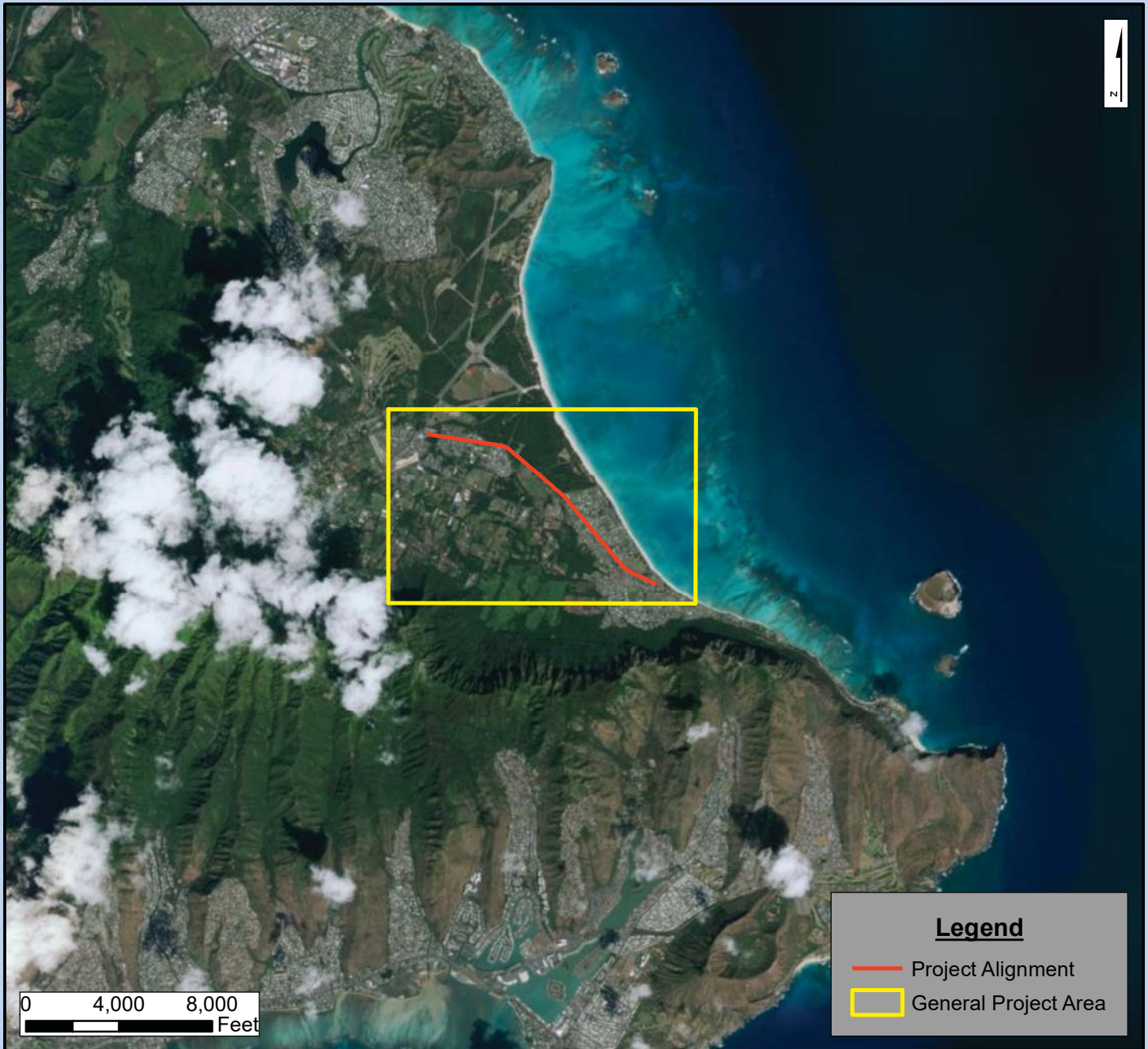


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Figure 4	Project Contour Map
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Kalanianaʻole Highway Resurfacing



Project Location



Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:

1. The project highway limits were determined using aerial imagery along with georeferenced as-builts provided by HDOT Highways Division.

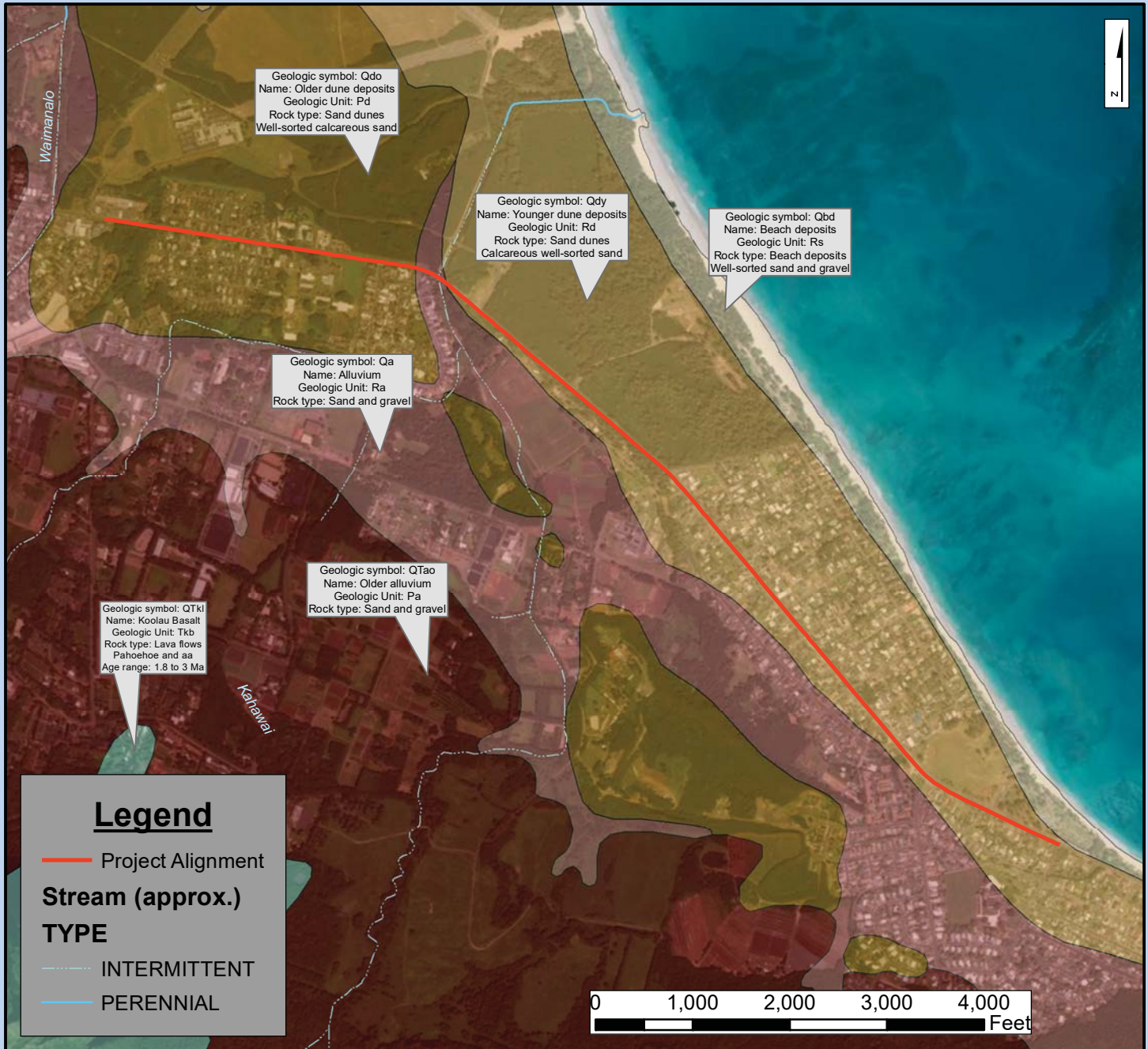
Figure 1

Project Location Map

**Kalanianaʻole Resurfacing
Waimanalo, Hawai'i
Poalima St. to Huli St.**

M_FA MASA FUJIOKA & ASSOCIATES
ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Kalaniana'ole Highway Resurfacing



Project Location



Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:

1. Geology data source: Sherrod, David R., J.M. Sinton, S.E. Watkins, and K.M. Brunt. 2007. Geologic map of the State of Hawai'i. U.S. Geological Survey Open-File Report 2007-1089 [http://pubs.usgs.gov/of/2007/1089/]. Map unit boundaries are only as accurate as the source data; contacts should be considered approximate. Standard error is 100 m (± 50 m).
2. Streams layer source: Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR). 2004. Retrieved 2009 from Hawaii Statewide GIS Program website: <http://hawaii.gov/dbedt/gis/>. Based in part on USGS Digital Line Graphs, 1983 version; locations are not precise.

