recreation areas along the entire coast of northwest California. As further discussed in [Finding I - Public Access and Recreation](#), improving the safety of the public highway is necessary to maximize public access to and along the coast consistent with public safety needs as required by Section 30210 of the Coastal Act. Therefore, the Commission finds that the “no project alternative” is not a feasible less environmentally damaging alternative to the proposed project, as conditioned.

(b) Alternative 1: Restore and Rehabilitate Roadway with Median Closures. In this alternative, along with the above listed rehabilitation components, Caltrans would simply close all the median crossings in the corridor. Alternative 1 would result in the least amount of wetland fill of all the overall alternatives, requiring a total of 3.57 acres of wetland fill as compared to the 10.25 acres of fill required for the project as proposed. However, Alternative 1 is not a feasible less environmentally damaging alternative as it would create substantial out of direction travel for the residents, business owners, and visitors who use the Highway 101 Corridor. As discussed above, the Jacobs Avenue area is a relatively significant and substantial community densely developed with commercial, industrial, and residential uses. The Community is linked closely to the central part of Eureka to the south, as it developed in the 1950s as a subdivision of Eureka with a substantial residential community in a RV/Trailer park. Given the linkages of this community to central Eureka, most of the traffic in and out of Jacobs Avenue is between the area and central Eureka. The only means of access to Jacobs Avenue is via the Highway 101/Airport Road intersection near the south end of the corridor. This intersection also provides the only access to Murray Field, a general aviation airport.

The distance between Jacobs Avenue and Murray Field to central Eureka is approximately one mile. Under Alternative 1, this trip would lengthen by approximately five additional miles, as travelers would first have to travel north on Highway 101 approximately two and a half miles in the opposite direction of Eureka to the existing interchange at the Samoa Boulevard/Highway 255 exit in Arcata where they would have the first opportunity to cross over to southbound

Highway 101 and return towards Eureka along the highway. To lesser degrees, the trips by travelers destined for Eureka from other areas inland of the highway such as Mid-City Motor World and the communities of Indianola and Bayside who would currently use the intersections along Highway 100 at Mid-City Motor World, Indianola Cutoff, Bracut, and Bayside Cutoff would also require substantial out-of-direction travel that would lengthen such trips. The median closures would also impact cycling and increase out-of-direction travel for bicyclists in the corridor. The longer trips resulting from the closure of all median crossings would greatly increase travel times and costs for users of the highway. As a result, the median closures would also lead to additional traffic on other nearby roads, especially Old Arcata Road, as residents and commercial users seek alternatives to using Highway 101. Caltrans indicates that Alternative 1 has been strongly opposed by the public.

In comparison, the proposed project includes several median closures that would also result in some increased out-of-direction travel for people who currently use the highway. However, with the proposed half-light intersection at the Airport Road intersection and the new interchange at Indianola Cutoff, intersections that currently receive the greatest use, many fewer users would be affected. In addition, the Indianola Interchange, located roughly mid-way along the corridor, would provide another crossing option besides the Samoa Boulevard/Highway 255 interchange for motorists and bicyclists who would currently cross the highway at Mid-City Motor World, Bracut, or Bayside Cutoff. Therefore, the increase in total out-of-direction travel resulting from the proposed project would be substantially less than Alternative 1.

As the closure of all of the medians would increase travel times and costs for businesses and residents, thereby impacting other highway users, including visitors to the coast, the closure of all of the medians would fail to accomplish the necessary safety improvements in a manner that maximizes safe public access to and along the coast. Therefore, the Commission finds Alternative 1 is not a feasible less environmentally damaging alternative to the proposed project, as conditioned.

c) Alternative 1A: : Restore and Rehabilitate Roadway Project with Median Closures and Three Turnarounds with Auxiliary Lanes and Half Signal for Southbound Left Turns Only at Airport Road. Alternative 1A is the same as Alternative 1 except a partial signal would be installed at Jacobs Ave/Airport road and 3 U-turn interchanges would be installed in the corridor. As with Alternative 1, the medians at each of the other intersections would be closed, thereby eliminating left turn and crossing movements. Additional sections of auxiliary lanes requiring fill would be constructed. Alternative 1A would require a total of 7.76 acres of wetland fill as compared to the 10.25 acres of fill required for the project as proposed. However, like Alternative 1, Alternative 1A is not a feasible less environmentally damaging alternative because Alternative 1A would create substantial out of direction travel for the residents, business owners, and visitors who use the Highway 101 Corridor, albeit less than for Alternative 1. In addition, the turnarounds would not be usable by bicyclists. As the closure of the medians with a partial signal would also increase travel times and costs for businesses and residents, thereby impacting other highway users, including visitors to the coast, the closure of all of the medians with a partial signal would thus fail to accomplish the necessary safety improvements in a manner that maximizes safe public access to and along the coast. Therefore, the Commission

finds that Alternative 1A is not a feasible less environmentally damaging alternative to the proposed project, as conditioned.

d) Alternative 2: Restore and Rehabilitate Roadway Project with Median Closures and Grade Separation at Indianola Cutoff. In this alternative, along with the above listed rehabilitation components, Caltrans would close all the medians, but include the addition of the proposed interchange at Indianola Cutoff to allow traffic there to safely merge onto the north and south bound directions of the highway. In comparison to Alternative 3, Alternative 2 would not include any signal at the intersection with Airport Road/Jacobs Avenue. Alternative 2, as presented in the FEIR would require a total of 12.35 acres of wetland fill, more than two acres greater than the 10.25 acres of fill required for the project as proposed. The interchange design at Indianola that is part of Alternative 2 would include 2,600 ft. long off-ramps, 2,000 ft. long on ramps, elevating Route 101 by 25 ft., constructing separated north and southbound bridges, a 50 ft. median width and a median barrier. A sub-alternative to Alternative 2 would be to utilize the smaller interchange design that is included as part of the proposed project. The proposed project reduces the footprint, amount of grading, and extent of wetland fill at the Indianola Interchange, by steepening the engineered slopes (from 2:1 to 1.5:1) and reducing the median width (to 22 ft. wide) at the interchange. Use of the smaller interchange design as part of Alternative 2 would reduce the amount of required fill below the amount of fill required for the proposed project. However, Alternative 2 is not a feasible less environmentally damaging alternative because Alternative 2 would create substantial out of direction travel for the residents, business owners, and visitors who use the Highway 101 Corridor, including for all those who use the Airport Road intersection for access to the Jacobs Avenue area and the airport. Notwithstanding the improvements to left turn movements provided by the Indianola Interchange, the closure of the medians at Airport Road and all the other intersections would significantly increase out-of-direction travel time and for businesses and residents, thereby impacting other highway users, including visitors to the coast. Therefore, the Commission finds that Alternative 2 is not a feasible less environmentally damaging alternative to the proposed project, as conditioned.

e) Alternative 3: Restore and Rehabilitate Roadway Project with Median Closures Interchange at Indianola Cutoff and Signalized Intersection at Airport Road. In this alternative, along with the above listed rehabilitation components, Caltrans would close most of the medians, but include the Indianola Interchange and a full signal at the intersection with Airport Road and Jacobs Avenue for both directions of traffic and a southbound left turn pocket. The Airport Rd./Route 101 intersection would be relocated to the north to improve operational efficiency, and a lane would be added from the Cole Avenue acceleration lane to the deceleration lane at Mid-City Motor World to maintain traffic flow (the 3000-foot-long extra lane). Alternative 3 would have limited effect on out-of-direction travel apart from the no project alternatives as the interchange at Indianola and the full intersection at Airport Road would accommodate left turn movements across the highway most completely at the two busiest intersections along the Highway 101 Corridor. However, this alternative would require the largest amount of wetland fill of any of the overall alternatives, a total of 15.1 acres, nearly five acres greater than the fill required for the proposed project. Therefore, Alternative 3 is not a feasible less environmentally damaging alternative to the proposed project, as conditioned.

f) Alternative 3A – Restore and Rehabilitate Roadway Project with Median Closures, Compact Interchange at Indianola Cutoff, and Half Signalized Intersection at Airport Road. This alternative is the same as Alternative 3, except the signal at Airport Road is only a half-signal, stopping northbound traffic when necessary to allow southbound turns for traffic from the east. **Alternative 3A** would also reduce the footprint of the Indianola Interchange, amount of grading, and extent of wetland fill at the Indianola Interchange, by steepening the engineered slopes (from 2:1 to 1.5:1) and reducing the median width (to 22 ft. wide) at the interchange. This alternative is very similar to the proposed project, known as “Modified Alternative 3A,” except that the Airport Road intersection has a slightly different intersection configuration that would not allow southbound turns onto Highway 1 from Airport Road. After receiving public input on Alternative 3A, Caltrans developed **Modified Alternative 3A** which allows for the southbound turning moves at the Airport Road intersection. Alternative 3A would require a total of 9.38 acres of wetland fill, less than the 10.25 acres of fill required for the project as proposed. However, by not allowing for southbound turning movements onto 101, as with Alternatives 1, 1A, and 2, Alternative 3A would not be a feasible alternative as it would create substantial out of direction travel for the residents, business owners, and visitors who use the Airport Road intersection for access to the Jacobs Avenue area and the airport. Notwithstanding the improvements to left turn movements provided by the Indianola Interchange, the elimination of southbound turning movements from Airport Road to southbound Highway 101 would greatly increase out-of-direction travel for businesses and residents, thereby impacting other highway users, including visitors to the coast. Therefore, the Commission finds Alternative 3A is not a feasible less environmentally damaging alternative to the proposed project, as conditioned

	Alternative					
Impact Type	1	1A	2	3	3A	Mod 3A
Permanent Impacts-ACOE (3-parameter)	2.29	6.03	10.25	12.89	7.40	8.22
Permanent Impacts-Coastal (<3-parameter)	1.28	1.73	2.1	2.19	1.98	2.03
Total Permanent Impacts	3.57	7.76	12.35	15.08	9.38	10.25

(Table 6: Associated Permanent Wetland Impacts of Alternatives (Caltrans.))

g) Signalized Boulevard. This alternative would involve adding signals at all six intersections and extend all left-turn lanes. This alternative was considered during the Commission’s consideration of the consistency certification. Caltrans concluded that this alternative was not feasible because it would increase traffic, reduce safety, increase wetland impacts, increase traffic on Old Arcata Road, and have multiple other negative impacts. The wetland fill impacts were determined to require at least 50% more wetland fill than the proposed project because of the need to provide for extra acceleration and deceleration lanes and turning lanes at the intersections to prevent significant backups along Highway 101 to accommodate vehicles that are stopped at the intersection. Caltrans determined that without these additional lanes, the alternative would actually reduce safety by increasing the number of rear end collisions of vehicles hitting vehicles stopped at the stop lights. Therefore, the Commission finds that the Signalized Boulevard alternative is not a feasible less environmentally damaging alternative to the proposed project, as conditioned.

(h) Restore and Rehabilitate Roadway Project with Median Closures, Signalized Intersection at Indianola Cutoff, and Half Signalized Intersection at Airport Road.

As part of the 2013 review by the Commission of the Consistency Certification, Caltrans was asked to consider an alternative to signalize the Indianola intersection rather than construct the graded interchange. The alternative would not include any additional turning lanes or through lanes to accommodate traffic stopped at the traffic light at the intersection. That alternative would have less wetland impacts than the proposed alternative. However, Caltrans determined that the currently proposed project which includes an interchange at Indianola Cutoff was still the least environmental damaging alternative. Caltrans determined that a signal interchange without additional lanes at Indianola was not feasible because it would result in heavy traffic flows at the interchange. A signalized interchange at this location would result in significant traffic congestion in the corridor, which would have significant adverse impacts in increased gas usage, greenhouse gas emissions, and air quality impacts. The traffic back-ups at a signalized Indianola interchange would also increase traffic on back roads such as Old Arcata road. Lastly, Caltrans concluded that because of the traffic back-ups and the continued need to cross highway lanes (given that people can still run red or yellow lights), and the increased risk of rear-end collisions associated with motorists failing to slow down sufficiently to stop before approaching the intersection, the signalized alternative would not improve safety to the extent the full interchange would, and therefore was not a feasible means to achieve the project purpose of improved safety. Therefore, the Commission finds the alternative to the proposed project of installing a traffic signal with no additional lanes at Indianola Cutoff is not a feasible less environmentally damaging alternative to the proposed project, as conditioned. Based on the above alternatives analysis, the Commission concludes that there are no feasible less environmentally damaging alternatives to the proposed development as conditioned.

For all of the above reasons, the Commission finds that there are no feasible less environmentally damaging alternatives to the proposed development as conditioned.

2) Alternative Construction Locations and Methods

This analysis will secondly consider the more specific project alternatives for elements of the final project, in terms of their alternative design, construction methods, or locations.

(a) Median-cable barriers. The proposed project will install cable rail safety barriers in the medians in two sections – between the Eureka Slough bridges and Airport Road and from South G Street to the 11th Street overcrossing in Arcata. This median barrier will sit on a four-foot wide concrete pad, which will result in fill in the median wetlands. Caltrans states that the four-foot wide concrete pad is required to adequately support the cable barriers and to prevent vegetation growing and undermining the barrier posts.²⁴ Along with cable barriers, some sections

²⁴ Note that as discussed in Section H on Visual Resources, for the majority of the sections of new cable barrier, most of the existing vegetated median will remain vegetated. However, from South G Street in Arcata to the 11 Street overcrossing, the median is much narrower and therefore the 4-foot pad will be expanded by 1 to 2 feet to the end of the median. Caltrans states that the concrete vegetation control is required around the barrier system to alleviate maintenance worker exposure to traffic. Otherwise, maintenance workers would be exposed to dangerous highway traffic while attempting to trim a 1 to 2-foot wide grass area. However, these additional paved areas outside of the median do not impact any wetlands, only the 4-foot concrete pad has wetland impacts.

of existing guardrail will be replaced, and some new guardrail will be installed along the lane extensions at Mid-City Motor World. The total wetland fill impact will be approximately 1.6 acres. Caltrans states that they considered alternative median barriers but they all require the same four-foot wide pad under existing safety standards and the high-tension cable barrier are superior for visual aesthetics in the coastal zone.

(b) Jacoby Creek Bridge Replacement. The proposed project will replace the deteriorating Jacoby Creek bridge. The project will construct the new bridge in the median between the northbound and southbound highway lanes. Abutments consisting of approximately 14 3-foot diameter cast-in-place steel shell piles will be placed on the banks of Jacoby Creek both for the temporary placement of the new bridge and the final location of the new bridge. Traffic will be diverted onto the new bridge requiring temporary fill in the median. Once the old bridge demolished the new bridge will be moved onto the new abutments. The bridge replacement project will result in approximately 0.42 acres of temporary impacts and 0.39 acres of permanent impacts.

Caltrans considered alternative construction methods, including a half-width construction rather than a temporary bridge. However, Caltrans determined that that construction method was not feasible given the significant traffic impacts that would result. Caltrans also considered placing the temporary bridge west of the highway, rather than in the median. However, this alternative location would also have more substantial wetland impacts and would conflict with the Humboldt Bay Trail North. Caltrans also evaluated other alternative designs, including replacing the existing bridge, which has piles in the creek, with another bridge on piles in the creek. Instead, Caltrans designed the bridge to have a longer span and avoid constructing piles within the channel. The current design will have all the piles for the foundation installed outside of the channel, with the bridge completely spanning the channel. This will reduce impacts to the stream flow and water quality. The number, type, depth, and size of piles was determined to be the only feasible alternative because of by the geotechnical characteristics of the underlying soils and the need to meet engineering standards for constructability and stability.

(c) Acceleration/deceleration lanes. The proposed project will extend existing highway merging lanes to improve safety. The increased fill will result in approximately 0.96 acres of permanent wetland fill and 1.2 acres of temporary impacts. Caltrans states that geometrics and engineering guidelines balanced with environmental concerns drove the design for the acceleration/deceleration project. The initial design lengths and tapers were based on the American Association of State Highway and Transportation Officials (AASHTO) recommendations. A Geometric Approval (GAD) review was then held to evaluate compliance with appropriate Caltrans Highway Design Manual requirements including. Terminus and Geometric conditions. Once those requirements were met, several design iterations were developed to see how wetland impact could be decreased. The final design (lane length, taper length, shoulder width, choker width, and side slope ratio) was then developed to minimize the amount of wetland impact commensurate with meeting the overall goals of the Safety Project.

