

UNIVERSITY OF THE NATIONS, KONA, INC. 2020 MASTER PLAN UPDATE

FINAL ENVIRONMENTAL IMPACT STATEMENT Volume I: FEIS



APPLICANT:



University of the Nations, Kona, Inc.
75-5851 Kuakini Highway
Kailua-Kona, HI 96740

PREPARED BY:



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JUNE 2025

UNIVERSITY OF THE NATIONS, KONA, INC. 2020 MASTER PLAN UPDATE

Kailua-Kona, Island of Hawai'i, Hawai'i

TMK (3) 7-5-010:085 and (3) 7-5-017:006

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This environmental document was prepared pursuant to Hawai'i Revised Statutes, Chapter 343,
Environmental Impact Statement Law and Hawai'i Administration Rules, Chapter 11-200.1,
Environmental Impact Statement Rules.

JUNE 2025

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List of Abbreviations

AA	Archaeological Assessment
ADA	American with Disabilities Act
AIS	Archaeological Inventory Survey
ALISH	Agricultural Lands of Importance to the State of Hawai'i
ASEA	Aquifer Sector Area
ASYA	Aquifer System Area
BMPs	Best Management Practices
<u>BSM</u>	<u>Blackburn's Sphinx Moth (ES-11)</u>
CAB	Clean Air Branch
CalEEMod	California Emissions Estimator Model
CDP	Census Designated Place
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act
CO	Carbon Monoxide
CIA	Cultural Impact Assessment
<u>CRB</u>	<u>Coconut Rhinoceros Beetle</u>
CWB	Clean Water Branch, <u>State of Hawai'i</u>
CWPP	Community Wildfire Protection Plan
CWRM	Commission on Water Resource Management, State of Hawai'i
CZM	Coastal Zone Management Program, State of Hawai'i
CZMA	Coastal Zone Management Act
dBA	Decibels A
<u>DEM</u>	<u>Division of Environmental Management, County of Hawai'i</u>
<u>DHS</u>	<u>Department of Human Services, State of Hawai'i</u>
DLNR	Department of Land and Natural Resources, State of Hawai'i
DNL	Day Night Average Sound Level
<u>DoD</u>	<u>Department of Defense, State of Hawai'i</u>
DOE	Department of Education, State of Hawai'i
DOFAW	Department of Forestry and Wildlife, State of Hawai'i
DOH	Department of Health, State of Hawai'i
DOT	Department of Transportation, State of Hawai'i
DPW	Department of Public Works, County of Hawai'i
DWS	Department of Water Supply, County of Hawai'i

EA	Environmental Assessment
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
<u>EMS</u>	<u>Emergency Medical Services (4-78)</u>
EPA	U.S. Environmental Protection Agency
ERP	Environmental Review Program
EU	Excavation Units
FEMA	Federal Emergency Management Area
FHA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FM	Fentometer
FONSI	Finding of No Significant Impact
FTE	Full-Time Equivalent
GHG	Greenhouse Gases
GPD	Gallons per Day
GPM	Gallons per Minute
HAR	Hawai'i Administrative Rules
HE	Hawaiian Electric
HEER	Hazard Evaluation and Emergency Response, State of Hawai'i
HFD	Hawai'i Fire Department, County of Hawai'i
<u>HIBC</u>	<u>Hawai'i Island Burial Council</u>
HRS	Hawai'i Revised Statutes
HTCO	Hawaiian Telcom
HUD	Housing and Urban Development
<u>HWUDP</u>	<u>Hawaii County Water Use and Development Plan</u>
H ₂ S	Hydrogen Sulfide
IBC	International Building Code
IPCC	Intergovernmental Panel on Climate Change
Kv	Kilovolt
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LOS	Level of Service
LSB	Land Study Bureau, University of Hawai'i
LUC	Land Use Commission, State of Hawai'i

LUPAG	Land Use Pattern Allocation Guide
MAR	Mobility Analysis Report
MDU	Medium Density Urban
MGD	Million Gallons per Day
MPH	Miles per Hour
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Sciences
NO _x	Nitrogen Oxides
OHA	Office of Hawaiian Affairs, State of Hawai'i
O ₃	Ozone
PACIOOS	Pacific Islands Ocean Observing System, University of Hawai'i
Pb	Lead
Petition Area	62-acres of Land Purchased by University of the Nations, Kona, Inc.
PHRI	Paul H. Rosendahl, Inc.
PM _{2.5}	Particulate Matter Smaller than 2.5 Microns
PM ₁₀	Particulate Matter Smaller than 10 Microns
PUC	Public Utilities Commission, State of Hawai'i
<u>PV</u>	<u>Photovoltaic</u>
SDG	Sustainable Development Goals
SDWB	Safe Drinking Water Branch, State Department of Health
SMA	Special Management Area
SAAQS	State Ambient Air Quality Standards
SHPD	State Historic Preservation District <u>Division</u>
SLR	Sea Level Rise
SLRXA	Sea Level Rise Exposure Area
So _x	Sulfur Oxides
So ₂	Sulfur Dioxide
SSSC	Side Street Controlled
TDFM	Travel Demand Management Plan
TDM	Transportation Demand Management
TMP	Transportation Management Plan

TEN	The Environmental Notice
TMKs	Tax Map Keys
TU	Test Units
T&C	Traditional and Customary Native Hawaiian Rights
UN	United Nations
University	University of the Nations
U of N Kona	University of the Nations, Kona, Inc.
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey

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Executive Summary

ES.1 Summary of the Project

University of the Nations, Kona, Inc. (U of N Kona), a Hawai'i 501(c)(3) non-profit corporation that operates a mission-based educational institution (the University), was founded in 1978 at its present campus (Existing Campus) in Kailua-Kona on the Island of Hawai'i. U of N Kona is an innovative degree-granting training institution. It is globally networked and collaborates with other non-traditional university-level educational campuses, recognized by the Global Accrediting Association. U of N Kona is one of approximately 600 locations with programs in over 90 languages around the world that offers transformational learning opportunities for emerging Christian leaders.

The Existing Campus identified by Tax Map Key (TMK) (3) 7-5-010:003 has been preparing followers for Christian services for over 40 years. Adjacent to the Existing Campus is the Petition Area identified by ~~(TMKs)~~ (3) 7-5-010:085 and (3) 7-5-017:006. Prior to 2018, various entities affiliated with the University, including the University's Benefit Corporation (Bencorp), held title to the Petition Area and prepared a plan that would generate revenue for the U of N Kona. The plan prepared by Bencorp included market-rate condominiums and a for-profit Pacific Cultural Center, which included an outside performance arena, a museum complex, a restaurant and shops, and a small educational facility. This formerly-proposed use, identified as the Hualālai Village Development Project, would not have been permissible under the State's Agricultural Land Use District designation ([Hawai'i Revised Statutes \(HRS\) § 205-4.5](#)) and required Bencorp to petition the Land Use Commission (LUC) for a district boundary amendment. In 2002, Bencorp filed a petition to reclassify the Petition Area from the Agricultural District to the Urban District, and on August 8, 2003, the Commission granted a boundary amendment for the former Hualālai Village Development Project (2003 Decision & Order).

Bencorp's plan for the Petition Area was never fully built out, and the Petition Area was formally transferred to AEKO Hawaii, another affiliate of the University. AEKO Hawaii formally transferred the Petition Area to the U of N Kona in 2018. Since acquiring the Petition Area, U of N Kona revised the land use plan for the expansion of the Existing Campus (the Master Plan Update). [In 2020, an updated Motion to Amend the 2003 Decision & Order \(2020 Motion to Amend\) was filed to obtain the LUC's approval of the Master Plan Update.](#) The Master Plan Update is driven by current and upcoming mission-based learning priorities and includes the addition of a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and housing for students and staff members. Buildings and facilities have been strategically located throughout the Petition Area to improve campus circulation. Facilities that are anticipated to be utilized by the community have been located closer to the entrance along Kuakini Highway to provide the community with easier accessibility to those facilities. Additionally, relocating buildings and facilities will preserve the natural environment and reduce extensive grading. A detailed description of the Master Plan Update is provided in *Chapter 2*.

The Master Plan Update includes key infrastructure improvements, including the expansion of the existing on-site spine road that bisects the Existing Campus and Petition Area, the addition of a secondary access point off of Kuakini Highway and necessary roadway improvements, and other upgrades to the existing utilities. As part of the Master Plan Update, necessary improvements for water supply and distribution, wastewater management, and drainage will be completed. Buildings and facilities will be designed and constructed to meet applicable building code standards as set forth in

Chapter 5 of the Hawai'i County Code. All necessary permits and approvals will be secured prior to the commencement of construction.

ES.2 Summary of Purpose and Need

The purpose of the Master Plan Update is to revise the land use plan for the Petition Area to reflect and fulfill the long-term vision of the U of N Kona's faith-based mission. U of N Kona is embarking on a project to expand the Existing Campus and enhance its training programs to continue serving the Lord's mission. The Master Plan Update addresses current and projected space and activity needs at the U of N Kona as enrollment is projected to gradually increase over the next three planning phases. Once fully built out, the U of N Kona will provide an enhanced learning and training facility for students. See *Section 2.2* for further discussion.

ES.3 Summary of Alternatives Considered to the Planned Project

A range of potential alternative actions could be contemplated for the U of N Kona's future. For this ~~Draft-Final~~ Environmental Impact Statement (EIS) alternatives analysis, several categories of alternatives to the Master Plan Update are evaluated in *Chapter 3*, including the following:

1. No-Action
2. Alternative Development Density
3. Alternative Land Uses
4. Alternative of Deferral of the Proposed Action

The Master Plan Update is envisioned as an extension of the Existing Campus. The alternatives to the Master Plan Update ~~considered~~ were assessed based on their ability to meet future space and facility needs, and compliance with the conditions in the 2003 Decision & Order granting a State Land Use District Boundary Amendment from the Agricultural District to the Urban District. The following is a summary of the evaluation of the range of alternatives and potential impacts associated with alternative actions, which are discussed in-depth in *Chapter 3*.

ES.3.1 No-Action Alternative

Under the "No Action Alternative," the Petition Area would remain in its current vacant state and no new buildings or facilities to support U of N Kona would be constructed. The "No Action Alternative" would not adequately address current and projected space, facility, and activity needs. Ultimately, housing in the nearby vicinity could be impacted by the overflow of students and staff members. Additionally, U of N Kona may be limited to the Existing Campus and would not be able to grow to its projected enrollment levels and would fail to meet the long-term vision of the U of N Kona.

If no action is taken, U of N Kona would not satisfy the conditions of the 2003 Decision & Order and may be at risk of the LUC involuntarily reverting the Petition Area to the Agricultural District. Furthermore, the "No Action Alternative" would not be consistent with the Petition Area's Land Use Pattern Allocation Guide (LUPAG) Map designation as described in the County of Hawai'i General Plan and the policies guiding future land use development in the Kona Community Development Plan, which identify the Petition Area as within the "Urban Core".

ES.3.2 Alternative Development Density

Lower Density Development Alternative

An alternative to the Master Plan Update is a lower density development alternative, which could entail developing Phase 1, Phase 1 and 2, or some other reduced version of the Master Plan Update.

Phase 1 would be of lower density than the full build out of the Master Plan Update, minimizing the overall use of the Petition Area. In comparison to the full buildout of the Master Plan Update, developing Phase 1 would result in an approximate 40% reduction in terms of building footprint in comparison to the full buildout of the Master Plan Update. Although Phase 1 would be of lower density, thereby minimizing the overall use of the Petition Area, Phase 1 would not accommodate future enrollment projections beyond the next 5-10 years.

Developing Phase 2 of the Master Plan Update alone is not a feasible option as it would not be provided with the proper support from Phase 1, including the infrastructure improvements proposed in Phase 1. Developing Phase 1 and 2 of the Master Plan Update would enhance the learning and training centers at the U of N Kona. Developing Phase 1 and 2 would result in an approximate 13% reduction in terms of building footprint in comparison to the full buildout of the Master Plan Update. Developing Phase 1 and 2 would increase the overall usage of the Petition Area by providing some of the needed space to accommodate future growth and also provide much needed athletic and meeting spaces in the greater Kailua-Kona region.

A “Lower Density Development Alternative” would reduce the overall scale and build-out of the Petition Area, which would reduce potential noise and privacy concerns to neighboring homeowners. However, because the Petition Area is not equipped with infrastructure, in order to support a “Lower Density Alternative”, infrastructure improvements such as a new sewer connection under Kuakini Highway and other improvements to provide water to the Petition Area would be required. Accordingly, a lower density alternative would require the same infrastructure improvements needed to support the full Master Plan Update but would not fully accommodate future growth over the next 30 years and would not fully optimize the Petition Area.

Higher Density Development Alternative

Planning the Petition Area to a greater density could include increasing the height and capacity of instructional buildings and dormitories or adding additional instructional buildings and dormitories beyond what is proposed in the Master Plan Update. Increasing the height and capacity of buildings and dormitories would infringe upon open space throughout the Petition Area and increase the footprint of the U of N Kona. As such, views and vistas may be impacted ~~with larger buildings by~~ buildings of larger scale and additional infrastructure services would be needed to accommodate a greater capacity.

Developing the Petition Area to a greater density would allow the U of N Kona to carry a larger ~~population-student enrollment~~ on a per quarter basis. Increasing student enrollment ~~the population~~ could potentially increase noise levels to an unacceptable level and put a strain on infrastructure services within the greater Kailua-Kona region. Furthermore, developing the Petition Area to a greater density would not comply with the LUPAG’s Map designation for the Petition Area.

ES.3.3 Alternative Land Uses

Consistency with the 2003 State Land Use District Boundary Amendment

The plan for the Petition Area approved in the 2003 Decision & Order called for the development of the Hualālai Village condominiums, a multi-function cultural center, and a five-acre educational facility. Although previously approved by the LUC, the proposed use of the Petition Area was re-evaluated and a new plan in alignment with U of N Kona's long-term vision was crafted. Although the original plan approved in the 2003 Decision & Order would provide greater economic opportunities for U of N Kona, the original plan would not accommodate the U of N Kona's future enrollment trajectory and growth.

Agriculture

Another potential land use alternative evaluated for the Petition Area was agricultural use. Although U of N Kona currently operates a small farm and agricultural research facility on the Petition Area, the facilities' main purpose is to support education in nutrition, farming, and agricultural techniques, and is not intended to support large scale agricultural production. Additionally, according to the Land Study Bureau (LSB) classification, the soils located on the Petition Area are poorly suited for agricultural productivity. The Petition Area was granted a District Boundary Amendment from the State Agricultural District to the Urban District, and the U of N Kona may have to file a motion to revert the Petition Area back to the Agricultural District if widespread agricultural activity were to be pursued. Overall, pursuing agricultural opportunities on the Petition Area would not accommodate the U of N Kona's future enrollment trajectory and growth. Notably, the State Agricultural District designation is inconsistent with the County General Plan and Kona Community Development Plan, which designates the Petition Area within the "Urban Core".

Both "Alternative Land Uses" for the Petition Area would not accommodate U of N Kona's future enrollment trajectory. Additionally, this EIS has been prepared to support the 2020 Motion to Amend, which seeks the LUC's approval to implement the Master Plan Update for the Petition Area. Reverting to the Hualālai Village Development Project or pursuing agricultural opportunities would be inconsistent with the 2020 Motion to Amend.

ES.3.4 Alternative of Deferral of the Proposed Action

Under the "Alternative of Deferral of the Proposed Action," the Master Plan Update would be deferred and the Petition Area would remain vacant and undeveloped despite the U of N Kona's need to expand its facilities to meet current and future enrollment projections. Similar to the "No Action Alternative", if the Master Plan Update is deferred, U of N Kona would not satisfy the conditions of the 2003 Decision & Order and may be at risk of the LUC involuntarily reverting the Petition Area to the Agricultural District. Furthermore, deferring the Master Plan Update would not be consistent with the Petition Area's LUPAG Map designation in the General Plan and the policies guiding future land use development in the Kona Community Development Plan.

Deferring expansion of the U of N Kona campus would not provide the space and facilities needed to support current and future enrollment. If U of N Kona defers further action, public facilities and services including housing, schools, and recreational facilities in the nearby vicinity of the Petition Area may be strained. Deferring further action would be inconsistent with the 2003 Decision & Order and the County General Plan and Kona Community Plan, which help guide land use and development in the Kailua-Kona region.

ES.4 Summary of Impacts and Proposed Mitigation Measures

Resources that may be potentially impacted by the Master Plan Update in the short- and long-term are identified in *Table ES-1* following this section. The table further identifies mitigation measures proposed to offset potential adverse impacts. In-depth discussion on each resource is provided in *Chapter 4*.

The Master Plan Update includes varying levels of activity ranging from clearing of existing vegetation, grading, excavation for building foundations, and construction of new buildings and associated utilities. ~~C~~~~Short term~~ construction related activity will generate short-term impacts on the environment. Potential short-term adverse impacts primarily relate to soil disturbance; dust and erosion during demolition and grading; increased noise during construction; and potential drainage and runoff during construction. Fiscal resources, labor, energy, and construction materials will be irretrievably committed to support construction of the Master Plan Update.

Fully built out, the Master Plan Update may generate some long-term adverse impacts to the natural and human environment, which will be mitigated to the extent reasonably possible and as required in accordance with law. Potential long-term impacts include effects on the following: drainage and runoff; archaeology, cultural and historic resources; noise; air quality; socio-economic conditions; and public infrastructure.

As part of the Master Plan Update, the Petition Area will be equipped with a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and housing for students and staff members. Such improvements will provide much needed recreational facilities for the greater Kailua-Kona community as the U of N Kona intends to host various community events. A unified architectural theme will be established to ensure that the buildings are scaled to reflect a distinct sense of place. Landscaping will be carefully selected to reflect a Hawaiian sense of place. Xeriscape techniques will be implemented to complement the dry climate and pay tribute to Kona's agricultural past. Overall, implementation of the Master Plan Update will improve existing conditions at the Petition Area as it is currently overgrown, primarily with non-native vegetation.

In the long term, the Master Plan Update will expand urban growth and opportunities in the Kailua-Kona region, consistent with plans and policies guiding future urban opportunities. As identified in the General Plan, the LUPAG Map designation for the Petition Area is Medium Density Urban use (MDU). Furthermore, the Kailua-Kona Community Development Plan locates the Petition Area within the Kona Urban Area slated for future growth.

ES.5 Summary of Compatibility with Land Use Policies and Plans

The Master Plan Update will serve as an extension of the Existing Campus and complement the existing urban environment surrounding the U of N Kona ~~campus~~ and in the greater Kailua-Kona region. The Master Plan Update will contribute to a wide range of benefits and will further a number of publicly-stated goals, objectives, and policies established by the State and County. In particular, the Master Plan Update is consistent with the LUPAG Map designation for the Petition Area in the General Plan and the Kona Urban Area identified in the Kailua-Kona Community Development Plan. *Chapter 6* contains an in-depth analysis of the relationship of the Master Plan Update to Federal, State, and County land use plans, policies, and regulatory controls.

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Climate	No adverse impact.	No adverse impact.	No mitigation measures required.	4.1
Geology and Topography	Land disturbing activities may result in soil erosion.	No adverse impact.	<ul style="list-style-type: none"> • Obtaining grading, grubbing, and stockpiling permits as appropriate. • Obtaining a National Pollutant Discharge Elimination System (NPDES) permit. • Compliance with Hawai'i County Code Chapter 10. • Phasing of construction. • Balancing cut and fill material to minimize the need to import fill or export excavated material. • Implementation of BMPs, which may include, but not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding, stabilized construction entrances, truck and equipment wash-down areas, and periodic spraying of soils. • Following construction, permanent BMPs, which may include landscaping steep and open space areas and implementing "golf course" sumps, lava swales and injection wells, will be implemented. 	4.2
Soils	Land disturbing activities may result in soil erosion.	No adverse impact.	<ul style="list-style-type: none"> • Phasing of construction. • Balancing cut and fill material to minimize the need to import fill or export excavated material. • Implementation of BMPs, which may include, but not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding, stabilized construction entrances, truck and equipment wash-down areas, and periodic spraying of soils. • Following construction, permanent BMPs, which may include landscaping steep and open space areas and implementing "golf course" sumps, lava swales, and injection wells, will be implemented. 	4.3

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Surface Waters & Drainage	Construction may result in potential stormwater runoff.	Increased impervious surface areas may result in potential stormwater runoff.	<ul style="list-style-type: none"> • Obtaining a NPDES permit. • Phasing of construction. • Adherence to State Department of Health (DOH) and County regulations to minimize increased stormwater runoff during construction. • Implementation of BMPs, which may include, but not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding, stabilized construction entrances, truck and equipment wash-down areas, and periodic spraying of soils. • Implementation of Low Impact Development (LID) measures where feasible. • Implementing xeriscape landscape techniques. • Implementing natural drainage conveyances. 	4.4, Appendix C
Groundwater Resources/Hydrology	Construction may result in potential stormwater runoff and erosion, which may decrease percolation to groundwater.	No adverse impact.	<ul style="list-style-type: none"> • Obtaining a NPDES permit. • Phasing of construction. • Adherence to State DOH and County regulations to minimize increased stormwater runoff during construction. • Implementation of water meters. • Implementing xeriscape landscape techniques. 	4.5, Appendix D
Natural and Manmade Hazards				4.6
Earthquakes	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Buildings and facilities will be designed in compliance with the County's Construction Administrative Code (Chapter 5 of the Hawai'i County Code). • Staff will receive proper training in assisting students and others on-campus in the event of an earthquake. 	4.6.1
Lava Hazards	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Due to its location, the Existing Campus U of N Kona may be utilized as an evacuation site or shelter in an emergency. 	4.6.2

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Hurricanes and Tropical Storms	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Buildings and facilities will be designed and constructed in compliance with all applicable provisions of the Hawai'i County Code. • Staff will receive proper training in assisting students and others on-campus in the event of a hurricane or tropical storm. • <u>Routine evacuation practice.</u> 	4.6.3
Flooding	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Implementation of LID measures which may include minimizing impervious surface areas, incorporating the site's natural topography to reduce grading, designing narrow roadways and driveway lengths and widths, designing sidewalks on one side of the street, planting trees, minimizing conventional infrastructure and utilizing onsite lava rock sumps, swales, trenches, and detention and retention basins where feasible. • Compliance with applicable standards articulated in Chapter 27 of the Hawai'i County Code, <u>which adopts measures from the Federal Emergency Management Agency's (FEMA) Flood Insurance Program.</u> 	4.6.4
Tsunami	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Staff will receive proper training in assisting students and others on-campus in the event of a tsunami. • <u>Routine evacuation practice.</u> 	4.6.5
Wildfires	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Removal of overgrown non-native vegetation and implementing native, drought-tolerant plants that will protect the campus from wildfire ignition and spread. • Buildings and roadways throughout the Petition Area will comply with all fire code requirements. • <u>Creation of defensible spaces around structures.</u> • <u>Careful selection of building materials to reduce the risk of wildfire spread.</u> • <u>Watering down construction areas.</u> • <u>Storing fire extinguishers at the construction site.</u> 	4.6.6

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
			<ul style="list-style-type: none"> Utilizing spotters for construction activity, such as welding, that may impair the vision of the worker. Ongoing consultation with the Hawai'i Wildfire Management Organization to incorporate wildfire prevention measures. 	
Climate Change and Sea Level Rise	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> Implementation of green building design strategies where feasible. Implementation of LID measures where feasible. 	4.6.7
Air Quality and Greenhouse Gases	<ul style="list-style-type: none"> Construction-related fugitive dust. Increase in GHG emissions produced from construction-related activity. 	Increase in GHG emissions from campus operations.	<ul style="list-style-type: none"> Construction-related activity will comply with the State DOH's Ambient Air Quality Standards, <u>Hawai'i Administrative Rules (HAR)</u> §11-59, and HAR §11-60.1-33 relating to Fugitive Dust. Phasing of construction. Preparation of a dust control management plan prior to construction. Implementation of BMPs, which may include, but not limited to, locating potential dust-generating equipment in areas of least impact, minimizing airborne and visible fugitive dust from shoulders and access roads, and controlling airborne and visible fugitive dust from debris being hauled away. Construction materials will be sourced locally, when possible, to reduce emissions generated from the transportation of goods and materials. Construction materials may be recycled and reused from other projects in the nearby vicinity. Implementation of solar <u>photovoltaic (PV)</u> panels on buildings and facilities, <u>Leadership in Energy and Environmental Design (LEED)</u> certification <u>or objectives for</u> buildings, implementation of low flow plumbing fixtures, and implementation of the campus wide recycling program. 	4.7, Appendix FE

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Biological Resources				4.8, Appendix GF
Botanical Resources	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> Existing overgrown non-native vegetation will be cleared and removed from the Petition Area. Construction equipment, materials, and personnel will be cleared of excess soil and debris to minimize the risk of spreading invasive species. <u>Vegetation cleared from the Petition Area will not be transported to the island of O'ahu to minimize the spread of the invasive Coconut Rhinoceros Beetle (CRB). Contractors will treat infected palms, should any be present, before removing them from the Petition Area.</u> The Master Plan Update will maintain and preserve open spaces throughout the Petition Area. Landscaping elements will reflect the natural and cultural landscape of the Kailua-Kona region. 	4.8.1, Appendix GF
Fauna	Temporary construction-related lighting could pose potential impact to protected seabirds, who may become disoriented by lights during the nesting season.	Exterior lighting could pose potential impact to protected seabirds, who may become disoriented by lights during the nesting season.	<ul style="list-style-type: none"> Prior to the start of construction, the Petition Area will be surveyed <u>during breeding season (March 1 to September 30)</u> to ensure Hawaiian Hawk nests are not present. <u>If nests are found, construction activity within a 1,600-foot buffer around the nest will cease, and the Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) will be notified.</u> <u>Contractors will be advised to avoid creating areas of standing water, which may attract waterbirds. Should nests of waterbirds be discovered, a 100-foot buffer around the nest will be established as a no construction zone, and the U.S. Fish and Wildlife Service (USFWS) and DLNR DOFAW will be contacted.</u> <u>If a Pueo nest is discovered, a 100-meter (330-foot) buffer around the nest will be established and DLNR DOFAW will be contacted.</u> <u>If Nēnē are present on the Petition Area, construction activities within 100 feet (30 meters) will cease, contractors will be</u> 	4.8.2, Appendix GF

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
			<p><u>advised to not approach the birds, and construction will not resume until the birds leave the area of their own accord. If a Nēnē nest is found, construction activity within a 150-foot radius of the nest will cease and the USFWS and DLNR DOFAW will be contacted.</u></p> <ul style="list-style-type: none"> • Construction will be limited to daytime hours to mitigate the need for nighttime lighting that could potentially disorient seabirds and migratory birds. • <u>Lighting installed to support the Master Plan Update will be shielded and in compliance with Hawai'i County Code §14-50.</u> • <u>Trees will be inspected for migratory bird nests prior to removal. If a nest is identified and the tree must be removed, USFWS will be contacted to establish a buffer zone.</u> 	
Mammalian, <u>Insect,</u> <u>and Reptile</u> Species	No adverse impact.	No adverse impact.	<p><u>—Trees over 15 feet tall will be inspected prior to removal to ensure the Hawaiian hoary bat is not nesting in the tree. Clearing of trees over 15 feet tall will be avoided during birthing and pup rearing season (June 1 to September 15).</u></p> <ul style="list-style-type: none"> • Prior to the start of construction, the Petition Area will be surveyed to ensure tree tobacco are<u>is</u> not present. Should tree tobacco be identified, DLNR DOFAW will be contacted to determine proper inspection for the presence of the <u>Blackburn's Sphinx Moth (BSM).</u> • <u>Covering trash bins to avoid attracting predators.</u> • <u>Removal of stray cats and implementation of bait stations for rodents and mongoose.</u> 	4.8.3, Appendix <u>GF</u>
Protected Species and Critical Habitats	No adverse impact.	No adverse impact.	No mitigation measures required.	4.8.4, Appendix <u>GF</u>
Jurisdictional Waters	No adverse impact.	No adverse impact.	No mitigation measures required.	4.8.5, Appendix <u>GF</u>

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Noise	Construction activities may increase noise levels at the Petition Area.	Campus activities may affect neighbors south of the Petition Area.	<ul style="list-style-type: none"> • Use of properly muffled construction equipment. • Compliance with DOH construction noise regulations. • Construction will not occur on Sundays and holidays, during early mornings, and late evenings and nighttime periods. • Sound attenuating walls within the vicinity of the Lower School's South Play Field and High School Practice Field may be constructed. • Neighbors will be notified if large events will be held and continuous efforts will be made to control noise generated at the U of N Kona campus. 	4.9, Appendix H G
Utilities and Infrastructure				4.10
Water	No adverse impact.	U of N Kona is in the process of securing <u>an allocation of water from a private third-party</u> well developer to support the Master Plan Update.	<ul style="list-style-type: none"> • Open and green spaces <u>Landscaped areas</u> will be landscaped with native plantings and LID design features, which <u>may will</u> include xeriscape landscaping techniques to reduce water consumption. • Implementation of water meters to track water consumption similar to what is utilized on the Existing Campus. • U of N Kona will enter a Water Development Agreement with the private well developer and the Water Board. Implementation of water reuse strategies for non-potable water needs. 	4.10.1, Appendix C
Wastewater	No adverse impact.	It is anticipated the Kealahou Wastewater Treatment Plan will have the capacity to serve Existing Campus and Petition Area.	<ul style="list-style-type: none"> • U of N Kona will continue to consult with the Division of Environmental Management (<u>DEM</u>). 	4.10.2, Appendix C
Power and Communication System	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> • Coordination with Hawaiian Electric (<u>HE</u>), Hawaiian Telcom (<u>HTCO</u>), and Spectrum during the design phase of the project will be conducted to verify points of connection. 	4.10.3, Appendix C

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Hazardous Substances	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> Compliance with Federal, State, and County laws to minimize and mitigate inadvertent spills or release of fuels or lubricants. 	4.11
Traffic and Mobility Analysis	No adverse impacts.	No adverse impacts, however, intersection conditions may be evaluated throughout each phase of the Master Plan Update to determine if a traffic signal is warranted.	<ul style="list-style-type: none"> Construction delivery will be scheduled Monday–Friday during off hours throughout the day. Addition of a second access point off Kuakini Highway. Implement an exclusive left-turn lane on the southbound approach and a striped south leg to accommodate a refuge lane serving the westbound left-turn vehicles at the second driveway. <u>The intersections of Queen Ka’ahumanu Highway and Kuakini Highway, and Queen Ka’ahumanu Highway and Hualālai Road will be evaluated prior to the construction of Phase 2 and 3 to determine if a traffic signal is warranted.</u> Preparation of a Transportation Management Plan (TMP) with a transportation demand management program for special events. 	4.12, Appendix I H
Socio-Economic Characteristics	No adverse impact.	<ul style="list-style-type: none"> Increase in population with growth in student enrollment, staff, and mission builders. Additional students, staff, and mission builders at the U of N Kona will generate an increase in demand for goods and services which could potentially increase competition for resources, potential shortages, or lead to price hikes. 	<ul style="list-style-type: none"> Housing will be provided through the Master Plan Update to accommodate growth at the U of N Kona campus to mitigate the need for students, staff, and mission builders to seek housing off-campus. 	4.13
Public Facilities and Services				4.14

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
Educational Facilities	No adverse impact.	No adverse impact.	No mitigation required. <u>Consultation with the Department of Education (DOE) for the development, funding, and/or construction of school facilities.</u>	4.14.1
Recreational Facilities	No adverse impact.	No adverse impact.	No mitigation required.	4.14.2
Police	No adverse impact.	No adverse impact.	No mitigation required.	4.14.3
Fire	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> Removal of existing overgrown non-native vegetation and implementing native, drought-tolerant plants that will protect the campus from wildfire ignition and spread. Buildings and roadways throughout the Petition Area will comply with all fire code requirements. Careful selection of building materials to reduce the risk of wildfire spread. Continued consultation with HFD for conformance with Federal, State, and County regulations. 	4.14.4
Emergency Medical Services	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> Continued operation of an on-campus health center. 	4.14.5
Solid Waste Management	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> <u>Disposal of construction related waste</u> <u>Contact DOH Hazard Evaluation and Emergency Response (HEER) for environmental accidents in the event of an accident.</u> Implementing a campus wide recycling program. 	4.14.6
Archaeological Resources	Potential for iwi kūpuna (Native Hawaiian ancestral remains), historical, and/or cultural finds to be encountered during construction.	An Archaeological Inventory Survey (AIS) identified significant historic properties.	<ul style="list-style-type: none"> Implementing short- and long-term preservation measures identified in the 2003 Burial Treatment Plan to preserve Site 23686, 23684, and 23685. Preparation of an Archaeological Data Recovery Report in 2007. 	4.15, Appendix J

Table ES.1: Summary of Impacts and Mitigation Measures

Resources Affected	Potential Short-term Impacts	Potential Long-term Impacts	Mitigation and Best Management Practices (BMPs)	Final DEIS Section
			<ul style="list-style-type: none"> Implementing short- and long-term preservation measures identified in the 2013 Preservation Plan to preserve Site 6302 and 23681. Adhering to measures described in the 2019 Dismantling and Restoration Plan to preserve and restore Kuakini Wall. Preparation of an archaeological monitoring plan. Implementing native plantings representative of the cultural landscape. Working in conjunction with a specialist to move/handle iwi kupuna, if it is necessary. In the event of an inadvertent discovery of ancestral remains during the phased buildout of the Master Plan Update, SHPD will be notified immediately, and all work will cease until further mitigation is recommended. 	
Cultural Resources and Practices	Potential for iwi kūpuna (Native Hawaiian ancestral remains), historical, and/or cultural finds to be encountered during construction.	<ul style="list-style-type: none"> Preparation of a Cultural Impact Assessment (CIA) and Ka Pa‘akai o ka ‘Āina Analysis No impacts to past or ongoing traditional or customary practices. Potential of encountering iwi kupuna during development activity. 	<ul style="list-style-type: none"> See mitigation measures listed above. 	4.16, 4.17, Appendix KJ , and Appendix LK
Visual Resources	No adverse impact.	No adverse impact.	<ul style="list-style-type: none"> Buildings and facilities planned for the Petition Area will not exceed the height of buildings on the Existing Campus. Integrating the natural topography of the Petition Area in the design of buildings and facilities. 	4.18

ES.6 Summary of Public Benefits

Students and staff at the U of N Kona have and continue to be active members in the Kailua-Kona community. Notably, during the Covid-19 lockdown, staff worked with the Aloha Urgent Care to help screen vulnerable populations for Covid and worked closely with the State of Hawai'i Department of Human Services (DHS) to provide foster children with families and provided childcare services at U of N Kona. Students and staff at U of N Kona take part in various volunteer opportunities ranging from environmental cleanup and restoration activities to volunteer services for the homeless community. The U of N Kona campus provides afterschool, recreational, and tutoring services for students, at local schools. The Master Plan Update will allow for an increase in enrollment at the U of N Kona and therefore increase U of N Kona's capacity to provide these services to the Kailua-Kona community. Such services will continue to be beneficial for the community. Additionally, the Master Plan Update will provide much needed recreational facilities for the greater Kailua-Kona community, as the U of N Kona has full intentions on hosting various community events.

ES.7 Unresolved Issues

Below are identified issues that are actively being addressed, but which are currently unresolved:

The County of Hawai'i Department of Water Supply (DWS) has indicated that due to the limited availability of potable water in its North Kona water system Swater from a U-of-N-Kona will need to obtain a new water source will be required to support the Master Plan Update serve the Petition Area. U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of Kona could be allocated water to support the Master Plan Update. The potential wells are located on TMK (3) 7-5-003:023 (Wheelock Property) and TMK (3) 7-5-017:044 (Bolton Property). U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property. The well developer recently entered into a Memorandum of Agreement with the DWS, under which the developer agreed to design and construct (to DWS-dedicable standards) the well, which would connect to the DWS water system via a water main running along Queen Kaahumanu Highway (Appendix E). U of N Kona understands that the well developer will need to negotiate a final well development agreement with DWS to formalize the number of water commitments, the water system design criteria, and the water credits available. As with either potential well, a well on the Bolton Property would be dedicated to DWS, after which the water produced would be allocated to DWS, the well developer, U of N Kona, and potentially other third-party users.

The well developer will need to obtain U of N Kona identified two potential well sites and is actively discussions and the Petition Area is identified as land that could be allocated water from the well if it proves viable and is dedicated to the County, and is in the process of finalizing an agreement with a private developer (See Section 5.6). The developer will need to enter into a Water Development Agreement with the Water Board to ensure the water source and supporting infrastructure will adequately meet the demand of operations. Subsequent permits will be filed with from the State Commission of Water Resource Management (CWRM) to test the well(s) for the availability of freshwater. Commitments from the well developer to monitor the long-term effects from the drawing of water will be established with the well construction permit. If freshwater is available and can be drawn at the proposed location, infrastructure to connect the well to the County's existing water system will need to be designed and constructed. U of N Kona understands water will need to be secured prior to the commencement of a change in zoning with the County.

Following completion of the environmental review process, U of N Kona will need to obtain approval for the Master Plan Update from the LUC and thereafter obtain a change in zoning from the County, both of which may be subject to additional unknown conditions. U of N Kona will be seeking to rezone the Petition Area to either the County's Project District or another appropriate zoning district. U of N Kona will continue to consult with the Planning Department to determine the zoning district suitable to support the Master Plan Update.

ES.8 List of Relevant Environmental Assessments and Impact Statements Considered in the Analysis of the Preparation of this ~~Final~~ DEIS

The following documents have been considered and reviewed in preparation of this ~~Final~~ DEIS.

- *Draft Environmental Assessment for Kuakini Highway Improvements, Phase II, Hualālai Road to the Proposed Ali'i Highway*. Prepared by Parsons Brinckerhoff, March 2013.
- *Final Environmental Assessment for Kuakini Highway Improvements Between Palani and Hualalai Roads*, April 1998.
- *Final Environmental Assessment North Kona Mid-Level Exploratory Well*. Prepared by Planning Solutions, November 2020.
- *Draft Environmental Assessment North Kona Sewer Pump Station*. Prepared by Wilson Okamoto Corporation, April 2021.

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Introduction

Chapter 1

Introduction

This ~~Draft-Final~~ EIS was prepared in accordance with the requirements of ~~Hawai'i Revised Statutes (HRS)~~, Chapter 343 and ~~Hawai'i Administrative Rules, (HAR)~~ Chapter 11-200.1, in support of a Motion to Amend the Findings of Fact, Conclusions of Law, and Decision and Order for a State Land Use District Boundary Amendment filed with the State of Hawai'i LUC (Docket No. A02-737 (*Appendix A*)). As determined by the LUC, due to the project's proposed use of County of Hawai'i lands for infrastructure improvements to support the revised the land use plan and development proposal for approximately 62 acres of land in Kailua-Kona, ~~U of N Kona~~~~the applicant~~ must comply with HRS Chapter 343 and may proceed with the preparation of an EIS (*Appendix B*).

1.1 Project Information Summary

Name of Action:	University of the Nations, Kona, Inc. 2020 Master Plan Update
Applicant/Landowner:	University of the Nations, Kona, Inc. 75-5851 Kuakini Highway Kailua-Kona, HI 96740
Accepting Authority:	Hawai'i State Land Use Commission P.O. Box 2359 Honolulu, HI 96813
Prepared By:	G70 111 S. King St., Suite 170 Honolulu, HI 96813 Contact: Jeff Overton, Principal Phone: (808) 523-5866
Project Location:	University of the Nations, Kona, Inc. 75-5943 & 75-5911 Kuakini Highway Kailua-Kona, HI 96740 (<i>Figure 1-1</i>)
Tax Map Keys (TMK):	(3) 7-5-010:085 and (3) 7-5-017:006 (<i>Figure 1-2</i>)
Project Area:	Approximately 62-acres
State Land Use District:	Urban (Reclassified from Agricultural to Urban in 2003) (<i>Figure 1-3</i>)

County of Hawai'i Zoning:	TMK (3) 7-5-010:085, A-1a, Agricultural District TMK (3) 7-5-017:006, RD-3.75 and RS-7.5, Residential District (<i>Figure 1-4</i>)
County of Hawai'i General Plan:	Medium Density Urban Development
Special Management Area:	Not Within SMA
Flood Zone:	Zone X (Outside 500-year Floodplain)
Hawai'i Revised Statutes (HRS) 343 Triggers:	Use of County Lands, Utility and Infrastructure Improvements
Existing Use	The Petition Area is primarily vacant and undeveloped, with the exception of a small research farm
Proposed Action	The University of the Nations, Kona, Inc. is proposing to expand its existing campus in three (3) phases over the next 30 years on lands adjacent to the existing campus. Fully built out, the campus expansion will support future enrollment projections and provide facilities to support the University of the Nations, Kona, Inc.'s mission.

1.2 Project Background

U of N Kona, a Hawai'i 501(c)(3) non-profit corporation that operates a mission-based educational institution, was founded in 1978 at its Existing Campus in Kailua-Kona on the Island of Hawai'i (*Figure 1-1*). U of N Kona is an innovative degree-granting training institution. It is globally networked, and collaborates with other non-traditional university-level educational campuses, recognized by the Global Accrediting Association. U of N Kona is one of approximately 600 locations with programs in over 90 languages around the world that offers transformational learning opportunities for emerging Christian leaders.

The Existing Campus, identified by ~~Tax Map Key (TMK)~~ (3) 7-5-010:003, has been preparing followers for Christian services for over 40 years. Adjacent to the Existing Campus is the Petition Area identified by ~~(TMKs)~~ (3) 7-5-~~0~~10:085 and (3) 7-5-~~0~~17:006 (*Figure 1-2*). Prior to 2018, various entities affiliated with the University, including the University's Benefit Corporation, held title to the Petition Area and prepared a plan that would generate revenue for the U of N Kona. The plan prepared by the University's Benefit Corporation included market-rate condominiums, a for-profit Pacific Cultural Center, which included an outside performance arena, a museum complex, a restaurant and shops, and a small educational facility. This formerly-proposed use, identified as the Hualālai Village Development Project, would not have been permissible under the State's Agricultural Land Use District designation (HRS §205-4.5) and required the University's Benefit Corporation to petition the LUC for a district boundary amendment. In 2002, the University's Benefit Corporation filed a petition to reclassify the Petition Area from the Agricultural District to the Urban District, and on August 8, 2003, the Commission granted a boundary amendment for the former Hualālai Village Development Project (*Appendix A*).

In 2004, the University's Benefit Corporation re-evaluated U of N Kona's needs and crafted a revised plan for the Petition Area that would realign with the University's mission. The revised plan proposed to replace the market-rate condominiums with subsidized housing for students and staff and provide academic and research facilities to enhance educational programs. The University's Benefit Corporation filed a Motion to Amend the 2003 Decision & Order (2006 Motion to Amend) to implement the revised plan for the Petition Area. Subsequently, the University's Benefit Corporation's Plan for the Petition Area was never fully built out, and the Petition Area was formally transferred to AEKO Hawaii, another affiliate of the University. AEKO Hawaii formally transferred the Petition Area to the U of N Kona in 2018.

In March 2020, U of N Kona withdrew the 2006 Motion to Amend and filed ~~an updated Motion to Amend the 2020 Motion to Amend to amend~~ the 2003 Decision & Order ~~and to~~ revise the land use plan and development proposal for the Petition Area (~~2020 Motion to Amend~~). The plan for the Petition Area was revised to fulfill the long-term vision of the U of N Kona. In support of the 2020 Motion to Amend, G70 prepared the 2020 Master Plan Update (Master Plan Update) and an Environmental Planning Report analyzing the potential environmental effects with the revised plan fully built out. Technical studies and investigations were prepared to support the Environmental Planning Report, including a flora fauna study, a traffic study, a preliminary infrastructure assessment, a water supply study, a cultural impact assessment, and a Ka Pa'akai O Ka 'Aina analysis. Additionally, in June 2020, a Conceptual Infrastructure Master Plan was prepared to prioritize the infrastructure improvements necessary to support the Master Plan Update and revealed a new sewer connection under Kuakini Highway would need to be installed to support the updated plan. However, because Kuakini Highway is owned and maintained by the County of Hawai'i, U of N Kona must first comply with HRS Chapter 343 before the LUC can take action on the 2020 Motion to Amend.

In compliance with HRS Chapter 343, U of N Kona filed a motion requesting the LUC to serve as the accepting authority for an EIS and to determine, through its judgment and experience, that an EIS is likely warranted and allow U of N Kona to move forward with the preparation of an Environmental Impact Statement Preparation Notice (EISPN). The LUC granted the request to serve as the accepting authority for an EIS and ordered U of N Kona to proceed with the preparation of an EISPN (*Appendix B*). That environmental review process was initiated with the publication of the EISPN in the Environmental Review Program's (ERP's) bi-monthly bulletin, *The Environmental Notice*, on March 8, 2021, and a public scoping meeting was held on March 25, 2021. A summary of the comments provided at the scoping meeting is located in Section 8.1. Comments provided during the scoping period and U of N Kona's responses are located in Section 8.2.

The Draft EIS was subsequently published in *The Environmental Notice* on February 8, 2024, followed by the 45-day public comment period. A total of 10 agencies provided comments on the Draft EIS (*Appendix P*). The comments on the Draft EIS and U of N Kona's responses are located in Section 8.3.

1.3 Project Location

The Petition Area is located on the west coast of the Island of Hawai'i, approximately one mile southeast of the town center of Kailua-Kona, in the North Kona District (*Figure 1-1*). The Petition Area is approximately 62 acres and identified by TMKs (3) 7-5-010:085 and 7-5-017:006 (*Figure 1-2*). The Petition Area is within the traditional moku of Kona and ahupua'a of Wai'aha 1st on the lower western slopes of Mount Hualālai (*Figure 1-3*).

The Petition Area is bordered by Kuakini Highway on the west, Queen Ka'ahumanu Highway, Hualālai Village, and Hualālai Road on the east, U of N Kona's Existing Campus to the north, and the Kona Hillcrest subdivision to the south (*Figure 1-4*). As depicted in *Figure 1-4*, the area surrounding the

Existing Campus is generally urban with various housing subdivisions and commercial uses. Originally part of the Hualālai Development Project, Hualālai Village is located on five (5) acres subdivided from U of N Kona's original 45-acre Existing Campus and consists of eight residential apartment buildings with a total of one hundred and five (105) condominium units. Units in three of the Hualālai Village buildings were sold in fee simple on the open market and the remaining five buildings have been transferred to Ka 'Ohana Wai'aha, a non-profit land trust management company whose purpose is to arrange for the acquisition and provision of affordable housing for faculty and staff of the U of N Kona.

Existing Conditions

The Petition Area is comprised of two parcels classified in the State Land Use Urban District (*Figure 1-5*) and the County of Hawai'i A-1a, Agricultural District, and the RD-3.7 and RS-7.5, Residential Districts (*Figure 1-6*). The Petition Area is generally gently sloped, ~~at an elevation ranging from approximately 100 to 360 feet,~~ rising in elevation from approximately 100 feet at Kuakini Highway to 360 feet with steeper slopes on the upper mauka side just below Hualālai Road. The Petition Area is primarily undeveloped and overgrown with non-native vegetation. The Petition Area is not equipped with infrastructure, including any on-site or off-site water sources or wastewater services.

A driveway along Kuakini Highway provides accessibility from Kuakini Highway to the Existing Campus. A series of on-site roadways and parking lots provide accessibility throughout the Existing Campus. A spine road is located along the southern property line separating the Existing Campus and northern boundary of the Petition Area and will be utilized in the future to connect the Existing Campus and the Petition Area.

Buildings and facilities on the Existing Campus include the following:

- 10 dormitories and classroom spaces
- Lokahi transmedia center
- Broadcast studio
- Innovision media studio
- Global outreach center
- Outdoor recreational facilities
- Basketball courts
- Gym/fitness space
- Ni'ihau library
- Café
- Dining facility
- Concert hall
- Storyhouse cinema
- Health and impact center
- Prayer room
- Sand volleyball courts
- Soccer fields
- Pool
- Mail room
- Parking areas

Current enrollment is approximately 774 students per quarter. Approximately 78% of students live on-campus totaling an estimated 609 students. In addition to student enrollment, the number of full-time equivalent (FTE) staff is approximately 602, about 280 of which reside on-campus. Staff who do not currently reside on-campus reside in either the Hualālai Villages, Kama'āina Hale, or have sought housing in the greater Kailua-Kona area, often from individuals associated with U of N Kona. Additionally, U of N Kona invites mission builders and guest speakers each quarter to facilitate and support the various programs at the U of N Kona. Mission builders devote their craftsmanship skills helping with the maintenance and upkeep of the Existing Campus. Guest speakers are versed in a variety of programs offered at the U of N Kona, all of which are tailored to training emerging Christian leaders. Mission builders and guest speakers are provided with temporary overnight accommodation on the Existing Campus or at an off-site apartment complex owned and maintained by the U of N Kona during their visits. The de facto day time population at the Existing Campus is approximately 1,401 people.

1.4 Compliance with Hawai'i Environmental Review Laws

This ~~Draft-Final~~ EIS has been prepared in support of U of N Kona's 2020 Motion to Amend, which was filed with the LUC to implement the Master Plan Update. To support the Master Plan Update, a Conceptual Infrastructure Master Plan was prepared and revealed that in order to fully support the Master Plan Update, a new sewer connection will need to be installed under Kuakini Highway, which is owned and maintained by the County of Hawai'i. Due to the proposed use of County lands, under HRS §343-5, U of N Kona must first comply with HRS Chapter 343 before the LUC can take action on the 2020 Motion to Amend.

As previously discussed, the LUC is serving as the accepting authority and determined through its judgment and expertise that an EIS is likely warranted and ordered U of N Kona to prepare the EISPN. The environmental review process was initiated with the publication of the EISPN in *The Environmental Notice* on March 8, 2021, and a public scoping meeting was held on March 25, 2021. A summary of comments from the Scoping Meeting is located in ~~Chapter Section 8.1. The comments received during the scoping period and U of N Kona's responses are located in Section 8.2.~~ The Draft EIS was subsequently published in *The Environmental Notice* on February 8, 2024, followed by the 45-day public comment period. A total of 10 agencies provided comments on the Draft EIS (*Appendix P*). The comments on the Draft EIS and U of N Kona's responses are located in *Section 8.3*.

This ~~Final~~~~Draft~~ EIS is being prepared pursuant to HRS Chapter 343 and HAR Chapter 11-200.1.

1.5 List of Relevant Environmental Assessments and Environmental Impact Statements Considered in the Analysis of the Preparation of this ~~Draft-Final~~ EIS and Related Actions, Public and Private, Existing or Planned in the Region

The following documents have been considered and reviewed in preparation of the ~~Draft-Final~~ EIS.

- *Draft Environmental Assessment for Kuakini Highway Improvements, Phase II, Hualālai Road to the Proposed Ali'i Highway.* Prepared by Parsons Brinckerhoff, March 2013.
- *Final Environmental Assessment for Kuakini Highway Improvements Between Palani and Hualalai Roads,* April 1998.
- *Final Environmental Assessment North Kona Mid-Level Exploratory Well.* ~~Prepared by Planning Solutions,~~ November 2020.
- *Draft Environmental Assessment North Kona Sewer Pump Station.* ~~Prepared by Wilson Okamoto Corporation,~~ April 2021.

~~1.6 Related Actions, Public and Private, Existing or Planned in the Region~~

~~The following actions have been considered as part of the analysis for this project:~~

- *Final Environmental Assessment – Natural Energy Laboratory of Hawaii Authority Innovation Center and Hale Wawaloli Visitor Center.* July 2022.
- *Final Environmental Assessment Royal Vistas Housing Project.* September 2021.

- Draft Environmental Assessment Kona Community Hospital Redundant Wastewater Treatment System. June 2023.
- Draft Environmental Assessment Makapalua Project District, March 2024.
- Draft Environmental Impact Statement Keauhou Bay Management Plan. June 2024.

1.71.6 List of Required Permits and Reviews

The following list identifies the anticipated State and County approvals and permits required for the implementation of the Master Plan Update (*Table 1-1*).

Table 1-1: List of Permits and Reviews	
Agency	Permits and Reviews
State of Hawai'i	
Land Use Commission (Accepting Authority)	HRS, Chapter 343 Environmental Impact Statement, Acceptability Determination; Amendment of Decision & Order in Docket No. A02-737
Department of Land and Natural Resources, State Historic Preservation Division (SHPD)	Historic Preservation Review, Chapter 6E
Department of Health, Clean Water Branch	National Pollution Discharge Elimination System (NPDES) Permit
Department of Health, Environmental Management Division	Construction Noise Permit, Fugitive Dust, Wastewater System, Safe Drinking Water Permit
Department of Transportation, Highways Division	Highways Review, Turning Lane, Driveways and Private Storm Drain Connection
County of Hawai'i	
Planning Department	Zone Change, Plan Approval
Planning Department Leeward Planning Commission	Zone Change
Department of Planning, Planning Division: Kailua Village Design Commission	Zone Change
County Council Approval	Zone Change
Department of Public Works, Engineering Division	Grading, Grubbing, Stockpiling Permits, County Right-of-Way Permit, Sewer Connection
Department of Public Works, Building Division	Building Permits

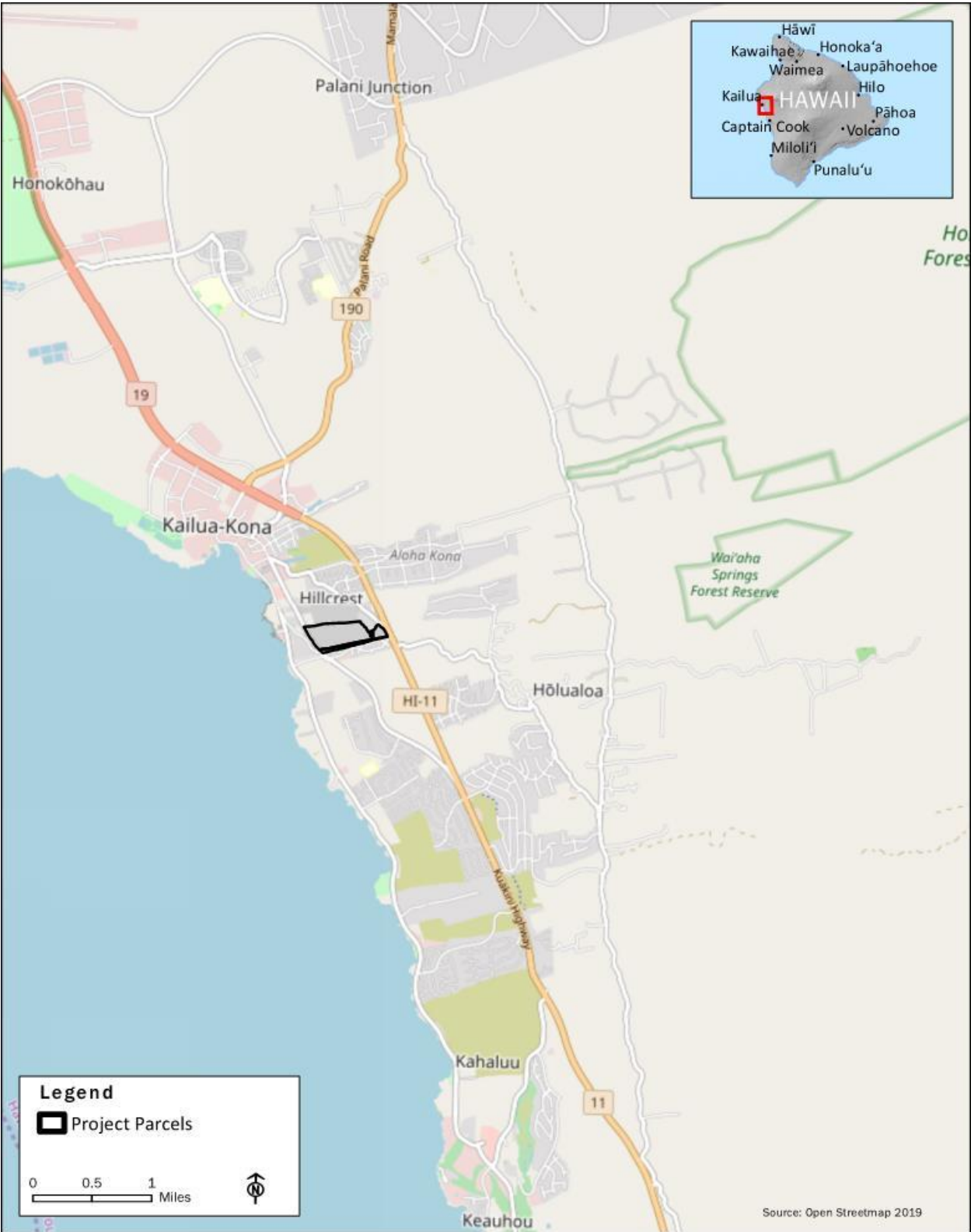


Figure 1-1

Project Location



Figure 1-2

TMK Map

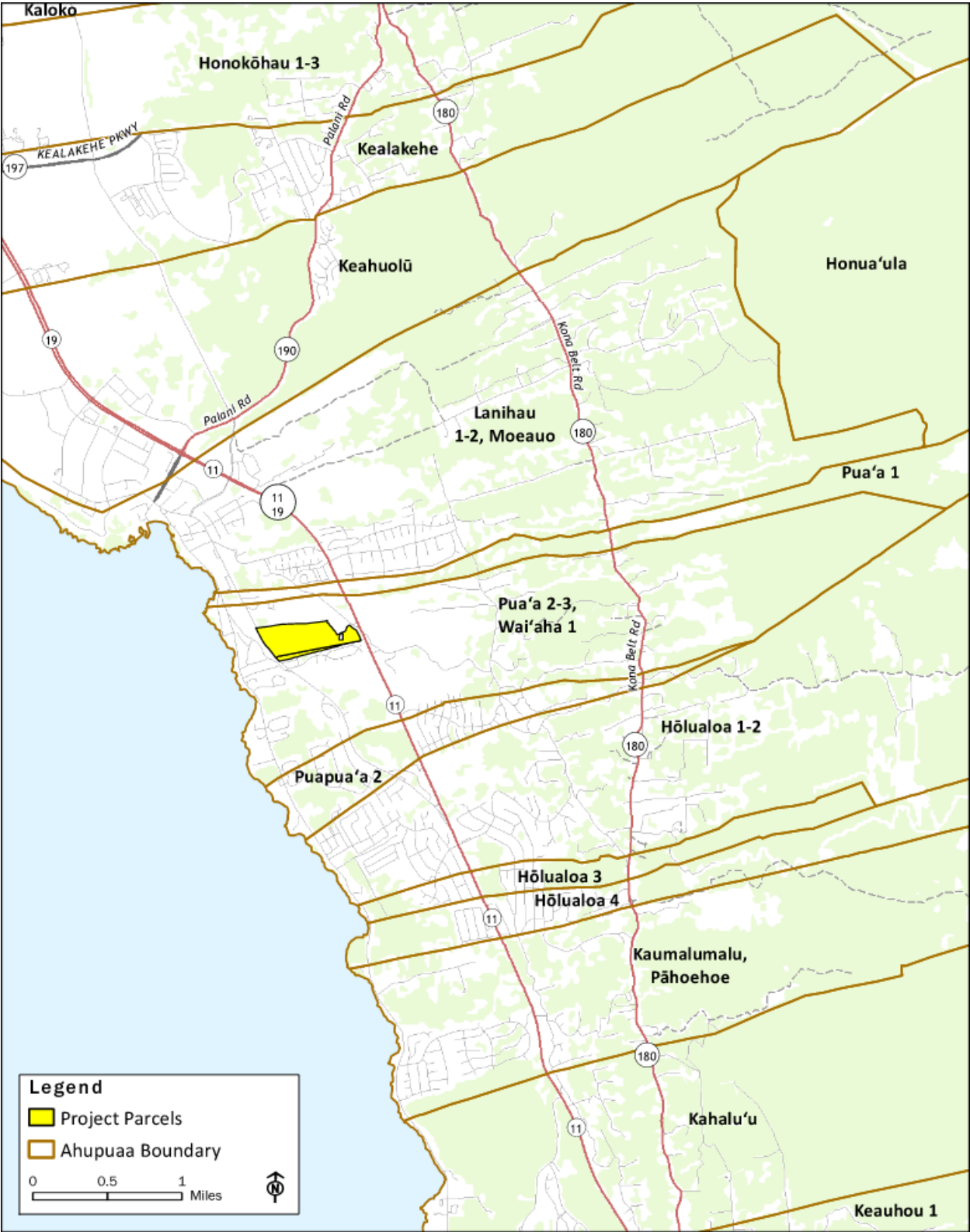


Figure 1-3

Ahupua'a Map



Figure 1-4

Adjacent Land Usage Map

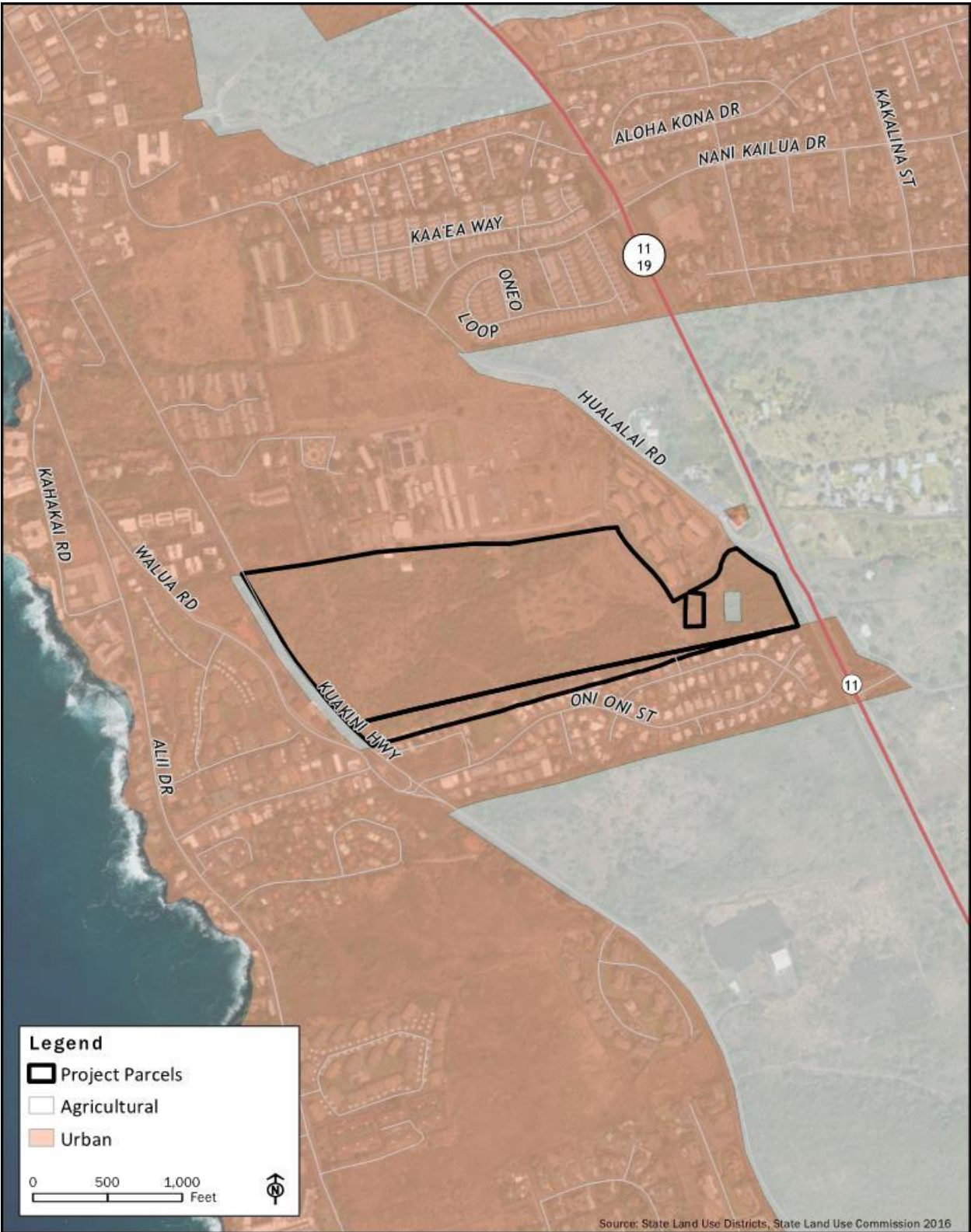


Figure 1-5

State Land Use District Designation Map



Figure 1-6

County of Hawai'i Zoning Map

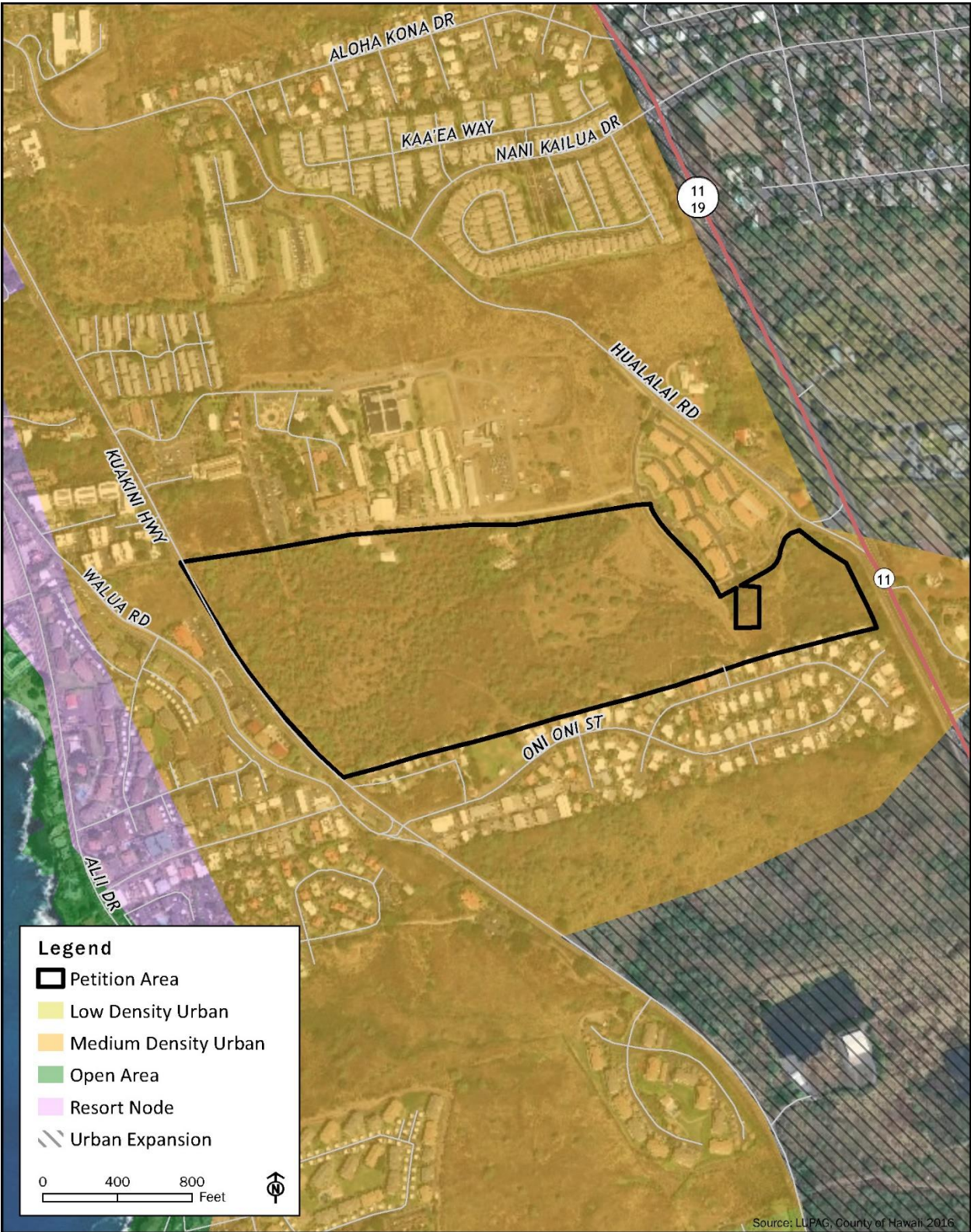


Figure 1-7

Land Use Pattern Allocation Guide

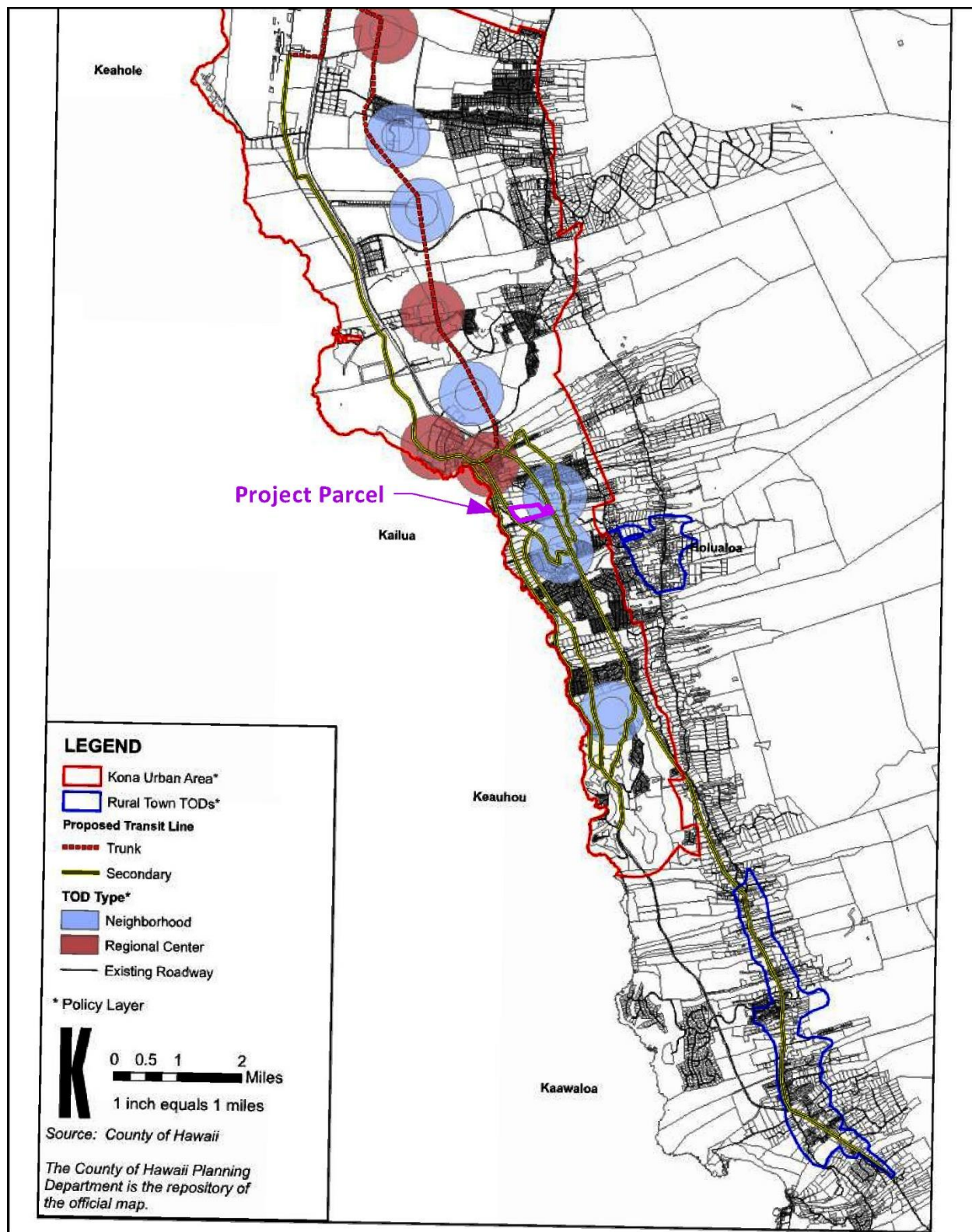


Figure 1-8

Kailua-Kona Community Development Map

Project Description

Chapter 2

Project Description

2.1 Proposed Action

U of N Kona is proposing to revise the land use plan for the Petition Area. The Master Plan [Update](#) is designed over a 30-year planning program, in three (3) development phases with 5-10 years allocated for each phase (*Table 2-1*). This chapter explains the purpose and need for the Master Plan Update.

Table 2-1: Planning Program, Master Plan Update	
Phase 1: 5-10 Years	Planning program projects anticipated for development with the next 5-10 years.
Phase 2: Beyond 10 Years	Planning program projects anticipated for development beyond the 10-year period.
Phase 3: Beyond 20 Years	Planning program projects anticipated for development beyond the 20-year period.

Since the establishment of the U of N Kona in 1978, the U of N Kona has served the Lord’s mission by educating and training emerging Christian leaders. The long-term vision of the U of N Kona is to continue serving the Lord’s mission through education. As such, U of N Kona has revised the plan for the Petition Area to continue educating emerging Christian leaders in an enhanced learning environment. The Master Plan Update includes the addition of a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and housing for students and staff members (*Figure 2-1*). Buildings and facilities have been strategically located throughout the Petition Area to facilitate efficient on-site circulation, enabling safe and smooth movements for students, volunteer staff, and visitors. Overall, the strategic location of buildings and facilities optimizes the functionality and accessibility throughout the Petition Area. Additionally, [strategically](#) locating buildings and facilities will preserve the natural environment and reduce extensive grading. Facilities that are anticipated to be high-traffic and frequented by both U of N Kona affiliates and the public, including recreational and meeting spaces, are located closer to the entrance along Kuakini Highway. By locating high-traffic facilities on the lower portion of the Petition Area near the entrance along Kuakini Highway, the privacy and security of students and staff dorming on the Petition Area will be maintained.

The Master Plan Update includes key infrastructure improvements, including the expansion of the existing on-site spine road that bisects the Existing Campus and Petition Area, the addition of a secondary access point off of Kuakini Highway, and other upgrades to the existing utilities. As part of the Master Plan Update, necessary improvements for water supply and distribution, wastewater management, necessary roadway improvements, and drainage will be completed. Details of the infrastructure improvements are located in *Section 4.10*. Buildings and facilities will be designed and constructed to meet all applicable building code standards set forth in in Chapter 5 of the Hawai’i County Code. All necessary permits and approvals will be secured prior to the commencement of construction.

As a part of the entitlement process, the LUC will need to approve the Master Plan Update and thereafter a change of zone will need to be processed with the County to implement the Master Plan Update. The majority of the Petition Area is currently zoned A-1a, Agricultural District, with a small portion split zoned RD-3.75 and RS-7.5, Residential Districts (*Figure 1-6*). An application for a change of zone will be submitted to the County for the anticipated Project District designation or other suitable zoning designation.

2.2 Purpose and Need for the Proposed Action

The purpose of the project is to revise the land use plan for the Petition Area to reflect and fulfill the long-term vision of the U of N Kona's faith-based mission. U of N Kona is embarking on a project to expand the Existing Campus and enhance its training programs to continue serving the Lord's mission by educating emerging Christian leaders. The U of N Kona was born out of the Youth With a Mission movement, which is led by Christian leaders dedicated to training and equipping followers of Jesus Christ. U of N Kona is an innovative degree-granting training institution. It is globally networked, and collaborates with other non-traditional university-level educational campuses, recognized by the Global Accrediting Association. U of N Kona is one of approximately 600 locations with programs in over 90 languages around the world that offers transformational learning opportunities for emerging Christian leaders

With students enrolling from around the world, U of N Kona provides housing for its students and staff and their dependents. Presently, each quarter there are approximately ~~757-774~~ students enrolled, of which approximately 62% or roughly ~~463-480~~ students are university-level. The remaining 38% or roughly 294 students are PK-12 students, which are predominantly children of students or staff members. Throughout the entire school year, there are approximately ~~600-602~~ staff members supporting campus operations. In addition to staff members, each quarter, U of N Kona is supported by mission builders and guest speakers to support its educational programs.

Currently, students and staff and their dependents and mission builders and guest speakers are housed on the Existing Campus. On a per quarter basis, the Existing Campus houses approximately 900 to 1,100 people. Of those dorming at the U of N Kona, approximately 60% are university-level students and their families, and approximately 30% are staff members and their families. Notably, all university-level students are housed in dormitories at the U of N Kona. Staff members who do not reside on-campus generally reside at the Hualālai Villages, which is adjacent to the Existing Campus, or reside off-campus, often in accommodations provided by people associated with the U of N Kona. As previously discussed in *Section 1.3*, mission builders and guest speakers are housed at the Existing Campus or at an off-site apartment complex owned and maintained by the U of N Kona.

