



Image 4A (VAU 4, KOP 4). Existing view looking northwest from the intersection of Airport Road and Highway 101.



Image 4B (VAU 4, KOP 4). Visual simulation of the post-project view looking northwest from the intersection of Airport Road and Highway 101.

Table 4. Anticipated Changes to Visual Quality in Visual Assessment Unit 4

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	4.5	5	5	4.8	
Proposed Condition ^A	5	5.5	5.5	5.3	
Visual Quality Difference				+0.5	Low (Positive)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

VAU 4 earns moderate ratings for intactness, unity, and vividness despite the obvious human-made intrusions on the landscape. Similar to the project effects on visual resources described for VAU 3, views such as those shown in Image 4A and in the post-project visual simulation, Image 4B, are aesthetically pleasing and pattern elements (form, line, color, and texture) are generally harmonious. Such views are relatively common over the extent of the proposed trail alignment through Segment 4 and are not individually remarkable. Changes to the view, including vegetation removal and exposure of the trail to neighbors on the south side of Highway 101, and installation of safety barriers such as cables to ensure separation of the trail from the highway to the east and the NWR to the west, would be an additional human-made intrusion on the landscape. However, any such project features would be low profile (elevation) and linear, consistent with the other linear features in the VAU. Removal of the taller vertical vegetation would enhance the vividness, intactness and unity of the view by returning it to a more natural coastal plain without the tall shrubs that are not commonly found in this habitat community. The continuity of the pattern character and use of low-chroma and non-glare construction materials would lessen the effects of the trail on the unity of the coastal plain. Construction activities would be a temporary visual impact and not unlike maintenance equipment used in the Highway 101 corridor. Project-related impacts on the visual environment as seen from KOP 4 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 4.

8.2.5. Landscape Unit #5: CRC and South Eucalyptus Area (Project Segment 5)

8.2.5.1. VISUAL ASSESSMENT UNIT 5, KEY OBSERVATION POINTS 5, 6, AND 7

VAU 5 includes the proposed trail alignment along the levee that extends along the CRC parcel. The proposed trail alignment in this VAU would leave the Highway 101 and NCRA corridors and would follow the levee that juts out into Humboldt Bay. As illustrated in the

photograph provided in Section 3.3.10, the stand of eucalyptus trees that line the NCRA corridor between Highway 101 and the CRC parcel in Landscape Unit #5 would not be affected by the proposed trail alignment. The view from KOP 5, as shown in Image 5A, would allow trail users to experience the contrast in visual character that occurs between the natural character and pattern elements of Humboldt Bay to the west versus those of the human-made environment of CRC to the east. Images 5B and 5C illustrate other views from the proposed trail that pedestrians and bicyclists would have of the bay and the structures associated with the CRC parcel. The levee is not visible to travelers on Highway 101. The levee prism is elevated above both the water and the upland areas through which it passes. The elevated levee would expand the distance of views afforded trail users of both the bay and the former industrial character of the CRC parcel. The form, line, and structure of these views are fairly common along the Humboldt Bay coastline, but are aesthetically pleasing and have a high degree of unity. Table 5 summarizes the anticipated effect of the proposed project on visual resources as seen from KOP 5.

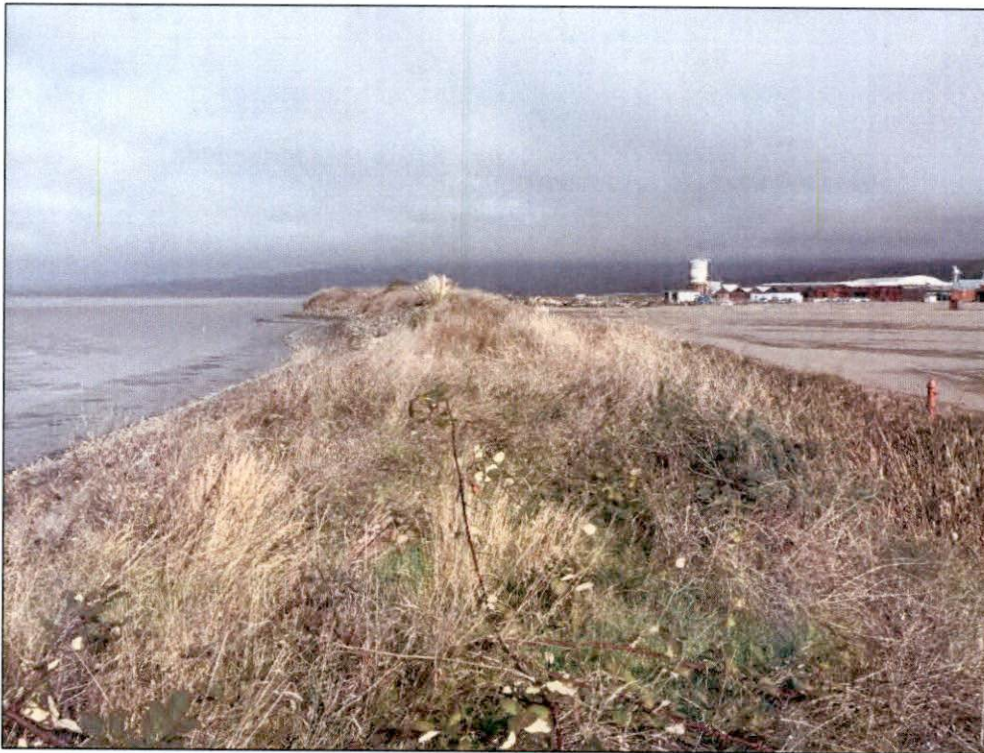


Image 5A (VAU 5, KOP 5). View of proposed trail alignment from south end of CRC parcel levee. View looking north..

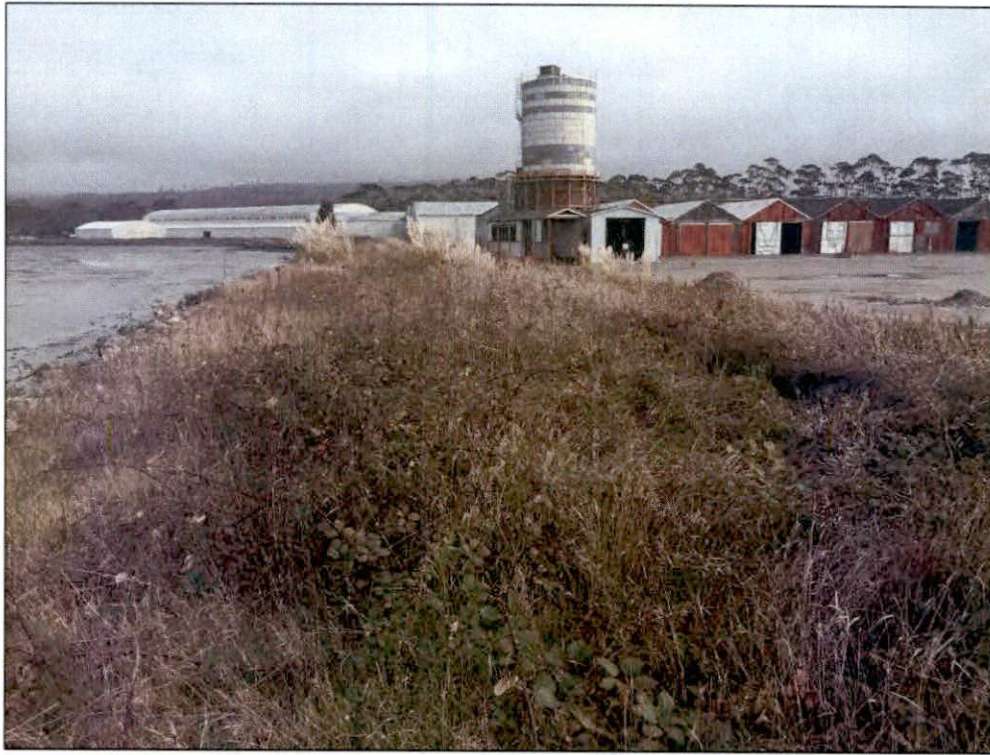


Image 5B (VAU 5, KOP 6). View of proposed trail adjustment near northwest end of CRC levee. View looking north.



Image 5C (VAU 5, KOP 7). View of proposed trail alignment from north end of CRC levee. View looking northeast.

Table 5. Anticipated Changes to Visual Quality in Visual Assessment Unit 5

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	5	4.5	6	5.2	
Proposed Condition ^A	6	3.5	5	4.8	
Visual Quality Difference				-0.4	Low (Positive)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

Alignment of the proposed trail along the levee would decrease the intactness and unity of the existing views as a result of the trail, and the fencing, barriers, and gates that may be needed along the trail to ensure there would be no trespass into the CRC industrial complex. Although the levee is a human-made feature located immediately adjacent to the CRC facility, which is an area that has undergone significant development, the existing sense of naturalness when looking west toward the bay, would be somewhat reduced by the removal of the coastal vegetation and addition of fencing. However, the presence of the trail along the levee would increase the vividness of the view for trail users. The exposure of neighbors would be limited to the limited number of viewers looking toward the trail from the CRC or from the bay. Similar to the visual experience of viewers from the trail, neighbors and outside travelers would may notice the vertical elements of the fencing and other barriers, which would reduce the overall quality of the view. In addition, railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail. It is anticipated that the temporarily disturbed area would be restored to pre-project conditions. Construction of the trail would require equipment and machinery that may temporarily reduce intactness and increase glare experienced by viewers from outside of the trail alignment. There would be no impact on pedestrians or bicyclists during construction since they would not have access to this area. Project-related impacts on the visual environment as seen from KOP 5 would be negative, but less than significant as summarized in Table 5.

