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LAND
STATE PARKS

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 10, 2015

Ms. Jessica Wooley, Director
Office of Environmental Quality Control
Department of Health
235 S. Beretania St., Room 702
Honolulu, Hawai'i 96813

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

15 JUN 10 AM 1:52

RECEIVED

Dear Director Wooley:

Transmitted for publication in the next available edition of *The Environmental Notice* is the draft environmental assessment and an anticipated finding of no significant impact (DEA-AFONSI) for the Ahupua'a 'O Kahana State Park's Issuance of Leases for Lots 1 - 6 and Sewer and Well Repair Improvements Project situated within Tax Map Key (TMK): (1) 5-2-002: 001 (por.), Ko'olauloa, O'ahu.

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

If there are any questions, please contact Lauren Tanaka at (808) 587-0293 or by email to: Lauren.A.Tanaka@hawaii.gov.

Very truly yours,

Daniel S. Quinn, Administrator

- Enclosures: OEQC Publication Form
- Two copies of the DEA
- CD with electronic copy of the DEA

AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (FEBRUARY 2013 REVISION)

Project Name: Ahupua'a 'O Kahana State Park Issuance of Leases for Lots 1 – 6 and Sewer and Well Repair Improvements Project
Island: O'ahu
District: Ko'olauloa
TMK: (1) 5-2-002: 001 (portion)
Permits: Grading Permit; Trenching Permit within the State Right-of-Way; Noise Permit; Conservation District Use Application permit amendment request may be required.

Proposing/Determination Agency:

State of Hawai'i, Department of Land and Natural Resources, Division of State Parks
P.O. Box 621, Honolulu, HI 96809, Daniel S. Quinn, (808) 587-0290

Consultant:

Bow Engineering & Development, Inc
1953 S. Beretania Street, PH-A, Honolulu, HI 96826; William Bow, 808-941-8853

Status (check one only):

- _X_ DEA-AFNSI** Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.
- __ FEA-FONSI** Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
- __ FEA-EISPN** Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.
- __ Act 172-12 EISPN** Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
- __ DEIS** The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
- __ FEIS** The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
- __ Section 11-200-23 Determination** The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.
- __ Section 11-200-27 Determination** The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
- __ Withdrawal (explain)**

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):

The State of Hawai'i, Department of Land and Natural Resources (DLNR), plans to issue six residential, long-term leases to residents at existing residential dwellings within the Ahupua'a 'O Kahana State Park (Kahana State Park). The action also includes closing the existing cesspools at each of the lots to resolve an informal Notice of Violation from the Department of Health; constructing individual wastewater systems to replace the cesspools; and providing water service to the lots via connection to the Board of Water Supply (BWS) water mains. The DLNR also proposes improvements to an existing non-potable well used for irrigation purposes throughout the State Park.

The State DLNR has identified the following objectives:

- To bring the existing residential uses into compliance with DLNR lease requirements in the Park to the greatest extent possible.
- To comply with the requests of the Planning Council to grant the six new leases pursuant to Act 15, SLH 2008.
- To remediate the existing wastewater violations and minimize future water quality violations.
- To repair the leaking non-potable well and minimize waste.

**DRAFT
ENVIRONMENTAL ASSESSMENT**

**AHUPUA‘A ‘O KAHANA STATE PARK
ISSUANCE OF LEASES FOR LOTS 1 – 6 AND
SEWER AND WELL REPAIR
IMPROVEMENTS PROJECT**

Kahana, Ko‘olaupua District, Island of O‘ahu

**State of Hawai‘i
Department Land and Natural Resources**

June 2015

**Ahupua'a 'O Kahana State Park
Issuance of Leases for Lots 1 – 6
and Sewer and Well Repair Improvements Project**

Kahana, Ko'olaupoko District, Island of O'ahu

Draft Environmental Assessment

This environmental document has been prepared pursuant to
Hawaii Revised Statutes, Chapter 343
and Hawaii Administrative Rules, Title 11, Chapter 200

Proposing Agency:

State of Hawaii
Department of Land and Natural Resources
P.O Box 621
Honolulu, Hawaii 96809

June 2015

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PROJECT SUMMARY INFORMATION

Project:	Ahupua‘a ‘O Kahana State Park Issuance of Leases for Lots 1 – 6 and Sewer and Well Repair Improvements Project Kahana, Ko‘olauloa, Island of O‘ahu
Accepting Authority:	State of Hawai‘i, Department of Land and Natural Resources Division of State Parks P.O Box 621 Honolulu, Hawai‘i 96809 Contact: Daniel S. Quinn (808) 587-0290
Location:	52-210 Kamehameha Highway Ahupua‘a ‘O Kahana State Park Portion of TMK (1) 5-2-002: 001
Proposed Project:	The proposed project includes issuance of six residential, long-term leases for existing residential uses at the State Park. The project also includes closing the existing cesspools at each of the lots; constructing replacement septic systems; and providing water service to the lots via connection to the Board of Water Supply water mains. In addition, the project includes improvements to an existing non-potable well used for irrigation purposes throughout the State Park.
HRS, Ch. 343 Trigger:	Use of state lands and state funds; use of conservation district lands
State Land Use Designation:	Conservation, Resource Subzone
Existing Zoning:	Preservation District, Restricted (P-1)
Special Management Area:	Within City and County of Honolulu SMA
Anticipated Determination:	Finding of No Significant Impact (FONSI)

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1.1 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

The evaluation of projects to determine their effects on the environment is required by the Hawai'i Revised Statutes (HRS), Chapter 343. An Environmental Assessment (EA) is a “written evaluation to determine whether an action may have a significant effect” (HRS, Section 343-2). The agency with primary responsibility over the project (the proposing agency) is required to prepare an EA and make a final environmental determination according to the presence of significant impacts or the lack thereof. As stated in HRS, Section 343-1:

An environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties, and alert decision makers to significant environmental effects which may result from the implementation of certain actions. ... The process of reviewing environmental effects is desirable because environmental consciousness is enhanced, cooperation and coordination are encouraged, and public participation during the review process benefits all parties involved and society as a whole.

As described above, the basic purpose of an EA is to provide information to the public and decision makers on proposed actions. The EA must also disclose: potential significant adverse environmental impacts, the expected primary and secondary consequences, and the cumulative as well as the short- and long-term effects of the action.

1.2 PROJECT OVERVIEW AND PROJECT NEED

The State of Hawai'i, Department of Land and Natural Resources (DLNR), plans to issue six residential, long-term leases to residents at existing residential dwellings within the Ahupua'a 'O Kahana State Park (Kahana State Park). The action also includes closing the existing cesspools at each of the lots; constructing septic systems; and providing water service to the lots via connection to the Board of Water Supply (BWS) water mains. The DLNR also proposes improvements to an existing non-potable well used for irrigation purposes throughout the State Park.

On November 21, 2013, an Informal Notice of Violation (NOV) was issued by the State of Hawai'i Department of Health (DOH) to the DLNR for violations of the Hawai'i Administrative Rules (HAR), Sections 11-62-08(b) and 11-62-31.1(f), which prohibits the construction, modification, or use of an individual wastewater system without DOH approval. The informal NOV issued by the DOH requires all of the cesspools to either be backfilled and abandoned, or converted to function as a disposal system for an approved wastewater system (i.e. seepage pit). The DLNR completed an action plan to comply with NOV requirements by fall of 2017, which the DOH found acceptable.

The State DLNR has identified the following objectives of the Ahupua'a 'O Kahana State Park Issuance of Leases for Lots 1 – 6 and Sewer and Well Repair Improvements Project (Kahana State Park Leases for Lots Project):

- To bring the existing residential uses into compliance with DLNR lease requirements in the Park to the greatest extent possible.
- To comply with the requests of the Planning Council to grant the six new leases pursuant to Act 15, SLH 2008.

- To remediate the existing wastewater violations and minimize future water quality violations.
- To repair the leaking non-potable well and minimize waste.

1.3 STATE AUTHORITY

The proposed action would use state funding and would be subject to state environmental laws and regulations. Environmental review procedures required by the State of Hawai'i include compliance with HRS, Chapter 343, and HAR, Title 11, Department of Health.

1.4 STEPS IN THE ENVIRONMENTAL REVIEW PROCESS

EARLY CONSULTATION AND DATA GATHERING

HAR, Section 11-200-9 requires that an agency must consult with agencies and individuals that might have jurisdiction or expertise with respect to the proposed action. Early consultation is considered an important part of the environmental review process – the ultimate goal is the gathering of information, data, and public concerns. A preliminary description of the project was circulated to agencies and individuals in January 2015, and phone consultations were conducted with permitting agencies as necessary. An early scoping meeting was held at the Kahana Community Center on February 23, 2015, and project information was provided and discussed at the March 25, 2015 Kahana Planning Council Meeting. For a detailed description of the early consultation component of this project, see Chapter 6, *Individuals, Community Groups, and Agencies Consulted*, of this EA.

CIRCULATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT

Following completion of the Draft EA, the environmental document is submitted to the State Office of Environmental Quality Control (OEQC). The OEQC will notify government agencies and the public when the Draft EA is available for review. The announcement is made in a bimonthly bulletin called *The Environmental Notice*, which is available in print and online. Publication in *The Environmental Notice* marks the beginning of a 30-day comment period during which government agencies and the public can review and comment on the environmental document and its findings. For the proposed project, DLNR has submitted a notice of determination with the Draft EA to the OEQC with an Anticipated Finding of No Significant Impact (AFONSI) (HAR, Section 11-200-11.1)

FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

After the 30-day review period, the DLNR will consider all comments and incorporate necessary changes into a Final EA. The Final EA will support a Finding of No Significant Impact (FONSI), if appropriate. The publication of the notice of availability of the Final EA-FONSI in *The Environmental Notice* initiates a 30-day judicial challenge period under HRS, Section 343-7(b).

If the proposing agency reviews public comments on the Draft EA, and the public comments indicate that the proposed action could in fact have significant effects, the agency would prepare a Final EA supporting an Environmental Impact Statement Preparation Notice (EISPN) determination.

2 PROJECT DESCRIPTION

2.1 ENVIRONMENTAL SETTING

PROJECT LOCATION

Ahupua‘a ‘O Kahana State Park, formerly Kahana Valley State Park, is located on the windward side of O‘ahu between Ka‘a‘awa and Punalu‘u, approximately 26 miles from Honolulu (see Figure 1). The project site is located in the Ko‘olauloa¹ District, one of the seven state divisions for the Island of O‘ahu. The project site includes a total of six residential lots², each ranging in size from 11,845 square feet to 13,956 square feet, within Ahupua‘a ‘O Kahana State Park (Kahana State Park), Tax Map Key (TMK) (1) 5-2-002: 001 (portion) (see Figure 2). The entirety of Kahana State Park totals 5,249 acres and includes TMK’s: (1) 5-2-001: 001 (portion), 5-2-002:001 to 008, and 5-2-005: 001, 003, 020, and 021.

EXISTING CONDITIONS

Ahupua‘a ‘O Kahana State Park

Ahupua‘a ‘O Kahana State Park is owned by the State of Hawai‘i. During the period from 1965 to 1969, the State initiated eminent domain proceedings to acquire the land as a way to prevent a proposed resort development and to retain the open space and rural character of the area. State lands are set aside under Governor’s Executive Order (EO) No. 3518 and EO No. 3765 to the DLNR Division of State Parks (State Parks) for Kahana Valley State Park purposes. The primary purpose of the park is to nurture and foster native Hawaiian cultural traditions and the cultural landscape of rural windward O‘ahu. Established as a “living park,” there are 28 leases in the park area. Families live on established lease lots and assist with interpretive programs that share the Hawaiian values and lifestyle in lieu of lease rent. Kahana valley is the largest ahupua‘a³ in the Ko‘olauloa District (BWS 2009).

History of the Park and Residential Leases

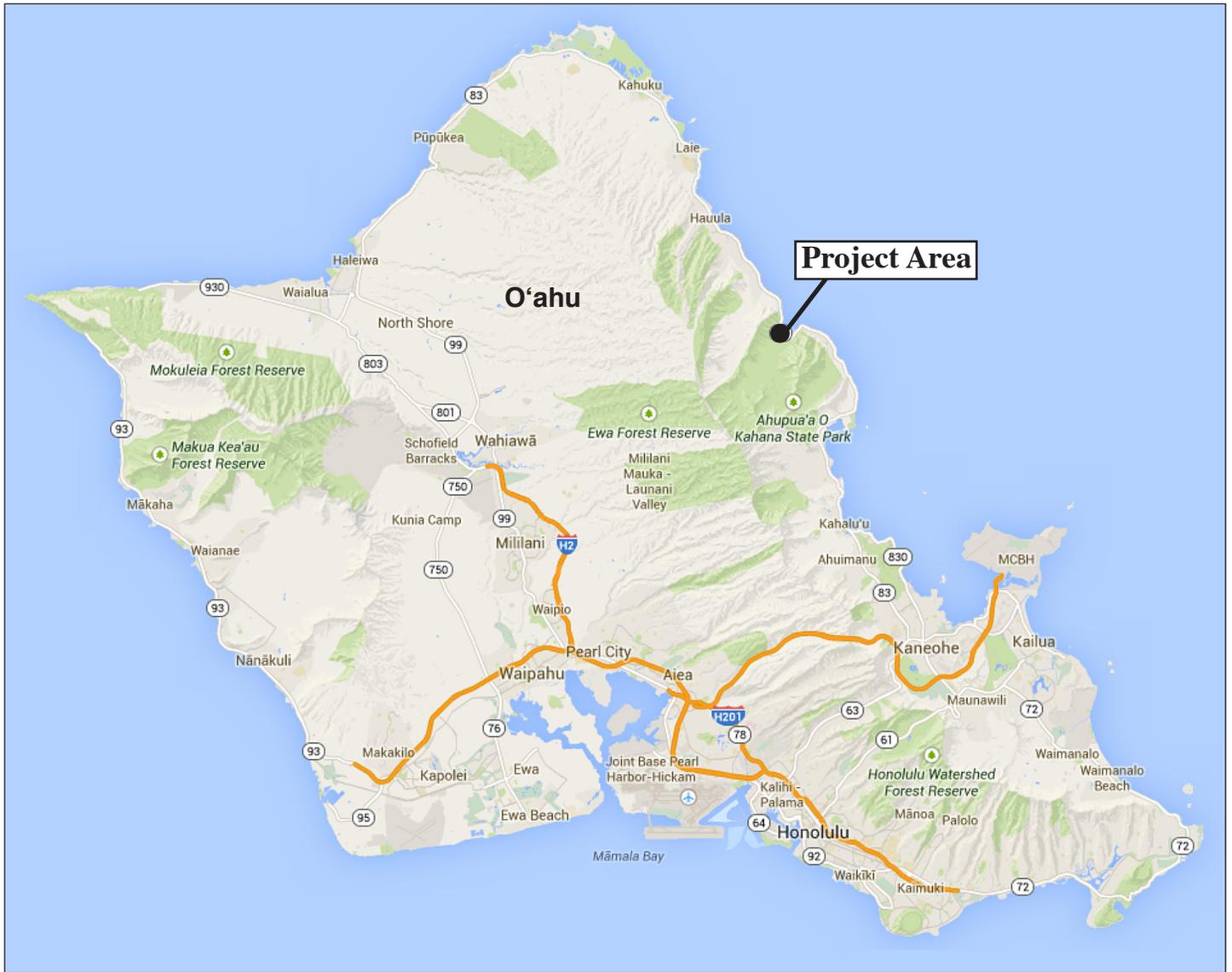
The State of Hawai‘i DLNR completed a Revised Environmental Impact Statement (EIS) in 1978 (approved in 1979), which planned for development of up to 18 new residences *mauka*⁴ of the community building along Kahana Valley Road. As approved, the 1992 Supplemental Final EIS included an additional 14 residential lots along Trout Farm Road. These environmental documents both referenced residents living in the front portions of the park and recommended they relocate to areas further back in the valley to avoid being in the flood plain. These documents also indicated the front areas of the park could be used for day use and interpretive purposes following relocation of the residents.

¹ *Ko‘olau* means the windward sides of the Hawaiian Islands, and *loa* means long.

² The DLNR staff has verified that the project area does not include legally subdivided lots, nor is any subdivision planned. The lots will be described in the lease by metes and bounds legal description.

³ Land division usually extending from the uplands to the sea.

⁴ Inland, toward the mountains.



Ahupua'a 'O Kahana State Park, Issuance of Leases to Lots, Lots 1 - 6

SOURCE: Google Maps, 2014; Planning Partners, 2014

Figure 1
Regional Location



SOURCE: Planning Partners, 2014; Google Earth, 2014

Ahupua'a 'O Kahana State Park, Issuance of Leases to Lots 1 - 6

Figure 2
Project Vicinity

Act 5, SLH 1987, authorized the DLNR to issue long term residential leases to individuals who had been living on the lands since before 1970 and provided authorization for a residential subdivision in Kahana Valley. The law granted the DLNR relief from regulation regarding subdivision entitlements and construction standards. In 1993, the DLNR entered into 65-year leases covering 31 residential properties. Pursuant to the terms of the leases, the residents are required to contribute at least twenty-five hours of service each month in lieu of rent. Act 238, SLH 1988, appropriated funds sufficient for 26 of the lessees to receive loans to build homes. Of the 31 leases established in Kahana, 28 remain.

In 2008, the Attorney General had advised the department that no new leases could be issued as Act 5 had sunsetted⁵. Several families that had applied for a lease were living on lands fronting the park that were not intended for residential use. Having no authorization to be there, the State took action to evict those families. These families went to see the legislators representing their districts, who enacted Act 15, SLH 2008⁶. This Act established a two-year moratorium on evictions and authorized the DLNR to issue long-term leases to qualified persons under certain conditions. Act 15 also created the Living Park Planning Council (Council) and charged it with the responsibility to develop a Master Plan that would establish a framework, proposed rules, measurements of success, and a planning process to ensure that the goals and objectives for the living park are met.

In January 2011, the Planning Council recommended the Board approve granting six new leases to the individuals residing on the lots located near the front of the valley that are the subject of this environmental assessment. In March 2013, the DLNR Board considered requests to grant leases to the residents at these lots pursuant to Act 15, under the premise that the leases would simply document a use that has been in place for many years, and that no new changes or construction would be necessary.

Existing Dwellings

The proposed project site includes six existing occupied dwellings located near the front of the valley. There are seven existing cesspools⁷ that are unauthorized and undocumented, six of which are currently used by the existing dwellings for wastewater discharge. On November 21, 2013, an Informal Notice of Violation (NOV) was issued by the State of Hawai'i DOH to the State of Hawai'i DLNR for violations of the HAR, Sections 11-62-08(b) and 11-62-31.1(f), which prohibits the construction, modification, or use of an individual wastewater system without DOH approval. The informal NOV issued by the DOH requires all of the cesspools to either be backfilled and abandoned, or converted to function as a disposal system for an approved wastewater system (i.e. seepage pit). The residential lots also have open discharge gray water plumbing (showers, kitchen sinks, etc.), which do not conform to DOH Guidelines for the "Reuse of Gray Water."

⁵ Ceased to have effect, or expired.

⁶ Act 15 was enacted following Governor Linda Lingle's veto, which was overridden by a Special Session of the 2009 Legislature. The reason for the Governor's veto was that it violated Article XI, Section 5 of the Hawai'i State Constitution.

⁷ Cesspools are underground holes that have been used throughout Hawai'i for the disposal of human waste.

Potable water is currently provided to several residential lots via various water laterals that are connected to the master water meter for the comfort station at the entrance to the park, with the exception of lot 5, which is served by a PVC lateral off a nearby meter. Due to the long lateral runs and the existence of non-potable water lines in the area, there is a potential for cross connection contamination of the potable water.

There is an existing non-potable well that provides irrigation water to the State Park. The well was drilled in 1932 and has an existing flow rate estimated at around 500 gallons per minute. The artesian well is in poor condition and has a small leak that results in ponding around the well head. Based on water movement, the leak was estimated to be somewhere above a depth of 112 feet.

The Kam Mon Store (Visitor Center), used for interpretive purposes, is located adjacent to the existing dwellings and proposed lease lots.

2.2 DESCRIPTION OF THE PROPOSED ACTION

The proposed project is the issuance of six residential, long-term leases by the DLNR to formalize existing residential uses at the front of Kahana Valley. In addition, the project includes modifications to the wastewater systems and potable water system serving the six residences in order to resolve the informal NOV and bring the systems into compliance with current standards and regulations.⁸ The project would also repair a small leak at a non-potable water well used for irrigation purposes throughout the State Park. Conceptual plans for the proposed improvements are described below.

ISSUANCE OF LEASES FOR LOTS 1 - 6

With implementation of the project, the DLNR would issue six residential, long-term leases to the existing residents at the parcels identified as Lease Lots 1 through 6 (see Figure 3). The lease term would be coterminous⁹ with the other existing 28 leases and would end in approximately 43 years. In lieu of monetary rent, the lessee would be required to participate in the interpretive programs at the Park in the amount of 25 hours per month, for a total of 300 hours per year.

WASTEWATER SYSTEM IMPROVEMENTS

Cesspool Closure

As set forth in the conceptual plans (see Appendix B), the existing cesspools would be backfilled and abandoned, or converted to function as a disposal system for an approved wastewater system (i.e. seepage pit). This would be accomplished by pumping out the waste and filling the cavity with concrete or a material similar to the site's natural material. For the two cesspools located beneath structures, the backfill method would be non-invasive, using pumped concrete or flowable fill. The placement of concrete under the water table would be made via tremie¹⁰ method.

⁸ With establishment of the lease lots, the existing dwellings would likely be required to comply with existing zoning ordinances and construction standards. This could require major modifications to the existing dwellings and possible demolition and rebuilding. While not a part of this project, Chapter 5 of this EA considers potential reconstruction of the dwellings as a secondary impact of the project.

⁹ In this instance, coterminous means having the same extent in time.

¹⁰ The tremie concrete placement method uses a pipe through which concrete is placed below water level.

All wastewater pumped from the cesspools, including sediment, sludge, debris, and organic matter, would be removed and disposed of properly in accordance with Department of Health requirements (HAR, Section 11-62). While as-built plans and the dimensions of the cesspools are currently unknown, a conservative estimate of the volume of waste material is approximately 37.7 cubic yards, which would require between 3 to 13 truckloads to a DOH-approved facility for processing.

Individual Wastewater Systems

Replacement individual wastewater systems (IWS) for each lease lot will consist of a treatment system (e.g., septic tank, aerobic treatment unit, etc.) and disposal system (e.g., absorption field, mounded system, seepage pit, etc.) as described below and shown in Appendix B (see Figure 3 for an example of an IWS configuration).¹¹ The type of treatment and disposal system appropriate to the lot has been determined by a site evaluation, which evaluated soil percolation rates, depth to groundwater, and other natural constraints.

Each individual wastewater system was designed for a total maximum wastewater flow of 1,000 gallons per day and a maximum service of five bedrooms (HAR, Section 11-62-31.1(a)(1)(D)). Due to their relatively small lot sizes, existing structures, depth to groundwater for lots 1 through 4, and proximity to Kahana Stream, the lease lots face several disposal system location constraints. HAR, Section 11-62 establishes minimum horizontal distance setbacks from disposal systems to: streams (50 feet), to property lines (5 feet), and to building structures (5 feet). Based on these location constraints, conceptual plans with several alternative wastewater systems have been developed for each of the lease lots (see Figure 4 for an example lease lot and Appendix B for details of each system). Replacement individual wastewater systems for each lease lot would consist of a treatment system (e.g., septic tank, aerobic treatment unit, etc.) and disposal system (e.g., absorption field, mounded system, seepage pit, etc.). The alternative wastewater systems considered for each lease lot include:

- Alternative 1 – Aerobic Treatment Units and Absorption Field (recommended for Lease Lot 2)
- Alternative 2 – Septic Tank and Elevated Mound (recommended for Lease Lots 1, 3, and 4)
- Alternative 3 – Aerobic Treatment Units and New or Converted Seepage Pit (recommended for Lease Lot 5)
- Alternative 4 – Septic Tank and Absorption Field (recommended for Lease Lot 6)

While these are the alternative wastewater systems that were considered for each lease lot, it does not preclude selection of an alternative system that would meet City and County regulations. This environmental analysis evaluates the broadest extent of environmental impacts (“worst case scenario”) in order to ensure that additional unknown alternatives have been considered.