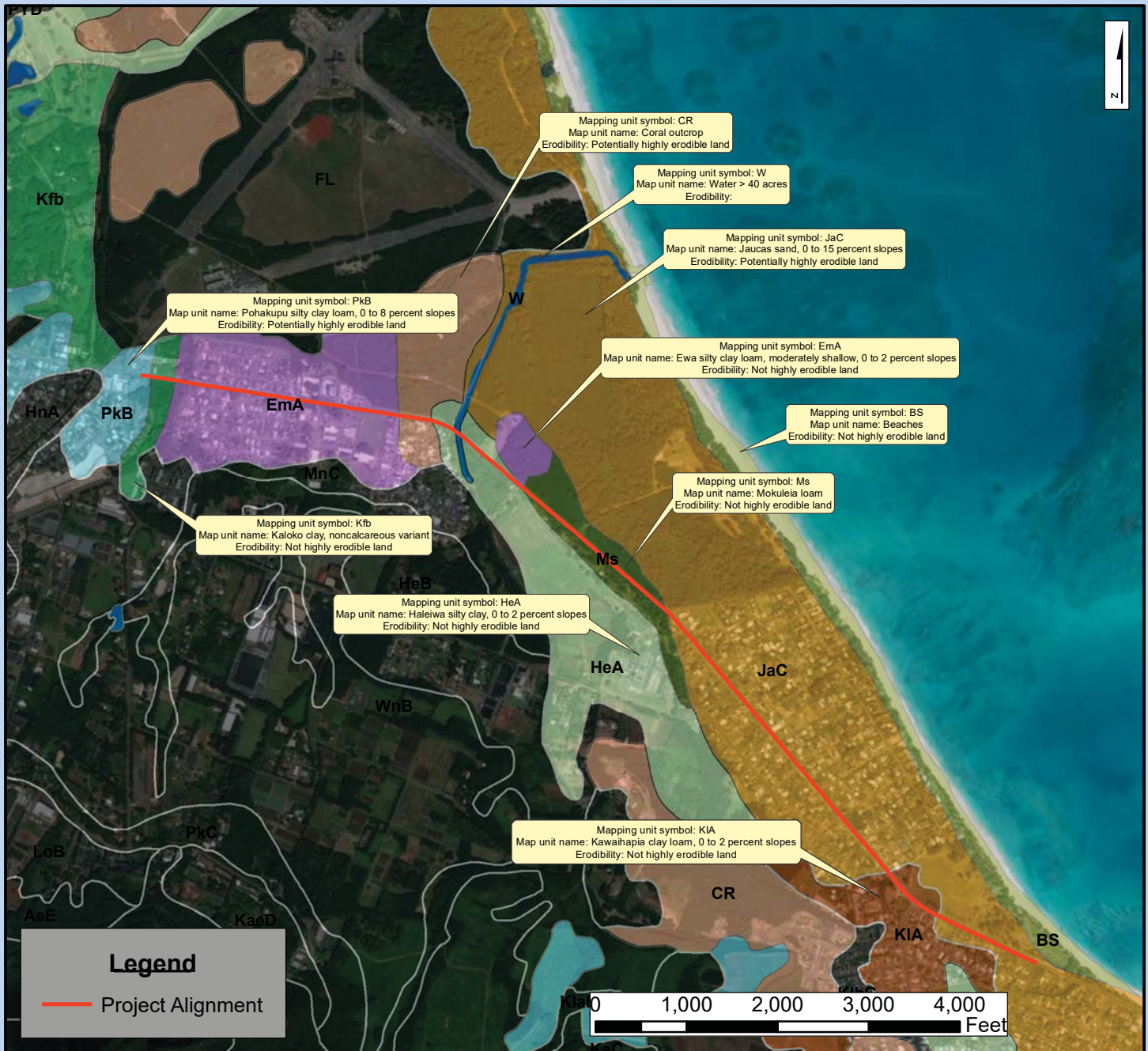
Figure 2

Project Geologic Map

Kalaniana'ole Resurfacing
Waimanalo, Hawai'i
Poalima St. to Huli St.

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ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Kalaniana'ole Highway Resurfacing



Project Location



Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:

1. Soils data source: USDA Natural Resources Conservation Service (NRCS). 1972. Soils [Statewide GIS layer], with associated Soil Survey Geographic (SSURGO) data. Retrieved May 2009 from Hawaii Statewide GIS Program website, <http://hawaii.gov/dbedt/gis/download.htm>. Map unit boundaries are only as accurate as the source data; contacts should be considered approximate.

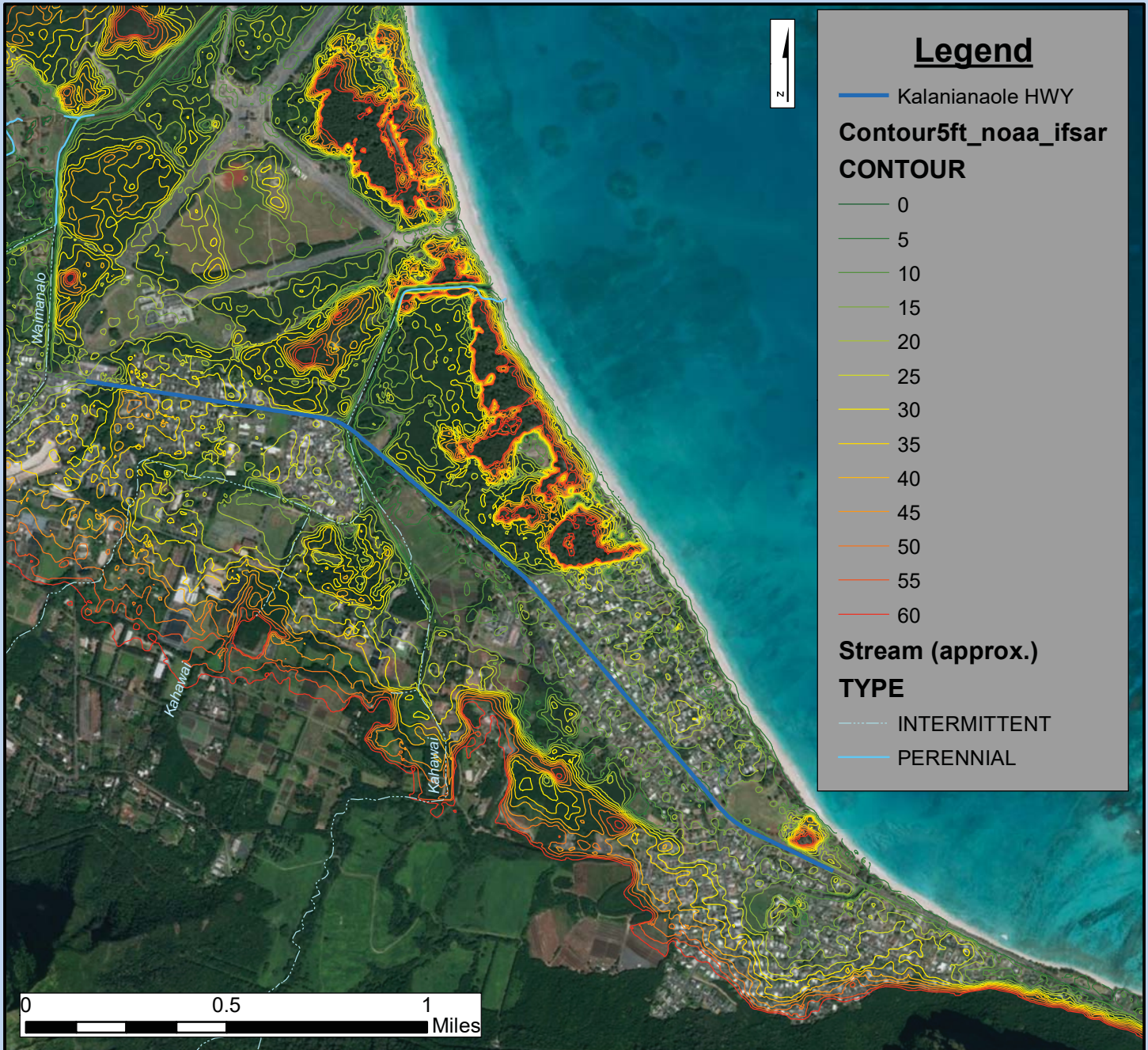
Figure 3

Project Soils Map

**Kalaniana'ole Resurfacing
Waimanalo, Hawai'i
Poalima St. to Huli St.**

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ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Kalanianaʻole Highway Resurfacing