In the next 5-10 years, enrollment at the U of N Kona campus is projected to increase to a total of approximately 1,058 students per quarter. The university-level enrollment is projected to increase to approximately 718 students, accounting for roughly 67% of the total student population. The PK-12 enrollment is projected to increase to approximately 340 students, accounting for roughly 32% of the total student population. To accommodate the projected student enrollment, Phase I will include additional dormitories and educational facilities to support campus operations as described in *Section 2.5*. Housing at the Existing Campus and Petition Area will be made available to students and staff members and their dependents, as space permits.

For Phase II, student enrollment is projected to increase to a total of approximately 1,424 students per quarter. The university-level enrollment is projected to increase to approximately 955 students, accounting for roughly 67% of the total student population. The PK-12 enrollment is projected to

increase to approximately 469 students accounting for roughly 32% of the total student population. With growth in student enrollment, it is projected that U of N Kona will invite approximately 200 volunteer mission builders per quarter to support program operations. To accommodate the growth in enrollment, Phase II will include the construction of additional dormitories and educational facilities to support campus operations as described in *Section 2.5*. Housing will continue to be made available to students and staff members and their dependents, and volunteer mission builders and guest speakers, as space permits.

For Phase III, student enrollment is projected to increase to a total of approximately 1,775 students per quarter. The university-level enrollment is projected to increase to approximately 1,200 students accounting for roughly 67% of the total student population. The PK-12 enrollment is projected to increase to approximately 575 students accounting for roughly 32% of the total student population. With growth in student enrollment, it is projected that U of N Kona will increase the total number of volunteer mission builders to approximately 300 volunteers per quarter. By the end of Phase III, the Petition Area will be fully built-out to provide the additional space needed to accommodate the projected growth in enrollment. Upon completion of Phase III, dormitories at the Existing Campus and Petition Area will be able to house all students and most, if not all, staff and their dependents and volunteer mission builders and guest speakers, as space permits.

The Master Plan Update addresses current and projected space and activity needs as enrollment is projected to gradually increase over the next three planning phases. Once fully built out, the campus will provide an enhanced learning and training facility for emerging Christian leaders.

2.3 Objectives of the Proposed Action

The purpose of the Master Plan Update is to revise land use plan for the Petition Area to expand and enhance the learning and training facilities at the U of N Kona. U of N Kona has been educating and preparing followers of Christ for service throughout the world. Over the last four decades, through both educational and physical development, tens of thousands of lives have been impacted, and have in turn identified with and invested in the mission and vision of the University. This investment has generated a large growing community that has labored and donated time and money towards the growth of the University. Realigning the planning principles and concepts for the Petition Area with its faith-based mission, U of N Kona is proposing to expand its Existing Campus to provide an enhanced learning and training facility to continue serving the Lord's mission by educating followers of Jesus Christ.

2.4 Master Plan Update

Located within the ahupua'a of Wai'aha 1st on the lower western slopes of Mount Hualālai within the traditional moku of Kona (*Figure 1-3*), U of N Kona serves as a premier globally-networked learning center to prepare followers of Jesus Christ for service throughout the world. Wai'aha – which means “gathering water” in Hawaiian – reflects the ideas, hopes and dreams of what the University's founders and representatives envisioned during the planning and design phases of the Master Plan Update. The U of N Kona is envisioned as a place for coming together or “gathering” to broaden the scope of evangelistic endeavors and prepare followers for Christian service with spiritual, cultural, intellectual, and professional training.

While providing an enhanced, mission-based educational environment for students, the Master Plan Update incorporates the unique topographic features and historical and cultural legacy specific to the area, Wai'aha Ahupua'a, and the greater Kailua-Kona region. Preservation and restoration of

significant cultural resources within the Petition Area are highlighted and interpreted as focal features in the design. The central gathering area at the Chapel is envisioned as the “Piko” of the campus. The design of the Chapel may include a stepped water feature complemented with a natural, terraced seating area for gathering, offering beautiful views of the campus and Kona Coast (*Figure 2-2*).

The Master Plan Update has been carefully crafted with attention given to the Petition Area’s natural and cultural features. As part of the Master Plan Update, cultural and archaeological features have been identified and measures have been established to preserve identified archaeological features. Preservation measures include the installation of rock walls along permanent preservation easements and buffers at each identified archaeological site. Buildings and facilities have been relocated throughout the Petition Area to reduce extensive grading and preserve the natural topographic setting. Additionally, a unified architectural theme for the Petition Area will be established to ensure that the buildings are scaled to reflect a distinct sense of the Kailua-Kona region. Buildings and facilities planned for the Petition Area will comply with all Building Code standards set forth in Chapter 5 of the Hawai’i County Code. Green building design measures will be incorporated and may include the installation of photovoltaic panels, green roofs, and other water and energy efficient features. Landscaping throughout the Petition Area will be carefully selected for the Kailua-Kona region. Xeriscape techniques may also be implemented to complement the dry climate, pay tribute to Kona’s agricultural past, and incorporate planting of native vegetation.

Much of the proposed design for the Petition Area reflects and capitalizes upon the beauty of the surrounding Kona region. The spaces between buildings are envisioned as either “outdoor rooms” functioning in concert with indoor spaces as venues for learning, gathering, and recreation, or as outdoor corridors. Outdoor open spaces or “outdoor rooms” linked through a pedestrian access network are envisioned to create outdoor learning environments that promote interaction between students and faculty. The Master Plan Update strives to embrace all elements of sustainability, and its architecture, open space, and landscape will work together to foster a Hawaiian sense of place that is also reflective of the Kailua-Kona region, both its natural attributes and its cultural history.



Figure 2-1

Table 2-2: Proposed Projects for Petition Area								
Petition Area Proposed Projects Phase 1 – Within 5-10 Years	Foot Print (SqFt)	Acreage	Petition Area Proposed Projects Phase 2 – Beyond 10 Years	Foot Print (SqFt)	Acreage	Petition Area Proposed Projects Phase 3 – Beyond 20 Years	Foot Print (SqFt)	Acreage
Discipleship Learning Center			Discipleship Learning Center			Discipleship Learning Center		
Chapel	3,629	0.1	Student Resource Center	8,770	0.2	Instruction Building (2)	17,718	0.4
Instruction Building	9,056	0.2	Instruction Building	6,198	0.1	Student Resident Dormitory Buildings (6)	38,284	1.4
Student Resident Dormitory Buildings (3)	19,117	0.4	Student Resident Dormitory Buildings (3)	19,127	0.14	Community Athletic Complex		
Lower School			Long-Term Staff Dormitories (5)	31,103	0.7	Aquatic Center Pool Complex	17,100	0.4
Instruction Building	8,096	0.2	Community Athletic Complex			Multipurpose Complex with Amphitheatre		
Cafe	5,250	0.1	Athletic Courts	31,384	0.7	Complex	68,889	1.6
Maintenance/Storage Facilities			Gym	9,800	0.2	Amphitheatre	17,817	0.4
Maintenance/Storage Warehouse	3,136	0.07	Locker Rooms	4,345	0.1	Theatre	6,599	0.2
SUBTOTAL BUILDING FOOTPRINT AREA	42,080	1.19	Crossfit Gym	9,856	0.2	Discovery Center		
Roadways & Pathways			Middle School			Exhibit Buildings	19,008	0.4
Roadway Connections to Existing Campus Site & Access Points	32,653 47,916	0.71.1	Instruction Building	11,354	0.3	Lower School		
ADA Compliant Pathways	21,121 43,560	0.51.0	High School			Instruction Building	8,096	0.2
SUBTOTAL ROADWAY & PATHWAY AREA	54,774 91,476	1.32.1	Instruction Building	13,599	0.3	Middle School		
Parking Areas			Maintenance/Storage Facilities			Instruction Buildings	11,412	0.2
Parking Area for Instruction & Dormitory Buildings	29,197	0.7	Maintenance/Storage Warehouses	5,000	0.1	High School		
Parking Area for Café, Meditation Garden & Lower School	16,832	0.4	Garage/Storage Warehouse	5,208	0.1	Instruction Buildings	10,400	0.3
Parking Area for Upper Dormitory Buildings	24,735	0.6	Food & Supply Storage Warehouse	18,120	0.4	SUBTOTAL BUILDING FOOTPRINT AREA		
SUBTOTAL PARKING AREA	150,000 46,029	3.41.1	SUBTOTAL BUILDING FOOTPRINT AREA			Roadways & Pathways		
Open Space/Playfields/Landscaped Areas			Roadways & Pathways			Roadways and Pathways	36,442 43,560	0.81.0
Areas above Upper Dormitories, Café, Meditation Garden, Lower School Instructional, and Campus Courtyard	839,871 866,844	19.93	Roadways & Pathways	163,425 191,664	3.84.4	SUBTOTAL ROADWAY & PATHWAY AREA		
Discipleship Learning Center Courtyard	45,000	1.0	SUBTOTAL ROADWAY & PATHWAY AREA			Parking Areas		
Lower School Play Field	22,774	0.5	Parking Areas			Parking Area for Multipurpose and Discovery Center	46,644	1.1
Archaeological Preservation Sites	31,250	0.7	Parking Area for Upper Dormitory Buildings	24,735 34,848	0.86	SUBTOTAL PARKING AREA		
SUBTOTAL OPEN SPACE/PERVIOUS AREA			Parking Area for Community Athletic Complex	61,130 65,340	1.54	Open Space/Pervious Area		
TOTAL PHASE 1 AREA	1,112,717	26.2	Parking for Handicap	3,287 8,712	0.24	Lower School Play Field	26,634 21,780	0.56
			SUBTOTAL PARKING AREA			Open Space and Landscaping	286,296 283,140	6.56

Table 2-2: Proposed Projects for Petition Area								
Petition Area Proposed Projects Phase 1 – Within 5-10 Years	Foot Print (SqFt)	Acreage	Petition Area Proposed Projects Phase 2 – Beyond 10 Years	Foot Print (SqFt)	Acreage	Petition Area Proposed Projects Phase 3 – Beyond 20 Years	Foot Print (SqFt)	Acreage
			Open Space/ Playfields/Pervious Area <u>Landscaped Areas</u>			SUBTOTAL OPEN	312,930 <u>304,920</u>	7.02
			Community Athletic/Soccer Field	102,249	2.3	TOTAL PHASE 3 AREA	611,309 <u>609,840</u>	146
			Practice Field	39,853 <u>56,628</u>	0.91 <u>.3</u>			
			Middle School Play Field	16,560	0.4			
			Lawn Areas <u>Open Space</u> and Landscaping	520,978 <u>309,276</u>	12.07 <u>.1</u>			
			SUBTOTAL OPEN SPACE/PERVIOUS AREA	483,516 <u>679,640</u>	15.71 <u>1.1</u>			
			TOTAL PHASE 2 AREA	1,106,081 <u>958,320</u>	225			

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Figure 2-2 Conceptual Rendering of the Discipleship Learning Center

2.5 Description of the Proposed Improvements

Proposed buildings and facilities are as follows:

Discipleship Learning Center:

The Discipleship Learning Center is the training center for students to train, learn, build connections with their peers, and establish a deeper connection with the gospel message of Jesus Christ. Facilities within the Discipleship Learning Center will provide necessary training spaces for students to carry out the mission of the University on a global scale. The following facilities are planned in the buildout of the Discipleship Learning Center.

Classroom Spaces:

Instructional buildings are envisioned as flexible classroom spaces. Classroom buildings are envisioned to have enclosed spaces on the ground level with stairs leading to an open rooftop space for students and staff to gather and study. As illustrated in *Figure 2-1*, buildings will form a central outdoor quadrangle area for students to safely gather. New flexible classroom spaces will provide modern learning environments that accommodate new interactive forms of teaching and learning, and spaces needed to support future growth at the U of N Kona.

Chapel:

The Chapel is planned to function as the central gathering space. Consisting of approximately 3,600 square feet, the Chapel is envisioned to be an iconic, round structure. The architectural character of the facility will create a centralized gathering space fitting with its surroundings. The proposed structure may also include a stepped-level entry with an outside seating area and a courtyard to create a welcoming and pleasant outdoor meeting space (*Figure 2-2*).

Student Resource Center:

The Student Resource Center will provide a modern study space that accommodates new interactive forms of teaching and learning for both students and faculty. The Student Resource Center is envisioned as a two to three-story structure, with an architectural character reflective of the Kailua-Kona region. The Student Resource Center may also include an entry courtyard with landscaped pavers and a variety of new plantings to create welcoming and pleasant outdoor meeting, study, and informal gathering spaces for students, faculty, and visitors.

Identity Icon:

The Identity Icon will provide a transition space from the Existing Campus to the Petition Area. Filled with art and photography from campuses throughout the globe, the space will reflect upon the greater worldwide mission of the University, and serve as a space for students to reflect on their journey. From the existing 'Ohana Court, students and staff may easily meander to the Identity Icon, which connects to the pathway leading to the Chapel. The Identity Icon will provide a transition space to the "Piko" of the campus.

Dormitories:

U of N Kona is one of 600 affiliated campuses offering formal and non-formal education with a commitment to worshipping God in spirit and truth. Each quarter, students from around the world train at the U of N Kona campus. Similar to any University, U of N Kona provides housing in the form of dormitories for its students, staff members, and their dependents, and will increase its capacity to do so through the Master Plan Update. The following dormitories will be constructed as part of the Master Plan Update.

Student/Staff Dormitories:

The Petition Area will be equipped with twelve (12) new dormitory buildings. The current dormitories on the Existing Campus are over thirty (30) years old and additional dormitories are needed to accommodate future enrollment projections. The twelve (12) new dormitory buildings will be three (3) stories high and have approximately 100 beds per building. The new dormitories will house both students and staff. Residents will enter on the first floor from the makai side of the buildings and enter on the second floor from the mauka side of the buildings in order to integrate the natural topography of the Petition Area. Common areas will be provided on each floor and parking areas are planned to accommodate residents with motor vehicles.

Family Dormitories:

U of N Kona provides housing for students and staff with families and dependents. To accommodate students and staff with families, five (5) family dormitory buildings containing one (1)-, two (2)-, and three (3)- bedroom units will be provided on the mauka portion of the Petition Area. Each building will have a total of approximately 100 beds. Units are planned to be module, “lock-off” style to accommodate various family sizes. Each family dormitory building will be three (3) stories high and contain an entrance to the first floor on the makai side of the building and an entrance to the second floor on the mauka side of the building. Common areas will be provided on each floor and parking areas are planned to accommodate residents with motor vehicles.

The additional dormitories provided through the Master Plan Update will accommodate projected enrollment at the U of N Kona. Moreover, at each phase of the Master Plan Update, the number of staff, faculty, and dependents residing off campus, if any, will continue to be reduced and potentially eliminated.

PK-12 School:

The new PK-12 School is envisioned to include a multi-phased development of a Lower School, Middle School, and High School. The new PK-12 school will help to address the demand for educational facilities for students and volunteer staff with families enrolled at U of N Kona. Additionally, the new PK-12 School will provide an additional PK-12 school for residents of the greater Kailua-Kona region.

Lower School

The Lower School will accommodate students ranging from Preschool to Grade 5. A rectangular pick-up/drop-off area is planned as an entry way to the Lower School. Additionally, a parking lot for parents to walk in with their children will be provided. The Lower School is envisioned to include two (2) new instructional buildings and open space areas to function as an outdoor learning environment. A new playfield dedicated to Lower School students is planned to provide a safe outdoor space for recess and outdoor educational activities.

Middle School

The Middle School will accommodate students ranging from Grade 6 to 8. The Middle School includes the addition of five (5) new instructional buildings clustered near one another to form a central open gathering space that will lead to a playfield. Similar to the playfield planned for the Lower School, the playfield near the Middle School will be dedicated to middle schoolers.

High School

The High School will accommodate students ranging from Grade 9 to 12. Eight (8) new instructional buildings are envisioned to fully build out the High School. The new instructional buildings will form a central quad area allowing students to study and gather outdoors.

Meditation Garden:

The Meditation Garden will provide a peaceful and serene experience for students and staff members. The Meditation Garden is envisioned as a garden space with open grass seating areas and benches for students and staff members to gather. A pathway connecting the Meditation Garden and the Chapel will provide students and staff members with a peaceful way to meander throughout the campus.

Café:

The Café is expected to provide quick food service and an outdoor dining space. The courtyard setting is envisioned as a casual outdoor dining area for students and staff to study and gather.

Athletic Facilities:

U of N Kona is expanding its athletic facilities to support program operations and provide additional facilities for competitive sports and events in the Kailua-Kona region. Athletic facilities planned for the Petition Area include an outdoor athletic stadium with supporting facilities, an outdoor artificial turf practice field, a new state of the art gymnasium, a practice gymnasium, outdoor courts, a pool, and locker rooms. The outdoor athletic stadium will be able to host various sporting events and provide an outdoor venue for U of N Kona and the community. Parking areas are planned to accommodate a variety of sporting events. Because U of N Kona plans on hosting competitive sporting events and various community events, facilities to host such events have been placed within the lower portion of the Petition Area, near the entrance along Kuakini Highway. Placing athletic and event facilities near the entrance along Kuakini Highway will improve on-site circulation and provide a sense of security and privacy for residents, as the public will not be meandering throughout the entire Petition Area.

Discovery Center:

The Discovery Center is intended to house the Discipleship Learning Center's expansive language library and informational resources, and function as an instructional and research facility with administrative and staff office spaces. The Discovery Center will allow the U of N Kona to showcase its mission and research as the facility will be open to the public. As such, the facility is planned within the lower portion of the Petition Area near the entrance along Kuakini Highway for public accessibility. A parking lot will be provided for the Discovery Center.

Multi-Purpose Building and Theatre

The Master Plan Update includes a state-of-the-art Multi-Purpose Building and a new Theatre to support program operations. U of N Kona currently lacks a covered and enclosed facility for large events. The new Theatre is an opportunity to upgrade and provide a modern venue for performative arts. The Multi-Purpose Building and Theatre are intended to provide additional meeting and gathering facilities in the Kailua-Kona region, and U of N Kona has full intentions of hosting events for the community. As such, these facilities have been placed within the lower portion of the Petition Area near the entrance along Kuakini Highway for public accessibility.

Archaeological Preservation Sites:

An Archaeological Inventory Study (AIS) was prepared to identify historic cultural and archaeological resources on the Petition Area. With the identification of historic, cultural, and archaeological features, buildings are intentionally situated at a distance from identified sites to ensure the proper preservation and protection. To protect the sites and resources identified on the Petition Area, interim and permanent preservation measures set forth in the 2003 Burial Treatment Plan, the 2007 Archaeological Data Recovery Report, the 2013 Preservation Plan, and the 2019 Dismantling/Restoration Plan described in *Section 4.15* will be implemented under the supervision of a qualified archaeologist.

Roadways and Parking:

The overall design concept of the roadways and parking for the Petition Area is to give priority to pedestrian circulation. Vehicular arrival points such as parking lots and driveways are located on the periphery of the Petition Area. The peripheral design of the roadways and parking areas provides significant areas for pedestrian use and open space in the interior of the Petition Area.

Landscape, Open Space and Pathways:

The plan for the Petition Area has been revised to better integrate the campus into the Kailua-Kona region. As such, the revised plan incorporates open space areas to complement the Kailua-Kona region. Landscaping throughout the Petition Area will be carefully selected to reflect a Hawaiian sense of place, in both its natural beauty and cultural history. Plant selections will include, but may not be limited to, native and drought-tolerant plants. Xeriscape landscaping techniques will be implemented to reduce the risk of wildfire and complement the dry climate of the Kailua-Kona region. A system of pathways is planned to allow for safe day and night travel for pedestrians, including persons with disabilities. The pathways will begin at arrival and parking areas, lead to major walking pathways, and connect to active and functional gathering places, such as outdoor courtyards and sitting areas fronting buildings. Walking surfaces will be permeable whenever possible.

Infrastructure Improvements:

Infrastructure improvements include expansion of the existing on-site spine road that bisects the Existing Campus and Petition Area, the addition of a secondary access point off of Kuakini Highway and necessary roadway improvements, and other upgrades to the existing utilities. Within the Petition Area, on-site infrastructure facilities to be expanded include circulation roadways, water transmission lines, wastewater collection lines, drainage systems, and electrical/communication systems. All infrastructure improvements will be designed and sized to accommodate the Master Plan Update. Construction will begin with the development of infrastructure after applicable grading permits have been issued. Details on the infrastructure improvements and the phasing of the improvements are located in *Section 4.10*.

2.6 Project Cost and Schedule

In total, the Master Plan Update is expected to cost approximately \$157,500,000. Construction of the Master Plan Update is planned in three phases, spanning approximately 30 years. Each phase is anticipated to span approximately 5-10 years. Construction for Phase I is expected to commence in 2030, following approval of the Master Plan Update by the LUC and successful completion of a change of zone application with the County. U of N Kona has successfully established the 360,000 square foot Existing Campus through its traditional non-profit financing model and will continue to use that model to complete the buildout of the Petition Area over a 30-year period.

Alternatives Considered

Chapter 3

Alternatives Considered

The purpose of the Master Plan Update is to revise the land use plan for the Petition Area to allow for the expansion of the Existing Campus. The following sections summarize alternatives to the Master Plan Update.

3.1 No Action Alternative

Under the “No Action Alternative,” the Petition Area would remain in its current vacant state and no new buildings or facilities to support U of N Kona would be constructed. The “No Action Alternative” would not adequately address U of N Kona’s current and projected space and activity needs. Under this alternative, current and future students would be limited to facilities and activities at the Existing Campus, which is not equipped with enough dormitories or student facilities to accommodate future enrollment projections. Ultimately, housing in the nearby vicinity could be impacted by the overflow of students and staff members.

The “No Action Alternative” would not adequately address U of N Kona’s current and projected space and activity needs. Without the expanded campus, U of N Kona would be limited to the Existing Campus and would lack the dormitories and facilities needed to support its projected enrollment. Under this scenario, the “No Action Alternative” would not allow the U of N Kona to grow to its projected enrollment levels and would fail to meet the long-term vision of the U of N Kona.

If no action is taken, U of N Kona would not satisfy the conditions of the 2003 Decision & Order (*Appendix A*) and may be at risk of the LUC involuntarily reverting the Petition Area back to the State Land Use Agricultural District. Furthermore, the “No Action Alternative” would not be consistent with the Petition Area’s LUPAG Map designation as described in the County of Hawai‘i General Plan or the policies guiding future land use development in the Kona Community Development Plan. The LUPAG Map designates the Petition Area as MDU use (*Figure 1-7*). As described in the General Plan, areas designated as MDU uses are described as “village and neighborhood commercial and single family and multiple family residential and related functions (multiple family residential – up to 35 units per acre).” Areas designated as Medium Density include urban centers that provide physical, social, governmental, and economic concentrations so that total activities of the community can be more readily and easily conducted. As shown in *Figure 1-4*, the area in the nearby vicinity of the Petition Area is generally urban and consists of residential and commercial development. The Master Plan Update would follow in keeping with the area’s urban usage and meet the LUPAG Map designation of the Petition Area. Although the County is currently undergoing its comprehensive review of the General Plan, the Draft General Plan maintains the MDU designation for the Petition Area.

The Kona Community Development Plan contains policies to avoid past and current trends of sprawling lot-density developments, disconnected subdivisions and business centers, and a general decline in the quality of life for people. Consistent with the LUPAG Map designation, the Petition Area is located within the Kona Urban Area identified in the Kona Community Development Plan, which is dedicated

for future growth (*Figure 1-8*). If no action is taken, the Petition Area would remain vacant and would be inconsistent with guidelines and policies related to future growth in the Kailua-Kona region.

In comparison to the Master Plan Update, the “No Action Alternative” would no longer require additional infrastructure services such as water and wastewater services. However, the “No Action Alternative” would fail to accommodate current and future enrollment projections. For these reasons, the “No Action Alternative” is not considered a reasonable solution and is therefore dismissed from further consideration.

3.2 Alternative Development Density

The Master Plan Update is planned in three (3) phases, with 5-10 years allocated for each phase of development. The following section summarizes and evaluates a lower and higher density build out of the Petition Area.

3.2.1 Lower Density Development Alternative

Planning for a “Lower Density Development Alternative” could entail developing just Phase 1 or Phase 1 and 2 of the Master Plan Update.

Phase 1 of the Master Plan Update has been designed to accommodate U of N Kona’s most current needs. In comparison to the full buildout of the Master Plan Update, developing Phase 1 would result in an approximate 40% reduction in terms of building footprint in comparison to the full buildout of the Master Plan Update. Although Phase 1 would be of lower density than the full build out of the Master Plan Update, thereby minimizing the overall use of the Petition Area, Phase 1 would not accommodate future enrollment projections beyond the next 5-10 years. Additionally, recreational and athletic facilities including the Athletic Complex, Fields, Tennis Courts, Gym, Pool, Multipurpose Complex, and Theatre are planned for Phases 2 and 3. Developing Phase 1 alone would not provide much needed recreational facilities for the greater Kailua-Kona community.

Another “Lower Density Development Alternative” could entail developing Phase 2 of the project. However, Phase 1 of the project is ancillary to Phase 2; if Phase 1 is not developed prior to or in conjunction with Phase 2, Phase 2 would not be equipped with the proper infrastructure support. Therefore, moving forward with the development of Phase 2 alone is not feasible and was dismissed from the “Lower Density Development Alternative”.

Phase 1 and 2 of the Master Plan Update would enhance the learning and training facilities at the U of N Kona. Developing Phase 1 and 2 would result in an approximate 13% reduction in terms of building footprint in comparison to the full buildout of the Master Plan Update. Development of Phase 1 and 2 would increase the overall usage of the Petition Area by providing some of the needed space to accommodate future growth and also provide much needed athletic and meeting spaces in the greater Kailua-Kona region.

In comparison to the full build-out of the Master Plan Update, planning for a “Lower Density Development Alternative” would reduce the overall scale and build-out of the Petition Area, which would reduce potential noise and privacy concerns to neighboring homeowners. However, because the Petition Area is not supplied with water or wastewater services, in order to support a “Lower Density Alternative”, infrastructure improvements such as a new sewer connection under Kuakini Highway and other improvements to provide water to the Petition Area would still be required. Accordingly, a lower density alternative would require the same infrastructure improvements needed to support the full

Master Plan Update, but would not fully accommodate future growth over the next 30 years, and otherwise not fully optimize the Petition Area. For these reasons, the “Lower Density Development Alternative” has been dismissed from further consideration.

3.2.2 Higher Density Development Alternative

Under this alternative, the plan for the Petition Area would be developed to a greater density than the Master Plan Update. Planning the Petition Area to a greater density could include increasing the height and capacity of instructional buildings and dormitories, or ~~adding additional~~increasing the total number instructional buildings and dormitories.

The Master Plan Update has been thoughtfully designed to embrace elements of sustainability. ~~The and its~~ architecture, open space, and landscape will work together to foster a Hawaiian sense of place that is reflective of the Kailua-Kona region, both in terms of its natural attributes and its cultural history. Increasing the height and capacity of buildings and dormitories would infringe upon open space throughout the Petition Area and increase the footprint of the U of N Kona. As such, views and vistas may be impacted with ~~larger buildings~~buildings of larger scale and additional infrastructure services would be needed to accommodate a greater capacity.

Developing the Petition Area to a greater density would allow U of N Kona to carry a larger student enrollment on a per quarter basis. Increasing ~~the student~~ enrollment could potentially increase noise and traffic to unacceptable levels, and put a strain on infrastructure services within the greater Kailua-Kona region. Furthermore, developing the Petition Area to a greater density may not comply with the LUPAG’s Map designation for the Petition Area. For these reasons, a “Higher Density Development Alternative” was dismissed from further consideration.

3.3 Alternative Land Uses

Consistency with 2003 State Land Use District Boundary Amendment

The Petition Area could be developed to encompass a range of viable urban land uses, including residential or commercial uses. Original plans for the Petition Area approved in the 2003 Decision & Order called for the development of the Hualālai Village condominiums, a multi-function cultural center, and a five-acre educational facility. The Hualālai Village project was planned in four phases. Phase 1 was planned to include 103 residential units outside the Petition Area, and Phases 2 to 4 was planned to include 297 residential units within 31 acres of the Petition Area. The condominiums ~~were planned to be equipped with~~included a recreation center, exercise facilities, and a pool. The condos were to be sold to U of N Kona affiliates and the general public. The Cultural Center was planned to be a first-class tourist attraction, intended to present the authentic story of the native Hawaiian culture, its historical relationship with the introduction of Christianity, and its impact upon the monarchy and the people of Hawai‘i. The Cultural Center ~~was planned to include~~d an outdoor water feature, an educational living museum complex, a restaurant, and shops. The Cultural Center was projected to serve between 500 to 1,100 visitors per day. A parking area was planned to accommodate 15 buses and 840 cars for visitors. Profits generated from the ~~Ce~~cultural Cecenter were intended to flow back to U of N Kona to support its educational activities. The educational facility was planned for approximately 5 acres of the Petition Area to allow for the expansion of the U of N Kona.

Although the Hualālai Village project was approved by the LUC, after U of N Kona acquired the Petition Area, the plan for the Petition Area was revised to meet the long-term vision of the U of N Kona. Although reverting to the Hualālai Village project would provide greater economic opportunities for the

U of N Kona, ~~it-the previous plan~~ would not accommodate U of N Kona's future enrollment trajectory and growth, and would fail to meet the long-term vision of the U of N Kona.

Agriculture

Another potential land use alternative evaluated for the Petition Area was agricultural use. Although U of N Kona currently operates a small-scale farm and research center on the Petition Area, the research farm's main purpose is to support education in nutrition, farming, and agricultural techniques, and is not intended to support large scale agricultural production. Furthermore, the LSB classification of the soils located on the Petition Area indicates that the soils are poorly suited for agricultural productivity. Additionally, the Petition Area was granted a State Land Use District Boundary Amendment from the State Land Use Agricultural District to the State Land Use Urban District. U of N Kona would have to file a motion to revert the Petition Area back to the Agricultural District if U of N Kona were to pursue agricultural ~~activity~~opportunities. Overall, the ability to pursue agricultural opportunities on the Petition Area is limited, and doing so would not accommodate U of N Kona's future enrollment trajectory and growth. The State Land Use Agricultural District is also inconsistent with the County General Plan and Kona Community Development Plan.

Both "Alternative Land Uses" for the Petition Area would not accommodate U of N Kona's future enrollment trajectory. Commercial or residential opportunities at the Petition Area would increase daily usage to and from the Petition Area, and could result in increased impacts to noise, traffic, and public services and infrastructure. Although agricultural opportunities would reduce the overall intensity of the usage of the Petition Area, the soils located on the Petition Area are not suitable for agricultural production. Additionally, this EIS has been prepared to support the 2020 Motion to Amend, which seeks the LUC's approval to implement the Master Plan Update. Reverting to the Hualālai Village Development Project or pursuing agricultural opportunities would be inconsistent with the 2020 Motion to Amend. For these reasons, both agriculture and alternative urban land uses have been dismissed from further consideration.

3.4 Alternative of Deferral of the Proposed Action

Under the "Alternative of Deferral of the Proposed Action," the Master Plan Update would be deferred and the Petition Area would remain vacant and undeveloped despite U of N Kona's need for the expansion. Current and future students would be limited to facilities and activities at the Existing Campus, which is not equipped with enough dormitories or student facilities to accommodate future enrollment projections. Ultimately, housing in the nearby vicinity could be impacted by the overflow of students and staff members. Alternative of Deferral of the Proposed Action would not allow the U of N Kona to timely expand the Existing Campus to accommodate its projected near-and long-term enrollment levels and would fail to meet the long-term vision of the U of N Kona.

Similar to the "No Action Alternative", if the Master Plan Update is deferred to, U of N Kona would not satisfy the conditions of the 2003 Decision & Order (*Appendix A*) and may be at risk of the LUC involuntarily reverting the Petition Area back to the Agricultural District. Furthermore, deferring the Master Plan Update would ~~not be~~ inconsistent with the County's LUPAG map designation in the County of Hawai'i General Plan ~~or and~~ the policies guiding future land use development in the Kona Community Development Plan. The LUPAG designates the Petition Area as MDU (*Figure 1-7*), and the Kailua-Kona Community Development Plan locates the Petition Area within the Kona Urban Area slated for future growth (*Figure 1-8*). Deferring further action would ~~not be~~ inconsistent with policies guiding land use and growth in the Kailua-Kona region.

Deferring further growth at U of N Kona would ~~not fail to~~ provide the needed space and facilities to accommodate its projected future enrollment. If U of N Kona defers further action, public facilities and services including housing, schools, and recreational facilities in the nearby vicinity of the Petition Area may be strained. Deferring further action would also be inconsistent with the 2003 Decision & Order, the County General Plan, and Kona Community Plan. For these reasons, deferral of the Master Plan Update has been dismissed from further consideration.

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Environmental Setting

Chapter 4

Environmental Setting

This chapter describes the existing environmental, cultural, economic, and social characteristics and conditions of the Petition Area, and discusses the potential impacts of the Master Plan Update. Strategies to minimize and mitigate any significant impacts are further discussed in this chapter. The technical studies and reports that have been prepared in support of this ~~Draft-Final~~ EIS include the following:

- Natural Resources Surveys for University of Nations Expansion Property, TMK: (3) 7-5-010:085, North Kona District, Island of Hawai'i, AECOS Inc., 2020.
- Mobility Analysis Report for the University of the Nations Kona Master Plan Update, Kona, Hawai'i, Fehr & Peers, Inc., 2023.
- Preliminary Infrastructure Assessment, University of the Nations, Kona Master Plan Update, G70, 2023.
- Water Supply Study for the Planned Expansion of University of the Nations, Kona, Hawai'i, Tom Nance Water Resource Engineering, 2023.
- Archaeological Inventory Study of TMKs: 3-7-5-10:85 and 3-7-5-17:06, Wai'aha Ahupua'a, North Kona District, Island of Hawai'i, Retchman Consulting, 2003.
- Burial Site Component of a Preservation Plan for Three Sites in the Proposed Hualālai Village Development Area, TMKs: 3-7-5-10:85 and 3-7-5-17:06, Wai'aha Ahupua'a, North Kona District, Island of Hawai'i, Retchman Consulting, 2003.
- Archaeological Data Recovery at Ten Sites on TMKs: 3-7-5-10:85 and 3-7-5-17:06, Wai'aha Ahupua'a, North Kona District, Island of Hawai'i, Retchman Consulting, 2007.
- Preservation Plan for SIHP Site 6032 and Site 23681, TMKs: 3-7-5-10:085 and 3-7-5-17:006, Wai'aha 1st Ahupua'a, North Kona District, Island of Hawai'i, Retchman Consulting, 2013.
- Dismantling/Restoration Plan for a Portion of the Kuakini Wall (SIHP 5-10-28-6302) TMKs: (3) 7-5-010:085 and (3) 7-5-017:006, Wai'aha 1st Ahupua'a, North Kona District, Island of Hawai'i, ASM Affiliates, Inc., 2019.
- Cultural Impact Assessment for the Update to the Master Plan for the Proposed 62-Acre Hualālai Village-Pacific Islands Cultural Center Development, Wai'aha, Kona District, Island of Hawai'i, TMK (3)-7-5-10:085; 7-5-17:006, Originally Prepared by Group 70 International, Inc., Updated by ASM Affiliates, Inc., 2020.
- Ka Pa'akai O Ka 'Aina Analysis, University of the Nations, TMKs: (3) 7-5-010:085 and (3) 7-5-017:006, ASM Affiliates, Inc., 2020.
- Acoustic Study for the University of the Nations, Kona, Kailua-Kona, Hawaii. Y. Ebisu & Associates, 2023.

4.1 Climate

Existing Conditions

The climate on Hawai'i Island can be characterized as mild and subtropical. Overall, the conditions on the Kona Coast are somewhat warmer and drier, with relatively low variability. According to the University of Hawai'i Geography Department Climate of Hawai'i Interactive Mapping Tool, the temperatures at and surrounding the general vicinity of the Petition Area are very moderate with an average annual air temperature of approximately 74°F. The average monthly low temperature is around 70°F in January and the average monthly high temperature is around 77°F in August.

The windward and northern regions of Hawai'i Island are typically wetter than the western and southern regions. The annual average rainfall in the general area of the Petition Area is 30 inches. February is typically the driest month, averaging 1.5 inches of rainfall and September is typically the wettest averaging 3 inches of rainfall. The winds on Hawai'i Island include trade winds, Kona winds, and winds associated with hurricanes and tropical storms. Trade winds from the northeast prevail most of the year with an average wind speed of 5-10 miles per hour (mph) (Giambelluca, et al., Department of Geography, University of Hawai'i at Manoa, State of Hawai'i, 2014).

Potential Impacts and Mitigation Measures

In Hawai'i, the annual and daily variation of temperature depends to a large degree on the elevation above sea level, the distance inland, and exposure to trade winds. Short-term construction related activity during the phased build out of the Petition Area is not anticipated to adversely affect current climate conditions. Upon completion of construction, it is not anticipated the Master Plan Update will adversely affect climate conditions in the greater Kailua-Kona region. No further mitigation is proposed.

4.2 Geology and Topography

Existing Conditions

Hawai'i Island is comprised of several volcanoes: Kohala, Mauna Kea, Hualālai, Mauna Loa, and Kīlauea. Of these volcanoes, only Mauna Loa and Kīlauea are considered active in addition to one active seamount, Lō'ihi located offshore. The Petition Area is situated on the western slopes of Hualālai Volcano, which is now considered dormant; its last eruption ended sometime between 1800-1801. Hualālai Volcano is composed of two types of lava flows: 'a'ā lava flow and pāhoehoe lava flow. The 'a'ā lava was formed by a slow moving and very viscous molten rock. The 'a'ā flow consists of a layer of clinkers and a core of hard massive basalt that originated from Hualālai between 1,500 and 3,000 years ago. The pāhoehoe lava is a fluid type of molten rock that flows relatively quickly down the slope with no overlying soil. The pāhoehoe lava originated from Hualālai 3,000 to 5,000 years ago. The ground surface covering the Petition Area is mainly overgrown with non-native vegetation, however there are a few heaps of sharp broken lava rock appearing more like 'a'ā than the smooth pāhoehoe. These fragments have been piled, apparently by hand, to facilitate cattle grazing.

The Petition Area rises in elevation from approximately 90 feet at Kuakini Highway to approximately 360 feet at its highest point, with steepest slopes on the upper mauka side just below Hualālai Road (Figure 4-1). The overall slope of the Petition Area is approximately 5-10% and increases to as much as 25% just below Hualālai Road.



Figure 4-1

Topography

Potential Impacts and Mitigation Measures

Short-term construction related activity will involve land disturbing activities that may result in minor soil erosion. Construction is planned in three phases to minimize the total amount of exposed soil. Overgrown vegetation will be cleared, and grading will be minimal and consist primarily of site preparation and excavation to level out the existing surface. As a general rule, cut material from grading will remain on-site and the amount of cut and fill will be balanced to minimize the need to import fill or to export excavated material. Grading, grubbing and stockpiling permits will be obtained from the County and a ~~National Pollution Discharge Elimination System (NPDES)~~ Permit will be obtained from the State of Hawai'i, ~~Department of Health (DOH)~~, Clean Water Branch (CWB) prior to the start of construction. During construction, soil erosion will be minimized through compliance with the Hawai'i County Code Chapter 10 – Erosion and Sediment Control. Construction ~~Best Management Practices (BMPs)~~ will be implemented and may include, but not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas. Periodic water spraying of soils may be conducted to minimize air-borne dirt particles from reaching adjacent properties. Implementing BMPs will mitigate potential impacts throughout the phased buildout of the Petition Area.

Upon completion of construction, permanent BMPs will be implemented throughout the Petition Area to reduce stormwater runoff typically associated with the increase in impervious surface areas. Permanent BMPs may include, but not be limited to, landscaping steep and open space areas and implementing “golf course sumps,” lava swales, and injection wells, where feasible. Upon completion of construction, the Master Plan Update is not anticipated to have a long-term adverse effect on the geology or topography of the Petition Area.

4.3 Soils

Existing Conditions

The physical attributes of Hawai'i's soils and the relative productivity of different Hawai'i soil types for agricultural production purposes are addressed in three (3) studies: (1) the U.S. Department of Agriculture Natural Resource Conservation Services (NRCS) Soil Survey, (2) the University of Hawai'i ~~Land Study Bureau (LSB)~~ Detailed Land Classification; and (3) the State of Hawai'i Department of Agriculture's, Agricultural Lands of Importance to the State of Hawai'i (ALISH) system. Soil information for the Petition Area was obtained from these studies, as summarized below.

Natural Resource Conservation Service Soil Survey:

The NRCS Soil Survey for Hawai'i Island classifies the two primary soils of the Petition Area as: Wai'aha-Punalu'u Lava Flows Complex, 10-20% slopes, and Kainaliu Cobbly Silty Clay Loam, 10-20% slopes (*Figure 4-2*).



Figure 4-2

Soils Map

The Wai'aha-Punalu'u series consists of medial silt loams soils that formed in volcanic ash over pāhoehoe lava flows. The Kainaliu Cobbly Silty Clay Loam series consists of moderately deep, silty clay loams that formed in volcanic ash in 'a'ā lava flows. Both soils are mainly found in lower elevations on the leeward slopes of Hualālai Volcano at elevations from sea level to 1,000 feet and slope gradients range from 2 to 40 percent. Both soils are well drained, permeability is moderately rapid in soils and very slow in underlying bedrock. Both soils are typically used for grazing and homesites. The ground surface covering the Petition Area is mainly overgrown with non-native vegetation, however there are a few heaps of sharp broken lava rock appearing more like 'a'ā than the smooth pāhoehoe. These fragments have been piled, apparently by hand, to facilitate cattle grazing.

Land Study Bureau Detailed Land Classification:

The LSB classification system classifies soils based on a productivity rating. Letters indicate class of productivity, with A representing the highest class and E the lowest.

The LSB map classification for the Petition Area is "E"/Very Poor, or among the lowest levels of agricultural productivity.

Agricultural Lands of Importance to the State of Hawai'i:

The ALISH Classification System was developed and compiled in 1977 by the State Department of Agriculture with assistance from the NRCS, U.S. Department of Agriculture and the College of Tropical Agriculture, University of Hawai'i. This classification system was developed to identify three classes of agriculturally important lands for the State of Hawai'i as part of a national effort to inventory important farmlands. Lands not considered for classification within this system are developed urban lands over ten acres, natural or artificial bodies of water over ten acres, public use lands, forest reserves, lands with slopes in excess of thirty five percent, and military installations except undeveloped areas over ten acres.

ALISH system classifies important agricultural lands as Prime, Unique, or Other Important Agricultural Land. Lands that do not fall into one of the three ALISH categories are listed as Unclassified and are not considered agriculturally important lands. The soils covering the Petition Area are listed as Unclassified. The nearest ALISH-classified parcel is roughly three-quarters of a mile south.

Potential Impacts and Mitigation Measures

Short-term construction related activity will involve land disturbing activities that may result in minor soil erosion. Construction is planned in three phases to minimize the total amount of exposed soil on-site. Non-native overgrown vegetation will be cleared, and grading will be minimal and consist primarily of site preparation and excavation to level out the existing surface. As a general rule, cut material from grading will remain on-site and the amount of cut and fill will be balanced to minimize the need to import fill or to export excavated material. Grading, grubbing and stockpiling permits will be obtained from the County and a NPDES Permit will be obtained from the State DOH, CWB prior to the start of construction. During construction, soil erosion will be minimized through compliance with the Hawai'i County Code Chapter 10 – Erosion and Sediment Control. Construction BMPs will be implemented and may include, but not be limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas. Periodic water spraying of soils may be conducted to minimize air-borne dirt particles from reaching adjacent properties. Implementing BMPs will mitigate potential impacts throughout the phased buildout of the Petition Area.

Upon completion of construction, permanent BMPs will be implemented throughout the Petition Area. Permanent BMPs may include, but not be limited to, landscaping steep and open space areas and implementing “golf course sumps,” lava swales, and injection wells, where feasible. Implementing permanent BMPs will mitigate potential soil erosion with the Master Plan Update. Upon completion of construction, the Master Plan Update is not anticipated to have a long-term adverse effect on soils covering the Petition Area.

Although U of N Kona operates a small farm and research center at the Petition Area, the small research farm’s main purpose is to support education in nutrition, farming, and agricultural techniques, and is not intended to support large-scale agricultural production. Furthermore, agricultural potential for the Petition Area is generally poor due to the ground surface that covers the Petition Area. As classified by the LSB, the Petition Area is rated “E”, very poorly suited for agricultural productivity. The Petition Area is also unclassified under the ALISH Classification System and is not considered agriculturally important lands. Due to the low potential for agricultural productivity, it is not anticipated the Master Plan Update will infringe upon agricultural lands that may be of importance to the County or the State.

4.4 Surface Waters and Drainage

Existing Conditions

The Petition Area is located within the Hualalai Aquifer Sector Area (ASEA), which is comprised of the Keauhou Aquifer System Area (ASYA) and Kiholo ASYA. The Petition Area is located within the Keauhou ASYA. According to the Hawai’i County Water Use and Development Plan Update and Hawai’i Water Use and Development Plan Update, Keauhou Aquifer System, surface water in the Keauhou Aquifer System Area is extremely limited. Wai’aha Stream is the only perennial stream located within the nearby area, due to the high permeability of basaltic lava flows from Mauna Loa and Hualālai volcanoes. In the wettest part of the rain belt, a few small springs may occur, such as Wai’aha Springs. The high permeability of soils in the Kailua-Kona region means that surface runoff enters the ocean only during substantial storm events. The few small springs that do occur, such as Wai’aha Springs, occurs as seepage of groundwater perches on soil and ash beds. However, such springs are minor and intermittent. Data for surface waters throughout the Keauhou ASYA is unavailable as surface water is extremely limited.

In support of the Master Plan Update, a *Preliminary Infrastructure Assessment* and a *Conceptual Infrastructure Master Plan* were prepared in ~~2023-April 2025~~ by G70 (Appendix C). According to the assessment, no perennial stream, existing drainage facilities, or defined natural drainage ways were identified at the Petition Area. Additionally, a previous drainage study was completed by Ross Engineering Inc. in 2002 to analyze the offsite stormwater drainage conditions that affect the Petition Area. The drainage report found that concentrated stormwater run-on enters the Petition Area at three different locations from the mauka direction (*Figure 4-3*): an 84-inch pipe culvert crosses Queen Ka’ahumanu Highway and discharges runoff at the southeastern corner of the Petition Area and a 36-inch and 30-inch culvert at the intersection of Queen Ka’ahumanu Highway and Hualālai Road discharge runoff on the Petition Area.

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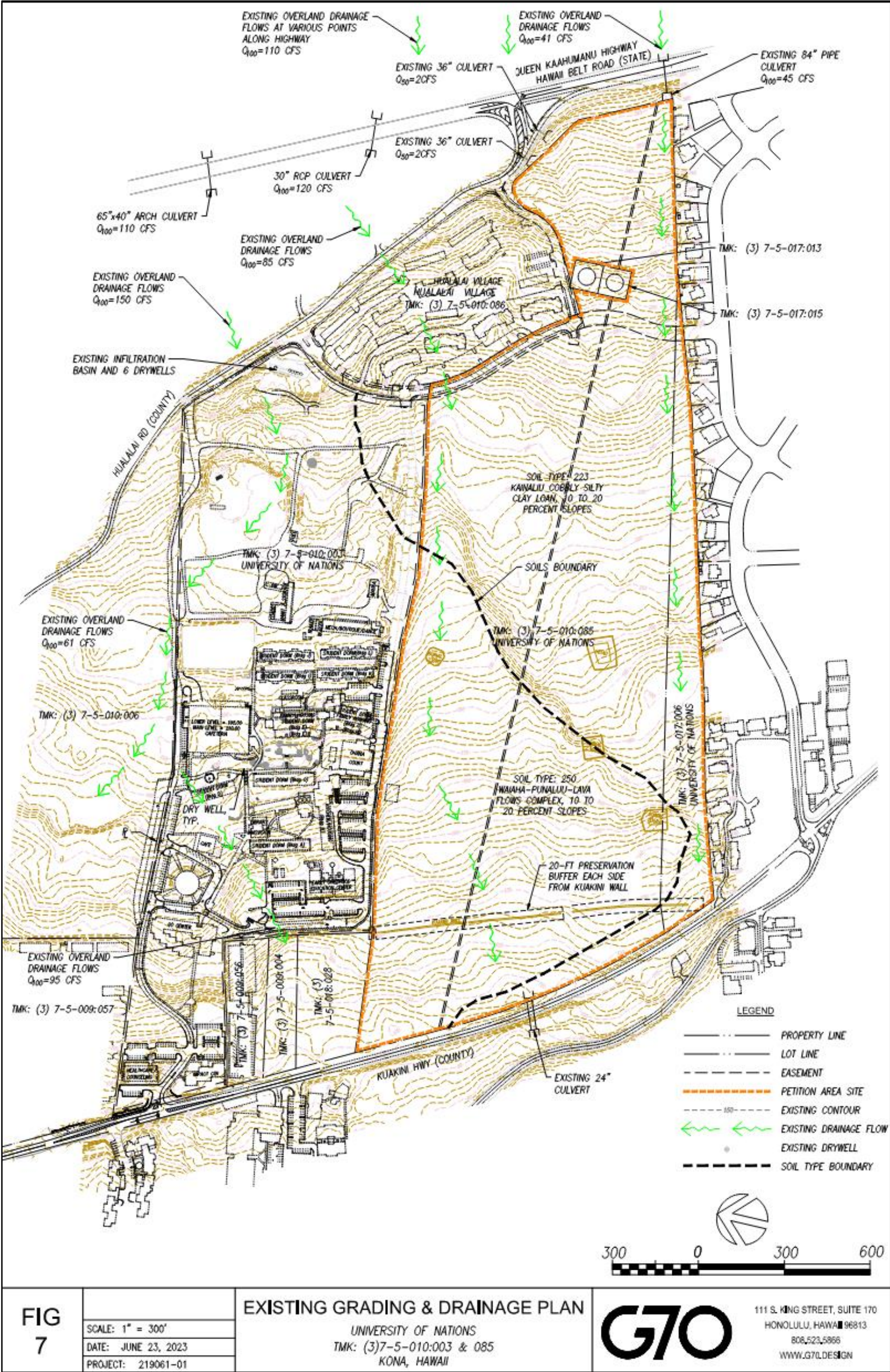


Figure 4-3 Existing Drainage Flow Pattern

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Stormwater runoff that flows on the Petition Area from the mauka culverts flows to an existing 24-inch culvert which conveys runoff across Kuakini Highway. Immediately downstream of the culvert, there is a series of six drywells located on TMK (3) 7-5-018:094 (owner: Walua Professional Center). No other culverts or drainageways were identified along Kuakini Highway. It is assumed run-on as well as runoff at the Petition Area is either disposed of by onsite or off-site drywells (across Kuakini Highway) or is slowed by heavy vegetation and infiltrates into the ground.

Potential Impacts and Mitigation Measures

Short-term construction related activity could increase stormwater runoff generated at the Petition Area, which may temporarily affect nearby surface waters. To minimize the potential for increased stormwater runoff generated at the Petition Area, construction is planned in three phases to minimize the amount of area exposed during construction. Contractors will follow State DOH and County regulations to minimize the potential for increased stormwater runoff during construction. A NPDES Permit will be obtained from the State DOH, CWB prior to the start of construction. Furthermore, BMPs described in Section 4.2 will be employed to mitigate the potential for increased stormwater runoff.

The drainage plan has been designed in accordance with the County of Hawai'i standards and is phased over the buildout of the Petition Area (*Figure 4-4a-4-4c*). For areas of 100 acres or less, drainage systems are to be designed for return periods of 10 years for runoff conditions or 50 years for sump conditions. Due to potential sumps at the Petition Area, the 50-year return rate has been utilized.

The Master Plan Update is anticipated to increase runoff generated at the Petition Area, which could cause adverse effects to areas downslope or nearshore waters. To mitigate the increase in runoff, ~~Low Impact Development (LID)~~ strategies and BMPs will be implemented to capture and retain stormwater runoff at the Petition Area. LID strategies consist of stormwater management methods that promote conservation of existing natural features and use of localized small-scale stormwater systems intending to mimic natural hydrologic patterns, while minimizing stormwater infrastructure. LID that may be implemented include:

- Minimizing impervious surface areas and using permeable surfaces where possible, including sidewalks and roadway/driveway paving.
- Retaining and incorporating the natural topography.
- Minimizing grading and disturbed areas.
- Designing narrow roadways and minimizing driveway lengths and widths.
- Designing sidewalks on one side of the street.
- Planting trees to accommodate future tree growth.
- Using source controls of stormwater for pollutant control and groundwater recharge.
- Minimizing conventional infrastructure (curb and gutter, drain inlets/catch basins, and culverts).

Utilizing onsite lava rock in sumps, swales, trenches, shallow drywells, and detention and retention basin

Implementation of LID will improve stormwater runoff management. Sizing and selection of LID will be site-specific depending on the land use and characteristics of individual developed drainage areas, with the intent to detain, retain, and infiltrate post-development runoff onsite.

For any larger stormwater events, excess stormwater runoff will be discharged to conveyances located along the central spine road and along the southern perimeter road. These drainage conveyances are envisioned to be natural unlined channels where possible, since natural channels provide disposal of runoff through fractured rock subgrade to attenuate peak flows and runoff volumes, and provide ground water recharge. road.

With an integrated stormwater management approach, it is not anticipated that the Master Plan Update will substantially increase stormwater runoff generated at the Petition Area, and the implementation of such measures will reduce overall runoff and impacts to nearshore waters.



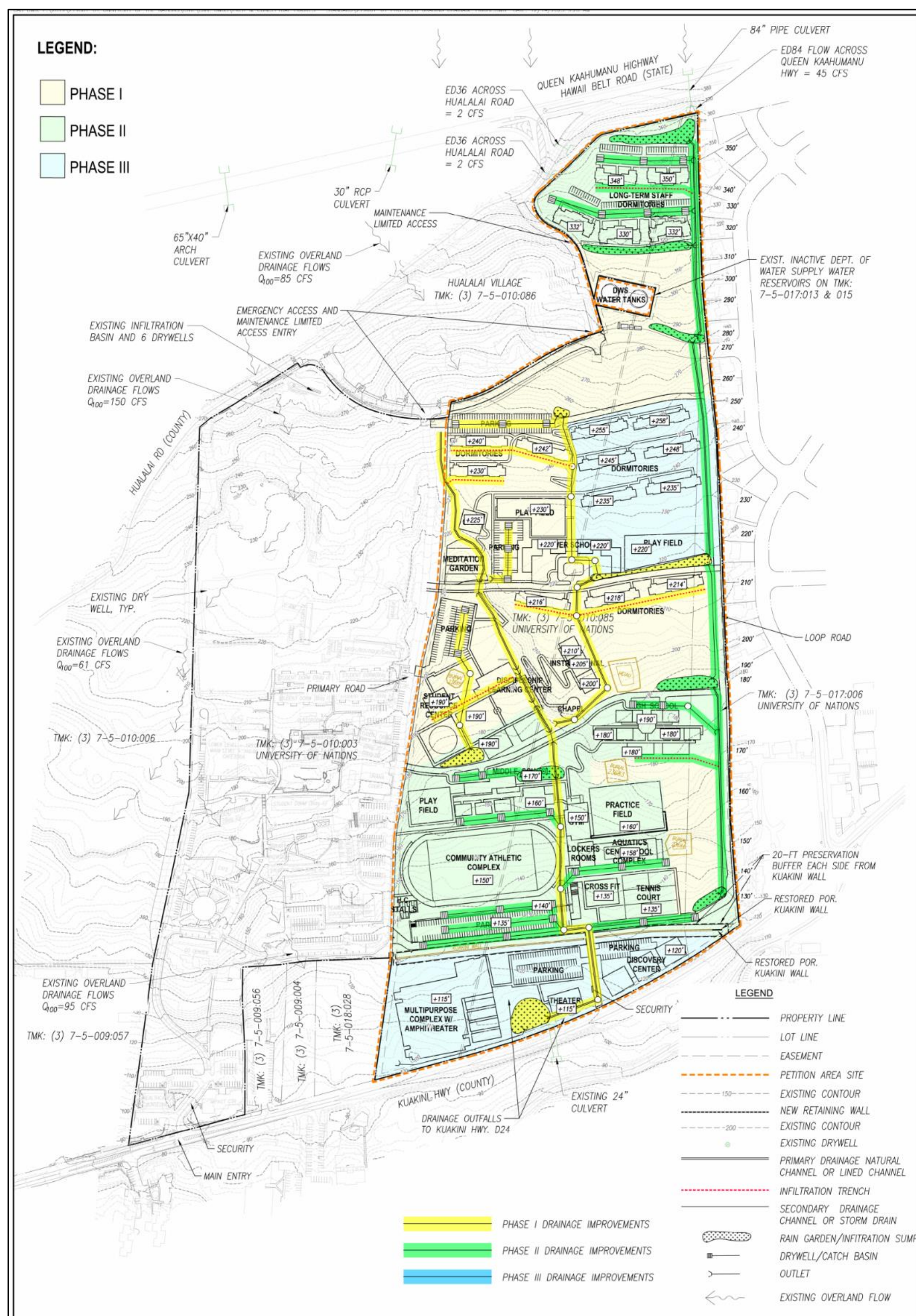


Figure 4-4b

Proposed Drainage Plan Phase 2



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4.5 Groundwater Resources/Hydrology

A Water Supply Study for the Planned Campus Expansion was prepared by Tom Nance Water Engineering, Inc. in June 2023 (Appendix D). The findings from the study are presented below.

Existing Conditions

On Hawai'i Island, groundwater is the primary source of drinking water. In the Kona area, groundwater occurs as both basal groundwater and high-level (dike-impounded perched) groundwater. The rainfall pattern of the region is responsible for the recharge of the basal aquifer that extends from the upper slopes of Hualālai to the shoreline. The basal lens in Kona is relatively thin and inconsistent due to the low rainfall input and the leakage of groundwater at the coastline. Wells drawing from basal groundwater in Kona are susceptible to salinity if they are drilled too deep or if they are over-pumped. Brackish water is another groundwater resource reserve type in Kona. Brackish water is created as a result of seawater intrusion at the shoreline. Groundwater beneath the Petition Area occurs as a thin brackish basal lens underlain by saline groundwater of seawater salinity.

The County adopted by ordinance the Hawaii County Water Use and Development Plan Update dated August 2010, and ~~the State Commission on Water Resource Management (CWRM)~~ granted approval in December 2011. According to the Hawaii County Water Use and Development Plan Update, the Petition Area is situated within the Hualalai ASEA, which is comprised of the Keauhou ASYA and the Kiholo ASYA. The Petition Area is located within the Keauhou ASYA. The Hualalai ASEA has a sustainable yield of 56 millions of gallons per day (MGD). Within the Hualalai ASEA, there are a total of 65 production wells, including 21 municipal, 18 irrigation, 1 industrial, and 25 other wells. The Hawaii County Water Use and Development Plan Update called for further evaluation of the Keauhou ASYA.

In March 2017, the Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System was finalized. The plan provides an integrated approach to land use planning and water resource development, and an estimate of future water demand projections based on County land use/zoning policies and water use rates for the Keauhou ASYA. Notably, the future water demand for the Keauhou ASYA includes the water needed to support the urban land use designation of the Petition Area, under the previous plan. According to the Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System, the Petition Area is situated within the Keauhou ASYA, which has a sustainable yield of 38 MGD. There are 47 production wells in the Keauhou ASYA, including 16 municipal, 12 irrigation, 1 industrial, 5 agricultural, and 13 wells drilled but categorized as unused.

Within the Hualalai ASEA, the ~~County of Hawai'i Department of Water Supply (DWS)~~ operates the Kona Water System, which is split into the North and South Kona Water System. The Kona districts were without any County water systems until funds were provided by the Legislature in 1951. Historically, surface water from Wai'aha Stream was diverted into large storage tanks located in Wai'aha above Māmalahoa Highway, filtered, then piped down to Kailua-Kona by a small transmission line to large tanks above Kailua-Kona Village. The first potable water wells began operations in 1967 and most of the small pipelines initially installed have been replaced with larger mains. The Kona Water System is supplied by ground water sources, including 12 wells.

The Existing Campus is supplied by water from DWS, but the Petition Area currently is not. The Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System encourages development of future high-level wells for DWS systems in areas generally between 1,500-feet and 1,800-feet

ground elevations mauka of Māmalahoa Highway, with the overall goal of sustainability throughout the region.

Potential Impacts and Mitigation Measures

Short-term construction related activity could increase stormwater runoff and soil erosion, which may potentially decrease percolation to groundwater. To minimize the potential for increased stormwater runoff and soil erosion, construction is planned in three phases to minimize the amount of area exposed during construction. Contractors will follow State DOH and County regulations to minimize the potential for increased stormwater runoff during construction. An NPDES Permit will be obtained from the State DOH, CWB prior to the start of construction. Furthermore, BMPs described in Section 4.2 will be employed.

Fully built out, it is anticipated approximately ~~107,95,000~~ gallons of water per day (GPD) will be needed to support the Master Plan Update. Furthermore, it is projected approximately 28,800 GPD will be needed to irrigate the Petition Area upon full buildout of the Petition Area. ~~The total projected water demand includes the projected demand for irrigation purposes and~~ U of N Kona submitted a request to DWS to obtain all potable water, ~~including potable and non-potable~~ from the DWS public water system. Due to limited capacity in the DWS system, water from DWS has indicated that a new water source will be required to serve the Petition Area support the Master Plan Update. U of N Kona does not intend to drill a well on the Petition Area due to basal lens insufficiency, potential sea water intrusion, and environmental concerns. U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of N Kona could be allocated water to support the Master Plan Update if the well(s) are completed and dedicated to DWS. The potential well(s) are located on TMK (3) 7-5-003:023 (Wheelock Property) and TMK (3) 7-5-017:044 (Bolton Property).

~~Two potential locations have been identified for a new well and related infrastructure (Figure 4-5 and Figure 4-6).~~ The discussion below presents further details of each potential location new well to develop a new well.

Well Development on TMK (3) 7-5-003:023: Wheelock Property

Upon completion of the Keōpū Deep Monitor Well (State No. 3855-001), fresh artesian water was encountered approximately 400 feet below sea level. In 2017, a second monitor well (No. 3855-002) was developed about 60 feet away from the Keōpū Deep Monitor Well and completed to isolate the artesian water from the overlying brackish and saline water. Once isolated in this manner, the static water level stood at 28 feet above sea level and varied with the ocean tide. A 48-hour constant rate test was conducted with the well averaging 820 gallons per minute (GPM). The drawdown was essentially constant and recovery was very rapid. It is important to note that there was no evidence in the drawdown or recovery of a boundary effect. Such an effect might have occurred if the water body tapped by the well was of modest areal extent. The pumped water salinity was constant and comparable to the DWS wells that draw high-level groundwater from locations above Māmalahoa Highway. Specific conductance was about 140μS/cm and chlorides were less than five (5) MG/L. Further, isotope analysis confirmed that the artesian water at depth below sea level was the same as the high-level groundwater pumped by the inland DWS wells. The pump test demonstrated that a viable source of drinking water from the artesian water at depth could be developed at this location.

Although the areal extent of the developable artesian water at depth is unknown at this ~~current~~ time, the distance to a well on the Wheelock property is modest enough (approximately 1,200 feet) to warrant drilling of an exploratory well and, if successful, completing it as a production well of 700 ~~gallons per minute (GPM)~~ capacity. As with either potential well, a well on the Wheelock Property would

be dedicated to the DWS, after which the water produced would be allocated to DWS, the well developer, U of N Kona, and potentially other third-party users.

The advantage ~~to of this~~ location of the Wheelock Property is the modest infrastructure improvements that would be required to integrate the well into the DWS system. The well water could be delivered downslope into the existing DWS 20-inch transmission main in Queen Ka'ahumanu Highway; and the pumping lift (i.e., required electrical power) would be about half the requirement of DWS' high-level wells above Māmalahoa Highway.

Well Development on TMK (3) 7-5-017:044: Bolton Property

~~The U of N Kona is engaged in discussions with a private well developer for a new potential well located on TMK (3) 7-5-017:044. At this particular location~~On the Bolton Property, the well would be drilled to tap into the fresh water at depth below sea level. Within the Kailua-Kona region, four other test holes were drilled to a depth below sea level (State Well Nos. 3858-001 and 3858-002 (Keōpū Deep Monitor Well) at Keōpū on State land; State Well No. 4159-001 (Kaloko Deep Monitor Well) in the DWS tank site at 600-foot elevation along Hina Lani Street; and State Well No. 3959-001 (Ota Well) at Kamakana). At each of these sites, fresh water was encountered between 400 and 1,000 feet below sea level. State Well No. 3858-002 was pump tested for 48 hours at 820 GPM. The water pumped from the four well sites discussed ~~previously above~~ were identical to the wells tapped by DWS above Mamalahoa Highway. The new potential well on the Bolton Property TMK (3) 7-5-017:044 could be successfully developed to produce more than 1.0 million GPD. ~~In the event that such a well does not produce potable water or has a yield too low to warrant development, a new well on the Wheelock property would need to be further explored.~~

U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property. The well developer recently entered into a Memorandum of Agreement with the DWS (Appendix E), under which the developer agreed to design and construct (to DWS-dedicable standards) the well, which would connect to the DWS water system via a water main running along Queen Kaahumanu Highway. U of N Kona understands that the well developer will need to negotiate a final well development agreement with DWS to formalize the number of water commitments, the water system design criteria, and the water credits available. As with either potential well, a well on the Bolton Property would be dedicated to the DWS, after which the water produced would be allocated to the DWS, the well developer, U of N Kona, and potentially other third-party users.

Although U of N Kona would only be seeking an allocation of the water produced from the new well, once it has been dedicated to DWS, ~~the identified locations for potential new well development would~~ draw upon the Keauhou ASYA and any new potable well withdrawals from ~~the groundwater~~ aquifer must consider potential adverse effects to the downgradient brackish basal groundwater lens. The Keauhou ASYA has been and continues to be carefully monitored as the Kona area has grown rapidly and ~~been~~ urbanized beginning in the late 1900s, which led to the diminishing of resources, including water. As of June 2022, the existing groundwater pumpage within the Keauhou ASYA is 14.452 ~~million gallons per day (MGD)~~, which constitutes approximately 38% of the total sustainable yield. The Master Plan Update is estimated to demand approximately 95,000 GPD for potable water. ~~107 MGD~~ which will increase the total groundwater pumped within the Keauhou ASYA by less than 1%. The new well would draw from the deep confined freshwater zone, and besides the Keōpū Monitor Well, there are no other wells within the Keauhou ASYA that have discovered and drawn water from the deep confined freshwater zone. Past and continued monitoring of DWS' inland potable wells, including the Keōpū Monitor Well, have shown no adverse effects to basal groundwater and it is not anticipated withdrawal of water from the deep confined freshwater zone at either of the two identified

locations for a new well will affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the fresh water body at depth below salt water.

Additionally, the Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System indicates that the aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated to replace basal sources. Appropriate consultation for the construction and testing of a new well will be conducted at the time well permits are sought from CWRM. Commitments to monitor the long-term effects from the drawing of water from the freshwater zone will be established with the well construction permit.

At full buildout, it is projected approximately 31,050 GPD will be needed to irrigate the Petition Area. Nonpotable water sources for irrigation will be investigated to provide the required irrigation water demand. Existing catchment systems on the Existing Campus may be expanded to irrigate the Petition Area. U of N Kona recognizes potable water is a limited resource and is committed to minimizing potable water for irrigation purposes as required by DWS. As such, the following various strategies will be considered and implemented during development of the campus.

- Rainwater Catchment
- Downspout Disconnects – discharge of runoff direct to landscaping for irrigation water
- Graywater Treatment and Reuse
- Condensate Water Reuse
- Xeriscaping – Install plantings and ground cover that required little to no irrigation water
- Synthetic Turf – install playfields that do not require irrigation

The total increase in water demand for the Master Plan Update is not anticipated to impact ground water resources, the total water availability for the County, or impact the Department of Hawaiian Home Lands' ability to provide water for its homesteads. Although the total increase in demand is not anticipated to affect groundwater resources. Nevertheless, to offset the increase in demand, water meters, similar to those installed throughout the Existing Campus, will be installed throughout the Petition Area to detect leaks and monitor water consumption rates. An additional potable well will provide water for future land use and water needs growth and urban activities in the North Kona area, as a portion of the water from the well will be dedicated to the County.

Due to the location of the identified well sites, which ~~sit is~~ is approximately 4.5 and 5 miles from the Kaloko-Honokōhau National Park, and the amount of water needed to support the Master Plan Update, it is not anticipated that the drawing of water at these two sites will affect freshwater flow to the coastline at the National Park or within the nearby vicinity of the National Park, or affect biota and Native Hawaiian traditional and customary practices.



Location of Wheelock Well

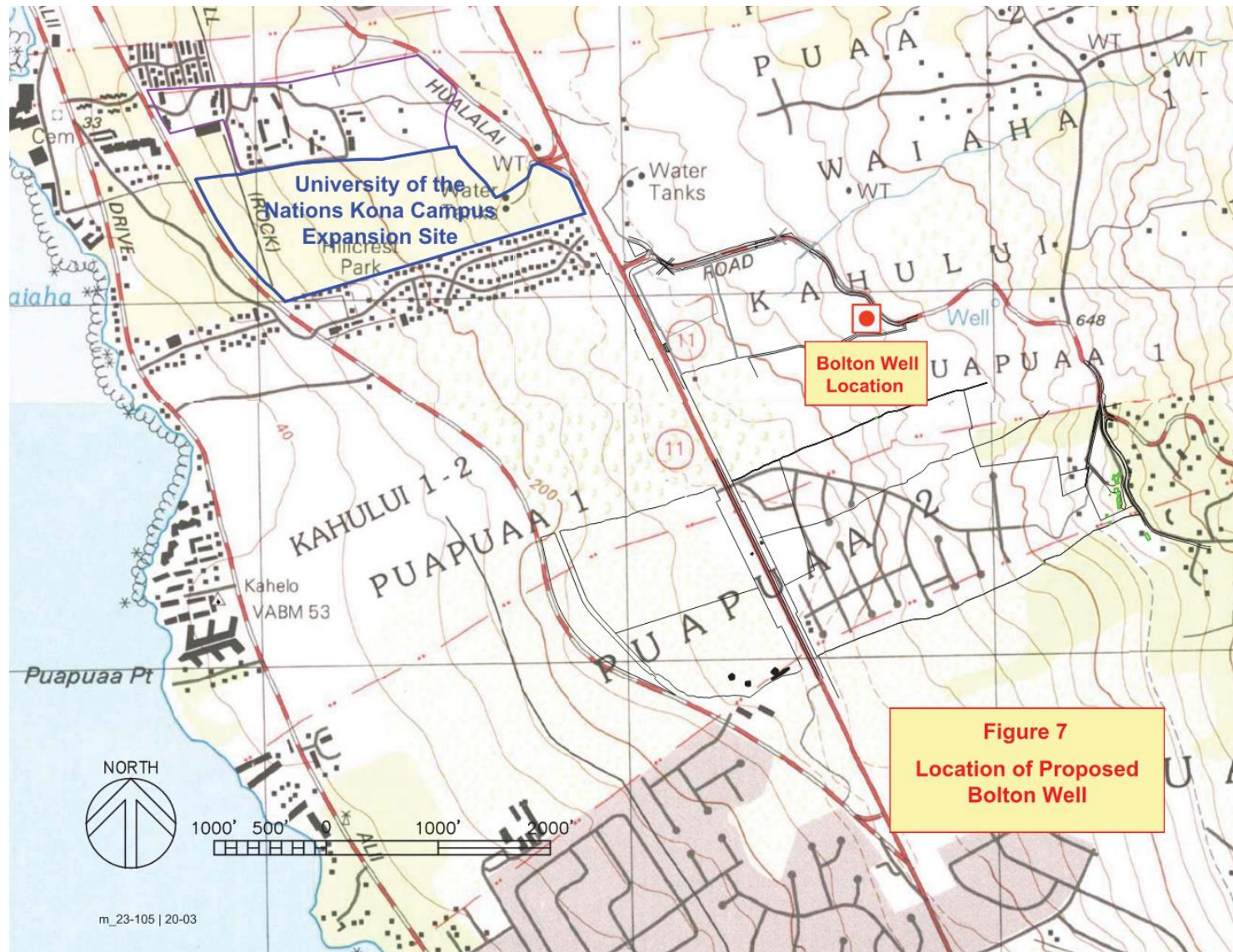


Figure 4-6

Location of Bolton Well

4.6 Natural and Manmade Hazards

4.6.1 Earthquakes

Existing Conditions

On Hawai'i Island, the majority earthquakes are linked to volcanic activity and the movement of magma within the Kīlauea Volcano or Mauna Loa Volcano. Other earthquakes are the result of exerted pressures released by magma that never reaches the surface. Based on the 2006 United States Geological Survey (USGS) International Building Code (IBC) Seismic Design Map, the County of Hawai'i could experience severe seismic activity with ground motion anywhere from 0.30 up to 1.23 of the earth's ground motion accelerations (g-force).

The seismic hazard is highest along the southeast coast of the Island of Hawai'i, followed by the Kona coast. Most recently, a 4.8 magnitude earthquake occurred on February 14, 2023 off the southeast coast of Hawai'i Island. Seismic tremors on the Island of Hawai'i have caused ground cracks, landslides, ground settlement, damaging tsunami, and mudflows. Existing buildings and infrastructure have been destroyed or damaged, and new construction could be impacted by seismic activity resulting in destruction and possible injury or loss of life (Fletcher III, Grossman, Richmond & Gibbs, 2002).

Potential Impacts and Mitigation Measures

Hawai'i Island is at risk for high magnitude earthquakes with volcanic activity from the Kīlauea Volcano and Mauna Loa Volcano. Buildings and facilities to support the Master Plan Update will comply with applicable building code standards as set forth in Chapter 5 of the Hawai'i County Code to mitigate potential building damage that may be caused by seismic activity. Staff will receive proper training to assist students and others on campus in the event of an earthquake. The Master Plan Update is not anticipated to increase the seismic vulnerability within the Kailua-Kona region.

4.6.2 Lava Hazards

Hazard zones from lava flows are based mainly on the location and frequency of both historic and prehistoric eruptions. "Historic eruptions" include those for which there are written records, beginning in the early 1800's, and those that are known from oral traditions of native Hawaiians. Knowledge of prehistoric eruptions is based on geologic mapping and dating of the old flows of each volcano. The USGS divided and mapped Hawai'i Island in nine hazard zones according to the level and degree of potential lava flow hazards.

Existing Conditions

Based on the USGS mapping of lava flow hazards, the Petition Area is within lava hazard Zone 4 (*Figure 4-7*), indicating a moderate hazard. Zone 4 includes all of the Kailua-Kona region and the entire Hualālai Volcano. Hualālai Volcano is considered dormant, having last erupted in 1801. The percentage of Mount Hualālai that has been subject to damage from lava in the last 750 years is less than 15 percent. The Hualālai Volcano is considered to represent a post-shield stage of Hawaiian volcanism, characterized by a marked decrease in the eruption rate as the volcano drifts off the Hawaiian hotspot. Based on the probability of lava flows in Zone 4, there is a low concern for lava affecting the Petition Area.