With implementation of the proposed project, gray water would no longer operate as open discharge and would be connected to each new wastewater system.¹²

¹¹ The cost of the IWS is to be shared by the Lessee and the State: the DLNR is to provide funds for the methods of disposal (e.g. Seepage Pit), and lessees would be responsible for the means of treatment, storage, and transmission (e.g. Septic Tank) to the designated disposal system.

¹² While the reconnection of the existing gray water discharge to the new individual wastewater systems would not be completed by the DLNR, it would be accomplished by the lessees and is considered part of the overall action.

Potable Water System Improvements

The proposed improvements would include a dedicated meter, lateral, and backflow preventer at each of the project lease lots for potable water service. The water meters and laterals would be sized for an assumed 16 fixture units¹³ at each residence. Lease Lots 1 through 4 would connect to the water main along Kahana Valley Road via a 1.5-inch lateral and four individual 3/4-inch water meters. Lease Lots 5 and 6 would connect to the water main along Kamehameha Highway via individual 1-inch laterals and 3/4-inch water meters. Trenching would occur within the State right-of-way to install the laterals and connect to the water main. There are existing BWS easements on both Kamehameha Highway and Kahana Valley Road for the water mains. Refer to Appendix B for the Conceptual Water Lateral Drawings (Sheets C-2.1 through C-2.2).

Non-Potable Water Well Remediation

The existing leaking non-potable well would be repaired by installing a grouted-in-place 6-inch steel sleeve down to 192-feet below ground surface in addition to above ground improvements. The new well would be able to free flow at several hundred gallons per minute, and an optional end suction pump could increase the yield. See Figure 5 for a depiction of the existing well and proposed remediation.

Grading and Earthwork

Based on the conceptual plans, improvements to the individual wastewater systems, potable water system, and the non-potable well would disturb approximately 9,950 square feet of the project area. A conservative worst-case scenario would not exceed 15,000 square feet of earthwork for these improvements. Because not all lease lots would necessarily install the individual wastewater systems at the same time, the grading and earthwork could occur in small increments intermittently over an unknown period of time.

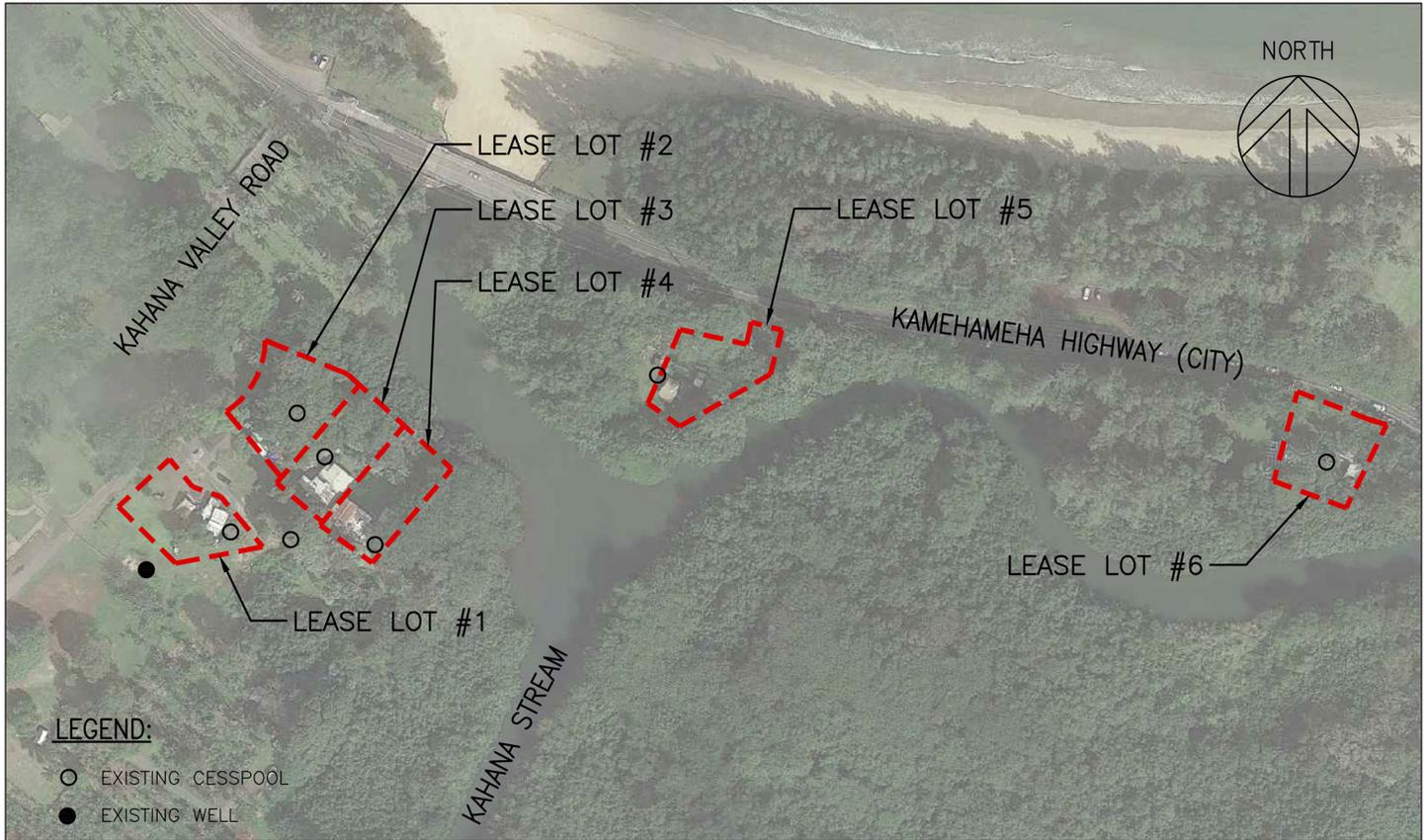
Site-Specific Best Management Practices

Due to the proximity of Kahana Stream and the location of the project site within the 100-year flood plain, the project could present increased potential for water quality impacts. The proposed project would include site-specific Best Management Practices (BMP) to be implemented during project construction to minimize erosion and potential impacts to water quality. BMPs could include but would not be limited to:

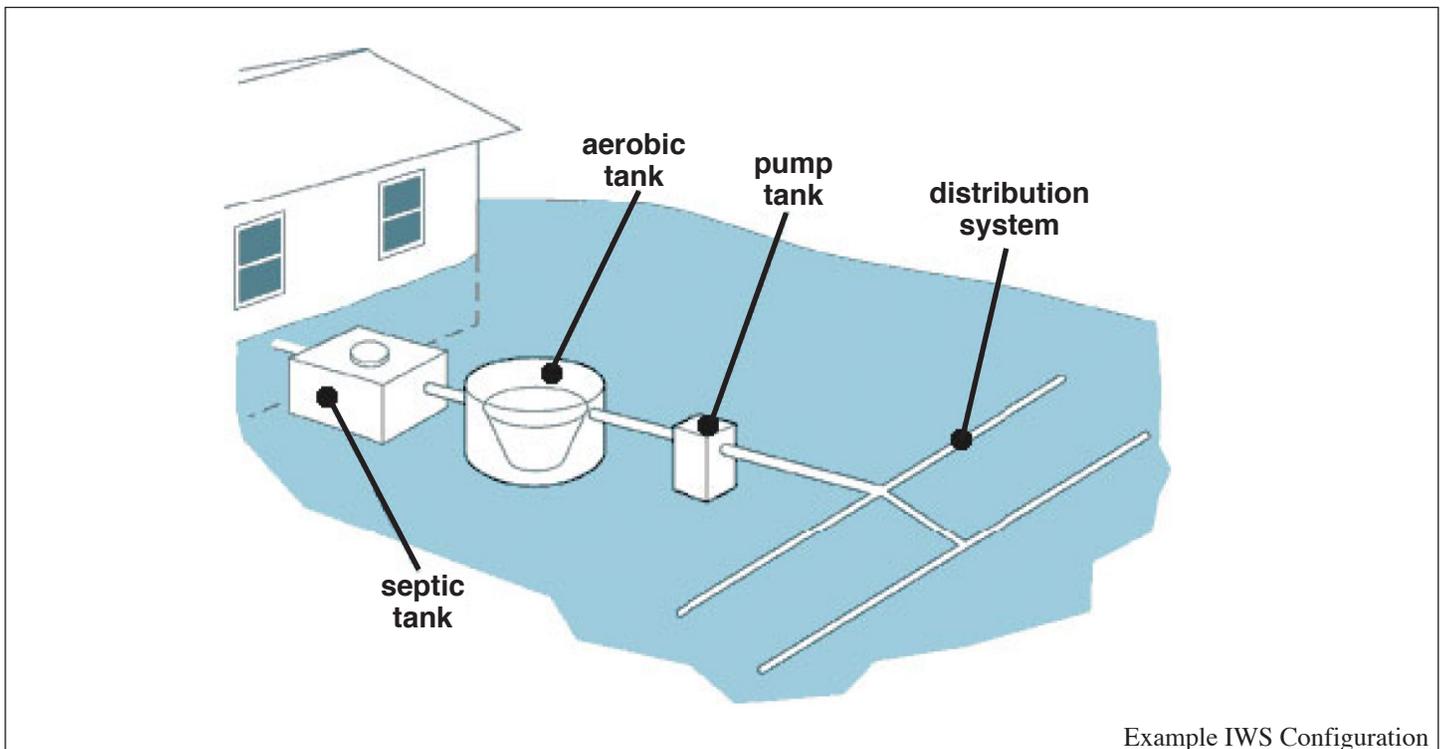
- Frequent wetting of graded areas by water truck or hose.
- Stabilized construction entrances to prevent the transport of mud, dirt, rocks, etc. onto the paved roadway.
- Sediment rolls or other temporary measures to be provided to protect adjacent areas.
- Temporary/permanent ground cover as soon as practical after final grading.

These BMPs will be developed in accordance with City and County of Honolulu regulatory requirements as part of the permitting process.

¹³ A fixture unit is used in plumbing design, as different fixtures (e.g. toilets, faucets, showers) have different flow requirements. A fixture unit is defined by the Uniform Plumbing Code.



Kahana Valley Lease Lots



Example IWS Configuration

SOURCE: Bow Engineering & Development, Inc. 2014
 University of Minnesota Extension "Aerobic Treatment Unit," April 2014

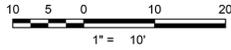
Ahupua'a 'O Kahana State Park, Issuance of Leases to Lots 1 - 6

Figure 3

Proposed Lease Lots and
 Example Individual Wastewater System

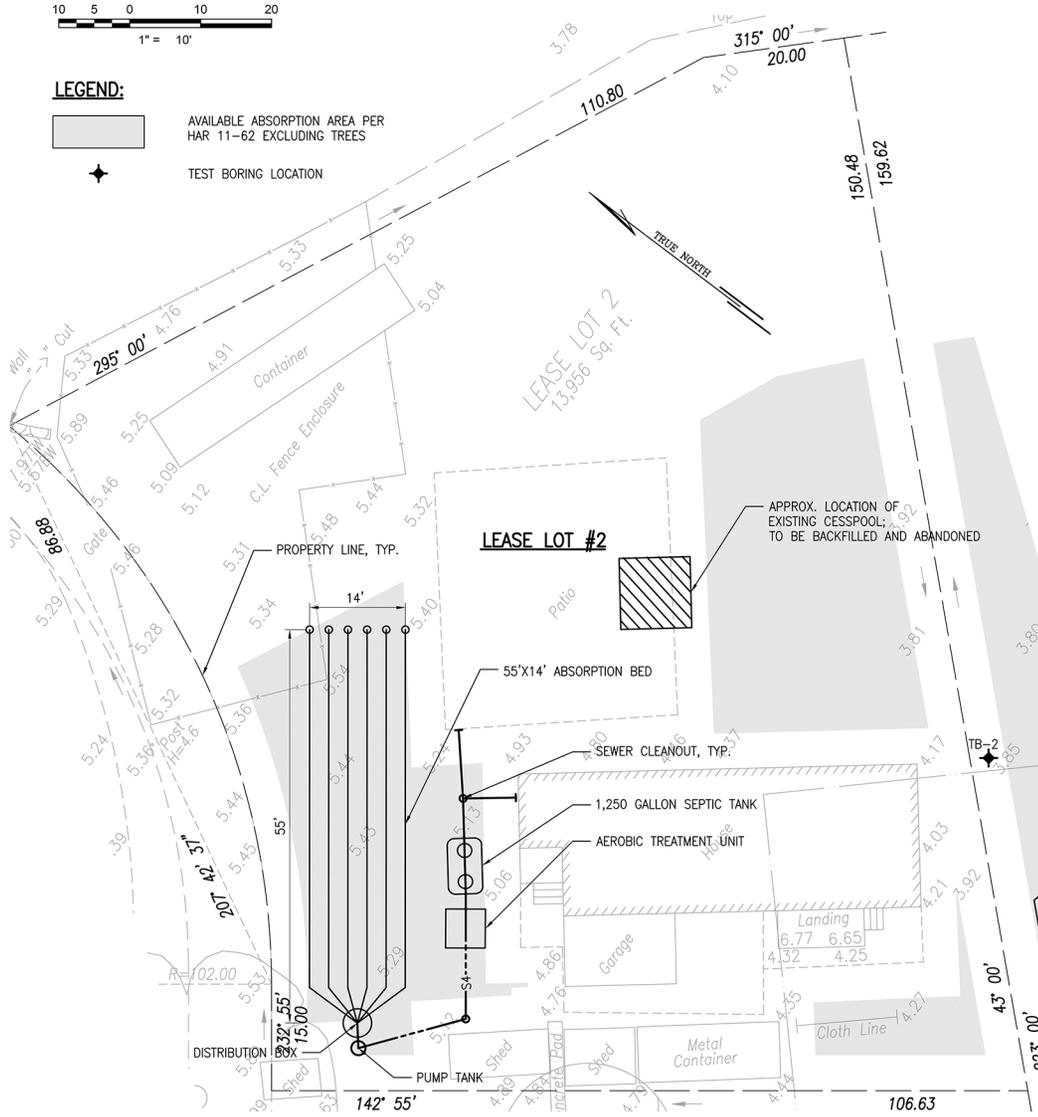
CONCEPT IWS SITE PLAN – LEASE LOT 2

GRAPHIC SCALE:

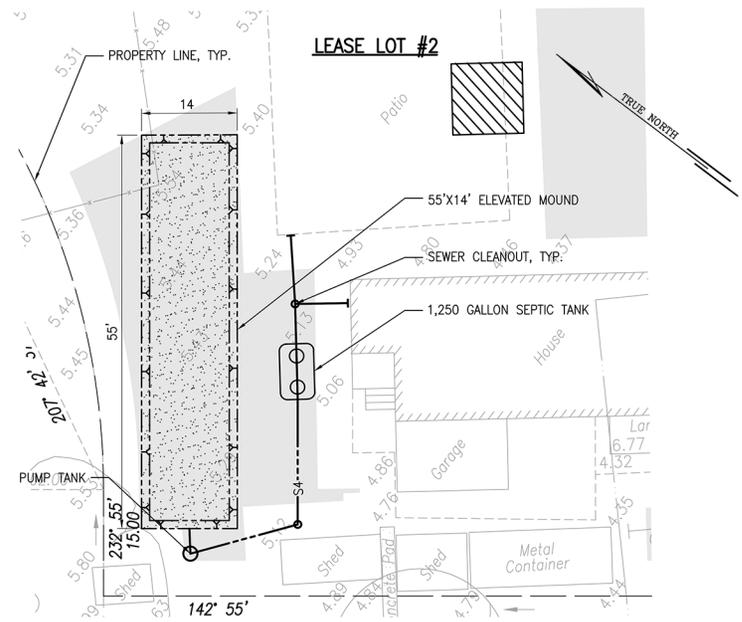


LEGEND:

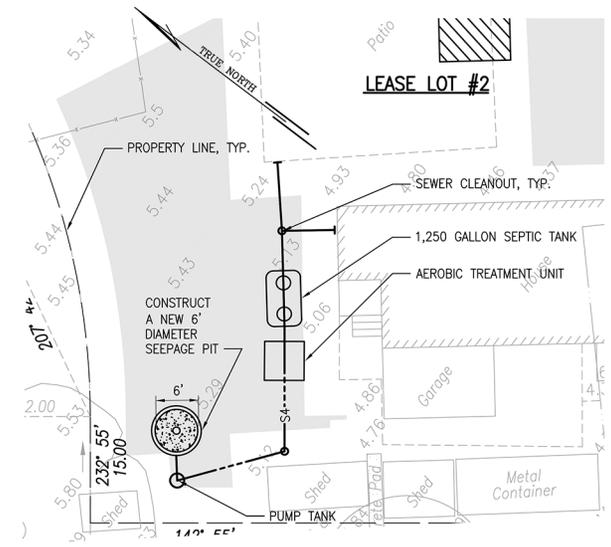
- AVAILABLE ABSORPTION AREA PER HAR 11-62 EXCLUDING TREES
- TEST BORING LOCATION



ALTERNATIVE #1 ATU & LEACHFIELD DISTRIBUTION SYSTEM



ALTERNATIVE #2 ELEVATED MOUND SEPTIC SYSTEM



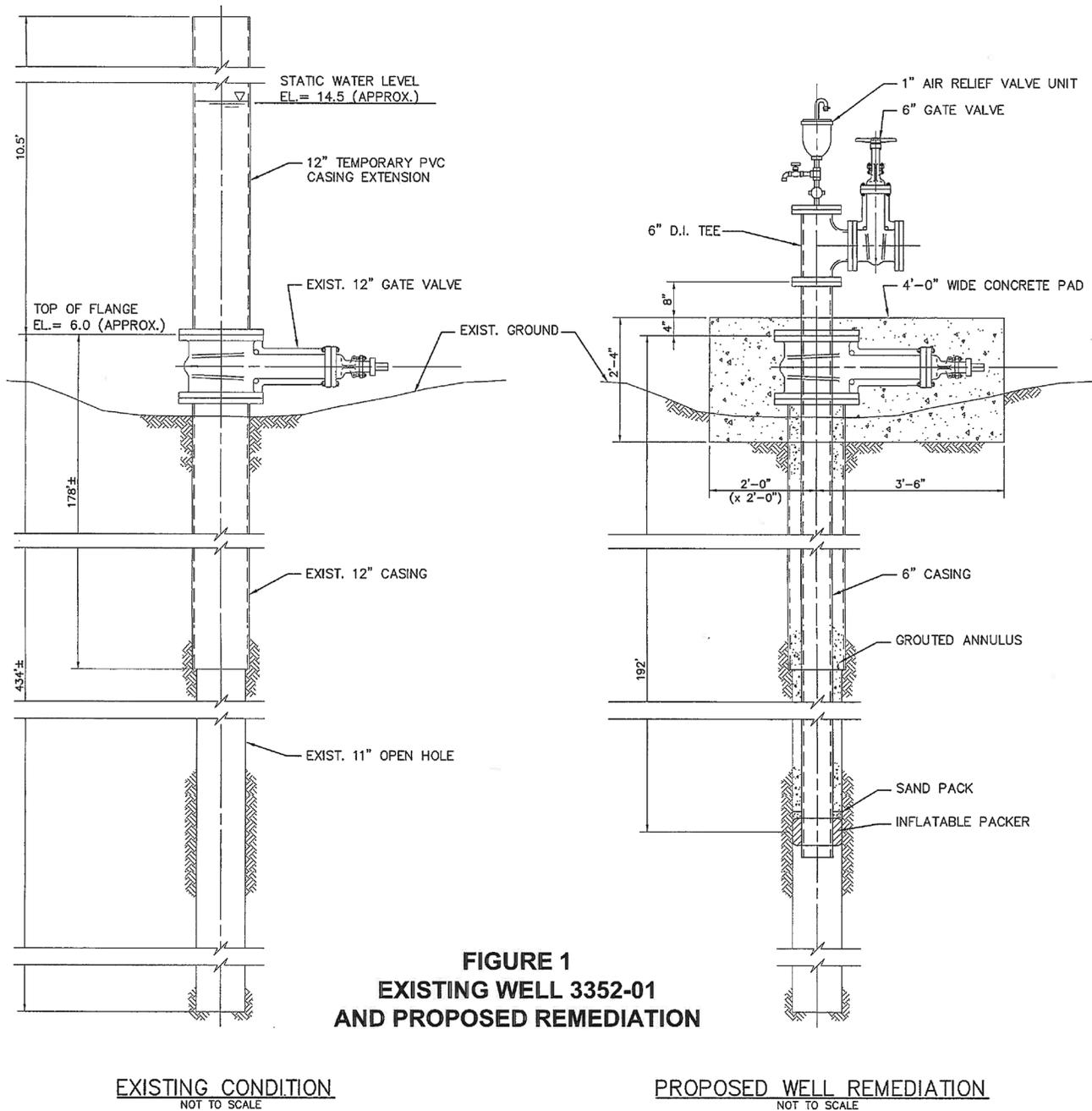
ALTERNATIVE #3 ATU & SEEPAGE PIT DISTRIBUTION SYSTEM

SOURCE: Bow Engineering and Development, April 2014;
Planning Partners, 2014

Ahupua'a 'O Kahana State Park, Issuance of Leases to Lots 1 - 6

Figure 4

Concept Plan for Individual Wastewater System Configuration - Lease Lot 2 Example



**FIGURE 1
EXISTING WELL 3352-01
AND PROPOSED REMEDIATION**

EXISTING CONDITION
NOT TO SCALE

PROPOSED WELL REMEDIATION
NOT TO SCALE

SOURCE: Tom Nance Water Resource Engineering 2014

PROJECT CONSTRUCTION AND COST

The construction costs for the recommended improvements to bring the six lease lots into conformance with DOH regulations and upgrade the existing water system are estimated from \$1,047,000 to \$1,162,000, depending on the IWS selected. Since the State has not committed to funding the entirety of the project, the cost breakout and responsible party, where known, for the project improvements are itemized below¹⁴:

- Cesspool Closure (\$40,000) – In the Board’s conceptual approval of the leases, the lessees pay for the cesspool closure.
- Individual Wastewater Systems (from \$844,715 to \$959,302) – Lessee and State DLNR. The DLNR is to provide funds for the methods of disposal (Seepage Pit, Absorption Bed, Leachfield), and lessees would be responsible for the means of treatment, storage, and transmission (Septic Tank, ATU, Pump Station) to the designated disposal system. Lessee would be responsible for gray water connection.
- Water Lateral Improvements (\$75,444) – State DLNR and Lessee. State would be responsible for laterals and individual meter and work within the state right-of-way. Lessee would be responsible for individual connection.
- Non-potable Water Well Remediation (\$127,200) – State DLNR.

Construction of the proposed improvements would be completed as financing is available. This could occur by individual IWS. Following completion of the replacement of the IWS, the cesspools would be closed to comply with the informal NOV.

COMMUNITY ISSUES IDENTIFIED DURING THE EARLY CONSULTATION PROCESS

During the early consultation phase of the project, there were a range of issues regarding the project that were identified at the February 23, 2015 scoping meeting, the March 25, 2015 Kahana Planning Council Meeting, and in email and telephone conversations with community members. Many of the issues discussed did not necessarily involve potential environmental impacts to be evaluated in the EA, but are important to the overall action. The issues of greatest concern included financing of the project components, and the ability of the lessees to shoulder the cost of the types of IWS required at their location, in addition to improvements or rebuilding of existing dwellings to bring them up to standards and lease terms. Also of concern was a desire for equity in public financing between previously established lease lots and associated septic systems and the current lease lots under consideration. Alternative financing options are being sought within the community, including working with Habitat for Humanity to construct the dwellings and septic systems. For a more detailed description of issues raised during the early consultation component of this project, see Chapter 6, *Individuals, Community Groups, and Agencies Consulted*, of this EA.

¹⁴ These estimates include soft costs such as archaeological monitoring, general construction equipment, erosion control, mobilization, and contingency.