8.2.6. Landscape Unit #6: North CRC Levee Trail Connector (Project Segment 6)

8.2.6.1. VISUAL ASSESSMENT UNIT 6, KEY OBSERVATION POINT 6

VAU 6 includes the north end of the CRC parcel. This VAU illustrates the proximity of Segment 6 to the shoreline and the view that recreational visitors using the trail might have of

the north end of the CRC parcel when looking southwest. This is one of only two areas along the proposed alignment that encompasses open water, the trail alignment, and urban development (the other being Segment 2 over Eureka Slough). A proposed bridge walkway would be created at this location to create a connection between the trail from the north to the levee that extends around the perimeter of the bay-ward edge of the CRC parcel. As shown in Image 6A, there is limited upland in front (north) of the office building where the trail could be routed. Therefore, as shown in the post-project visual simulation, Image 6B, a bridge crossing would be built that would extend approximately 200 feet from the railroad corridor, over the water, to the edge of the levee just northeast of the office building complex. Travelers, particularly commuters on Highway 101, and neighbors (i.e., those who occupy the CRC offices and outbuildings) would experience noticeable changes in the vividness, intactness, and unity of the view.

The proposed bridge crossing would add a sense of connectivity between the bustling activity occurring on Highway 101 and the tranquility of Humboldt Bay. The color, line, and airy form of the proposed bridge would be inviting and encourage viewers to explore beyond what can be seen from KOP 6. Minor obstruction to views from the adjacent CRC office building could result from the proposed bridge alignment, but the openness of the structure over the water would minimize this potential effect. It is anticipated that the temporarily disturbed area would be restored to pre-project conditions.

Construction of the trail and bridge would require equipment and machinery that may temporarily reduce the quality of the existing view. Table 6 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 6.

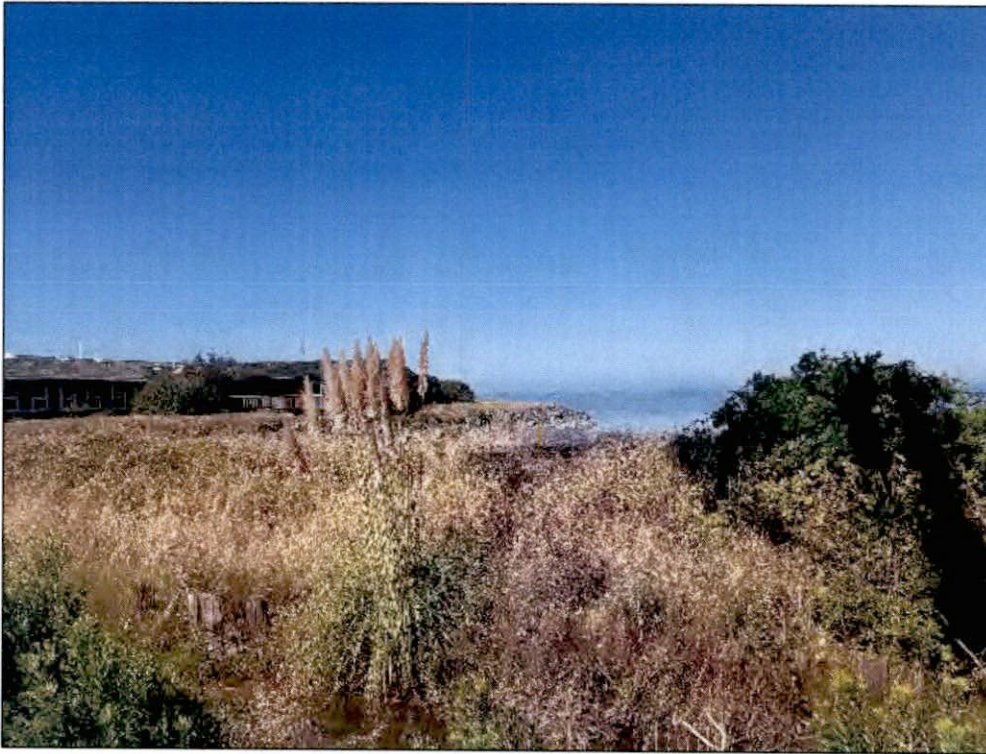


Image 6A (VAU 6, KOP 6). View of existing conditions at north end of CRC parcel. View looking southwest towards levee.



Image 6B (VAU 6, KOP 6). Visual simulation of proposed bridge connection to levee at north end of CRC parcel. View looking southwest toward levee.

Table 6. Anticipated Changes to Visual Quality in Visual Assessment Unit 6

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	5	4	4	4.3	
Proposed Condition ^A	5.5	4	4.5	4.5	
Visual Quality Difference				+0.2	Low (Positive)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from within VAU 6 earn moderately low to moderate ratings. Views such as those shown in Image 6A illustrate the proximity of buildings on the CRC parcel to Humboldt Bay and the proposed trail alignment. There is a disparity between the intactness and unity of the coastline to the north and south of the CRC parcel and the industrial and commercial development that occurs intermittently along the proposed trail corridor. The vividness (memorability) of the view from KOP 6 is relatively high compared to surrounding areas because of the presence of a definable feature—the office building—that is highly visible on the landscape. Addition of the proposed bridge crossing as shown in visual simulation Image 6B would increase the memorability of the view. The human-made bridge and its safety railings would be a permanent, unnatural feature in the VAU; however, the form, line, and color of the bridge design would add diversity, scale, and continuity to the pattern character associated with the view from KOP 6. Each of the various bridge design options under consideration, and as illustrated in Section 3.3.8, would have their own unique visual character that would influence viewer response. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. The proposed trail alignment and enhancements would be visible for a distance given the flat topography of the viewing area and the linear nature of the proposed trail. It is anticipated that travelers and neighbors would enjoy the resulting changes in the quality of the views when looking east toward the trail from these locations.

Construction equipment required for pile driving and cranes would be required. This would temporarily increase visual intrusions and the potential for glare in the project area. Construction equipment and activities may equally impact commuters and tourists, however permanent changes to the visual environment would be more noticeable to commuters and

neighbors in the adjacent offices. Project-related impacts on the visual environment as seen from KOP 6 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 6.

8.2.7. Landscape Unit #7: Eucalyptus Area North (Project Segment 7)

8.2.7.1. VISUAL ASSESSMENT UNIT 7, KEY OBSERVATION POINT 7

VAU 7 consists of project Segment 7, which includes an approximately 0.7-mile-long eucalyptus stand located between the west side of Highway 101 and the east side of the NCRA railroad corridor. As shown in Image 7A, these trees dominate the VAU and limit views of Humboldt Bay from Highway 101. Their presence emphasizes the linearity of the human-made elements in the view including Highway 101, the metal guard rail, the railroad corridor, and the alignment of the trees themselves. According to the project's cultural report (JRP Historical Consulting Services 2004) the eucalyptus was planted at the time of Highway 101 construction as a beautification effort. These trees provide a vertical element and rich texture to the existing view. Other non-native vegetation has established itself along the proposed trail corridor, adding to the visual obstructions for the view from Highway 101. Commuters are the viewer group having the most familiarity of this view, so they would be the most affected by the proposed removal of these trees for public safety reasons. As shown in the visual simulation Image 7B, removal of the trees would change the visual character of the view by allowing for unobstructed views of the coastal plain and Humboldt Bay previously obstructed by the presence of the trees. The pattern elements of form, line, color, and texture associated with the towering stand of eucalyptus would be replaced by the new trail prism that would be supported by a conspicuous retaining wall that would be exposed to the Highway 101 corridor. Removal of the stand of eucalyptus trees, as shown in the photograph provided in Section 3.3.10, would also expose the CRC buildings to the south, making them a dominant, unnatural feature, potentially distracting from the adjacent bay. Recreationists using the trail would be fully exposed to the visual quality of the Highway 101 corridor to the east, which would be in sharp contrast to the presence of Humboldt Bay immediately to the west.

Table 7 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 7.

