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Lyle Tabata
Acting County Engineer

MAR 08 2018

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OF. OF ENVIRONMENTAL
QUALITY CONTROL

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RECEIVED

February 8, 2018

Scott Glenn, Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Mr. Glenn:

With this letter, the Department of Public Works hereby transmits the Final environmental assessment and finding of no significant impact (FEA-FONSI) for the Aliomanu Road Repair project situated at TMK 4-8-18: 028 and 029 in the Kawaihau District on the island of Kauai for publication in the next available edition of the Environmental Notice.

The Department of Public Works has included copies of public comments and the corresponding responses from the applicant that were received during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI).

Enclosed is a completed OEQC Publication Form, two copies of the FEA-FONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Don Fujimoto, P.E., Project Manager, Department of Public Works at 808-241-4882.

Sincerely,

 **Lyle Tabata**
Lyle Tabata, P.E.
Acting County Engineer

Digitally signed by Lyle Tabata
Date: 2018.02.07 16:06:47 -10'00'

Enclosures:

18-392

AGENCY PUBLICATION FORM

Project Name:	Aliomanu Road Repair
Project Short Name:	Aliomanu Road Repair
HRS §343-5 Trigger(s):	Use of County Lands, Use within a Conservation District, Use within a shoreline area
Island(s):	Kauai
Judicial District(s):	Kawaihau
TMK(s):	4-8-18: 028, 029
Permit(s)/Approval(s):	Conservation District Use Permit, Army Section 404 Permit, Section 401 Water Quality Certification, Coastal Zone Management Consistency, Shoreline Setback Variance, Special Management Area Permit, Request Form for Non-Homesteading Land Use Purposes
Proposing/Determining Agency:	Department of Public Works
Contact Name, Email, Telephone, Address	Donald Fujimoto, dfujimoto@kauai.gov , 808-241-4882, 4444 Rice Street, Suite 175 Lihue, Hawaii 96766
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	Oceanit
Contact Name, Email, Telephone, Address	Dayan Vithanage, dvithanage@oceanit.com , 808-531-3017, 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813

Status (select one) DEA-AFNSI**Submittal Requirements**

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

 X FEA-FONSI

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

 FEA-EISPN

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

 Act 172-12 EISPN
("Direct to EIS")

Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

 DEIS

Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

 FEIS

Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

 FEIS Acceptance
Determination

The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.

 FEIS Statutory
Acceptance

Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.

 Supplemental EIS
Determination

The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and

determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.

- Withdrawal Identify the specific document(s) to withdraw and explain in the project summary section.
- Other Contact the OEQC if your action is not one of the above items.

Project Summary

Provide a description of the proposed action and purpose and need in 200 words or less.

This Final Environmental Assessment (FEA) was prepared to update a previous EA published for the repair of 'Aliomanu Road. The subject road is located along the shoreline in Anahola Bay. Wave induced erosion has severely undermined the road and has caused collapse of a portion of the pavement into the ocean. The FEA describes the potential impact of projected sea level rise on the proposed road repair project and evaluates alternative means for re-establishing a safe and reliable vehicular access. The proposed repair includes rebuilding the damaged road section into a two-lane road, with a supporting rock revetment on the makai side to protect the road from long term erosion and prevent soil erosion from running off and contaminating the ocean. The revetment design consists of boulder rocks and a concrete curve along the roadway. The design retains the rocky nature of the existing shoreline and the contractor may use boulders that exist on the project footprint for the revetment structure.

Final Environmental Assessment

‘Aliomanu Road Repair

Island of Kaua‘i, Hawai‘i



Prepared for:

County of Kaua‘i
4444 Rice Street
Līhu‘e, Hawai‘i 96766

Prepared by:

Oceanit Laboratories, Inc.
828 Fort Street Mall, Suite 600
Honolulu, Hawai‘i 96813

February 2018

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1. INTRODUCTION

This Final Environmental Assessment (FEA) was prepared for the County of Kaua‘i Department of Public Works (DPW) for the repair of ‘Aliomanu Road. This document incorporates by reference a Final Environmental Assessment published on October 8, 2009, including the analysis of significance of the proposed project. ‘Aliomanu Road is located along the shoreline in Anahola Bay, Kaua‘i (Figure 1). Erosion has severely undermined the roadway, causing the collapse of a portion of the pavement into the ocean (cover image).

‘Aliomanu Road is the only means of vehicular access and public utilities to about 18 properties in the ‘Aliomanu neighborhood. In the eroded area, the roadway runs adjacent to a naturally sandy and rocky shoreline. Presently, the steep slope below the eroding road appears unstable and puts the structure at risk of further collapse into the ocean. Access for emergency vehicles is of concern, as is safe passage for evacuation during an emergency. In its existing condition, ‘Aliomanu Road is a risk to public safety, health and welfare.



Figure 1. Location map of the ‘Aliomanu Road Repair Site.

1.1 Background

The trend of shoreline erosion in the project area has been documented by the University of Hawai‘i at Mānoa Coastal Geology Group. Using orthorectified and georeferenced historic aerial photographs and National Ocean Survey topographic survey charts dating to 1927, the University determined that the average shoreline change for the project area is about -1.3 feet horizontally per year [1]. The beach erosion has caused progressive damage to the most seaward portion of ‘Aliomanu Road (Figure 2) reducing the width of the road. Currently, the road is only one lane wide in the project area and the erosion continues to progress (Figure 3 and Figure 4). If the erosion continues to go unaddressed, the damage may make the road impassible. The County of Kaua‘i proposes to repair the road and restore it to two lanes.

The Kaua‘i County Code 1987 restricts development within the shoreline setback areas. The proposed repair is within this setback, so a shoreline setback variance will be required. Section 8-27.10 of the Code states that a variance may be approved for “private and public structures that may artificially fix the shoreline but not adversely affect beach processes; provided that, the Commission also finds that shoreline erosion is likely to cause severe hardship to the applicant if the facilities or improvements are not allowed within the shoreline setback area and all alternative erosion control measures, including retreat, have been considered” [2].



Figure 2. Photograph of the shoreline erosion undermining ‘Aliomanu Road.



Figure 3. Photograph looking south along the damaged road.



Figure 4. Photograph looking north along the damaged road.

1.2 Objective and Scope

The objective of this Supplementary EA is to describe the potential impact of projected sea level rise on the proposed road repair project and to evaluate alternative means for re-establishing safe, reliable vehicular access to the residences impacted by this damaged section. Possible solutions of ‘Aliomanu Road include repairing the roadway, or retreating and establishing other means of access. The scope of this evaluation is to present technically feasible alternatives, and to provide information on the approximate costs and timeline of the environmental, economic and social impacts with each alternative.

2. DISCUSSION OF ALTERNATIVES

This evaluation considers several options to provide access to the ‘Aliomanu community impacted by the damage to the existing road. The alternatives identified are technically feasible and deemed reasonable given the existing conditions of the Anahola area. The alternatives, shown in Figure 5, include:

- No Action;
- Proposed repair and revetment at the project site (white line);
- Repair ‘Aliomanu Road into a single lane at the project site (white line);
- Realignment of ‘Aliomanu road mauka of site (red line);
- Rebuild a bridge to connect the north and south ends of ‘Aliomanu Road (blue line);
- Extend Hokualele Road to connect with ‘Aliomanu Road (orange line); or
- Pave and extend a private gravel drive to connect with ‘Aliomanu Road (yellow line).

The method for the evaluation and comparison of the alternatives accounts for the following criteria:

- Provides reliable, safe access to the neighborhood;
- Coastal and environmental impacts including the potential impact of sea level rise;
- Construction, operation, and maintenance costs;
- Community and stakeholder acceptance; and
- Timeline for project completion including planning, design, permitting and construction.

To gain information for this evaluation, the project team engaged with stakeholders in the community. The County of Kaua‘i Department of Public Works, Oceanit, and the State of Hawai‘i Department of Hawai‘ian Home Lands (DHHL) Planning and Land Use staff met on November 23, 2016 and on February 22, 2017 to discuss road repair alternatives. On March 29, 2017, the project team met with the DHHL lessees in Anahola to discuss the alternatives. On April 25, 2017, the County held a public information meeting with the larger Anahola community to present and discuss the project alternatives. Insights gained from these meetings are included in this report.

The assessment estimated the time for completion of each alternative based on experience with the required time to secure project funds, develop designs, seek approvals from environmental regulatory

agencies and complete the construction. Many unknowns can affect the amount of time required to take a project from the planning phases to construction. Future changes in regulations, reviewing agency procedures, budget priorities, economy, etc. may change the expected timeline for each project.

The cost figures in this report are rough estimates based on conceptual scopes for each potential project. The study applies the analogous and/or work-breakdown techniques to develop these order of magnitude estimates. The analogous method compares the expected project requirements to cost data from similar projects. The work-breakdown technique calculates the rough project cost based on potential labor and material requirements. The construction capital costs estimate and total 50-year cost estimate include maintenance and expected repairs. Not included in these estimates are the costs of pre-construction services such as investigations, design, environmental documents, permitting, etc. Costs are provided in 2017 dollars and do not account for inflation.

A 50-year period was a basis for comparison for the total lifetime costs of different project alternatives. The 50-year lifetime total cost estimates account for the capital construction cost and the expected costs of inspections, maintenance, repairs and/or replacements over a 50-year project period.

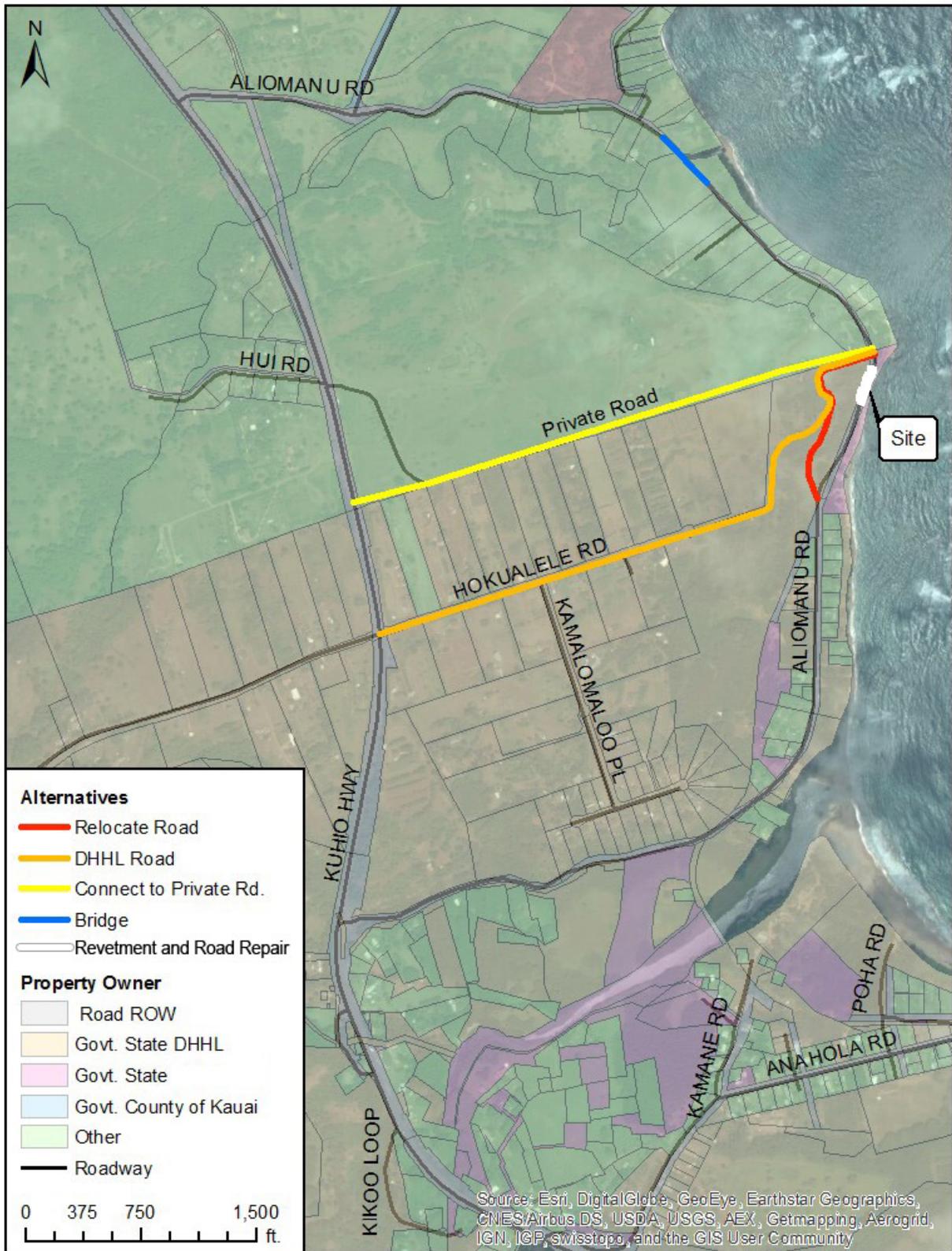


Figure 5: Map showing the Project alternatives and property ownership.