2.3 PERMITS AND APPROVALS REQUIRED OR POTENTIALLY REQUIRED

Government permits required or potentially required to implement the proposed action are listed below:

STATE OF HAWAII

Department of Land and Natural Resources

- Preparation and approval of an Environmental Assessment – As the proposing agency, the DLNR will have the authority to determine if the EA is adequate and whether a FONSI is appropriate.

Department of Land and Natural Resources, Office of Conservation and Coastal Lands

- Conservation District Use Application (CDUA) (permit amendment *may be required*) – The Kahana State Park is located within the Conservation District and is subject to an existing Conservation District Use permit. While the wastewater and well improvements would be considered replacement or reconstruction of existing facilities, the potable water system improvements may be considered a change in use, and an amendment to the Conservation District Use Permit may be required. Consultation with the Office of Conservation and Coastal Lands was initiated at the time of early consultation and EA preparation.

Department of Health

- National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Stormwater Activities (*would not be required*) – Since construction activities would disturb less than one acre of total land area, an NPDES permit would not be required.
- Community Noise Permit – A noise permit would be required for construction of the proposed project.
- Stream Channel Alteration Permit (*would not be required*) - No construction would occur within the Kahana streambed or banks of the stream channel.

City and County of Honolulu

- Construction Permits – Grading Permit from the Department of Planning and Permitting; Trenching Permit for trenching within the State Right-of-Way.
- Special Management Area Permit (SMA) (*may not be required*) – The proposed wastewater system improvements would be considered development of underground utilities at single family homes, and would be considered exempt from SMA permit requirements. Consultation with the City and County of Honolulu, Department of Planning and Permitting was initiated at the time of early consultation and EA preparation.
- Segregation of Service – The Board of Water Supply would require an application to install additional water meters. The Board may require a variance to allow installation of the meters since the existing dwellings are not constructed to code. The BWS may require a fire protection system, such as a sprinkler system or fire hydrant, to be constructed prior to issuing the water connection. For a discussion on code compliance and secondary impacts of the proposed project, see Chapter 5, *Findings and Determination*.

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT, ANTICIPATED EFFECTS, AND PROPOSED MITIGATION MEASURES

The intent of this chapter is to describe the existing physical and social environment that is affected by the proposed action. As defined in HAR, Section 11-200, Environmental Impact Statement Rules, potential project impacts or effects may include primary and secondary impacts, in addition to cumulative impacts:

- A “primary impact” or “direct impact” means impacts that are caused by the action and occur at the same time and place.
- A “secondary impact” or “indirect impact” means impacts that are caused by the action but occur later in time, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.
- A “cumulative impact” means 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (HAR, Section 11-200-2).

Potential impacts that may result from implementation of the proposed action and mitigation measures to minimize the adverse impacts are described below.

3.1 GEOLOGY, TOPOGRAPHY, AND SOILS

Kahana Valley is located on the windward side of O‘ahu, in an area known for its dramatic coastline and the jagged mountain ridges of the Ko‘olau range. This mountain range is a remnant of a deeply eroded basaltic shield. Stream erosion and wave erosion shaped the ridges and valleys. The streams carried alluvium, consisting of clay, silt, sand, gravel, and boulders, to the valley floors.

The project areas as shown in Figures 2 and 3 include developed residential lots with surrounding trees and vegetation at approximately 3 – 7 feet Mean Sea Level (MSL). Kahana Stream runs adjacent to each of the lease lots.

Soils in the area of the project site as classified by the Natural Resources Conservation Service (NRCS) consist of Jaucas sand, 0 to 15 percent slopes (JaC) and Mokuleia clay loam (Mt) (see Appendix C). JaC soils are usually found on beaches and are excessively drained, and Mt clay is typically found on coastal plains and is well drained (NRCS 2014). The Mt soil is classified as prime farmland, if irrigated (see Appendix C).

Based on soil suitability and extent, the State of Hawai‘i, Department of Agriculture has established the Agricultural Lands of Importance to the State of Hawai‘i (ALISH) system to identify areas of prime farmland. The ALISH system classifies three types of land suitable for agriculture: Prime Lands, Unique Lands, and Other Lands. A large majority of Kahana Valley has been designated as “other” agricultural lands, with small portions of prime lands in the back of the valley. While there is active *kalo* (taro) cultivation in the valley, the project site lease lots do not appear to be within designated agricultural lands of importance.

The soil test borings completed for the project found that groundwater was encountered at depths of 20 to 30 inches below ground surface (bgs) at Lease Lots 1 - 4. No groundwater was encountered at Lease Lots 5 and 6 with boring depths of 4 feet bgs. The soil profiles were generally granular (sandy), with the exceptions of Lots 2 and 3, which would be classified as non-granular (dirty sand, organics, loam, and clay), which exhibit poor percolation rates (Bow Engineering 2014).

IMPACTS AND MITIGATION MEASURES

Individual wastewater systems (IWS) and potable water system connections would be installed at each of the lease lots as financing becomes available. Following the construction of the IWSs, the existing cesspools would be closed. These improvements would require trenching on each of the lease lots in addition to trenching within the State right-of-way of Kahana Valley Road and Kamehameha Highway to install the laterals and connect to the water main. Implementation of the proposed action could result in disturbance of up to 15,000 square feet (0.34 acre). All trenched materials would be used as fill on the site. See Appendix B for conceptual plans and approximate locations of earthwork.

There would be a short-term increase in soil erosion during construction since grading and trenching associated with construction of the proposed facilities would result in the exposure of bare soil to potential erosion. An erosion control plan will be submitted prior to grading and trenching activities and will specify best management practices in accordance with the City and County of Honolulu's Best Management Practices (BMP) Manual for Construction Sites, as amended (City and County of Honolulu 2011). All grading and trenching operations would be conducted in compliance with dust and erosion control requirements included in the grading and trenching permits issued by the City and County of Honolulu, and the proposed project would not result in a significant impact due to soil erosion or off-site sediment transport. For a discussion of drainage on the project site, see Section 3.2, *Hydrology and Water Quality*.

No long-term or cumulative adverse effects to geology, topography, soils, or agricultural resources are anticipated with implementation of the proposed action.

3.2 HYDROLOGY AND WATER QUALITY

Coastal marine waters in the vicinity of Kahana Bay were classified "AA" in State Department of Health water quality regulations (DOH 2014). The objective for Class AA waters is that the waters remain in their natural pristine state as nearly as possible with the absolute minimum of pollution. Class AA marine waters are protected for oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, compatible recreation, and aesthetic enjoyment.

Kahana Stream has a maximum elevation of 2,641 feet and empties into Kahana Bay. Kahana Stream is a perennial stream and is classified as a Class 2 inland water by the State of Hawai'i (DOH 2014). Protected uses of Class 2 waters include recreational use, support and propagation of fish and other aquatic life, and agricultural and industrial water supply. Stormwater discharges covered by a NPDES general permit that meet the requirements of basic water quality criteria set forth in HAR, Section 11-54-4 are considered acceptable discharges in Class 2 inland waters.

The Clean Water Act (CWA), Section 303(d), requires states to submit a list of waters that do not attain or maintain applicable water quality numeric criteria, in addition to a priority ranking of impaired waters for Total Maximum Daily Loads (TMDL) development based on the severity of pollution and the uses of the waters. The State's water quality report lists Kahana Stream for ammonia nitrogen and turbidity based on a visual assessment during the dry season, and the Stream is categorized as a "medium" priority for initiating TMDL development within the monitoring and assessment cycle. At Kahana Bay Beach Park, levels of enterococci¹⁵, total nitrogen, total phosphorous, and turbidity have exceeded water quality standards during the wet season (DOH CWB 2014). Exceedence of the water quality standard for enterococci is generally thought to indicate the presence of human fecal contamination and associated pathogens. The rich vegetation of the valley contributes to the high levels of nitrogen and phosphorous. During storm conditions, sediments in runoff are released into the streams and cause high turbidity along the coastline. Because of the embayment and lack of ocean circulation, higher turbidity levels affect Kahana Bay.

The Kahana watershed is 8.5 square miles, which is considered medium sized, and is steep in the upper watershed. Kahana Stream has one of the highest stream flows in the Ko'olauloa watershed, and stream diversions are used for irrigation water in the valley (BWS 2009). The Huilua fishpond, which is fed by freshwater springs, is located within the Kahana watershed on the east side of the bay (DAR 2008). The rock seawall containing the pond controls water levels and prevents sand and sediment from entering the fishpond (NPS 2015).

The aquifer systems in windward O'ahu consist of basal aquifers, high-level dike aquifers, and dike basal aquifers, which are a combination of the first two. The Kahana aquifer system area consists of dike formations near the crest and basal aquifers near the coast. Surface and groundwater interactions are more likely in dike formations. Groundwater development in the basal formations usually does not have an effect on stream flows (BWS 2009).

There is an existing non-potable well used for the irrigation of surrounding *kalo* (taro) fields. According to the well report, the well was drilled in 1932 to a total depth of approximately 440 feet. It has a solid 12-inch diameter casing to a depth of approximately 177 feet and an open hole below that to a depth of 440 feet. The existing well flow rate is estimated at around 500 gallons per minute. Video logging showed the solid casing to be completely tuberculated¹⁶ over its entire length. The well has a small leak at an unknown location, but based on water movement, it was determined to be somewhere above the 112 foot depth (TNWRE 2014).

There are seven existing unauthorized and undocumented cesspools at the project site. On November 21, 2013, the State of Hawai'i Department of Health issued an Informal Notice of Violation to the DLNR for violations of HAR, Sections 11-62-08(b) and 11-62-31.1(f), which prohibits the construction, modification, or use of an individual wastewater system without DOH approval. The informal NOV issued by the DOH requires all of the cesspools to either be backfilled and abandoned, or converted to function as a disposal system for an approved wastewater system.

¹⁵ A group of bacteria that commonly reside in the guts of animals, including humans.

¹⁶ Tuberculation is the development of small mounds of corrosion products on the inside of the pipes. These tubercles roughen the inside of the casing, increasing its resistance to water flow and decreasing capacity.

IMPACTS AND MITIGATION MEASURES

Construction activities disturbing one or more acres are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program and are required by the State to obtain a NPDES permit. Because the project would disturb less than one acre, a construction NPDES permit would not be required. However, construction activities could result in adverse impacts to water quality, including erosion, sedimentation, and turbidity within Kahana Stream. The proposed action would include a site-specific Best Management Practices plan developed as part of the permitting process to minimize any environmental effects to water quality in the vicinity of the project site during construction. BMPs could include but would not be limited to:

- Frequent wetting of graded areas by water truck or hose.
- Provide stabilized construction entrance to prevent transport of mud, dirt, rocks, etc. onto the paved roadway.
- Sediment rolls or other temporary measures to be provided to protect adjacent areas.
- Temporary/Permanent ground cover as soon as practical after final grading.

These BMPs will be developed in accordance with the City and County of Honolulu regulatory requirements as part of the permitting process. With implementation of best management practices, the construction of the project would not result in a violation of water quality standards. For a discussion of impacts due to soil erosion and off-site sediment transport, see Section 3.1, *Geology, Topography, and Soils*. For a discussion of impacts due to flooding, see Section 3.3, *Natural Hazards*.

The existing cesspools may adversely affect water quality in the project area, as raw, untreated sewage is discharged directly into holes in the ground, releasing disease-causing pathogens and nitrates. As set forth in the conceptual plans (see Appendix B), the cesspools would be backfilled and abandoned by pumping out the waste from the cesspools and filling them with concrete or a material similar to the site's natural material. Under several of the IWS alternatives, the cesspool would be converted to a seepage pit for the proposed wastewater system following removal of existing waste. With removal of existing waste and closure of the cesspools, potential impacts to water quality from the cesspools would no longer occur.

All wastewater pumped from the cesspools, including sediment, sludge, debris, and organic matter, would be removed and disposed of properly in accordance with Department of Health requirements (HAR, Section 11-62). While as-built plans and the dimensions of the cesspools are currently unknown, a conservative estimate of the volume of waste material is approximately 37.7 cubic yards, which would require between 3 to 13 truckloads to a DOH-approved facility for processing.

Replacement individual wastewater systems for each lease lot would consist of a treatment system and disposal system as shown in Appendix B. With implementation of the proposed action, gray water would no longer operate as open discharge and would be connected to each new wastewater system. Due to their relatively small lot sizes, existing structures, depth to groundwater for lots 1 through 4, and proximity to Kahana Stream, the lease lots face several disposal system location constraints. HAR, Section 11-62 establishes minimum horizontal distance setbacks from disposal systems to: streams (50 feet), to property lines (5 feet), and to building structures (5 feet). Based on these location constraints, conceptual plans with several alternative wastewater systems have been developed for each of the lease lots (see Figure 4 for an example lease lot and Appendix B for details of each system). The size and type of disposal system is based on the soils ability to convey and treat

wastewater effluent prior to discharge to the groundwater. HAR, Section 11-62 requires percolation rates for disposal systems to be between 1 and 60 minutes per inch. Disposal systems for effluent from septic tanks must be at least 3 feet from groundwater. To ensure the wastewater systems are installed properly, the following measure would be required:

Mitigation Measure 1:

Prior to construction of each wastewater system, additional soil tests shall be performed at the selected disposal system location for each lease lot to ensure uniform percolation rates and confirm the depth to the seasonal high groundwater table. Soil tests and wastewater system plans shall be approved by DOH prior to system installation.

Closure of the cesspools and installation of individual wastewater systems at the lease lots would resolve the informal NOV and bring the systems into compliance with current standards and regulations for the disposal of wastewater, and potential impacts to water quality from the cesspool would be minimized.

The existing leaking non-potable well would be repaired with a well sleeve and above ground improvements that would allow the well to have a controlled flow rate. The new well would be able to free flow at several hundred gallons per minute, and an optional end suction pump could increase the yield. See Figure 5 for a depiction of the existing well and proposed repairs. Groundwater withdrawal used for irrigation would not be expected to change with implementation of the proposed action, and repair of the existing leak would result in reduced groundwater waste from the leak.

The establishment of formalized lease lots and connection would allow for the future development of new residences to replace the existing structures. Building and grading permits would be required at the time of development, and compliance with City and County of Honolulu BMPs for construction would minimize impacts to water quality. No long-term or cumulative adverse effects to hydrology or water quality are anticipated with implementation of the proposed action.

3.3 NATURAL HAZARDS

Natural hazards in Hawai'i include floods, strong winds and flooding from hurricanes and tropical storms, volcanoes, and earthquakes. The Kahana Valley area is identified as a tsunami evacuation zone, as all low lying coastal areas and streams are vulnerable to tsunami impacts. The project area is not located adjacent to any active volcanoes.

Most of the earthquakes in Hawai'i are directly related to volcanic activity and are caused by magma moving beneath the earth's surface. Numerous small earthquakes are reported felt each year, mostly on Hawai'i Island. According to FEMA earthquake hazard maps, the project area is located within Seismic Design Category D, which means it could experience strong shaking with sustained damage to poorly designed or built structures (FEMA 2014).

The project area is mapped by the Federal Emergency Management Agency (FEMA) as Floodway Areas in Zone AE, which is within the 100-year flood zone, with a Base Flood Elevation of 8 feet (FEMA 2004). The Floodway area designation (Zone AEF) denotes that the area is in the channel of a stream in addition to adjacent floodplain areas that must be kept free of encroachment so that the

100-year flood can occur without substantial increases in flood heights (HNFIP 2015) (see Appendix C).

The project area is subject to periodic flooding, and the existing project site dwellings have encountered flooding in the past. The lots are adjacent to Kahana Stream and a network of its surface water distributaries, or branches, empty into the bay. The heavy vegetation adjacent to the stream tributaries contributes debris that can clog the outlets, and the waterways are frequently dammed by silt and sand. Sand build-up prevents the stream from draining to the ocean and can flood inland areas. While the six lease lots appear to be outside of the floodway area designation, based on flooding history and field observations, the lots are within the flood fringe.

IMPACTS AND MITIGATION MEASURES

During construction, stream flood events, or flash flooding, could result in potential hazards to workers and construction equipment located in the flood hazards area. Site-specific BMPs included as part of the permitting process will include measures to be taken in the event of intense rainfall, weather, or increased stream flows. These measures would include relocation of personnel and construction materials and equipment to higher ground during a flood event. With implementation of these BMPs, potential hazards to construction workers would be minimized, and no mitigation would be required.

Establishment of the lease lots and construction of wastewater improvements, water service improvements, and well repair would not result in increased flooding or hazards from flooding in surrounding areas. While the proposed improvements would be within a flood hazard zone and tsunami inundation zone, the flood elevations have been considered in the design of the wastewater and water service improvements. While not recommended, the DOH does not restrict construction of any waste disposal systems within flood zones or tsunami inundation zones (Pruder pers. comm. 2014). To minimize flood impacts to the system, the IWS alternatives including the Aerobic Treatment Unit (ATU) would either need to be weighed down to counteract buoyant forces, or constructed to a higher level than that of the designated flood elevation with the integration of a sewage pump. The electrical connection to power the ATU would be insulated to avoid system failure.

The existing dwellings would continue to be subject to inundation during a major flood event or tsunami, and no changes would occur with implementation of the project. Establishment of the lease lots could result in the potential future construction of new residences to replace the existing dwellings. For a discussion of secondary impacts of the project, see Chapter 5, *Findings and Determination*.

Prior to the initiation of construction of the proposed improvements, the City and County of Honolulu would review proposed plans for compliance with City and County of Honolulu requirements and standards. No significant long-term or cumulative adverse environmental effects would result from natural hazards, and no mitigation would be necessary.

3.4 BIOLOGICAL RESOURCES

Native plant communities in windward O‘ahu are generally found above 1,000 feet in elevation. The lease lots range in size from 11,845 square feet to 13,956 square feet and consist of developed residential uses with surrounding trees and vegetation. Vegetation on the residential lots includes ornamental and fruit trees such as plumeria, lime, coconut, mango, and avocado trees. There are hau thickets along the Kahana Stream water edges adjacent to the lease lots.

The Biological Assessment of Kahana Stream (Fitzsimmons et. al. 2005) identified three species of ‘o‘opu (Hawaiian stream gobies) ‘ōpae (native shrimp), and other native species in the stream. Alien fishes and larger invertebrates occur throughout Kahana Stream. The study attributed reduced flows and slowed water movement in the middle and lower sections of the stream with lower biological diversity and a reduction in native species (Fitzsimmons et. al. 2005). According to the Division of Aquatic Resources (DAR), there is no abundance of any native species in the Kahana watershed, but candidate endangered species may be present (DAR 2008).

IMPACTS AND MITIGATION MEASURES

While the proposed project would include grading and trenching that would result in the removal of some existing vegetation on the lots, these areas would be re-grassed following construction to prevent erosion, and there would be no loss of natural habitat. No adverse long-term effect to natural habitat would occur with project implementation.

During construction, site-specific BMPs developed as part of the permitting process would minimize erosion and sedimentation and potential adverse effects to aquatic biota in the vicinity of the project site. In addition, with removal of existing waste and closure of the cesspools, impacts to water quality and aquatic organisms from the cesspools would no longer occur. No adverse long-term effects to aquatic biota would occur, and no mitigation would be necessary.

3.5 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

An Archaeological Literature Review and Field Inspection was completed for the South Kahana Stream Bridge Replacement Project (Cultural Surveys Hawai‘i 2006a), which is located directly adjacent to the project lease lots. In addition, a Cultural Impact Assessment was prepared for this project (Cultural Surveys Hawai‘i 2006b). Because of the project area overlap, the limited scope of the proposed project, and the relatively recent completion of these analyses, these reports were used in this discussion.¹⁷

HISTORICAL PERSPECTIVE

Prior to Western contact, Kahana was a thriving fishing and farming community. Kahana Stream provided an abundance of fresh water for *kalo* (taro) cultivation. Kahana Bay also provided a wealth of fish and shellfish. In the 19th Century, the population in Kahana Valley and Hawai‘i in general rapidly declined as a result of Western contact and the introduction of foreign diseases. The valley

¹⁷ Further, the Kahana community is relatively small, and duplicating the consultation effort with identified knowledgeable individuals with cultural expertise and/or knowledge of the project area and the vicinity could prove tiresome for those individuals graciously sharing their time and knowledge.

was also used for rice cultivation in the mid to late 1800s, which transitioned to pineapple cultivation in the late 1800s and early 1900s (Kaanaana undated). From 1923 to 1935, sugar cane cultivation was prevalent. The valley was also used as a World War II jungle warfare-training site. All of these activities dramatically changed the landscape of the valley. However, many of the families who live in Kahana Valley have been there for multiple generations, and many traditional cultural practices are still taking place (Cultural Surveys Hawai'i 2006b).

HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Archaeological surveys of Kahana Valley have found extensive remnants of Hawaiian culture. The Huilua Fishpond, located on the east side of the bay, played an important role in Hawaiian culture and history, and is a National Historic Landmark listed on the National and Hawai'i Registers of Historic Places. There is a fishing shrine (*keo'a*) associated with this pond. Additional archaeological resources in the valley include *heiau* (religious temple), house sites, stone-walled enclosures, *'auwai* (irrigation channels), agricultural terraces, walls, and planting areas. Coastal sand areas have been shown to contain human burials and cultural deposits throughout Hawai'i, and numerous burial sites have been identified in the coastal and valley areas of Kahana Valley, including the vicinity of the project site lease lots (Cultural Surveys Hawai'i 2006).

Cultural practices such as fishing and gathering occur in some areas of Kahana stream and at the Huilua Fishpond. There is no public access to the stream at the project site lease lots.

IMPACTS AND MITIGATION MEASURES

The project site lease lots consist of previously disturbed areas from house construction, cesspool construction, and localized gardening. However, there is potential for previously unidentified subsurface burial and or cultural deposits to be present in the proposed project area. Currently, the DLNR is working with the State Historic Preservation Division (SHPD) on an Archaeological Inventory Survey that includes trenching investigations where major excavation areas are proposed. The following mitigation measure will be required to minimize impacts to unidentified cultural resources. It is emphasized that sensitivity to cultural concerns be employed when dealing with burial issues.

Mitigation Measure 2:

- Based on the testing results of the Archaeological Inventory Survey, should it be determined necessary, an Archaeological Monitoring Plan will be developed in consultation with the SHPD. Detailed mitigation plans shall be submitted to the SHPD for approval. The SHPD must verify in writing that the plan have been successfully executed prior to any land alteration.
- If burials are discovered during the archaeological survey, burial treatment determinations shall be requested from the O'ahu Island Burial Council. A burial treatment plan shall be prepared following the procedures outlined in HRS, Section 6E-43 and the accompanying rules. Prior to any land alteration, the burial plan shall be implemented as specified.
- In the event that historic resources, including human skeletal remains, are identified during the construction activities, all work shall cease in the immediate vicinity of the find, the find shall be protected from additional disturbance, and the SHPD, O'ahu Section, shall be contacted immediately.

With implementation of these conditions, no adverse effect to cultural, historic, or archaeological resources would occur. Because the proposed project represents a continuation of existing uses and would not negatively impact access to the shoreline, fishpond, or Kahana Stream, there would be no impacts to cultural practices that may occur in the vicinity of the project site.

3.6 AIR QUALITY AND CLIMATE

Hawai'i receives most of its precipitation during the winter months (October to April). Flooding is more likely during this wet period, and stream flows decrease during drier conditions from May to September. Along the Ko'olau Mountains, trade winds come from the northeast for most of the year and bring moisture from the ocean, and overcast skies and showers are frequent. The Kahana Valley is one of the wettest areas on O'ahu, with rainfall ranging from 75 inches per year at the shoreline to 300 inches per year at the upper elevations of the valley. Temperatures are generally uniform and mild, with daytime temperatures commonly in the 70's to 80's and nighttime temperatures in the 60's to 70's.

The Department of Health, Clean Air Branch (CAB), monitors the ambient air in the State of Hawai'i for various gaseous and particulate air pollutants. The U. S. Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter (PM₁₀ and PM_{2.5}). Hawai'i has established state ambient air standards for all of these pollutants (except for PM_{2.5}) in addition to hydrogen sulfide, a product of volcanic emissions (CAB 2013). The primary purpose of the statewide monitoring network is to measure ambient air concentrations of these pollutants and ensure that these air quality standards are met.