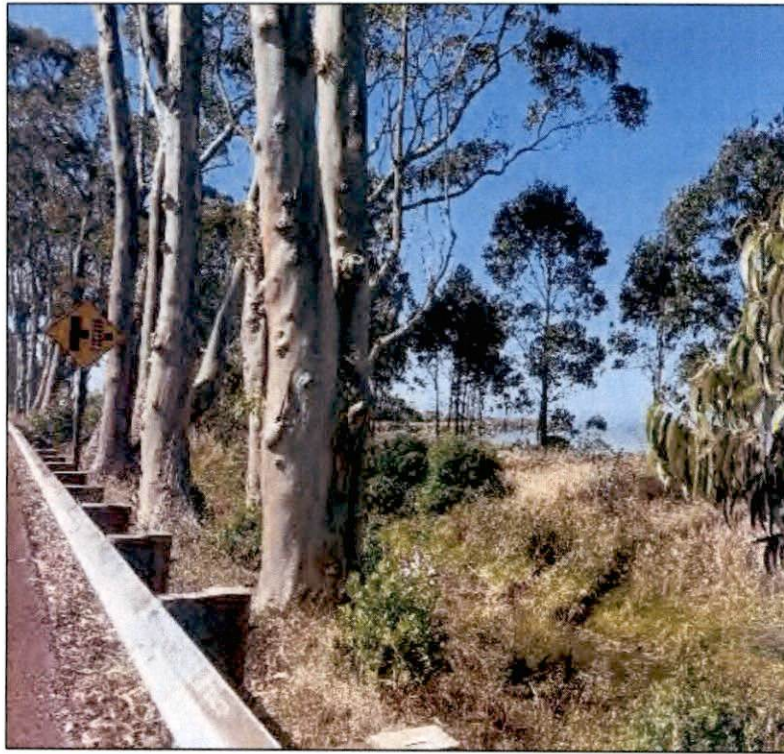


Image 7A (VAU 7, KOP 7). Existing view of eucalyptus trees and vegetation lining the Highway 101 corridor just north of CRC. View looking southwest.



Image 7B (VAU 7, KOP 7). Visual simulation of the proposed trail alignment post-tree removal just north of CRC. View looking southwest.

Table 7. Anticipated Changes to Visual Quality in Visual Assessment Unit 7

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	5	5	6	5.3	
Proposed Condition ^A	4	3.5	4	3.8	
Visual Quality Difference				-1.5	Moderately Low (Negative)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

VAU 7 earns moderately high to high ratings for existing intactness, unity, and vividness. However, proposed removal of the eucalyptus trees and the installation of extensive safety railing and approximately 2,700 linear feet of retaining wall would decrease the visual character of views experienced by travelers both in and outside of the proposed trail alignment, as well as the limited number of neighbors at the CRC parcel. Although the eucalyptus trees were purposely planted and are not native to the area, their presence along the coastline provides a higher level of unity and intactness than would exist as a result of their removal. Replacement of trees by a human-made feature (trail) would change the pattern elements associated with this view. Vertical lines would be replaced by the horizontal trail alignment, and the dynamic color and texture of the trees would be replaced by the monochromatic trail features; however, railing materials, color, and scale would affect the visual impact. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. The overall aesthetic quality would be lessened along this trail segment. Project-related impacts on the visual environment as seen from KOP 7 would be negative; moderately low significance as summarized in Table 7.

8.2.8. Landscape Unit #8: South of Bracut (Project Segment 8)

8.2.8.1. VISUAL ASSESSMENT UNIT 8-1, KEY OBSERVATION POINT 8

KOP 8 is used to illustrate the changes to visual resources and aesthetics that would occur as a result of removing the sizable eucalyptus that currently line Highway 101 south. As shown in Image 8A, the trees dominate the existing view, drawing the viewer's eye skyward. In contrast, post-construction visual simulation Image 8B draws the viewer's line of vision toward the background of the image. The northern end of this stand of eucalyptus trees along

Highway 101 begins approximately 1,000 feet south of the Indianola Cutoff and extends south nearly to the CRC parcel (as described in Landscape Unit #7).

Despite obvious signs of human intrusion, the view shown in Image 8A includes a dynamic mix of form, line, color, and texture. Humboldt Bay is visible to the west. The continuity of the highway and adjacent railroad corridors influence the pattern character of the existing and post-construction views. Similar to other VAUs north of CRC, VAU 8-1 exhibits more areas of disturbance and decreased unity than those further to the south. Tourists and other travelers may find the existing view fairly common and unremarkable compared to more natural areas along the Humboldt Bay coastlines. The removal of the trees would only increase the unremarkable visual experience. Commuters would be the most affected viewer group. Recreationists on the trail may also find the view unremarkable and common with nothing to buffer the presence of the Highway 101 corridor. Table 8 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 8-1. Table 8 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 8-1.

As previously discussed, one of the billboards is located within the project area between the highway and railroad, and depending on the final trail alignment, the trail may narrowly avoid this billboard. The potential exists for the trail to conflict with the billboard, which may result in its removal or relocation. The visual simulation (Image 8B) assumes the billboard would not be in conflict with the trail alignment and, therefore will remain. If the billboard is removed, views of Humboldt Bay from Highway 101 would be broadened and the distraction created by its presence would be removed.



Image 8A (VAU 8-1, KOP 8). Existing view of north end of eucalyptus grove on west side of Highway 101 south, just south of Indianola Cutoff.



Image 8B (VAU 8-1, KOP 8). Visual simulation of the post-construction trail alignment along Highway 101 south, just south of Indianola Cutoff.

Table 8. Anticipated Changes to Visual Quality in Visual Assessment Unit 8

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	5	4.5	4.5	4.7	
Proposed Condition ^A	4	3	3.5	3.5	
Visual Quality Difference				-1.2	Low (Negative)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from VAU 8-1 are generally low to moderate. Significant urban and commercial development and infrastructure detracts from the visual quality and aesthetics of this landscape unit as a whole; compounded further by the removal of the trees in the middle- and background of the view. Views such as those shown in Images 8A and B are relatively common in urban areas and are not individually remarkable. Numerous human-caused intrusions on the landscape dominate the view as seen from KOP 8. The addition of safety cable fencing and raised profile asphalt path as shown in Image 8B would add to the diminished quality of the view. Views of the bay may be increased, but the visual intrusions may distract from the aesthetic quality of the visual resource. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. Construction activities would temporarily increase intrusions and glare. These changes would be most noticeable to commuters as opposed to tourists due to the routine exposure to views along their commute. Project-related impacts on the visual environment as seen from KOP 8 would be negative; moderately low significance as summarized in Table 8.

8.2.8.2. VISUAL ASSESSMENT UNIT 8-2, KEY OBSERVATION POINT 9

The purpose of VAU 8-2 is to provide a pre- and post-construction comparison of the proposed trail. Image 9A shows the existing condition of the NCRA railroad corridor just south of Bracut. The area available for the trail is relatively narrow with Highway 101 immediately to the east and Humboldt Bay to the west. Views such as this are common and while harmonious with the dominant coastal character of the area, are unremarkable. Post-construction visual simulation Image 9B illustrates the proposed asphalt trail alignment and the safety cable barrier that would be used between the trail and Highway 101. Views in this area are expansive and generally unobstructed. Travelers of all types can appreciate the size

of the bay and get a sense of the coastline as it extends into the distance. Table 9 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 8-2.



Image 9A. (VAU 8-2, KOP 9). Existing view of Highway 101 corridor south of Bracut. View facing north.



Image 9B. (VAU 8-2, KOP 9). Post-construction visual simulation of proposed trail south of Bracut. View facing north.

Table 9. Anticipated Changes to Visual Quality in Visual Assessment Unit 8-2

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	5	6	6	5.7	
Proposed Condition ^A	5	5.5	5.5	5.3	
Visual Quality Difference				-0.4	Low (Negative)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

KOP 8-2 earns fairly high ratings for intactness, unity, and vividness. The pattern elements present are harmonious and open. The new trail would be intrusive on the landscape, but somewhat consistent with the adjacent Highway 101 corridor and the railroad prism. Intactness and unity would be slightly diminished. The proposed trail and its features would be apparent to travelers on Highway 101 and may distract from the scenic resources associated with the bay in the background. The presence of recreational trail uses so close to the highway could be a distraction to drivers. Alternatively, some drivers may feel that observing people recreating along the bay is an enhancement. However, railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. During construction equipment and machines would be present which would provide a temporary increase in visual intrusions. Project-related impacts on the visual environment as seen from KOP 8 would be negative, but less than significant as summarized in Table 9.

8.2.9. Landscape Unit #9: Bracut (Project Segment 9)

8.2.9.1. VISUAL ASSESSMENT UNIT 9, KEY OBSERVATION POINTS 10 AND 11

VAU 9 is located just north of Bracut where the Highway 101 crosses Brainard Slough. KOPs 10 and 11 are located in close proximity to each other and were established to illustrate different views of the proposed trail alignment APE at Brainard Slough, including proposed changes to visual resources that would occur as a result of installing a pedestrian bridge crossing over the slough and shoreline revetment (rock). Image 10 faces west toward Humboldt Bay as seen from Highway 101. The railroad crossing over Brainard Slough has been significantly degraded by historic washout and erosion. The view of the Bracut peninsula that extends into the distance coupled with the diverse textural elements, including rocks, mudflats, vegetation, and the slough extending out towards the bay has a relatively high degree of vividness, intactness, and unity despite the human-made elements. As seen

from Highway 101, views of the crossing would be fleeting, but nonetheless interesting. The unique quality of this view decreases slightly with the presence of the metal guardrail and highway corridor as shown in Image 11A, but it continues to retain a sense of the area's history. Installation of a pedestrian bridge crossing as a part of the proposed trail would change the character of the view by adding a modern, vertical, human-made feature to the visual resource. Table 10 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 9.