2.1 No Action

If Kaua‘i County takes no action, the damaged roadway will continue to pose a risk to public safety, health, and welfare. The roadway may continue to erode and the community would be increasingly vulnerable to natural hazards due to limited access for emergency vehicles and evacuation. The damaged roadway could also collapse resulting in possible injury. The erosion of soils from under the roadway will continue to cause pollution into the ocean. Should a storm event further damage the road and make it impassable an emergency road repair would follow. An emergency repair may not have the same level of planning and scrutiny to prevent negative environmental impacts as a capital improvements project. The community stakeholders may also have less input into the road repair project if the damage worsens and results in a hazardous condition that presents an imminent danger to the public or public trust resources. No action is not a viable option.

No action requires no capital expenditure. The continuous damage to the road will require ongoing temporary repairs to keep the road passable. Over the course of 50 years, operation and maintenance costs (O&M) will include temporary road repairs and shoreline protection such as sand filled erosion barriers. Temporary projects to the approximately 400 feet of damaged roadway may cost about \$175,000 and may be required at a frequency of about once every two years. The required repair frequency may increase with projected sea level rise. Total operation and maintenance costs combine to about \$4.4 million over a 50-year period. These estimates do not account for the cost of a large emergency road repair if a severe storm makes the road impassable; nor does it account for the potential cost to the County if it must condemn and purchase the private properties with no vehicular access. Table 1 provides a summary of this discussion.

Table 1: No Action Summary

ISSUES	DESCRIPTION
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • A risk to public safety, health and welfare will continue unabated and will increase with time with SLR. • If shoreline erosion continues, the road may become impassable without constant repairs and temporary shoreline protection. • A severe storm event may make the road impassable. At this point, a road repair may be rushed and/or the County may buy out the private properties with no road access.
Coastal and environmental impacts	<ul style="list-style-type: none"> • Soil will continue to erode from the shoreline into the ocean and contaminate the nearshore reef and ecosystem. • Does not mitigate or adapt to the increasing erosion and flooding hazards expected with sea level rise.
Capital costs	None
50-year total costs	~\$4.4 million unless storm or SLR causes severe damage
Operation and maintenance	<ul style="list-style-type: none"> • Temporary repairs to the roadway may cost about \$175K every two years, or \$4.4 million total 50-year O&M cost.

Community acceptance	<ul style="list-style-type: none"> Community members and the County of Kaua‘i do not accept this option because it does not provide safe, reliable access to the ‘Aliomanu neighborhood.
Timeline and ease of implementation	None

2.2 Proposed Repair and Revetment

The proposed repair consists of rebuilding the damaged section of ‘Aliomanu Road to a two-lane road with a rock revetment, as shown in Figure 6. The rock revetment would protect the road for the long term from erosion and prevent soil erosion from running off and contaminating the ocean. The revetment design consists of boulder rocks and a concrete curb along the roadway. The design retains the rocky nature of the existing shoreline. The construction contractor may use the boulders that already exist in the project footprint as part of the revetment structure.

According to a recent topographic survey [6], the existing alignment for ‘Aliomanu Road uses about 2,000 square feet of property owned by the DHHL. This small area of DHHL property was likely accidentally used during the original road construction. The two-lane road repair alternative requires that DHHL provide an easement or right of entry to the County of Kaua‘i for the use of this land.

This portion of DHHL land is at the base of a steep sloping hillside. The steep terrain makes development of the adjacent property difficult for residential homes and agriculture. This study identified no negative impacts to DHHL by officially leasing this property to the County for long-term use. At its greatest, the width of the pavement outside of the DHHL property is only five feet. If required to avoid DHHL property entirely, a segment of the road must be moved makai to maintain roadway continuity.

The proposed repair and revetment would require capital expenditures to construct a 387-foot long boulder stone revetment with concrete rubble masonry (CRM) curb walls and a grouted riprap end section. The project repairs the road surface and replaces a four-inch blow-off waterline. The estimated construction cost for capital improvements is about \$2.2 million, including the roadway repairs and shoreline stabilization to keep ‘Aliomanu Road passable while construction is completed. Over the course of our 50-year comparison period, the proposed revetment may require maintenance to address damage due to large storm events and settling of the structure. The County may expect one repair to address structural settling over the 50-year period at a cost of about \$200,000. Roadway maintenance at intervals of approximately 15 years at about \$700 per linear foot (LF), or \$225,000 for each repair project. The operation and maintenance costs combine to about \$1 million over a 50-year period. Table 2 provides a summary of this discussion.

The County is currently developing a plan to provide beach nourishment seaward of this revetment project. This plan may call for the placement of about 500 cubic yards of sand from the Anahola Stream mouth along the coastline in the project area. The frequency of the beach nourishment projects may be about every two to four years at an approximate cost of \$150,000 per replenishment effort. These costs were not included in the road repair estimates because nourishment is a separate project.

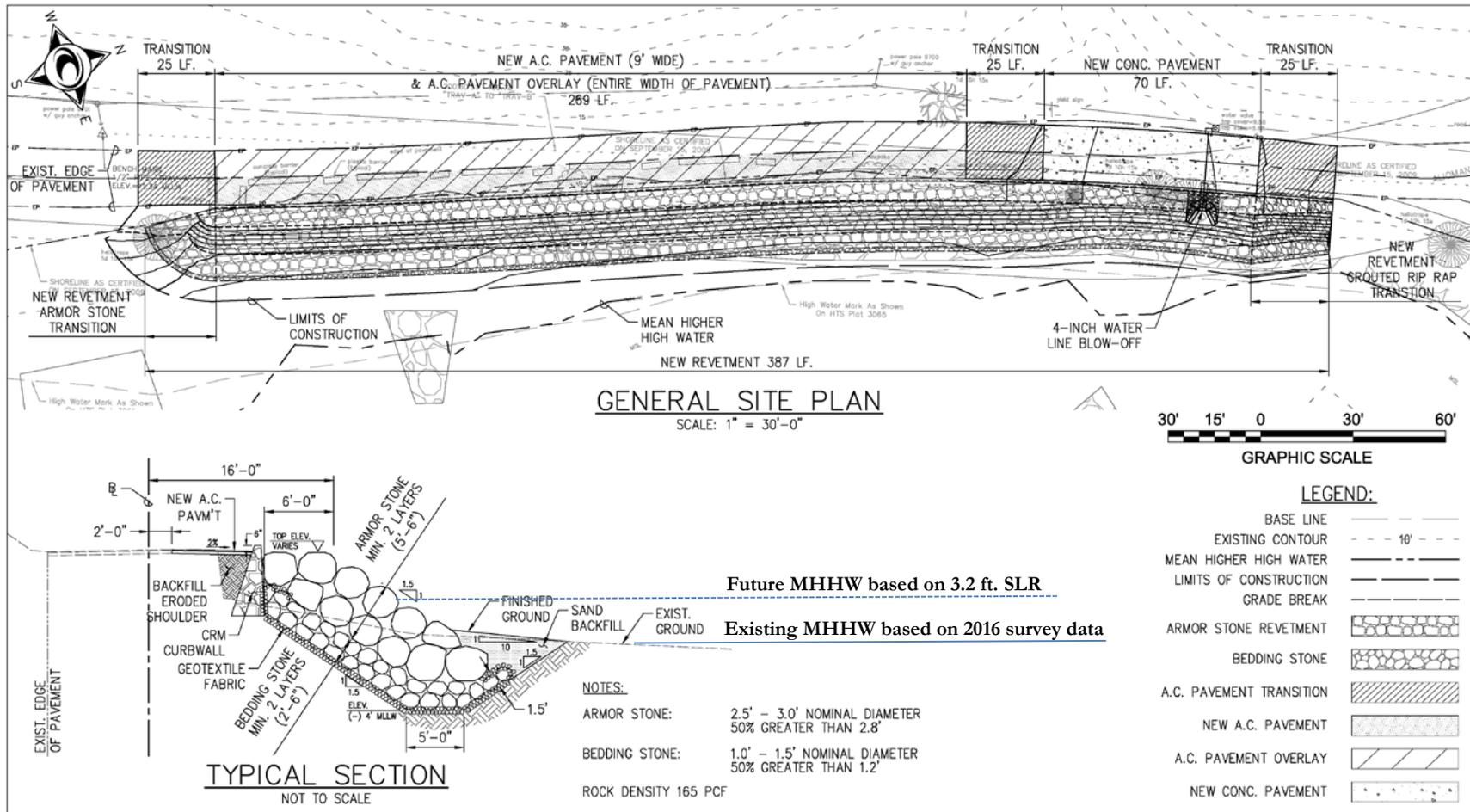


Figure 6. Schematic of proposed road repair. Note that this design is slightly different than that previously published in the October 8, 2009 Environmental Assessment. The major difference is that the south end of the revetment design returns into the existing property, while the previous design did not feature a return.

Table 2: Summary of the Proposed Road Repair and Revetment Alternative

<u>ISSUES</u>	<u>DESCRIPTION</u>
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • This option would restore the use of the two lane ‘Aliomanu Road and provide safe and reliable access to the neighborhood.
Coastal and environmental impacts	<ul style="list-style-type: none"> • The repair would prevent the long-term contamination of the coastal water by preventing soil erosion into the ocean. • During construction, a BMP plan may prevent contaminants from entering the ocean, but there may be a risk of sediments entering the water due to wave conditions. Limiting work to favorable conditions would reduce the risk. • Work in the coastal area may require a Nationwide Permit from the US Army Corps of Engineers. • The beach nourishment plan may mitigate end erosion effects of the revetment on the adjacent sandy beach. The costs below do not include beach nourishment.
Capital costs	~ \$2.2 million
50 year total costs	~ \$3.2 million
Operation and maintenance	<ul style="list-style-type: none"> • This repair is a permanent solution. The revetment may require repairs after severe weather events. • Roadway maintenance may be required about every 15 years and could cost about \$225,000 for each occurrence. • Revetment repairs may be required about once every 50 years and could cost about \$200,000 per occurrence. • Total 50-year O&M costs combine to about \$1 million.
Community acceptance	<ul style="list-style-type: none"> • Members of the community view the road repair and revetment as the most practicable means of providing safe access to the neighborhood. Some community members have raised concerns that the repaired road would increase speeding in the area. A long-term land use agreement with the DHHL is required.
Timeline and ease of implementation	<ul style="list-style-type: none"> • The project may require two years to complete. The DLNR has a policy against new shoreline armoring projects, but has approved this repair project in the past.

2.3 Convert ‘Aliomanu Road to Single-Lane

This alternative consists of keeping this portion of ‘Aliomanu Road as a single-lane and constructing a revetment to protect against future erosion or damage to the roadway (Figure 7). Keeping the roadway as a single-lane may allow the County to avoid the need to lease property from DHHL. This option would also preserve the current character of the narrow road, which may discourage speeding in the area. A single lane, however, is a bottleneck that will affect the flow of traffic and poses a

potential safety risk during an emergency or evacuation. The community seems split on whether they prefer a single-lane versus a two-lane roadway repair.

The material costs for a single-lane project may be slightly less than for two-lanes because less pavement would be required. The cost of design, permitting, and construction would be similar as a full two-lane project. A single-lane, 10-foot wide, road repair would have no shoulder on either side and would still require DHHL land or moving the project makai of the existing shoreline at the north end of the project area. Building makai of the existing shoreline may cause an increase in the project completion timeline and costs due to added environmental permitting and construction challenges.

The estimated construction costs for the single-lane capital improvements are \$2.0 million, including the roadway repairs and shoreline stabilization to keep ‘Aliomanu Road passable while construction is completed. The maintenance cost associated with the alternative is about \$200,000 for each repair project at intervals of about 15 years. One repair project to address structural settling over a 50-year period may cost about \$200,000. Total operation and maintenance costs combine to under about \$0.9 million over a 50-year period. Table 3 provides a summary of this discussion.