Environmental Justice

Along with the increased wetland fill impacts of Alternative 3 over Modified Alternative 3A, and the infeasibility of full closures under the other alternatives discussed above, Alternative 1 and

Alternative 2 would have significant environmental justice concerns. Under Section 30604(h) of the Coastal Act, “When acting on a coastal development permit, the issuing agency, or the commission on appeal, may consider environmental justice, or the equitable distribution of environmental benefits throughout the state.” Although Section 30604 is not a Chapter 3 policy of the Coastal Act, by its very terms it is still relevant for making determinations on a CDP. The FEIR has identified the Lazy J Trailer Park off Jacobs Avenue and Airport road as an environmental justice community. Closure of the median at the Airport Road intersection at Highway which would be part of several of the alternatives discussed above would have substantial negative effects on this community. As discussed above, the closure of the median at this intersection would result in substantial increases in the out-of-direction travel for the residents and businesses in the Jacobs Avenue area, including the residents of the Lazy J Trailer Park. This increase in out-of-direction travel would result in disproportionately higher travel costs for the Environmental Justice community at the Lazy J Trailer Ranch (a mobile home park). As noted above full closure of the medians at all the intersections in the Highway 101 Corridor would result in adding approximately five miles to the currently one-mile trip between the Jacobs Avenue area and Eureka. Even under the alternatives that include an interchange at Indianola Cutoff, if the median at Airport Road were closed, a trip originating at the Lazy J Trailer Park to central Eureka would require turning right from Airport Road onto Route 101, traveling 1.9 miles to the Indianola Interchange and then turning around to return to Eureka, an additional 3.8 miles overall compared to existing conditions. When Caltrans surveyed residents of the Lazy J community, residents believed that even with the Indianola Interchange, closure of the median at Airport Road would still make driving too expensive and inconvenient and may force them to move. Closure of all the medians would also impact the residents along Jacobs Avenue who depend on the Highway 101 connection to access vital services such as grocery stores, medical services, schooling, and further essential services.

Overall, Modified Alternative 3A would avoid the substantial environmental justice impacts of closing the Airport Road/Jacobs Avenue intersection by retaining southbound turning movements onto Highway 101 for Jacobs Avenue and improving the safety of such turning movements by providing a half-light intersection

Alternatives Conclusion

For the reasons stated above, the Commission finds that the proposed development, as conditioned, is consistent with the second test of Section 30233(a) because there is no feasible less environmentally damaging alternative to the proposed project as conditioned. As discussed above, the Commission finds that there is no feasible less environmentally damaging alternative to the proposed project as conditioned because the other identified alternatives result in more wetland fill or fail to accomplish the necessary safety improvements in a manner that maximizes public access to and along the coast consistent with public safety needs. In addition, other rejected alternatives would result in disproportionately higher travel costs for an identified Environmental Justice Community.

Mitigation for Dredging and Fill of Coastal Wetlands

Section 30233 further requires that feasible mitigation measures be provided to minimize adverse environmental effects. In addition, the project must maintain and enhance the functional capacity of coastal wetlands and waters consistent with section 30233 and protect marine resources and

the biological productivity and the quality of wetlands and waters consistent with the requirements of sections 30230 and 30231. Depending on the manner in which the proposed project is conducted, the potential significant adverse impacts of the project may include (1) construction-related impacts to water quality and aquatic habitat from sediment, pollutants, or debris from construction activities entering coastal waters and from post-construction storm water runoff; and, (2) construction-related impacts to wetlands, sensitive species and nesting birds.

The proposed project will result in the permanent fill of about 10.25 acres of wetlands. As shown above, these various impacts result from safety improvements, including installation of median safety barriers, temporary paving for bridge installation, bridge rail replacements, clearing of safety zones, and grading associated with paving and fill. Only about 0.1 acres are estuarine wetlands, the rest are freshwater wetlands with emergent vegetation that are located in highway median depressions or along the edge of the highway and are dependent on rainfall and runoff. In addition, there will be about 4.7 acres of freshwater wetlands in highway medians or highway shoulders that will be temporarily impacted by construction activities, but will not be permanently filled. There will also be impacts to 1.56 acres of “riparian vegetation” within the corridor, which includes the removal of about 95 trees, with a maximum of 106, including non-native Monterey pines and Monterey cypress, and native willows, shore pine, and wax myrtle. About one-half the trees Caltrans would remove are non-native. These impacts are considered “temporary” because the trees will be replaced with native riparian species after construction. “Riparian vegetation” is defined broadly and conservatively by Caltrans to include all the trees in the highway corridor because they are all within about 100 feet from a water body. However, as discussed below, staff does not consider all of this vegetation to be riparian ESHA.

1) Construction Mitigation Measures

The proposed project involves ground disturbance, paving, and the use of heavy equipment that could result in sediment, debris, or hazardous materials entering coastal waters and impacting sensitive fish species and their habitat.

General BMPs/Issues

As submitted, the project proposal includes numerous avoidance and minimization measures to protect habitat and sensitive species. The Project Description dated July 2019 includes multiple construction-related Best Management Practices (BMPs) and avoidance and minimization measures in the subsections of the “Water Quality Impact Description” section of the Project Description titled, “Avoidance of Direct Water Quality Impacts,” “Avoidance of Indirect Impacts,” “Short Term Construction Site BMPs,” “Temporary Construction Site BMPs,” “Staging Areas,” “Conservation of Riparian Habitat,” “Prevention of Spread of Invasive Species.” (See pages 19-26, [Exhibit 4](#).) The proposals are consistent with the “Minimization and Monitoring” section of the FEIR (pages 481-496). The Project Description also includes proposed BMPs for the proposed Jacoby Creek Bridge Replacement. Commission staff reviewed these provisions and found them consistent with measures staff would recommend to protect water quality and habitat areas. In order to ensure these measures are carried out, **Special Condition 12** requires Caltrans to implement these BMP measures listed in the project description. Special Condition 12 also requires that Caltrans only use 100% biodegradable and

non-synthetic erosion control products to avoid entanglement with wildlife as sometimes occurs with use of plastic construction fencing and similar materials.

The Project Description also states that Caltrans' contractor will develop a Storm Water Pollution Prevention Plan consistent with the BMPs listed. To ensure that Caltrans implements the proposed erosion and sediment control plan and construction-phase BMPs, the Commission attaches **Special Condition 13** requiring that a final erosion and sediment control and pollution prevention plan be submitted for the review and approval of the Executive Director. That plan shall demonstrate compliance with the BMPs proposed in the project description and listed in Special Condition 12. Special Condition 13 also requires that the final plan include: (a) a construction site map identifying the location of all temporary construction-phase BMPs proposed and required by Special Condition 12; (b) a narrative description of the BMPs to be implemented; and (c) a schedule for the management of all BMPs.

Although Caltrans has proposed to dispose of all trash and debris at an appropriately permitted upland disposal facility, Caltrans has not yet identified a feasible disposal location. Therefore, the Commission also attaches **Special Condition 16** requiring the Permittee to submit a final debris disposal plan prior to commencement of construction for the Executive Director's review and approval to ensure that the contractor disposes of the debris at a lawful upland disposal site instead of in an area that could adversely affect coastal resources.

Jacoby Creek Bridge Mitigation Measures

Caltrans proposes to replace the 1920s-era southbound Jacoby Creek bridge because it does not meet current standards and its structural elements are deteriorating. Because this project involves work immediately adjacent to a coastal stream including pile driving there are potential impacts to coastal waters and sensitive species.

This project would require the construction of the new bridge in the median immediately to the east of the current bridge, which will first serve as a temporary detour bridge to maintain continuous open traffic flows for the highway. (For an overview of the construction process, see Project Description, pp. 5-8, [Exhibit 4](#).) The new bridge would require excavations about 50 feet by 10 feet x 8 feet deep on both sides of the creek in uplands adjacent to the creek channel that would be used to contain the new bridge piles and abutments. The excavation is so close to the channel (within 15 feet) that marine water will seep into the excavation during high tides. Sheetpile cofferdams would be installed to reduce tidal intrusion and water would be pumped out of the excavation onto the adjacent ground or will be stored in tanks. The sheet pile will be vibrated in and removed the same way. Hydroacoustic impacts in the adjacent creek are unlikely using this method. Six pipe piles (36" diameter) would be installed within the excavations on each bank. Caltrans originally proposed to install the piles using a vibratory or oscillator/rotation method. However, as a result of additional geotechnical analysis, it was concluded that these methods could not be used at Jacoby Creek and that the piles must be impact driven into place to support the new bridge in both the temporary and final positions. In a telephone conversation with staff, the project engineer explained that Caltrans would drive the piles down until the tops are four to five feet below the ground surface. Caltrans would place temporary forms in the excavations and concrete abutments would be poured and supported by the piles. The top of the abutments that would support the bridge and it would be very close to the ground surface. The

new pre-cast bridge will then be put in place. There would be no piles in the creek for the temporary bridge. Highway traffic would be rerouted onto the new bridge.

Caltrans would then proceed to demolish the original bridge. Caltrans would install a debris containment system to prevent demolition debris entering the creek. The old bridge will be cut into pieces and lifted out with a crane or excavator. After the old bridge is demolished, the piles left standing within the channel will be cut and removed above the waterline of Jacoby Creek during low tide period to reduce water turbidity. A biological monitor would be present during the in-stream activities of the demolition. Caltrans states that their contractor will prepare a final Demolition Plan for the Jacoby Creek Bridge. To ensure that plan is consistent with the project description, the minimization and avoidance measures described therein, and all BMPs listed in **Special Conditions 12 and 13, Special Condition 7** requires the submittal of a final Jacoby Creek Demolition Plan before the onset of construction activities for the Jacoby Creek Bridge replacement project.

Caltrans would then construct the new bridge piles and abutments in the same manner as for the temporary location. The new bridge piles would be outside the stream and about 15-20 feet from the active wetted channel. After construction the new bridge would be moved over from its temporary location in the median and installed using the “Jack-and-Slide” method. The piles and abutments at the temporary location would be left in place within the median and covered with soil.

The construction and demolition activities associated with replacement of Jacoby Creek bridge have the potential to impact five endangered species of fish: Coho salmon, Chinook salmon, Steelhead, Green Sturgeon, and Tidewater Gobies. The temporary removal of riparian trees from the median at Jacoby Creek will reduce shading of the creek which has the potential affect water temperature and cover for fish. Construction activities have the potential for increasing suspended sediments and turbidity within the stream, and decreasing water quality due to an increase in polluted runoff as a result of an increased area of pavement with concomitant decrease in permeable surface. Noise and visual disturbance near Jacoby Creek can result in behavioral responses to stress associated with noise, and visual disturbance could affect juvenile salmonids. Pile driving with an impact hammer generates hydroacoustic pressure impulses and particle velocities that can cause effects on fish ranging from altered behavior, hearing loss, and tissue injuries to immediate mortality.

Caltrans has consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to develop mitigation measures to reduce the potential for significant adverse project impacts on listed fish species. These include:

1. Restricting in-stream work to the period from July 1 through October 15 when juvenile salmonids are least likely to be present;
2. Not allowing equipment within the creek channel and restricting walking in the channel to low tide events when fish are less likely to be present;
3. Placing the bridge abutments above the mean high tide line, thereby avoiding excavation and construction within the Jacoby Creek channel;
4. Containing all bridge debris during demolition of the old bridge;

5. Placing temporary barrier fencing along the banks of Jacoby Creek to minimize visual disturbance to fish and prevent worker encroachment;
6. Implementing construction BMPs to minimize the input of sediment and increased turbidity;
7. Insuring that a biological monitor will be present during in-stream work;
8. Conducting hydroacoustic monitoring and stop driving prior to reaching the 187 dB cumulative threshold for fish greater than 2 g. This threshold was based on the fact that any salmonids present are likely larger fish. Additionally, if 206 dB is reached on any single strike, pile driving would stop and the NMFS would be notified;
9. Installing tide gates during low tide when old tide gates are out of the water;
10. Documenting baseline hydrological conditions prior to replacement; and
11. Monitoring and adjusting the fish-friendly tide gates for two years to insure that the average weekly hydrological conditions are within 95% of pre-replacement conditions or within the range of suitability for tidewater gobies.

In an April 2016 Concurrence Letter that responded to Caltrans February 2016 Biological Assessment, the National Marine Fisheries Service (NMFS) evaluated the effect of the project on Coho salmon, Chinook salmon, Steelhead, and Green Sturgeon, and on critical habitats. The NMFS found that:

“The removal of vegetation from the median at Jacoby Creek will result in a minor, temporal loss of cover, shade, and allochthonous inputs until native vegetation (trees and shrubs) are planted and matured. However, given the scale of the impact, no measurable increase in water temperature or reduction in the amount of terrestrial food input into Jacoby Creek is anticipated and there remains ample vegetative cover of higher quality habitat immediately upstream of the project site for fish to take refuge.”

“Potential negative effects associated with minor, localized, and short term increases in turbidity during construction will be minimized to a less than significant level with incorporation of the avoidance and minimization measures. Given that no significant degradation of critical habitat would result from vegetation disturbance, there would be no detectible loss of water quality or food subsidies for individual coho salmon, Chinook salmon, steelhead or green sturgeon.”

“Studies found that effects from runoff are essentially unperceivable when less than about 5 percent of the watershed is impervious. The proposed project does not constitute a significant increase in impervious surface within the affected watershed.” and “The new road surface will be composed of the same OGFC concrete asphalt as the existing surface. Therefore, no change in baseline concentrations of contaminants related specifically to the road surface material is expected.”

“Exposure of individual fish [to noise and visual disturbance] is expected to be low given the poor quality of the rearing habitat within the action area during the summer months (resulting in a low likelihood of fish presence). The work window also avoids the critical period (time of most activity) of adult and smolt migration. Furthermore,

adverse effects to listed species will be avoided with implementation of avoidance and minimization measure which restrict noise below levels that would hurt fish.”

“Furthermore, the work window avoids periods of juvenile and adult migration, therefore would not negatively affect safe passage conditions of coho salmon, Chinook salmon, and steelhead critical habitat. Green sturgeon are not likely to venture into the action area at Jacoby Creek, therefore would not be exposed to noise disturbance from bridge construction.”

The NMFS concurred with Caltrans that the project, as proposed and mitigated, “may effect but is not likely to affect” listed salmon, steelhead or green sturgeon or their individual designated critical habitat. The NMFS also found that the project would adversely affect Pacific Salmon, Pacific Groundfish, and Coastal Pelagic species’ Essential Fish Habitat because it would: 1) Increase underwater noise and motion disturbance; 2) Decrease water quality (through increased turbidity, suspended sediment, chemical pollution, and salinity; and 3) reduce aquatic and riparian vegetation. However, the NMFS also found there are no practical measures that could be taken to minimize or avoid those effects other than those already incorporated into the design proposed by Caltrans.

Caltrans amended their Biological Assessment in a February 14, 2019 letter to incorporate impact pile driving in place of a vibratory or oscillator/rotation method installing piles. The Amended Biological Assessment states, “Caltrans does not anticipate exceeding the 206 dB peak SPL associated with the onset of physical injury to fish²⁵; however, hydroacoustic noise is expected to accumulate over time, reaching the 150 dB threshold for behavioral effects, and the 183 dB and 187 dB cumulative SEL thresholds for injury to fish weighing less than two grams and greater than two grams, respectively.” Salmonids present in the action area during the work window are expected to weigh more than two grams. Caltrans proposes the following actions:

“To avoid injuring fish potentially present in the action area, Caltrans intends to conduct hydroacoustic monitoring during pile driving operations and stop driving prior to reaching the 187 dB cumulative SEL threshold. Additionally, if 206 dB is hit on any single strike, pile driving would stop, and NMFS would be notified. Regular decibel readings would be collected and documented during pile driving activities (including driving to test load capacity) to ensure established noise thresholds are not exceeded. Once stopped, pile driving would not resume for a minimum of 12 hours to allow fish time to recover from exposure to sub-injurious hydroacoustic noise (NMFS

²⁵ A consortium of state and federal transportation and resource agencies established the Fisheries Hydroacoustic Working Group, which is comprised of scientists concerned with barotrauma to fish. The Working Group reviewed pertinent research and recommended interim standards to define the underwater sound levels that have deleterious effects on fish so that barotrauma could be avoided. Those standards were accepted by the agencies in 2008. Acoustic monitoring devices can be utilized to determine whether pile driving activities are approaching these sound exposure levels. The standards include a level at which a single hammer strike would cause lethal injury as well as a standard for accumulated exposure to multiply hammer strikes over the course of one day. The standards are called the dual metric criteria. The agencies agreed upon the following criteria for injury to fish: 1. a peak Sound Pressure Level (SPL) at or above 206 dB (re 1μPa) from a single hammer strike; or, 2. an accumulated Sound Exposure Level (SEL) at or above 187 dB (re: 1μPa²-sec) for fish greater than 2 grams and an SEL at or above 183 dB (re: 1μPa²-sec) for fish weighing 2 grams or less.

2007).

A Hydroacoustic Monitoring Plan would be prepared by the contractor prior to construction that addresses the frequency of monitoring, positions that hydrophones would be deployed, and techniques for gathering and analyzing acoustic data, quality control measures, and reporting activities. The monitoring plan and all onsite acoustic monitoring would be conducted by a Caltrans-approved, trained Hydroacoustic Specialist with professional experience in the field of hydroacoustic monitoring. With this approach, Caltrans does not expect to exceed hydroacoustic noise thresholds associated with injury or adverse effects to fish. Insignificant behavioral effects to fish resulting from exceedance of 150 dB are expected but not at a scale or frequency greater than what is addressed in the existing consultation for the vibratory or oscillation/rotator method of pile installation.”

In a February 15, 2019 letter responding to Caltrans’ Amended Biological Assessment, the National Marine Fisheries Service concluded, based on Caltrans’ hydroacoustic analysis and avoidance and minimization measures, that “... the proposed changes to the pile driving for the Southbound Highway 101 Bridge over Jacoby Creek do not change the original effects analysis and determination of the April 2016 ESA letter of concurrence, and therefore will not require reinitiation of informal consultation.”