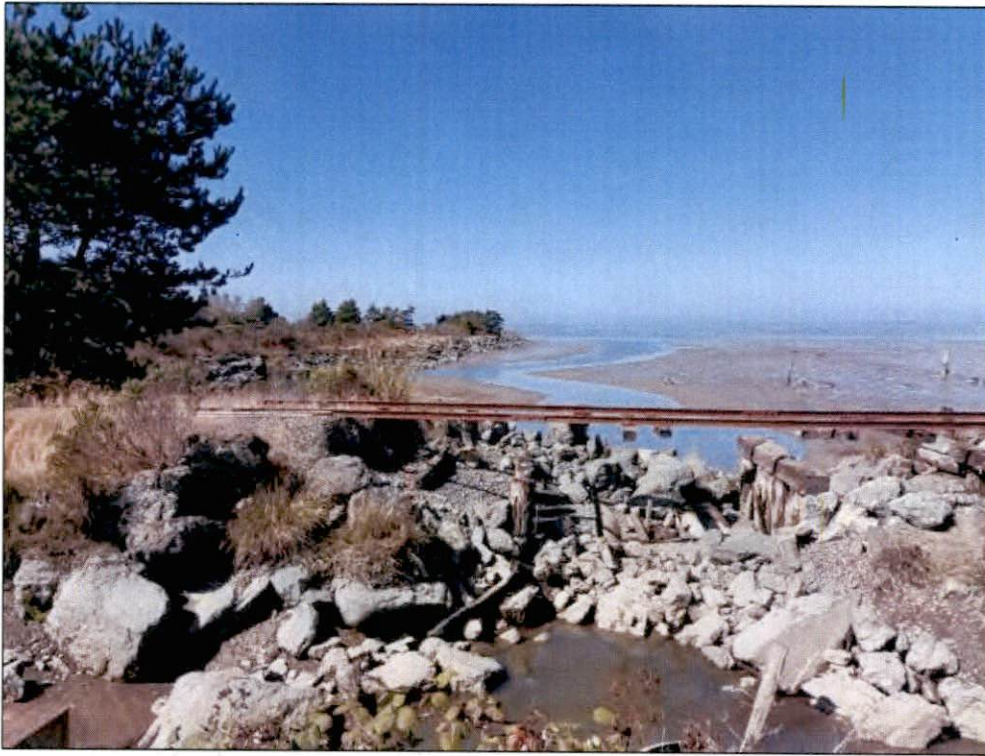


Image 10 (VAU 9, KOP 10). Existing Brainard Slough railroad crossing. View looking west.

Table 10. Anticipated Changes to Visual Quality in Visual Assessment Unit 9

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition [^]	6	5.5	6	5.8	
Proposed Condition [^]	6	5	5.5	5.5	
Visual Quality Difference				-0.3	Low (Negative)

[^]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from KOP 10 earn moderately high to high ratings. Views such as those shown in Images 10 and 11A are aesthetically pleasing due to the pattern elements (form, line, color, and texture) that are harmonious throughout the entirety of the views. Although the proposed bridge crossing, revetment, and trail alignment would be visual intrusions on the landscape, the retention of existing trees and landscape features (as shown in visual simulation Image 11B) would continue to draw the viewer's eye upward and towards the background of the image instead of along the horizontal trail. Use of rock and low-chroma colors that would be consistent with the surrounding environment would lessen the visual effect of the bridge on the landscape. The continuity of the pattern character would be maintained as a result of the linearity of the trail alignment; however, intactness and unity would be slightly diminished. The vividness (memorability) of the view from this KOP would remain high given the uniqueness of the bridge crossing. The proposed trail and its features would be apparent to travelers on Highway 101 and may distract from the scenic resources associated with the bay in the background. The presence of recreational trail uses so close to the highway could be a distraction to drivers. However, railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. During construction equipment and machines would be present which would provide a temporary increase in visual intrusions. Project-related impacts on the visual environment as seen from KOP 9 would be negative, but less than significant as summarized in Table 10.



Image 11A (VAU 9, KOP 11). Existing view from southbound Highway 101 next to Brainard Slough crossing. View looking southwest.



Image 11B (VAU 9, KOP 11). Post-construction visual simulation showing proposed Brainard Slough crossing from Highway 101 south. View looking southwest.

8.2.10. Landscape Unit #10: Humboldt Bay Trail North Extension

8.2.10.1. VISUAL ASSESSMENT UNIT 10, KEY OBSERVATION POINT 12

VAU 10 is comprised of the southernmost extent of the nearly completed Humboldt Bay Trail North (shown in Image 12A). The proposed cable barrier fencing would be extended north from Landscape Unit #9 into Landscape Unit #10 (as far as the Gannon Slough crossing). No other activities would occur in this VAU, since the Bay Trail North has already been implemented under a separate project. Visual simulation Image 12B illustrates the existing paved trail segment, including the cable barrier fencing. The low profile cable barrier would be set back from the edge of trail and approximately 8 to 12 feet from the edge of the Highway 101 shoulder. The cable barrier would consist of steel wire ropes (typically 4 strands) mounted on steel posts secured in concrete foundations. An approximately 2-foot wide concrete weed mat would be installed along the length of the cable barrier. Views such as those shown in Images 12A and 12B would be common throughout the entirety of the proposed trail system improvements along Humboldt Bay between Arcata and Eureka. Although the cable barrier fencing would be another human-made intrusion on the landscape, it would be consistent with existing conditions, which include the paved trail, the NCRA corridor, and Highway 101. Views in this area are expansive and generally unobstructed. Travelers of all types can appreciate the size of the bay and get a sense of the coastline as it extends into the distance. Table 11 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 10.



Image 12A. (VAU 10, KOP 12). Existing view of the Humboldt Bay Trail North, which is currently under construction. View facing north.



Image 12B. (VAU 10, KOP 12). Visual simulation of the completed Humboldt Bay Trail North, including the continuation of cable barrier fencing from VAU 9. View facing north.

Table 11. Anticipated Changes to Visual Quality in Visual Assessment Unit 10

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition ^A	5	6	6	5.7	
Proposed Condition ^A	5	6.5	6.5	6	
Visual Quality Difference				+0.3	Low (Positive)

^AThe visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

KOP 12 earns moderately high ratings for intactness, unity, and vividness. The pattern elements present are harmonious and open. While the addition of the cable barrier fencing, including its concrete foundation and metal fence posts, would be intrusive on the landscape, it would be consistent with the existing paved trail, adjacent Highway 101 corridor, and the railroad prism. The low profile and openness of the barrier would not obstruct views available to motorists or recreationists. While there may be an increased potential for glare as a result of the use of galvanized metal and concrete, it is anticipated that this potential impact would be avoided through the use of non-glare and low-chroma construction materials. Intactness and unity would increase with the installation of the barrier because of its linearity and consistency with the other human-made features visible from KOP 12. The proposed trail and its features would be apparent to travelers on Highway 101 and may slightly distract from the scenic resources associated with the bay, but the impact would be low. Recreationists would similarly find views of the trail to be visually common and would not be distracted from the panoramic views of the adjacent coastline. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. During construction equipment and machines would be present, which would provide a temporary increase in visual intrusions; however, because the pavement has already been installed in this VAU, the duration of construction would be shorter than along other segments of the Humboldt Bay Trail South. Project-related impacts on the visual environment as seen from KOP 10 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 12.

8.3. Special Consideration – Eucalyptus Tree Removal

Removal of approximately 1/3 of the total eucalyptus stand that currently lines Highway 101, would be arguably the most noticeable change to the visual character of the Humboldt Bay Trail. Not only would their removal change the existing views along the Highway 101 corridor, but it would also change the visual character of the skyline as viewed from distant neighbors and as reference by pilots using the nearby Murray Field Airport. These trees are considered by some in the community to be an important local landmark, with a history reaching back approximately 80 years. Neighbors and commuters using Highway 101 (i.e., those most familiar with the existing view) would be the most affected viewer groups. There is currently not a trail in the affected area, thus the effect of changes in the visual character of this proposed trail segment on future trail users cannot be qualified since there is not an established existing view for this viewer group. Removal of the eucalyptus trees would be open up views of Arcata Bay from Highway 101 as well as to neighbors; however, the use of railings, fencing, and barriers that may be used to ensure public safety along the affected segment may be considered by some to be an unnatural obstruction on the landscape, reducing the intactness of the view. Unity would be reduced because the eucalyptus trees were a compatible visual intrusion and were harmonious with other visual components. However, harmonious elements like native landscaping treatments would also be included. The photograph provided in Section 3.3.10 shows the extent of proposed eucalyptus tree removal.

