Manoa Stream Bank
Erosion & Stab. Structure

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

'98 APR -6 A8:30

MAR 25 1998

Mr. Gary Gill
Office of Environmental Quality Control
235 South Beretania St. Suite 702
Honolulu, Hawaii 96813

Dear Mr. Gill

Subject: Finding of No Significant Impact (FONSI)
Environmental Assessment, Manoa Village Association, *Gabion Erosion Control Structure*, Manoa, Oahu, TMK 2-9-26:04

The Manoa Village Association has prepared and submitted a Draft Environmental Assessment for the purpose of requesting an easement from the State of Hawaii. The easement will be used to construct a gabion erosion control structure along the bank of a 90 foot segment of Manoa Stream situated on State owned land in Manoa Valley, Oahu identified as a portion of TMK 2-9-26:04. This erosion control structure will prevent the continued erosion of the Manoa river bank adjacent to the Manoa Village condominium. The draft EA for this project was announced in the Office of Environmental Quality Control bulletin of January 23, 1998 and comments have been received and answered.

The Department of Land and Natural Resources, as the lead agency, has reviewed the information contained in the draft EA and the comments received. The comments have been adequately addressed and we have determined that the proposed project will not have significant environmental effects and has issued a FONSI.

We have enclosed a completed OEQC Publication Form and four copies of the final EA. Please call Cecil Santos at the Oahu Land District at 5870433 if you have any questions.

Aloha

for Michael Wilson

cc matsumoto COS

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1998-04-23-OA-FEA-Manoa Stream Bank Erosion & Stabilization Structure

FINAL ENVIRONMENTAL ASSESSMENT

Manoa Village Association

TMK: 2-29-26: 05

LP&D Hawaii

MARCH 1998

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Final Environmental Assessment
for
Manoa Village Association

Prepared By: LP&D Hawaii
March 1998

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1. Introduction

1.1 Purpose of the Environmental Assessment

Applicant: Manoa Village Homeowner's Association

Agent: LP&D Hawaii

Engineer: Engineering Solutions, Inc.

Accepting Agency: State of Hawaii
Department of Land and Natural Resources

The intent of this assessment is to examine the environmental effects of a proposed erosion and stabilization structure along a 90 foot section of Manoa Stream. Although this work will be privately funded, portions of this erosion and stabilization structure and its related construction activities will occur on State property. Under Hawaii's EIS Law (Chapter 343-5, HRS), usage of State or County lands or funds triggers the requirement of the environmental review process.

1.2 Scope of the Environmental Assessment

This assessment is prepared based on the requirements of the Hawaii EIS Laws (Section 343-5, HRS), and the Guidebook for the Hawaii State Environmental Review Process, as prepared by the Office of Environmental Quality Control, August 1992. In certain instances, the information presented in this EA extends beyond the physical boundaries of the project area. The EA however assesses only the impacts of the proposed project and does not include actions that are existing or proposed by others.

1.3 Proposed Action

An improvement project consisting of an erosion and stabilization structure and landscaping is proposed by the Manoa Village Homeowner's Association (applicant). This project is proposed to alleviate erosion that has been steadily occurring along a section of an exposed embankment at Manoa Stream. The project will occur primarily on State land, but because the improvements will

benefit the adjacent property (Manoa Village), the applicant is proposing to fund and manage the construction.

It is anticipated that the project will result in improvements to the stream flow, a reduction in erosion and siltation, and will protect the adjacent Manoa Village site from property loss and hazards associated with storm conditions and heavy stream flows.

In proposing the work, the applicant petitions the State of Hawaii for the granting of a "retailing wall and landscaping easement" (approximately 1550 sf at TMK: 2-9-26: 04) and necessary approvals that will allow the applicant to construct the proposed erosion and stabilization structure on State property. Upon receiving approval for this easement, the applicant will assume landscaping and maintenance responsibilities from the bottom of the stream to the top of the bank (see Exhibit No. 12).

Generally, the project will consist of site grading and the construction of a "wall-like" structure along 90 linear feet of Manoa Stream. The applicant proposes to utilize a "gabion" embankment system. It will consist of steel wire mesh baskets which are filled with loose stones and are stacked, in a battered fashion, to a height of approximately 9 feet. The structure will be approximately 90 feet in length and will be located between two existing wall structures (see Exhibit Nos. 6, 7 & 8).

Construction mobilization will be conducted from the Manoa Village site. Construction activities will be conducted on this site as well as on the State land, to include limited work within the stream.

1.4 Agencies Consulted

The following agencies were consulted by LP&D Hawaii during preparation of this assessment, or by Engineering Solutions during the design of the project:

Federal Agencies

Department of the Army
Operations Branch
U.S. Army Engineering District, Honolulu

Federal Emergency Management Agency
Washington, D.C. 20472

State Agencies

Department of Business, Economic Development & Tourism
Office of Planning

Department of Health
Environmental Management Division

Department of Land and Natural Resources
Commission on Water Resource Management

Department of Land and Natural Resources
Oahu Land Management District Office

Department of Land and Natural Resources
Historic Preservation Division

Department of Land and Natural Resources
Aquatic Resources Division

City and County Agencies

Department of Public Works
City and County of Honolulu

Department of Land Utilization
City and County of Honolulu

Written communications with these agencies are contained in Appendix C of this report.

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2. Project Description

2.1 Site Location

Manoa Village is a townhouse project, consisting of two lowrise buildings containing a total of 10 dwelling units. It is located on the island of Oahu, midway into and along the eastern side of Manoa Valley, near East Manoa Road and Lowery Avenue, and across from the Manoa Market Place. The land is owned in fee by the Manoa Village Association.

The vicinity surrounding Manoa Village is urbanized. It is well developed with public roadways, established single and multi-family neighborhoods, public support facilities and commercial businesses. The area is fully supported with all public utilities to include water, sewer, electrical and drainage systems.

The Manoa Village site occupies .419 acres of Apartment zoned land (A-1). Along its southern boundary, the site is parallel to and abuts a portion of Manoa Stream. Manoa Stream is a perennial fresh water stream. Its headwaters begin in the upper reaches of the Koolau Range. The stream flows diagonally across the valley floor, cutting through various residential neighborhoods and eventually drains into the Ala Wai Canal. In the area adjacent to the Manoa Village, the stream is approximately 50 feet wide (top of bank to top of bank).

The proposed project will occur along the north stream bank fronting the Manoa Village site. The proposed work will involve two TMK parcels. The first parcel is the Manoa Village site, described as TMK: 2-9-26: 05.

The second parcel is owned by the State of Hawaii and includes a segment of Manoa Stream. This parcel is described as TMK: 2-9-26: 04. Information about each parcel is contained on the following table.

TABLE A

	TMK: 2-9-26: 05	TMK: 2-9-26: 4
Owner	Manoa Village Association	State of Hawaii
Size	.420 acres	1.125 acres
Existing Use	Multi Family (built 19	Manoa Stream
Zoning	A-1	A-1, R7.5
DP	Low Density Apt.	
State Land Use	Urban	Urban
Flood Zone	AE, X	AE
Special District	No	No
SMA	No	No
Historic Site	No	No

2.2 Site Description

The .420 acre Manoa Village property is a rectilinear shaped site. It is bound by East Manoa Road, Ono Street and Manoa Stream. The property is gently sloped from its Ono Street boundary to Manoa Stream to facilitate site drainage. It is approximately 225 feet in length where it parallels Manoa Stream.

Two conditions occur along this boundary.

Condition 1: For the first 110 feet from Manoa Bridge, the Manoa Village site is protected by an existing concrete and a CRM wall. The property line is set back from these walls, leaving a relatively narrow, backfilled strip of State owned land behind the walls.

Condition 2: The second half of the property generally extents to the top of the stream bank. Elevations along he top of bank are approximately 154 feet. Approximately 90 linear feet along this frontage is characterized by a steep slope which leads down to the stream bed.

In the vicinity of Manoa Village, the stream varies from approximately 55 to 70 feet in width (top of bank to top of bank). Up stream from the East Manoa Bridge, the stream is fully channelized with concrete walls along both side of the stream bank as well as a concrete stream bed (see Exhibit No. 6, Photos 2 & 3). This concrete channelization continues under the bridge and extends

approximately 70 linear feet along the Manoa Village frontage. At this point, a CRM wall has been constructed. The wall is approximately 9 feet in height and extends for another 90 feet. The CRM wall however does not extend the fully length of the site, but instead tapers to a roughly finished edge, leaving approximately 90 linear feet of exposed embankment.

The concrete and CRM walls, as well as the exposed banks are located on State property.

This exposed segment of the bank is undergoing steady erosion. According to information submitted by the residents to the DLNR Commission on Water Resource Management (Sept. 24, 1996), they have witnessed considerable erosion along this portion of Manoa Stream over the past 16 years. They indicated that "what was once a gentle slope leading from their property to the stream's edge, is now a steep cliff, eroded and exposing tree roots."

Residents have also stated that it is not uncommon for heavy rains to generate a significant flow of water through Manoa Stream, and on several occasions, the stream has overflowed its northern bank and has threatened the adjacent property.

Site inspections conducted during August 1997 confirm the erosional process occurring along the exposed stream bank. Based on the topographic survey performed by Harry S.H. Au on May 15, 1996, the average grade from the bottom of the stream to the top of the bank is 1:1. In contrast, the exposed stream bank along the opposite side is 1:1.5.

It was noted during site inspections that the exposed bank consist of loose rocks and soil and occurs along a gentle, exterior curve in the stream's alignment. There is a distinct absence of groundcover (i.e. grasses, vines, etc.) along the bank. The ground appears bare, peppered with exposed boulders along the

bank and bottom of the stream. Exposed roots are visible along the surface of the bank. Based on the curvature of the stream and the conditions described above, it appears that the exposed bank is susceptible to scouring from the stream's flow and evidence of erosion is visually apparent (see Exhibit No. 7 & 8, Photos 4- 6).

The slope along the opposite bank (fronting Manoa Market Place) is less severe. Signs of erosion along the bottom of the slope (exposed roots) are evident, however the scouring effects along the mid and upper portions of the bank are not highly evident.

2.3 Project Description

In 1996, Manoa Village retained Engineering Solutions, Inc., a professional engineering firm to assess the problem and develop a plan for stabilizing the exposed portions of the stream bank.