Upon receipt of Caltrans February 13, 2019 Amended Biological Assessment, the U.S. Fish and Wildlife Service Reinitiated Formal Consultation regarding the effects of the project on the endangered tidewater goby and its designated critical habitat.²⁶ In their consultation letter the Service states that:

“Gobies nesting in the area where workers will be walking in the creek will likely be injured or killed by being crushed, as could larval young or eggs within occupied nest burrows. We consider that this may occur when construction workers walk in the wetted creek channel to install, maintain, and remove the debris containment systems used during the demolition of the old SB Jacoby Creek Bridge.” and “...[G]obies may be exposed to injury or death by workers walking in the wetted channel on 22 occasions for an approximate total of 34 hours during a single construction season.”

“Caltrans and the Service considers hydroacoustic noise that exceeds 150 dB cumulative SEL to potentially cause behavioral effects to gobies and cumulative SEL at or above 183 dB to result in injury to fish ≤ 2 grams, such as the tidewater goby. For the purposes of this consultation, the Service considers that hydroacoustic noise at or above 183 dB cumulative SEL would result in goby take due to direct physical injury, but cumulative SEL ≥ 150 dB and < 183 dB would not result in goby take. Caltrans has estimated that for the temporary and permanent bridge pile installation, the maximum amount of wetted channel that may be exposed to ≥ 183 cumulative SEL threshold is 0.39 ac. of wetted channel or approximately 80 m upstream and downstream of the proposed bridge pile locations near the current SB Jacoby Creek Bridge. Temporary and

²⁶ The Reinitiation Letter received by staff in April 2019 was not dated.

permanent bridge pile installation will occur over two consecutive construction seasons and both will expose approx. 0.39 ac. of wetted channel to elevated sound levels. Therefore, gobies occurring within that 0.39 ac. of wetted channel will be exposed to elevated sound levels during two consecutive goby nesting seasons.”

“For purposes of this consultation, the Service assumes that all goby nest burrows within 7.6 m of a driven pile would be subject to vibrations that could result in death or injury to gobies due to collapse in each of the two consecutive construction seasons. All proposed pile locations will be at least 15 ft. (4.6 m) from the wetted channel. Therefore, a maximum of 3 m (10 ft.) of wetted channel may be subjected to vibratory forces at each pile location. However, the wetted channel in the vicinity of the piles is only 25–30 ft. wide and piles will be installed on both sides of the creek, suggesting that most of the wetted channel near the piles will be exposed to vibrations from pile driving.”

The Service concluded, “After reviewing the current status of the tidewater goby, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service’s biological opinion that the Eureka-Arcata Route 101 Corridor Improvement Project, in Humboldt County, California, as proposed, is not likely to jeopardize the continued existence of the goby.” This conclusion was based on 1) the small spatial scale of potential impacts, 2) the short-term nature of most potential impacts, 3) the potential for natural restoration of the affected goby population soon after the project is completed, and 4) the conservation measures incorporated into the project to avoid and minimize impacts to the goby population.

Staff notes that the currently proposed limits to pile driving are based on the dual criteria for fish larger than 2 grams. Tidewater gobies are less than 2 grams and those present within about 80 meters of the site where pile driving is taking place would be injured or killed and this impact would occur during two seasons of proposed construction activities. The U.S. Fish and Wildlife Service accepted this proposal because it is unlikely that this level of harm would jeopardize the continued existence of the species. This is a low bar. Sections 30230 and 30231 of the Coastal Act require that the biological productivity of coastal water be maintained and that the quality of coastal waters, streams, and estuaries appropriate to maintain optimum populations of marine organisms be maintained. Therefore, staff recommends **Special Condition 9 and 10** setting designated “Pile Driving Protections” and requiring a “Hydroacoustic Monitoring Plan.” This Hydroacoustic Monitoring Plan requires that the peak sound pressure level within the Jacoby Creek aquatic environment not exceed 205 dB and the accumulated exposure level not exceed 182 dB at 10 meters distance from pile-driving. Special Condition 9 requires that pile-driving be limited to daylight hours to facilitate monitoring and avoid habitat impacts from night-lighting, limits pile-driving to the July 1–October 15 work window, and limits pile-driving to two piles per day. Special Condition 9 also requires a biological monitor to be in place, as well as hydroacoustic monitoring personnel and equipment. The Hydroacoustic Monitoring Plan in Special Condition 10 requires monitoring of designated metrics for sound exposure and sets designated limits, including limiting peak Sound Pressure Level (SPL) to less than 206 dB and accumulated Sound Exposure Level to less than 183 dB. Special Condition 10 also requires the

plan to include, proposed monitoring methods, real-time monitoring, and provides for record-keeping and reporting.

Lyngbye's sedge

The Jacoby Creek Bridge replacement also will result in possible impacts to Lyngbye's sedge (*Carex lyngbyei*), a sensitive plants species associated with brackish marshes and tidally influences sloughs around Humboldt Bay. Caltrans has determined that a small population of Lyngbye's sedge "may be temporarily impacted" during the replacement of the southbound bridge. Caltrans proposes to collect sedge plants that may be impacted prior to construction and transplant plants back to an appropriate habitat area along Jacoby Creek following construction. However, the project plans provide insufficient detail to ensure that the best mitigation measures feasible to minimize impacts to Lyngbye's sedge are provided consistent with Section 30233(a). Therefore, the Commission imposes **Special Condition 11-C**, which requires submittal of a mitigation plan for sedge impacts at a 1:1 ratio by area. The plan must detail monitoring methods, provisions for salvage and reestablishment of sedge plants, success criteria, and provisions for submittal of interim and final monitoring reports. The condition requires that at least 80% ground cover of Lyngbye's sedge observed in the construction area prior to impact must be achieved. If reestablishment of sedge habitat impacted by the project is unsuccessful, the condition further requires that the applicant submit a revised or supplemental restoration plan, which would be processed as an amendment to the CDP.

Tide Gates

In addition to bridge replacement, old and failing tide gates would be replaced with fish-friendly tide gates at Jacoby Creek, Brainard, and Gannon Sloughs where both tidewater gobies and salmonids may be present. The two remaining tide gate locations (Jacobs Avenue ditch and California Redwood Company ditch) have no upstream fish habitat and will not have a fish-friendly design. The tide gates will make use of the existing headwall and will be installed at the same height as the existing gates. The fish-friendly tide gates will be placed by cranes and then bolted into place. Most of the work will be done from shore, but one or two workers may have to enter the wetted channels to position and install the tide gates. The workers may disturb the substrate and cause minor elevated turbidity in the immediate vicinity.

The U.S. Fish and Wildlife Service Reinitiated Formal Consultation noted above concluded that:

"Goby nest burrows may also be damaged during tide gate replacement. However, strong tidal flow at tide gate locations suggests that the habitat immediately surrounding the tide gates would be unsuitable for nesting gobies; therefore, goby take at those locations is unlikely."

According to the project description, Caltrans would perform the replacements during low flow and low tide periods and during the summer months to minimize turbidity and exposure to fish. **Special Condition 8** limits the period of construction work on tide gates to the period July 1 to October 15. After replacement, the fish-friendly tide gates will be adjusted to mimic the pre-replacement hydrology. This will require the assessment of hydrological conditions both before and after replacement.

Special Condition 8 requires a Tide Gate Installation Plan that includes pre-construction monitoring for one season (April 1–November 30) and post-construction monitoring for two years, a description of the type of fish-friendly tide gate matching specific criteria to be installed and the method of installation at each location, various conservation measures to avoid or minimize impacts, and a protocol developed with NMFS and USFWS for conservation procedures if water and fish are present in the work area.

2) *On-Site Mitigation*

As discussed above, the project in its proposed configuration would have approximately 10.25 acres of permanent wetland fill and 4.7 acres of temporary wetland fill. The section above has discussed the steps taken to minimize impacts to sensitive species and habitat. For unavoidable impacts, Caltrans must undertake additional mitigation measures. This section describes the “on-site” mitigation measures Caltrans proposes with this project, which will be undertaken within the project corridor.

The proposed On-site MMP provides a total of 10.39 acres of on-site mitigation and off-sets for temporary and permanent impacts to wetlands. ([Exhibit 17.](#)) The On-site MMP proposal includes 5.58 acres of voluntary on-site mitigation for temporal losses of function due to temporary impacts to wetlands, 0.87 acre of on-site offsets for permanent impacts to wetlands, and 3.51 acres of on-site mitigation for the removal of trees in 1.56 ac of riparian habitat (Table 2). The removal of riparian tree habitat is further discussed below.

Most of the temporary impacts to freshwater wetlands (about 3.2 acres) result from grading in the median and along the highway shoulder. These wetland areas are close to the highway and are probably dependent upon highway runoff. The vegetation in these wetlands is a mix of native and non-native species, but is often dominated by non-native velvet grass. These areas will be hydroseeded with native wetland species but there will be no subsequent maintenance or remediation, because these areas are too close to traffic for worker safety. They will be monitored after one year from the time of the impact. Monitoring will involve visually estimating vegetative cover and recording the cover of the dominant species at random locations throughout the impact area, and identifying locations with significant bare spots. Although seeded with native species, without maintenance and the opportunity for any needed remediation, it is likely that these areas will eventually become dominated by a mix of native and non-native species as they are now. Without periodically closing a traffic lane, it is not feasible to permanently restore these areas to native vegetation, and reasonable success criteria will be vegetative ground cover similar to that which was present prior to the temporary impact. Four locations are much more accessible and restorations more similar to what the Commission usually requires are possible. The temporary impacts to freshwater wetlands along the broad shoulders north and south of Indianola Cutoff and south of Bayside Cutoff, and the permanent impacts at the Jacoby Creek bridge, are being restored in place by hydroseeding and planting, and remediation during the establishment period is feasible. The areas of temporary impacts will be subject to the Commission’s usual protocol for assessing such impacts. It is reasonable to expect a higher proportion of native species at these locations for several years, but over time non-natives will colonize and form a mix of species similar to what exists now. If the areas of temporary impacts are not restored within one year of the impact, Condition 11 requires that the impacts be considered “permanent” and be mitigated at a 4:1 ratio.

The On-site MMP proposes to remove invasive non-native species to the “extent feasible.” Revegetation will include hydroseeding with native plant seed and the planting, where appropriate and possible, of native trees, shrubs and dense clusters of native wetland plant plugs. Caltrans would collect the plant material on-site or as close to the site as possible.

Wetland creation will occur in the closed median crossings, where existing roads crossing the highway median will be removed, the area recontoured, and planted with native wetland plants and monitored. This will result in about 0.52 acres of freshwater wetlands. Caltrans will also restore 0.35 ac of wetlands in the median along Jacoby Creek impacted for two years by temporarily rerouting the 101 Highway.(0.25 freshwater and 0.10 ac of estuarine wetlands).

Caltrans also proposes enhancement and restoration work at the 101 Slough and levee near Airport Road. About .81 acres of riparian habitat and .06 acres of estuarine habitat are proposed for enhancement by manually removing non-native species. In addition, a 0.17-ac degraded riparian area adjacent to the Slough is proposed to be substantially restored by removing non-native species and planting native riparian trees, shrubs, and herbs. These enhancement and restoration activities are proposed as mitigation for a) temporal loss of ecological functions due to removing riparian trees from the project area, and b) temporal loss of ecological functions in Essential Fish Habitat, riparian habitat, and estuarine intertidal wetlands during reconstruction of the Jacoby Creek bridge.

The replacement planting of native trees and shrubs is proposed in the areas of riparian habitats that are impacted by the construction, as well as the newly side slopes of the overcrossing at the Indianola Interchange. Native riparian trees will also be planted to replace four Monterey pine trees removed for construction of the Jacoby Creek Bridge.

To ensure that impacts that the Commission considers permanent are mitigated as permanent impacts and not temporary impacts, **Special Condition 11** provides a protocol for assessing temporary impacts and defines permanent impacts as those wetland areas that are to be developed, or that will be frequently disturbed to maintain the development, or where the impact to the habitat lasts longer than one year. Special Condition 11 specifies that any areas impacted, in which the habitat has not recovered within one year, shall be considered permanent and require additional mitigation through a CDP amendment. Special Condition 11 also includes provisions for five-years of monitoring and specifications for sampling and success criteria.

Furthermore, where trees are removed in areas temporarily disturbed by construction, they will be replaced with appropriate native species in a similar location when construction is completed. It may take many years for the newly planted trees to provide the ecological functions of the mature trees that were removed. To offset this temporal loss of ecological function, Caltrans will plant an additional 1.93 ac of native riparian trees along the highway corridor and conduct the 0.98 ac of riparian enhancement and restoration near airport road described above.

Lastly, a 0.2-acre freshwater wetland adjacent to the highway has been invaded by the common reed, *Phragmites australis*, which has displaced the native species and now accounts for nearly 100% of the ground cover. Caltrans proposes to remove the existing reeds and successfully reestablish native wetland species within their right-of-way. A portion of the infestation is on adjacent private land. Caltrans will attempt to acquire access to conduct work in that area, but

that is not part of the application that is before the Commission. *Phragmites* is notoriously difficult to remove. Caltrans proposes to first cut the reeds, leaving 6 to 12 inches above the ground surface in late winter or early spring to reduce biomass. After the cut plants have resprouted, they will be sprayed with 1% Imazapyr aquatic formulation during the dry season (June 15 – October 15). The herbicide will be re-applied to old plants and resprouts as necessary in July and August. Mowing and herbicide application will be repeated the second year as needed. For the next five years seedlings and resprouts will be removed using hand tools. Seeding and planting with native species will take place after at least one year after the last application of herbicide. Revegetation with natives will be done for two years and the area may be watered for three years or as necessary. Monitoring and maintenance will continue through the eighth year. Unless all the *Phragmites* is eradicated from the wetland, it will no doubt reinvade over time. However, the restoration project would, nevertheless, be beneficial and would provide improved native habitat for a decade or more.

Special Condition 14 requires the submittal of a final Herbicide Management Plan to govern the use of herbicide during any phase of the on-site mitigation. Special Condition 14 provides standards for success criteria, monitoring, and reporting and best management practices for herbicide use. Caltrans proposes this restoration as mitigation for temporal losses of wetland function due to temporary impacts of the project.

The Commission finds that the proposed creation of 0.52 acre of freshwater wetlands in the median closures and substantial restoration of 0.35 ac in the footprint of impacts due to rerouting traffic for two years as partial mitigation for the wetland impacts considered “permanent.” For the remaining permanent impacts to wetlands from the project, Caltrans proposes tidal wetland restoration within Humboldt Bay by removing an invasive species that is degrading or replacing native saltmarsh.

3) *Spartina* Removal Mitigation

Given the location of the project in a narrow highway corridor and that it is largely surrounded by agricultural parcels, there are few additional areas available for on-site mitigation. Additional off-site mitigation for wetland impacts is complicated in Humboldt Bay by the lack of available freshwater wetland sites for restoration and the fact that most potential mitigation sites are within agricultural lands.²⁷ Section 30241 and 30242 of the Coastal Act limit the conversion of agricultural lands, even for wetland restoration or mitigation purposes. There are few opportunities for freshwater wetland creation or restoration within the Coastal Zone in this part of the state.

Given these constraints, staff has worked with Caltrans staff and other entities to develop a tidal wetland restoration mitigation plan in the form of removal of the invasive cordgrass, *Spartina densiflora* from saltmarsh habitats within Humboldt Bay, which will lead to the restoration of these areas as native saltmarsh. ([Exhibit 16.](#)) Coastal saltmarsh is an extremely important habitat

²⁷ For instance, in its Consistency Determination the Commission found that tidal wetland restoration has the potential to meet the wetland mitigation test of Section 30233(a) and that the out-of-kind nature of such restoration could be allowed because of the unavailability of non-agricultural sites in the Humboldt Bay area and the infeasibility of creating freshwater wetlands in such areas.

type. Saltmarsh has high primary productivity which forms the base of estuarine food webs and is important for nutrient regeneration, recycling, and export. Saltmarsh also provides nursery habitat for many invertebrates and fishes, is critical roosting and foraging habitat for many migrating and overwintering bird species, and supports several species of rare plants. Saltmarsh has also suffered huge losses. In 1854, the Bay occupied about 25,800 acres, including 15,300 acres of open water and inter-tidal mudflats and 10,500 acres of intertidal saltmarsh. The great majority of intertidal habitats have been lost due to diking and conversion to agriculture. Today the remaining saltmarsh acreage is something less than about 2000 acres. The USFWS estimates that nearly 1,700 acres of saltmarsh are infested with *Spartina densiflora*. In short, *Spartina* is present in essentially all remaining occurrences of saltmarsh within the Humboldt Bay Region.

