

Appendix G

Comments and Responses Received on
the Draft Study Report



APPENDIX G

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G.1 Comments and Responses Received on the Draft Study Report

On May 12, 2020, AMBAG released the Draft Central Coast Highway 1 Climate Resiliency Study for public review and comment. The close of the public comment period for the Draft report was June 11, 2020. The comments received on the Draft Central Coast Highway 1 Climate Resiliency Study as well as written responses are included as an attachment to this Appendix.

Draft Central Coast Highway 1 Climate Resiliency Study Public Comments and Responses Received During the Public Review Period									
Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date	
1	Land Watch	DeLapa	Michael	General	Thank you for the opportunity to review the Draft Central Coast Highway 1 Resiliency Study Report. Due to projected sea level rise between the cities of Monterey and Santa Cruz, Highway One will be affected in the following areas: Elkhorn Slough, Watsonville, Moss Landing south of Dolan Road and Castroville. Since the goal of the Resiliency Study is to maintain a coastal connection between Santa Cruz and Monterey Counties, what are the plans for addressing the segments other than the one for Elkhorn Slough?	This study's focus was the eight mile stretch between the Santa Cruz/Monterey County line near Salinas Road and SR 1/SR 183 intersection near Castroville. Other efforts may be studied a later date as funding is available. Additionally, Caltrans recently completed climate change vulnerability assessments for all the districts within California.	Letter	5/22/2020	
2	Land Watch	DeLapa	Michael	Chapter 6 and Appendix E	The cost/benefit analysis for the inland route should consider that much of Moss Landing will be severely affected by sea level rise. Indeed, much of the town and power plant are projected to be under water, assuming a 3’ rise in sea level (see map below). Is an inland route the least costly alternative when the cumulative cost/benefits for all improvements -- Moss Landing Road, other sections of Highway 1, and other public infrastructure -- are considered?	The transportation analysis includes flood effects in Moss Landing as part of the no action scenario. The inland route (C2) is lowest cost option for construction, but not the lowest social cost option.	Letter	5/22/2020	
3	Public	Isaacson	Mark	General	I am in favor of the proposal to route Hwy 1 north. From the gas station in Moss Landing straight to Castroville would be a logical route.	Thank you for your comment.	Email	5/24/2020	
4	Public	Allison	Andrew	Chapter 5	Per https://en.wikipedia.org/wiki/Sea_level_rise and many other sources, sea level rise between now and 2100 is HALF that suggested in the report.	Section 3.6 outlines sea level rise assumptions used in this study, which are consistent with state policy. We used SLR values corresponding to the OPC 2018 medium-high risk aversion scenario (OPC 2013 high emissions scenario). The benefit cost analysis, in Section 6, uses a probabilistic approach and examines a range of sea level rise amounts.	Email	5/25/2020	
5	Elkhorn Slough Foundation	Silberstein	Mark	Chapter	<p>On behalf of the Elkhorn Slough Foundation, I am writing in response to your call for public comment of the draft report issued by the Central Coast Highway 1 Climate Resiliency Study. I was pleased to participate with AMBAG and partners for beginning the process of addressing the effects of climate change on Highway 1 in our region. I share concerns expressed by the Elkhorn Slough Reserve staff about some elements of the draft report.</p> <p>Elkhorn Slough National Estuarine Research Reserve (ESNERR) staff have suggested changes to the document that clarify the future of Slough habitats and ecological value as sea level rises and impacts the system. The concern they raised, which I share, is that readers of the report would conclude that Elkhorn Slough will be almost entirely lost to SLR. They point out that although most existing salt marsh and mudflat habitat is projected to be inundated, these represent habitat conversions that can be managed via restoration, and are not likely to impact many of the varied habitats of Elkhorn Slough. It is our strong belief and understanding that Elkhorn Slough will continue to be a vital and important ecological and economic asset in spite of the changes wrought by rising sea level. The report and its reference to the SLR study by the Harbor District, as currently drafted, might lead the reader to believe that since these habitats will be inundated, the future value of the slough is lost and therefore can be developed without environmental consequence.</p>	This will be revised in the final report.	Letter	6/8/2020	
6	Elkhorn Slough Foundation	Silberstein	Mark	Chapter 6	We see diverse opportunities for managing and restoring the slough going forward, and see common cause in balancing impacts of making Highway 1 more climate resilient with promoting the continued health of the estuary. Potential options include habitat restoration, acquisition of low-lying areas to allow for marsh migration, and other ecologically-based solutions. Although the current analysis only seems to addresses sediment addition projects, it would be valuable to expand options in a larger context for the future.	This will be revised to clarify in the final report.	Letter	6/8/2020	

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7	Elkhorn Slough Foundation	Silberstein	Mark	Chapter 6	Removal of Scenario A4/B1 is the right thing to do from fiscal, environmental, and practical points of view. The negative environmental impacts, both during construction and as a permanent development, would dramatically impact the future of Elkhorn Slough, which was recognized as a Wetland of International Importance by the Ramsar Convention, the world's first international environmental treaty. I am heartened to see that the authors of the study have not recommended this option for consideration, and I hope planners in the future do not return to it. I would add that it was AMBAG's founding executive, Wil Smith, who worked with former TAMC executive director Bill Reichmuth to formally petition to have this option removed from Caltrans' long-range plans.	Thank you for your comment.	Letter	6/8/2020
8	Elkhorn Slough Foundation	Silberstein	Mark	General	This study has been a very positive effort, and I appreciate the invitation to attend the meetings. Clearly, this is the start of a longer range planning effort. Addressing the impacts of climate change to our transportation infrastructure is critical, and incorporating the convergent interests of protecting, sustaining, and restoring coastal habitats along with infrastructure planning is commendable and valuable. Thank you.	Thank you for your comment.	Letter	6/8/2020
9	Transportation Agency for Monterey County (TAMC)	Hale	Debbie	Chapter 6	On behalf of the Transportation Agency for Monterey County (TAMC), I am writing to submit comments on the draft Central Coast Highway 1 Climate Resiliency Study. Thank you for developing a comprehensive and innovative study that considers both the transportation characteristics and the environmental conditions in a sensitive habitat vulnerable to sea level rise. This study makes it clear that planning must begin in the near future to maximize the investment of scarce resources and protect our natural environment and our transportation corridors that are critical to the economic vibrancy of our coastal communities. TAMC has the following comments regarding the transportation concepts in this study: (1) Elevating a four-lane Highway 1: The Transportation Agency supports the concept of an elevated four-lane Highway 1 in the current alignment, if one of those lanes is a high occupancy vehicle/busway lane, to improve regional transit and encourage carpooling and ridesharing. A protected bike lane and pedestrian corridor on this elevated highway scenario should also be included to promote alternative modes of travel.	Future studies will need to be conducted to further identify the specific design of improvements to Highway 1 but this study's efforts supports moving forward with strategy that encourages multimodal trips.	Letter	6/9/2020
10	TAMC	Hale	Debbie	Chapters 5 and 6	(2) Managed retreat to G-12 corridor: The Transportation Agency does not support the concept of abandoning Highway 1 in favor of a "managed retreat" to the G-12 corridor, which is an already heavily traveled corridor through communities that provided extensive input into a study on how to improve that corridor. Adding more traffic to this route is not supported by the Pajaro to Prunedale corridor study. This proposal also forsakes the disadvantaged community of Moss Landing.	Thank you for your comment.	Letter	6/9/2020
11	TAMC	Hale	Debbie	Chapters 5 and 6	(3) Rail corridor: Improvements to the rail network will support alternative transportation options to the region and help increase rail service to the San Francisco Bay Area as well as around the Monterey Bay. Since the hydraulic modeling showed that the existing railroad berm is important for the environment, as it prevents tidal scouring, we support keeping the railroad at grade, but will coordinate with the State of California in their negotiations with Union Pacific Railroad, the owner of the tracks, on planning for improvements to the tracks.	Based on the study, it does not anticipate that a railroad at grade would be viable at higher sea level rise, due to weak soil strength. Hence, we expect that a new railway structure would have to be elevated on piles. The existing railway embankment can be left as-is.	Letter	6/9/2020
12	TAMC	Hale	Debbie	Chapters 6 and 7	(4) Timing of improvements: Given the funding constraints on major infrastructure improvements recommended by this study, we would recommend that you evaluate an incremental phased approach to implementation.	Future studies will evaluate the preferred phasing of improvements to improvements in the Highway 1 corridor. However, data suggests that operational improvements at key intersections would help improve the safety in the corridor.	Letter	6/9/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
13	Monterey Bay Aquarium	Wolfrum	Amy	General	The Monterey Bay Aquarium appreciates the project team's efforts to plan sea level rise adaptation scenarios for the Elkhorn Slough area of Highway One and we thank you for the opportunity to comment. Given our scientific expertise and historical involvement with southern sea otters (<i>Enhydra lutris nereis</i>) in Elkhorn Slough, we focused our comments on these federally threatened species found in high densities in this biodiverse area. Presently, Elkhorn Slough is the only estuary in California that has an established distinct, and self-sustaining population of sea otters with approximately 100 otters year-round. While sea otters in California range roughly from Point Año Nuevo to Gaviota State Beach, Elkhorn Slough is of unique importance in their range. From 2002-2016, the Aquarium released 37 rehabilitated sea otter juveniles into Elkhorn Slough. Through our rehabilitation and tracking of these otters, our team conducted a study to understand the contributions of these otters to the wild population. The study concluded that surrogate-reared otters and their offspring accounted for more than half of Elkhorn Slough's otter population growth, and showed that surrogate-reared otters are surviving as well as their wild kin. These animals transformed what was virtually an all-male, non-breeding population in Elkhorn Slough to a robust and thriving community with mothers and pups helping to recover this threatened species. Elkhorn Slough offers important benefits for sea otters that differ from the rest of the current range. Several benefits of estuarine habitats for sea otters have been documented for Elkhorn Slough, such as low predation risk (i.e., lack of predators like white sharks), ample prey, haul out opportunities, and sheltered nursery habitat. Along the northern and southern limits of the current range, non-consumptive bites by white sharks are the greatest cause of mortality and a primary factor limiting continued expansion into adjacent areas of the historical range.	Thank you for your comment.	Letter	6/10/2020
14	Monterey Bay Aquarium	Wolfrum	Amy	General	One of the few high-density areas of Elkhorn Slough for sea otters is an area called Seal Bend. This area has eelgrass beds allowing for many sea otters to forage, rest, and nurse their pups. The scenarios that realign the roadway inland to the east starting at Struve Road, specifically shown in Figures 24 on page 68 and Figure 25 on page 69, cross Elkhorn Slough directly over Seal Bend. This applies to both the 2- and 4-lane road scenarios. The transportation impacts both during and after construction (noise, runoff, etc.) from the potential new alignment are likely to negatively impact sea otters in one of the most important areas of Elkhorn Slough. While all of the scenarios are likely to have some impact on otters, we are most concerned about the new realignment scenarios that cross over Seal Bend and urge you to take this into consideration.	The adaptation scenario to co-locate Highway 1 and the rail line jointly was initially evaluated in the preliminary analysis and was not recommended to move forward into the secondary analysis of refined scenarios.	Letter	6/10/2020
15	Monterey Bay Aquarium	Wolfrum	Amy	General	As you move forward with planning for sea level rise in this important California estuary, we request that you pay specific attention to the impacts future construction and road alignment may have on southern sea otter foraging, resting, and nursery habitat in this area. Again, we commend you on planning for this important transportation corridor in the face of sea level rise and thank you for the opportunity to comment. Please feel free to contact us should you have any questions or need further information.	Future studies will further evaluate the specific design features construction impacts of Highway 1 roadway improvements.	Letter	6/10/2020