In 2013, there were four air monitoring stations on the island of O'ahu. While there are no monitoring stations in the project vicinity, according to the State of Hawai'i Department of Health Annual Summary 2013 Air Quality Data, criteria and pollutant levels in the State remained below all federal and state ambient air quality standards (excluding exceedances due to the volcano) (CAB 2014).

IMPACTS AND MITIGATION MEASURES

Construction of the proposed project could result in temporary air quality effects, including exhaust emissions from construction vehicles and dust generated by short-term construction related activities. Components of construction emissions include employee trips, exhaust emissions from construction equipment, and fugitive dust emissions. Grading and earthwork within the project area could generate airborne dust particulates.

Dust control measures such as watering and sprinkling will be implemented as needed to minimize wind-blown dust. To minimize construction-related exhaust emissions, project contractors will ensure that all internal combustion engines are maintained in proper working order. All construction work will be in conformance with the air pollution control standards contained in HAR, Title 11, Chapter 59, "Ambient Air Quality Standards," and Chapter 60, "Air Pollution Control," which would minimize air quality emissions.

Once constructed, the proposed lease lots and wastewater improvements would not result in any air emissions, and there would be no long-term adverse air quality impacts associated with the proposed action. Other than passing vehicles on the highway, there are no air contaminant sources in the project area.

3.7 NOISE

The project site is located in a rural area of windward O‘ahu. Surrounding noise levels in the vicinity of the project site are considered relatively low. Existing noise sources are from occasional vehicular traffic on Kamehameha Highway, in addition to the sound of flowing stream water.

IMPACTS AND MITIGATION MEASURES

Noise impacts from a project can be categorized as those resulting from construction and those from operational activities. Construction noise would have a short-term effect; operational noise would continue throughout the lifetime of the project. Implementation of the proposed improvements could temporarily increase noise levels during construction, though because of the types of construction equipment necessary and scale of the improvements, noise levels are not anticipated to be above maximum allowable limits. All construction work would be during the daytime, and construction-period noise would be minimized by project compliance with HAR, Section 11-46, “Community Noise Control” of the State Department of Health.

There would be no long-term increase in noise during project operations since the project includes continuation of existing residential uses and associated utility improvements. Further, the project would not generate additional traffic and associated noise.

3.8 AESTHETIC AND RECREATIONAL RESOURCES

The project area consists of rural, agricultural, and limited residential uses. The lease lots are located near the highway within the Ahupua‘a ‘O Kahana State Park. From the highway while driving, there are limited views of the residences, and scenic views both *mauka* and *makai* of the stream and ocean. Motorists may stop in the area to visit Kahana Bay or hike in Kahana State Park.

The Ahupua‘a ‘O Kahana State Park is a scenic wilderness valley comprised of 5,249 acres with a variety of beach-related, hiking, camping, and picnicking activities. It was established as a “living park,” and currently has 28 established leases. The families that live on the lease lots and assist with interpretive programs share the Hawaiian values and lifestyle.

IMPACTS AND MITIGATION MEASURES

During construction, workers, materials, and equipment would be visible from the highway. Visual impacts during construction would be temporary and intermittent, and likely limited to small increments of the project over time. Since the proposed project predominantly consists of underground utilities, the proposed project would not significantly change the scenic and visual character of the surrounding area.

Existing uses at the project site include six existing occupied dwellings. While there are public recreational uses at the park, the proposed project would represent a continuation of existing residential uses and improvements to those uses, and no adverse impacts to existing recreational uses would occur. For a discussion of secondary impacts of the project, see Chapter 5, *Findings and Determination*.

3.9 SOCIAL AND ECONOMIC CHARACTERISTICS

In 2013, the population in Honolulu County included an estimated 964,678 persons, with a total of 338,266 housing units, a median family income of \$85,440, and an unemployment rate of 3.7 percent. In the Hauula-Ka'a'awa Census Tract (Tract 102.01), there are an estimated 5,433 persons, a total of 1,591 households, a median family income of \$63,623, and an unemployment rate of 6.1 percent (DBEDT 2013). Due to the rural nature of the project area, residents generally must travel to Kane'ohe or Honolulu to obtain social and health services.

IMPACTS AND MITIGATION

Implementation of the proposed action would result in the replacement of utilities and infrastructure and would not displace any residents. While construction employment would be created during the project construction phase, needed employees could be expected to be provided by the local labor pool, without the importation of significant amounts of new labor.

From an economic standpoint, flood insurance at this location may be at higher rates than up in the valley, and building homes in a flood plain would cost more in order to meet federal and local codes. Considering the cost of the alternative wastewater systems (both installation and maintenance), all of these increased costs could force several of these families beyond their abilities to pay for the mortgage and required improvements. For a discussion of secondary impacts of the project, see Chapter 5, *Findings and Determination*.

3.10 UTILITIES AND PUBLIC SERVICES

The six existing residences use cesspools for wastewater discharge. Potable water is currently provided to the residential lots via various water laterals, some of which are connected to the master water meter for the comfort station at the entrance to the park. Lot 5 currently is served by a PVC lateral off a nearby water meter. There are electrical, telephone, and cable lines and poles in the project area. In addition, there is an existing leaking non-potable well that provides irrigation water to the State Park.

The Honolulu Fire Department provides fire protection and first responder emergency medical services. There are 45 fire stations on the island, with a station located in Ka'a'awa, approximately two miles from Kahana Valley. The Honolulu Police Department also provides service to the area.

IMPACTS AND MITIGATION

The proposed improvements would include closure of the existing cesspools and replacement IWS for each lease lot. In addition, a dedicated meter, lateral, and backflow preventer at each of the project lease lots would be installed for potable water service and connection to the water mains located along Kahana Valley Road and Kamehameha Highway. The leaking non-potable well would also be repaired as part of the project. Refer to Appendix B for the Conceptual Water Lateral Drawings (Sheets C-2.1 through C-2.2).

During construction, there may be increased calls or complaints to the police from motorists due to traffic disruption, noise, and temporary lane closures. The proposed improvements would not result in an increase in service demands from police and fire protection. With connection to the water

main, the BWS may require a fire protection system, such as a sprinkler system or fire hydrant, to be constructed prior to issuing the water connection. Because the project does not envision an intensification of land use from that currently existing or designated by the County, no major new utility systems are necessary to serve proposed uses on the site. Therefore, no significant adverse impacts to existing utilities and public services are expected, and no mitigation would be necessary.

3.11 TRAFFIC AND TRANSPORTATION

The portion of Kamehameha Highway (Hawai'i Route 83) serving the project site serves as the main transportation route between Kane'ohe and Hale'iwa. It is a scenic drive on a two-lane road that passes through several windward communities.

IMPACTS AND MITIGATION

Construction of the proposed project would result in short-term impacts on traffic. During trenching in the State right-of-way to install the water laterals and connect to the water main, one highway travel lane would need to be closed, resulting in one-way traffic and temporary delays. Providing notification of any temporary closures would minimize impacts to the public. Emergency services (police, fire, and ambulance services) and area residents would be given adequate notice of potential delays prior to construction.

There would be no direct increase in operational traffic due to implementation of the proposed project, and no long-term adverse affects to transportation and traffic would occur.

3.12 LAND USE CONTROLS

State and County policy, and land use and community plans and controls are established to address the long-term physical, social, economic, and environmental needs in Hawai'i. Pertinent land use controls for the Kahana State Park Lease Lots project are described below.

STATE OF HAWAI'I

State of Hawai'i, Land Use Commission – State Land Use Districts

HRS, Chapter 205, establishes four major land use districts in which all lands in the State are placed. These districts include: urban, rural, agricultural, and conservation. The Conservation District has five subzones: Protective, Limited, Resource, General, and Special. Excluding the Special subzone, the four subzones are arranged in a hierarchy of environmental sensitivity, ranging from the most environmentally sensitive (Protective) to the least sensitive (General). These subzones define a set of identified land uses that may be allowed by discretionary permit as regulated by HAR, Chapter 13-5, "Conservation District" and HRS, Chapter 183C. The project site is located within the "Conservation" District Resource Subzone classification

Ahupua'a 'O Kahana State Park is subject to an existing Conservation District Use Permit approved in 1979 for public recreational use at Kahana Valley (Mills *pers. comm.* 2015); the permitted uses include valley residences as part of the "living park" concept. The existing permit conditions state that for any changes in use, consultation with the Office of Conservation and Coastal Lands must occur and compliance with permit conditions is required. While the wastewater and well improvements would be considered replacement or reconstruction of existing facilities, the potable

water system improvements may be considered a change in use, and an amendment to the Conservation District Use Permit may be required. Consultation with the Office of Conservation and Coastal Lands was initiated at the time of early consultation and EA preparation, and any permit requirements will be included as part of project approval. For a discussion of potential secondary impacts and associated permits, see Chapter 5, *Findings and Determination*.

Coastal Zone Management Program

In October 1972, Congress passed the Coastal Zone Management Act for the purpose of establishing a national program for the management, beneficial use, protection, and development of land and water resources of the coastal areas of the United States. The Hawai'i Coastal Zone Management (CZM) Program (HRS, Chapter 205A) was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The objectives and policies of the CZM Program are to provide recreational resources; protect historic, scenic, and coastal ecosystem resources; provide economic uses; reduce coastal hazards; and manage development in the coastal zone.

Special Management Area Designation

The CZM Program outlines controls and policies within an area along the shoreline called the Special Management Area (SMA). The objectives of the SMA are “the maintenance, restoration, and enhancement of the overall quality of the coastal zone environment, including, but not limited to, its amenities and aesthetic values, and to provide adequate public access to publicly owned or used beaches, recreation areas and national reserves.” The purpose of the SMA Permit is to regulate any use, activity or operation that qualifies as a “development” and is administered at the County level – the permit is a management tool to ensure activities within the SMA are carried out in compliance with the CZM objectives and policies, and SMA guidelines.

The project site is located within the SMA boundary. The SMA regulations generally exempt repair and installation of underground utilities and construction of single-family homes that are not part of a larger development from obtaining an SMA permit (HRS, Section 205A-22). Consultation with the City and County of Honolulu, Department of Planning and Permitting was initiated at the time of early consultation and EA preparation.

CITY AND COUNTY LAND USE PLANS AND POLICIES

City and County of Honolulu General Plan

The City and County of Honolulu General Plan (1992 edition, amended in 2002) sets forth the long-range objectives and policies for the general welfare and, together with the regional development plans, provides a direction and framework to guide the programs and activities of the City and County of Honolulu. An update to the Plan is underway, the O'ahu 2035: General Plan Focused Update. This update will focus on the critical issues of growth, development, and quality of life. The General Plan designates Ko'olauloa District, the area of the proposed project, as a rural area where agricultural lands are preserved for agricultural uses.

City and County of Honolulu Land Use Ordinance

The land use ordinance of the City and County of Honolulu, or zoning ordinance, regulates land use on O'ahu to encourage “orderly development in accordance with adopted land use policies,” such as the O'ahu General Plan (Revised Ordinances of Honolulu (ROH), Section 21-1.20). The proposed project site is located in an area with a Preservation District, Restricted zoning designation (P-1).

The purpose of the preservation district is to preserve and manage major open space and recreation lands and lands of scenic and other natural resource value. All lands within a state designated conservation district are within the restricted preservation district (P-1) (ROH, Section 21-3.40). All uses, structures, and development in this district are governed by state agencies.

Kahana Community Planning

The Kahana Planning Council was created by Act 15, of the 2009 Hawai'i State Legislature Special Session, and is charged with the task of creating a Master Plan for the ahupua'a. With capital improvement funds, a Master Plan will be initiated to include an assessment of the issues it will address, if it should be a phased project, what will be included in each phase, how much it will cost to complete, and a plan for how best to proceed with its development. The process for consultant selection was recently initiated.

An EIS was prepared for Kahana Valley in 1979, which planned for the development of up to 18 new residences. A 1992 Supplemental EIS planned for a second residential area of 14 lots along Trout Farm Road. Both environmental documents noted the existing residential uses in the front areas of the park within the floodplain, many of which were not constructed to code and in substandard condition. The environmental document also indicated that the front areas of the park should be used for day use and interpretive purposes. The 1992 EIS stated that all residents living in the flood plain or unable to meet Department of Health sewage treatment requirements would relocate, and all residents living in prime areas of the park would relocate. Despite these recommendations, the residents have remained at their location in the front of the park.

Park Planning History and Origin of Day Use in the Front Portion of the Park

Earlier documents prepared for the park's development reference day use for the front area of the park as far back as 1962. A conceptual drawing of the proposed development plan and a description of the park was found in "A Comprehensive Plan for Hawaii State Parks" (see Appendix C). The 1974 Mōgi Master Plan for Kahana Valley State Park also included an orientation center comprised of *kaunohale*, or separate structures with a specific function, such as an information center, general store, and restaurant at the front area of the park.

Legislative Actions

Act 5, 1986 Special Session, gave the DLNR authority to issue long-term residential leases (maximum of 65 years) to qualified residents of Kahana Valley. Qualified residents are defined as those persons who at the time of enactment of Act 5 reside in Kahana Valley on land acquired for Kahana Valley State Park and have lived continuously on this land since before 1970 or persons who on the effective date of Act 5 have permits issued by the DLNR allowing them to reside on designated parcels of land acquired for Kahana Valley State Park.

Act 5 also authorized the DLNR to create a residential subdivision that was exempt from all statutes, ordinances, charter provisions, and rules of any governmental agency relating to zoning and construction standards for subdivisions, the development and improvement of land and the construction of units provided the project is consistent with the purposes of the Act, meets minimum requirements for health and safety, and that no state funds are expended in the relocation or construction of these residences. The stated purpose of Act 5 is to authorize the DLNR to issue long-term residential leases to qualified persons now residing in Kahana Valley on the condition that these persons participate in the park's interpretive programs for the public.

Act 238, Regular Session of 1988, amended the provision in Act 5 that did not allow the use of state funds for relocation or construction and provided an appropriation of \$1,360,000 to provide low-interest home construction and mortgage loans of up to \$50,000 per lessee. Twenty-six lessees received mortgage loans that were administered by the Housing Finance and Development Corporation.

Descendants of six families that did not originally qualify for long-term residential leases remained in the front of the valley. Act 15 (2009 Special Session) established a two-year moratorium on evictions of persons who at the time of the enactment of the Act, reside in Kahana Valley State Park, have participated in interpretive programs for Kahana Valley State Park, and have continuously lived there since before 1987 or hold or have held a long-term lease or permit to reside there.

Act 15 also authorized the DLNR to issue long-term residential leases to qualified persons, and establish a living park planning council to develop a Master Plan for each State living park that will provide the framework, proposed rules, measurements for success, and planning process to ensure that the living park achieves its purpose and goals.

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4 ALTERNATIVES TO THE PROPOSED ACTION

This chapter considers alternatives to the proposed action, including the No Action Alternative.

4.1 PROPOSED ALTERNATIVES

NO ACTION ALTERNATIVE

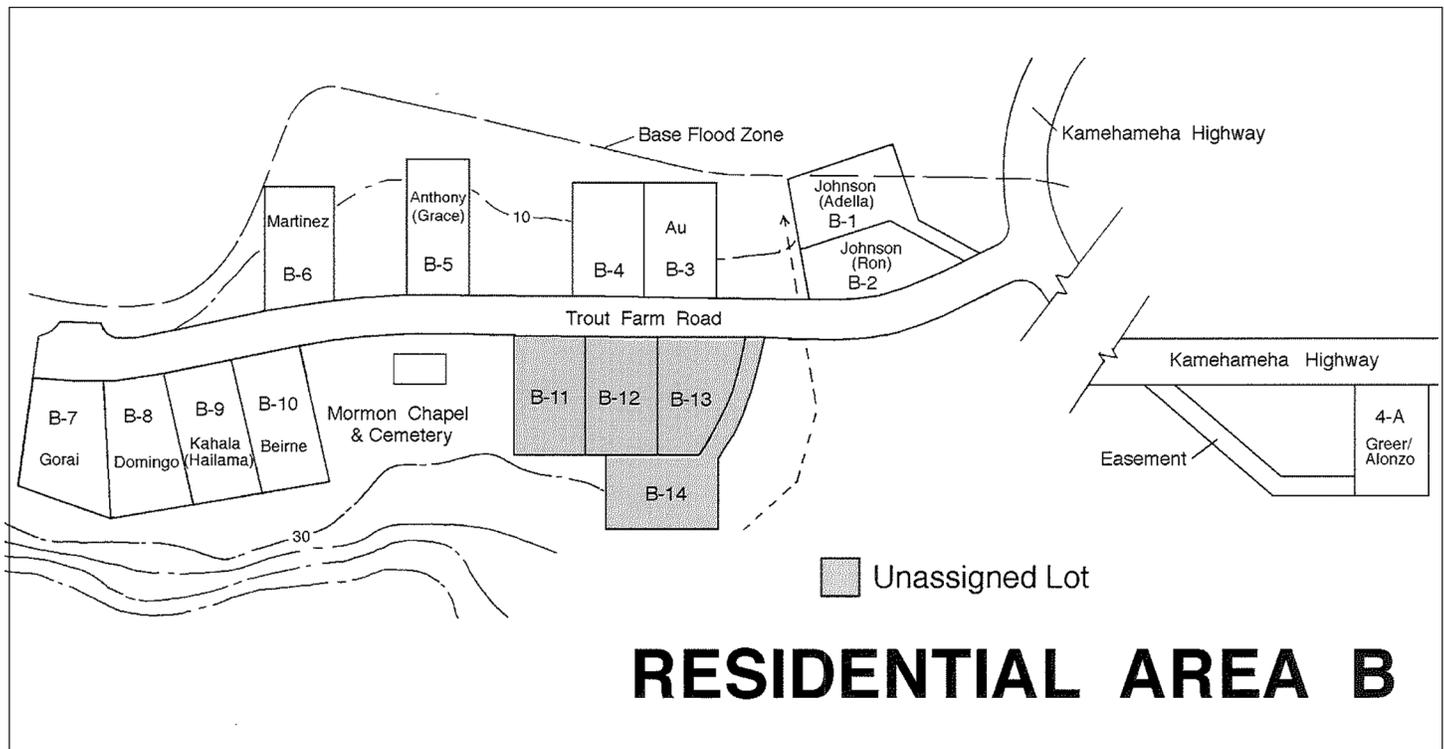
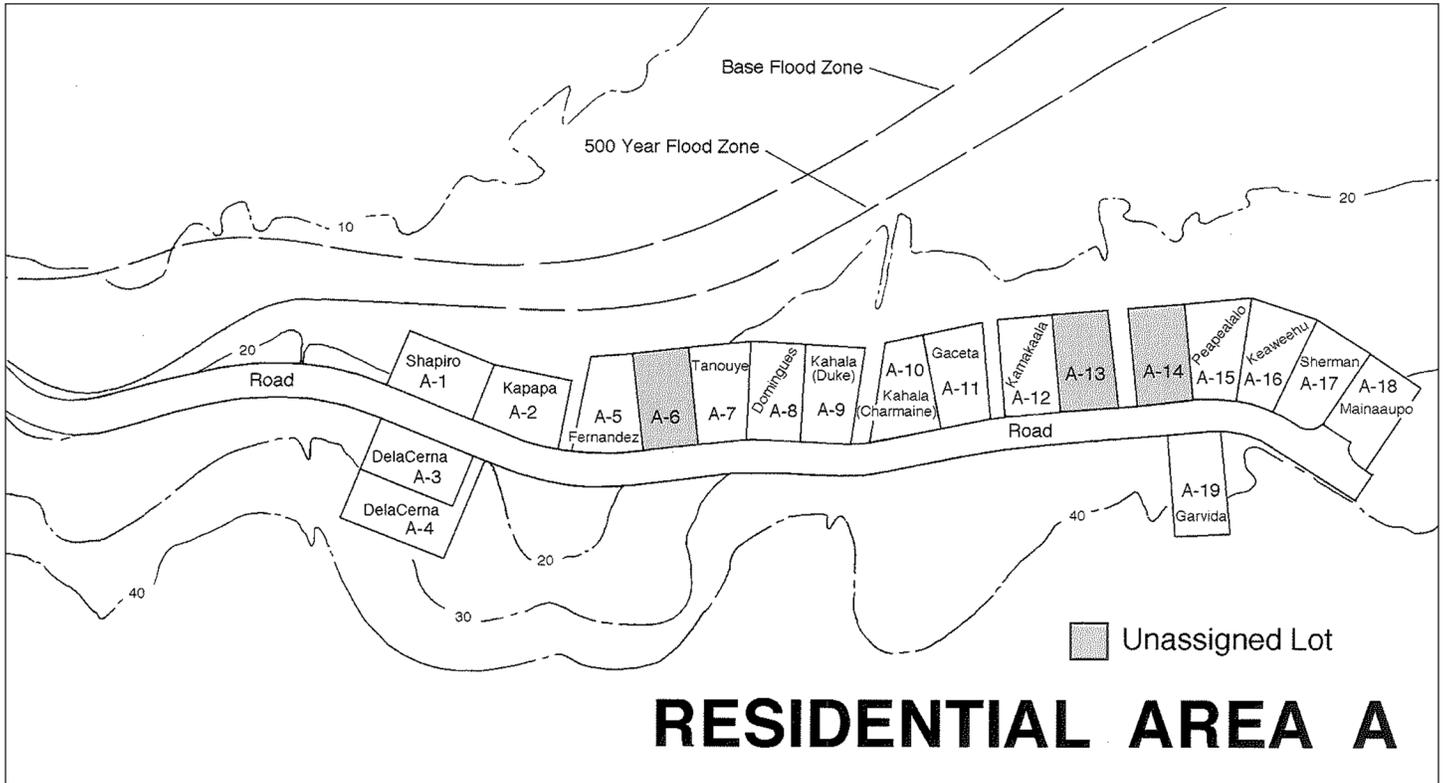
The No Action Alternative identifies the expected environmental impacts in the future if existing conditions were left as is with no action taken by the approving agency. Under the No Action Alternative, establishment of the lease lots would not occur. The Informal Notice of Violation issued by the DOH via letter dated November 21, 2013 is clear that the continued use of the wastewater systems without DOH authorization constitutes continuing violations of HAR, Sections 11-62-08(b) and 11-62-31.1(f), subject to penalties of up to \$25,000 per day. The DOH further ordered State Parks as owner of the subject property to correct the violations. Therefore, the cesspools would be required to be closed under this alternative. Without a method to dispose of waste from the existing dwellings, the residents would not be able to continue residing at the dwellings, and they would need to relocate to alternate locations. This alternative would not meet the following objectives:

- To bring the existing residential uses into compliance with DLNR lease requirements in the Park to the greatest extent possible.
- To comply with the requests of the Planning Council to grant the six new leases pursuant to Act 15, SLH 2008.
- To repair the leaking non-potable well and minimize waste.

ALTERNATIVE 1: RELOCATE EXISTING RESIDENCES

Alternative 1 would not execute the leases for lots 1-6 and would relocate residents to vacant lease lots elsewhere in the valley as identified in maps of residential areas A and B shown on Figure 6. The seven existing cesspools would be backfilled and abandoned. The existing dwellings would be demolished and the area could be dedicated to park uses to be determined in the park master plan. Since there would no longer be residences at these locations, installation of individual wastewater systems and modification to the potable water system serving the six residences would not be required. The leak at the non-potable irrigation well would be repaired.

While there would be costs associated with this alternative, the price of home construction and wastewater systems outside of the flood zone would be markedly less for the lessees than the proposed project. With assistance from the Habitat for Humanity and the State for the home construction and wastewater system improvements at the alternate lease lot locations, the six families would have homes in compliance with DLNR lease requirements, leases would be issued to the families as requested by the Kahana Planning Council, existing wastewater violations would be mitigated, and the leaking non-potable well would be repaired. Additionally, the families would be out of the flood zone and tsunami hazard area and the front portion of the park would become available to public use.



Source: State of Hawai'i Department of Land and Natural Resources 2015
 Ahupua'a 'O Kahana State Park, Issuance of Leases to Lots 1 - 6
Figure 6
 Alternative 1 - Vacant Residential Lease Lots

5 FINDINGS AND DETERMINATION

As set forth in HAR, Section 11-200-12, in considering the significance of potential environmental effects, an agency must “consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action.” The proposed action is not expected to have a significant effect on the environment. The recommended preliminary determination for the Kahana State Park Issuance of Leases for Lots 1-6 Project is a Finding of No Significant Impact (FONSI). The findings supporting this determination are discussed below.