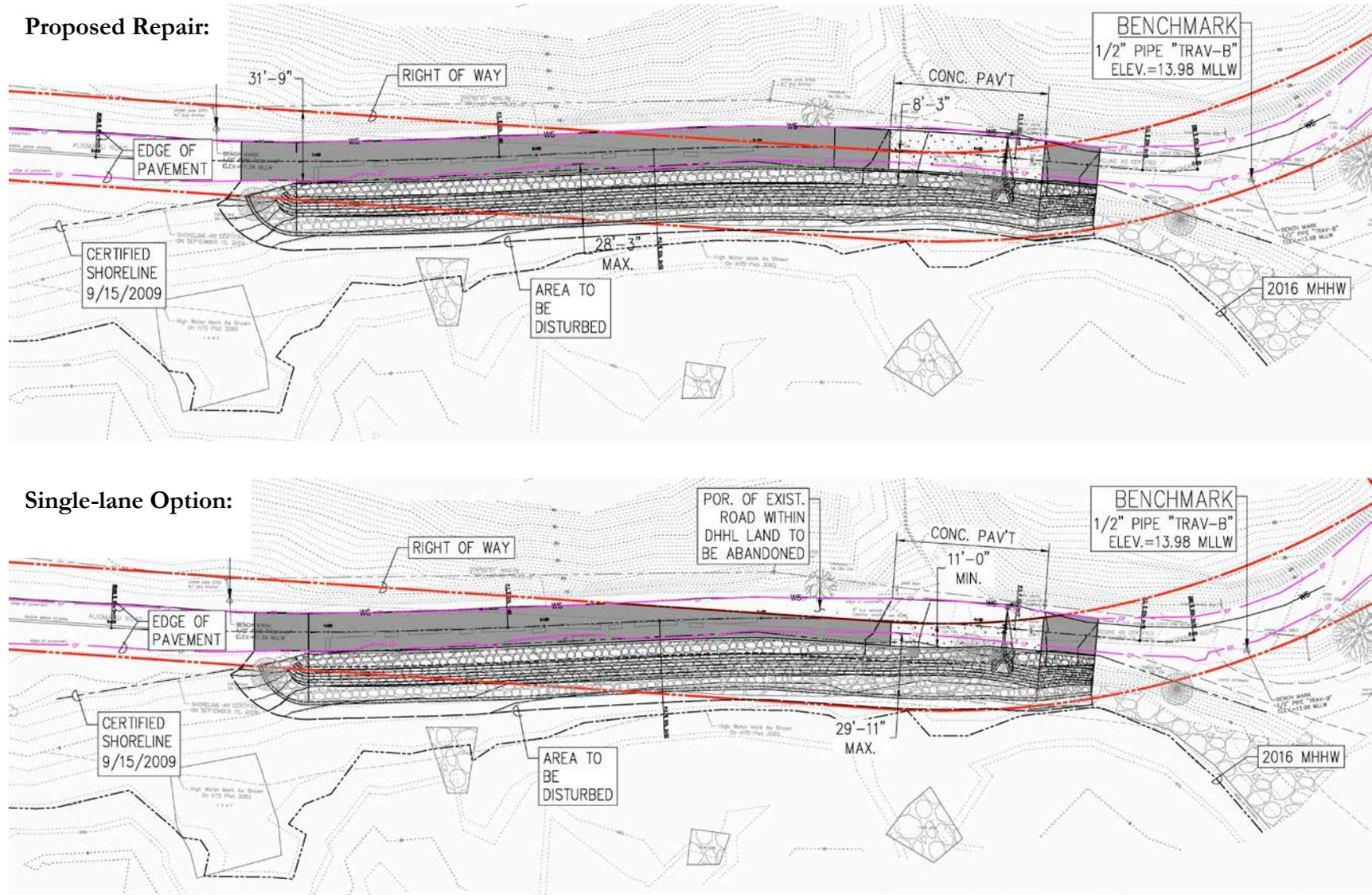


Figure 7. Schematic comparing the proposed repair to the option of converting ‘Aliomanu Road to a single lane road at the project site. The single lane option avoids DHHL property, but pushes the revetment slightly seaward.

Table 3: Summary of the Single Lane Alternative

<u>ISSUES</u>	<u>DESCRIPTION</u>
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • This option would restore the use of ‘Aliomanu Road and provide reliable, safe access. • A single lane road will reduce access during an emergency.
Coastal and environmental impacts	<ul style="list-style-type: none"> • The repair would prevent the long-term contamination of the coastal water by preventing soil erosion into the ocean. • During construction, a BMP plan may prevent contaminants from entering the ocean, but there may be a risk of sediments entering the water due to wave conditions. Limiting work to favorable conditions would reduce the risk. • The beach nourishment plan may mitigate end erosion effects of the revetment on the adjacent sandy beach. The costs below do not include beach nourishment.
Capital costs	~ \$2.0 million
50 year total costs	~ \$2.9 million
Operation and maintenance	<ul style="list-style-type: none"> • This option would avoid a long-term land use agreement with DHHL. • This repair is a permanent solution. The revetment may require repairs after large weather events. • Roadway maintenance may be required about every 15 years and could cost about \$200,000 for each occurrence. • Revetment repairs may be required about once every 50 years and could cost about \$200,000 per occurrence. • Total 50-year O&M costs combine to about \$0.9 million.
Community acceptance	<ul style="list-style-type: none"> • This option avoids DHHL lands. • Some community members view this option as a practicable means of providing access to the neighborhood while keeping the road in its current narrow condition. • Some community members are concerned that the narrow road would be a safety risk.
Timeline and ease of implementation	<ul style="list-style-type: none"> • The project may require two years to complete. This alternative would be a design change for a shoreline protection project that the DLNR has previously approved.

2.4 Mauka Realignment of ‘Aliomanu Road

Realignment of ‘Aliomanu Road would involve constructing a new roadway located mauka, approximately 300 feet inland of the existing road as shown by the red line on the map in Figure 5. The new road alignment would run along the ridgeline above the existing ‘Aliomanu roadway (Figure 8). The new road alignment would be entirely on DHHL land and would require a long-term land use agreement. The proposed location is along a steep rocky slope. The design would likely follow the

existing contours to limit grading. The steep terrain would require the design and construction of slope stability and retaining structures to support the roadway, which would add to project costs.



Figure 8. Looking north along ‘Aliomanu Road showing a conceptual alignment of a new mauka roadway.

Construction of this alternative may include about 1,350 linear feet of grading, grubbing, slope stability, and roadway construction through the hillside. The estimated construction cost for capital improvements is \$3.3 million. The roadway would require repairs every 20 years at approximately \$700/LF, \$945,000 per project. Slope stability measures would require inspection and maintenance estimated at \$300,000 per project at an interval of 20 years. Total operation and maintenance costs combine to about \$3.1 million over a 50-year period.

The option for a realignment of ‘Aliomanu Road mauka through DHHL property is not popular with the DHHL community. This alternative is not viable because there is no support to build this road on Hawaiian Homes’ property. Table 4 provides a summary of the discussion on the mauka realignment of ‘Aliomanu Road.

Table 4: Summary of the Alternative for a Mauka Realignment of ‘Aliomanu Road

<u>ISSUES</u>	<u>DESCRIPTION</u>
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • This option would restore full use of ‘Aliomanu Road and provide permanent, reliable and safe access to residents.
Coastal and environmental impacts	<ul style="list-style-type: none"> • Would require clearing of the existing vegetation on the hillside and disruption of the natural coastal landscape. • Project avoids armoring of the shoreline • The exposed shoreline may continue to erode soil into the ocean waters. • A beach nourishment plan may or may not be included in this alternative. The costs below do not include beach nourishment.
Capital costs	~ \$3.3 million
50 year total costs	~ \$6.4 million
Operation and maintenance	<ul style="list-style-type: none"> • This solution aims to avoid coastal erosion issues in the near future. • The slope may be prone to erosion or rock falls requiring maintenance. • Retaining walls and a drainage culvert may be required. • Roadway maintenance may be required about every 20 years and could cost about \$945,000 for each occurrence. • Retaining wall repairs may be required about once every 20 years and could cost about \$300,000 per occurrence. • Total 50-year O&M costs combine to about \$3.1 million.
Community acceptance	<ul style="list-style-type: none"> • A long-term land use agreement for DHHL property would be required. • There are cultural concerns, such as burials, associated with developing a road through the coastal hillside. • The Hawaiian Homes community does not support this option.
Timeline and ease of implementation	<ul style="list-style-type: none"> • The project may require about three to four years for completion.

2.5 Bridge Connecting North and South Ends of ‘Aliomanu Road

The County has the alternative to reconstruct a bridge to connect the north and south portions of ‘Aliomanu Road and create a discontinuity at the currently eroding area. A bridge once crossed the stream in this area (Figure 9). In meetings held for this FEA, community members recalled that a past hurricane or tsunami event destroyed the original bridge. The blue line on Figure 5 shows the location of the bridge alternative. This option consists of investigating the previous bridge design failure, designing a new bridge and building the structure. The design of a new bridge requires hydrologic and hydraulic study of the stream and its watershed. Time would be required to conduct engineering studies and make design recommendations. A new bridge design would account for the risk of

flooding and channel erosion caused by large storm events. Construction of the structure might fit within the existing road right of way and may not require additional land purchase or agreements. Construction of the bridge would provide full access to the neighborhoods along ‘Aliomanu Road, but would alter the existing character by moving the road discontinuity from the bridge location to the currently eroding area.

The estimated cost of construction for a new bridge is between \$2.7 and \$6 million based on comparison of the recent construction cost information published by the State Procurement Office for the Keāhua Forest Reserve Bridge on Kaua‘i [7] and the Kawela Stream Bridge on Moloka‘i [8]. The cost would largely depend on the required length, width, height, foundation and construction materials. The cost of a bridge may be in the higher range because it would be in the coastal environment. Corrosion resistance of the construction materials would be a design issue. The bridge may also be of significant size because storm forces and flood volumes are typically high in the coastal zone. A detailed planning and design study would be required to refine the cost estimate and the expected timeline for this option.

Post-construction, annual bridge inspections may occur once per year at a cost of \$10,000 per inspection. Bridge repairs may occur at a frequency of 20 years at \$750,000 per repair project. Total estimated operation and maintenance costs combine to about \$2.4 million over a 50-year period. Table 5 provides a summary of the discussion on this alternative.



Figure 9. Photograph looking across ‘Aliomanu stream at the site of the bridge alternative.

Table 5: Summary of the Bridge Alternative

<u>ISSUES</u>	<u>DESCRIPTION</u>
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • This option would provide permanent, reliable and safe access to ‘Aliomanu Road residents.
Coastal and environmental impacts	<ul style="list-style-type: none"> • The bridge project would require in-stream construction work. A BMP plan may minimize the environmental impacts of this work. • The exposed shoreline at the damaged road may continue to erode soil into the ocean.
Capital costs	Between \$2.7 million to \$6 million based on construction costs for recent roadway bridge projects in Hawai‘i. A planning study is required to refine the design details.
50 year total costs	\$5.1 to \$8.4 million
Operation and maintenance	<ul style="list-style-type: none"> • This solution avoids the shoreline erosion area, but it exposes the roadway to stream flood hazards. • The annual inspection costs may be about \$10,000 per year. • Bridge repairs may be required about every 20 years and could cost about \$750,000 for each occurrence. • Total 50-year O&M costs combine to about \$2.4 million.
Community acceptance	<ul style="list-style-type: none"> • This option would change the character of two existing cul-de-sac neighborhoods. The community has expressed concerns over the potential to disrupt the public access to the beach, but some in the community are supportive of rebuilding a bridge in this area.
Timeline and ease of implementation	<ul style="list-style-type: none"> • The bridge project may require about four to eight years for completion depending on design recommendations.

2.6 Extend Hokualele Road to Connect with ‘Aliomanu Road

The alternative of extending Hokualele Road to connect with ‘Aliomanu Road is shown by the orange line in Figure 5. This option would require an easement through DHHL lands to allow the DHHL owned Hokualele Road to become a County road. About 2,050 LF of grading, grubbing, slope stability and roadway construction may be required along with improvements to the existing 1,980 feet of Hokualele Road to meet county standards (Figure 10). The cost of construction for this project alternative may be about \$3.2 million. Road maintenance projects would be required approximately every 30 years at an estimated \$2.7 million. Total operation and maintenance costs combine to about \$4.6 million over a 50-year period.

The DHHL community is not supportive of this option because providing access to ‘Aliomanu Road through Hokualele Road may significantly change the character of the rural farming neighborhood by increasing public traffic (Figure 11). Section 4 of this FEA provides more information on the community perception of this option. Table 6 provides a summary of the discussion on this alternative.



Figure 10. Photograph of the end of Hokualele Road looking west toward the Kūhiō Hwy.



Figure 11. Photograph of the posted warnings at the end of Hokualele Road.

Table 6: Summary of the Hokualele Road Connection Alternative

<u>ISSUES</u>	<u>DESCRIPTION</u>
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • This option may provide permanent, reliable and safe access to residents.
Coastal and environmental impacts	<ul style="list-style-type: none"> • Would require clearing of the existing vegetation and disruption of the natural coastal landscape. • The existing erosion on the shoreline may continue to release soil into the ocean.
Capital costs	~ \$3.2 million
50 year total costs	~ \$7.8 million
Operation and maintenance	<ul style="list-style-type: none"> • This is considered a permanent solution with little operation and maintenance over the life of the structure. • A road repair project may be necessary once every 30 years and could cost about \$2.7 million. • Total 50-year O&M costs combine to about \$4.6 million.
Community acceptance	<ul style="list-style-type: none"> • A land easement with DHHL would be required. • The Hawaiian Home Lands community does not support this alternative.
Timeline and ease of implementation	<ul style="list-style-type: none"> • The project may take about four to five years.