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16	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	<p>Thank you for the opportunity to review the Central Coast Highway 1 Climate Resiliency Study - Draft Study Report. First, I would like to commend AMBAG, Caltrans, and the other partner organizations for undertaking proactive consideration of this transportation issue and these complex planning issues. This type of advance thinking is critical to helping the State effectively respond to the impacts of climate change along the coast. We appreciate that you included the Coastal Conservancy on the planning team and have given us the opportunity to provide our perspective on this study. Below are our overarching concerns with the document. with more detailed comments provided in the attached table.</p> <p>1) 1. Throughout the report, conclusions of the technical analyses are presented without presenting basic information about the key assumptions or methodologies of the analyses. Some of this information may be in the technical appendices but summaries of key assumptions and factors driving results should also appear in the main text. In addition, there is no information about the sensitivity of the analyses to these various assumptions. As a result, the conclusions in the document are not well-supported and leave the reader with significant doubts and concerns.</p>	This planning study builds upon previous flood hazard modeling conducted for Coastal Resilience Monterey, which uses the OPC 2013 sea level rise curves. We crosswalked the 2013 SLR estimates to the most recent 2018 OPC guidance, as described in Section 3.6. A discussion around implications of the H++ extreme scenario at 2100 will be added to the final report.	Letter	6/10/2020
17	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	<p>2.) It was our understanding that one of the original purposes of this study was to evaluate how nature-based solutions (or green infrastructure) might be a part of the solution to the issues along this segment of Highway 1. Through our participation in the planning effort, we did not feel that the process embraced the innovative, truly collaborative and, integrated approach that we had hoped for. The relationship between the infrastructure options assessed and the natural environment seems to be very much an outdated perspective about project impacts and habitat mitigation. We strongly urge AMBAG and Caltrans to re-evaluate the options for nature-based adaptations to be in part of the Highway 1 resiliency solution.</p>	The original purpose of this study was to demonstrate how adapting highway infrastructure with a lens of benefiting nature would provide long-term benefits to that infrastructure, humans, and surrounding ecosystems. To that end we examined the entire Elkhorn Slough ecosystem and surrounding area and how different highway/railway adaptation scenarios could most benefit habitats throughout that larger area, rather than simply mitigating the impacts of the footprint of highway improvement. We will work to make this point more clear early in the report and throughout. Given the very low elevation of Highway 1 through this corridor and its vulnerability to tidal flooding from the estuary there is no opportunity for green infrastructure alone to enhance resilience of the highway corridor and such effort would not benefit estuarine wetland area and function. The Moss Landing Community Coastal Climate Change Vulnerability Report (2017) and the Moss Landing Harbor District Sea Level Rise Vulnerability Assessment (2019) recommend green infrastructure actions, such as dune restoration, which would enhance existing dune resilience and mitigate ocean wave erosion and flooding. However, these approaches will not lessen the tidal flooding of the estuary and Highway 1. Since green infrastructure alone would not improve the resilience of the highway or the estuarine wetlands, we instead worked to incorporate green infrastructure into the adaptation scenarios we assessed. The idea behind the “ecotone levee” or horizontal levee is a type of living shoreline championed by many as a forward thinking adaptation approach for providing increased human community resilience in San Francisco Bay while enhancing estuarine habitat area. We applied this concept to each of our adaptation scenarios to enhance the area and resilience of estuarine habitats as a result of the highway adaptation, rather than a typical steep walled levee or highway elevated on piles. Application of a horizontal levee approach by the highway could produce up to 83 acres of additional estuarine marsh habitat and space for these habitats to move inland as sea levels rise.	Letter	6/10/2020

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18	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	3.) We are concerned that the sea level rise estimates and planning timeframe used in this study may significantly underestimate the SLR for which the Highway 1 project should be designed. Using a more appropriate estimate of sea level rise could significantly change the conclusions of the study. The discussion of Table 3 of the study explains that the numbers used in the study are similar to the low- and medium estimates in the 2018 guidance. But review of the 2018 Guidance shows that the a project of this magnitude should be based on the high SLR estimates (or the high-risk adverse option). Specifically, it recommends, "For high consequence projects with a design life beyond 2050 that have little to no adaptive capacity, would be irreversibly destroyed or significantly costly to relocate/repair, or would have considerable public health, public safety, or environmental impacts should this level of sea-level rise occur, the H++ extreme scenario should be included in planning and adaptation strategies " This year, the OPC has revised its recommendations even further recommending that State agencies use an estimate of 3.5 feet of SLR by 2050 for planning long-term projects. While no one knows what the 2050 SLR will turn out to be, we do know that every time SLR estimates are revised, they go up. Thus, it is critical to not only use the most current estimates but to use highly conservative estimates.	The 2018 SLR guidance centers around using best available science. For this study, the team relied on best available science and modeling for the region that was available at the time. Sea level rise modeling for Monterey County available for the analysis was Coastal Resilience Monterey Bay (CRMB). The USGS Coastal Storm Modeling System (CoSMoS) is not yet available for Monterey (as of June 2020). In the report, we cross-walk the elevations from CRMB which were used for the transportation and ecology analyses to the 2018 guidance. Also, the 2018 guidance points to the probabilistic analyses of Kopp et al. 2014 as the best available science. Our Cost Benefit Analysis is a probabilistic analysis a la Kopp et al. 2014, and based off the 2018 guidance. In the 2018 guidance, the H++ scenario does not have a probability associated with it and no modeling produced, so therefore could not be included in the analysis. In the report, we emphasize the importance of adaptive planning and re-evaluation when newer modeling is available in later stages of planning. We will note in the report that the Sea Level Rise Principles, which were released by the State of California a month ago and therefore could not be addressed in the analysis or draft report, also speak to the need to continue to adaptively manage and plan and integrate best available science.	Letter	6/10/2020
19	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	4.) We disagree that planning for future conditions along this vulnerable section of coastline can wait until the 2030s and will only take 10 year. 15-20 years is a more realistic assumption. Complex and potentially controversial projects can take decades to plan in terms of gathering and synthesizing information, filling information gaps, developing community support, and securing funding, just to name a few factors. Planning for construction of large-scale high-cost infrastructure projects should also assume a project design life span of 75-100 years. The report appears to use a much shorter (20-year) life span for the project by designing for 2070 SLR planning time horizon with construction planned for completion by 2050.	(1) Planning for adaptation can take place any time. The analysis focuses on the question of when, given the uncertainties about the pace and extent of sea level rise, is the point at which the actual experience of sea level rise means that commitment should be made to a specific approach to adaptation on Highway 1 in order that resources are committed neither too soon nor too late. Spending too soon risks over committing resources; spending too late risks enduring damages that could have been avoided. That point occurs in the early 2040s using the Ocean Protection Council's medium/high risk/high emissions scenario for SLR in Monterey. From that point of commitment on, a 10 year project development and construction begins based on information from the highway engineers consulted for this project. (2) All costs and benefits were calculated for a 50 year period following completion of construction, irrespective of the starting point for project development.	Letter	6/10/2020
20	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6 & Appendix E	5.) We have significant concerns with the cost-benefit analysis, both in terms of the assumptions and methodologies used and the lack of information about critical pieces of data used in the analyses. Key concerns are: 1) the sensitivity of the analysis to the data provided in Table E-4 and the lack of information about the applicability of that data to the project scenarios; 2) the methodology used to value natural habitats and processes; and 3) the assumptions underlying the recreational cost estimate.	The benefit cost analysis does account for the different values of habitat type and the changes in these habitat types based on the SLAMM model analysis. The changes in habitat type are discussed in both Appendix D and Appendix E. No information is available to relate changes in Elkhorn Slough to the quality of the recreational experience, or to relate changes in the quality of the experience to changes in the value of recreation. Without this information changes in recreation would not be factored into the benefit cost analysis. Access to Elkhorn Slough for recreational purposes is clearly a function of the available highway network (nearly 100% of recreational users in the recreational survey arrived by car). If the highway is eliminated (no action scenario) or reduced to a local road (Scenario C-2) there will be less highway access and fewer trips. Some visitors will clearly still come to the Slough but that number is not known. The change in the number of trips is the best available proxy for the change in access and thus recreational use.	Letter	6/10/2020

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21	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	<p>6. Given that this study is the first dual transportation ecosystem climate resilience study for this area, we strongly recommend that all comments received on the draft be included in the final report as an appendix in order for the issue raised by stakeholders to be made clearly available to readers.</p> <p>Again, we appreciate the effort put into this study. Given our strong concerns with the document and analysis presented, the Coastal Conservancy intends to withhold support for the conclusions presented in this study until AMBAG and Caltrans address questions presented in this letter and attached table and/or undertake further analysis. We would be happy to discuss these comments further in a meeting with members of the project team before the study is finalized.</p>	Comments and responses will be included in the final report as Appendix G.	Letter	6/10/2020
22	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	Study reads like a plan to promote business as usual. Business as usual is not going to work with a rising sea. Caltrans needs to start thinking about how to change demand projections and demand routing – not how to accommodate patterns we’ve seen for the last 40 years projected onto the next 40 years.	<p>The approach to this study is not business as usual. This study is a first step in developing transportation improvements and nature-based strategies that work in tandem to enhance ecological and transportation resilience through the Moss Landing and Elkhorn Slough area under future conditions, including sea level rise. Past planning studies typically focus on the transportation needs in a corridor and do include nature based strategies as potential have not taken this approach and simple focus on the transportation needs in a corridor. The outcomes of this study are intended to inform future transportation and nature-based adaptation strategy planning and design for the roadway, railway and adjacent areas.</p> <p>There have been little transportation investments in this corridor for decades. One of key components of the study is to identify transportation improvements to meet the existing deficiencies in the study area as well to help plan for the future.</p>	Letter	6/10/2020
23	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	Study does not use appropriate estimate of SLR. Should be based on best available science, which should be the 2018 OPC Sea Level Rise Guidance for the H++ extreme scenario. Estimated 2100 SLR levels should be used for planning purposes of a project of this magnitude.	See response to Comment #16.	Letter	6/10/2020
24	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	All alternatives should address a route for bikes and this route should be shown on all graphics of the alternatives.	A bike route is currently being planned for the study area by the County of Monterey. It was assumed that this bike route was included in all of the scenarios evaluated. This will be clarified in the final report.	Letter	6/10/2020
25	California State Coastal Conservancy	Chapman Couch	Trish Rachel	General	Make sure every Figure is referenced in the text. Several are not.	This will be revised in the final report.	Letter	6/10/2020
26	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 1	Page 1-1 - The number for loss of estuarine habitat in the Central Coast is far greater than other research I have seen (the statewide number for wetland loss is around 90% -- but that is largely driven by loss of Central Valley freshwater wetlands). The citation of “Brophy et. Al. 2019” is not included in the References list.	This will be updated in the final report.	Letter	6/10/2020
27	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 3	Figure 5 - Get an updated figure. Map is 14 years old.	The source figure originates from the Elkhorn Slough Tidal Wetland Plan. This figure will be updated in the final report.	Letter	6/10/2020
28	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 3	Figure 7 - Unclear what graphic on the right is supposed to be showing. What are the big white polygons?	The white polygons indicate flooded areas. This figure will be revised in the final report.	Letter	6/10/2020
29	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 3	Page 3-10 - The County is building a new bike and pedestrian bridge over the slough mouth. Isn't that the plan rather than using the existing bridge. Is the 2008 plan still valid?	This is correct.	Letter	6/10/2020