The engineers developed a design solution consisting of a 90 foot long gabion embankment system. The bank would first be graded and shaped to receive gabion baskets. These gabion baskets are made of prefabricated galvanized steel wire mesh box-shaped baskets. These baskets are set in place and filled with stone (3-6 inches in size). The stone will not be grouted, but instead held in place by the wire mesh basket and gravity. The embankment will include several gabion baskets, stacked one upon another to a height of approximately 9 feet. The top of the embankment would be topped with soil and planted with groundcover.

To control silt, sediment and other construction debris in the stream during the construction period, a silt/ debris fence will be erected at the bottom of the embankment, along the entire length of the project area. This silt/ debris fence will be erected prior to the grading operations and will remain in place until the final inspection has been completed.

It is estimated that approximately 93 cubic yards of stone fill will be required and 1230 cubic yards of gabion. The engineers estimate a one month construction period.

Exhibit No. 12 illustrates the project area and the location of the proposed gabion embankment system relative to the surround environment. Key elements depicted in this Exhibit are:

- The exposed/ eroded portion of the stream bank is located near the curvature of the stream.
- The grade at the north bank is steep, approximately 1:1.
- Except for the exposed 90 feet, the north stream bank is currently lines with concrete and sloping CRM structures.
- The proposed gabion embankment will be located between existing walls along the bank of the stream.
-

Exhibit No. 9 & 10 illustrates cross sectional views of the gabion embankment system. The Exhibit shows a cylindrical gabion basket used at the toe of the embankment, followed by a stacking of rectangular gabion baskets to a height of approximately 9 feet, thereby bring the top of the structure near the top of the present bank. The upper portion of the embankment will be graded with soil and planted in groundcover. A 5 degree batter will be used, thereby avoiding a straight 9 foot face. Grading will occur behind the embankment. It will be backfilled with coarse stones and soil.

In order to set the toe and lower portions of the structure, grading within the stream will be required.

According to technical literature, the gabion wire mesh structures are galvanized and coated with PVC to form a highly corrosive resistant material.

Because this technique of constructing a retaining structure utilizes loose (unmortared) rock fill, it allows for permeability and is considered to be a preferred alternative to hardened structures along stream and rivers. According to comments received from the Department of Business, Economic Development and Tourism, this stabilization technique was considered to be consistent with the Hawaii Coastal Zone Management (CZM) Program and a preferred alternative to concrete or grouted structures.

Construction access to the project area will be along the side yard of the Manoa Village property. There is adequate room for equipment access, and all graded material will be stockpiled and re-used on the premises.

The construction duration is expected to be one month. Actual construction within the stream will be limited to 8 days.

The project has undergone extensive design review by Federal, State and City and County agencies. Agency comments and approvals are contained in Appendix C of this report.

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3. Affected Environment

3.1 Topography

The project area (mauka stream bank) straddles the Manoa Village site and the adjoining State land (Manoa Stream). It is a steep slope with an average gradient of 1:1. The bottom of the stream has an elevation of 144 to 146 feet. The top of the bank has an elevation of 154 to 156 feet. The exposed portion of the stream bank is characterized by its an eroded condition, consisting of loose rocks, exposed tree roots and the absence of vegetative groundcover.

Bottom and top of stream bank elevations along the opposite stream bank (Manoa Market Place) are 144 to 156 feet and 156 to 157 feet respectively. The average slope along this side of the stream bank is approximately 1:1.5.

In the vicinity of project area, the stream bed is approximately 20 feet wide and has a slope of less than 1.5%.

3.2 Soils

ALISH (Agricultural Lands of Importance to the State of Hawaii)

Because the project area is in the Urban State Land Use District, no soils information is provided by the ALISH mapping system.

Soil Conservation Service

The soil classification for the vicinity is described as Hanalei Silty Clay (HnA) with 0 to 2 percent slopes. This class of soil is typically found on stream bottoms and flood plains. It is characterized by very poor drained clay soils that are strongly mottled and are underlain by peat, muck or massive marine clay.

3.3 Drainage and Flood Hazards

According to the Flood Insurance Rate Map (FIRM), Manoa Stream is within Zone AE (base flood elevation determined) and the adjacent Manoa Village site is within Zone AE and Zone X.

A Drainage Report was prepared in August 1996, by Engineering Solutions, Inc. The report evaluates the drainage conditions affecting the portion of Manoa Stream in the vicinity of the project site. It concludes that the proposed improvements would produce no rise in the 100 year storm water surface elevation. This Drainage Report is contained in Appendix B of this EA report.

3.4 Climate

The project area has a relatively moderate climate, characterized by warm days, cool nights, and frequent showers within the period from late afternoon to early morning. According to information provided through the National Weather Service and published in the Atlas of Hawaii, Second Edition, the two rain gauge stations closest to the project site are located at Tantalus and at the University of Hawaii. Rainfall at Tantalus varies from approximately 7 to 14 inches per month, with the winter months receiving the highest rainfall averages. Rainfall at the U.H. are from just one to two inches per month in the summer, and up to 5 to 6 inches during the winter.

The Manoa Village site is closest to the UH Manoa campus and is similar in elevation. It is reasonable to assume that the rainfall data collected at the University of Hawaii rain gauge station is representative of the project area. Although this rainfall is moderate, the Manoa drainage basin extend to the full length of the valley, up to the top of the Koolau Range where the isohyetal contour lines indicate annual rainfall exceeding 150 inches per year. While this far exceed the probable rainfall at the Manoa Village site, this intensity of rainfall is sufficient to generate a significant stream flow during storm conditions.

3.5 Water Quality

Manoa Stream is classified as Class 2 waters. In November 1996, the State Department of Health (Environmental Management Division) reviewed the proposed work and issued a Section 401 Water Quality Certification (WQC) for the project.

3.6 Aquatic Resources

According to the DLNR Aquatic Resources Division, several native and introduced aquatic species inhabit Manoa Stream (see Appendix for list). The DLNR staff identified the o-opu nakea[1] as a native specie which utilizes Manoa Stream as a migratory route between up their up stream and the coastal waters habitats.

While limited construction activity will occur within the stream, these activities are considered to be temporary in nature and would not have a significant or permanent impact to the usage of Manoa Stream by the o'opu nakea. Conditions which mitigate possible construction activities impacts to the o'opu nakea include:

- Construction will be restricted to a narrow portion along the edge of the stream, and the overall stream flow will not be impeded.
- Construction activity in the stream will be limited to 8 days.
- Construction activity in the stream will not be permitted during heavy rains.

Upon completion, the gabion structure will not have significantly alter the bottom of the stream bed and will not result in any alternation to the stream's alignment. No long term impacts affecting the o'opu-nakea are identified.

[1] Adults thought to migrate downstream to breed during heavy rains of autumn; eggs are laid close to mouth of streams and guarded by males and females; upon hatching larvae go out to sea for several months before reentering river mouths from December through July.

3.7 Vegetation

The project area contains 5 mature trees (i.e. Opiuma, Alvacado), sparse groundcover (Pothos) and a few scattered shrubs. None of the existing vegetation within the project area are native species, nor are they identified as rare of endangered plant species.

One fallen tree will be removed. Based on the proposed grading plan, it is likely that 3 existing trees will be affected by the grading operations and may need to be removed. Upon completion of the project, the area will be landscape and maintained by the Manoa Village Association.

3.8 Views, Public Access and Open Space

The project area is canopied from mature trees located on both sides of the stream. The project area is not visible from any public park, school ground of public right of way. The project area is not known to be a significant viewing point nor view object. The project area is not part of any public access way.

The project area is part of the overall Manoa Stream drainage system. In addition to facilitating storm drainage, it is an important open space feature. The proposed project will not reduce the quantity of this open space element.

3.9 Archaeology and Historic Sites

On October 31, 1996, the DLNR Historic Preservation Division responded to the DLNR's Commission on Water Resource Management regarding the proposed gabion embankment system at Manoa Stream. Based on a literature search, Historic Sites determined that there are no known archaeological sites in the area, and therefore concluded that the project would have "no effect" on historic sites (see Appendix C).

3.10 Circulation, Traffic, and Access

Public vehicular and pedestrian circulation are confined to the public right-of-way. The proposed project is excepted to have no effect upon vehicular or pedestrian circulation.

3.11 Utilities

There are no existing public utilities (i.e. sewer, water, electrical, drain lines) nor any vehicular roadways or pedestrian pathways within the project area; nor will the proposed improvements require any utility service after it is completed.

3.12 Access

The project area is not accessible to the general public. Both sides of the stream are privately owned and fully developed with residential, apartment or commercial projects. There are no public easements in the immediate vicinity.

Access for construction of this project will utilize the side yard of the Manoa Village site. It is approximately 15 feet wide, sufficient for the passage of equipment.

3.13 Social Characteristics

The project will effected approximately 90 linear feet along the northern bank of Manoa Stream. This portion of the stream and stream bank is not visible from the roadway or from any public area. It is not utilized by the public for recreational, cultural or social purposes and contains no archaeological resources.

3.14 Economic Characteristics

The cost of installing gabion structures along the stream bank is estimated to be approximately $90,000. Although the majority of these improvements will occur on State owned land, The State will not be responsible for any of the construction cost. It will be financed in full by the Manoa Village Association. It

anticipated to be a "one time" expenditure. Long term maintenance and insurance will also be the responsibility of the Manoa Village Association.

There are no public economic impacts associated with the proposed project.

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4. Applicable Land Use Controls

4.1 In addition to fulfilling the requirements of Chapter 343, HRS, other permits and/ or approvals will be needed from City, State and Federal agencies. A listing of permits and approvals are outlined below.

City and County of Honolulu

- Department of Public Works
  - Drainage and erosion control approval**
- Department of Land Utilization
  - No rise certification*
  - Floodway certification*
  - Grading permit***

State of Hawaii

- 401 Water Quality Certification*
- CZM consistency approval*
- Stream Channel Alteration Permit*

Federal

- Army Corp Nationwide Permit*
- FEMA no rise certification*

* Indicates permit/ approval acquired
** Indicates application for permit/ approval in progress
*** Indicates application for permit to be acquired by contractor

Upon satisfying the requirements of Chapter 343, HRS, the Department of Land and Natural Resources will undertake an appraisal of the land in question, and will negotiate the lease agreement with the applicant for a long term retaining wall and landscape easement.

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5. Alternatives

Several alternatives were considered. A brief description of each alternative is as follows:

Alternative No. 1: Landscape Planting

Stabilizing the stream bank with plant material was initially considered. Under this alternative selective groundcover and shrubbery would be planted along the bank of the stream and reliance would be place on the root structure of the plants to hold the soil in place.

