US Army Corps
of Engineers
Honolulu District

Public Notice of Application for Permit

Regulatory Branch (1145b)
Building 230
Fort Shafter, Hawaii 96858-5440

Public Notice Date: February 13, 2013
Expiration Date: March 15, 2013
Permit File Number: POH-2011-00147

Interested parties are hereby notified that an application has been received for a Department of the Army permit for certain work in waters of the United States as described below and shown on the attached drawings.

APPLICANT: Lori MK Kahikina, City and County of Honolulu, Department of Design and Construction, Frank F Fasi Municipal Building, 650 S King St, 11th Floor, Honolulu, HI 96813

AGENT: Michael S Nishimura, AECOM, 1001 Bishop St, Suite 1600, Honolulu, HI 96813

LOCATION: TMK: (1) 8-6-016:017, 21°26'16" N 158° 11' 10" W, Wai'anae, Island of O'ahu, Hawaii.

WORK: The applicant proposes to concrete line the bed and vegetate the banks of an existing 400 ft long, dirt-lined drainage channel in Wai'anae, between Farrington Highway and Pokai Bay St.

PURPOSE: To restore the channel profile to provide positive drainage flow, improve the conveyance of drainage flow from inland of Farrington Highway, and enhance flood relief for the adjoining and adjacent properties. The current hydraulic capacity of the channel is approximately 97 cubic feet per second (cfs). Channel improvements will increase the hydraulic capacity to approximately 346 cfs.

ADDITIONAL INFORMATION: The drainage channel would be grubbed and graded. A small front end loader/bulldozer would be used to excavate approximately 492 CY of accumulated debris. Excavated material would be disposed of in an appropriate upland location and no machinery, construction debris/materials, or excavated sediment would be stockpiled in the channel. The channel would be excavated and the banks reshaped to form a trapezoidal cross-section with a slope of 2H: 1V. The banks would be reshaped using existing material from the channel, graded and compacted, then re-vegetated with native/non-invasive plant species such as *pōhinahina, 'ilie'e,* and non-invasive Vetiver grass. Pyramat geotextile fabric would be installed over the re-vegetated areas and anchored with 24 inch metal pins and ArmorMax earth percussion anchors.
The channel bottom would be excavated to a depth of four (4) feet, filled with eighteen (18) inches of select granular fill (crushed coral or basalt), and lined with six (6) inches of monolithic pour-in-place concrete. Construction would be split into four (4) phases and occur during the dry summer months

(June-October). The work would take approximately four (4) months to complete. Temporary BMPs and sandbag berms would be placed to divert flow around the phased work area.

MITIGATION: In order to prevent sediment from washing outside the work area into the ocean, a silt fence would be placed at the mouth of Pokai Bay box culvert and anchored with rebar. Work would also halt during adverse weather conditions. Banks of the improved channel would be re-vegetated with native and/or non-invasive groundcover to prevent the spread of introduced, nuisance plant species. Archaeological monitoring would also be performed at the site during construction, as recommended by the State of Hawaii, Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD).

WATER QUALITY CERTIFICATION: The **proposed action would result in a discharge of fill material into a water of the U.S.** and would require authorization from the U.S. Army Corps of Engineers (Corps) in accordance to Section 404 of the Clean Water Act of 1972 (CWA). Under Section 401 of the CWA (Public Law 95-217), the Corps may not issue a permit for the described work until the applicant obtains a certification, or waiver of certification, from the State of Hawaii, Department of Health – Clean Water Branch.

COASTAL ZONE MANAGEMENT ACT CERTIFICATION: **The proposed activity would affect land or water uses in the Coastal Zone**. Under Section 307(c)(3) of the Coastal Zone Management Act of 1972, as amended by 16 U.S.C. 1456(c)(3), the Corps may not issue a permit for the described work until the applicant obtains a Federal Consistency Concurrence from the State of Hawaii, Department of Business, Economic Development, and Tourism – Office of Planning.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, clearly and concisely, the reasons and rationale for holding a public hearing.

CULTURAL RESOURCES: The latest published version of the National Register of Historic Places (NRHP) has been consulted for the presence or absence of historic properties, including those listed in or eligible for inclusion in the National Register of Historic Places. There are no listed or eligible properties in the vicinity of the worksite. Consultation of the NRHP constitutes the extent of cultural resource investigations by the District Engineer at this time, and he is otherwise unaware of the presence of such resources. This application is being coordinated with the State Historic Preservation Officer (SHPO). Any comments SHPO may have concerning presently unknown archeological or historic data that may be lost or destroyed by work under the requested permit will be considered in our final assessment of the described work.

ENDANGERED SPECIES: Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) on all actions that may affect a species listed (or proposed for listing) under the ESA as threatened or endangered or any designated critical habitat. We have determined the following listed species have the potential to occur near the project location:

Hawksbill sea turtles *(Eretmochelys imbricate)*, endangered
Green sea turtles *(Chelonia mydas)*, threatened
Hawaiian monk seals *(Monachus schauinslandi)*, endangered

The project location is absent of designated critical habitat for ESA-listed species.

The applicant's proposed site-specific Best Management Practices (BMPs) would be included as conditions of the Corps permit, if issued. Based on the applicant's proposed project scope, the Corps

has preliminarily determined this project may affect, but would not likely adversely affect the federally listed species identified above. We will be initiating informal consultation with NMFS and USFWS to seek written concurrence with our determination.

ESSENTIAL FISH HABITAT: The proposed work is being evaluated for possible effects to Essential Fish Habitat (EFH) pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act of 1996 (MSFCMA) (16 U.S.C. 1855 (b)) and associated federal regulations found at 50 CFR Part 600 Subpart K. The Honolulu District area of responsibility includes EFH for species managed under Fishery Management Plans. Concurrently with the issuance of this public notice, the USACE will evaluate the potential impacts to EFH and provide a coordination letter to the NMFS, as required, with the USACE's effects determination for the proposed project.

SPECIAL AREA DESIGNATION: None

AUTHORITY: This permit application will be reviewed under the following authorities:

(X) Perform work in or affecting navigable waters of the United States – Section 10 Rivers and Harbors Act 1899 (33 U.S.C. 403).

(X) Discharge dredged or fill material into waters of the United States – Section 404 Clean Water Act (33 U.S.C. 1344). The Corps' public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

( ) Transport dredged material for the purpose of dumping it into ocean waters - Section 103 Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413). The Corps' public interest review will consider the criteria established under authority of Section 102(a) of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (40 CFR Parts 220 to 229), as appropriate.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

The U.S. Army Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for the work. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity.

COMMENT AND REVIEW PERIOD: Conventional mail or e-mail comments on this public notice will be accepted and made part of the record and will be considered in determining whether it would be in the public interest to authorize this proposal. In order to be accepted, e-mail comments must

originate from the author's e-mail account and must include on the subject line of the e-mail message the permit applicant's name and reference number as shown below. All e-mail comments should be sent to Kaitlyn.R.Seberger@usace.army.mil. Conventional mail comments should be sent U.S. Army Corps of Engineers, Regulatory Branch, Building 230, Ft. Shafter, HI 96848. Both conventional mail and e-mail comments must include the permit applicant's name and reference number, as shown below, and the commenter's name, address, and phone number. All comments whether conventional mail or e-mail must reach this office, no later than the expiration date of this public notice to ensure consideration. Please include the following name and reference number: **POH-2011-0147.**

Comments on the described work, with the reference number, should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact **Kaitlyn Seberger** at (808) 835-4300 if further information is desired concerning this notice.

Additional Project Information and Project Drawings are attached to this Public Notice.

District Engineer
U.S. Army, Corps of Engineers

Attachments

Appendix A: DA permit application and construction drawings
Appendix B: Project Alternatives

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This Information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
POH-2011-147	CEPOH-EC-R	AUG 29 2012	

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Lori Middle - M.K. Last – Kahikina	First - Michael Middle - S. Last – Nishimura
Company – City & County of Honolulu (C&C), Department of Design and Construction (DDC)	Company – AECOM Technical Services, Inc.
E-mail Address – LKahikina@Honolulu.Gov	E-mail Address – Mike.Nishimura@AECOM.com
6. APPLICANT'S ADDRESS.	9. AGENT'S ADDRESS
Address - Frank F. Fasi Municipal Building, 650 South King Street, 11th Floor	Address - Bishop Square - American Savings Bank Tower, 1001 Bishop Street, Suite 1600
City – Honolulu State – Hawaii Zip – 96813 Country – USA	City – Honolulu State – Hawaii Zip – 96813 Country – USA
7. APPLICANT'S PHONE NOs. W/AREA CODE.	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business 808.768.8480 c. Fax 808.768.4567	a. Residence b. Business 808.521.3051 c. Fax 808.524.0246

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Michael S. Nishimura to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE DATE 8/21/12

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

Pokai Bay Ditches Flood Control Improvements

13. NAME OF WATERBODY, IF KNOWN (if applicable)

Pokai Bay Ditches, Pokai Bay (Pacific Ocean) coastline (Lualualei Beach Park shoreline)

14. PROJECT STREET ADDRESS (if applicable)

Address N/A

15. LOCATION OF PROJECT

Latitude: °N 21d26'10" (South Ditch - Channel 1), 21d26'16" (North Ditch - Channel 2)
Longitude: °W 158d11'7" (South Ditch - Channel 1), 158d11'10" (North Ditch - Channel 2)

City - State – Zip -

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID (1)8-6-016:003 & 017 Municipality Waianae
Section – Township – Range –

17. DIRECTIONS TO THE SITE

Starting from Honolulu International Airport, head west on I-H-1 W (17.1 mi). Continue onto H1-93 W/Farrington Highway (10.1 mi). Both ditches are between Farrington Highway (upstream) and Pokai Bay Street (downstream) with access from upstream and downstream locations for both ditches.

18. Nature of Activity (Description of project, include ures)

Proposed improvements for the ditches include clearing, grubbing, grading, tree removals and the installation of structural erosion control matting over existing earthen ditch banks with reinforced concrete channel bottoms to establish trapezoidal cross sections. The suggested Contractor's operations and staging area (COSA) of roughly 2,000 square feet shall be located within the Luaiualei Beach Park AC paved parking lot. Silt, debris, or other unsuitable materials will be removed and disposed of at the City-owned Waimanalo Gulch Landfill or other approved disposal site. Channel 1 is about 210 feet long and stretches westerly from Farrington Highway to Pokai Bay Street. Channel 2 is approximately 400 feet long and stretches westerly from Farrington Highway across from the Seventh-Day Adventist Church, to the intersection of Alta Street and Pokai Bay Street. The existing ditches are within a 20' easement in favor of the City. Construction equipment is anticipated to include, but not limited to, bobcats, crane to lift and lower bobcat into/out of ditches, vibratory compactors and dump trucks.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Improve stability, erosion control, and drainage management of two existing unlined, earthen C&C stormwater ditches. The proposed ditch improvements will restore the ditch profiles from upstream (Farrington Highway) to downstream (Pokai Bay Street) existing box culverts to provide positive drainage flow, improve the conveyance of drainage flow from inland of Farrington Highway and enhance flood relief for the adjoining and adjacent properties.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

N/A - Fill and excavated materials will be balanced and localized within the channels between upstream (Farrington Highway) and downstream (Pokai Bay Street) existing concrete box culverts as much as practicable. Excess material will be disposed of properly off-site.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Refer to supplemental information attached	Refer to supplemental information attached	Refer to supplemental information attached

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres N/A

Or

Liner Feet N/A

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Typical construction "Good Housekeeping" Best Management Practices and Erosion Control standards and practices will be followed. Refer to the Mitigation section of the Questionnaire for more information.