Chapter 9. Summary of Project Impacts

9.1. Determination of Impacts Under CEQA

Project consistency with the significance criteria used in the current CEQA Guidelines (2017) was determined using the impacts thresholds identified in Table A (Chapter 8. Section 8.1). The proposed project impacts on visual resources and aesthetics, and the anticipated viewer response would be less than significant, even when the impact would result in a low to moderately low negative resource change. Table 12 summarizes the project’s impacts and consistency with the current CEQA significance criteria

Significance Criteria Issue	Project-related Impact	Project Consistency
Have a significant adverse effect on a scenic vista?	The project would result in minor changes to the appearance of the existing ROW between Highway 101 and Humboldt Bay, but would not diminish views of Humboldt Bay on the landward side or of the coastal mountain from the bay.	Less than Significant
Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Highway 101 in the project vicinity is not a designated state scenic highway. There are no documented scenic resources or historic buildings in the immediate project area. However, the eucalyptus trees that line Highway 101 from just south of Bracut to the southern end of the CRC parcel are a local landmark and scenic resource. Partial removal of eucalyptus trees on the north side of the CRC site for safety would change the existing view, but would result in an expansion of views of Humboldt Bay.	Less than Significant
Substantially degrade the existing visual character or quality of the site and its surroundings?	The project would be compatible with the existing visual character of the proposed project alignment and its surroundings, and would not introduce any elements that would degrade existing visual character or quality. The addition of project components such as a boardwalk, fencing, retaining walls, and rock slope protection would occur in a manner consistent with the existing aesthetic of the surrounding area.	Less than Significant
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	The project would result in some light emissions similar to existing conditions in the Bracut area and the Highway 101 corridor. Use of metal bridge railings may increase the potential for glare. The use of reflective paint and signage, and lighting at some trail/driveway intersections would be consistent with other California Coastal Trail segments. Project	Less than Significant

Significance Criteria Issue	Project-related Impact	Project Consistency
	implementation would may impact daytime views as a result of glare off of metal bridges. However, the type of bridges used in the proposed trail alignment are currently to be determined. Nighttime views would not be affected in the project area and vicinity as a result of project-related safety lighting improvements.	

9.2. Determination of Impacts Under NEPA

Although there are no specific standards for determining the significance of project impacts on visual resources and aesthetics under NEPA, the assessment of changes in visual quality as a result of project-related impacts on visual resources was determined based on the relationship of viewers with their visual environment and the project's potential to change the visual character of the environment. Similar to the CEQA thresholds for significance, project compatibility, viewer sensitivity, and degree of impacts were identified for the purpose of this study as the NEPA criteria used to determine if overall project impacts on visual quality would be beneficial, adverse, or neutral. The determination of visual quality change is based on visual simulations and other images, and prevailing findings of qualitative resource changes summarized in the VAU assessment tables used in Chapter 8. An overall net change when assessing the project as a whole (i.e., the cumulative net change of all KOPs assessed) was found to equal -0.7 (Low/Less than Significant) (as described in Chapter 8, Section 8.1, Table A). The degrees of visual change used in NEPA are described as beneficial, adverse, or neutral. Because the overall net change falls within the low end of the negative side of the scale used in Table A, the changes in visual quality when assessed using NEPA terminology were determined to be "neutral." Table 13 provides a summary of NEPA criteria, general project impact, and the anticipated effect that project-related changes to visual resources would have on viewers.

Criteria	Project-related Impact	Visual Quality Change
Compatibility of impacts on visual resources	The project would be compatible with the existing visual character of the proposed project alignment and its surroundings, and would not introduce any elements that would substantially degrade existing visual character or quality.	Neutral

Criteria	Project-related Impact	Visual Quality Change
Viewer sensitivity to impacts	Commuters would be the viewer group potentially most affected by the proposed project because of their familiarity with the Highway 101 corridor. However, views of Humboldt Bay and compatibility of the proposed trail components with the surrounding area would likely be enhanced as a result of the project. Other travelers would have little or no familiarity with the existing view. The few neighbors with views of the project would not be adversely affected by the project.	Neutral
Degree of impacts	Overall impacts on visual resources as a result of project implementation would enhance the existing viewshed (i.e., views of Humboldt Bay and surrounding areas as seen from both land and water). In addition, project components would not degrade the visual character or quality of the existing visual environment.	Neutral

9.3. Summary of Project Impacts

In general, the project would have a beneficial impact on existing and planned visual resources in the project alignment or vicinity, which would include improvements to existing aesthetics and visual resources, and creation of additional viewing opportunities of Humboldt Bay, mudflats and marshlands. New features such as signage, bridge crossings, and viewing platforms would be constructed to be unobtrusive on the landscape. Landscape reestablishment would incorporate plants that would match the surrounding native vegetation and improve the aesthetic qualities of the trail.

The project would not adversely impact the panoramic scenic vistas of Humboldt Bay visible from points along the proposed trail alignment and locations adjacent to the trail such as along Highway 101 and nearby roads such as the Indianola Cutoff. The low profile of project features such as a guard rail and cable barriers, and directional signage would not substantially obstruct views of the bay as seen from inland areas. The three proposed new bridge structures including the Brainard Slough crossing and two crossings to the CRC levee (one at either end of the parcel) would affect the pattern elements (form, line, structure, texture, etc.) of the existing views, but the effect on visual resources and aesthetics would be less than significant. Neighbors (i.e., those persons working in offices and buildings near the north end of CRC) would be exposed to visual changes as a result of the bridge crossing extending from the trail corridor to the levee. Consideration for construction materials, color palettes, plantings, and use of open safety barrier design would buffer the appearance of project features on the landscape and the effect on viewers, in particular, commuters on Highway 101 who would have the greatest familiarity with the pre-project conditions. In

addition, the use of cable safety barriers or rails as needed along the extent of the trail would be consistent with the safety features along Highway 101.

Removal of eucalyptus north of CRC (Segment 7) would result in a minor adverse change in the visual environment, primarily noticeable to commuters; however, views of Humboldt Bay would be increased for travelers on Highway 101 as well as landward views from the bay and curving coastline to the north and south. Other vegetation management actions throughout the project alignment, including removal of smaller trees and shrubs along the railroad corridor would have a lesser impact on visual resources and aesthetics. Travelers would have more intact and unified views of Humboldt Bay and the coastal plain as a result of vegetation management activities. Few, if any, neighbors would be significantly impacted by changes in visual resources as a result of vegetation management, including removal of the eucalyptus, since most are too far away to see a change in the visual environment or have obstructed views.

The completed project includes use of nighttime safety lighting at locations where the trail would intersect roadways, such as at the Bracut driveway/intersection (Segment 9). While this would be a new source of nighttime lighting, low-level, low-glare lighting will be used. The potential for glare from headlights (including bicycle lights), the expanded trail surface, directional and informational signs, soils exposed by project construction, and vegetation removal would be consistent with existing conditions along the Highway 101 corridor and surrounding areas and would not be significant. Nighttime views of the project area would be limited to artificial light from outside sources such as bicycle lights and road crossings. Conservation Measure VIS-1 (see Chapter 11) is recommended to ensure that impacts resulting from project-related light sources remain less than significant.

The effects of new signage and viewing platforms set against the landscape would be less-than-significant given the dominant vertical structure of the vegetation and occasional overhead utilities throughout the project alignment. However, reflective road paint, where appropriate, and highly reflective signs are required by law.

During construction minor temporary impacts on aesthetics could result from construction disturbance. Large machines and equipment would be present along the highway, which could temporarily provide sources of glare and obstruct views of the Humboldt Bay. Most noticeable to neighbors and travelers would be the presence of construction equipment at the various bridge crossings; however, the industrial nature of the adjacent parcels and the temporary presence of the equipment makes this a less-than-significant impact on aesthetics and visual resources.

The effects of the project on the Coastal Commission’s Coastal Act requirements, the County and City’s general plans and LCP guidelines are summarized in Table 14.

Table 14. Project Consistency with Management Guidelines

Management Guideline		Impact	Consistency Determination
California Coastal Commission			
Coastal Development Permit	Protection of the scenic beauty of coastal landscapes and seascapes	The scenic beauty of the coastal landscape will be protected. Landscape revegetation and reestablishment would incorporate plants that would match the surrounding native vegetation and improve the aesthetic qualities of the trail. All project components (i.e., interpretive signage, fencing, boardwalk, retaining walls, etc.) would be at a low height (approximately 4.5 feet in height maximum), thereby not diminishing views of Humboldt Bay on the landward side or of the coastal mountains from the bay.	Consistent
Humboldt County General Plan			
Conservation and Open Space Element	Goal SR-G1: Conservation of Scenic Resources. Protect high-value scenic forest, agriculture, river, and coastal areas that contribute to the enjoyment of Humboldt County's beauty and abundant natural resources.	The proposed project would protect the coastal area through shoreline restoration along certain portions of the project alignment.	Consistent
Humboldt County Local Coastal Program			
Public Services - Rural	3.22 – B.3: Public Roadway Projects. Public roadway improvement projects shall not, either individually or cumulatively, degrade environmentally sensitive habitats or coastal scenic areas. Improvements (beyond repair and maintenance) shall be consistent with Section 3.30 et seq and shall be limited to the following: g. construction of bikeways.	Improvements to bikeways shall be consistent with Section 3.30	Consistent
Natural Resource Protection Policies and Standards.	3.30. *** 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.	The proposed project does not conflict with the development policies in Section 3.30 regarding visual resources. Areas within 100 feet of a mean high water line shall match existing contours and would revegetate disturbed areas.	Consistent