But because the upper reaches of the drainage basin receives over 150 inches of rainfall per year, and because the affected area of the stream bank is located along the outer curvature of the stream alignment, the landscape planting alternative was considered to be inadequate in preventing the scouring effects under high stream flow conditions. In addition, it was estimated that due to the heavy shade conditions, a minimum of 1 year of undisturbed growth would be required to achieve vegetative cover along the bank.

This alternative was not considered to be sufficient in alleviating the erosion problem.

Alternative No. 2: Construct Concrete or Rock Revetment Structures

Examples of concrete structures and rock revetments were observed along many segments of Manoa Stream (as well as other Oahu streams). This alternative was considered to be a proven, time tested and technically acceptable method of stabilization.

However this alternative was considered to be a very cost intensive approach, would requiring a longer construction period and a significant amount of construction work within the stream to establish the wall footing.

For these reason, alternative number 2 was not pursued.

Alternative No. 3: Construct Gabion Embankment System

The gabion system, although not extensively used in Hawaii, was considered to be a viable and practical solution. Because this technique required less heavy equipment and could be constructed relatively quickly, its cost was estimated to be significantly less that alternative no. 2.

The gabion system utilizes ungrouted stones and is therefore less intrusive than a harden embankment. It allowed for permeability and ground water recharge through its open pores. These were environmental factors that enhanced the gabion system as being the preferred solution in addressing the goals of the project.

Alternative 4: Construct Protection Structure at Property Line

In order to avoid acquiring an easement from the State of Hawaii, construction of a protection structure inside the Manoa Village property line was considered. This alternative however would result in a significant amount of grading, a widening of the stream bed and a vertical wall structure. In addition, the wall structure would not be in alignment with the existing wall structures located immediately up and down of the affected area and would therefore result in a radical alteration of the stream's alignment.

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6. Impacts and Mitigative Measures

6.1 Evaluation of Environmental Impacts

An evaluation of the proposed action is provided relative to the Significance Criteria contained in the Environmental Impact Statement Rules, Title 11, Chapter 200-12.

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

Although Manoa Stream has been significantly modified from its natural condition, it is a resource that benefits both human habitation within the valley and aquatic resources inhabiting the stream. The construction of a gabion erosion and stabilization structure along a 90 foot segment of the stream's bank, and the granting of an easement in favor of the Manoa Village Association, would not result in the loss, destruction or degradation of the natural or cultural characteristics of the stream.

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

The proposed project and granting of an easement would not curtail the beneficial uses of the environment. No alteration to the alignment of the stream will occur, nor will the project result in impeding the stream's flow.

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

The proposed erosion and stabilization structure and granting of easement does not conflict with the policies, goals or guidelines expressed in Chapter 344, HRS.

(4) Substantially affects the economic or social welfare of the community or State;

Because the proposed project will be financed entirely by the Manoa Village Association, no public economic or social impacts are anticipated.

(5) Substantially affects public health;

The proposed action would protect private property by reducing on site hazards associated with the erosion. In addition, it would enhance public health by reduce down stream siltation currently being generated by the erosion and would reduce non-point source pollutants from entering the stream through landscape planting along the top of the stream bank. Technical review by the Department of Health was performed in conjunction with the issuance of their 401 Water Quality Certification.

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

The proposed action is limited to a small segment along Manoa Stream. The action will not result in land use changes and will not require the service of public facilities.

(7) Involves a substantial degradation of environmental quality;

The usage of a gabion system is preferred design solution over traditional methods of erosion control along stream banks (e.g. concrete and grouted CRM walls). Its porous characteristics would allow ground water to flow through the structure and would allow vegetation to volunteer from between the individual stones. Topping the gabion structure with soil and landscape planting will help to filter non-point source pollutants from entering the stream. The use of the gabion system will significantly reduce the degree of disruption to the stream during the construction period.

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

The need for erosion protection along this segment of the stream is spurred on by (1) the exposed bank being situated along the outer curvature in the stream's alignment; and (2) concrete and CRM walls up stream and down stream of this location.

The proposed action will infill between existing wall structures. This action is individually limited and does not represent a considerable cumulative effect nor a commitment for larger action.

(9) Substantially affects rare, threatened or endangered species, or its habitat;
Based on site inspections, literature research and consultation with agencies, it is determined that the project area does not contain any rare, threatened or endangered plant material or animal species. Adequate measure are included in the construction plans and Best Management Practices to minimize possible impacts to aquatic resources.

(10) Detrimentally affects air, or water quality or ambient noise levels; or
Noise, dust and disturbance to the stream water will occur primarily during the grading operations. This will be temporary in nature, and will be limited to weekdays and normal working hours. No weekend or evening construction will occur. Adherence to Chapter 14, Articles 13, 14, 15, and 16 as related to grading, soil erosion, and sediment control (ROH) and Chapter 11-60 Air Pollution Control are requirements of the plan.

Upon completion of the grading operations, no heavy equipment will be needed to install the gabion structures. Grading

(11) Affects an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.
Manoa Stream has been significantly altered over the years to accommodate urban development of the valley. The proposed action will not result in any hazards and will not jeopardize existing land, aquatic or coastal resources. The proposed action will alleviate erosion and minimize the threat of future flooding at the adjacent property.

Based on the technical studies performed by the project engineers, the proposed gabion structure will not contribute to any flooding nor erosion to along the opposite stream bank.

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

The project area is not identified as a scenic resource in county or state plans.

(13) Requires substantial energy consumption.

The proposed project will require the consumption of substantial energy, nor will it require substantial public man-power to maintain.

6.2 Impacts and Mitigative Measures

Short term impacts related to the construction activity can be expected. These would include noise, dust, turbidity and siltation into the stream. To minimize these impacts, a Best Management Practice Plan (BMPP) has been developed and included in the construction plans for the project. The BMPP was developed in consultation with numerous Federal, State and City & County agencies (see Appendix C for agency comments and approvals).

There are no significant long term impacts of an adverse or detrimental nature associated with the proposed project. The installation of the structure will reduce the threat of property loss and flooding at the adjacent Manoa Village site, will alleviate the erosional process occurring along the stream bank and will reduce siltation into the stream system. These effects are considered to be positive and desirable for this urban setting.

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7. Summary and Conclusions

7.1 Summary

Based on site inspections performed during August 1997, there is a need for action to stabilize the stream bank from erosion in order to protect the Manoa Village site and reduce hazards associated with the on going erosion. Without protection along the bank, the scouring effect along the stream bank is are likely to continue and may eventually threaten the adjacent dwelling units. Whereas the project area is within a well developed urban environment, and whereas the Manoa Stream has been significantly altered through previous development projects, reinforcement of the stream bank is a reasonable and acceptable course of action.

The applicant and their engineering consultants have performed a thorough evaluation of possible solutions, and have proposed a design solution that is environmentally sensitive, cost effective and has no economic impact upon the State of Hawaii. Their proposal to utilize a gabion system is an environmentally sensitive approach, and is supported with favorable review comments from the State DBED&T Office of Planning and Eugene P. Danshiell, AICP, Ala Wai Watershed Management Coordinator. In addition, numerous Federal, State and City and County agencies have reviewed the proposed plans and have issued their approvals to include the following:

- Army Corp of Engineers- NWP Permit, Nationwide Permit for Bank Stabilization (re-authorized)
- Federal Emergency Management Agency- Certification of a "No Rise" Determination
- State Department of Health- Section 401 Water Quality Certification (WQC)
- Hawaii Coastal Zone Management (CZM) Program Federal Consistency

- State Department of Land and Natural Resources- Stream Channel Alteration Permit
- City and County of Honolulu, Department of Public Works- Drainage Report

The applicant's plans are well documented and clear. Their Best Management Practice Plan (BMPP) incorporates comments and conditions from reviewing Federal and State agencies outline above.

The applicant will bear the entire cost of construction. Through the granting of a retaining wall and landscape easement, the applicant will relieve the State of any responsibilities associated with the long term maintenance of the improvement.

This assessment of the proposed action identifies no long term or adverse environmental impacts.

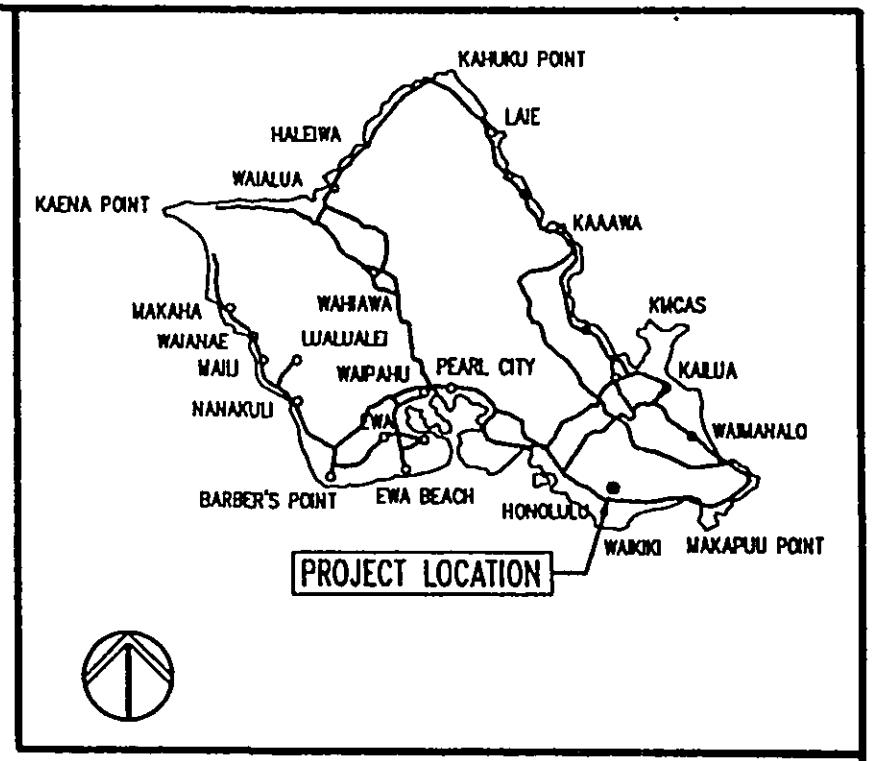
7.2 Conclusions

Based on the research and analysis performed under this EA, the proposed action does not represent a perceived risk to individuals or to the public health and safety; nor will it result in any adverse environmental effects. A finding of no significant impact would be warranted.