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☑ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address – see attached supplemental list

City – Waianae State – Hawaii Zip – 96792

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
State of Hawaii, Department of Health (DOH)	Section 401, Water Quality Certification (W	N/A	N/A	N/A	N/A
State of Hawaii, Department of Health (DOH)	NPDES, NOI-G (Construction Activity De	N/A	N/A	N/A	N/A
C&C, Department of Planning and Permitting	MS4 Construction Dewatering Permit (Te	N/A	N/A	N/A	N/A
State of Hawai'i, DOH, Safe Drinking Water	UIC Abandon Unregistered Injection Well	N/A	N/A	N/A	N/A

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

8/21/12 — SIGNATURE OF APPLICANT — DATE

8/24/12 — SIGNATURE OF AGENT — DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

2. Supplemental Information & Clarifications to ENG Form 4345, Sept 2009

BLOCK 5. APPLICANT'S NAME
Lori M.K. Kahikina, Director
City & County of Honolulu, Department of Design & Construction

BLOCK 6. APPLICANT'S ADDRESS
Frank F. Fasi Municipal Building (Honolulu Municipal Building)
650 South King Street, 11th Floor
Honolulu, Hawai'i, 96813

BLOCK 7. APPLICANT'S PHONE NUMBERS WITH AREA CODE
Telephone: 808.768.8480
Facsimile: 808.768.4567
Electronic Mail: LKahikina@Honolulu.Gov

BLOCK 8. AUTHORIZED AGENT'S NAME AND TITLE
Michael S. Nishimura, Project Manager
AECOM Technical Services, Inc.

BLOCK 9. AGENT'S ADDRESS
Bishop Square—American Savings Bank Tower
1001 Bishop Street, Suite 1600
Honolulu, Hawai'i 96813

BLOCK 10. AGENT'S PHONE NUMBERS WITH AREA CODE
Telephone: 808.521.3051 (extension 2657228)
Facsimile: 808.524.0246
Electronic Mail: Mike.Nishimura@AECOM.Com

BLOCK 12. PROJECT NAME OR TITLE
C&C DDC Job No. 09-12: Pōka'ī Bay Ditches Flood Control Improvements
Lualualei, Wai'anae, O'ahu, Hawai'i

BLOCK 13. NAME OF WATERBODY, IF KNOWN
Storm drainage ditch leading to Pōka'ī Bay, Lualualei Beach Park shoreline (Pacific Ocean)

BLOCK 14. PROJECT STREET ADDRESS
Not applicable—none; Tax Map Keys (1) 8-6-016:003 & 017—Two separate C&C drainage easements and parcels between Farrington Highway and Pōka'ī Bay Street.

BLOCK 15. LOCATION OF PROJECT
West side of the island of O'ahu—Lualualei, Wai'anae, O'ahu, Hawai'i—vicinity and location maps for the project are included as **Figure 1**.

BLOCK 16. OTHER LOCATION DESCRIPTIONS, IF KNOWN
Channel 2 stretches westerly from Farrington Highway across from the Seventh-Day Adventist Church, to the intersection of Alta Street and Pōka'ī Bay Street about 0.2 miles northwest of the Wai'anae Mall.

BLOCK 17. DIRECTIONS TO THE SITE

Starting from Honolulu International Airport, head west on I-H-1 W (about 17.1 miles). Continue onto H1-93 W / Farrington Highway (about 10.1 miles). The ditch is between Farrington Highway (upstream) and Pōka'ī Bay Street (downstream) with access from upstream and downstream locations of the ditch.

BLOCK 18. NATURE OF ACTIVITY *(Description of project, include all features)*

Proposed improvements for each ditch include clearing, grubbing, grading, tree removals and installation of reinforced concrete channel bottom with structural erosion control matting over existing earthen ditch banks to establish trapezoidal cross sections. The suggested Contractor's operations and staging area (COSA) of roughly 2,000 square feet shall be located within the Lualualei Beach Park AC paved parking lot. Silt, debris, or other unsuitable materials will be removed and disposed of at the City-owned Waimānalo Gulch Landfill, or other approved disposal site. Channel 2 is approximately 400 feet long and stretches westerly from Farrington Highway across from the Seventh-Day Adventist Church, to the intersection of Alta Street and Pōka'ī Bay Street. The existing ditch is within a 20' easement in favor of the City. Construction equipment is anticipated to include, but not limited to, small bobcat-type front-end loaders/bulldozers, crane to lift and lower equipment into/out of the ditch, vibratory compactors and dump trucks, only as necessary.

BLOCK 19. PROJECT PURPOSE *(Describe the reason or purpose of the project)*

Improve stability, erosion control, and drainage management of two (2) existing unlined, earthen C&C stormwater ditches approximately 210 feet (Channel 1) and 400 feet (Channel 2) in length. The proposed ditch improvements will restore the ditch profile from upstream (Farrington Highway) to downstream (Pōka'ī Bay Street) existing box culverts to provide positive drainage flow, improve the conveyance of drainage flow from inland of Farrington Highway and enhance flood relief for the adjoining and adjacent properties. The owner is seeking coverage under this permit for the construction of proposed improvements within Channel 2 as determined to be navigable waters of the U.S. by the USACE. Refer to the approved Jurisdictional Determination letter at the end of this permit.

BLOCK 20. REASONS FOR DISCHARGE

Not applicable—Excavated materials within Channel 2 are not considered to be a suitable source of backfill material and will be disposed of properly off-site. Imported structural fill from an acceptable source shall be used for and consist of non-expansive select granular materials, such as crushed coral or basalt.

BLOCK 21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS:

Temporary (during construction only)	
Sandbags:	Approximately 50 CY
Geotextile Filter Fabric:	Approximately 300 SF
Permanent (finish condition)	
Steel-reinforced concrete:	Approximately 31 CY
Aggregate course and fill:	Approximately 5 CY

BLOCK 22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED:

Not applicable.

BLOCK 23. DESCRIPTION OF AVOIDANCE, MINIMIZATION, AND COMPENSATION

Typical construction "Good Housekeeping" Best Management Practices and Erosion Control standards will be followed (refer to the "Mitigation" section of the Questionnaire attached).

BLOCK 24. IS ANY PORTION OF THE WORK ALREADY COMPLETED?

[ ] YES [✓] NO

BLOCK 25. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC WHOSE PROPERTY ADJOINS THE WATERBODY

Table 1—Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Waterbody and Lies Within 500 Feet of the Site

	Property	Owner	Parcel TMK No.	Mailing Address
1)	Abandoned O'ahu Railway and Land Co. Right-Of-Way	State of Hawai'i	8-6-001:006	Not applicable / none
2)	Lualualei Beach Park	State of Hawai'i	8-6-001:007	Not applicable / none
3)	86-82 Farrington Hwy	Hale Wai Vista	8-6-001:035	Not applicable / none
4)	Not applicable / none	TNP SRT Wai'anae Mall, LLC	8-6-001:055	c/o George McElroy & Associates, Inc. PO Box 565048 Dallas, TX 75356-5048
5)	86-88 Farrington Hwy	LBSK Family LTD Partnership	8-6-001:056	2163 Ala Wai Blvd Honolulu, HI 96815
6)	86-78 Farrington Hwy	Jan Properties LTD Partnership	8-6-001:059	4975 Kolohala St Honolulu, HI 96816
7)	86-80 Farrington Hwy	LBSK Family LTD Partnership	8-6-001:060	2163 Ala Wai Blvd Honolulu, HI 96815
8)	86-61 Alta St	Marilyn & Schuyler Cole	8-6-015:001	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
9)	86-56A Pōka'ī Bay St	Marilyn & Schuyler Cole	8-6-015:002	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
10)	86-52A Pōka'ī Bay St	Marilyn & Schuyler Cole	8-6-015:003	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
11)	86-48A Pōka'ī Bay St	Marilyn & Schuyler Cole	8-6-015:004	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
12)	86-46A Pōka'ī Bay St	Marilyn & Schuyler Cole	8-6-015:005	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
13)	86-55 Alta St	Marilyn & Schuyler Cole	8-6-015:016	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
14)	86-51A Alta St	Marilyn & Schuyler Cole	8-6-015:015	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
15)	86-47A Alta St	Marilyn & Schuyler Cole	8-6-015:014	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
16)	86-43A Alta St	Marilyn & Schuyler Cole	8-6-015:013	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
17)	86-41A Alta St	Marilyn & Schuyler Cole	8-6-015:012	59-229 Kē Nui Rd #C Hale'iwa, HI 96712
18)	86-66 Alta St	Jane & Jerry Oyabu	8-6-015:017	1636 Silva St Honolulu, HI 96819

19)	86-62 Alta St	Kara & Calvin Kaneshiro	8-6-015:018	PO Box 701212 Kapolei, HI 96709
20)	86-60 Alta St	Marie & Willie Pualoa	8-6-015:019	PO Box 1197 Wai'anae, HI 96792-1197
21)	86-58 Alta St	Bernd Friedmann	8-6-015:020	2999 Lawrence St San Diego, CA 92106
22)	86-54 Alta St	Melynda Giordani	8-6-015:021	11955 Missouri Ave 8 Los Angeles, CA 90025
23)	86-50 Alta St	Mamo & Dennis Fortna	8-6-015:022	86-050 Alta St Wai'anae, HI 96792
24)	86-48 Alta St	Noemi & Dante Academia	8-6-015:023	86-048 Alta St Wai'anae, HI 96792
25)	86-44 Alta St	Susan & James Kauanui	8-6-015:024	86-044 Alta St Wai'anae, HI 96792
26)	86-42 Alta St	Siaosi Saelua	8-6-015:025	86-042 Alta St Wai'anae, HI 96792
27)	86-41 Farrington Hwy	Jean, Thomas & Peter Hepa	8-6-015:035	86-041 Farrington Hwy Wai'anae, HI 96792
28)	86-43 Farrington Hwy	Catherine, Pedro Jr. & Pedro Keli'iho'omalu	8-6-015:036	86-043 Farrington Hwy Wai'anae, HI 96792
29)	86-47 Farrington Hwy	Theresa Keli'iho'omalu & Kekoa Octubre	8-6-015:037	86-047 Farrington Hwy Wai'anae, HI 96792
30)	86-49 Farrington Hwy	John Swift	8-6-015:038	86-049 Farrington Hwy Wai'anae, HI 96792
31)	86-53 Farrington Hwy	Kathie Kaopuiki	8-6-015:039	86-053 Farrington Hwy Wai'anae, HI 96792
32)	86-55 Farrington Hwy	Kinue & Tadao Fukuda	8-6-015:040	1813 Wai'ola St Honolulu, HI 96826
33)	86-59 Farrington Hwy	Matsue Okimoto	8-6-015:041	86-059 Farrington Hwy Wai'anae, HI 96792
34)	86-61 Farrington Hwy	Mary Apo & Wallace, Calvin, Alexander & Melvin Kunukau	8-6-015:042	86-061 Farrington Hwy Wai'anae, HI 96792
35)	86-88 Pōka'ī Bay St	Carla Brede, Julianaa Kahoonei, Michelle Furfaro & Dory Andres	8-6-016:007	P.O. Box 279 Kaunakakai, HI 96748 66-328 Ka'amo'oloa Rd Waialua, HI 96791
36)	86-86 Pōka'ī Bay St	Edward & Rosa Gutzler	8-6-016:008	21645 Columbia St Lexington Park, MD 20653-2544
37)	86-82A Pōka'ī Bay St	Florence Richardson & Allene Suemori	8-6-016:009	4153 Pāpū Cir Honolulu, HI 96816-4836