Project Location



Project: Kal Hwy Resurfacing
 Approved: ECL
 Drawn: RNH
 Date: January 2019

Notes:

1. Contours from City & County of Honolulu, Department of Planning and Permitting, Honolulu Land Information System (HoLIS). 04/09/2008. Derived from the Interferometric Synthetic Aperture Radar (ifSAR) 5 meter post spacing digital terrain model from NOAA. Vertical accuracy stated to be within 1.68 meters. Retrieved May 23, 2014 from <http://gis.hicentral.com/>.
2. Streams layer source: Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR). 2004. Retrieved 2009 from Hawaii Statewide GIS Program website: <http://hawaii.gov/dbedt/gis/>
 Based in part on USGS Digital Line Graphs, 1983 version; locations are not precise.

Figure 4

Project Contour Map

Kalanianaʻole Resurfacing
Waimanalo, Hawai'i
Poalima St. to Huli St.

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Kalanianaʻole Highway Resurfacing

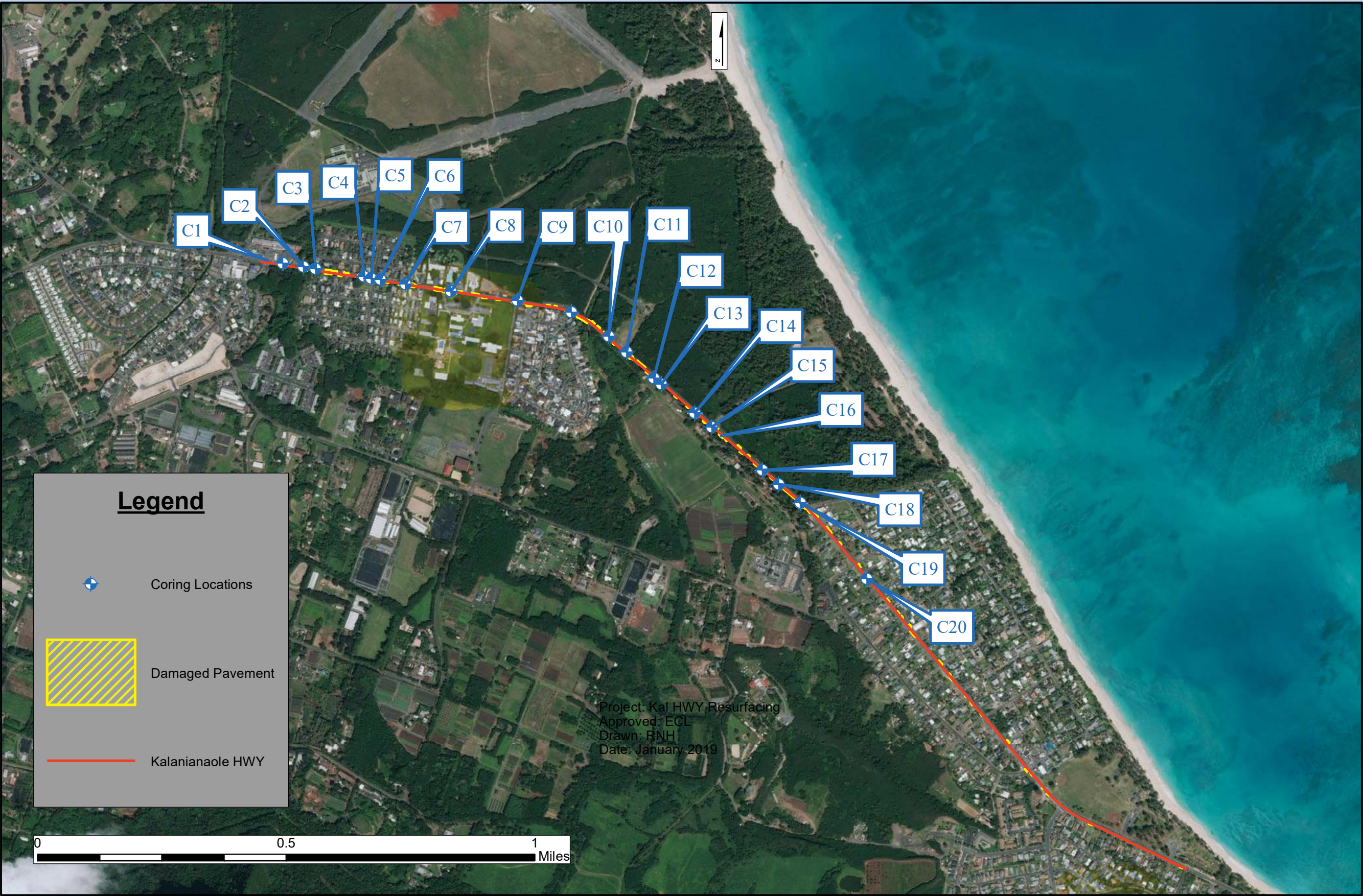
Figure 5
Coring Locations
and Pavement Failures Map

HDOT Highways

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ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:
1. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.