****

APPENDIX A
LIST OF EXHIBITS

EXHIBIT NO.	DESCRIPTION
EXHIBIT NO. 1	LOCATION MAP
EXHIBIT NO. 2	TAX MAP KEY
EXHIBIT NO. 3	ZONING MAP
EXHIBIT NO. 4	DEVELOPMENT PLAN LAND USE MAP
EXHIBIT NO. 5	SITE PHOTOS
EXHIBIT NO. 6	SITE PHOTOS
EXHIBIT NO. 7	SITE PHOTOS
EXHIBIT NO. 8	DETAIL, GABION EMBANKMENT SECTION
EXHIBIT NO. 9	DETAIL, GABION EMBANKMENT SECTION
EXHIBIT NO. 10	PROPOSED SITE PLAN
EXHIBIT NO. 11	PROPOSED EASEMENT



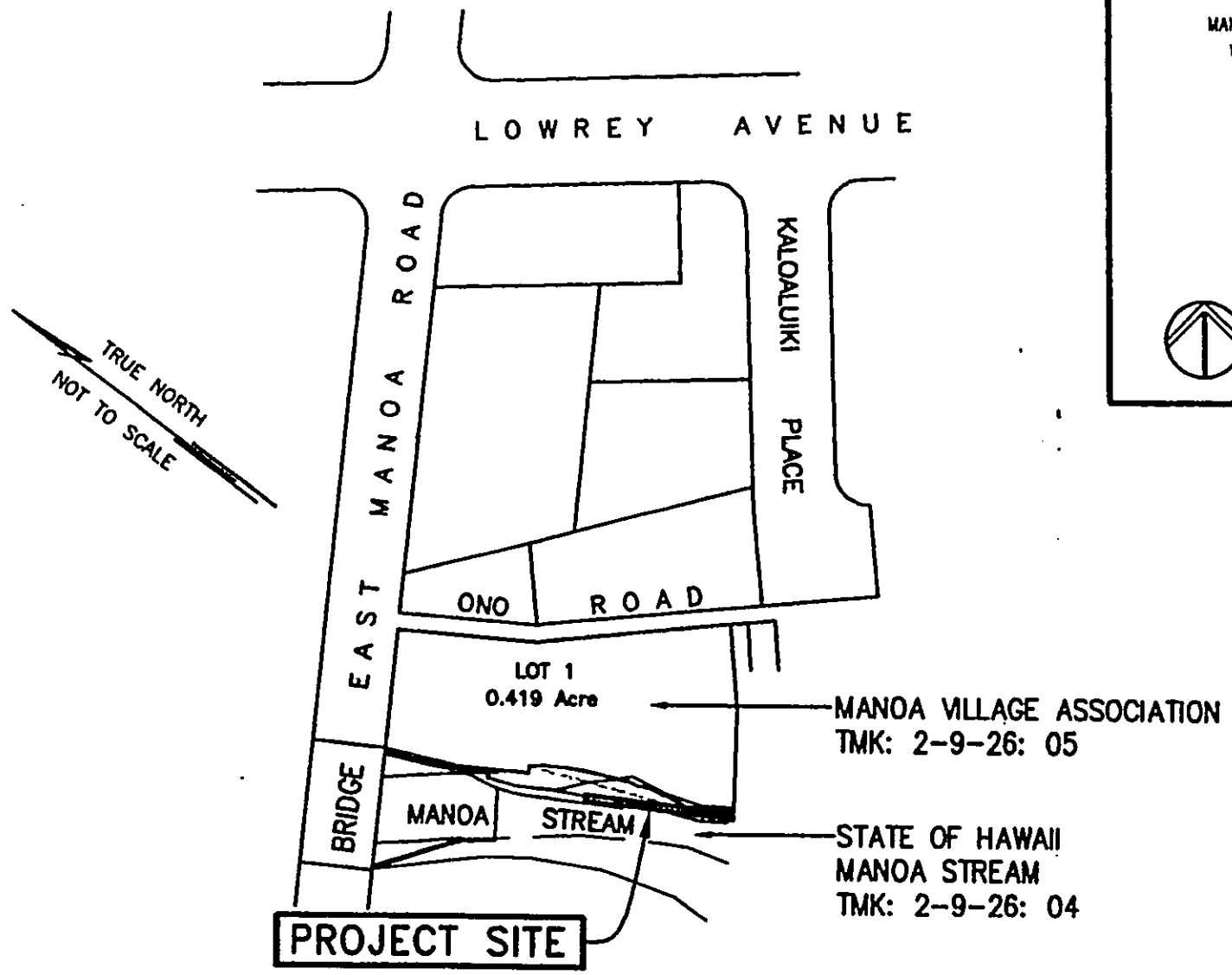


EXHIBIT NO. 1 LOCATION MAP	MANOA VILLAGE ASSOCIATION TMK: 2-9-26: 05	Land Planning & Design Hawaii **LP&D Hawaii** 126 Queen Street, Suite 306 • Honolulu,Hawaii 96813 ph: 808/ 537-4674 • fx: 808/ 521-9054

EIS 00 81 00 00000

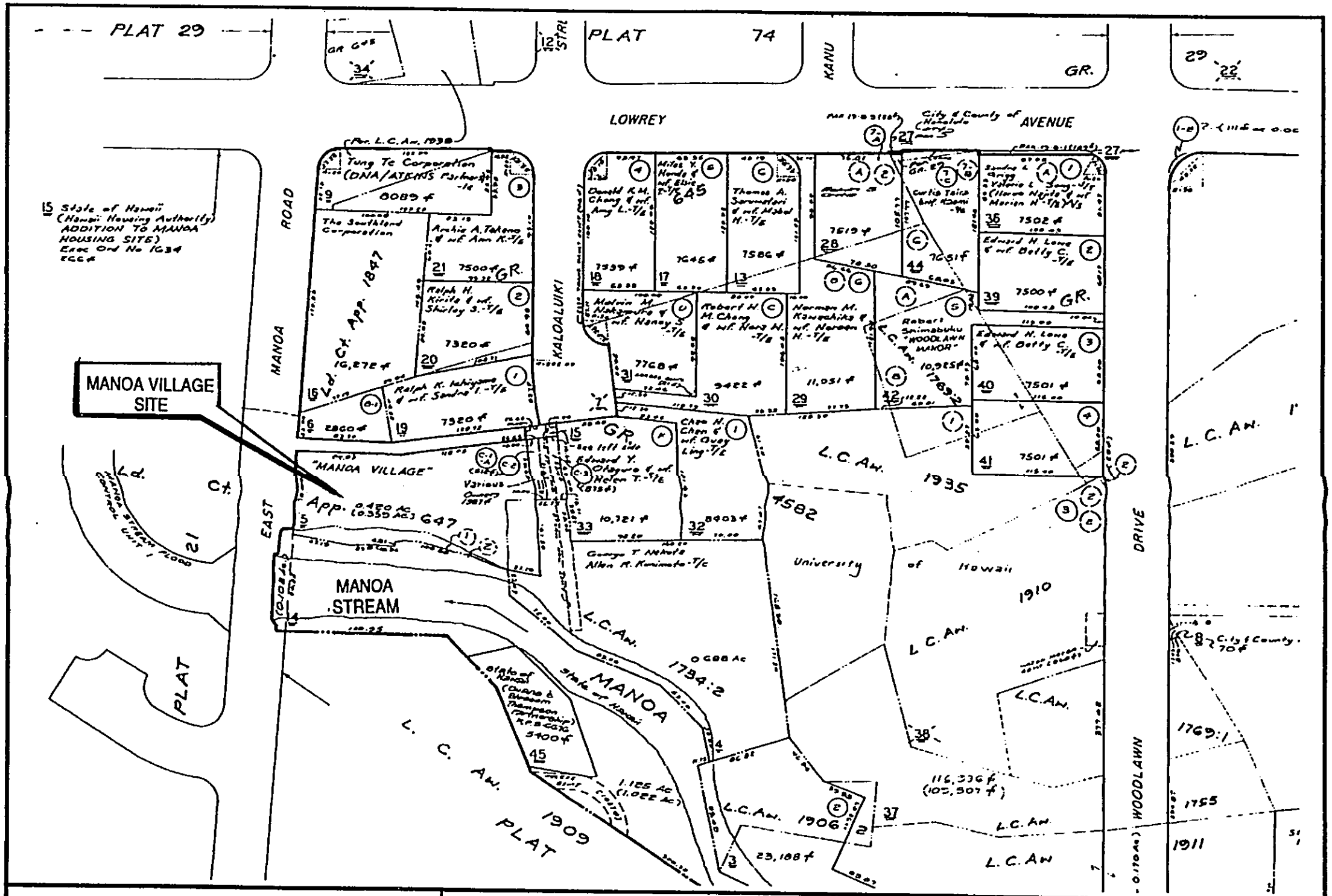


EXHIBIT NO. 2 TAX MAP KEY	**MANOA VILLAGE ASSOCIATION** TMK: 2-9-26: 05	Land Planning & Design Hawaii **LP&D Hawaii** 126 Queen Street, Suite 306 • Honolulu, Hawaii 96813 ph: 808/ 537-4674 • fx: 808/ 521-9054