38)	86-80 Pōka'ī Bay St	Norman & Lois Suzuki	8-6-016:010	1188 Bishop St, Ste 1805 Honolulu, HI 96813
39)	86-76 Pōka'ī Bay St	Edward Halfinger	8-6-016:011	86-076 Pōka'ī Bay St Wai'anae, HI 96792
40)	86-72 Pōka'ī Bay St	Mary Monte-Lovelace	8-6-016:012	86-021 Ala Poko St Wai'anae, HI 96792-3030
41)	86-25 Ala Poko St	Alfred Jr. & Shelaine Carvalho	8-6-016:013	86-025 Ala Poko St Wai'anae, HI 96792
42)	86-68 Pōka'ī Bay St	Dorothy De Tomaso	8-6-016:014	86-068 Pōka'ī Bay St Wai'anae, HI 96792
43)	86-64 Pōka'ī Bay St	Bernadette Beuker & Ruth Long	8-6-016:015	86-064 Pōka'ī Bay St Wai'anae, HI 96792
44)	86-26 Ala Poko St	Laulupe & Oscar Dempster, Harriet Kauaihilo	8-6-016:018	86-026 Ala Poko St Wai'anae, HI 96792
45)	86-30 Ala Poko St	Rodney Jackson	8-6-016:020	86-030 Ala Poko St Wai'anae, HI 96792
46)	86-32 Ala Poko St	Cleta & John Young	8-6-016:021	86-032 Ala Poko St Wai'anae, HI 96792
47)	86-36 Ala Poko St	Voranus & Gary Ludewig	8-6-016:022	86-036 Ala Poko St Wai'anae, HI 96792
48)	86-35 Ala Poko St	Dale Yap	8-6-016:023	86-035 Ala Poko St Wai'anae, HI 96792-3030
49)	86-75 Farrington Hwy	Fances Ashley	8-6-016:024	86-075 Farrington Hwy Wai'anae, HI 96792
50)	86-29 Ala Poko St	Vickie-Jean & Rufus Demarco	8-6-016:025	86-029 Ala Poko St Wai'anae, HI 96792
51)	86-77 Farrington Hwy	Stephanie & Amadeo Verzon	8-6-016:026	86-077 Farrington Hwy Wai'anae, HI 96792
52)	86-81 Farrington Hwy	Issa Nael Hilweh & Justin Bizer	8-6-016:027	86-81 Farrington Hwy Waianae, HI 96792
53)	86-83 Farrington Hwy	Luella & James Awana	8-6-016:028	86-033 Farrington Hwy Wai'anae, HI 96792
54)	86-87 Farrington Hwy	Luella & James Awana	8-6-016:029	86-033 Farrington Hwy Wai'anae, HI 96792
55)	86-72 Farrington Hwy	Hawaiian Association 7th Day Adventist	8-6-018:020	2728 Pali Hwy Honolulu, HI 96817
56)	86-66 Farrington Hwy	Jadine London & Deron, Curtis & Bruce Yee	8-6-018:021	C/O Fahrni Realty Inc 98-277 Kam Hwy 'Aiea, HI 96701 2023 Coyne St

				Honolulu, HI 96826-1334
57)	86-62 Farrington Hwy	Popua Moafangupo	8-6-018:022	7433 Arthur St Oakland, CA 94605
58)	86-60 Farrington Hwy	Anna & Jeffery Hicks	8-6-018:023	94-927 Awanei St Waipahu, HI 96797
59)	86-56 Farrington Hwy	E.M. Ito Investments LLC	8-6-018:024	15 Country Club Rd Honolulu, HI 96817
60)	86-52 Farrington Hwy	Aurelio & Susan Bernardino	8-6-018:025	86-052 Farrington Hwy Waiʻanae, HI 96792
61)	86-50 Farrington Hwy	Joanne Ryckman	8-6-018:026	86-050 Farrington Hwy Waiʻanae HI 96792
62)	86-103 Pūhano St	Tamura Superette Inc	8-6-018:027	86-032 Farrington Hwy Waiʻanae HI 96792

BLOCK 26. LIST OF OTHER CERTIFICATIONS OR APPROVALS/DENIALS RECEIVED FROM OTHER FEDERAL, STATE, OR LOCAL AGENCIES FOR WORK DESCRIBED IN THIS APPLICATION

Table 2—Other Certifications or Approvals/Denials Received from Other Federal, State or Local Agencies for Work Described In This Application

	AGENCY	TYPE APPROVAL	ID NUMBER	DATE APPLIED	DATE APPROVED or DENIED
1)	State of Hawaiʻi, Department of Health (DOH), Clean Water Branch (CWB)	Section 401, Water Quality Certification (WQC)	Pending	Pending	Pending
2)	State of Hawaiʻi, DOH, Clean Water Branch (CWB)	NPDES, NOI-G (Construction Activity Dewatering Effluent)	Pending	Pending	Pending
3)	State of Hawaiʻi, DOH, Safe Drinking Water Branch (SDWB)	UIC Abandon Unregistered Injection Well	Pending	Pending	Pending
4)	C&C, Department of Planning and Permitting (DPP)	MS4 Construction Dewatering Permit (Temporary)	Pending	Pending	Pending

QUESTIONNAIRE

A complete Department of the Army Permit Application consists of the application form (ENG Form 4345), drawings and environmental information necessary to determine a project's probable impact on the public interest (33 CFR Part 325.1 (d)(1) and Part 325.3(a)). Based on our experience, the environmental information necessary to make the public interest determination is often inadequate when only the ENG Form 4345 form is submitted by applicants. Project managers must then request additional information from applicants, resulting in delays in project evaluation. In order to provide more efficient processing of your application, this questionnaire has been developed to supplement the information required in ENG Form 4345 and to simplify your submittal of environmental assessment information.

A. LOCATION (supplement to Blocks 15–16 of ENG Form 4345):

1. Please provide the Tax Map Key number(s) for the project site: (1)8-6-016:017.

2. Please provide the Latitude 21°26'16"N and Longitude 158°11'10"W.

3. Please provide the watershed in which work is proposed: Wai'anae Watershed; Lualualei Beach Park shoreline; Pacific Ocean.

B. DISCHARGE OF DREDGED AND/OR FILL MATERIAL (Blocks 20–22 of ENG Form 4345 also pertain to discharges of dredged and/or fill material).

1. State the source of the dredged or fill material.*

   No activity or installation of temporary materials associated with Best Management Practices (BMPs) is anticipated to discharge excavated or fill material. BMPs will include typical construction "good housekeeping" measures, and will be in effect throughout the duration of the construction period. The BMPs are temporary and will be removed upon completion of the project.

2. State the method of discharge.

   Not applicable—no discharge of dredged or fill material is anticipated. Excavation of soft to medium clay soils are anticipated within Channel 2 and considered not suitable as a source of backfill material and will be disposed of properly off-site. Imported structural fill from an acceptable source shall be used. The BMPs will be installed and removed manually with the assistance of hand tools.

3. Indicate the location of the discharge within the project site. This is best accomplished through a plan view drawing of the site that shows the footprint of filling (discharge). A cross-sectional view with existing and proposed contours (elevations) also provides necessary information on the scope of proposed work.**

   Refer to **Figures 1** and **2** for a plan view drawing of the project site and for a typical cross-sectional view of proposed channel improvements.

4. What types of structures or facilities would be constructed on the fill area? (Show on drawings their dimensions, layout, etc.)

   Proposed improvements include the installation of structural erosion control matting over existing earthen ditch banks with reinforced concrete channel bottom. Refer to **Figures 1** and **2** for a plan view drawing of the project site and for a cross-sectional view of proposed channel improvements.

* Note that Blocks 21 and 22 of ENG Form 4345 require both the volume (usually given in cubic yards) *and* surface area (square feet, acres, etc.) of fill.

** Please submit any drawings on 8½"×11" paper whenever possible.

C. DREDGING PROJECTS

1. Please provide plans showing the dredging footprint within the project site. Include cross-sectional views depicting the existing and proposed contours. Also include a location/vicinity map and plan view (if appropriate) of the area(s) where dredge spoil will be stockpiled, processed, and disposed.

   No dredging activities are anticipated; however, excavation activities are anticipated to occur. Refer to **Figures 1** and **2** for a plan view drawing of the project site and for a cross-sectional view of proposed channel improvements.

2. What is the type and composition of the material to be dredged?

   No dredging activities are anticipated; however, excavation of existing, in-situ soils and accumulated sediment is anticipated—refer to project soils report for additional information.

3. How much time will be required to complete the dredging (construction window)? Will the dredging project be accomplished in phases? If so, please describe. Is maintenance dredging proposed, and, if so, what is the timeframe of the dredging cycle?

   No dredging activities are anticipated; however, the anticipated durations of the excavations activities are as follows (although construction will be completed in a single construction phase, the work is anticipated to be segmented into sections):

   Channel 2, segment 1: Approximately 18 days.

   Channel 2, segment 2: Approximately 18 days.

   Channel 2, segment 3: Approximately 18 days.

   Channel 2, segment 4: Approximately 18 days.

4. How much material will be dredged?

   a. Volume: Approximately 99 CY of excavation.

   b. Surface area: Approximately 2,800 SF.

5. State what dredging method(s) will be used, and indicate why that method(s) is proposed.

   No dredging activities are anticipated; however, excavation will be performed using small bobcat-type front-end loaders/bulldozers, etc., and a dump truck only as necessary.

6. Where will the dredged material be de-watered?

   No dredging activities are anticipated; however, excavated material is anticipated to be dry and hauled off-site for proper disposal.

7. Do you plan to transport dredged material for the purpose of disposing it in the ocean?

   No dredging activities are anticipated; however, excavation of soft to medium clay soils are anticipated within Channel 2 and considered not suitable as a source of backfill material and will be disposed of properly off-site. Imported structural fill from an acceptable source shall be used. No excavated material shall be disposed of in the ocean.

   a. Where do you plan to dispose of the dredged material?

      Not applicable.

   b. How much material (volume) will be disposed?

      Not applicable.

   c. What is the type and composition of the material?

      Not applicable.

   d. How long do you plan to dispose of the material?

      Not applicable.

   e. How will you transport the material to the ocean dump site?

      Not applicable.

D. STRUCTURES IN NAVIGABLE WATERS

1. What specific structures will be constructed (type and size)?

   Proposed improvements include the installation of reinforced concrete channel bottom and structural erosion control matting over existing earthen ditch banks. Refer to **Figures 1** and **2** for a plan view drawing of the project site and for a cross-sectional view of proposed channel improvements.

2. What will the structures be used for?

Improve stability, erosion control and drainage management.

E. EXISTING ENVIRONMENT

Refer to attached pictures.

1. PHYSICAL ENVIRONMENT

a. How would you generally describe the project area and surrounding area?

(1) Level of development:

The project areas and their surrounding areas are made up of single-family homes, small businesses, shopping centers, super markets, a church and parks. Channel 2 is approximately 400 feet long and stretches westerly from Farrington Highway across from the Seventh-Day Adventist Church, to the intersection of Alta Street and Pōka'ī Bay Street in the town of Wai'anae on the west side of the island of O'ahu.

(2) Existing land and water use:

The existing use of the project sites includes conveyance and mitigation of drainage flow from inland of Farrington Highway and from properties adjacent to the ditch. Temporary BMPs and sandbag berms to divert flow around the phased work area will be installed during construction and will be removed to allow full function of the ditch upon project completion.

(3) Other general features:

General terrain/topography and lay of the land encompassing the project sites is flat and relatively of low elevation.

b. What kind of substrate (soil) is found at the project site? In absence of site-specific soil surveys, the United States Department of Agriculture, NRCS

According to the "Soil Survey of the Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i," the soils in the project vicinity consists of the Lualualei-Fill Land-Ewa association: deep, nearly level to moderately-sloping, well-drained soils that generally have fine-textured or moderately fine-textured subsoil or underlying material and areas of fill land; on coastal plains. Refer to **Figure 3** for Soils Map.

c. What is the range of water levels which occur (during normal tides and during storm of flood periods)?