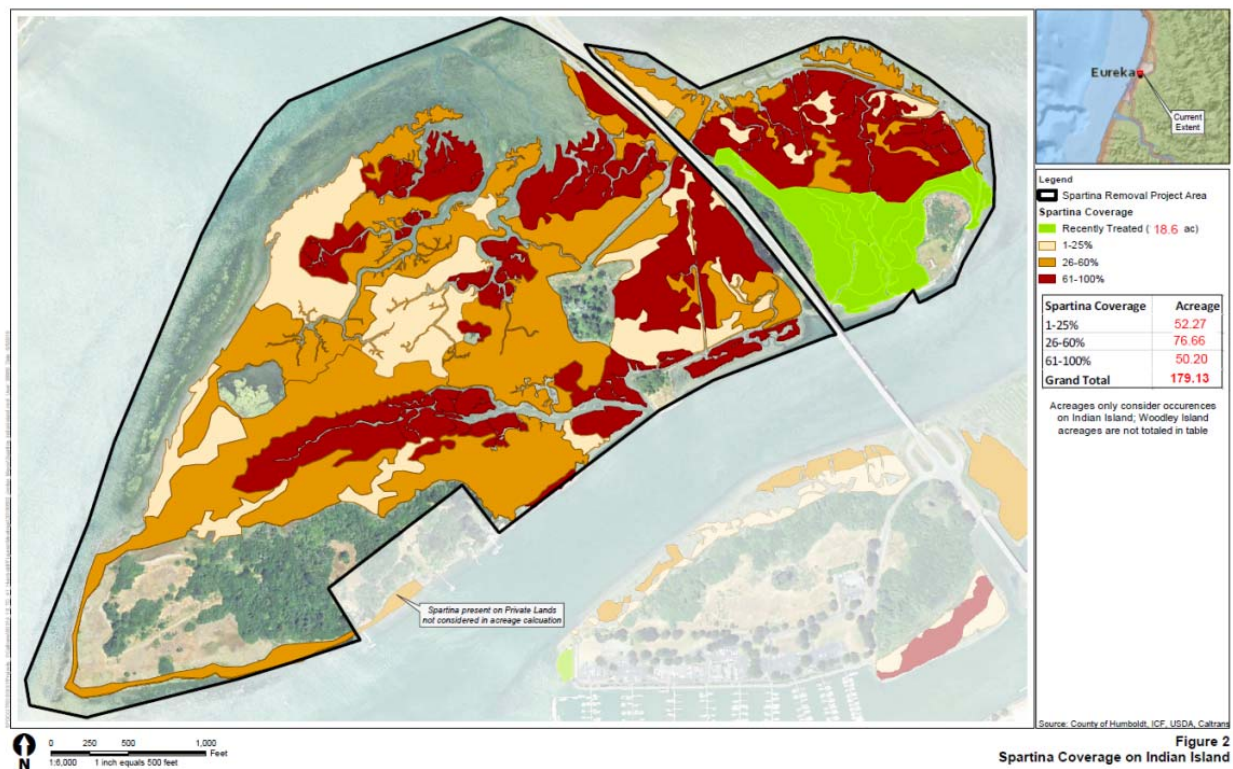
Spartina densiflora profoundly alters estuarine habitats by increasing sedimentation, replacing native plant species, and disrupting habitats for fish and wildlife species. Where *Spartina* is abundant, the native estuarine habitat essentially disappears and where *Spartina* is present, it predictably increases over time. The impact of *Spartina* is so profound and complete that the removal of the plant goes beyond the typical removal of non-native species through weeding or site enhancement. Unless *Spartina* is removed the native habitat will be lost. The removal of *Spartina*, if properly monitored and maintained, results in the return in native salt marsh habitat. Therefore, the Commission's ecologist Dr. Dixon has concluded that *Spartina* removal can reasonably be considered "substantial restoration." (See [Exhibit 39.](#))

The Commission finds that the *Spartina* Removal Plan will provide substantial restoration because (1) it will lead to the removal of an invasive species that has displaced and prevented the reemergence of native saltmarsh habitat, in a contiguous area, and the plan includes long-term monitoring, maintenance, and funding provisions to ensure the success of the removal and restoration plan to prevent the spread of *Spartina* in the restoration area, enable the restoration of native salt marsh habitat, and reduce the spread of *Spartina* in the bay over time.

The amount of mitigation credit given for *Spartina* removal must be proportional to its abundance since dense infestations have more serious ecological consequences than infestations with low cover. For example, 1 acre of mitigation credit would be given for removing *Spartina* from 10 acres of saltmarsh where it is present at 10% cover or by removing *Spartina* from 1.1 acres where it is present at 90% cover. The only available estimates of *Spartina* cover were conducted by the USFWS in 2010 using aerial imagery. *Spartina* was mapped in three categories of density: High (60-100% cover), Medium (26-60% Cover), and Low (1-25% cover). Using the mid-point of each cover class, Special Condition 5 authorizes 1 acre of mitigation credit for successfully removing *Spartina* from 1.24 acres of high-cover areas, 2.33 acres of medium-cover areas, or 7.69 acres of low-cover areas. The resulting estimates of mitigation credit are probably conservative, because *Spartina* cover has undoubtedly increased since the maps were made.

The Wetland Mitigation Plan proposes to remove *Spartina densiflora* from 179 acres of land at Tuluwat Island (Indian Island) in Humboldt Bay. ([Exhibit 16.](#)) The Plan will almost completely remove *Spartina* from the island. The selection of this site was driven in part by the presence of public land owners willing to support the project and its long-term obligations, as well as the opportunity to completely remove *Spartina* from a contiguous area of an entire island, and that this location would eliminate a major source of *Spartina* seed from the bay. Much of the island

lands are currently owned by the City of Eureka (who support the mitigation project), but the city is in the process of transferring ownership of the lands to the Wiyot Tribe, as it is home to ancestral Wiyot tribe village sites, the site of the tribe's "World Renewal Ceremony," and considered to be the "Center of the Wiyot Universe." (See Appendix B of the plan for letters of support from the city of Eureka and the Wiyot tribe.) As discussed below, using a sliding scale of mitigation credit that considers the different levels of *Spartina* infestation density, the 179 acres of *Spartina* removal provides the equivalent of 80.18 acres of mitigation, exceeding the necessary 4:1 mitigation ratio for the 10.25 acres of wetland impacts²⁸, and about equal to 4:1 if the wetland impacts of the north and south Bay Trail are included.



(Figure 3: Spartina densities on Indian Island. (Caltrans, 2019))

Caltrans²⁹ will undertake the *Spartina* removal work under an existing 2015 CDP authorization, CDP 1-14-0249, which authorized the Humboldt Bay Harbor, Recreation, and Conservation District to coordinate and implement the Humboldt Bay Regional *Spartina* Eradication Plan in cooperation with other agencies and cooperating landowners. The CDP authorized the regional plan to be implemented over multiple years across the Humboldt Bay region within approximately 1,400 acres of tidal marsh habitats in Humboldt Bay, the Eel River estuary, and

²⁹ As discussed immediately below, Caltrans will undertake the proposed mitigation through designated entities that will actually perform the work of implementation, monitoring, and maintenance. All references to Caltrans in this section of the findings refer to Caltrans and/or its implementing entity.

the Mad River estuary, including the subject parcels proposed by Caltrans here. The regional plan relies on site-specific *Spartina* Removal Plans for the proposed primary *Spartina* removal work in the area consistent with the CDP conditions. Caltrans has coordinated with the Harbor District to develop this site-specific *Spartina* Removal Plan.

Special Condition 5 requires Caltrans to submit a site-specific final revised *Spartina* Removal Plan consistent with the terms of this CDP and CDP 1-14-0249. The initial removal work would take two years. After the two years of removal implementation, there would be a five-year monitoring and maintenance period. Special Condition 5 requires this five-year monitoring and maintenance period after removal. Regular monitoring reports would be required including a success criteria for *Spartina* removal that requires less than 5 % ground cover of *Spartina* be maintained after primary removal, after five years following primary removal, and during the long-term maintenance removal discussed below. The regular monitoring reports would be required to demonstrate success criteria for ground cover of native species of equal to or greater than 80% native cover within five years following primary removal. The successful removal of *Spartina* will enable native vegetation to return.

Under the plan, Caltrans will conduct monitoring evaluations and submit monitoring reports six months after completion of the removal treatments, the first spring after removal treatments in year 2, and annually for years 3 to 7 in the field. Caltrans will use drones to survey the sites in years 3, 5, and 7. Special Condition 5 also includes provisions and criteria on the methods of monitoring and sampling for the presence of *Spartina* and return of native saltmarsh.

Caltrans intends to have a designated entity with further experience in *Spartina* removal undertake the removal work. The plan proposes that for the first seven (7) years of treatment, Caltrans mitigation specialists and Caltrans project biologists will oversee and conduct quality control on the designated entity removal, maintenance, and monitoring activities. To ensure, however, that Caltrans remains ultimately responsible for a successful removal, Special Condition 5 requires that Caltrans remain ultimately responsible for the success of the restoration, and ensure on-going monitoring reports are properly submitted. Special Condition 5 also requires that Caltrans submit for the review and approval of the Executive Director an MOU/MOUs or similar legally binding agreement or agreements with a designated “Management Entity” or Entities that will be responsible for the implementation of *Spartina* removal and the on-going monitoring and maintenance consistent with the requirements of Special Condition 5.

To ensure that the *Spartina* removal is successful, Special Condition 5 requires that if the *Spartina* removal does not meet the success criteria, Caltrans will be required to submit a revised or supplemental *Spartina* Removal Plan that will compensate for those portions of the original plan that did not meet the approved performance standards. The revised plan will complete the full removal of *Spartina* in the area of the initial project or in new replacement areas of Humboldt Bay, such that the plan completes the full removal of *Spartina* from an equivalent amount of acreage. Additionally, in the event that the *Spartina* removal activities take longer than the period authorized by CDP 1-14-0249, Caltrans will have to obtain an amendment to this coastal development permit or to CDP 1-14-0249 to authorize additional removal work.

Ultimately, for *Spartina* removal to be meaningful, it must be long-lasting. Unless *Spartina densiflora* is completely eradicated from the Humboldt Bay Region, this means monitoring and maintenance removal in perpetuity. Special Condition 5 therefore requires that a non-wasting endowment be established to fund those activities in perpetuity. The non-wasting endowment fund will be an interest-bearing account in an amount sufficient to generate enough yearly income to fund the long term monitoring and removal of *Spartina* in perpetuity. Caltrans will fund the endowment based on estimates of the cost of ongoing monitoring and maintenance.

Lastly, to ensure that these areas of *Spartina* removal are permanently protected as saltmarsh habitat, and thus, properly count as mitigation, the Wiyot tribe has agreed to protect these areas from future development. Special Condition 5 therefore requires Caltrans to develop with both the Wiyot tribe, and the City of Eureka if they have yet to transfer title of the lands to the tribe, a Memorandum of Understanding or similar legally binding agreement for the review and approval of the Executive Director. The MOU shall include provisions providing for *Spartina* removal, *Spartina* monitoring, and protection of all areas of *Spartina* removal consistent with all requirements of Special Condition 5, including the requirement that no future development as defined by Section 30106 of the Coastal Act may occur in the areas of *Spartina* removal except for the ongoing removal of *Spartina* and other non-native invasive species, maintenance of native vegetation, and habitat restoration.

The Commission finds that the project as conditioned provides feasible mitigation measures to minimize the project's impacts on wetland habitat consistent with Section 30233 of the Coastal Act.

Maintenance and Enhancement of Biological Productivity and Functional Capacity

The fourth general limitation set by Section 30233 of the Coastal Act is that any proposed dredging or filling in coastal wetlands or estuaries must maintain or enhance the functional capacity of the wetland or estuary. In addition, proposed development must maintain, enhance, and where feasible restore, the biological productivity and the quality of wetlands and waters consistent with the requirements of Sections 30230 and 30231.

The mitigation measures incorporated into the project and required by the special conditions discussed above will ensure that the project will not have significant adverse impacts on coastal waters or wetlands in and around the project vicinity.

Therefore, the Commission finds that the project, as conditioned, will maintain and enhance the biological productivity, quality, and functional capacity of coastal waters and wetlands consistent with the requirements of Sections 30230, 30231, and 30233 of the Coastal Act.

H. VISUAL RESOURCES

Section 30251 of the Coastal Act states:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to

minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Highway 101 in the project corridor affords scenic views of multiple features of coastal areas, including picturesque wetlands, sloughs, forested hills, and coastal agriculture and pasturelands the east of the corridor, and scenic views of Humboldt Bay to the west of the corridor. These views are largely open but are at times interrupted by commercial development, industrial buildings, overhead infrastructure, and numerous roadside billboards that block views of Humboldt Bay from the roadway. There is also a dominant row of eucalyptus trees and other trees and shrubs that alternatively enhance or block coastal views.

Visual Resources

The proposed development has the potential to adversely impact visual resources. The proposed development and its consistency with Section 30251 are discussed in detail below.

1. Bridge Railings. As discussed above, the proposed development includes the replacement of bridge railings on the northbound Jacoby Creek and Gannon Slough Bridges and replacement of the Jacoby Creek southbound bridge with new bridge railings. Depending on the design, the bridge railings could significantly obstruct views to the Bay and the adjoining scenic areas and/or be visually incompatible with the character of the surrounding area in a manner inconsistent with Section 30251. The current bridge railings on the northbound roadway and southbound Gannon Slough Bridge are low concrete barriers dating to the 1950s and are approximately two-feet high. (See [Exhibit 11](#).) The older 1920s southbound Jacoby Creek Bridge is also a low concrete barrier approximately one-foot high. Caltrans will replace all these rails with either the ST-70 or ST-75 bridge rails. (See [Exhibit 13](#), bridge rail plans.) The ST-70 bridge rails are an existing barrier used in several Coastal Commission approved project and approved by the Commission's Road Edge Subcommittee. The ST-70 is an aesthetic, see-through design of four rails with six-inch gaps between the rails and 3' 10.5" high in total. The ST-75 is a new variant of the ST-70, which is designed to meet new federal crash standards. Caltrans is currently in the final stages of crash testing this barrier and approving it for use. It is scheduled for approval in October of 2019. If approved, Caltrans intends to use the ST-75 rather than the ST-70. The ST-75 is a similar see-through design to the ST-70. Posts are separated by ten feet. It has three rails, slightly greater in size, and a fourth rail atop which is intended to protect cyclists from falling over the rail. The fourth cyclist rail is much smaller than other rails and on narrower posts. The car rails are 36-inch high, with another 6-inch for the cyclist rail, for a total of 42 inches high. In either case, the new rails will be cantilevered from the existing bridge, widening the bridge shoulders and widening the bridge by twelve inches on each side (the traffic lanes will not be widened).

The bridge railings are necessary for public safety. Commission staff has worked closely with Caltrans staff on the design of the bridge rails and Caltrans proposes to use a dull gray color to be as unobtrusive as possible. The railings will be similar to the adjacent metal railings of the nearby public access trail, although the dull grey metal will minimize the glare of the shiny trail

bridge railings while still blending in with the color of the sky and bay so as to not become the focal point of the view. Caltrans has prepared a visual simulation of this rail along with an existing simulation of the ST-75. ([Exhibit 12](#).) In order to ensure that the railings are installed as proposed and are visually compatible with the character of the surrounding area consistent with Section 30251, **Special Condition 18** requires Caltrans to submit final plans depicting the installation of federally approved bridge railings that are finished with a dull gray metallic color consistent with the color depicted in [Exhibit 12](#).

2. Median barriers and Guard Rails. Depending on the design, the proposed median barriers and guardrails could also significantly obstruct views to the Bay and the adjoining scenic and/or be visually incompatible with the character of the surrounding area in a manner inconsistent with Section 30251. Caltrans currently proposes to replace existing older metal beam guard rails with standard Midwest Guardrail System railings in four locations and slightly extend existing guard rails at the Mid-City Motorworld and Bracut intersections. The new guardrail will raise the height of the guard rails two inches. The replacement of the guardrails occurs in an existing developed areas on the side of the highway. Thus, the replacement guardrail will not significantly affect views of Humboldt Bay or scenic coastal areas and the replacement railings will not affect a significant amount of the viewshed along the highway. The replacement metal guardrails are also compatible with the character of the surrounding area because they are on a highway, which itself is part of the existing character of the surrounding area. Metal guardrails are a typical highway feature, and metal guardrails are already present.

Caltrans is proposing to install a cable median barrier at both the south and north ends of the corridor. At the south end the barrier will extend from the Eureka Slough bridges to the Airport Road intersection along a portion of the median that currently has no barrier. At the north end, the cable median barrier will extend from the Gannon Slough Bridges to 11th Street in Arcata to replace existing older guardrails in the median. (See [Exhibit 3](#).) The new cable median barrier will sit slightly higher. Caltrans states that installation of a median barrier in these sections of the highway is necessary to meet highway safety standards. Caltrans considered concrete or metal beam barriers, but picked cable barriers because of their reduced visual impacts and see-through design, and the projects location in the Coastal Zone. The cable rail barriers will minimize coastal view blockage, and given that the barriers will be installed within an existing highway median, the barriers will be compatible with the character of surrounding areas.

The cable rail barriers also require a four-foot wide concrete base. In most stretches of the median barrier area, the median is substantially wider than four feet and the appearance of the concrete base will be buffered by grass landscaping between the barrier and paved roadway. However, from G Street to 11th Street the entire median will be paved, because the median is narrower ranging from 14 to 22 feet wide (see [Exhibit 27](#)). Under Caltrans safety design standards, these narrow strips of grass create unacceptable safety issues for maintenance workers who would be required to physically mow these sections while being on or directly adjacent to the highway. In several sections, the additional paving will also enable Caltrans to enlarge roadway shoulders and create a consistent shoulder width. Although the removal of the grass medians above G Street will be noticeable to travelers who have frequently used this section of the corridor, the development will be compatible with the character of the surrounding area, as the development is within the median of a highway in an urban setting that includes a substantial

highway interchange at Samoa Boulevard. As such, the cable rail barriers and guardrail updates protect coastal views to and along the coast and are visually compatible with the character of the highway, consistent with Section 30251.