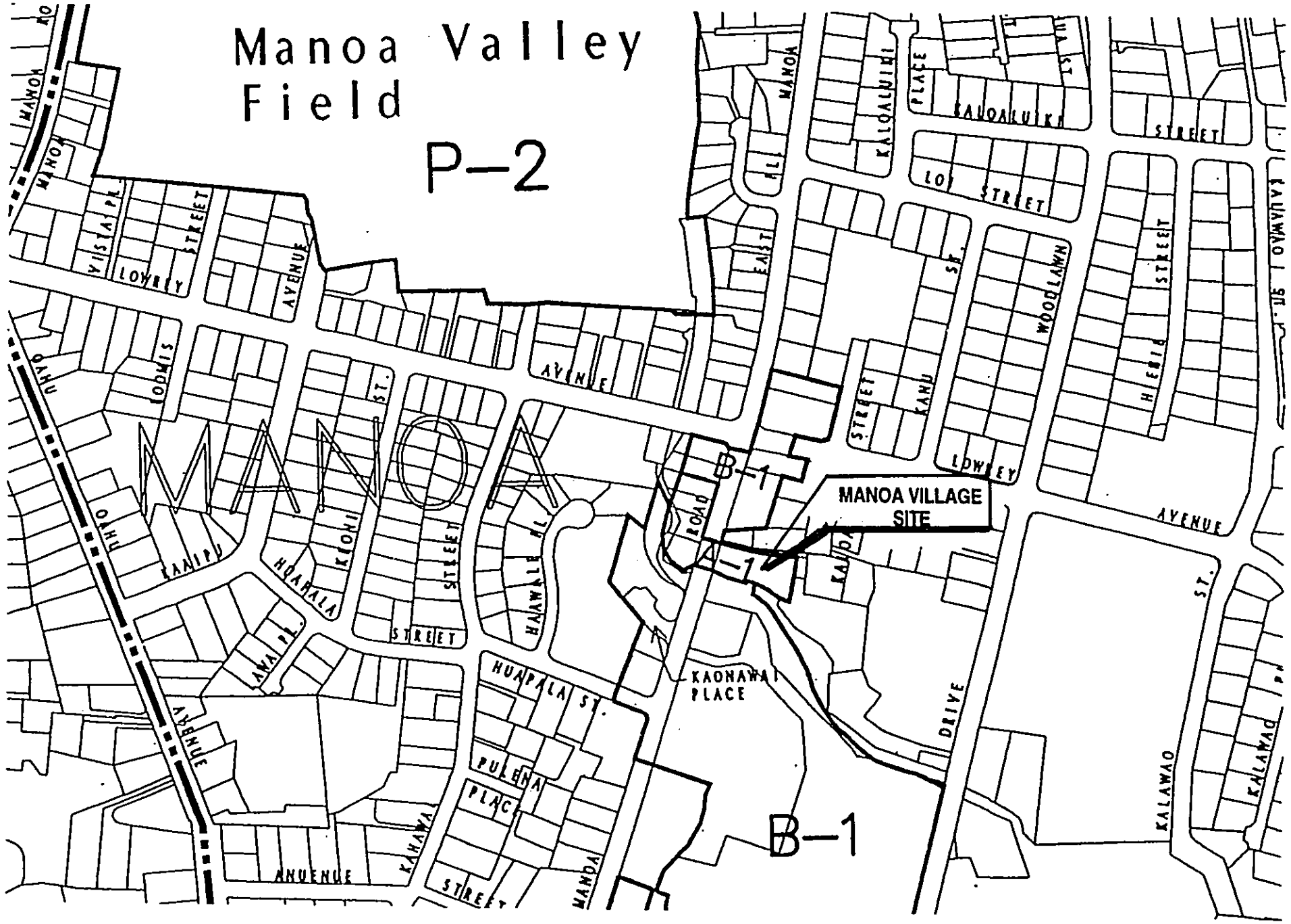


EXHIBIT NO. 3 ZONING MAP	MANOA VILLAGE ASSOCIATION TMK: 2-9-26: 05	Land Planning & Design Hawaii **LP&D Hawaii** 126 Queen Street, Suite 306 • Honolulu,Hawaii 96813 ph: 808/ 537-4674 • fx: 808/ 521-9054

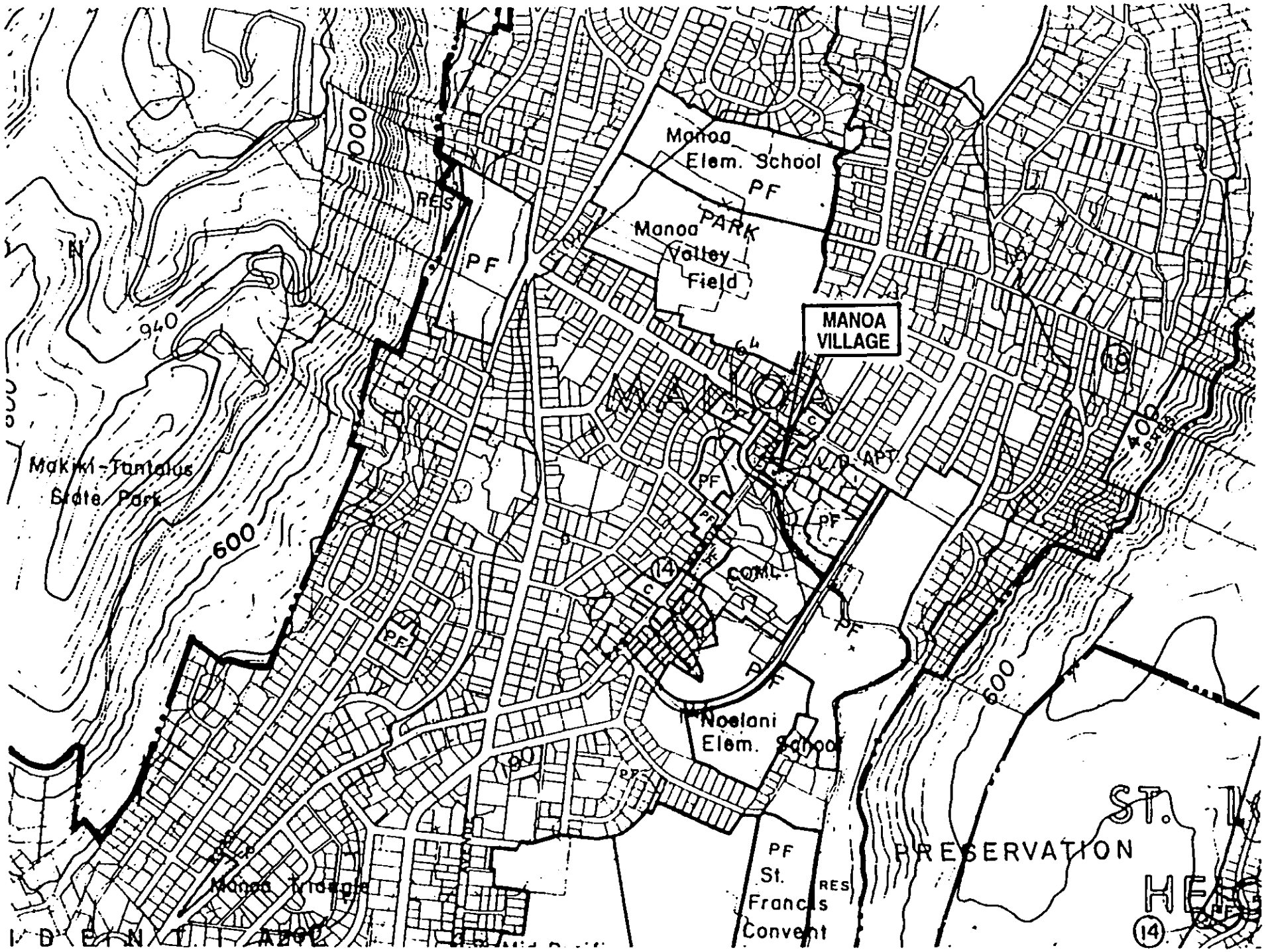


EXHIBIT NO. 4 DEVELOPMENT PLAN LAND USE MAP	MANOA VILLAGE ASSOCIATION TMK: 2-9-26: 05	Land Planning & Design Hawaii **LP&D Hawaii** 126 Queen Street, Suite 306 • Honolulu,Hawaii 96813 ph: 808/ 537-4674 • fx 808/ 521-9054

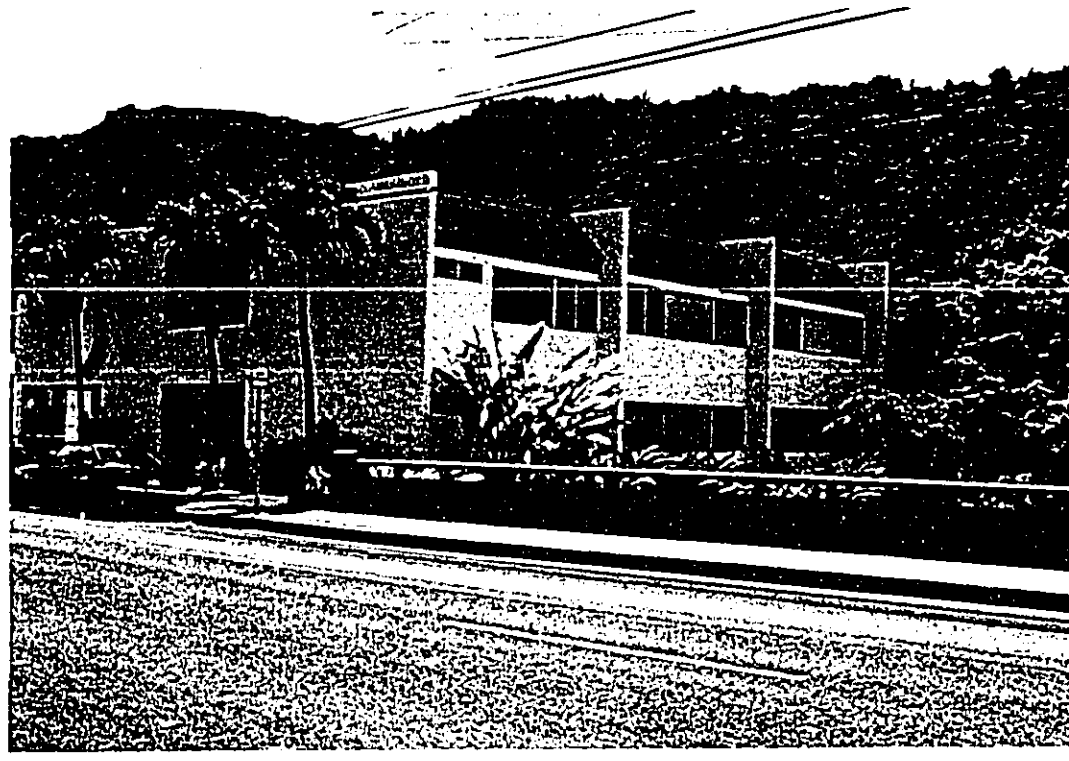


PHOTO NO. 1
View of Manoa Village cross Manoa Bridge at East Manoa Road. The Manoa Village site is .419 acres in size, zoned A-1 and abuts approximately 225 linear feet of Manoa Stream.