2.7 Extending Private Drive to Connect with ‘Aliomanu Road

Another alternative means to provide access to the ‘Aliomanu community involves developing a road through private land from Kūhiō Highway to connect with ‘Aliomanu Road (Figure 12). A potential route is along an existing gravel drive on private agricultural land about 800 feet north of Hokualele Road. The new road would require significant grading, grubbing, slope stability, and roadway construction to connect ‘Aliomanu Road with the existing gravel drive and to relocate utilities as shown by the yellow line on Figure 5. To develop the project, the County would require a large purchase of private property. The estimated cost of this alternative includes land purchase cost from published property tax records. The private property owners may oppose the acquisition of their land for a new public roadway. The community did not support this option during public meetings. Section 4 provides more information on the community perception of the alternatives.

The construction of this alternative may cost about \$4.2 million. Road maintenance projects may be required approximately every 30 years at an estimated cost of \$2.7 million. Total operation and maintenance costs combine to about \$4.5 million over a 50-year period. Table 7 provides a summary of the discussion on this alternative.



Figure 12. Photograph looking east along the entrance to a private drive along Kūhiō Hwy.

Table 7: Summary of the Alternative to Connect ‘Aliomanu Road through a Private Road

ISSUES	DESCRIPTION
Provide reliable, safe roadway access	<ul style="list-style-type: none"> • This option may provide permanent, reliable and safe access to residents.
Coastal and environmental impacts	<ul style="list-style-type: none"> • Would require clearing of the existing vegetation and disruption of the natural coastal landscape. • The existing erosion on the shoreline may continue to release soil into the ocean.
Capital costs	~ \$4.2 million
50 year total costs	~ \$8.7 million
Operation and maintenance	<ul style="list-style-type: none"> • This may be considered a permanent solution with little operation and maintenance over the life of the structure. • A road repair project may be necessary once every 30 years and could cost about \$2.7 million. • Total 50-year O&M costs combine to about \$4.5 million.
Community acceptance	<ul style="list-style-type: none"> • Would require securing private property. • The private property landowners may oppose. • The community objects to the option.
Timeline and ease of implementation	<ul style="list-style-type: none"> • The project may require about four to five years for completion.

3. WATER LEVEL CHANGE

The following sections provide a discussion of the expected changes to ocean water level and a comparison of how each project alternative may help mitigate or adapt to the increased erosion and flooding hazards that are expected with the rise in sea levels.

3.1 Expected Future Water Level Change

Water level measurements within closest proximity to the site are available from the U.S. National Oceanic and Atmospheric Administration (NOAA) tidal station located at Nāwiliwili, Hawai‘i (Station ID: 1611400) [6]. The tide station datum defines the range in water levels at the site: Mean Higher-High Water (MHHW) is 1.01 ft. above Mean Sea Level (MSL), while Mean Lower-Low Water (MLLW) is 0.82 ft. below MSL. Removal of the short term water level fluctuations from the water level recorded by station 1611400 from 1955 to 2016, the historic trend in sea level at the project site shows a rise at a rate of 1.52 ± 0.44 mm/year (Figure 13).

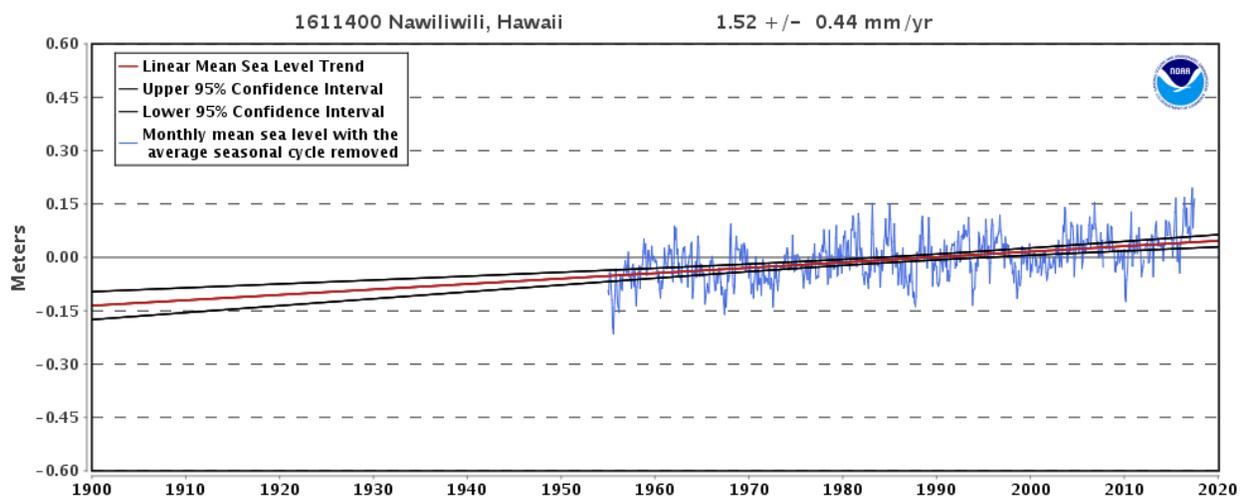


Figure 13: Mean sea level trend with the short term fluctuations removed from the recorded water levels by the NOAA tide gauge 1611400 in Nāwiliwili [6].

The United States Army Corps of Engineers (USACE) Sea-Level Change Curve Calculator [7] applied the data from gauge 1611400 to calculate the expected relative sea level change over the expected life-cycle of the project. According to both NOAA and USACE data, the sea level rise (SLR) predictions at the site vary between a low of 0.4 feet and a high of 3.5 feet by 2070 compared to the sea levels in 1992 as illustrated in Figure 14. The data plot shown in the figure starts in 1992, which corresponds to the midpoint of the current National Tidal Datum Epoch of 1983-2001. The Kaua‘i County General Plan departmental draft published on June 13, 2017 suggests a planning target of at least three feet of sea level rise [8]. Similarly, the Hawai‘i Climate Change Mitigation and Adaptation Commission has recommend a planning target of 3.2 feet of sea level rise [9].

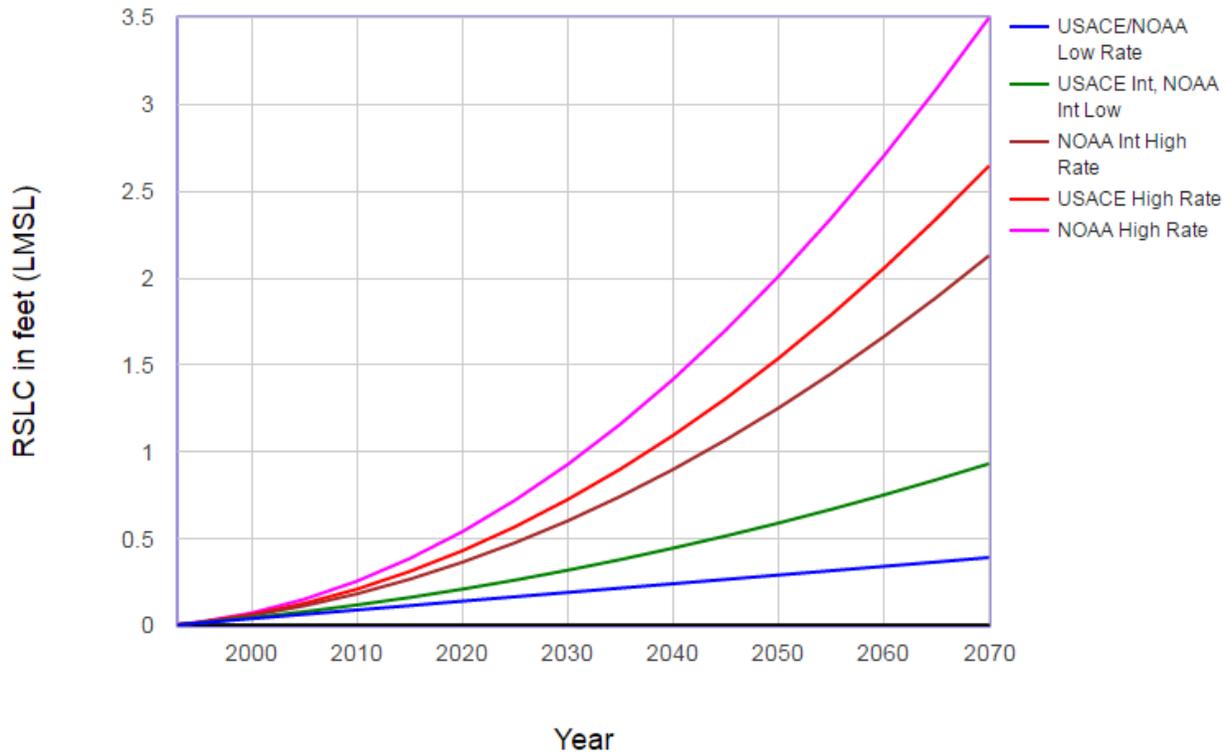


Figure 14: Relative sea level change projections from 1992 to 2070 for NOAA tide gauge 1611400 in Nāwiliwili [6]

3.2 Sea Level Rise Impact on Project Area

To visualize the potential impacts of 3.2 feet of sea level rise on the project area, a “bathtub” model of passive flooding was created by raising the static water level over a digital topographic map. Data on the existing elevations of the land relative to the mean sea level (MSL) [6] was used to identify areas with elevations between 0.0 ft. MSL and 4.21 ft. MSL (MHHW+3.2 ft. SLR). These area were shaded pink in Figure 15 to represent the land that may be flooded by high tide after SLR.

This static model of SLR does not take into account future erosion or increased wave inundation. The Hawai‘i Sea Level Rise Vulnerability and Adaptation Report [9] provides an assessment of SLR that includes these impacts on the project area. The shaded blue area in Figure 16 is the expected “SLR exposure area”, which accounts for passive flooding, annual high wave flooding and expected coastal erosion. The following sections discuss the impacts of SLR on each project alternative and compare how each alternative may help mitigate or adapt to the increased erosion and flooding hazards.

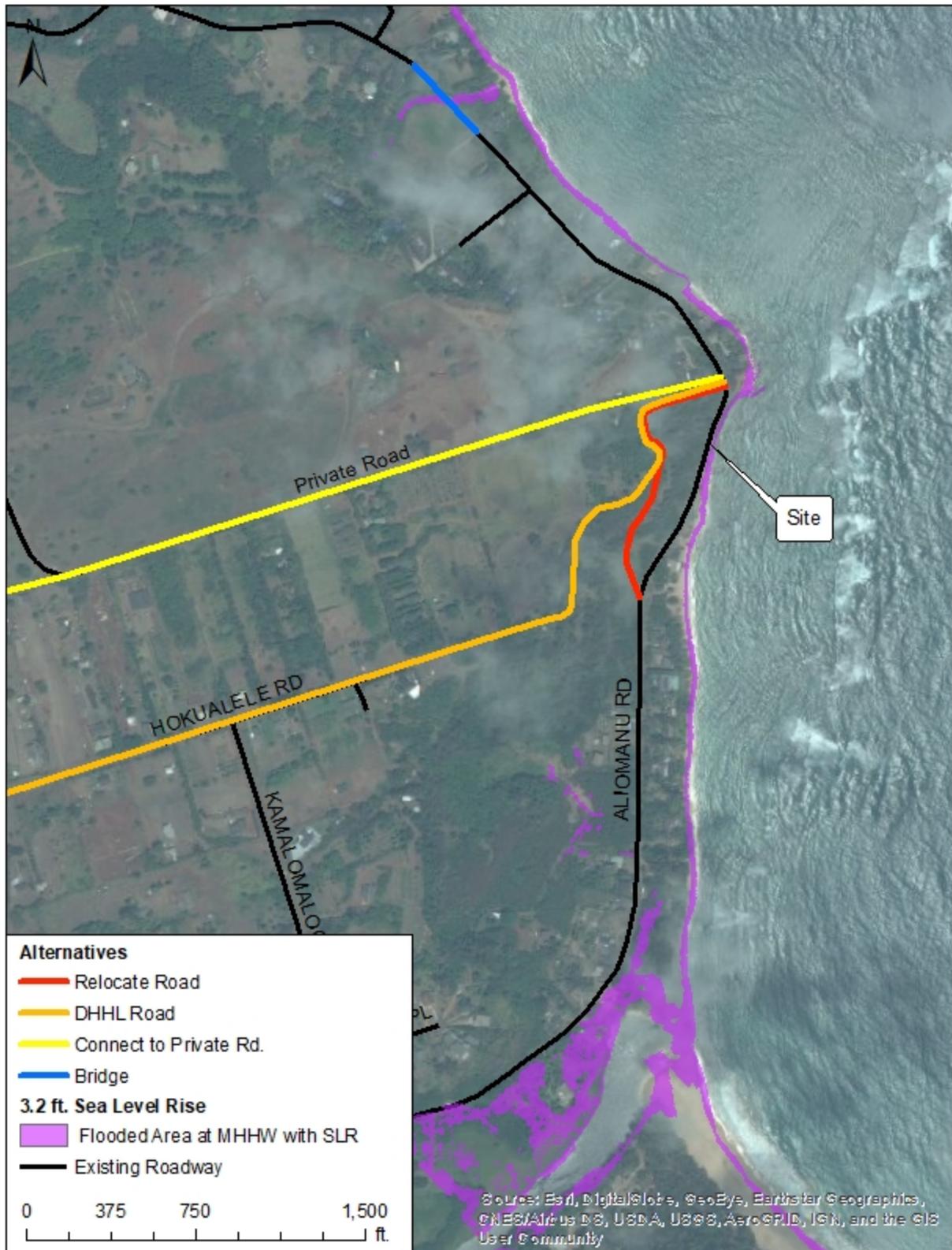


Figure 15: Map of the project area and proposed project alternatives showing the area of expected passive flood inundation during high tide after a static sea level rise of 3.2 feet.