Normal tide: Approximately 1.08 feet MHHW.

Storm/flood water level (10-Year Flood Recurrence Interval): Approximately 4.38 feet (normal flood depth within Channel 2 plus MHHW normal tide).

d. Describe the water currents and water circulation patterns at the project site.

Flow from runoff entering the ditch is intermittent (channel apparently normally dry) and appears not to be influenced by normal tidal fluctuations. The hydraulic capacity of the existing ditch is approximately 97 cubic feet per second (cfs) and is estimated to increase to approximately 346 cfs upon the completion of the proposed improvements.

e. What is the salinity (salt, brackish, or fresh) of the water at the project site?

The source of water entering the ditch is the Waiʻanae Watershed which is made up of runoff and mixes with salt water from the ocean. Therefore, the ditch is made up of brackish water.

f. What is the quality of the water at the project site? For instance, in Hawaiʻi a stream may be listed as a 303(d) Impaired Water by the State of Hawaiʻi's Department of Health (DOH). See DOH's web site below:
http://www.hawaii.gov/health/environmental/env-planning/wqm/wqm.html#303pcd

The project site is classified as Class 2 inland waters. The Hawaiʻi Administrative Rules (HAR), Title 11 Chapter 54—"Water Quality Standards," defines Class 2 waters as those to be protected for recreational purposes, aesthetic enjoyment, agricultural and industrial water supplies, shipping, navigation, and the propagation of fish, shellfish, and wildlife. These waters are not to receive any discharges that have not received the best degree of treatment or control compatible with the criteria established for this class. No new treated sewage discharges shall be permitted within estuaries.

Lualualei Beach Park shoreline is classified as Class A marine waters. The HAR 11-54—"Water Quality Standards," defines Class A waters as those to be protected for recreational purposes and aesthetic enjoyment, propagation of fish, shellfish, and wildlife. These waters are not to receive any discharges that have not received the best degree of treatment or control compatible with the criteria established for this class. No new sewage discharges will be permitted within embayments.

Pōkaʻī Bay Channel 2 is not listed on the State's Final 2006 List of Impaired Waters in Hawaiʻi prepared under the Clean Water Act §303(d). The off-site downstream outlet waters for Channel 2 are identified on the 2006 §303(d) list of impaired waters in Hawaiʻi which includes Lualualei Beach Park, Pōkaʻī Bay, Pōkaʻī Bay (oceanic) and Pōkaʻī Bay (open coastal). The 2006 §303(d) list identifies Lualualei Beach Park as a Category 3 (there is insufficient available data and/or information to make a use support determinations) surface water, and indicates the presence of monitored

pollutants to be unknown. The 2006 §303(d) list identifies Pōka'ī Bay as Categories 2 (available data and/or information indicate that some, but not all of the designated uses are supported) & 3 surface water, and indicates traces of enterococci were attained. The 2006 §303(d) list identifies both Pōka'ī Bay (oceanic) and Pōka'ī Bay (open coastal) as Categories 3 & 5 [available data and/or information indicate that at least one designated use in not being supported or is threatened, and a total maximum daily load (TMDL) is needed] surface water, traces of "total nitrogen" and "chlorophyll a" were not attained, and a low priority for initiating TMDL development.

g. Is this area a groundwater recharge area?

   The project area is not an apparent groundwater recharge area.

h. What is the history or possibility of contaminants/pollutants in the substrate (soil) at the source of fill material?

   Imported structural fill from an acceptable source shall be used and contain no contaminants/pollutants. The construction contractor shall furnish certificates, or other acceptable proof, that the source material is clean and meets project requirements.

i. Have there been problems with erosion at or near the project site?

   Channel 2 has apparent erosion along the channel bottom and embankments and this project will target improvements to mitigate the erosion within the channel. Lualualei Shoreline, located off-site and downstream of Channel 2, experiences erosion problems as well. The shoreline is composed of carbonate sand and limestone rock with a deep fringing reef near the shore. The area is exposed to southerly swells in summer months and refracted northerly swells in winter months. Southerly waves from winter Kona storms may also impact this coast. The shoreline position is highly variable as limestone outcrops are intermittently exposed and buried by shifting sand.

j. Is the project site located in or near a drainage way or flood plain? If yes, describe.

   The project site is designated to be primarily within flood zone VE, with small portions near Farrington Highway within flood zone AE, as indicated by the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM). Zone VE and AE are located parallel to the coast with zone AE located inland. Refer to **Figure 4**.

k. What is the quality of the air at the project site? Will the proposed project have an adverse, or insignificant, effect on air quality at the site? Will the impacts to air quality be temporary or permanent?

   There are currently no air quality concerns at the project site due to the lack of industrial pollutants at the immediate site and the existing growth of vegetation. The presence of trade winds mitigates the effects of vehicular traffic on air quality; however, strong winds may tend to cause some dust pollution by blowing the sand in the air.

   The principle sources of air pollution associated with this project will be the pollution resulting from construction activities and the emissions caused by the construction

machine/equipment and project vehicles. These effects are short-term in nature and will cease upon completion of the proposed projects. No long-term effects on air quality due to the operation of construction equipment or vehicles are anticipated as their presence and use will be temporary.

l. What are the existing noise levels at the project site? Will the proposed project have an adverse, or insignificant, effect on noise levels at the site? Will the impacts to noise levels be temporary or permanent?

The current noise in the area is mainly generated from surrounding residences, small businesses and from vehicular movements along Farrington Highway and Pōka'ī Bay Street. Additional background noise is provided from natural sources, such as, the wind and the breaking surf. During construction, noise levels will increase from the operation of heavy construction equipment. Typical construction equipment will include, but may not be limited to, small bobcat-type front-end loaders/bulldozers cranes, etc. Typical noise levels generated by this equipment will range from 80–90 decibels (dBA). Noise generated by construction activities will comply with noise provisions established by the State Department of Health. Construction activities are short-term and localized in nature, therefore no long-term or cumulative impacts are anticipated due to construction of the proposed project, and no other mitigative measures are anticipated.

2. BIOLOGICAL ENVIRONMENT (attach biological survey reports if available)

a. Biological survey reports from a qualified environmental professional can provide much of the necessary information for evaluating a project's potential to impact aquatic resources. If not available, a general characterization of the plants and animals at the site should be provided.

Typical plants and vegetation generally found within the region containing the site include california grass (*Brachiaria mutica*), fingergrass *Eustachys*), kiawe (*Prosopis pallid)* trees, sea grape (*Coccoloba unvifera*) trees and koa haole (*Leucaena glauca*) trees. Typical animals generally found within the region containing the site include dogs, cats, mongooses, rats, mice, mynahs, sparrows, doves, cardinals, pigeons and bulbuls. None of these animals are on, nor are candidates for, the Federal or State list of threatened or endangered species. Typical aquatic resources in the general vicinity of the site include fishing and ocean recreation off-site of project along Lualualei Beach Park Shoreline.

The proposed project may necessitate the transplant or removal of vegetation and trees. Area of removed plants and trees will be re-vegetated at the final phase of construction with grass for erosion control measures. Additionally, potential impacts from construction activities will be temporary and of relatively short duration, and are anticipated to be sufficiently and adequately mitigated through the implementation of BMPs (discussed further in the Mitigation section of this permit).

The area encompassing Pōka'ī Bay Channel 2 is not considered a prime wildlife habitat suitable for nesting or as a refuge. This project is not anticipated to adversely affect the local habitat.

b. Please list any plants and animals found within or near the project area that are listed as threatened or endangered under the Endangered Species Act of 1973). http://endangered.fws.gov/esa.html

The United States, Department of the Interior (DOI), Fish and Wildlife Service (FWS) was consulted to determine whether they are knowledgeable of any identified endangered and/or threatened/protected plant and animal species/habitats that could possibly be affected by the proposed project undertaking. At the time this report is compiled, a response/determination letter has not yet been received from them. Any information or data subsequently received by the US DOI-FWS regarding the project will be forwarded to the state DOH-CWB upon their receival.

Similar to the US DOI-FWS, the State of Hawai'i, University of Hawai'i at Mānoa (UHM), Center for Conservation Research and Training (CCRT), Pacific Biomedical Research Center (PBRC), Hawai'i Biodiversity and Mapping Program (HBMP), was consulted to determine whether they are knowledgeable of any identified endangered and/or threatened/protected plant and animal species/habitats that could possibly be affected by the proposed project undertaking. They have no comments on the proposed project undertaking and could not find any incidence of rare or endangered species immediately within the project area. This does not mean that no species of concern have ever been spotted in the project area; however, the HBMP has no official record of sighting in its databases (GIS Environmental Data). The HBMP does have records of monk seal sightings along the coast in the Pōka'ī Bay area and of native damselfly, *Megalagrion oahuense*, near the water tower on Pu'upahe'ehe'e Ridge. The HBMP's findings and feedback can be found at the end of this permit application.

3. SPECIAL AQUATIC SITES Is the project site located at or adjacent to any of the following areas? (Show on vicinity drawings the extent of the special sites, if they are present, clearly labeling each type.)

	Dredge Site	Discharge Site	Construction Site
Sanctuaries and Refuges (protected wildlife areas)	Not applicable	Not applicable	No
Wetlands (swamps, marshes, bogs)	Not applicable	Not applicable	No
Mudflats	Not applicable	Not applicable	No
Vegetated Shallows (seagrass bed)	Not applicable	Not applicable	No
Coral Reefs	Not applicable	Not applicable	Yes*
Riffle and Pool Complexes	Not applicable	Not applicable	No

* A coral reef is located along the shoreline of Lualualei Beach Park, off-site and makai of the project site.

4. HUMAN USE CHARACTERISTICS

a. What is the existing land use zoning for the site and its vicinity?

The existing state land use zoning designation for the project site is Urban and its vicinity is Urban as well. Refer to **Figure 5** for State Land Use Map.

Under the City and County of Honolulu Zoning, the project site is located within the Residential (R-5) zoning district. The projects vicinity is located within Business (B-2), Preservation (P-2), Industrial (I-2) and Residential (R-5). Refer to **Figure 6** for City and County of Honolulu Zoning Map.

b. What is on the land (including dwellings, facilities, etc.) at or near the site?

The project site is an existing earthen drainage ditch and the surrounding area is made up of residences, small businesses, shopping centers, super markets, a church and beach parks. Channel 2 stretches westerly from Farrington Highway across from the Seventh-Day Adventist Church, to the intersection of Alta Street and Pōka'ī Bay Street in the town of Wai'anae on the west side of the island of O'ahu.

c. Do any of the following occur at or near the site?

	Dredge Site	Discharge (fill) Site	Construction Site
Local fresh water supply	Not applicable	Not applicable	No
Fishing (recreational, commercial)	Not applicable	Not applicable	Yes*
Scenic areas	Not applicable	Not applicable	No
Agriculture (type)	Not applicable	Not applicable	No
Aquaculture (type)	Not applicable	Not applicable	No
Historic sites (type)	Not applicable	Not applicable	Yes*
Other cultural resources (type)	Not applicable	Not applicable	No
Parks, monuments, preserves, etc.	Not applicable	Not applicable	Yes*
Other (type)	Not applicable	Not applicable	No

* The project site is located near Lualualei Beach Park. The area is open to beach-goers and local shore fisherman. Additionally, archaeological monitoring shall be performed at the site during construction as recommended by the State DLNR-SHPD. The proposed project is not anticipated to negatively impact the surrounding sites.

F. ENVIRONMENTAL EFFECTS OF PROPOSED PROJECT

Briefly describe the environmental effects which may be expected as a result of your proposal, referring to the items listed in Section E above. Please don't answer "none." All projects have some effects.