Project Location



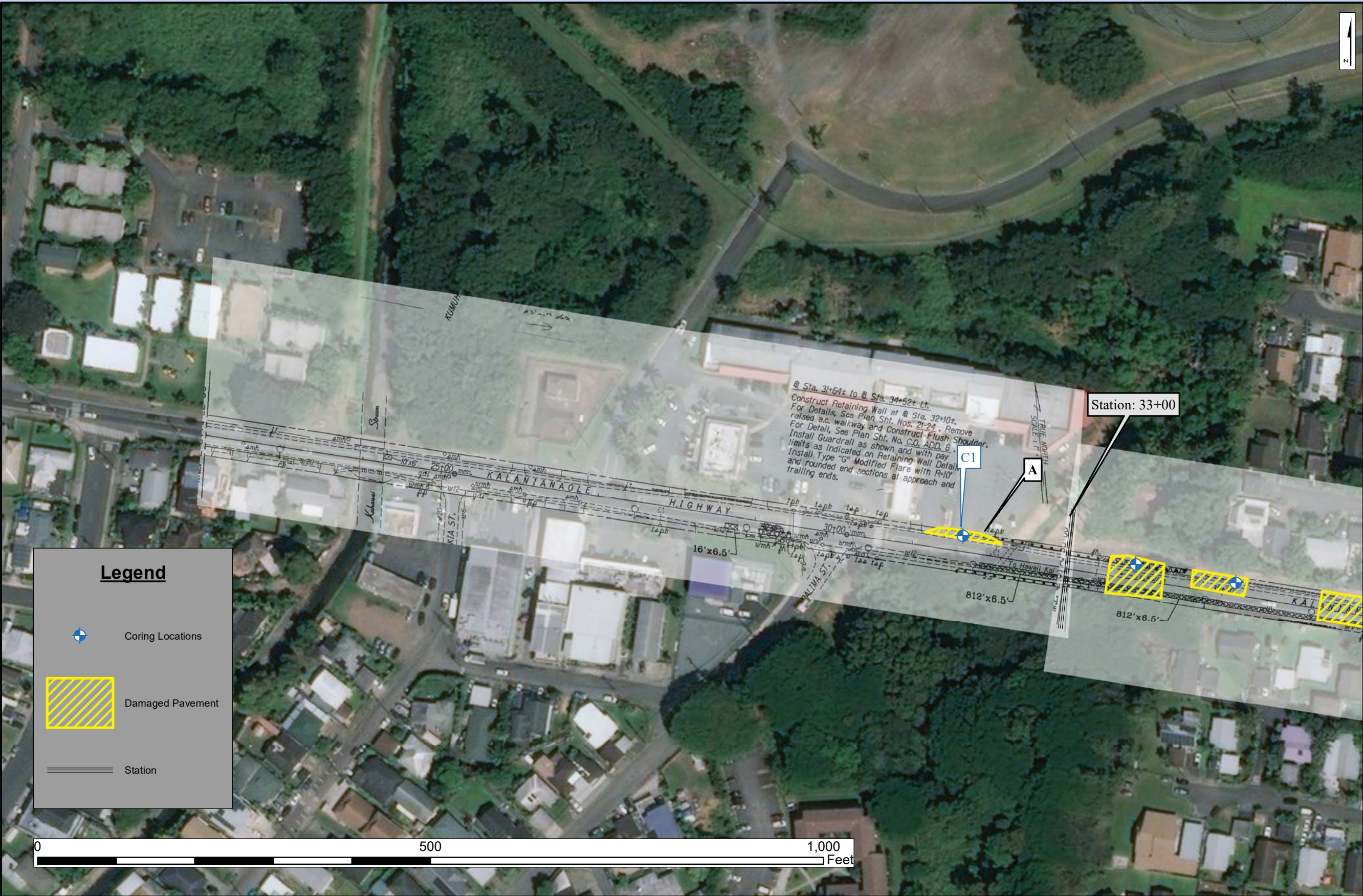
Kalaniana'ole Highway Resurfacing

Figure 6
Poalima St. to Station 33
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.



Project Location



Kalaniana'ole Highway Resurfacing

Figure 7
Station 33 to 44

HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.



Project Location



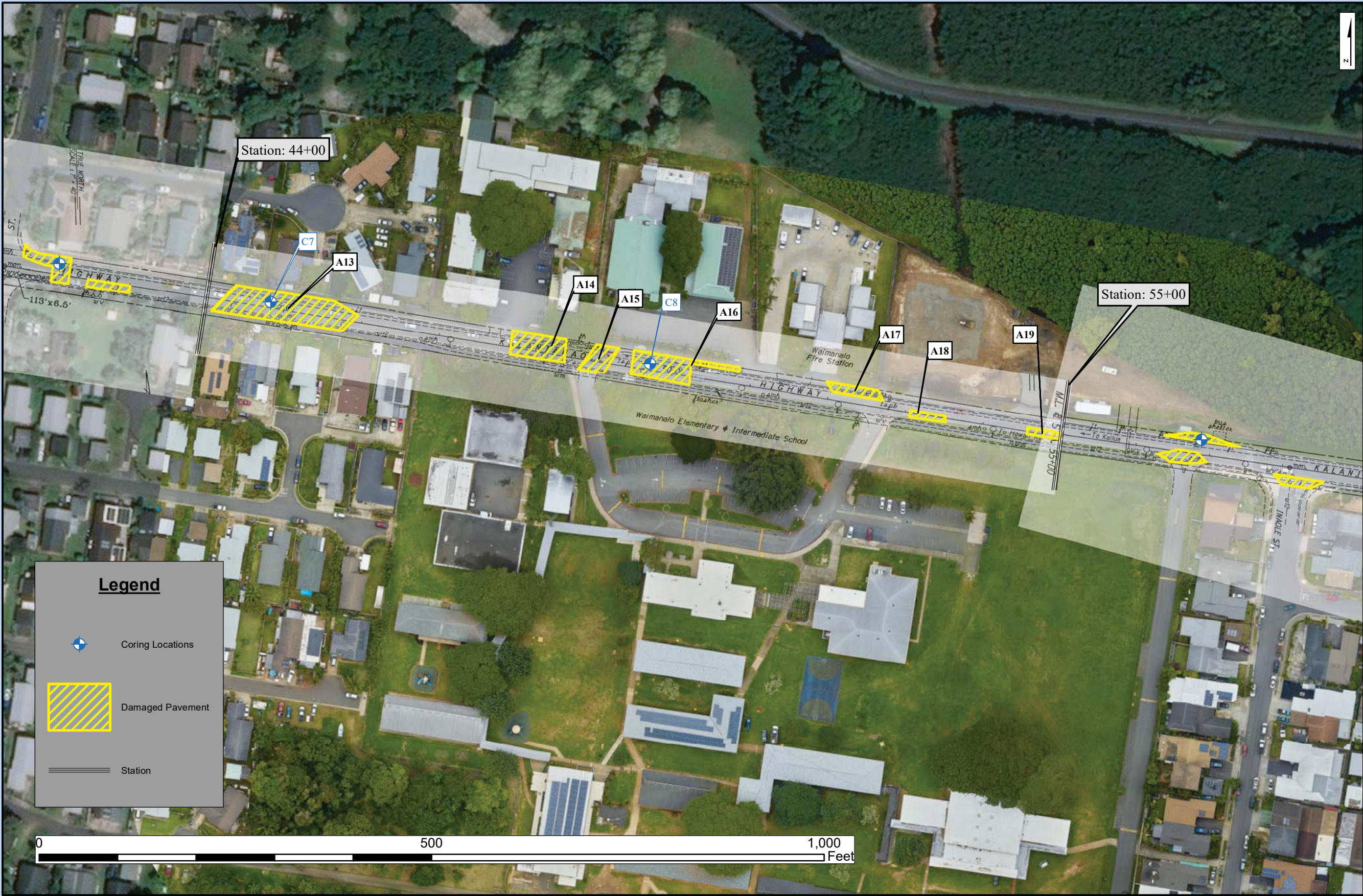
Kalaniana'ole Highway Resurfacing

Figure 8
Station 44 to 55
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.



Project Location



Kalaniana'ole Highway Resurfacing

Figure 9
Station 55 to 66
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.



Project Location



Kalaniana'ole Highway Resurfacing

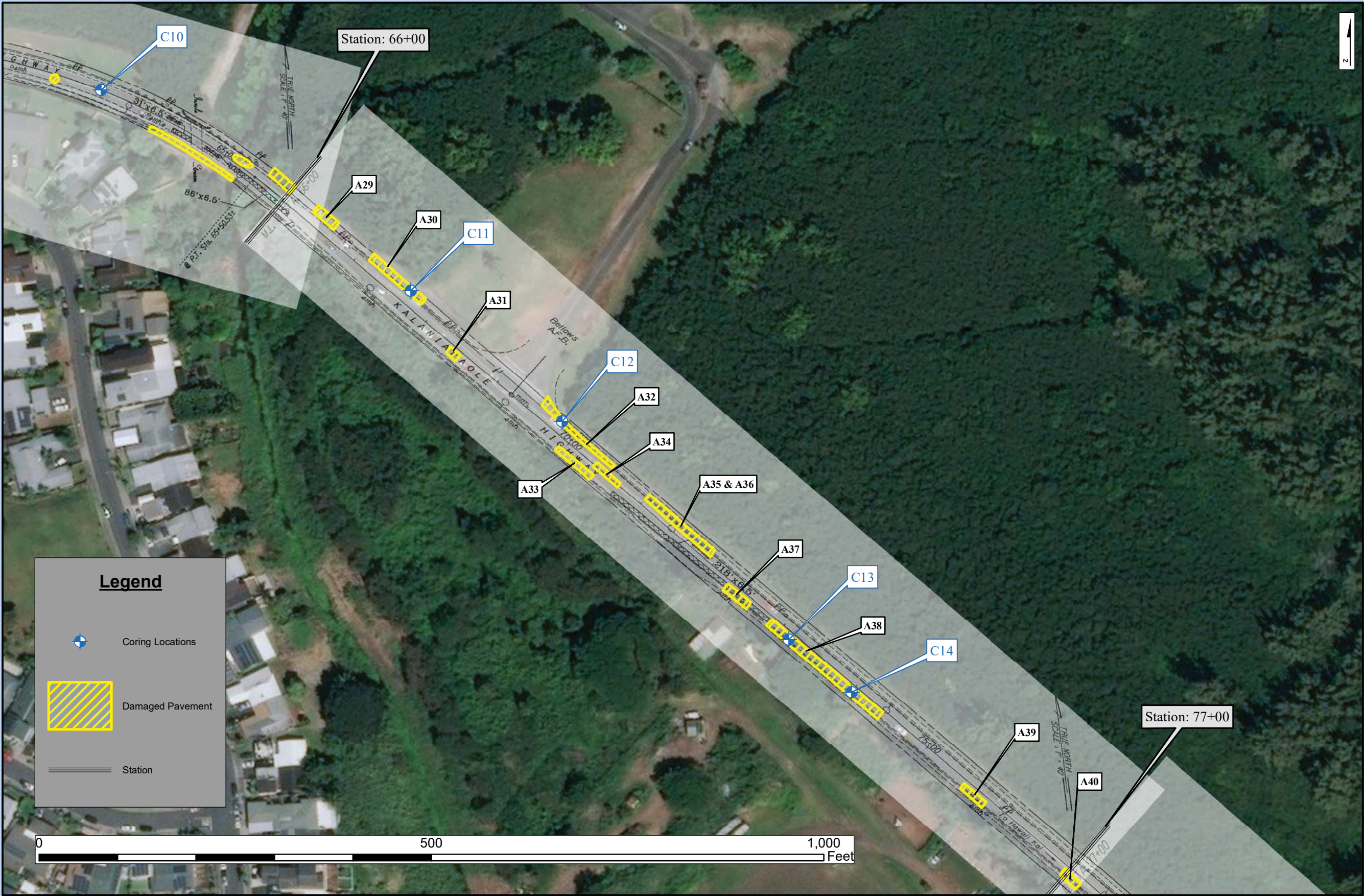
Figure 10
Station 66 to 77
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.