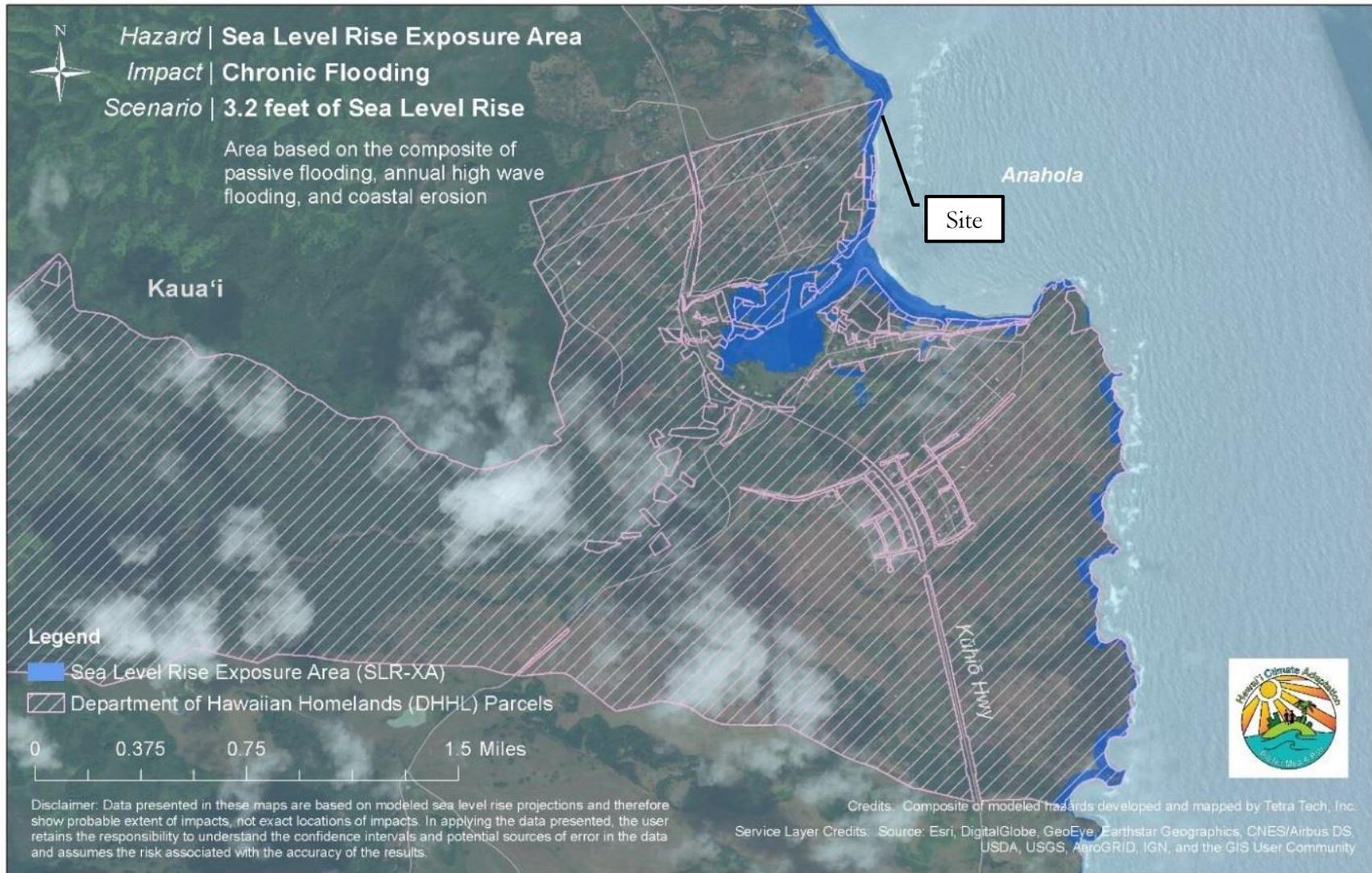


Figure 16: Map of the project area showing the area of expected passive flooding, annual high wave flooding and coastal erosion under a 3.2 feet sea level rise scenario [9].

3.2.1 No Action

While the extent of the future flooding and erosion will ultimately be determined by the measures taken to protect the coast, Figure 15 and Figure 16 provide a comparison of the potential impacts of SLR on the area. SLR will decrease the buffer between the Aliomanu Road and the ocean. While the existing roadway in the project area is sufficiently elevated to avoid passive flooding after 3.2 ft. of SLR, coastal erosion and waves may expose the project area to increased risk of flooding if no action is taken to mitigate SLR impacts (Figure 15). South of the project site, near the mouth of the Anahola Stream, SLR may cause nuisance flooding along portions of the existing roadway (Figure 15) and future erosion and waves could expose much of this area to SLR (Figure 16). Kaua‘i County, DHHL and other property owners need to consider a plan to adapt to SLR in these low laying coastal neighborhoods. If Kaua‘i County takes no action, SLR will likely lead to increasing shoreline erosion, which may further damage the roadway. This option does not help mitigate or adapt to the increased erosion and flooding hazards that are expected with SLR.

3.2.2 Proposed repair and revetment at the project site

The design for the road repair helps to mitigate the increased erosion and flooding hazards that are expected with SLR. The repair design that includes a revetment will stop the shoreline erosion in the project site. The design will also prevent wave swash from flooding the roadway. An elevated curbwall will separate the roadway from the rock revetment along the shoreline. The minimum elevation of the curbwall will be 10.3 feet above MLLW or 8.5 feet above MHHW. Accounting for the State’s recommend 3.2 feet sea-level rise planning target, in the future the curbwall will be 5.3 feet above water level during MHHW. The elevation is sufficient to prevent waves from flooding the road except under the most extreme conditions.

3.2.3 Repair ‘Aliomanu Road into a single lane at the project site

Like the proposed repair in 3.2.2, the elevation of the road and the curbwall will be sufficient to withstand the impacts from the recommended sea level rise of 3.2 feet. Therefore, the option of repairing the ‘Aliomanu Road to a single lane is a viable alternative to mitigate the increased erosion and flooding hazards that are expected with SLR.

3.2.4 Realignment of ‘Aliomanu road mauka of site

Realigning the road mauka of the site will not prevent the increased erosion expected with SLR. However, this alternative moves the road away from the potential wave erosion area to a higher elevation. Therefore, this option does not help mitigate or adapt to the increased erosion and flooding hazards that are expected with SLR.

3.2.5 Rebuild a bridge to connect the north and south ends of ‘Aliomanu Road

The bridge alternative will not prevent the increased erosion expected with SLR. The bridge and roadway can be designed so that it is not affected by the increased flooding expected with SLR. Therefore, this option does not help mitigate or adapt to the increased erosion and flooding hazards that are expected with SLR.

3.2.6 Extend Hokualele Road to connect with ‘Aliomanu Road

The option of extending Hokualele Road to connect with ‘Aliomanu Road will not prevent the increased erosion expected with SLR. The alternative will avoid the coastal area that may experience increased flooding with SLR. The SLR will not adversely impact this option. Therefore, this option does not help mitigate or adapt to the increased erosion and flooding hazards that are expected with SLR.

3.2.7 Pave and extend a private gravel drive to connect with ‘Aliomanu Road (yellow line)

The option of building this new road to connect with ‘Aliomanu Road will not prevent the increased erosion expected with SLR. The alternative does avoid the coastal area that may experience increased flooding with SLR. The SLR will not adversely impact this option. Therefore, this option does not help mitigate or adapt to the increased erosion and flooding hazards that are expected with SLR.

4. COMMUNITY MEETINGS

The County of Kaua‘i held meetings to discuss the road repair alternatives with the community and to gage public opinions on the options. The first meeting was with the DHHL beneficiaries living in the Anahola area. The second meeting was open to the public.

Prior to the public meetings, the County and Oceanit consulted with Department of Hawaiian Home Lands (DHHL) staff to discuss the project and potential issues that may arise within the Hawaiian Home Lands community. DHHL expressed concern with the source of the stones for the construction of the proposed revetment. It was agreed that the issue could be resolved by stipulating in the construction plans that the contractor must not source the stones from culturally important sites and that the source of stone would require the County’s approval prior to construction. Also raised was the potential to disturb cultural remains such as *imi* (ancient human skeletal remains), especially if the County decides to develop a new road on the undeveloped inland areas. Archeological survey and monitoring plans may resolve this issue. Overall, the DHHL staff felt that repair of the existing road was the best option.

On March 29, 2017, the County of Kaua‘i held a meeting with the beneficiaries living on the DHHL lands in Anahola. Nine DHHL lessees attended the meeting. The County presented the alternatives detailed in this FEA and sought feedback. The County was particular interested in the community perception on whether road development in or near the DHHL neighborhood was seen as a positive or negative option. Overall, the community opposed the new road development alternatives and was supportive of the existing road repair and/or the bridge replacement options.

A second community meeting took place on April 25, 2017. This meeting was open to the public. Fifty-two (52) residents including twenty-two (22) DHHL lessees attended. The County presented the alternatives and discussed any public comments and questions. Towards the end of the evening, the

community showed their support for the various options by a show of hands vote (Figure 17). The majority of those present supported the road repair option, while a few supported the option of a new bridge; there was no community support for developing a new roadway. Materials from these meetings are included in the Appendix A of this SEA report.



Figure 17. Show of hands vote in support of the proposed option of repairing the ‘Aliomanu road, which includes coastal armoring. Photograph taken by the County during a public information meeting held on April 25, 2017 in Anahola, Kaua‘i.

5. CONCLUSION AND DETERMINATION

This FEA presents several options to provide safe and reliable access to properties that may lose roadway access and public utilities should the existing damage to the ‘Aliomanu road continue to worsen. Considering the potential environmental impacts, total costs and project timelines of the alternatives (Table 8), the County of Kaua‘i, Department of Public Works prefers to repair the damaged section of ‘Aliomanu Road in its existing location and restore two-lanes of roadway. The project includes armoring the coastline with a boulder stone revetment. The County is developing a beach nourishment plan for the coastal armoring area that will undergo environmental permitting as a separate project. The road repair design will mitigate the increased erosion and flooding hazards that are expected with Sea Level Rise. The County can complete the preferred repair alternative relatively quickly and economically, while also limiting the environmental and socio-economic impacts to the surrounding community. The Anahola community has shown strong support for the road repair option during recent public information meetings regarding this FEA.

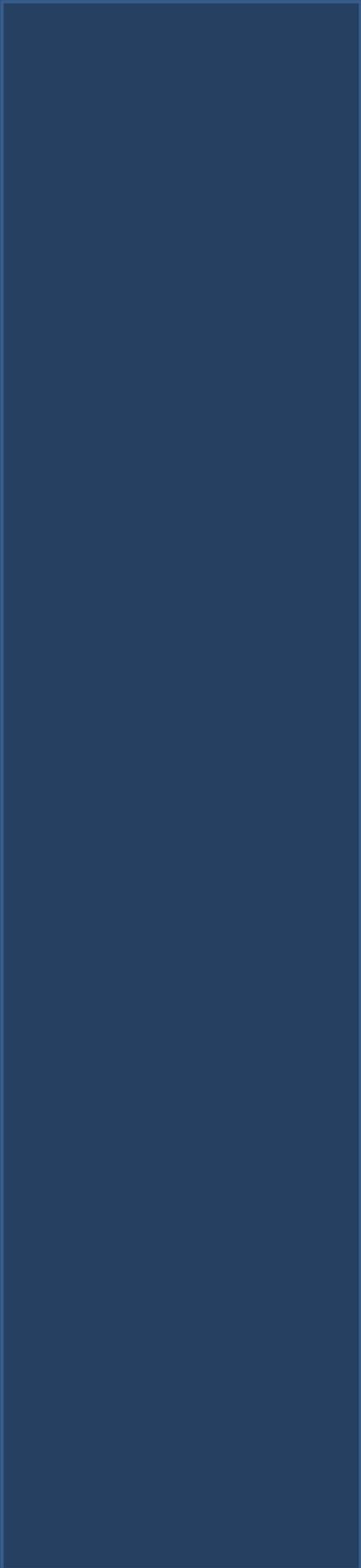
Based on the review of the Draft Environmental Assessment and analysis of significance criteria, the County of Kaua‘i Department of Public Works is filing this Finding of No Significant Impact (FONSI).