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30	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 3	Figure 12 - Add current elevations to this figure. Would also be helpful to add elevations for the planned level of SLR.	This figure will be revised in the final report.	Letter	6/10/2020
31	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 3	Figure 13 - This is a confusing graphic that does not really succeed at making information easier to digest. Here are several suggestions: <ul style="list-style-type: none"> • Increase color differentiation between human impacts and process changes. • Add the red color to the legend. • Make loss of tidal marsh one large box (i.e., combine 3 boxes), probably in the middle. Put in less info but make it easier to follow. Change box color to result, not impact. • Put all the causation impacts at the top so that diagram flows from causes to results • Add diking of wetlands for agriculture as a cause of decreased marsh elevation. 	The figure originates from the Elkhorn Slough Tidal Wetland Plan and is referenced in the report body to represent major process changes, human impacts on tidal marsh habitats.	Letter	6/10/2020
32	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 5	Figure 18 - This graphic is very misleading. Why is the ecotone slope presented as 5 to 5-20, rather than 1:1 to 4:1 – that's what it really is. It appears to be an effort to mislead the reader into thinking it is showing a 20:1 slope. A 1:1 or 4:1 slope off the levee will not result in a good ecotone for wetland habitat. A much more gentle slope is needed to end up with anything other than a tiny fringe of wetland and mudflat area with everything else subtidal. Also graphic is not at all to scale. If it is going to be not to scale, then at least both parts of the graphic should use the same modification of scale. The graphic makes the ecotone area look much gentler than the levee slope but the difference from 3:1 to 4:1 is not as much as shown (relative to the out-of-scale 3:1 slope).	The referenced figure is an example schematic from the Hamilton Wetlands project. The figure is vertically exaggerated. The flatter ecotone slope is approximately 10H:1V, relative to the 3H:1V levee slope, which is within the range of 5H:1V to 20H:1V. Additional information on ecotone geometry in Reaches 1 and 2 will be added to Section 5.3.1.	Letter	6/10/2020
33	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 5	Section 5.3.5 - Planning to raise Highway 1 on piles for a 20 year time frame is very short-sighted. The State and local communities are going to have many additional costs related to sea level rise and climate change. It is unrealistic to think that the State will be able to afford a 20-year fix and then a longer-term fix.	The timeframe for design is 2070 and the associated sea level rise is 3 feet, with an additional foot of freeboard, on top of the 100-yr water level. We agree that higher sea level rise amounts could be used; however, we note that at greater than 3 feet of sea level rise, most of Moss Landing would be underwater, rendering the roadway inaccessible. We agree that this would necessitate other adaptation actions.	Letter	6/10/2020
34	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 5	Figures 21-25 <ul style="list-style-type: none"> • Show areas of flooding with 2018 OPC risk adverse SLR on each figure for 2100 • Indicate bike route facilities on each figure • Indicate approximate area of impacted wetlands on each figure (also for Figure 26) 	The reader is referred to Figure 1, which shows flooding extents from SLR at 2100 (5.3 ft), Figure 9, which shows the proposed bike trail alignment, and Figure 11, which crosswalks the OPC 2013/2018 SLR projections.	Letter	6/10/2020
35	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 5	Figure 27 - The figure implies that before managed retreat would be implemented the highway would be put on piles. It is unrealistic to think that the State will have funding for two fixes for every SLR issue. Why not commit to managed retreat and start now so the highway does not need to be put on piles? Also, this figure should clarify whether the costs of these interim actions are part of the cost of the alternative.	The question regarding managed retreat and a new roadway alignment is a valid one and one that this report raises but does not answer. Figure 27 has been relabeled as Figure 28 in the final report, since an additional figure was referenced. Figure 28 shows a phased adaptation, which would allow for transportation to continue over the time period it would take to create a new roadway alignment. We think it is realistic that this process would take several decades and that there would be a concurrent desire to maintain Highway 1. Figure 28 was created/used early in the study process to develop the adaptation scenarios that ended up being modeled (see Figure 34). The revised framework assumes that the adaptation project would be designed for 3 feet of SLR (approx. 2070 time horizon), recognizing that additional adaptation actions would be necessary after that.	Letter	6/10/2020
36	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Table 5 - The text does not adequately explain this table.	Additional text will be added to better clarify Table 5 in the final report.	Letter	6/10/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
37	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	<p>Section 6.3.1 - Text states that with the G12 option, that local access to Moss Landing would only be available through 2050. But it does not discuss what the status of Moss Landing would be in 2050 or 2100. Using the OPC's current recommendation of 3.5 feet of SLR by 2050, Moss Landing would be largely flooded. The analysis of the costs and benefits should be based on higher SLR conditions that should have been used in the study. Presumably the pros and cons of the various options would look different under that scenario.</p> <p>The study should make it clear what the assumptions are that underly the transportation analysis. For instance, in the webinar on the cost benefit analysis, the presenter stated that the safety issues along the G12 corridor were a significant detractor from benefit. But it was not clear what the safety issues were and why they wouldn't have been addressed in a project costing hundreds of millions of dollars to improve the route. What are the underlying assumptions?</p>	<p>(1) This will be revised the in the final report to address how adaptation actions were framed and developed with this study and provided context including recognition of these comments.</p> <p>(2) The analysis of safety issues is detailed in Appendix E, Section E, pp. E-10 to E-15. The analysis is based on actual safety experience on the different types of roads in the region projected forward based on the changes in road usage appropriate to each scenario examined. Those scenarios include safety upgrades where appropriate (e.g., expanding 101 and G12 to accommodate the traffic shifted to those roads in Scenario C-2</p>	Letter	6/10/2020
38	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Social Equity - It is not clear from this discussion if the analysis of impact on social equity looked at all communities in the vicinity of various options, or just the impact on communities in the vicinity of the existing route. More information needs to be provided to explain the conclusions reached.	Additional text will be added to better clarify the analysis in the final report.	Letter	6/10/2020
39	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Figures 30-32 - These figures should show water levels with sea level rise for 2018 OPC risk adverse option for at least 2100. By leaving out the change in sea level, the graphics are missing essential information.	See response to Comment 34.	Letter	6/10/2020
40	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Figure 33 - See comments to Figure 27. Same apply to this figure.	See response to Comment 35.	Letter	6/10/2020
41	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	<p>Section 6-18</p> <ul style="list-style-type: none"> •The data from the results should be presented in a table to make it easier to compare. • What volume of sediment would be needed to achieve the modeled marsh restoration east of the highway? What are the likely sources of sediment for that volume of fill? •Does the analysis take into account the high demand for sediment to raise land up that will result as sea levels rise? Is the resulting increased cost of sediment accounted for in the costs? 	The reader is referred to Appendix D for further detail on performance by scenario. We assume that the marsh areas east of the railway would be raised at 2050 to keep pace with 3' SLR. The total estimated volume of fill is 3183 acre-ft. The net sediment subsidence rate was modeled in SLAMM, to capture future change in elevation. Costs were based on the Hester Marsh Restoration, which were provided by ESNERR; for this effort, sediment was provided from the Pajaro Flood project. We did not adjust these costs for future scarcity of fill material.	Letter	6/10/2020
42	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Figure 34 - This figure seems to show that at this level of analysis, there is essentially no difference in marsh habitat between the various scenarios, but the text makes it sounds as if there is a significant difference. The text should be revised to present this information in a way that is more consistent with Figure 34.	The differences in marsh acreages between transportation scenarios is small relative to the larger changes that result from sea level rise and proposed marsh restoration. The marsh restoration identified in this report makes a large difference in the amount of marsh remaining in the future, on the order of hundreds of acres, whereas the transportation adaptations result in habitat creation on the order of tens of acres.	Letter	6/10/2020
43	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Figure 35 - Title at top of Figure is nonsensical. It is unclear what this figure is trying to communicate.	The title reflects the model run name. We will revise to make the figure information clearer.	Letter	6/10/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
44	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	<p>Section 6.5.2</p> <ul style="list-style-type: none"> Why does the transit analysis assume less bus transportation under the C2 alternative? If the number of routes is reduced, then the frequency should be increased to account for the fact that traffic from the old route has been added to the G12 corridor. Add a figure with the bus routes. <p>The conclusions in the roadway section should be explained. What factors lead to the results seen?</p> <p>In the original alternatives (the A series), the G12 realignment was the cheapest option; in the revised alternatives (C series) the G12 option is now more than the option 1. What drove this change in the relative costs of the alternatives? The cost estimate provided should be broken out more to show where the differences occur – summing it all up to one total is not sufficient. Where can a more detailed cost estimate for each alternative be found?</p>	Section 6.5.2 will be revised in the final report. The detailed cost estimates will be included in a new Appendix F in the final report.	Letter	6/10/2020
45	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	<p>Table 9</p> <ul style="list-style-type: none"> What does the “Highway” line represent? Is this supposed to be the cost of construction? Because it is not consistent with Table 8. If the no action alternative receives positive dollar amounts for not building something, it is basically given twice as much benefit as it should have. It would only be positive if the state got that money. It should be 0 for not spending any money. How is it possible that the value of “travel delay” is as high as the cost of the freeway itself? What are the assumptions that underlie that? If travel delay cost that much, people would change mode. It is this unexplained number which makes Alternative 3 the best option – this number needs much more explanation. 	<p>(1) Table 8 are the costs provided by the engineers. Table 9 shows the discounted present value of those costs.</p> <p>(2) If no expenditures are made to adapt Highway 1, then Caltrans will have an amount equal to what would have spent on Highway 1 to use on other projects. That amount is an “avoided cost” and thus counted as a benefit, in the same way that adaptation expenditures avoid other costs from SLR-related damages to the transportation network.</p> <p>(3) The construction of the highway occurs once; the benefits of reduced travel delay accrue over 50 years and are compared in present value terms with the costs of building the highway adaptation.</p> <p>(4) The AMBAG travel demand model calculates travel delay that is left over after shifts to less crowded roads occur. For more information see Association of Monterey Bay Governments, Regional Travel Demand Model Technical Report (2018) available from AMBAG.</p>	Letter	6/10/2020
46	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	<p>Sea Level Rise Analysis</p> <ul style="list-style-type: none"> In the webinar on the cost-benefit analysis, the presenter made a comment about “if the sea level rise ever occurred”, as opposed to when it occurs. This reflects a fundamental problem with this report. The authors do not appear to take sea level rise as seriously as they should. In Figure 37, the authors argue that the OPC’s guidance is ultra conservative because it is based on a low probability event. Two problems – First, we have repeatedly seen that subsequent estimates of emissions and resulting climate change patterns have not followed the low or middle projection, but rather have followed the extreme projections. Why should we expect anything else here? Second, major infrastructure is always built to withstand low probability events (100 or 500 year flood, dams built to maximum credible earthquake, etc.). Why would we treat sea level rise as something less risky than those other events? The report describes the OPC’s SLR number as an “extremely risk adverse position to take” based on a 0.5% chance of occurrence. In comparison with floods, this would be a 200-year event. No one would think it unreasonable to design a \$500 million project to withstand a 200-year flood instead of a 100-year flood. Why is it unreasonable with SLR, which again, has a pattern of being consistently underestimated. 	<p>(1) A certain amount has already occurred and a certain amount is already destined to occur given current GHG levels in the atmosphere, but beyond that no one knows. The analysis in the report assumes relative high rates of sea level rise which are currently estimated to have low probabilities of occurring. The comment “if sea level rise occurs” refers to these high rate but low probability estimates.</p> <p>(2) The SLR projections underlying the OPC guidance were based on the highest emissions rates from the IPCC. Those projections show a 1 in 200 chance of the levels in the High Risk Aversion scenario occurring. These projections include the probability of extreme events such as collapse of the West Antarctic and Greenland ice shelves in the calculation of that probability.</p> <p>(3) The 100 year and 500 year storms identify storms of intensity that is historically likely to occur with a 1% probability and a 0.2% every year. The SLR probabilities are the cumulative probability of the extent of sea level rise between 2010 and 2100. The graphs on page 6-30 show this cumulative distribution of probable sea level rise in Monterey using the High Emissions IPCC scenario, and how that the estimates used are consistent with the very low probabilities.</p>	Letter	6/10/2020
47	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Chapter 6	Marsh Restoration - Given the trajectory for marsh drowning by 2100, wouldn't it make more sense to invest in restoration of surrounding higher elevation areas that could potentially be resilient longer?	Yes, this may be true. However, most of the areas in the surrounding higher elevation ranges are developed or used for agriculture.	Letter	6/10/2020