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The proposed project has been designed to avoid potential impacts to natural or cultural resources. Prior to project approval, an Archaeological Inventory Survey will include exploratory archaeological trenching at the major excavation areas. Based on the testing results, should it be necessary, an Archaeological Monitoring Plan to be implemented during construction would be prepared for SHPD approval. While there is the potential for discovery of burial sites or other historic or cultural remains during construction, environmental impacts would be minimized with implementation of mitigation measures and BMPs contained in this document.

(2) Curtails the range of beneficial uses of the environment.

The proposed improvements would not curtail the range of beneficial uses at the project site, and would actually result in a beneficial effect to water quality. Implementation of the proposed lease lots project would be consistent with the current residential uses. The 1992 Supplemental EIS for Kahana Valley indicated that the front areas of the park should be used for day use and interpretive purposes. The proposed improvements would not curtail the public’s existing use and access to coastal resources or other features of Kahana State Park, and could benefit recreational uses that depend upon good water quality.

(3) Conflicts with the State’s long-term environmental policies or goals and guidelines as expressed in HRS, Chapter 344, and any revisions thereof and amendments thereto, court decisions, or executive orders.

The proposed project is consistent with the environmental goals, policies, and guidelines established in HRS, Chapter 344. The following guidelines from the “Parks, Recreation, and Open Space” and “Community life and housing” sections of the State Environmental Policy (HRS, Chapter 344) apply to the proposed project:

(8) Community life and housing.

- (A) Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawai‘i through the design and maintenance of neighborhoods which reflect the culture and mores of the community;
- (C) Encourage the reduction of environmental pollution which may degrade a community;
- (D) Foster safe, sanitary, and decent homes.

The project objectives are to bring the existing residential uses into compliance with DLNR lease requirements in the Park to the greatest extent possible; to remediate the existing wastewater violations and minimize future water quality violations; and to repair the leaking non-potable well.

(4) Substantially affects the economic or social welfare of the community or state.

The proposed action would have a short-term positive effect on the economic welfare of the island resulting from hiring construction workers and purchasing materials. The proposed action would not have a substantial long-term effect on the economic and social welfare of the community or the state.

(5) Substantially affects public health.

Construction activities may temporarily increase fugitive dust and noise levels in the project vicinity. However, these impacts would cease upon completion of construction. No long-term negative impact on public health is anticipated with implementation of the proposed action. Closure of the cesspools would result in elimination of an existing likely source of water quality pollution. See Section 3.2, *Hydrology and Water Quality* for a discussion of impacts to water quality as a result of the project.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities.

The proposed action is not expected to generate population change on a magnitude that would create secondary demands and impacts on public facilities and services.

With establishment of the lease lots, the existing dwellings would likely be required to comply with existing zoning ordinances and construction standards. This could require major modifications to the existing dwellings and possible demolition and rebuilding. While not a part of this project, potential reconstruction or replacement of the existing dwellings would be considered a secondary impact of the project. The maximum design capacity of the wastewater systems would allow construction of a five-bedroom house.

At this time, there is no information on which homes would need to be rebuilt, or whether there would be changes in footprint, design, or location. In order to avoid flood levels, these homes may need to be reconstructed as raised buildings, which may be more of a visual intrusion to the overall park aesthetic. Raising the houses above the flood plain may create access issues for the elderly or handicapped people, and building homes in a flood plain could cost more in order to meet federal and local codes. Considering the cost of the alternative wastewater systems (both installation and maintenance), all of these increased costs could force several of these families beyond their abilities to pay for the mortgage and required improvements.

Building and grading permits would be required at the time of development, and compliance with City and County of Honolulu BMPs for construction would minimize impacts due to soil erosion. Further, because the alternate lots are located in the State Park and in a Conservation District subject to an existing Conservation District Use permit, construction of new single family residences may be considered a change from permit conditions, and an amendment to the Conservation District Use Permit may be required. Consultation with the

OCCL was initiated at the time of early consultation and EA preparation. For a discussion of the objectives of the Conservation District and permit requirements, see Section 3.12, *Land Use Controls*.

(7) Involves a substantial degradation of environmental quality.

There would be no long-term impacts associated with the proposed action. Construction activities may temporarily increase dust, noise, and traffic inconvenience in the project vicinity. However, these impacts would cease upon completion of construction. The proposed project will also include site-specific BMPs to minimize erosion and sedimentation effects to water quality. Additional mitigation measures included in Chapter 3 would minimize potential construction-related impacts.

(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.

The proposed action is limited to establishment of leases for existing residential uses and wastewater and water infrastructure improvements. The proposed action is limited to these actions to resolve a wastewater informal NOV and bring the existing residential uses into compliance with current lease requirements to the greatest extent possible. The proposed action does not involve a commitment for larger action.

(9) Substantially affects a rare, threatened, or endangered species, or its habitat.

The proposed improvements would occur at the existing residential lots and within right-of-way easements. With implementation of mitigation and BMPs described in Section 3.4 of this document, no substantial adverse effects would occur to rare, threatened, or endangered species, or their habitats.

(10) Detrimentially affects air or water quality or ambient noise levels.

Construction activities would have a short-term effect on air quality, water quality, and ambient noise levels. Mitigation included in Chapter 3 would minimize these potential impacts. No additional long-term impacts would occur.

(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

Portions of the project site are located within the 100-year flood zone and within the City and County of Honolulu's Tsunami Evacuation Zone. The O'ahu Civil Defense does not require any mitigation measures for residential uses, as tsunami control design is only required for resorts and commercial projects. During construction, stream flood events, or flash flooding, could result in potential hazards to workers and construction equipment located in the flood hazards area. Site-specific BMPs will include measures to be taken in the event of intense rainfall, weather, or increased stream flows. With implementation of these BMPs, potential hazards to construction workers would be minimized, and no mitigation would be required. Construction of the proposed improvements would not result in increased flooding or hazards from flooding in surrounding areas. Prior to the initiation of construction, the County would review proposed construction plans for consistency with County requirements and good engineering practice.

(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The proposed establishment of lease lots and utility infrastructure improvements would be consistent with the existing uses of the area, and implementation of the project would not degrade the existing visual character of the site or surroundings. The proposed improvements would not obstruct views from any recognized view corridor or scenic roadway.

(13) Requires substantial energy consumption.

There would be energy consumption associated with construction of the proposed project. The amount of energy that would be consumed with project implementation is not considered substantial.

6 INDIVIDUALS, COMMUNITY GROUPS, AND AGENCIES CONSULTED

6.1 EARLY CONSULTATION

Early consultation with agencies, organizations, and individuals was conducted during preparation of the Draft EA for the proposed project. Agencies, organizations, and individuals were sent a preliminary project description for comments or questions in January 2015.

Agencies, organizations, and/or individuals identified below provided written comments for the project Draft EA, as included in Appendix A of this document.

State Agencies

DLNR, Commission on Water Resource Management
DLNR, Division of Boating and Ocean Recreation (no comment)
DLNR, Engineering Division
DLNR, Land Division – O‘ahu District
DLNR, Office of Conservation and Coastal Lands
DLNR, Division of State Parks

Community

Jim Anthony, PhD

COMMUNITY MEETINGS

Existing Kahana Valley leaseholders were sent preliminary project description materials during the early consultation process, in addition to a community scoping meeting held on February 23, 2015. The community meeting was held at the Kahana Community Center.

Eight Kahana Valley residents and DLNR State Park representatives and consultants attended the evening meeting to discuss the scope of work and intent of the Environmental Assessment. Concerns and questions highlighted in the early consultation meeting included:

- Constraints and environmental impacts of establishing lease lots in the floodway
- Funding sources (individual or state)
- Constitutionality of Act 15
- Policy implications of granting the leases at the front of the park
- Compliance with Clean Water Act and Safe Drinking Water Act
- Violation of Federal EPA regulations due to unauthorized discharge into the Kahana Stream (cesspools)
- Residents may be required to provide funding for construction of IWS, though by precedent the DLNR would provide funds for the methods of disposal (i.e. leachfield)
- Parallel to the EA, the DLNR is working with community members and proposed leaseholders to determine sources of funding
- State of existing dwellings and compliance with Code requirements
- Visual impacts from raising homes and IWS above flood level
- Request to include IWS Alternatives in EA

DLNR representatives also attended a Kahana Planning Council Meeting on March 25, 2015. At this meeting, the lease applicants indicated they had communicated with the Habitat for Humanity and could receive assistance with no-interest loans to construct their dwellings wastewater systems. The DLNR indicated they would continue discussions regarding the financial ability of the lease applicants to complete these improvements.

6.2 ENVIRONMENTAL ASSESSMENT PREPARATION

This Draft Environmental Assessment (EA) was prepared for DLNR by Environmental Planning Partners, Inc. and Bow Engineering & Development, Inc. The following consultants were involved in the preparation of this document:

Raadha M. B. Jacobstein, Professional Planner, Environmental Planning Partners, Inc.

William H. Q. Bow, P.E., President, Bow Engineering & Development, Inc.

Jason Campbell, Project Engineer, Bow Engineering & Development, Inc.

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APPENDIX A

EARLY CONSULTATION AND CORRESPONDENCE

APPENDIX A

Agencies, organizations, and individuals included on the Office of Environmental Quality Control recommended distribution list for an Environmental Assessment were sent a preliminary project description for comments or questions in January 2015. The following correspondences include responses to early consultation requests from the following agencies. The content of this consultation has been incorporated into the analysis contained in this Draft EA.

State Agencies

- DLNR, Commission on Water Resource Management
- DLNR, Division of Boating & Ocean Recreation (no comment)
- DLNR, Engineering Division
- DLNR, Land Division – O‘ahu District
- DLNR, Office of Conservation and Coastal Lands
- DLNR, Division of State Parks

Community

- Jim Anthony, PhD

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

MEMORANDUM

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

FIRST DEPUTY

WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAILOOLAWA ISLAND RESERVE COMMISSION
LAND
STATE PARKS

RECEIVED
LAID DIVISION
2015 FEB 10 AM 11:00
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FR:

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Ahupua`a O Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements Project, Scoping and Early Consultation

LOCATION:

52-210 Kamehameha Highway, Ahupua`a O Kahana State Park, Portion of TMK (1) 5-2-002:001

APPLICANT:

State of Hawaii, Department of Land and Natural Resources by its consultant, Bow Engineering & Development, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **February 10, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- () We have no objections.
- () We have no comments.
- (x) Comments are attached.

Signed: W. Roy Hardy
Print Name: W. Roy Hardy, Acting Deputy Director
Date: 2/9/15

FILE ID: RFD.4122.3
DOCID: 119551

DAVID Y. IGE
GOVERNOR OF HAWAII



CARTY S. CHANG
ACTING CHAIRPERSON

DENISE ANTOLINI
KAMANA BEAMER
MICHAEL G. BUCK
MILTON D. PAVAO
VIRGINIA PRESSLER, M.D.
JONATHAN STARR

W. ROY HARDY
ACTING DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

P.O. BOX 621
HONOLULU, HAWAII 96809

February 3, 2015

REF: RFD.4122.3

TO: Russell Tsuji, Administrator
Land Division

FROM: W. Roy Hardy, Acting Deputy Director
Commission on Water Resource Management

SUBJECT: Ahupuaa O Kahana State Park, Issuance of Lease Lots 1-2 & Sewer & Well Repair Improvements Project,

FILE NO.:

TMK NO.: (1) 5-2-002:001

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://www.hawaii.gov/dlnr/cwrm>.

Our comments related to water resources are checked off below.

- 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.
- 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- 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 EPA as having high water efficiency can be found at <http://www.epa.gov/watersense/>.
- 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://hawaii.gov/dbedt/czm/initiative/lid.php>.
- 6. We recommend the use of alternative water sources, wherever 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>

DRF-IA 03/20/2013

- 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
- 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:

Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

- 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
- 11. A Well Construction Permit(s) is (are) required before any well construction work begins.
- 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- 14. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.
- 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.
- 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

OTHER:

Well ID number should be listed as 3-3352-001. A well construction permit is required for leaking well fix. Ground Water Use Permit 311 identifies 16 residences but report only mentions 6 lots and 16 assumed water fixtures at each residence. Residential units should be made clear. During the CWRM 20-year review in 2009 no field investigation was done to verify the current use conditions due to none response of permittee. The report identifies up to 18 new residences planned. Report should identify if this is in addition to the currently permitted 16 per WUP 311. This actions requires modification of WUP 311, which should be initiated by a water use permit application if pumping water from well 3352-001 will meet these new demands. Alternatively, if the Honolulu Board of Water Supply will be replacing the some or all of the water demand needs for well 3352-001 then it should be made clear in the document or the future application to modify Ground Water Use Permit 311.

If there are any questions, please contact me at 587-0214 or Dean Uyeno of the Stream Protection and Management Branch at 587-0234 or Ryan Imata of the Ground Water Regulation Branch at 587-0225.

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

MEMORANDUM

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
FIRST DEPUTY
WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAIHOHOLAWEI AND RESERVE COMMISSION
LAND
STATE PARKS

From
TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

RECEIVED
LAND DIVISION
2015 JAN 23 PM 1:26
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

To:

~~FROM:~~ Russell Y. Tsuji, Land Administrator *RT*

SUBJECT: Ahupua`a O Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements Project, Scoping and Early Consultation

LOCATION: 52-210 Kamehameha Highway, Ahupua`a O Kahana State Park, Portion of TMK (1) 5-2-002:001

APPLICANT: State of Hawaii, Department of Land and Natural Resources by its consultant, Bow Engineering & Development, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **February 10, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: *Edward R. Underwood*

Print Name: Edward R. Underwood

Date: 1/22/15

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

MEMORANDUM

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

FIRST DEPUTY

WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES INFORMATION
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

TO: PR:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division**
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM: *PR*

Russell Y. Tsuji, Land Administrator *RT*

SUBJECT:

Ahupua'a O Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements Project, Scoping and Early Consultation

LOCATION:

52-210 Kamehameha Highway, Ahupua'a O Kahana State Park, Portion of TMK (1) 5-2-002:001

APPLICANT:

State of Hawaii, Department of Land and Natural Resources by its consultant, Bow Engineering & Development, Inc.

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

2015 FEB 10 AM 10:59

RECEIVED
15 JAN 21 AM 11:02 ENGINEERING

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **February 10, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: _____

Print Name: *CS* Carty S. Chang, Chief Engineer

Date: 2/9/15

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/ Russell Y. Tsuji

Ref.: Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements
Project, Scoping and Early Consultation
Oahu.004

COMMENTS

- () We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ____.
- (X) **Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zones AE and AEF. The National Flood Insurance Program regulates developments within these zones as indicated in bold letters below.**
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ____.
- (X) **Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.**

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- (X) **Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.**
- () Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.
- () Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning.
- () Mr. Stanford Iwamoto at (808) 241-4896 of the County of Kauai, Department of Public Works.
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

() Additional Comments: _____

() Other: _____

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: 
CARTY S. CHANG, CHIEF ENGINEER
Date: 2/9/15



FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- Zone A:** No BFE determined.
- Zone AE:** BFE determined.
- Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY: HONOLULU
TMK NO: (1) 5-2-002-001
PARCEL ADDRESS: 52- KAAAWA, HI 96730
FIRM INDEX DATE: NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S): NONE
FEMA FIRM PANEL(S): 15003C0155G-JUNE 02, 2005
 15003C0165F-SEPTEMBER 30, 2004

PARCEL DATA FROM: APRIL 2014
IMAGERY DATA FROM: MAY 2006

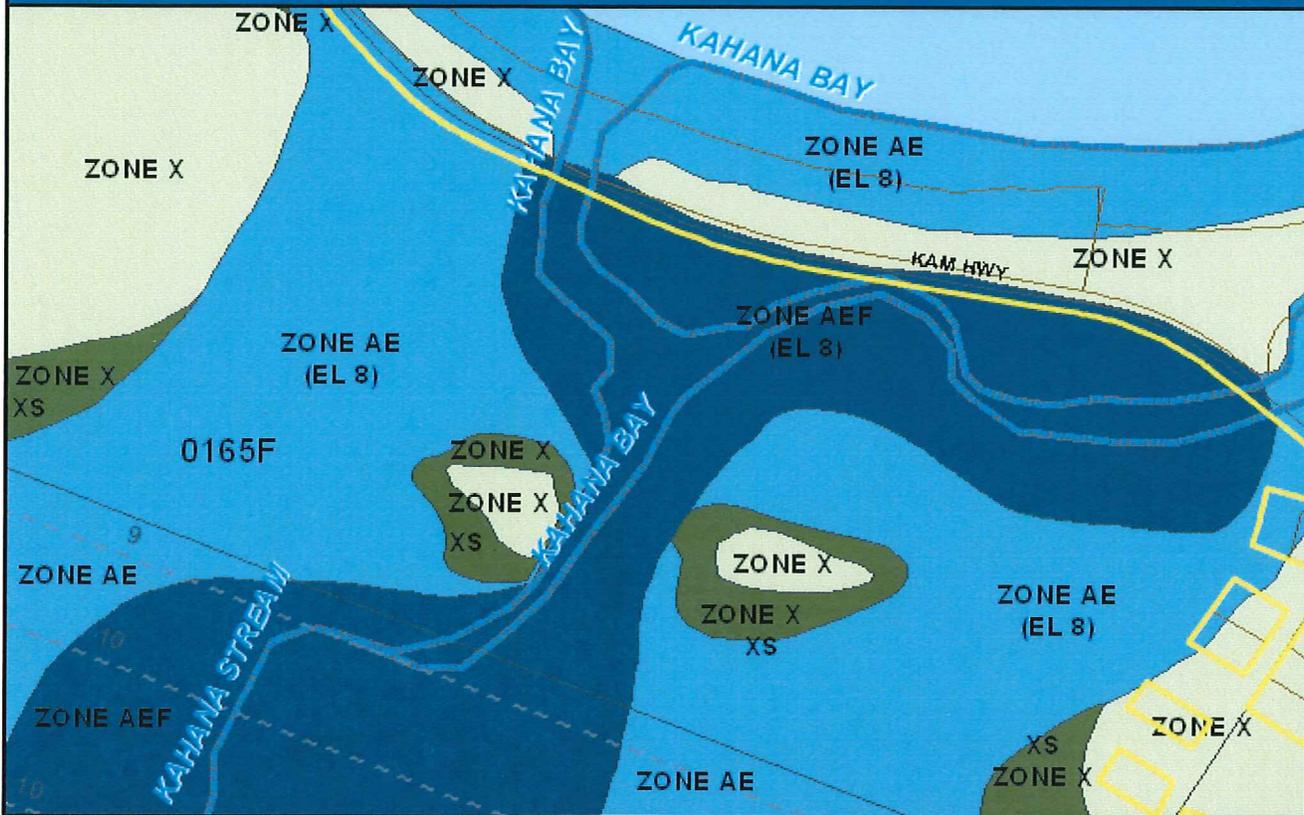
IMPORTANT PHONE NUMBERS

County NFIP Coordinator
 City and County of Honolulu
 Mario Siu-Li, CFM (808) 768-8098
State NFIP Coordinator
 Carol Tyau-Beam, P.E., CFM (808) 587-0267

Disclaimer: The Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR from any liability, which may arise from its use.
If this map has been identified as 'PRELIMINARY' or 'UNOFFICIAL', please note that it is being provided for informational purposes and is not to be used for official/legal decisions, regulatory compliance, or flood insurance rating. Contact your county NFIP coordinator for flood zone determinations to be used for compliance with local floodplain management regulations.



FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

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OTHER FLOOD AREAS

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PROPERTY INFORMATION

COUNTY: HONOLULU
 TMK NO: (1) 5-2-002-001
 PARCEL ADDRESS: 52- KAAWA, HI 96730
 FIRM INDEX DATE: NOVEMBER 05, 2014
 LETTER OF MAP CHANGE(S): NONE
 FEMA FIRM PANEL(S): 15003C0155G-JUNE 02, 2005
 15003C0165F-SEPTEMBER 30, 2004

PARCEL DATA FROM: APRIL 2014
 IMAGERY DATA FROM: MAY 2006

IMPORTANT PHONE NUMBERS

County NFIP Coordinator
 City and County of Honolulu
 Mario Siu-Li, CFM (808) 768-8098
State NFIP Coordinator
 Carol Tyau-Beam, P.E., CFM (808) 587-0267

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DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

MEMORANDUM

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
FIRST DEPUTY
WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAIHOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

FROM NO:

- DLNR Agencies:**
- Div. of Aquatic Resources
 - Div. of Boating & Ocean Recreation
 - Engineering Division
 - Div. of Forestry & Wildlife
 - Div. of State Parks
 - Commission on Water Resource Management
 - Office of Conservation & Coastal Lands
 - Land Division – Oahu District
 - Historic Preservation

To FROM: Russell Y. Tsuji, Land Administrator ✓

SUBJECT: Ahupua`a O Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements Project, Scoping and Early Consultation

LOCATION: 52-210 Kamehameha Highway, Ahupua`a O Kahana State Park, Portion of TMK (1) 5-2-002:001

APPLICANT: State of Hawaii, Department of Land and Natural Resources by its consultant, Bow Engineering & Development, Inc.

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Please submit any comments by **February 10, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

- Attachments
- We have no objections.
 - We have no comments.
 - Comments are attached.

Signed: T. Chee
 Print Name: Tony Chee BL
 Date: 1/22/15

COMMENTS:
 THE STATE LAND IS SET ASIDE UNDER EO 3518 TO THE DIVISION OF STATE PARKS FOR KAHANA VALLEY STATE PARK PURPOSES.

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

MEMORANDUM

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
FIRST DEPUTY
WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAOHOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

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STATE OF HAWAII
NATURAL RESOURCES
2015 JAN 21 A 10: 52

RECEIVED
LAND DIVISION
2015 JAN 22 AM 10: 52
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Ahupua`a O Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements Project, Scoping and Early Consultation

LOCATION:

52-210 Kamehameha Highway, Ahupua`a O Kahana State Park, Portion of TMK (1) 5-2-002:001

APPLICANT:

State of Hawaii, Department of Land and Natural Resources by its consultant, Bow Engineering & Development, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **February 10, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

Print Name:

Date: 1-21-15

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

MEMORANDUM

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
FIRST DEPUTY
WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISI AND RESERVE COMMISSION
LAND
STATE PARKS

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

RECEIVED
LAND DIVISION
2015 FEB 11 PM 2:57
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Ahupua'a O Kahana State Park, Issuance of Lease Lots 1-6 and Sewer and Well Repair Improvements Project, Scoping and Early Consultation

LOCATION:

52-210 Kamehameha Highway, Ahupua'a O Kahana State Park, Portion of TMK (1) 5-2-002:001

APPLICANT:

State of Hawaii, Department of Land and Natural Resources by its consultant, Bow Engineering & Development, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **February 10, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

RECEIVED
STATE PARKS DIV
15 JAN 23 AM 11:14
Attachments

DEPT OF LAND &
NATURAL RESOURCES

- We have no objections.
- We have no comments.
- Comments are attached.

Lauren Tanaka

Signed: _____

Print Name: Lauren Tanaka

Date: 2-10-15



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621

February 10, 2015

Jason Campbell
Bow Engineering & Development, Inc.
1953 South Beretania St., PH-A
Honolulu, HI 96826

Dear Mr. Campbell:

Subject: Scoping and Early Consultation for an EA on the Issuance of Lease Lots 1 – 6 and Sewer and Well Repair Improvements Project at Ahupua‘a ‘O Kahana State Park, O‘ahu

We reviewed the Project Summary Information provided and have the following comments:

There is an okina in the name of the park before the letter “O”, and is Ahupua‘a ‘O Kahana State Park. The TMK’s for the park are: 5-2-02: 001 to 008 and 5-2-05: 001, 003, 020, and 021 totalling 5,249 acres. If you meant to reference only the area in the park where the 6 lots are, then parcel 001 of 5-2-02 is correct. For the period of 1965 and 1969, the State initiated eminent domain proceedings to acquire the land and established the area as a cultural living park in 1971. In 1987, Act 5 authorized the issuance of 65 year leases to qualified residents who resided in the valley since before 1970 or were issued a permit allowing them to reside on designated parcels within the valley and established the interpretive programs for the public’s benefit. A residential subdivision was created that was exempt from all statutes, ordinances, charter provisions and rules of any governmental agency relating to zoning and construction standards for subdivisions, the development and improvement of land and the construction of units, provided it met minimum safety and health requirements and no State funds were used in the relocation or construction of the residences. An appropriation of funds was provided for low-interest home construction and mortgage loans and in exchange for the leases, those who qualified had to agree to be an essential part of the interpretive programs.