Table 8: Summary of the Alternatives for ‘Aliomanu Neighborhood Access

<u>ALTERNATIVE</u>	<u>CAPITAL COST</u>	<u>TOTAL 50-YEAR O&M COST</u>	<u>TOTAL PROJECT COST</u>	<u>PROJECT TIMELINE</u>	<u>NOTES</u>
No Action	---	\$4.4M	\$4.4M	N/A	Unaddressed hazard to public safety. If road becomes impassable due to severe storm or SLR, costs will be much greater.
Proposed repair and revetment	\$2.2M	\$1.0M	\$3.2M	~2 yrs.	Restores original two-lane road. Prevents pollution. Coastal armoring with beach nourishment plan.
Convert ‘Aliomanu Road to a single-lane	\$2.0M	\$0.9M	\$2.9M	~2 yrs.	No DHHL land required. Constricted route for emergency and evacuation access. Coastal armoring with plan for beach nourishment.
Realignment of ‘Aliomanu road mauka	\$3.3M	\$3.1M	\$6.4M	~3-4 yrs.	Requires DHHL lands and approval. Develops natural coastal landscape. DHHL lessees opposed.
Rebuilding bridge connecting both sides of ‘Aliomanu Road	\$2.7M - \$6M	\$2.4M	\$5.1M - 8.4M	~4-8 yrs.	Connects two cul-de-sac neighborhoods. Separates DHHL from other community. Prevents shoreline armoring. Previous bridge failed and additional studies required.
Extend Hokualele Road to connect with ‘Aliomanu Road	\$3.2M	\$4.6M	\$7.8M	~4-5 yrs.	Requires DHHL lands and approval. Develops natural coastal landscape. Community opposed.
Extend private driveway to connect with ‘Aliomanu Road	\$4.2M	\$4.5M	\$8.7M	~4-5 yrs.	Requires securing private property. Separates DHHL from other community. Community opposed.

6. REFERENCES

1. Hawaii Coastal Erosion Website, Coastal Geology Group, University of Hawai‘i at Manoa, available at <http://www.soest.hawaii.edu/coasts/erosion/maui/index.php>, accessed August 2017.
2. A Bill For An Ordinance To Amend Chapter 8, Kauai County Code 1987, As Amended, Relating To The Comprehensive Zoning Ordinance; Ordinance No. 979; Bill No. 2461, Draft 5
3. Esaki Surveying & Mapping, Inc., Topographic Survey Showing Portion of Aliomanu Road, Prepared for Oceanit Laboratories, Inc. Dates of Survey August 18-19, 2016; August 22, 2016; and August 31, 2016.
4. DLNR Job No. D00CK62B Keahua Forest Reserve Bridge Kauai Hawaii, Contracts for Goods, Services and Construction. State Procurement Office, Department of Accounting, and General Services, Awarded August 2014
5. Kamehameha V Highway Kawela Bridge Replacement District of Molokai Island of Molokai, Federal-Aid Project No. BR-04508, Contracts for Goods, Services and Construction. State Procurement Office, Department of Accounting, and General Services, Awarded August 2011.
6. Water Levels, Center for Operational Oceanographic Products and Services, National Ocean Service National Oceanic and Atmospheric Administration, available at <https://tidesandcurrents.noaa.gov/stations.html?type=Water+Levels>, accessed in January 2017.
7. Sea-Level Change Curve Calculator (2015.46), Climate Change Adaptation, Comprehensive Evaluation of Projects with Respect to Sea-Level Change, United States Army Corps of Engineers, revised November 2014, accessed January 2017.
8. Kaua‘i County General Plan, Departmental Draft dated June 13, 2017, available at <http://plankauai.com/>, accessed in August 2017.
9. Hawai‘i Climate Change Mitigation and Adaptation Commission. 2017. Hawai‘i Sea Level Rise Vulnerability and Adaptation Report. Prepared by Tetra Tech, Inc. and the State of Hawai‘i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawai‘i Department of Land and Natural Resources Contract No: 64064.
10. 2013 USACE NCMP Topobathy Lidar: Kauai (HI) – LMSL, USACE National Coastal Mapping Program data collected by the Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX). Available at <https://www.coast.noaa.gov/dataviewer/#/>, accessed December 2017.



APPENDIX A

Community Meeting Materials



Meeting Notes

Date: March 29, 2017

Time: 6:00 p.m

Location: Anahola Clubhouse

Project: 'Aliomanu Road Repair

Subject: Discussion with the Department of Hawaiian Home Lands community in Anahola on the Alternatives for Repairing the Aliomanu Road

Attendees:

DHHL:

Robert Freitas (RF), Nancy McPherson (NM), Erna Kamibayashi (EK), Kaipo Duncan (KD)

Kauai County:

Don Fujimoto (Kauai County, DF), Michael Moule (Kauai County, MM)

Oceanit:

Dayan Vithanage (Oceanit, DV)

Community members:

Wini Fred Ku'ulei Smith; Leiola Kamalani Oliver; Elizabeth Goo; Dennis Neves; Tory Simons; L. Haulani Fernandez; (handwriting not legible); Nailani Kameaheu; Elise Gavitt

Discussion Items:

1. Since the time of the Aliomanu Road temporary repair, the law has changed and now an alternative assessment is required for shoreline armoring projects. This meeting is to present the findings of the study and discuss the alternatives with the Department of Hawaiian Home Lands (DHHL) community.
2. A portion of the road was constructed on Hawaiian Home Lands. The County hopes to repair the road to what was existing since the 1940s, which would involve a small portion of the DHHL land.
3. Kauai County and Oceanit presented a PowerPoint on the alternatives assessment including repairing the existing road, moving the road to a new mauka alignment, constructing a new bridge, connecting Aliomanu Rd. with Hokualele Rd., and extending the Aliomanu Road to the highway through private property.
4. Questions and comments from the DHHL community included:

- a. How much land has been lost due to the erosion?
 - b. Why has it taken so long to do this road repair?
 - c. What is a revetment? How long will the repair last? What the impact be on the beach?
 - d. Who lives at the end of the road and how does this project benefit Hawaiian Homes? Will there be negotiation on the terms of using DHHL land?
 - e. Could you rebuild the road a few feet inland to buy more time against the erosion instead of building further mauka on virgin land where there may be concerns with seabirds, owls, iwi, etc.?
 - f. One community member expressed concern over where beach visitors will park.
 - g. The option of connecting Aliomanu rd. with Hokualele rd. is "out". Several community members voiced opposition to this option and to the option of developing a road through the large private lot.
 - h. Reconstructing the bridge is a good idea to provide an additional route for emergency evacuation; it is just a matter of time and money. This option would also change the character of the natural stream environment.
 - i. The County could help DHHL by moving sand out of the Anahola River mouth and up to road repair area as a condition of the use of DHHL property.
 - j. A community member suggested that there are other places in the Anahola community where the County could potentially help DHHL with repairs or improvements.
5. The County will invite the DHHL community will to the public informational meeting in April.
 6. Oceanit has already completed an environmental assessment for this project. A supplemental document with information on alternatives and sea-level rise is being prepared. Information from this meeting will be included in the new document.
 7. The meeting was recorded and Oceanit has prepared a written transcript documenting the meeting.

Action Items:

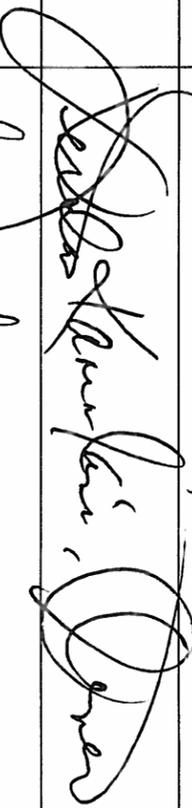
- *Kauai County and Oceanit will present this information at the public informational meeting in April 25, 2017.*
- *Oceanit will summarize the community feedback from these two meetings in the Supplementary Environmental Assessment (SEA).*

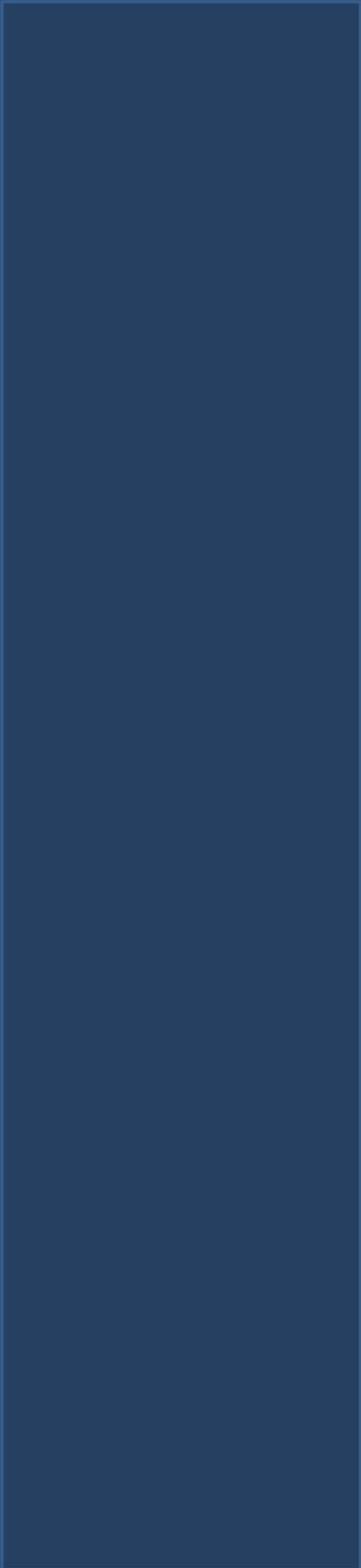
COMMUNITY INFORMATIONAL MEETING
 SIGN-IN SHEET

EVENT 'Aliomannu Road Repair, Anahola

DATE Wed. March 29, 2017

(Please print)

NAME	SIGNATURE	E-MAIL	TELEPHONE
Mini ^{Kaula} Kiuilei Smith		wkstata@hawaii.rv.com	(808) 823-2228
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Elizabeth Gio		egoo2124@gmail.com	278-2535
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Tony Shinas			631-2888
L. Hankani Fernandez		lpietjumbo@yahoo.ca	639-4176
Shirley Aki Jo.			
Kelani Kamehau		hokalei@psd.live.com	
Eliso Spaitt		e.gavitt@yahoo.com	
Erna Tamibayashi DHHL		erna.a.kamibayashi@hawaii.gov	346-3387 274-3131



Public Meeting Notice
April 25, 2017



ALIOMANU ROAD REPAIR **SUPPLEMENTAL E.A. ON** **ALTERNATIVES ANALYSIS**

Public Meeting
Anahola Neighborhood Center
Kawelo Street, Anahola, Kauai
Tuesday, April 25, 2017; 6:00 PM to 8:00 PM

The Kaua'i County Public Works Department will provide an update on alternatives to the road repair based on global warming and rising sea level. The public is invited to provide feedback on the various options.

- Repair Existing Road Erosion
- Mauka Realignment
- Reconstruct Bridge
- Tie into Hokulele Roadv- Mauka
- Tie into Private Road - Mauka

If you need an ASL interpreter, materials in an alternate format or other auxiliary aide support or language assistance, contact Donald Fujimoto at (808) 241-4882 or dfujimoto@kauai.gov at least 5 days before the meeting.



Doors Open at 6:00 PM
 Presentation at 6:15 PM





Meeting Notes April 25, 2017



Meeting Notes

Date: April 25, 2017

Time: 6:00 p.m

Location: Anahola Clubhouse

Project: 'Aliomanu Road Repair

Subject: Discussion with the Department of Hawaiian Home Lands community in Anahola on the Alternatives for Repairing the Aliomanu Road

Attendees:

Kauai County:

Don Fujimoto (Kauai County, DF), Michael Moule (Kauai County, MM)

Oceanit:

Mike Foley (Oceanit, MF)

DHHL:

Robert Freitas (RF), Nancy McPherson (NM), Erna Kamibayashi (EK)

Community members (Sign In Sheet Attached):

Lily Yamamoto, Armin Rapaport, Tilly Kanekolani, Kim Kain, Mark Pomstouh, Terilynn Makanani, Chad Rapozo, Sal Marti V, Leiola Kamalani Oliver, Wehi Nakano, Nick Wilke, Lindyl Laniham, Nalani Kaneakua, Jeff Fremine, Candace Kleven, Kimo Aluli, Jim Liesse, Sat Rattan Khalsa, Maybelle K Kaia'a, Franth Coatrude, Yvonne Stoner, Steve Stoner, Clyde & Oma, Aggie Marti-Kimi, Lahaina Grance, Joseph H Kaaukiai, Cindy Griffin, Gary Dueret, Luella Lemn, Colleen Kohlsaar, Hari Khaisa, Robin Young, Rich Young, Vaclav Burger, Iris Caycayon, Mahealani Hookane, Larry Arruoa, Donna Bodine, Joel Madrazo, Wini Smith, Jesse Reiff, Dan Kallai, Kuulei W, Sue Strickland, Greg Strickland, Malia Locey, Bonnie Morris, D Manaka, Kae Ahloo

Discussion Items:

1. Introduction by MM and DF to state that the reason for this public information meeting is to discuss the alternatives that the County has considered during the design phase of this road repair project and to review the proposed repair plan including a rock revetment along the shoreline.
2. MF presents about the history of the project, existing site conditions and issues, and alternatives evaluated (Presentation slides attached).
3. Comments and questions from the community members present at the meeting are received by MM, DF and MF.