3. Tree Removal and Replacement. Another component of the project that affects visual resources is the proposed removal and replacement of up to 35 trees for highway construction and to establish a sufficient clear recovery zone adjacent to the expanded acceleration and deceleration lanes to minimize collisions with trees by vehicles that drift off the traveled way. The proposed tree removal and replanting is described in the On-Site Mitigation and Monitoring Plan ([Exhibit 17](#)). The removal of trees could potentially be incompatible with the character of the surrounding area, and the placement of trees could potentially block coastal views. However, as proposed, all trees being removed are located on the inland eastern side of the highway except for a few that are located within the highway median (See On-Site Mitigation and Monitoring Plan, [Exhibit 17](#) or Project Layouts, [Exhibit 5](#)), and all trees being planted are on the inland eastern side of the highway in areas with existing trees in areas where the trees are being removed and replaced. The tree planting will occur almost entirely on the inland side of Highway 101 at Airport Road, and near the Indianola Interchange. Replanting is proposed in the median of the Jacoby Creek bridge area but the replanting will be replacement plantings and utilize native species in a stream bed. The removal of trees and their replacement with native species in areas either in the same location or immediately adjacent will be visually compatible with the character of the highway, consistent with the requirements of Section 30251 of the Coastal Act.

Additionally, it should be noted that no Eucalyptus trees from the row of Eucalyptus trees on the west side of the highway near Brainard and the old California Redwood Mill are being removed by this project. It is anticipated, however, that Humboldt County's forthcoming Humboldt Bay Trail South project, which will complete the separated Class I Bike and Pedestrian trail connecting Arcata and Eureka, may include some Eucalyptus tree removal. The County's trail project will be reviewed under a separate CDP.

4. Indianola Interchange. The primary visual resource issues of the proposed project results from the construction of the 25-ft.-high, raised highway interchange at Indianola Rd. The interchange will modify the level topography along this portion of the bayfront, thus altering natural landforms (380,000 cu. yds. of fill) and modifying the character of this scenic area. The interchange will also result in some decrease in coastal views of the Bay looking west from Indianola Cutoff. An updated visual is attached as [Exhibit 9](#), and [Exhibit 6](#) includes before and after views.

However, as explained above, the Indianola Interchange is a necessary safety project and is sited and designed consistent with the requirements of Section 30251. The design of the interchange "minimizes the alteration of natural landforms" as required by Section 30251 for several reasons. First, compared to more standard interchange designs, such as a clover-leaf intersections, the proposed compact diamond interchange requires a much smaller footprint and volume of grading. Second, Caltrans narrowed the median between the north and south highway lanes to reduce landform alteration. Lastly, Caltrans selected a design that minimizes land form alteration over the next several decades by incorporating a design that allows for a phased raising of the interchange over time rather than initially constructing the interchange to the full height needed

to accommodate sea level rise over the design life of the interchange. As discussed above, the highway bridge crossings over Indianola Cutoff can be raised when likely needed several decades from now without reconstructing the entire interchange. The lower height of the interchange during the first decades of use results in less landform alteration over that period of time. Therefore the Commission finds that the interchange minimizes the alteration of natural land forms consistent with Section 30251.

Furthermore, the new interchange will be compatible with the character of the surrounding area. The existing four-lane highway already forms part of the character of the area and the new interchange will be similar to an existing interchange at Samoa Blvd and 101 in Arcata within the project limits. The raised highway on fill will also be compatible with the character of the low-lying hills in the areas nearby to the east of the interchange and Indianola Cutoff. Lastly, the interchange uses a motif on the abutments consistent with the scenic character of the Humboldt Bay that will allow the interchange to better blend into its surroundings. (See Exhibit 9, p.2.) The Commission therefore finds that the proposed interchange is compatible with [the](#) character of the surrounding area consistent with Section 30251.

5. Lighting. The project also includes the installation of new highway street lighting through the corridor. (See Project Description, p. 9, [Exhibit 4](#).) Caltrans has yet to determine the exact location and numbers of these lights, but the new lights would be located in the areas of Cole Avenue, Airport Road, Indianola Interchange, the Bayside Cut Off, G Street, and the 255 Interchange. (See also, Project Layouts, [Exhibit 5](#).) Caltrans states that these street lights are only at intersections with public roads and are required under design guidelines for safety, to properly light highway intersections.

Otherwise, Caltrans has avoided adding new lighting in the corridor and is not proposing any additional street lights in the undeveloped stretches of the corridor or at intersections with the various private business locations (Mid-City Motor world, Bracut, the Mill), because they are not public roads and have relatively low night-time traffic volumes.

According to Caltrans, the new lights will amount to an incremental increase in lighting, spread over three locations and miles of corridor, and will not result in a substantial change to the existing lighting for the corridor. The Indianola Cutoff currently has eight lights, and will have ten lights after the project. The Cole Avenue has three lights, and will have six lights. The Bayside Cutoff has three lights, and will have seven lights. This amounts to nine additional lights throughout the corridor.

Caltrans also proposes that the lights be LED and will be focused downward to reduce night sky light pollution.

As such, the proposed lighting will protect views to and along the coast and is visually compatible with the character of the surrounding area. Highway lights at public road intersections are an expected feature of highways, even along the coast. A minimal number of lights are being proposed. Nonetheless, to ensure exterior lighting is installed as proposed, **Special Condition 15** requires a final lighting plan for the approved development be submitted for the review and approval of the Executive Director. Special Condition 15 requires that all new

outdoor night lighting shall be minimized, directed downward, and shielded using the best available dark skies technology and pole height and design that minimizes light spill, sky glow, and glare impacts. The condition also requires that any security lighting attached to structure use a control device or automatic switch system or equivalent functions to minimize lighting.

6. Improvements to Coastal Views. As part of this project, Caltrans is removing approximately 2,400 square feet of existing signage within the highway corridor related to the Safety Corridor and signage no longer needed for the current configuration of the roadway. Removal of these signs will enhance the visual quality of the highway corridor. (See [Exhibit 28](#) for a listing and photos of these signs.) **Special Condition 3** requires that Caltrans submit a report on the completion of this project documenting the removal of the corridor safety signs.

There also will be some improvement in coastal views for highway drivers from the raised interchange. Caltrans has incorporated a modified interchange at Indianola that lessens the impacts to coastal views. The raised interchange will be visually compatible with the other highway infrastructure and interchange within the corridor and the raised topography of the nearby coastal hills. The replacement of trees to be removed and the requirement to ensure that new lighting is directionally cast downward and minimized as proposed will also ensure the development will be compatible with the character of surrounding areas.

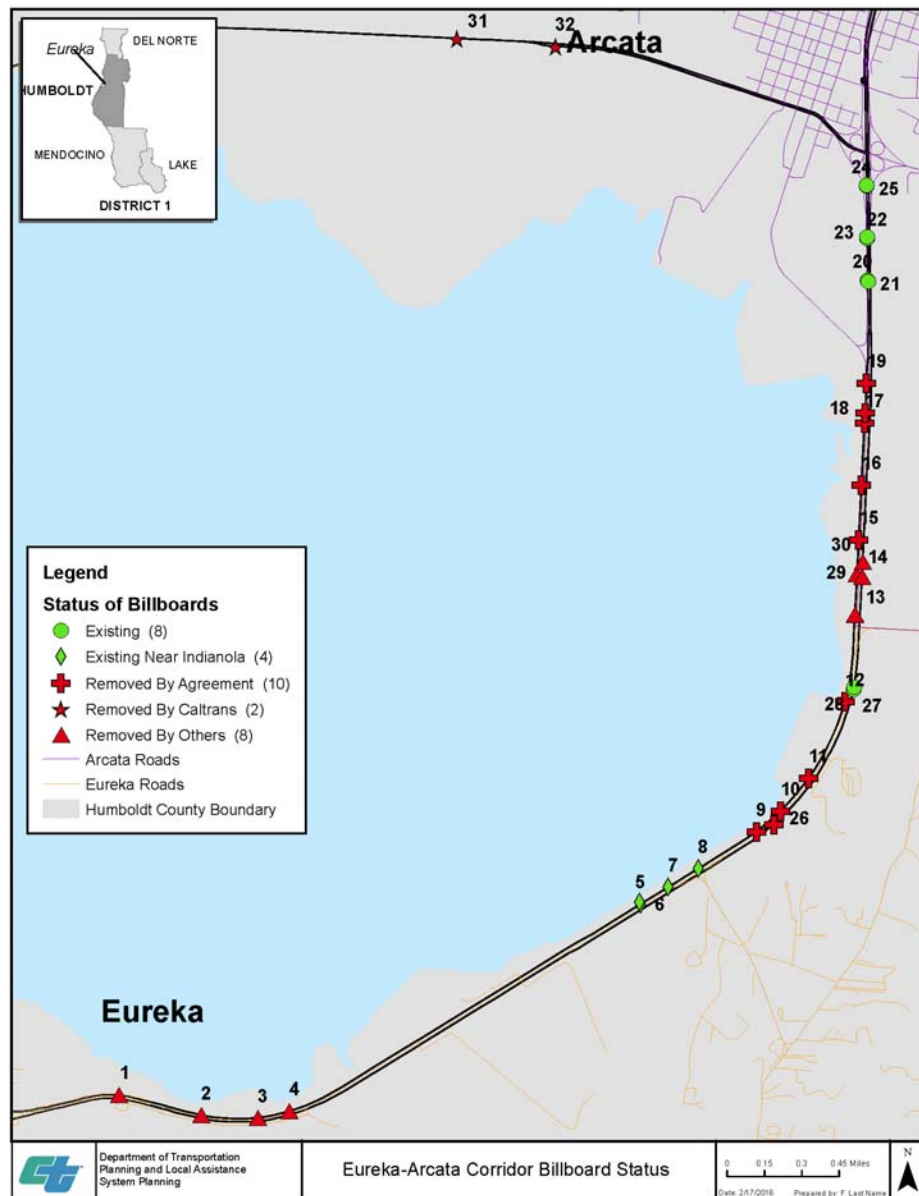
For all the reasons discussed above, the Commission finds that the project as conditioned is consistent with Section 30251 of the Coastal Act.

Removal of Billboards

As discussed above, the Commission has found that the development has been sited and designed consistent with the visual resource protection requirements of Section 30251 of the Coastal Act. Independent of this CDP process, Caltrans previously removed, or assisted in the removal of, 15 billboards. The removal of the billboards enhanced the visual quality of the Highway 101 corridor. No billboard removal is proposed in the CDP application for this permit.

As documented in [Exhibit 29](#), Caltrans has been able to secure the removal of, or assisted in the removal of, 15 billboards within the project limits of the Eureka/Arcata Corridor Improvement Project (Corridor) and 2 billboards along Route 255 near Arcata. Caltrans is directly able to remove billboards when it owns the property, but no such billboards exist in the 101 Corridor. Instead, Caltrans was able to remove the 2 billboards along Route 255 near Arcata after it purchased that property. Caltrans also was able to come to an agreement with billboard owner Outfront Media to remove 10 billboards within the 101 Corridor in August 2016. This agreement involved a relocation agreement between Caltrans Office of Outdoor Advertising and Outfront Media that removed the coastal billboards and allows Outfront Media to post billboards in inland, locations designated non-scenic. Three more billboards were removed by the billboard owners when the Caltrans Office of Outdoor Advertising revoked their permits because they were on property owned by North Coast Railroad Authority (NCRA) and NRCA, as landowner, requested that Caltrans revoke the permit. Lastly, two other billboards were removed by local activists, after which the city of Arcata denied permit applications to repair or rebuild these billboards.

As stated above, the removal of the billboards has resulted in significant improvements to the visual character of the corridor. (See photo in [Exhibit 29](#), p.5 for an example.)



(Figure 4: Map of Billboard Status in Corridor (Caltrans))

Twelve billboards remain in the corridor, all owned by Outfront Media, including four near the proposed Indianola interchange. Caltrans states that removal of these billboards is not feasible at this time. Caltrans has indicated it cannot exercise eminent domain or invoke condemnation to remove the billboards because they are not within the path of the proposed project. In addition, in May and August 2018, Caltrans submitted offers to purchase the remaining 12 billboards. Outfront Media rejected these offers.

Caltrans further states that it has no authority to secure removal of these billboards on NRCA land or in tidelands under terms of the OAA. ([Exhibit 29](#).) Caltrans states that these billboards

predate the OAA and are grandfathered in, with automatic permit renewal rights. While permits do expire, they do so only every five years, and are subject to automatic renewals under the administrative regulations that interpret the Outdoor Advertising Act. These permits can be revoked only when they are in specific violation of the Act, and then only after the permittee has been afforded due process through the formal hearing procedures articulated within the state's Administrative Procedures Act. Any revocation of a permit will trigger a legal challenge and a takings claim.

Additionally, the Humboldt County Association of Governments (HCAOG) had allocated and programmed \$2,000,000 in funds for billboard removal for the Corridor Project. Because 17 billboards were removed at no cost, and Caltrans was able to obtain the removal of 15 of those, after a meeting with the county, Caltrans and Commission staff, the \$2,000,000 in funds were allocated to support the Humboldt Bay Trail South project. One of the remaining billboards is within the alignment of the proposed Humboldt Bay Trail South project, which Caltrans is supporting. The County may proceed with the eminent domain process if they are unable to secure a purchase arrangement with Outfront Media.

Finally, according to the State Lands Commission staff, four billboards are located on patented tidelands, which are actually owned in fee by private parties. As a result, the billboards do not require a lease from either the State Lands Commission or the Humboldt Bay Harbor, Conservation, & Recreation District which received a legislative grant of state tidelands in the vicinity in the early 1970's. The State Lands Commission and the Harbor District have not made any determinations whether retention of the existing billboards is consistent with the public trust easement that may still apply to the patented tidelands, or, in the case of the Harbor District, whether any permit is required to retain or maintain the billboard and if such a permit could possibly be authorized.

For all of the above reasons, the Commission finds that the proposed development is consistent with the visual quality requirements of the Coastal Act, including because some of the development is proposed on the east side of the highway, Caltrans has designed the improvements to be visually compatible with the character of the surrounding area and minimize the alteration of landforms, and Caltrans is proposing to remove 2,400 square feet of existing roadway signage.

The Commission finds that although interested persons are requesting that the Commission require Caltrans to remove the 12 remaining billboards in the Highway 101 corridor, primarily based on laws relating to the placement of billboards and assertions that the existing billboards are not in compliance with all applicable laws, the 12 remaining billboards are existing and are not proposed to be newly placed. In addition, Caltrans has submitted evidence that it is infeasible to remove the remaining 12 billboards because they are owned by another party who is unwilling to sell, on properties owned privately in fee, are not located in the Caltrans ROW, and/or the billboards have previously been permitted. Finally, to the extent any of the remaining billboards are not in compliance with applicable laws such as the Outdoor Advertising Act, and/or are not considered legal non-conforming, the Commission finds that the remedy for such noncompliance remains available to the relevant agency independent of the CDP application process.

I. PUBLIC ACCESS AND RECREATION

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse. Section 30211 of the Coastal Act requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30212 of the Coastal Act requires that new development projects provide access from the nearest public roadway to the shoreline, except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or where adequate access exists nearby. Section 30213 provides that lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided; and that developments providing public recreational opportunities are preferred.

Highway 101 provides a critical link for the public to access significant stretches of the coast in the Humboldt Bay region and beyond, as it is the main traffic conduit north and south along the coast through Humboldt and Del Norte counties. In the more immediate vicinity, just beyond the southern project limit, Highway 101 provides access to the Coastal Trail that extends along the entire length of the bay shoreline of the City of Eureka. Just west of the northern end of the project, Highway 101 can be used to access the shoreline along the Arcata March and Wildlife Sanctuary.

Currently cyclists use the existing highway shoulders for public access through the corridor (See e.g. [Exhibit 19](#)) and the corridor serves as the designated Pacific Coast Bike Route through this area. Caltrans classifies the existing Route 101 corridor on-shoulder bike route as a Class III Bikeway that “designates a preferred bike route through a high demand corridor and provides for shared use with motor vehicle traffic.” The right, or outside, highway shoulder width in both directions is 10-feet wide for the length of the project corridor.

As discussed below, the partially completed Humboldt Bay Trail, follows a route parallel and along the bay side of the Highway 101 Corridor. Currently, Highway 101 does not provide direct access to the trail except for a temporary short paved connector trail from the southern end of the completed trail that allows southbound cyclists on the trail to switch over to the shoulder of the highway after coming to the end of the trail. Highway 101 does provide direct access to the Fay Slough Wildlife area on the inland side of the corridor at the north end of Mid-City Motor World. Otherwise, there are no other coastal trail, parks or coastal access points along the highway and pedestrians are not allowed on the highway shoulders.