Project Location



Kalaniana'ole Highway Resurfacing

Figure 11
Station 77 to 88
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.

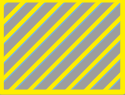
Project Location




Legend



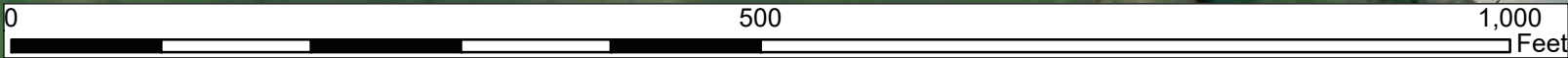
Coring Locations



Damaged Pavement



Station



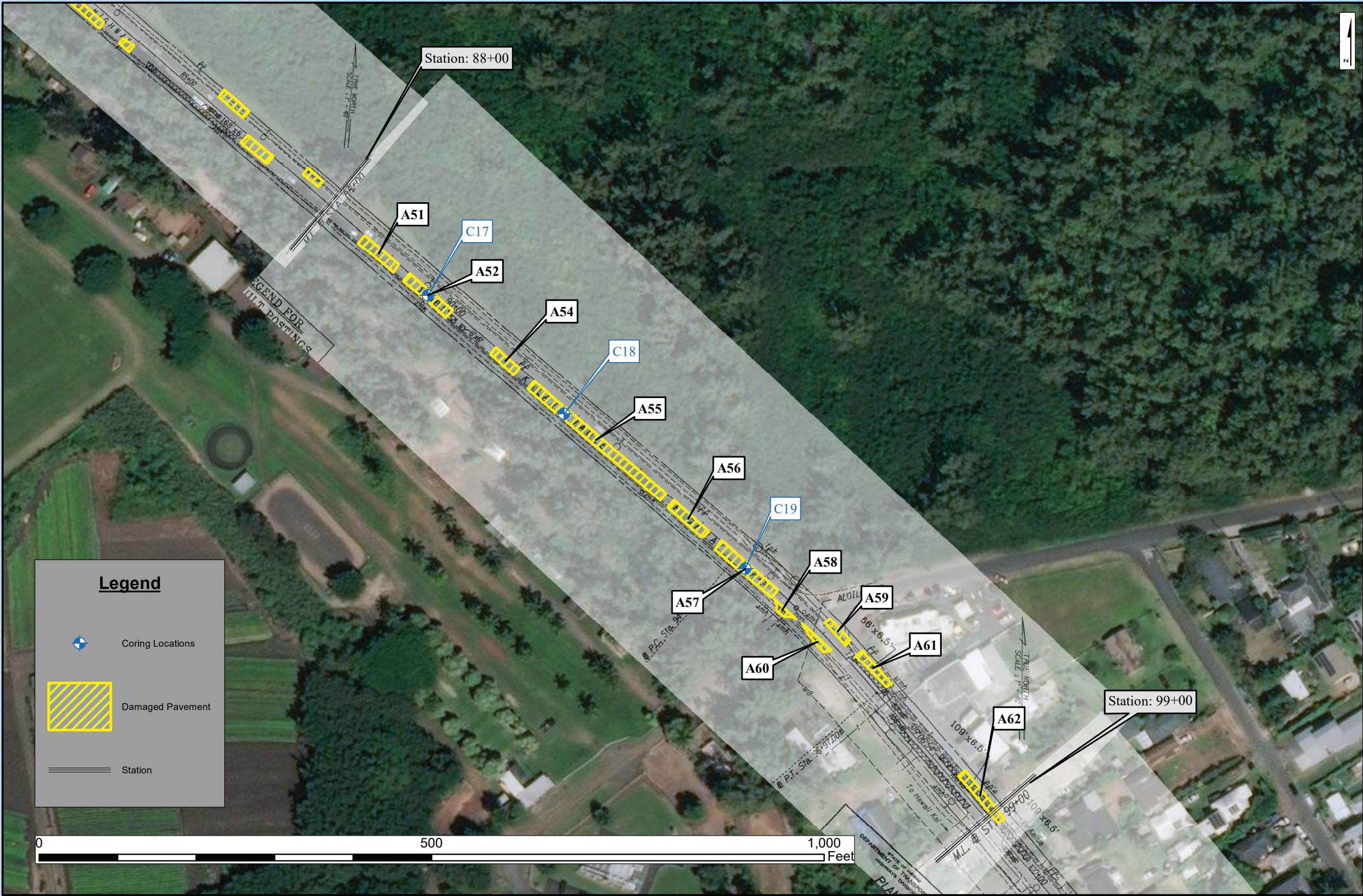
Kalaniana'ole Highway Resurfacing

Figure 12
Station 88 to 99
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.



Project Location



Kalaniana'ole Highway Resurfacing

Figure 13
Station 99 to 110

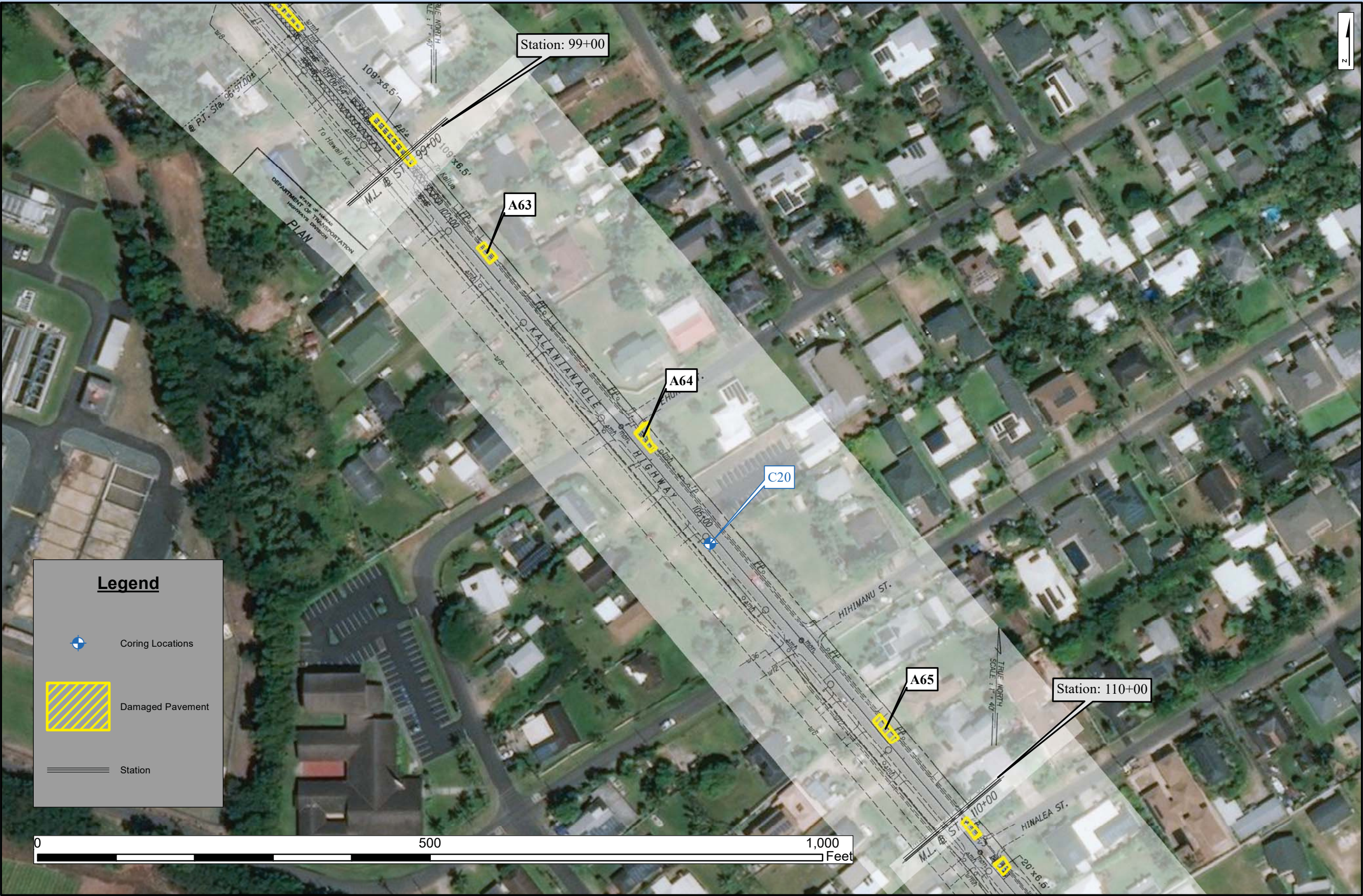
HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.