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48	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Appendix E	Much of this analysis seems to hinge on the AMBAG traffic demand analysis based on the demand of the regional economy. What assumptions does the AMBAG model make in terms of water availability for regional growth; adverse impacts on regional economies due to increased impacts of SLR, changes in demand patterns due to improvements in public transit or modifications of commute patterns (as seen over the past 3 months)? Given how much the AMBAG study drives the conclusions of this report, far more information should be provided about its assumptions and analyses, and the strengths and weaknesses of these in terms of applicability to this report.	The AMBAG model uses a driver forecast of population and employment from 2015 to 2040 that implies a 0.6% per year growth in population. SLR is not expected to affect population out to 2040. Effects beyond 2040 may occur, but would require an analysis beyond the capacity of currently available models. For more information see Association of Monterey Bay Governments, Regional Travel Demand Model Technical Report (2018) available from AMBAG.	Letter	6/10/2020
49	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Appendix E	Hourly Wage - Why is 35 hours per week considered the norm and not 40? This will elevate the average hourly wage and thus the impact of traffic	The actual number of hours worked per week is not estimated at the county level. Thirty-five hours is used to reflect the mix of full and part time employment.	Letter	6/10/2020
50	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Appendix E	Table E-4 - What is the basis for the Table E-4? Where do these numbers come from and what time frame do they apply to? The difference in the cost-benefit analysis among the options evaluated stems almost entirely from the travel delay numbers provided in this table. The difference in the calculated cost of travel delay among the various options dwarfs by one to two orders of magnitude the other factors that were evaluated. Despite this, there is very little information provided about Table E-4 and how the numbers were derived. It appears, for example, that the calculation for delay along the G12 corridor assumes only that the number of lanes is increased, but not that the roadway is improved and the speed limit potentially increased. In addition, the analysis does not seem to factor in any consideration for changes in use patterns over the next few decades.	(1) These share of trips by type is derived from the trip generation model within the AMBAG travel demand model. As explained in Appendix E, the value of time for purposes of estimating the costs and benefits of travel time is a function of the purpose of the trip. The number of trips by each purpose and the hours of delay estimated by the model yields the value of travel time affected by the scenario chosen. (2) The travel demand model's purpose is to reallocate trips across the highway network based on factors such as the road capacity, speed limits, the number of vehicles, and time of day. Each of the scenarios examined for the travel analysis in Section 6-3 adjusts traffic within the existing network, and the benefit cost analysis is based on travel after all travel adjustments are made.	Letter	6/10/2020
51	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Appendix E	Table E-7 - The explanation of Table E-7 is not sufficient. It is not at all clear what these percentages mean or how they will be used in the analysis.	As discussed in Appendix E, the change in the number of delay hours per year (Table E-4) is multiplied by the value of time. The value of time is calculated as the average hourly wage in Monterey and Santa Cruz Counties (Table E-5 and Table E-6). The value of time is adjusted by trip purpose, which is derived from the purposes of trips determined in the travel demand model (Table 3-7). The adjustments to the average hourly wage are derived from standards for travel economics published by the Association of State Transportation and Highway Officials.	Letter	6/10/2020
52	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Appendix E	The decision to base the recreational value of the slough on vehicle miles traveled for the alternatives is preposterous. Relative to the distance traveled to get in the general vicinity of the Elkhorn Slough for most visitors, modifications to that distance caused by the various options would not be large enough to drive a visitor's decision-making. Much more important would be the quality of the experience. For instance, the range of experiences in descending order of value is clearly – kayaking in a slough with no highway, kayaking near a 2-lane highway, and kayaking next to a 4-lane highway. The conclusion reached that a recreational experience adjacent to a 4-lane highway would be over 10 times as valuable as a recreational experience with no highway nearby is completely indefensible and clearly wrong. It is also a major flaw that no effort was made to quantify the value of land-based recreation in the area.	(1) No information is available to relate changes in Elkhorn Slough to the quality of the recreational experience, or to relate changes in the quality of the experience to changes in the value of recreation. Without this information changes in recreation would not be factored into the benefit cost analysis. (2) Access to Elkhorn Slough for recreational purposes is clearly a function of the available highway network (nearly 100% of recreational users in the recreational survey arrived by car). If the highway is eliminated (no action scenario) or reduced to a local road (Scenario C-2) there will be less highway access and fewer trips. Some visitors will clearly still come to the Slough but that number is not known. The change in the number of trips is the best available proxy for the change in access and thus recreational use. (3) Appendix E notes that bird watching in the Elkhorn Slough area is not measured either with respect to the number of visitors nor the value of that recreation. If changes in the bird watching experience as a result of sea level rise can be estimated and related to changes in recreational use, these should be included in the benefit cost analysis.	Letter	6/10/2020

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53	California State Coastal Conservancy	Chapman Couch	Trish Rachel	Appendix E	<p>There are multiple problems with this section of the study providing the valuation for natural resource impacts and/or benefits of the various alternatives. Specifically:</p> <p>1. This analysis considers only wetland habitat. Elkhorn Slough has multiple habitats types each of which provides different functions and values. By only considering wetlands, this analysis looks at only a corner of the picture.</p> <p>2. Basing the non-recreational value of wetlands on land acquisition costs is inappropriate. This analysis should be based on an evaluation of ecosystem services. The write-up does not provide sufficient detail, but it appears that the methodology only values wetland habitat once through the acquisition cost. Using an ecosystem services model, the values would be calculated over the same timeframe for the project as the travel delay. An ecosystem services approach would also enable the analysis to consider the value of all the habitat types found in the slough, including the very valuable subtidal habitat. This approach could also account for changes in habitat types over time. Using an ecosystems services approach would make for a more balanced evaluation of costs and benefits.</p> <p>3. The study methodology concluded that agricultural land was of less value than wetlands. This is a nonsensical conclusion and review of any appraisal for properties acquired in the area would demonstrate that. We don't currently have access to appraisal information for Elkhorn Slough acquisitions involving both wetlands and agricultural land, but two acquisitions along Watsonville Sloughs from approximately 10 years ago calculated wetland value at approximately \$3,800/acre and agriculture land ranging from \$10,000 - \$40,000 per acre. These numbers may not apply exactly to Elkhorn, but they demonstrate the relative value of the area's ag land to wetlands and the false assumption on which the analysis is based.</p>	<p>(1) Using ecosystem services as the appropriate measure of changes in economic value resulting from changes in Elkhorn Slough is clearly correct. The issue is how the value of ecosystem services are to be estimated for this study. One method for assessing ecosystem services in contingent valuation of use values related to recreation, which is what was used in the section on recreational values. Data was also available on transportation access to estimate changes in recreation values. However, no other information necessary for an ecosystem service assessment is available. This includes physical/biological models relating Elkhorn Slough characteristics to relevant ecosystem service endpoints. Without some information the value changes in wetlands, a central element in this study, could not be included in the benefit cost analysis. The use of market prices paid for Elkhorn Slough lands for conservation purposes is a reasonable revealed preference proxy for the bundle of ecosystem services provided by the Slough.</p> <p>(2) The benefit cost analysis does account for the different values of habitat type and the changes in these habitat types based on the SLAMM model analysis. The changes in habitat type are discussed in both Appendix D and Appendix E.</p> <p>(3) The data in Table E-21 has been revised for the final report, which shows higher values for agricultural land. But the value estimates used in the study are based on land purchases made by conservation organizations to preserve the ecosystems of the Slough, and such purchasers are not buying land for agriculture.</p> <p>(4) Standard appraisal techniques undervalue wetlands because they cannot generally be developed.</p> <p>(5) The analysis does not include actions to protect agricultural land from sea level rise, though the effects of such actions on habitat are estimated in the SLAMM analysis. The costs of protecting agricultural land are not available. Future studies should consider the costs and benefits of protecting agricultural land near the Slough.</p>	Letter	6/10/2020
54	California Coastal Commission	Grove	Tami	General	<p>Thank you for the opportunity to comment on the Central Coast Highway 1 Climate Resiliency Study Draft Report. Coastal Commission staff appreciated the ability we have had to participate in some of the study's Steering Committee activities over the past two years. We are heartened to recognize the places where our feedback has helped shape the draft report. As clearly recognized by the report, Elkhorn Slough is one of the largest estuarine marshes left in California, and an icon of the state's central coast. Not only is the slough part of the Monterey Bay National Marine Sanctuary, but a portion of it is also protected as a National Estuarine Research Reserve. In addition, the slough has been recognized as a Wetland of International Importance by the Secretariat of the Ramsar Convention on Wetlands. The wetland complex provides extremely valuable habitat for hundreds of aquatic bird, fish, marine mammal, and invertebrate species, including many which are threatened or endangered. As we have discussed as part of this effort, the area provides significant ecosystem services, including natural flood control and resilience to sea level rise. Elkhorn Slough is also an extremely popular destination for the visiting public, including birdwatchers, kayakers, and those traveling through the area via Highway 1. As a result of these diverse ecological and public values, maintaining and enhancing the resources in Elkhorn Slough for both the ecosystem values and compatible public uses are critical priorities for the Coastal Commission, the Central Coast, and the state as a whole.</p>	Thank you for your comment.	Letter	6/11/2020