Table 14. Project Consistency with Management Guidelines

	Management Guideline	Impact	Consistency Determination
Visual Resource Protection	<p>3.40.*** 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.</p>		Consistent
	<p>3.40 – B.1. Physical Scale and Visual Compatibility</p> <p>No development shall be approved that is not compatible with the physical scale of development as designated in the Area Plan and zoning for the subject parcel; and the following criteria shall be determinative in establishing the compatibility of the proposed development:</p> <p>a. For the proposed development that is not the principle permitted use, or that is outside and urban limit and for other than detached residential, agricultural uses, or forestry activities regulated by CDFW, that the proposed development compatible with the principle permitted use, and, in addition is either:</p> <p>(1) No greater in height or bulk than is permitted for the principle use, and is otherwise compatible with the styles and visible material so existing development or land forms in the immediate neighborhood, where such development is visible from the nearest public road.</p>	<p>The proposed project's styles and visible materials would be compatible with immediately surrounding existing land forms and development. Landscaping and exterior designs would be compatible with the physical scale established by surrounding development.</p>	Consistent

Table 14. Project Consistency with Management Guidelines

Management Guideline	Impact	Consistency Determination
<p>(2) Where the project cannot feasibly conform to paragraph 1, and no other more feasible location exists, that the exterior design, and landscaping be subject to a public hearing, and shall be approved only when:</p> <p>(a) There is no less environmentally damaging feasible alternative location.</p> <p>(b) The proposed exterior design, and landscaping are sufficient to assure compatibility with the physical scale established by surrounding development.</p>		
<p>3.40 – B.2. Protection of Natural Landforms and Features</p> <p>Natural contours, including slope, visible contours of hilltops and treelines, bluffs, and rock outcroppings shall suffer the minimum feasible disturbance compatible with development of any permitted use, and the following standards shall at a minimum secure this objective:</p> <p>a. Under any permitted alteration of natural landforms during construction, mineral extraction or other approved development, the topography shall be restored to as close to natural contours as possible, and the area planted with attractive vegetation common to the region.</p> <p>b. In permitted development, land form alteration for access roads and public utilities shall be minimized by running hillside roads and utility corridors along natural contours where feasible, and the optional waiving on minimum street width requirements, where proposed development densities or use of one-way circulation patterns make this consistent with public safety, in order that necessary hillside roads may be as narrow as possible.</p>	<p>The project would match the existing contour and would disturb natural tree lines and features to the minimum amount feasible. Disturbed areas will be revegetated along the proposed trail would match the surrounding landscape.</p>	<p>Consistent</p>

Table 14. Project Consistency with Management Guidelines

Management Guideline	Impact	Consistency Determination
<p>3.40 – B.3. Coastal Scenic Area In the Coastal Scenic Area designated in the Area Plan Map (Indianola area), it is the intent of these regulations that all developments visible from Highway 101 be subordinate to the character of the designated area, and the following uniform standards shall apply to all development within said area, in addition to other applicable policies of this plan:</p> <p>a. New industrial and public facility development shall be limited to:</p> <p>(1) Temporary storage of materials and equipment for the purpose of road and utility repair or improvement provided that this is necessary to the repair or improvement, and no feasible site for storage of equipment of material is available outside such area.</p> <p>b. All permitted development shall be subject to the following standards for siting and design except for structures integral to agricultural use and timberland management subject to CDF requirements for special treatment areas.</p> <p>(2) The highest point of a structure shall not exceed 30' vertically measured from the highest point of the foundation, nor 40' from the lowest point of the foundation.</p> <p>(3) Vegetation clearing for new development shall be minimized. New development on ridgelines shall be sited adjacent to existing major vegetation, prohibiting removal of tree masses which might destroy the ridgeline silhouette, and limiting the height of structures so that they maintain present ridgeline silhouettes.</p>	<p>Proposed project features will be subordinate to the character of the surrounding area. No structures will be included that are above 30 feet at the highest point nor 40 feet from the lowest point of the foundation. The least amount of vegetation clearing feasible will occur.</p>	<p>Consistent</p>

Table 14. Project Consistency with Management Guidelines

Management Guideline	Impact	Consistency Determination
City of Eureka General Plan		
<p>Recreation and Cultural Resources Element</p>	<p>Goal 5.A. To provide for park and recreational systems which include sufficient diversity of areas and facilities to effectively serve a population with varied characteristics, densities, needs and interests, consistent with protecting environmentally sensitive habitats.</p> <p>Goal 5.B To provide public open space and shoreline accessways throughout the Coastal Zone, consistent with protecting environmentally sensitive habitats and other coastal priority land uses.</p> <p>Policy 5.B.1: The City shall provide public open space and shoreline access throughout the Coastal Zone, particularly along the waterfront and First Street, through all of the following:</p> <p style="padding-left: 40px;">d. Consider and protect the scenic and visual qualities of coastal areas that are visible from scenic public vista points and waterfront walkways.</p>	<p>Amenities proposed along the trail route are designed to serve a wide array of potential users and to enhance the public's understanding of environmentally sensitive habitats through interpretive signage and passive recreation opportunities that allow the public to become familiar with the natural character of the Humboldt Bay coastline.</p> <p>Consistent</p>
<p>Natural Resources Element</p>	<p>To support the continued protection of valuable open space resources in and around Eureka.</p>	<p>The proposed trail would follow and existing right of way and existing roads. Proposed enhancements will benefit adjacent natural resources through actions such as vegetation management and curtailing transients camping and dumping.</p> <p>Consistent</p>
<p>Land Use and Community Design Element</p>	<p>To maintain and expand views of the waterfront, inner harbor, and landmark buildings from public streets and other public spaces.</p>	<p>The project would create viewing opportunities of Humboldt Bay throughout the extent of the trail alignment.</p> <p>Consistent</p>
Eureka Local Coastal Program		
<p>Land Use and Development Framework</p>	<p>The City shall continue to work with the Humboldt Bay Harbor, Recreation, and Conservation District to implement the projects described in the City's Eureka</p>	<p>The proposed project would create viewing and additional access opportunities to Humboldt Bay for the public. The project would be consistent with</p> <p>Consistent</p>

Table 14. Project Consistency with Management Guidelines

	Management Guideline	Impact	Consistency Determination
	Waterfront Revitalization Program, including construction of a public access vista point at the foot of Truesdale Street.	other public recreation projects proposed or completed.	
Streets and Highways	The City should improve the appearance of existing transportation ROWs and incorporate high standards of aesthetic design when considering new transportation corridors, including streets, bikeways, walkways, and other related ROWs.	The project includes numerous aesthetic enhancements that would be implemented along a currently degraded existing transportation ROW.	Consistent
Coastal Recreation and Access	The City shall provide public open space and shoreline access throughout the Coastal Zone by considering and protecting the scenic and visual qualities of coastal areas that are visible from scenic public vista points and waterfront walkways.	Proposed trail enhancements, including non-native vegetation management, interpretive signage, and creation of waterfront viewing opportunities would enhance and protect the scenic natural beauty of the coastal landscape.	Consistent
	Where public access ways or vista points are located near environmentally sensitive habitat areas, attractive barriers shall be provided to preclude disturbance of natural areas by off-road or all-terrain vehicles.	The proposed trail would be for pedestrian or non-motorized use. Standard trail-related traffic-control signage would be installed in order to comply with Class I standards and MUTCD requirements. At locations where the trail intersects a vehicular roadway, removable bollards would be installed to prevent unauthorized motorized vehicles from entering the trail. Safety railing and fencing is proposed along retaining walls, viewing platforms, the CRC levee, and at the edge of the trail when adjacent to steep embankments.	Consistent

Chapter 10. Cumulative Effects

Proposed changes to the existing aesthetic of the project area from implementation of the Humboldt Bay Trail South Project would not degrade views of Humboldt Bay or the scenic quality of the project area. The proposed project would enhance viewing opportunities for the public and would provide landscaping treatments that visually match the surrounding landscape. Rock rip-rap, weed mats, and native revegetation are examples of the types of landscape treatments that would be used throughout the project area, as practicable. In addition, it is anticipated that native vegetation would reestablish over time, lessening the appearance of such treatments even further. The visual effect of these treatments on the landscape would be a part of the cumulative considerations afforded landscaping used for other projects associated with the Highway 101 corridor and adjacent areas. Views of Humboldt Bay, the coastal mudflats, and other coastal scenic resources would open up in some areas where large trees are planned for removal. Travelers typically experience views from a travel corridor in a cumulative rather than site specific manner. The project's contribution to cumulative impacts on aesthetics and visual resources would be an overall improvement of the scenic quality of the area throughout many segments of the proposed alignment, when considering the scattered industrial and commercial development that distracts from the panoramic views of Humboldt Bay along the Highway 101 corridor. The cumulative effect of the vegetation removal along Highway 101 on visual resources and aesthetics would contribute to the loss of vertical pattern elements rich in texture, form, line, and color, thus reducing the visual diversity of the views between Eureka and Arcata. The addition of the cable barrier railing, fencing, and retaining walls in the project area would be a cumulative impact, particularly when considered in the context of other projects such as the Eureka-Arcata Route 101 Corridor Improvement Project (Caltrans District 1-HUM-101, PM 79.9/86.3) that will affect the same general area. The larger Highway 101 corridor has cable barrier rail proposed in McKinleyville and the Eureka to Arcata corridor, along with the existing cable barrier rail already installed in Arcata. However, in the project area, Humboldt Bay and the coastal shoreline would be made more prominent, consistent with the majority of the project area. The presence of the trail would be a cumulatively considerable improvement for recreationists.