Project Location



Kalaniana'ole Highway Resurfacing

Figure 14
Station 110 +

HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

- Notes:
- 1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.
 - 2. Coring locations shown were measured in the field by measuring from a known object to the location of each core, locations should be considered approximate and do not replace a survey.

Project Location



Kalaniana'ole Highway Resurfacing

Figure 15
Hilu St. to Wailea St.

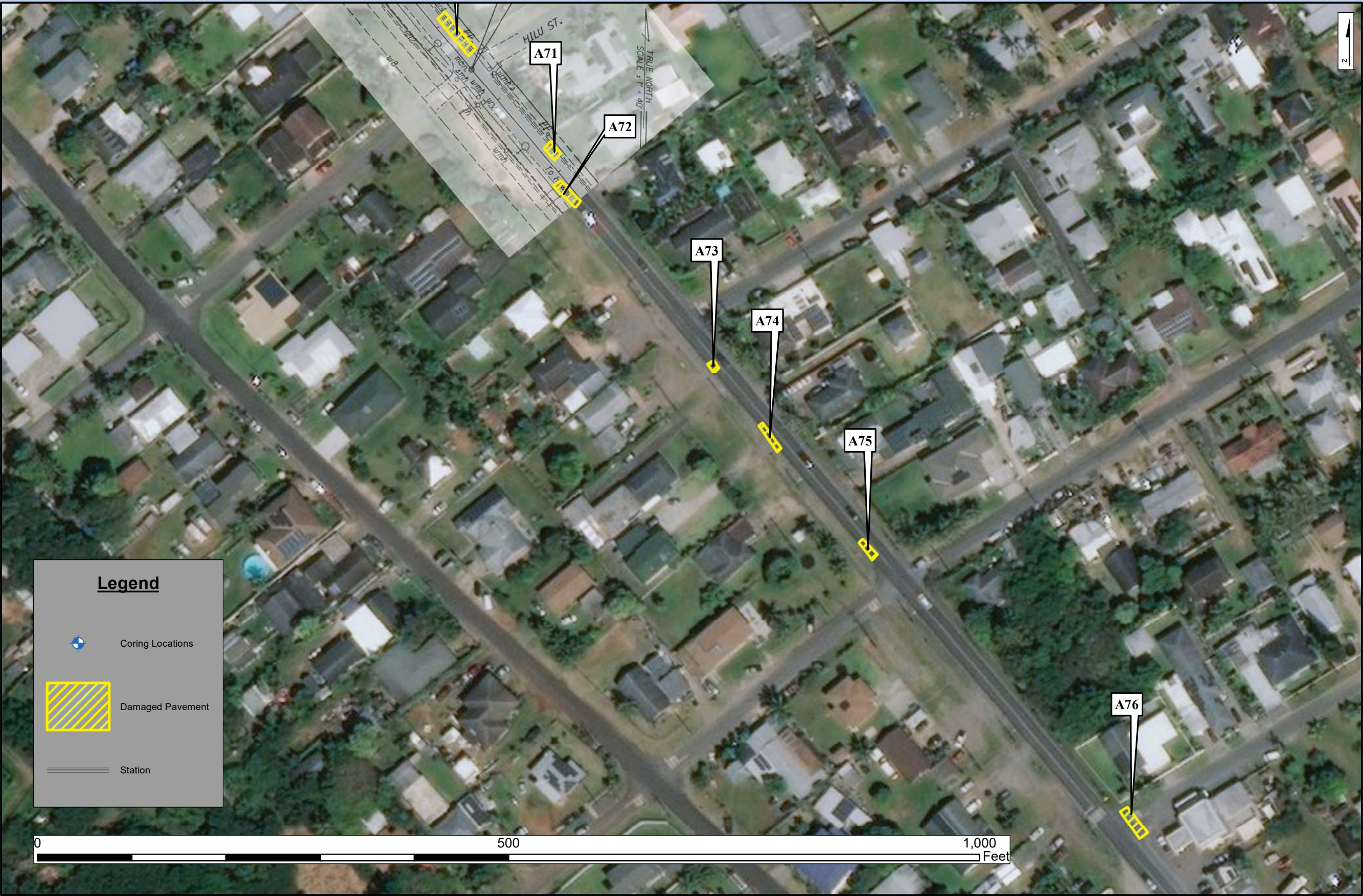
HDOT Highways

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ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:
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Project Location



Kalaniana'ole Highway Resurfacing

Figure 16
Wailea St. to Waimanalo
Beach Park

HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:
1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.

Legend

Coring Locations

Damaged Pavement

Station

0 500 1,000 Feet

Project Location



Kalaniana'ole Highway Resurfacing

Figure 17
Waimanalo Beach Park
to Huli St.

HDOT Highways

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Project: Kal Hwy Resurfacing
Approved: ECL
Drawn: RNH
Date: January 2019

Notes:
1. Plan drawings where provided were georeferenced by MFA personnel, this process may introduce some measure of distortion. Measurements should be considered approximate and do not replace a survey.



Project Location



Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366				Boring: C1 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.				Figure: 18.1	
								Job Number: 18086-116	
								Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.						Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring						Start Date: 1/22/2019			
Sample Method: Modified California, 2" Macrocore						End Date: 1/22/2019			
Borehole Diameter: 4 inches			Depth to water: NA			Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description					Remarks
			0	Asphalt (poor condition) w/ parallel cracking and AC Patch					
C1-A			<div><div>GW not encountered</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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Masa Fujioka & Associates

98-021 Kamehameha Highway #337
Aiea, Hawaii 96701
(808) 484-5366

Boring: C2

State of Hawaii, DOT Highways
Kalaniana'ole Hwy. Resurfacing
Poalima St. to Huli St.

Figure: 18.2

Job Number: 18086-116

Location: Waimanalo, HI

Driller: GeoTek Hawaii, Inc.