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55	California Coastal Commission	Grove	Tami	General	As you are aware, the Coastal Commission has been heavily involved for decades in efforts to protect and enhance Elkhorn Slough, including contributing to the development of the Monterey County Local Coastal Program (LCP) and advocating for the above-noted national designations. These efforts helped to articulate a comprehensive long-term protective vision for the Elkhorn Slough area—including the slough system, the community of Moss Landing, and critical infrastructure such as Highway 1 and the power plant—in coordination with a multitude of stakeholders. Over the years, the exercise of developing and refining this long-term vision has increased in complexity as a result of modern phenomenon such as climate change and sea level rise, increasing population growth, and developments in the tourism, agricultural and marine-related local economies. All of these factors are critical to consider as the collective conversation continues about the land use and transportation future of this area. This initial analysis and study adds yet another piece of information and perspective toward evolving our collective vision for the slough in ways that are most protective of its significant natural and coastal resources.	Thank you for your comment.	Letter	6/11/2020
56	California Coastal Commission	Grove	Tami	General	Given that the frame of the draft study has the dual priority of providing a safe, resilient transportation network while also ensuring the long-term function and restoration of the slough, our comments: (1) reiterate the planning and regulatory roles of the Coastal Commission and Monterey County in Elkhorn Slough under the Coastal Act; (2) summarize some of our perspectives on future transportation analysis; (3) remark on the ecology and SLR-related analyses, and (4) provide miscellaneous comments and questions about specific text and figures.	Thank you for your comment.	Letter	6/11/2020
57	California Coastal Commission	Grove	Tami	General	Coastal Act and Monterey County Local Coastal Program Policies As a reminder, the Coastal Commission regulates land use in the Coastal Zone through the issuance of Coastal Development Permits (CDPs). In order for the Commission to approve a CDP, proposed development must be consistent with the policies of Chapter Three of the Coastal Act (Pub. Res. Code § 30200 et seq.). In areas where the Commission has certified a Local Coastal Program (LCP) for a local government, that local government exercises primary CDP authority. In a jurisdiction with a certified LCP, the policies of the LCP are the standard of review for proposed development, with the policies of the Coastal Act serving as guidance.	The County of Monterey is currently updating the Moss Landing Community Plan and the Local Coastal Program (LCP). Hopefully, this study will inform the County's Community Plan and LCP update process.	Letter	6/11/2020
58	California Coastal Commission	Grove	Tami	General	The Coastal Act requires appropriate protections for coastal resources, a term that is understood broadly to apply to public access to and along the coast, environmentally sensitive habitat, scenic public views, agriculture, and virtually all of the other resources relevant to discussions regarding the future of Elkhorn Slough. In terms of public access, the Coastal Act requires that such access opportunities be maximized for all people (Section 30210); that development not interfere with existing access (Section 30211); that such access be provided in all development projects (Section 30212); that low-cost and free access facilities and opportunities be provided and prioritized (Section 30213); and that oceanfront land and upland areas be reserved and protected for public recreational access use (Sections 30221 and 30223).	One of the main purposes of this study is to maintain transportation in this important coastal corridor. Highway 1 serves as the backbone for coastal access in Monterey County. It is important to identify potential improvements needed to ensure that Highway 1 remains a viable transportation corridor.	Letter	6/11/2020

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59	California Coastal Commission	Grove	Tami	General	Similarly, in terms of other important coastal resource considerations for Elkhorn Slough, the Coastal Act also requires that marine resources (including wetlands) be maintained, enhanced, and where feasible, restored (Section 30230). Relatedly, diking, filling, or dredging in existing estuaries and wetlands is limited to only seven narrowly defined types of activities and those must maintain or enhance the functional capacity of the affected habitats (Section 30233). The Coastal Act further requires that environmentally sensitive habitat (ESHA) be protected against any significant disruption or degradation, and that activities in ESHA be limited to those actually dependent on the resource (e.g., nature study, interpretation, etc.) (Section 30240); that the maximum amount of prime agricultural land be maintained (Sections 30241); that archaeological resources be protected (Section 30244); that development be sited and designed to protect public views to and along the ocean and scenic coastal areas (Section 30251) and that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road (Section 30254) (It is worth noting that the Commission has historically treated the Moss Landing corridor as a rural area of the coastal zone.) These Coastal Act requirements are foundational to determining what development can and cannot be allowed in the Elkhorn Slough area, including how such development applies to the area's unique ecology, its relationship to contiguous agricultural lands, and its incomparable scenic views.	Thank you for your comment.	Letter	6/11/2020
60	California Coastal Commission	Grove	Tami	General	The policies of the Monterey County North County LUP are derived from Coastal Act policies, and are similarly intended to provide appropriate land use management consistent with natural resource protection. These include policies protecting visual resources, environmentally sensitive habitats, wetlands, agriculture, coastal hazards, and archaeological resources, among others. ¹ The North County LUP also contains policies specifically intended to protect Elkhorn Slough, including policies restricting fill within the slough (Policy 2.4.2 #6), prioritizing provision of public access to the slough (Policy 5.4.3 #6), and requiring maximum protection from oil spills (Policy 5.5.2 #8). In general, local land use regulations are very restrictive in Elkhorn Slough, and thus, in order to be approvable, any development proposals must pay special attention to both the general policies of the LUP as well as any policies that specifically reference Elkhorn Slough.	Thank you for your comment.	Letter	6/11/2020
61	California Coastal Commission	Grove	Tami	General	Commission staff understands that the present study is not intended to advance a specific project alternative, and that development of a long-term adaptation plan and subsequent projects for Elkhorn Slough, Highway 1, and the railway will require years of further outreach, research, and planning. Nevertheless, it is important to recognize at the outset that any future development and restoration projects within the Elkhorn Slough area will require Coastal Development Permits from the Coastal Commission and Monterey County. Thus, the policies of the Coastal Act and the Monterey County North County LUP must be applied in the framing of both transportation and land use development proposals into the future.	Thank you for your comment.	Letter	6/11/2020
62	California Coastal Commission	Grove	Tami	Chapter 6	Commission staff appreciates the study's emphasis on promoting a safe, resilient, multimodal transportation network through the Elkhorn Slough area. Resilience to future projected sea level rise and the promotion of alternative and multimodal transportation options, including expanded non-automotive travel and appropriate public transit as well as freight and commuter rail service, could all be critical toward ensuring that future adaptation projects are consistent with the policies of the Coastal Act and the Monterey County LCP.	Thank you for your comment.	Letter	6/11/2020