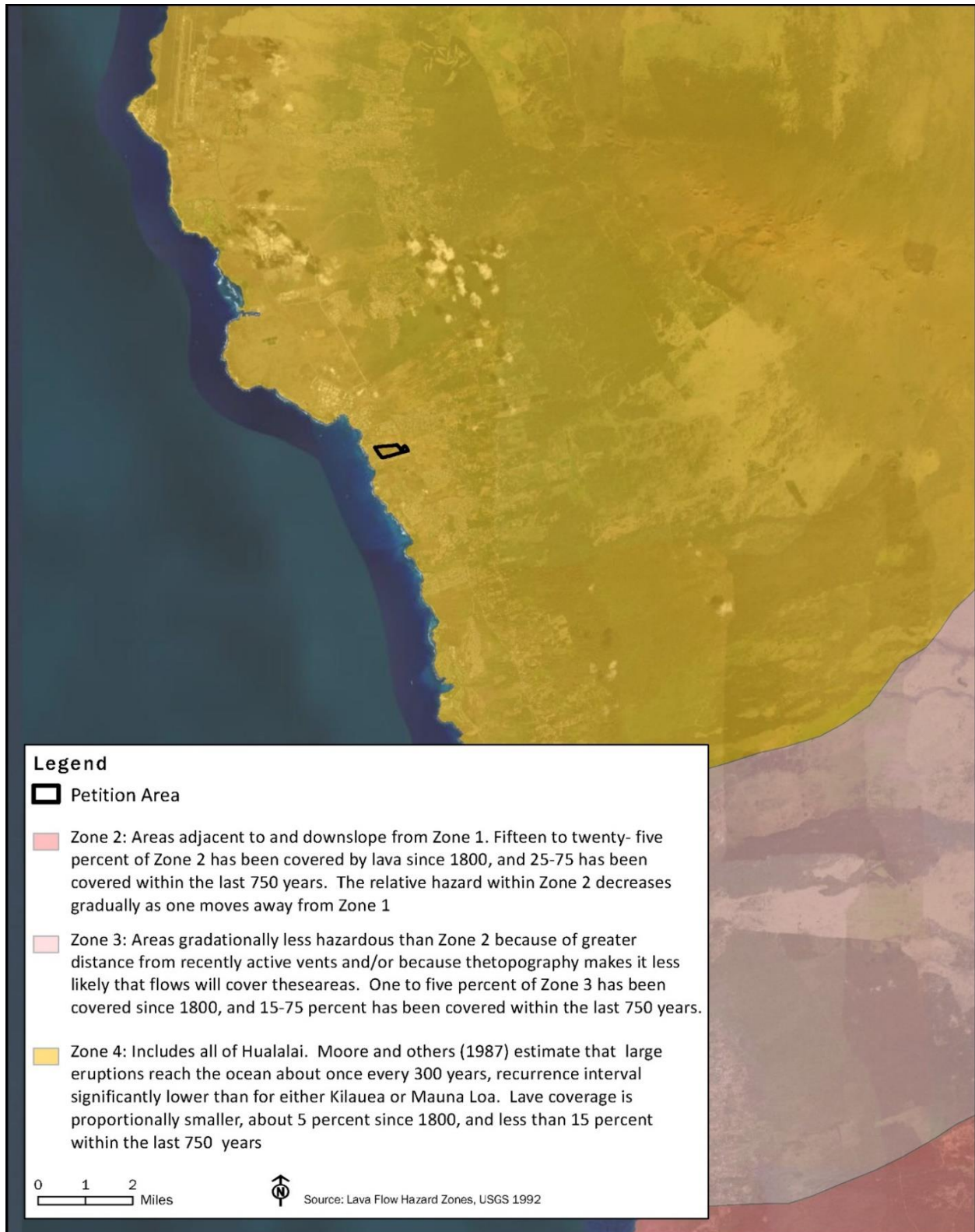


Figure 4-7

Lava Hazards

Potential Impacts and Mitigation Measures

Although Hawai'i Island is at risk of lava flow hazards from the Kīlauea Volcano and Mauna Loa Volcano, the Petition Area does not lay within the rift zones of the current active volcanoes. Additionally, Hualālai Volcano is considered dormant and was last active over 200 years ago. It is not anticipated the Master Plan Update will increase the area's vulnerability to lava flow hazards. Due to the location of the U of N Kona, the U of N Kona may be used as an evacuation site or shelter in an emergency.

4.6.3 Hurricanes and Tropical Storms

Hurricanes and tropical storms are both categorized as tropical cyclones, which are warm-core storms that originate over tropical waters with well-defined centers of closed surface wind circulation. A hurricane is a tropical cyclone that sustains surface winds of 64 knots (74 mph) or more. Once categorized as a hurricane, the intensity of the hurricane is measured by the Saffir-Simpson Hurricane scale. The scale ranges from category 1 (low) to 5 (high). Tropical storms are categorized as an organized system of strong thunderstorms with defined circulation and maximum sustained winds of 33 to 63 knots (39 to 73 mph) (NOAA, 2015). Tropical depressions are systems of clouds and thunderstorms with wind speeds of up to 38 mph (NOAA, 2015).

Existing Conditions

Hurricanes are considered to be relatively rare events throughout the Hawaiian Islands. Records show that strong windstorms have struck all major Hawaiian Islands. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawai'i: Nina (1957), Dot (1959), 'Iwa (1982), Estelle (1986), and 'Iniki (1992). Hurricane Iniki (1992) was the strongest and most destructive hurricane to hit the Hawaiian Islands, with major impacts to the Island of Kaua'i. Wind speeds were recorded at 130 mph with gusts reaching 160 mph. Approximately 13,000 homes were damaged.

With rising global temperatures, Hawai'i is expected to experience a higher incidence of tropical storm events. In most recent history, Tropical Storm Iselle made landfall on Hawai'i Island in 2014, causing considerable damage to utility poles, roadways, and homes on the windward side of the island. In 2016, Tropical Storm Darby made landfall on Hawai'i Island, producing heavy rain and widespread flash floods. In 2018, Hurricane Lane passed southeast of the Hawai'i Island as a weakening Category 5 hurricane, causing severe mudslides and flash flooding.

Potential Impacts and Mitigation Measures

Although the Petition Area has not been directly impacted by a major hurricane or tropical storm, the future threat of hurricanes in the area cannot be estimated beyond the fact that hurricanes and tropical storms will most likely continue to frequent the Hawaiian Islands. Buildings and facilities will comply with applicable building code standards as set forth in Chapter 5 of the Hawai'i County Code. Staff members will receive proper training to assist students and others on campus if a hurricane or tropical storm watch or warning is issued. U of N Kona will regularly practice evacuations to prepare students and staff should the U of N Kona campus be under the threat of a natural disaster. The Master Plan Update is not anticipated to increase the area's vulnerability to hurricane events or tropical storms. The U of N Kona campus may also be used as a shelter in an emergency.

4.6.4 Flooding

Existing Conditions

The ~~Federal Emergency Management Agency's (FEMA)~~ Flood Insurance Rate Maps (FIRM) indicate that the Petition Area is within Zone X (*Figure 4-8*), which represents areas with minimal flood hazards. Zone X is defined as areas determined to be outside the 500-year flood plain. Areas designated as Zone X are outside of the 0.2 percent annual chance floodplain because these are areas considered to have very low potential for flooding.

Potential Impacts and Mitigation Measures

The Petition Area ranges from 90 to 360 feet above sea level and is located within Zone X, an area designated with a very low potential of flooding. No significant impacts from flooding are anticipated to occur at the Petition Area during the phased construction of the Master Plan Update or upon completion. The Petition Area is not located within a Special Flood Hazard Area, as determined by FEMA. The Master Plan Update will comply with applicable standards articulated in Chapter 27 of the Hawai'i County Code, which adopts measures from FEMA's Flood Insurance Program. Additionally, LID measures will be implemented throughout the Petition Area, where feasible, to mitigate potential stormwater runoff generated at the site. The Master Plan Update is not anticipated to increase the area's vulnerability to flood hazards.

4.6.5 Tsunami

According to the County of Hawai'i Multi-Hazard Mitigation Plan (2020), a tsunami consists of a series of high-energy waves that radiate outward like pond ripples from an area where a generating event occurs. The waves arrive at shorelines over an extended period of time. Tsunamis are typically classified as local or distant. Locally generated tsunamis have minimal warning times, leaving little time for response. They may be accompanied by damage resulting from the triggering earthquake due to ground shaking, surface faulting, liquefaction or landslides. Distant tsunamis may travel for hours before striking a coastline, giving a community a chance to implement more detailed evacuation plans. s are series of long period sea waves that result from large scale sea floor displacement associated with large earthquakes below or neath the ocean floor (NOAA, 2018). An estimate reported that 80% of tsunamis are the result of earthquakes. Although it is unknown when the next tsunami will strike, tsunami warning centers are able to detect the earthquakes that may generate tsunamis.

Existing Conditions

On Hawai'i Island, tsunamis have been induced by earthquakes, landslides, and submarine volcanic explosions. Tsunamis induced by earthquakes are referred to as "tsunamigenic earthquakes". Hawai'i Island is affected by earthquakes that occur at a considerable distance, including Alaska or South America, and earthquakes in the nearby Pacific Ocean, where seismic activity can travel up to 500 miles per hour. The second most common cause of a tsunami areis from landslides. Tsunamis generated from landslides result from a landslide originating above sea level plunging into the sea, a landslide occurring mainly beneath sea level, or a landslide occurring entirely beneath sea level. Hawai'i Island has recorded one landslide-induced tsunami when a landslide along the flanks of the Kohala volcano occurred approximately 200 feet above sea level.

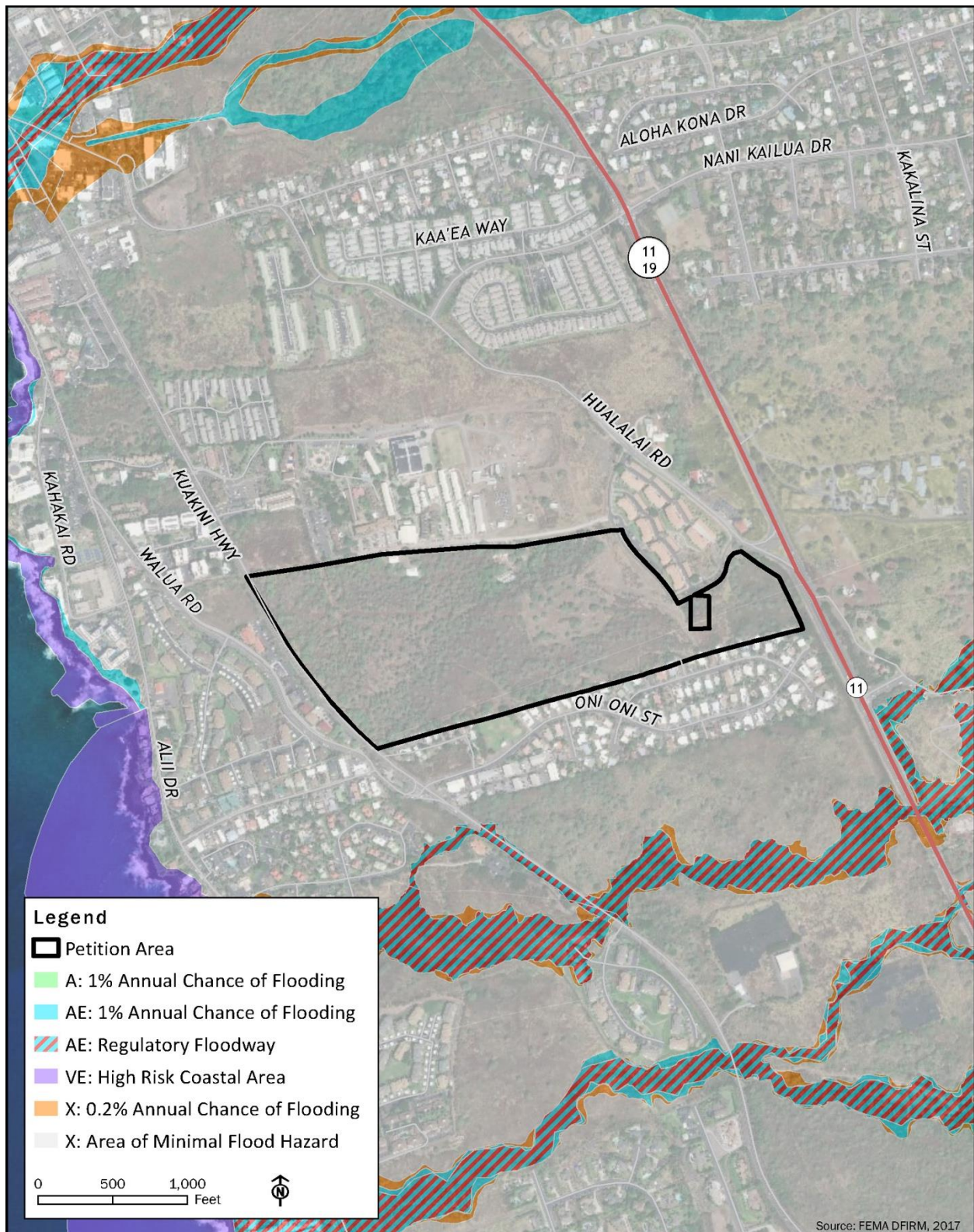


Figure 4-8

Flood Hazards

Twenty-five of the tsunamis recorded in Hawai'i since 1812 have had an adverse impact on the Island of Hawai'i; ~~twenty-two were distant tsunamis seven caused major damage,~~ and three were generated locally. The most devastating tsunamis that hit the State occurred in 1946 ~~and 1960~~. The 1946 tsunami ~~originated in the Aleutian Islands. This tsunami~~ came in with no warning as there were no seismological stations on the Hawaiian Islands, ~~and killed .There were~~ over 170 ~~recorded deaths on the Island of Hawai'i, people,~~ mainly in Laupāhoehoe and Hilo where wave heights averaged at ~~thirty~~30 feet. ~~The 1960 tsunami originated in Chile and advanced upon Hawai'i Island from the southeast. The arrival of the tsunami was correctly predicted, but many people failed to heed the warnings, and as a result a total of 61 lives were lost. The 1960 tsunami caused an estimated \$23 million in damages.~~ The most recent tsunami ~~to impact~~impacting Hawai'i Island occurred on March 11, 2011, causing ~~approximately \$14.2 million in~~ property damage at several locations on the Kona coast. The Petition Area is ~~not located within the FEMA designated Tsunami Inundation Zone~~located within the Tsunami Safe Zone (Figure 4-9).

Potential Impacts and Mitigation Measures

In general, all coastal areas of the Island of Hawai'i are vulnerable to hazards from a tsunami. ~~Although~~ ~~the~~ Petition Area is located ~~outside the Tsunami Inundation Zone~~within the Tsunami Safe Zone. ~~However, according to a letter provided by the Department of Department of Defense (DoD), a lower portion of campus is located within the FEMA-designated Extreme Tsunami Inundation Zone. The DoD was contacted to verify the portion of the lower campus located within the Extreme Tsunami Inundation Zone. The DoD verified that the tsunami evacuation zones have been completed for Hawai'i Island and the latest data does not locate the Petition Area within the Extreme Tsunami Inundation Zone. According to the available data, the Petition Area is located within the Tsunami Safe Zone (Figure 4-9).~~ ~~the~~The proximity to the Tsunami Inundation Zone may prompt ~~an~~ evacuation. The U of N Kona will take the appropriate measures to train staff to evacuate students and others on campus in the event of a tsunami, ~~and will regularly practice evacuations to be prepared should the U of N Kona campus be under the threat of a tsunami.~~ The Master Plan Update is not anticipated to increase the area's vulnerability to tsunami threats.

4.6.6 Wildfires

Existing Conditions

In the State of Hawai'i, wildfires are most prominent in developed areas, alongside roadways, and near infrastructure that abuts undeveloped areas. The majority of wildfires that break out are caused by human error or arson, especially near developed areas, power line right of ways, roadsides, and sprawling dry nonnative grasslands surrounding communities. Once ignited, wildfires can spread rapidly through and around residential areas, threatening both property and life. Wildfires in lesser developed areas, fallow agricultural lands, and in areas of higher elevation can also spread and threaten natural areas and native and protected species. (Hawai'i Wildfire Management Organization, 2016).

The North Kona area is at risk of wildfires due to its terraneous environment covered by highly ignitable invasive grasses, warm weather, and history of human-caused fires. The Hawai'i Wildfire Management Organization developed a Community Wildfire Protection Plan (CWPP) for the North Kona area to bring awareness to the hazards wildfires may have on the community. The CWPP mapped past wildfire incidents in the North Kona area (Figure 4-10). Similar to trends of wildfires in the State, majority of wildfire incidents that have occurred in the North Kona area are human-caused and have been ignited along roadsides. Past wildfire incidents reflect that numerous smaller wildfires (less than 100 acres) and several larger wildfires (over 1000 acres) have taken place in the North Kona area.

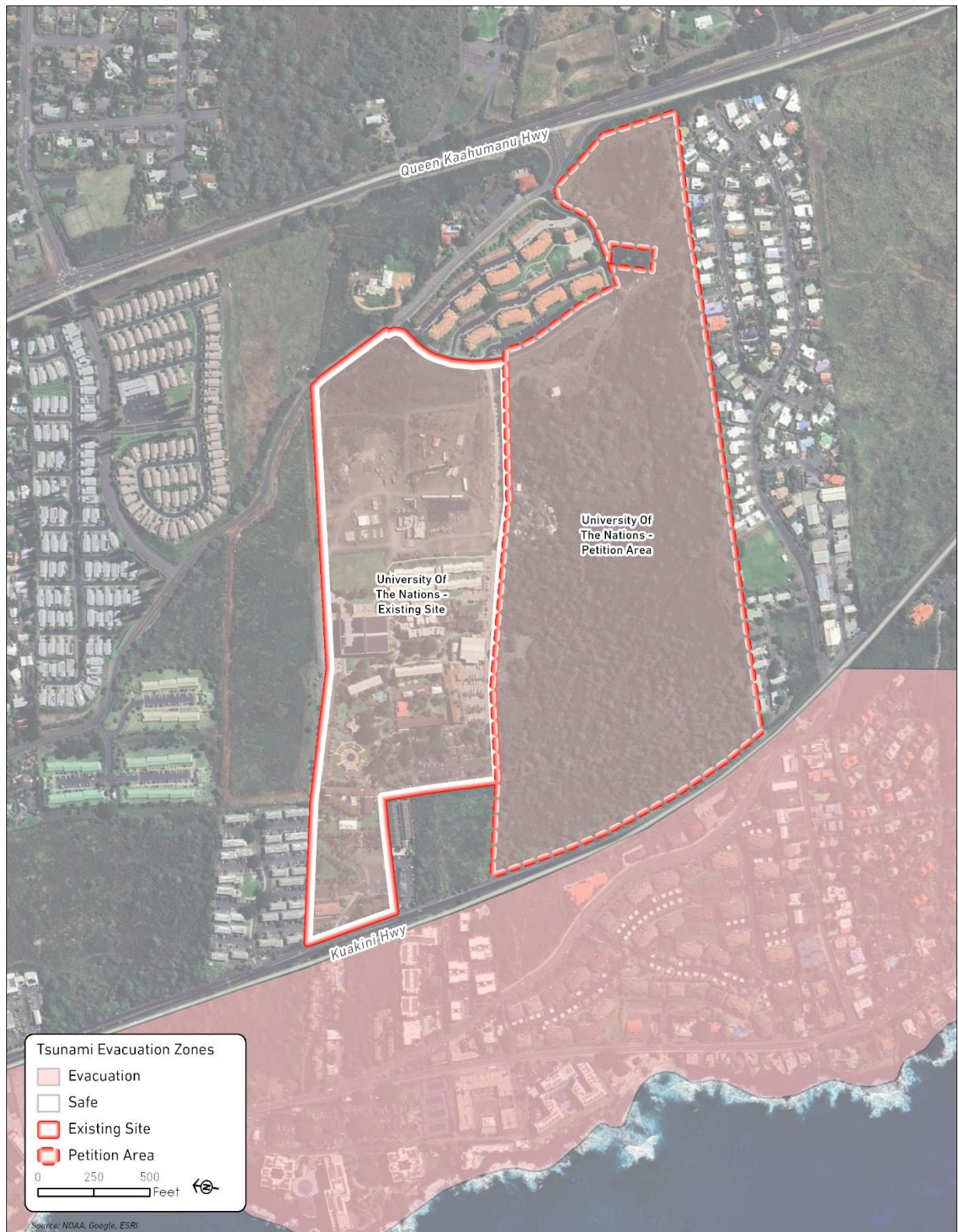


Figure 4-9

Tsunami Evacuation Zones

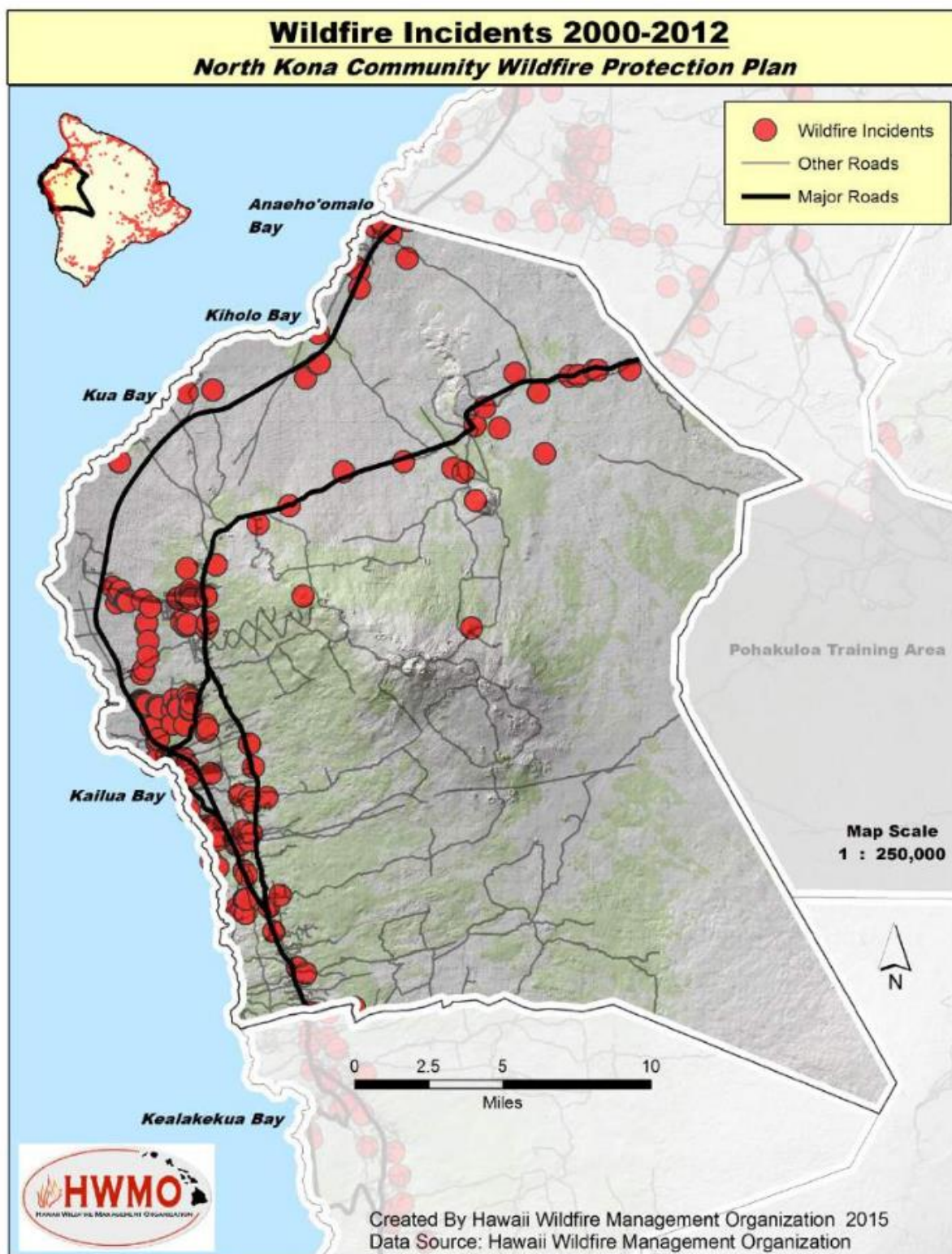


Figure 4-10

North Kona Wildfire Incident Map
Source: Hawaii Wildfire Management Organization, 2016

Within the North Kona area, the Petition Area is located in an area identified as a High Hazard Zone with respect to wildfires (*Figure 4-11*). Due to the warm and dry climate coupled with a history of human-caused wildfires, the majority of the lower lands in North Kona area are in a High Hazard Zone. Historically, five wildfires have been recorded within the nearby vicinity of the Petition Area. All five wildfires were recorded over 10 years ago. One of the wildfires was considered to be a significant wildfire that burned approximately 25 acres. The other four wildfires recorded near the Petition Area burned less than five acres.

The July 2023 Fire Chief's Report recorded four fires – two brush fires and two structure fires – in the month of July. Of the four fires reported, one brush fire and one structure-related fire were reported in the West Hawai'i response area. The brush fire was located along Highway 190 in Pu'uana'hulu and burned approximately one acre. The structure fire took place at a residential property. No injuries or deaths were reported due to the fires.

Potential Impacts and Mitigation Measures

During the phased buildout of the Petition Area, the existing dry and overgrown non-native vegetation on the Petition Area will be cleared, which will reduce the risk for fire ignition and fire spread. Should any fires breakout during construction, the Hawai'i Fire Department (HFD) will be called immediately to mitigate the risk of a large wildfire. When engaging in activities that have a high risk of starting a wildfire, the area of the activity will be watered down and, as needed, continuously watered down throughout the day. Additionally, fire extinguishers will be readily available at the construction sites. Should there be construction activities that impair the vision of workers (i.e., welding with goggles), a spotter will be on-site to monitor for fires. Further discussion regarding HFD services is provided in Section 4.14.4.

Recognizing the high risk of wildfires in the Kailua-Kona region, the Petition Area will be landscaped with native, drought-tolerant plants to create defensible spaces around structures that will further protect the campus from wildfire ignition and spread. Furthermore, fire-resistant building materials will be incorporated into the design of the Petition Area. New buildings will comply with all fire code requirements, and roadways throughout the Petition Area will be built in accordance with fire accessibility requirements. U of N Kona will also consult with Hawai'i Wildlife Management Organization at the appropriate time to discuss how wildfire prevention can be further addressed for the Petition Area and Master Plan Update.

~~Should any fires breakout during construction, the Hawai'i Fire Department (HFD) will be called immediately to mitigate the risk of a large wildfire. Further discussion regarding HFD services is provided in Section 4.13.4.~~ With these mitigation measures in place, it is not anticipated that the full buildout of the Petition Area will increase the risk of wildfires in the Kailua-Kona region.

4.6.7 Climate Change and Sea Level Rise

Existing Conditions

Rapid anthropogenic climate change is a well-established fact within the scientific community. As global temperatures increase, established patterns of weather and climate are shifting. These erratic changes in weather patterns have increased the severity of events like droughts, storms, floods, and even hurricanes, while at the same time causing these events to be more difficult to predict and protect against. The fragility of the ecosystems and unique island nature of the Hawaiian Islands make the State particularly vulnerable to the damaging effects of climate change. Among the impacts associated with climate change is the threat of rising sea levels.

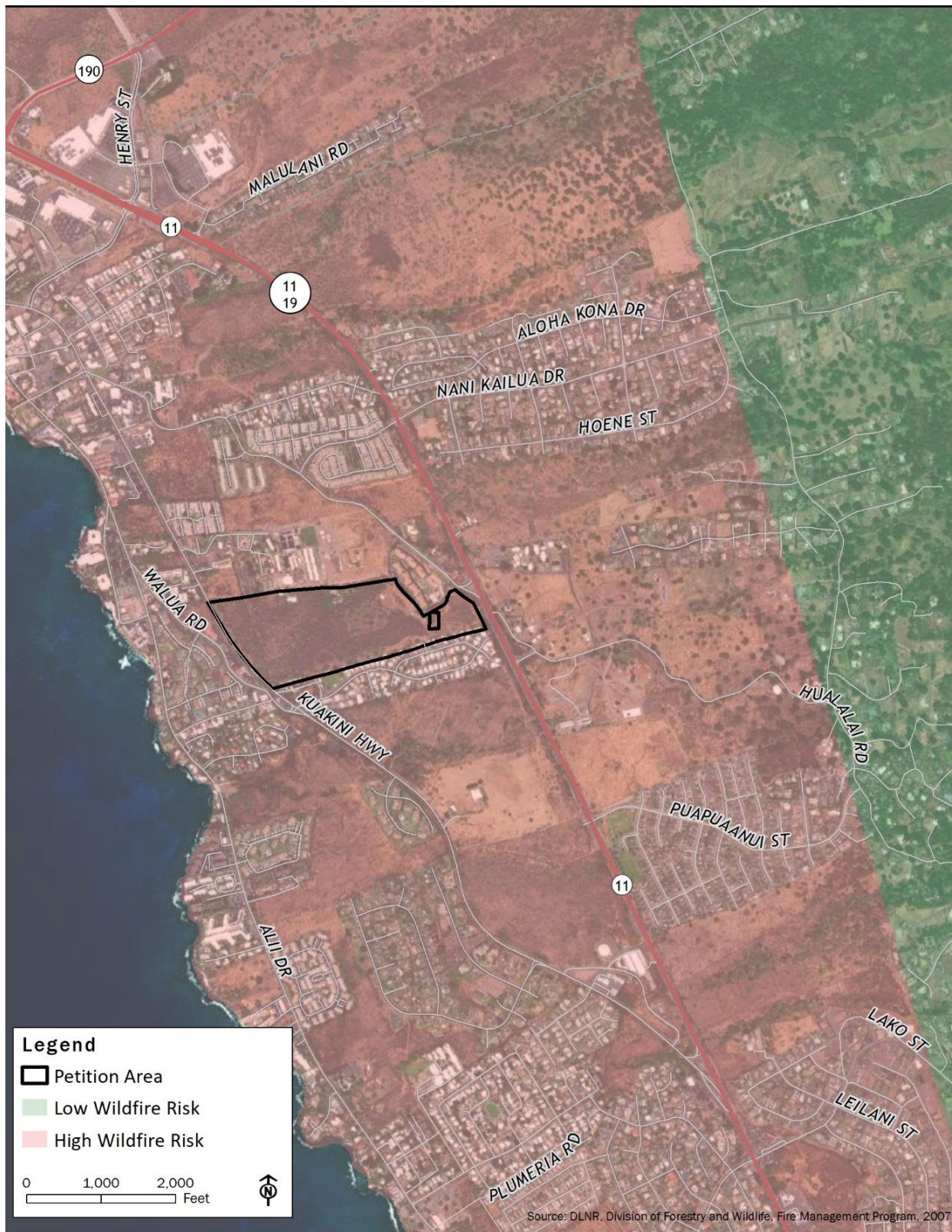


Figure 4-11

Wildfire Risk Map

The National Oceanic and Atmospheric Administration (NOAA) recently revised their sea level change projections through 2100 considering up-to-date scientific research and measurements. Mean sea level rise (SLR) scenarios for Hawai'i based on NOAA projections are depicted in *Figure 4-12*. An important conclusion of this regional climate assessment is that NOAA recommends the revised *Intermediate* rate for planning and design purposes in Hawai'i. The *Intermediate* rate projects that sea level in Hawai'i will rise 2.3 feet by 2070. Given the recent upwardly revised projections and the potential for future revisions, consideration may also be given to the *Intermediate-High* rate for planning and design purposes, which projects that sea level in Hawai'i will rise 3.4 feet by 2070.

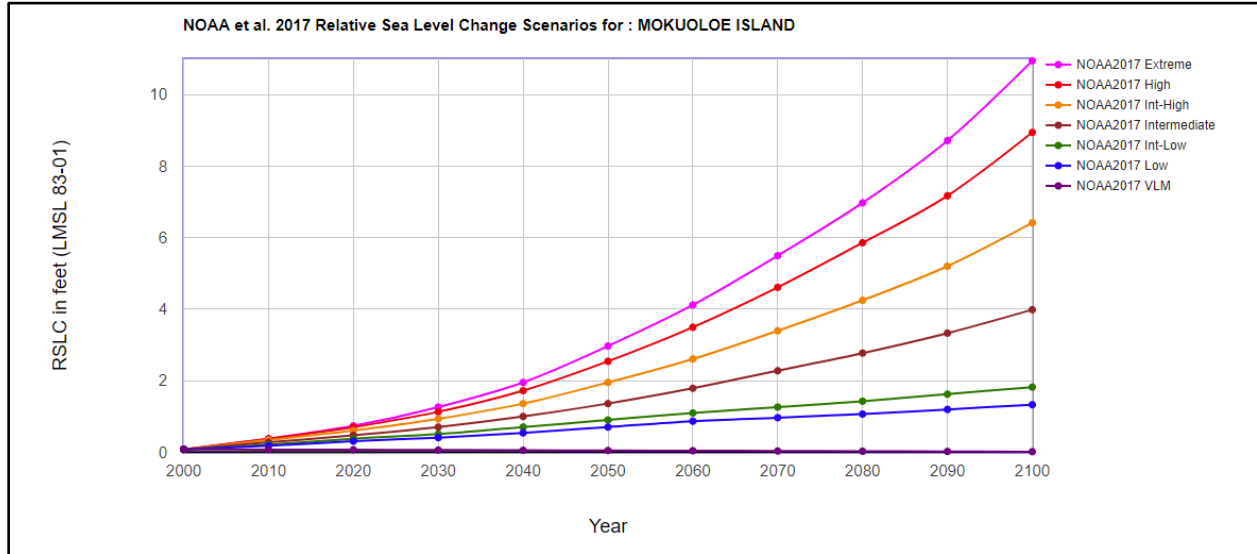


Figure 4-12 Hawai'i Sea Level Rise Projections (Adopted from NOAA, 2017)

In 2017, the Hawai'i Climate Commission published the Sea Level Rise Vulnerability and Adaptation Report for Hawai'i, which discusses the anticipated impacts of projected future SLR on coastal hazards, and the potential physical, economic, social, environmental, and cultural impacts of SLR in Hawai'i (Hawai'i Climate Change Commission, 2017). The report combines data from the Intergovernmental Panel on Climate Change (IPCC) Assessment Report 5 (IPCC 2014), NOAA, the National Aeronautics and Space Administration, and the best-available peer-reviewed scientific research articles. The IPCC Assessment Report 5 describes possible climate futures based on how much greenhouse gases (GHG) are emitted. The "business as usual" scenario predicts up to 3.2 feet of global SLR by the year 2100. As such, questions remain around the exact timing of that rise due largely to uncertainties around future behavior of Earth's cryosphere and global GHG emission trajectories. For this reason, it is vital to track the magnitude and rate of SLR as new projections emerge, plan for 3.2 feet of SLR now, and be ready to adjust that projection upward. The Hawai'i Sea Level Rise Viewer model developed by the University of Hawai'i Pacific Islands Ocean Observing System (PacIOOS) models the potential impacts that a 3.2-foot rise in sea level would have on coastal hazards, include passive flooding, annual high wave flooding, and coastal erosion. The footprints of these three hazards were combined to define the projected extent of chronic flooding due to SLR, referred to as the Sea Level Rise Exposure Area (SLRXA) (PacIOOS, 2018).

The Existing Campus and Petition Area are located mauka of Kuakini Highway, outside the 3.2-foot SLRXA (*Figure 4-13*), and at low risk of being affected by rising sea levels.

Potential Impacts and Mitigation Measures

Although the Petition Area will not be directly impacted by 3.2-feet of sea level rise, green building design strategies will be implemented, where feasible. Green building design strategies may include but are not limited to, water and energy saving features, and implementing ~~photovoltaic~~ PV panels and green roofs. Additionally, LID measures are also planned for the Master Plan Update, which include xeriscape landscaping techniques and permeable pavements and sidewalks. Incorporating green building design strategies will help reduce the carbon footprint of the U of N Kona, which in return has an effect on future climate conditions. A breakdown of GHG emissions projected with the Master Plan Update is further discussed in *Section 4.7*.



Figure 4-13

3.2-Foot Sea Level Rise Exposure Area

4.7 Air Quality and Greenhouse Gases

The U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) per the requirements of the Clean Air Act (last amended in 1990) to protect public health and welfare and prevent the significant deterioration of air quality. These standards account for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O₃), particulate matter smaller than 10 microns (PM₁₀), particulate matter smaller than 2.5 microns (PM_{2.5}), sulfur oxides (SO_x), and lead (Pb). The State DOH, Clean Air Branch (CAB) has also established State Ambient Air Quality Standards (SAAQS) for six of these air pollutants to regulate air quality statewide. The SAAQS for carbon monoxide and nitrogen dioxide are more stringent than NAAQS. Hawai'i also has a stringent standard for hydrogen sulfide (H₂S), which is a common odorous pollutant associated with wastewater treatment facilities.

Existing Conditions

Air quality in the State is generally characterized as relatively clean and low in pollution. DOH CAB regularly samples ambient air quality at monitoring stations throughout the State, and publishes this information annually. According to the Annual Summary 2022 Hawai'i Air Quality Data, data taken from air monitoring stations throughout the State indicate criteria pollutant levels remain below Federal and State ambient air quality standards (State of Hawai'i, DOH, 2022).

The DOH has monitoring stations on the Island of Hawai'i, which mainly measure air quality impacts from the volcanoes and geothermal energy production. The closest air monitoring station to the Petition Area is the Kailua-Kona Station, which is located approximately 2 miles south. Air quality data from the Kailua-Kona Station suggests that all National and State ambient air quality standards are currently being met.

Present air quality at the Petition Area is primarily affected by natural, industrial, agricultural, and/or vehicular sources. Natural sources that may affect the Petition Area include wind-blown dust and volcanic emissions (vog) from Kīlauea Volcano. Vog is comprised mainly of water vapor (H₂O), carbon dioxide (CO₂), and sulfur dioxide (SO₂), and may hang over the Petition Area depending on the wind direction. Kīlauea Volcano can emit anywhere between 500 to 14,000 metric tons of sulfur dioxide (SO₂) per day during periods of sustained eruption. During the 2018 eruption at Kīlauea's Lower East Rift Zone, SO₂ emissions were over 100,000 metric tons per day. High rates of SO₂ emissions may result in voggy conditions, which lead to an increase in air pollution.

Potential Impacts and Mitigation Measures

A greenhouse gas analysis was conducted using the California Emissions Estimator Model (CalEEMod) to analyze the potential increase of GHG emissions that may be produced with the Master Plan Update. The full greenhouse gas analysis is located in *Appendix EE*.

Construction related activity during the phased build out of the Master Plan Update is anticipated to generate short-term impacts to air quality. Construction-related activity includes clearing, grading, excavation, concrete work, stockpiling, and transport of building materials and construction spoils and debris. Over a 30-year construction period, it is estimated project construction will produce approximately 114,000 metric tons of CO₂ emissions or roughly 3,800 metric tons of CO₂ emissions annually. Annual global CO₂ emissions estimate the construction industry accounts for approximately 6% of global CO₂ emissions or roughly 2.3 gigatons of CO₂ emissions annually.

The impacts of GHG emissions are inherently indirect and cumulative, when comparing the annual amount of emissions generated from construction for the Master Plan Update to the annual global amount of emissions produced by the construction industry. GHG emissions generated from the construction of the Master Plan Update is not anticipated to significantly contribute to the total annual amount of CO₂ emissions generated by the construction industry.

Although construction is temporary, U of N Kona will source materials locally, as supply allows, to reduce emissions generated from the transportation of goods and materials. Additionally, U of N Kona may recycle and reuse construction materials from renovation or demolition of other projects in the nearby vicinity. Short-term construction related activity will comply with provisions of the State DOH's Ambient Air Quality Standards, HAR §11-59 relating to Ambient Air Quality Standards and HAR §11-60.1-33 relating to Fugitive Dust.

As recommended by the CAB, a dust control management plan will be developed prior to the start of the construction period. The dust control management plan will identify and outline mitigation measures for dust associated with construction related activity. The full build out of the Master Plan Update is planned in three (3) phases to minimize the amount of airborne, visible fugitive dust-generating materials and activities. BMPs will be implemented and may include, but not be limited to, locating potential dust-generating equipment in areas of the least impact, minimizing airborne and visible fugitive dust from shoulders and access roads, and controlling airborne and visible fugitive dust from debris being hauled away from the Petition Area.

Using the CalEEMod, GHG emissions associated with the Master Plan Update were projected. Upon completion of the Master Plan Update and over the next 100 years, it is anticipated operations at the Petition Area will produce approximately 17,625 metric tons of CO₂ emissions annually. Although the Master Plan Update will contribute to an increase in GHG emissions, at a local and global scale, impacts of GHG emissions are inherently indirect and cumulative. It is not anticipated the Master Plan Update will substantially increase GHG emissions that may cause or contribute to any appreciable impact to local or regional air quality. Furthermore, U of N Kona will implement measures to reduce GHG produced at the U of N Kona. Sustainable measures to mitigate GHG emissions produced at the U of N Kona will include the expansion of solar energy production throughout the Petition Area with the implementation of solar PV panels on buildings, implementation of low flow plumbing fixtures; and buildings designed to achieve ~~Leadership in Energy and Environmental Design (LEED)~~ objectives.

4.8 Biological Resources

A *Natural Resources Survey for the University of the Nations Expansion Property* was prepared by AECOS, Inc. in January 2020 (*Appendix GF*). Previously, a biological survey of the Petition Area was prepared in 2002 (Terry & Hart, 2002). At the time of the 2002 study, all portions of the Petition Area were surveyed, and no threatened or endangered plant or animal species were identified or ~~were~~ expected to be identified at the Petition Area. For the updated survey, the entire Petition Area was re-surveyed, and a bird and mammal survey was conducted. A map of the Petition Area was loaded on a Trimble 6000 Series GNSS unit providing real time feedback on location and adequacy of coverage during the pedestrian survey. Findings from the 2002 and 2020 survey are presented below.

4.8.1 Botanical Resources

Existing Conditions

The upper portion of the Petition Area is covered by a mixture of scattered kiawe (*Prosopis pallida*) and short-stature koa haole (*Leucaenaleucocephala*), with moderately dense Guinea grass (*Megathyrsus maximus*). Portions of the Petition Area that have been disturbed mainly contain koa haole and areas of dense herbaceous coffee senna (*Senna occidentalis*) and 'uhaloa (*Waltheria americanas*) (Figure 4-14a and 4-14b). Four native (indigenous) plants were recorded during the survey: 'ilima (*Sida fallax*), 'uhaloa (*Waltheria indica*), 'ilie'e (*Plumbago zeylanica*), and a common sedge (*Cyperus polystachyos*). All four native plantings are widespread across Hawai'i and are of no conservation concern. Appendix GF contains a full list of the plant species observed in the 2020 survey as well as the 2002 survey.

Results from the 2020 survey were compared to the 2002 survey. The 2002 survey identified 35 plant species, whereas the 2020 survey identified 49 species. Although the 2002 survey provides no indication of qualitative abundance, 15 (43%) of the recorded plant species identified in the 2002 survey were not recorded in the 2020 survey. The 2020 survey indicated a higher percentage (61%) of "rare" plant species, meaning a plant species was encountered no more than two or three times over the course of the survey. Unlike the 2020 survey, the 2002 survey identified Christmasberry and weeping fig trees that presumably could still be present and rare on the site. It is not unusual that the 2002 and 2020 surveys differed as species are likely to change over time. Moreover, not all rare species are going to be encountered in a pedestrian survey.

The 2020 survey did not identify plant species that are currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs. However, according to the USFWS's IPaC program, which is utilized to identify endangered species that may be present in a project area, the following endangered species may be found at the Petition Area: 'aiea (*Nothocestrum breviflorum*), carter's panicgrass (*panicum fauriei*), hala pepe (*Dracaena konaensis*), ihi (*Portulaca vilosa*), ko'oko'olau (*Bidens micrantha*), loulou (*Pritchardia maideniana*), neraudia ovata, ohai (*Sesbania tomentosa*), po'e (*Portulaca sclerocarpa*), uhiuhi (*Mezoneuron kawaiense*), wahine noho kula (*Isodendron pyriform*).

Potential Impacts and Mitigation Measures

Short-term construction related activity will involve clearing and preparing the site. The plant species identified in the 2002 and 2020 survey are consistent with those found in urban environments, which are common non-native introduced species and scattered weedy growth. Although the USFWS's IPaC program identified endangered species that may occur at the Petition Area, none were detected during the 2020 survey, and the clearing of the Petition Area is not anticipated to adversely affect threatened or endangered plant species. To avoid the unintentional introduction or transportation of invasive plant species during the short-term construction period, construction equipment, materials, and personnel will be cleaned of excess soil and debris to minimize the risk of spreading invasive species. The plan for the Petition Area has been revised to fulfill the long-term vision of the U of N Kona and to reduce extensive grading. As much as possible, cut material from grading will remain on-site and the amount of cut and fill will be balanced to minimize the need to import fill or to export excavated material. Balancing cut and fill material will minimize the movement of soils from off-site locations that may contain invasive fungal pathogens or invasive plant parts that could harm the native ecosystem.

The invasive CRB is known to live in palm plants, including: Washingtonia Livinstona and Pritchardia (fan palms), Cocos (coconut palms), Phoenix (date palms), and Roystonea (royal palms). Most recently,

the Department of Agriculture approved Plant Quarantine Rule 22-1, which restricts the movement of CRB-host material on or to and from the island of O'ahu. To minimize the spread of the invasive CRB, vegetation cleared from the Petition Area will not be transported to the island of O'ahu. Additionally, contractors will treat infected palms, should any be present, before removing them from the Petition Area.

The plan for the Petition Area has been revised to better integrate the campus into the Kailua-Kona region. As such, the revised plan incorporates ~~large green and open space areas that will be landscaped with native plantings and landscaping elements representative of the natural and cultural landscape to complement the Kailua-Kona region.~~ Xeriscape landscaping techniques will ~~also be included in the landscape be implemented~~ to reduce the risk of wildfire and to complement the dry climate of the Kailua-Kona region. Fully built out, the Master Plan Update will improve the existing landscape and complement the Kailua-Kona region.



Figure 4-14a

Vegetation Covering the Petition Area (Source: AECOS, 2020)



Figure 4-14b **Vegetation Covering the Petition Area (Source: AECOS, 2020)**

4.8.2 Bird Species

Existing Conditions

A bird and mammal survey was conducted as part of the 2020 Natural Resource Study. Eight equidistant avian point in count stations were established. A single eight-minute avian point-count was made at each of the eight stations using Leica 8 x 42 binoculars. Additionally, the entire Petition Area was surveyed for species and habitats not detected during station counts.

The survey recorded a total of 349 individual birds of 21 avian species. Four species (the Japanese White-eye (*Zosterops japonicus*), Zebra Dove (*Geopelia striata*), Java Sparrow (*Lonchura oryzivora*), and Saffron Finch (*Sicalis flaveola*)) accounted for 50 percent of all birds recorded. The most frequently recorded species was the Japanese White-eye, which accounted for 19 percent of the total number of individual birds recorded.

The Hawaiian Hawk (*Buteo solitarius*), which is listed as an endangered species, was observed flying over the Petition Area. Effective February 3, 2020, the Hawaiian Hawk has been delisted as an endangered species by the USFWS, but it remains listed by the State of Hawai'i and protected under the Migratory Bird Treaty Act.

Findings from the bird survey are consistent with the location of the Petition Area and the vegetation present. All but one of the species recorded during the survey are alien to the Islands. The remaining species recorded are all commonly occurring, established alien species.

Potential Impacts and Mitigation Measures

The Hawaiian Hawk is known to occur across a broad range of forest habitats throughout Hawai'i Island. To avoid and minimize potential impacts to the Hawaiian Hawk throughout breeding season (March 1 to September 30), ~~Prior to the start of construction~~, the Petition Area will be surveyed to ensure Hawaiian Hawk nests are not present ~~at the site~~. If Hawaiian Hawk nests are found, ~~clearing and~~ construction activity will cease ~~around a 1,600-foot radius of the nest until the species fledges~~, and ~~the Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW)~~ will be notified.

Although not detected during the survey, according to USFWS IPaC program, the following endangered and threatened species may overfly the Petition Area: Hawaiian Coot (*Fulica alai*), Hawaiian Duck (*Anas wyvilliana*), Hawaiian Goose (*Branta sandvicensis*), Hawaiian Stilt (*Himantopus mexicanus knudseni*), Hawaiian Petrel (*Pterodroma sandwichensis*), Band-rumped Storm Petrel (*Hydrobates castro*), and Newell's Shearwater (*Puffinus newelli*) ~~may over fly the Petition Area between April and November, each year. The Hawaiian Goose and Newell's Shearwater are threatened species, whereas the Hawaiian Coot, Hawaiian Duck, Hawaiian Petrel, and Band-rumped Storm Petrel are listed as endangered. The petrel and storm petrel are listed as endangered, and the shearwater as threatened under both federal and State of Hawai'i endangered species statutes.~~

The Hawaiian Stilt, Hawaiian Coot, and Hawaiian Duck are identified as Hawaiian waterbirds that are typically found in wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, kalo or taro lo'i or patches, irrigation ditches, sewage treatment ponds, and streams and marshlands. Threats to Hawaiian waterbirds include non-native predators, habitat loss, and habitat degradation. To avoid and minimize adverse effects to Hawaiian waterbirds, contractors will be advised to avoid creating areas of standing water that may attract waterbirds. Due to the inland location of the Petition Area, it is uncommon to find waterbirds at the Petition Area; however, should nests be identified at the Petition Area, the USFWS and DLNR DOFAW will be contacted and 100-foot buffer around the nest will be established as a no construction zone.

The Hawaiian Goose or Nēnē is mainly found in open areas such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the Nēnē include introduced mammalian and avian predators, wind facilities, and vehicle strikes. If a Nēnē is found at the Petition Area, construction activity within a 100-foot radius of the Nēnē will cease, and contractors will be advised to not approach or feed the bird. Contractors will be cautioned to reduce speed limits around the Petition Area due to the potential for the species to be present. If nests are found at the Petition Area, construction activity within a 150-foot radius of the nest will cease and the USFWS and DLNR DOFAW will be contacted.

Although not identified on the IPaC program, the endemic pueo or Hawaiian Short-Eared Owl (*Asio flammeus sandwichensis*) could potentially nest at the Petition Area. Construction activity will be limited to day-time hours, and it is not anticipated construction activity will affect active periods for the Hawaiian Short-Eared Owl. If a nest is discovered, a minimum 100-meter (330-foot) buffer around the nest will be established and DLNR DOFAW will be contacted.

The Hawaiian Petrel, Newell's Shearwater, and Band-rumped Storm Petrel are known as Hawaiian seabirds. Hawaiian seabirds may overfly the Petition Area during breeding, nesting, and fledging season which occurs from March 1 to December 15. The primary cause of mortality for these three ground nesting seabirds is thought to be predation by alien mammalian species at nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Collision with man-made structures is the second most significant cause of mortality of these seabirds. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting.

When disoriented, seabirds can collide with man-made structures and, if not killed outright, dazed or injured birds become prey to feral mammals. Neither nesting colonies nor appropriate nesting habitat for the Hawaiian Petrel, Band-rumped Storm Petrel, and Newell's Shearwater occur within or near the Petition Area.

Short-term construction related activity will be limited to daytime hours and will not occur throughout the night to mitigate the need for lighting that could potentially disorient seabirds. If nighttime construction activity or equipment maintenance is needed, lighting will be shielded and placed high enough to allow lights to be pointed directly at the ground. Should nighttime construction be needed, nighttime construction will be avoided during seabird fledging period from September 15 through December 15. Lighting that is installed as part of the buildout of the Petition Area will be shielded and in compliance with Hawai'i County Code §14-50, which requires the shielding of exterior lights to lower ambient glare reaching the astronomical observatories located on Mauna Kea and to minimize disorientation and downing of seabirds. The Master Plan Update is not anticipated to increase threats to endangered or threatened bird species.

The USFWS IPaC program identified the following threatened and endangered migratory birds that may overfly or nest at the Petition Area: 'Apapane (*Himatione sanguinea*), 'Oma'o (*Myadestes obscurus*), Black noddy (*Anous minutus melanogenys*), Hawai'i 'amakihi (*Chlorodrepanis virens*), Red-tailed Tropicbird (*Phaethon rubricauda*), Wandering Tattler (*Tringa incana*). According to the OSL (Appendix G), breeding season for the 'Apapane, Hawai'i 'amakihi, and Red-tailed Tropicbird runs from late November to late August. Breeding season for the 'Oma'o and Black noddy runs from March to November. Recent surveys indicate the Wandering Tattler frequents the area the most often and has the highest likelihood of overflying the area amongst other migratory birds.

To minimize and reduce potential impacts to migratory birds, trees that are proposed for removal will be inspected to ensure nests are not present. If a nest is present or a bird species is found in the tree, removal activity will cease until the species flees. If activity must occur in the vicinity of the nesting site, USFWS will be contacted, and a buffer zone will be established. Contractors will be advised to clean off excess soil and debris to minimize the risk of spreading invasive species that pose as an attractive nuisance for migratory birds. Construction activity will be limited to day-time hours and will not occur throughout the night to mitigate the need for lighting that could potentially disorient migratory birds. As discussed above, measures to reduce light pollution, including for any necessary nighttime construction activity or equipment maintenance, will be implemented to minimize disorientation and downing of migratory birds. Contractors will be advised to cover, seal, or enclose nesting surfaces that migratory birds may become trapped in. With mitigation measures in place, it is not anticipated the project will adversely affect migratory birds, should they overfly or nest on the Petition Area.

4.8.3 Mammalian, Insect, and Reptile Species

Existing Conditions

The mammal survey recorded five mammalian species, all of which are deleterious to native ecosystems and the native faunal species dependent on them. No Hawaiian hoary bats or 'ōpe'ape'a (*Lasiurus cinereus semotus*), or species currently proposed for listing or listed under the federal or State of Hawai'i endangered species statutes were detected during the course of the survey. It is likely that the Hawaiian hoary bat forages over the Petition Area on a seasonal basis. However, the current vegetation covering the Petition Area is not typical of that in which one would expect to find roosting Hawaiian hoary bats.

Although no rodents were recorded during the course of the survey, it is likely that one or more of the four established alien Muridae found on the Island of Hawai'i – European house mouse (*Mus musculus domesticus*), roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and black rat (*Rattus exulans hawaiiensis*) – use various resources within the general vicinity of the Petition Area on a seasonal basis. These human commensal species are drawn to areas of human habitation and activity. All of these introduced rodents are deleterious to native ecosystems and the native faunal species dependent on them.

Potential Impacts and Mitigation Measures

The findings of the mammalian survey are consistent with the location and vegetation of the Petition Area. It is not anticipated the Master Plan Update will threaten the Hawaiian hoary bat as the current vegetation covering the Petition Area is not suitable or preferred for the species to roost in. Nevertheless, trees over 15 feet that need to be removed will be inspected for the Hawaiian hoary bat. Clearing of trees over 15 feet will be avoided during birthing and pup rearing season (June 1 to September 15) and barbed wire fencing will not be utilized to avoid entangling the Hawaiian hoary bat.

Although not detected during the survey, the Federal and State listed Blackburn's Sphinx Moth (BSM) (*Manduca blackburn*) has a historic range of encompassing the Petition Area. Larvae of the moth feed on many non-native hostplants including tree tobacco (*Nicotiana glauca*) which is known to grow in disturbed soils. Although tree tobacco was not present during the course of the survey, before the clearing of non-native vegetation, the area will be surveyed to ensure tree tobacco is not present. Should tree tobacco be present, DLNR DOFAW will be contacted to determine proper inspection for the presence of the BSM.

The USFWS IPaC program indicates that the Hawksbill Sea Turtle may nest along the Kona coast. The Petition Area is not located along the coastline and will not affect coastal areas where the Hawksbill Sea Turtle may nest. No further mitigation is proposed.

~~The Master Plan Update is not anticipated to have an adverse effect on mammalian species.~~ Stray and domestic animals will most likely continue to pass through the Petition Area during and after the buildout of the Master Plan Update. To minimize the presence of nonnative predators that may harm vulnerable birds, trash bins will be covered throughout the Petition Area. Additionally, stray cats will be removed and bait stations for rodents and mongoose will be implemented. The Master Plan Update is not anticipated to have an adverse effect on mammalian species.

4.8.4 Protected Species and Critical Habitats

Existing Conditions

With one exception, as discussed in Section 4.8.7.2, no plant or animal species currently protected or proposed for protection under either the federal or state endangered species programs were detected at the Petition Area during the course of the survey. Additionally, no federally delineated Critical Habitat for any species on, or close to, the Petition Area were identified during the course of the survey.

Potential Impacts and Mitigation Measures

Neither short-term construction related activity nor the full buildout of the Master Plan Update are anticipated to adversely affect federal or state listed endangered species or federally delineated Critical Habitat.

4.8.5 Jurisdictional Waters

Existing Conditions

No wetlands or streams that may raise an issue of federal jurisdiction (waters of the U.S.) were detected throughout the course of the survey of the Petition Area.

Potential Impacts and Mitigation Measures

No short-term or long-term adverse effects to wetlands or streams are anticipated with the Master Plan Update. No further mitigation is proposed.

4.9 Noise

An *Acoustic Study for the University of the Nations Kona, Kona, Hawai'i* (Appendix ~~HG~~). was completed in support of the Master Plan Update. The Acoustic Study assessed potential impacts from existing and future traffic related noise as well as potential impacts from activities at the U of N Kona.

Existing Conditions

Traffic and background ambient noise measurements were obtained in May 2023 at seven different locations at and in the surrounding area of the Petition Area (*Figure 4-15*). Existing background ambient noise levels at the Petition Area are largely attributed to birds and intermittently loud distance noise sources from aircrafts. Existing background noise levels drop to levels below 50 decibels A (dBA) with steady noise levels at approximately 45 dBA.

Existing traffic noise levels at the Petition Area along Queen Ka'ahumanu Highway are in the "Significant Exposure, Normally Unacceptable" category, and at or greater than 65 Day Night Average Sound Level (DNL) at the first row of existing homes within approximately 140 feet from the centerline and on the mauka and makai sides of the Highway. Along Kuakini Highway, where the majority of front row receptors are commercial or resort use, existing traffic noise levels are in the "Moderate Exposure, Normally Acceptable" category at distances beyond 68 to 82 feet from the centerline of that roadway. The existing traffic noise levels at the Petition Area along Hualālai Road are also in the "Moderate Exposure, Normally Acceptable" category and less than 65 DNL 13 to 18 feet from that roadway's centerline.

Further northwest of the U of N Kona, noise levels affecting the Kama'āina Hale Apartments likely exceed the Federal Highway Administration (FHA)/Housing and Urban Development (HUD) 65 DNL standard. Exceedances of the 65 DNL standard probably occur across Kuakini Highway. Existing traffic noise levels also exceed the FHA/HUD 65 DNL standard at the intersection of Nani Kailua and Queen Ka'ahumanu Highway.



Figure 4-15

Noise Measurement Locations
 (Source: Acoustic Study for the University of the Nations, Kona, 2023)

Potential Impacts and Mitigation Measures

Temporary noise impacts may occur during construction of the Master Plan Update, particularly during earth moving activities. The quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. However, adverse impacts from construction related activity is not anticipated to be in the “public health and welfare” category due to the temporary nature of construction, and due to the administrative controls available for regulation of construction noise. Mitigation measures to reduce adverse impact from construction noise include use of properly muffled construction equipment and compliance with State DOH construction noise regulations. Construction will not occur on Sundays and holidays, during the early morning, and during the late evening and nighttime periods.

Upon completion of construction, existing traffic noise levels along Queen Ka’ahumanu Highway and Kuakini Highway are expected to remain the dominant noise sources in the vicinity of the Petition Area. Project related traffic is not anticipated to significantly increase noise levels along Queen Ka’ahumanu Highway or Kuakini Highway. Project related traffic is anticipated to increase by 0.6 DNL along Kuakini Highway; and 0.1 DNL along Queen Ka’ahumanu Highway. The increase in noise levels are not considered to be significant and traffic noise mitigation measures are not proposed. Non-project traffic is anticipated to increase future traffic noise levels by 1 to 2 DNL along Queen Ka’ahumanu Highway and Kuakini Highway, Existing areas where noise levels currently exceed the FHA/HUD 65 DNL standard will remain as such.

The potential noise from activities associated with the Master Plan Update could disturb neighboring residences along the southern boundary of the Petition Area, however it is not anticipated noise levels will exceed the acceptable 55 DNL level. Residences to the south, where background noise levels are relatively low, could be affected by campus activities at the Petition Area. Neighboring residences west of the Petition Area (across Kuakini Highway) are less likely to be affected by campus activities at the Petition Area due to the larger buffer distance and higher background noise levels associated with traffic along Kuakini Highway. Predicted DNL levels from campus activities at the Petition Area are presented in *Table 4-1*. The DNL values are typically lower than the average noise levels during a period of noisy activity because the DNL metric is based on annually averaged (over the calendar year) sound levels rather than average noise levels during the activity period.

Table 4-1: Comparisons of Measured Background and Normalized Activity DNL Values at Southern Property Boundary				
Campus Activity Area	Hours of Active Noise	Activity DNL Value	Total Days of Use Per Year	Average DNL
Lower School Play Field	3.96	58.4	250	48.9
Lower School Play Field	3.96	58.4	250	48.9
Middle School Play Field	3.96	58.4	250	48.9
High School Play Field	8.00	52.3	300	46.7
Community Athletic Complex	6.00	64.4	300	57.5
Tennis Courts	4.00	52.3	150	40.7

Using the predicted DNL values for campus activities at the Petition Area, DNL values at the four survey locations along the southern boundary of the Petition Area (see *Figure 4-15*) were generated and are presented in *Table 4-2*. DNL values at the four survey locations were compared to measured background noise levels. Where the total normalized DNL values are not at least 5 DNL lower than the background noise levels, neighbors may be affected by noise generated from campus activities at the Petition Area and exceed the Community Threshold and result in a noise complaint as depicted in *Table 4-2*. To mitigate potential impacts to neighbors south of the Petition Area, sound attenuating walls in the vicinity of the Lower School's South Play Field, and High School Practice Field will be further evaluated. Although the Community Athletic Complex is anticipated to generate noise up to 57.5 DNL, due to its location on the northern end of the Petition Area, adjacent to the Spine Road, it is not anticipated noise generated from the Community Athletic Complex will affect neighbors south of the Petition Area. Although neighbors along the southern property boundary may be affected by campus activities, it is not anticipated noise levels will exceed the acceptable 55 DNL level. U of N Kona will notify neighbors that efforts are being made to control noise and ensure the community is aware of any events that may generate noise.

Table 4-2: Comparisons of Measured Background and Normalized Activity DNL Values at Southern Property Boundary				
Location	Background Noise DNL	DNL from All Sources	DNL from Outdoor Activities	Threshold Exceeded
CCT-1	47.4	49.7	47 DNL from H.S. Practice Field	Yes
CCT-2	45.4	47.1	44 DNL from H.S. Practice Field	Yes
CCT-3	49.3	50.6	50 DNL from L.S. Play Field	Yes
CCT-4	44.4	38.8	35 DNL from L.S. Play Field	No

4.10 Utilities and Infrastructure

4.10.1 Water

Existing Conditions

The *Preliminary Infrastructure Assessment and Conceptual Infrastructure Master Plan (Appendix C)* included an assessment of the water supply at the U of N Kona. The Existing Campus is supplied by water from DWS, but the Petition Area currently is not.

Water is supplied to the Existing Campus from the DWS 325 reservoir. The DWS 325 reservoir supplies water to areas located in elevations ranging from 0 feet to 225 feet above msl in the Kailua-Kona region. The Existing Campus is served by two DWS meters. A 6"x3" master femtometer (FM) meter operated by DWS is located near the existing driveway along Kuakini Highway. This meter connects to a 6" main in Kuakini Highway that supplies water to the Existing Campus. The second meter is an 8"x2" master FM meter located near the top of the existing spine road. This meter connects to an 8" main in the Hualālai Village lower driveway. Both mains are maintained and managed by DWS. Although the 6"x3" meter is assigned to the Existing Campus and the 8"x2" meter is assigned to the Petition Area, both meters are currently supplying water to the Existing Campus.

The water system is looped, and the master meters reflect two service connection points to the existing DWS system (*Figure 4-16*).

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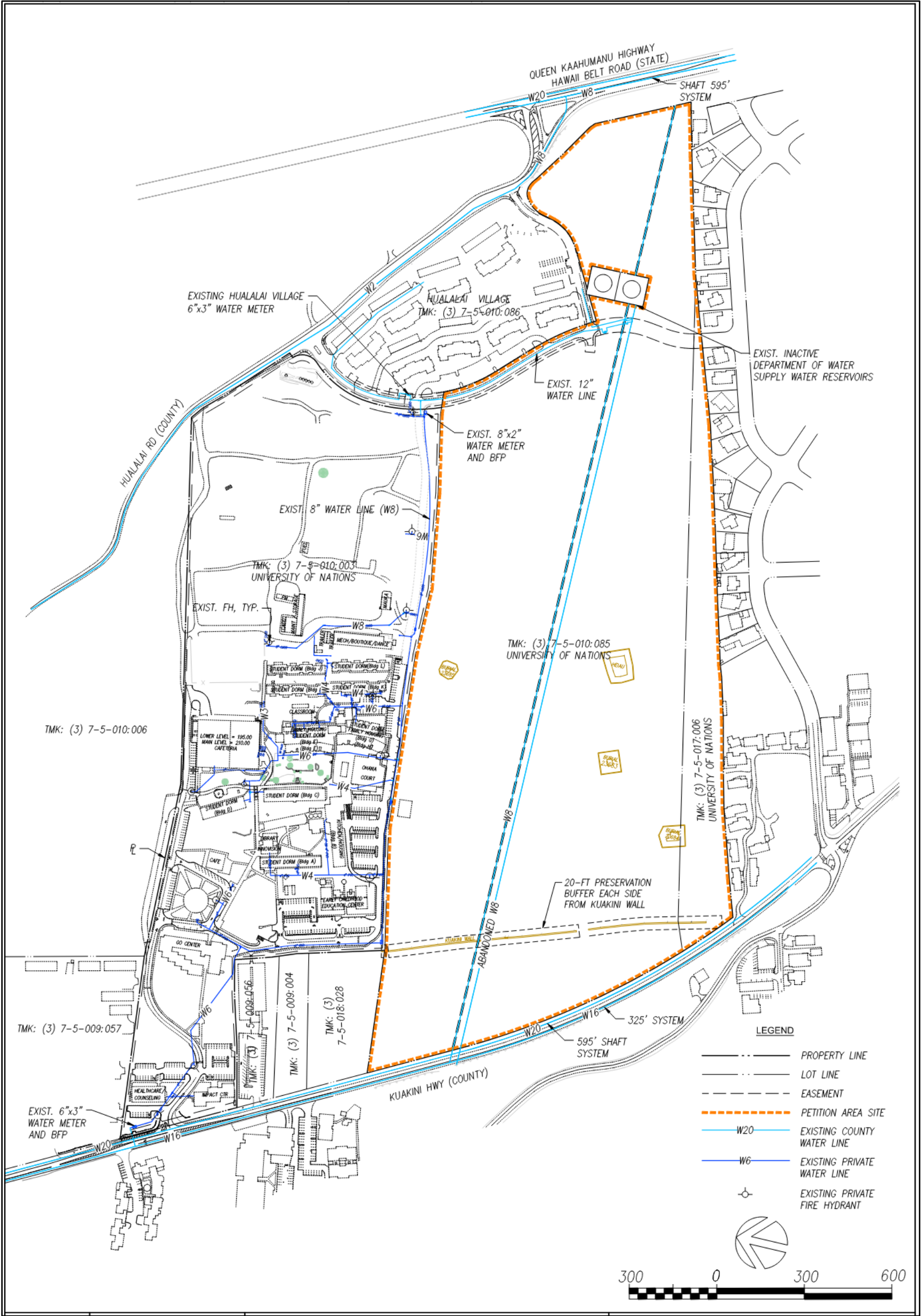


Figure 4-16 Existing Water Distribution

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Water is distributed throughout the Existing Campus via a system of private water lines. The age of the existing onsite system is not known, but the U of N Kona was founded in the late 1970s and it is therefore assumed that the infrastructure to support the U of N Kona was developed no later than 1980. The 8"x2" meter was installed in 2013 to provide a second point of connection and to maintain adequate pressure and flow for the Petition Area, however supplies water to the Existing Campus.

U of N Kona installed water meters on approximately 17 buildings and 21 irrigation zones throughout the Existing Campus to collect data relative to water consumption. U of N Kona tracked water consumption throughout the Existing Campus and found:

- The average per capita water consumption rate for residents is approximately 30 gallons per capita daily (gpcd) or less.
- The average per capita water consumption rate for daily users is approximately 12 to 14 gpcd.
- The average rate of water utilized for irrigation is approximately 8,600 gpd or 1,000 gallons per irrigated acre.
- The cafeteria consumes approximately 2 gpcd.
- The average water consumption for a resident dorming population of 1,158 averaged approximately 39 gallons per resident per day.

Notably, the installation of water meters throughout the Existing Campus identified leakages contributing to the overall rate of water consumed at the U of N Kona. The identified leakages have been fixed and U of N Kona is currently in conformance with the amount of water allocated from DWS.

Potential Impacts and Mitigation Measures

After installing water meters and tracking water consumption, the U of N Kona requested and was granted approval by DWS to reduce the per capita water demand rate for the Master Plan Update based on the tracking of existing water consumption. *Table 4-3* compares DWS' standard per capita water demand rate and the recently approved per capita rate based on existing water consumption at the U of N Kona.

Table 4-3: Comparison of Per Capita Water Demand			
Criteria	Unit	DWS Standard Rate	U of N Kona Adjusted Rate
Residential (including cafeteria)	gpd	80	4035
Day Visitors (including K-12 students, staff and volunteers)	gpd	60	20

Based on the future enrollment at the U of N Kona and the approved reduced demand rate as shown in *Table 4-3*, the daily water demand rate was calculated and is shown in *Table 4-4*.

Table 4-4: Domestic Water Demand								
	Current		Phase 1		Phase 2		Phase 3	
	Pop.	Gallons	Pop.	Gallons	Pop.	Gallons	Pop.	Gallons
Daily Users								
PK-12 Students	148	2,960	110	2,200	155	3,100	175	3,500
University Students	17	340	11	228	6	116	-	-
Staff	322	6,440	282	5,635	225	4,500	200	4,000
Guests	5	100	3	67	2	34	-	-
Subtotal	492	9,840	406	8,130	387	7,750	375	7,500
Residents								
PK-12 Students	146	5,840 <u>5,110</u>	230	9,193 <u>8,044</u>	314	12,546 <u>10,977</u>	400	16,000 <u>14,000</u>
University Students	463	18,520 <u>16,205</u>	706	28,248 <u>24,717</u>	949	37,977 <u>32,230</u>	1,200	48,000 <u>42,000</u>
Staff	280	11,200 <u>9,800</u>	386	15,424 <u>13,496</u>	491	19,648 <u>17,192</u>	600	24,000 <u>21,000</u>
Guests	20	8,700	112	4,496 <u>3,934</u>	205	8,192 <u>7,168</u>	300	12,000 <u>10,500</u>
Subtotal	909	36,360 <u>31,815</u>	1,434	57,361 <u>50,191</u>	1,959	78,362 <u>68,567</u>	2,500	100,000 <u>87,500</u>
Total Domestic		46,200 <u>41,655</u>		65,491 <u>58,321</u>		86,112 <u>76,317</u>		107,500 <u>95,000</u>

Fully built out, it is anticipated approximately ~~107,500~~95,000 gallons of water per day will be needed to support the Master Plan Update. ~~The total projected water demand includes the projected demand for irrigation purposes and~~ U of N Kona submitted a request to DWS to obtain all water, including potable and non-potable from the DWS public water system. ~~Due to limited capacity in the DWS system, water from a new source will be required to support the Master Plan Update. To support the Master Plan Update, two potential locations have been identified for a new well and related infrastructure (Figure 4-5 and Figure 4-6). A discussion of the potential location of a new well is located in Section 4.5. To offset the increase in demand, water meters, similar to those installed throughout the Existing Campus, will be installed throughout the Petition Area to detect leaks and monitor water consumption rates. Xeriscape landscaping techniques will also be integrated into the landscape design.~~

~~As discussed in Section 4.5, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of Kona could be allocated water to support the Master Plan Update if the well(s) are completed and dedicated to DWS (Figure 4-5 and Figure 4-6). U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton~~

Property. The well developer recently entered into a Memorandum of Agreement with the DWS (Appendix E), under which the developer agreed to design and construct (to DWS-dedicable standards) the well, which would connect to the DWS water system via a water main running along Queen Kaahumanu Highway. U of N Kona understands that the well developer will need to negotiate a final well development agreement with DWS to formalize the number of water commitments, the water system design criteria, and the water credits available. Either well would be dedicated to the DWS, after which the water produced would be allocated to DWS, the well developer, U of N Kona, and potentially other third-party users.

The proposed schematic water distribution for the Petition Area has been designed in accordance with ~~Hawai'i County~~ DWS Water System Standards. Infrastructure improvements are phased based on the phasing of the Master Plan Update shown in *Figure 4-17a* to *Figure 4-17c*. It is recommended the Petition Area be equipped with looped mains, wherever possible, 8-inches in diameter to provide adequate fire flow, with main valves not greater than 500 feet apart and approved fire hydrants not located farther than 300 feet apart. Due to the gap between the upper and lower reservoir service area elevations, a portion of the Petition Area will require a connection to the DWS 595 system, which has service limits of 272 to 502 feet msl. Water service between the limits of the DWS 325 and DWS 595 reservoirs will be served from the upper reservoir via pressure reducing valves. Details of the location and size of water lines proposed for the Petition Area will be confirmed during final site planning and design. Additionally, to offset the increase in demand, water meters, similar to those installed throughout the Existing Campus, will be installed throughout the Petition Area to detect leaks and monitor water consumption rates. Xeriscape landscaping techniques will also be integrated into the landscape design.

At full buildout, it is projected approximately 31,050 GPD will be needed to irrigate the Petition Area. A break down of the irrigation requirements for the Master Plan Update is provided below:

Table 4-5: Irrigation Water Demand								
	Current		Phase 1		Phase 2		Phase 3	
	Area	Gallons	Area	Gallons	Area	Gallons	Area	Gallons
Open Space	6.0	-	25.9	-	32.2	-	38.0	-
Landscaping	1.2	1,800	2.7	4,050	3.5	5,250	4.2	6,300
Playfields	0.5	2,250	1.0	4,050	5.0	22,500	5.5	24,750
Total	7.7	4,050	29.6	8,550	40.7	27,750	47.7	31,050

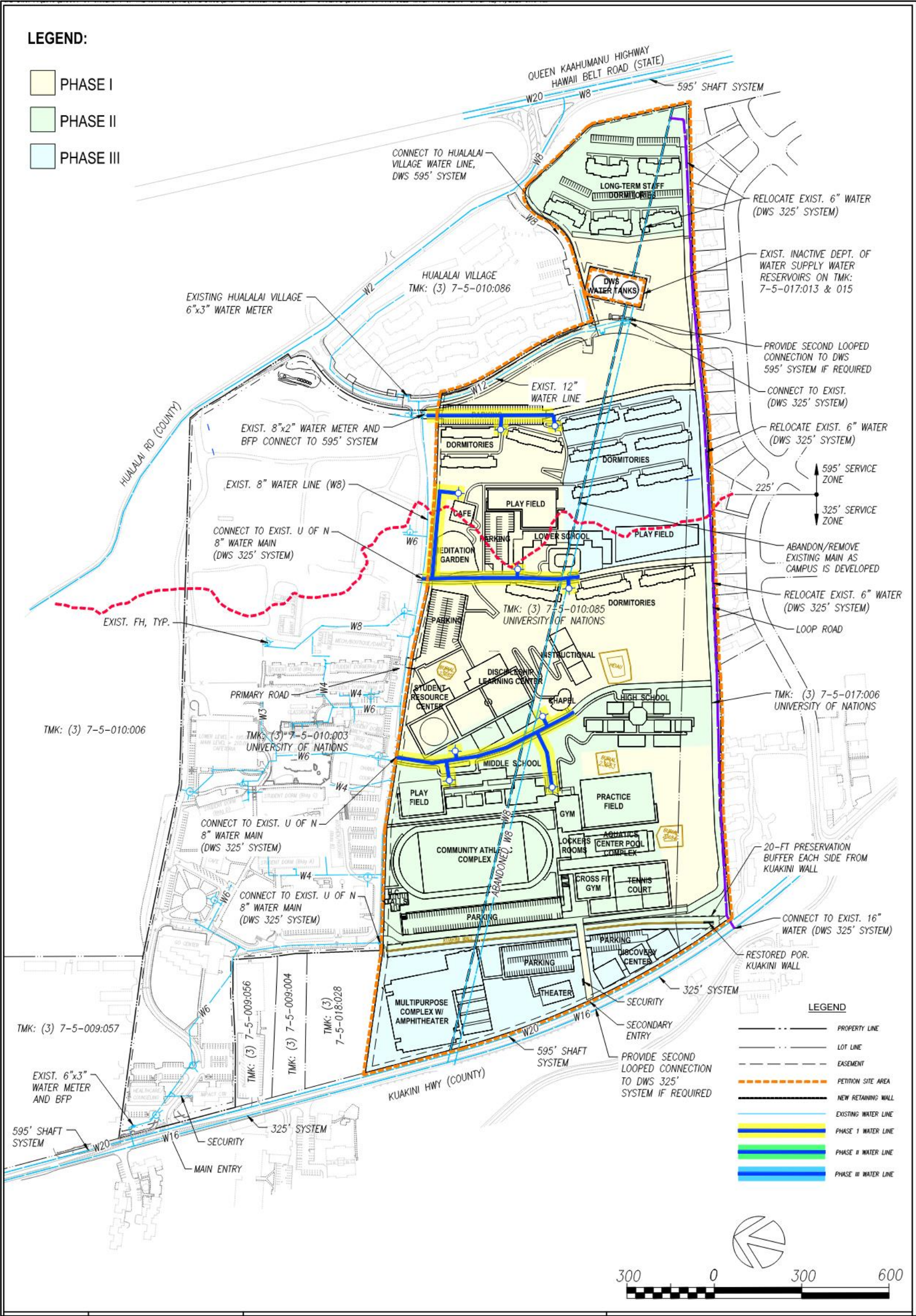
Irrigation for the Master Plan Update is tabulated using an irrigation rate of 1,500 GPD per acre for landscape areas, which is approximately equivalent to irrigating once or twice a week for a total of 0.4 inches of water per week. Irrigation water requirements for playfields are tabulated using an irrigation rate of 4,500 GPD per acre, which is approximately equivalent to irrigating several times per week for a total of 1.25 inches of water per week. Open space areas will remain in their existing condition or re-naturalized with lava rock or xeriscape and will not require irrigation.