The primary purpose of the Highway 101 Corridor project is to improve the safety of the highway by eliminating the uncontrolled left turn move and highway crossings at the corridor's six intersections. In addition, the project will upgrade portions of the highway to reduce other dangerous traffic conflicts. For example, the project will reduce current hazards associated with vehicles attempting to merge onto a high-speed moving highway by extending acceleration and deceleration lanes. As the Highway 101 Corridor is a critical link for connecting to public access facilities in the greater area, the various safety improvements are necessary for providing maximum access and recreational opportunities for the public consistent with public safety needs, as required by Section 30210 of the Coastal Act.

Although the project will provide necessary improvements for providing public access for public safety related to traffic hazards, many of the project highway improvements will be vulnerable to flooding hazards related to SLR over time. As discussed above in Finding F, above, while the structural components of this project (the bridge replacement and interchange) are designed to withstand some levels of SLR, most of the proposed highway improvements do not address SLR over the entirety of their design life or duration, inconsistent with the requirements of the Coastal Act to minimize risk to life and property and maximize public access consistent with public safety needs. In order to be found consistent with the hazard and public access policies of the Coastal Act, it is critical to assess SLR vulnerabilities over the entirety of a development's design life, especially when the development involves critical infrastructure serving the public, such as a principal highway providing access up and down the coast. Because the proposed project does not ensure consistency with the Coastal Act hazard and public access policies through its design life of 2100, **Special Condition 2** requires Caltrans to submit a CDP amendment application in the future supported by a Phased Adaptation Plan by specified deadlines tied to SLR impacts. Although the Phased Adaptation Plan is required no later than December 31, 2030, the Phased Adaptation Plan and CDP amendment application will be required earlier if the specified flooding at specific levels occurs on any travel portion of the Highway 101 Corridor prior to that time.

The project will not alter the existing width of the shoulder of prevent future shoulder use for cyclists; however, bicycle use will be affected by construction of the project. Caltrans has taken steps to ensure access impacts during construction are minimized. Transportation Management Plans (TMPS) have been developed for each separate project component. ([Exhibit 21.](#)) Each of these TMPS include Bike and Pedestrian Accommodation provisions that mandate that bicyclists must be accommodated throughout the work zone. Each TMP designates that cyclists be provided adequate (4-foot wide) delineated space to safely traverse through the work zone. Caltrans has committed to maintaining public access through the temporary bike lanes. (See Project Description, [Exhibit 4.](#)) However, in two- to four-weekend periods there will be weekend daytime closures of one lane while the bridge rails on the on the Jacoby Creek Bridge and Gannon Slough Bridge bridge rails are replaced. During those short windows, a separate van equipped for passengers with storage for the bicycle will be provided to ensure continued cycling access directly through the corridor. (Some possible cycling access will also be impacted during the two six-hour nighttime complete closures of Highway 101 when the new Jacoby Creek Bridge is relocated into the existing highway alignment.) In order to ensure van use in minimal and public access for cyclists is maintained during construction, the Commission includes **Special Condition 19**. Special Condition 19 requires that Caltrans shall maintain public access for bicyclists through the work corridor at all times by providing designated adequate space adjacent to the open traffic lane to safely traverse through the work zone except if necessary during construction of the bridge rails on North Bound Jacoby Creek and Gannon Slough Bridges, when traffic is reduced to one lane, and bikes will be accommodated with a shuttle vehicle service (currently scheduled as 2-4 weekend closures). The use of vehicle transportation to transport cyclists or pedestrians through the work corridor shall be avoided to the maximum extent feasible.

Overall, as conditioned, the construction activities do not result in any closures of public access to coastal access points or recreation areas or reduce the ability to access any such area. Given

that cycling access through the corridor will be maintained, the van bridge use is of a minimal and nighttime period, and there are no public recreational closures, as conditioned, the construction activities of this project do not have significant adverse effects on public access to the coast.

In terms of long-term public access issues, the partially completed Humboldt Bay Trail follows a route parallel and along the bay side of the Highway 101 Corridor. However, much of the public access benefits of the trail will not be realized if there is no connection between Indianola Cut Off road and the trail. This is particularly true for the residents along the corridor or coming from the roads east of the corridor where the median crossings closed. Indianola Cut Off will provide a much improved through access for cyclists and pedestrians, but those benefits will only be realized if it connects to the Humboldt Bay Trail. Caltrans states that it intends to build this connection but cannot do so at this time because the trail itself is not completed. However, the trail is anticipated to be completed by 2020-2021, and the Indianola Interchange is scheduled to be constructed from 2021 to 2026. Therefore, **Special Condition 4** requires Caltrans to submit prior to beginning construction of the Indianola Interchange, along with final plans for the construction of the Indianola Interchange, plans for the construction of a connection between the improved Indianola Cut-off and the bike path. Special Condition 4 also requires that the trail match the improved sidewalks and shoulders by being six-feet wide, and that any impacts to wetlands be avoided.

The Commission finds that as the Highway 101 Corridor project as conditioned (1) will provide essential public safety improvements for a highway route that is critical for providing public access to the coast, (2) will ensure continued bicycle access along the highway shoulders including during construction, (3) provides for a public access connection to the future Humboldt Bay Trail, and (4) will provide for future adaptation of the highway facility to SLR to ensure use of the highway for public access will be provided consistent with public safety, the project as conditioned is consistent with the public access policies of the Coastal Act.

Furthermore, regarding public access in the region, in recent years a network of separated bike and pedestrian trails has expanded in the Humboldt Bay Area and in the cities of Eureka and Arcata. The Commission has urged implementation of such separated bicyclist and pedestrian trail separated from highway and road traffic, primarily when possible through expansion of the California Coastal Trail segments. The Coastal Trail is a vision for all Californians and future generations worldwide that has been endorsed by the legislature and the governor, who have directed state transportation and other agencies to coordinate development of the Coastal Trail, including, where applicable, making lands available for completion of the trail (PRC Section 31408(b), as amended by AB 1396 (2007)). The California Coastal Trail reflects a clear preference for separated pedestrian and bike trails off major highways. The Coastal Conservancy's *Siting and Design Standards* manual for the CCT states that, "The CCT should be designed to avoid being located on roads with motorized vehicle traffic where feasible." Completing the California Coastal Trail, prepared by the California Coastal Conservancy in 2003, includes the following recommendation: "Support implementation of the Humboldt Bay Trails Feasibility Study to develop a continuous trail system around the east side of Humboldt Bay."

However, currently these trails are not interconnected and there is no existing connection between the two cities. The west side of Highway 101 along the North Coast Rail Authority (NCRA) track bed that parallels the Highway 101 Corridor, provides an opportunity to connect existing coastal trails and to provide a separated bicycle and pedestrian trail connecting the two communities. (See [Exhibit 30](#) for an overview map of separated trail projects along Humboldt Bay.)

As discussed above, the Commission has found that the development as conditioned has been sited and designed consistent with the public access policies of the Coastal Act. In addition to designing the project to be consistent with the public access policies, Caltrans has been separately facilitating development of the Humboldt Bay Trail along a route parallel to the Highway 101 Corridor on its Bayward side. Working with Humboldt County, North Coast Railway Authority, the California Coastal Conservancy, and the cities of Eureka and Arcata, Caltrans has supported efforts to complete the Humboldt Bay Trail as a network of paved paths connecting the communities around Humboldt Bay. ([Exhibit 30](#).) The trail is being constructed in phases and is almost entirely now completed. Only a final four miles of the trail remain to be constructed, which is necessary to link the north and south sections of the completed trail together. This section is called the “Humboldt Bay Trail South” Project, which extends from the Target store near Eureka Slough to the Bracut Industrial Park near Bayside Cutoff.

Caltrans actions to support the Humboldt Bay Trail System development since the Consistency Certification include the following. Caltrans made a \$1 million contribution to capital construction of the northern segment, which was completed in 2017 and involved construction of approximately 3.0 miles of a Class I, ADA accessible, non-motorized multi-use trail, which runs from the terminus of the Arcata Rails with Trail at State Route 255 and through the Arcata Marsh and Wildlife Sanctuary. The trail continues south along the former railroad line to south of Bayside Cutoff along Humboldt Bay. Caltrans has contributed \$1.25 million to capital construction of the southern segment. Caltrans has employed significant staff resources to assist the local agencies in the development of the trails, working with the County on safety and other operational factors associated with the trails. Caltrans also points out that in its efforts to secure agreements to remove billboards from the Highway 101 Corridor, which was also required by the Consistency Certification, enabled the Humboldt County Association of Governments (HCAOG) to transfer \$2,000,000 in funds HCAOG had allocated for billboard removal and instead allocate it to the Bay Trail South Project.

Moreover, although not a direct Caltrans contribution, in January 2019 the California State Transportation Commission awarded the County funding in the amount of \$13.5 million through the competitive Active Transportation Program.

At this time, the County of Humboldt is leading the development of the Humboldt Bay Trail South segment. The proposed trail alignment is generally situated between Highway 101 and the NCRA railroad prism, except where the proposed alignment is located on the CRC levee or where the trail is on the NCRA Eureka Slough Bridge and approaches. Where the project is situated between Highway 101 and the railroad, the proposed alignment is on the west-northwest side of Highway 101 and on the east-southeast side of the NCRA railroad corridor. Right-of-way, permits, wetland mitigation, and funding for construction still need to be secured.

Preliminary cost estimates for the project are approximately \$14-16 million. On July 31, 2018, Humboldt County Board of Supervisors adopted an Initial Study and Mitigated Negative Declaration prepared for the Humboldt Bay Trail South project in accordance with the California Environmental Quality Act (CEQA). The County is now working to make right-of-way acquisitions, secure necessary permits (including a CDP anticipated in 2020), and complete the final design. The target date for beginning construction is 2021. The County has estimated it will take six months to construct the 4-mile trail.³⁰

Caltrans also intends to cover the mitigation for the wetland impacts of both trail segments, including on behalf of the City of Arcata and Humboldt County. As discussed in Section G above, Caltrans proposes to incorporate mitigation for the wetland impacts of the trail projects into its overall mitigation for this project through the *Spartina* mitigation project discussed above. The Humboldt Bay Trail South Project is due to come before the Commission for approval in 2020 with construction starting in 2021 and completion in 2022. The Humboldt Bay Trail North Project by the City of Arcata was approved by the Commission on October 5, 2016,

J. ARCHAEOLOGICAL RESOURCES/TRIBAL CONSULTATION

Section 30244 of the Coastal Act states:

Where development would adversely impact archeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Mechanical treatments that disturb the soils (grinding, tilling, disking and digging/excavating) could damage unknown historical or archaeological resources. These activities also could inadvertently damage human remains. Section 30244 of the Coastal Act requires development projects to implement reasonable mitigation measures to protect identified archaeological or paleontological resources.

Archaeological Resources and Tribal Consultation

As part of its CEQA process, Caltrans conducted an archaeological investigation, completed in 2006. The investigation included a full archeological field surveys of the entire project area to identify archaeological resources that might be subject to impacts from the proposed project activities. The investigation also reviewed all archeological studies related to the project area and reviews of information in historical societies and libraries. Caltrans also conducted a historic resources evaluation. Caltrans identified two potential historic sites, parts of the 1930s Batini Dump and Murray Field Airport, which were potentially eligible for protection under the National Register of Historic Places. However, all build alternatives for the project avoided both these sites and therefore Caltrans concluded there are no adverse impacts to cultural resources by the project. The State Historic Preservation Office essentially concurred with that assessment.

³⁰ For a review of Humboldt Bay Trail and its status, see <https://humboldt.gov.org/1923/Humboldt-Bay-Trail>.

Tribal Consultation

The project area lies within the traditional territory of the Wiyot tribe group. This territory lies along the coast of Humboldt County, and encompasses Humboldt Bay and the lower reaches of the Eel, Mad and Elk Rivers. Eastward, this territory extends across the coastal plain to the crest of the first mountain range. Traditionally, the Wiyot occupied permanent year-round village communities consisting of rectangular wood plank homes, often with a smaller central sweathouse. Settlements existed all around Humboldt Bay and along the banks of many of the streams and sloughs in the region.

The Tribe is understood to include three tribal divisions (Patawat, Wiki, and Wiyot), each associated with a water-related resource (the Mad River, Humboldt Bay, and the lower Eel River, respectively) and each speaking a common language (Selateluk). Although the first European contact probably did not occur until 1806, the area saw a major population influx after gold was discovered in the mountains above Eureka in the 1850s. The Wiyot suffered repeated violence at the hands of the new settlers. It is estimated that violence and introduced disease had resulted in the death of as much as 90 percent of the contact period population by 191. (Morgon, et.al, (2006) (citing Elsasser 1978).) Despite these tragedies, the Wiyot of today enjoy a continuance, and a renaissance of, cultural identity and traditions. (Morgon, et.al, (2006) (citing The Wiyot Tribe 2002).)

Today, representatives of the Wiyot Tribe are the Table Bluff Reservation Wiyot Tribe, the Blue Lake Rancheria, and the Bear River Band of the Rohnerville Rancheria.

Caltrans initiated consultation efforts with the various Native American Tribes of the area in 2002. Communications between Caltrans and the tribes are confidential, and therefore the full record of those communications is not included here.

Caltrans requested from the Native American Heritage Commission (NAHC) a review of the Sacred Lands File and list of potential Native American individuals or organizations that might have knowledge of cultural resources in the project area. Caltrans received a response on October 31, 2002, which noted no known Native American cultural resources were in the project area. Caltrans contacted the groups identified by NAHC in 2002 and met with Table Bluff Rancheria (Wiyot Tribe) representatives in 2002.

On January 21, 2014, Caltrans met with Tribal Historic Preservation Office representatives of the Wiyot Tribe - Table Bluff Reservation, Blue Lake Rancheria Tribe of Indians, and Bear River Band of Rohnerville Rancheria to provide project updates. Caltrans has continued to discuss the project with tribal representatives through at least February 2019.

Responses to Caltrans generally indicated that the project is not located in a known archaeologically sensitive area and there were no known archaeological sites within the project area. Although there are no known archeological sites in the project area, through consultation with the tribes and at the request of the tribes, Caltrans agreed to protocols for the evaluation and protection of archaeological resources discovered during certain construction phases of the project. These protocols include the presence of a monitor at certain confidential locations that the tribes considered sensitive for potential cultural resources during the grading and

earthmoving phases of the project. In the event that cultural materials were discovered during construction, Caltrans has agreed to cease all earthmoving activity within and around the immediate discovery area would be diverted until a qualified archaeologist could assess the nature and significance of the find.

Consistent with the Commission's tribal consultation policy adopted in 2018, Commission staff also identified the relevant tribes to contact about the project and reviewed the tribal consultation Caltrans had undertaken. On April 3, 2019, Commission staff also wrote to the representatives of the Blue Lake Rancheria Tribe, the Bear River Band of Rohnerville Rancheria, the Wiyot Tribe - Table Bluff Reservation, and representatives of the Trinidad Rancheria, to inform them of the project's CDP application and the Commission hearing on the project, and advise them of the opportunity to provide comments for the CDP hearing.

To ensure protection of any cultural resources that may be discovered at the site during project construction, the Commission attaches **Special Condition 17**. This condition requires that Caltrans provide a qualified monitor in place during the grading and earthmoving phases of construction that are at the locations requested by the tribes, which are confidential. If an area of cultural deposits or human remains is discovered during the course of the project, all construction must cease and a qualified cultural resource specialist, in consultation with the THPOs of the Wiyot Tribe, the Bear River Band of Rohnerville Rancheria, and the Blue Lake Rancheria, must analyze the significance of the find. To recommence construction following discovery of cultural deposits or human remains, Caltrans is required to submit a supplementary archaeological plan for the review and approval of the Executive Director and obtain a permit amendment for changes the Executive Director determines are not *de minimis* in nature and scope.

Therefore, the Commission finds that the development, as conditioned, is consistent with Coastal Act section 30244.

K. AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Coastal Act Section 30253 states, in part:

New development shall do all of the following:

- (c) *Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.*
- (d) *Minimize energy consumption and vehicle miles traveled.*

This section of the findings primarily discusses the project's consistency with Section 30253 (c) and (d). However, it should be recognized that along with Section 30253, various global climate change effects that result from increases in greenhouse gas emissions directly impact numerous coastal resources. Among other things, these impacts can include: (1) coastal flooding and erosion; (2) inundation of developed areas and public access and recreation areas; (3) alterations

to existing sensitive habitat areas; (4) ocean warming and acidification; (5) changes in marine species diversity, distribution, and productivity; and (6) infrastructure damage arising from sea level rise. Thus, actions to reduce greenhouse gases and to protect coastal resources at risk from the adverse effects of global warming are consistent with a number of Coastal Act goals and policies, including but not limited to the directives in Section 30253.

For purposes of Section 30253(c), the California Air Resources Board (CARB) is the state air resources board. The local air pollution control district is the North Coast Unified Air Quality Management District (NCUAQMD). CARB sets state ambient air quality standards (along with U.S. EPA, which sets National Ambient Air Quality Standards through the Federal Clean Air Act). Caltrans does not require a permit from CARB or NCUAQMD for the proposed project. Typically, transportation projects must demonstrate conformity with designated standards and an emissions budget, however, this project is in a region, the North Coast Air Basin, considered “in attainment,” and does not need to demonstrate conformity. However, in the FIER Caltrans performed an analysis of the projects effects on air pollutants as necessary under federal standards.