1. Physical environment (effects on land, water, air, soil, etc.)

The principle sources of air pollution associated with this project will be fugitive dust emissions resulting from construction activities and emissions from the construction machine/equipment. These effects are short-term in nature and will cease upon completion of the proposed project. No long-term effects on air quality due to the operation of construction equipment or vehicles are anticipated as their presence and use will be temporary. The trade winds in this area will assist in mitigating any vehicular air pollution.

Construction activities for the proposed improvements include the installation of structural erosion control matting over existing earthen ditch banks with reinforced concrete channel bottom; thus, mitigating soil erosion within the ditch. No short-term or long-term adverse impacts to the soils are anticipated in the project vicinity.

Construction within the normally dry ditch is anticipated to occur during the dry summer months; however, during periods of rainy inclement weather, proper construction "good housekeeping" BMPs will be in-place and water quality monitoring and observation will be done to minimize adverse impacts of potential pollutants and nuisances to adjacent properties and the ocean.

The proposed project will not affect the area's flood zone.

The project will be designed to minimize its impact on the natural appearance of the site.

2. Biological environment (effects on plants, animals, and habitats)

Construction activities are anticipated to be performed using small bobcat-type front-end loaders/bulldozers, etc., and a dump truck only as necessary. The HBMP was consulted to determine whether they are knowledgeable of any identified endangered and/or threatened/protected plant and animal species/habitats that could possibly be affected by the proposed project undertaking and had no comments and could not find any incidence of rare or endangered species immediately within the project area. The HBMP does have records of monk seal sightings along the coast in the Pōka'ī Bay area and of native damselfly, *Megalagrion oahuense*, near the water tower on Pu'upahe'ehe'e Ridge. The HBMP's findings and feedback can be found at the end of this permit application.

Mobilization/demobilization between the project site and the suggested COSA within Lualualei Beach Park existing AC parking lot for construction equipment and materials will be via Pōka'ī Bay Street. No adverse effects to nearby plants and animals are anticipated from mobilization/demobilization activities.

Dewatering effluent from subgrade preparation for the new concrete channel bottom is not anticipated to discharged into State waters, and is planned to be stored in water trucks and disposed of properly off-site. Should backup, overflow dewatering containment be necessary based on dewatered volumes, an at-grade, built-up dewatering basin (polypropylene interwoven sandbag berm, unlined earthen bottom, surrounded by 6-foot tall chain-link fence for safety, and an overflow pipe to the channel with normally closed gate valve) will be constructed atop the earthen shoulder of Pōka'ī Bay above and in land of the beach shoreline. This secondary basin will allow dewatering effluent to percolate/evapotranspirate and allow settlement of suspended particulates prior to any discharge of overflow. An NPDES NOI-G permit will be completed and processed to cover any overflow discharge of dewatering effluent from the basin back into the ditch (downstream of work area). Typical proposed dewatering details are shown on **Figures 8 and 9**.

Additionally, the following measures will be taken to mitigate the effects of the project on the surrounding environment:

- No construction materials/equipment will be stockpiled or stored in the marine environment.
- All construction-related materials should be free of pollutants.

- No contamination of the marine environment should result from construction activities.
- A contingency plan to contain and control accidental spills of petroleum products within Channel 2 will be developed. Absorbent pads and containment booms will be stored on-site to facilitate the clean-up of petroleum spills.

3. Special aquatic sites (effects on wetlands, coral reefs, etc.)

   Coral Colonies
   There is an apparent coral population along the Lualualei Beach Park shoreline that is located off-site and downstream of the Channel 2 project site. Construction activities are anticipated to have no lasting or significant impact to the coral colonies and not displace or cause destruction of existing coral with the proposed activities.

4. Human use (how existing human activities would be affected)

   The proposed project site is near Lualualei Beach Park that is open to beach-goers and local shore fisherman; however, construction activities are not anticipated to negatively impact the surrounding sites. Temporary traffic control devices will be in place along portions of Pōkaʻī Bay Street and Alta Street during construction to safely allow local vehicle and pedestrian traffic flow around the work area.

5. Historical/Cultural resources. The Corps must evaluate permit applications pursuant to Section 106 of the National Historic Preservation Act. In many cases, the Corps must coordinate its determination of a project's potential to adversely affect historic sites with the local Historic Preservation Officer. The Corps encourages applicants to contact their local Historic Preservation Officer as soon as possible in the project planning process to address any issues relevant to Section 106. The State of Hawai'i's Historic Preservation Office can be found at http://www.hawaii.gov/dlnr/hpd/hpgreeting.htm. In Guam, the Historic Preservation Officer can be found at

   The State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Department, revealed that construction activities may potentially have adverse effects on significant historic sites and recommended that archaeological monitoring be carried out during all ground-disturbing activities. Thus, the construction contractor shall procure the services of a Hawai'i-licensed Archaeologist to provide archaeological monitoring during construction in accordance with State DLNR-SHPD recommendations.

6. Indirect impacts (will the project eventually encourage or discourage residential, agricultural, urban, industrial or resort activities?)

   The proposed project is anticipated to neither encourage nor discourage residential, agricultural, urban, industrial or resort activities.

7. Cumulative impacts (Is this project similar in purpose, characteristics, and location compared to previous projects? Will this project lead to or be followed by similar projects? Are there other activities in the area similar to your proposed activity?)

   The purpose of the project is to improve and mitigate apparent erosion along the ditch bottom and embankments and restore the ditch profile from upstream to downstream existing box culvert inverts to provide positive drainage flow. Similar improvements are proposed for

Pōka'ī Bay Channel 1 that is located approximately 750' southeast along Pōka'ī Bay Street of Pōka'ī Bay Channel 2, and stretches westerly from Farrington Highway to Pōka'ī Bay Street similar to Channel 2. Further maintenance of Channel 2 outlet sand plug may occur in the future as a separate project.

8. Other impacts

   None anticipated.

ALTERNATIVES

1. List other sites which may be suitable for this proposal and indicate whether these are or could become available to you. If none, explain why.

   The purpose of the project is to improve and mitigate apparent erosion along the ditch bottom and embankments and restore the ditch profile from upstream to downstream existing box culvert inverts. No other site would be suitable for this purpose. This project involves the improvements to, and stabilization of, an existing ditch rather than the construction of a new structure.

2. If your project involves the discharge of fill material to convert wetlands or submerged areas to fastland (dry land), list any existing fastland sites which are or could become available to you. If none, clearly explain why.

   None—this project is not anticipated to involve any conversion of wetlands or submerged areas to fastland.

3. List other methods or project designs which would fulfill the basic purpose of your proposal. Which ones are reasonable for you? If none, explain why.

   Other prospective improvement alternatives, which the C&C DDC considered include:

   (1) Flexible Nonconforming Ditch Lining with Reinforced Concrete Bottom (bank requires earthwork preparation to set the ditch bottom even and banks at 2H:1V):
      a) Scourstop, or approved equal, on embankments; or
      b) Concrete interlocking blocks—ArmorLoc, Channel-Lock or approved equal, on embankments; or
      c) Cable tied articulating concrete block—ArmorFlex, class 50s, on 1.5H:1V embankments, or approved equal;
      d) Reinforced concrete bottom.

   (2) Rigid Ditch Lining:
      a) Rigid Ditch Lining:
      b) Reinforced Concrete Lining.
      c) Concrete Rubble Masonry (CRM) Riprap Embankments with Reinforced Concrete Bottom.

   (3) Retaining Walls with Reinforced Concrete Bottom:

a) Retaining Walls with Reinforced Concrete Bottom:
b) Grouted Concrete Rubble Masonry Embankment Retaining Walls with Reinforced Concrete Bottom.
c) Reinforced Concrete Embankment Retaining Walls with Reinforced Concrete Bottom.

(4) Reinforced Concrete Box Culvert:
a) Reinforced Concrete Box Culvert:
b) 8′-0″-wide × 4′-0″-high box culvert with 4′-0″ × 4′-0″-square top inlets or 2′ 0″ wide × 6″-high side inlets spaced at 12 feet on-center, and manhole maintenance accesses.

All improvement alternatives address the concerns for this project; however, the chosen proposed improvement for this project appears to be the most cost effective and favorable for the project site conditions then the other alternatives. The chosen improvement will tend to minimize ditch hardening and appear the most "natural" by allowing vegetation to grow on the banks, while being rigid enough on the bottom to stabilize erosion concerns and allow for regular, routine maintenance and cleaning by the C&C. This would also minimize any "heating" effects of added substantial concrete structures on adjacent and surrounding properties. The ditch improvements will foster public safety by apparently stabilizing eroding banks of adjoining properties and improving flood management (reducing potential upstream and adjacent flooding of residential neighborhood and shopping center).

4. If your permit application were denied, what other alternatives would you have?

If the permit application is denied, Channel 2 would remain in its existing condition and the following issues will apparently continue to persist and possibly worsen:

(1) Erosion of ditch banks and bottom, which potentially lead to sediment runoff into the ocean threatening the local reefs and coral, as well as, collapse of adjoining property structures into the ditch and related public safety concerns.

(2) Water ponding due to uneven slope of ditch bottom; therefore, causing nuisance from mosquito propagation.

(3) Debris accumulation and sedimentation, which may cause a decrease in the capacity of the ditch and increase the flood and public safety risks of adjacent and upstream properties.

(4) Tree and root overgrowth from adjacent private properties potentially adversely affecting the hydraulic capacity of the ditch.

MITIGATION

What can you do to avoid or minimize adverse effects of your proposal on the environment? For instance, a project might be relocated to a non-aquatic site, the footprint of fill or dredging can be minimized to only that which is necessary to achieve project purpose, a project footprint might be moved within a site to avoid aquatic resources, and/or different construction methods could be used.

The BMPs and mitigation measures for the environmental effects are as follows:

(1) The principle sources of air pollution associated with this project will be fugitive dust emissions resulting from construction activities. Watering may be done to control fugitive dust from becoming a nuisance to neighboring properties. These effects are short-term in nature and will cease upon completion of the proposed project. No long-term effects on air quality due to the operation of excavation equipment or vehicles are anticipated as their presence and use will be temporary.

(2) Construction within the normally dry ditch is anticipated to occur during the dry summer months; however, during periods of rainy inclement weather, proper construction "good housekeeping" BMPs will be in-place to minimize adverse impacts of potential pollutants and nuisances to adjacent properties and the ocean.

(3) Construction activities may disrupt aesthetic qualities temporarily. Disruptions will be minor and short term and will result primarily from activities associated with the construction activities.

(4) All construction activity, including vehicle operations, shall adhere to all applicable Driver Tailgate Lesson Plans of the City and County of Honolulu's Industrial Safety and Workers' Compensation Division. Temporary traffic control devices will be in place along portions of Pōka'ī Bay Street and Alta Street during construction to safely allow local vehicle and pedestrian traffic flow around the work area.

(5) Silt, sediment and other debris will be removed and disposed of properly off-site.

(6) Water quality monitoring and assessment program will be implemented to mitigate impacts to water quality pre-, during- and post-construction periods of the proposed project on Channel 2. Photographs of the affected area during and following construction activities will be submitted to the Army Corps.

Please see the Honolulu District's Compensatory Mitigation and Monitoring Guidelines on-line on our web site (http://www.poh.usace.army.mil/regulatory.asp), or contact the Corps office listed below to request a hard copy. Thank you for your cooperation in this manner. If you have any questions, please contact the Corps of Engineers, Regulatory Branch at (808) 438-9258 in Honolulu or at (671) 339-2108 in Guam.