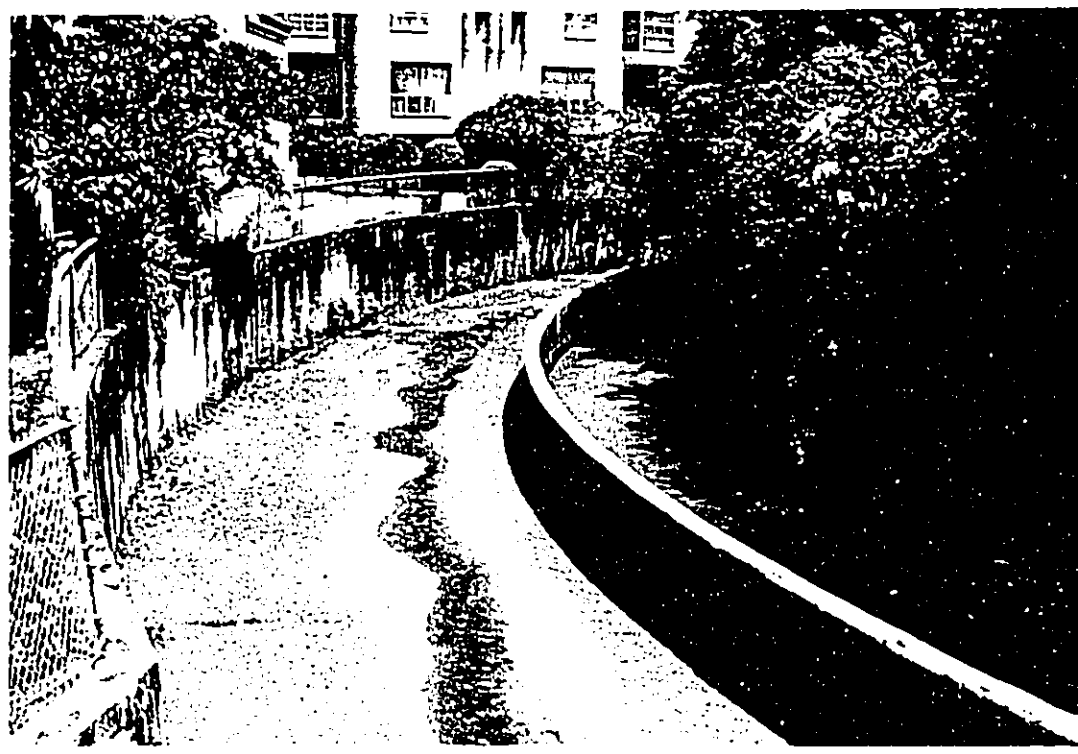


PHOTO NO. 2
View of Manoa Stream, immediately up stream of the Manoa Bridge. The stream is heavily channelized at this location, providing flood protection for the adjacent properties.

PHOTO NO. 3
View of Manoa Stream, immediately down stream of the Manoa Bridge with portions of Manoa Village in the photo background. The concrete channelization of the stream continues under the bridge and extend approximately 70 feet along the Manoa Village site.

EXHIBIT NO. 5
SITE PHOTOS

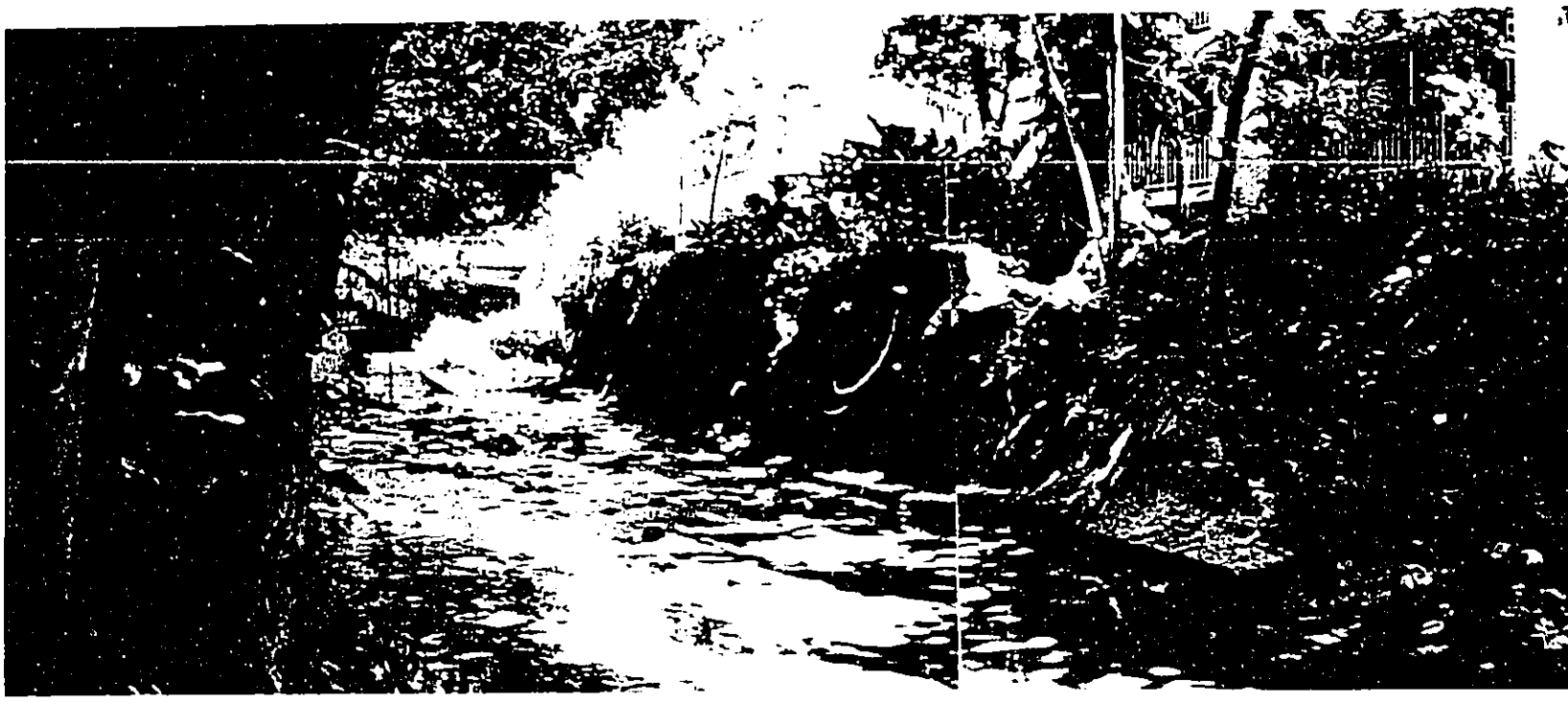


PHOTO NO. 4

View of Manoa Stream and the northern bank fronting the Manoa Village site, with the Manoa Bridge visible in the photo background. The photo illustrates how portions of the stream bank are reinforced with a concrete wall, followed by a CRM walls, approximately 9 ft. height.

PHOTO NO. 5

View of northern bank fronting the Manoa Village site. The last 22 ft. of the existing CRM wall is tapered and "unfinished." This portion of the wall will be removed to form a straight edge, and replaced with the gabion embankment system along the exposed portions of the slope.

The exposed bank has a 1:1 slope. Accumulation of loose rocks and soil along the bottom of the stream bank are the results of slope erosion. During heavy rainfall, the velocity of water is sufficient to scour away natural vegetation that would otherwise volunteer along the stream banks.

EXHIBIT NO. 6

SITE PHOTOS

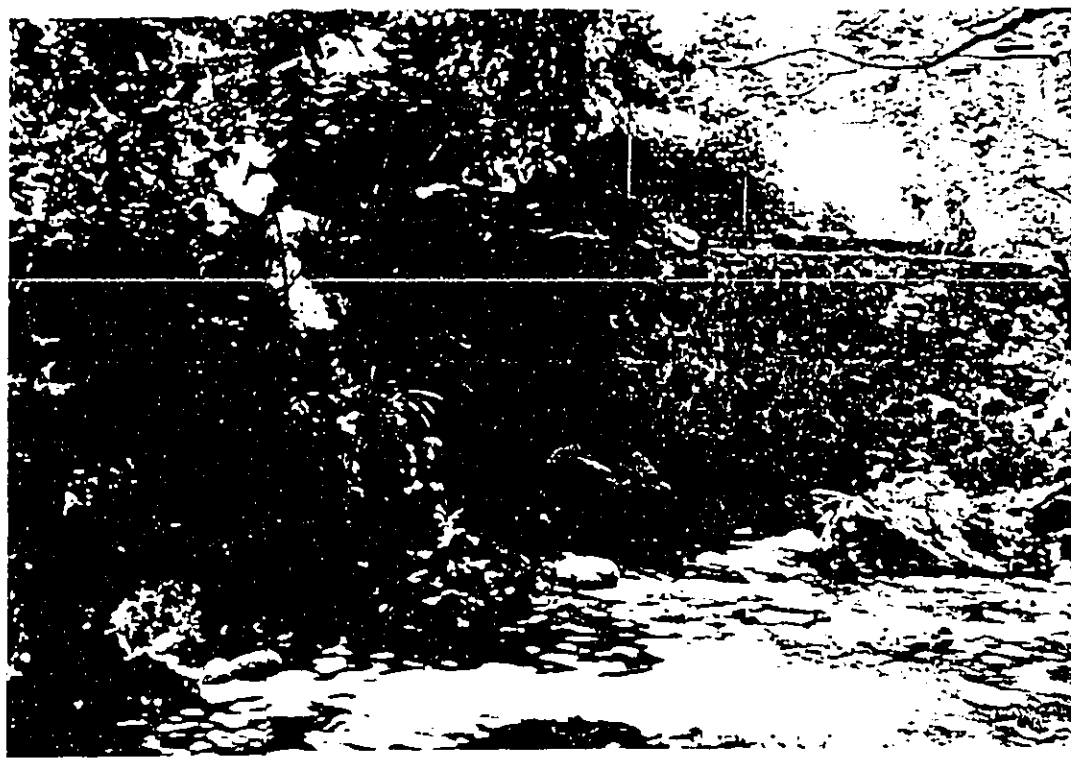


PHOTO NO. 6
Existing CRM wall immediately adjacent and down stream from the Manoa Village site. Bank protection structures occur above and below the Manoa Village property.