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63	California Coastal Commission	Grove	Tami	Chapter 6	Building off of this study, we believe there are additional considerations that could be incorporated into future studies to further inform long-term transportation planning. For example, traffic criteria could be better disaggregated by origin-destination, such as distinguishing between local trips (i.e., those between Moss Landing, Castroville, and other local communities), intra-regional trips (i.e., originating in and destined for Santa Cruz and Monterey County), and inter-regional trips (long-haul travel between the Bay Area, Monterey County, and beyond the Big Sur coast). This would allow for transportation modeling that orients various adaptation scenarios around certain origin-destinations, such as evaluating in more detail how to adapt local roads optimally to continue to serve automotive local trips, while reorienting longer intra-regional trips around a replaced or relocated Highway 1 or alternative inland road connections and directing inter-regional trips to Highways 101 and 156. Such nuances might enrich future transportation planning for the Elkhorn Slough area by moving beyond the assumption that the long-term transportation vision for Elkhorn Slough must serve the entire traveling public in the same way.	The Regional Travel Demand Model does include and is calibrated based on various datasets of transportation data including: travel behavior/user studies, origin-destination data, traffic counts, etc. The Highway 1 corridor serves a variety of trips including local, commute, interregional and longer regional trips. The adaptation scenarios evaluated in this study contain a mix of improvements to serve the multiple needs along this corridor.	Letter	6/11/2020
64	California Coastal Commission	Grove	Tami	Chapter 6	Railway scenarios should similarly factor into the overall analysis for the various origin-destinations by illuminating issues such as how commuter and expanded freight rail services might best co-exist; how population centers might be serviced; where and how station development would best advance rail services; and, whether bus or other mass transit technologies could complement commuter rail service to better service origin-destinations not covered by rail. Of course, the ways in which an improved rail system might reduce traffic demands on the road system within the Elkhorn Slough area also is a critical factor to examine. We look forward to the next stages of this study's future efforts coordinating closely with the Monterey Bay Area Rail Network Integration Study currently underway, as well as with ongoing regional transportation and sustainability plans.	A number of rail planning studies have already been completed in the past. The Transportation Agency for Monterey County (TAMC) has completed a number of these studies and is currently working on multi-phased project to extend passenger rail from San Jose to Salinas. Additionally, TAMC is currently conducting a Monterey Bay Area Rail Network Integration Study. The purpose of this study is to lay the groundwork for implementing the 2018 California State Rail Plan in the Monterey Bay Area by determining the optimal options for: rail connectivity and operations, equipment needs, governance, and community benefits for service between Monterey County and Santa Clara County, Monterey and Santa Cruz and the Coast Rail Corridor. As future projects in the corridor move forward, design components such as transit bus stop/rail station location would be further evaluated, including frequency and phasing.	Letter	6/11/2020
65	California Coastal Commission	Grove	Tami	Chapter 6	In addition to these details, future studies should also consider the connections between the highway and other critical infrastructure that might be implicated by any proposal, such as the power plant and associated connections and supply lines, and roadway and utility connections with the community of Moss Landing. Future models should also more carefully consider long-term maintenance costs associated with various adaptation scenarios, particularly those related to sea level rise.	The completion of the County's Moss Landing Community Plan update will provide additional information that would help future study in this area.	Letter	6/11/2020
66	California Coastal Commission	Grove	Tami	Chapter 3	The draft report describes that ESA applied the Coastal Resiliency Monterey Bay (CRMB) hazard mapping resource to project flooding as a result of future sea level rise (SLR). Specifically, the high CRMB SLR scenarios were used, amounting to 2.4 feet by 2060 and 5.2 feet by 2100. The report recognizes that these sea level rise scenarios are similar to, but lower than, the current California state guidance for the medium-high risk aversion scenario. Consistency with the best available State SLR science and most current guidance will be critical for the Coastal Commission's evaluation of any future adaptation proposals.	Comment noted.	Letter	6/11/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
67	California Coastal Commission	Grove	Tami	General	In early 2020, seventeen state agencies with coastal climate resilience responsibilities (including the Coastal Commission and Caltrans) developed and adopted a set of consensus principles for aligned state action on sea level rise. These principles broadly include using best available science, building coastal resiliency partnerships, improving coastal resilience communications, supporting local leadership, strengthening alignment around coastal resilience, and implementing and learning from coastal resilience projects. These principles are consistent with and complementary to the Coastal Commission's Sea Level Rise Policy Guidance, which guides the Commission's approach to addressing sea level rise. Some shared principles include using best available science; taking a precautionary approach by considering high or extreme SLR projections, particularly for high-risk decisions like those for critical infrastructure; and maximizing natural shoreline values and processes, including through encouraging nature-based adaptation solutions. A critical component of this work is providing best available science on sea level rise projections to use in planning and decision-making. Consistent with the Ocean Protection Council's (OPC's) State of California Sea-Level Rise Guidance, the Commission's Sea Level Rise Policy Guidance, and the Principles for Aligned State Action, the Commission will continue to recognize OPC's 2017 Rising Seas in California Science Report and the 2018 State Sea-Level Rise Guidance as best available science until updates occur, and will work with planners and project applicants to assess an appropriate range of sea level rise scenarios.	Additional text will be added to the final report to reflect this new guidance. See response to Comment #16.	Letter	6/11/2020
68	California Coastal Commission	Grove	Tami	Chapter 5	It is important to note that the 2018 OPC Sea Level Rise Guidance recommends considering the extreme risk aversion (H++) SLR scenario, in addition to the medium-high risk aversion scenario, for high-consequence projects with a design life beyond 2050 that have little to no adaptive capacity, that would be irreversibly destroyed or significant costly to relocate or repair, or that would have considerable public safety or environmental impacts should extreme sea level rise occur. Given that the long-term adaptation of Highway 1 and the railway through the Elkhorn Slough area meets all of these criteria, the H++ scenario would be relevant to consider in future SLR planning efforts to ensure that adaptation alternatives will last long into the future while also allowing for the continued wetland function of the slough. Though the probabilities associated with the medium-high and extreme risk aversion scenarios are low and unknown, respectively, a precautionary approach obliges that these uncertainties be reasons for building additional safeguards into future adaptation scenarios.	Additional text addressing the State's guidance and the H++ extreme scenario will be added. Considering higher levels of sea level rise occurring sooner would result in significant differences in the technical analyses performed. Specifically, the project lifetime pf proposed roadway improvements would shorten or the criteria would increase; hence, the benefit cost analysis may change with higher costs and lower benefits.	Letter	6/11/2020
69	California Coastal Commission	Grove	Tami	Appendix E	Two specific safeguards that Commission staff would strongly encourage the authors of the study to consider relate to the timing and planning horizon for adaptation. The study includes the benefit-cost analysis as a method for calculating approximately when future damages to Highway 1 from sea level rise will be sufficient to economically justify adaptation. Commission staff recognizes that the benefit-cost analysis has limitations, as described in Appendix E, and is intended primarily to clarify the choices, timing and consequences of various adaptation approaches rather than to provide a definitive roadmap for adaptation. However, Commission staff believes that the assumption of a 10-year period for planning and developing the long-term adaptation project for Highway 1, the railway, and the slough is unrealistically short. Indeed, projects of this scale often take closer to 20 years or longer to go from planning to completion, with additional time (i.e., more than five years) for restoration.	See response to Comment #19.	Letter	6/11/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
70	California Coastal Commission	Grove	Tami	Chapter 6 and Appendix E	Given that the threat of sea level rise to the Elkhorn Slough area is both complex and significant, and that the long-term adaptation solution will require close coordination between numerous entities including state and local governments, property owners, and the public, Coastal Commission staff believes that such an effort should not wait until the early to mid-2030s, as the draft report states. Because of all the possibly drastic changes to the low-lying pockets of the local area that have been identified by several studies to date, climate resiliency transportation planning for the Moss Landing corridor should continue presently in earnest so as to be prepared for potential effects that may begin to be felt in a shorter time frame. We would welcome more attention being given to potential nature-based solutions in the short term that might help buffer Highway 1 and both extend its lifetime and promote ecological improvements. Concerted efforts clearly need to be initiated soon to advance strategies that can meet the challenges facing more extensive critical infrastructure construction that will be expected to have 75-100 year design lives, even though adaptation efforts may be through a series of phased approaches in the meantime. Obviously, the current strides to update the Moss Landing Community Plan portion of the County's LCP also will play heavily into articulating the transportation vision for the area and careful attention to integrating with such planning efforts would be prudent.	See response to Comment #19. Additionally, the next generation of planning studies should examine the relationship between this study and the Moss Landing plan and should include an evaluation of the various wetland restoration options under consideration.	Letter	6/11/2020
71	California Coastal Commission	Grove	Tami	Chapter 6 and Appendix E	The need for more immediate planning is further underscored by the informational gaps recognized by the benefit-cost analysis, including recreation values for non-water-based recreation (e.g., bird watchers), long-term maintenance costs and wetland impacts of two-lane versus 4-lane highway alternatives, the economic impacts of phased adaptation, and the economic benefits of natural infrastructure adaptive strategies (such as restoring shoreline dune systems) as well as various ongoing wetland restoration scenarios. Future planning should also more broadly include wetland elevation and restoration efforts either in planning or currently underway in various parts of the slough, such as additions to the Hester Marsh restoration project being implemented by the Research Reserve partnerships.	See response to Comment #70. These are all good things for future studies.	Letter	6/11/2020
72	California Coastal Commission	Grove	Tami	Chapter 6	This inclusive approach can also help promote the continued function of the slough as a wetland marsh. Commission staff are concerned that the draft report leaves readers with the impression that it is a foregone conclusion that sea level rise will permanently drown and convert Elkhorn Slough into a saltwater basin, and thus the slough can be developed without consideration of environmental consequences. The report should affirm that Elkhorn Slough can be expected to continue to be a vital ecological and economic resource despite the habitat changes brought about by sea level rise, and that nature-based solutions (e.g., habitat restoration, acquisition of low-lying areas to allow for marsh migrations, etc.) should be integrated into any future development proposals to ensure that this occurs. On this front, Commission staff looks forward to learning more about the vision for the 700-acre railroad marsh restoration project currently factored into the draft resiliency report. We would encourage future research and planning efforts to broadly include other conservation and restoration opportunities identified throughout Elkhorn Slough. All of these continued analyses will allow for more informed decision-making to guide meeting current and future transportation needs while protecting the evolving ecology of the slough.	The SLAMM projections indicate significant losses of estuarine marsh habitat in Elkhorn Slough with sea level rise. The project also identifies approximately 700 acres of marsh restoration that could mitigate the effects of sea level rise, as well as the potential conversion of agricultural low lands (approx. 1100 acres) that could be considered in strategic planning towards maintaining wetlands in the region. The report also attempts to integrate new wetland creation in transportation modifications made by Highway 1 Reach 2. The transportation adaptation improvements would have adverse impacts on the environment; mitigation costs were included in the planning level costs. The acreage impacted by widening the roadway to 4-lanes along all eight miles of the corridor would be approximately 19.5 acres.	Letter	6/11/2020
73	California Coastal Commission	Grove	Tami	Chapter 6 and Appendix E	Commission staff does recognize that there are some values, such as cultural resources, aesthetics, and certain other uses of Elkhorn Slough, that cannot be monetized (and were not included in the cost benefit analyses) but are also important factors for future planning and decision-making. We note that numerous similar considerations will need to be factored into future evaluations; it could be helpful for this report to make note as to how follow up steps to this study will address such issues.	These should be evaluated in future studies as data becomes available.	Letter	6/11/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
74	California Coastal Commission	Grove	Tami	Chapter 6 and Appendix E	Finally, Commission staff questions the use of several time horizons incorporated into the study, particularly the use of a 2070 time horizon for the purposes of SLR planning. Given that the study, based on the benefit-cost analysis, projects that new roadway and railway facilities would be constructed around 2050, this assigns a roughly 20-year lifespan to the project once built, only 10 more years than the projected planning and construction period. Since the purpose of the study is to evaluate potential long-term adaptation strategies for the slough area, using a time horizon of at least 2100-2120 seems more appropriate. Projecting beyond 2100, to the extent feasible, would also be appropriate for a truly long-term evaluation, and would be more consistent with the standard design life of bridge and highway infrastructure (i.e., approximately 75-100 years).	See response to Comment #19.	Letter	6/11/2020
75	California Coastal Commission	Grove	Tami	Table of Contents	Page i - Remove inadvertent capitalization in Chapter 7 title ("MoVing").	This will be revised in the final report.	Letter	6/11/2020
76	California Coastal Commission	Grove	Tami	Chapter 1	Page 1-1, Paragraph 2 - The second sentence appears to be missing a verb.	This will be revised in the final report.	Letter	6/11/2020
77	California Coastal Commission	Grove	Tami	Chapter 1	Page 1-1, Paragraph 2 - In the third sentence, "With 2 feet (ft) of sea-level rise...."	This will be revised in the final report.	Letter	6/11/2020
78	California Coastal Commission	Grove	Tami	Chapter 1	Page 1-2, Paragraph 1 - "A suite of near-term actions (e.g. next ten years) are identified to mitigate flooding impacts to transportation and ecology, in addition to developing long-range adaptation scenarios to be that could be implemented later this century.	This will be revised in the final report.	Letter	6/11/2020
79	California Coastal Commission	Grove	Tami	Chapter 1	Page 1-3, Paragraph 2 - Did any modeling assess the impacts of widening the roadway on induced demand, and subsequently, increased greenhouse gas emissions?	Although the AMBAG RTDM does not specifically quantify induced travel, at the regional level the effects of induced travel may be negligible compared to the overall amount of travel. This statement is supported by the Federal Highway Administration's "HERS-ST Highway Economic Requirements System - State Version: Technical Report - Appendix B: Induced Traffic and Induced Demand." The technical report states that if the demand is for a single facility, then induced traffic will appear large relative to previous volumes, because most of the change in trips will be from diverted trips. At the regional level, induced travel would be a smaller share of total traffic growth, because only trips diverted from other regions, plus substitutions between transportation and other goods, make up the induced share." In other words, at the regional level, induced travel is a smaller percentage of traffic growth because the vehicles constituting the induced travel on a particular facility in the region may constitute trips that have been diverted from other roadways in the region, and therefore would not be "new" induced VMT. Because induced VMT would likely be minimal on a regional level, the GHG emissions associated with any induced VMT would also be minimal.	Letter	6/11/2020
80	California Coastal Commission	Grove	Tami	Chapter 1	Page 1-4, Paragraph 2 - The report states that 3 feet of SLR will render farming untenable in low-lying agricultural lands. However, it is unclear whether the implication is that strategies to prevent overtopping would prevent this outcome. Also, does this determination also account for rising groundwater?	Agricultural operations in the low-lying areas by Highway 1 Reaches 3 and 4 will be impacted both by overland flooding from overtopping and rising groundwater.	Letter	6/11/2020
81	California Coastal Commission	Grove	Tami	Chapter 1	Page 1-6, Paragraph 2 - Did any modeling assess the impacts of widening the roadway on induced demand, and subsequently, increased greenhouse gas emissions? This is an important factor in differentiating between these alternatives.	See response to Comment #79.	Letter	6/11/2020
82	California Coastal Commission	Grove	Tami	Chapter 2	Page 2-1, Paragraph 2 - "The California State Transportation Agency (CalSTA) providing provided additional funding in Spring 2019 to include adaptation planning for the railway in this study."	This will be revised in the final report.	Letter	6/11/2020
83	California Coastal Commission	Grove	Tami	Chapter 2	Figure 1 - The legend should also include the specific amount of SLR, not just the associated year.	This figure will be revised in the final report.	Letter	6/11/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
84	California Coastal Commission	Grove	Tami	Chapter 3	Page 3-1 - It would be worth adding a brief subsection (e.g., 3.1.2) describing the federal, state, and local agencies with regulatory authority over projects in the Elkhorn Slough area.	Additional language will be added in the final report.	Letter	6/11/2020
85	California Coastal Commission	Grove	Tami	Chapter 3	Page 3-14, Paragraph 2 - This paragraph should note the existence of the extreme risk aversion (H++) SLR scenario, though it is not evaluated in this study.	Language addressing the H++ scenario will be added in the final report.	Letter	6/11/2020
86	California Coastal Commission	Grove	Tami	Chapter 3	Figure 4 - The lines overlaying the map's key should be removed.	This will be revised in the final report.	Letter	6/11/2020
87	California Coastal Commission	Grove	Tami	Chapter 3	Page 3-10, Paragraph 5 - "Types of information included <u>as</u> -built drawings...."	This will be revised in the final report.	Letter	6/11/2020
88	California Coastal Commission	Grove	Tami	Chapter 5	Page 5-3, Paragraph 4 - "Constructing a new alignment inland of the existing roadway was included as an adaptation concept...."	This will be revised in the final report.	Letter	6/11/2020
89	California Coastal Commission	Grove	Tami	Chapter 5	Page 5-9 - This section could benefit generally from explanation of the interrelationship between segments, including how the various segments fit together, whether the identified segments are long enough to rejoin the non-elevated segments at the grade of the existing segments, whether the unanalyzed segments will be included in the road widening effort, and whether the associated costs and environmental impacts will be addressed.	Segments between the Highway 1 reaches are assumed to be elevated and improved in all scenarios, as it would make more sense to incorporate long-term capital investments along the entire stretch of the highway. Highway 1 Reaches 1-4 are called out specifically because they were identified as segments of the transportation infrastructure that would be impacted earliest by future sea level rise.	Letter	6/11/2020
90	California Coastal Commission	Grove	Tami	Chapter 5	Figure 27 - The first branch of alternative A3 is missing a label.	A label will be added for that part of the figure in the final report.	Letter	6/11/2020
91	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-3, Table 5 - It is unclear whether the "Coastal Storm Threshold" column includes a 100-year storm on top of the noted SLR amounts. If so, it would be useful to include this detail in the table or caption.	This will be revised in the final report.	Letter	6/11/2020
92	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-3, Section 6.3 - Given that the subsidence rates are not uniform throughout the slough, is there any sensitive analysis to determine acceptable ranges of subsidence?	The average subsidence rate used in the SLAMM modeling was based off of SET data provided by ESNERR. No sensitivity analysis was conducted on subsidence rates. This could further addressed in future habitat modeling.	Letter	6/11/2020
93	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-4, Paragraph 2 - In the second sentence, please note the amount of SLR associated with 2060, as this will help provide consistency even as SLR projections change with new science.	This will be revised in the final report.	Letter	6/11/2020
94	California Coastal Commission	Grove	Tami	Chapter 6	Figure 29 - The notation is unclear and would benefit from revision. For example, does a "-" sign for "Congested VMT" mean that VMT is going down (presumably a positive benefit) or up (a negative impact)? It may be simpler and clearer for the notation to describe whether the factor increases or decreases.	The "-" indicates a negative impact. In this specific case, congested VMT is getting worse.	Letter	6/11/2020
95	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-10, Table 6 - Please clarify what is included in these costs (e.g., construction, maintenance, acquisition, mitigation, etc.). If maintenance and mitigation are included, for what period? Also, does this not include other associated costs that are included in the full cost-benefit analysis, such as habitat loss?	The detailed cost estimates will be included in a new Appendix F in the final report.	Letter	6/11/2020
96	California Coastal Commission	Grove	Tami	Chapter 6	Figure 36 - Same comment as for Figure 29.	See response to Comment #94.	Letter	6/11/2020