Nonpotable water sources for irrigation will be further investigated to provide the required irrigation water demand. Existing catchment systems on the Existing Campus may be expanded to irrigate the Petition Area. U of N Kona recognizes potable water is a limited resource and is committed to minimizing potable water for irrigation purposes as required by DWS. As such, the following various strategies will be considered and implemented during development of the campus.

- Rainwater Catchment
- Downspout Disconnects – discharge of runoff direct to landscaping for irrigation water
- Graywater Treatment and Reuse
- Condensate Water Reuse
- Xeriscaping – Install plantings and ground cover that required little to no irrigation water
- Synthetic Turf – install playfields that do not require irrigation

~~Irrigation water requirements are included in the projected water demand shown in Table 4-4.~~

The U of N Kona is in the process of securing the water needed to support the Master Plan Update. Notably, the future water demand for the Keauhou ASYA includes the water needed to support the urban land use designation of the Petition Area, under the previous plan. ~~Furthermore, the location and size of water lines proposed for the Petition Area will be confirmed during final site planning and design. At the appropriate time, a Water Development Agreement will be entered into between the developer of the well and the Water Board.~~ An additional potable well will provide water for future growth and urban activities in the North Kona area, as a portion of the water from the well will be dedicated to the County. See Section 5.6 for further discussion.



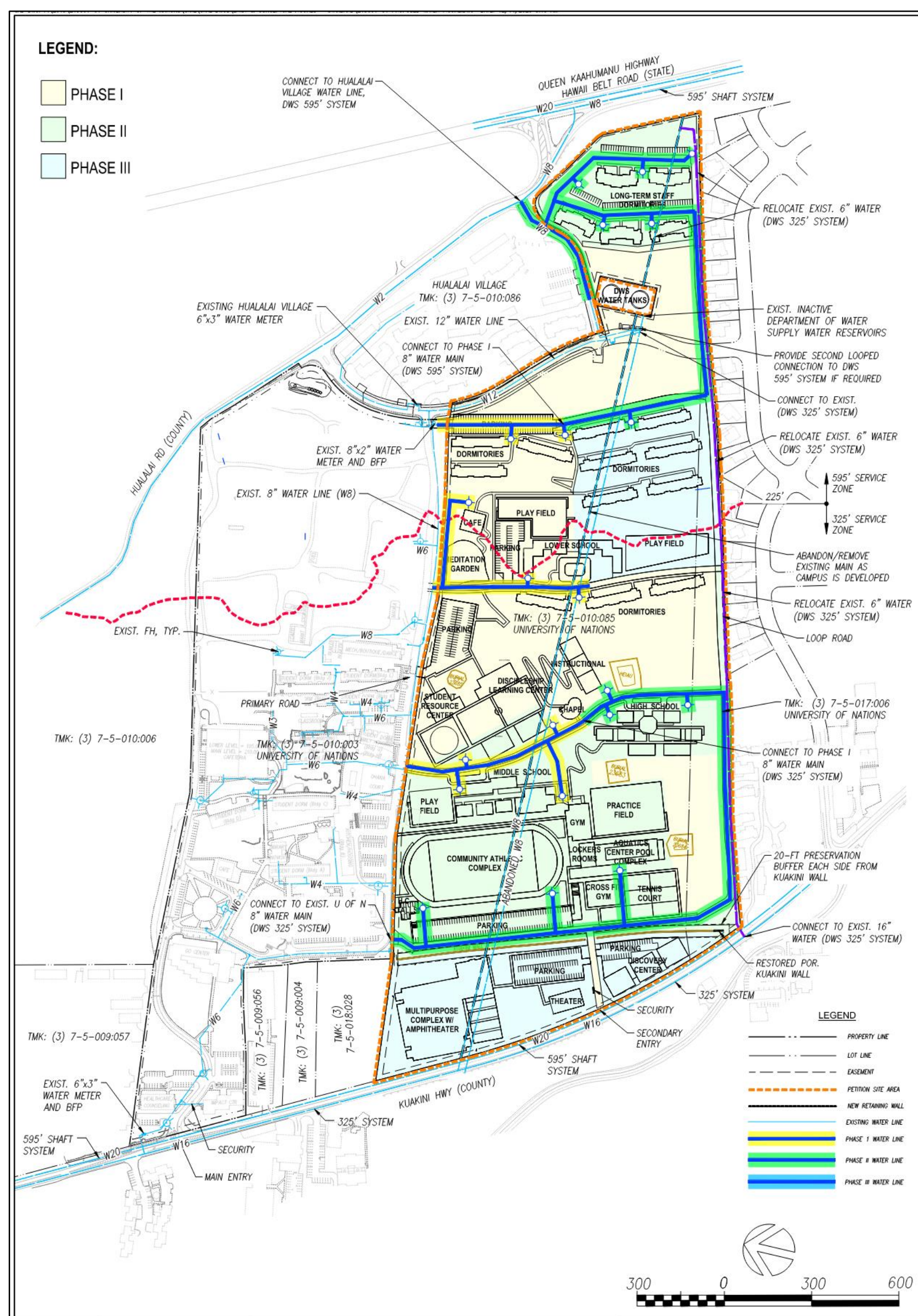


Figure 4-17b

Proposed Water Distribution Phase 2

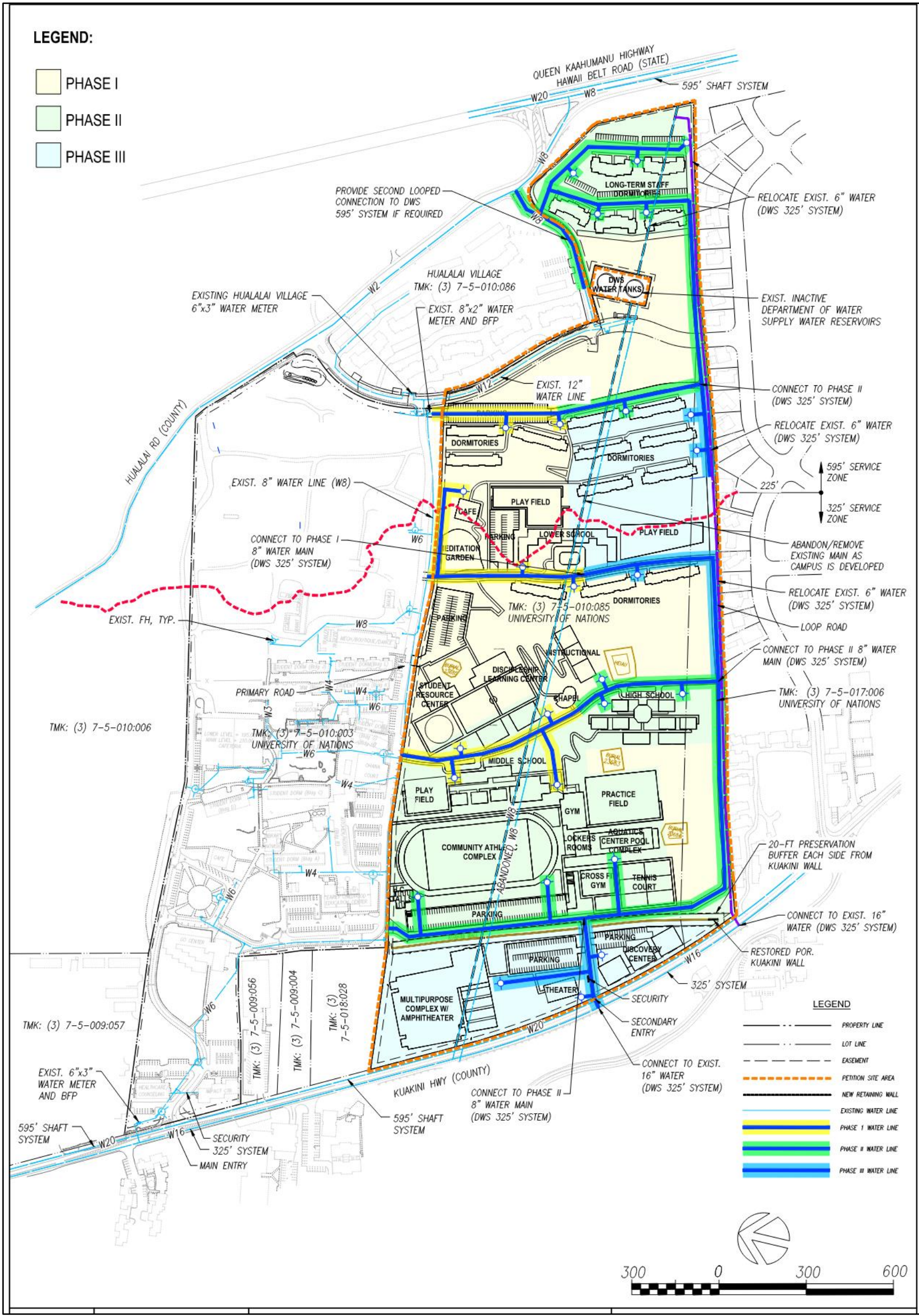


Figure 4-17c

Proposed Water Distribution Phase 3

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4.10.2 Wastewater

Existing Conditions

According to the *Preliminary Infrastructure Assessment and Conceptual Infrastructure Master Plan* (Appendix C), the existing sanitary system at the U of N Kona discharges wastewater to a sewer manhole on Kuakini Highway, near the existing driveway (Figure 4-18). Wastewater is then conveyed to the Kealakehe Wastewater Treatment Plant where it is treated and then discharged to a constructed wetland located immediately south of Honokohau Small Boat Harbor. In September 2023, a lawsuit was filed against the County alleging that the Kealakehe Wastewater Treatment Plant has been operating in violation of the Clean Water Act. The lawsuit seeks injunctive relief requiring the County to comply with the Clean Water Act, including obtaining a NPDES permit, and asks that civil penalties be imposed on the County.

Potential Impacts and Mitigation Measures

In 2019, DEM's Wastewater Division approved a wastewater exemption request to allow U of N Kona to reduce sewer generation rates, conditioned on the installation and reporting of wastewater flows with U of N Kona water meter readings and invoices. Flow measurements from November 2022 to May 2023 suggest that wastewater flows are typically 60% to 80% of water usage. The total projected wastewater flow for the Master Plan Update is shown in Table 4-65. The projected wastewater flow was recently submitted to the Division of Environmental Management's Wastewater Division for review.

Table 4-65: Wastewater Projections								
	Current		Phase 1		Phase 2		Phase 3	
	Persons	Flow	Persons	Flow	Persons	Flow	Persons	Flow
Daily Users								
PK-12 Students	148	2,368	110	1,760	155	2,480	175	2,800
University Students	17	272	11	182	6	92	-	-
Staff	322	5,152	282	4,508	225	3,600	200	3,200
Volunteers	5	80	3	54	2	27	-	-
Subtotal	492	7,872	406	6,504	387	6,200	375	6,000
Residents								
PK-12 Students	146	4,088	230	6,435	314	8,782	400	11,200
University Students	463	12,964	706	19,774	949	26,584	1,200	33,600
Staff	280	7,840	386	10,797	491	13,754	600	16,800
Volunteers	20	560	112	3,147	205	5,734	300	8,400
Subtotal	909	25,452	1,434	40,153	1,959	54,854	2,500	70,000
Total Domestic		33,324		46,657		61,053		76,000

Infrastructure improvements are phased based on the phasing of the Master Plan Update shown in *Figure 4-19a* to *Figure 4-19c*. Sanitary wastewater will continue to be discharged from U of N Kona to the Kuakini Highway sewer manhole, and then conveyed and treated at the Kealakehe Wastewater Treatment plant. The Kealakehe Wastewater Treatment Plan currently has the capacity to service the Master Plan Update at full build out. U of N Kona does not anticipate that the lawsuit filed against the County under the Clean Water Act will affect the County's ability to provide wastewater service, as the lawsuit does not seek to close down the Kealakehe Wastewater Treatment Plan and the parties recently entered into a partial settlement agreement, under which the County has agreed to apply for a NPDES permit.

~~Infrastructure improvements are phased based on the phasing of the Master Plan Update shown in *Figure 4-19a* to *Figure 4-19c*. Sanitary wastewater will continue to be discharged from U of N Kona to the Kuakini Highway sewer manhole, and then conveyed and treated at the Kealakehe Wastewater Treatment plant. The Kealakehe Wastewater Treatment Plan currently has the capacity to service the Master Plan Update at full build out. U of N Kona does not anticipate that the lawsuit filed against the County under the Clean Water Act will affect the County's ability to provide wastewater service, as the lawsuit does not seek to close down the Kealakehe Wastewater Treatment Plan~~

The Master Plan Update is not anticipated to adversely impact the County's wastewater service for the Kailua-Kona region. U of N Kona will continue to consult with DEM ~~as legal proceedings continue and~~ during the phased buildout of the Master Plan Update to ensure the Kealakehe Wastewater Treatment Plant has the capacity to serve the Master Plan Update as there may be other projects, including, but not limited to projects listed in *Section 1.6*, requiring services at the Kealakehe Wastewater Treatment plant.

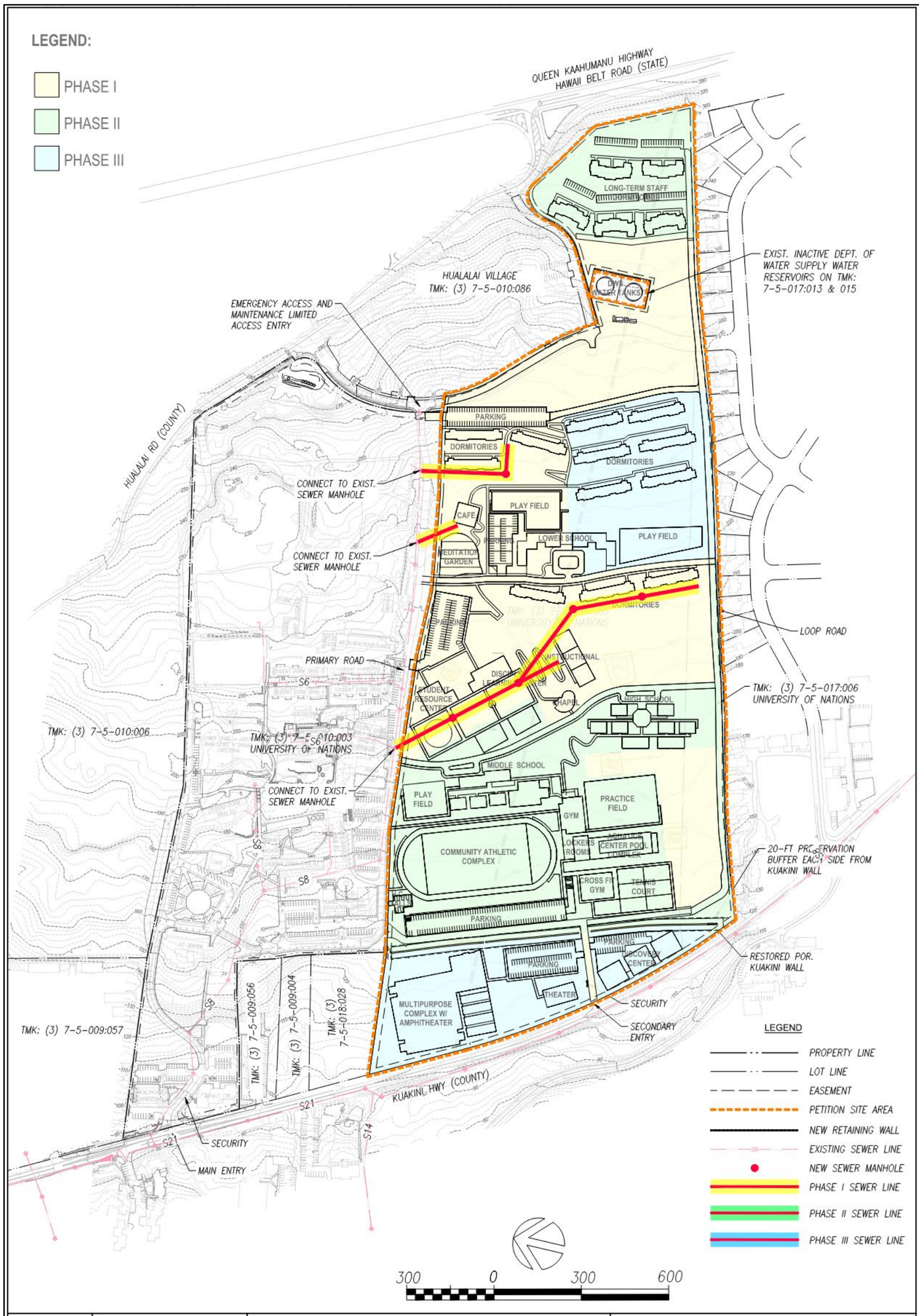


Figure 4-19a

Proposed Wastewater Distribution Phase 1

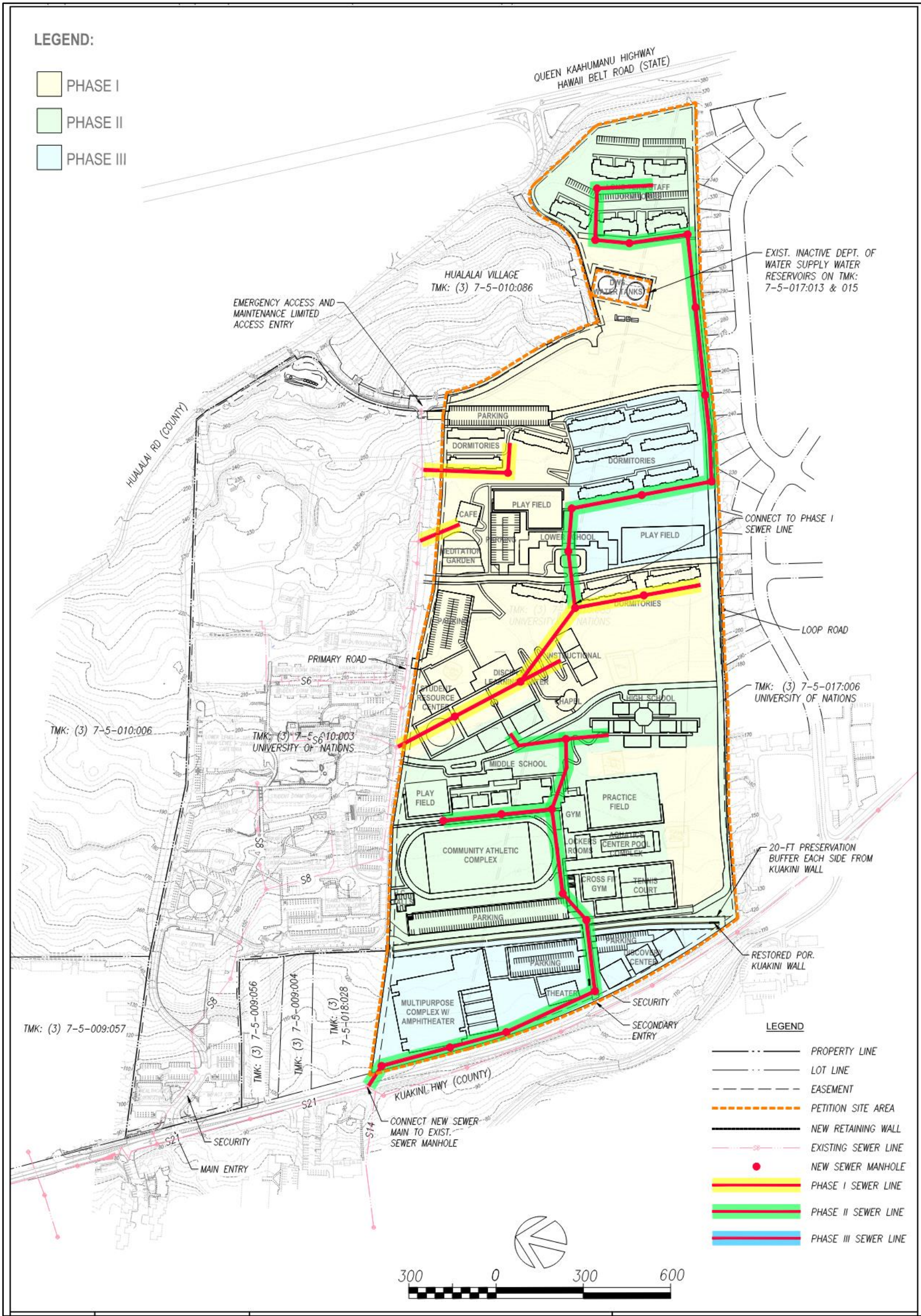


Figure 4-19b

Proposed Wastewater Distribution Phase 2

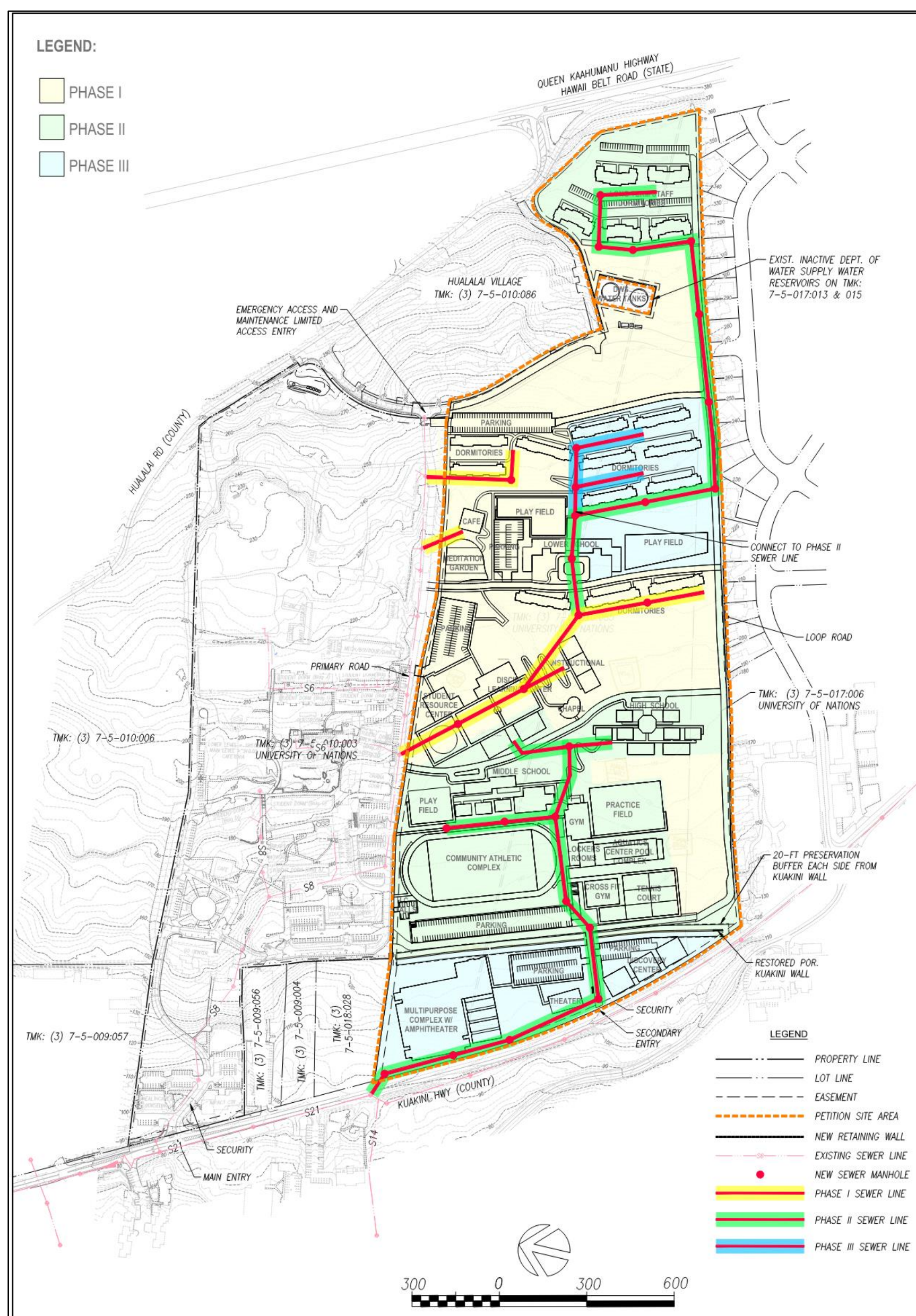


Figure 4-19c

Proposed Wastewater Distribution Phase 3

4.10.3 Power and Communication System

Existing Conditions

Electrical service to the U of N Kona is currently provided by ~~Hawaiian Electric (HE)~~ and communication services are provided by both ~~Hawaiian Tel (HTCO)~~ and Spectrum. As State of Hawai'i Public Utility Commission (PUC) regulated public utilities, HE and HTCO are responsible for the development of off-site facilities that meet island-wide needs, such as power generating plants and power and signal transmission lines, and facilities that serve regional needs of Kailua-Kona. The Existing Campus Site is served by these utilities off of Kuakini Highway. The HE electrical service is at the primary distribution voltage of 12.47kV, three-phase, through a single metering point. The power is further distributed at 480/277v, 208/120v, three and single phase, to the existing buildings and facilities. This electrical infrastructure is owned and maintained by U of N Kona.

Potential Impacts and Mitigation Measures

~~For each phase of the Master Plan Update, A service requests will be submitted to HE and HTCO and/or Spectrum will be submitted in support of the Master Plan Update, at the appropriate time and the required infrastructure will be installed. The upgrade of the existing service will occur for each phase of the Master Plan Update. A service request will be submitted to HE at the appropriate time, and the required infrastructure will be installed.~~

~~A service request to HTCO or Spectrum will be submitted in support of the Master Plan Update. The upgrade of the existing service will occur for each phase of the Master Plan Update. A service request will be submitted to either HTCO or Spectrum at the appropriate time, and the required infrastructure will be installed.~~

No impacts to existing power and communication systems are anticipated, and no further mitigation is ~~recommended~~ proposed.

4.11 Hazardous Substances

Existing Conditions

The State DOH's Solid and Hazardous Waste Branch regulates the generation, treatment, storage, and disposal of hazardous waste. The State DOH's ~~Hazard Evaluation and Emergency Response (HEER)~~ office provides leadership, support, and partnership in preventing, planning for, responding to, and enforcing environmental laws relating to the release or threats of release of hazardous substances. Specific facilities, sites, or areas in which HEER has investigated or may investigate are tracked in the public records accessed through iHEER. Public records revealed no reported spills or releases at the Petition Area.

The Petition Area is not listed for action under the federal Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) information systems database. CERCLA is commonly referred to as the "Superfund" program that is responsible for cleaning up contaminated lands and responding to emergencies, oil spills, and natural disasters (EPA, 2023). The database tracks the location of identified hazardous waste sites.

Potential Impacts and Mitigation Measures

Short-term construction-related activities will involve heavy equipment that requires the use of fuels and lubricants. Construction operators will comply with County, ~~S~~state, and ~~F~~federal laws to minimize and mitigate inadvertent spills or the release of fuels or lubricants.

The handling of regulated solid waste associated with the Master Plan Update is discussed in Section 4.14.6. No long-term adverse effects are anticipated from any on-site hazardous substances.

4.12 Traffic and Mobility Analysis

A *Mobility Analysis Report for the University of the Nations Kona Master Plan Update, Kona, Hawai'i* (MAR) was completed in December 2023 by Fehr and Peers, Incorporated (*Appendix H1*). The MAR was completed to assess traffic conditions with and without each phase of the Master Plan Update. For the MAR, a comprehensive data collection effort was undertaken to identify existing transportation conditions in the vicinity of the U of N Kona. A total of nine (9) intersections (eight (8) existing and one (1) future location) were evaluated during the weekday morning (AM) and evening (PM) peak hours to study existing traffic conditions and evaluate future traffic conditions with and without the Master Plan Update (*Figure 4-20*).

Existing Conditions

The U of N Kona is currently accessible via a driveway located along Kuakini Highway. An access gate located approximately 125 feet east of Kuakini Highway controls access into the Existing Campus.

Existing Roadway System

The key roadways providing access to or in the vicinity of the Petition Area include:

- The existing driveway provides direct access from Kuakini Highway and serves as the primary internal roadway throughout the U of N Kona. The roadway terminates just west of the Aloha Lanai Cafeteria. The roadway has speed bumps and is currently two lanes. The posted speed limit is 15 ~~miles per hour~~ (mph).
- Kuakini Highway is the primary street that provides access to the Existing Campus. Adjacent to the Petition Area, is a two-lane collector roadway that extends generally from the north end of Kailua-Kona town to Queen Ka'ahumanu Highway. The posted speed limit is 35 mph. Kuakini Highway is under the jurisdiction of the County of Hawai'i Department of Public Works (DPW). Sidewalks are not provided on either side of Kuakini Highway. No bicycle facilities exist along Kuakini Highway within the vicinity of the U of N Kona. Crosswalks are provided at the intersection of Kuakini Highway and Hualālai Road.
- Hualālai Road is a two-lane local roadway that is under the jurisdiction of the County of Hawai'i Department of Public Works (DPW). It runs east-west between Ali'i Drive and Queen Ka'ahumanu Highway. The posted speed limit is 25 mph. Sidewalks are provided on both sides of the roadway makai of Kuakini Highway, on the north side of the roadway between Kuakini Highway and the Regency at Hualālai, and the south side of the roadway just makai of Queen Ka'ahumanu Highway. No bicycle facilities exist along Hualālai Road within the vicinity of the U of N Kona. On-street parking is not provided.



Figure 4-20:

**Project Site and Study Intersections
(Fehr & Peers, Inc., 2020)**

- Queen Ka'ahumanu Highway is a two-lane highway that is under the jurisdiction of the State of Hawai'i Department of Transportation (DOT). It is a major component of the Hawai'i Belt Road and runs from Highway 19 in Kailua-Kona to Highway 19 in Hilo. The posted speed limit within the vicinity of the U of N Kona is 45 mph. Neither sidewalks nor bicycle facilities are provided along the roadway. On-street parking is also not provided.
- Nani Kailua Drive is a two-lane local roadway that is under the jurisdiction of DPW. It runs east-west and extends from Hualālai Road to just mauka of Pikake Place. The posted speed limit is 25 mph. Neither sidewalks nor bicycle facilities are provided along the roadway. On-street parking is provided on both sides of the roadway.

Existing Transit Facilities and Services

The County of Hawai'i Mass Transit Agency provides island-wide commuter and fixed-route service on the Island of Hawai'i, where it served over 800,000 riders in the fiscal year of 2016-2017. Hele-On offers fixed-route transit service in the Hilo and Kona areas, Monday through Saturday, and limited commuter services to the South Kohala Resort areas seven days a week. Within the vicinity of the U of N Kona, the Pahala-Kona-South Kohala Route provides daily service along Queen Ka'ahumanu Highway with transit stops both north and south of the U of N Kona.

Existing Bicycle Activity

Bicyclists can access the U of N Kona from Kuakini Highway at the existing driveway. No bicycle facilities exist along Kuakini Highway within the vicinity of the U of N Kona.

The study area has a low level of bicycle activity. Based on the peak period traffic counts, a range of 0-2 bicyclists were observed at each intersection during the AM and PM peak hours. The highest level of bicycle activity occurred in the vicinity of the U of N Kona from 3:35 to 4:35 PM.

Existing Pedestrian Activity

Pedestrians can access the U of N Kona from Kuakini Highway at the existing driveway. A pedestrian sidewalk runs along the east side of Kuakini Highway, beginning at the existing driveway and terminates approximately 150 feet north of the driveway. A pedestrian crosswalk exists approximately 600 feet north of the existing driveway and provides connectivity across Kuakini Highway.

The study area generally has a low level of pedestrian activity, except for the intersection of Kuakini Highway and Hualālai Road, where pedestrian activity is high. During the AM peak hour, 12 pedestrians were observed at the intersection of Kuakini Highway and Hualālai Road, and between zero (0) and nine (9) pedestrians were observed at the other study intersections. During the PM peak hour, 37 pedestrians were observed at the intersection of Kuakini Highway and Hualālai Road, and between zero (0) and seven (7) pedestrians were observed at the other study intersections.

Existing Traffic Volumes/Lane Configurations

Operations of the eight (8) existing study intersections were evaluated for the weekday AM and PM peak hours (*Figure 4-20*). Traffic counts were collected during the weekday AM and PM peak periods in April 2023 while classes at the U of N Kona were in session. The weekday peak hours of traffic generally occurred 7:15 to 8:15AM and 3:15 to 4:15PM.

Field observations identified the following key operational issues at the following intersections:

- **Kuakini Highway/Hualālai Road:** Vehicular congestion along Kuakini Highway limited the number of vehicles that can pass through this intersection during the peak hour than would in free-flow conditions.
- **Queen Kaʻahumanu Highway & Nani Kailua Drive:** Vehicular congestion along Queen Kaʻahumanu Highway limits the number of vehicles that can pass through this intersection during the peak hour than would in free-flow conditions.
- **Queen Kaʻahumanu Highway & Lako Street:** Though not located within the MAR's study area, delays at this intersection cause substantive amounts of queuing in the southbound direction along Queen Kaʻahumanu Highway. This queuing spills back into the intersection of Queen Kaʻahumanu Highway and Kuakini Highway and can disrupt intersection operations.
- **Queen Kaʻahumanu & Hualālai Road:** Making a left turn from Hualālai Road during the morning hours was observed as challenging. Northbound queues originating from Nani Kailua often spill back and contribute to the congestion at the intersection with Hualālai Road.
- **Queen Kaʻahumanu Highway & Kuakini Highway:** Queues extending almost to the point of spillback to Kuakini Highway were observed. The southbound flow remained consistent. Making a left turn from Kuakini Highway to Queen Kaʻahumanu Highway during peak hours was observed as challenging.

Existing Intersection Levels of Service:

The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on factors including speed, travel time, delay, and freedom to maneuver. Six (6) levels are defined, from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions.

A peak hour intersection capacity analysis was performed for the study intersections using the peak hour traffic data collected in April 2023. As described in *Table 4-6*, the Petition Area is served by both signalized and unsignalized intersections, defined as side-street-controlled (SSSC) intersections within the vicinity of the U of N Kona. The LOS ratings for signalized intersections are based on average control delay per vehicle. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The LOS ratings for unsignalized intersections are based on the average control delay expressed in seconds per vehicle. For SSSC intersections, control delay is calculated for each minor-street-stopped movement and the major street left turns; not for the intersection as a whole. *Table 4-~~7~~6* below summarizes the results of the intersection operations within the vicinity of the Petition Area.

Table 4-76: Existing Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Existing Conditions	
			(sec/veh) ^{1,3}	LOS ^{2,3}
1. Kuakini Highway & Hualālai Road	Signalized	AM	33.5	C
		PM	28.0	C
2. Kuakini Highway & North Campus Entrance	SSSC	AM	27.4	D
		PM	31.1	D
3. Hualālai Road & Nani Kailua Road	SSSC	AM	10.6	B
		PM	9.7	A
4. Queen Kaʻahumanu Highway & Nani Kailua Drive	Signalized	AM	47.7	D
		PM	35.8	D
5. Hualālai Road & Hualālai Village North Driveway	SSSC	AM	10.6	B
		PM	10.1	B
6. Queen Kaʻahumanu Highway & Hualālai Road	SSSC	AM	32.6	D
		PM	22.4	C
7. Queen Kaʻahumanu Highway & Kuakini Highway	SSSC	AM	37.9	E
		PM	27.4	D
8. Hualālai Road & Hualālai Village South Driveway	SSSC	Hualālai Village South Driveway is currently closed. This access is assumed to be used as emergency access only under plus project conditions.		

Source: Fehr & Peers, Inc., 2020 Notes:

- 1 Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized intersections. The vehicular delay for the worst movement is reported for the side-street stop-controlled (SSSC) intersection, and traffic along the main roadways typically moves more efficiently.
- 2 LOS calculations performed using the Highway Capacity Manual (HCM) method.
- 3 Unacceptable seconds of delay per vehicle and LOS highlighted in **bold**.
- 4 Eastbound left-turn movement operates at LOS F during AM, and LOS E during PM peak hours.

As shown in *Table 4-87*, the following intersections operate at less-than-desirable LOS:

7. Queen Kaʻahumanu Highway and Kuakini Highway: LOS E (AM Peak)

Intersection results are generally consistent with field observations. The intersections of Kuakini Highway/Hualālai Road and Nani Kailua/Queen Kaʻahumanu Highway could occasionally operate worse than average conditions, primarily because congestion along Kuakini Highway and Queen Kaʻahumanu Highway limits the number of vehicles that can pass through the intersection during the peak hour than would pass in free-flow conditions.

Table 4-87: Projected Peak Hour Intersection Levels of Service																	
Intersection	Traffic Control	Peak Hour	Phase 1					Phase 2					Phase 3				
			Conditions Without Master Plan Update		Conditions with Master Plan Update		Change in Delay	Conditions Without Master Plan Update		Conditions With Master Plan Update		Change in Delay	Conditions Without Master Plan Update		Conditions With Master Plan Update		Change in Delay
			Sec/Veh ^{1, 3}	LOS	Sec/Veh ^{1, 3}	LOS		Sec/Veh ^{1, 3}	LOS	Sec/Veh ^{1, 3}	LOS		Sec/Veh ^{1, 3}	LOS	Sec/Veh ^{1, 3}	LOS	
Kuakini Highway & Hualālai Road ⁵	Signalized	AM	37.7	D	39.5	D	1.8	41.1	D	43.2	D	2.1	44.6	D	46.9	D	2.3
		PM	31.5	C	32.4	C	0.9	35.6	D	38.9	D	3.3	42.3	D	50.0	D	7.7
Kuakini Highway & North Campus Entrance	SSSC	AM	32.1	D	33.9	D	1.8	34.5	D	38.5	E	4.0	37.4	E	46.4	E	9.0
		PM	38.7	E	41.4	F	2.7	42.9	E	48.9	E	6.0	48.3	E	60.1	F	11.8
Hualālai Road & Nani Kailua Road	SSSC	AM	10.9	B	10.9	B	0.0	11.1	B	11.1	B	0.0	11.3	B	11.4	B	0.1
		PM	9.9	A	9.9	A	0.0	10.0	B	10.0	B	0.0	10.1	B	10.2	B	0.1
Queen Kaʻahumanu Highway & Nani Kailua Driveway	Signalized	AM	114.6	F	114.6	F	0.0	136.2	F	136.2	F	0.0	160.4	F	160.4	F	0.0
		PM	105.0	F	105.3	F	0.3	129.3	F	129.9	F	0.6	156.7	F	158.4	F	1.7
Hualālai Road & Hualālai Village North Driveway	SSSC	AM	10.9	B	10.9	B	0.0	11.0	B	11.0	B	0.0	11.2	B	11.2	B	0.0
		PM	10.3	B	10.3	B	0.0	10.4	B	10.4	B	0.0	10.6	B	10.6	B	0.0
Queen Kaʻahumanu Highway & Hualālai Road	SSSC	AM	49.4	E	49.4	E	0.0	58.4	F	58.4	F	0.0	70.4	F	70.4	F	0.0
		PM	28.8	D	28.8	D	0.0	31.7	D	31.7	D	0.0	35.0	E	35.0	E	0.0
Queen Kaʻahumanu Highway & Kuakini Highway	SSSC	AM	58.2	F	59.9	F	1.7	70.8	F	74.6	F	3.8	92.9	F	102.0	F	9.1
		PM	38.2	E	39.5	E	1.3	43.5	E	46.6	E	3.1	50.8	F	58.2	F	7.4
Hualālai Road & Hualālai Village South Driveway	Hualalai Village South Driveway is currently closed. This access is used as an emergency access only.																
Kuakini Highway and South Campus Entrance	SSSC	AM	-	-	13.6	C	-	-	-	14.2	B	-	-	-	15.2	C	-
		PM	-	-	16.0	C	-	-	-	17.3	C	-	-	-	19.1	C	-

1 Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized intersections. This vehicular delay for the worst movement is reported for the side-street-stop-controlled (SSSC) intersection, and traffic along the main roadways typically moves more efficiently.

2 LOS calculations were performed using the Highway Capacity Manual (HCM) method.

3 Unacceptable seconds of delay per vehicle and LOS are highlighted in **bold**.

4 Delay increases of more than five seconds or degradation from LOS A, B, C, or D to E/F are colored in **red**.

5 Eastbound left-turn movement operates at LOS F during AM and PM peak hours.

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Potential Impacts and Mitigation Measures

Traffic Improvements

During the short-term construction period, construction related vehicles will utilize the existing driveway along Kuakini Highway until such time as other alternatives are in place. To mitigate additional traffic during the short-term construction period, delivery and transportation of construction materials will be scheduled Monday through Friday during off hours throughout the day.

A second access point off Kuakini Highway via a new unsignalized intersection and driveway leading to the U of N Kona is planned as part of the Master Plan Update. The MAR recommends that the new access point be constructed with an exclusive left-turn lane on the southbound approach and the south leg be striped to accommodate a refuge lane serving the westbound left-turn vehicles. Due to the relatively low volume of vehicles on this roadway and the limited land uses served by this roadway, it is not anticipated there will be vehicular site access or operational issues with the implementation of the second access point. Adding a second access point to the U of N Kona will distribute traffic and minimize the potential for intermittent congestion during peak hours.

To evaluate the long-term potential traffic impacts with the Master Plan Update, future traffic conditions without the Master Plan Update were compared to future traffic conditions with the Master Plan Update. This is done to determine if the addition of traffic generated with the Master Plan Update is expected to result in a significant impact on the surrounding roadways. Based on previous studies conducted for the County of Hawai'i, the minimum desired operating standard for a signalized intersection is LOS D for the overall intersection. Additionally, the Hawai'i DOT strives to universally maintain LOS D intersection operations. The *Draft, Hawai'i DOT Best Practices for Traffic Impact Report* defines a significant impact when the operations of an intersection, turning movement, or roadway segment changes from LOS D or better to LOS E or F. Additionally, when evaluating intersection approach LOS at any location, other factors should be considered in the analysis, such as traffic volumes and potential secondary impacts to pedestrian, bicycle, and transit travel.

At a signalized intersection, if the addition of project generated traffic is expected to degrade acceptable service levels (LOS D or better) to unacceptable service levels (LOS E or F), then the project is considered to have a direct impact. Alternatively, if the intersection LOS is determined to be LOS E or F without the project and the projects adds traffic to the intersection or location, causing the delay to increase by five (5) seconds or more, then this result would be characterized as a cumulative impact.

For unsignalized intersections, the criterion for a direct impact is similar to that of signalized intersections as described above, but one or more signal warrants must also be met. However, if a project adds traffic to a location that includes a controlled approach that already operates at an unacceptable level (LOS E or F) and one or more volume-based signal warrants are met, then the project is determined to have a significant impact.

Although the County of Hawai'i and HDOT do not publish impact criteria for pedestrian, bicycle, and transit impacts, for the MAR, these impacts are evaluated based on whether the Master Plan Update would: 1) conflict with the existing or planned pedestrian, bicycle, or transit facilities and services, or 2) create substantive walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility.

Special events held on campus may generate a substantial amount of vehicular traffic traveling to and from the U of N Kona if demand is not managed. To mitigate the additional volume of traffic with special events held on campus, ~~is~~ the MAR recommends a ~~transportation management plan (TMP)~~, which will include a transportation demand management (TDM) program to reduce potential temporary impacts to intersections within the vicinity of the U of N Kona during special events. Potential TDM strategies include the use of event shuttle/buses, dynamic event parking pricing, remote parking, and incentives to encourage attendees to carpool to and from the event. Additionally, the MAR recommends that a manual traffic control and focus enforcement be implemented to help manage special event traffic to minimize traffic around the nearby area.

Future traffic conditions within the vicinity of the Petition Area were generated with and without the Master Plan update. Future traffic conditions without the Master Plan Update were generated using the travel demand forecasting model (TDFM) which uses land use and socioeconomic data to assign traffic across the planned roadway network. Without implementation of the Master Plan Update, future conditions reflect traffic increases due to regional growth and development. Future traffic conditions with each phase of the Master Plan Update were generated using a three-step process: 1) project trip generation, 2) trip distribution, and 3) trip assignment. *Table 4-7* compares the projected LOS at the study intersections with and without the Master Plan Update.

Results indicate that under Phase 1, the following intersection are anticipated to operate at a less than desirable level during the AM and PM peak hours:

2. Kuakini Highway and North Campus Entrance (LOS F, PM peak)
4. Queen Ka'ahumanu and Nani Kailua Drive (LOS F, AM and PM peak)
6. Queen Ka'ahumanu Highway and Hualālai Road (LOS E, AM peak)
7. Queen Ka'ahumanu Highway and Kuakini Highway (LOS F, AM peak and LOS E, PM peak)

Under Phase 2, the following intersections are anticipated to operate at a less than desirable level during the AM and PM peak hours:

2. Kuakini Highway and North Campus Entrance (LOS E, AM and PM peak)
4. Queen Ka'ahumanu and Nani Kailua Drive (LOS F, AM peak and PM peak)
6. Queen Ka'ahumanu Highway and Hualālai Road (LOS F, AM peak)
7. Queen Ka'ahumanu Highway and Kuakini Highway (LOS F, AM Peak and LOS E, PM peak)

Upon completion of Phase 3, the following intersections are anticipated to operate at a less than desirable level:

2. Kuakini Highway and North Campus Entrance (LOS E, AM peak and LOS F, PM peak)
4. Queen Ka'ahumanu and Nani Kailua Drive (LOS F, AM and PM peak)
6. Queen Ka'ahumanu Highway and Hualālai Road (LOS F, AM peak and LOS E, PM peak)
7. Queen Ka'ahumanu Highway and Kuakini Highway (LOS F, AM and PM peak)

Based on the results from the TDFM, the Master Plan Update may impact services at the intersection of Kuakini Highway and North Campus Entrance, and Queen Ka'ahumanu Highway and– Kuakini Highway. To determine whether significant impacts would occur at either of these intersections a signal warrant analysis was performed using the Eight-Hour Vehicular Volume and Peak-Hour Vehicular Volume from the *Manual of Uniform Control Devices*. Table 4-98 summarizes the signal warrant analysis.

Table 4-98: Signal Warrant Analysis				
Intersection	Warrant	Scenario		
		Year 2030 + P	Year 2040 + P	Year 2050 + P
2. Kuakini Highway & North Campus Entrance	8-Hour Vehicular Volumes Warrant	Not Met	Not Met	Not Met
	Peak-Hour Vehicular Volumes	Not Met	Not Met	Not Met
7. Queen Ka'ahumanu Highway & Kuakini Highway	8-Hour Vehicular Volumes Warrant	Not Met	Not Met	Not Met
	Peak-Hour Vehicular Volumes	Not Met	Not Met	Not Met

The intersections of Kuakini Highway and North Campus Entrance and Queen Ka'ahumanu Highway and Kuakini Highway did not meet any of the signal warrants in any phase of the Master Plan Update. Although no significant impact were identified, the MAR provides the following recommendations.

2. Kuakini Highway & North Campus Entrance

This intersection does not meet the need for a traffic signal; however, the MAR recommends that the south leg be restriped and a refuge lane for the westbound left turning traffic be implemented to improve operations at this intersection.

7. Queen Ka'ahumanu Highway & Kuakini Highway

This intersection does not meet the need for a traffic signal; however, the MAR recommends ~~recommends- that~~ conditions at this intersection be evaluated prior to construction of Phase 2 and Phase 3 to determine if a traffic signal is warranted. This is consistent with comments received on the Draft EIS from HDOT, which recommended that a traffic warrant signal study be conducted at this intersection before the certificate of occupancy for Phase 2.

Although the Master Plan Update is not anticipated to directly impact traffic at the intersection of Queen Ka'ahumanu Highway and Hualālai Road, the MAR recommends that traffic conditions at this intersection ~~be are~~ evaluated prior to the construction of Phase 2 and Phase 3 to determine if a traffic signal is warranted. This is consistent with comments received on the Draft EIS from HDOT, which recommended that a traffic warrant signal study be conducted at this intersection before the certificate of occupancy for Phase 2.

On-Site Vehicle Circulation and Parking

As part of the Master Plan Update, several on-site internal campus roadways will be extended. Three new north-south roadways are proposed to connect buildings and facilities throughout the Petition Area to the spine road (east-west campus roadway). The spine road will serve to integrate the Existing Campus and Petition Area into a single campus. The. To manage travel speeds along on-site vehicular roadways, the MAR recommends stop signs and other traffic calming devices be included at key points along these roadways.

Vehicular parking will continue to be provided at the U of N Kona. The MAR recommends that the parking supply provided in each phase of the Master Plan Update maintain (or reduce if feasible) the current ratio of parking spaces to the number of campus students, faculty, staff, and visitors. Reduced parking supplies are a key incentive to minimizing the number of vehicle trips generated by land uses, but they must be supported by services and facilities to accommodate non-automobile travel such as, but not limited to, increased transit accessibility, bicycle lanes, and dedicated walking paths.

Off-Site and On-Site Pedestrian and Bicycle Circulation and Transit Access

Existing facilities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality and scope of existing facilities. Additionally, the Bike Plan Hawai'i Master Plan (2012), Statewide Pedestrian Master Plan (2013), and County of Hawai'i Transit Multi-Modal Transportation Master Plan (2018) were assessed to determine if the Master Plan Update is expected to conflict with the existing or planned improvement to pedestrian and bicycle facilities, or if the Master Plan Update is expected to generate a substantial demand which could warrant additional transit service. If the Master Plan Update was found to conflict with the existing plans or generate a substantial demand for additional transit services, then the Master Plan Update would be determined to have a project-specific impact to non-motorized modes of transportation.

Implementation of the Master Plan Update will not conflict with any existing pedestrian or bicycle facilities and will not preclude the implementation of any planned pedestrian or bicycle facilities within the vicinity of the U of N Kona. The Master Plan Update is anticipated to generate some bicycle and pedestrian trips to and from the U of N Kona. Most of these trips would occur along Kuakini Highway by students, staff, and visitors. As project generated pedestrian and bicycle trips are anticipated to be low, no significant impacts are anticipated. However, using the Federal Highway Administration guidelines and the Fehr & Peers proprietary Crosswalk+ tool, off-site pedestrian and bicycle improvements that may be implemented at the intersection of Kuakini Highway and the existing driveway include:

- A raised sidewalk or path separated from traffic by a raised asphalt berm should be installed between the existing sidewalk on the east side of Kuakini Highway from the existing sidewalk's terminus near the site to the existing crosswalk located approximately 600 feet north of the existing driveway.
- Addition of a high-visibility crosswalk, adequate nighttime lighting levels, and crosswalk warning signs on the north and east legs of Kuakini Highway & North Entrance and Kuakini Highway & South Entrance.
- The existing striped triangle on the east leg of the intersection should be converted to a raised median to provide a pedestrian refuge area.

- A Pedestrian Hybrid Beacon could also be installed on the north leg of the intersection, however, a warrant would need to be conducted to determine whether it would be necessary. If it is not warranted, a Rectangular-Flashing Beacon could be added.

The Bike Plan Hawai'i identifies three high priority projects within the vicinity of the Petition Area:

1. Hualālai Road from Kuakini Highway to Old Mamalahoa: Signed Shared Path
2. Kuakini Highway from Lake Street to Hualālai Road: Bike Lane
3. Queen Ka'ahumanu Highway from Henry Road to Kuakini Highway: Signed Shared Path

The proposed bike lane along Kuakini Highway will enhance bicycle connectivity to and from the entrance and the planned second entrance to the U of N Kona.

Direct connections between buildings and parking lots will be provided via unrestricted pedestrian and bicycle pathways. Pedestrians and bicyclists will share paths and crosswalks. Unrestricted pedestrian and bicycle pathways are anticipated to provide adequate connectivity, however the MAR provides the following recommendations to improve on-site circulation for pedestrians and bicyclists:

- A shared-use path should be included on one side of both on-site campus roadways to further enhance pedestrian and bicycle connectivity and safety throughout campus.
- An enhanced bicycle facility should be included along the makai north-south campus roadway between the northern and central roadways.
- Pedestrian-level lighting is recommended along any shared-use path or pedestrian-only sidewalk or path.
- Raised crosswalks should be provided at several locations on the new spine road where higher levels of pedestrian activity are anticipated.
- Provide secure bike parking to encourage the use of non-motorized travel.

The Master Plan Update is anticipated to generate a relatively low number of transit riders and no impacts to transit facilities or services are anticipated and no modifications to transit stop locations or services are required. The nearest bus stop requires transit patrons to walk or bike approximately 2,000 feet from the U of N Kona. It is recommended a multi-use connection directly to Hualālai Road be provided to reduce the overall distance transit riders would walk or bike to access the U of N Kona.

4.13 Socio-Economic Characteristics

Existing Conditions

The population on the Island of Hawai'i has grown rapidly beginning in the 1970s. Much of the population growth is due to the growth of the West Hawai'i and South Hilo Regions. In 2021, the U.S. Census reported that the population of the County was approximately 200,468.

The Island of Hawai'i is comprised of nine (9) districts: the Puna District, South Hilo District, North Hilo District, Hāmākua District, North Kohala District, South Kohala District, North Kona District, South Kona District, and the Ka'ū District. The Petition Area is located within the North Kona District. According to the Kona Community Development Plan, the North Kona District has seen a substantial population increase beginning in the 1980s to 2000 and has grown at nearly twice the rate of the South Kona District. Puna was the largest growing district, followed by the North Kona District followed Puna in terms of population growth. In 2021, the U.S. Census reported that the population of the North Kona District was approximately 40,931. The North Kona District accounted for approximately 20.4% of the County's total population in 2021. The Kona Community Plan and the Kailua Kona Master Plan project that the North Kona District will continue to increase its share of the countywide population.

Within the North Kona District, the Petition Area is located in the U.S. Census Bureau's Hōlualoa Census Designated Place (CDP). The North Kona District is comprised of six (6) CDPs, which include Honalo, Kealahou, Hōlualoa, Kahalu'u-Keauhou, Kalaoa, and Kailua. In 2021, the Hōlualoa CDP population was approximately 4,959. The Hōlualoa CDP accounted for approximately 12.5% of the North Kona district's total population in 2021.

Table 4-109 summarizes the population and characteristics of the Hōlualoa CDP compared to the North Kona District, the County, and the State. The 2021 American Community Survey reported that the median age for the Hōlualoa CDP is 49.9, which is slightly higher than the median age of the North Kona District, the County, and the State. The 2021 American Community Survey reported approximately 1,823 households in the Hōlualoa CDP with an average of 2.7 persons per household. The median income for a household in the Hōlualoa CDP was reported as \$99,554, which is higher than the average median income for the North Kona District and the County. About 1.8% of the population in the Hōlualoa CDP falls below the poverty line.

According to the 2021 American Community Survey, the local economy within the Hōlualoa CDP is primarily based on educational services, health care and social assistance, retail trade, and the arts, entertainment, recreation, and accommodation and food services sectors. Within the Hōlualoa CDP, approximately 63% of the population is employed, 2% unemployed, and 34% not in the labor force (based upon the employment status of the population 16 years or older).

Table 4-109: Population Characteristics

Area	Population (2021)	Median Age (Years)	Persons/ Household	Median Household Income	Ethnicity (percent)
Hōlualoa CDP	8,538	49.9	2.7	\$99,554	White: 57% Asian: 24% Pacific Islander: 1% Two or more races: 12%
North Kona District	37,875	43.2	2.8	\$80,125	White: 41% Asian: 19% Pacific Islander: 11% Two or more races: 18%
County of Hawai'i	200,461	44.0	2.7	\$69,473	White: 30% Asian: 22% Pacific Islander: 12% Two or more races: 31%
State of Hawai'i	1,441,553	40.2	2.8	\$84,857	White: 22% Asian: 37% Pacific Islander: 10% Two or more races: 26%

Source: (American Community Survey, 2019)

Potential Impacts and Mitigation Measures

Construction of the Master Plan Update will require the purchase of goods and services. As the availability of materials and supplies allows, U of N Kona will purchase materials and supplies locally and recycle and reuse construction materials from renovation or demolition of other projects in the nearby vicinity. Inherently, the need to purchase goods and services to support the buildout of the Petition Area will help sustain a healthy economy in the State and in the County.

Expansion of the Existing Campus will accommodate future growth in enrollment at the U of N Kona. Upon completion of the Master Plan Update, the U of N Kona will carry approximately 1,775 students and approximately 1,100 faculty and staff members. Growth at the U of N Kona will increase the demand for goods and services. Although growth in enrollment will increase the demand for goods and services, it is not anticipated that such growth will lead to potential shortages or price hikes, and an increase in demand for goods and services may generate additional jobs and revenues in the County and the State

The projected growth at U of N Kona is in alignment with projected growth patterns in the North Kona District. Although U of N Kona will increase the population in the North Kona District, growth at the U of N Kona is not anticipated to substantially increase population to an extent that would strain public facilities or services. Growth at the U of N Kona is in alignment with policies and plans guiding urban growth in the Kailua-Kona region. As described in the County General Plan, the LUPAG Map designates the Petition Area as Medium Density Urban. Furthermore, the Kona Community Development Plan locates the Petition Area within Kona Urban Area slated for future growth. The Master Plan Update would adhere to the plans and policies guiding growth of urban opportunities in the Kailua-Kona region. Continued urban growth will yield an overall positive economic benefit for the local economy.

4.14 Public Facilities and Services

4.14.1 Educational Facilities

Existing Conditions

The State of Hawai'i ~~Department of Education (DOE)~~ runs the State's public schools. The Petition Area is located within the Kealakehe Complex subsection, which is part of the Honokaa-Kealakehe-Kohala-Konawaena Complex Area on Hawai'i Island.

The following DOE public schools are located within the Kealakehe Complex:

4. Hōlualoa Elementary School – 76-5957 Mamalahoa Highway
5. Kealakehe Elementary School – 74-5118 Kealaka'a Street
6. Kealakehe Intermediate School – 74-5062 Onipa'a Street
7. Kealakehe High School – 74-5000 Puohulihuli Street
8. Innovations Public Charter School – 75-5815 Queen Ka'ahumanu Highway
9. Kanu o ka 'Āina New Century Public Charter School – 64-1043 Hi'iaka Street
10. West Hawai'i Explorations Public Charter School – 73-4500 Kahilihili Street

Potential Impacts and Mitigation Measures

The Master Plan Update will provide a new K-12 school in the Kailua-Kona region. The Lower School, which includes Kindergarten to Grade 5, will be operating upon completion of Phase 1. Additional facilities supporting the Lower School will be completed upon Phase 3. The Middle School, which includes Grade 6 to Grade 8, and High School, which includes Grade 9 to Grade 12, will be completed during ~~Phase 2 and Phase 3 the second phase of the Master Plan Update.~~

The LUC's 2003 Decision & Order (Appendix A), requires U of N Kona to contribute to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE. The terms of such a fair-share contribution are further required to be agreed upon in writing prior to seeking any building permits for the Petition Area.

U of N Kona anticipates that the LUC will impose the same or similar condition when it takes action on the 2020 Motion to Amend. At the appropriate time, U of N Kona will engage with the DOE to determine its obligations to contribute to the development, funding, and/or construction of school facilities. If the Master Plan Update is determined to trigger such obligations, U of N Kona will enter into and comply with the appropriate written agreement with DOE.

4.14.2 Recreational Facilities

Existing Conditions

There are many recreational facilities and public parks in the greater Kailua-Kona Region. They are run by the U.S. National Park Service, DLNR, or County of Hawai'i Parks and Recreation.

Some of the parks in the vicinity of the Petition Area include:

- Hale Halawai Park to the north on Ali'i Drive.
- Kamakahonu Beach to the north next to Kailua Pier.
- Old Kona Airport State Recreation Area, Kailua Beach, Kekuaokalani Gymnasium, and Kona Community Aquatic Center located to the north on Kuakini Highway.
- Kaloko-Honokōhau National Historic Park to the north on Queen Ka'ahumanu Highway.
- Pāhoehoe Beach Park and Magic Sands Beach Park to the south on Ali'i Drive.
- Hillcrest Park located to the south on Oni Oni Street.

Potential Impacts and Mitigation Measures

The Master Plan Update addresses current and projected space and activity needs at the U of N Kona. ~~Planned improvements and facilities include As part of the Master Plan Update,~~ an athletic complex (, which will include a soccer field, outdoor courts, a gymnasium, ~~and~~ a pool, and a multi-purpose complex), and a theatre, ~~both of which~~ will provide much needed facilities to support recreational opportunities for current and future students. The planned recreational facilities will also be made available for the community to utilize as the U of N Kona is planning on hosting competitive sporting events and various community events. Overall, the additional recreational facilities will provide the greater Kailua-Kona community with much needed recreational spaces.

4.14.3 Police

Existing Conditions

The Petition Area is located in the Hawai'i Police Department Area II, Kona Patrol District. The Kona Patrol District encompasses approximately 834 square miles of patrolling areas from the South Kohala District at Waikaloa to the Ka'ū District at Kaulanamauna. Its officers operate from a central station in Kealakehe and from district stations in Keauhou and Captain Cook, as well as a mini-station in Kailua Village. The central Kona Station is located at 74-611 Hale Māka'i Place, Kailua-Kona, an approximately 3.2-mile drive north from the Petition Area.

Potential Impacts and Mitigation Measures

Short-term construction related activity is not anticipated to increase the demand for police services within the Kailua-Kona region. In the long term, the Master Plan Update is not anticipated to adversely affect police services within the Kailua-Kona region. Furthermore, on-campus security conducts routine patrol and surveillance at the Existing Campus and will extend their patrol and surveillance to the Petition Area. No further mitigation is proposed.

4.14.4 Fire

Existing Conditions

HFD provides fire protection and suppression, pre-hospital emergency medical services, land and sea search and rescue, hazardous materials response, ocean safety, fire prevention, and public education for the County. Hawai'i Island is equipped with 20 County-operated fire stations and 18 volunteer fire stations. The Kailua Fire Station, Hawai'i County Fire Station #7, West Battalion, is the identified fire station serving the Petition Area in case of an emergency and is located approximately 1.5-miles north from the Petition Area.

Each month, HFD issues the Fire Chief's Report, which includes a recap of the total number of calls and types of calls HFD responded to. Additionally, the Fire Chief's Report includes a total count of the number of calls and types of calls HFD responds to since the beginning of the calendar year. As of July 2023, HFD responded to a total of 17,902 calls. *Table 4-110* breaks down the different types and number of those calls. *Figure 4-21* illustrates the number and type of incidents from January to July.

Table 4-110: Total Calls for Calendar Year 2023		
Type	Total	Percentage
Fire	630	4%
Overpressure, Rupture, Explosion – no fire	3	0%
Rescue and Emergency Medical Services (EMS)	12,992	73%
Hazardous Conditions (no fire)	175	1%
Service Call	1,173	7%
Good Intent Calls	2,701	15%
False Alarm/False Calls	208	1%
Severe Weather	6	0%
Special Incident Type	10	0%
Other	4	0%
Total	17,902	100%

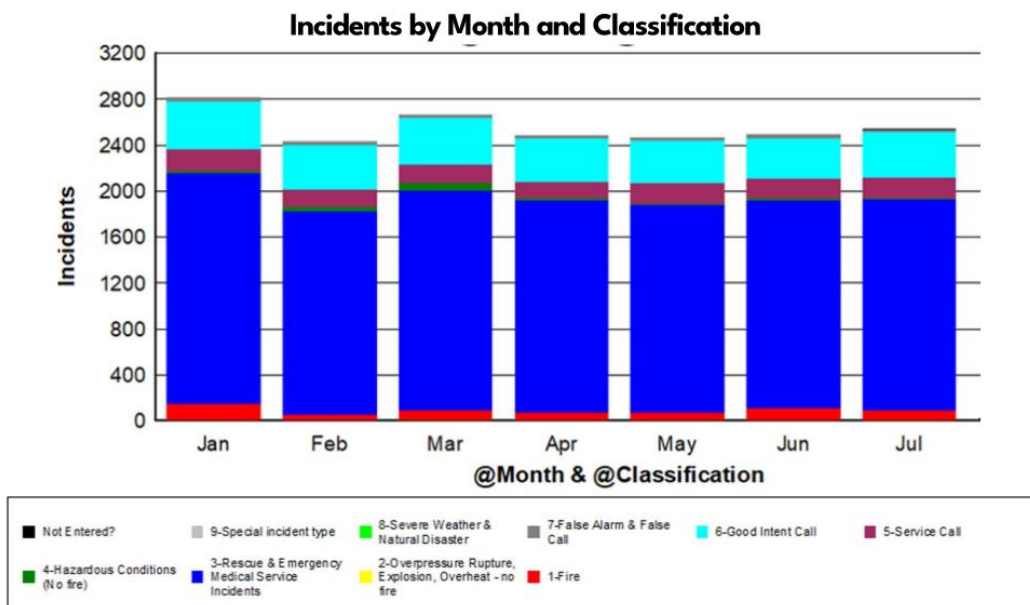


Figure 4-21:

**Incidents Reported from January to July 2023
(Fire Chief's Report, July 2023)**

Table 4-124 provides an overview of the total number of calls the County Fire Department responded to over the last five (5) years. It is projected that the County Fire Department will respond to a total of approximately 31,000 calls in the 2023 calendar year.

Table 4-124: Total Number of Calls Received from 2018-2023						
Year	2018	2019	2020	2021	2022	Est. 2023
Total Calls	25,331	26,869	25,015	27,398	29,594	31,000

Potential Impacts and Mitigation Measures

Short-term construction related activity is not anticipated to increase the demand for fire services. As discussed in Section 4.6.6, should any fires break out during the short-term construction period, HFD will be called immediately.

Although growth at the U of N Kona could increase the demand for fire services, the plan for the Petition Area will implement measures to reduce the risk of ~~wildfire ignition and spread~~igniting a fire. Measures to reduce the risk of wildfires include clearing the Petition Area of overgrown non-native vegetation, using of xeriscape landscaping techniques, selecting native, drought-tolerant plants, keeping trees and shrubs properly pruned, and removing leaf clutter and other dead and dried debris. Buildings will comply with all fire code requirements and building materials will be carefully selected to reduce the risk of wildfire spread.

Additionally, operations at the U of N Kona generally do not include activities that require rescue and Emergency Medical Services (EMS) services, and it is not anticipated the Master Plan Update will generate an increased demand on rescue and EMS services. HFD will review the Master Plan Update for conformance with Federal, State, and County regulations. With measures in place to reduce the risk of a wildfire ignition and spread, the Master Plan Update is not anticipated to adversely affect, or impact services provided by HFD.

4.14.5 Emergency Medical Services

Existing Conditions

EMS provides pre-hospital emergency medical care throughout the State of Hawai'i. Hawai'i County is equipped with 16 ambulance units, with ambulance units distributed at fire stations throughout the entire island. The Kailua Fire Station, Hawai'i County Fire Station #7, West Battalion, which is the identified fire station serving the Petition Area, is equipped with an EMS unit.

The Kona Community Hospital is the main hospital servicing the Kailua-Kona region and is located in Kealahou approximately 9.4 miles south of the Petition Area. Kona Community Hospital is a Level III trauma center and is equipped to handle emergency resuscitation and stabilization, emergency surgery, and intensive care. EMS dispatchers coordinate the transportation of patients to the Kona Community Hospital. Other health care facilities in the vicinity of the Petition Area include Kaiser Permanente Kona Medical Office approximately 4-miles to the north, West Hawai'i Community Health Center (Kealahou) approximately less than 0.5-mile to the north, and Queen's Medical Center Medical Clinic approximately 1.2 miles to the north. In addition, Aloha Kona Urgent Care, a healthcare clinic associated with U of N Kona, is located less than 0.6-mile to the south of the Petition Area.

Potential Impacts and Mitigation Measures

Short-term construction related activity is not anticipated to increase the demand for EMS within the Kailua-Kona region. Although growth at the U of N Kona could increase the demand for medical services, U of N Kona will continue to operate an on-campus health center for its students, staff, and faculty. Students, staff, and faculty will be advised of nearby health centers should further medical attention be needed. With medical services provided at the U of N Kona and with the availability of nearby health centers, the Master Plan Update is not anticipated to adversely affect emergency medical services provided within the Kailua-Kona region.

4.14.6 Solid Waste Management

Existing Conditions

According to the *Preliminary Infrastructure Assessment (Appendix C)* the County operates a network of twenty-one (21) recycling and transfer stations, transfer stations, and two landfills. The County does not have a curbside pickup system and instead depends on waste collection companies to transport waste to the nearest transfer station. The County then transfers waste from the transfer station to either the South Hilo Sanitary Landfill or the West Hawai'i Sanitary Landfill in Pu'uana'hulu. The Petition Area is located between two existing transfer stations, the Kealakehe Transfer Station (3.1 miles to the northwest) and the Keauhou Transfer Station (7.1 miles to the southeast). The West Hawai'i Sanitary Landfill in Pu'uana'hulu receives solid waste from U of N Kona.

Potential Impacts and Mitigation Measures

Short-term construction related activity during the phased development of the Master Plan Update will generate construction waste on site. Construction-related waste will be properly disposed of and not left on the site. Should there be any environmental accidents during the buildout of the Petition Area, the State DOH HEER office will be contacted.

The County has completed its *2019 Integrated Solid Waste Management Plan Update*, which evaluates the County's existing waste management practices and programs and provides short-term and long-term recommendations to improve the County's waste management system. U of N Kona is committed to meeting recommendations in the *2019 Integrated Solid Waste Management Plan Update* and will implement recycling and trash bins at the U of N Kona for students, faculty, and staff to properly discard waste.

The *2019 Integrated Solid Waste Management Plan Update* estimates the total Hawai'i Island population at 201,389 persons and total disposal weight (including recycling) for the 2017-2018 period at 283,021 pounds, or about 1.4 pounds per person each day. Based on the estimates, solid waste disposal generated by the Master Plan Update is projected in *Table 4-1* [32](#).

Table 4-132: Solid Waste Projection

	Current		Phase 1		Phase 2		Phase 3	
	Capita	Solid Waste	Capita	Solid Waste	Capita	Solid Waste	Capita	Solid Waste
Dormers	909	0.8	1,434	1.7	1,959	2.9	2,500	4.7
Day Users	492	0.4	406	0.5	387	0.5	375	0.7
Total, tons/day		1.2		2.2		3.5		5.4

Fully built out, the Master Plan Update is not anticipated to adversely affect or impact the County's waste service facilities. The West Hawai'i Sanitary Landfill in Pu'uuanahulu will continue to receive solid waste from U of N Kona.

4.15 Archaeological Resources

An *Archaeological Inventory Survey of TMKs 3-7-5-010:085 and 3-7-5-017:006* was prepared for the Petition Area by Rechtman Consulting in 2003 (*Appendix J.1*). Additionally, there have been a number of archaeological studies conducted for surrounding lands, including studies within the Wai'aha Ahupua'a and the coastal kula areas of Kailua-Kona (*Table 4-143*). These studies have included archaeological inventory surveys, archaeological data recovery projects, subsurface testing, and burial treatment planning. These studies have identified a range of both late Precontact and early Historic residential sites, many of which were associated with elite members of Hawaiian society. Also prevalent in the region are features associated with transportation, opportunistic and more formalized agriculture, temporary and permanent habitation, burials, and ceremony. Collectively, the findings of previous archaeological investigations conducted within and in the general vicinity of the Petition Area allow for a holistic portrayal of past land use and settlement patterns for Kailua-Kona's kula lands and other contributing factors to the overall cultural landscape.

Table 4-143: Previous Archaeological and Cultural Studies Conducted

Year	Author	Type of Study
1994	Head et al.	Archaeological Inventory Survey
1996	Walker et al.	Archaeological Data Recovery
2000	Rechtman	Archaeological Inventory Survey
2002	Corbin and Rosendahl	Archaeological Assessment Survey*
2002	Rosendahl	Burial Site Testing Report*
2003	Clark and Rechtman	Archaeological Inventory Survey*
2003	Rechtman	Burial Treatment Plan*
2007	Rechtman and Loubser	Data Recovery Report*
2013	Rechtman	Preservation Plan*
2019	Barna	Dismantling/Restoration Plan*

* Previous archaeological and cultural studies conducted within the Petition Area.

A summary of the archaeological studies conducted within and near the Petition Area is presented below.

Existing Conditions

1994 Archaeological Inventory Survey:

In 1994, Paul H. Rosendahl, Inc. (PHRI) conducted an *Archaeological Inventory Survey for the Ali'i Drive Sewer Project, Lands of Pua'a 2nd and 3rd, and Wai'aha 1st and 2nd, North Kona District, Island of Hawai'i (TMK: (3) 7-5-18:7,8) (1994 AIS)*. The 1994 AIS was conducted for the Ali'i Drive Sewer Project on parcels located makai of Kuakini Highway, in close proximity to the Petition Area. A total of 20 archaeological sites comprised of at least 38 associated features were identified. A variety of formal site types were documented including, but not limited to, mounds, alignments, walls, enclosures, trails, and lava blisters and caves, and were assigned functional interpretations relating to agriculture, temporary and permanent habitation, transportation, animal husbandry, landscape clearance, and potential ceremonial and burial functions. The 1994 AIS recommended that data recovery be conducted at 17 of the sites, all of which were assessed as significant under Criterion D and five of which were recommended for preservation. The remaining three sites were recommended for no further work, and it was proposed that although they contained only limited potential with regards to future research, they be integrated into the then-proposed landscaping of the project area. It was determined that while construction activities for the then-proposed development did not threaten the integrity of 17 of the sites, three could not be avoided.

1996 Archaeological Data Recovery Report:

In 1996, PHRI prepared an *Archaeological Data Recovery Report for the Ali'i Drive Sewer Project Mitigation Program – Phase II, Lands of Pua'a 2nd and 3rd, and Wai'aha 1st and 2nd, North Kona District, Island of Hawai'i (TMK: (3) 7-5-18:7,8) (1996 Data Recovery Report)*. The 1996 Data Recovery Report was conducted in follow-up to the 1994 AIS prepared for the Ali'i Drive Sewer Project on the parcels located makai of Kuakini Highway, in close proximity to the Petition Area. Data recovery was conducted at the three archaeological sites that were purported to be unavoidable during construction (Site 15507, Site 15511, and Site 15526). A total of 20 units (four each in Sites 15507 and 15511, and 12 in Site 15526) were excavated within the data recovery sites. Cultural material and portable remains (e.g. charcoal, kukui, gourd, and coconut fragments, marine shell, lithic and volcanic glass debitage and shatter, basalt hammerstones, possible adze fragments, echinoid and coral abraders, a bone awl and pick, fishhooks, shell ornament, historic glass and metal fragments, and a stone pendant) were recovered along with varying amounts of mammal, bird, turtle, lizard, rat, mouse, pig, and fish bones. Additionally, and more importantly, human skeletal remains were recovered from all three sites, although the remains recovered from 15511 and 15526 were likely deposited secondarily as a result of natural processes rather than being in an in situ context. The human skeletal remains associated with Site 15507, however, were determined to be representative with an articulated individual in situ and were ultimately recommended for preservation in place.

2000 Archaeological Inventory Survey:

In 2000, Rechtman Consulting, LLC prepared an *Archaeological Inventory Survey of TMK: (3) 7-5-18:08, Wai'aha 1st Ahupua'a, North Kona District, Island of Hawai'i (2000 AIS)*. The 2000 AIS included a survey of one parcel located makai of Kuakini Highway, in close proximity to the Petition Area. Small portions of the parcel had been previously surveyed by PHRI as a part of the 1994 AIS and 1996 Data Recovery Report. Of the 29 sites previously recorded, 28 were extant. Of these, one (Site 15525) was reevaluated as non-cultural. Twelve of the remaining sites were assessed as likely deriving from the

Precontact Period: two were agricultural in nature (Sites 21992 and 22065); nine were associated with habitation (Sites 15517, 15518, 15521, 15524, 21991, 22067, 22068, 22069, and 22070); and one was a habitation/burial site (Site 15507). Three of the identified sites (Sites 21194, 21196, and 22063) were concluded to date to the late Precontact/early Historic Period and may have been associated with one another. The 2000 AIS opined that these three sites appeared to be of religious significance, and noted the presence of human remains at Site 22063. Twelve of the 28 sites dated to the Historic Period, all of which consisted of stone walls or enclosures likely associated with cattle ranching practices during the early to mid-twentieth century.

2002 Archaeological Assessment Survey:

In 2002, PHRI prepared an Archaeological Assessment for the Petition Area. As a result, 28 archaeological sites encompassing 45 features were documented, and a single previously identified site, the Kuakini Wall (Site 6302), was relocated. Other recorded feature types included walls, terraces, mounds, modified outcrops, platforms, enclosures, and lava blister caves. Identified site types were assigned various functions including habitation, ranching, agricultural, and burial.