In the section entitled History of the Park, a more detailed description of the evictions should be provided. As it is written, the wording is not favorable to the department and does not reflect the events and circumstances that led to the State taking those actions. May we suggest the following:

In 2008, the Attorney General had advised the department that no new leases could be issued as Act 5 had sunsetted. Several families who had applied for a lease, were living on lands fronting the park that was not intended for residential use. Having no authorization to be there, the State took action to evict those families and they went to see the legislators representing their districts who enacted Act 15, SLH 2008. This Act established a two-year moratorium on evictions and authorized the department to issue long-term leases to qualified persons. It also established a living park planning council and charged it with the responsibility to

CARTY S. CHANG
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DANIEL S. QUINN
INTERIM FIRST DEPUTY

W. ROY HARDY
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
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KAHOOLAWE ISLAND RESERVE COMMISSION

LAND
STATE PARKS

develop a Master plan that would establish a framework, proposed rules, measurements of success, and a planning process to ensure that the goals and objectives for the living park are met.

The footnote on Act 15 should read: Act 15 was vetoed by the Governor and the veto was overridden in a Special Session of the Legislature on July 15, 2009.

On page 9 it is stated that a CDUA may not be required as the proposed wastewater improvements appear to be the replacement or reconstruction of existing facilities. Backfilling of the cesspools, abandonment and filling them with concrete are planned and will be followed by installation of a treatment and disposal system appropriate to each of the 6 lots. It is advised that a determination by OCCL be requested on the CDUA requirement.

Should you have questions or need additional information, please contact Lauren Tanaka at 808 587-0293 or by email to: Lauren.A.Tanaka@hawaii.gov.

Very truly yours,



 Daniel S. Quinn
State Parks Administrator

[FINAL]

A memo for the Kahana Planning Council
By Jim Anthony, PhD

Subject: Prospective new leases for six residents: matters related to an Environmental Assessment under Chapter 343 and other matters

The Kahana Planning Council (“KPC”) has done its job under Act 15. It has recommended that six residents be given leases in Kahana specifically where they are now living. The residents asked to remain where they now are, and have long been and the KPC agreed with them. In making its decision the KPC conducted no investigations about the legal, environmental and fiscal implications of its decision. The KPC elicited no financial information from the six potential lessees as to their ability to pay for anything: sewage treatment systems, repairs to, or replacement of, existing homes or anything else.

The Board (of Land and Natural Resources) approved the Staff Submittal based on the KPC’s recommendation. The Staff Submittal did not take into account any of the issues which have now surfaced: compliance with Chapter 343, compliance with County and Federal regulations related to construction work in a flood plain, the fact that the EPA had issued NOVs (notices of violation) to the State for the existing cesspools serving the homes of the six lease applicants, and, most importantly, matters related to cost. The Staff Submittal recommending approval of the KPC’s decision to grant leases to the six residents did not ask for, and did not disclose, any information on the financial ability of the six residents to pay for any infrastructure costs that might arise.¹

After the Board decided to grant the leases (with unresolved constitutional issues still hanging over their decision) the Attorney-General’s office said that it would **not** sign off on any lease until there was full compliance with Chapter 343.

“That has brought us to where we are now.

BOW Engineering was retained by the State to prepare an EA. We now have their preliminary report sent to DLNR under cover of their memo dated January 7, 2015.²

¹ The Board (of Land and Natural Resources), did caution, however, in its formal proceedings, that if there were any costs for infrastructure, then those costs would have to borne by the resident applicants concerned.

² This document and attachments are already in the possession of all member of the KPC and resident lessees.

The most significant disclosure in the documents attached to the January 7, 2015 memo is that the estimated cost of doing the work related to compliance with Chapter 343, including, apparently, the cost of doing the EA itself, would be **over \$1 million.**

That figure does not include costs likely to arise in connection with compliance with local County and Federal flood control regulations. There may well also be compliance costs linked to Federal Clean Water Act and Federal Safe Drinking Water Act issues which might arise.

State Parks spokesman, Curt Cottrell (acting Administrator of the State Parks Division) has indicated that there are likely to be serious problems with State funding of the project at the projected level of over a million dollars.

Against this background a number of pertinent questions arise:

1. Does it make sense to proceed with the EA at this time in light of the fact that funding for the project is in such serious question?
2. Does it make sense to proceed with the EA when we still have no data in hand concerning the ability of the six applicant lessees to pay for any part of the projected sewage treatment system (whatever form it takes) that is likely to meet regulatory requirements with residences in their current condition (all, as far as we know, are unpermitted dwellings that do not meet Code) and where they are presently located (in the flood control plain)?
3. Does it make any sense to proceed with the EA without a full assessment of the present condition of each residence? This matter is particularly pertinent since all of the six existing residences are not in compliance with the Building Code even if you install a Chapter 343 compliant sewage treatment system and address flood plain issues. So this question arises: will the relevant regulatory agency approve hookups to structures which are not in compliance with the Building Code?
4. What work needs to be done on each existing residence to bring it up to Code and how much will it cost for each? The ability of each resident to pay for such costs arises again. If only some of the six applicants can qualify for loans to cover expected costs what should be done in that event?
5. If any of the existing residence are tear downs (that is declared to be unfit for human habitation) and have to be replaced entirely, what will the costs be for such replacements and what is the ability of the resident in question to qualify for a loan? *(Kahana leases, remember, apparently prohibit the lease itself from being used as collateral for loans. There's a Catch-22 here: even if the leases were to be usable as collateral for a loan, the lease itself would already have to be executed and in place before the loan would be processed. The situation is very frustrating: no lease, no loan.)* And eligibility for loans is not determined by the existence of the lease itself. The borrower must show

- ability to repay the loan. For many of the lessee applicants qualifying for a loan **may be difficult, perhaps impossible.**
6. And if some, or all, of the resident lease applicants cannot qualify for loans, what then?
 7. Can an exploratory effort be launched to find a cost effective, regulatory compliant way to deal with sewage treatment systems and water issues for which the six resident lessee applicants will pay a fair share to be negotiated and take such other steps regarding making their dwellings compliant with the Building Code? [That will probably mean that the EA process will keep moving but the contract to actually do the work set out in the EA would not be executed because of its high cost.] This option has arisen in KPC discussions and ought to be explored further. This implies finding solutions to loans and requires intensive discussions with the six families. In some, or many, cases loans might not work but we have to find out for sure. And the only way to do that is to talk about this at length and to be as imaginative and creative as possible.

I am prepared to lead a small committee, with the assistance of one representative from the Council and one other representing the six lessee applicants to follow through on what is in this report and such other issues as may arise in the course of discussions with the Division of State Parks, the DLNR Division of Engineering and Bow Engineering.

The mission of the Committee would be to find a cost effective way to get leases for the six applicants with full regulatory compliance and to make recommendations to the Council as to what changes should or must be made in the new leases that will enable lessees to qualify for loans should they be interested in seeking financial assistance and can meet loan requirements. HUD, for example, may be a source to be explored, but we do not know yet.

Here, finally, is a real opportunity for the Council to lead, to be proactive. Besides, this issue is linked to the matter concerning leases which the Council has decided must be addressed and resolved as a top priority issue before any other Master Plan issue is addressed.

Respectfully submitted

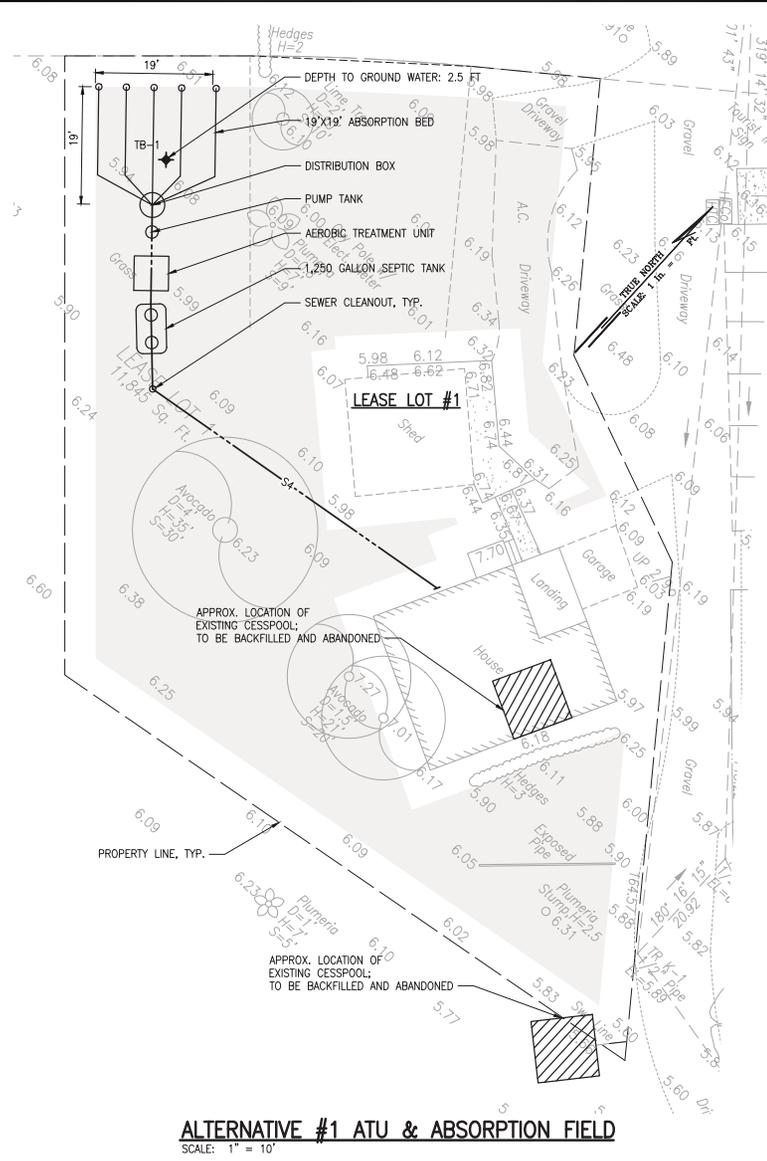
Jim Anthony, PhD

March 1, 2015

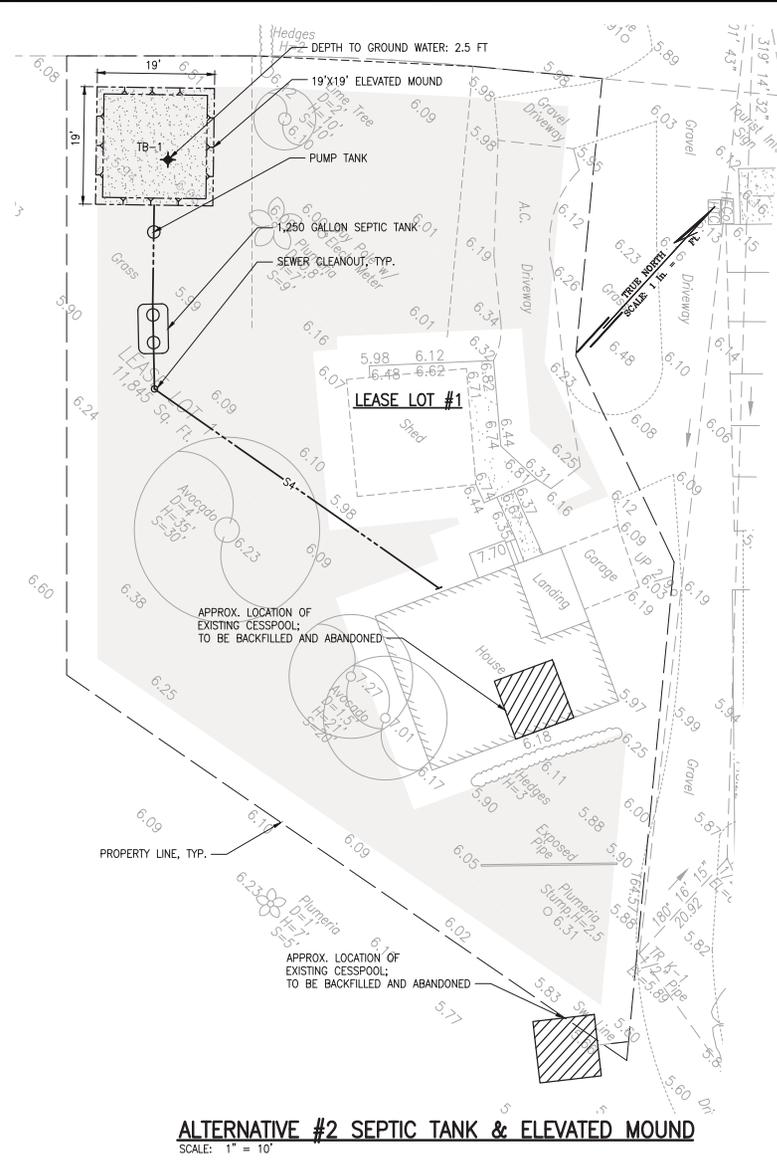
APPENDIX B
CONCEPTUAL PLANS

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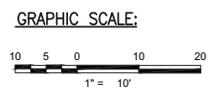
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ALTERNATIVE #1 ATU & ABSORPTION FIELD
 SCALE: 1" = 10'



ALTERNATIVE #2 SEPTIC TANK & ELEVATED MOUND
 SCALE: 1" = 10'



CONCEPT IWS SITE PLAN - LEASE LOT 1
 SCALE: 1" = 10'

- LEGEND:**
- AVAILABLE ABSORPTION AREA PER HAR 11-62 EXCLUDING TREES
 - TEST BORING LOCATION

SYMBOL	DESCRIPTION	DATE

Bow Engineering & Development, Inc.
 PLANNERS
 CIVIL ENGINEERS
 1100 KULUHIWA RD., SUITE 100A Honolulu, HI 96813
 Tel: (808) 942-2500
 Email: bow@boweng.com

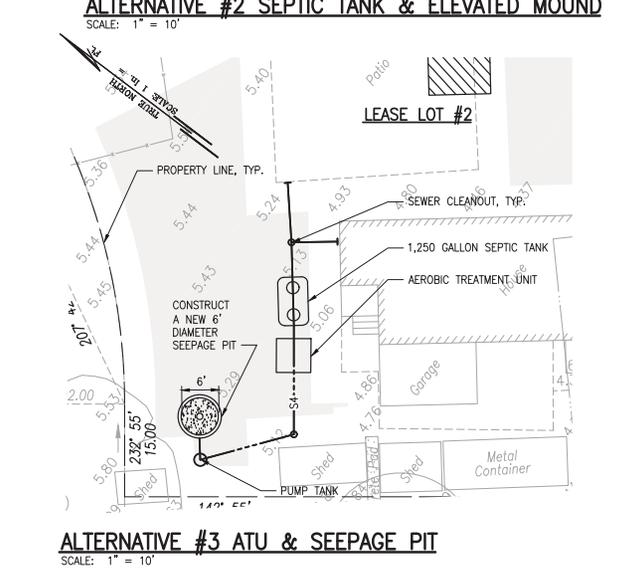
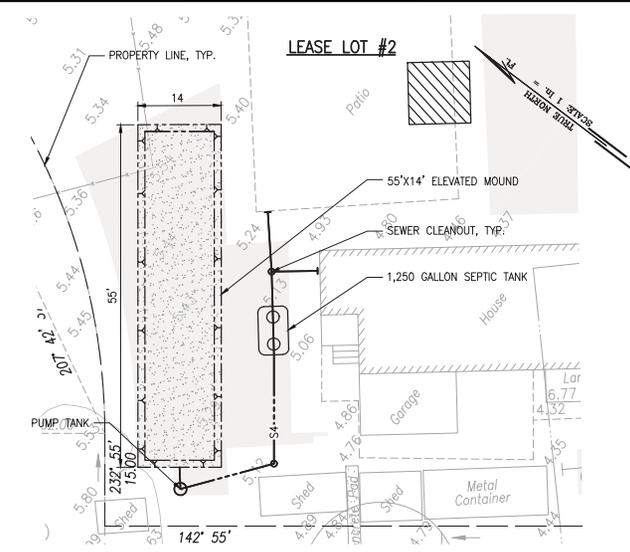
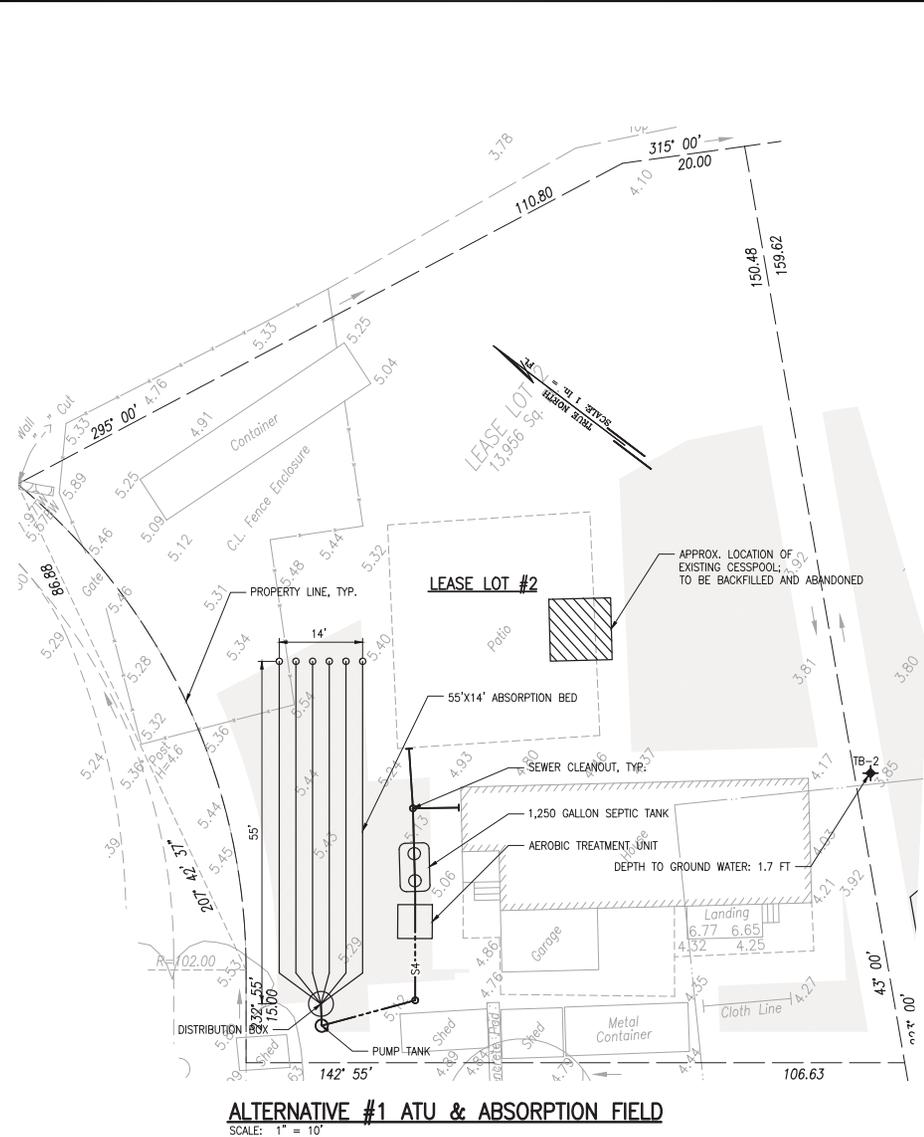
**AHUPUA O KAHANA STATE PARK
 SEWER AND WATER IMPROVEMENTS PHASE 1
 CONCEPT IWS SITE PLAN
 LEASE LOT 1**

Designed by: _____
 Checked by: _____
 Drawn by: _____
 Approved by: _____
 Date: APR. 10, 2015
 AS NOTED
 Scale: _____
 T.M.K. (1)25300.01

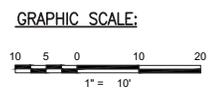
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#14-03102

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CONCEPT IWS SITE PLAN - LEASE LOT 2
 SCALE: 1" = 10'



- LEGEND:**
- AVAILABLE ABSORPTION AREA PER HAR 11-62 EXCLUDING TREES
 - TEST BORING LOCATION

DATE	
DESCRIPTION	
BY	

Bow Engineering & Development, Inc.	PLANNERS
CIVIL ENGINEERS	REGISTERED PROFESSIONALS
1100 KULUHIWA STREET, SUITE 100A Honolulu, HI 96813	PH: (808) 942-2500
	FAX: (808) 942-2501
	Email: bow@bowengineering.com

**AHUPUA O KAHANA STATE PARK
 KAHANA, OAHU, HAWAII**

**SEWER AND WATER IMPROVEMENTS PHASE 1
 CONCEPT IWS SITE PLAN
 LEASE LOT 2**

Designed by:	APR. 10, 2015
Checked by:	AS NOTED
Drawn by:	SCALE
Reviewed by:	T.M.K.
DATE:	
SCALE:	
T.M.K.	

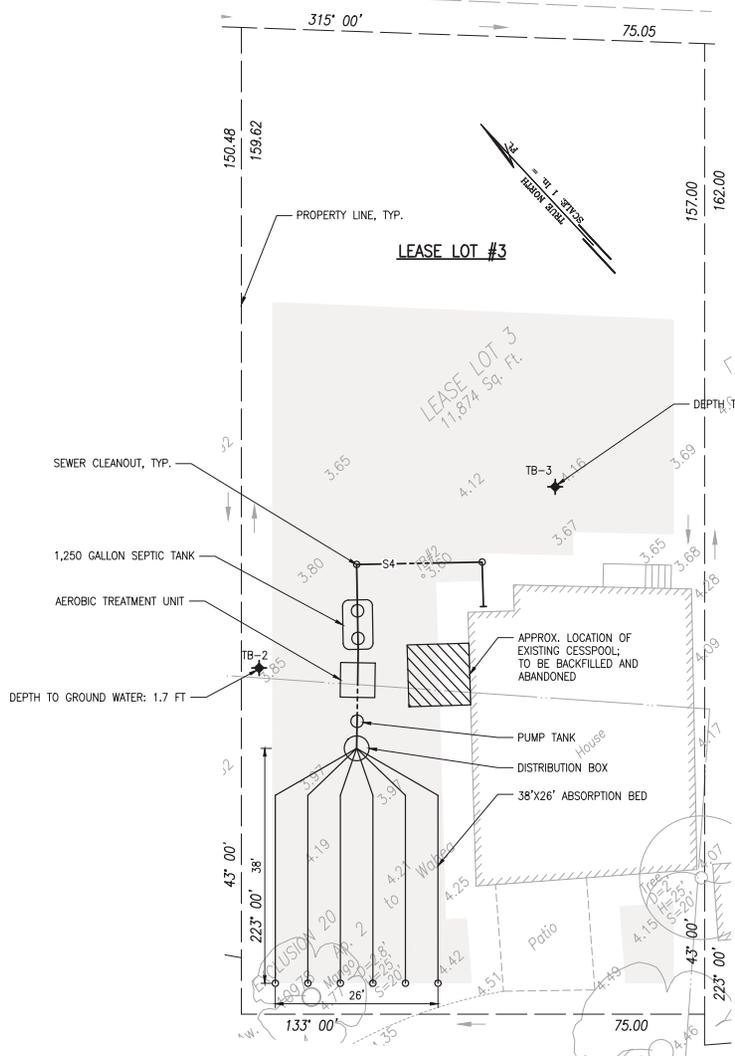
THE WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII. I HEREBY CERTIFY THAT I AM THE AUTHOR OF THIS PROJECT AND THAT I AM NOT PROVIDING ENGINEERING SERVICES TO ANY OTHER PARTY AT THE SAME TIME.