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97	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-25, Bullet 1 - It would be helpful to provide additional context for the various assumptions and variables, such as how “good” the assumptions are, and how a change in one direction affects the overall evaluation.	Additional language will be added to Section 6.5.3 in the final report.	Letter	6/11/2020
98	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-26, Bullet 2, Paragraph 2 - Information on the relative “accuracy” of this assumption would be particularly helpful.	This information is included in Appendix E.	Letter	6/11/2020
99	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-31 - Footnote 13 contains extremely helpful explanation should be retained.	This information will be updated with new figures in the final report.	Letter	6/11/2020
100	California Coastal Commission	Grove	Tami	Chapter 6	Page 6-33, Paragraph 3 - “Much more detailed analysis of this option will be required, including many environmental, <u>social</u> , and <u>political</u> dimensions not covered here.”	This will be revised in the final report to clarify.	Letter	6/11/2020
101	California Coastal Commission	Grove	Tami	Appendix E	It seems there are multiple benefits attributed to faster travel, and some might be double-counting the same attributes for several purposes. It would be worth explaining what makes each travel benefit separate and distinct.	Changes in travel time are only counted in the costs of delay in the benefit cost analysis. Changes in vehicle costs and safety benefits are estimated separately.	Letter	6/11/2020
102	California Coastal Commission	Grove	Tami	General	<p>Thank you again for the opportunity to comment on the Central Coast Highway 1 Climate Resiliency Study Draft Report. We appreciate the contribution of this report to the gradual development of a long-term vision of a vibrant and resilient Elkhorn Slough. We also value the opportunities for further research and planning that this study has highlighted, and we hope to participate in any collaborative efforts to advance such work in the future. We strongly believe that close collaboration among state and local government, and other stakeholders can result in the development of a vision that provides a safe, effective, and resilient multi-modal transportation network through the area while also promoting adaptation and restoration of one of the most spectacular wetland environments in California.</p> <p>We appreciate your consideration of these comments, and we look forward to continuing to work with you, your team, and the other members of the Steering Committee. We feel that we should note at this time that our participation in this effort should not be interpreted as explicit support of this study until we have an opportunity to contemplate its final results. If you have any questions or would like to discuss these comments, please do not hesitate to contact me.</p>	Thank you for your comments.	Letter	6/11/2020
103	California Department of Fish and Wildlife	Vance	Julie A.	General	On behalf of the California Department of Fish and Wildlife, which manages the Elkhorn Slough National Estuarine Research Reserve (ESNERR) with ongoing support from the National Oceanic & Atmospheric Administration, I am writing in response to your call for public comment of the draft report issued by the Central Coast Highway 1 Climate Resiliency Study. We commend AMBAG and your partners for beginning the process of addressing the effects of climate change on Highway 1 in our Region and appreciate that our organization was invited to participate on the Steering Committee. Nevertheless, we do have concerns about some elements of the draft report and welcome this opportunity to provide further feedback. As noted below, our major concerns are how the draft report discusses habitat losses and changes in value of Elkhorn Slough, and how it neglects to provide a broader context regarding a portfolio of future habitat restoration and migration options. We are also attaching more detailed comments on the draft report.	Thank you for your comment.	Letter	6/15/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
104	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	First, the report repeatedly conflates concerns about future sea-level rise (SLR) driven losses of tidal habitats within Elkhorn Slough (i.e., tidal salt marsh and mudflats) with all habitat loss within Elkhorn Slough. As a result of these overly broad characterizations, we are concerned that readers and future planners might erroneously conclude that Elkhorn Slough's valuable ecosystem services and functions will be almost entirely lost to SLR. Although most existing salt marsh and mudflat areas are projected to be inundated, these represent habitat conversions, with associated changes including both gains and losses in ecosystem habitats, processes, and services. We anticipate long-term management to mitigate some of these net habitat conversions via various kinds of management and restoration activities. Regardless, despite SLR, the protection of diverse estuarine habitats within Elkhorn Slough will continue to offer multiple environmental and economic benefits, such as seagrass beds that provide nurseries for commercially valuable flatfish and clam beds that support the sea otters that are so popular with recreational visitors and provide an important economic draw to the area. We request that the final report reflect this clarification.	Clarifying language will be added in the final report.	Letter	6/15/2020
105	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	We appreciate that restoration of particularly vulnerable tidal marsh habitats has been included within this study of transportation adaptation options. Future opportunities for habitat restoration will be diverse, and we commend the report's authors for beginning this discussion. Nevertheless, we want to point out that future restoration opportunities may extend well beyond those explicitly referenced in the draft report. In considering how to balance the impacts of making Highway 1 more climate resilient with promoting the continued health of the estuary, we suggest that future consideration be given to analyzing a broader suite of non-exclusive options for managing tidal marsh habitat. These options include tidal marsh restoration as part of green infrastructure, through non-infrastructure sediment addition projects, and via acquisition of other low-lying areas to allow for marsh migration. Other nature-based approaches may be important as well, such as restoring more natural flow regimes to portions of the estuary. Although the current analysis only addresses a subset of these opportunities, it would be useful for the report to explicitly put its analyses in the larger context of future possible options. We have recently completed a technical paper outlining salt marsh conservation, restoration, and enhancement opportunities in and around Elkhorn Slough in the face of sea level rise, and have attached it to this letter (Fountain, 2020. Elkhorn Slough Tech. Rep. Series 2020: 2).	Discussion around this context as well as a reference to the attached technical paper will be added to the final report.	Letter	6/15/2020
106	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	We are relieved to see that Scenario A4/B1 is now recognized as too costly and promises too little benefit to justify its continued consideration, and we hope that future analyses do not reconsider this option. In short, the negative environmental impacts, both during construction and as a permanent development, would have tragic consequences for the biodiversity and wildlife of the Elkhorn Slough ecosystem, which was recognized in 2018 as a Wetland of International Importance by the Ramsar Convention, the world's first international environmental treaty.	Thank you for your comment.	Letter	6/15/2020
107	California Department of Fish and Wildlife	Vance	Julie A.	General	We recognize that the Central Coast Highway 1 Climate Resiliency Study is one of the earliest steps in a decades-long process of preparing Highway 1 for SLR and a changing climate. ESNERR appreciates participating on the Steering Committee, and we hope our comments here provide clarity regarding our concerns with respect to this draft report and the opportunities that future planning for adaptation to climate change and SLR will offer. ESNERR staff stand ready to continue sharing our perspectives informed by the best practices of conservation science and environmental stewardship, and we look forward to strengthening future collaborations and partnerships to achieve the multiple benefits expected from such restoration and green infrastructure initiatives.	Thank you for your comment.	Letter	6/15/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
108	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 1	Page 1-5 - Should be clearer that marsh migration is a solid strategy and strategic land acquisition to allow for marsh migration should be prioritized.	Text will be revised to include marsh migration and land acquisition as a strategy.	Letter	6/15/2020
109	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 1	Page 1-6 - This should emphasize habitat conversion, with gains for mudflat and subtidal habitat, loss of marsh if migration doesn't happen (if people decide to protect lowlands along Moro Cojo, OSRC)	Comment noted.	Letter	6/15/2020
110	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 2	Page 2-2 (Figure 1) - Predictions based on adding to current king tides. Not reflective of habitat changes.	The intent of the figure is to show areas of transportation infrastructure affected by projected future flooding from sea level rise at 2100.	Letter	6/15/2020
111	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 2	Page 2-5 - The first goal was reached but not sure the group spent much time on the 2nd goal.	Comment noted.	Letter	6/15/2020
112	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-3 (Figure 4) - Land use needs updating. Should update map to show Minhoto, Yampah Island, Wells, Springer/Empire and Avila as "open space", unless ESNERR pastures should have another designation?	The land use figure is sourced from most recently available Caltrans data for the entire study area, including areas adjacent and around Moss Landing and Elkhorn Slough .	Letter	6/15/2020
113	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-4 (Figure 5) - Map is out of date.	See response to Comment #27.	Letter	6/15/2020
114	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-6 - Include Bennett Slough, Moro Cojo, Tembladero and OSRC here, too. They are all part of the historic estuary today removed from tidal influence because of tide gates.	Human-driven impacts to Bennett Slough and the Old Salinas River Channel are discussed in this section. References to the Moro Cojo and Tembladero Slough systems will be incorporated into the final report.	Letter	6/15/2020
115	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-6 - The slough was open most of the year, with a few exceptions in the winter/spring, when strong ocean waves from storms closed the mouth for up to a couple/few months a year. Longer closure times only began to occur in the early 1900s as tidal prism decreased as a function of massive diking and draining in Moro Cojo, etc. That closure pattern was man-made and should not be used as baseline data	Comment noted.	Letter	6/15/2020
116	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-6 - There is published evidence (Nidzeko) that the Slough was naturally ebb-dominant. ESA should update their priors. They keep returning to old ideas first promoted in the 1980s.	Theses references will be reviewed and incorporated into the text as appropriate.	Letter	6/15/2020
117	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	A regional transportation study has not been done to substantiate future transportation needs and where mass transit would help congestion over just building out the roads.	In addition to this study, there has been a number of previous transportation studies that consider the regional transportation needs in this corridor as well as the surrounding areas.	Letter	6/15/2020
118	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-14 (Section 3.7) - Wetlands should be marsh since wetlands include mudflats too. Second sentence incomplete. Include subtidal channels in estuarine habitats.	The sentence will be revised in the final report.	Letter	6/15/2020
119	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-14 - Some very important estuarine habitats will expand such has subtidal channels.	Comment noted.	Letter	6/15/2020