2002 Burial Site Testing Report:

Later in 2002, PHRI conducted subsurface testing of a sample of possible burial features based on the findings from the 2002 Archaeological Assessment. Eleven features at eleven different sites were tested for the presence of burials, however this investigation yielded negative results. A small amount of cultural material including a coral abrader, adze fragment, and marine shell fragments were documented during these excavations but appeared to never have been collected.

2003 Archaeological Inventory Survey:

In 2003, Rechtman Consulting, LLC prepared an *Archaeological Inventory Study of TMKs: (3) 7-5-10:85 and (3) 7-5-17:06, Wai'aha Ahupua'a, North Kona District, Island of Hawai'i* (2003 AIS) (Appendix [J.1](#)). As part of the investigation, twenty-two 1 x 1 meter test units were excavated at ten sites (Sites 23668, 23670 Feature B, 23672 Features A and B, 23673 Feature A, 23675, 23676, 23677, 23681 Feature A, 23683, 23684, 23685, and 23686 Features 183, 187, 189, 201, 204, 239, 262, 266, 271, and 297). Subsurface testing yielded numerous examples of cultural material, including volcanic glass flakes and shatter, charcoal fragments, groundstone, waterworn and fire cracked basalt, branch and waterworn coral, marine shell (*Cellana* sp., *Conus* sp., *Drupa* sp., *Nerita* sp., *Echinoidea* sp., *Cypraea* sp., *Strombina* sp., *Venus* sp., and *Cantharus* sp.), kukui, an unidentified seed, shark teeth, a mostly intact lūhe'e lure, and dog, rodent and fish bones. Additionally, human skeletal remains were identified during excavation of Sites 23683, 23684, and 23685. The 2003 AIS identified 25 previously unrecorded sites and a single previously recorded site ([Table 4-154](#) and [Figure 4-22](#)). The sites identified were both Historic and Precontact in nature and were further grouped into seven categories: Historic ranching related sites and boundary walls; Precontact habitation sites; trails; ceremonial sites; game boards; burials; and agricultural sites.

All sites were assessed as significant under Criterion D, with eleven sites (Sites 23662 through 23669, 23679, 23680, and 23682) recommended for no further work. Sites 23681, 23683, 23684, and 23685 were assessed as significant under both Criteria D and E and recommended for preservation. Site 6302, the Kuakini Wall, was assessed as significant under Criteria A, C, and D, and further recommended for preservation. The remaining ten sites were recommended for data recovery (Sites 23670 through 23678 and 23686). The 2003 AIS received final acceptance from [the State Historic Preservation Division \(SHPD\)](#) by letter dated November 17, 2003 (Log No. 2003.2356, Doc No. 0311PM04) ([Appendix J.2](#)).

Table 4-154: Archaeological Sites Recorded (ASM Affiliates, Inc., 2020)

Site No.	Formal Type	Functional Type	Age	Significance	Treatment
6302	Wall	Kuakini Wall	Historic	a, c, d	Preservation
23662	Enclosure	Ranching	Historic	d	No further work
23663	Wall	Ranching	Historic	d	No further work
23664	Wall	Ranching	Historic	d	No further work
23665	Wall	Landscape Marker	Historic	d	No further work
23666	Wall	Landscape Marker	Historic	d	No further work
23667	Wall	Landscape Marker	Historic	d	No further work
23668	Lava Blister	Temporary Habitation	Precontact	d	No further work
23669	Modified Outcrop	Temporary Habitation	Precontact	d	No further work
23670	Platform Complex	Permanent Habitation	Precontact	d	Data Recovery
23671	Platform	Temporary Habitation	Precontact	d	Data Recovery
23672	Enclosure Complex	Temporary Habitation	Precontact	d	Data Recovery
23673	Platform/Enclosure	Permanent Habitation	Precontact	d	Data Recovery
23674	Platform/Enclosure	Temporary Habitation	Precontact	d	Data Recovery
23675	Platform	Temporary Habitation	Precontact	d	Data Recovery
23676	Platform	Temporary Habitation	Precontact	d	Data Recovery
23677	Platform/Enclosure	Temporary Habitation	Precontact	d	Data Recovery
23678	Enclosure	Temporary Habitation	Precontact	d	Data Recovery
23679	Trail	Trail	Precontact	d	No further work
23680	Trail	Trail	Precontact	d	No further work
23681	Platform/Enclosure	Ceremonial	Precontact	d, e	Preservation
23682	Game Board	Game Board	Precontact	d	No further work
23683	Platform	Burial	Precontact	d, e	Preservation
23684	Platform/Enclosure	Burial	Precontact	d, e	Preservation
23685	Platform	Burial	Precontact	d, e	Preservation
23686	Complex	Agricultural	Precontact	d	Data Recovery

*SIHP site numbers are preceded by the State, Island, and U.S.G.S. Quad Prefix.

2003 Burial Treatment Plan:

Later in 2003, Rechtman Consulting, LLC prepared a *Burial Site Component of a Preservation Plan for Three Sites in the Proposed Hualālai Village Development Area* (TMKs: (3) 7-5-10:85 and (3) 7-5-17:06) *Wai'aha Ahupua'a, North Kona District, Island of Hawai'i* (2003 Burial Treatment Plan) (Appendix J.3). The 2003 Burial Treatment Plan was prepared for the proper treatment of the three burial sites (Sites 23683, 23684, and 23685) identified in the 2003 AIS.

Site 23683 is a platform located in the west-central portion of the Petition Area (*Figure 4-21*). The platform measures approximately 6.7 meters long by 5.4 meters wide and 1.6 meters above the surrounding bedrock ground surface at its northeast corner. The platform is constructed of 'a'ā and pahoehoe boulders and cobbles stacked along its exterior north, south, and east edges. A raised bedrock outcrop abuts the western edge of the platform. The platform's surface is paved with small 'a'ā and pahoehoe cobbles. The site was evaluated to be in a good state of repair, although portions of the exterior walls have collapsed. Although Site 23683 yielded negative results when burial testing was conducted in 2002, the 2003 AIS found that the platform's formal attributes appeared similar to the burial sites in North Kona, and it was recommended the site be re-evaluated for the presence or absence of a burial. Burial testing conducted in 2003 revealed human skeletal remains were indeed present at Site 23683. Upon discovery of the skeletal remains, excavation immediately ceased. Although the remains were not moved from their original position, the remains were stabilized and re-buried with the soil excavated. Based upon the identified remains, it is suggested that the platform was built solely as a burial monument subsequent to the interment of the deceased individual.

Site 23684 consists of a platform attached to the north side of a square enclosure located in the southwest corner of the Petition Area (*Figure 4-22*). The platform measures approximately 7 meters long by 3.5 meters wide. The platform is constructed of 'a'ā cobbles and boulders along its exterior edges with small cobbles atop the surface. The platform is in fairly stable condition except for the northwest corner which has collapsed. Notably a branch coral was found amongst the rubble scatter in the northwest corner. Burial testing conducted at the platform required removal of a 70-centimeter-thick architectural layer which consisted of small to large sized 'a'ā cobbles mixed with organic materials. Pockets of branch coral were also identified and recorded to return to their appropriate places upon completion of the testing. Testing at the site revealed human skeletal remains were present. Although the remains were not moved from their original position, the remains were stabilized and re-buried with the soil excavated. The platform and enclosure may have been used for habitation purposes prior to the internment of the deceased individual.

Site 23685 (*Figure 4-22*) consists of a platform located in the north-central portion of the Petition Area. The platform measures approximately 3.8 meters long and 3.0 meters wide and is constructed of formerly stacked, but now mostly collapsed pahoehoe cobbles and boulders. The platform forms a roughly circular monument with a slightly rounded top surface paved with small cobbles. The platform abuts a pahoehoe bedrock outcrop along its northern edge. Unlike the other two identified platforms, Site 23685 has a very formal appearance. Testing at Site 23685 revealed human skeletal remains were present. The burial appeared to be an intrusive pit excavated into the cultural soil, which indicates the individual was interred subsequent to the area being used as a habitation feature. Although the remains were not moved from their original position, they were stabilized and re-buried with the soil excavated. All artifacts recovered from the testing were returned to their rightful places.

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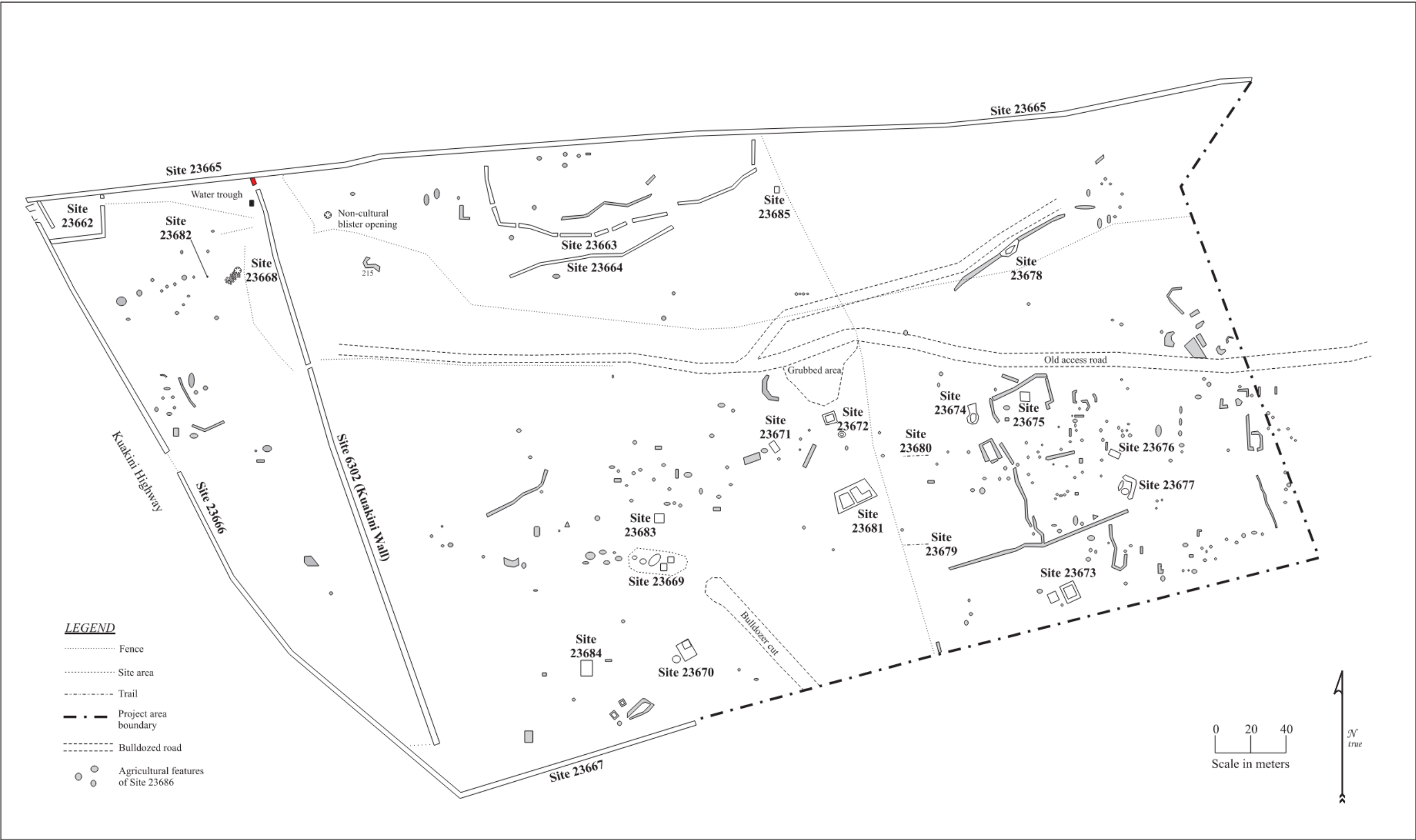


Figure 4-22

Archaeological Sites (Rechtman, 2003)

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Upon the discovery of human skeletal remains SHPD was notified immediately. Based on the results of the burial testing, a search for lineal and cultural descendants was conducted and consisted of the following:

1. Review of documentary research relating to the Petition Area and its general vicinity;
2. Publication of appropriate public notices in newspaper of local and statewide distribution; and
3. Consultation with local community representatives, the Hawai'i Island Burial Council (HIBC), the Office of Hawaiian Affairs (OHA), and SHPD.

Additionally, land claims within the ahupua'a of Wai'aha 1st and 2nd were reviewed to identify land claims that may have crossed the Petition Area, and if land claims crossed the Petition Area, to identify individuals who may be a lineal descendant.

Appropriate public notices requesting any information concerning the unmarked graves were published in the West Hawaii Today, Hawaii Tribune Herald, Honolulu Advertiser, and Ka Wai Ola o OHA. The public notices contained the location of the project, a contact person, and the intent to preserve the identified remains in place. Although the public notices did not receive any responses, one individual identified as a potential cultural descendant through work conducted for the CIA in support of the Master Plan Update .

In August 2003, Josephine Kamoku was contacted to discuss the potential of being a descendant of iwi kupuna identified at the Petition Area. Although she explained that she could not establish direct ties to the Petition Area, as a kupuna of the general area, she shared mana'o relative to the treatment of burial sites and indicated that the burial sites should be preserved within rock wall enclosures with native plants.

2007 Archaeological Data Recovery Report:

In 2007, Rechtman Consulting, LLC prepared an *Archaeological Data Recovery at Ten Sites on TMKs: (3) 7-5-10:85 and (3) 7-5-17:06, Wai'aha Ahupua'a, North Kona District, Island of Hawai'i* (2007 Archaeological Data Recovery Report) (Appendix J.5) for the Petition Area. As shown below in Table 4-15, nine of the ten sites subject to the data recovery were inferred to have been utilized for habitation (four with permanent habitation and five with temporary habitation) and one was associated with agricultural use. All of the sites dated to the Precontact Period. The primary objectives of the data recovery centered around establishing the sequence of Precontact land use within the Petition Area and within the general kula lands of Kona, refining the precise nature of data recovery sites associated with habitation, and refining the age estimate and functional interpretation of the documented agricultural features. The 2007 Archaeological Data Recovery Report proposed that conducting data recovery of these sites would establish whether short-term habitation and associated opportunistic agriculture was indeed followed by recurrent habitation and associated formal agriculture, and finally by more consistent habitation with associated household gardens and animal pens.

The 2007 Archaeological Data Recovery Report included thorough redocumentation of the data recovery sites. That process included clearance of vegetation to assess the then-current conditions of the sites, site photography, the illustration or update of existing site plan views from the 2003 AIS to show the placement of the excavation units, and subsurface testing to determine the presence or absence of buried cultural deposits.

As part of the fieldwork, a total of 39 Excavation Units (EU) and 17 Test Units (TU) were excavated. These units ranged in configuration from 1 x 1 meters, 1 x 2 meters, and 2 x 2 meters, and generally

multiple units were excavated into each site. With respect to the habitation sites (Sites 23670 through 23678), there were a total of 22 EU and 7 TU excavated. For Site 23686, 17 EU and 10 TU were excavated. As a result of excavations, a wide assemblage of cultural material was collected, including intact and fragmented marine shells (e.g. *Cypraea*, sp., *Conus* sp., *Drupa* sp., *Cellana* sp., *Morula* sp., *Isognomon* sp., *Fimbria* sp., *Brachiodontes* sp., *Turbo* sp., *Nerita* sp., *Mitra* sp., *Terebra* sp., *Cantharus* sp., *Chama* sp., *Venus* sp., *Nassarius* sp., *Strombina*, sp., *Serpuloris variabilis*, *Thais* sp., *Cymatium* sp., *Fimbria* sp., and an unidentifiable bivalve fragment), echinoderms, a crustacean fragment, and both branch and waterworn coral pieces. Lithic assemblages identified during fieldwork included worked and unworked volcanic glass flakes and shatter, fire-cracked basalt, basalt flakes, and waterworn and groundstone basalt fragments. Additionally, a variety of faunal remains were recovered including worked and unworked bones (e.g., rodent, pig, dog, cow, bird, and some which were unidentifiable) as well as bird, fish, dog, cow, and shark teeth. A variety of portable remains (artifacts) were also recovered during data recovery excavations, including coral abraders, intact and fragmented echinoderm abraders, a fine-grained basalt adze fragment, a *lūhe'e* lure, an awl manufactured from unidentifiable materials, a bone awl, a .166 lead pellet, an iron horseshoe nail, a steel nail, a steel nut, rusted iron fragments, and fragments of brass buttons. Fragments of *kukui* (candlenut; *Aleurites moluccana*) and an unidentifiable seed and nut were also recovered during excavations, as were numerous charcoal samples, 17 of which were submitted for radiocarbon assaying.

Following the synthesis of field and laboratory results, it was proposed in the 2007 Archaeological Data Recovery Report that the data recovery sites were collectively representative of four relatively arbitrary time periods, which were assigned as Phases A through D, with each interpreted as more extensive than the one preceding: Phase A from A.D. 1400 to A.D. 1460; Phase B from A.D. 1460 to A.D. 1580; Phase C from A.D. 1580 to A.D. 1680; and Phase D from A.D. 1680 to A.D. 1850. Phase A occupation encompassed Site 23686 Features 247, 293, and 294; Phase B occupation pertained to Site 23676, Site 23673 Features A and B, and Site 23671; Phase C related to Site 23686 Features 250, 254, 282, and 289, potentially Site 23674, Site 23672 Features A and B, and potentially Site 23674; and Phase D occupation was concluded to be associated with nine excavated features, including Site 23675, Site 23670 Features A, B, and C, Site 23678, Site 23677 Features A and B, Site 23686 Feature 251, and potentially also the *kuaiwi* associated with Site 23686. Table 4-165 provides a summary of the time periods and their associated features.

**Table 4-165: Summary of Site and Feature Function Types Through Time
(Rechtman Consulting, LLC)**

Phase	Date Range (AD)	Sites/ Features (n)	Hale Mua (n)	Hale Noa (n)	Terrace Wall (n)	Helau (n)	Unknown Agricultural (n)	Kuaiwi (n)	Cattle Enclosure (n)
A	1400-1460	2	1	-	-	-	1	-	-
B	1460-1580	5	3	1	1	-	-	-	-
C	1580-1680	7	2	2	1	1	1	-	-
D	1680-1850	9	1	3	-	3	-	1	1

Phase A

Site 23686 contains Features 293 and 294 that are associated with the earliest dated evidence of occupation within the Petition Area. Both features are located near the southwestern corner of the Petition Area and are identified as being related to agricultural activities. Both features have been disturbed by modern day activities and are covered in recent refuse such as glass, plastic and metal

containers, and automobile parts. The Features also have a similar architectural layer comprised of 'a'a cobbles and small boulders, roughly 40 centimeters thick. Considering the generally similar size, shape, architectural attributes, and deposits from Features 293 and 294, it is proposed that the two are roughly contemporary. Although both Features appear similar, Feature 239 appears to have been more elaborate and used more extensively than Feature 294. It is proposed that the differences probably have more to do with different functions, intensity of use, and/or persistence of use than with time differences. Items recovered from Feature 239 indicate that the structure was most likely used by men cultivating fields away from the main habitation area. Feature 294 was probably used for a shorter period or as temporary sleeping quarters. The evidence of both Features suggests that the initial fifteenth century AD occupation of the Petition Area was restricted and temporary.

Phase B

Features associated with the second oldest period of occupation within the Petition Area include:

11. Site 23676 Platform
12. Feature B enclosure of Site 23673
13. Feature A platform of Site 23673
14. Site 23671 Platform
15. Feature 247 terrace within Site 23686

The remains of certain animal species and artifacts associated with the second oldest period of occupation and an analysis of the cultural history of Hawai'i indicates that the Petition Area was associated with male related activities. The recovery of a burnt shark tooth from Site 23676 provides further evidence as Malo (1951) notes that prior to 1819, shark meat was *kapu* (taboo or prohibited) for Hawaiian women. Additionally, tuna remains within the Feature B enclosure of Site 23673 suggests that this feature was used by high status males as tuna was particularly favored by men of high status (Malo, 1951). The recovery of pig, dog, and bird remains from Site 23676 provides further evidence as all of these foods were consumed by men or used as offerings to the family ancestor spirits in the *hale mua* (house where the husband ate his food) (Handy and Handy 1972: 24, 252, 256, 387). Furthermore, the shell lure found from Site 23676 is known to be a composite of a fishing tool that was crafted by men.

Although Feature A platform of Site 23673 lacks male-related evidence, its proximity to Feature B enclosure of Site 23673 and its similar rectangular shape to Site 23676 suggests Feature A platform of Site 23673 functioned as a cooking area for male consumption. Feature B enclosure of Site 23673 was a *hale mua*, where men consumed and discarded their food. It is suggested that that Feature A of Site 23673 is where food was prepped and cooked, and was then taken to Feature B of Site 23673 to be consumed. The more isolated location of Site 23676 and the animal remains recovered from that Site indicates the food was prepared, consumed, and discarded on site.

The appearance of Site 23671 platform and Feature 247 terrace wall, which lay approximately 180 meters northwest of Site 23673, suggests the features could have served as the foundation of a *hale noa* (sleeping hut). Based on the evidence, the two main categories of features that were used during Phase B includes the *hale mua* (male eating house) and *hale mua* kitchen and the *hale noa* (sleeping house).

Phase C

Features associated with the third phase of occupation within the Petition Area includes:

16. Feature 250 pavement within Site 23686
17. Feature 254 terrace within site 23686
18. Site 23674 articulated platform and circular enclosure
19. Feature A enclosure of Site 23672
20. The smaller Feature B enclosure of site 23672
21. Feature 286 pavement within Site 23686
22. Feature 282 pavement within Site 23686

Although Site 23674 has not been dated, its placement between Features 250/254 mauka and Site 23672 makai suggests Site 23674 belongs to the same period. Features 282 and 289 falling on the mauka end of the same line tentatively suggests that they date to Phase C.

The recovery of items and considerations of feature shape and size suggests that Features 250 and 254 within Site 23686 and Site 23674 platform were cooking areas utilized by men. Site 23674 seems to be a more substantial and permanent *hale mua* than Feature 250 based on the size, weight, and variety of items. Additionally, Feature B of Site 23672 could have also been associated with male-related activities. The dark grayish brown fine silt suggests that a substantial oven associated with a *hale 'aina*, a temporary shed where men cooked meals for women and children, could have been built into the surface (Handy and Handy 1972: 302). Often times, the *hale 'aina* would be located near the *hale noa*, the common sleeping house. The two shark teeth recovered from Feature B of Site 23672 could have been introduced while men were preparing food.

Based on the comparatively large size of the walled enclosure (Handy and Handy 1972:291) and the absence of male-related items, the nearby Feature A of Site 23672 suggests the Feature was part of a *hale noa* where everybody slept.

The size and even surface of Feature 282 platform suggests that it could have been a *heiau* platform. Similar to a *hale mua*, *heiau* were placed at the approach toward a settlement, the front of a household cluster (Valeri 1985: 174), or agricultural plots. The *hale noa* dating back to Phases B and C and the identified *heiau* were all on the mauka side. Based on these identifications, it is further suggested that the agricultural settlement within the project area was approached from the mauka side. The south to north orientation of the terrace walls dating to Phases B and C could also be significant in this regard to providing a front facing fence as people approached the *hale noa* (Site 23671) and *hale mua* (Site 23674) from the interior. Feature 389 yielded a more restricted range of items suggesting the feature could have been a convenient stopping and snacking point on the way to agricultural plots.

Four main categories of features were used during Phase C, which includes the *hale mua*, the *hale noa* and the possibility of a *hale noa* kitchen, an agricultural platform, and a possible *heiau*. The increase in different kinds of features between the late sixteenth to mid seventeenth century suggests settling in and increasingly permanent use of the Petition Area. However, in comparison to earlier and later Phases, Phase C represents an overall drop in the mass and variety of resources exploited.

Phase D

The features that are associated with the fourth phase of occupation includes:

- 23. Site 23675 enclosed platform
- 24. Site 23670A lower tier platform
- 25. Site 23670B upper tier platform
- 26. Site 23670C platform
- 27. Site 23678 oval enclosure
- 28. Site 23677A enclosure
- 29. Site 23677B platform
- 30. Feature 251 enclosure within site 23686
- 31. Feature 23686 Kuaiwi
- 3.2 Feature 291

Recovery of pig and dog bones from Site 23675 suggests a *hale mua*, where men cooked, consumed, and discarded their food, was present within the site. Site 23675 appears to be in the vicinity of the earlier but smaller cooking structures at Feature 250 and Site 23674.

The tiered Site 23670A and B platform suggests the structure was once part of a *heiau*. Unlike the *heiau* identified in Phase B and C, which were located on the mauka end of the Petition Area, the Phase D *heiau* appears to be located in the makai portion of the Petition Area. This suggests that the main approach to the agricultural settlement rotated 180° during Phase D.

Feature 291 appears to be a wall that runs more-or-less perpendicular to the coast line. The perpendicular orientation of the wall suggests that new divisions emerged within the Petition Area during Phase D. Built within Feature 291 is the oval-shaped Site 23678. Based off the absence of male-related items and the medium sized structure, it is suggested this enclosure was once part of a *hale noa*. However, the high average weight of items recovered, and the high variety of items identified (approximately 21 different items) exceed the specifications of a typical *hale noa*. It is further suggested that this *hale noa* had increased and intensified its occupation.

Features A and B of Site 23677 appear to be features associated with what was once a second *hale noa*. Although both features are separated, the Feature B wall shows that these two features are part of the same structure. Recovered remains suggest that cooking occurred on this platform. Similar to Site 23678, Site 23677 had a cooking area within. The cooking areas being part of the *hale noa* structures at Sites 23677 and 23678 of Phase D contrasts with the earlier Phase C Site 23672 proposed *hale noa* where the cooking area was a spatially separate structure.

Cattle bones were recovered from the rectangular Feature 251 enclosure. The size of the enclosure, together with the absence of items apart from the cow carcass, suggests that the enclosure served as a cattle pen. Cattle was introduced to Hawai'i in 1793 and by 1810 herds of cattle roamed across the island. By 1812, *kapu* against capturing feral cattle was lifted, marking the beginning of fully fledged ranching activities. Captured animals were taken into stone-walled paddocks. Cattle ranching became an important asset to Hawai'i's economy, and by the late 1800s cattle ranches grew in the Kona District (Kelly 1980).

Based on the available evidence, five main categories of features were used during Phase D, which includes a *hale mua*, two *hale noa* that contained kitchens, a *kuakini* (wall) associated with a *hale noa*, a *heiau*, and a cattle enclosure. Except for the *heiau*, Phase D features were sandwiched between two walls that appear to define boundaries between plots and/or homestead units. The presence of walls within the Petition Area suggests that a permanent cropping system replaced a shifting system of rotating cultivation by the eighteenth century.

Data recovery suggests the first use (Phase A or AD 1400-1460) was for short term habitation and associated opportunistic agriculture. Following Phase A, formal agriculture and recurrent habitation occurred during Phases B and C (1460-1680). Phase D (AD 1680-1850) is marked by consistent habitation and animal pens. Recovered remains suggests changing trends in gender presence and activities. Throughout time, it is worth recognizing that sites and features shifted makai to mauka. Phase A features were located in the southwestern, makai portion of the Petition Area, whereas Phase D occupational features expanded to the north, mauka of the Petition Area.

2013 Preservation Plan:

A *Preservation Plan for SIHP Site 6032 and Site 23681 (TMKs: (3) 7-5-10:085 and (3) 7-5-17:006) Wai'aha 1st Ahupua'a, North Kona District, Island of Hawai'i for Sites 6032 and 23681* (2013 Preservation Plan) (Appendix JL.6) was prepared by Rechtman Consulting, LLC in 2013 to identify measures to properly preserve Site 6302 and 23681.

Site 6032 is the State Inventory of Historic Places (SIHP) designation for the Kuakini Wall. Known as the Great Wall of Kuakini, archaeological documentation indicates that construction of the wall began in the early 1800s as a response to the growing number of feral animals running rampant throughout Kona. Although no record exists of former Governor Kuakini ordering the wall to be built, its final configuration is attributed to him. Other archival research (Thurston 1882) identifies a wall being built on a 5-acre property in 1825 and extending north, suggesting that Kuakini Wall was not built as a single construction but rather likely incorporated many preexisting property boundary walls along its course. Over time, it is believed that the function of the wall shifted from protecting fields from feral animals to protecting coastal settlement areas makai of the wall. Notably, maps filed with Māhele records for Kuleana parcels bordering Kuakini Wall mark Kuakini Wall in the vicinity of the Petition Area.

Approximately 340 meters of Kuakini Wall is located on the Petition Area. The section of the wall extends in the north/south direction on the lower portion of the Petition Area (*Figure 4-22*). This portion of Kuakini Wall is constructed in a core-filled method (*Figure 4-23*). Three gaps were identified along this portion of the wall (*Figure 4-24*). The first gap occurs along the northern end of the wall and is approximately 3 meters wide, and the second gap occurs 110 meters south of the northern end and is also approximately 3 meters wide. Both gaps are believed to be created by the Gomes Ranch to help funnel cattle waste towards Site 23662 and other pasture areas. The third gap occurs at the wall's southern end approximately 20 meters from the southern boundary of the Petition Area. This gap was most likely created for the construction of Sites 23666 and 23667. A wire fence connects the southern end of Kuakini Wall to Site 23666 creating a large paddock between the two walls.



Figure 4-23

Portion of Kuakini Wall (ASM Affiliates, 2020)

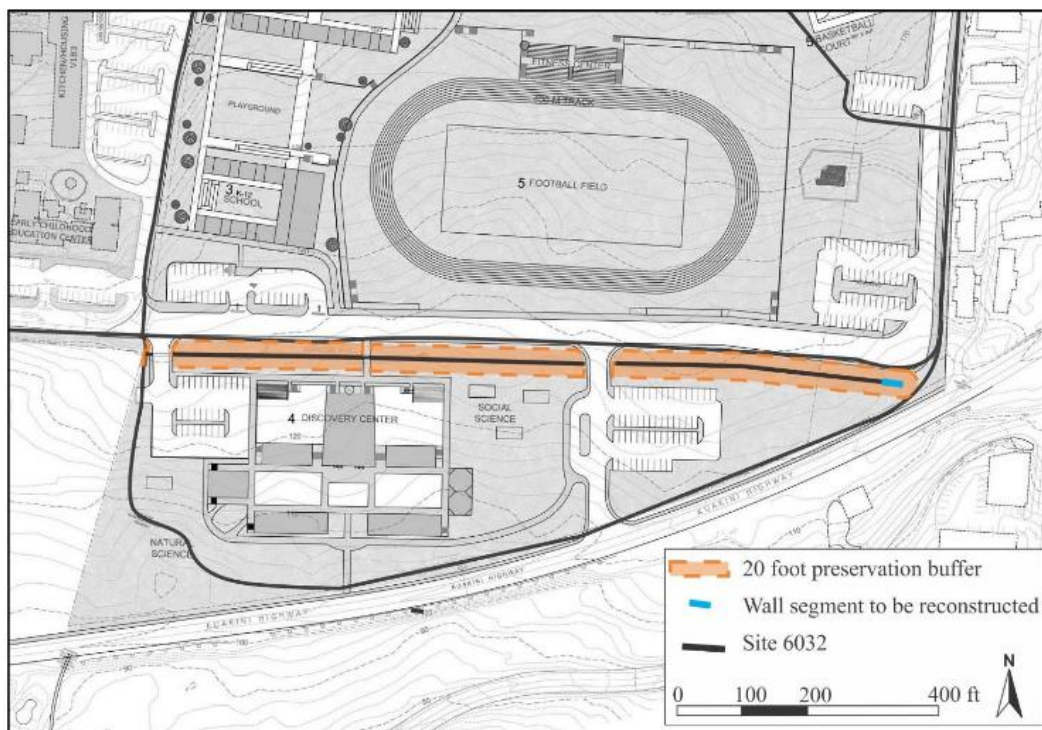


Figure 4-24

Dismantling, Stabilization, and Restoration of Site 6032 (Rechtman, 2019)

Site 23681 is located in the southern central portion of the Petition Area (Figure 4-21). The site consists of two features and is interpreted as an agricultural *heiau* or shrine, where Hawaiians would conduct rituals to ensure agricultural fertility and/or to induce rain. Feature A is a platform constructed within the northeast corner of a double enclosure (Feature B). Both features are constructed of 'a'ā cobbles and boulders.

Feature A is a large rectangular platform measuring approximately 9.1 meters long by 5.3 meters wide. The platform is approximately .7 meters above the ground surface and is mostly intact with the exception of some collapse in the southwest corner and along the northern edge. Feature B consists of a double enclosure located to the south and west of Feature A. The enclosure measures approximately 19 meters long and 15 meters wide. A partially terraced central dividing wall creates two enclosure areas within Feature B. The interior of the western area of Feature B measures approximately 12 meters by 5 meters and the eastern interior area measures approximately 12 meters by 10 meters. Notably, the eastern enclosure area is slightly terraces above the western area.

The size and shape of the agricultural *heiau* identified at the Petition Area resembles other agricultural *heiau* identified in the greater North Kona area.

Potential Impacts and Mitigation Measures

As part of the design of the Master Plan Update, the following measures have been incorporated to preserve identified archaeological features at the Petition Area.

2003 Burial Treatment Plan

To properly preserve Site 23683, 23684, and 23685, the three identifies sites will be preserved in place. Preservation in place will be achieved through the establishment of defined preservation easements. During the short-term construction period, a temporary 50-foot buffer zone marked by orange construction fencing will be established around each identified burial site. A qualified archaeologist will ensure the proper placement of the fence, which will be verified with SHPD. No construction activity will take place within the 50-foot buffer zone. The 2003 Burial Treatment Plan received approval from SHPD on August 20, 2019 (Log No.2019.01527, Doc No. 1908CJ001 (Appendix J.4)).

To provide long-term preservation for Site 23683, 23684, and 23685, a 20 feet buffer zone will be established around each site. The 20-foot buffer zone will be defined by stone walls constructed of local basalt boulders and cobbles. A narrow-gated opening will be left through the enclosing walls to allow access for descendants. A landscaping plan incorporating native foliage will be prepared and submitted to SHPD for review. A small sign informing the public of the culturally sensitive site will be placed adjacent to the stone wall. Beyond the 20-foot buffer zone defined by a stone wall, an additional 10-foot buffer zone will be established as a no construction zone. Access to the burial site for appropriate cultural activities would be permitted to any lineal and/or cultural descendant who has been formally recognized by the Hawai'i Island Burial Council (HIBC) in accordance with the administration procedures contained within HAR §13-300-35. A long-term perpetual easement will be executed that would set forth requirements and restrictions related to physical improvements, signage, maintenance, and access by lineal or cultural descendants.

The Master Plan Update has been carefully designed to ensure appropriate buffer zones are established around Site 23683, 23684, and 23685. With buffer zones established and with the construction of stone walls and appropriate signage, it is not anticipated the Master Plan Update will adversely affect Sites 23683, 23684, or 23685.

2007 Archaeological Data Recovery Report

The 2007 Archaeological Data Recovery Report was prepared based on the strategies established in the Data Recovery Plan (Rechtman 2004) for the mitigation of ten sites (Site 23670, 23671, 23672, 23673, 23674, 23675, 23676, 23677, 23678, and 23686). Excavations were taken at each site recommended for data recovery and the excavations were then tested to gain further information on the identified features. Testing identified dates and possible duration of occupation as well as the function of the sites. The information obtained will contribute to the growing corpus of knowledge of the Pre-contact use of Kona's kula zone. The 2007 Data Recovery Report was originally submitted to SHPD in October 2007 and was resubmitted in August 2019. The Report is currently under review for review and acceptance.

2013 Preservation Plan

A Preservation Plan was prepared by Rechtman Consulting LLC in 2013. The Preservation Plan identifies measures to preserve Site 6302 and 23681. The 2013 Preservation Plan received final acceptance from SHPD by letter dated June 19, 2014 (Log No. 2014.2843 and Doc No. 1406MV15) (*Appendix J.7*).

Site 6302

The 2013 Preservation Plan outlines a multi-modal approach to preserve Kuakini Wall and calls for the preservation of stabilized intact portions of the wall, restoration and stabilization for collapsed portions of the wall, and reconstruction of the southern portion of the wall. Additionally, the preservation plan calls for the widening of the northern most breach for infrastructure improvements and the creation of a new 40-foot wide breach for accessibility purposes (*Figure 4-24*). In support of the multi-modal approach to preserve Kuakini Wall, a Dismantling/Restoration Plan outlines measures to preserve and restore the wall.

Preservation during the short-term dismantling, stabilizing, and reconstruction phase will be achieved through the establishment of twenty-foot buffer zone measured from the mauka and makai faces of the wall. Orange construction fencing will be placed along the preservation boundary during the dismantling, stabilization, and reconstruction phases. Proper placement of the orange construction fencing will be checked by a qualified archaeologist and verified in writing to SHPD. The preservation site relative to construction zones will be plotted on construction plans and reviewed prior to the start of dismantling. No construction, land modification, or other unauthorized activities would be permitted to occur within the buffer zone. Invasive landscaping in the buffer zone will be removed by hand.

Long-term preservation for Kuakini Wall will be achieved through the establishment of a permanent preservation easement recorded with the Bureau of Conveyances. Upon completion of construction, the orange construction fencing will be removed and interpretive signage with information about Kuakini Wall will be placed along the 20-foot buffer.

Site 23681

The agricultural *heiau* identified at the Petition Area will be preserved as a stabilized ruin, and signage informing of the cultural and historic significance of the *heiau* will be posted. A twenty-foot buffer zone will be defined by the construction of a stone wall comprised of local basalt boulders and cobbles. The appearance of the wall will be built in typical traditional Hawaiian dry stacked fashion with a hidden concrete core for stability. The wall will be a minimum of three feet in height and two feet in width. An

inconspicuously situated narrow gated opening will be left through the enclosing of the wall to allow access for appropriate visitation and maintenance purposes.

Orange construction fencing will be placed along the permanent preservation boundary during the construction of the stone wall. Proper placement of the orange construction fencing will be checked by a qualified archaeologist and verified in writing to SHPD. The preservation site relative to the construction zone will be plotted on construction plans and reviewed prior to the start of dismantling. Absolutely no construction activity will occur within the preservation area. Upon completion, the orange construction fencing will be removed, and the preservation buffer will be treated as a permanent preservation measure.

Invasive vegetation will be removed by hand within the preservation buffer and collapsed portions of the *heiau* will be restacked, if necessary. If any vegetation is introduced into the buffer zone it will consist of shallow rooted native and Polynesian-introduced species.

Long-term preservation will be achieved through the establishment of a permanent preservation easement that will be recorded with the Bureau of Conveyances and will be attached to the property deed. The buffer zone will be delineated by a vegetation transition. Additionally, a cautionary sign will be established along the preservation buffer zone boundary to inform the public of the *heiau*.

2019 Dismantling and Restoration Plan

In support of the 2013 Preservation Plan, a *Dismantling/Restoration Plan for a Portion of the Kuakini Wall (SIHP 5-10-28-6302) TMKs: (3) 7-5-010:085 and (3) 7-5-017:006, Wai'aha 1st Ahupua'a, North Kona District, Island of Hawai'i* (2019 Dismantling/Restoration Plan) (Appendix ~~JJ~~.8) was prepared by ASM Affiliates. The 2019 Dismantling/Restoration Plan was submitted to SHPD in 2019 and is currently under review for acceptance.

The 2013 Preservation Plan calls for the preservation of stabilized intact portions of the wall, restoration and stabilization for collapsed portions of the wall, and reconstruction of the southern portion of the wall. Additionally, the preservation plan calls for the widening of the northern most breach for infrastructure improvements and the creation of a new 40-foot wide breach for accessibility purposes.

A qualified archaeologist, under the direction of a Principal Investigator will present on-site to observe and document the dismantling of the wall for the creation of the new 40-foot wide breach and will conduct periodic monitoring, once a week. The archaeological monitor will keep a daily log of activities performed and discoveries made. A scaled plan view drawing of the portions of the wall to be dismantled will be prepared and the archaeological monitor will meet with the construction team prior to any dismantling work. Portions of the wall that are planned to be dismantled will be cleared of vegetation, and then photographed prior to dismantling. During the dismantling phase, all rocks taken from the existing gap and the new breach will be removed by hand and retained for stabilization and reconstruction. Exterior rocks will be staged separately from the interior fill so that they can be used to face the repaired and reconstructed sections.

Dismantling for the new 40-foot wide breach will be conducted first, followed immediately by stabilization of the newly created wall ends. Once dismantling is completed for the new breach, the newly created wall ends will be photographed, and scaled cross-section drawings will be prepared. The stabilized wall ends will be crafted similar to the dismantled ends. Once stabilization of the new wall ends has been completed, the remaining rocks obtained during dismantling efforts will be used to reconstruct the missing portion of the wall beginning at its current southern termination and extending

southward, as far as the amount of rock material will allow. If rock material remains, other partially collapsed sections of the wall will then be stabilized using excess rocks. The appearance of the stabilized portions of the wall will match that of the existing wall. All sections of the wall that require stabilization will be photographed prior to and after any such work is completed.

Upon completion, the orange construction fencing will be removed, and the preservation buffer will be treated as a permanent preservation measure. Should any previously undocumented, non-burial historic properties be identified during the dismantling, stabilization, and reconstruction of the Kuakini Wall, SHPD will be notified immediately, and all work will cease until further recommendation and mitigation is prepared. Undocumented cultural deposits will be mapped, photographs will be taken, scaled profile drawings and plan views will be prepared, and soils (if applicable) will be described in detail. Upon completion of the dismantling, stabilization, and reconstruction of the Kuakini Wall, a dismantling/restoration report will be prepared and submitted to SHPD for review and acceptance.

Long-term preservation will be achieved through the establishment of a permanent preservation easement that will be recorded with the Bureau of Conveyances and will be attached to the property deed. The buffer zone will be delineated by a vegetation transition. Additionally, cautionary signs will be established along the preservation buffer zone boundary to inform the public.

The previous archaeological studies conducted at the Petition Area have identified significant, valued cultural resources, including sites traditionally used for ceremonial, habitation, agricultural, burial, and transportation purposes. U of N Kona recognizes the significant features associated with the Petition Area and has incorporated the identified preservation measures into the design of the Master Plan Update. With interim and permanent preservation measures implemented during the buildout of the Petition Area, it is not anticipated historic archaeological features will be disturbed. An archaeological monitor will be present during the buildout of the Petition Area, and an archaeological monitoring plan will be prepared in accordance with HRS §13-279-4 and submitted to SHPD for review and acceptance prior to construction. Additionally, in the event of an inadvertent discovery of ancestral remains during the phased buildout of the Master Plan Update, SHPD will be notified immediately, and all work will cease until further mitigation is recommended. Should *iwi* need to be moved or touched, an identified cultural monitor, lineal/cultural descendant, or someone with knowledge of Hawaiian ancestry will work in conjunction with a qualified archaeological monitor to complete the task.

4.16 Cultural Resources and Practices

A Cultural Impact Assessment for the Update to the Master Plan for the Proposed 62-Acre Hualālai Village-Pacific Islands Cultural Center Development, Wai'aha, Kona District, Island of Hawai'i, TMK (3) 7-5-10:085; (3) 7-5-17:006 was prepared by ASM Affiliates in 2020 in support of the Master Plan Update., (2020 CIA) (*Appendix KJ*). The 2020 [Cultural Impact Assessment \(CIA\)](#) is an update to a previous cultural impact assessment conducted for the Petition Area by G70 in 2003. The methodology for the 2020 CIA was primarily based upon the following scope:

1. A review and summary of historical documentation for purposes of identifying potential traditional cultural properties, features, resources, beliefs, and practices within or near the Petition Area.
2. An analysis of information provided in archaeological reports and known oral traditions of areas near or within the Petition Area as a means of identifying traditional land use activities, cultural resources, and associative practices and beliefs.

3. Compilation and summary of information obtained from informal discussions and formal interviews with identified knowledgeable individuals regarding historic and traditional practices that are site-specific and inclusive of the ahupua'a of Wai'aha.
4. Preparation of a report that summarizes the information obtained from research conducted from which an evaluation of the potential cultural impacts related to the Petition Area. As necessary, recommendations to mitigate potential impacts will also be included.

As part of the 2020 CIA, various agencies and organizations, including The Office of Hawaiian Affairs (OHA), ~~Hawai'i Island Burial Council~~ HIBC, Queen Lili'uokalani Trust, community members, and cultural/lineal descendants with ties to Wai'aha were contacted in order to identify traditional cultural properties, practices, and contemporary cultural uses associated with the Petition Area and surrounding lands. A total of thirty-four individuals were contacted for consultation based on their potential to provide intimate knowledge of Wai'aha, in particular nā kupuna, nā kumu hula, and nā kua 'āina. Twenty-one individuals responded to the request, although several declined to be interviewed, directed consultation to other individuals (besides themselves), or expressed that they did not have intimate knowledge of Wai'aha.

Existing Conditions

Traditional Land Uses

The Petition Area is located on the lower western slopes of Hualālai within the ahupua'a of Wai'aha in the moku o loko (interior district) of Kona on the Island of Hawai'i (Pukui et al, 1974:219). The moku o loko of Kona is one of six interior land districts that divide up the Island of Hawai'i, originally called Lononuiākea. Due to the vast expanse of land acreage, the Kona district is partitioned into a northern and southern region, with Pu'u Ohau, a cinder cone between Kealahakua and Keauhou, demarcating the boundary (Clark 1985:107). The Petition Area is located within the Northern District of Kona. The Northern Kona District stretches from Keahualono to Pu'u Ohau, and contains approximately 82 ahupua'a (Pukui 1983:198). The ahupua'a of Wai'aha, which translates to "gathering water", is noted in many oral traditions and written records as an area that is abundant with mountainous and coastal resources.

The gentle sloping contours of the Wai'aha uplands were a complement to its level coastal plains, with the former providing an ideal environment for the cultivation of dryland kalo (*Colocasia esulenta*, taro). The general soil characteristics of decomposing lava mixed with organic material provided ideal terrain conditions for planting 'uala (*Ipomoea batatas*, sweet potato), 'ulu (*Artocarpus altilis*, breadfruit), wauke (*Broussonetia papyrifera*, paper mulberry), and ipu (*Lagenaria siceraria*, gourd), thereby providing adequate food, clothing, and storage resources. Toward the uplands, open vistas expanded for miles, unveiling a diversified landscape of forest and fruit trees, which included koa (*Acacia koa* subsp. *Koa*), kou (*Cordia subcordata*), hala (*Pandanus tectorius*, screwpine), and 'ōhi'a 'ai (*Syzygium malaccense*, mountain apple). As shared in the 'ōlelo no'eau, Kona, mauna uliuli, Kona mauna ulupō, the lands of Kona are distinguished by its green mountains and dense forest. (Abbot: 1974, 174; Handy, Handy, & Pukui: 1972, 522-523; Pukui: 1983, 199)

Historical Background

The moku o loko of Kona is associated with the akua (god) Lono, who is considered to be the source of agriculture, fertility, and abundant rains. The land use practices, and cultural protocols associated with agriculture practices, in Kona have been well documented. As provided in an overview of historical

references and native accounts, honorific tributes to the akua Lono were a part of the cultural practices within the district that were perpetuated from time antiquity:

The most interesting mythological and legendary materials relating to Kona have to do directly or indirectly with the god Lono...the origin of the Makahiki rain and harvest festival. From Kona, we have the written record of a myth of Kumuhonua (Earth Foundation, 36 generations before Wākea and Papa, who was the first man fashioned by the gods.), whose writer says that Lono was a fisherman and yet ends his story by stating that the events related occurred before men peopled the earth. Lono is credited with introducing the main food plants, taro, breadfruit, yams, sugarcane, and bananas to Hawai'i and also 'awa (Handy, Handy, & Pukui: 1972, 522).

The sweet potato and gourd were suitable for cultivation in the drier areas of the island. Lono was important in these areas, particularly in Kona on Hawai'i and 'Ulupalakua on Māui. At both of these places, there were temples dedicated to Lono. The sweet potato was particularly the food of the common people. The festival in honor of Lono, preceding and during the rainy season, was essentially a festival for the whole people, in contrast to the war rite in honor of Kū which was a ritual identified with Kū as god of battle (Handy, Handy, & Pukui: 1972, 14)

Various oral traditions recount the lineage of Līloa and 'Ehunuikaimalino, ali'i nui (ruling stewards) of Hawai'i Island during the Consolidation Period (1180-1450 A.D.) During this period, the establishment of political consolidation through applied concepts of sovereignty and hereditary rule by particular families was emphasized, thereby providing opportunities for individual islands to become politically, economically, and socially prosperous (Barrere: 1971, 1-5; Kelly: 1983; 1; Kamakau: 1992 (c), 170; Lake: Ms.). The ascension of Līloa's son, 'Umiālīloa, in the mid-15th century marks the end of the Consolidation Period. It was 'Umiālīloa who established peace and prosperity on the Island of Hawai'i. Through subsequent generations, 'Umiālīloa is the progenitor for other ali'i nui including the aforementioned Kalaninui'iāmamao, the father of Kalani'ōpu'u, who was the father of Kīwala'ō and uncle to Kamehameha I. Oral traditions recount that it was Kalani'ōpu'u who placed the kapu for the war akua (god) Kūka'ilimoku with Kamehameha instead of Kīwala'ō, which had a significant impact on the socio-political events that lead to the eventual and successful campaign and reign of Kamehameha I.

Pre-Contact to the Early 1800s

Since the time of 'Umiālīloa, the abundance of resources made the district of Kona a favorable place of residence for ali'i with lands designated for agricultural production, aquaculture cultivation, and habitation. In Precontact and early Historic times, the people of Kona lived primarily in small settlements along the coast with access to fresh water, where they subsisted on marine resources and agricultural products. The agricultural field system exemplified the adaptation of traditional native planters to various climatic, terrain, and soil conditions. There are four traditional vegetation zones in Kona that characterize the natural landscape from makai to mauka, consisting of the kula, kalu'ulu, 'āpa'a, and 'ama'u zones. The Petition Area is located along the coastal edge of the Kona Field System within the kula zone. The kula zone is the lowest elevation zone, ranging from sea level to 150 meters in elevation, traditionally associated with habitation and cultivation of sweet potatoes, paper mulberry, and gourds. The natural environment of the kula lands immediately mauka of Kailua Bay were described to Reverend William Ellis by Reverend Asa Thurston when a group traversed through the upland region:

The houses, which are neat, are generally built on the seashore, shaded with coconut and kou trees, which greatly enliven the scene...Small gardens were seen among the barren rocks on which the houses are built, wherever soil could be found sufficient to nourish the sweet potato, the watermelon, or even a few plants of tobacco, and in many places these seemed to be growing literally in the fragments of lava, collected in small heaps around the roots (Ellis: 1979, 31).

The cultivation of the kula lands was much more labor-intensive and often did not yield the same quantity or quality in agricultural production as compared to its wetland counterpart. Moreover, the only major tributary stream serving the ahupua'a is the Wai'aha Stream. The headwaters of the stream lie in the upper mountain regions of Hualālai. With only a limited water supply stemming from intermittent rainfall, a series of underground dike systems, and the outflow of the stream, there was an applied approach to water conservation and management to ensure that drought conditions were not prevalent. Thus, to effectively manage the area's water supply, innovative irrigation and dryland agricultural production methods were derived in order to provide a yield of food and water that could sustain the expanding population within the region.

Journal entries describing the Kailua-Kona region in the early 1800s describe the growing population and agricultural features of the area. The journal of Reverend Ellis describes the verdant landscape of the surrounding kula lands, including those of Wai'aha:

Leaving Kairua, we passed through the villages thickly scattered along the shore to the southward. The country around looked unusually green and cheerful, owing to the frequent rains, which for some months past have fallen on this side of the island. Even the barren lava, over which we traveled, seemed to veil its sterility beneath frequent tufts of tall waving grass, or spreading shrubs and flowers. The sides of the hills laid out for a considerable extent in gardens and fields, and generally cultivated in potatoes, and other vegetables were beautiful (Ellis: 1979, 78-79).

As such, the district became a population center with increased patterns of settlement through the Post-Contact period.

Transition in the Early 1800s

The last seven years of Kamehameha's life were in Kailua at his principal residence of Kamakahonu near the heiau of Ahu'ena, thereby shifting political and spiritual governance from O'ahu back to Hawai'i Island. Following the death of Kamehameha I in 1819, Kaluaikonahale John Adams Kuakini was appointed by the Queen Ka'ahumanu to the position of kia'āina (governor) for the Island of Hawai'i. Governor Kuakini was the younger brother of Ka'ahumanu and the son of Namahana and Ke'eaumoku. Although trained in the traditional cultural practices of the Kū priesthood, Kuakini was one of the first ali'i that mastered the English language, even prior to the arrival of missionaries in 1820.

In 1837, Kuakini built his permanent residence, now known as Hulihe'e Place, and constructed Moku'aikaua, the first and oldest Christian church in Hawai'i. Also during this time, the Pā a Kuakini (wall of Kuakini) was constructed along the entire length of North and South Kona to protect the productive agricultural uplands from being inundated from free-roaming domesticated animals. A stone building was also built by Kuakini to be used as a cotton factory, but dwindled within a year. Kuakini had a definitive role in shaping the natural and social landscape of Kona by promoting various

construction endeavors designed to enhance the quality of life for his people during the time directly following the overthrow of the traditional kapu system (Kame'elehiwa 1992; Winnie 1928).

Remaining loyal to the traditional ways of the people but respecting Ka'ahumanu's new affirmation to the Christian faith, Kuakini was considered to be a pono ali'i by traditional Hawaiian standards, maintaining a commitment to address the needs of the people while preserving and protecting the natural resources within the Kailua-Kona region. After his death in December 1844, Kuakini bestowed his position of Kia'āina and all of his lands to his keiki hānai, William Pitt Leleiōhoku. Leleiōhoku's inheritance included Hulihe'e Palace, which was later passed to Princess Ruth Ke'elikōlani, upon his death in 1848.

Notably, the early 1800s marked the arrival of the British missionary William Ellis and members of the American Board of Commissioners for Foreign Missions (ABCFM). Seeking communities to establish church centers for the growing Calvinist mission, William Ellis and members of the ABCFM began to establish political and social relationships with ruling ali'i.

Disposition of Wai'aha at the Time of the 1848 Māhele

In 1848, during the reign of Kauikeaouli (Kamehameha III), the Māhele, a western concept of land tenure, was derived into legislation, which created a massive reformation of the existing land system in Hawai'i. It was the first time a system of separation and identification of the associative rights of the king and the chiefs to the land was established. The result of the Māhele led to the division and distribution of land, thus creating a system of possession rights and private title to land. During this process, all lands were placed into one of three categories: Crown Lands (for the occupant of the throne), Government Lands, and Konohiki Lands (lands for the lesser chiefs and landlords).

The lands of Wai'aha were divided into two sections. Wai'aha 1st was the most northern section and comprised of approximately 260 acres (*Figure 4-25*). Conversely, Wai'aha 2nd was the southern section, comprised of approximately 170¼ acres (*Figure 4-24*). The area fronting the cove at Wai'aha, between the point of Kalaeloa on the north and Kā'ilipunahele on the south, once belonged to Grace Kama'iku'i Rooke. Grace Kama'iku'i Rooke was the daughter of John Young and Mary Kuamo'o, who later adopted her niece, Queen Emma, who had a strong affinity for the ahupua'a of Wai'aha.

Land Commission Awards and Māhele Claims

As lands were divided and distributed, all lands that were identified as Crown Lands, Government Lands, and Konohiki Lands were "subject to the rights of native tenants." This meant the Privy Council adopted resolutions, which authorized the Land Commission to award fee simple titles to all native tenants who could demonstrate that they either occupied or improved any portion of these lands.

Awards issued by the Land Commission to the maka'āinana were called Kuleana awards or Kuleana lands. Native and foreign testimonies were provided to verify the legitimacy of an applicant that claimed residency upon a particular piece of land prior to 1839. Although the maka'āinana did not have to pay a commutation fee, they did have to pay for the survey of their awarded parcels. During the Māhele, 14,195 kuleana claims were filed and 8,421 of those claims were awarded. The total acreage of those lands included in these claims equated to approximately 28,658 acres, which consisted of only lands under direct cultivation and did not include lands that were fallow (Kame'elehiwa: 1992, 295-297; Chinen: 1958).

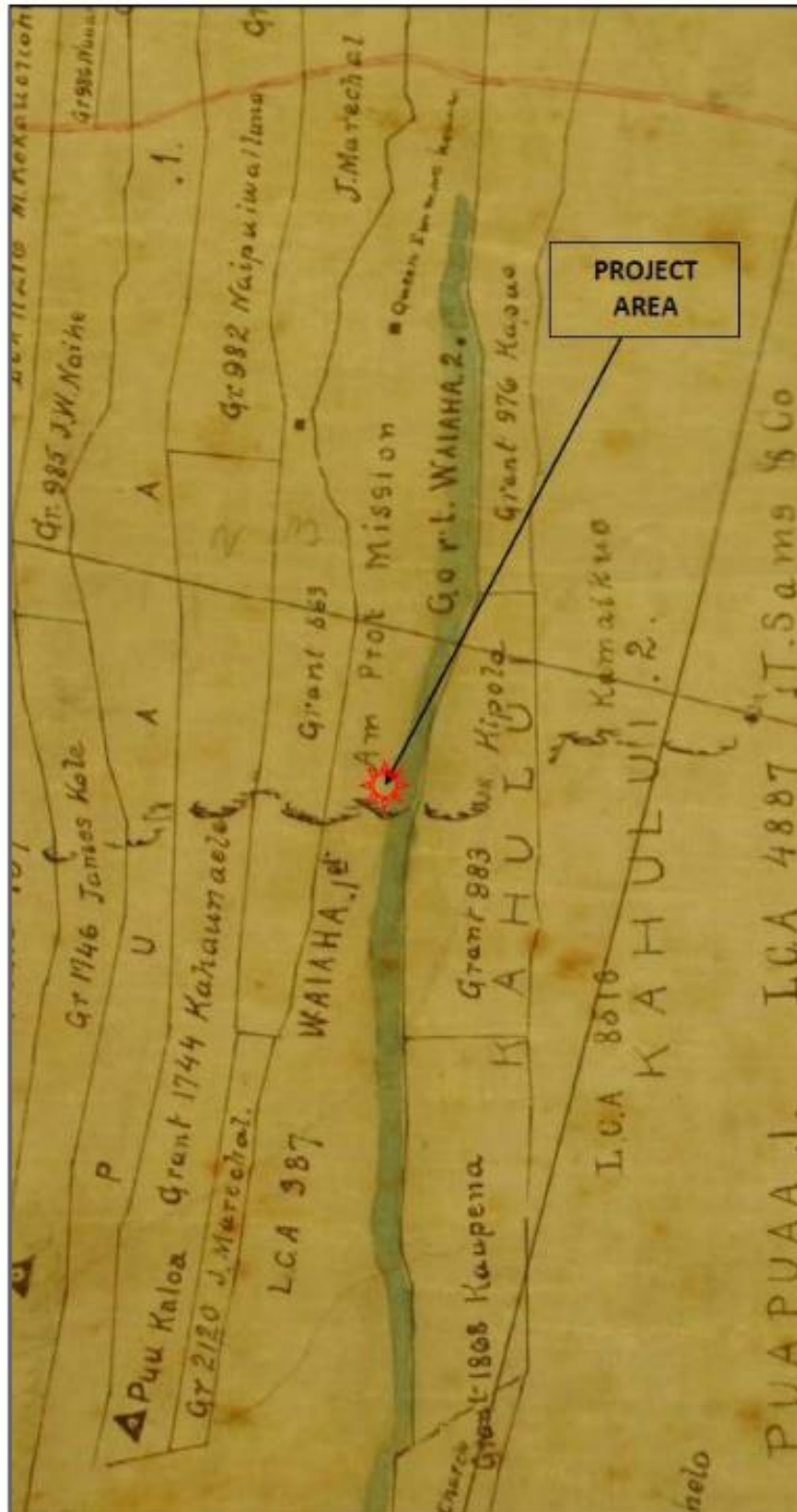


Figure 4-25

**Wai'aha 1st and Wai'aha 2nd Ahupua'a (J.S. Emerson, Circa 1981)
(ASM Affiliates, 2020)**

Land Commission Awards and Māhele Claims

The lands of Wai'aha 1st were initially awarded to the ABCFM as LCA 387 after a petition was sent to the Ministry of the Interior requesting that a commutation for a fee simple title be granted for these lands. Additionally, four native tenants presented and were awarded a Land Commission Award within the Ahupua'a of Wai'aha 1st (Table 4-176). Three of the kuleana awards are situated west of the Petition Area near the shoreline, while the remaining kuleana award parcel is located well to the east in the upper reaches of the Wai'aha ahupua'a.

Table 4-176: Land Commission Awards in the Ahupua'a of Wai'aha 1st					
Awardee	LCA	Royal Patent	Register: (N): Native (F): Foreign	Testimony: (N): Native (F): Foreign	Acres
ABCFM	387	1600	(F) 47v.2	(F) 142v.3	281.80
Kalae	7481	3682	(N) 442v.8	(N) 513v.4	1.61
Kalama	7241-B	6672	(N) 419v.8	(N) 514.4	0.29
Kaulua	7083	N/A	(N) 418v.8	N/A	0.16
Lumaawe	6699	N/A	(N) 413v.8	(N) 549v.4	1.00

Post Māhele Period: The Advent of the Contemporary Agricultural Production

In 1899, the Kona Sugar Company established itself in the Kailua-Kona region with the intent to become an emerging leader in the Hawai'i's sugar industry. In 1901, the plantation built its first sugar mill, which was situated at an elevation of 764 feet in Wai'aha. The Kona Development Company constructed and operated an 11-mile railroad line that extended from Keōpuka, South Kona to the mill site that was situated at Wai'aha. The railroad line was built at approximately the 700- foot elevation level. Stone trestles were constructed as high as 20 feet. Sugarcane was transported from the upland fields to the railway via triggered cables, whereupon it was hauled to the railroad site just above Kailua. The plantation and the mill site operated for approximately 27 years until closing in 1926.

Development of Trade, Cattle, and Ranching Industry

The town of Kailua developed into a major seaport with an embayment that provided a safe anchor. Kailua served as a major port-of-call for initial shipping vessels and steam ships. Boat days became an intricate part of the social fabric for the area, as it served as a primary means of shipping goods, products, and livestock being cultivated, processed or raised within the Kailua-Kona region.

The development of large parcels of kula lands encouraged and expanded import of cattle from Scotland, Australia and England. This was aided by the tug and barge system at Kaiakeakua (Kailua) Bay, which improved the transportation of cattle. In 1918, there were approximately 10 major ranching operations that tended to nearly 14,000 cattle. By the 1920s, three of these ranches emerged along the Kona coast as the primary producers of cattle: the Frank Greenwell Ranch at Honokōhau, Hualālai Ranch, and the Arthur Greenwell Ranch in South Kona.

Land Ownership

According to land records, lands within Wai'aha were partially held in title by Thomas Gouveia, a local rancher and butcher. Ownership was then transferred to Josephine Duarte and Sam Liftee. In 1952, Josephine Duarte and Sam Liftee sold the property to Manuel Gomes.

In an interview conducted with Joseph Gomes, the son of Manuel Gomes, he further shared that his father was able to purchase the lands within Wai'aha as ranching began to evolve, and cattle were pushed to the uplands where pastures could provide adequate food and water for them. In August 2000, the parcels encompassing the Petition Area were conveyed to PACU Bencorp (subsequently named U of N Bencorp) for the benefit of the U of N Kona via the Gomes Family Limited Partnership.

Potential Impacts and Mitigation Measures

Based upon the information obtained from the review of historical documentation, archaeological reports, oral traditions, informal discussions, and formal interviews, the 2020 CIA recognizes that the native Hawaiian epistemological approaches to land use that continue to be perpetuated are:

1. *Recognizing that all 'āina (translated as "that which feeds", but commonly applied as a definition for "land") is born of Papahānaumoku (Earth Mother).*
2. *Acknowledging that although traces of a physical imprint and its integrity of traditional cultural properties, resources, features, beliefs, and practices may no longer remain, there is a thriving spiritual imprint that remains in the form of mana, the spiritual essence of those kūpunu and nā mea loea that have come before.*
3. *Understanding place names, such as Wai'aha, illustrate a collective history of a geographical region, reiterate community and familial genealogy, characterize and describe the natural resources within a prescribed physical space, and define recognized cultural mores and values of the existing community.*

As recommended by the 2020 CIA, the plan for the Petition Area has been thoughtfully designed to foster a place that is reflective of the Kailua-Kona region, both its natural attributes and cultural history. U of N Kona acknowledges the historic cultural and archaeological features identified at the Petition Area and has carefully designed the Master Plan Update to preserve the identified historic cultural and archaeological features. As such, buildings are intentionally situated at a distance from identified cultural and archaeological sites to ensure the proper preservation and protection of the sites. Additionally, a unified architectural theme will be established to reflect a distinct sense of place.

Interim and permanent preservation measures identified in the 2003 Burial Treatment Plan, the 2007 Archaeological Data Recovery Report, the 2013 Preservation Plan, and the 2019 Dismantling/Restoration Plan described in *Section 4.15* will be implemented under the supervision of a qualified archaeologist. Additionally, native plants and landscaping elements representative of the natural and cultural landscape will be integrated throughout the Petition Area.

With interviewees expressing concerns for the handling of iwi, should there be a reason for iwi to be moved or touched, an identified cultural monitor, lineal/cultural descendant, or someone with knowledge of Hawaiian ancestry, will work in conjunction with a qualified archaeological monitor to complete the task. In the event of an inadvertent discovery of ancestral remains, SHPD will be notified immediately, and all construction activity will cease until further mitigation is recommended. An archaeological monitor will be present during the buildout of the Petition Area and an archaeological monitoring plan will be prepared in accordance with HRS §13-279-4 and submitted to SHPD for review.

and acceptance prior to construction. As part of the EIS process, U of N Kona will continue to consult with appropriate agencies and organization including but not limited to SHPD, SHPD Burial staff, HIBC, OHA, and other interested native Hawaiian organizations.

4.17 Ka Pa‘akai o Ka ‘Aina Analysis

A *Ka Pa‘akai O Ka ‘Aina Analysis*, University of the Nations, TMKs: (3) 7-5-010:085 and (3) 7-5-017:006. *Wai‘aha 1st Ahupua‘a, North Kona District, Island of Hawai‘i* was completed in 2020 by ASM Affiliates, Inc. (Ka Pa‘akai Analysis) (Appendix ~~LK~~) to examine the project’s potential effect on or impairment of valued cultural, historical, or natural resources in the Petition Area, including traditional and customary native Hawaiian rights and practices. The Ka Pa‘akai Analysis is based on the Hawai‘i Supreme Court’s decision in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission*, 94 Hawai‘i 31, 74, 7 P.3d 1068, 1084 (2000), which sets forth the State’s (and its agencies’) duty to protect traditional and customary practices and resources under the Hawai‘i Constitution. Under the *Ka Pa‘akai v. Land Use Commission* case, prior to an agency taking action that may impact native Hawaiian traditional and customary practices, the agency must make specific findings of fact and conclusions of law as to:

1. *The identity and scope of valued cultural, historical, or natural resources in the subject land, including the extent to which traditional and customary native Hawaiian rights are exercised in the subject land;*
2. *The extent to which those resources, including traditional and customary native Hawaiian rights, will be affected or impaired by the proposed action; and*
3. *The feasible action, if any, to be taken by the agency to reasonably protect native Hawaiian rights if they are found to exist.*

The Ka Pa‘akai Analysis provides a discussion describing the extent to which the valued cultural, historical or natural resources, and customary native Hawaiian rights and practices may be impacted by the Master Plan Update, and recommends feasible actions and mitigative measures that may be taken by the Land Use Commission to reasonably protect native Hawaiian rights and practices, to the extent they are found to exist within the Petition Area.

Existing Conditions

The cultural significance of the Kona District and the ahupua‘a of Wai‘aha in the conscience of native Hawaiians is illustrated in several oral traditions associated both with the moku o loko and the ahupua‘a as being an area of residence for ruling ali‘i (often referred to as “chiefs” but are considered living akua who bear the kuleana of developing and practicing appropriate land and coastal stewardship practices). Numerous native traditions and foreign accounts, illustrate that the ahupua‘a of Wai‘aha was part of a larger and significant political and population center that was primarily sustained by a variety of dryland agricultural practices. Generally speaking, Kona is associated with the god Lono, who is considered to be the source of agriculture, fertility, and abundant rains.

As previously discussed, the extensive agricultural production is characterized as one of the most significant cultural features of the Kona district. The Petition Area is situated within the Kula zone, which was traditionally associated with habitation and cultivation of sweet potatoes, paper mulberry, and gourds. Agricultural features such as clearing mounds, planting mounds, planting depressions, modified outcrops, pavements, enclosures, and planting terraces are common throughout much of the Kula zone. Within Kona’s arid Kula zone, elaborate irrigation methods were developed to provide an adequate supply of freshwater to agricultural parcels.

In the Precontact and early historic times, the people of Kona lived primarily in small settlements along the coast with access to fresh water, where they subsisted on marine resources and agricultural products. Within Kona's coastal fisheries, the waters are instilled with innumerable streaks of blue-green hues, indicating the varying ocean depths and channels that are abundant with schools of pelagic fish such as a'u (*Istiophoridae*, marline or spearfish), *ono* (*Acanthocybium solandri*, wahoo), *aku* (*Katsuwonus pelamis*, bonito or skipjack), *ahi* (*Thunnus albacares*, yellow-fin tuna), *mahimahi* (*Coryphaena hippurus*, dolphin-fish), *kāhala* (*Seriola dumerilii*, amberjack or yellow-tail), and *ulua* (*Family carangidae*, jack crevalle). In addition to the fish, Kona is also recognized for its fringing reef that teem with a wide variety of nearshore marine species.

Following the Pre-contact and early historic period, the arrival of the ABCFM led to the ever-growing population of Westerners, which led to socioeconomic and demographic changes and promoted the establishment of land ownership. The Māhele 'Āina of 1848 distributed land, thus creating a system of possession rights and private title to land. The lands of Wai'aha were divided into two sections, Wai'aha 1st and Wai'aha 2nd. Wai'aha 1st was initially awarded to the ABCFM (LCA 387) after a petition was sent to the Ministry of the Interior by the ABCFM with a request that a fee simple title be granted for these lands. Notably LCA 387 also awarded additional lands to the ABCFM. Within the Wai'aha 1st ahupua'a, five native long-standing residents made claims for lands (*Table 4-15*). The awarded lands totaled approximately 3.06 acres and ranged from 0.16 to 1.61 acres. None of the awarded lands are located within the Petition Area.

By the late 1890s, lands within Wai'aha were utilized by the Kona Sugar Company. After closing its doors in 1926, lands within the ahupua'a of Wai'aha 1st and Wai'aha 2nd were purchased by Manuel Gomes, who transformed the area into cattle and ranching operations. The upper slopes of Wai'aha are utilized today for ranching, diversified agriculture, and coffee production and the coastal regions are part of a growing urban environment.

Consultation

As part of the 2003 Cultural Impact Assessment, various agencies and organizations, community members, and cultural/lineal descendants with ties to Wai'aha were contacted in order to identify traditional cultural properties, practices, and contemporary cultural uses associate with the Petition Area and surrounding lands. A total of thirty-four individuals were contacted for consultation based on their potential to provide intimate knowledge of Wai'aha, in particular nā kupuna, nā kumu hula, and nā kua'āina. Twenty-one individuals responded to the request, although several declined to be interviewed, directed consultation to other individuals (besides themselves), or expressed that they did not have intimate knowledge of Wai'aha.

There were three primary guiding principles that were the theme of consultation. The first being that 'āina is born of Papahānaumokua (Earth Mother). This guiding principle is the foundation from which the cultural values of aloha 'āina and mālama 'āina are derived. Also, it is necessary to acknowledge that although traces of a physical imprint and its integrity of traditional cultural properties, resources, features, beliefs, and practices may no longer remain, there is a thriving spiritual imprint that remains in the form of mana, the spiritual essence of those kūpuna and nā mea loea that have come before. Finally, it is necessary to understand that place names, like Wai'aha, illustrate a collective history of a geographical region, reiterate community and familial genealogy, characterize and describe the natural resources within a prescribed physical space, and define recognized cultural mores and values of the existing community.

Collectively, the individuals relayed similar concerns regarding the potential impacts of the Master Plan Update on the known archaeological and burial sites, and the potential for encountering previously unidentified burials. Also expressed was the concern for proper stewardship of the lands by the

landowner in order to maintain its cultural integrity, and the need for involvement in the design of the Master Plan Update by cultural and lineal descendants, particularly kūpuna. These concerns and recommendations, expressed in 2003 when previous surveys were conducted, were then used to formulate a set of project-specific recommendations.

Potential Impacts and Mitigation Measures

The archaeological research conducted at the Petition Area combined with the cultural-historical information collected for the CIA attests to the presence of significant cultural resources within the Petition Area. These significant cultural resources include sites and features associated with specific historical activities such as agriculture, temporary and permanent habitation, transportation, animal husbandry, ceremony, and burial. Identification of resources has demonstrated cultural use of the Petition Area that spanned both the Precontact and Historic periods. Given the kaleidoscope of historical and cultural features identified at the Petition Area, the Master Plan Update has been carefully designed to preserve the identified historic cultural and archaeological features. As such, buildings are intentionally situated at a distance from identified cultural and archaeological sites to ensure the proper preservation and protection of the sites. Additionally, a unified architectural theme will be established to reflect a distinct sense of place.

Although the 2003 CIA did not identify any specific past or ongoing traditional or customary practices occurring at the Petition Area, concerns were expressed by those consulted in connection with the Ka Pa'akai Analysis regarding the presence of burials, given the archaeological findings identified at the Petition Area and the possibility of encountering additional unidentified *iwi kupuna* during the buildout of the Master Plan Update, and the potential effects that the proposed development would have on the ability of the descendant community to care for those ancestral remains. Access to the burial site for appropriate cultural activities will be permitted to any lineal and/or cultural descendant who has been formally recognized by the HIBC in accordance with the administration procedures contained within HAR §13-300-35. A long-term perpetual easement will be executed that ~~will~~ set forth requirements and restrictions related to physical improvements, signage, maintenance, and access by lineal or cultural descendants.

To properly protect the cultural resources identified at the Petition Area, interim and permanent preservation measures identified in the 2003 Burial Treatment Plan, the 2007 Archaeological Data Recovery Report, the 2013 Preservation Plan, and the 2019 Dismantling/Restoration Plan described in Section 4.15 will be implemented under the supervision of a qualified archaeologist. With interviewees expressing concerns for the handling of *iwi*, should there be a reason for *iwi* to be moved or touched, an identified cultural monitor, lineal/cultural descendant, or someone with knowledge of Hawaiian ancestry, will work in conjunction with a qualified archaeological monitor to complete the task.

The Master Plan Update has been thoughtfully designed to foster a place that is reflective of the natural attributes and cultural history of the Wai'aha ahupua'a and the greater Kailua-Kona region. As such, buildings are intentionally situated at a distance from identified cultural and archaeological sites to ensure the proper preservation and protection. Additionally, at the recommendation of OHA, a portion of the historic trail will be preserved. With measures in place to properly preserve and allow lineal descendants access, it is not anticipated the Master Plan update will impinge access on the descendant community to access and care for their *iwi kupuna*. Given the Petition Area has known burial sites and the concerns expressed by those consulted regarding the potential to encounter additional burial sites during construction, an archaeological monitor will be present during the buildout of the Master Plan Update and an archaeological monitoring plan will be prepared in accordance with HRS §13-279-4 and submitted to SHPD for review and acceptance prior to construction.

4.18 Visual Resources

Existing Conditions

The Petition Area is located in the North Kona District on the lower western slopes of Mount Hualālai. As pointed out in the Hawai'i County General Plan, the steep slopes of Mount Hualālai provide a green backdrop when viewed from the coast, and spectacular views of the coastline, ocean and horizon from higher elevations. Mount Hualālai is identified as a natural beauty site within the North Kona district.

The Petition Area is bordered by Kuakini Highway on the west, Hualālai Village on the east, the University's Existing Campus Site on the north, and the Kona Hillcrest subdivision on the south. View planes running mauka and makai from both Kuakini Highway and Queen Ka'ahumanu Highway are identified as natural beauty sites within the North Kona district. Mauka and makai views of the Keahuolu coastline and the Holualoa-Keauhou view plane are other notable natural beauty sites identified by the General Plan that are visible from the Petition Area. Current views from adjacent properties and roads overlook the undeveloped Petition Area which is currently covered with overgrown dense vegetation and overhead utility lines (*Figures 4-26 – 4-29*).