C-1.2

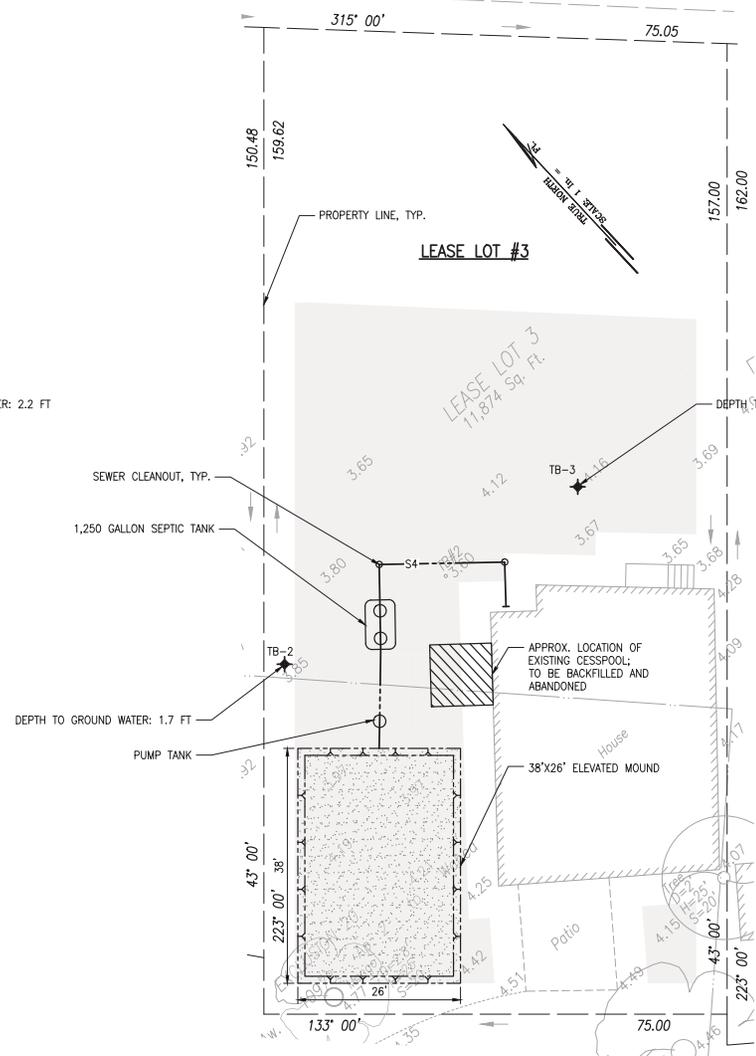
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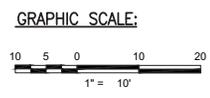
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ALTERNATIVE #1 ATU & ABSORPTION FIELD
 SCALE: 1" = 10'



ALTERNATIVE #2 SEPTIC TANK & ELEVATED MOUND
 SCALE: 1" = 10'



CONCEPT IWS SITE PLAN - LEASE LOT 3
 SCALE: 1" = 10'

- LEGEND:**
- AVAILABLE ABSORPTION AREA PER HAR 11-62 EXCLUDING TREES
 - TEST BORING LOCATION

SYMBOL	DESCRIPTION	DATE

Bow Engineering & Development, Inc.
 PLANNERS
 CIVIL ENGINEERS
 1100 KULU HIKES - SUITE 100A - Honolulu, HI 96813
 Phone: (808) 942-2500
 Email: bow@bowengineering.com

**AHUPUA O KAHANA STATE PARK
 SEWER AND WATER IMPROVEMENTS PHASE 1
 CONCEPT IWS SITE PLAN
 LEASE LOT 3**

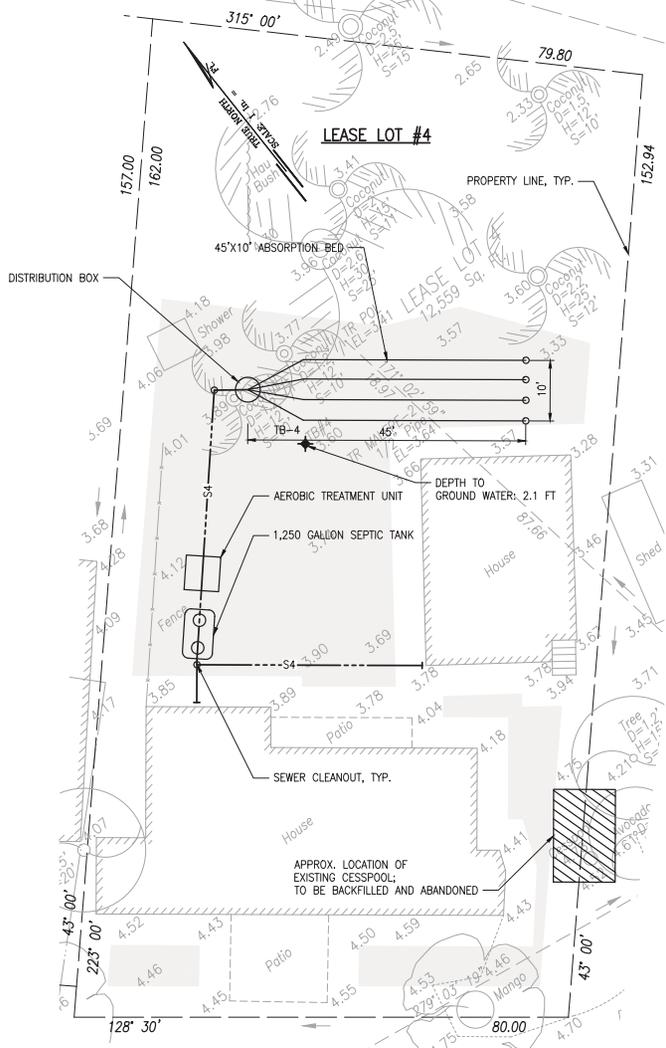
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 AS NOTED
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THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII.

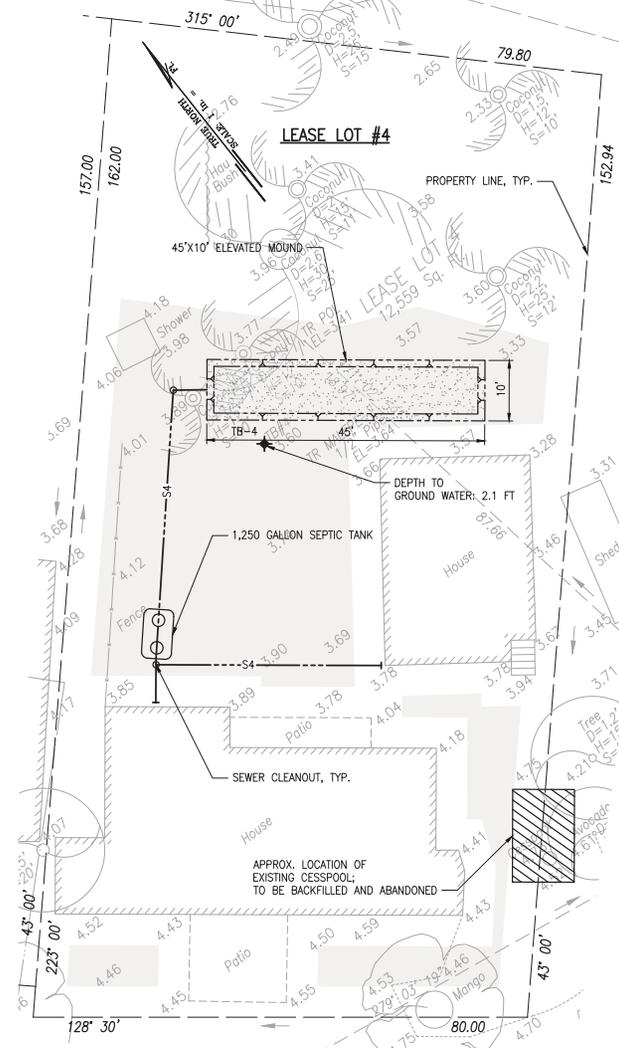
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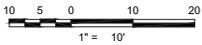


ALTERNATIVE #1 ATU & ABSORPTION FIELD
 SCALE: 1" = 10'



ALTERNATIVE #2 SEPTIC TANK & ELEVATED MOUND
 SCALE: 1" = 10'

GRAPHIC SCALE:



CONCEPT IWS SITE PLAN - LEASE LOT 4
 SCALE: 1" = 10'

LEGEND:

- AVAILABLE ABSORPTION AREA PER HAR 11-62 EXCLUDING TREES
- TEST BORING LOCATION

SYMBOL	DESCRIPTION	DATE

Bow Engineering & Development, Inc.
 CIVIL ENGINEERS
 1100 KULUHIPIA ST., SUITE 100A HONOLULU, HAWAII 96813
 TEL: (808) 942-2500 FAX: (808) 942-2501
 Email: bow@bowengineering.com

**AHUPUAA O KAHANA STATE PARK
 SEWER AND WATER IMPROVEMENTS PHASE 1
 CONCEPT IWS SITE PLAN
 LEASE LOT 4**

Designed by: _____
 Checked by: _____
 Drawn by: _____
 Approved by: _____
 Date: APR. 10, 2015
 Scale: AS SHOWN
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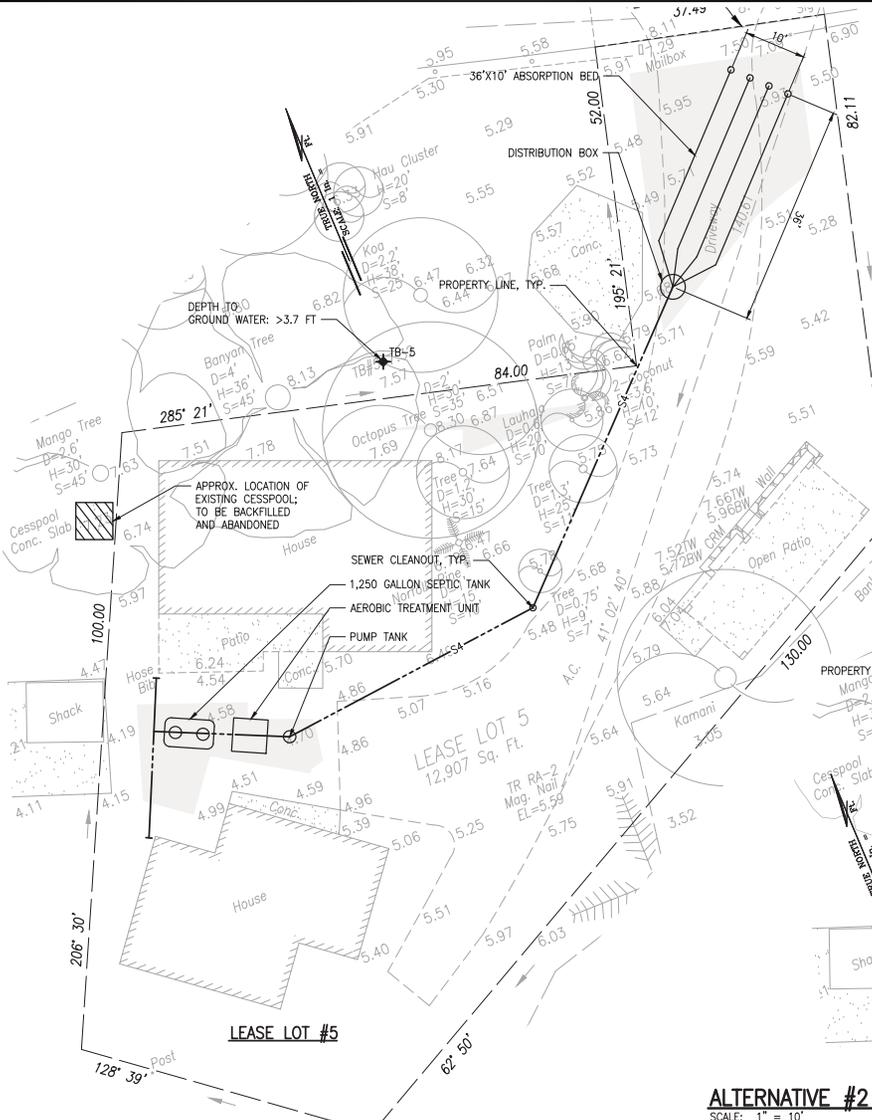
THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII.
 I HEREBY CERTIFY THAT I AM THE AUTHOR OF THIS PROJECT AND I AM NOT PROVIDING ENGINEERING SERVICES TO ANY OTHER PARTY.
 SIGNATURE: _____

C-1.4

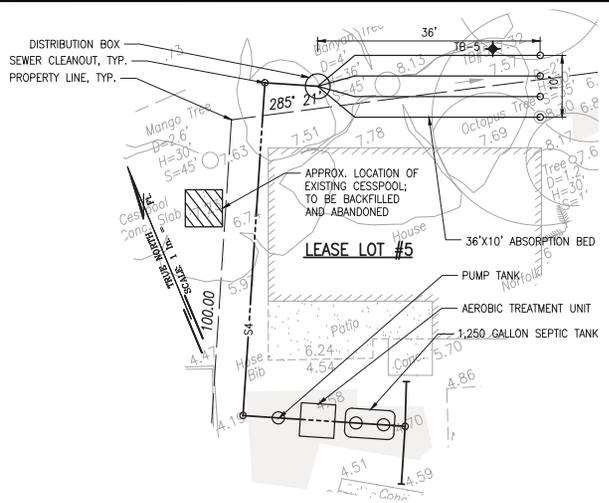
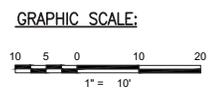
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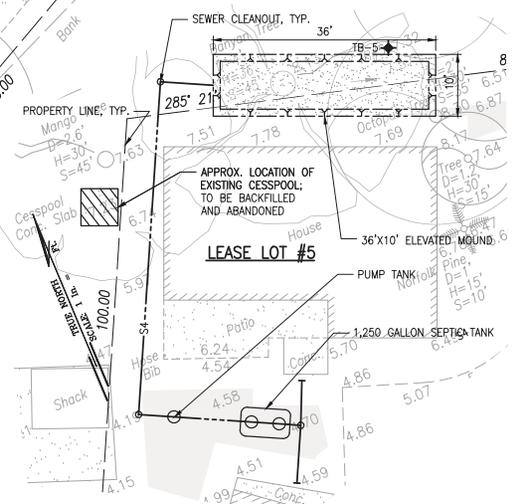
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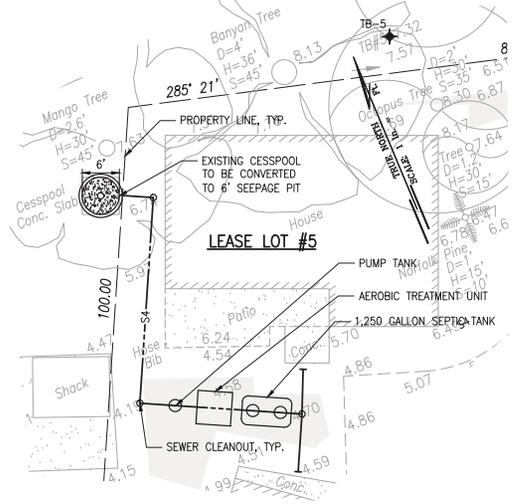
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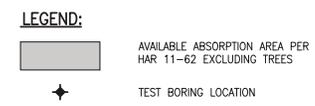
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SCALE: 1" = 10'



ALTERNATIVE #2 SEPTIC TANK & ELEVATED MOUND*
SCALE: 1" = 10'



ALTERNATIVE #3 ATU & SEEPAGE PIT*
SCALE: 1" = 10'



***NOTE:**
IWS LAYOUTS REQUIRE THE GRANTING OF AN EASEMENT FOR ABSORPTION FIELDS

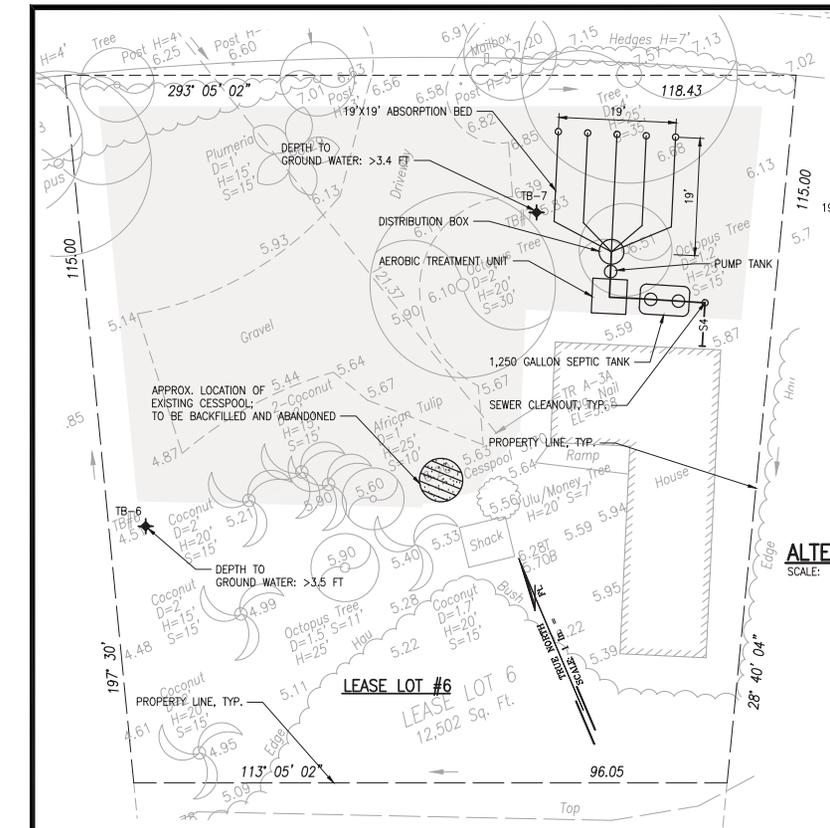
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SCALE: 1" = 10'

DATE	DESCRIPTION	BY

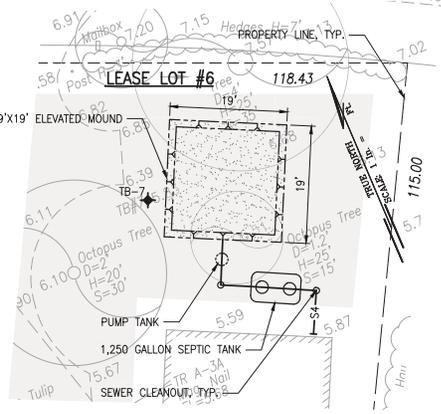
Bow Engineering & Development, Inc.
PLANNERS
CIVIL ENGINEERS
1100 KULUHI PIKE, SUITE 100A Honolulu, HI 96813
Tel: (808) 942-2500
Email: bow@bowengineering.com

AHUPA'A O KAHANA STATE PARK
Kahana, Oahu (Hawaii)
SEWER AND WATER IMPROVEMENTS PHASE 1
CONCEPT IWS SITE PLAN
LEASE LOT 5

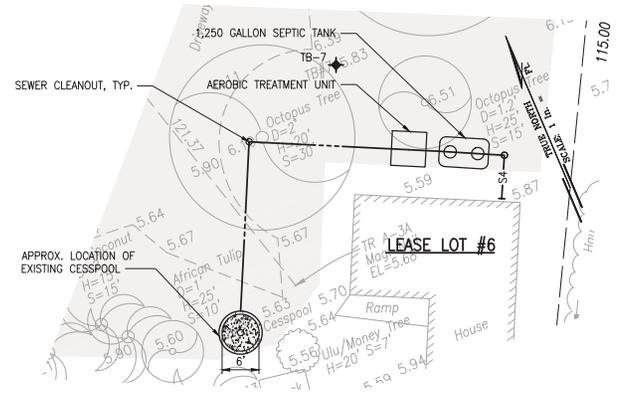
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Checked by: [Signature]
Drawn by: [Signature]
Date: APR 10, 2015
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T.M.K. [Number]
SHEET NO. OF TOTAL SHEETS



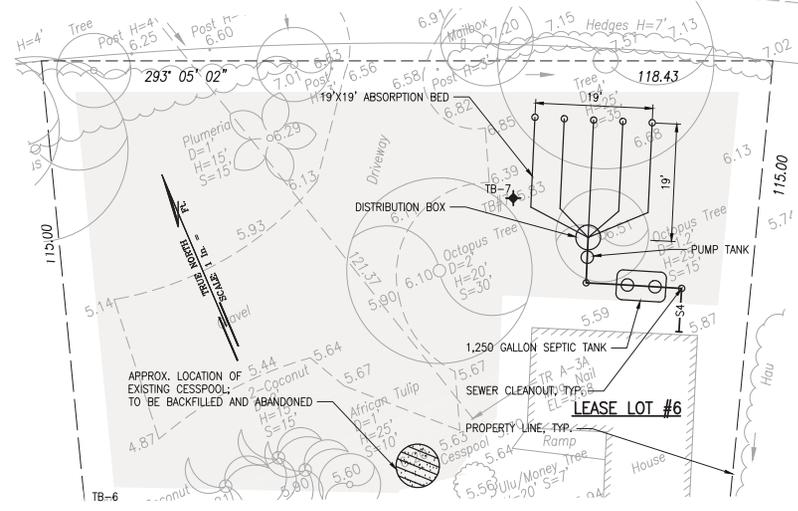
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ALTERNATIVE #2 SEPTIC TANK & ELEVATED MOUND
SCALE: 1" = 10'

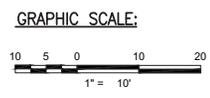


ALTERNATIVE #3 ATU & SEEPAGE PIT
SCALE: 1" = 10'



ALTERNATIVE #4 SEPTIC TANK & ABSORPTION FIELD
SCALE: 1" = 10'

CONCEPT IWS SITE PLAN - LEASE LOT 6
SCALE: 1" = 10'



- LEGEND:**
- AVAILABLE ABSORPTION AREA PER HAR 11-62 EXCLUDING TREES
 - TEST BORING LOCATION

Plotted: Fri, 10 Apr 2015 - 10:44am By: JCAMPRELL
 File Name: H:\P2014\14003_Kahana NOV'08 CAD\DWG-C-1-1-16_Kahana IWS Site Plan.dwg

SYMBOL	DESCRIPTION	DATE

Bow Engineering & Development, Inc.
 PLANNERS
 CIVIL ENGINEERS
 1100 KULUHI PIKES, SUITE 100A Honolulu, HI 96813
 Email: bow@bowengineering.com

**AHUPUAʻA KAHANA STATE PARK
 SEWER AND WATER IMPROVEMENTS PHASE I
 CONCEPT IWS SITE PLAN
 LEASE LOT 6**

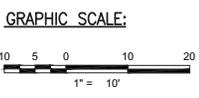
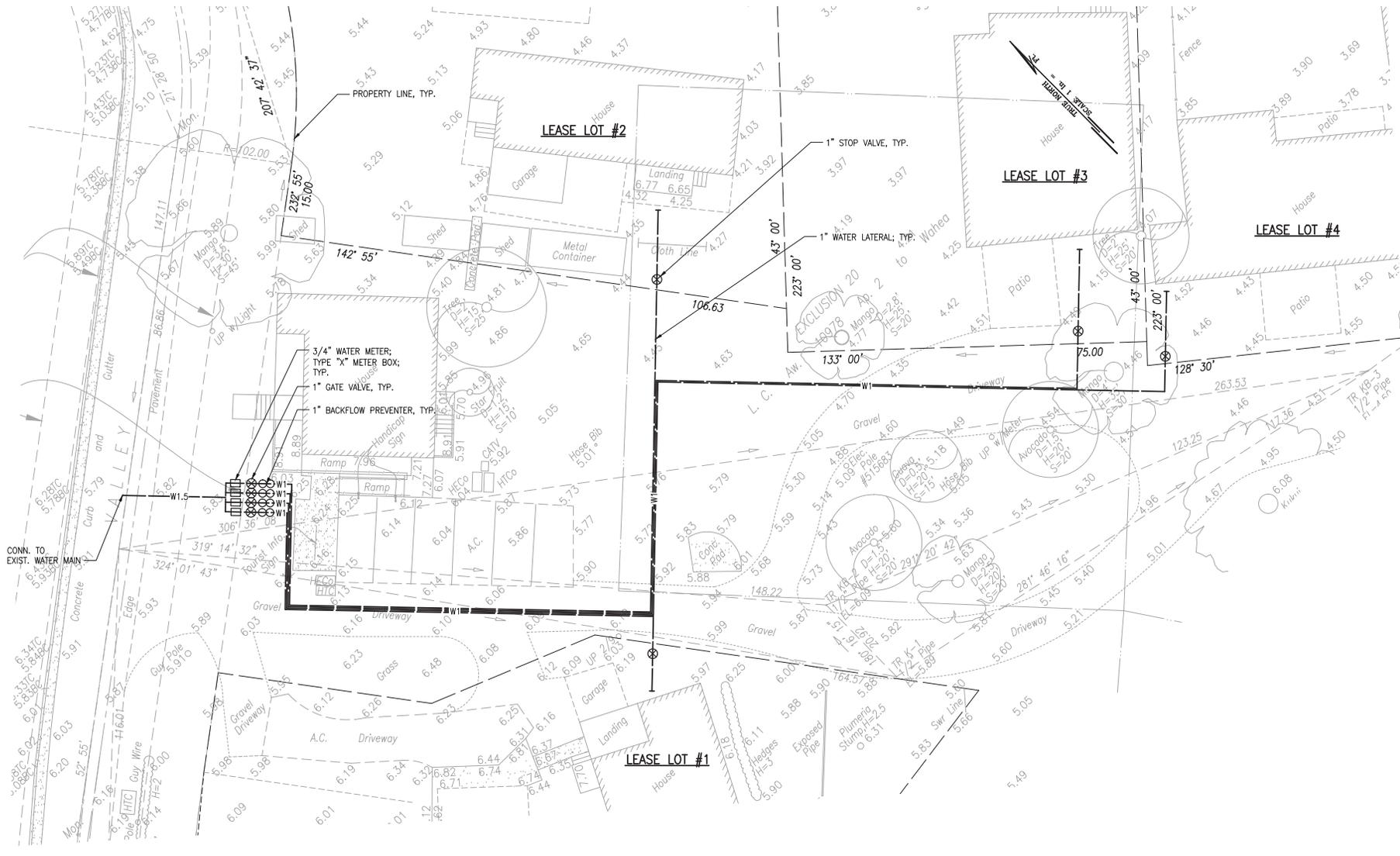
Designed by: _____
 Checked by: _____
 Drawn by: _____
 Date: APR 10, 2015
 Scale: AS NOTED
 T.M.K. (0155301.01)

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII.