Caltrans analyzed the effects on Mobile Source Air Toxics Emissions (MSATs) regulated by CARB for the proposed alternatives. Overall, the project does not increase highway capacity in the corridor which would have a significant effect on Vehicle Miles Travelled (VMTs) and MSATs. The closure of the medians will result in slight increases in VMTs and MSATs because there will be additional out-of-direction travel compared to using the existing median crossings. Caltrans selected the alternative that had substantially less out-of-direction travel, VMTs, and MSATs through the provision of the Indianola Interchange and intersection at Airport Road/Jacobs Avenue. The slight increase in MSATs from the out-of-direction travel is offset, however, by the improved level-of-service traffic flows through the corridor. There will be less idling cars waiting to make turns across the highway, and less traffic back-ups resulting from the traffic conflicts of open uncontrolled medians. Because there are no increases in traffic capacity or major new highway connections, the project is not anticipated to increase the percentage of diesel trucks in the corridor. Overall, Caltrans concluded that “the proposed project is not expected to create or worsen particulate matter air quality violations.” (See FEIR, p. 299.)

Construction activities are a potential source of dust and equipment emissions that can have temporary impacts on local air quality. The NCUAQMD does not set specific thresholds for these temporary impacts but prescribes a set of minimization measures for dust control. (See FEIR, pp.295-297, 301-302, [Exhibit 37](#).) The proposed project would follow the recommended NCUAQMD minimization measures that provide dust control practices to reduce particulate matter emissions from construction activities. The proposed project also states that it employ other measures to reduce construction emissions including limiting idling engines, keeping engines properly tuned, avoiding unnecessary use of construction equipment.

Climate Change Emissions

Under AB 32 (California Global Warming Solutions Act of 2006), CARB was required to create a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California. AB 32 required CARB to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020 and

update the program every five years. CARB adopted a scoping plan in 2008 and updated it in 2014, with another update in 2017 to reflect the increased emissions reductions targets of SB32 (See [2017 Scoping Plan](#)). Among these steps, CARB staff has also adopted a “Mobile Source Strategy” for greenhouse gas emissions.³¹

Transportation projects have an obvious potential to increase greenhouse gas emissions. The sector is the largest emitter of GHG emissions in California. Along with the Coastal Act’s mandate that new development reduce VMTs and energy consumption in Section 30253(d), there is the requirement for compliance with the state Air Resources Board requirements in 30253(c). As the lead agency under CEQA, and consistent with federal and state law, Caltrans undertook a study of climate-change impacts of the project consistent with CARB requirements (See FEIR, pp. 441-453, [Exhibit 38](#)). Under existing CEQA guidelines related to climate change, a project’s implications for climate change should be analyzed not only as individual contributions but also as “cumulative” impacts. (See CEQA Guidelines sections 15064(h)(1) and 15130.)

The actual highway corridor safety and improvement projects components here do not necessarily reduce or increase CHG emissions or VMTs. The highway corridor projects are concerned with safety and updates to aging infrastructure and do not increase the capacity of the highway or significantly increase VMTs. Caltrans states that there will be a reduction in CHG emissions and energy usage because there will be a reduction in idling cars waiting to make turns through the uncontrolled medians or backed-up in traffic because of the turns. At the same time, there will be some increase in VMTs/CHG emissions from the wrong-way impacts that do stem from the project, though these were minimized by the selected alternative which minimizes out-of-direction travel. Caltrans has additionally noted its increased use of native landscaping in the project and riparian replanting (which should contribute to slight reductions in CHG emissions), and use of LED light builds in corridor lighting to reduce energy consumption. Overall, the project does not appear, by itself, to reduce or expand emissions.

Caltrans has separately supported the construction of a separated public access bicycle and pedestrian trail along Humboldt Bay as part of an integrated effort to construct separated trails in the Humboldt Bay Area. (See [Exhibit 30](#).) With Caltrans funding, planning support, and proposed mitigation coverage, the City of Arcata has already planned, obtained a CDP, and completed the north section of this trail. Caltrans has also provided substantial funding for future trail segments. Active transportation policies that encourage cycling and walking transportation are consistent with the CARB 2017 Scoping Plan (see, e.g., pp. 75-76). The increased cycling opportunities should result in reduced VMTs in the highway corridor.

Overall, because the project does not increase traffic capacity, and has some increases in wrong-way travel but reductions in traffic idling time, it neither contributes to or substantially reduces CHG emissions in the project corridor. Therefore, the project is consistent with Section 30253 (c) and 30253(d), as well as the other Coastal Act sections impacted by climate change resulting from increased CHG emissions.

³¹ See <https://ww3.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm>.

L. ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Coastal Act Section 30240 states:

Section 30240 Environmentally sensitive habitat areas; adjacent developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

The Coastal Act defines environmentally sensitive habitat areas (ESHAs) as areas in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Section 30107.5). Coastal Act Section 30240 allows only resource-dependent development in environmentally sensitive habitat areas, and requires that development adjacent to sensitive habitats be sited and designed so as to not significantly degrade the habitats.

As documented in the On Site Mitigation and Monitoring Plan ([Exhibit 17](#)), in conjunction with the construction work for the Indianola Interchange, the acceleration and deceleration lanes, and the Jacoby Creek Bridge replacement, Caltrans proposes to remove numerous trees and shrubs, including trees totaling 1.56 acres in area and approximately 95 trees and shrubs. A maximum of no more than 106 trees will be removed or limbed. Approximately half of the trees Caltrans would remove are non-natives.

Caltrans describes all the areas of trees and shrubs to be removed as “riparian” because the trees and shrubs are within 100 feet of water. However, no analysis was provided demonstrating that the vegetation removal areas are ESHA and the areas described as riparian are not necessarily ESHA.

In this case the impacts of the tree and shrub removal would occur in seven distinct different areas of the project corridor, all of which are on the east side of Highway 101 except for a location in the median at Jacoby Creek Bridge. (See OMMP, [Exhibit 17](#) and Project Layouts, [Exhibit 5](#).) All of the tree removals would occur in wetland areas. The tree removals are required for different reasons. Some of the trees to be removed are directly in the path of actual construction of the development, such as the extension of the new merging lanes, the temporary placement of the new Jacoby Creek Bridge, and the interchange. In those cases, the tree and shrub removed in conjunction with wetland fill. Where the application of Coastal Act/LUP policies overlap such as the application of Sections 30240 and 30233 would in this instance, the more specific policy controls over the more generally applicable policies. In this case, Section 30233 is the more specific policy and as discussed in Section G above, the removal of trees and shrubs in those cases can be approved as an incidental public use under Section 30233(4), when

it is the least environmentally damaging feasible alternative and includes feasible measures to minimize and avoid impacts.

Some of the trees and shrubs that Caltrans would remove, however, are not associated with any wetland fill. Caltrans is removing these plants to ensure a 30-foot-wide clear recovery zone (“CRZ”) adjacent to the highway, which is a highway safety standard that requires a safety zone within which there are no large fixed objects. Some other locations are not in the actual final areas of the new lane or interchange, but would be cleared during the construction process. In these cases, removal of the trees is not reviewed for consistency with Section 30233 (4) because it is not “diking, filling, or dredging.”

However, removal of the trees must still be reviewed for consistency with other Coastal Act policies, including Section 30240. Therefore, Commission staff including Dr. Dixon conducted a site visit to review the seven proposed locations and determine if any of the trees and shrubs would be considered ESHA. These findings are discussed in a memorandum of July 24, 2019 prepared by Dr. Dixon. ([Exhibit 34.](#))

As stated in that memo, the Commission has often found that riparian habitats meet the definition of ESHA, but this has generally been in the context of natural water bodies. In this case, almost all the aquatic areas of concern are drainage ditches, except for Jacoby Creek and possibly, and natural-appearing area near Brainard Slough. However, the 101 Slough drainage ditch north of Mid-City Motor World has more stream-like characteristics in its lower reach where it is 15 to 30 feet wide and is tidally influenced.

In reviewing the seven proposed locations, Dr. Dixon concluded that two areas should be recommended to be found to meet the definition of ESHA, including the riparian area adjacent to the 101 Slough north of Mid-City Motor World (described as RP-2a to RP-2h in the Dixon Memo and Caltrans OMMP) and the riparian forest north of the Caltrans maintenance yard at Bracut (described as location RP-5a and 5b).

As discussed below, Caltrans worked with Commission staff to significantly reduce the number of trees and shrubs removed from the riparian ESHA habitat. After project revisions, Caltrans now proposes to remove only five trees from areas recommended as ESHA in the Dr. Dixon memo, four for purposes of the CRZ and one for construction activities.³² These trees are all in the area adjacent to the 101 Slough north of Mid-City Motor World (described as RP-2a, RP-2b, RP-2c, and RP-2d). Because of their close proximity to Highway 101 and the new merging lane, Caltrans would need to remove these trees to maintain an adequate, safe clear recovery zone.

Coastal Act Section 30240 allows only resource-dependent uses in environmentally sensitive habitat areas, and requires that development adjacent to sensitive habitats be sited and designed so as to not significantly degrade the habitats. The proposed tree removal for safety purposes in

³² Caltrans would remove two willow trees in the area Dr. Dixon determined would meet ESHA in the RP-5 area. However, Caltrans would remove those trees in an area that will actually be covered with the new acceleration lane, so those trees are covered as wetland fill and Section 30233(a).

this case is not an allowable resource-dependent use under Section 30240, and therefore is inconsistent with Section 30240.

As described further below, though impacts to sensitive habitat along the new acceleration lane will occur, Caltrans proposes to mitigate on-site for those impacts and has taken measures to minimize any ESHA impacts. Although these impacts are inconsistent with Section 30240, the proposed project as mitigated and conditioned is approvable pursuant to the conflict resolution provisions of the Coastal Act.

M. CONFLICT RESOLUTION

As noted above, the removal of five trees as part of the acceleration/deceleration lane project, in order to provide space for a clear recovery zone along the highway is not for an allowable resource dependent use under Section 30240(a) and is inconsistent with Section 30240. However, as explained below, denying or modifying the proposed project to eliminate this inconsistency would lead to nonconformity with other Coastal Act requirements, namely Sections 30210 (maximizing public access and recreation).

The standard of review for the Commission's decision whether to approve a coastal development permit in the Commission's retained jurisdiction is whether the project as proposed is consistent with the Chapter 3 policies of the Coastal Act. In general, a proposal must be consistent with all relevant policies in order to be approved. Thus, if a proposal is inconsistent with one or more policies, it must normally be denied (or conditioned to make it consistent with all relevant policies).

However, the Legislature also recognized that conflicts can occur among those policies (Coastal Act Section 30007.5). It therefore declared that when the Commission identifies a conflict among the policies in Chapter 3, such conflicts are to be resolved "*in a manner which on balance is the most protective of significant coastal resources* [Coastal Act Sections 30007.5 and 30200(b)]." That approach is generally referred to as the "balancing approach to conflict resolution." Balancing allows the Commission to approve proposals that conflict with one or more Chapter 3 policies, based on a conflict among the Chapter 3 policies as applied to the proposal before the Commission. Thus, the first step in invoking the balancing approach is to identify a conflict among the Chapter 3 policies.

Identification of a Conflict

For the Commission to use the balancing approach to conflict resolution, it must establish that a project presents a substantial conflict between two statutory directives contained in Chapter 3 of the Coastal Act. The fact that a proposed project is consistent with one policy of Chapter 3 and inconsistent with another policy does not necessarily result in a conflict. Virtually every project will be consistent with some Chapter 3 policy. This is clear from the fact that many of the Chapter 3 policies prohibit specific types of development. For example, section 30211 states that development "*shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization . . .*," and subdivision (2) of section 30253 states that new development "*shall . . . neither create nor contribute significantly to erosion . . . or in any way require the construction of protective devices . . .*" Almost no project would violate every

such prohibition. A project does not present a conflict between two statutory directives simply because it violates some prohibitions and not others.

In order to identify a conflict, the Commission must find that although approval of a project would be inconsistent with a Chapter 3 policy, the denial of the project based on that inconsistency would result in coastal zone effects that are inconsistent with some other Chapter 3 policy. In most cases, denial of a proposal will not lead to any coastal zone effects at all. Instead, it will simply maintain the *status quo*. The reason that denial of a project can result in coastal zone effects that are inconsistent with a Chapter 3 policy is that some of the Chapter 3 policies, rather than prohibiting a certain type of development, affirmatively mandate the protection and enhancement of coastal resources, such as sections 30210 (“*maximum access . . . and recreational opportunities shall be provided . . .*”), 30220 (“*Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses*”), and 30230 (“*Marine resources shall be maintained, [and] enhanced...*”). If there is ongoing degradation of one of these resources, and a proposed project would cause the cessation of that degradation, then denial would result in coastal zone effects (in the form of the continuation of the degradation) inconsistent with the applicable policy. Thus, the only way that denial of a project can have impacts inconsistent with a Chapter 3 policy, and therefore the only way that a true conflict can exist, is if: (1) the project will stop some ongoing resource degradation, and (2) there is a Chapter 3 policy requiring the Commission to protect and/or enhance the resource being degraded. Only then is the denial option rendered problematic because of its failure to fulfill the Commission’s protective mandate.

With respect to the second of those two requirements though, there are relatively few policies within Chapter 3 that include such an affirmative mandate to enhance a coastal resource. Moreover, because the Commission’s role is generally a reactive one, responding to proposed development rather than affirmatively seeking out ways to protect resources, even policies that are phrased as affirmative mandates to protect resources more often function as prohibitions. For example, Section 30240’s requirement that environmentally sensitive habitat areas “*shall be protected against any significant disruption of habitat values*” generally functions as a prohibition against allowing such disruptive development, and its statement that “*only uses dependent on those resources shall be allowed within those areas*” is a prohibition against allowing non-resource-dependent uses within these areas. Similarly, Section 30251’s requirement to protect “*scenic and visual qualities of coastal areas*” generally functions as a prohibition against allowing development that would degrade those qualities. Section 30253 begins by stating that new development shall minimize risks to life and property in certain areas, but that usually requires the Commission to condition projects to ensure that they are not unsafe. Even Section 30220, listed above as an affirmative mandate, can be seen more as a prohibition against allowing non-water-oriented recreational uses (or water-oriented recreational uses that could be provided at inland water areas) in coastal areas suited for such activities. Denial of a project cannot result in a coastal zone effect that is inconsistent with a prohibition on a certain type of development. As a result, there are few policies that can serve as a basis for a conflict.

Similarly, denial of a project is not inconsistent with Chapter 3, and thus does not present a conflict, simply because the project would be less inconsistent with a Chapter 3 policy than some alternative project would be, even if approval of the proposed project would be the only way in

which the Commission could prevent the more inconsistent alternative from occurring. For denial of a project to be inconsistent with a Chapter 3 policy, the project must produce tangible, necessary enhancements in resource values over existing conditions, not over the conditions that would be created by a hypothetical alternative. In addition, the project must be fully consistent with the Chapter 3 policy requiring resource enhancement, not simply less inconsistent with that policy than the hypothetical alternative project would be. If the Commission were to interpret the conflict resolution provisions otherwise, then any proposal, no matter how inconsistent with Chapter 3, which offered even the smallest, incremental improvement over a hypothetical alternative project, would necessarily result in a conflict that would justify a balancing approach. The Commission concludes that the conflict resolution provisions were not intended to apply based on an analysis of different potential levels of compliance with individual policies or to balance a proposed project against a hypothetical alternative.

In addition, if a project is inconsistent with at least one Chapter 3 policy, and the essence of that project does not result in the cessation of ongoing degradation of a resource the Commission is charged with enhancing, the project proponent cannot “create a conflict” by adding on an essentially independent component that does remedy ongoing resource degradation or enhance some resource. The benefits of a project must be inherent in the essential nature of the project. If the rule were to be otherwise, project proponents could regularly “create conflicts” and then demand balancing of harms and benefits simply by offering unrelated “carrots” in association with otherwise unapprovable projects. The balancing provisions of the Coastal Act could not have been intended to foster such an artificial and manipulable process. The balancing provisions were not designed as an invitation to enter into a bartering game in which project proponents offer amenities in exchange for approval of their projects.

Finally, a project does not present a conflict among Chapter 3 policies if there is at least one feasible alternative that would accomplish the essential purpose of the project without violating any Chapter 3 policy. Thus, an alternatives analysis is a condition precedent to invocation of the balancing approach. If there are alternatives available that are consistent with all of the relevant Chapter 3 policies, then the proposed project does not create a true conflict among Chapter 3 policies.

In sum, in order to invoke the balancing approach to conflict resolution, the Commission must conclude all of the following with respect to the proposed project before it: (1) approval of the project would be inconsistent with at least one of the policies listed in Chapter 3; (2) denial of the project would result in coastal zone effects that are inconsistent with at least one other policy listed in Chapter 3, by allowing continuing degradation of a resource the Commission is charged with protecting and/or enhancing; (3) the project results in tangible, necessary resource enhancement over the current state, rather than an improvement over some hypothetical alternative project; (4) the project is fully consistent with the resource enhancement mandate that requires the sort of benefits that the project provides; (5) the benefits of the project are a function of the very essence of the project, rather than an ancillary component appended to the project description in order to “create a conflict; ” and (6) there are no feasible alternatives that would achieve the objectives of the project without violating any Chapter 3 policies.