4. Consensus reached among the community members in attendance that the proposed road repair is their preferred alternative. A brief discussion of the associated design parameters ensued, mainly focusing on whether the County should repair the road to have one or two lanes.

Comments/Questions:

1. A community member commented that he does not believe public funds should be used to fix the road when he is not allowed to access the lands at the end of the road and the river. He believes the homeowners should be responsible for the road repairs. He then left the meeting without awaiting a response.
2. Q: How wide does a road need to be?
A: Minimum ~10 feet for safe access, however, the County intends to replace the roadway to its original width. With the width that remains now, access for emergency vehicles and garbage trucks still exists, however, if we do nothing and let it continue to erode then the passage of larger trucks becomes dangerous.
3. Q: What types of archaeological surveys were done?
A: The proposed construction will include an archaeological monitoring plan. The area immediately under the existing road is fill material and will likely not contain items of archaeological significance. If the County pursues another option such as rerouting the road mauka, additional archaeological studies will be required.
4. Q: The original EA was published in 2009, what has happened since then?
A: Environmental studies were conducted as part of the permit requirements. County funds are earmarked for FY19 for the repairs project. Temporary sandbag installations will occur as necessary until the repairs project commences.
5. A community member suggested that the County use sand from the north side of the Anahola river mouth for the beach nourishment plan associated with this project because flooding is a concern. She stated that the roadway adjacent to the stream flooded after the County used sand from the south portion of the stream mouth for the last emergency erosion response project.
6. A community member asserted that the alternative to relocate the road mauka is on Hawaiian Homelands property. There would need to be an agreement in place for any alternatives that include the use of Hawaiian Homelands.
7. The alternative to replace the bridge would be a very involved process such as land acquisition, analysis of previous bridge failure, additional studies involving the hydrology and hydraulics of the stream would be needed. The eroding portion of the road would be abandoned. This alternative would be very costly and take longer.

- There was an initial assessment for the bridge replacement alternative in the 2009 EA. There was another bridge replacement project that took place recently that took only 1.5 years and \$2.2M. The estimate for this alternative may be an overestimate.
8. Hokulele Rd extension through DHHL property alternative. DHHL is not in favor of the change of the character of the neighborhood by extending the road. The hillside is more like a cliff and it is hard to imagine cutting a road through there. Would large trucks still be able to pass through? Yes, it is feasible but it would be expensive and involve major grading work and retaining walls.
 9. Can we make this road a single lane because there are only 28 homes past this point in the road? Yes, that's an option.
 10. A survey of the public support for each alternative was taken by a show of hands:
Alternative 1, Repairing the road as is: Very supported (see attached photo).
Alternative 2, Realignment of the road mauka: No one likes this alternative, public suggests alternative 1 but making it one lane so that there is no need for DHHL land use. Cutting more into the slope/DHHL property is not supported.
Alternative 3, Bridge: Some support
Alternatives 4 & 5, Roads inland through DHHL/private property: No support
 11. Alternative 1 is the most popular. There was discussion of having the road one lane vs two lanes and another suggestion of having one lane with a pedestrian walkway as well. The cost for having a one lane vs two lane road is similar because most of the cost is in the protection of the road with a coastal revetment and not the road construction itself. There was debate of having one lane to deter speeding. Tsunami evacuation needs to be taken into account as well since this area is within the evacuation zone. Vacation rentals and tourists speeding down the road is a reason to make it one lane. Is installing speed bumps an option? There is a separate process with the county to request speed bumps and that should be followed.
 12. The road was a historic pathway.
 13. MF passed out business cards to receive any additional comments or questions regarding the project through the EA process.

Action Items:

- *Oceanit will summarize the community feedback from these two meetings in the Supplementary Environmental Assessment (SEA). The SEA will be completed and published with OEQC.*
- *The county will take into account all comments and will decide on having one lane vs two lanes as a part of the final design.*

Aliomanu Road Repair - Public Meeting, 4/25/17; 6:00 pm to 8:00 pm
Anahola Clubhouse,

	Name	Address	Phone	Email
1	Lily Yamamoto	Box 107 Anahola HI 96703	822-5347	
2	KROW RAPAPET	Box 523 ANAHOLA	808 652-1344	
3	Piny Kandaui	Anahola	639-6353	
4	Kim Kain	Box 61, Anahola	821 0128	
5	Mark Bonstouh	4300 Hokuwala	652 5044	
6	Terrilyn Makani	4412 Malama Aiea Pt	652 1727	akanache@yahoo.com
7	Chad Rapozo	"	652-2099	
8	SOL MARTI V	P.O. Box 520 ANAHOLA, HI	346-4684	
9	Leiola Kamalani	Box 613 Oliver ANAHOLA	651 5896	
10	LAHAINA OLIVER		808-5882	
11	WEHI NAKANO	5671 Kei Pl KAPAA	651-3681	
12	NICK WILHE	4887 ALUOAN RD	822-3549	
13	Kindyl Lantham	4929 Aliomanu	713 859-3582	Kindyl@HomeopathyHolston.com
14	Kalani Kanaeue	4320 Malamaia Rd	—	hokelei808@live.com
15	Jeff Kamine	Box 25 ANAHOLA	808 821-0000	
16	Candace Klevon	44930 - Kuhio Hwy Anahola	(310) 947-2960	dr.candaklevon@gmail.com
17	Kimio Aulii	4910C Wailapa	375-9530	kimioaulii@yahoo
18	Jim LIESSE	5047 Ahimama	822 7006	jimliesse@gmail.com
19	Sat Rattan Kuls	4-4970 Kuhio Hwy Anahola	510-407-5328	satrattan@gmail.com
20				

Aliomanu Road Repair - Public Meeting, 4/25/17; 6:00 pm to 8:00 pm
 Anahola Clubhouse,

	Name	Address	Phone	Email
1	Maybelle K. Kaia	POB 517 Anahola 96703	(808) 821-8604	kauaikalani@hawaiiantel.net
2	Frank C. [unclear]	4463 Kinali	822-3114	
3	YVONNE STONER	4985 ALIOMANU Rd	651 600-1850	yelstoner@gmail.com
4	Steve Stoner	4965 ALIOMANU Rd ANAHOLA	651 600-1850	"
5	CLYDE OMA	P.O. Box 442	431-4883	---
6	Aggie Matto-Kini	P.O. Box 520	346-0473	3242keo@gmail.com
7	Lahaina Grace	PO Box 30899 Anahola	284-5882	6graces@gmail.com
8	Joseph H Kakuai	Box 623 ANAHOLA	652-0732	
9	CINDY GRIFFIN	PO BOX 30978 ANAHOLA	281-381-9455	GRIFFINCLG@GMAIL.COM
10	GARY DREEST	4953 Aliomanu	826-8991	gdreest@sbcglobal.net
11	Luella Lemn	4270 Anahola Rd	822-4854	wonlu17@gmail.com
12	Colleen Kohlsaat	5047B ALIOMANU Rd	415 3426461	gopita@COMCAST.net
13	HARI KITAIKA	PO 640 ANAHOLA 96703	808 353 1114	DRYOSI@DRYOSI.COM
14	Robin Young	P.O. Box 204	508-551-0300	
15	Rich Young	" " " "	727 430-0646	
16	Vaclav Burger	PO BOX 579 Anahola, HI 96703	530 219 6277	vaclavburger@gmail.com
17	Iris Caycaym	PO BOX 463 Anahola 96703	652-4581	onaona1@hotmail.com
18	Mahaakini Hooatoo	P.O. Box 781 Anahola, HI 96703	(714) 251-0408	Mahaatoo@gmail.com
19				
20				

Aliomanu Road Repair - Public Meeting, 4/25/17; 6:00 pm to 8:00 pm
 Anahola Clubhouse,

	Name	Address	Phone	Email
1	LARRY ARRUDA	5282 MAAHEO ST.	651-7549	LIAKAWAKE@aol.com
2	DONALD BODINE	4664 ALIOMANU	6399000	donald@aloha.net
3	JOEL MADRAZO	4941 ALIOMANU	823-0821	jbmadra@aol.com
4	Wini Smith	POB 24 ^{Anahole} 96709	823-7	wkstutu@hawaii.rr.com
5	Jesse Reiff	POB 30943 Anahole	212- 3526	hanaleipa@gmail.com
6	Ann Kallian	P.O. KILASIA Box 655	828 6367	
7	Hepe Kallian	"	651-7154	lokahiath2@live.com
8	Kundi Oshim	POB 60 Anahole	652-9158	ibkml@gmail.com
9	Sue Strickland	PO Box 553 Anahole	6514694	sue@kawaiiproperties.com
10	Greg Strickland	"	"	
11	Maria Wacey	POB 450 Anahole HI 96709		
12	Bonnie Morris	6053 ALIOMANU RD	639-3459	anaholabon@gmail.com
13	D. Maemaki	POB 58 ANAHOLE	60758191	Maemaki@gmail.com
14	Karee Ah Leo	POB 6024	60398982	Kareealani@gmail.com
15				
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Slides of April 25, 2017
Public Information Meeting

Aloha and Welcome
ALIOMANU ROAD REPAIR

**PRESENTATION OF PROPOSED
ALTERNATIVES
TO
REPAIRING OF ALIOMANU ROAD**

BY: COUNTY OF KAUAI AND OCEANIT



AGENDA

- **Background information**
- **Purpose of project**
- **Activities conducted to date**
 - **Topographic surveys**
 - **Wave analysis and erosion assessment**
 - **Archaeological studies**
- **Proposed alternatives and evaluation**
- **Summary**
- **Questions and Comments**



PROBLEM STATEMENT

- **Aliomanu Road has been eroding for the last decade and currently is posing a safety hazard to users**
- **Threat to the only means of access to about 28 residences**
 - Limited access for emergency vehicles
 - Limited route for evacuation during a hazardous situation
 - Threat to vital utilities (water and electric)



SITE LOCATION



EROSION HISTORY



EXISTING ALIOMANU ROAD DAMAGE



EXISTING ALIOMANU ROAD DAMAGE



EXISTING ALIOMANU ROAD DAMAGE



EXISTING ALIOMANU ROAD DAMAGE



EXISTING ALIOMANU ROAD DAMAGE



PURPOSE OF THE PROJECT

Provide safe reliable vehicular access to the residents affected by the damage to Aliomanu Road by:

- **Accounting for expected change in sea level**
- **Repairing the existing road and protecting it from future erosion**
- **Analyzing alternate access routes**



CURRENT PROJECT STATUS

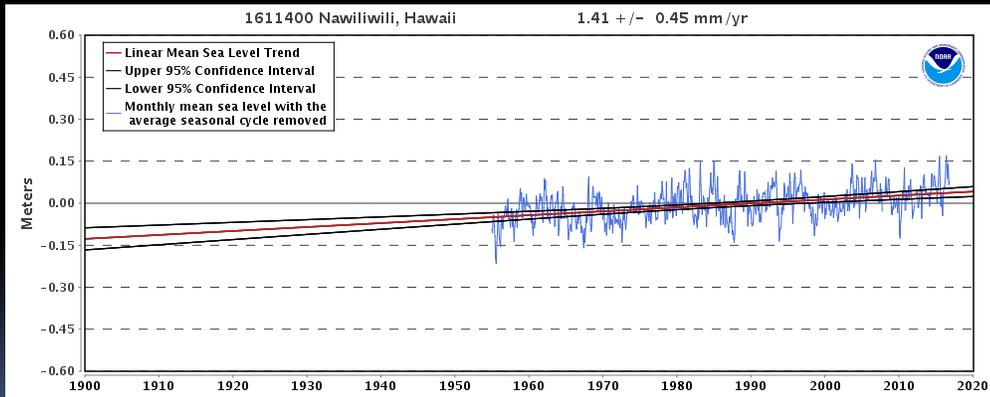
Activities to date:

- **Topographic surveys**
- **Wave analysis and erosion assessment**
- **Archaeological studies**
- **Beach nourishment studies**
- **Supplementary environmental assessment (ongoing)**
 - **Sea level change studies (ongoing)**
 - **Alternatives assessment (ongoing)**
- **Evaluate permit requirements**