Figure 4-26

**Makai View from the Intersection of Hualālai Road and
Queen Ka'ahumanu Highway**



Figure 4-27 **Makai View of the Petition Area from Queen Ka'ahumanu Highway**



Figure 4-28 **Mauka View of the Petition Area from Kuakini Highway**



Figure 4-29

Entrance to the Petition Area from Hualālai Village

Potential Impacts and Mitigation Measures

As described in *Chapter 2*, buildings and facilities were relocated throughout the Petition Area to better integrate the site's natural topographic features and to reduce extensive grading. Buildings and facilities proposed in the Master Plan Update will not impose upon mauka and makai viewplanes from Kuakini Highway and Queen Ka'ahumanu Highway. Buildings and facilities planned for the Petition Area will not exceed the height of existing buildings at the Existing Campus, nor will they exceed building heights established for the zoning district that will be sought from the County following completion of the environmental review process and approval of the Master Plan Update by the LUC. Furthermore, buildings may be designed within the natural topography, including by featuring entrances to the first floor from the makai side of the building and entrances to the second floor from the mauka side. Utilizing the natural topography of the Petition Area will preserve views of Mount Hualālai, which the County General Plan identifies as a natural beauty site.

Although the Master Plan Update requires clearing the Petition Area and the construction of new campus facilities, it has been carefully designed to reflect the Kailua-Kona region. Buildings and facilities have been carefully relocated to preserve mauka and makai views. Furthermore, native plants representative of the natural and cultural landscape will be integrated throughout the Petition Area and will improve the visual environment as the Petition Area is currently covered with overgrown non-native vegetation. The Master Plan Update is not anticipated to adversely affect visual resources.

Probable Impacts and Other Considerations

Chapter 5

Probable Impacts and Other Considerations

5.1 Interrelationships and Cumulative Environmental Impacts

HAR Chapter 11-200.1, defines “cumulative impacts” as the “impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes the other actions. Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time.” Past actions, which have already been implemented, are considered part of the existing or present conditions. A description of the existing environmental setting and an analysis of the probable impacts on the environment from the Master Plan Update is located in *Chapter 4*. Reasonably foreseeable actions include relevant Environmental Assessments (EAs) and EISs identified and are further described below.

- The State is proposing to move forward with the Master Plan for the Natural Energy Laboratory of Hawai‘i located near the Kona International Airport and plans to develop a new innovation center and a separate Hale Wawaloli Visitor Center. As described in the Final Environmental Assessment, the project is not related to other activities planned in the greater Kailua-Kona region and will not produce adverse cumulative effects.
- Kona Three LLC is proposing to develop the Royal Vistas Housing Project, which includes the construction of 450 multi-family residential units on approximately 70 acres of land near downtown Kailua-Kona. The project would require infrastructure service, including electrical, sewer connections, and water commitments, which have already been negotiated. A new unsignalized intersection off Queen Ka‘ahumanu Highway will be implemented to mitigate traffic related impacts from the project.
- The Kona Community Hospital is proposing to install a redundant wastewater treatment system with a capacity of 50,000 gallons-per-day to supplement its existing system. Because the existing system will need to be shut down to perform critical repair and maintenance, wastewater will be diverted to the redundant wastewater system to allow hospital operations to continue. The redundant wastewater system will serve as a backup system whenever future maintenance to the existing system is needed.
- The County DWS is proposing a new mid-level exploratory well to fulfill its mission for the continued development, operation, and maintenance of the municipal water systems on the Island of Hawai‘i. The new mid-level exploratory well is designed to test the fresh water below the brackish basal lens as a source of drinking water. The well would draw upon the Keauhou Aquifer System.
- The Lili‘uokalani Trust is proposing to move forward with infill mixed-use development on approximately 69.5 acres of land in Kailua-Kona. The project consists of approximately 600

residential units; 150 hotel rooms; and 220,900 square feet of commercial and open space. Accordingly, a new water source will be developed to support the project and would source water from the deep confined freshwater zone.

- Kamehameha Schools is proposing the implementation of the Keauhou Bay Management Plan on approximately 29 acres at Keauhou Bay. The Plan aims to ensure the proper management for all the users of Keauhou Bay and calls for the establishment of a heritage management corridor, a new commercial bayfront area with a low-density resort, improvements to the bayfront area for recreational opportunities along the shoreline, and the establishment of a new cultural learning center.

Reasonably foreseeable actions, including the Master Plan for the Natural Energy Laboratory of Hawai'i, and the Royal Vistas Housing Project, the proposed redundant wastewater treatment system for the Kona Community Hospital, the County's new mid-level exploratory well, and the Lili'uokalani Trust Makapalua Project all received a Findings of No Significant Impact (FONSI), which means the proposed actions will not have a significant effect on the environment. The Keauhou Bay Management Plan calls for improved management of the lands at Keauhou Bay and measures to mitigate potential impacts have been. The Draft EIS for the Keauhou Bay Management Plan was published in the June 23, 2024 edition of *The Environmental Notice*.

With the potential new well on the Bolton Property, the County mid-level exploratory well, and the anticipated new well to be developed to support the Lili'uokalani Trust Makapalua Project, there would be three new wells drawing water from the deep confined freshwater zone within the Hualālai ASYA. Initial indications from the monitoring of the Keōpū Deep Monitor Well are that the aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated as a source to replace basal sources. Due to the recent discovery of water in the deep confined freshwater zone, there is limited data on the impacts of drawing water from the deep confined freshwater zone. Commitments to monitor the long-term effects from the drawing of water from the freshwater zone will be established with the forthcoming well construction permits.

The Master Plan Update has been carefully designed to integrate U of Kona's campus expansion into the Kailua-Kona region. As described in *Chapter 4*, short-term construction related activity will involve land disturbing activities, including clearing, grading, and grubbing. Such activities could result in temporary increases in levels of soil erosion, stormwater runoff, and noise, but will be mitigated by the phasing of construction and the implementation of BMPs. Long-term mitigation measures to reduce impacts associated with the expansion of the Existing Campus are described in *Chapter 4*. With both the short- and long-term mitigation measures identified, it is not anticipated that the Master Plan Update will result in cumulative environmental impacts when considering past and reasonably foreseeable actions in the nearby vicinity of the Petition Area.

5.2 Potential Secondary Effects

According to HAR §11-200.1-2, "secondary or indirect impact or effect" means "an effect that is caused by the action and is later in time or farther removed in distance, but is still reasonable foreseeable in the future."

Upon completion of the Master Plan Update, the U of N Kona will have approximately 1,775 students and 1,100 staff members on campus, per quarter. Growth at the U of N Kona campus will increase the overall population in the North Kona District; however, it is not anticipated to substantially increase the population to an extent that would strain public facilities or services in the North Kona District. As

part of the Master Plan Update, additional housing in the form of dormitories will be constructed for students, staff and their dependents. With the additional dormitories, it is anticipated that all students and most, if not all, staff and their dependents will reside at U of N Kona. Accordingly, it is not anticipated that the Master Plan Update will adversely affect the supply of market rate and affordable housing in the nearby vicinity or greater Kailua-Kona region.

The Master Plan Update also includes a new PK-12 school, athletic facilities, and meeting facilities. The planned recreational, athletic, and meeting facilities will provide much needed facilities in the greater Kailua-Kona community as the U of N Kona plans has full intentions on hosting various community events. The new PK-12 school will provide educational facilities not only for the children of U of N Kona's students and staff, but also to the children of the greater community. Additionally, for the Master Plan Update to be implemented, U of N Kona will need to secure an allocation of potable water from a new well to be developed by a private third party. Any such well would be dedicated to the DWS and would provide additional potable water to DWS toas part of the Master Plan Update, a new well support future land use and water needs in the North Kona area. supplying potable water will be developed. An additional potable well will provide water for future growth and urban activities in the North Kona area, as a portion of the water from the well will be dedicated to the County.

In the long term, the Master Plan Update will expand urban growth in the Kailua-Kona region, consistent with the County's plans and policies guiding future urban development in Kailua-Kona. The development of the Master Plan Update and operation of the Expanded Campus will accommodate projected growth at the U of N Kona which in return will increase the demand for goods and services from other businesses in the Kailua-Kona region and across the state. An increase in goods and services will support jobs and increase expenditures in the County and the State.

5.3 Relationship Between Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

The relationship between the short-term use and long-term productivity of the environment primarily involves short-term impacts during construction and the long-term land use change of the Petition Area from an area overgrown with vegetation to an expansion of the Existing Campus.

Short-term impacts associated with construction include temporary noise, air, and soil erosion impacts from the clearing of vegetation and construction of facilities. As discussed in *Chapter 4*, BMPs will be employed during construction to mitigate potential short-term construction related impacts.

To ensure the protection of endangered and threatened species that may be found at the Petition Area, the following measures will be implemented during the short-term construction period:

- Prior to the start of ground disturbing activities, the Petition Area will be surveyed during Hawaiian Hawk breeding season (March 1 to September 30) to ensure Hawaiian Hawk nests are not present, and tree tobacco, which the State listed Blackburn's Sphinx Moth (BSM) larvae feed on, are not present. If Hawaiian Hawk nests are identified at the Petition Area, construction activity will cease around a 1,600-foot buffer zone, and DLNR DOFAW will be notified immediately.
- Contractors will be advised to avoid creating areas of standing water that may attract waterbirds. Should a nest be identified at the Petition Area, a 100-foot buffer around the nest will be established and the USFWS and DLNR DOFAW will be contacted.

- If a Hawaiian Goose or Nēnē is found at the Petition Area, construction activity within a 100-foot radius of the species will cease and contractors will be advised to not approach or feed the bird. Contractors will be advised to reduce speed limits around the Petition Area. If nests are found at the Petition Area, construction activity within a 150-foot radius of the nest will cease and the USFWS and DLNR DOFAW will be contacted.
- If nests of the Hawaiian Short-Eared Owl are discovered at the Petition Area, a 330-foot buffer around the nest will be established and DLNR DOFAW will be contacted.
- To minimize disorientation of Hawaiian seabirds, construction will be limited to day-time hours to avoid seabird disorientation. If nighttime construction activity or equipment maintenance is needed, lighting will be shielded and placed high enough to allow lights to be pointed directly at the ground. Lighting installed as part of the buildout of the Petition Area will be shielded and in compliance with Hawai'i County Code §14-50.
- Trees that are proposed for removal will be inspected prior to removal to ensure migratory bird nests are not present. If a nest is present or a bird species is found in the tree, removal activity will cease until the species flees. If activity must occur in the vicinity of the nesting site, USFWS will be contacted, and a buffer zone will be established.
- Prior to the clearing of vegetation, the Petition Area will be surveyed for the presence of tree tobacco, which the State listed BSM larvae feed on. Should tree tobacco be present, DLNR DOFAW will be contacted to determine proper inspection for the presence of the BSM larvae.
- Trees over 15 feet tall that need to be removed will be inspected for Hawaiian hoary bats prior to clearing. Additionally, tree clearing will be avoided during Hawaiian hoary bat pup rearing season, June 1 to September 15.

To ensure the protection of identified archaeological sites, an archaeological monitoring plan will be prepared and submitted to SHPD for review and acceptance prior to the start of construction. A qualified archaeologist will ensure orange construction fencing is properly placed around archaeological sites identified for preservation. Construction will cease if any inadvertent archaeological finds are discovered and SHPD will be notified immediately. Construction related activity will also be limited to daylight hours to minimize impacts to neighboring residents during construction.

The Master Plan Update will maintain and enhance the long-term productivity of the Petition Area, which is currently underutilized. Expansion of the Existing Campus will enhance the learning environment at the U of N Kona. Additionally, as part of the Master Plan Update, the Petition Area will be equipped with a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and housing for students and staff members. The additional recreational and athletic facilities at the Petition Area will provide much needed facilities in the greater Kailua-Kona community as the U of N Kona has full intentions on hosting various community events.

Trade-offs among short-term and long-term gains and losses

The short-term impacts caused by construction related activity include increased levels of noise, dust, and soil erosion. Upon completion, the Petition Area will serve as an extension of the Existing Campus equipped with a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and dormitories for students and staff members, and will enhance the learning environment at the U of N Kona. The addition of a new PK-12 school and athletic and meeting facilities will provide the greater Kailua-Kona community with much needed recreational, educational, and gathering

facilities. These long-term benefits are anticipated to significantly outweigh the relatively short-term impacts anticipated during construction.

Foreclosure of future options

Expansion of the Existing Campus is a reasonable and well-planned use of the underutilized Petition Area, but will foreclose other potential uses of the Petition Area as discussed in *Chapter 3*. However, the Master Plan Update is not anticipated to foreclose future options for the environment surrounding the Petition Area.

Narrowing the range of beneficial uses of the environment

The Master Plan Update will complement the existing environment surrounding the Existing Campus. As depicted in *Figure 1-4*, the area surrounding the Existing Campus is generally urban with various housing subdivisions and commercial uses. Alternative uses for the Petition Area described and analyzed in *Chapter 3* include agriculture and commercial or residential opportunities. Due to the soils covering the Petition Area, which are poorly suited for agricultural activities, agricultural productivity would be limited and could potentially create a nuisance to surrounding landowners. Although commercial or residential opportunities would generate additional profits for the U of N Kona in support of its educational activities, commercial or residential opportunities would intensify the use of the Petition Area and could result in increased impacts to noise, traffic, and public services and infrastructure. The Master Plan Update is not anticipated to narrow the beneficial uses of the environment given the conditions of the Petition Area and the existing environment surrounding the Existing Campus.

Long-term risks to health and safety

The Master Plan Update will not create long-term risks to health and safety. Staff will receive proper training to assist students and others on campus in the event of a natural disaster and standard operating procedures will be employed during the event of a natural disaster. Additionally, the U of N Kona may be utilized as a shelter in an emergency.

5.4 Irreversible and Irretrievable Commitments of Resources

Short-term construction related activity during the phased build out of the Master Plan Update will require the irreversible and irretrievable commitments of fiscal resources, labor, energy, construction materials, and various resources used to clear the Petition Area and construct new facilities. However, construction is temporary, and it is not anticipated that the irreversible and irretrievable commitments of these resources will result in significant impacts.

Strategic mitigation measures have been identified in *Sections 4.154-4.176* to protect and preserve the archaeological, historical, and cultural resources identified within the Petition Area. If all conditions and measures outlined in the 2003 Burial Treatment Plan, 2007 Archaeological Data Recovery Report, 2013 Preservation Plan, and 2019 Dismantling/Restoration Plan are adhered to and implemented, it is not anticipated the Master Plan Update will adversely affect archaeological, historical, or cultural resources, or infringe upon the descendant community's access to and care for their iwi kupuna. Accordingly, no irreversible or irretrievable commitments to archaeological and historic cultural resources are anticipated.

The Master Plan Update irreversibly and irretrievably commits to the development of lands once used for agriculture on the Island of Hawai'i. However, agricultural use of the Petition Area ceased long ago and the potential for agriculture was found to be very limited because the soils within the Petition Area are poorly suited for agricultural activity.

5.5 Adverse Environmental Effects that Cannot be Avoided

Unavoidable short-term and long-term impacts will be generated with the implementation of the Master Plan Update. Short-term effects are generally associated with construction and are therefore temporary. Long-term effects generally follow the completion of the Master Plan Update and relate to changes to the Petition Area with the completion of the expanded campus. Effects that are considered both adverse and unavoidable are discussed below.

Short-Term

- Temporary increases in soil erosion and stormwater runoff at the Petition Area may result from the clearing of vegetation from the Petition Area (Section 4.2, 4.3, and 4.4).
- Construction related activity is expected to generate short-term impacts to air quality, primarily from fugitive dust emissions. There will be a temporary increase in GHG emissions due to the clearing of vegetation from the Petition Area and equipment operated during construction (Section 4.7).
- Unavoidable but temporary noise impacts may occur during the construction period (Section 4.9).
- Potential for iwi kūpuna and/or cultural finds to be encountered during construction (Section 4.15).

Long-Term

- With any large-scale development, there is the potential for increased stormwater runoff due to increased impermeable surface areas. LID measures will be implemented throughout the Petition Area, where feasible, to mitigate the potential for increased stormwater runoff. LID measures may include xeriscape techniques and permeable pavements and sidewalks (Section 4.4).
- The Master Plan Update will result in an increase in water consumption, wastewater disposal, solid waste generation, and power and communication services. To meet the water consumption demand, ~~U of N Kona~~ U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of N Kona could be allocated water to support the Master Plan Update if the well(s) are completed and dedicated to DWS. The U of N Kona is actively working with the developer private well of the Bolton Well developers, who to secure water from wells developed off (Section 4.510.1). recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct (to DWS-dedicable standards) the well, which would connect to the DWS system via a water main running along Queen Kaahumanu Highway. U of N Kona will continue to consult with the County to ensure the existing infrastructure and utility services have the capacity to service the Petition Area (Section 4.10).
- Growth at the U of N Kona will result in some increased traffic in the nearby vicinity. However, traffic conditions are anticipated to remain similar to conditions without the project, and the

project is not anticipated to significantly impact traffic in the nearby vicinity (*Section 4.12*). To ensure growth at the U of N Kona campus will not affect traffic in the nearby vicinity, an exclusive left-turn lane on the southbound approach and a striped south leg to accommodate a refuge lane serving westbound left-turn vehicles at the second driveway will be implemented. Although the Spine Road connects to the driveway serving the Hualālai Villages condominiums, that access point will only be used by the U of N Kona during emergencies. Additionally, a TMP will be prepared for special events at the U of N Kona campus. Although it is not anticipated the project will affect traffic in the long-term future, the intersection of Kuakini Highway and the North Campus Entrance, and the intersection of Queen Ka'ahumanu Highway and Kuakini Highway two intersections surrounding the U of N Kona campus will be evaluated before Phase 2 and Phase 3 are implemented to determine ~~whether future improvements are necessary if~~ whether a traffic signal is warranted.

- Expansion of the campus is expected to result in some increase of GHG emissions. U of N Kona will continue implement measures to reduce GHG emissions produced at the U of N Kona (*Section 4.7*). Sustainable design measures and practices include, but are not limited to, solar PV panels on buildings and facilities, buildings designed to achieve LEED certification or objectives, implementation of low flow plumbing fixtures, and a campus-wide recycling program.
- Expansion of the campus will accommodate projected growth at the U of N Kona. Growth is in alignment with plans and policies guiding urban growth and development in the Kailua-Kona region as identified in the General Plan and the Kailua-Kona Community Development Plan. However, with an increase in students, staff, and faculty at the U of N Kona, it is anticipated there will be an increase in demand for goods and services from other businesses in the Kailua-Kona region and across the State. Although an increase in goods and services could theoretically increase competition for resources or result in potential shortages, such impacts are not anticipated from the Master Plan Update, and increases in demand for goods and services will increase expenditures and support jobs in the County and the State (*Section 4.13*).
- Expansion of the campus will increase noise levels in the nearby vicinity of the Petition Area. At the appropriate time, U of N Kona will evaluate constructing sound attenuating walls to mitigate noise impacts to neighbors directly south of the Petition Area, and will continue to maintain relationships with neighbors to notify them of events held at the U of N Kona (*Section 4.9*).
- Archaeological investigations reveal that the Petition Area contains significant historic and archaeological features. Three burial sites (Sites 23683, 23684, and 23685), one ceremonial site (Site 23681), and the Kuakini Wall (Site 6302) were identified during the AIS and were determined to be significant under multiple criteria in HAR §13-284-6. Based on these findings, an Archaeological Data Recovery Report, a Preservation Plan, and a Burial Treatment Plan were prepared and approved by SHPD. Sites 23683, 23684, and 23685 will be preserved in place. To provide long-term preservation for Sites 23683, 23684, and 23685 a 20 foot buffer zone will be established around each site. Beyond the 20-foot buffer zone defined by a stone wall, an additional 10-foot buffer zone will be established as a no construction zone. A long-term perpetual easement will be executed that would set forth requirements and restrictions related to physical improvements, signage, maintenance, and access by lineal or cultural descendants. Site 23681 will be preserved in place and a twenty-foot permanent preservation easement buffer will be established for avoidance and protection. Site 6032 will be preserved and stabilized. A Dismantling/Restoration plan to properly restore and stabilize a portion of Kuakini Wall has been prepared (*Section 4.15*).

5.6 Unresolved Issues

Pursuant to HAR § 11-200.1-24(q), the ~~Draft-Final~~ EIS is to include a separate and distinct section that summarizes unresolved issues and contains either a discussion of how such issues will be resolved prior to the commencement of the action, or the overriding reasons there are for proceeding without resolving the issue. The following section summarizes unresolved issues and how such issues will be resolved prior to construction of the Master Plan Update.

DWS has indicated that U of N Kona will need to obtain ~~a new~~ water from a new source to serve the Petition Area. As discussed in Section 4.5, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region, and U of N Kona has identified two potential well-sites in active and ongoing discussions with the developer proposing a new well on the Bolton Property. If a well is developed on the Bolton Property, it would be dedicated to DWS and the water produced would be allocated for use by DWS, the well developer, U of N Kona, and possibly other third-party users. The well developer recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct the well (to DWS-dedicable standards), which would connect to the DWS water main running along Queen Kaahumanu Highway. The well developer will need to negotiate a final well development agreement with DWS to formalize the number of water commitments, the water system design criteria, and the water credits available. Subsequent permit applications will-would need to be filed with the Commission of Water Resource ManagementCWRM to construct and test the well(s) for the availability of freshwater. Commitments from the well developer to monitor the long-term effects from the drawing of water from the freshwater zone would# be established with the well construction permit. If freshwater is available and ~~water~~ can be drawn at the proposed location, infrastructure to connect the well to the existing County water system will need to be designed and constructed. U of N Kona understands water will need to be secured prior to filing a change in zone application with the County.

Following completion of the environmental review process, U of N Kona will need to obtain approval for the Master Plan Update from the LUC and thereafter obtain a change in zoning from the County, both of which may be subject to additional unknown conditions. U of N Kona will be seeking to rezone the Petition Area to either the County's Project District or another appropriate zoning district. U of N Kona will continue to consult with the Planning Department to determine the zoning district most suitable to support the Master Plan Update.

Land Use Plans, Policies, and Controls



Chapter 6

Land Use Plans, Policies, and Controls

This chapter discusses the relationship of the Master Plan Update to the following Federal, State, and County land use plans, policies, and regulatory controls.

Federal

- Coastal Zone Management Act
- Title III of the Americans with Disabilities Act

State of Hawai'i

- Environmental Impact Statements
- Land Use Commission
- Hawai'i State Plan
- Hawai'i State Functional Plans
- Hawai'i 2050 Sustainability Plan
- Hawai'i Coastal Zone Management Program

County of Hawai'i

- County of Hawai'i General Plan
- Kona Community Development Plan
- Kailua-Kona Master Plan
- County of Hawai'i Zoning
- County of Hawai'i Water Use and Development Standards

6.1 Federal

6.1.1 Coastal Zone Management Act

In 1972, the Federal government enacted the Coastal Zone Management Act (CZMA) to effectively manage, use, protect, and develop coastal areas in the U.S. The CZMA was a government response to increasing and competing demands upon habitats and resources of coastal lands and waters. Such demands often resulted in a loss of living marine resources and wildlife; depleted nutrient-rich areas; shoreline erosion; diminished open space for public use; and permanent and adverse changes to ecological systems. Under the CZMA, states are authorized to work in a unified manner with Federal and local governments to develop programs, policies, evaluation criteria, and development standards that lend to the effective protection and prudent use of coastal lands and waters.

The enforcement authority for the Federal Coastal Management Program (Public Law 104-150, as amended in 1996), has been delegated to the State under HRS, Chapter 205A, Coastal Zone Management Program (State CZM Law). The State defines the coastal zone management area as the following:

“All lands of the State and the area extending seaward from the shoreline limit of the State’s police power and management authority, including the United States territorial sea.”

Discussion: *In Hawai‘i, the “coastal zone management area” means all land of the State, and therefore includes the Petition Area. However, the Petition Area is not within the Special Management Area. The Master Plan Update has been designed to conform to the goals, policies, and objectives of the State CZM Law. A full discussion of the Master Plan Update’s compatibility the State CZM Law is provided in Section 6.2.6.*

6.1.2 Title III of the Americans with Disabilities Act

In 1991, the Federal government enacted the American with Disabilities Act (ADA) to provide equal accessibility for persons with disabilities. Title III of the ADA Title covers businesses that are considered public accommodations. Public accommodations include private entities that own, lease, or operate facilities such as restaurants, retail stores, and hotels. Public accommodations must comply with basic nondiscrimination requirements that prohibit exclusion, segregation, and unequal treatment of persons with disabilities, as addressed in the ADA. They also must comply with specific requirements related to architectural standards for new and altered buildings; reasonable modifications to policies, practices, and procedures; effective and accessible communication; and other access requirements.

Discussion: *All buildings and facilities proposed in the Master Plan Update will be designed and constructed to applicable architecture standards to ensure they are ADA-compliant. Additionally, improvements to pedestrian facilities associated with the Master Plan Update will meet the applicable ADA-requirements of the ADA.*

6.2 State of Hawai‘i

6.2.1 Environmental Impact Statements

Under HRS Chapter 343, the State legislature found that the quality of humanity’s environment is critical to its well-being, and that human activities have broad and profound effects upon the interrelations of all components of the environment. Accordingly, the environmental review process is necessary to integrate the review of environmental concerns with existing planning processes of the State and counties. This process alerts decision makers to significant environmental effects that may result from the implementation of certain actions, and discloses proposed mitigation measures to address potential impacts. HRS Chapter 343 states that a process of reviewing environmental effects is important to enhance environmental consciousness, encourage cooperation and coordination, and invite community participation during the public comment period. As such, the State has established a system of environmental review to ensure that concerns are given appropriate consideration in decision-making, in addition to economic and technical considerations. This process alerts decision makers to significant environmental effects that may result from the implementation of certain actions, and discloses proposed mitigation measures to address potential impacts.

Discussion: This ~~Draft-Final~~ EIS has been prepared in compliance with requirements outlined in HRS Chapter 343 and HAR Chapter 11-200.1. As determined by the LUC, the Master Plan Update may have a significant effect on the environment, thus this ~~Draft-Final~~ EIS has been prepared.

An EISPN for the Master Plan Update was published by the Environmental Review Program in the March 8, 2021 edition of The Environmental Notice. Subsequently, a Public Scoping Meeting was held virtually on March 25, 2021 at 6:00 p.m. Comment letters received during the EISPN 30-day review period are attached as Appendix ~~NM~~. ~~See responses to comments and further discussion in Chapter 8.0-A summary of the comments provided at the scoping meeting is located in Section 8.1. Comments provided during the EISPN comment period and U of N Kona's responses are located in Section 8.2.~~

~~Subsequently, the Draft EIS was published in The Environmental Notice, on February 8, 2024, followed by the 45-day public comment period. A total of 10 agencies provided comments on the Draft EIS (Appendix P). Comments on the Draft EIS and responses are located in Section 8.3.~~

6.2.2 State Land Use Commission

State Land Use Districts are established by the LUC pursuant to HRS Chapter 205. The basic intent of the law is to regulate the classification and uses of lands in the State in order to accommodate growth and development as needed, and to retain and protect important agricultural and natural resource areas. All State lands are classified as Urban, Rural, Agricultural, or Conservation, with consideration given to county general and development plans in determining the classification.

Discussion: In 2003, U of N Kona was granted a SLU District Boundary Amendment to reclassify the Petition Area from the Agricultural District to the Urban District (Appendix A) (Figure 1-3). Lands classified as Urban are characterized by “city-like” concentrations of people, structures, and services. ~~The~~ Urban District also includes vacant areas for future development.

U of N Kona filed the 2020 Motion to Amend to revise the land use plan for the Petition Area and obtain the LUC's approval for the Master Plan Update. This EIS has been prepared in support of the 2020 Motion to Amend, and U of N Kona anticipates that the LUC will take action on the 2020 Motion to Amend, as later amended and/or supplemented, following completion of the HRS Chapter 343 environmental review process. The Master Plan Update for the Petition Area is consistent with Urban land usages as described in HRS Chapter 205 and will complement the surrounding urban area. U of N Kona acknowledges the Urban District designation of the Petition Area and the Master Plan Update contemplates relocating the existing small farm and research center to the Existing Campus.

6.2.3 Hawai'i State Plan

The Hawai'i State Plan, codified as HRS Chapter 226, establishes a statewide planning system that sets forth goals, objectives, policies, and priority directions to provide for the wise use of Hawai'i's resources and guide the future long-range development of the State. Table 6-1 provides an evaluation and summary of the project's compatibility with Hawai'i State Plan.

Table 6-1: Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Section 226-4: State Goals.			
In order to ensure, for present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:			
(1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i's present and future generations	X		

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.	X		
(3) Physical, social and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.	X		
<p>Discussion: The Master Plan Update has been carefully designed to reflect the Kailua-Kona region. Upon completion of the buildout of the Petition Area, U of N Kona will be equipped with recreational and meeting facilities to help meet current and future space needs for its students and staff as well as the greater community. The buildout of the Petition Area will provide much needed facilities in the greater Kailua-Kona region to support various recreational and community activities.</p> <p>Construction for the buildout of the Petition Area will require the purchase of goods and services which inherently will help sustain a healthy economy in the State and the County. In the long-term, enrollment at the U of N Kona is projected to grow over the next 30 years. With an increase in enrollment and staff needed to support growth at the U of N Kona, it is anticipated there will be an increase in the demand of goods and services, which will help sustain a healthy economy in the State and the County.</p>			
Section 226-5: Objective and Policies for Population.			
(A) It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter;			
(B) To achieve the population objective, it shall be the policy of this State to:			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawai'i's people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county.			X
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs-and desires.	X		
(3) Promote increased opportunities for Hawai'i's people to pursue their socioeconomic aspirations throughout the islands.			X
(4) Encourage research activities and public awareness programs to foster an understanding of Hawai'i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai'i's population.			X
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among states, provided that such actions do not prevent the reunion of immediate family members.			X
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.			X
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.	X		
<p>Discussion: As discussed in Section 4.13, construction for the buildout of the Petition Area will require the purchase of goods and services which inherently will help sustain a healthy economy in the State and the County. Fully built out, the Master Plan Update will allow for student growth at the U of N Kona. Growth in students and staff members will increase the demand for goods and services, which will help sustain a healthy economy in the State and the County.</p> <p>Although growth at the U of N Kona will increase the population in the North Kona District, it is not anticipated growth at the U of N Kona will strain public facilities and services in the greater North Kona District. Furthermore, growth at the U of N Kona is in alignment with the County's plans and policies guiding urban growth in the Kailua-Kona region. The County's General Plan LUPAG map designates the Petition Area as MDU, and the Kona Community Development Plan locates the Petition Area within the Kona Urban Area which is an area designated for future urban growth.</p>			
Section 226-6: Objectives and Policies for the Economy in General.			
(A) Planning for the State's economy in general shall be directed toward achievement of the following objectives:			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people.	X		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.	X		
(B) To achieve the general economic objectives, it shall be the policy of this State to:			
(1) Promote and encourage entrepreneurship within Hawaii by residents and nonresidents of the State.			X
(2) Expand Hawai'i's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			X
(3) Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawai'i's people.			X
(4) Transform and maintain Hawaii as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.			X

(5) Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawaii.			X
(6) Seek broader outlets for new or expanded Hawai'i business investments.			X
(7) Expand existing markets and penetrate new markets for Hawai'i's products and services.			X
(8) Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation.			X
(9) Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.	X		
(10) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawai'i's small scale producers, manufacturers, and distributors.			X
(11) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.			X
(12) Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawaii.	X		
(13) Foster greater cooperation and coordination between the government and private sectors in developing Hawai'i's employment and economic growth opportunities.			X
(14) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.			X
(15) Maintain acceptable working conditions and standards for Hawai'i's workers.			X
(16) Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and nondiscrimination measures.			X
(17) Stimulate the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.			X
(18) Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy.	X		
(19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the Aloha spirit, which are vital to a healthy economy.	X		
(20) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular.			X
(21) Foster a business climate in Hawai'i - including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.			X
Discussion: The Master Plan Update supports the State's objectives and policies for the economy in general. As discussed in Section 4.13, construction for the buildout of the Petition Area will require the purchase of goods and services, which will help sustain a healthy economy in the State and the County. Fully built out, the Master Plan Update will allow for growth in enrollment at the U of N Kona. Growth at the U of N Kona may increase the demand for goods and services, which will support jobs and increase expenditures in the County and the State.			
Section 226-7 Objectives and Policies for the Economy – Agriculture.			
(A) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:			
(1) Viability of Hawai'i's sugar and pineapple industries.			X
(2) Growth and development of diversified agriculture throughout the State.			X
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being.			X
(B) To achieve the agriculture objectives, it shall be the policy of this State to:			
(1) Establish a clear direction for Hawai'i's agriculture through stakeholder commitment and advocacy.			X
(2) Encourage agriculture by making best use of natural resources.			X
(3) Provide the governor and the legislature with information and options needed for prudent decision making for the development of agriculture.			X
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			X
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy.			X
(6) Seek the enactment and retention of federal and state legislation that benefits Hawai'i's agricultural industries.			X
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's food producers and consumers in the State, nation, and world.			X

(8) Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.			X
(9) Enhance agricultural growth by providing public incentives and encouraging private initiatives.			X
(10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			X
(11) Increase the attractiveness and opportunities for an agricultural education and livelihood.			X
(12) In addition to the State's priority on food, expand Hawai'i's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			X
(13) Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency, including the increased purchase and use of Hawaii-grown food and food products by residents, businesses, and governmental bodies as defined under section 103D-104.			X
(14) Promote and assist in the establishment of sound financial programs for diversified agriculture.			X
(15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			X
(16) Facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses.			X
(17) Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of of loko i'a, māla, and irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu.			X
(18) Increase and develop small-scale farms.			X
Discussion: The State's policies for the economy regarding agriculture are not directly applicable to or implicated by the Master Plan Update.			
Section 226-8 Objective and Policies for the Economy-- Visitor Industry.			
(A) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai'i's economy.			
(B) To achieve the visitor industry objective, it shall be the policy of this State to:			
(1) Support and assist in the promotion of Hawai'i's visitor attractions and facilities.			X
(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.			X
(3) Improve the quality of existing visitor destination areas by utilizing Hawai'i's strengths in science and technology.			X
(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			X
(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawai'i's people.			X
(6) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the visitor industry.			X
(7) Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit.			X
(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.			X
Discussion: The State's policies for the economy regarding the visitor industry are not directly applicable to or implicated by the Master Plan Update.			
Section 226-9 Objective and Policies for the Economy-- Federal Expenditures.			
(A) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.			
(B) To achieve the federal expenditures objective, it shall be the policy of this State to:			
(1) Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment;			X
(2) Promote Hawai'i's supportive role in national defense, in a manner consistent with Hawai'i's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawai'i's economy;			X
(3) Promote the development of federally supported activities in Hawai'i that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment;			X

(4) Increase opportunities for entry and advancement of Hawai'i's people into federal government service;			X
(5) Promote federal use of local commodities, services, and facilities available in Hawai'i;			X
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i; and			X
(7) Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.			X
Discussion: <i>The State's policies related to economy and federal expenditures are not directly applicable to or implicated by the Master Plan Update.</i>			
Section 226-10 Objective and Policies for the Economy-- Potential Growth and Innovative Activities.			
(A) Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawai'i's economic base.			
(B) To achieve the potential growth and innovative activity objective, it shall be the policy of this State to:			
(1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawai'i's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors;			X
(2) Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawai'i through the export of services or products or substitution of imported services or products;	X		
(3) Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements;	X		
(4) Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity;	X		
(5) Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus;	X		
(6) Expand Hawai'i's capacity to attract and service international programs and activities that generate employment for Hawai'i's people;			X
(7) Enhance and promote Hawai'i's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts;	X		
(8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, underground resources, and solid waste;	X		
(9) Promote Hawai'i's geographic, environmental, social, and technological advantages to attract new or innovative economic activities into the State;			X
(10) Provide public incentives and encourage private initiative to attract new or innovative industries that best support Hawai'i's social, economic, physical, and environmental objectives;			X
(11) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research;			X
(12) Develop, promote, and support research and educational and training programs that will enhance Hawai'i's ability to attract and develop economic activities of benefit to Hawai'i;	X		
(13) Foster a broader public recognition and understanding of the potential benefits of new or innovative growth-oriented industry in Hawai'i;			X
(14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawai'i's social, economic, physical, and environmental objectives;			X
(15) Increase research and development of businesses and services in the telecommunications and information industries;			X
(16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation; and			X
(17) Recognize and promote health care and health care information technology as growth industries.			X
Discussion: <i>The Master Plan Update supports the State's objectives and policies for the economy, potential growth and innovative activities. U of N Kona offers formal and non-formal education for students who wish to seek higher education with a commitment to worshipping God in spirit and in truth. Students from around the world travel to train at the U of N Kona where they are offered courses in the arts, healthcare, linguistics, sports, communication, counselling, education, and</i>			

science. Through the Master Plan Update, the U of N Kona will be equipped with state of the art learning and training facilities for emerging Christian leaders. The Master Plan Update will enhance the learning environment at the U of N Kona and its ability to produce citizens committed to contributing to society and the greater good.

Section 226-10.5 Objectives and Policies for the Economy - Information Industry.

(A) Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawai'i as a leader in broadband and wireless communications and applications in the Pacific Region.

(B) To achieve the information industry objective, it shall be the policy of this State to:

(1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawai'i and between Hawai'i and the world, and make high speed communication available to all residents and businesses in Hawai'i;			X
(2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth and innovation in Hawai'i's economy;			X
(3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawai'i;			X
(4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or contractors to live in and work from Hawai'i, using technology to communicate with their headquarters, offices, or customers located out-of-state;			X
(5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry;			X
(6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people;			X
(7) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry;			X
(8) Foster a recognition of the contribution of the information industry to Hawai'i's economy; and			X
(9) Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific.			X

Discussion: The State's policies related to the economy and the information industry are not directly applicable to or implicated by the Master Plan Update.

Section 226-11 Objectives and Policies for the Physical Environment - Land-based, Shoreline, and Marine Resources.

(A) Planning for the State's physical environment with regard to land-based, shoreline and marine resources shall be directed towards achievement of the following objectives:

(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.	X		
(2) Effective protection of Hawai'i's unique and fragile environmental resources.	X		
(B) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:			
(1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.	X		
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	X		
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.	X		
(4) Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.	X		
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			X
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.	X		
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			X
(8) Pursue compatible relationships among activities, facilities, and natural resources.	X		
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes.	X		

Discussion: The Master Plan Update is compatible with the urban environment surrounding the Petition Area and will confirm to the Urban Land Use Designation granted by the LUC. As discussed in Section 4.8, the Master Plan Update is not anticipated to impact ~~rare~~ threatened or endangered plant or animal species or habitats native to Hawai'i. As part of this Final EIS, threatened or endangered animal species that may overfly or nest at the Petition Area have been identified in Section 4.8. These species include Hawaiian waterbirds, Hawaiian seabirds, migratory birds, the Hawaiian Hawk, the Hawaiian Goose, the Hawaiian Short-Eared Owl, the Hawaiian Hoary Bat, and the BSM. Measures to minimize impacts to threatened and endangered species that may overfly or nest at the Petition Area are detailed in Section 4.8. Measures

include, but are not limited to, surveying of trees before removal to ensure nests are not present and establishing appropriate buffers around nests, should they be found at the site.

The Master Plan Update has been carefully designed to take into account the natural setting of the Petition Area and reflect the Kailua-Kona region, both its natural and cultural attributes. Much of the proposed design for the Petition Area reflects and capitalizes upon the beauty of the surrounding Kona region. The spaces between buildings are envisioned as either “outdoor rooms” functioning in concert with indoor spaces as venues for learning, gathering, and recreation, or as outdoor corridors. Outdoor open spaces or “outdoor rooms” linked through a pedestrian access network are envisioned to create outdoor learning environments that promote interaction between students and faculty. Additionally, a unified architectural theme will be established to reflect a distinct sense of place and landscaping elements will be selected to complement the Kailua-Kona region.

Section 226-12 Objective and Policies for the Physical Environment - Scenic, Natural Beauty, and Historic Resources.

(A) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.

(B) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:

(1) Promote the preservation and restoration of significant natural and historic resources.	X		
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.			X
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	X		
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.	X		
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	X		

Discussion: The Master Plan Update supports the State's objectives and policies related to the physical environment, scenic, natural beauty, and historic resources. The Master Plan Update has been carefully designed to reflect the Kailua-Kona, both its natural and cultural attributes. As discussed in Sections 4.15 – 4.17, the Petition Area has been surveyed and measures have been identified to protect, preserve, and restore significant historic, cultural, and archaeological resources. A unified architectural theme will be established to reflect a distinct sense of place. Furthermore, buildings have been relocated to integrate the natural topography of the site and to reduce the need for extensive grading. Through its careful design, it is not anticipated the Master Plan Update will impact views and vistas.

Section 226-13 Objectives and Policies for the Physical Environment - Land, Air, and Water Quality.

(A) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:

(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.	X		
(2) Greater public awareness and appreciation of Hawai'i's environmental resources.	X		
(B) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:			
(1) Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.			X
(2) Promote the proper management of Hawai'i's land and water resources.	X		
(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground and coastal waters.	X		
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.	X		
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	X		
(6) Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.	X		
(7) Encourage urban developments in close proximity to existing services and facilities.	X		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.	X		

Discussion: The Master Plan Update supports the State's objectives and policies related to the physical environment, land, air, and water quality. The Master Plan Update has been carefully designed to complement the existing Kailua-Kona region. Green building strategies will be implemented through the design of buildings and facilities, where feasible. Green building strategies ~~may~~ include, but are not be limited to, solar PV panels on buildings and facilities and buildings designed to achieve LEED certification or objectives. LID measures are also planned to be implemented throughout the Petition Area and ~~may~~ include, but not limited to, xeriscape landscaping techniques and implementation of permeable pavements and sidewalks. Incorporating sustainable design measures will help reduce U of N Kona's carbon footprint and retain surface and stormwater runoff from running to areas downstream.

As discussed in Section 4.5, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which it could be allocated water to support the Master Plan Update. Two new potential wells that will

~~draw from the Keauhou Aquifer System have been identified as potential water sources to support the Master Plan Update U of N Kona is in active and ongoing discussions with the developer of the proposed well on the Bolton Property. The developer recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct the well to DWS-dedicable standards. If successfully completed, the well would be dedicated to DWS and connected to the DWS water system via a water main running along Queen Kaahumanu Highway. Once completed and dedicated, the water produced would be allocated to DWS, the well developer, U of N Kona, and potentially other third-party users.~~

~~The proposed new well on the Bolton Property would draw upon the deep confined freshwater zone. Besides the Keōpū Monitor Well, there are no other wells within the Keauhou ASYA that have drawn water from the deep confined freshwater zone. However, based on the monitoring of the Keōpū Well it is not anticipated the drawing of water from the deep confined freshwater zone will affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the freshwater body at depth below salt water. Commitments to monitor the long-term effects of drawing water from the freshwater zone will be established with the well construction permit. Past and continued monitoring of DWS' inland potable wells have shown no adverse effects to basal groundwater and it is not anticipated withdrawal of water at either of the two identified locations will affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the fresh water body at depth below salt water. Furthermore, due to the location of the Bolton Property, two potential well sites, it is not anticipated the drawing of water at these two sites will affect freshwater flow to the coastline at Kaloko-Honokōhau National Park or within the nearby vicinity of the National Park.~~

~~Through the implementation of LID measures identified in Section 4.4, it is not anticipated the Master Plan update will impact surface and nearshore waters.~~

Section 226-14 Objective and Policies for Facility Systems - In General.

(A) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, sustainable development, climate change adaptation, sea level rise adaptation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

(B) To achieve the general facility systems objective, it shall be the policy of this State to:

(1) Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.			X
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.			X
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.			X
(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.			X
(5) Identify existing and planned state facilities that are vulnerable to sea level rise, flooding impacts, and natural hazards.			X
(6) Assess a range of options to mitigate the impacts of sea level rise to existing and planned state facilities.			X

Discussion: *The State's policies related to facility systems are not directly applicable to or implicated by the Master Plan Update.*

226-15 Objectives and Policies for Facility Systems - Solid and Liquid Wastes.

(A) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:

(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.			X
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.			X

(B) To achieve solid and liquid waste objectives, it shall be the policy of this State to:

(1) Encourage the adequate development of sewerage facilities that complement planned growth.			X
(2) Promote reuse and recycling to reduce solid and liquid wastes and employ a conservation ethic.			X
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			X

Discussion: *The State's policies related to solid and liquid waste are not directly applicable to or implicated by the Master Plan Update.*

226-16 Objective and Policies for Facility Systems - Water.

(A) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.

(B) To achieve the facility systems water objective, it shall be the policy of this State to:

(1) Coordinate development of land use activities with existing and potential water supply.	X		
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(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.	X		
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.	X		
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.	X		
(5) Support water supply services to areas experiencing critical water problems.	X		
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.	X		
<p>Discussion: The Master Plan Update supports objectives and policies for facility systems, water.</p> <p>As discussed in Section 4.10.1, <u>U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which it could be allocated water to support the Master Plan Update. two locations have been identified for new well development. U of N Kona is in active and ongoing discussions with the developer of the proposed well on the Bolton Property. The developer recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct the well to DWS-dedicable standards. If successfully completed, the well would be dedicated to DWS and connected to the DWS water system via a water main running along Queen Kaahumanu Highway. A portion of the water from a-the new well would be dedicated to allocated to DWS the County and may support future urban growth to support future land use and water needs in the Kailua-Kona region, in addition to the Master Plan Update.</u></p> <p><u>Non-potable water sources for irrigation will be further investigated. Strategies that will be further investigated and implemented include, but are not limited to, the installation of rainwater catchment, downspout disconnects, graywater treatment and reuse, condensate water reuse, xeriscaping, and synthetic turf.</u></p> <p>LID BMPs will be implemented to mitigate small stormwater runoff events; and drainage corridors are planned throughout the U of N Kona campus to mitigate larger stormwater events. Section 4.4 contains further details on the design strategy to mitigate stormwater runoff.</p>			
226-17 Objectives and Policies for Facility Systems - Transportation.			
(A) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.			X
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.	X		
(B) To achieve the transportation objectives, it shall be the policy of this State to:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;			X
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;	X		
(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;	X		
(4) Provide for improved accessibility to shipping, docking, and storage facilities;			X
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;			X
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;	X		
(7) Encourage a variety of carriers to offer increased opportunities and advantages to interisland movement of people and goods;			X
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			X
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;			X
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment;	X		
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;	X		
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and			X
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.			X

Discussion: A MAR was prepared in December 2023 in support of the Master Plan Update. Traffic conditions are anticipated to remain similar to conditions without the project, and the Master Plan Update is not anticipated to significantly impact traffic in the nearby vicinity. ~~Although the Master Plan Update is not anticipated to impact traffic in the nearby vicinity. Nevertheless,~~ to accommodate future growth at the U of N Kona, an exclusive left-turn lane on the southbound approach and a striped south leg to accommodate a refuge lane serving westbound left-turn vehicles at the second driveway will be implemented. ~~Additionally, the intersection of Kuakini Highway & North Campus Entrance and Queen Ka'ahumanu Highway & Kuakini Highway will be evaluated before Phase 2 and Phase 3 are implemented to determine if a traffic signal is warranted. Intersections surrounding the Existing Campus will continue to be monitored and evaluated for improvements, should improvements be necessary.~~ All students and most, if not all, staff members will be housed on-campus to reduce the need to commute to campus. Staff members, if any, living off-campus will continue to be encouraged to carpool and seek alternative modes of transportation.

As part of the ~~environmental review is Draft EIS process,~~ HDOT and DPW ~~were notified of the publication and comment periods for the EISPN and Draft EIS. Comments from DOT and U of N Kona's responses are located in Chapter 8. will be provided the opportunity to comment on the Draft EIS and revised MAR.~~

226-18 Objectives and Policies for Facility Systems – Energy.

(A) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:

(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			X
(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation;			X
(3) Greater energy security in the face of threats to Hawai'i's energy supplies and systems;			X
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use; and	X		
(5) Utility models that make the social and financial interests of Hawai'i's utility customers a priority.			X
(B) To achieve the energy objectives, it shall be the policy of this State to ensure the short- and long-term provision of adequate, reasonably priced, and dependable energy services to accommodate demand. I) To further achieve the energy objectives, it shall be the policy of this State to:			
(1) Support research and development as well as promote the use of renewable energy sources;	X		
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;			X
(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			X
(4) Promote all cost-effective conservation of power and fuel supplies through measures, including: (A) Development of cost-effective demand-side management programs; (B) Education; (C) Adoption of energy-efficient practices and technologies; and (D) Increasing energy efficiency and decreasing energy use in public infrastructure;			X
(5) Ensure, to the extent that new supply-side resources are needed, that the development or expansion of energy systems uses the least-cost energy supply option and maximizes efficient technologies;			X
(6) Support research, development, demonstration, and use of energy efficiency, load management, and other demand-side management programs, practices, and technologies;	X		
(7) Promote alternate fuels and transportation, and energy efficiency;	X		
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications;			X
(9) Support actions that reduce, avoid, or sequester Hawai'i's greenhouse gas emissions through agriculture and forestry initiatives.			X
(10) Provide priority handling and processing for all state and county permits required for renewable energy projects;			X
(11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy sources; and			X
(12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawai'i.			X

Discussion: The Master Plan Update is supportive of the State's policies and objectives related to facilities and energy. Green building strategies will be implemented through the design of buildings and facilities, where feasible. Green building strategies ~~may include, but not beare not~~ limited to solar PV panels on buildings and facilities and buildings designed to achieve LEED certification or objectives.

226-18.5 Objectives and Policies for Facility Systems - Telecommunications.			
(A) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.			
(B) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.			
(C) To further achieve the telecommunications objective, it shall be the policy of this State to:			
(1) Facilitate research and development of telecommunications systems and resources;			X
(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;			X
(3) Promote efficient management and use of existing telecommunications systems and services; and			X
(4) Facilitate the development of education and training of telecommunications personnel.			X
Discussion: The State's policies related to facility systems about telecommunications are not directly applicable to or implicated by the Master Plan Update.			
226-19 Objectives and Policies for Socio-Cultural Advancement - Housing.			
(A) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			
(1) Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and above moderate-income segments of Hawai'i's population.			X
(2) The orderly development of residential areas sensitive to community needs and other land uses.			X
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.			X
(B) To achieve the housing objectives, it shall be the policy of this State to:			
(1) Effectively accommodate the housing needs of Hawai'i's people.			X
(2) Stimulate and promote feasible approaches that increase affordable rental and for sale housing choices for extremely low-, very low-, lower-, moderate-, and above moderate-income households.			X
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.			X
(4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.			X
(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.			X
(6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing.	X		
(7) Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.			X
(8) Promote research and development of methods to reduce the cost of housing construction in Hawai'i.			X
Discussion: The Master Plan Update is supportive of the State's policies related to socio-cultural advancement for housing. Although not all of the above objectives and policies are directly applicable to the Master Plan Update, the construction of additional dormitories in each phase of the Master Plan Update will reduce the number of U of N Kona staff members currently living off-campus and therefore open additional housing opportunities for the people of the Kailua-Kona region.			
226-20 Objectives and Policies for Socio-Cultural Advancement - Health.			
(A) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:			
(1) Fulfillment of basic individual health needs of the general public.			X
(2) Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.			X
(3) Elimination of health disparities by identifying and addressing social determinants of health.			X
(B) To achieve the health objectives, it shall be the policy of this State to:			
(1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.			X
(2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.	X		
(3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.			X
(4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.			X

(5) Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.	X		
(6) Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement.			X
(7) Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve native Hawaiian health and well-being consistent with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data.			X

Discussion: The Master Plan Update is supportive of the State's policies related to socio-cultural advancement regarding health. Although not all of the above objectives and policies are directly applicable to the Master Plan Update, U of N Kona contributes to the health and wellness of the Kailua-Kona community in a number of ways, including by providing support to Aloha Kona Urgent Care and providing critical services to the homeless and other segments of the Kailua-Kona community. Students and staff at the U of N Kona also take part in various volunteer opportunities ranging from environmental cleanup to providing afterschool, recreational, and tutoring services for students, at local schools. The Master Plan Update will allow for an increase in enrollment at the U of N Kona and therefore increase U of N Kona's capacity to provide these services to the Kailua-Kona community. Wastewater and solid waste services will meet regulatory requirements to maintain public health standards (Section 4.10.2 and 4.14.6).

226-21 Objective and Policies for Socio-Cultural Advancement – Education.

(A) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.

(B) To achieve the education objective, it shall be the policy of this State to:

(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.	X		
(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.	X		
(3) Provide appropriate educational opportunities for groups with special needs.	X		
(4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage.	X		
(5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.	X		
(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.			X
(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.	X		
(8) Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.	X		
(9) Support research programs and activities that enhance the education programs of the State.			X

Discussion: The Master Plan Update is supportive of the State's policies related to government actions for socio-cultural advancement, education and social services.

The U of N Kona offers formal and non-formal education for students who wish to seek higher education with a commitment to worshipping God in spirit and in truth. U of N Kona has been operating at its current campus for over 40 years. Students from around the world travel to train at the U of N Kona where they are offered courses in the arts, healthcare, linguistics, sports, communication, counselling, education, and science. The Petition Area will be equipped with state-of-the-art classrooms and labs for emerging Christian leaders. Upon completion of construction, the Master Plan Update will enhance the learning environment at the U of N Kona and continue to produce citizens committed to contributing to society and the greater good.

Additionally, the 2003 Decision & Order requires a contribution to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE, and that the terms of the contribution be agreed upon in writing by U of N Kona and the DOE prior to seeking building permits for any portion of the Petition Area. At the appropriate time, U of N Kona will engage with DOE to determine its obligations to contribute to the development, funding, and/or construction of school facilities. If the Master Plan Update is determined to trigger such obligations, U of N Kona will enter into and comply with the appropriate written agreement with DOE.

226-22 Objective and Policies for Socio-Cultural Advancement - Social Services.

(A) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.

(B) To achieve the social service objective, it shall be the policy of the State to:			
(1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.	X		
(2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.	X		
(3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawai'i's communities.			X
(4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.			X
(5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.	X		
(6) Promote programs which assist people in need of family planning services to enable them to meet their needs.	X		
Discussion: The Master Plan Update is supportive of the State's policies for government actions for socio-cultural advancement, social services. U of N Kona supports social services in the Kailua-Kona community in a number of ways, including providing support to the State Department of Human Services, foster care programs, free childcare programs, support for the homeless, outreach and tutoring services, and community recreational programs. The Master Plan Update would expand U of N Kona's ability to provide these services and continued support to the community.			
226-23 Objective and Policies for Socio-Cultural Advancement - Leisure.			
(A) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.			
(B) To achieve the leisure objective, it shall be the policy of this State to:			
(1) Foster and preserve Hawaii's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.	X		
(2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.	X		
(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.	X		
(4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.	X		
(5) Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.	X		
(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.	X		
(7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawai'i's people.	X		
(8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.	X		
(9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawai'i's population to participate in the creative arts.	X		
(10) Assure adequate access to significant natural and cultural resources in public ownership.	X		
Discussion: The Master Plan Update is supportive of the State's policies for socio-cultural advancement, leisure. The Master Plan Update will meet current and projected space needs to accommodate future enrollment projections. Recreational facilities and meeting spaces planned for the Petition Area will be available for the greater Kailua-Kona community to utilize, as the U of N Kona has full intentions on hosting community events and allowing the community to utilize the campus. The Master Plan Update will enhance the learning and training center at the U of N Kona. Additionally, the Petition Area has been surveyed <u>undergone an AIS</u> and measures have been identified to protect, preserve, and restore significant cultural, historic, and archaeological sites. Access to the identified burial site for appropriate cultural activities will be permitted to any lineal and/or cultural descendant who has been formally recognized by the <u>Hawai'i Island Burial Council (HIBC)</u> in accordance with the administration procedures contained within HAR §13-300-35.			
226-24 Objective and Policies for Socio-Cultural Advancement - Individual Rights and Personal Well-Being.			
(A) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.			
(B) To achieve the individual rights and personal well-being objective, it shall be the policy of this State to:			

(1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.	X		
(2) Uphold and protect the national and state constitutional rights of every individual.			X
(3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.			X
(4) Ensure equal opportunities for individual participation in society.	X		
Discussion: The Master Plan Update is supportive of the State's policies for socio-cultural advancement, individual rights and personal well-being. The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. The Master Plan Update will enhance the learning and training center at the U of N Kona and continue to produce citizens committed to contributing to society and the greater good.			
226-25 Objective and Policies for Socio-Cultural Advancement - Culture.			
(A) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people			
(B) To achieve the culture objective, it shall be the policy of this State to:			
(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.	X		
(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.	X		
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.			X
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.	X		
Discussion: The Master Plan Update is supportive of the State's policies for socio-cultural advancement, culture.			
<u>In support of the Master Plan Update, a CIA and Ka Pa'akai Analysis were prepared. Additionally, an Archaeological Assessment was completed in 2002 and identified 28 archaeological sites with 45 features. Based on the findings of the Archaeological Assessment, a Burial Site Testing Report and AIS were prepared. The AIS identified a number of archaeological resources within the Petition Area and evaluated each resource for their significance. Thereafter, a Preservation Plan, Archaeological Data Recovery Report, Burial Treatment Plan, and Dismantling and Restoration Plan were prepared. Details of the findings from each study are located in Sections 4.15 – Section 4.17.</u>			
<u>The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, in terms of both its natural and cultural attributes. The Petition Area has been surveyed and measures have been identified to protect, preserve, and restore significant cultural, historic, and archaeological sites. Access to the identified burial sites for appropriate cultural activities will be permitted for any lineal and/or cultural descendant who has been formally recognized by the Hawai'i Island Burial Council in accordance with the administration procedures contained within HAR §_13-300-35. Interpretive signage will be implemented to bring awareness to the significance of the historic archaeological sites at the Petition Area. <u>With measures in place to protect, preserve, and restore identified significant cultural and archaeological resources, the Master Plan Update will continue to support the State's policies and objectives with regards to culture.</u></u>			
226-26 Objectives and Policies for Socio-Cultural Advancement - Public Safety.			
(A) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:			
(1) Assurance of public safety and adequate protection of life and property for all people.			X
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.			X
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.			X
(B) To achieve the public safety objectives, it shall be the policy of this State to:			
(1) Ensure that public safety programs are effective and responsive to community needs.			X
(2) Encourage increased community awareness and participation in public safety programs.			X
(C) To further achieve public safety objectives related to criminal justice, it shall be the policy of this State to:			
(1) Support criminal justice programs aimed at preventing and curtailing criminal activities.			X
(2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.			X
(3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.			X
(D) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:			

(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.			X
(2) Enhance the coordination between emergency management programs throughout the State.			X
Discussion: The Master Plan Update supports the policies for government actions for socio-cultural advancement, public safety. However, the Master Plan Update is not directly applicable to these policies. As discussed in Section 4.14.3, on-campus security will extend their patrol and surveillance to the Petition Area to ensure the safety of students and staff members. The U of N Kona may also be utilized as an evacuation center in the event of natural or other disasters.			
226-27 Objectives and Policies for Socio-Cultural Advancement - Government.			
(A) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:			
(1) Efficient, effective, and responsive government services at all levels in the State.			X
(2) Fiscal integrity, responsibility, and efficiency in the state government and county governments.			X
(B) To achieve the government objectives, it shall be the policy of this State to:			
(1) Provide for necessary public goods and services not assumed by the private sector.			X
(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.			X
(3) Minimize the size of government to that necessary to be effective.			X
(4) Stimulate the responsibility in citizens to productively participate in government for a better Hawai'i.			X
(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.			X
(6) Provide for a balanced fiscal budget.			X
(7) Improve the fiscal budgeting and management system of the State.			X
(8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.			X
Discussion: The State's policies related to socio-cultural advancement, government are not directly applicable to or implicated by the Master Plan Update.			
Hawai'i State Plan - HRS Ch. 226 - Part III. Priority Guideline			
226-101 Purpose.			
The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
226-102 Overall Direction.			
The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, principles of sustainability, and climate change adaptation.			
226-103 Economic Priority Guidelines.			
(A) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy:			
(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.			
(a) Encourage investments which:			
(i) Reflect long term commitments to the State;			X
(ii) Rely on economic linkages within the local economy;			X
(iii) Diversify the economy;	X		
(iv) Reinvest in the local economy;	X		
(v) Are sensitive to community needs and priorities;	X		
(vi) Demonstrate a commitment to provide management opportunities to Hawai'i residents; and			X
(b) Encourage investments in innovative activities that have a nexus to the State, such as:			
(i) Present or former residents acting as entrepreneurs or principals;			X
(ii) Academic support from an institution of higher education in Hawai'i;	X		
(iii) Investment interest from Hawai'i residents;			X
(iv) Resources unique to Hawaii that are required for innovative activity; and			X
(v) Complementary or supportive industries or government programs or projects.			X
(2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.			X
(3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.			X
(4) Seek to ensure that state business tax and labor laws and administrative policies are equitable, rational, and predictable.		X	

(5) Streamline the process for building and development permit and telecommunication infrastructure installation approval and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where scientific evidence indicates that public health, safety, and welfare would not be adversely affected.	X		
(6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawai'i's small-scale producers, manufacturers, and distributors.			X
(7) Continue to seek legislation to protect Hawai'i from transportation interruptions between Hawai'i and the continental United States.			X
(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:			
(a) An industry that can take advantage of Hawai'i's unique location and available physical and human resources.	X		
(b) A clean industry that would have minimal adverse effects on Hawai'i's environment.			X
(c) An industry that is willing to hire and train Hawai'i's people to meet the industry's labor needs at all levels of employment.			X
(d) An industry that would provide reasonable income and steady employment.			X
(9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawai'i business.			X
(10) Enhance the quality of Hawai'i's labor force and develop and maintain career opportunities for Hawai'i's people through the following actions:			
(A) Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible.	X		
(B) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.	X		
(C) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.			X
(D) Promote career opportunities in all industries for Hawai'i's people by encouraging firms doing business in the State to hire residents.			X
(E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities.			X
(F) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.			X
(B) Priority guidelines to promote the economic health and quality of the visitor industry:			
(1) Promote visitor satisfaction by fostering an environment which enhances the aloha spirit and minimizes inconveniences to Hawai'i's residents and visitors.			X
(2) Encourage the development and maintenance of well- designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.			X
(3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.			X
(4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.			X
(5) Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions.			X
(6) Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets.			X
(7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.			X
(8) Support law enforcement activities that provide a safer environment for both visitors and residents alike.			X
(9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.			X
(C) Priority guidelines to promote the continued viability of the sugar and pineapple industries:			
(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.			X
(2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i.			X
(3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.			X
(D) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:			

(1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.			X
(2) Assist in providing adequate, reasonably priced water for agricultural activities.			X
(3) Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.			X
(4) Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.			X
(5) Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawai'i's agricultural community.			X
(6) Seek favorable freight rates for Hawai'i's agricultural products from inter-island and overseas transportation operators.			X
(7) Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.			X
(8) Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.			X
(9) Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.			X
(10) Support the continuation of land currently in use for diversified agriculture.			X
(11) Encourage residents and visitors to support Hawai'i's farmers by purchasing locally grown food and food products.			X
(E) Priority guidelines for water use and development:			
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.	X		
(2) Encourage the improvement of irrigation technology and promote the use of non-potable water for agricultural and landscaping purposes.			X
(3) Increase the support for research and development of economically feasible alternative water sources.	X		
(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.	X		
(F) Priority guidelines for energy use and development:			
(1) Encourage the development, demonstration, and commercialization of renewable energy sources.			X
(2) Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.	X		
(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.	X		
(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.			X
(G) Priority guidelines to promote the development of the information industry:			
(1) Establish an information network, with an emphasis on broadband and wireless infrastructure and capability, that will serve as the foundation of and catalyst for overall economic growth and diversification in Hawai'i.			X
(2) Encourage the development of services such as financial data processing, a products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.			X
(3) Encourage the development of small businesses in the information field such as software development; the development of new information systems, peripherals, and applications; data conversion and data entry services; and home or cottage services such as computer programming, secretarial, and accounting services.			X
(4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.			X
(5) Encourage research activities, including legal research in the information and telecommunications fields.			X
(6) Support promotional activities to market Hawai'i's information industry services.			X
(7) Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected.			X
Discussion: The Master Plan Update supports the Hawai'i State Plan Economic Priority Guidelines. Construction for the buildout of the Petition Area will require the purchase of goods and services which inherently will help sustain a healthy economy in the State and the County. In the long-term, enrollment at the U of N Kona is projected to grow over the next 30 years. With an increase in enrollment and staff needed to support growth at U of N Kona, it is anticipated there will be an increase in the demand of goods and services, which will support jobs and increase expenditures in the County and the State.			

As discussed in Section 4.5 ~~4.0-1~~, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region, and is in active and ongoing discussions with the developer proposing a new well on the Bolton Property. If a well is developed on the Bolton Property, it would be dedicated to DWS and the water produced would be allocated for use by DWS, the well developer, U of N Kona, and potentially other third-party users. The well developer recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct the well to DWS-dedicable standards. If successfully completed, the well would be dedicated to DWS and connected to the DWS water system via a water main running along Queen Kaahumanu Highway. ~~two locations have been identified for new well development~~ An additional potable well dedicated to DWS would provide water for future growth and urban activities in the North Kona area, ~~as a portion will be dedicated to the County.~~

Non-potable water sources for irrigation will be further investigated. Strategies that will be investigated and implemented to minimize potable water use and reduce the total non-potable water demand include, but are not limited to, installation of rainwater catchment, downspout disconnects, graywater treatment and reuse, condensate water reuse, xeriscaping, and synthetic turf.

The Master Plan Update will implement green building strategies. Sustainable design measures and practices include, but are not limited to, solar PV panels on buildings and facilities, buildings designed to achieve LEED certification or objectives, implementation of low flow plumbing fixtures, and a campus-wide recycling program.

U of N Kona is a non-profit religious organization which is guided by the foundational value of volunteerism. To the extent the concept of volunteerism is not directly supportive of business expansion and paid jobs, the implementation of the Master Plan Update diverges from some of the Hawai'i State Plan Economic priorities.

226-104 Population Growth and Land Resources Priority Guidelines.

(A) Priority guidelines to effect desired statewide growth and distribution:

(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawai'i's people.	X		
(2) Manage a growth rate for Hawai'i's economy that will parallel future employment needs for Hawai'i's people.			X
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.	X		
(4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.			X
(5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.			X
(6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.			X
(7) Support the development of high technology parks on the neighbor islands.			X

(B) Priority guidelines for regional growth distribution and land resource utilization:

(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.	X		
(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.	X		
(3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.			X
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.			X
(5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.			X
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.	X		
(7) Pursue rehabilitation of appropriate urban areas.			X
(8) Support the redevelopment of Kaka'ako into a viable residential, industrial, and commercial community.			X
(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	X		
(10) Identify critical environmental areas in Hawai'i to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space			X

and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.			
(11) Identify all areas where priority should be given to preserving rural character and lifestyle.			X
(12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	X		
(13) Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.	X		
<p>Discussion: The Master Plan Update supports the State's priority guidelines with regards to population growth and land resources. The Master Plan Update will provide current and projected space needs to accommodate future enrollment projections. Although the Master Plan Update will increase the enrollment and staff at the U of N Kona, it is not anticipated that the Master Plan Update will strain public facilities in the greater North Kona area.</p> <p>As discussed in Section 4.510-1, <u>U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of Kona could be allocated water to support the Master Plan Update. U of N Kona is in active and ongoing discussions with the developer proposing a new well on the Bolton Property. The developer recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct the well to DWS-dedicable standards. If successfully completed, the well would be dedicated to DWS and the water produced would be allocated for use by DWS, the well developer, U of N Kona, and potentially other third-party users. An additional potable well dedicated to DWS would provide water for future growth and urban activities in the North Kona area. Two locations have been identified for new well development. An additional potable well will provide water for future growth and urban activities in the North Kona area, as a portion will be dedicated to the County.</u></p> <p>The U of N Kona was granted a <u>State Land Use</u> District Boundary Amendment to reclassify the Petition Area from the State Agricultural District to the State Urban District. The petition for the boundary amendment was found to be reasonable and was not in violation of HRS Chapter 205. Furthermore, LSB ratings for the soils covering the Petition Area are rated "E", or very poorly suited for agricultural activity, and the LUC found the Petition Area suitable for reclassification to the State Urban District. The nearest ALISH-classified parcel is roughly three-quarters of a mile south of the Petition Area. The Master Plan Update is not anticipated to infringe upon agricultural lands that may be of importance to the State or the County.</p>			
226-105 Crime and Criminal Justice Priority Guidelines.			
(A) Priority Guidelines in the Area of Crime and Criminal Justice:			
(1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.			X
(2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.			X
(3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.			X
(4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.			X
(5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.			X
(6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.			X
<p>Discussion: The Master Plan Update does not directly implicate the priority guidelines related to crime and criminal justice. However, for the last ten (10) years, U of N Kona has allowed the Hawai'i County Police Department's S.W.A.T. team to conduct training exercises on the Existing Campus.</p>			
226-106 Affordable Housing Priority Guidelines.			
(A) Priority guidelines for the provision of affordable housing:			
(1) Seek to use marginal or nonessential agricultural land, urban land, and public land to meet housing needs of extremely low-, very low-, lower-, moderate-, and above moderate-income households.			X
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.			X
(3) Improve information and analysis relative to land availability and suitability for housing.			X
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawai'i's low-, very low-, lower-, moderate-, and moderate-income households and residents with special needs.			X
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawai'i's people for the purchase of initial owner-occupied housing.			X
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.			X
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.			X

(8) Give higher priority to the provision of quality housing that is affordable for Hawai'i's residents and less priority to development of housing intended primarily for individuals outside of Hawai'i.			X
Discussion: The Hawai'i State Plan Priority Guideline Policy regarding affordable housing are not directly implicated by the Master Plan Update. However, the construction of additional dormitories in each phase of the Master Plan Update will reduce the number of U of N Kona staff members currently living off-campus and therefore open additional housing opportunities for the people of the Kailua-Kona region.			
226-107 Quality Education Priority Guidelines.			
(A) Priority guidelines to promote quality education:			
(1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement.	X		
(2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs.	X		
(3) Initiate efforts to improve the quality of education by improving the capabilities of the education workforce.	X		
(4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities.	X		
(5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for.	X		
(a) The electronic exchange of information.	X		
(b) Statewide electronic mail.	X		
(c) Access to the Internet.	X		
Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;			X
(6) Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific;	X		
(7) Develop resources and programs for early childhood education;	X		
(8) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and			X
(9) Strengthen and expand educational programs and services for students with special needs.			X
Discussion: The Master Plan Update is supportive of the State's Quality Education Priority Guidelines. The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. The Master Plan Update will provide current and projected space needs to support program operations and future enrollment projections. The Master Plan Update will provide another PK-12 school in the Kailua-Kona region. Upon completion of construction, the Master Plan Update will enhance the learning environment at the U of N Kona and continue to prepare Christian leaders around the world. <u>Additionally, the 2003 Decision & Order requires a contribution to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE, and that the terms of the contribution be agreed upon in writing by U of N Kona and the DOE prior to seeking building permits for any portion of the Petition Area. At the appropriate time, U of N Kona will engage with DOE to determine its obligations to contribute to the development, funding, and/or construction of school facilities. If the Master Plan Update is determined to trigger such obligations, U of N Kona will enter into and comply with the appropriate written agreement with DOE.</u>			
226-107 Sustainability Priority Guidelines.			
(A) Priority guidelines to promote sustainability shall include:			
(1) Encouraging balanced economic, social, community, and environmental priorities;	X		
(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;	X		
(3) Promoting a diversified and dynamic economy;	X		
(4) Encouraging respect for the host culture;	X		
(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;	X		
(6) Consider the principles of the ahupua'a system; and	X		
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawai'i.	X		
Discussion: The Master Plan Update is supportive of the State's Sustainability Priority Guidelines. The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. The Petition Area has <u>been surveyed, undergone an AIS</u> and measures have been identified to protect, preserve, and restore significant cultural, historic, and archaeological features. Interpretive signage will be implemented to bring awareness to the significance of the archaeological sites at the Petition Area.			

<p>Green building strategies will be implemented through the design of buildings and facilities, where feasible. Green building strategies may include, but <u>are</u> not limited to, water and energy saving features, PV panels, and green roofs. Buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Furthermore, low flow plumbing fixtures will be implemented, and recycling bins and trash bins will be distributed throughout the Petition Area for students, staff, and faculty- to properly discard waste.</p> <p>Over the long term, it is anticipated growth at the U of N Kona will increase the demand for additional goods and services from other businesses to support operations. Such goods and services may generate jobs and revenues in the greater Kailua-Kona region and across the State.</p>			
226-109 Climate Change Adaptation Priority Guidelines.			
(A) Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy shall:			
(1) Ensure that Hawai'i's people are educated, informed, and aware of the impacts climate change may have on their communities;	X		
(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;			X
(3) Invest in continued monitoring and research of Hawai'i's climate and the impacts of climate change on the State;			X
(4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;			X
(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;	X		
(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;			X
(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;	X		
(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;			X
(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and			X
(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.	X		
<p>Discussion: The Master Plan Update is sportive of Priority Guidelines related to climate change adaptation. As part of the Master Plan Update, a GHG analysis was conducted to project the amount of GHG emission that will be produced from the buildout of the Master Plan Update and long-term operations. It is not anticipated the Master Plan Update will substantially increase GHG emissions that may cause of contribute to any appreciable impact to local or regional air quality. Although the Master Plan Update is not anticipated to have an impact local or regional air quality, recognizing the threats of climate change and the effect the campus expansion may contribute towards rising GHG emissions, buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Furthermore, low flow plumbing fixtures will be implemented and recycling bins and trash bins will be distributed throughout the Petition Area for students, staff, and faculty to properly discard waste.</p>			

6.2.4 Hawai'i State Functional Plans

The Hawai'i State Functional Plans implement the goals, objectives, policies and priority guidelines of the Hawai'i State Plan. The Functional Plans provide the connection between State programs and State policy. Twelve functional plans have been adopted by the State Legislature, including in the areas of agriculture, conservation lands, education, energy, health, higher education, historic preservation, housing, recreation, tourism, transportation and water resources. The State Functional Plans are designed to address issues pertaining to physical resource needs and development.

State Education Functional Plan

The State Education Functional Plan reflects the Department of Education's strategies to address the policies and priority guidelines of the Hawai'i State Plan, the goals of the Board of Education, and the concerns of the State Educational Functional Plan Advisory Committee. As such, it serves as a mechanism for implementing the Hawai'i State Plan as it relates to the directions of the Board of Education and the programs of the Department. The State Educational Functional Plan contains policies to improve educational curriculum throughout the State.

ACADEMIC EXCELLENCE

Policy: Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.

Implementing Action:

- (1)(b) Develop an articulated K-12 second language program that promotes multilingual and multicultural understanding and communication.
- (1)(e) Establish Learning Centers in all districts to expand educational opportunities for students with special talents and interests, to provide public school parents with new choices on the kinds and quality of education they want for their children, and to share as models of educational excellence in the community.

Discussion: *The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. Current courses are offered in such subjects as music education, creative media, counseling, education, stewardship & sustainability, community development. The Master Plan Update will provide current and projected space needs to support program operations and future enrollment projections, as well as a new K-12 school open to the Kailua-Kona community. The Master Plan Update will enhance the learning environment at the U of N Kona and increase its capacity to produce citizens committed to contributing to society and the greater good.*

Additionally, the 2003 Decision & Order requires a contribution to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE, and that the terms of the contribution be agreed upon in writing by U of N Kona and the DOE prior to seeking building permits for any portion of the Petition Area. At the appropriate time, U of N Kona will engage with DOE to determine its obligations to contribute to the development, funding, and/or construction of school facilities. If the Master Plan Update is determined to trigger such obligations, U of N Kona will enter into and comply with the appropriate written agreement with DOE.

BASIC SKILLS

Policy: Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.

Goal: Provide a curriculum that is broad but well-balanced and related to the times and to the needs of students.

Implementing Action:

- (2)(a) Promote the teaching of the basic skills of speaking, listening, reading, writing, computing, reasoning, and other life-role competencies in all program areas and obtain adequate resources to meet the needs of all learners.

- (2)(c) Strengthen and expand instructional services, facilities and equipment, including direct services, enrichment activities and opportunities to enhance science education, to help students meet future demands as they face an increasingly technological society.

Discussion: *The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. As part of the Master Plan Update, buildings and learning spaces to support the mission of the University will strengthen and expand learning opportunities for students. The Master Plan Update will provide an enhanced learning environment for U of N Kona's students.*

SERVICES AND FACILITIES

Policy: Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.

Goal: Provide facilities that are sufficient in number, functional, well-paced and compatible with the physical surroundings.

Implementing Action:

- (4)(a) Secure the resources necessary to implement and carry out a program to provide for safe and secure campus environments.
- (4)(k) Provide adequate facilities, equipment and transportation for specialized activities involving performance and media productions.