QUANTITY CALCULATIONS

Project Title:	DDC Job No. 09-12—Pōka'ī Bay Ditches Flood Control Improvements	**Prepared By:**	SB	**Date:**	1/29/2013
		Checked By:	PI	**Date:**	1/31/2013
Location:	Lualualei, Wai'anae, O'ahu, Hawai'i				
Item:	DA 404/SECTION 10 PERMIT APPLICATION QUANTITY CALCULATIONS				

I. PURPOSE: Estimate the anticipated quantity of excavation and discharges for the project.

II. REFERENCES:
A. "Best Management Practices Manual for Construction Sites in Honolulu", Department of Environmental Services, City and County of Honolulu, May 1999.
B. "$CB_PokaiDrn.dwg", AECOM, June 2012.
C. "Pōka'ī Bay Ditches Flood Control, Cross Sections", AECOM, June 2012.

III. CALCULATIONS:

A. APPROXIMATE EXCAVATION WITHIN APPROXIMATE USACE JURISDICTIONAL LIMITS

Channel 2
From the project design drawing cross sections, roughly 30 ft² of existing grade is excavated per section cut over about a 380′ length for Channel 2.
Approximate Excavation Volume = 30 ft² × 380′ = **11,400 ft³**, or **422 yd³**.

B. APPROXIMATE DISCHARGE WITHIN APPROXIMATE USACE JURISDICTIONAL LIMITS—MATERIAL ASSOCIATED WITH TEMPORARY BMPS DURING CONSTRUCTION

1. Sandbags

Each sandbag estimated to be 34 ft³.
From the project design drawings, an estimated 40 total bags will be required for the project; thus,
Approximate Sandbag Volume = 34 ft³ × 40 = **1,360 ft³**, or **50 yd³**.

2. Geotextile Filter Fabric (Interwoven in Sandbags)

Estimated 3′ height of fabric required over 100′ length.
Approximate Geofabric Area = 3′ × 100′ = **300 ft²**, or **34 yd²**.

3. Turbidity Barriers

From the project design drawing general site plan and BMP plan & details,
the approximate length of turbidity barrier required is 20′ for the in-ditch work area; thus,
Approximate turbidity barrier length = **20′**, or 7 **yd**.

C. APPROXIMATE DISCHARGE WITHIN APPROXIMATE USACE JURISDICTIONAL LIMITS—MATERIAL ASSOCIATED WITH PERMANENT CHANNEL IMPROVEMENTS

1. Steel-Reinforced Concrete

Channel 2
From the project design drawing cross sections, roughly 6 ft² of steel-reinforced concrete for new channel bottom is required per section cut over about a 380′ length; thus,
Approximate Steel-Reinforced Concrete Volume = 6 ft² × 380′ = **2,280 ft³**, or **84 yd³**.

2. Aggregate Course and Fill

Channel 2
From the project design drawing cross sections, roughly 10 ft² of aggregate base course for new channel bottom is required per section cut over about a 380′ length; thus,
Approximate Aggregate Base Course Volume = 10 ft² × 380′ = **3,800 ft³, or 141 yd³.**

3 Structural Erosion Control Matting

Channel 2
Approximate Erosion Control Matting = **280 ft²**

D. TOTAL EXCAVATION

Channel 2
From the project design drawing cross sections, roughly 35 ft² of existing grade is excavated per section cut over about a 380′ length for Channel 2.
Total Excavation Volume = 35 ft² × 380′ = **13,300 ft³**, or **492 yd³**.

QUANTITY CALCULATIONS

Project Title:	DDC Job No. 09-12—Pōka'ī Bay Ditches Flood Control Improvements	**Prepared By:**	SB	**Date:**	1/29/2013
		Checked By:	PI	**Date:**	1/31/2013
Location:	Lualualei, Wai'anae, O'ahu, Hawai'i				
Item:	DA 404/SECTION 10 PERMIT APPLICATION QUANTITY CALCULATIONS				

E. TOTAL DISCHARGE—MATERIAL ASSOCIATED WITH TEMPORARY BMPS DURING CONSTRUCTION

1. **Sandbags**

Each sandbag estimated to be 34 ft^3.
From the project design drawings, an estimated 40 total bags will be required for the project; thus,
Total Sandbag Volume = 34 ft^3 × 40 = **1,360 ft^3**, or **50 yd^3**.

2. **Geotextile Filter Fabric (Interwoven in Sandbags)**

Estimated 3′ height of fabric required over 100′ length.
Total Geofabric Area = 3′ × 100′ = **300 ft^2**, or **34 yd^2**.

3. **Turbidity Barriers**

From the project design drawing general site plan and BMP plan & details,
the approximate length of turbidity barrier required is 20′ for the in-ditch work area; thus,
Total turbidity barrier length = **20′**, or **7 yd.**

F. TOTAL DISCHARGE—MATERIAL ASSOCIATED WITH PERMANENT CHANNEL IMPROVEMENTS

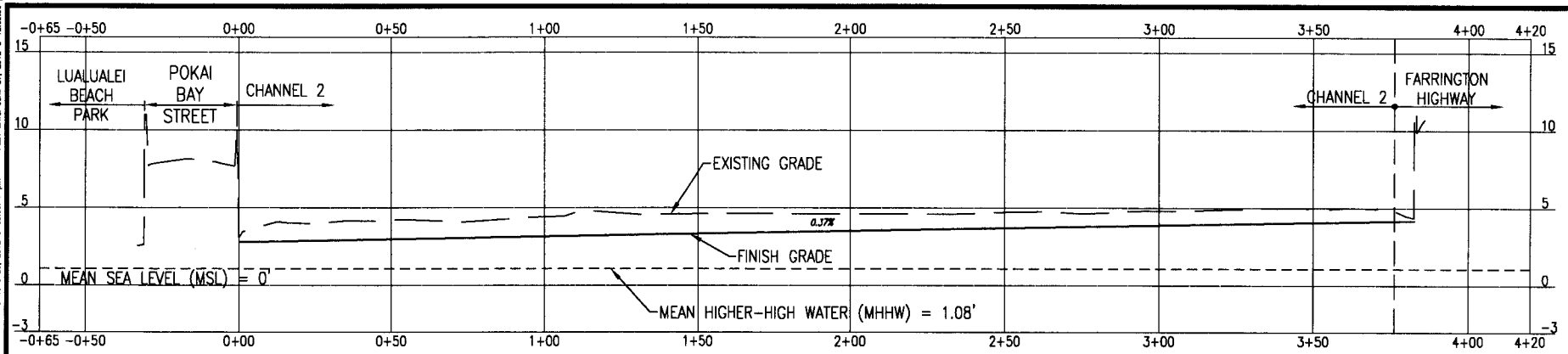
1. **Steel-Reinforced Concrete**

Channel 2
From the project design drawing cross sections, roughly 6 ft^2 of steel-reinforced concrete for new channel bottom is required per section cut over about a 380′ length; thus,
Total Steel-Reinforced Concrete Volume = 6 ft^2 × 380′ = **2,280 ft^3**, or **84 yd^3**.

2. **Aggregate Course and Fill**

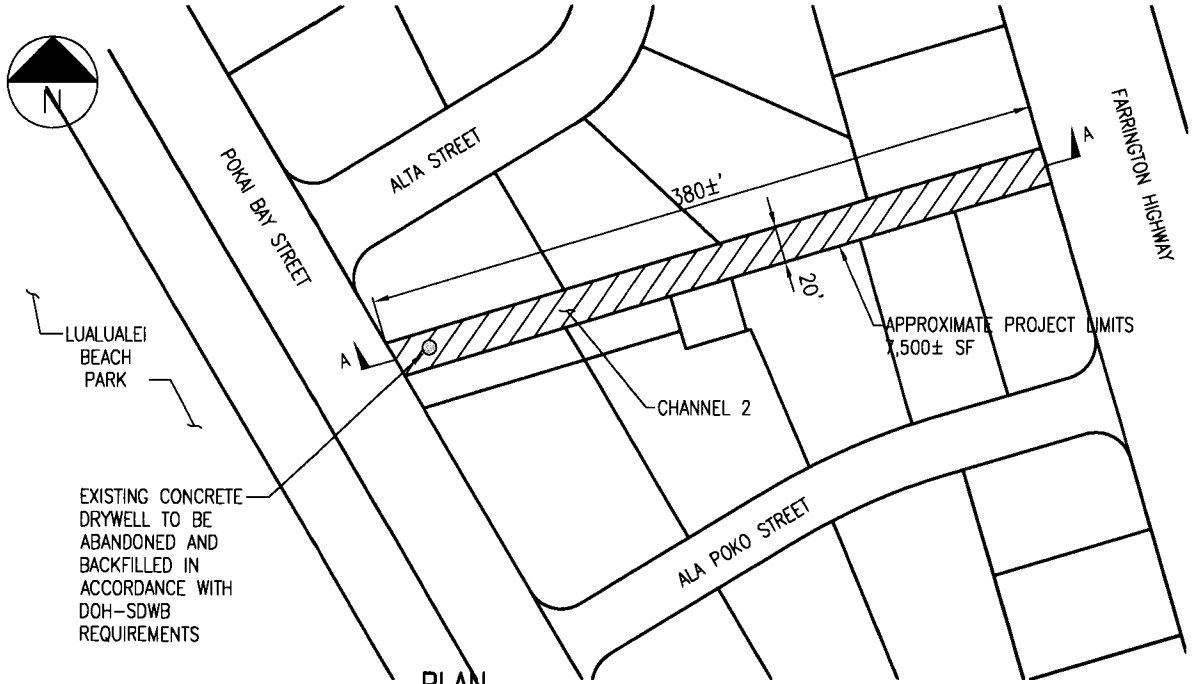
Channel 2
From the project design drawing cross sections, roughly 12 ft^2 of aggregate base course for new channel bottom is required per section cut over about a 380′ length; thus,
Total Aggregate Base Course Volume = 12 ft^2 × 380′ = **4,560 ft^3**, or **169 yd^3**.

3 **Structural Erosion Control Matting**
Channel 2
Total Erosion Control Matting = **1,070 ft^2**



SECTION A–A

SCALE: HORIZ 1" = 50'
VERT 1"=10'

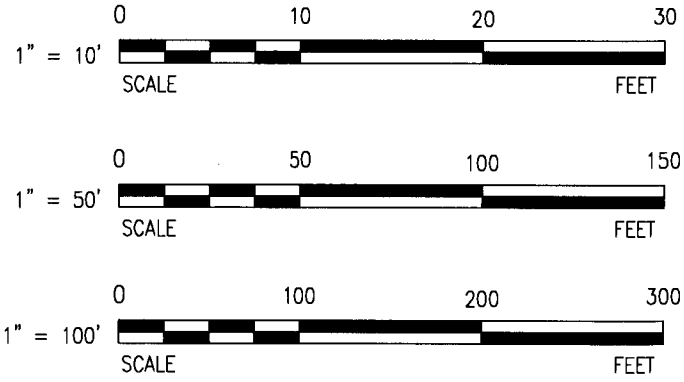


PLAN

SCALE: 1" = 100'

NOTES:

1. MHHW AND MSL DATUMS OBTAINED AT THE HONOLULU TIDE STATION (STATION 1612340) FROM THE NATIONAL OCEAN SERVICE (NOAA).
2. EXISTING ELEVATIONS ARE APPROXIMATIONS.