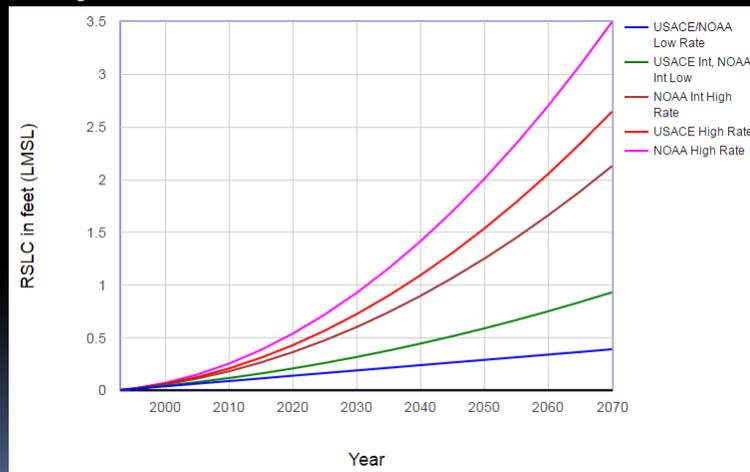
SEA LEVEL CHANGE

Historical:



SEA LEVEL CHANGE

Projected:



PROPOSED ALTERNATIVES

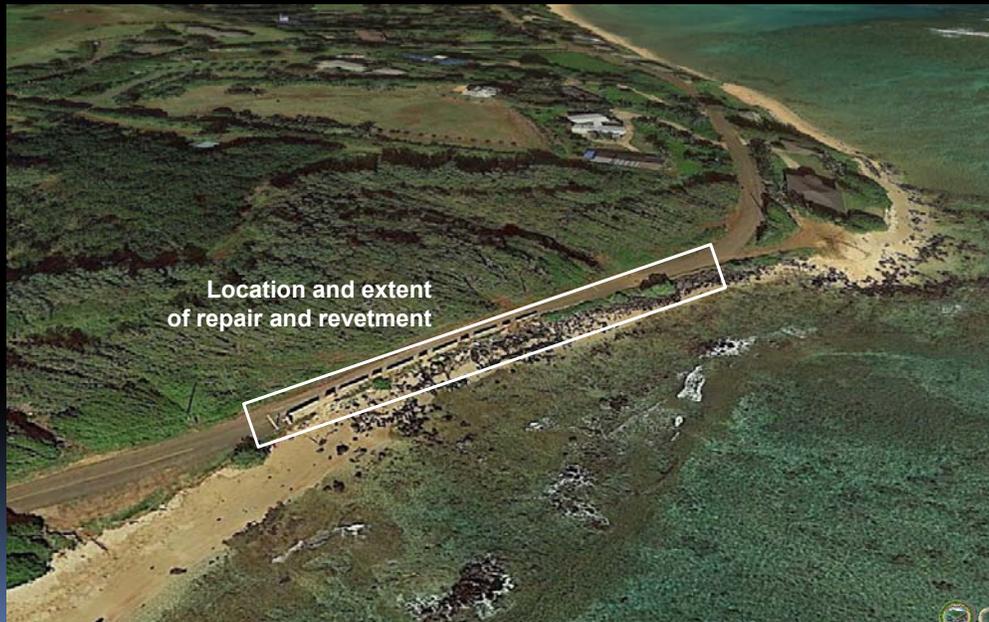
1. Repair Road and protect with a revetment (white line)
2. Realign road mauka of existing site (red line)
3. Construct bridge to provide access from north (blue line)
4. Extend Hokulele Road to connect with Aliomanu Road (orange line)
5. Pave and extend private gravel road to connect with Aliomanu Road (yellow line)



PROPOSED ALTERNATIVES



1. REPAIR ROAD AND BUILD REVETMENT



1. ROAD REPAIR AND REVETMENT

- **Repair the road to condition prior to erosion**
- **Build an engineered rock revetment to prevent future erosion**
- **Includes a beach restoration plan**
- **Improves water quality by stopping soil from eroding into the ocean**
- **Cost about 2.2 million dollars**
- **Time to complete project: 2 years**



2. MAUKA REALIGNMENT OF ROAD



2. MAUKA REALIGNMENT OF ROAD

- **Construct a new roadway alignment on the hillside landward of the existing road alignment.**
 - Clear vegetation and cut into hillside for road, shoulders and drainage culvert
- **Avoids shoreline hardening**
- **Existing roadway abandoned and soil erosion continues to enter ocean**
- **Utilizes undisturbed land (potential to disturb cultural sites)**
- **Cost about 3.8 million dollars**
- **Time to complete project: 3 to 4 years**

3. CONSTRUCT NEW BRIDGE



3. CONSTRUCT NEW BRIDGE

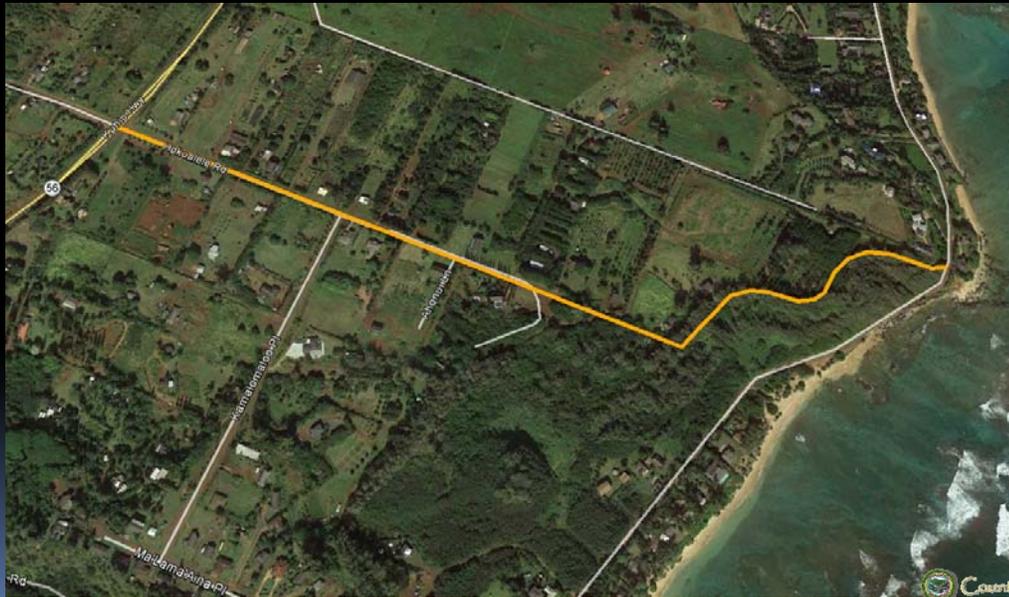


3. CONSTRUCT NEW BRIDGE

- **Rebuild the bridge that once connected both ends of Aliomanu Road**
- **Re-establishes Aliomanu Road as a loop, creating two access ways for residents, and increasing safety during emergencies.**
- **Disruption to stream environment**
- **Road right-of-way already in place**
- **Aliomanu Road will continue to erode**
- **Cost about 6.3 million dollars**
- **Time to complete project: 6 to 8 years**



4. EXTEND HOKUALELE ROAD



4. EXTEND HOKUALELE ROAD

- **Change character of the neighborhood. Hokualele Road is currently a dead end. Connecting the roadway would open the neighborhood to more public traffic.**
- **Potential impact to cultural sites**
- **Clearing existing vegetation on hillside**
- **Require a large tract of DHHL land**
- **Avoids shoreline hardening.**
- **Cost about 3.3 million dollars**
- **Time to complete project: 4 to 5 years**



5. EXTEND PRIVATE ROAD



5. EXTEND PRIVATE ROAD

- **Changes the character of the neighborhood. Private road would become open to public and more traffic.**
- **Acquisition of private land. Development in between homes.**
- **Clearing vegetation on hillside and heavy grading to accommodate steep slopes.**
- **Costs about 4.3 million dollars**
- **Time to complete project: 4 to 5 years**



SUMMARY OF ALTERNATIVES

ALTERNATIVE	COST	PROJECT TIMELINE	NOTES
No Action	----	N/A	Unaddressed hazard to public safety.
Repair and revetment	\$2.2M	~2 yrs.	Restores original two-lane road. Prevents pollution. Includes coastal armoring and beach nourishment plan.
Realignment of 'Aliomanu road mauka	\$3.8M	~3-4 yrs.	Requires DHHL lands and approval. Develops through a natural coastal landscape.
Bridge connecting both sides of 'Aliomanu Road	\$6.3M	~6-8 yrs.	Connects two cul de sac neighborhoods. Separates DHHL from other community.
Extend Hokualele Road to connect with 'Aliomanu Road	\$3.3M	~4-5 yrs.	Requires DHHL lands and approval. Develops natural coastal landscape. Changes the character of the community.
Extend private driveway to connect with 'Aliomanu Road	\$4.3M	~4-5 yrs.	Requires securing private property. Changes the character of the community. Separates DHHL from other community.



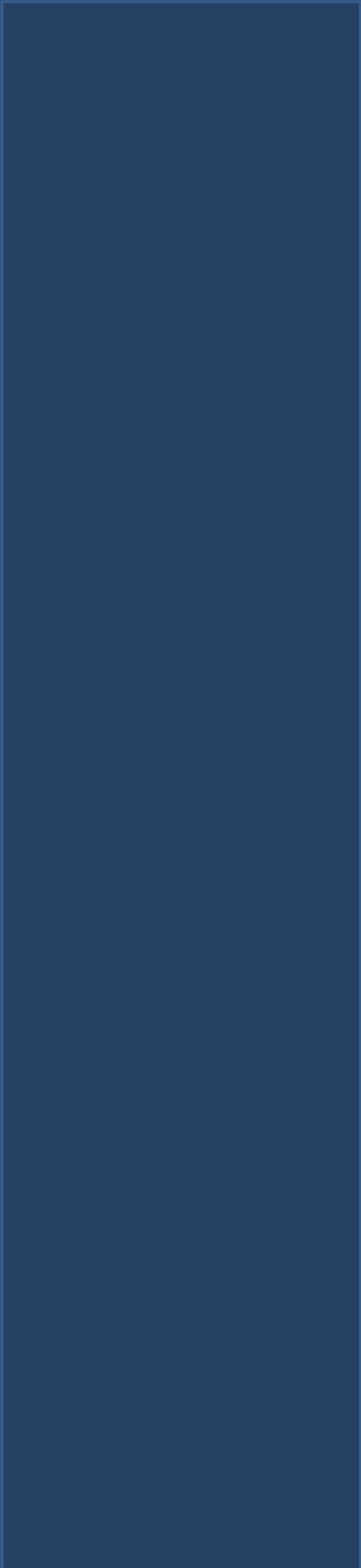
MAHALO

Contact Information:

Donald Fujimoto
(808) 241-4882
Kauai County DPW
dfujimoto@Kauai.gov

Mike Foley
(808) 531-3017
Oceanit, Engineering Director
dvithanage@oceanit.com





Written Comments from Community

Marcia Batcheller Harter PO Box 280 Anahola, HI 96703

April 25, 2017

Mr. Donald Fujimoto
Kauai County Planning Commission
dfujimoto@kauai.gov

Dear Mr. Fujimoto,

I am writing in response to the proposals for addressing the deteriorating conditions of Aliomanu South in Anahola.

I am pleased to see the most recent Environmental Study and resulting recommendation to improve the existing road. I am unable to evaluate the efficacy of the various strategies for this road repair, but hope that the long term stability of the beach will be a primary consideration when deciding how to proceed with the road construction.

I thank you very much for your efforts on behalf of the people and land of Kauai.

Sincerely yours,

Marcia Harter
Kolea91@aol.com



February 23, 2018

Ms. Marcia Harter
P.O. Box 280
Anahola, Hawaii 96703

Dear Ms. Harter:

Subject: County of Kaua'i, Department of Public Works (DPW)
'Aliomanu Road Repair
Consultation for Final Environmental Assessment (FEA)

On behalf of DPW thank you for reviewing the Draft EA and providing your comment letter dated April 25, 2017. In response to your comments we offer the following responses.

- After considering potential environmental impacts, total costs and project timelines of seven (7) alternatives, the County of Kaua'i, Department of Public Works has chosen to repair the damaged section of 'Aliomanu Road in its existing location and restore two-lanes of roadway, including supporting the roadway with a boulder stone revetment.
- The long term stability of the beach is a primary consideration for this road repair effort. DPW is developing a beach nourishment plan which would augment the portion of the project where the boulder revetment is proposed.

If there are any questions, please contact Dayan Vithanage at (808) 531-3017 or by email at dvithanage@oceanit.com.

Sincerely,

Dayan Vithanage
Project Manager

cc: Department of Public Works – Donald Fujimoto