Elevation: not measured

Drill Method: 6620 Geoprobe w/ Concrete coring

Start Date: 1/16/2019

Sample Method: Modified California, 2" Macrocore

End Date: 1/16/2019

Borehole Diameter: 4 inches

Depth to water: NA

Logged By: RNH

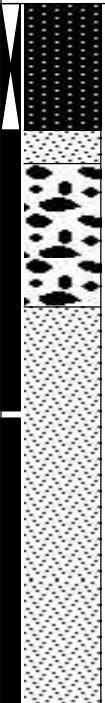
Checked By: ECL

Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description		Remarks
				Asphalt (poor condition) depression w/ stress cracks		
C2-A			0	AS	Asphalt - 1 intact layer 0-4"	
				GP	Tan coral GRAVEL w/ fine coral sand, poorly graded, very loose, moist	
C2-1	4 / 7 / 7	18 / 14	1		Grey basalt GRAVEL, poorly graded, loose, moist	
				ML	Grades to brn SILT w/ basalt gravel and some clay, medium stiff, slightly moist	
			2		Brn clayey SILT, medium stiff, slightly moist	
C2-2	6 / 10 / 9	18 / 9	3			Macrocore to 38" bgs
			4			
			5			
			6			
			7			

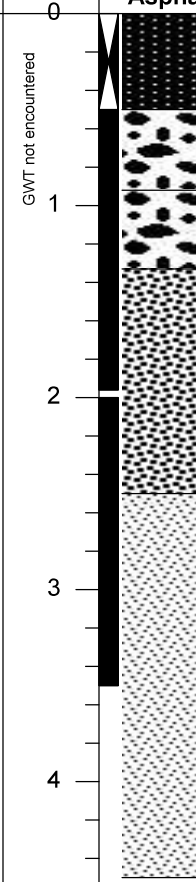
Boring terminated at 40" bgs

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C3 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.3	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/16/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/16/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) depression w/ stress cracks			
C3-A				AS	Asphalt - 3 Layers: 0-1", 1"-2.5", and 2.5"-5.5"		
				GP	Tan coral GRAVEL w/ brn fine coral sand, poorly graded, loose, moist		
C3-1	12 / 14 / 13	18 / 15	1				
			2	Grades v. loose			
C3-2	4 / 5 / 4	18 / 14	3				macrocore to 28" bgs
				Boring terminated at 41.5" bgs			Mod Cal to 41.5" bgs
			4				
			5				
			6				
			7				

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C4 State of Hawaii, DOT Highways Kalanianaʻole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.4
						Job Number: 18086-116
						Location: Waimanalo, HI
Driller: GeoTek Hawaii, Inc.				Elevation: not measured		
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/16/2019		
Sample Method: Modified California, 2" Macrocore				End Date: 1/16/2019		
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description		Remarks
			0	Asphalt (poor condition) pavement failure and stress cracking		
C4-A					Asphalt - 2 Layers: 0-2" and 2"-4.5"	
				GP	Grey basalt GRAVEL, poorly graded, loose, moist	
				GP	Tan coral GRAVEL, w/ medium coarse to fine coral sand, poorly graded, loose to medium dense, moist	
C4-1	7 / 7 / 15	18 / 15	1			
				SP	Tan coral SAND, fine grained w/ little coral gravel, poorly graded, moist	Mod Cal to 22.5" bgs
			2			Macrocore to 32" bgs
				Boring terminated at 32" bgs		
			3			
			4			
			5			
			6			
			7			

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C5 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.5	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/16/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/16/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) w/ pavement failure and stress cracking			
C5-A				AS	Asphalt	3 Layers: 0-2", 2"-4.5", and 4.5"-8"	
				SP	Brn SAND, fine grained, w/ coral gravel, poorly graded, medium dense, moist		
				GP	Grey basalt and tan coral GRAVEL, w/ coral sand, poorly graded, medium dense, moist		
C5-1	18 / 14 / 7	18/12			Grades w/ more brn coral sand, medium dense, slightly moist		
				SP	Coral SAND w/ coral gravel, poorly graded, medium dense to loose, slightly moist		
C5-2	15 / 6 / 4	18/2	2	Grey PVC encountered 36" bgs Boring terminated at 44" bgs			Macrocore to 30" bgs
			3				
			4				
			5				
			6				
			7				

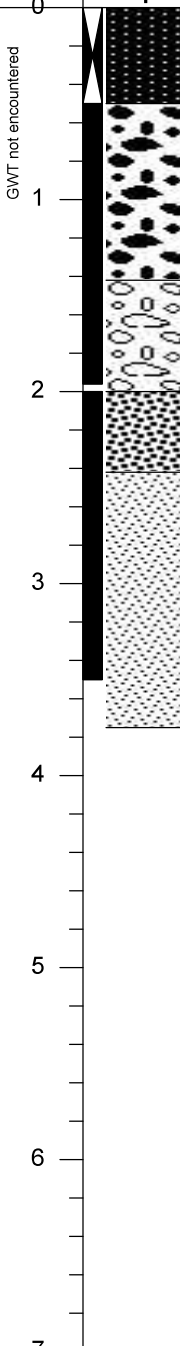
Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C6 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.6	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/22/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/22/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) Pavement failure W/ stress cracks			
C6-A			<div><div>GWT not encountered</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C7 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.7	
			Job Number: 18086-116				
			Location: Waimanalo, HI				
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/22/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/22/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) Stress cracking			
C7-A				AS	Asphalt - 3 Layers: 0-1.5", 1.5"-3.25", 3.25"-6"		
				GP	Grey basalt GRAVEL w/ brn sand, poorly graded, dense, moist		
					Tan coral GRAVEL w/ tan coral fine grained sand, poorly graded, medium dense, moist		
C7-1	36 / 27 / 13	18 / 18		SW	Brn to tannish coral SAND, well graded, medium dense, dry		
C7-2	12 / 13 / 25	18 / 18		SP	Tan coral SAND, fine grained, poorly graded, medium dense, dry		
			2				
			3				
			4				Mod cal to 42" bgs
			5				Macrocore to 54" bgs
			6				
			7				
					Boring terminated at 54" bgs		

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C8 State of Hawaii, DOT Highways Kalanianaʻole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.8
						Job Number: 18086-116
						Location: Waimanalo, HI
Driller: GeoTek Hawaii, Inc.				Elevation: not measured		
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/16/2019		
Sample Method: Modified California, 2" Macrocore				End Date: 1/16/2019		
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description		Remarks
C8-A			0	Asphalt (poor condition) stress cracking		
				AS	Asphalt - 3 Layers: 0-1", 1"-2.5", and 2.5"-6"	
C8-1	50 / 5.5 in	5.5 / 5.5		GP	Grey basalt GRAVEL, v. dense, moist	
			1	Refusal at 11.5" bgs		Mod Cal refusal at 11.5" bgs with 50 blows for 5.5"
			2			
			3			
			4			
			5			
			6			
			7			

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C9 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.9	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.					Elevation: not measured		
Drill Method: 6620 Geoprobe w/ Concrete coring					Start Date: 1/16/2019		
Sample Method: Modified California, 2" Macrocore					End Date: 1/16/2019		
Borehole Diameter: 4 inches		Depth to water: NA			Logged By: RNH		Checked By: ECL
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) stress cracking			
C9-A			<div><div></div><div>GWT not encountered</div></div>	AS	Asphalt - 3 Layers: 0-1.5", 1.5"-5", 5"-8"		
				GP	Grey basalt GRAVEL w/ some coral sand, poorly graded, medium dense, moist		
				SP	Brn SAND w/ some coral and basalt gravel, poorly graded, medium dense, slightly moist		
				SP	Grades to tan coral SAND, poorly graded, medium dense, slightly moist		
					Boring terminated at 39 inches bgs		
C9-1	24 / 30 / 25	18 / 16			Mod cal to 26" bgs		
					Macrocore to 39" bgs		

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C10 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.10	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/16/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/16/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (good condition)			
C10-A			<div><div></div><div>GWT not encountered</div></div>	AS	Asphalt - 3 Layers: 0-1.5", 1.5"-3.5", and 3.5"-5"		
				GP	Grey basalt GRAVEL w/ medium grained grey sand, poorly graded, medium dense, moist		
C10-1	24 / 40 / 12	18 / 16		GW	Brn to tan coral GRAVEL, well graded, medium dense to dense, moist		
				SW	Brn coral SAND, fine to medium grained, well graded, loose, slightly moist		
C10-2	11 / 11 / 13	18 / 18		SP	Grades to tan coral SAND, fine to medium grained, poorly graded, medium dense, slightly moist		
			3				Mod Cal terminated at 41" bgs Macrocore to 43" bgs
				Boring terminated at 43 inches bgs			
			4				
			5				
			6				
			7				