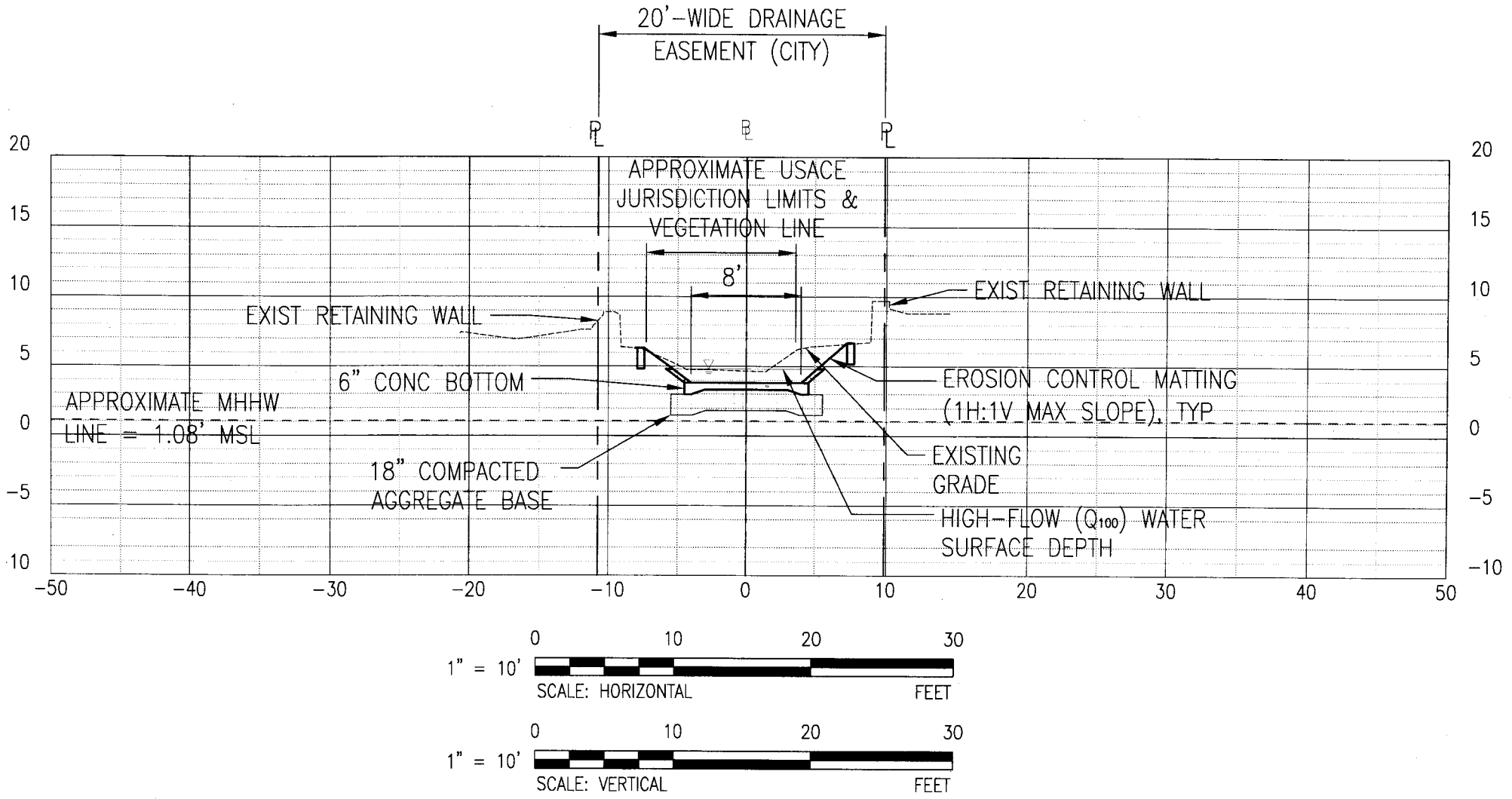
AECOM

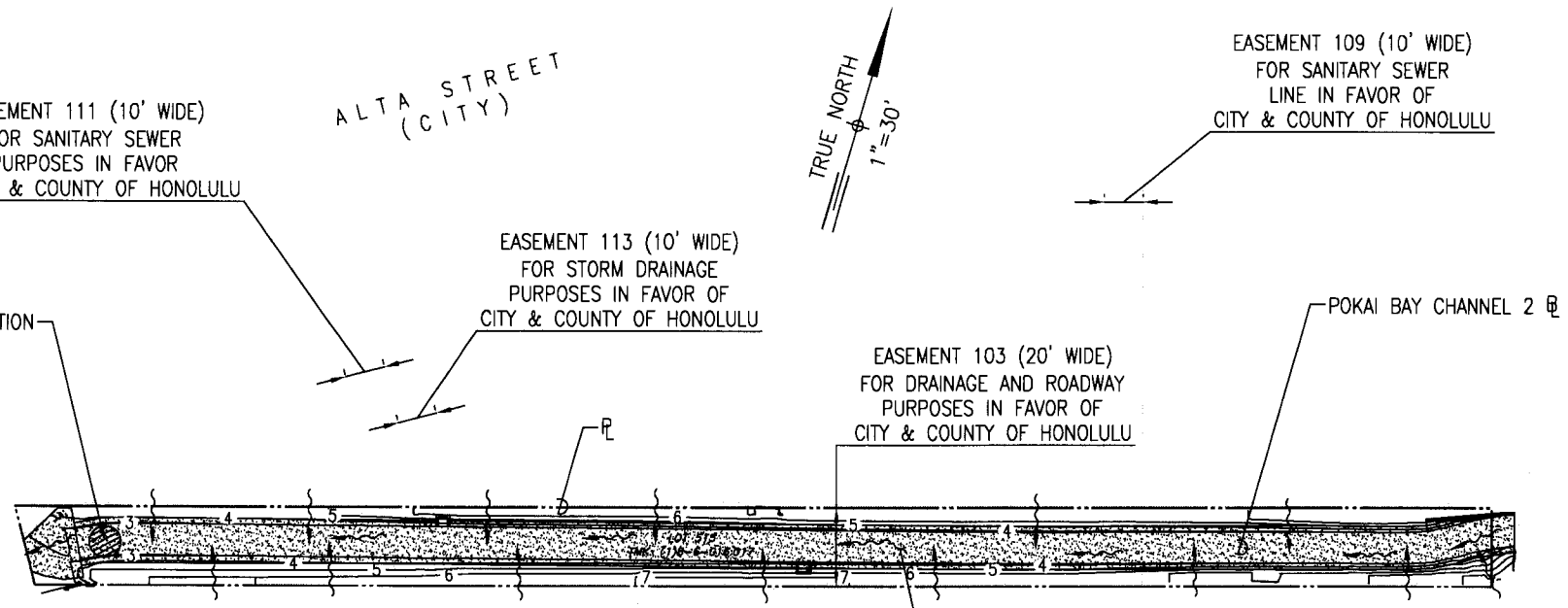
1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

Reference: POH-2011-00147
Applicant: City & County of Honolulu Dept. of Design & Construction
Proposed: Clearing/Grubbing/Grading/Erosion Control Improvements Work
At: Pokai Bay Channel 2, Waianae, Oahu
Sheet 2 of 9 June 27, 2012

Figure 2
Channel 2 Plan & Profile

City & County of Honolulu, Department of Design and Construction
Pokai Bay Ditches Flood Control Improvements
Lualualei, Waianae, Oahu, Hawaii
June 2012


20'-WIDE DRAINAGE
EASEMENT (CITY)
℄
℄
℄
APPROXIMATE USACE
JURISDICTION LIMITS &
VEGETATION LINE
8'
EXIST RETAINING WALL
EXIST RETAINING WALL
6" CONC BOTTOM
EROSION CONTROL MATTING
(1H:1V MAX SLOPE), TYP
APPROXIMATE MHHW
LINE = 1.08' MSL
EXISTING
GRADE
18" COMPACTED
AGGREGATE BASE
HIGH-FLOW (Q_{100}) WATER
SURFACE DEPTH
20
15
10
5
0
-5
10
-50
-40
-30
-20
-10
0
10
20
30
40
50
0
10
20
30
1" = 10'
SCALE: HORIZONTAL
FEET
0
10
20
30
1" = 10'
SCALE: VERTICAL
FEET



LEGEND & ABBREVIATIONS

NEW SURFACE FLOW DIRECTION

PROPERTY LINE

GRAPHIC SCALE:

1" = 30'