Chapter 11. Visual Resource Management Recommendations

11.1. Resource Protection Measures

The effect of the proposed project on scenic resources and aesthetics would be a benefit to the County and the City of Eureka. Project design considerations include the beneficial effects of the project on viewer sensitivity to Humboldt Bay, and the County's, City's, and Caltrans' guidelines pertaining to scenic resources. This assessment of the visual character of the project area indicates that the following management recommendations should be considered for inclusion in the project design standards to ensure minimal adverse changes in overall visual quality:

1. Manipulate landscape components such as landform and vegetation to enhance the visibility of project actions from surrounding areas.
2. Enhance opportunities for scenic views from the Humboldt Bay Trail South when possible.
3. Use construction materials that are visually compatible with the landscape. However, reflective road paint and highly reflective signs are required by law.
4. Retaining wall architectural treatment, such as specified color, texture, and material options that would allow the wall to recede into the landscape.
5. Select pedestrian safety rails within consideration for matching the scenic character to the project area.
6. Revegetation would be limited to native grasses and special-status native plants.

11.2. Conservation Measures

The following conservation measure is recommended to be incorporated into the project description to minimize impacts associated with required safety lighting:

- **Conservation Measure VIS-1:** To avoid adverse impacts, new sources of light, including any outside night lighting associated with construction, will be designed to protect wildlife and nighttime views, including views of the night sky. This design goal will be satisfied using a variety of means as applicable, including fixture types, cut off angles, shields, lamp arm extensions, and pole heights. Specific design preferences include not directing light upward or to other properties, avoiding

brightly illuminated vertical surfaces where feasible, such as walls and lamp poles, and not directing lighting toward environmentally sensitive habitats. The Recommended Practices of the Illuminating Engineering Society of North America should be consulted for lighting levels and quality of light.

Chapter 12. Conclusions

Assessment of potential impacts on visual resources and aesthetics resulting from implementation of the Humboldt Bay Trail South project, and viewer response to these impacts, would be less than significant for the project as a whole. Although the cumulative net change to the existing views afforded travelers and neighbors resulting from the presence of the trail and the minor changes that would be made to the visual character of the proposed trail alignment were found to be negative (-1.7 [Moderately Low/Less than Significant]) based on the assessment methodology used in Chapter 8, this rating indicates that there would be no substantial reduction in visual quality. Implementation of the Humboldt Bay Trail South would enhance opportunities for the public to experience the panoramic vistas of Humboldt Bay and the coastal environment.

Chapter 13. List of Preparers and Reviewers

13.1. County of Humboldt –Public Works Department

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13.2. GHD

Misha Schwarz	Senior Environmental Scientist
Josh Wolf, P.E.	Project Manager
Julia Clark	Spatial Scientist

13.3. NSR, now part of Stantec

Keith Marine	Principal Aquatic and Fishery Scientist/Project Manager
Wirt Lanning	Principal
Connie MacGregor	Senior Environmental Analyst/Environmental Scientist
Brendan Cohen	Environmental Scientist
Sylvia Langford	Document Production

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Appendix C CalEEMod Emissions

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Humboldt Bay Trail South Eureka to Bracut Const. - Humboldt County, Annual

Humboldt Bay Trail South Eureka to Bracut Const.
Humboldt County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.60	Acre	4.60	200,376.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	103
Climate Zone	1			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -
 Land Use - 3.8 miles long x 10 feet wide = 4.61 acre pavement
 Construction Phase - Project-specific Construction Schedule
 Off-road Equipment - Project-Specific Equip Mix and Activity
 Off-road Equipment - Project-Specific Equip Mix and Activity
 Off-road Equipment - Project-Specific Equip Mix and Activity
 Off-road Equipment - Project-Specific Equip Mix and Activity
 Off-road Equipment - Project-Specific Equip Mix and Activity
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 Off-road Equipment - Project-Specific Equip Mix and Activity
 Off-road Equipment - Project-Specific Equip Mix and Activity
 Off-road Equipment - Project-Specific Equip Mix and Activity
 Demolition - 100 tons pavement, 50 tons misc material to be hauled away

Grading - 10,568 cy import, 2,000 cy export

Construction Off-road Equipment Mitigation - Environmental Protection Action 2 - Implement AQ Measures During Const.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	16
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	230.00	40.00
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	8.00	90.00
tblConstructionPhase	NumDays	18.00	10.00
tblConstructionPhase	NumDays	5.00	90.00
tblGrading	MaterialExported	0.00	2,000.00
tblGrading	MaterialImported	0.00	10,568.00
tblOffRoadEquipment	HorsePower	84.00	600.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	0.80
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	3.00
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tblOffRoadEquipment	UsageHours	7.00	4.50
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	7.10
tblProjectCharacteristics	OperationalYear	2018	2019

2.0 Emissions Summary

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.0759	0.7115	0.4804	8.3000e-004	0.0153	0.0395	0.0548	2.3000e-003	0.0375	0.0398	0.0000	75.2622	75.2622	0.0167	0.0000	75.6799
2018	0.1428	1.4123	0.9504	2.2700e-003	0.0567	0.0535	0.1103	0.0122	0.0503	0.0625	0.0000	208.9734	208.9734	0.0323	0.0000	209.7804
Maximum	0.1428	1.4123	0.9504	2.2700e-003	0.0567	0.0535	0.1103	0.0122	0.0503	0.0625	0.0000	208.9734	208.9734	0.0323	0.0000	209.7804

2.2 Overall Operational

Not Applicable

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/5/2017	10/2/2017	5	20	
2	Clearing and Grubbing	Site Preparation	10/3/2017	2/5/2018	5	90	
3	Grading	Grading	2/6/2018	6/11/2018	5	90	
4	Retaining Wall Construction	Building Construction	6/12/2018	8/6/2018	5	40	
5	Barrier Installation	Building Construction	8/7/2018	8/20/2018	5	10	
6	Pile Driving-Bridge and Boardwalk	Building Construction	8/21/2018	9/3/2018	5	10	
7	Paving	Paving	9/4/2018	9/17/2018	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 39.94

Acres of Paving: 4.6

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing and Grubbing	Concrete/Industrial Saws	2	5.30	81	0.73
Clearing and Grubbing	Excavators	1	3.60	158	0.38
Clearing and Grubbing	Graders	1	8.00	187	0.41
Clearing and Grubbing	Rubber Tired Dozers	0	8.00	247	0.40
Clearing and Grubbing	Tractors/Loaders/Backhoes	2	7.10	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	7.10	187	0.41
Grading	Rollers	1	3.60	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Retaining Wall Construction	Cranes	0	7.00	231	0.29
Retaining Wall Construction	Excavators	1	4.50	158	0.38

Retaining Wall Construction	Forklifts	0	8.00	89	0.20
Retaining Wall Construction	Generator Sets	1	8.00	84	0.74
Retaining Wall Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Retaining Wall Construction	Welders	0	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	2.00	81	0.73
Demolition	Excavators	1	2.00	158	0.38
Demolition	Rubber Tired Dozers	1	2.00	247	0.40
Barrier Installation	Cranes	0	7.00	231	0.29
Barrier Installation	Excavators	1	3.00	158	0.38
Barrier Installation	Forklifts	0	8.00	89	0.20
Barrier Installation	Generator Sets	1	3.00	84	0.74
Barrier Installation	Other Construction Equipment	1	2.00	172	0.42
Barrier Installation	Tractors/Loaders/Backhoes	1	4.50	97	0.37
Barrier Installation	Welders	0	8.00	46	0.45
Pile Driving-Bridge and Boardwalk	Bore/Drill Rigs	1	4.00	221	0.50
Pile Driving-Bridge and Boardwalk	Cranes	1	0.80	231	0.29
Pile Driving-Bridge and Boardwalk	Excavators	1	8.00	158	0.38
Pile Driving-Bridge and Boardwalk	Forklifts	0	8.00	89	0.20
Pile Driving-Bridge and Boardwalk	Generator Sets	1	1.00	84	0.74
Pile Driving-Bridge and Boardwalk	Other Construction Equipment	1	1.00	172	0.42
Pile Driving-Bridge and Boardwalk	Pumps	1	2.00	600	0.74
Pile Driving-Bridge and Boardwalk	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Pile Driving-Bridge and Boardwalk	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Other Construction Equipment	1	2.00	172	0.42
Paving	Pavers	1	10.00	130	0.42
Paving	Paving Equipment	1	10.00	132	0.36
Paving	Rollers	2	10.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	10.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clearing and Grubbing	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	1,321.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Retaining Wall Construction	3	84.00	33.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	3	8.00	0.00	15.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Barrier Installation	4	84.00	33.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pile Driving-Bridge and Boardwalk	7	84.00	33.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.2000e-004	0.0000	7.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4100e-003	0.0539	0.0293	5.0000e-005		2.8800e-003	2.8800e-003		2.7100e-003	2.7100e-003	0.0000	4.5235	4.5235	1.0900e-003	0.0000	4.5508
Total	5.4100e-003	0.0539	0.0293	5.0000e-005	7.2000e-004	2.8800e-003	3.6000e-003	1.1000e-004	2.7100e-003	2.8200e-003	0.0000	4.5235	4.5235	1.0900e-003	0.0000	4.5508