C-1.6
 SHEET OF SHEETS

20150410-116

Plotted: Fri, 10 Apr 2015 - 10:45am By: JCAMPBELL
 File Name: H:\P2014\14003_Kahana NOV08 CAD\DWG-21-2.2 Water Plan.dwg



CONCEPT WATER UTILITY PLAN - LEASE LOTS 1-4
 SCALE: 1" = 10'

SYMBOL	DESCRIPTION	DATE

Bow Engineering & Development, Inc.
 PLANNERS
 CIVIL ENGINEERS
 1100 KULUHIWA RD., SUITE 100A Honolulu, HI 96813
 Phone: (808) 948-2500
 Email: bow@bowengineering.com

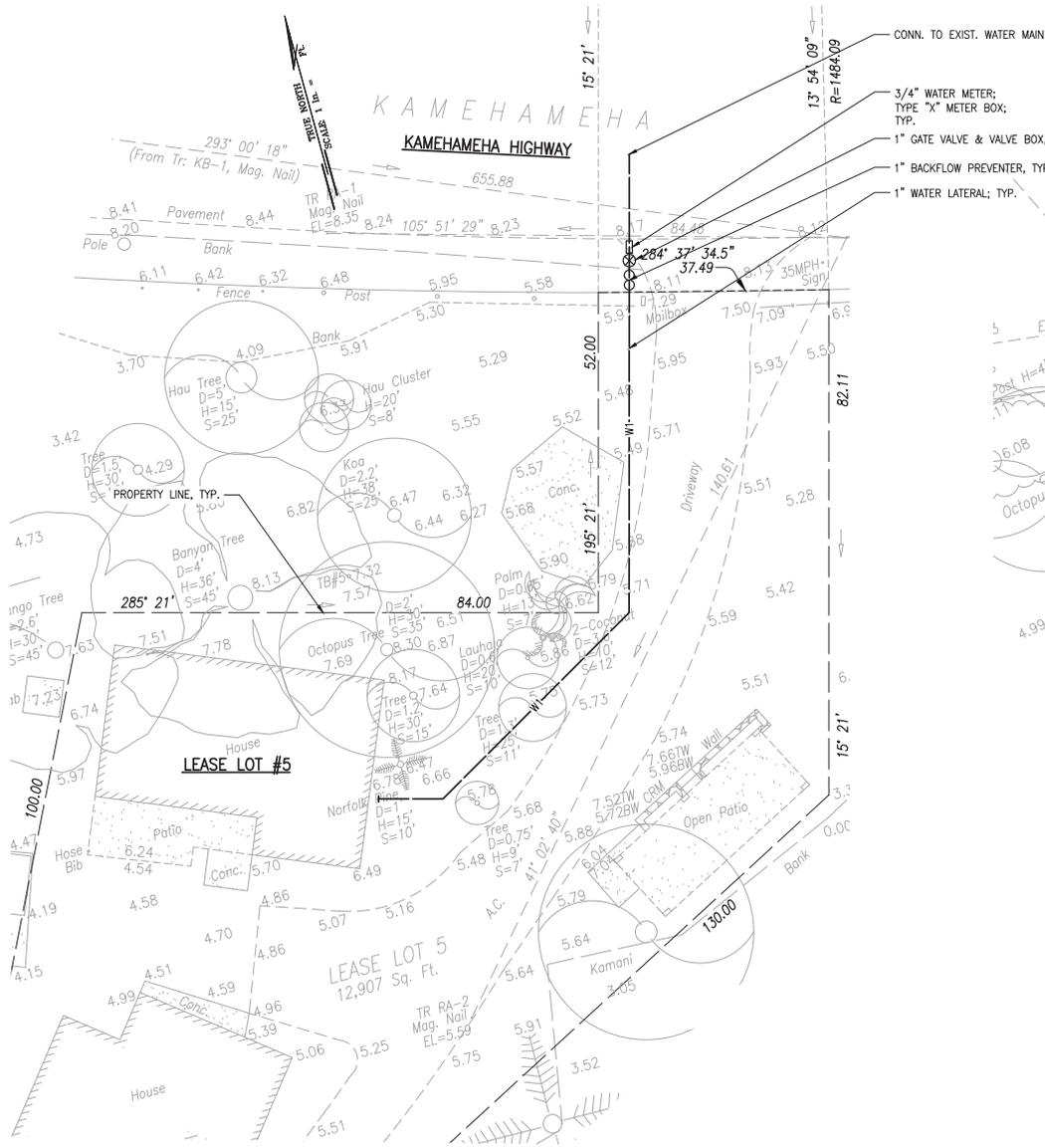
AHUPUAA O KAHANA STATE PARK
 KAHANA, OAHU, HAWAII
SEWER AND WATER IMPROVEMENTS PHASE 1
CONCEPT WATER UTILITY
PLAN - LEASE LOTS 1-4

Designed by: _____
 Checked by: _____
 Drawn by: _____
 Date: APR. 10, 2015
 Scale: AS NOTED
 T.M.K. (1)25500.01

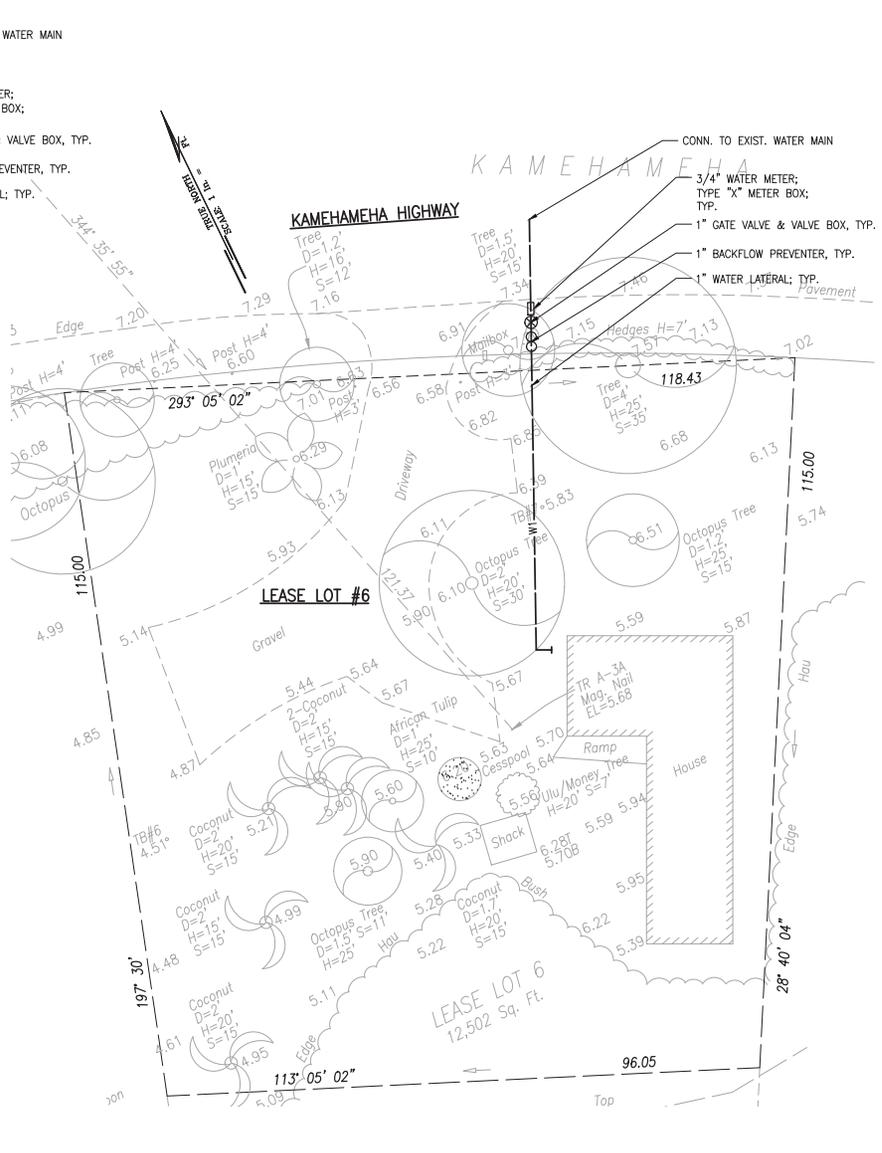
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2015CIP-#111

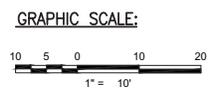
Plotted: Fri, 10 Apr 2015 - 10:45am By: JCAMPELL
 File Name: H:\P2014\14003_Kahana NOV 06 CAD\DWG-21-22 Water Plan.dwg



CONCEPT WATER UTILITY PLAN - LEASE LOT 5
 SCALE: 1" = 10'



CONCEPT WATER UTILITY PLAN - LEASE LOT 6
 SCALE: 1" = 10'



DATE	DESCRIPTION	BY

Flow Engineering & Development, Inc.
 PLANNERS
 CIVIL ENGINEERS
 1100 KULUWAHINE ST. SUITE 100A Honolulu, HI 96813
 Phone: (808) 442-2500
 Email: flow@flowengineering.com

AHUPUA O KAHANA STATE PARK
 KAHANA, OAHU (HAWAII)
SEWER AND WATER IMPROVEMENTS PHASE 1
CONCEPT WATER UTILITY
PLAN - LEASE LOTS 5-6

Designed by: _____
 Checked by: _____
 Drawn by: _____
 Date: APR 10, 2015
 AS NOTED
 SCALE: T.M.K.
 SHEET: 0125501.01

THE WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII.
C2.2
 SHEET OF SHEETS

APPENDIX C
REFERENCE FIGURES

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United States
Department of
Agriculture



NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

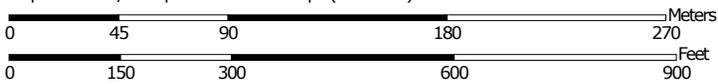
Custom Soil Resource Report for Island of Oahu, Hawaii



Custom Soil Resource Report Soil Map



Map Scale: 1:3,090 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Oahu, Hawaii
 Survey Area Data: Version 8, Dec 7, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- Zone A:** No BFE determined.
- Zone AE:** BFE determined.
- Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY: HONOLULU
TMK NO: (1) 5-2-002-001
PARCEL ADDRESS: 52- KAAAWA, HI 96730
FIRM INDEX DATE: JANUARY 19, 2011
LETTER OF MAP CHANGE(S): NONE
FEMA FIRM PANEL(S): 15003C0155G-JUNE 02, 2005
 15003C0165F-SEPTEMBER 30, 2004

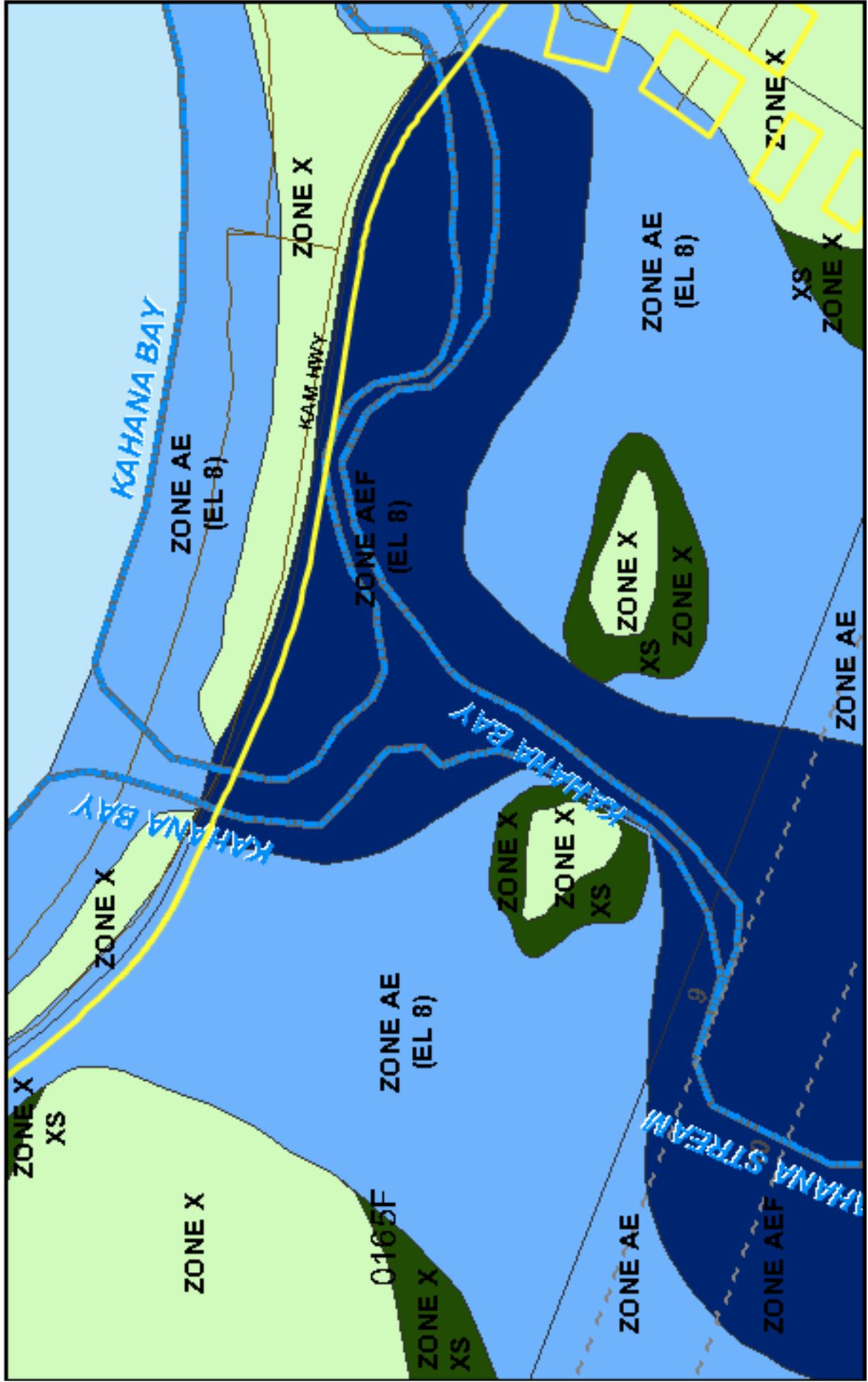
PARCEL DATA FROM: APRIL 2013
IMAGERY DATA FROM: MAY 2006

IMPORTANT PHONE NUMBERS

County NFIP Coordinator
 City and County of Honolulu
 Mario Siu-Li, CFM (808) 768-8098
State NFIP Coordinator
 Carol Tyau-Beam, P.E., CFM (808) 587-0267

Disclaimer: The Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR from any liability, which may arise from its use.

If this map has been identified as 'PRELIMINARY' or 'UNOFFICIAL', please note that it is being provided for informational purposes and is not to be used for official/legal decisions, regulatory compliance, or flood insurance rating. Contact your county NFIP coordinator for flood zone determinations to be used for compliance with local floodplain management regulations.



Origin of Day Use in the Front Portion of the Park

A Territorial Parks System for Hawai'i, January 1962

Recommended for Parks Development Program 1961 – 1965

Kahana Bay Park listed in 2nd phase of the program; 1959 – 1961 was the priority phase

A Comprehensive Plan for Hawaii State Parks, February 1962

Development Plan for Kahana includes a drawing that indicates picnic area, campsites mauka of the highway and Park Headquarters

Parking for several 1000 cars at the beach and bay frontage area with 100 acres or more to picnic areas and open space use; 200 acres providing more than 1000 camping sites with a large area set aside for a tropical botanical garden

Kahana Valley State Park, 1974 Mogi Master Plan

main entrance to the park past the coconut grove with a system of pedestrian ways leading to orientation center that is comprised of *kauhale*, separate structures with a specific function, such as an information center, general store, restaurant

In designing for the park, Dr. James Kumagai was asked to examine the implications of a system and he recommended small, self-contained underground sewage disposal systems, such as cesspools and septic tanks as being the most economical as opposed to a centralized sewage treatment plant that requires an extensive collection system and sophisticated treatment techniques, making it very costly

Main orientation center in the visitor center is located just inside the main gate, centrally located within the park's internal circulation system, near the main parking area

In the past, it was assumed that the flood plain of Kahana Stream was the main impediment to construction on the floor of the main valley. Discussions with valley residents, along with evidence of buildings still standing after 50 years in the 10-year flood plain suggests that the valley floor may be an acceptable location for certain permanent structures, if precautions are taken; location of new housing on the valley floor was not considered because of the frequency of flooding and tsunami hazards

A total of 18 homes will be affected by the 1st phase development plan;

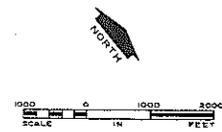
No dwellings to be constructed in hazard prone areas (flooding, tsunami)



ISLAND OF OAHU
 PROPOSED DEVELOPMENT PLAN
 ————— KAHANA BAY PARK —————

LEGEND

- | | | | |
|---|-------------------------------|---|------------|
|  | LANDSCAPE (Botanical Society) |  | STRUCTURES |
|  | ROAD & PARKING AREA |  | CAMPSITES |
|  | LOOKOUT |  | SHELTERS |



KAHANA BAY

Site Description

On the Northeast coast of Oahu 25 miles from downtown Honolulu, and accessible via Highway 83. This site includes the entire Kahana Valley drainage basin of approximately 5,300 acres. The floor of the valley is an open flat alluvial plain of some 600 acres which extends inland almost a mile. It is enclosed on all three sides by a steep ridge line, the slopes of which are heavily forested with Hau, Java Plum, Koa, and Hala.

There is a mile of Kahana stream frontage in the valley, this being the heaviest flowing stream on the island. There is also over a mile of bay frontage with perhaps 2,000 feet of suitable sandy beach. Annual rainfall at the lower end of the valley is 70 inches annually which increases rapidly near the head of the drainage basin to well over 200 inches.

Present Status

For hundreds of years the floor of this valley had been used for wetland paddy culture followed by sugar cane, and later forage grass, as pasturage is the main use today. During World War II, U. S. troops were trained in jungle warfare in Kahana Valley.

Present uses are for limited residential purposes, diversified agriculture, however, the main use is for grazing. The comparatively few residences are generally in very poor condition. Above the head of the valley, Oahu Sugar Company diverts water from the stream for irrigation purposes.

Recreational use is made of the bay frontage area where the City and County Parks and Recreation Department is developing a park where they have acquired 4.7 acres of land. Konohiki fishing rights in the bay are being acquired by the State. The remaining lands are all privately owned, although some are within the Forest Reserve. The Hui O Kahana has the largest portion of 105 shares belonging to the majority of the share holders of the basin area.

According to the General Plan of the City and County of Honolulu, future land use planning includes park, residential and resort hotel, and zoning is hotel and residential. There is the possibility that the present highway in this area might be rerouted up the valley some time in the future.

Recreational Interests

Kahana Valley and Bay has more recreational interests than any other area of similar size on Oahu. These include the following potentials:

Boating, water skiing, swimming, sun bathing, and fishing in the bay.

Historical interest in connection with early land use and archaeological values of the fish pond and heiaus, etc., in the basin.

Stream boating and fresh water fishing, including an opportunity to create a 50 acre fresh water impoundment for bass fishing and swimming.

Picnicking, tent and trailer camping, and cabin type lodgings use.

Hiking and riding trails along the slopes of the basin.

Organized group camping and camp-out activities.

Botanical interests and nature study (A portion of the area may be suitable for a tropical botanical garden).

Sight seeing as scenic qualities of the basin and bay are excellent.

Development

To fully realize the potentials of the bay frontage, it would be necessary to relocate about one-half mile of the present highway which is too close to the shoreline providing a sufficiently high structure over the stream so as to give a means of safe access for pedestrian traffic underneath to the beach. Stream channel work would also be necessary to minimize flooding during periods of high stream run-off, and even some relocation of the lower end might be necessary to better utilize the beach frontage and immediate backup area.

Parking for several thousand cars could be provided at the beach and bay frontage area with perhaps 100 acres or even considerably more devoted to picnic and open space use. Two hundred acres developed for camping, for example, would provide for over 1,000 camp sites. A rather large area could be set aside for a tropical botanical garden which would add to the park interest.

Stream side fishing could be provided and a 50 acre lake could be constructed taking advantage of natural terrain and would not have to be excavated. This lake could be stocked with bass and other fish for both boat and shoreline fishing. Swimming areas could be graded out along the lake. Cabin facilities could be located on a high flat knoll by the lake. A concession could handle lodging, food sales, and horse rental. Miles of riding and hiking trails could be built to traverse the valley slopes. There is room available for organized group camps and additional picnicking facilities near the head of the valley. Archaeological features could be restored and interpreted.

The six-year project costs are estimated at \$3,950,000 for planning, land acquisition, and construction. The total project costs would exceed this amount as the area would be developed over a longer period of time as the need and use increases. Land values are estimated at not more than \$3,500,000 and construction could cost an equal amount if all of the resources were developed.

Justification

Kahana Bay and Valley is the best site for a major park development on Oahu, and the last real opportunity to provide for mass recreation needs of a non-urban type. By 1980, Oahu's population in the Windward side alone is anticipated to increase from 68,000 to 132,000 and a deficiency in park acreage is estimated at over 2,000 acres if no more additional parks are acquired. The great need on Oahu, which will experience an almost similar population rate of increase as the Windward side, as revealed by this report, is to provide for mass recreation needs, and secondly, a diversity of use. The proposed Kawainui Swamp Park project, if implemented, will provide primarily for urban needs due to its location and features.

The possibility of obtaining Federal aid in the acquisition of at least a portion of Kahana Bay and Valley, inasmuch as it has shoreline area, is considered good because of S. 543, the National Shoreline Bill or companion legislation in which the Federal government would participate by paying one-half of the land acquisition costs on a matching basis with the State.