The Proposed Project Presents a Conflict

The Commission finds that the proposed project presents a true conflict between Chapter 3 policies of the Coastal Act. The proposed development will remove five trees from riparian ESHA habitat which is not for an allowable resource dependent use and is inconsistent with Section 30240 of the Coastal Act. However, to not approve the project would be inconsistent with the mandates of Sections 30210. Section 30210 affirmatively mandates that “maximum access ... and recreational opportunities shall be provided for all the people consistent with public safety needs” Highway 101 provides a critical link for the public to access significant stretches of the coast in the Humboldt Bay region, and indeed, given that Highway 101 is the main traffic conduit north and south it serves as a critical link for access further up and down the coast. To deny the project would lead to ongoing unsafe highway conditions, and indeed, given the deteriorating infrastructure, lead to worsened conditions in the near future. Currently, the acceleration lanes are too short and create dangerous conflicts as vehicles attempt to merge onto a high-speed moving highway. Deceleration lanes are also too short to provide a safe distance to slow down and turn off the highway at appropriate speeds for local roads. The project will improve the safety aspects of the highway by extending these merging lanes. The improved acceleration lanes and the provision of a clear safety zone alongside the highway of a width consistent with highway safety standards are necessary to ensure that Highway 101 in this corridor provides maximum public access consistent with public safety.

In most cases, denying a proposed project will not cause adverse effects on coastal resources for which the Coastal Act mandates protection or enhancement, but will simply maintain the status quo. However, where denial of a project would result in significant impacts to public access and recreation consistent with public safety requirements and approval is inconsistent with another policy, a conflict between or among two or more Coastal Act policies is presented. The project is essential to maintaining the safety and continuity of the primary public access corridor in the Humboldt Bay region. Although the proposed project tree removal element is inconsistent with the requirements of Section 30240 that protects ESHA, denial would preclude achieving Sections 30210’s mandate to ensure maximum safe public access.

In addition, it is the very essence of the project, not an ancillary amenity offered as a trade-off, that provides the Chapter 3 benefits. The project would improve the safety and infrastructure reliability of a major highway that ensures safe public access to the coast in the region. In this case the benefits of the project result from its primary purpose – an upgraded highway corridor that will remain open for public access with the removal of unsafe conditions and increased safety overall. The project is therefore fully consistent with the Coastal Act public access and recreation policies. Finally, as discussed below, there are no alternatives identified that were both feasible and less environmentally damaging.

Alternatives analysis.

As noted above, a true conflict among Chapter 3 policies would not exist if there are feasible alternatives available that are consistent with all of the relevant Chapter 3 policies. Alternatives that have been identified that conceivably could accomplish the essential purposes of the project (i.e., highway safety improvements) include (1) alternative sites; (2) alternative methods; and (3) the “no project” alternative, as discussed below.

1. Alternative sites

A highway safety and infrastructure is inherently site specific and by necessity involves the existing highway location. The median closures to improve crossing safety, bridge upgrades, acceleration and deceleration lane improvements to meet current safety standards, all are required to integrate into the existing highway that provides essential public access in the area. Although realignment of all or some portions of the highway corridor is a potential solution to SLR, it will take decades to plan and implement, and almost certainly involve greater impacts to wetlands, ESHA, and other coastal resources. Furthermore, the acceleration lane in this case extends from an existing intersection with the highway that connects to a developed area of approximately eight acres in size. The location of the acceleration lane cannot be moved because the existing intersection cannot be relocated to avoid the impacts without having other impacts to riparian or wetland habitats inconsistent with Section 30240 and or Section 30233. Nor can Caltrans move the acceleration lane westward to avoid impacts to the trees. That would require moving Highway 101 westward which would result in additional wetland fill inconsistent with Section 30233 and likely create additional highway safety issues. Therefore, implementing the project at an alternative location is not a less environmentally damaging feasible alternative that is consistent with all relevant Chapter 3 policies.

2. Alternative project methods and designs

There are no apparent methods or designs that could achieve the same objectives of providing for a safe highway corridor that provides essential public access in the area. The ESHA impacts come from the construction of acceleration lanes and to establish the necessary safe zones around the highway required by highway safety standards. There are no different designs for acceleration lanes that are required to meet minimum safety standards to provide safe transportation.

This section of highway is classified as an expressway. Freeways and expressways standard require a minimum 30 feet standard distance from Edge of Travelled Way (ETW) to a fixed object like a large diameter tree. This CRZ protects the public from collisions with substantial objects when accidents lead to vehicles leaving the roadway. One alternative would be to use guardrails in front of trees to prevent vehicles colliding with the trees. Caltrans considered the use of guardrails but ruled them out as protection in front of a tree. Guardrails help reduce the severity of the collision, but are not sufficient to protect vehicles from tree impacts given the narrow distance between the roadway and the trees. The guardrail manufacture requires the equipment be placed in a condition that it tested and passed the crash criteria. Guardrail also requires a concrete foundation and concrete vegetation control area, which would increase wetland fill and/or ESHA impacts, inconsistent with Sections 30233 and 30240. Guardrails also create potential impacts to cycling and therefore public access. Cyclists travelling on the roadway shoulder could be pushed against the guardrail by vehicles drifting off the highway. These issues are worse in the context of acceleration lanes because when vehicles merge the driver is typically looking over their left shoulder to make sure there is a gap to merge into traffic while accelerating to 60 mph (88 feet/second). In those instances, vehicles have an increased tendency to drift over the right edge stripe while deciding if the merge can be accomplished. This could also create a pinch point for bicycles commuting through the corridor, potentially becoming pinned between a vehicle and the guardrail.

Rumble strips were also considered as an alternative to providing the required CRZ. Rumble strips are typically used to alert weary drivers that may drift off the roadway or between lanes. However they are not typically used in acceleration lanes for when drivers are entering the highway and likely have not been driving any distance which would make them tired and drift toward the rumble stripe. The need for the CRZ is more necessitated by potential collisions or near-collisions as vehicles enter the highway, for which rumble strips provide no protection. Rumble strips also create issues for cyclists. In this case, the shoulder will be down to four-feet wide, which does not provide room for a one-foot wide rumble strip and still allow adequate space for cyclists. Caltrans does at times use a four- to six-inch wide rumble strip under the white strip. However, vehicle tires are typically wider than six inches and the tires may bridge the rumble and lessen the vibrational effect. This may be acceptable between lanes, but would not adequately alert drivers to prevent them veering off the highway.

Another alternative design would be to reduce the length of the acceleration/deceleration lanes. This alternative might reduce, but not eliminate, the tree removal in the potential ESHA. Under American Association of State Highway Transportation Officials Guidelines, various acceleration and deceleration lane lengths are determined based on relative speed of traffic. The current project includes 1600 feet acceleration lanes, which are considered the standard for cars to reach 60 mph. Reducing the acceleration lane to less than 1,300 feet would create collision problems as vehicles would not have time to increase speed and would enter the merge at a slower speed than highway traffic. This creates the risk of collisions due to sudden movements to avoid a slow vehicle. In this case, all the trees to be removed or limbed in the area of potential ESHA are within 1,100 feet of the intersection. Reducing the acceleration lane to 1,000 feet would potentially avoid the removal of one tree, but the acceleration lane would have to be reduced to well under 900 feet to avoid further tree removals. Reducing the acceleration lane to such an extent would be well below safety standards and create significant safety issues.

Another more specific alternative would be to complete the project without the north bound acceleration lane from Mid-City, where the potential ESHA habitat exists. However, that would mean that acceleration lane would remain below safety standards, insufficient, and unsafe. Because vehicles enter Highway 101 from the Mid-City intersection, and there would be insufficient safe room for those cars to merge, the potential for collisions is to Highway 101 generally, and thereby affects the travelling public generally.

Similarly, another more specific alternative would be to construct the improved acceleration lanes but to not remove the trees in the Clear Recovery Zone. However, not removing those trees where it is essential for public safety because they are well within the standard limit set for the Clear Recovery Zone would create dangerous conditions for the travelling public. Therefore, the “no project” alternative is not a less environmentally damaging feasible alternative that is consistent with all relevant Chapter 3 policies.

As discussed further below, Caltrans has utilized some different methods of calculating the CRZ rather than the generic 30-foot CRZ safety standard. This has adapted the tree removal criteria reduce the amount of trees removed to the maximum extent while still complying with safety standards. There are no other apparent methods or designs for project implementation that would eliminate the tree removal and avoid the Coastal Act Chapter 3 conflict.

3. “No project” alternative

The “no project” alternative would maintain the *status quo* of the site and would not solve the safety problem of the uncontrolled median crossings at intersections, and it would not upgrade degrading highway infrastructure to meet current highway safety standards. Under the “no project” alternative, the highway, which is essential for public access in the area, would continue to have collisions at substantially higher rates than the statewide average and with greater severity than statewide averages. Infrastructure would continue to degrade.

As discussed above, none of the identified alternatives to the proposed project would be both feasible and consistent with all relevant Chapter 3 policies. The Commission further finds that based on the alternatives analysis above, the proposed project is the least environmentally damaging feasible alternative.

Conflict resolution

After establishing a conflict among Coastal Act policies, Section 30007.5 requires the Commission to resolve the conflict in a manner that is on balance most protective of coastal resources. In this case, the Commission finds that the impacts on coastal resources from not constructing the project would be more significant than the project’s ESHA impacts. The approved project is more protective of coastal resources than denial would be because it allows for continued motor vehicle and bicycle access along and to the coast with great improvements in public safety and reliability. Denying the project because of its inconsistency with Section 30240 would avoid the removal of five trees that may be considered ESHA habitat. However, the ESHA impacted is only five trees and is on a highway median where it provides relatively low-quality ESHA of uncertain benefits. The Commission’s ecologist has determined that the site at issue may qualify as ESHA, but also notes that the Commission typically finds riparian areas to be ESHA in the context of natural water bodies. In this case, the water body is a drainage ditch adjacent to a highway. ([Exhibit 34.](#)) Dr. Dixon also found that the vegetation alone would not qualify as ESHA, but only in combination with the 101 Slough drainage and the general ecosystem functions it provided to assist the ecology of the slough drainage. Additionally, overall about one-half the trees that Caltrans will remove are non-native trees and there will be some benefits of the project in the removal of non-native species from riparian habitat. Lastly, with the mitigation proposals discussed below and the tree & shrub replanting, the impacts would be temporary in nature.

In addition, as the proposed highway safety components to a major highway that provides essential connectivity north and south through the region ensures coastal public access is maintained in the region consistent with public safety. The proposed improvements are therefore essential under the requirements of Sections 30210. Therefore, the Commission finds that the approving the project with its safety improvements is more protective of coastal resources than the impacts of the removal of five trees from low-quality ESHA along a highway when those trees will be replaced in the same area with similar native vegetation.

Mitigation

As stated above, the conflict resolution provisions of the Coastal Act require that the conflict be resolved in a manner that on balance is the most protective of significant coastal resources. To meet this test, in past actions where the Commission has invoked the balancing provisions of the

Coastal Act, the Commission has found it necessary to mitigate adverse impacts on coastal resources to the maximum extent feasible.

In this case, Caltrans has taken numerous steps to reduce the number of trees and shrubs that had to be removed for the project and is proposing on site mitigation for the impacts to riparian habitat by planting replacement trees at other points along the highway ROW.

The Commission finds that in this particular case because (1) the project proposes to create a safer highway corridor which is essential for public access to the coast; (2) the project minimizes impacts to ESHA; (3) the ESHA impacted is low quality and difficult to access; and (4) the impacts are temporary and mitigated with replanting, the Commission finds that the impacts on coastal resources from not constructing the project will be more significant than the project's ESHA habitat impacts, if these impacts are minimized and mitigated as proposed and conditioned. Therefore, the Commission finds that approving the project, as conditioned, is, on balance, most protective of coastal resources.

N. APPLICANT'S LEGAL INTEREST IN THE PROPERTIES

Section 30601.5 of the Coastal Act states:

Where the applicant for a coastal development permit is not the owner of a fee interest in the property on which a proposed development is to be located, but can demonstrate a legal right, interest, or other entitlement to use the property for the proposed development, the commission shall not require the holder or owner of any superior interest in the property to join the applicant as coapplicant. All holders or owners of any other interests of record in the affected property shall be notified in writing of the permit application and invited to join as coapplicant. In addition, prior to the issuance of a coastal development permit, the applicant shall demonstrate the authority to comply with all conditions of approval.

Under Section 30601.5 of the Coastal Act, an applicant for a coastal development permit (CDP) does not need to be the owner of a fee interest in the property on which the proposed development is located as long as the applicant can demonstrate a legal right, interest, or other entitlement to use the property for the proposed development, and as long as all holders or owners of any other interests of record in the affected property are notified in writing of the permit application and invited to join as co-applicants. In addition, Section 30601.5 of the Coastal Act requires that the applicant demonstrate authority to comply with all conditions of approval prior to issuance of a CDP.

Virtually all of the work for the proposed project will take place in Caltrans right-of-way on property that it owns. Small portions of the construction work for the expansion of the lanes at the Airport and Jacoby road intersection with Highway 101 will require staging on private property (APNs 014-151-008/009). A staging area would also be required along the Bracut Lumber Company (APNs 501-241-030/031/033) for work on the acceleration and deceleration lanes. Caltrans has submitted copies of Temporary Construction Easements already obtained for these activities. Airport road will also be widened in part on property owned by the county. In

each case, the TCE includes general language that Caltrans has the right of access to the property for the general purpose of making improvements for the corridor project. The County has issued a Right-to-Enter permit allowing Caltrans to enter the property for that work. However, Caltrans will still need to obtain an encroachment permit for the actual construction work.

Additionally, this project includes related Spartina Removal mitigation work that will be performed under an existing CDP 1-14-0249, a separate permit granted to the Humboldt Bay Harbor District that authorizes such work with conditions. To ensure the mitigation for this project can be completed as described herein, the Applicant must demonstrate that it has a legal right, interest, or other entitlement to complete the mitigation components of this project, including the indefinite monitoring and maintenance. Here, Caltrans has provided letters from the Wiyot Tribe and the City of Eureka allowing Caltrans to undertake the mitigation activities under the Spartina Removal Mitigation Plan including the indefinite monitoring and maintenance. (See [Exhibit 16](#), Appendix B.)

Finally, 30601.5 requires that the applicant shall demonstrate the authority to comply with all conditions of approval, as it is conditioned by the Commission in its approval.

To ensure these requirements are met, the Commission is attaching Special Condition 26, requiring that the Applicant, prior to permit issuance, show evidence that all affected property owners have agreed in writing that the Applicant may undertake development on their properties pursuant to CDP 1-18-1078 as conditioned by the Commission.

The Commission finds that as conditioned, the development is consistent with the requirements of Section 30601.5 of the Coastal Act.

O. REIMBURSEMENT OF COSTS AND FEES

Coastal Act Section 30620(c)(1) authorizes the Commission to require applicants to reimburse the Commission for expenses incurred in processing CDP applications. See also 14 C.C.R. § 13055(g). Thus, the Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP application. Therefore, consistent with Section 30620(c), the Commission imposes **Special Condition 27** requiring reimbursement of specified costs and attorneys' fees the Commission incurs in connection with the defense of any action brought by a party other than the Applicant/Permittee challenging the approval or issuance of this permit.

P. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Caltrans served as the lead agency for the project for CEQA purposes. Caltrans adopted a final programmatic environmental impact report for the project on January 20, 2017.

Section 13906 of the Commission's administrative regulation requires Coastal Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of

CEQA prohibits approval of a proposed development if there are any feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As discussed above, the proposed project has been conditioned to be consistent with the policies of the Coastal Act. The findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As specifically discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts which the activity may have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act to conform to CEQA.

APPENDIX A: SUBSTANTIVE FILE DOCUMENTS

Coastal Development Permits and Application Materials:

Coastal Development Permit No. 1-18-1078 and associated file.

Coastal Consistency Certification CC-016-13 and associated file.

Coastal Development Permit Waiver 1-19-0334-W and associated file.

Other Public Documents

Humboldt County Certified Local Coastal Program

California Coastal Commission. (2015, August 12; including October 2018 Science Update adopted November 7, 2018). California Coastal Commission sea level rise policy guidance: Interpretive guidelines for addressing sea level rise in local coastal programs and coastal development permits.

California State Coastal Conservancy. (2003, January). Completing the California Coastal Trail. <https://www.coastal.ca.gov/access/coastal-trail-report.pdf>.

Scientific Publications:

Aldaron Laird, Trinity Associates, “Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment” (2018).

The City of Arcata, “LCP SLR Vulnerability Assessment” (2018).

The City of Eureka, “LCP Sea Level Rise Assets Vulnerability and Risk Assessment” (2016).

The City of Eureka, “Adaptation Planning Report” (2016).

Laird, Powell, and Anderson, “Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment” (2013).

Aldaron Laird, Trinity Associates, “Humboldt Bay Area Plan Diked Shoreline Sea Level Rise Adaptation Feasibility Study” (2018).