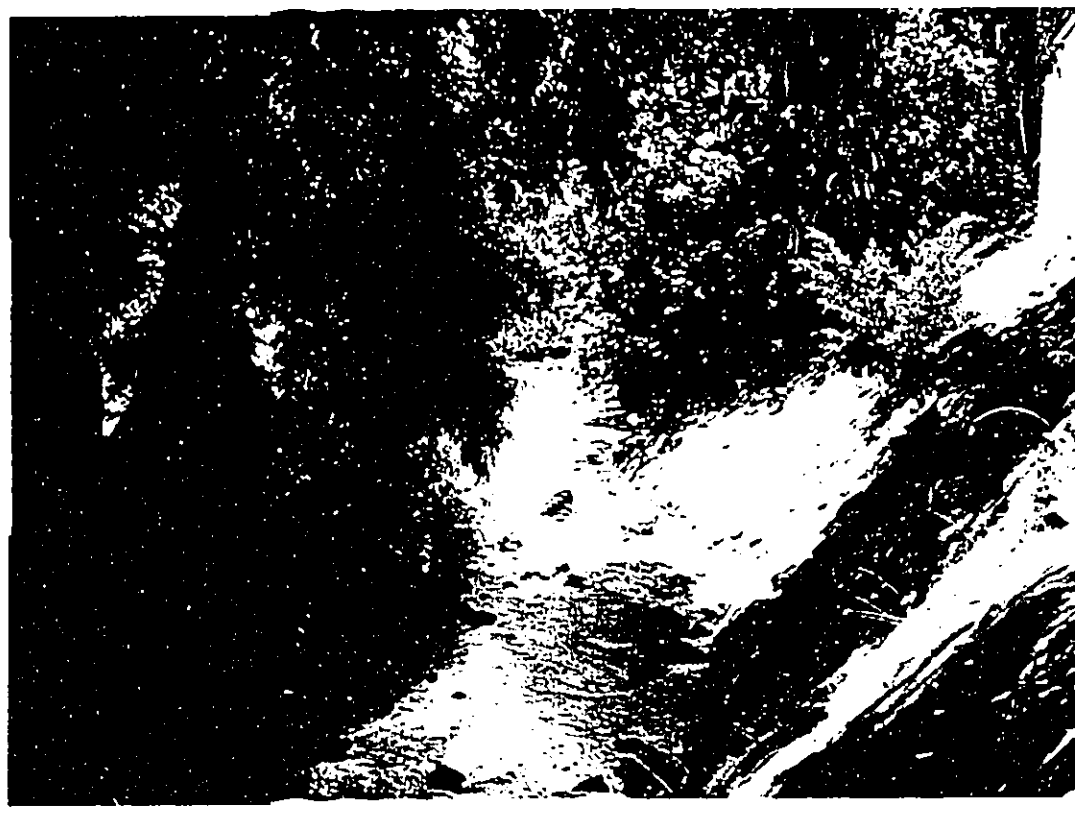
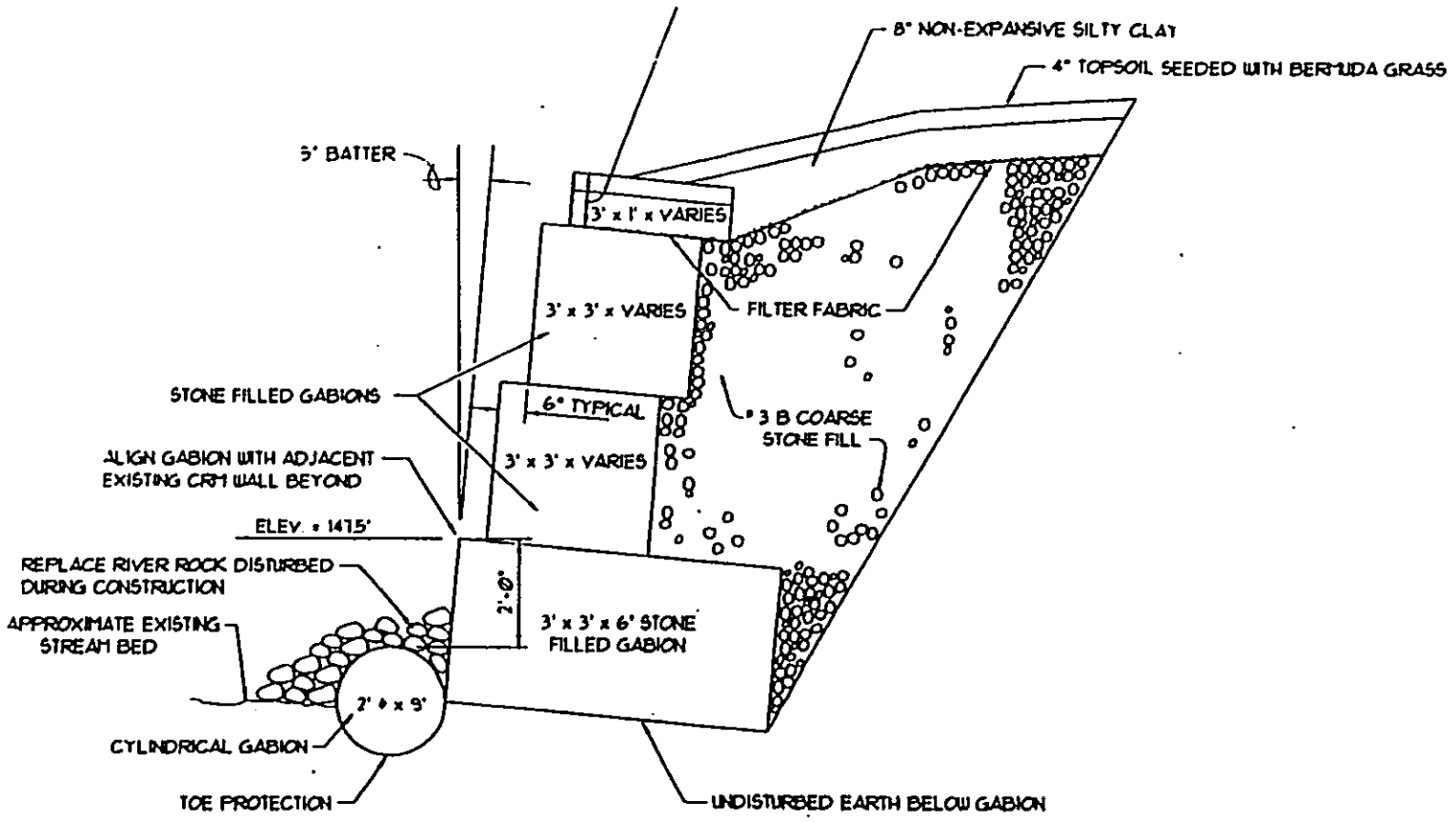


PHOTO NO. 7
View of Manoa Stream with sloping CRM revetment, immediately down stream and on the opposite side of Manoa Village site (Manoa Market Place). Note natural vegetation along exposed stream banks.

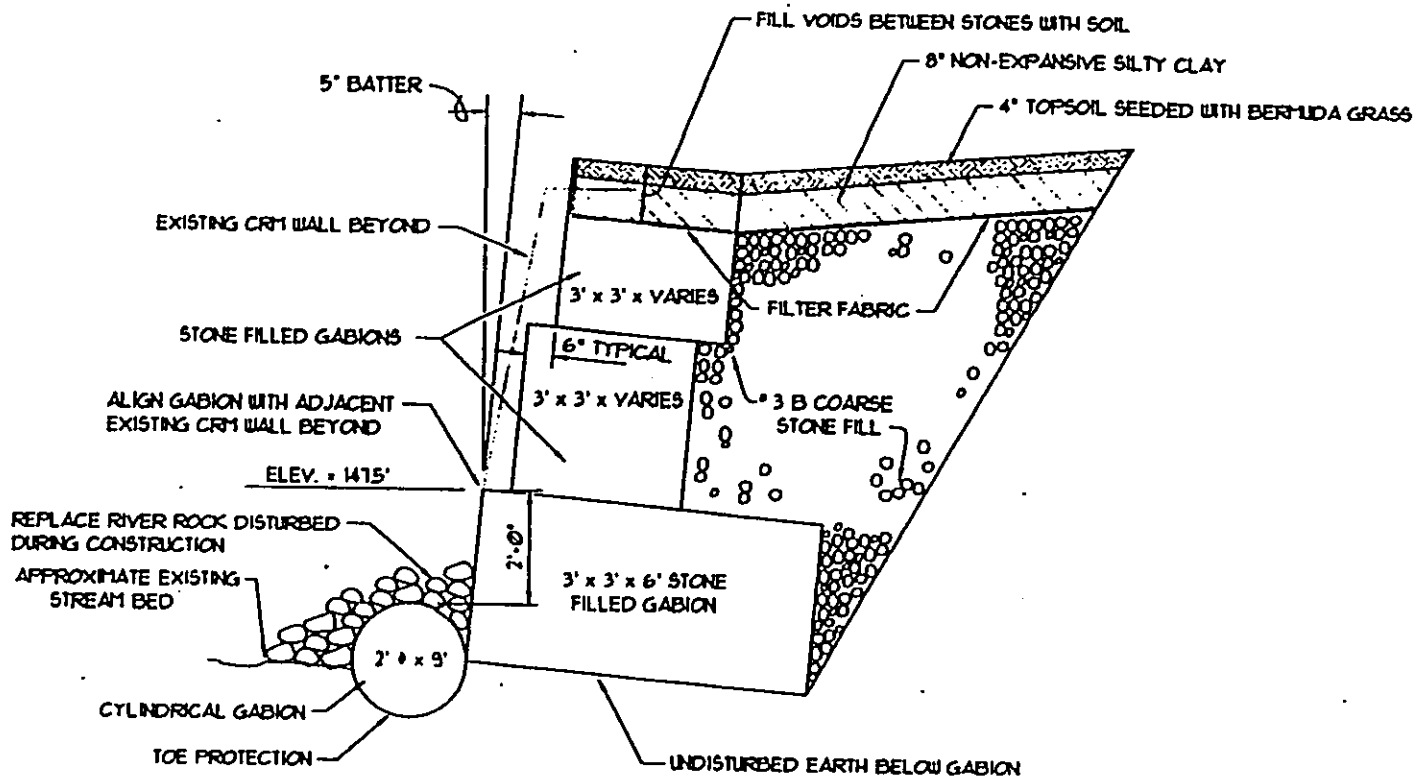
EXHIBIT NO. 7
SITE PHOTOS



B / C-2 TYPE - B GABION EMBANKMENT SECTION

SCALE: 1/2" = 1' - 0"