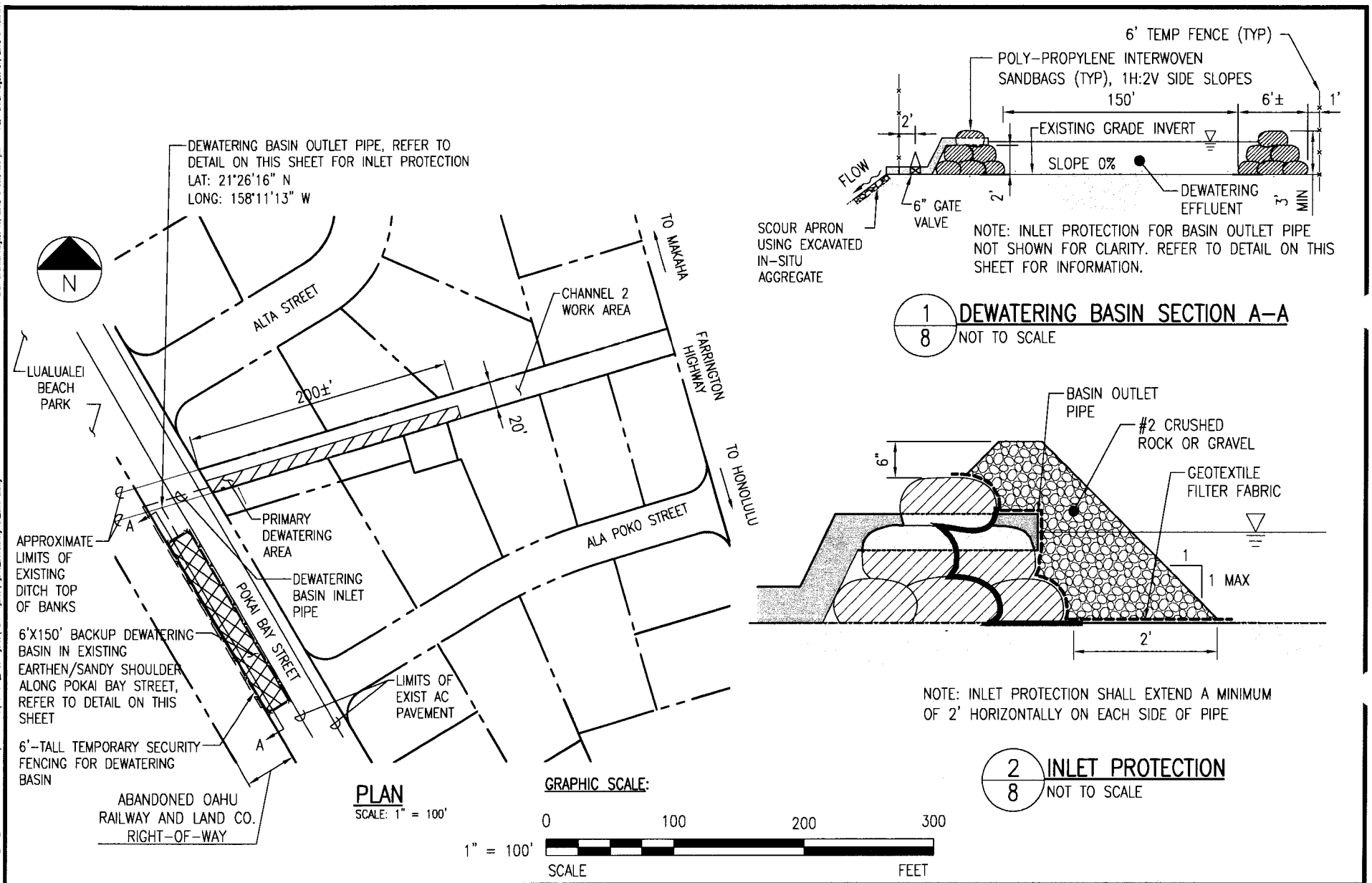
0 30 60 90

SCALE: HORIZONTAL FEET

AECOM

1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

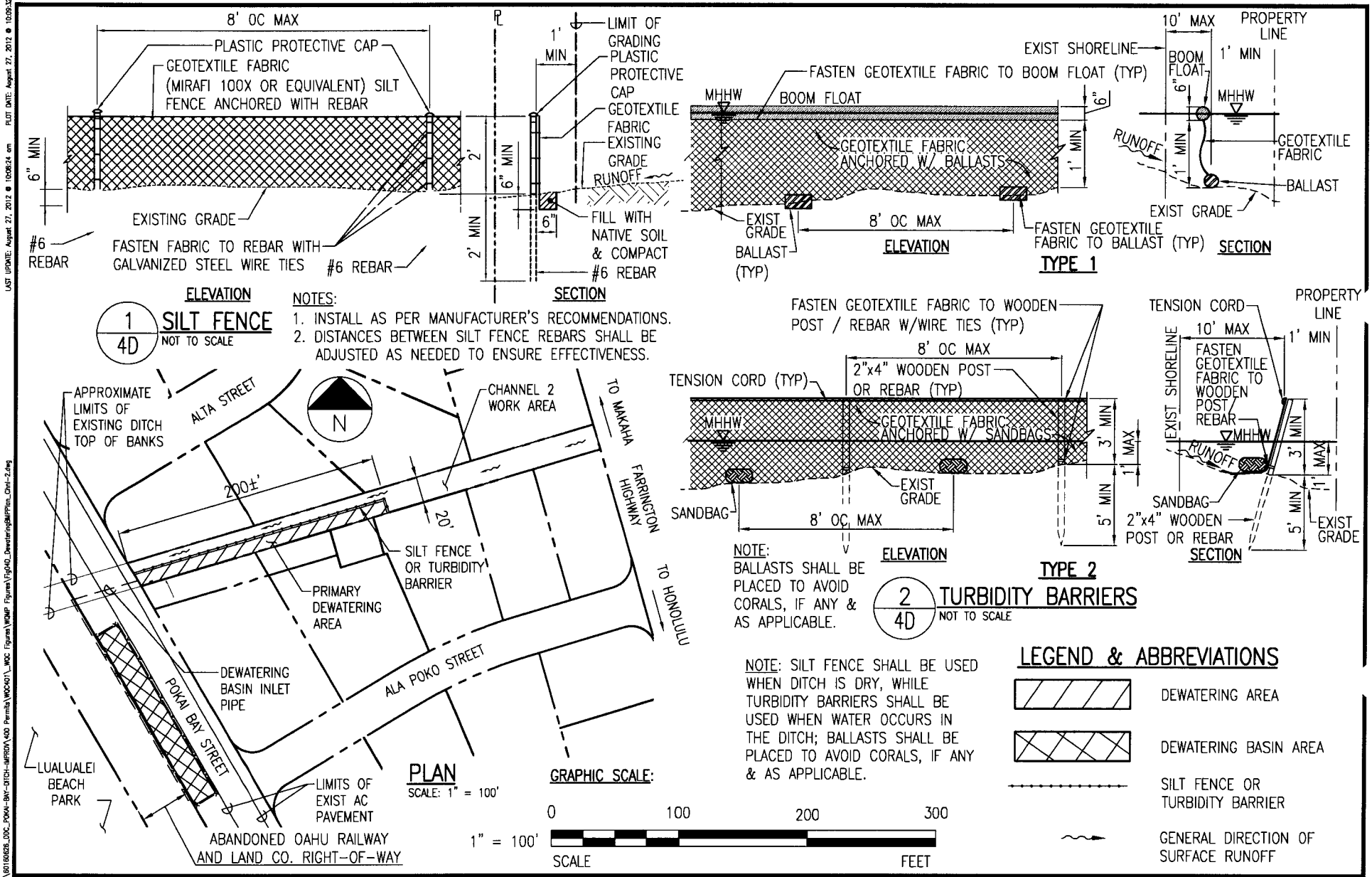
Attachment 2B
Site Plan - Channel 2
City & County of Honolulu, Department of Design and Construction
Pokai Bay Ditches Flood Control Improvements
Lualualei, Waianae, Oahu, Hawaii
June 2012



AECOM
1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

Figure 8
Dewatering Plan and Details

City & County of Honolulu, Department of Design and Construction
Pokai Bay Ditches Flood Control Improvements
Lualualei, Waianae, Oahu, Hawaii
June 2012



AECOM

1001 BISHOP STREET, SUITE 1600, HONOLULU, HAWAII 96813

Figure 9
Dewatering BMP Plan

City & County of Honolulu, Department of Design and Construction
Pokai Bay Ditches Flood Control Improvements
Lualualei, Waianae, Oahu, Hawaii
June 2012

AECOM
1001 Bishop Street
Suite 1600
Honolulu, HI 96813
www.aecom.com

808 521 3051 tel
808 524 0246 fax

Memorandum

To:	CCH-DDC	Page	1
CC:			
Subject:	Project Summary, Avoidance/Minimization Measures and Overview of Alternatives for USACE DA 404/Section 10 Permit		
From:	AECOM		
Date:	February 4, 2013		

Project Summary and Avoidance/Minimization Measures:

1. The existing intermittent, normally dry drainage ditch is located in Lualualei, Wai'anae on the relatively dry, Leeward western coast of O'ahu, Hawai'i and is not identified as an inland water body per DOH Water Quality Maps. Only after it rains hard enough (infrequent), does the ditch convey drainage flow from areas inland of Farrington Highway (residential neighborhoods and shopping center) and surface runoff from adjacent residential properties toward the Pōka'ī Bay coastline (no special marine conservation area classification per DOH Water Quality Maps). The purpose of this project is to improve drainage management of the existing ditch, increase its capacity for higher, more infrequent storm runoff flows, enhance flood relief for upstream, adjoining and adjacent properties and improve public and property safety. This project will also minimize erosion occurring along the ditch bottom and embankments and restore the originally-constructed ditch profile—that has flattened overtime due to sediment accumulation—from Farrington Highway (upstream) to Pōka'ī Bay Street (downstream) existing box culvert inverts to provide positive drainage flow. If "No Action" is done, the existing earthen ditch will continue to erode, potentially causing more sediment to accumulate within the ditch and decrease the ditch capacity; thus, resulting in potential flood damage and adverse impacts to the public and upstream, adjacent and adjoining properties.

2. Ditch capacity could be significantly increased by concrete lining the entire ditch; however, the City is proposing a compromise to only line the bottom of the ditch with concrete that will aid periodic maintenance activities and install erosion control matting along the embankments for erosion control/slope stabilization that will allow vegetation to be established for filtration of sediment from runoff, as well as, reduce generated sediment runoff from the ditch. Native plants such as *pōhinahina* and *'ilie'e* will be recommended for vegetation on the slope, and deep-rooting, marine tolerant noninvasive *vetiver* grass will also be considered, per meeting discussion with the USACE on

Wednesday, 1/23/13. Improvements will only occur between Farrington Highway (upstream) and Pōka'ī Bay Street (downstream) existing box culverts. No work will occur between Pōka'ī Bay Street box culvert and Pōka'ī Bay shoreline; therefore, the existing natural occurring sand berm between Pōka'ī Bay box culvert and Pōka'ī Bay shoreline will remain existing and unaffected by proposed improvements, and will continue to filter any water that reaches it from the ditch under normal circumstances.

3. Concrete channel bottom improvements will allow for a clear depth to which accumulated sediment shall be removed and be able to support maintenance equipment, allowing them to be driven in the channel. Any indirect impacts from sediment or debris that may flow through the ditch will be mitigated by filtering through the natural occurring sand berm prior to the flow entering the ocean, as it does in the existing condition. The existing sand berm would still tend to wash out during periods of heavy rain to temporarily relieve flooding to upstream and adjacent properties as it normally does in existing ditch condition; and, will eventually recreate itself afterward.

Overview of Alternatives:

None of these actions will present a *direct* impact to any existing coral or marine habitats. All alternatives would occur inland and upstream from the inlet of the existing Pō'kaī Bay Street culvert to the downstream, outlet of the existing Farrington Highway culvert. No work will be done from the Pō'kaī Bay Street culvert to the beach and shoreline, where the naturally occurring sand berm (natural filter buffer) will be continued to be allowed to form. Regardless of the alternative done below—as what happens in the existing condition—this berm would be temporarily blown out during periods of significant rainfall and resulting high flow in the ditch, for the relatively short duration until the sand berm naturally reforms itself.

Alternative 1: "No Action"—

A. Benefits:
   (1) No cost.
   (2) No change in impact to environment.
B. Drawbacks:
   (1) Accumulated sediment/debris has flattened slope of originally-constructed ditch profile causing flood water levels to increase in the ditch (less depth and flow velocity) and erode higher up on the banks that could eventually cause existing walls of adjacent properties to collapse and possibly result in property damage and public safety concerns. No action would allow continued erosion of the earthen banks and bottom scour during

periods of significant rainfall and resulting high flow in the ditch that could contribute relatively higher suspended sediment loading downstream.

(2) The existing capacity of the ditch is roughly just 97 cubic feet per second (cfs), or only 7.8% of the approximate 1,250-cfs drainage flow that contributes to the ditch.

1. Alternative 2: "Maximization of Ditch Conveyance"—
   A. Benefits:
      (1) Concrete box culvert or entirely concrete ditch lining of floor and banks would improve the capacity of the channel by an estimated 500% above the existing condition to about 46% of its required capacity.
      (2) Additionally, concrete box culvert of entirely concrete ditch lining would protect the banks from erosion, and facilitate maintenance cleaning by providing hard limit of accumulated sediment removal.
      (3) The concrete would prevent erosion of both the ditch walls and bottom. During periods of significant rainfall and resulting high flow in the ditch, the concrete would prevent erosion of the underlying earthen banks and bottom scour that could contribute relatively higher suspended sediment loading downstream.
   B. Drawbacks:
      (1) Hardened unnatural appearance.
      (2) No filtering of drainage flow and velocity would be increased before discharge from ditch outlet to the existing recurring sand berm (natural filter).

2. Alternative 3: "No Concrete"—
   A. Benefits:
      (1) Entirely vegetated erosion control matting on ditch floor and banks would provide natural appearance.
      (2) Vegetation could filter out suspended sediment in the drainage flow prior to discharge from ditch outlet to the existing recurring sand berm (natural filter). The vegetation would also tend to slow down drainage flow.
      (3) The matting would control erosion of both the ditch walls and bottom. During periods of significant rainfall and resulting high flow in the ditch, the matting would control erosion of the underlying earthen banks and bottom scour that could contribute relatively higher suspended sediment loading downstream

B. Drawbacks:

(1) The capacity of the channel would be increased only 15% above the existing condition to about 8% of its required capacity.

(2) Maintenance vehicles cannot be driven atop matting depending on softness of underlying soil.

(3) Matting on ditch floor susceptible to potential uplift from maintenance equipment.

3. Alternative 4: "Balanced Compromise" (*this is the preferred & proposed action*)—

A. Benefits:

(1) The vegetated erosion control matting on the banks would filter out suspended sediment in the drainage flow prior to discharge from ditch outlet to the existing recurring sand berm (natural filter). The vegetation would also tend to slow down drainage flow and provide a natural appearance. Noninvasive and/or native groundcover (such as, *pōhinahina* & *'ilie'e*) will be recommended as much as practicable.

(2) The concrete floor would allow maintenance vehicles to be driven over it while providing a hard limit to facilitate sediment removal.

(3) The matting would control erosion of the ditch walls and the concrete floor would prevent erosion of the ditch bottom. During periods of significant rainfall and resulting high flow in the ditch, the concrete and matting would control erosion of the underlying earthen banks and bottom scour that could contribute relatively higher suspended sediment loading downstream

B. Drawbacks:

(1) The capacity of the channel would be increased only 24% above the existing condition to about 10% of its required capacity.