Discussion

The Master Plan Update has been carefully designed to serve as an extension of the Existing Campus. As previously discussed, the plan for the Petition Area has been redesigned to align with the mission of the U of N Kona. As part of the Master Plan Update, the U of N Kona will be equipped with the addition of a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and dormitories for students and staff members. The addition of athletic and meeting facilities at the U of N Kona will provide the greater Kailua-Kona community with recreational facilities as the U of N Kona has full intentions on hosting various community and recreational events. The Master Plan Update will complement the existing urban environment surrounding the Petition Area.

PERSONAL DEVELOPMENT

Policy: Support education programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.

Goal: Make learning a lifelong experience that is affordable, effectively presented, and offered at convenient times and places.

Implementing Action:

- (4)(b) Assess the extent to which values/character education is being implemented and provide appropriate support to strengthen the implementation, including community/parental participation.
- (4)(h) Provide systematic opportunities for elementary students to develop leadership skills through a comprehensive K-12 student activities program and provide appropriate resources such as school activities coordinators.

Discussion

The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. As part of the Master Plan Update, the U of N Kona campus will be equipped with the addition of a new PK-12 school, university-level classroom spaces, athletic and meeting facilities, and dormitories for students and staff members. The Master Plan Update will enhance the learning environment at the U of N Kona and continue to produce citizens committed to contributing to society and the greater good.

6.2.5 Hawai'i 2050 Sustainability Plan

Updated in June 2021, the Hawai'i 2050 Sustainability Plan serves as the State's sustainability and climate strategic action plan; aligns the State's goals, policies, and actions with the United Nations (UN) Sustainable Development Goals (SDGs); and recommends sustainability and climate change actions for 2020–2030. The revised plan guides the coordination and implementation of Hawai'i's sustainability and climate adaptation goals, principles, and policies, pursuant to HRS, Section 226-65. It also provides recommendations for a sustainable and resilient economic recovery for Hawai'i.

The Hawai'i 2050 Sustainability Plan identifies eight focus areas with 38 strategies and more than 250 recommended actions toward a sustainable Hawai'i. The focus areas align with priorities identified through public and stakeholder engagement, as well as ongoing commitments the State has made. The Master Plan Update's consistency with the 2021-2030 Recommended Actions outlined in the Hawai'i 2050 Sustainability Plan are discussed in Table 6-2.

Table 6-2: Hawai'i 2050 Sustainability Plan HRS, Section 226-65 S = Supportive, N/S = Not Supportive, N/A = Not Applicable				S	N/S	N/A
1. Promote a Sustainable Economic Recovery						
Strategy 1: Support farmer livelihoods.						X
Strategy 2: Support local markets for locally grown food.						X
Strategy 3: Promote sustainable & resilient farmland, practices, and infrastructure.						X
Strategy 4: Invest in green workforce development beginning with youth.						X
Strategy 5: Foster the development of jobs that can sustain families financially.						X
Strategy 6: Support diversification of the economy.				X		
Strategy 7: Reduce the environmental footprint of the tourism industry.						X
Strategy 8: Support native Hawaiian culture and reduce impacts of the tourism industry to local communities.				X		
Discussion: As discussed in Section 4.13, construction for the buildout of the Petition Area will require the purchase of goods and services, which inherently will help sustain a healthy economy in the State and the County. In the long-term, enrollment at the U of N Kona is projected to grow over the next 30 years. With an increase in enrollment and staff needed to support growth at the U of N Kona, it is anticipated there will be an increase in the demand of goods and which will support jobs and increase expenditures in the County and the State.						
2. Reduce Greenhouse Gas Emissions						
Strategy 9: Measure, manage, and plan for GHG emission reduction.				X		
Strategy 10: Incorporate climate change planning into decision-making processes.				X		
Strategy 11: Promote energy conservation and efficiency through outreach, communication, and community and public engagement.						X
Strategy 12: Continue to invest in the deployment of clean energy technologies to reduce reliance on fossil fuels.				X		
Strategy 13: Expand the adoption of zero emission vehicles.						X
Strategy 14: Promote alternative modes of transportation.				X		
Strategy 15: Reduce the generation of waste, including plastic waste.				X		
Strategy 16: Increase diversion of waste through recycling, reuse, and composting.				X		

<p>Discussion: As part of the Master Plan Update, a GHG analysis was conducted to project the amount of GHG emission that will be produced from the buildout of the Master Plan Update and long-term operations. It is not anticipated the Master Plan Update will substantially increase GHG emissions that may cause or contribute to any appreciable impact to local or regional air quality. Although the Master Plan Update is not anticipated to have an impact local or regional air quality, recognizing the threats of climate change and the effect the campus expansion may contribute towards rising GHG emissions, buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Furthermore, low flow plumbing fixtures will be implemented and recycling bins and trash bins will be distributed throughout the Petition Area for students, staff, and faculty to properly discard waste.</p>			
3. Improve Climate Resilience			
Strategy 17: Integrate climate change adaptation and resilience considerations into planning and implementation.	X		
Strategy 18: Assess and communicate the impacts of climate change to residents, businesses, and communities most likely to be impacted.			X
Strategy 19: Implement actions that improve the State's resilience to climate change.	X		
Strategy 20: Increase the resilience of vulnerable populations to the impacts of climate change and other shocks and stressors.			X
<p>Discussion: The Master Plan Update is supportive of the 2050 Sustainability Plan's strategies related to climate resilience. Although the Master Plan Update is not anticipated to have an impact on local or regional air quality, recognizing the threats of climate change and the effect the campus expansion may contribute towards rising GHG emissions, buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Furthermore, low flow plumbing fixtures will be implemented, and recycling bins and trash bins will be distributed throughout the Petition Area for students, staff, and faculty to properly discard waste.</p>			
4. Advance Sustainable Communities			
Strategy 21: Advance smart growth initiatives and multimodal transportation systems.			X
Strategy 22: Advance sustainability in school and university operations.	X		
Strategy 23: Integrate sustainable design principles into new and existing buildings.	X		
<p>Discussion: The Master Plan Update is supportive of the 2050 Sustainability Plan's strategies related to sustainable communities. The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. Open space areas will be preserved, and landscaping will be selected to reflect Kailua-Kona's agricultural past. LID features will be implemented and may include implementation of permeable sidewalks and parking areas. Xeriscape techniques will be implemented to complement the dry climate. Buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Furthermore, low flow plumbing fixtures will be implemented, and recycling bins and trash bins will be distributed throughout the Petition Area for students, staff, and faculty to properly discard waste.</p>			
5. Advance Equity			
Strategy 24: Strengthen broadband access to support digital learning and online solutions in rural areas.			X
Strategy 25: Continue to improve economic and social sustainability of individuals through access to affordable housing.			X
Strategy 26: Continue to implement strategies that reduce homelessness in Hawai'i to enhance livelihoods.			X
Strategy 27: Continue to advance opportunities for all, regardless of gender.	X		
<p>Discussion: The Master Plan Update is supportive of the 2050 Sustainability Plan's strategies related to advancing equity. The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. The Master Plan Update will enhance the learning and training facilities, so that U of N Kona can continue to provide opportunities for emerging Christian leaders regardless of gender identification.</p>			
6. Institutionalize Sustainability Throughout Government			
Strategy 28: Invest in staff and other resources to coordinate and advance sustainability goals across State agencies and local governments.			X
Strategy 29: Update State policies to reflect sustainability and climate change priorities.			X
Strategy 30: Incorporate sustainability into government operations.			X
<p>Discussion: The 2050 Sustainability Plan's strategies related to institutionalized sustainability throughout government are not directly applicable to or implicated by the Master Plan Update.</p>			
7. Preserve the Natural Environment			
Strategy 31: Improve water quality through reduced pollution and dumping.			X
Strategy 32: Support water reuse strategies to conserve water.	X		
Strategy 33: Establish policies to protect Hawai'i's unique marine ecosystems.			X
Strategy 34: Manage climate change impacts to marine resources.			X

Strategy 35: Protect and manage watersheds.	X		
Strategy 36: Continue to adopt strategies that protect land-based natural resources.			X
Strategy 37: Conserve working forest landscapes, protect forests from harm, and enhance public benefits from trees and forests.			X
Discussion: The Master Plan Update is supportive of the 2050 Sustainability Plan's strategies related to preserving the natural environment. The implementation of BMPs and compliance with applicable State and County provisions will mitigate potential short- and long-term impacts to water quality due to stormwater runoff (Section 4.4 and 4.5). LID measures, such as permeable pavement and xeriscape techniques, will be integrated into design of the Master Plan Update where feasible.			
8. Perpetuate Traditional Ecological Knowledge and Values			
Strategy 38: Ground climate and sustainability strategies in our cultural foundation.	X		
Discussion: The Master Plan Update is supportive of the 2050 Sustainability Plan's strategies related to perpetuating traditional ecological knowledge and values. As part of the Master Plan Update, cultural, historical, and archaeological features have been identified at the Petition Area and measures to protect, preserve, and restore significant archaeological features have been crafted. Historic archaeological features will be preserved, and interpretive signage will be implemented to bring awareness to the cultural significance of such features.			

6.2.6 Hawai'i Coastal Zone Management Program

The Coastal Zone Management Program (CZMP) is a comprehensive nationwide program that establishes and enforces standards and policies to guide the development of public and private lands within the coastal areas. In the State of Hawai'i, the CZMP is implemented through the State Coastal Zone Management Law, codified in HRS Chapter 205A (State CZM Law). The State CZM Law's objectives and policies address ten subject areas. These subject areas include recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, beach protection, and marine resources. Virtually all relate to potential development impacts on the shoreline, near shore, and ocean area environments.

The State CZM Law also requires each county to designate and regulate Special Management Areas (SMA) within the State's coastal areas. Any "development," as defined by the State CZM Law and county regulations, located within the SMA requires a SMA permit. The Petition Area is not within the SMA as delineated by the County. However, the State CZM Law requires all state and county agencies to enforce the objectives and policies as set forth in HRS §205A-2.

Table 6-3 provides an evaluation and summary of the project's compatibility with the objectives and policies established in the State CZM Law.

Table 6-3: Coastal Zone Management Program HRS Section 205 A-2: Objective and Policies S = Supportive, N/S = Not Supportive, N/A = Not Applicable		S	N/S	N/A
OBJECTIVES & POLICIES				
(1) Recreational resources;				
Provide coastal recreational opportunities accessible to the public.				
(A) Improve coordination and funding of coastal recreational planning and management; and				X
(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:				
(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;				X
(ii) Requiring replacement of coastal resources having significant recreational and ecosystem value, including but not limited to coral reefs, surfing sites, fishponds, sand beaches, and coastal dunes, when these resources will be unavoidably damaged by development; or requiring monetary compensation to the State for recreation when restoration is not feasible or desirable;				X

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;			X
(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;			X
(v) Ensuring public recreational uses of county, state and federally-owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;			X
(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect and where feasible, restore the recreational value of coastal waters;	X		
(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, artificial reefs for surfing and fishing; and			X
(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.			X
<p>Discussion: The Master Plan Update supports the State CZM Law's objectives regarding recreational resources.</p> <p>As discussed in Section 4.5, U of N Kona has identified two potential well sites-U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which it could be allocated water to support the Master Plan Update. U of N Kona is in active and ongoing discussions with the developer proposing a new well on the Bolton Property, which would draw upon the deep confined freshwater zone within Keauhou ASYA. Based on the monitoring of the Keōpū Monitor Well, which also draws from the deep confined freshwater zone within Keauhou ASYA, it is not anticipated that the proposed new well would affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the freshwater body at depth below salt water. Additionally, the Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System indicates that the aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated to replace basal sources. Due to the location of the Bolton Property, it is also not anticipated the drawing of water will affect freshwater flow to the coastline at or in the nearby vicinity of the Kaloko-Honokōhau National Park or impact recreational activities that occur in the area, that will draw water from the Keauhou Aquifer System to support the Master Plan Update. Any water drawn from the Keauhou Aquifer system must consider potential adverse effects to the downgradient brackish basal groundwater lens. Past and continued monitoring of DWS' inland potable wells has shown no adverse effects to the basal groundwater lens. It is not anticipated that drawing water from either of the two identified potential well sites will affect the flowrate and salinity of the brackish basal lens that may impact water flow to areas along the coast.</p> <p>During the short-term construction period, contractors will follow State DOH and County regulations to minimize the potential for increased stormwater runoff. An NPDES permit will be obtained prior to the start of construction. Furthermore, BMPs will be employed to mitigate the potential for increased stormwater runoff from the Petition Area. These BMPs include, but are not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas.</p> <p>Upon completion of construction, LID measures will be implemented throughout the Petition Area to manage stormwater runoff. These LID measures that may be implemented include, but are not limited to, installation of permeable surfaces, retaining the natural topography of the site, minimizing grading, designing narrow roadways and sidewalks on one side of the street, planting trees, using source controls of stormwater for pollutant control, and minimizing conventional infrastructure (-are detailed in Section 4.4). With BMPs and LID measures in place, it is not anticipated the Master Plan Update will substantially increase stormwater runoff or result in impacts to nearshore waters along the coast.</p>			
(2) Historic resources;			
Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.			
(A) Identify and analyze significant archaeological resources;	X		
(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and	X		
(C) Support state goals for protection, restoration, interpretation, and display of historic resources.	X		
<p>Discussion: The Master Plan Update supports the State CZM Law's objectives regarding historic resources.</p> <p>In support of the Master Plan Update, an Archaeological Inventory Survey, Cultural Impact Assessment, and Ka Pa'akai Analysis have been completed. An Archaeological Assessment was completed in 2002 and identified 28 archaeological sites with 45 features. Based on the findings from the Archaeological Assessment, a Burial Site Testing Report and AIS were prepared. The AIS identified a number of archaeological resources and evaluated each resource for their significance. Thereafter, a Preservation Plan, Archaeological Data Recovery Report, Burial Treatment Plan, and Dismantling and Restoration Plan were prepared. Details of the findings from each study are located in Cultural, historic, and archaeological features have been identified within the Petition Area and measures to preserve, protect, and restore identified archaeological features have been incorporated into the design of the Master Plan Update (Sections 4.15 – Section 4.17). Protection Measures for the protection, preservation, and restoration of identified archaeological features will include</p>			

appropriate buffer zones and setbacks, use of native plants for landscaping, and interpretive signage to bring awareness to the significance of each identified feature. With measures in place to preserve identified archaeological sites, the Master Plan Update will meet the objectives of the State CZM Law's regarding historic resources and bring greater awareness to the historic archaeological resources found on the Petition Area.

(3) Scenic and open space resources;

Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

(A) Identify valued scenic resources in the coastal zone management area;	X		
(B) Ensure that new developments are compatible with their visual environment by designing and locating those developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;	X		
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and	X		
(D) Encourage those developments that are not coastal dependent to locate in inland areas.	X		

Discussion: The Master Plan Update supports the State CZM Law's objectives regarding scenic and open space resources.

As discussed in Section 4.18, Mount Hualālai has been identified as a natural beauty site within the North Kona district. Other notable natural beauty sites in the North Kona district also include mauka and makai views of the Keahuolu coastline and the Holualoa-Keauhou view plane that are visible from the Petition Area.

The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. Buildings have been relocated to integrate the natural topography of the site and to reduce extensive grading. A unified architectural theme will be established to reflect a distinct sense of place and landscaping elements will be selected to complement the Kailua-Kona region.

Furthermore, buildings and facilities will not impose upon mauka and makai viewplanes from Kuakini Highway and Queen Ka'ahumanu Highway. Buildings will not exceed the height of existing buildings at the Existing Campus, and the Master Plan Update maintains open spaces areas throughout the Petition Area. Buildings and structures will not affect shoreline open space views or scenic resources in the North Kona district. The campus expansion will be completed on the Petition Area adjacent to the Existing Campus, and no work is proposed in an area adjacent to the coast.

(4) Coastal ecosystems;

Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;			X
(B) Improve the technical basis for natural resource management;			X
(C) Preserve valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes;			X
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.	X		

Discussion: The Master Plan Update supports the State CZM Law's objectives regarding coastal ecosystems. As discussed in Section 4.5, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of N Kona could be allocated water to support the Master Plan Update. U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property, which is located within the Keauhou ASYA and draws upon the deep confined freshwater zone. Besides the Keōpū Monitor Well, there are no other wells within the Keauhou ASYA that have drawn water from the deep confined freshwater zone. However, based on the monitoring of the Keōpū Well, it is not anticipated the drawing of water from the deep confined freshwater zone will affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the freshwater body at depth below salt water. Additionally, the Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System indicates that the aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated to replace basal sources. Due to the location of the Bolton Property, it is also not anticipated the drawing of water will affect freshwater flow to the coastline at Kaloko-Honokōhau National Park or within the nearby vicinity of the National Park.

As discussed in Section 4.4, construction of the Master Plan Update is planned in three phases, which will minimize the potential for increased stormwater runoff that may affect nearby surface waters. Additionally, BMPs will be implemented to mitigate the potential increase of stormwater runoff during construction. BMPs include, but are not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas. As part of the Master Plan Update, LID measures will be incorporated to minimize the potential for increased stormwater runoff with the Petition Area built out. LID measures include, but are not limited to, installation of permeable surfaces, retaining the natural topography of the site, minimizing grading, designing narrow roadways and sidewalks on one side of the street, planting trees, using source controls of stormwater for pollutant control, and minimizing conventional infrastructure. With short- and

long-term measures in place to mitigate an increase in stormwater runoff, it is not anticipated the Master Plan Update will affect nearby coastal waters.			
(5) Economic uses;			
Provide public or private facilities and improvements important to the State's economy in suitable locations.			
(A) Concentrate coastal dependent development in appropriate areas;			X
(B) Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area; and			X
(C) Direct the location and expansion of coastal dependent developments to areas designated and used for that development and permit reasonable long-term growth at those areas, and permit coastal development outside the designated areas when: (i) Use of presently designated locations is not feasible; (ii) Adverse environmental effects and risks from coastal hazards are minimized; and (iii) The development is important to the State's economy.			X
Discussion: The State CZM Law's objectives and policies related to economic uses are not directly applicable to or implicated by the Master Plan Update.			
(6) Coastal hazards;			
Reduce hazard to life and property from coastal hazards.			
(A) Develop and communicate adequate information about the risks of coastal hazards;	X		
(B) Control development, including planning and zoning control, in areas subject to coastal hazards;			X
(C) Ensure that developments comply with requirements of the National Flood Insurance Program; and	X		
(D) Prevent coastal flooding from inland projects.	X		
Discussion: The Master Plan Update supports the State CZM Law's objectives regarding coastal hazards. <u>Section 4.6.7 contains a detailed analysis of the potential threats of coastal hazards at the Petition Area. Due to its inland location, the Petition Area is generally not located in an area that is subject to threats from coastal hazards.</u> Although the Petition Area is not directly impacted by coastal hazards, <u>the Master Plan Update includes both short- and long-term measures to mitigate any potential increase in stormwater runoff that could affect areas further makai. Short-term measures include temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas. A drainage plan has been designed to prevent flooding at the Petition Area and is further detailed in Section 4.4. Additionally, as discussed in Section 4.4, construction of the Master Plan Update is planned in three phases, which will further minimize the potential for increased stormwater runoff that may affect nearby surface waters. Long-term measures include LID features, including implementation of permeable sidewalks and parking areas, retaining the natural topography of the site, minimizing grading, designing narrow roadways and sidewalks on one side of the street, planting trees, using source controls of stormwater for pollutant control, and minimizing conventional infrastructure. With short- and long-term measures in place to mitigate any potential increase in stormwater runoff, it is not anticipated that the phased build-out or operation of the Master Plan Update will affect areas further makai.</u> <u>U of N Kona will implement LID features which may include implementation of permeable sidewalks and parking areas. Xeriscape techniques will be implemented to complement the dry climate. Buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Incorporating sustainable design measures will reduce U of N Kona's carbon footprint which in return affects future climate conditions.</u> <u>The FEMA Firm map indicates the Petition Area is located in Flood Zone X (area of minimal flood hazard) (Section 4.6.4), and all facilities and buildings in the Master Plan Update will comply with applicable standards in Chapter 27 of the Hawai'i County Code, which adopts measures from FEMA's Flood Insurance Program, requirements of the Federal Flood Insurance Program as discussed in Section 4.6.4.</u>			
(7) Managing development;			
Improve the development review process, communication, and public participation in the management of coastal resources and hazards.			
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;			X
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and			X
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.			X
Discussion: The State CZM Law's objectives regarding managing development is not applicable to or implicated by the Master Plan Update.			
(8) Public participation;			
Stimulate public awareness, education, and participation in coastal management.			

(A) Promote public involvement in coastal zone management processes;	X		
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and			X
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.			X
Discussion: The State CZM Law's objectives for public participation are furthered through the HRS Chapter 343 environmental review process. Following the publication of the EISPN, <u>the 30-day public comment period commenced and a public scoping meeting was held, both of which a 30-day public comment period</u> allowed the public to comment on the Master Plan Update and scope of this <u>Draft-EIS.</u> <u>Additionally, a public scoping meeting was held to allow input on the scope of the EIS. The publication of this Draft EIS will also commence a 45 day public comment period. Federal, State, and County agencies having jurisdiction or expertise on the Master Plan Update, as well as individuals who may be affected, were provided notification of the opportunity to review and comment on the Draft EIS. A list of those who were notified of the publication of the Draft EIS, their comments, and the U of N Kona's responses are provided in Chapter 8.</u>			
(9) Beach and coastal dune protection;			
Protect beaches and coastal dunes for:			
i. Public use and recreation;			
ii. The benefit of coastal ecosystems; and			
iii. Use as natural buffers against coastal hazards; and			
Coordinate and fund beach management and protection			
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;	X		
(B) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;			X
(C) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;	X		
(E) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and	X		
(F) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.	X		
Discussion: The Master Plan Update supports the State CZM Law's objectives regarding beach and coastal dune protection. The Petition Area is not located in a coastal dependent area. Construction for the Master Plan Update will not involve ground disturbing activity along the public shoreline that may interfere with the public accessor coastal recreational activities			
(10) Marine and coastal resources;			
Promote the protection, use, and development of marine and coastal resources to assure their sustainability.			
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;			X
(B) Coordinate the management of marine, coastal resources and activities to improve effectiveness and efficiency;			X
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;			X
(D) Promote research, study, and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources; and	X		
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.	X		
Discussion: The Master Plan Update supports the State CZM Law's objectives regarding marine and coastal resources. <u>This EIS has been prepared to understand the potential impacts of the Master Plan Update on the surrounding environment. As discussed in Section 4.5, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of Kona could be allocated water to support the Master Plan Update. U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property, which is located within the Keauhou ASYA and would draw upon the deep confined freshwater zone. Besides the Keōpū Monitor Well, there are no other wells within the Keauhou ASYA that have drawn water from the deep confined freshwater zone. However, based on the monitoring of the Keōpū Well, it is not anticipated the drawing of water from the deep confined freshwater zone will affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the freshwater body at depth below salt water. Additionally, the Hawai'i County Water Use and Development Plan Update, Keauhou Aquifer System indicates that the</u>			

~~aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated to replace basal sources. Due to the location of the Bolton Property, it is also not anticipated the drawing of water will affect freshwater flow to the coastline at Kaloko-Honokōhau National Park or within the nearby vicinity of the National Park.~~

~~As part of the Master Plan Update a drainage plan has been designed to prevent flooding at the Petition Area and is further detailed in Section 4.4. Additionally, as discussed in Section 4.4, construction of the Master Plan Update is planned in three phases, which will minimize the potential for increased stormwater runoff that may affect nearby surface waters. BMPs will be implemented to mitigate the potential increase of stormwater runoff and coastal flooding from inland projects during construction. BMPs include, but are not limited to, temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas. Due to the inland location of the Petition Area, the Master Plan Update will not affect areas along the Kona coast, including marine and coastal resources. As part of this Draft EIS, the potential impacts of the Master Plan Update on climate change were analyzed (Section 4.6.7). Although the Petition Area is not directly impacted by coastal hazards, U of N Kona will also implement LID features, which may include, but are not limited to, implementation of permeable sidewalks and parking areas, planting trees, using source controls of stormwater for pollutant control, and minimizing conventional infrastructure. Xeriscape techniques will be implemented to complement the dry climate. Implementing LID measures will capture stormwater runoff at the Petition Area, which will prevent flooding to areas further makai.~~

~~The potential for the Master Plan Update to impact climate change is discussed in Section 4.6.7. Buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Incorporating sustainable design measures will reduce U of N Kona's carbon footprint, which in return affects future climate conditions. With the expansion of the campus, U of N Kona will continue to serve as an institution promoting research and new development towards a sustainable future.~~

6.3 County of Hawai'i

6.3.1 County of Hawai'i General Plan

The County of Hawai'i's 2005 General Plan is the policy document for the long-range, comprehensive development of the Island of Hawai'i. The General Plan is intended to guide the pattern of future development in the County based on long-term goals, while identifying and promoting the visions, values, and priorities important to its people.

A Draft General Plan 2045 was released by the County for public review and feedback in September 2023, ~~and a Final Recommended Draft General Plan 2045 was released in July 2024,~~ with the public comment period ending ~~on September 26, 2024 on March 1, 2024.~~ Since the Draft General Plan 2045 has not been adopted and remains subject to public comment and further revisions, the specific goals and policies in the 2005 General Plan that are pertinent to the Master Plan Update are discussed below.

ECONOMIC

Goals:

- (A) Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.
- (B) Economic development and improvement shall be in balance with the physical, social and cultural environments of the Island of Hawai'i.

Policies:

- d. Require a study of the significant cultural, social and physical impacts of large developments prior to approval.
- f. Support all levels of educational, employment and training opportunities and institutions.

- h. The land, water, air, sea and people shall be considered as essential resources for present and future generations and should be protected and enhanced through the use of economic incentives.
- i. Identify and encourage primary industries that are consistent with the social, physical, and economic goals of the residents of the County.

Discussion: *The Master Plan Update supports the County's economic goals and policies. The U of N Kona is a non-traditional, globally networked learning center offering learning opportunities for emerging Christian leaders. U of N Kona has been operating at its current campus for over 40 years. The Master Plan Update will enhance the learning and training center at the U of N Kona and continue to offer learning opportunities for emerging Christian leaders.*

The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. As part of the Master Plan Update, an ~~Archaeological Inventory Survey~~AIS, ~~Cultural Impact Assessment~~CIA, and Ka Pa'akai o Ka 'Āina Analysis have been prepared (Sections 4.15- 4.17). Significant archaeological sites have been identified and will be preserved and protected through the implementation of the Master Plan Update.

Over the long term, it is anticipated that growth at the U of N Kona will require additional goods and services from other businesses to support operations. An increase in goods and services will support jobs and increase expenditures in the County.

ENERGY

Goals:

- (A) Strive towards energy self-sufficiency.

Policies:

- a. Encourage the development of alternate energy resources.
- c. Encourage the expansion of energy research industry.
- d. Strive to educate the public on new energy technologies and foster attitudes and activities conducive to energy conservation.
- k. Strive to diversity the energy supply and minimize the environmental impacts associated with energy usage.
- n. Encourage energy-saving design in the construction of buildings.

Discussion: *The Master Plan Update supports the County's goals and policies related to energy. As part of the Master Plan Update, a GHG analysis was conducted to project the amount of GHG emission that will be produced from the buildout of the Master Plan Update and long-term operations. Although the Master Plan Update will contribute to an increase in GHG emissions, at a local and global scale, impacts of GHG emissions are inherently indirect and cumulative and it is not anticipated the Master Plan Update will substantially increase GHG emissions that may cause or contribute to any appreciable impact to local or regional air quality. Although the Master Plan Update is not anticipated to have an impact on local or regional air quality, recognizing the threats of climate change, buildings and facilities throughout the Petition Area will be designed to achieve LEED objectives or LEED certification. Furthermore, low flow plumbing fixtures will be implemented, and recycling bins and trash bins will be distributed throughout the Petition Area for students, staff, and faculty to properly discard waste.*

ENVIRONMENTAL QUALITY

Goals:

- (A) Define the most desirable use of land with the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.
- (B) Maintain and, if feasible, improve the existing environmental quality of the land.

Policies:

- a. Take positive action to further maintain the quality of the environment.
- k. Require implementation of the management measures contained in Hawai'i's Coastal Nonpoint Pollution Control Program as a condition of land use permitting.

Discussion: *The Master Plan Update supports the County's goals and policies related to environmental quality. The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. Temporary erosion control measures will be incorporated during the short-term construction period to minimize soil loss and erosion hazards. BMPs will be implemented for stormwater management to minimize adverse effects during the short-term construction period. BMPs may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, inlet protection, temporary ground cover, stabilized construction entrances, and truck wash-down areas. Open space areas will be maintained, and landscaping will reflect Kailua-Kona's agricultural past. LID features will be implemented and may include permeable sidewalks and parking areas and xeriscape landscaping techniques to reduce a potential increase in stormwater runoff.*

FLOODING AND OTHER NATURAL HAZARDS

Goals:

- (A) Protect human life.
- (B) Prevent damage to man-made improvements.
- (C) Control pollution.
- (D) Prevent damage from inundation.
- (E) Reduce surface water and sediment runoff.
- (F) Maximize soil and water conservation.

Policies:

- b. Review land use policy as it relates to flood plain, high surf, and tsunami hazard areas.
- g. Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.
- q. Consider natural hazards in all land use planning and permitting.
- r. Discourage intensive development in areas of high volcanic hazard.

Discussion: *The Master Plan Update supports the County's goals and policies related to flooding and other natural hazards. Section 4.6 contains a detailed discussion of natural hazards including earthquakes, lava hazards, hurricane and tropical storms, flooding, tsunami hazards, wildfire hazards,*

and threats of sea level rise. Due to the location of the Petition Area, which is in a low-risk area from natural hazards, the U of N Kona may be used as an evacuation site or a shelter in an emergency.

Short-term construction related activity during the phased build out of the Master Plan Update will involve clearing, grading, excavation and grubbing that may increase runoff from the Petition Area. BMPs will be implemented for stormwater management to minimize adverse effects during the short-term construction period. BMPs may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, inlet protection, temporary ground cover, stabilized construction entrances and truck wash-down areas. Grading, grubbing, and stockpiling permits will be obtained from the County Department of Public works prior to the start of construction. To reduce the potential increase in stormwater runoff with the full buildout of the Petition Area, LID features will be implemented and may include permeable sidewalks and parking area and xeriscape landscaping techniques.

HISTORIC SITES

Goals:

- (A) Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai'i.
- (B) Appropriate access to significant historical sites, buildings, and objects of public interest should be made available.
- (C) Enhance understanding of man's place on the landscape by understanding the system of ahupua'a.

Policies:

- a. Agencies appropriate ordinances, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.
- c. Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.
- d. Public access to significant historic sites and objects shall be acquired, where appropriate.
- f. Encourage the restoration of significant sites on private lands.
- g. Collect and distribute historic sites information of public interest and keep an inventory of sites.
- i. Signs explaining historic sites, buildings and objects shall be in keeping with the character of the area or the cultural aspects of the feature.
- o. Recognize the importance of certain natural features in Hawaiian culture by incorporating the concept of "cultural landscapes" in land use planning.

Discussion: The Master Plan Update supports the County's goals and policies related to historic sites. As part of the Master Plan Update, an ~~Archaeological Inventory Survey~~~~AI~~~~S~~, ~~Cultural Impact Assessment~~~~CIA~~, and Ka Pa'akai o Ka 'Āina analysis were conducted (Sections 4.15-4.17). Based on the findings from the studies conducted, the Master Plan Update has been carefully crafted to preserve and protect significant cultural and historic archaeological sites. Easement buffers with narrow gated openings to facilitate access for site maintenance and appropriate visitation by cultural and/or lineal descendants will be established around archaeological sites for proper protection and

preservation. Additionally, signage with information of the historic site will also be implemented to bring awareness to the historic significance of each site.

NATURAL BEAUTY

Goals:

- (A) Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
- (B) Protect scenic vistas and view planes from becoming obstructed.
- (C) Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.

Policies:

- f. Protect the views of areas endowed with natural beauty by carefully considering the effects of proposed construction during all land use reviews.
- g. Do not allow incompatible construction in areas of natural beauty.

Discussion: *The Master Plan Update supports the County's goals and policies related to natural beauty. As discussed in Section 4.18, Mount Hualālai is identified as a natural beauty site in the North Kona District. Upon completion, the Master Plan Update is not anticipated to obstruct views of Mount Hualālai, nor will the Master Plan Update obstruct mauka and makai views from Kuakini Highway and Queen Ka'ahumanu Highway. Buildings will not exceed the height of the current buildings located on the Existing Campus.*

NATURAL RESOURCES AND SHORELINE

Goals:

- (A) Protect and conserve the natural resources from undue exploitation, encroachment and damage.
- (B) Provide opportunities for recreational, economic, and educational needs without despoiling or endangering natural resources.
- (C) Protect and promote the prudent use of Hawai'i's unique, fragile, and significant environmental and natural resources.
- (D) Protect rare or endangered species and habitats native to Hawai'i.
- (E) Protect and effectively manage Hawai'i's open space, watersheds, shoreline, and natural areas.
- (F) Ensure that alterations to existing land forms, vegetation, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of an earthquake.

Policies:

- a. Require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse effects on the environment.

- i. Encourage an overall conservation ethic in the use of Hawai'i's resources by protecting, preserving, and conserving the critical and significant natural resources of the County of Hawai'i.
- p. Encourage the use of native plants for screening and landscaping.

Discussion: *The Master Plan Update supports the County's goals and policies related to natural resources and the shoreline. As discussed in Section 4.8, a natural resources survey was conducted in support of the Master Plan Update to identify Federal and State listed endangered or protected species. ~~Although not detected, the Petition Area will be surveyed prior to construction to ensure Hawaiian Hawk nests and tree tobacco which are hostplants for larvae of the BSM to feed on are not present. It is not anticipated the Master Plan Update will impact threatened or endangered plant or animal species or habitats native to Hawai'i. As part of this Final EIS, threatened or endangered animal species that may overfly or nest at the Petition Area have been identified in Section 4.8. These species include Hawaiian waterbirds, Hawaiian seabirds, migratory birds, the Hawaiian Hawk, the Hawaiian Goose, the Hawaiian Short-Eared Owl, and the BSM. Measures to minimize impacts to threatened and endangered species that may overfly or be present on the Petition Area are detailed for each species in Section 4.8. These measures include, but are not limited to, surveying trees before removal to ensure nests are not present and establishing appropriate buffers around nests should they be found at the site.~~*

Additionally, to mitigate impacts to seabirds and migratory birds, construction will be limited to daytime hours. If nighttime construction is needed, lighting will be shielded and placed high enough to allow lights to be pointed directly at the ground. Lighting installed throughout the Petition Area will be in compliance with Hawai'i County Code §14-50. Fully built out, the Master Plan Update will improve the landscape as it is currently overgrown with dense non-native vegetation. Landscaping throughout the Petition Area will be carefully selected to reflect the Kailua-Kona region. Xeriscape techniques ~~may~~ will also be implemented to complement the dry climate.

RECREATION

Goals:

- (A) Provide a wide variety of recreational opportunities for the residents and visitors of the County.
- (B) Maintain the natural beauty of recreation areas.
- (C) Provide a diversity of environments for active and passive pursuits.

Policies:

Coordinate recreational programs and facilities with governmental and private agencies and organizations. Innovative ideas for improving recreational facilities and opportunities shall be considered.

Discussion: *The Master Plan Update supports the County's goals and policies related to recreation. As part of the Master Plan Update, the U of N Kona campus will be equipped with a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and dormitories for students, staff, and faculty members. The addition of athletic and meeting facilities will provide a significant resource to the greater Kailua-Kona community as the U of N Kona has full intentions on hosting various community and recreational events.*

LAND USE

The County of Hawai'i General Plan's accompanying LUPAG Map establishes the future land use patterns for the Island of Hawai'i, including the community of Kailua-Kona. The LUPAG Map designates the Petition Area "Medium Density Urban" (MDU) (*Figure 1-7*). This designation includes "*village and neighborhood commercial and single family and multiple family residential and related functions (3-story commercial; multiple family residential – up to 35 units per acre).*" The Petition Area retains the MDU designation in the proposed Draft General Plan 2045.

The following goals and policies are applicable to the Master Plan Update:

Goals:

- (A) Designate and allocate land uses in appropriate proportions and mix and in keeping with the social, cultural, and physical environments of the County.

Policies:

- f. Encourage the development and maintenance of communities meeting the needs of its residents in balance with the physical social environment.
- j. Encourage urban development within existing zoned areas already served by basic infrastructure, or close to such areas, instead of scattered development.

Discussion: *The Master Plan Update will adhere to the LUPAG Map's MDU designation for the Petition Area. The Master Plan Update will serve as an expansion of the Existing Campus located immediately adjacent to the Petition Area, providing the space needed to accommodate future enrollment projections. The Master Plan Update will enhance the learning and education center at the U of N Kona and complement the existing urban environment surrounding the Petition Area.*

6.3.2 Kona Community Development Plan

The Hawai'i County General Plan requires that Community Development Plans be adopted by the County Council for each judicial district in the County. The Kona Community Development Plan (Kona CDP), which the County Council adopted in September 2008 and amended in 2019, covers the judicial districts of North and South Kona. The Kona CDP establishes a framework for future growth by identifying the County's major policies concerning the type and location of future development. The Kona CDP delineates urban and rural areas where future growth should be directed. Most of the future growth in Kona will be directed to the defined "Urban Area" and compact villages located along proposed transit routes or Transit-Oriented Development zones. The "Rural Area" consists of the lands outside of the Kona Urban Area where limited future growth should be directed to the existing rural towns and villages in a way that revitalizes and enhances the existing rural lifestyle and culture of those communities.

The Kona CDP articulates the area residents' vision for Kona's future: *A more sustainable Kona characterized by a deep respect for the culture and the environment and residents that responsively and responsibly accommodate change through an active and collaborative community.*

In order to achieve this vision, the Kona CDP presents guiding principles that are the foundation for the goals, objectives, policies, and implementation actions for eight thematic "elements": 1) transportation; 2) land use; 3) environmental resources; 4) cultural resources; 5) housing; 6) public facilities, infrastructure and services; 7) energy; and 8) economic development.

The Existing Campus Site and the Petition Area are located in the Kona Urban Area (*Figure 1-8*). Specific Kona CDP guiding principles, goals, objectives, and policies most applicable to the Master Plan Update are discussed below.

GUIDING PRINCIPLES

1. Protect Kona's natural resources and culture.
2. Provide connectivity and transportation choices.
3. Provide housing choices.
4. Provide recreation opportunities.
5. Direct future growth patterns toward compact villages, preserving Kona's rural, diverse, historical character.
6. Provide infrastructure and essential facilities concurrent with growth.
7. Encourage a diverse and vibrant economy emphasizing agriculture and sustainable economies.
8. Promote effective governance.

LAND USE

Objective LU-1: Overall Growth Pattern. To identify areas where higher intensity growth areas should occur and areas where the rural character and open space along the shoreline should be preserved.

- **Policy LU-1.2: Urban Area.** The majority of future growth in Kona shall be directed to the Kona UA shown on the Official Kona Land Use Map, which spans from the Kona International Airport to Keauhou subject to the policies set forth under Objective LU-2.
- **Policy LU-1.4: Consistency with LUPAG.** The current LUPAG accommodates the vision and needs for the Kona CDP area planning horizon and should be amended only for compelling reasons. Any rezoning application shall be consistent with the LUPAG.

Discussion: *The Master Plan Update will adhere to Kona Urban Area land use designations in the Kona CDP. Upon completion, the expanded campus will provide space needed to accommodate future enrollment at the U of N Kona. Additionally, U of N Kona will file a zoning application with the County to rezone the Petition Area from the A-1a, Agricultural District and RD-3.75 and R-7.5, Residential Districts to the Project District, which is consistent with the LUPAG Map's MDU designation for the Petition Area.*

Objective LU-2: Urban Area Growth Management. Recognizing that the LUPAG Urban Area is larger than needed in order to accommodate the projected growth within the planning horizon, future growth within the Urban Area shall be encouraged in a pattern of compact villages at densities that support public transit.

- **Policy LU-2.1: Village Defined – Transit-Oriented Developments (TODs) vs. Traditional Neighborhood Developments (TNDs).** Both TODs and TNDs are compact mixed-use villages, characterized by a village center within a higher-density urban core, roughly equivalent to a 5-minute walking radius (1/4 mile), surrounded by a secondary mixed-use, mixed-density area with an outer boundary roughly equivalent to a 10-minute walking radius from the village center (1/2 mile). The distinction between a TOD and TND is that the approximate location of a TOD is currently designated on the Official Kona Land Use Map along the trunk or

secondary transit route and contains a transit station, while TND locations have not been designated and may be located off of the trunk or secondary transit route at a location approved by a rezoning action.

- **Policy LU-2.2: TOD/TND Components.** The components of a TOD/TND include Urban Core, Secondary Core, and Greenbelt. A TOD/TND contains a higher density urban core surrounded by a lower density secondary area. A greenbelt should, in turn, surround and define the outer edge of the secondary area.
- **Policy LU-2.3: TODs Identified.** To control the spacing of transit stations in support of Policy TRAN-1.2, TOD floating zones, identifying the general location of TODs, should be encouraged as shown on the Official Kona Land Use Map.
- **Policy LU-2.4: TOD Floating Zones.** Development of TODs are encouraged within the extent and locations of the floating zones shown on the Official Kona Land Use Map. These locations are approximate and become fixed pursuant to the modified Project District rezoning procedures.

Discussion: *U of N Kona acknowledges that TOD Floating Zones have been established to guide growth in the Kona Urban Area and reduce urban sprawl. As shown in Figure 1-8, the Petition Area is located within the Puaa-Waiaha Village Neighborhood TOD Floating Zone.*

In order to implement the Master Plan Update, U of N Kona will be seeking a zone change from the Agriculture and Residential Districts to the Project District or other appropriate zoning district identified in consultation with the Planning Department. As set forth in Policy LU-2.4 in the Kona CDP, TODs are established through the modified Project District rezoning procedures. U of N Kona will continue to consult with the Planning Department to determine whether it is appropriate to establish a TOD with the procedures to rezone the Petition Area.

ENVIRONMENTAL RESOURCES

Objective ENV-1: Managing Impacts. In order to minimize impacts on the land, make use of best management planning practices for any land-based endeavor by balancing public and private rights, and taking advantage of an ever-improving knowledge of resource sensitivity and natural processes.

- **Policy ENV-1.5: Sensitive Resources.** In the context of Kona's ecology and history, the following natural and cultural resources shall be considered sensitive and therefore shall be inventoried, as part of any permit application to the County Planning Department.
 - Critical habitat areas as identified by the U.S. Fish and Wildlife or County General Plan;
 - Predominantly native ecosystems, which may not be considered endangered but are valued because of their nearly pristine condition;
 - Anchialine ponds subject to a management Program addressed in Policy ENV-1.10: Non-Degradation of Anchialine Ponds;
 - High-level groundwater recharge area which shall initially be defined as all lands mauka of the 1,500 foot elevation and which may be refined by the Kona Mauka Watershed Management Program;
 - Historic trails;
 - Archaeological and historic sites subject to protection under HRS Chapter 6E; and,
 - Enhanced Shoreline Setback (see Policy LU-1.5).

Discussion: *The Master Plan Update supports the County's objectives and policies related to environmental resources. As part of the Master Plan Update, a Natural Resources Survey (Section 4.8) was conducted. No critical habitats or waters under federal jurisdiction were identified at the Petition Area.*

It is not anticipated the Master Plan Update will impact threatened or endangered plant or animal species or habitats native to Hawai'i. As part of this Final EIS, threatened or endangered animal species that may overfly or nest at the Petition Area have been identified in Section 4.8. Threatened or endangered species that may overfly or nest at the Petition Area include Hawaiian waterbirds, Hawaiian seabirds, migratory birds, the Hawaiian Hawk, the Hawaiian Goose, the Hawaiian Short-Eared Owl, and the BSM. Measures to minimize impacts to threatened and endangered species that may overfly or be present on the Petition Area are detailed for each species in Section 4.8. These measures include, but are not limited to, surveying trees before removal to ensure nests are not present and establishing appropriate buffers around nests should they be found at the site.

Although the Master Plan Update will involve clearing the Petition Area of primarily non-native vegetation, landscaping will be carefully selected to reflect the Kailua-Kona region. Xeriscape techniques may also be implemented to complement the dry climate, pay tribute to the region's agricultural past, and incorporate planting of native vegetation. Fully built out, the Master Plan Update will improve the landscape of the Petition Area as it is currently overgrown with dense non-native vegetation.

An ~~Archaeological Inventory Survey~~AIS, ~~Cultural Impact Analysis~~CIA, and Ka Pa'akai o Ka 'Āina analysis were conducted in support of the Master Plan Update (Sections 4.15 – 4.17). Based on the findings from the studies conducted, the Master Plan Update has been carefully crafted to preserve and protect significant cultural, historic, archaeological sites. Easement buffers with narrow gated openings to facilitate access for site maintenance and appropriate visitation by cultural and/or lineal descendants will be established around archaeological sites for proper protection and preservation. Additionally, signage with information of the historic site will also be implemented to bring awareness to the historic significance of each site.

CULTURAL RESOURCES

Objective CR-1: Community-Based Program. Develop a community-based program to evaluate and to protect Kona's cultural resources. Kona is rich with historic and cultural resources, but organized, proactive processes to provide stewardship for these resources are lacking.

Objective CR-2: Funding of Kona Historic Resources Programs. In addition to budgeting general fund revenues, the County of Hawai'i shall seek and participate in programs that can provide resources serving to protect and enhance Kona's historic resources.

Objective CR-3: Preservation of Kanaka Maoli Culture and Island Values. Ensure that our Kanaka Maoli and island values and cultures are preserved and perpetuated.

- **Policy CR-3.1: Honor Kanaka Maoli culture and heritage.** The Kanaka Maoli culture is the foundation of Hawai'i's living culture. We must ensure that the Kanaka Maoli people are supported and that this part of our culture is perpetuated. The success of this endeavor will ensure that the way of the Kanaka Maoli will guide our actions and behaviors in the years ahead.

- **Policy CR-3.2: Preserve and perpetuate our Hawaiian and island cultural values by celebrating our cultural diversity and island way of life.** Our diversity likewise defines us. Ensuring that our cultural practices flourish through language, dance, song, and art is crucial to sustaining who we are as a people. We must protect and nurture all aspects of our diverse history, traditions and cultures.
- **Policy CR-3.3: Enable Kanaka Maoli and others to pursue traditional Kanaka Maoli lifestyles and practices.** We must provide opportunities to those who want to pursue and perpetuate the way of the Kanaka Maoli.
- **Policy CR-3.4: Provide support for subsistence-based businesses and economies.** We must create opportunities for the Kanaka Maoli practice of subsistence-based businesses and economies, and remove the hurdles to their start-ups and development. Such traditional cultural practices are an economic alternative to Western forms of trade and commerce. Subsistence fishing, gathering, hunting and farming are examples of subsistence-based economies that are viable.
- **Policy CR-3.5: Ahupua'a Resource and Management.** Integrate the values and principles of the traditional ahupua'a resource and management systems as a basis for a sustainable Hawai'i.

Discussion: *In support of the Master Plan Update, an ~~Archaeological Inventory Survey~~AIS, ~~Cultural Impact Analysis~~CIA, and Ka Pa'akai o Ka 'Āina analysis were conducted (Sections 4.15 – 4.17). Cultural and historic archaeological features have been identified and measures to protect, preserve, and restore significant features have been established. As such, the Master Plan Update has been designed to protect and preserve identified archaeological features. Protection and preservation measures includes the establishment of easement buffers with narrow gated openings to facilitate access for site maintenance and appropriate visitation by cultural and/or lineal descendants will be established around archaeological sites for proper protection and preservation. Additionally, signage with information of the historic site will also be implemented to bring awareness to the historic significance of each site.*

ECONOMIC DEVELOPMENT

Objective ECON-1: Strategic Public Facilities and Business Opportunities as Economic Stimuli. To optimize the potential of certain public facilities and policies to stimulate ancillary economic growth that is desirable because they are environmentally clean, diversify the economy (i.e., not visitor-dependent), pay decent wages, and demand skills and intellect that challenge Kona's existing and upcoming workforce.

Discussion: *The Master Plan Update supports the County's objectives related to economic development. As discussed in Section 4.12, growth at the U of N Kona is anticipated to generate additional demand for goods and services from businesses in the Kailua-Kona region and across the State. An increase in demand for goods and services outside of the U of N Kona will support jobs and increase expenditures in the County and the State.*

6.3.3 Kailua-Kona Master Plan

The Kailua-Kona Master Plan was adopted in 1994 to help advise the Hawai'i County Planning Director and guide urban design in the Kailua Village area. The Kailua Village planning area is defined by the "Kailua Village Special District," as described in Chapter 25 of the County of Hawai'i Code (Zoning). The Kailua-Kona Master Plan defines goals, objectives and urban design guidelines for the Kailua

Village Special District, including a designated land use master plan and urban design recommendations intended to preserve and enhance the “Village Core” and set reasonable limits on the spread of resort and commercial development. The Petition Area is located within the boundaries of the “Kailua Village Special District” and defined as “Low-Density Residential” by the Kailua-Kona Master Plan. The Master Plan Update must be consistent with the goals, objectives, and design guidelines of the Kailua-Kona Master Plan and is required to obtain Plan Approval, which is reviewed by the Kailua Village Design Commission and approved by the Hawai‘i County Planning Department.

Specific goals, objectives, and design guidelines of the Kailua-Kona Master Plan most applicable to the Master Plan Update are discussed below.

Goals of the Kailua-Kona Master Plan

2. To maintain and enhance the character identified as “The Kona Way of Life”
3. To be a guide for future development and redevelopment, decision making and plan implementation within the Kailua-Kona Master Plan area.

Objectives of the Kailua-Kona Master Plan

1. Preserve and enhance the natural environment by preserving natural assets/landscape and integrating them with pedestrian activities and new development.
8. Preserve and enhance cultural/historical/natural resources and sites to maintain local values and encourage visitor access.
9. Upgrade and expand infrastructure throughout the planning area.
10. Improve and increase non-ocean oriented public facilities, especially recreation.
11. Provide the appropriate phased expansion of infrastructure and county services to support gradual growth in the master plan area.

Discussion: *The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. Cultural and historic archaeological sites have been identified and will be protected and preserved with the implementation of the Master Plan Update. The Master Plan Update has been carefully designed to integrate the natural topography of the site and to reduce extensive grading. As part of the Master Plan Update, the Petition Area will be equipped with a new PK-12 school, university-level classroom spaces, athletic facilities, meeting facilities, and housing for students and staff members. The addition of athletic and meeting facilities at the U of N Kona campus will provide the greater Kailua-Kona community with a significant resource as the U of N Kona has full intentions on hosting various community events.*

As discussed in Section 4.510.1, U of N Kona ~~is negotiating the development of a new water source with a private well developer, is actively working with the developer of a new well on the Bolton Property, from which U of Kona could be allocated water to support the Master Plan Update. The well developer recently entered into a Memorandum of Agreement with DWS (Appendix E), under which the developer agreed to design and construct (to DWS-dedicable standards) the well that would connect to the DWS water system via a water main running along Queen Kaahumanu Highway. A new potable water~~The proposed new well source and associated infrastructure improvements would be dedicated to the County and the water produced would support urban growth and expansion in the Kailua-Kona region, in addition to the Master Plan Update.

Design Guidelines

The “Kona Way of Life” can be physically translated into design concepts, applicable concepts to the Master Plan Update include the following:

1. Integration of new development in the natural environment, while sustaining and enhancing the latter.
2. A respect for the local history, tradition and culture via the preservation of sites and structures while encouraging public understanding and access.
7. Opportunities for friendly gatherings in comfortable places.

Discussion: *The Master Plan Update has been carefully designed to reflect the Kailua-Kona region, both its natural and cultural attributes. The Master Plan Update has been carefully designed to integrate the natural topography of the site and to reduce extensive grading. Open space areas will be maintained to allow for casual outdoor gatherings. A unified architectural theme will be established to reflect a distinct sense of place and landscaping elements will be selected to complement the Kailua-Kona region.*

Cultural and historic archaeological sites have been identified and will be protected and preserved with the Master Plan Update. Easement buffers with narrow gated openings to facilitate access for site maintenance and appropriate visitation by cultural and/or lineal descendants will be established around archaeological sites for proper protection and preservation. Additionally, signage with information of the historic site will also be implemented to bring awareness to the historic significance of each site.

6.3.4 County of Hawai‘i Zoning

The zoning regulations for the County of Hawai‘i are prescribed in Chapter 25 of the Hawai‘i County Code (Zoning Code) and applied and administered within the framework of the Hawai‘i County General Plan and Kona CDP. Under the Zoning Code, various zoning districts are established to regulate the type of development and permitted uses of property and are depicted on zoning district maps. Most of the Petition Area is currently zoned A-1a (Agricultural District, one-acre minimum lot size) and a portion of the Petition Area is split zoned RD-3.75 and RS-7.5 (Residential Districts) (Figure 1-4).

Discussion: *U of N Kona will be filing a change in zoning application with the County upon completion of the environmental review process and approval of the Master Plan Update by the LUC, and prior to plan approval(s) and issuance of building permits. U of N Kona will be seeking to rezone the Petition Area to the Project District, which would provide flexibility in relocating elements within the Petition Area, or other appropriate district determined to be suitable in consultation with the Department of Planning. Further detail will be provided in the forthcoming zoning application.*

6.3.5 County of Hawai‘i Water Use and Development Plan Update, Keauhou Aquifer System

The primary objective of the County of Hawai‘i Water Use and Development Plan is to set forth the allocation of water to land uses. As required by the HAR Title 13, Chapter 170, Hawai‘i Water Plan, each of the four counties is required to prepare a Water Use and Development Plan to include, but not be limited to, the following:

1. Status of county water and related land development including an inventory of existing water uses for domestic, municipal, and industrial users, agriculture, aquaculture, hydropower development, drainage, reuse, reclamation, recharge, and resulting problems and constraints;
2. Future land uses and related water needs; and
3. Regional plans for water developments including recommended and alternative plans, costs, adequacy of plans, and relationship to the water resource protection plan and water quality plan.

The County Council adopted the *Hawaii County Water Use and Development Plan Update* dated August 2010 (HWUDP), and the Commission on Water Resource Management granted approval in December 2011. As identified in the HWUDP, the Petition Area falls within the Keauhou ~~Aquifer System Area~~ (Keauhou ASYA). ~~According to which, the HUWDP, the Keauhou ASYA should to be considered for further evaluation and detailed assessment. Following the recommendation of the HWDUP, the~~ *Keauhou Aquifer System, Hawai'i Water Use and Development Plan Update* (HWUDP Keauhou Update), dated March 2017, ~~was published. The HWUDP Keauhou Update providesing now guides the County in an integrated approach to land use planning and water resource development development and provides an estimate of anticipated future water demand projections based on County land use/zoning policies and water use rates for the Keauhou ASYA.~~

The HWUDP Keauhou Update promotes overall themes common to several other HWUDP components:

- Public Trust Doctrine – the State holds ownership over public water resources as a trustee for the benefit of the people of the State.
- Water is a most precious resource, shall be used wisely and conserved, not wasted.
- The highest quality water shall be used for the public's highest beneficial uses.
- Lower quality water (e.g. recycled water, surface water, brackish water) should be used whenever feasible.

Specific recommendations for the *Keauhou ASYA* are as follows:

1. Development of new ground water well sources is encouraged in areas within the high-level aquifer generally from the vicinity of the Hawaii Department of Water Supply (HDWS) Queen Lili'uokalani Trust Deepwell extending south into the Kealakekua ASYA.
2. Continue studies of the ground water hydrology in the Keauhou ASYA, particularly the mid-elevation deep water source, which potentially could be a long-term solution.
3. Water purveyors are encouraged to assist in the development of non-potable water resource enhancement measures that do not involve ground water, such as recycled water, to satisfy non-potable demands. This may reduce reliance on ground water sources.
4. State and County agencies and private entities with water interests in the Keauhou ASYA are encouraged to participate and/or coordinate with the Three Mountain Alliance major landowners (Kamehameha Schools, Division of Forestry and Wildlife, and National Park Service) to assist in the preservation and restoration of watersheds in the Keauhou ASYA which will ultimately protect and potentially augment the ground water resources.
5. State and County agencies are encouraged to develop and implement ground water well protection initiatives and to participate in the State of Hawai'i Department of Health, Safe Drinking Water Branch (SDWB) Wellhead Protection Financial Assistance Program.

6. HDWS will continue to work with 'Aha Moku to ensure that its proposed source development strategies are properly vetted for Traditional and Customary Native Hawaiian Rights (T&C) issues.

Discussion: As discussed in Section 4.5 and 4.10.1, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of Kona could be allocated water to support the Master Plan Update. two locations have been identified for new well developmentU of N Kona is actively working with the well developer for a new well on the Bolton Property. The well developer recently entered into a Memorandum of Agreement with the DWS (Appendix E), under which the developer agreed to design and construct (to DWS-dedicable standards) the well, which would connect to the DWS water system via a water main running along Queen Kaahumanu Highway. The well developer will need to negotiate a final well development agreement with DWS to formalize the number of water commitments, the water system design criteria, and the water credits available. Subsequent permit applications would need to be filed with CWRM to construct and test the well for the availability of freshwater. Commitments to monitor the long-term effects of drawing water from the freshwater zone will be established with the well construction permit. If freshwater is available and can be drawn at the proposed location, infrastructure to connect the well to the existing County water system will need to be designed and constructed. The proposed new well ~~A new potable water source~~ and associated infrastructure improvements ~~would~~ will then be dedicated to the County and ~~would~~ will support urban growth and expansion in the Kailua-Kona region, in addition to the Master Plan Update.

~~U of N Kona remains committed to working with DWS to finalize a well and secure the infrastructure necessary to support the Master Plan Update. The private developer of the well will enter into a Water Development Agreement with the Water Board to ensure the water source and supporting infrastructure will adequately meet the demand of operations at U of N Kona.~~

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Determination and Rationale

Chapter 7

Determination and Rationale

This ~~Draft-Final~~ EIS has been prepared in support of U of N Kona's Motion to Amend the 2003 Decision & Order to allow for the implementation of the Master Plan Update. As determined by the LUC, under HRS §343-5, due to the proposed use of County of Hawai'i lands for infrastructure improvements to support the Master Plan Update, U of N Kona must comply with HRS Chapter 343.

Often the environmental review process begins with the preparation of a draft environmental assessment and concludes in one of two ways. If the approving agency determines that a proposed action is not likely to have a significant effect on the environment, it issues a finding of no significant impact (FONSI) and directs the applicant to file the FONSI and a final EA with the Environmental Review Program. If, on the other hand, the approving agency determines that a proposed action may have a significant effect, it instructs the applicant to prepare an EISP and complete the environmental review process through the preparation and processing of an EIS.

However, as a result of the Hawai'i State Legislature's passage of Act 172 in 2012, an approving agency may authorize an applicant to proceed directly to the preparation of an EISP where the agency determines, through its judgment and experience, that an EIS is likely to be required. HRS §343-5(3)(e) provides that: "[I]f the agency determines, through its judgment and experience, that an environmental impact statement is likely to be required, the agency may choose not to prepare an environmental assessment and instead shall prepare an environmental impact statement that begins with the preparation of an environmental impact statement preparation notice as provided by rules." HAR §11-200.1-14(d) similarly permits an approving agency to authorize an applicant to proceed directly to the preparation of an EISP where the agency determines, through its judgment and experience, that an EIS is likely to be required.

To determine whether a proposed action may have a significant effect on the environment, and therefore require an EIS, an agency must review the proposed action under the significance criteria set forth in HAR §11-200.1-13(b). The following is an assessment of the Master Plan Update's impacts based on the 13 significance criteria established in HAR §11-200.1-13(b).

- (1) Irrevocably commit a natural, cultural, or historic resource;

Discussion: A *Natural Resources Survey for the University of the Nations Expansion Property* was prepared by AECOS, Inc. in January 2020 ([Appendix GF](#)) in support of the Master Plan Update. Plant species identified at the Petition Area are consistent with those found in urban environments, which are common non-native introduced species and scattered weedy growth. Clearing the Petition Area is not anticipated to adversely affect threatened or endangered plant species.

The Natural Resources Survey included a biological survey of threatened and endangered animal species. A Hawaiian Hawk was observed overflying the Petition Area during the course of the survey. The Petition Area will be surveyed during breeding season (March 1 to September 30) prior to tree clearing to ensure Hawaiian Hawk nests are not present. If Hawaiian Hawk nests are found, a 1,600-foot buffer zone will be established around the nest and DLNR DOFAW will be notified. Additionally,

~~the survey identified threatened and endangered animal species that may overfly or be present at the Petition Area. These species include Hawaiian waterbirds, Hawaiian seabirds, migratory birds, the Hawaiian Goose, the Hawaiian Short-Eared Owl, and the BSM. Measures to minimize potential impacts to these species are detailed for each species in Section 4.8. These measures include, but are not limited to, surveying trees before removal to ensure nests are not present and establishing appropriate buffers around nests should they be found at the site. Prior to the start of ground-disturbing activities, the Petition Area will be surveyed to ensure Hawaiian Hawk nests and tree tobacco, which can serve as a food source for the BSM larvae, are not present. If Hawaiian Hawk nests are identified at the Petition Area, construction activity will cease and DLNR will be notified immediately. Should tree tobacco be present, DLNR DOFAW will be contacted to determine proper inspection for the presence of the BSM.~~

An ~~Archaeological Inventory Survey~~AIS has been conducted to identify historic archaeological resources at the Petition Area. Based on the findings presented in the ~~Archaeological Inventory Survey~~AIS, a Burial Treatment Plan, Data Recovery Report, Preservation Plan, and Dismantling and Restoration Plan have been completed in support of the Master Plan Update (Section 4.15). The Master Plan Update has been carefully designed to protect and preserve identified archaeological features. Through the establishment of interim and permanent preservation buffers and cautionary signage, identified archaeological features will be preserved and protected. Measures to properly dismantle and restore portions of the Kuakini Wall to accommodate a new 40-foot wide gap have been identified to ensure the proper protection and restoration of the archaeological site. With preservation measures in place, the Master Plan Update does not involve a significant loss of archeological or cultural resources.

With identified preservation measures, the ~~Cultural Impact Analysis~~CIA and Ka Pa‘akai Analysis determined that the Master Plan Update will not impact valued cultural, historic, or archaeological resources, including traditional and customary native Hawaiian rights and practices (Section 4.16 and 4.17). An archaeological and/or cultural monitor will be present during ground-disturbing activities. In the event of an inadvertent discovery of ancestral remains, SHPD will be notified immediately, and all construction activity will cease until further mitigation is recommended. If for some reason, iwi must be moved or touched, an identified cultural monitor, or a lineal/cultural descendant of the area will be consulted to provide further mitigation and recommendation.

(2) Curtail the range of beneficial uses of the environment;

Discussion: The range of beneficial uses of the environment will not be significantly curtailed by the Master Plan Update. The Existing Campus has been preparing followers of Christ for service for over 40 years. The Master Plan Update will serve as an expansion of the Existing Campus, providing for the current and projected space needs at the U of N Kona. The Master Plan Update will allow the U of N Kona to expand their services in the greater Kailua-Kona area. Additionally, the Master Plan Update will provide much needed recreational facilities that the greater Kailua-Kona community will have access to. The Master Plan Update is consistent with plans and policies identified in the County of Hawai‘i General Plan and the Kailua-Kona Community Development Plan. The Master Plan Update will improve the existing environment as it is currently overgrown with dense vegetation.

(3) Conflict with the State's environmental policies or long-term environmental goals established by law;

Discussion: The Master Plan Update is consistent with and supportive of State and County long-term goals related to the environment, as discussed in Chapter 6. The Master Plan Update was designed to preserve and integrate the natural environment. Open space areas will be preserved, and landscaping

will be selected to reflect Kailua-Kona's agricultural past. Sustainable design measures and practices will be implemented throughout the design of the Master Plan Update. Sustainable design measures and practices include, but are not limited to, solar PV panels on buildings and facilities, buildings designed to achieve LEED certification or objectives, implementation of low flow plumbing fixtures, and a campus-wide recycling program.

- (4) Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State;

Discussion: The Master Plan Update will have a positive benefit on the State's economic welfare (Section 4.13). Upon completion of construction, the U of N Kona and its students, staff, and faculty will continue to purchase goods and services from in the Kailua-Kona region and across the state. An increase in goods and services will support jobs and increase expenditures in the County.

Although the 2003 CIA did not identify any specific past or ongoing traditional or customary practices occurring at the Petition Area (Section 4.17), concerns were expressed by those who were consulted regarding the presence of burials identified at the Petition Area, the possibility of encountering additional *iwi kupuna* during the buildout of the Master Plan Update, and the potential effects that the proposed development would have on the ability of the descendant community to care for those ancestral remains. Access to the burial site for appropriate cultural activities would be permitted to any lineal and/or cultural descendant who has been formally recognized by the HIBC in accordance with the administration procedures contained within HAR §13-300-35. A long-term perpetual easement will be executed that would set forth requirements and restrictions related to physical improvements, signage, maintenance, and access by lineal or cultural descendants.

- (5) Have a substantial adverse effect on public health;

Discussion: U of N Kona was granted a ~~SLU~~ State Land Use District Boundary Amendment to reclassify the Petition Area from the Agricultural District to the Urban District. The Master Plan Update is consistent with the Urban District land use designation and will not substantially affect public health. Solid waste and wastewater collection and disposal services will meet regulatory requirements to maintain public health standards. Long-term adverse impacts to air, water quality, and noise are not anticipated as a result of the Master Plan Update (Sections 4.7, 4.5, and 4.9).

- (6) Involve adverse secondary impacts, such as population changes or effects on public facilities;

Discussion: The Master Plan Update is intended to support future growth and enrollment at the U of N Kona. The projected growth at U of N Kona is in alignment with projected growth patterns in the North Kona District. Although U of N Kona will increase the population in the North Kona District, growth at the U of N Kona is not anticipated to substantially increase population to an extent that would strain public facilities and services (Section 4.14 and Section 5.2).

Growth at the U of N Kona is consistent with plans and policies guiding future urban opportunities in the Kailua-Kona region. The General Plan LUPAG Map designates the Petition Area as ~~Medium Density Urban (MDU)~~ and the Kailua-Kona Community Development Plan locates the Petition Area within the Kona Urban Area slated for future growth (Section 4.13). The Master Plan Update will also provide much needed recreational and learning spaces to support program operations and the greater Kailua-Kona community.

- (7) Involve a substantial degradation of environmental quality;

Discussion: The Master Plan Update will not involve a substantial degradation of environmental quality on-site or in the surrounding environment. Construction impacts related to noise and air quality are

temporary and will be minimized by implementing construction and erosion control BMPs, as described throughout *Chapter 4*. Long-term significant impacts to air and water quality, noise, and natural resources are not anticipated. Sustainable design features, such as LID will be implemented, where feasible.

- (8) Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions;

Discussion: The Master Plan Update is not anticipated to have substantial cumulative adverse impacts on the environment, as discussed in *Section 5.1*. Additionally, the Master Plan Update is not a commitment to a larger action or project by the U of N Kona. The Master Plan Update is intended to serve as an extension of the Existing Campus to support current and future space and facility needs.

The Master Plan Update is in alignment with plans and policies guiding urban growth in the Kailua-Kona region. The County of Hawai'i General Plan LUPAG Map designates the Petition Area as MDU and the Kailua-Kona Community Development Plan locates the Petition Area within the Kona Urban Area slated for future growth. The Master Plan Update will complement the existing urban setting surrounding the Petition Area.

- (9) Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat;

Discussion: As discussed in *Section 4.8.2*, other than the State endangered Hawaiian Hawk (*Buteo solitarius*), which was observed flying over the Petition Area, no rare, threatened, or endangered species or critical habitats were detected within the Petition Area. The Petition Area will be surveyed during breeding season (March 1 to September 30) prior to tree clearing to ensure Hawaiian Hawk nests are not present. If Hawaiian Hawk nests are found, a 1,600-foot buffer zone will be established around the nest and DLNR DOFAW will be notified. Additionally, the survey identified threatened and endangered animal species that may overfly or be present at the Petition Area. These species include Hawaiian waterbirds, Hawaiian seabirds, migratory birds, the Hawaiian Hawk, the Hawaiian Goose, the Hawaiian Short-Eared Owl, and the BSM. Measures to minimize impacts to these species are detailed for each species in *Section 4.8*. These measures include, but are not limited to, surveying trees before removal to ensure nests are not present and establishing appropriate buffers around nests should they be found at the site. Prior to the start of construction, the Petition Area will be surveyed to ensure Hawaiian Hawk nests and tree tobacco, which can serve as a food source for the BSM larvae, are not present are not present. If Hawaiian Hawk nests are found, construction activity will cease, and the DLNR, DOFAW will be notified. Should tree tobacco be present, DLNR DOFAW will be contacted to determine proper inspection for the presence of the BSM. With surveying in place, it is not anticipated the Master Plan Update will have a substantial adverse effect on the endangered species.

Additionally, mitigation measures outlined in *Section 4.8.2* will be implemented to minimize the potential for impacts to seabirds that may occasionally fly over the Petition Area. No long-term impacts to rare, threatened, or endangered species or habitat are anticipated.

- (10) Have a substantial adverse effect on air or water quality or ambient noise levels;

Discussion: An GHG analysis using the CalEEMod (*Appendix FE*) and Acoustic Study (*Appendix HG*) were conducted to assess the potential impacts to the environment as a result of the Master Plan Update. Temporary impacts associated with construction are identified throughout *Chapter 4*. Short-term effects on air, water quality/stormwater runoff, and ambient noise levels during construction will be mitigated through adherence to State and ~~City-County~~ regulations and mitigation measures, as summarized in *Table ES-1*.

No detrimental long-term impacts to air, water, or acoustic quality are anticipated from the Project.

- (11) Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

Discussion: The Petition Area is not located in an environmentally sensitive area that is likely to suffer damage from a flood, tsunami, sea level rise, erosion, or geological hazards. The Petition Area is located in Flood Zone X (area of minimal flood hazard). The Master Plan Update will comply with applicable standards in Chapter 27 of the Hawai'i County Code, which adopts measures from FEMA's Flood Insurance Program.

All buildings and facilities will be built in accordance with building code standards as defined in Chapter 5 of the Hawai'i County Code. Due to its location, the U of N Kona may also serve as a shelter in the event of a natural disaster (*Section 4.6*).

- (12) Have a substantial adverse effect on scenic vistas and viewplanes, during day or night, identified in county or state plans or studies; or

Discussion: The Master Plan Update will not have a substantial adverse effect on scenic vistas and viewplanes. The Master Plan Update has been carefully designed to integrate the Petition Area's natural topographic features and reduce extensive grading. Utilizing the natural topography of the Petition Area will preserve views of Mount Hualālai which the County General Plan identifies as a natural beauty site (*Section 4.18*).

- (13) Require substantial energy consumption or emit substantial greenhouse gases.

Discussion: Construction related activity during the phased build out of the Master Plan Update is anticipated to generate short-term impacts to air quality. However, construction is temporary and will cease upon completion. Additionally, short-term construction related activity will comply with provisions of the State DOH's Ambient Air Quality Standards, HAR §11-59 relating to Ambient Air Quality Standards and HAR §11-60.1-33 relating to Fugitive Dust.

It is not anticipated the Master Plan Update will substantially increase GHG emissions that may cause or contribute to any appreciable impact to local or regional air quality. U of N Kona is committed to methods that will reduce GHG emissions produced from the Master Plan Update. Sustainable measures and practices include, but are not limited to, solar PV panels on buildings and facilities, buildings designed to achieve LEED objectives or LEED certification; implementing low flow plumbing fixtures; and a campus-wide recycling program (*Section 4.7*).

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Agencies and parties Consulted

Chapter 8

Agencies and Parties Consulted

The publication of the EISPN in the ERP's bi-monthly bulletin, [*The Environmental Notice*](#), on March 8, 2021, commenced the 30-day public review and comment period, which ran through April 7, 2021. The 30-day public comment period allows government agencies, community associations and organizations, elected officials, and individuals in the community to provide further guidance on the scope of the Draft EIS. Table 8-1 lists those agencies, organizations, and individuals that received notification of the EISPN. A total of nine (9) agencies and individuals provided responses during the public comment period ([*Appendix N*](#)).

[*The Draft EIS was subsequently published in The Environmental Notice on February 8, 2024, followed by the 45-day public comment period. These agencies, organizations, and individuals listed in Table 8-1 have also been notified of the publication of this Draft EIS and this Final EIS. A total of 10 agencies provided comments on the Draft EIS \(Appendix P\).*](#)

Table 8-1: Consulted Parties					
Respondents and Distribution	Provided EISPN	Provided Comments on EISPN	Notified of Draft EIS	Provided Comments on Draft EIS	Notified of Final EIS
Federal Agencies					
U.S. Department of the Interior, U.S. Fish and Wildlife Service	X	X	X	X	X
U.S. Department of the Interior, Geological Survey	X		X		X
<i>U.S. Department of the Interior, National Parks Service</i>				X	X
U.S. Environmental Protection Agency, Pacific Islands Office Region 9	X		X		X
Department of the Agriculture, Natural Resources Conservation Service	X		X		X
Department of Transportation, Federal Highways Administration	X		X		X
State of Hawai'i					
Department of Agriculture	X		X		X
Department of Business, Economic Development & Tourism, Land Use Commission	X		X	X	X
Department of Business, Economic Development & Tourism, Office of Planning	X		X	X	X

Table 8-1: Consulted Parties

Respondents and Distribution	Provided EISPN	Provided Comments on EISPN	Notified of Draft EIS	<u>Provided Comments on Draft EIS</u>	<u>Notified of Final EIS</u>
Department of Business, Economic Development & Tourism, Office of Planning, Statewide Sustainability Program			X		<u>X</u>
Department of Defense	X		X	<u>X</u>	<u>X</u>
Department of Education	X	X	X	<u>X</u>	<u>X</u>
Department of Hawaiian Home Lands	X	X	X		<u>X</u>
Department of Health, Clean Air Branch	X	X	X		<u>X</u>
Department of Health, Clean Water Branch	X		X		<u>X</u>
Department of Health, Office of Environmental Quality Control	X		X		<u>X</u>
Department of Health, Safe Drinking Water Branch	X		X		<u>X</u>
Department of Health, Solid and Hazardous Waste Branch	X		X		<u>X</u>
Department of Health, Wastewater Branch	X		X		<u>X</u>
Department of Land and Natural Resources, Commission on Water Resources Management	X	X	X		<u>X</u>
Department of Land and Natural Resources, Division of Forestry and Wildlife	X	X	X	<u>X</u>	<u>X</u>
Department of Land and Natural Resources, Engineering Division	X	X	X		<u>X</u>
Department of Land and Natural Resources, Land Division	X	X	X		<u>X</u>
Department of Land and Natural Resources, Office of Conservation Coastal Lands	X		X		<u>X</u>
Department of Land and Natural Resources, Historic Preservation Division	X		X		<u>X</u>
Department of Transportation, Highways Division	X	X	X	<u>X</u>	<u>X</u>
Office of Hawaiian Affairs	X		X		<u>X</u>
County of Hawai'i					
Civil Defense Agency	X		X		<u>X</u>
Department of Environmental Management	X		X		<u>X</u>
Department of Finance, Real Property Tax Division	X		X		<u>X</u>
Department of Housing and Community Development	X		X		<u>X</u>
Department of Parks and Recreation	X		X		<u>X</u>
Department of Planning, Planning Division	X		X	<u>X</u>	<u>X</u>
Department of Public Works, Engineering Division	X		X		<u>X</u>

Table 8-1: Consulted Parties

Respondents and Distribution	Provided EISPN	Provided Comments on EISPN	Notified of Draft EIS	<u>Provided Comments on Draft EIS</u>	<u>Notified of Final EIS</u>
Department of Public Works, Building Division	X		X		<u>X</u>
Department of Water Supply	X	X	X		<u>X</u>
Fire Department	X		X		<u>X</u>
Police Department	X	X	X	<u>X</u>	<u>X</u>
Elected Officials					
County of Hawai'i, Mayor Harry Kim <u>Mitch Roth</u>	X		X		<u>X</u>
County of Hawai'i Councilmember, Rebecca Villegas, District 7	X		X		<u>X</u>
State House Representative, David A. Tarnas <u>Nicole Lowen</u> , District 7	X		X		<u>X</u>
<u>State House Representative, Kirstin Kahaloe, District 6</u>					<u>X</u>
State Senator, Dru Mamo Kanuha, District 3	X		X		<u>X</u>
<u>State Senator, Herbert M. Richards, District 4</u>					<u>X</u>
The Honorable David Ige <u>Josh Green</u> , Governor of the State of Hawai'i	X		X		<u>X</u>
Utility Companies					
Hawai'i Electric Light Company, Inc.	X		X		<u>X</u>
Hawaiian Telecom, Inc.	X		X		<u>X</u>
Libraries					
Hawai'i State Library	X		X		<u>X</u>
Kailua-Kona Public Library	X		X		<u>X</u>
Kealahou Public Library	X		X		<u>X</u>
News Media					
Hawai'i Tribune Herald	X		X		<u>X</u>
West Hawai'i Today	X		X		<u>X</u>
Community Groups/Individuals					
<u>Hawai'i Wildfire Management Organization</u>					<u>X</u>
Kailua Village Design Commission	X		X		<u>X</u>
Cultural Resources Commission	X		X		<u>X</u>
Kahu Wai'aha Community			X		<u>X</u>
Wai'aha Community Advisory Committee			X		<u>X</u>
Adjacent Landowners and Neighbors	X		X		<u>X</u>
Lois Hodges		X			

8.1 Scoping

Pursuant to HAR §11-200.1-23, the public scoping process provides for public and agency input through outreach and a public comment period. Scoping serves as an opportunity to obtain input from the community, agencies and other stakeholders regarding the issues and resources they would like to see addressed and analyzed throughout the EIS process. A public scoping meeting is required to be held during the 30-day EISPN comment period.