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C11 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.11	
			Job Number: 18086-116				
			Location: Waimanalo, HI				
Driller: GeoTek Hawaii, Inc.					Elevation: not measured		
Drill Method: 6620 Geoprobe w/ Concrete coring					Start Date: 1/15/2019		
Sample Method: Modified California, 2" Macrocore					End Date: 1/15/2019		
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) pavement cracking			
C11-A			<div>GWT not encountered</div> 	AS	Asphalt- 4 Layers: 0-1.5", 1.5"-3.5", 3.5"-5", and 5"-6"		
				GP	Grey basalt GRAVEL w/ some sand, poorly graded, medium dense, moist		
C11-1	26 / 14 / 10	18 / 15		GW	Tan coral GRAVEL w/ fine to medium grained coral sand, well graded, loose, slightly moist		
				SW	Brn coral SAND w/ few coral gravel, well graded, loose, slightly moist		
				SP	Grades to tan coral SAND, fine to medium grained, poorly graded, loose, slightly moist		
C11-2	11 / 7 / 5	18 / 18	3				
			4	Boring terminated at 45 inches bgs			Mod Cal terminated at 42" bgs Macrocore to 45" bgs
			5				
			6				
			7				

Boring terminated at 45 inches bgs

Masa Fujioka & Associates

98-021 Kamehameha Highway #337
Aiea, Hawaii 96701
(808) 484-5366

Boring: C12

State of Hawaii, DOT Highways
Kalaniana'ole Hwy. Resurfacing
Poalima St. to Huli St.

Figure: 18.12

Job Number: 18086-116

Location: Waimanalo, HI

Driller: GeoTek Hawaii, Inc.

Elevation: not measured

Drill Method: 6620 Geoprobe w/ Concrete coring

Start Date: 1/15/2019

Sample Method: Modified California, 2" Macrocore

End Date: 1/15/2019

Borehole Diameter: 4 inches

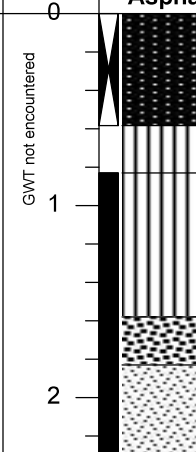
Depth to water: NA

Logged By: RNH

Checked By: ECL

Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description	Remarks
				Asphalt (poor condiion) pavement cracking	
C12-A			0	AS Asphalt - 4 Layers: 0-1", 1"-3", 3"-5" gravel, 5"-7", 7"-10"	
			1	SW SP Grey SAND, medium to coarse grained, w/ basalt gravel, well graded, loose, moist Brn to tan coral SAND, fine to medium grained, w/ few basalt and coral gravel, poorly graded, loose, slightly moist	
C12-1	8 / 7 / 4	18 / 16	2		Mod Cal terminated at 28" bgs
			3		Macrocore to 36" bgs
			4		
			5		
			6		
			7		

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C14 State of Hawaii, DOT Highways Kalaniana'ole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.14
						Job Number: 18086-116
						Location: Waimanalo, HI
Driller: GeoTek Hawaii, Inc.				Elevation: not measured		
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/14/2019		
Sample Method: Modified California, 2" Macrocore				End Date: 1/14/2019		
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH	Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description		Remarks
C14-A			0	Asphalt (poor condition) stress cracking		
				AS	Asphalt - 2 Layers: 0-1.75" intact, 1.75-4.75 highly fractured	
				GP	Grey basalt GRAVEL, poorly graded, medium dense, moist	
				SW	Brn coral SAND w/ basalt gravel and brn silt, well graded, dense, slightly moist	
				LT	Tan CORALLINE ROCK, hard, dry	
C14-1	32 / 45 / 22	18 / 13		SW	Brn coral SAND w/ basalt gravel and brn silt, well graded, medium dense, v. slightly moist	Mod Cal only, no macrocore
				SP	Tan coral SAND, fine to medium grained, medium dense, v. slightly moist	
					Boring terminated at 25.75 inches bgs	
			1			
			2			
			3			
			4			
			5			
			6			
			7			

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C15 State of Hawaii, DOT Highways Kalanianaʻole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.15	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/14/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/14/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) failing pavement and stress cracking			
C15-A				AS	Asphalt - Highly fractured AC, layers could not be determined		Mod Cal sampling started at 10" bgs
				ML	Brn SILT w/ coral sand and few basalt gravel, slightly moist		
					Brn SILT w/ coral sand and gravel, medium stiff, slightly moist		
C15-1	8 / 6 / 6	18 / 14			SW	Grey coral SAND, fine to medium grained, well graded, loose, moist	
				SP	Grey to tan coral SAND, fine grained, poorly graded, loose, moist		
				Boring terminated at 28 inches bgs			
			3				
			4				
			5				
			6				
			7				

Masa Fujioka & Associates

98-021 Kamehameha Highway #337
Aiea, Hawaii 96701
(808) 484-5366

Boring: C16

State of Hawaii, DOT Highways
Kalaniana'ole Hwy. Resurfacing
Poalima St. to Huli St.

Figure: 18.16

Job Number: 18086-116

Location: Waimanalo, HI

Driller: GeoTek Hawaii, Inc.

Elevation: not measured

Drill Method: 6620 Geoprobe w/ Concrete coring

Start Date: 1/14/2019

Sample Method: Modified California, 2" Macrocore

End Date: 1/14/2019

Borehole Diameter: 4 inches

Depth to water: NA

Logged By: RNH

Checked By: ECL

Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description	Remarks
				Asphalt (poor condition) AC patch failure and stress cracking	
C16-A			0	AS Asphalt - 3 Layers: 0-2.5", 2.5"-3", and 3"-10"	
			1	SP Tan coral SAND, fine to medium grained, poorly graded, v. loose, moist	
C16-1	5 / 3 / 2	18 / 9	2	Grades w/ some silt	
				Boring terminated at 28" bgs	Mod Cal only, no macrocore
			3		
			4		
			5		
			6		
			7		

Masa Fujioka & Associates 98-021 Kamehameha Highway #337 Aiea, Hawaii 96701 (808) 484-5366			Boring: C18 State of Hawaii, DOT Highways Kalanianaʻole Hwy. Resurfacing Poalima St. to Huli St.			Figure: 18.18	
						Job Number: 18086-116	
						Location: Waimanalo, HI	
Driller: GeoTek Hawaii, Inc.				Elevation: not measured			
Drill Method: 6620 Geoprobe w/ Concrete coring				Start Date: 1/15/2019			
Sample Method: Modified California, 2" Macrocore				End Date: 1/15/2019			
Borehole Diameter: 4 inches		Depth to water: NA		Logged By: RNH		Checked By: ECL	
Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description			Remarks
			0	Asphalt (poor condition) pavement failure			
C18-A			<div><div>GWT not encountered</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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Masa Fujioka & Associates

98-021 Kamehameha Highway #337
Aiea, Hawaii 96701
(808) 484-5366

Boring: C19

State of Hawaii, DOT Highways
Kalaniana'ole Hwy. Resurfacing
Poalima St. to Huli St.

Figure: 18.19

Job Number: 18086-116

Location: Waimanalo, HI

Driller: GeoTek Hawaii, Inc.

Elevation: not measured

Drill Method: 6620 Geoprobe w/ Concrete coring

Start Date: 1/16/2019

Sample Method: Modified California, 2" Macrocore

End Date: 1/16/2019

Borehole Diameter: 4 inches

Depth to water: NA

Logged By: RNH

Checked By: ECL

Sample #	Blows	Inches Driven / Recovered	Depth (Ft.)	Material Description		Remarks
				Asphalt (poor condition) pavement failure and stress cracking		
C19-A			0	AS	Asphalt - 3 Layers, all moderately fractured: 0-1.5", 1.5"-3.0", and 3.0"-6.5"	
			1	SW	Brn to tan coral SAND, fine to coarse grained, w/ coral gravel and silt, well graded, medium dense, moist	
C19-1	22 / 19 / 11	18 / 15	2	SW	Brn SAND w/ basalt gravel, well graded, medium dense, moist	
				SP	Grades with less basalt gravel starting at 18" bgs	
			2		Tan coral SAND, fine to medium grained, poorly graded, loose, slightly moist	Mod Cal terminated at 24.5" bgs
			3			
			4			Macrocore to 44" bgs
			5			
			6			
			7			