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120	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-16 - (Figure 11) - Missing subtidal channels.	The referenced figure shows rolled up habitat classifications for ease of understanding the general location and extent of each category. In this graphic, tidal channels are included in the 'Estuarine' category. In the SLAMM habitat modeling conducted as part of the scenarios evaluation, detailed habitat categories were used; tidal channels were considered separately from other estuarine habitat types.	Letter	6/15/2020
121	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-17 (Figure 12) - This is a vertical profile of estuarine habitat, not just tidal marsh.	The figure will be re-titled in the final report.	Letter	6/15/2020
122	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 3	Page 3-20 - Limited tidal connectivity	Unclear what the comment is referring to. Marshes east of the railway with reduced tidal exchange are described in the section this comment refers to.	Letter	6/15/2020
123	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 4	Page 4-1 - Include under a reference to SLR technical paper.	Comment noted.	Letter	6/15/2020
124	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 4	Page 4-2 - (Section 4.3) - add property acquisition from willing sellers for marsh migration.	This will be added in the final report.	Letter	6/15/2020
125	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 5	Page 5-6 - Include marsh migration as an option.	Since this study is focused on adaptation by the transportation infrastructure, we did not explicitly examine marsh migration as a strategy. However, use of a levee ecotone approach would create space for marsh migration. Additionally, the SLAMM modeling conducted does provide an estimate of undeveloped land that wetland habitats could potentially migrate into. Additional language regarding marsh migration as a strategy where appropriate in the final report.	Letter	6/15/2020
126	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 5	Page 5-11 - The MLHD report misinterprets the habitat changes expected in Elkhorn Slough. If you are citing this report, also site ESNERR SLR report. The idea of moving the harbor east into protected lands should not be perpetuated and this statement should be removed.	The language will be clarified in the final report. We have made an effort to reference several other reports, including reports and papers from ESNERR.	Letter	6/15/2020
127	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-7 (Figure 29) - These appear to be generated independently, rather than formed by a diverse group of expert opinion based on transparent evidence. This figure should be removed.	This figure was prepared by transportation professionals based on model output and this type of graphic has been used in other studies.	Letter	6/15/2020
128	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-18 - Or you could say "restoring tidal openings." We have good data on which tidal creeks have been closed since the railroad was built.	Comment noted.	Letter	6/15/2020
129	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-18 - Include marsh migration not just sediment addition as a strategy.	See response to Comment #125.	Letter	6/15/2020
130	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-22 (Figure 36) - These appear to be generated independently, rather than formed by a diverse group of expert opinion based on transparent evidence. This figure should be removed.	See response to Comment #127.	Letter	6/15/2020

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131	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-25 - Expenditures for the ecotones and marsh restoration projects should include acquisition of land for marsh migration.	Ecology adaptation approaches (e.g. ecotone and marsh restoration) were developed in coordination with ESF, ESNERR and CDFW, who are the primary organizations responsible for the protection of the areas where these approaches might be implemented. Most areas are public land; therefore the cost for land acquisition was considered negligible.	Letter	6/15/2020
132	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-26 - Number of estimated visitors is low. It is over 45K just at ESNERR alone.	Our information is that of the 45,000 visitor at ESNERR, 15,000 are bird watchers who were not included in the recreational survey, 15,000 are school students who are not counted in economic values. This leaves 15,000 general visitors, who are included in the estimates of recreational users, along with an equal number of people who visit the Slough on the water.	Letter	6/15/2020
133	California Department of Fish and Wildlife	Vance	Julie A.	Chapter 6	Page 6-29 - It's not clear why the authors use medium high risk.	This is the Ocean Protection Council recommendation for infrastructure projects. It is used only in the estimates of the economically optimal time to begin project development.	Letter	6/15/2020
134	California Department of Fish and Wildlife	Vance	Julie A.	Appendix D	SLAMM - Done based on old maps and elevation even though there is new data from ESNERR post habitat restoration at Hester.	Model inputs reflect the best and most recent available data. We coordinated with ESNERR in incorporating updated elevations and data from the Hester Marsh Restoration into model inputs.	Letter	6/15/2020
135	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 1	The Monterey County Resource Management Agency (RMA) offers the following comments on the Central Coast Highway 1 Climate Resiliency Draft Study ('Draft Study'). Executive Summary – This section provides a great introduction to why the study is needed. Staff suggests that the summary be taken a step further and describe its purpose. For example, the last sentence of the first paragraph on page 2-3 of the draft states: "The outcomes of this study are intended to inform future transportation and nature-based adaptation strategy planning and design for the roadway, railway and adjacent areas." It would be helpful for the reader to provide insight on the utility of document and it how would/could be used for improvements to Highway 1 and/or future development within the area. If one of the scenarios were to be implemented, are any of steps in the permit process already covered by the study? What can we do with, or build upon, the work that was already done?	Additional text will be added to the Executive Summary.	Letter	6/16/2020
136	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 2	Section 2, Study Need, Objectives and Framework – The North County Land Use Plan, including the Moss Landing Community Plan, identifies Moss Landing as a unique community of great importance. As such, staff suggests that one of the objectives of the scenarios should be to maintain vehicular access to the area. In the case of Moss Landing Harbor and the Island, it is a priority for Monterey County to protect in place. This section, and other applicable areas of the plan should reflect the County's position.	Additional text will be added to Chapter 2 to better document the County's position.	Letter	6/16/2020
137	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 2	Figure 4, Land Use Type – Staff suggests that the legend on the map be cleaned up to remove what appears to be delineation of roadways. The draft identifies that the map was provided by Caltrans. Since this illustrates land uses, staff would suggest that a map with the accurate land use designation be used instead.	This will be revised in the final report.	Letter	6/16/2020
138	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 5	Section 5, Adaptation Scenarios Development – Staff suggests that this section include an expanded discussion on other scenarios explored during development (including those scenarios that were brought up during steering committee and community meetings), concluding with reasons for why those scenarios were not explored.	This will be revised in the final report.	Letter	6/16/2020

Number	Agency	Last Name	First Name	Chapter	Comment	Response	Comment Format	Date
139	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 6	Improvements along Existing Highway 1 Alignment – Options presented in this study include significant roadway infrastructure improvements to Highway 1 along its existing alignment. However, Public feedback received by the County indicate a preference for a 4-lane facility, similar to the 4-lane facility of Scenario C3 of this study, but along an alternate alignment that is more inland from Highway 1. This alternate alignment would extend generally from the northerly Highway 1/Struve Road intersection, southeasterly across the slough towards Dolan Road west of Via Tanques and the existing railroad tracks, and continuing southerly, generally following the alignment of the railroad line towards Highway 156 and a connection near Castroville. This alternate alignment could minimize the further bisecting and isolating of portions of the Moss Landing community. Additionally, a roadway facility designed to handle high traffic volumes, such as the 4-lane facility identified in the study options, but developed keeping in mind the needs of the communities as well as the overall regional transportation and circulation needs, would potentially provide a more coherent and effective roadway system, while also minimizing adverse effects on rural County roadways that are not designed for highway level traffic volumes. Considering the infrastructure costs of a raised roadway structure as presented in this study, there may be additional benefits to evaluating the overall transportation network in this area, including this alternate alignment, that may have comparable infrastructure costs, but may also present different options that could better serve the communities and travelers along this corridor.	The Project Team and Steering Committee considered a number of inland options during scenario development but given the study's limited time and resources, it was decided to evaluate a co-located highway/rail corridor and various options for the G12 corridor.	Letter	6/16/2020
140	Monterey County Resource Management Agency	Carroll	Shandy	Chapters 5 and 6	Other Options or Solutions Considered – In review of the study, it appears that here is very minimal discussion regarding consideration of alternatives other than those presented in the study. It is unclear if alternatives such as the ones presented in the County's comments were considered and evaluated and deemed less favorable than the options presented in this study. Additional details and discussion would be helpful to the public to provide clarity and the rationale regarding consideration of alternate solutions that may have not warranted recommendation by this study at this time.	Additional language will be added to the final report to better reflect early discussion on scenario development.	Letter	6/16/2020
141	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 6	Scenario C2 (Managed Retreat/Widening of G-12 4 Lanes) – This scenario does not account for the G12: Pajaro to Prunedale Corridor Study prepared by the Transportation Agency for Monterey County (TAMC), and the findings and recommendations of this study. The TAMC study proposes mid-term and long-term improvements that promote safety and multimodal use of roadway and transportation facilities to enhance connectivity for pedestrians and bicyclists, along with roadway improvements that include a number of roundabouts, signals, rumble strips, and vehicle speed feedback signs to manage vehicle flow along the corridor. Additional improvements along the roadway, such as enhanced pedestrian crossings and flashing beacons, are proposed to enhance community connectivity in the areas of Las Lomas (along Hall Road) and Prunedale (along San Miguel Canyon Road). The Resiliency Study's option to utilize the G-12 corridor to relocate Highway 1 traffic is inconsistent with and contrary to TAMC's study and recommendations for promoting safety, and pedestrian and multimodal access through rural communities along the G-12 corridor because the Resiliency Study's scenario recommends increasing traffic volume.	Additional language will be added to the final report to better reflect TAMC's G12 corridor study and its results.	Letter	6/16/2020
142	Monterey County Resource Management Agency	Carroll	Shandy	Chapter 6	San Juan Road Corridor – The San Juan Road corridor, generally along the north portion of Monterey County, provides a roadway connection from Highway 1 via Pajaro to Highway 101, directly connecting at the San Juan Road interchange. San Juan Road may provide a more direct, less circuitous connection, and may provide a more appropriate route that minimizes further bisecting existing rural communities. The concept of evaluating San Juan Road was brought up at community meetings/webcasts, however, it appears that consideration this option was omitted in this draft study report.	Additional language will be added to the final report to better reflect early discussion on scenario development.	Letter	6/16/2020

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143	Monterey County Resource Management Agency	Carroll	Shandy	Appendix E	Appendix E: Benefit-Cost Analysis Technical Memorandum – Section E. Traffic Safety, of Appendix E does not appear to account for collision types in its assessment of traffic accident and collision data. For example, TAMC’s G-12 study included a similar analysis, and identified collision data that included pedestrians and bicyclists. Better understanding the nature of the collision data can provide additional insight and decision-making data related to diverting traffic and increasing traffic volume and potentially vehicle speeds along a corridor that studies identified a desire to enhance pedestrian and bicyclist access and usage.	Tables E-17 and E-18 indicate the collision types, derived from the California Highway Patrol SWITRS data used in the safety analysis. Bike and pedestrian accidents were not included in the analysis because the economic value of these types of accidents was not available. A future analysis should include these, though it is unlikely they will alter the overall traffic safety conclusions.	Letter	6/16/2020
144	Monterey County Resource Management Agency	Carroll	Shandy	Chapters 5 and 6	<p>Upon review, specific to the County’s roadway system in the study area, the Draft Study is lacking consideration of other regional plans for the roadway system within this study area, and evaluation of alternate roadway corridors that may provide additional or preferable transportation connectivity.</p> <p>Additional information from further evaluation of these considerations will provide helpful information and data that will provide a more comprehensive picture of the roadway system in this area, the potential effects of diverting highway-level traffic volumes on County communities and roadway in these areas, and the data and analysis necessary to make informed decisions.</p>	Additional language will be added to the final report regarding the highway corridor in the regional setting.	Letter	6/16/2020

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