Notification of the public scoping meeting for the Master Plan Update was published in the [The Environmental Notice ERP's bi-monthly bulletin](#) on March 8, 2021, alongside publication of the EISPN, and in local news media outlets. [The notification for the EISPN and Scoping Meeting is located in Appendix O.](#) Due to public health concerns from the COVID-19 pandemic, in-person agency and public meetings were not held. As a result, a virtual public scoping meeting to obtain public feedback on the scope of the ~~eis~~ Draft EIS was held on March 25, 2021, from 6:00 – 7:30PM via Zoom. The meeting was facilitated by representatives from U of N Kona and G70. The project team shared courtesy rules for the online public scoping meeting notifying participants that the meeting would be recorded and a portion at the end of the presentation was reserved for participants to provide oral comments with regards to the scope of the ~~eis~~ Draft EIS. Additionally, the project team encouraged participants to submit written comments before the comment deadline on April 7, 2021. A copy of the scoping meeting presentation is attached in [Appendix ML](#), and the public scoping comments were recorded and submitted to ERP per HAR § 11-200.1-5(e)(5)(E).

8.1.1 Summary of Scoping Comments

The primary points of comments included: privacy for neighboring property owners, noise concerns, traffic and roadways, community outreach, and non-potable water. A summary of the comments received during the scoping process is provided below:

Privacy for Neighboring Property Owners

With existing residential housing development adjacent to the Petition Area's southern boundary, residential neighbors expressed concern for their privacy. Neighbors expressed the desire for the construction of walls/increasing the height of existing walls and building setbacks from the Petition Area's southern boundary line to ensure their privacy is maintained.

- A resident stressed concerns about an increase in day and evening noise. Neighboring residents are currently impacted by noise generated from the Existing Campus and are concerned that the expansion of the U of N Kona, which will be in closer proximity to existing residential housing, will increase the volume of noise.

Traffic and Roadways

- A resident shared that the roadways serving the Existing Campus are already congested. The intersection of Hualalai Road and Queen Ka'ahumanu Highway is of concern because heavy traffic exists at that intersection. The resident inquired about measures that will be taken to control traffic in the area with the proposed campus expansion.
- A resident shared that the County attempted to build a connector road running mauka to makai (from Hualalai Road to Kuakini Highway) but were unsuccessful after residents showed them the unsafe conditions in the proposed construction area. The resident requested that the U of N Kona keep them informed of any new roadway construction.

Non-Potable Water

- A participant asked if a non-potable water system will be developed to provide a source of water for landscaping within the Petition Area.

Community Outreach

- A participant noted that it would be appreciated if additional notification of the scoping meeting was made to neighboring property owners and residents. The resident stressed many neighboring residents were unaware of the proposed expansion of the U of N Kona, the public scoping meeting, and EISPN comment period.
- Neighboring residents requested better communication and outreach from the U of N Kona with regards to future meetings addressing the Master Plan Update. A resident stressed that there are over 100 homes in the adjoining Kona Hillcrest subdivision.

8.2 Summary of Comments on the EISPN

A total of nine (9) agencies and individuals provided comments during the 30-day public EISPN comment period. Copies of each comment letter are provided in *Appendix ~~NA~~*. A summary of comments received and associated responses is provided in *Table 8-2*. Comments are organized by major topics.

Table 8-2: EISPN Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Responses
Air Quality		
You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas, and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does not require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.	DOH CAB; April 6, 2021	U of N Kona recognizes construction for the buildout of the Petition Area may increase dust levels in the vicinity of the Petition Area. As such, a dust control management plan will be developed prior to the start of construction (<i>Section 4.7</i>).
Construction activities must comply with the provisions of Hawaii Administrative Rules, Chapter 11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.	DOH CAB; April 6, 2021	As discussed in <i>Section 4.7</i> , construction activity will comply with HAR §11-60.1-33 relating to Fugitive Dust. To mitigate potential dust generating activities to neighboring property owners, dust-generating equipment will be located in areas of the least impact as much as possible.
<p>You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to the following:</p> <ul style="list-style-type: none"> a) Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact b) Providing an adequate water source at the site prior to start-up of construction activities; c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase; d) Minimizing airborne, visible fugitive dust from shoulders and access roads; e) Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up construction activities; and f) Controlling airborne, visible fugitive dust from debris being hauled away from the project site 	DOH CAB; April 6, 2021	As noted in <i>Section 4.7</i> , the U of N Kona is aware of the potential dust generating activities during the short-term construction period and has phased the Master Plan Update. Additionally, BMPs including those provided by DOH CAB will be implemented during the short-term construction period. BMPs will include but not limited to locating potential dust-generating equipment in areas of the least impact, minimizing airborne and visible fugitive dust from shoulders and access roads, and controlling airborne and visible fugitive dust from debris being hauled away from the Petition Area. Additionally, a Dust Control Management Plan will be prepared prior to the start of construction.

Table 8-2: EISPN Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Responses
Biological Resources		
Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the 'Occurs In or Near Project Area' column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promor.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawaii, we have also enclosed our biosecurity protocol for activities in or near natural areas.	USFWS; April 12, 2021 (File No. 01EPIF00-2021-TA0229)	We appreciate the reference to the species most likely to occur within the vicinity of the Petition Area and the recommended conservation measures to avoid or minimize adverse effects to federally protected species. In support of the Master Plan Update, a <i>Natural Resources Survey for University of Nations Expansion Property</i> has been conducted to identify both Federal and State listed endangered and protected species at the Petition Area. The survey outlines mitigation measures to avoid any adverse effects to Federal and State listed endangered and protected species. Further discussion of the findings from the <i>Natural Resources Survey</i> is located in <i>Section 4.8</i> .
The State listed Hawaiian Hawk or 'Io (<i>Buteo solitarius</i>) is known to occur in the project vicinity. DOFAW recommends surveying the area to ensure no Hawaiian Hawk nests are present if trees are to be cut. 'Io nests might be present during the breeding season from March to September.	DLNR DOFAW; March 18, 2021 (File No. 3070)	Thank you for informing U of N Kona of the presence of the Hawaiian Hawk. As discussed in <i>Section 4.8.2</i> , a Hawaiian Hawk was observed flying over the Petition Area during the biological survey. The Petition Area will be surveyed prior to the start of construction to ensure no Hawaiian Hawk nests are present before vegetation is cleared. If Hawaiian Hawk nests are found, construction activity will cease, and DLNR DOFAW will be notified.
We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. We appreciate the measures outlined in the permit application to minimize night time lighting impacts to seabirds such as fully shielding lights. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai'i please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf	DLNR DOFAW; March 18, 2021 (File No. 3070)	U of N Kona acknowledges the adverse impacts artificial lighting can have on seabirds that may flyover the Petition Area at night and have outlined mitigation measures to minimize potential impacts to seabirds. Measures include limiting construction to daytime hours to mitigate the need for nighttime lighting and shielding lighting should nighttime construction activity be needed. Lighting installed as part of the Master Plan Update will be shielded and in compliance with Hawai'i County Code § 14-50. Please see <i>Section 4.8.3</i> for further discussion on mitigation measures to minimize potential impacts to seabirds.

Table 8-2: EISPN Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Responses
The State listed Blackburn's Sphinx Moth (BSM; <i>Manduca blackburn</i>) has a historic range that encompasses the project area. Larvae of BSM feed on many nonnative hostplants that include tree tobacco (<i>Nicotiana glauca</i>) which grows in disturbed soils. We recommend contacting our Hawai'i Island DOFAW office at (808) 974-4221 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. To avoid harm to BSM, DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If you remove tree tobacco over one meter in height or disturb the ground around or within several meters of these plants they must be checked thoroughly for the presence of eggs and larvae.	DLNR DOFAW; March 18, 2021 (File No. 3070)	Thank you for informing U of N Kona of the presence of the BSM. Although the BSM and tree tobacco were not detected during the biological survey of the Petition Area (<i>Section 4.8.2</i>), prior to the clearing of non-native vegetation the area will be surveyed to ensure tree tobacco is not present. If tree tobacco is found to be present, DLNR DOFAW will be contacted to determine proper inspection for the presence of the BSM.
DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid 'ōhi'a death), vertebrate and invertebrate pests (e.g. little fire ants, coconut rhinoceros beetles), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the Big Island Invasive Species Committee at (808) 933-3340 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of rapid 'ōhi'a death and other harmful fungal pathogens.	DLNR DOFAW; March 18, 2021 (File No. 3070)	U of N Kona appreciates the recommended measures to minimize the introduction of invasive species to the Petition Area and greater Kailua-Kona Region. The plan for the Petition Area has been revised to meet the long-term vision of the U of N Kona and to reduce extensive grading. As much as possible, cut material from grading will remain on-site and the amount of cut and fill will be balanced to minimize the need to import fill or to export excavated material. Balancing cut and fill material will minimize the need to import soils from an off-site location that may contain invasive fungal pathogens, vertebrate and invertebrate pests, and invasive plant parts that could harm native species and ecosystems. As discussed in <i>Section 4.8.1</i> , construction equipment, materials, and personnel will be cleaned of excess soils and debris to minimize the risk of spreading invasive species.

Table 8-2: EISPN Summary of Comments and Responses

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DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai'i-Pacific Weed Risk Assessment website (https://sites.google.com/site/weedriskassessment/home) to determine the potential invasiveness of plants proposed for use in the project. We recommend that you refer to www.plantpono.org for guidance on selection and evaluation for landscaping plants.	DLNR DOFAW; March 18, 2021 (File No. 3070)	Thank you for providing guidance on native plants to incorporate into the landscape. Landscaping will be carefully selected to reflect the natural and cultural landscape of the Kailua-Kona Region, and will include the use of native plants. Xeriscape techniques may also be incorporated to complement the dry climate and pay tribute to the region's agricultural past.
Flooding		
The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards. The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designations for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiiinfip.org/FHAT).	DLNR ENGR; March 30, 2021	Thank you for providing guidance on the National Flood Insurance Program. As discussed in <i>Section 4.6.4</i> and depicted in <i>Figure 4-8</i> , the Petition Area is located in Zone X. Areas designated as Zone X are not located within a Special Flood Hazard Area. The Master Plan Update will comply with applicable standards articulated in Chapter 27 of the Hawai'i County Code. Please see <i>Section 4.6.4</i> for further discussion regarding flooding and the Master Plan Update.
Surface Waters & Drainage		
5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at: http://planning.hawaii.gov/czm/initiatives/low-impact-development/	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	Thank you for providing information on BMPs for stormwater management. As discussed in <i>Section 4.4</i> , BMPs will be incorporated during the short-term construction period and may include temporary sediment basins, temporary diversion berms or ditches, silt fences, dust screens, storm drain inlet protection, hydroseeding for temporary ground cover, stabilized construction entrances, and truck and equipment wash-down areas. Additionally, LID measures may be incorporated where feasible to minimize the potential for increased stormwater runoff upon full build out of the Master Plan Update.

Table 8-2: EISPN Summary of Comments and Responses

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Potable and Non-Potable Water		
1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	A discussion of the Master Plan Update's compliance with the County's 2019 Water Use and Development Plan Update is located in <i>Section 6.3.5</i> . U of N Kona will continue to consult with DWS as it finalizes an agreement for the development of an off-site well. As noted in <i>Section 4.5</i> , the future water demand for the Keauhou ASYA includes the water needed to support the urban land use designation of the Petition Area, under the previous plan
4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed . A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense .	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	U of N Kona is committed towards a sustainable future. As discussed in <i>Section 4.7</i> , buildings and facilities planned for the Petition Area will be designed to achieve LEED certification or objectives. Additionally, the buildings and facilities planned for the Petition Area will be equipped with low flow plumbing fixtures.
6. We recommend the use of alternative water sources, wherever practicable.	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	As noted in <i>Section 5.6</i> of the Draft EIS, DWS has indicated that U of N Kona will need to seek a new water source to serve the Master Plan Update, and water service is included as an unresolved issue in the Draft EIS. U of N Kona has identified two potential well sites and is in the process of negotiating an agreement with the developer of a private well to secure water for the Master Plan Update. As U of N Kona continues its efforts to secure a water source for the Master Plan Update, it will continue to assess the use of viable alternative water sources, where practicable.
7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program .	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	U of N Kona is committed towards a sustainable future and will look into participating in the Hawaii Green Business Program.

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Comments	Commenter and Date of Comment Letter	Responses
8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPS.pdf	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	Thank you for sharing information on the landscape irrigation conservation BMPs endorsed by the Landscape Industry Council of Hawaii. BMPs identified in the landscape irrigation conservation BMPs that will be implemented through the Master Plan Update include but are not limited to installation of water meters to detect leaks and to monitor water consumption rates and integrating xeriscape landscaping techniques.
Regulation - pg. 4-7 of the document refers to Keauhou HWUDP encouragement of developing future high-level wells for the DWS system in areas generally between 1,500-feet and 1,800-feet ground elevations mauka of Māmalahoa Highway. It should be stated that the HWUDP document also discourages any new county development north of the Keahuolu QLT 1 4057-001 Well in that high-level aquifer and any new wells in the basal aquifer portions of the aquifer area. Also, it should be mentioned that there were 2 permitted basal wells the University was planning to drill that expired in May 2020 and the disposition of those wells should be mentioned. Dry wells are also a potential source of pollution to the aquifer which are under the water quality protection control of the Department of Health. All these issues should be evaluated for their impacts to ground water dependent ecosystems and consult with the Aha Moku Advisory Committee as well as the traditional & customary impacts.	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	U of N Kona acknowledges the Keauhou HWUDP recommendation of developing future high-level wells for the DWS system in areas generally between 1,500 feet and 1,800 feet, and discourages any new development north of the Keahuolu QLT 1 4057-001 Well and any new wells in the basal aquifer portions of the aquifer area. As discussion in <i>Section 4.5</i> and <i>Section 5.6</i> , U of N Kona has identified two potential well sites and is in the process of negotiating an agreement with the developer of a private well to secure water for the Master Plan Update. Upon the completion of a negotiation with a private well developer, the developer will need to enter into a Water Development Agreement with the Water Board to ensure the water source and supporting infrastructure will adequately meet the demand of operations. Subsequent permit applications will be filed with the Commission of Water Resource Management to test the well(s) for the availability of freshwater and analyze the impacts on groundwater resources and traditional and customary practices. At this time, it is not anticipated the total increase in demand to support the Master Plan Update is not anticipated to affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the fresh water body being at a depth below salt water. U of N Kona explored the potential to drill two basal wells on the Petition Area, however, is no longer pursuing wells on the Petition Area due to the basal lens insufficiency, potential sea water intrusion and environmental challenges.

Table 8-2: EISPN Summary of Comments and Responses

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Planning - The proposed water source(s) and projected water demands for the project, both potable and non-potable, should be identified and the calculations used to estimate demands should be provided. A discussion of the potential impacts on water resources and other public trust uses of water should be included, and any proposed mitigations measures described. Water conservation and efficiency measures to be implemented should also be discussed.	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	The projected potable and non-potable water demands were calculated, and enclosed in <i>Appendix C</i> . As discussed in <i>Section 4.5</i> , the total increase in demand to support the Master Plan Update is not anticipated to affect the flowrate and salinity of the brackish basal lens in the nearshore area due to the fresh water body being at a depth below salt water. Additionally, the total increase in demand is not anticipated to impact the total water availability for the County or the Department of Hawaiian Home Lands. To offset the increase in demand, water meters, similar to those installed throughout the Existing Campus, will be installed throughout the Petition Area to detect leaks and monitor water consumption rates. Xeriscape landscaping techniques will also be integrated into the landscape design.
1. The proposed action is situated in the Keauhou Aquifer System. The Department notes for the applicant that the Commission on Water Resource Management has reserved 3.389 MGD of groundwater from the Keauhou Aquifer System for future DHHL development needs. DHHL has concerns that the proposed action could potentially impact the Department's ability to provide water to our homesteads. Section 4.5 of the EISPN states that a new water source(s) will be needed to support the buildout of each phase and the expansion of the project area. The forthcoming Draft Environmental Impact Statement (DEIS) should identify the location of U of N Kona's future water development and detail the amount of water demand the applicant anticipates. Further there should be an analysis and discussion of how these water plans and projections impact DHHL's ability to develop water for our homestead lands. We would also like to remind the applicant that DHHL water use is one of four protected public trust uses of water under HRS 171, otherwise known as the State Water Code.	DHHL; April 8, 2021 (File No. PO-21-068)	As noted in <i>Section 5.6</i> , DWS has indicated that U of N Kona will need to seek a new water source to serve the Master Plan Update, and water service is included as an unresolved issue in the Draft EIS. U of N Kona has identified two potential well sites and is in the process of negotiating an agreement with the developer of a private well to secure water for the Master Plan Update. The potential well sites are situated within the Keauhou Aquifer System Area, which has a sustainable yield of 38 MGD (<i>Figure 4-5 and 4-6</i>). The Keauhou Aquifer System Area has been and continues to be carefully monitored. As of June 2022, the existing groundwater pumpage within the Keauhou Aquifer System Area is 14.452 million gallons per day (MGD), which constitutes approximately 38% of the total sustainable yield. As discussed in <i>Section 4.5</i> , the Master Plan Update is estimated to demand approximately .107 MGD, which will increase the total groundwater pumped within the Keauhou Aquifer System Area by less than 1%. Notably, the future water demand for the Keauhou ASYA includes the water needed to support the urban land use designation of the Petition Area, under the previous plan. The total increase in demand from the Master Plan Update is not anticipated to impact DHHL's ability to provide water to its homesteads. U of N Kona acknowledges that water for DHHL is a protected public trust use under the State Water Code.

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2. Groundwater flows within the Kaloko-Honokōhau National Historic Park are also connected to the Keauhou Aquifer System Area. DHHL also has concerns about future pumping activities in this basal aquifer, which may likely reduce the amount of freshwater flow to the coastline thereby impacting biota and Native Hawaiian traditional and customary practices that our beneficiaries may conduct in the vicinity of the park. The location of new ground water sources that will serve the campus development should be located in areas that will minimize impact to freshwater flow to the coastline. The DEIS should summarize the potential impacts to these environmental and cultural resources from construction activities, as well as the cumulative impacts of the proposed project as contemplated in the Master Plan Update.	DHHL; April 8, 2021 (File No. PO-21-068)	As discussed in <i>Section 4.5</i> of the Draft EIS, based on the amount of water needed to support the Master Plan Update, it is not anticipated that the drawing of water at these two sites will affect freshwater flow to the coastline at or near the National Park or impact biota and Native Hawaiian traditional and customary practices.
Please be informed that the existing campus is supplied by two existing services. One from the 325 feet service area connected to an existing 8-inch waterline along Kuakini Highway and the other from 601 feet service area connected to an existing 12-inch waterline along Hualālai Road. It should be noted that the current usage exceeds the total water allotment for Parcel 3 and Parcel 85. Also, there is an outstanding item from Phase 1-B and there are existing water system facilities within Parcel 85.	DWS; April 6, 2021	<i>Section 4.10.1</i> discusses the use of the waterlines and service areas serving the Existing Campus. Water meters were installed on approximately 17 buildings and 21 irrigation zones throughout the Existing Campus. The water meters identified leaks contributing to the overall rate of water consumed at the U of N Kona. The identified leaks have been fixed and U of N Kona is currently in conformance with the amount of water allocated from DWS. U of N Kona is aware there are existing water system facilities on Parcel 85 and may be utilized to support the Master Plan Update.
Currently, the Department's existing water system facilities are unable to support the proposed development. As stated in the subject EISPN, the Department's existing water system facilities are unable to support the proposed development. As stated, in the subject EISPN, the Department's existing water system lacks adequate source and transmission capacity to provide the anticipated amount of water needed. In addition, the developer will also be required to construct the necessary storage facilities to provide for the estimated maximum daily water usage for the development.	DWS; April 6, 2021	As noted in <i>Section 5.6</i> of the Draft EIS, U of N Kona understand that it will need to seek a new water source to serve the Master Plan Update, and water service is included as an unresolved issue in the Draft EIS. U of N Kona has identified two potential well sites and is in the process of negotiating an agreement with the developer of a private well to secure water for the Master Plan Update. U of N Kona understands that new transmission and storage facilities will be required to supply water to the Petition Area.
In addition to the Water Supply Study, the Department would request a conceptual water master plan for the necessary off-site water system improvements, including any proposed phasing of the project, to better determine the scope of water system improvements that will be required. All uses of water would need to be factored when calculating water demand for a project.	DWS; April 6, 2021	U of N Kona is in the process of negotiating an agreement with an off-site private well developer to supply water to the Petition Area. Once the final well site is determined and the agreement with the well developer is finalized, a conceptual water master plan will be prepared and submitted to the DWS.

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The Department of Water Supply acknowledges that potable water is Hawai'i Island's most precious resource and encourages our communities to promote water conservation and reserve the highest quality of water for the most valuable end use, which is the sustenance of life. The Department requests the developer address the non-potable demand of water or irrigation by using alternate methods (i.e. reclaimed or reused water).	DWS; April 6, 2021	Fully built out, it is anticipated approximately 107,500 gallons of water per day will be needed to support the Master Plan Update. The total projected water demand includes the projected demand for irrigation purposes. U of N Kona submitted a request to DWS to obtain all water, including potable and non-potable from the DWS public water system.
Educational Facilities		
<p><u>Thank you for your letter dated March 9, 2021. The Hawaii State Department of Education (HIDOE) has the following comments on the Environmental Impact Statement Preparation Notice for the preparation of a Draft Environmental Impact Statement (DEIS) for the University of the Nations, Kona Inc. (Applicant) 2020 Master Plan Update (Project) for lands located at TMK (3) 7-5-010:085 and (3) 7-5-017:006, Kailua-Kona, Island of Hawaii. Project lands were reclassified to the State Land Use Urban District by the Hawaii State Land Use Commission in Docket No. A02-737.</u></p> <p><u>The Proposed Project will guide the expansion of the existing campus over the next 30 years. Applicant has filed a Motion to Amend Findings of Fact, Conclusions of Law and Decision and Order for a Land Use District Boundary Amendment, dated August 8, 2003, with the Hawaii State Land Use Commission. The DEIS will provide a revised land use plan and development proposal to support the Applicant's Motion to Amend.</u></p> <p><u>A condition of approval for Docket No. A02-737 required a fair-share contribution to the development, funding, and/or construction of school facilities, as determined by and to the satisfaction of the HIDOE. A written agreement is to be executed prior to seeking building permits for any portion of the reclassified area. To date, no educational contribution agreement has been executed.</u></p> <p><u>Further comments will be provided upon the review of the DEIS.</u></p>		<p><u>U of N Kona acknowledges that the LUC's 2003 Decision & Order requires a contribution to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE, and that the terms of the contribution are to be agreed upon in writing by U of N Kona and the DOE prior to seeking building permits for any portion of the Petition Area.</u></p> <p><u>At the appropriate time, U of N Kona will engage with DOE to determine its obligations to contribute to the development, funding, and/or construction of school facilities. If the Master Plan Update is determined to trigger such obligations, U of N Kona will enter into and comply with the appropriate written agreement with DOE.</u></p>
Noise		
I believe that your assessment of the noise impact in item 4.10 of your report is an incomplete and incorrect assessment. I would like to request that you restudy this issue at a time when the University of the Nations is holding a large	Lois Hodges; March 31, 2021	In support of the Master Plan Update, an Acoustic Study has been conducted and is attached in <i>Appendix G</i> . Please see <i>Section 4.9</i> for further discussion on noise associated with the Master Plan

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assembly/revival or other group gathering where there is amplified music involved. With Covid impact these loud gatherings do not seem to be as frequent but in non-pandemic times they are much too frequent and much too loud. The music is amplified so that it carries down into the Alii Drive & Walua Road area. During the summer there are week long gatherings and the noise continues from early morning until 10 p.m. There is not only music and singing but loud cheering, hooting, hollering and sounds similar to what one would expect to hear from an NFL Football stadium only for many hours longer than a football game.		Update. The Acoustic Study found that potential noise from activities associated with the Master Plan Update could disturb neighboring residences along the southern boundary of the Petition Area, although it is not anticipated noise levels will exceed the acceptable 55 DNL level. U of N Kona will notify neighbors that efforts are being made to control noise and ensure the community is aware of any events that may generate noise.
The University has been made aware of both verbally and in writing that the amplification is a nuisance to the area. They seem to have no regard for the mental health of the neighborhood. Their representative indicated that having a "radical man of Jesus" in town was the cause and also indicated that there will be joyful noise in heaven which seems to make it acceptable to have joyful noise in the neighborhood.	Lois Hodges; March 31, 2021	We understand your concerns with noise generated at the U of N Kona. The U of N Kona is aware of operations that may disturb neighboring homeowners. In support of the Master Plan Update, an Acoustic Study has been conducted and is attached in <i>Appendix G</i> . U of N Kona remains committed to being good neighbors and will remain vigilant of the noise generated by events held on campus and the impact it may have on neighboring residents. Furthermore, the U of N Kona will notify neighboring homeowners if any large event will be held in the late afternoon extending into the night.
I request that you restudy the noise issue by contacting people who live in the condo complexes of Kona Pacific, Kona Mansions, & Alii Cove where we often have to tolerate the stadium effect for hours on end, particularly in the summer. I also request that you recommend a limitation of the amplification of the sound emitted from the campus as I am concerned that their proposed 4000 sq. ft. chapel, located closer to residential areas will be a source of further noise nuisance to the neighborhood.	Lois Hodges; March 31, 2021	In support of the Master Plan Update, an Acoustic Study has been conducted is attached in <i>Appendix G</i> . Please see <i>Section 4.9</i> for further discussion on noise associated with the Master Plan Update. U of N Kona will notify neighbors that efforts are being made to control noise and ensure the community is aware of any events that may generate noise.
Traffic		
1. We find that the MAR lacks detailed conclusions on traffic improvements and recommendations to be made for local and regional impacts by development. Therefore, the HDOT recommends that the MAR should be revised.	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	The MAR has been revised to analyze future operations at the U of N Kona for each phase of the Master Plan Update (<i>Appendix H</i>). In general, the MAR concluded that the Master Plan Update will not result in direct impacts to the nine intersections that were evaluated. For the intersection at Kuakini Highway and the Existing Campus entrance, the revised MAR recommends that the

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		south leg be restriped and a refuge lane for westbound left turning traffic be provided with Phase 1. Additionally, the MAR recommends that prior to the buildout of Phases 2 and 3, the intersections of Queen Ka'ahumanu Highway and Kuakini Highway, and Queen Ka'ahumanu Highway and Hualālai Road be evaluated to determine whether a traffic signal is warranted.
1.1 The MAR should be revised to include the development's specific recommendations on mitigation measures on traffic impacts identified or provide additional studies to address each of the following findings in the study: 1.1.1 In Section 1.2 Phase 1 (2030) Plus Project Intersection Level of Service, it states that "the addition of project traffic would cause operations at each location to degrade further."	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	The MAR has been revised to analyze future operations at the U of N Kona with the Master Plan Update (<i>Appendix H</i>). The Master Plan Update is not anticipated to increase traffic in the nearby vicinity and at this time it is not anticipated that any traffic signals are warranted. To mitigate traffic related impacts from the Master Plan Update at the intersection of Kuakini Highway & North Campus Entrance, the south leg will be restriped and a refuge land for westbound left turning traffic will be implemented. Additionally, prior to the buildout of Phase 2 and 3 the intersection of Queen Ka'ahumanu Highway & Kuakini Highway and Queen Ka'ahumanu Highway & Hualālai Road will be evaluated to determine if a traffic signal is warranted.
1.1.2 In Section 1.2 Future Phase 2 and Phase 3 Assessment it states that "Intersection conditions (for Queen Kaahumanu Highway and Nani Kailua Drive) would likely continue to degrade with the addition of ambient and project-related traffic in Phase 2."	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	
1.1.3 In Section 7.2 Phase 2 Hot Spot Assessment relating to the Queen Kaahumanu Highway/Hualalai Road and Queen Kaahumanu Highway/Kuakini Highway, it states that "The Phase 2 campus development is anticipated to contribute additional traffic and exacerbate the delay in intersection movements."	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	
1.1.4. In Section 7.2 Phase 2 Hot Spot Assessment relating to the Queen Kaahumanu Highway and Nani Kailua Drive, it states that "The anticipation of intersection conditions would likely continue to degrade with the addition of ambient and project-related traffic in Phase 2."	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	
2. We have initially reviewed the MAR and an Environmental Planning Report (EPR) included in the Motion to Amend the Decision and Order, which was received on April 13, 2020 from the Office of Planning. Our review comments for the MAR on April 27, 2020 sent to them remain applicable as follows:	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	U of N Kona acknowledges the conditions related to traffic improvements imposed by the LUC under the 2003 Decision & Order. As part of approving the Master Plan Update, U of N Kona anticipates that the LUC will impose a new or amended condition related to participation in the pro-rata funding and construction of local and regional transportation improvements and programs,

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<p>2.1 Although the proposed land use trips generated and access points to the petition area have changed in the interim, the 2003 Decision and Order conditions remain relevant to the 2020 Master Plan as follows:</p> <p>2.2 Condition 9. Transportation: Petitioner shall participate in the pro-rata funding and construction of local and regional transportation improvements and programs necessitated by the proposed development in designs and schedules accepted and determined by HDOT and County of Hawaii Department of Public Works (DPW). Agreement between the Petitioner and the DOT and DPW as to the level of funding and participation shall be obtained prior to the Petitioner obtaining County zoning, or prior to the Petitioner securing County building permits if County zoning is not required.</p>		<p>including the requirement for UNK to enter into an agreement with HDOT and County DPW for the level of funding and participation. U of N Kona will comply with all conditions that may imposed by the LUC in approving the Master Plan Update.</p>
<p>2.3 Condition 10. Traffic: Petitioner shall, prior to the Petitioner obtaining County zoning, submit a revised Traffic Impact Analysis Report for the review and approval of the HDOT and DPW, which shall include an analysis of the entire development of the existing/proposed University of the Nation-Kona, Hualalai Village project, and the Cultural Center, as well as existing and potential future developments in the immediate area as required by the HDOT and DPW.</p>	<p>DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)</p>	<p>As noted above, U of N Kona acknowledges the conditions related to traffic improvements imposed by the LUC under the 2003 Decision & Order. U of N Kona anticipates that the LUC will impose new or amended conditions related to traffic when approving the Master Plan Update. U of N Kona will comply with all conditions that may imposed by the LUC in approving the Master Plan Update.</p>
<p>2.4 The MAR appears to be consistent with Condition 10 and addresses the potential impacts of traffic generated by the entire development area (3 parcels), not just the petition area. However, the estimates of students and staff living on-campus versus off-campus for 2030 appears to differ between the EPR (Page 2-15) and the MAR (Table 5-1). Clarify the population/enrollment assumptions for the phases. For example, Phase I appears to fully build-out the Discipleship Learning Center and partially build-out the lower school campus. Will all enrollment in 2030 be adult or will enrollment include lower school children that require drop-off and pick-up during peak traffic hours?</p>	<p>DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)</p>	<p>The student and staff estimates for each phase have been reviewed and revised, where necessary, in the MAR and Environmental Planning Report, and are summarized in the <i>Section 4.12</i> of the Draft EIS. The enrollment projections and assumptions used for preparation of the revised MAR included enrollment and traffic generated at the lower school campus.</p>
<p>2.5 Clarify the need for 2 parallel internal east-west roads (MAR, Page 6), one of which would extend east to a new University of the Nations drive way on Hualalai Road and the other would extend to Hualalai Village Road, which intersects with Hualalai Road. The EPR does not include this discussion. The Preliminary Infrastructure Assessment, included in the EPR, includes a figure</p>	<p>DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)</p>	<p>As noted in <i>Section 4.12</i> and the MAR, the spine road (east-west campus roadway) will conjoin the Existing Campus and the Petition Area. The spine road will extend from the western edge of the U of N Kona to the roadway serving Hualālai Village</p>

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Comments	Commenter and Date of Comment Letter	Responses
(Attachment 2) that identifies the central "Spine" Road Phase 1, but no further details are shown.		Apartments. The access point at the Hualālai Village Apartments will operate as an emergency access. A new internal roadway
2.6 Minor edit: MAR Page 29, Section 5.1, second paragraph, first sentence, change one of the 2 "off-campus" to "on-campus."	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	Thank you for pointing this error out. It has been corrected.
2.7 The 3 phases of implementation span 20 years or more. An updated MAR shall be prepared before county zoning (Condition 9), prior to executing each phase, and when there is a significant change in the proposed land use, trip generation, or roadway network.	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	As noted above, U of N Kona will comply with all conditions imposed by the LUC in approving the Master Plan Update, including conditions related to traffic. As also noted above, the revised MAR recommends that prior to the buildout of Phases 2 and 3, the intersections of Queen Ka'ahumanu Highway and Kuakini Highway, and Queen Ka'ahumanu Highway and Hualālai Road be evaluated to determine whether a traffic signal is warranted. In light of the MAR being revised, U of N Kona looks forward to additional comments from HDOT during the public comment period for the Draft EIS. U of N Kona will respond to all comments provided.
2.8 We appreciate the consideration of impacts to multimodal transportation. The MAR includes recommendations that are not directly relevant to HDOT roadways and we defer to others for comment. However, we recommend the 2020 Master Plan include a conceptual plan identifying opportunities for internal campus paths to connect with the existing and proposed public roadway routes in the vicinity, as well as adjacent residential communities. The demand for bicycle and pedestrian routes will increase with each phase of development.	DOT; April 5, 2021 (Log No. DIR 0248 HWY-PS 2.5394)	Thank you for your recommendation. <i>Section 4.12</i> includes an expanded discussion of opportunities to connect on-site and off-site pedestrian and bicycle pathways and outlines measures the U of N Kona will take to improve the safety for pedestrians and bicyclists.
Consultation		
3. DHHL strongly encourages the applicant to consult with DHHL beneficiaries in the Kona region during the EIS process.	DHHL; April 8, 2021 (File No. PO-21-068)	The publication of the Draft EIS triggers a forty-five day comment and review period. DHHL will be notified of the publication of the Draft EIS and U of N Kona welcomes comments on the Master Plan Update from all interested DHHL beneficiaries.
Permit Review and Approvals		

Table 8-2: EISPN Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Responses
11. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	U of N Kona and its potential private well developer understand and acknowledge that a Well Construction Permit will be required prior to the commencement of any well construction work. All necessary permits will be obtained.
12. A pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.	DLNR CWRM; April 1, 2021 (File No. RFD.5090.8)	U of N Kona and its potential private well developers understand and acknowledge that a Pump Installation Permit is required before ground water is developed as a source of water supply for the Master Plan Update. All necessary permits will be obtained.
The developer will also be required to enter into a Water Development Agreement with the Water Board, which will establish the necessary off-site water system improvements required to support the development and the allocation of water commitments from any new source(s) developed. Water service within the proposed development will not be granted until the necessary off-site and on-site water system improvement are completed and accepted by/dedicated to the Water Board.	DWS; April 6, 2021	U of N Kona understands and acknowledges that it and/or the well developer will be required to enter into a Water Development Agreement with the Water Board that will establish the necessary off-site improvements and allocation of water commitments from the new well. U of N Kona also acknowledges that water service will not be provided for the Master Plan Update until the necessary off-site and on-site water system improvement are completed and accepted by and/or dedicated to the Water Board. U of N Kona will continue to consult with DWS as it works to secure a new water source for the Master Plan Update.

8.3 Summary of Comments on the Draft EIS

A total of 10 agencies provided comments during the 45-day public comment period for the Draft EIS. Copies of each comment letter are provided in *Appendix P*. Responses to comments are provided in *Table 8-3*. Comments are organized by major topics.

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
<u>Project Description</u>		
<u>The FEIS should confirm UNK's commitment to installing permeable pavements and sidewalks and solar PV panels on buildings. Some sections of the DEIS state that UNK "may" utilize permeable pavements and sidewalks or solar PV panels and other sections state that UNK "will" install these sustainability features.</u>	<u>Office of Planning and Sustainable Development, April 3, 2024</u>	<u>U of N Kona is committed to implementing green building design measures as part of the Master Plan Update. As such, U of N Kona plans on installing permeable pavements and sidewalks and solar PV panels on buildings, where feasible. The Final EIS has been revised accordingly.</u>
<u>The FEIS should confirm the total number of K-12 students, university students, and staff members at full buildout, the number of acres being developed in each phase, and the total water demand (gpd), including irrigation, at full buildout. There is a discrepancy between the figures given for these items in the DEIS narrative and Table 2-2, Table 4-4 and Table 4-5.</u>	<u>Office of Planning and Sustainable Development, April 3, 2024</u>	<u>At full buildout, the U of N Kona is projected to enroll up to approximately 1,775 students per quarter. Approximately 67% or roughly 1,200 will be university level students and the remaining 32% or roughly 575 students will be PK-12 students. In support of the growth in enrollment, the U of N Kona will be supported by up to 600 staff members and up to 300 volunteers per quarter. A detailed breakdown of the projected student enrollment and supporting staff and volunteers is located in Section 2.4. Section 2.4 has been revised to accurately describe the projected enrollment over the next 30 years at the U of N Kona and is consistent with Table 4-4 and 4-6.</u> <u>To support the growth in enrollment, the Petition Area will be built out as an expansion of the Existing Campus. The Master Plan Update for the Petition Area includes classroom spaces, dormitories, and various gathering spaces including outdoor recreational fields and other athletic facilities, a multi-purpose building and theatre, and outdoor gathering spaces. The Master Plan Update has been planned in three phases over the next 30 years.</u> <u>Phase I will build out approximately 26.2 acres of the Petition Area. This buildout accounts for the construction of instructional buildings, dormitories, the discipleship learning center, maintenance buildings, as well as roadways and parking areas.</u> <u>Phase II will further build out approximately 22 acres of the Petition Area. The Phase II build out calls for the additional instructional buildings, components of the discipleship learning</u>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
		<p>center, dormitories, the community athletic complex, maintenance facilities, as well as roadways and parking areas. The final phase will build out the remaining 14 acres of the Petition Area. Phase III includes the addition of instructional buildings, dormitories, the multi-purpose complex and theatre, and the expansion of parking areas and roadways.</p> <p>Areas of the Petition Area that will not be developed will be maintained as open space, landscape areas, or playfield spaces. <i>Table 2-2</i> contains a detailed list of the facilities planned for each phase of the Master Plan Update.</p> <p>To support the Master Plan Update, several infrastructure improvements are planned, including the expansion of water transmission lines (<i>Figures 4-17a-4-17c</i>). The Master Plan Update is projected to demand approximately 95,000 GPD of potable water upon full buildout. Areas throughout the Petition Area that will not be developed will be maintained as open space, landscaped, or used as playfield spaces. U of N Kona recognizes water is a limited resource and plans on implementing water saving features to reduce the total water demand to support the Master Plan Update. This includes installing artificial turf on playfields and maintaining open space areas in their existing condition or re-naturalized with lava rock or xeriscape. With design consideration in place to minimize water demand, it is projected that approximately 31,050 GPD of irrigation water will be required. This irrigation water demand accounts for irrigating playfields and landscaped areas. A breakdown of the acreage and rate used to irrigate landscaped areas and playfields is located in <i>Section 4.10</i>.</p> <p>Non-potable water sources will be further investigated to meet the required non-potable water demand. The following strategies will be considered to minimize the total water demand:</p> <p>Rainwater catchment (which are already being utilized on the Existing Campus)</p>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
		<p><u>Downspout disconnects – discharge of runoff direct to landscaping for irrigation water</u></p> <p><u>Graywater treatment and reuse</u></p> <p><u>Condensate water reuse</u></p> <p><u>Xeriscaping – install plantings and ground cover that require little to no irrigation water</u></p> <p><u>Synthetic turf – install playfields that do not require irrigation</u></p>
Biological Resources		
<p><u>The very first step in both our updated technical assistance and consultation process is to obtain an Official Species List (OSL) in our new Information for Planning and Consultation (IPaC) online tool, for which a link can be found at the box in the top left corner of the below website: https://ecos.fws.gov/ecp</u></p> <p><u>Once you have entered your basic project information, including a map of the project (you can use the map drawing tool or upload a GIS polygon that contains the project area(s)), you will need to formally submit the OSL. A copy will automatically be sent to our office. Each submitted project is assigned a unique Project Code in IPaC. This Project Code should be provided to our office with any correspondence relating to a given project.</u></p>	<u>USFWS; March 6, 2024</u>	<p><u>Thank you for providing guidance on navigating the IPaC online tool. The Official Species List (OSL) was submitted on April 26, 2024, and is located at the end of the Natural Resources Survey (Appendix G).</u></p> <p><u>Future correspondence regarding the Master Plan Update will reference the assigned Project Code.</u></p>
<p><u>Your IPaC generated OSL will include all federally listed species, critical habitat, migratory birds, and wetlands habitat that occurs, or may transit through, the project area(s). Each species on your OSL will have a link directly below it that provides the Service's recommended avoidance and minimization measures (AMMs) for that species. We recommend you include all of the AMMs for each of the species into your project description and impacts analysis, as applicable to the proposed project.</u></p> <p><u>These measures include the following:</u></p> <p><u>1. Implement avoidance and minimization measures for all species that may be impacted by the project.</u></p>	<u>USFWS; March 6, 2024</u>	<p><u>The OSL identified the following federally-listed species and migratory birds that may occur or transit through or above the Petition Area:</u></p> <p><u>Mammals</u></p> <ul style="list-style-type: none"> <u>• Hawaiian Hoary Bat (<i>Lasiurus cinereus semotus</i>)</u> <p><u>Birds</u></p> <ul style="list-style-type: none"> <u>• Band-Rumped Storm Petrel (<i>Hydrobates castro</i>)</u> <u>• Hawaiian Coot (<i>Fulica alai</i>)</u> <u>• Hawaiian Duck (<i>Anas wyvilliana</i>)</u> <u>• Hawaiian Goose (<i>Branta sandvicensis</i>)</u>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
<p><u>2. Adhere to service recommendations for avoiding nighttime project-related and residential lighting that can impact seabirds.</u></p> <p><u>3. Avoid removal of trees and vegetation above 15 feet tall between June 15 and September 15 during the Hawaiian hoary bat pupping season.</u></p> <p><u>4. Incorporate all species conservation measures into the project description.</u></p> <p><u>Additional background information on IPaC:</u></p> <ul style="list-style-type: none"> <u>• Your official IPaC species list is based on species' ranges. IPaC generates a list of all federally listed species and other trust resources that is/are or could potentially be in the project area.</u> <u>• If your IPaC species list includes a species you do not think would occur in the project area, explain why in your consultation letter.</u> <u>• Implementing surveys is a good way to determine if a species is present or not.</u> <u>• We recommend our partners incorporate all the species and their associated AMMs in their impact analysis.</u> <u>• The AMMs are there to help you avoid and minimize effects to listed species, critical habitat, migratory birds, and wetland habitat.</u> 		<ul style="list-style-type: none"> <u>• Hawaiian Petrel (Pterodroma sandwichensis)</u> <u>• Hawaiian Stilt (Himantopus mexicanus knudseni)</u> <u>• Newell's Shearwater (Puffinus newelli)</u> <p><u>Reptiles</u></p> <ul style="list-style-type: none"> <u>• Hawksbill Sea Turtle (Eretmochelys Imbricata)</u> <p><u>Insects</u></p> <ul style="list-style-type: none"> <u>• Blackburn's Sphinx Moth (Manduca Blackburni)</u> <p><u>Flowering Plants</u></p> <ul style="list-style-type: none"> <u>• 'Aiea (Nothocestrum breviflorum)</u> <u>• Carter's Panicgrass (panicum fauriei)</u> <u>• Hala Pepe (Dracaena konaensis)</u> <u>• Ihi (Portulaca vilosa)</u> <u>• Ko'oko'olau (Bidens micrantha)</u> <u>• Loulu (Pritchardia maideniana)</u> <u>• Neraudia Ovata</u> <u>• Ohai (Sesbania tomentosa)</u> <u>• Po'e (Portulaca sclerocarpa)</u> <u>• Uhiuhi (Mezoneuron kawaiense)</u> <u>• Wahine Noho Kula (Isodendron pyrifolium)</u> <p><u>Migratory Birds</u></p> <ul style="list-style-type: none"> <u>• 'Apapane (Himatione Sanguinea)</u> <u>• 'Oma'o (Myadestes Obscurus)</u> <u>• Black Noddy (Anous Minutus Melanogenys)</u> <u>• Hawai'i 'Amakihi (Chlorodrepanis Virens)</u> <u>—Red-Tailed Tropicbird (Phaethon Rubricauda Melanorhynchos)</u> <u>• Wandering Tattler (Tringa Incana)</u>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
		<p>As recommended, <i>Section 4.8</i> has been revised to include federally listed species, critical habitat, migratory birds, and wetlands habitat that may occur, or transit through, the Petition Area, as well as avoidance and minimization measures (AMMs) for these species.</p> <p><i>Section 4.8.1</i> has been revised to include flowering plant species identified in the OSL. The clearing of the Petition Area is not anticipated to adversely affect threatened or endangered plant species, including those identified in the OSL. Construction equipment, materials, and personnel will be cleared of excess soil and debris to minimize the risk of spreading invasive species. Additionally, cut material will be kept on-site to minimize the need to import fill. The Master Plan Update will improve the Petition Area with open spaces and xeriscape landscaping features that complement the Kailua-Kona region.</p> <p>During the Natural Resources Survey, a Hawaiian Hawk (<i>Buteo solitarius</i>) was observed overflying the Petition Area. <i>Section 4.8.2</i> identifies measures to protect the species if nests are present at the site, including surveying the Petition Area during breeding season (March 1 to September 30) to ensure nests are not present. Should nests be present at the Petition Area, DLNR DOFAW will be notified, a 1,600-foot buffer zone will be established, and no clearing or construction activity will be conducted within the buffer zone.</p> <p>Although not detected during the Natural Resource Survey conducted for the Master Plan Update (<i>Appendix G</i>), the OSL identified seven bird species (listed above) that may overfly the Petition Area. <i>Section 4.8.2</i> has been revised to include measures to minimize potential impacts to these species, should they be present on the Petition Area, including the following:</p> <ul style="list-style-type: none"> • The Hawaiian Stilt, Hawaiian Coot, and Hawaiian Duck are identified as Hawaiian waterbirds. To minimize potential impacts to Hawaiian waterbirds, contractors will be advised to avoid creating areas of standing water.

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
		<p><u>that may attract waterbirds. Should a nest be identified at the Petition Area, the USFWS will be notified and DLNR DOFAW will be contacted and 100-foot buffer around the nest will be established as a no construction zone.</u></p> <ul style="list-style-type: none"> <u>If a Hawaiian Goose or Nēnē is identified at the Petition Area, construction activity within a 100-foot radius of the species will cease and contractors will be advised to not approach the bird or feed it. Contractors will be cautioned to reduce speed limits around the Petition Area. If nests are found at the Petition Area, construction activity within a 150-foot radius of the nest will cease and the USFWS and DLNR DOFAW will be contacted.</u> <u>The Hawaiian Petrel, Newell's Shearwater, and Band-rumped Storm Petrel are known as Hawaiian seabirds. To minimize potential impacts to Hawaiian seabirds, construction activity will be limited to daytime hours to mitigate the need for nighttime lighting. Lighting installed as part of the buildout of the Petition Area will be shielded and in compliance with Hawaii County Code §14-50.</u> <p><u>The OSL identified migratory birds (listed above) that may overfly the Petition Area. Section 4.8.2 has been revised to include measures to minimize potential impacts to these migratory birds should they be present at the Petition Area, including the following:</u></p> <ul style="list-style-type: none"> <u>Inspection of trees for nests prior to removal.</u> <u>If a nest is identified and the tree must be removed, USFWS will be contacted, and a buffer zone will be established.</u> <u>Limiting construction to daytime hours to mitigate the need for nighttime lighting.</u>

Table 8-3: DEIS Summary of Comments and Responses

<u>Comments</u>	<u>Commenter and Date of Comment Letter</u>	<u>Response</u>
		<ul style="list-style-type: none"> • <u>Implementing shielded lighting in compliance with Hawaii County Code §14-50.</u> • <u>Advising contractors to cover, seal, or enclose nesting surfaces where migratory birds may become trapped.</u> <p><u>The OSL identified mammalian, insect, and reptile species (listed above) that may be present at the Petition Area. Section 4.8.3 has been revised to address and identify appropriate mitigation for these species, including the following:</u></p> <ul style="list-style-type: none"> • <u>Trees over 15 feet tall will be inspected for Hawaiian hoary bats prior to removal. Tree clearing over 15 feet will be avoided during birthing and pup rearing season (June 1 to September 15) and barbed wire fencing will not be utilized.</u> • <u>The Petition Area will be surveyed prior to clearing to ensure tree tobacco is not present. Should tree tobacco be present, DLNR DOFAW will be contacted to determine proper inspection for the presence of BSM.</u> • <u>The Petition Area is not located along the coastline and will not directly affect coastal areas where the Hawksbill Sea Turtle may nest, and no further mitigation is recommended.</u> <p><u>The OSL did not identify any critical habitat or wetland habit within the Petition Area, and none was found to exist during the Natural Resource Survey.</u></p>
<p><u>DOFAW concurs with the measures included in the DEIS intended to avoid construction and operational impacts to State-listed species including Blackburn's Sphinx moth (<i>Manduca blackburni</i>), 'io or Hawaiian Hawk (<i>Buteo solitarius</i>), and seabirds. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai'i please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf. We also appreciate the measures outlined to use native plants for landscaping, minimize the movement of plant and soil material to</u></p>	<p><u>DLNR DOFAW; April 3, 2024</u></p>	<p><u>Thank you for concurring with the measures included in the Draft EIS intended to avoid construction and operational impacts to State-listed species, including Blackburn's Sphinx moth (<i>Manduca blackburni</i>), 'io or Hawaiian Hawk (<i>Buteo solitarius</i>), and seabirds, and for providing additional guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai'i, which U of N Kona will reference when selecting lighting for the Mast Plan Update.</u></p>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
<u>prevent the spread of invasive species and for the use of native plant species, and the use of Best Management Practices during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems. DOFAW provides the following additional comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.</u>		<u>We also thank you for recognizing the measures included in the Draft EIS related to the use native plants for landscaping, minimizing the movement of plant and soil material to prevent the spread of invasive species, and the use of Best Management Practices during and after construction to contain any soils and sediment to prevent damage to near-shore waters and marine ecosystems.</u>
<u>The State listed ‘ōpe‘ape‘a or Hawaiian Hoary Bat (<i>Lasiurus cinereus semotus</i>) could potentially occur at or in the vicinity of the project and may roost in nearby trees. Any required site clearing should be timed to avoid disturbance to bats during their birthing and pup rearing season (June 1 through September 15). During this period woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed. Barbed wire should also be avoided in any construction as bats can become ensnared and killed by such fencing material during flight.</u>	<u>DLNR DOFAW; April 3, 2024</u>	<u>Thank you for providing further guidance to protect the Hawaiian Hoary Bat. Section 4.8.3 has been revised to include measures to protect this state-listed species. These measures include the inspection of trees over 15 feet tall for the Hawaiian hoary bat. Tree clearing over 15 feet will also be avoided during birthing and pup rearing season (June 1 to September 15). Additionally, barbed wire fencing will be avoided in any construction activity.</u>
<u>The State listed nēnē or Hawaiian Goose (<i>Branta sandvicensis</i>) could potentially occur in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any are present during construction, all activities within 100 feet (30 meters) should cease and the bird or birds should not be approached. Work may continue after the bird or birds leave the area of their own accord. If a nest is discovered at any point, please contact the Hawai‘i Island Branch DOFAW Office at (808) 974-4221 and establish a buffer zone around the nest.</u>	<u>DLNR DOFAW; April 3, 2024</u>	<u>Section 4.8.2 has been revised to include measures to protect the Hawaiian Goose. Should any Hawaiian Geese be present on the Petition Area, construction activity will cease within a 100-foot radius and contractors will be advised to not approach the birds. Construction activity will not resume until the birds leave the area of their own accord. If nests are found at the Petition Area, construction activity within a 150-foot radius of the nest will cease and the USFWS and DLNR DOFAW will be contacted.</u>
<u>The endemic pueo or Hawaiian Short-Eared Owl (<i>Asio flammeus sandwichensis</i>) could potentially nest in the project area. Pueo nest on the ground and active nests have been found year-round. Before any potential vegetative alteration, especially ground-based disturbance, we recommend that line transect surveys are conducted during crepuscular hours through the project area. If a pueo nest is discovered, a minimum buffer distance of 100 meters from the nest should be established until chicks are capable of flight.</u>	<u>DLNR DOFAW; April 3, 2024</u>	<u>Thank you for providing information on the Hawaiian Short-Eared Owl. Construction activity will be limited to day-time hours, and it is not anticipated construction activity will affect active periods for the Hawaiian Short-Eared Owl. If a nest is discovered, a minimum 100-meter (330-foot) buffer around the nest will be established and DLNR DOFAW will be contacted. Section 4.8.2 has been revised accordingly.</u>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
<p>The invasive Coconut Rhinoceros Beetle (CRB) or <i>Oryctes rhinoceros</i> is found on the islands of O'ahu, Hawai'i Island, Maui and Kaua'i. On July 1, 2022, the Hawai'i Department of Agriculture (HDOA) approved Plant Quarantine Interim Rule 22-1. This rule restricts the movement of CRB-host material within or to and from the island of O'ahu, which is defined as the Quarantine Area. Regulated material (host material or host plants) is considered a risk for potential CRB infestation. Host material for the beetle specifically includes a) entire dead trees, b) mulch, compost, trimmings, fruit and vegetative scraps, and c) decaying stumps. CRB host plants include the live palm plants in the following genera: <i>Washingtonia</i>, <i>Livistona</i>, and <i>Pritchardia</i> (all commonly known as fan palms), <i>Cocos</i> (coconut palms), <i>Phoenix</i> (date palms), and <i>Roystonea</i> (royal palms). When such material or these specific plants are moved there is a risk of spreading CRB because they may contain CRB in any life stage. For more information regarding CRB, please visit: https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/.</p>	<p>DLNR DOFAW; April 3, 2024</p>	<p>Thank you for providing information to reduce the spread of the invasive CRB. To minimize the spread of CRB, vegetation cleared from the Petition Area will not be transported to the island of O'ahu. Additionally, contractors will treat infected palms, should any be present, before removing vegetation from the Petition Area. <i>Section 4.8.1</i> has been revised accordingly.</p>
<p>DOFAW is concerned about impacts to vulnerable birds from nonnative predators such as cats, rodents, and mongooses. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.</p>	<p>DLNR DOFAW; April 3, 2024</p>	<p>To minimize the presence of nonnative predators that may harm vulnerable birds, trash bins will be covered throughout the Petition Area. Additionally, stray cats will be removed and bait stations for rodents and mongooses will be implemented. <i>Section 4.8.3</i> has been revised accordingly.</p>
Groundwater		
<p><u>Discrepancy Between Volume of Water Required for the Project and Planned Pumping Volume:</u></p> <p>Page 4-14 of the DEIS states that when "Fully built out, it is anticipated approximately 107,500 gallons of water per day (gpd) will be needed to support the Master Plan Update." The volume of 107,500 gpd is equal to approximately 75 gallons per minute (gpm). However, in the same section the DEIS states on pg. 4-15 that a successful well on the Wheelock Property could be completed as a production well of 700 gpm capacity. Also, page 4-15 of the DEIS</p>	<p>National Park Service; March 18, 2024</p>	<p>As discussed in <i>Section 4.5</i>, a new water source will be required to support of the Master Plan Update. U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of N Kona could be allocated water to support the Master Plan Update if the well(s) are completed and dedicated to DWS. The potential well(s) are located on TMK (3) 7-5-003:023 (Wheelock Property) and TMK (3) 7-5-017:044 (Bolton Property).</p>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
<p>states that a well on the Bolton Property could be successfully developed to produce more than 1.0 million gpd, which is equal to approximately 700 gpm. However, the DEIS does not discuss why there is a need to pump 700 gpm, or possibly more, if the project only requires 75 gpm.</p> <p><u>NPS Recommended Follow-up:</u></p> <ul style="list-style-type: none"> • <u>An explanation of the discrepancy between water that is needed and the planned pumping rates. If a groundwater withdrawal rate of 700 gpm is truly planned the DEIS should identify the specific beneficial uses to which the water will be applied and the places of use.</u> 		<p>U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property. The well developer has recently entered into a Memorandum of Agreement with the DWS, under which the developer agreed to design and construct a well to DWS-dedicable standards, which would connect to the DWS water system via a water main running along Queen Kaahumanu Highway.</p> <p>The proposed new well on the Bolton Property is projected to provide up to 1 million GPD. However, U of N Kona is requesting a small portion of the water provided from the proposed well, approximately 95,000 GPD. The remaining water will be allocated to the County, well developer, and potentially other third-party users to support future land use and water needs in the North Kona area. The well developer will need to negotiate a final agreement with DWS to formalize the number of water commitments, the Water System design criteria, and the credits available. U of N Kona and the well developer will then finalize the total number of credits for the Petition Area. <i>Section 4.5</i> has been revised accordingly.</p>
<p><u>Paucity of Information Regarding the Deep Confined Freshwater Zone:</u> Neither the State nor the County can manage groundwater properly if they do not understand the properties of the deep confined freshwater zone and its connections to other aquifer systems or the impacts to those resources that are dependent on that groundwater. If implemented, this proposal, will be in essence a scientific experience to determine the aquifer characteristics and sustainability of an unknown portion of the deep confined freshwater zone. The DEIS identifies four wells that have intersected the deep confined freshwater zone, but two of the wells (Kamakana and Kaloko Deep) were unable to be completed in the deep confined zone because of the well construction difficulties. Recorded thicknesses of the deep confined zone range from about 25 feet to 100 feet and the areal extent is unknown. The 48-hour pumping test described in Appendix D of the DEIS provides good information but is not sufficient to evaluate</p>	<p><u>National Park Service; March 18, 2024</u></p>	<p>As discussed in the previous response, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of N Kona could be allocated water to support the Master Plan Update if the well(s) are completed and dedicated to DWS.</p> <p>U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property. The new well would draw from the deep confined freshwater zone, and besides the Keōpū Monitor Well, there are no other wells within the Keauhou ASYA that have discovered and drawn water from the deep confined freshwater zone. Due to the recent discovery and limited data on the withdrawal of water in the deep confined zone, there is limited data on the impacts of drawing water from the deep confined freshwater zone. Initial indications from the monitoring of the Keōpū Deep Monitor Well are that the</p>

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<p>the long-term effects of groundwater pumping at a rate of 700 gpm. The NPS suggests that much more information must be developed regarding the extent and hydrologic characteristics of the deep confined zone in order to understand what sustainable use could be and the potential impacts of this project. Uncertainties include the overall extent and physical characteristics, and how the deep confined zone is connected hydrologically to the basal and high level aquifer systems, and to the ocean. The potential for increased sea water intrusion that could be caused by pumping from the deep confined zone must be evaluated.</p> <p><u>NPS Recommended Follow-up:</u></p> <ul style="list-style-type: none"> • The next version of the EIS should evaluate the effects of pumping from the deep confined zone and explain how exploration of the deep confined zone will be conducted to ensure the collection of high-quality data that increases understanding of the resource for state and county agencies. • The University of the Nations, Kona should consult with the Hawai'i Department of Land and Natural Resources, Commission on Water Resource Management and the US Geological Survey regarding best practices for exploration of the deep confined freshwater zone and development of data regarding sustainability of use. 		<p>aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated as a source to replace basal sources. New wells must follow applicable procedures under CWRM's administrative rules. Appropriate consultation for the construction and testing of a new well will be conducted in connection with the filing of applications for the new well permits. Commitments to monitor the long-term effects from the drawing of water from the freshwater zone will be established with the well construction permit. <i>Section 4.5</i> has been revised accordingly.</p>
<p>In the previous comment letter, LUC staff identified concerns with the unsecured water resources, the location and size of water lines proposed for the Petition Area has not been confirmed, nor has a Water Development Agreement been negotiated between the developer and proposed land/well developers.</p> <p>During the internal meeting between petitioner and staff on September 19, 2023, it was argued that the petitioner did not have to provide specific information on water sources in the EIS phase, but LUC Staff believe providing information on how petitioner plans to obtain water will provide a cohesive application.</p>	<p><u>Land Use Commission, February 26, 2024</u></p>	<p>As discussed in <i>Section 4.5</i>, U of N Kona has identified two potential new well developments by third-parties in the Kailua-Kona region from which U of Kona could be allocated water to support the Master Plan Update. U of N Kona is in active and ongoing discussions with the developer of the proposed new well on the Bolton Property. The well developer recently entered into a Memorandum of Agreement with the DWS, under which the developer agreed to design and construct a well to DWS-dedicable standards, which would connect to the DWS water system via a water main running along Queen Kaahumanu Highway. U of N Kona understands that the well developer will need to negotiate a final well development agreement with DWS</p>

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Comments	Commenter and Date of Comment Letter	Response
		<p>to formalize the number of water commitments, the water system design criteria, and the water credits available.</p> <p>A Preliminary Infrastructure Assessment was prepared in support of this EIS and is located in <i>Appendix C</i>. As part of the Preliminary Infrastructure Assessment, a schematic water distribution system for the Petition Area, designed in accordance with DWS Water System Standards, was prepared as shown in <i>Figure 4-17a-Figure 4-17c</i>. The Preliminary Infrastructure Assessment recommends that the Petition Area be equipped with looped mains, wherever possible, 8-inches in diameter to provide adequate fire flow, with main valves not greater than 500 feet apart and approved fire hydrants not located farther than 300 feet apart. Due to the gap between the upper and lower reservoir service area elevations, a portion of the Petition Area will require a connection to the DWS 595 system, which has service limits of 272 to 502 feet msl. Water service between the limits of the DWS 325 and DWS 595 reservoirs will be served from the upper reservoir via pressure reducing valves. <i>Section 4.10</i> contains additional details, and a schematic of the water distribution system planned for the Petition Area.</p>
Wildfires		
<p>Due to the arid climate and risks of wildfire to listed species, we recommend coordinating with the Hawai'i Wildfire Management Organization at (808) 850-0900 or admin@hawaiiwildfire.org, on how wildfire prevention can be addressed in the project area. When engaging in activities that have a high risk of starting a wildfire (i.e. welding in grass), it is recommended that you:</p> <ul style="list-style-type: none"> • Wet down the area before starting your task, • Continuously wet down the area as needed, • Have a fire extinguisher on hand, and • In the event that your vision is impaired, (i.e. welding goggles) have a spotter to watch for fire starts. 	<p><u>DLNR DOFAW; April 3, 2024</u></p>	<p>As recommended, when engaging in activities that have a high risk of starting a wildfire, construction areas will be watered down and, as needed, continuously watered down throughout the day to reduce the risk of starting a wildfire. Additionally, fire extinguishers will be stored at the construction site, should they be needed. Should there be construction activity that impairs the vision of the worker, a spotter will be on-site to monitor for fires. <i>Section 4.6.6</i> has been revised to include these short-term mitigation measures to reduce the risk of wildfires.</p> <p>The Hawai'i Wildlife Management Office will be notified of the availability of the Final EIS. U of N Kona will also consult with HWMO at the appropriate time to discuss how wildfire prevention</p>

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Comments	Commenter and Date of Comment Letter	Response
		can be further addressed for the Petition Area and Master Plan Update.
Educational Facilities		
<p>The Hawaii State Department of Education (Department) previously provided the enclosed comments, dated April 7, 2021. We encourage the developer to meet with the Department as early as possible to discuss executing an Educational Contribution Agreement.</p> <p>(From enclosed comments) A condition of approval for Docket No. A02-737 required a fair-share contribution to the development, funding, and/or construction of school facilities, as determined by and to the satisfaction of the HDOE. A written agreement is to be executed prior to seeking building permits for any portion of the reclassified area. To date, no education contribution agreement has been executed.</p>	<p>Department of Education, March 22, 2024</p>	<p>U of N Kona acknowledges that the LUC's 2003 Decision & Order requires a contribution to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE, and that the terms of the contribution be agreed upon in writing by U of N Kona and the DOE prior to seeking building permits for any portion of the Petition Area.</p> <p>At the appropriate time, U of N Kona will engage with DOE to determine its obligations to contribute to the development, funding, and/or construction of school facilities. If the Master Plan Update is determined to trigger such obligations, U of N Kona will enter into and comply with the appropriate written agreement with DOE.</p>
Tsunami/Flooding		
<p>The State of Hawaii Department of Defense would like to make note that portions of the University of the Nations lower campus sits within the Extreme Tsunami Inundation Zone.</p>	<p>Department of Defense, March 8, 2024</p>	<p>Thank you for providing comments on the Draft EIS. The DoD was contacted to verify the lower portion of the campus within the Extreme Tsunami Inundation Zone as the publicly available GIS data did not locate the Petition Area within the Extreme Tsunami Inundation Zone. Correspondence with the DoD is attached to the letter in <i>Appendix P</i>. The DoD confirmed that the tsunami evacuation zones have been completed for Hawai'i Island. According to the latest available data, the Petition Area is located within the Tsunami Safe Zone.</p> <p>As noted in <i>Section 4.6.5</i>, U of N Kona will take the appropriate measures to train staff to evacuate students and others on campus in the event of a natural disaster such as a tsunami, including by regularly practicing for evacuations.</p>

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Comments	Commenter and Date of Comment Letter	Response
Traffic & Mobility		
Access to the site will be from Kuakini Highway, which is a County road. <u>Queen Kaahumanu Highway, adjacent to the site's southeast corner, is the closest state highway. No direct access to the state highway is proposed. We concur with the MAR finding of no anticipated direct or indirect adverse impact on state highways during the construction or operation of Phase 1 of the proposed project. The applicant shall conduct a traffic warrant signal study at two intersections with Queen Kaahumanu Highway at Hualalai Road and Kuakini Highway before the certificate of occupancy of Phase 2.</u>	<u>Department of Transportation, March 18, 2024</u>	<u>Thank you for concurring with the findings from the MAR. As recommended by the MAR, a traffic signal warrant analysis will be conducted at the intersection of Queen Ka'ahumanu Highway and Kuakini Highway and Queen Ka'ahumanu and Hualalai Road prior to the construction of Phase 2 and 3.</u>
<u>The Final Environmental Impact Statement (FEIS) should confirm that the only access to UNK's existing north campus and the planned south campus will be through the existing driveway and a planned second driveway off Kuakini Highway; and that vehicular access to UNK's existing or the planned campuses via the Hualalai Village subdivision's driveways will only be allowed during emergencies.</u>	<u>Office of Planning and Sustainable Development, April 3, 2024</u>	<u>As noted in <i>Section 4.12</i> and <i>Section 5.5</i>, upon completion of the Master Plan Update, U of N Kona will be accessed via the existing driveway and the planned second driveway off Kuakini Highway. Vehicular access via the Hualalai Village subdivision's driveways will only be utilized only during emergencies.</u>
Cumulative Impacts		
<u>Cumulative Effects</u> <u>Planned projects that must be included in the cumulative effects analysis presented in the UNK DEIS include:</u> <u>North Kona Mid Level Deepwell Development – Phase 1. On November 16, 2020, the County of Hawai'i Department of Water Supply transmitted to the State of Hawai'i Office of Environmental Quality Control a Final Environmental Assessment and Finding of No Significant Impact for its proposed North Kona Mid Level Deepwell Development – Phase 1. The Department of Water Supply plans to drill an exploratory well into the deep confined freshwater zone at site TMK No. 7-5-003:001 and conduct a pumping test at a rate between 700 gpm and 1,000 gpm. Depending on the results of the drilling and test pumping, the Department of Water Supply may convert the test well into a production well. It appears that this proposed well location is</u>	<u>National Park Service; March 18, 2024</u>	<u>According to available publications in <i>The Environmental Notice</i>, there are two other planned projects in the Kailua-Kona region that call for the development/consumption of potable water include: the North Kona Mid Level Deepwell, and the Lili'uokalani Trust Makalapua Project District. In addition to the Master Plan Update, these two other projects planned in the North Kona area will also require additional water consumption and should be included in the cumulative impacts analysis. Due to the recent discovery of water in the deep confined zone, there is limited data on the impacts of drawing water from the deep confined freshwater zone. Initial indications from the monitoring of the Keōpū Deep Monitor Well are that the aquifer is below sea level and would have minimal, if any, impact on the basal aquifer and should be further investigated as a source to replace basal sources. Commitments to monitor the long-term effects from the drawing of water from the freshwater zone will be established</u>

Table 8-3: DEIS Summary of Comments and Responses

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<p>very close, perhaps adjacent to the Wheeler Property mentioned above.</p> <p>In a letter to the Kona area community dated August 8, 2003, the Department of Water Supply indicated that the “North Kona Mid-Elevation Deep Well project is another highly anticipated water source development project for DWS as it would tap a previously unutilized deep confined aquifer resulting in lower operations costs.” This project is not included in the DEIS Chapter 5 discussion of cumulative impacts.</p> <p>Lili'uokalani Trust Makalapua Project District. On February 12, 2024, the County of Hawai'i Planning Department transmitted to the State of Hawai'i Office of Planning and Sustainable Development a Draft Environmental Assessment and Anticipated Finding of No Significant Impact for the Lili'uokalani Trust Makalapua Project District in Kailua-Kona. The Lili'uokalani Trust plans to develop a new regional groundwater source in conjunction with its project – a new well completed in the deep confined freshwater zone.</p> <p>The well is planned to be located adjacent to Palani Road, northeast of downtown Kailua-Kona, approximately one mile from the Wheeler Property and approximately two miles from the Bolton Property. Lili'uokalani Trust plans to pump about 1,500 gpm (2.16 million gallons per day) from the deep confined freshwater zone to supply potable water for current and future Lili'uokalani Trust development plans. This project is not included in the DEIS Chapter 5 discussion of cumulative impacts.</p> <p>NPS Recommended Follow-up:</p> <ul style="list-style-type: none"> The next version of the EIS must evaluate the cumulative effects of all three groundwater development projects: Department of Water Supply, Lili'uokalani Trust, and University of the Nations, Kona. The effects of long-term pumping from three separate but reasonably close locations in the deep confined freshwater zone at individual pumping rates ranging from 700 gpm to 1,500 gpm are unknown. Pumping at a conceivable combined rate approaching 3,000 gpm (4.32 		<p>with the well construction permit. <i>Section 5.1</i> has been revised to include these two identified groundwater development projects in the Hualālai Aquifer Sector Area.</p>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
<p>million gallons per day) dramatically increases the uncertainty regarding long-term sustainability and decreases the margin for error with respect to unintended consequences of groundwater withdrawal from this zone.</p> <ul style="list-style-type: none"> The next version of the EIS must identify all other groundwater development projects in the Hualalai Aquifer Sector Area that will target the deep confined freshwater zone for groundwater supply. It is critical for the County and State to understand the potential scope of planned groundwater withdrawal from the deep confined freshwater zone to be able to manage the system sustainable and to model and predict possible outcomes. 		
Plans and Policies		
<p>In section 6.2.2's discussion section there is mention of the 2003 district boundary amendment granting the urbanization of the project area, it states that:</p> <p>The Master Plan Update for the Petition Area is consistent with Urban land usages as described in HRS Chapter 205 and will complement the surrounding urban area. U of N Kona acknowledges the Urban District designation of the Petition Area, and the Master Plan Update contemplates relocating the existing small farm and research center to the Existing Campus.</p> <p>This section should include a statement that U of N Kona has the active 2020 motion to amend, to amend the current conditions and update the project description to reflect the Master Plan Update. Similarly, there should be mention of the motion to amend in the executive summary portion, as well as 3.3 Alternative Land Uses in the consistency paragraph.</p>	<p>State Land Use Commission, February 26, 2024</p>	<p>For the Final EIS, the sections referenced in your comment have been revised to note that the active 2020 Motion to Amend seeks to amend the 2003 Decision & Order to obtain LUC approval for the Master Plan Update.</p>
<p>The subject properties are 58.597 acres and 5.361 acres in size respectively. Parcel 85 is zoned Agricultural-1 acre and Parcel 6 is zoned Double-Family Residential (RD-3.75) & Single-Family Residential (RS-7.5) by the County of Hawai'i. Both properties are</p>	<p>Planning Department; March 25, 2024</p>	<p>Thank you for providing guidance on the appropriate zoning designation for the Petition Area to support the Master Plan Update. Following the LUC taking action on the 2020 Motion to Amend, U of N Kona will pursue rezoning to the Project District or</p>

Table 8-3: DEIS Summary of Comments and Responses

Comments	Commenter and Date of Comment Letter	Response
currently designated as Urban by the State Land Use Commission. It is our understanding that the petitioner will be seeking a rezoning to the Project District, which would provide flexibility in relocating elements within the Petition Area, or another appropriate zoning district. Based on the information below regarding the Kona Community Development Plan, the Project District zoning would be the appropriate zoning district for the proposed development.		other appropriate zoning district identified in consultation with the Planning Department.
The General Plan Land Use Pattern Allocation Guide (LUPAG) map designation for the project site is Medium Density Urban (mdu), which allows for Village and Neighborhood Commercial zoning, as well as Single-Family and Multiple-Family Residential and related functions. This designation allows for multiple-family residential units up to 3 units per acre. The proposed development is consistent with the General Plan LUPAG designation for the project site.	Planning Department; March 25, 2024	Thank you for providing information on the General Plan LUPAG. Thank you also for confirming that the Master Plan Update is consistent with the General Plan LUPAG designation for the Petition Area.
The properties are not located within the Special Management Area but are situated within the Coastal Zone Management Area (CZMA). Please expand on the discussion of how the project will meet the objectives and policies of the CZMA that are applicable.	Planning Department; March 25, 2024	Table 6-3 has been revised to expand the discussion of how the Master Plan Update will meet the objectives and policies of the Coastal Zone Management Act.
The property is in an area affected by the Kona Community Development Plan, which was adopted by the Hawai'i County Council by Ordinance No. 08-131 and amended by Ordinance 19-91, among others. The project site is situated within the Kona Urban Area (KUA) and within the Puaa-Waiaha Village Neighborhood [Transient] Oriented Development (TOD) Floating Zone identified on the Official Kona Land Use Map (Figure 4-7) within the KCDP. The process for establishing a TOD Floating Zone within the KUA is identified within the amended KCDP under Policy LU-2.4 of the Land Use Section. The development of TODs are encouraged within the extent and locations of the floating zones shown on the Official Kona Land Use Map (Figure 4-7). These locations are approximate and	Planning Department; March 25, 2024	Thank you for confirming that the Petition Area is located within the area affected by the Kona Community Development Plan and within Kona Urban Area and the Puaa-Waiaha Village Neighborhood TOD Floating Zone, as shown in Figure 1-8. U of N Kona acknowledges that TOD Floating Zones have been established to guide urban growth in the Kona Urban Area to reduce urban sprawl. As previously discussed, U of N Kona will be seeking a zone change from the Agriculture and Residential District to the Project District or other appropriate zoning district identified in consultation with the Planning Department. As set forth in Policy LU-2.4 of the Kona Community Development Plan, TODs are established through the modified Project District rezoning procedures. U of N Kona will continue to consult with the Planning Department to determine whether it is appropriate

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<u>Comments</u>	<u>Commenter and Date of Comment Letter</u>	<u>Response</u>
<u>become fixed pursuant to the Project District rezoning procedures as modified and described under Policy LU-2.4 (1 through 7).</u>		<u>to establish a TOD with the procedures to rezone the Petition Area.</u> <u>Section 6.3.2 has been revised to address the applicability of Policy LU-2.4.</u>

List of References

Chapter 9

List of References

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Preparers of the Draft EIS

Chapter 10

Preparers of the ~~Draft~~Final EIS

Below is a list of individuals that contributed to the preparation and completion of this ~~DEIS~~Final EIS. The list includes the name of the individual and their role, or the name of the company and the subfield of professional expertise utilized to conduct and complete the EIS.

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Preservation Plan

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