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	3.0600e-003	6.3000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.4000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.5824	0.5824	2.0000e-005	0.0000	0.5830
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	7.9000e-004	6.4000e-003	1.0000e-005	5.3000e-004	1.0000e-005	5.4000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.6125	0.6125	6.0000e-005	0.0000	0.6139
Total	9.0000e-004	3.8500e-003	7.0300e-003	2.0000e-005	6.4000e-004	4.0000e-005	6.8000e-004	1.7000e-004	4.0000e-005	2.1000e-004	0.0000	1.1949	1.1949	8.0000e-005	0.0000	1.1968

3.3 Clearing and Grubbing - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0107	0.0000	0.0107	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0649	0.6491	0.4057	7.3000e-004		0.0366	0.0366		0.0347	0.0347	0.0000	65.8691	65.8691	0.0152	0.0000	66.2492
Total	0.0649	0.6491	0.4057	7.3000e-004	0.0107	0.0366	0.0473	1.1600e-003	0.0347	0.0359	0.0000	65.8691	65.8691	0.0152	0.0000	66.2492

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-003	4.7200e-003	0.0384	4.0000e-005	3.1900e-003	5.0000e-005	3.2400e-003	8.6000e-004	4.0000e-005	9.0000e-004	0.0000	3.6748	3.6748	3.3000e-004	0.0000	3.6831
Total	4.7000e-003	4.7200e-003	0.0384	4.0000e-005	3.1900e-003	5.0000e-005	3.2400e-003	8.6000e-004	4.0000e-005	9.0000e-004	0.0000	3.6748	3.6748	3.3000e-004	0.0000	3.6831

3.3 Clearing and Grubbing - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0107	0.0000	0.0107	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0235	0.2389	0.1621	3.0000e-004		0.0128	0.0128		0.0121	0.0121	0.0000	26.4668	26.4668	6.0700e-003	0.0000	26.6186
Total	0.0235	0.2389	0.1621	3.0000e-004	0.0107	0.0128	0.0235	1.1600e-003	0.0121	0.0133	0.0000	26.4668	26.4668	6.0700e-003	0.0000	26.6186

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7800e-003	1.7400e-003	0.0141	2.0000e-005	1.3000e-003	2.0000e-005	1.3100e-003	3.5000e-004	2.0000e-005	3.7000e-004	0.0000	1.4612	1.4612	1.2000e-004	0.0000	1.4643
Total	1.7800e-003	1.7400e-003	0.0141	2.0000e-005	1.3000e-003	2.0000e-005	1.3100e-003	3.5000e-004	2.0000e-005	3.7000e-004	0.0000	1.4612	1.4612	1.2000e-004	0.0000	1.4643

3.4 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8500e-003	0.0000	9.8500e-003	1.0800e-003	0.0000	1.0800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0320	0.3943	0.1682	3.9000e-004		0.0169	0.0169		0.0156	0.0156	0.0000	35.5045	35.5045	0.0111	0.0000	35.7809
Total	0.0320	0.3943	0.1682	3.9000e-004	9.8500e-003	0.0169	0.0268	1.0800e-003	0.0156	0.0167	0.0000	35.5045	35.5045	0.0111	0.0000	35.7809

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.6900e-003	0.2506	0.0474	5.4000e-004	9.5600e-003	2.0500e-003	0.0116	2.6700e-003	1.9600e-003	4.6300e-003	0.0000	51.0294	51.0294	1.7600e-003	0.0000	51.0733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2900e-003	3.2100e-003	0.0261	3.0000e-005	2.3900e-003	3.0000e-005	2.4300e-003	6.5000e-004	3.0000e-005	6.8000e-004	0.0000	2.6976	2.6976	2.3000e-004	0.0000	2.7033
Total	0.0120	0.2538	0.0735	5.7000e-004	0.0120	2.0800e-003	0.0140	3.3200e-003	1.9900e-003	5.3100e-003	0.0000	53.7271	53.7271	1.9900e-003	0.0000	53.7766

3.5 Retaining Wall Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0174	0.1565	0.1469	2.4000e-004		9.7200e-003	9.7200e-003		9.3700e-003	9.3700e-003	0.0000	20.8631	20.8631	3.7900e-003	0.0000	20.9579
Total	0.0174	0.1565	0.1469	2.4000e-004		9.7200e-003	9.7200e-003		9.3700e-003	9.3700e-003	0.0000	20.8631	20.8631	3.7900e-003	0.0000	20.9579

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5100e-003	0.1035	0.0339	1.9000e-004	3.7600e-003	1.1400e-003	4.9000e-003	1.1100e-003	1.0900e-003	2.2100e-003	0.0000	17.5711	17.5711	1.0200e-003	0.0000	17.5965
Worker	0.0154	0.0150	0.1216	1.4000e-004	0.0112	1.5000e-004	0.0113	3.0200e-003	1.4000e-004	3.1500e-003	0.0000	12.5890	12.5890	1.0600e-003	0.0000	12.6154
Total	0.0209	0.1185	0.1555	3.3000e-004	0.0149	1.2900e-003	0.0162	4.1300e-003	1.2300e-003	5.3600e-003	0.0000	30.1601	30.1601	2.0800e-003	0.0000	30.2120

3.6 Barrier Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.9300e-003	0.0285	0.0249	4.0000e-005		1.7000e-003	1.7000e-003		1.6000e-003	1.6000e-003	0.0000	3.4466	3.4466	8.2000e-004	0.0000	3.4671
Total	2.9300e-003	0.0285	0.0249	4.0000e-005		1.7000e-003	1.7000e-003		1.6000e-003	1.6000e-003	0.0000	3.4466	3.4466	8.2000e-004	0.0000	3.4671

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3800e-003	0.0259	8.4800e-003	5.0000e-005	9.4000e-004	2.9000e-004	1.2300e-003	2.8000e-004	2.7000e-004	5.5000e-004	0.0000	4.3928	4.3928	2.5000e-004	0.0000	4.3991
Worker	3.8400e-003	3.7400e-003	0.0304	4.0000e-005	2.7900e-003	4.0000e-005	2.8300e-003	7.5000e-004	3.0000e-005	7.9000e-004	0.0000	3.1473	3.1473	2.6000e-004	0.0000	3.1539
Total	5.2200e-003	0.0296	0.0389	9.0000e-005	3.7300e-003	3.3000e-004	4.0600e-003	1.0300e-003	3.0000e-004	1.3400e-003	0.0000	7.5400	7.5400	5.1000e-004	0.0000	7.5530

3.7 Pile Driving-Bridge and Boardwalk - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.0600e-003	0.0658	0.0438	1.2000e-004		2.7300e-003	2.7300e-003		2.5800e-003	2.5800e-003	0.0000	11.2235	11.2235	2.0200e-003	0.0000	11.2739
Total	6.0600e-003	0.0658	0.0438	1.2000e-004		2.7300e-003	2.7300e-003		2.5800e-003	2.5800e-003	0.0000	11.2235	11.2235	2.0200e-003	0.0000	11.2739

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3800e-003	0.0259	8.4800e-003	5.0000e-005	9.4000e-004	2.9000e-004	1.2300e-003	2.8000e-004	2.7000e-004	5.5000e-004	0.0000	4.3928	4.3928	2.5000e-004	0.0000	4.3991
Worker	3.8400e-003	3.7400e-003	0.0304	4.0000e-005	2.7900e-003	4.0000e-005	2.8300e-003	7.5000e-004	3.0000e-005	7.9000e-004	0.0000	3.1473	3.1473	2.6000e-004	0.0000	3.1539
Total	5.2200e-003	0.0296	0.0389	9.0000e-005	3.7300e-003	3.3000e-004	4.0600e-003	1.0300e-003	3.0000e-004	1.3400e-003	0.0000	7.5400	7.5400	5.1000e-004	0.0000	7.5530

3.8 Paving - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.1100e-003	0.0944	0.0781	1.1000e-004		5.6200e-003	5.6200e-003		5.1700e-003	5.1700e-003	0.0000	10.4784	10.4784	3.2600e-003	0.0000	10.5600
Paving	6.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0151	0.0944	0.0781	1.1000e-004		5.6200e-003	5.6200e-003		5.1700e-003	5.1700e-003	0.0000	10.4784	10.4784	3.2600e-003	0.0000	10.5600

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	6.7000e-004	5.4300e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	0.5620	0.5620	5.0000e-005	0.0000	0.5632
Total	6.9000e-004	6.7000e-004	5.4300e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	0.5620	0.5620	5.0000e-005	0.0000	0.5632

2.0 Emissions Summary

2.1 Overall Construction

Not Applicable

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mobile	7.3000e-004	2.0800e-003	0.0124	3.0000e-005	1.9100e-003	1.0000e-005	1.9200e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	2.3386	2.3386	1.1000e-004	0.0000	2.3414

3.0 Construction Detail

Not Applicable