EXHIBIT NO. 8 GABION EMBANKMENT SECTION PREPARED BY: ENGINEERING SOLUTIONS, INC.	MANOA VILLAGE ASSOCIATION TMK: 2-9-26: 05	Land Planning & Design Hawaii **LP&D Hawaii** 126 Queen Street, Suite 306 • Honolulu,Hawaii 96813 ph: 808/ 537-4674 • fx: 808/ 521-9054



A / C-2 TYPE - A GABION EMBANKMENT SECTION

SCALE: 1/2" = 1' - 0"

EXHIBIT NO. 9 GABION EMBANKMENT SECTION PREPARED BY: ENGINEERING SOLUTIONS, INC.	MANOA VILLAGE ASSOCIATION TMK: 2-9-26: 05	Land Planning & Design Hawaii **LP&D Hawaii** 126 Queen Street, Suite 306 • Honolulu, Hawaii 96813 ph: 808/ 537-4674 • fx: 808/ 521-9054

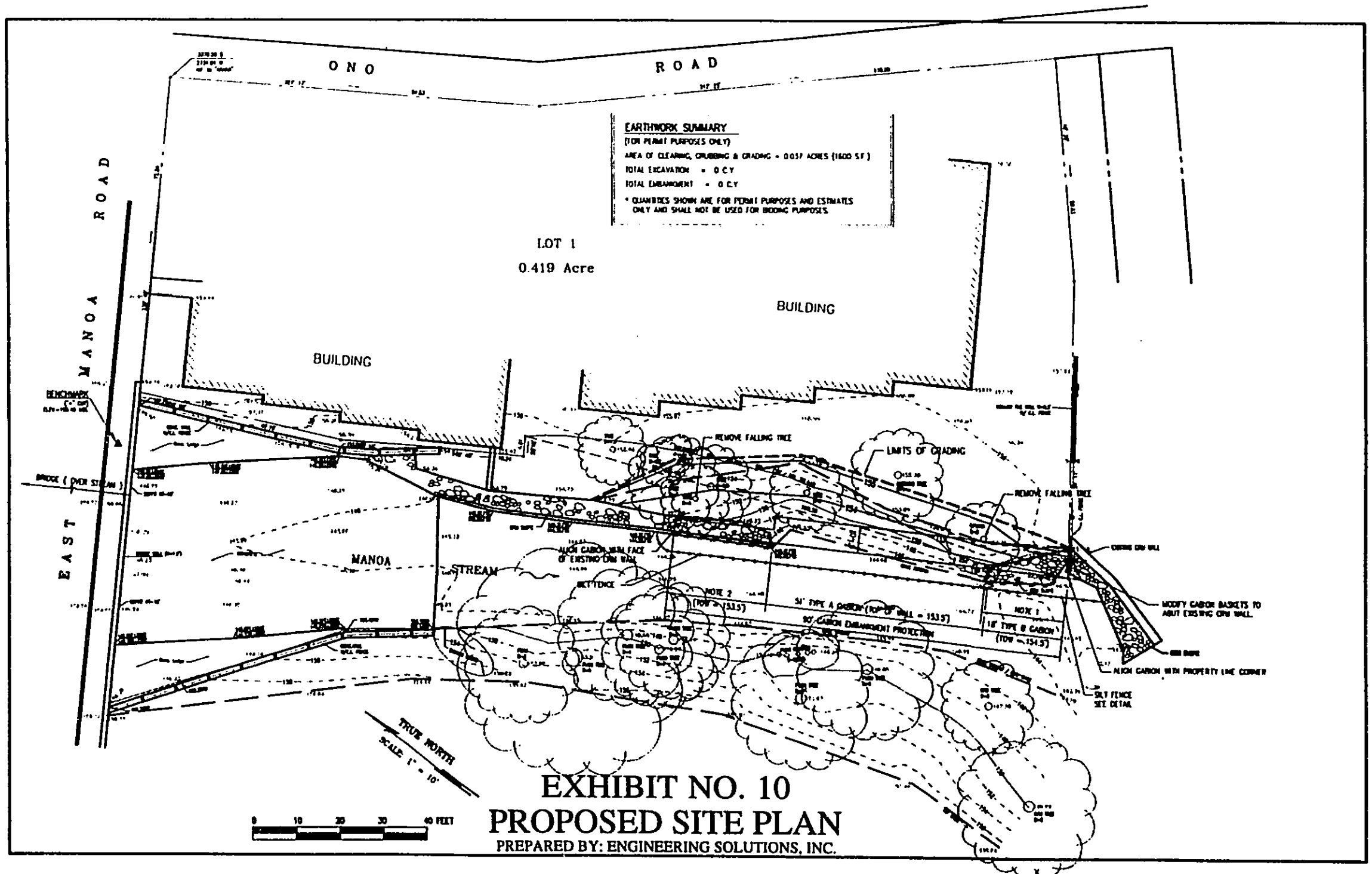
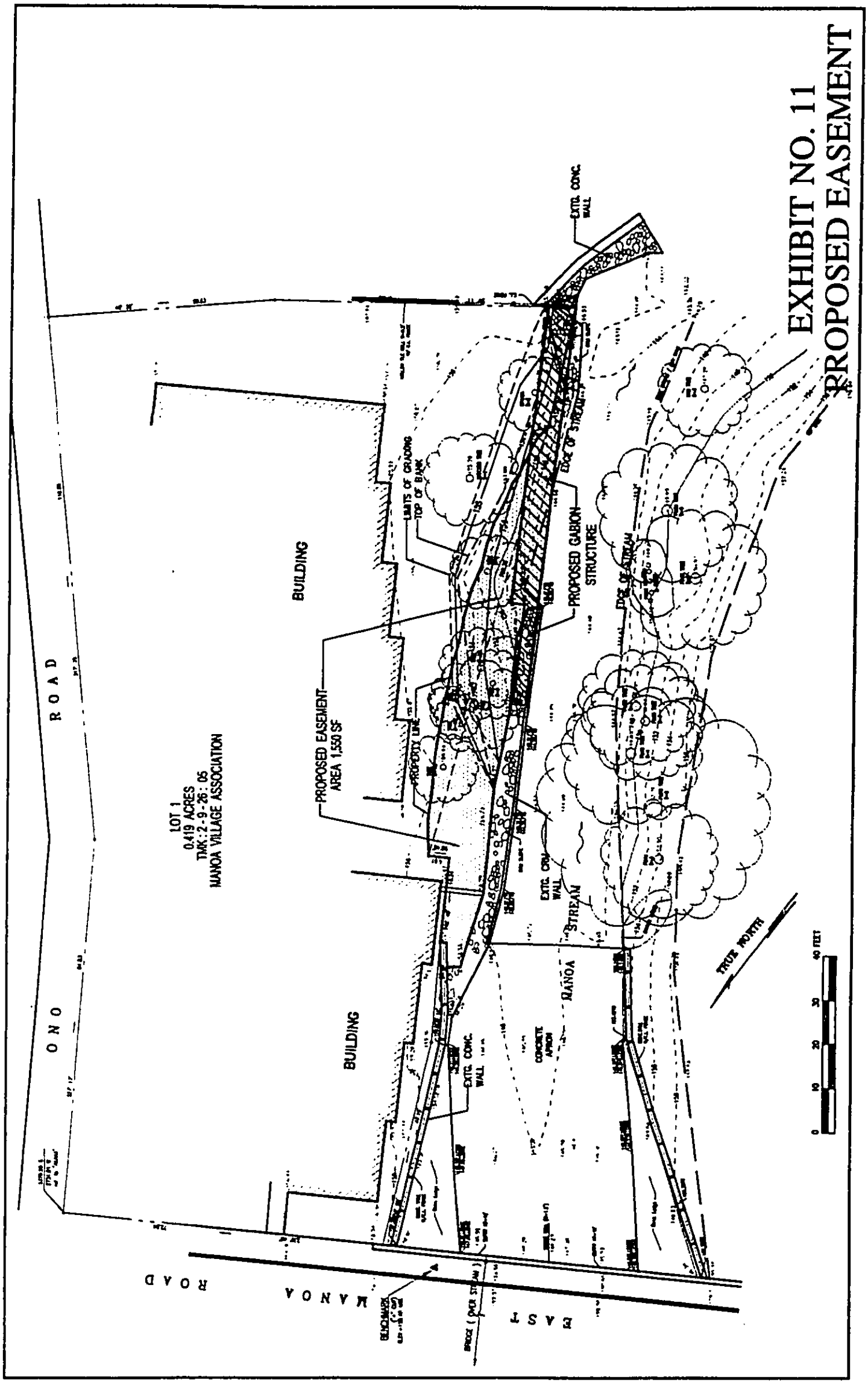


EXHIBIT NO. 10
PROPOSED SITE PLAN

PREPARED BY: ENGINEERING SOLUTIONS, INC.

0000 0013 1683

EXHIBIT NO. 11
PROPOSED EASEMENT



APPENDIX B

DRAINAGE REPORT

PREPARED FOR: MANOA VILLAGE HOMEOWNER'S ASSOCIATION
PREPARED BY: ENGINEERING SOLUTIONS, INC. AUGUST 1996

0000 0013 1685

DRAINAGE REPORT

FOR

MANOA VILLAGE EMBANKMENT STABILIZATION WALL

Manoa Valley, Honolulu, Oahu, Hawaii
TMK: 2-9-26: 05

Prepared for:

MANOA VILLAGE HOMEOWNER'S ASSOCIATION
2939 East Manoa Road
Honolulu, Hawaii 96822

Prepared by:

ENGINEERING SOLUTIONS, INC.
98-021 Kamehameha Highway, Suite 211
Aiea, Hawaii 96701

August 1996

ENGINEERING SOLUTIONS, INC.
213 Pearlridge Center, Uptown
98-1005 Moanalua Rd.
Aiea, Hawaii 96701

TABLE OF CONTENTS

DRAINAGE REPORT

FOR

MANOA VILLAGE EMBANKMENT

STABILIZATION WALL

I. INTRODUCTION

The purpose of this report is to evaluate the drainage conditions affecting the portion of Manoa Stream along the project site, as a result of the proposed improvement.

II. PROPOSED PROJECT

A. Location

Situated at the lower boundary of Manoa Valley, the project site is located along the mauka bank of Manoa Stream, bordering the 10-unit townhouse association of Manoa Village. The site is designated by Tax Map Key 2-9-26: 05. (See Exhibits 1 and 2).

B. Project

Due to general runoff and frequent flooding, the site has seen considerable erosion over the past several years. The proposed project consists of a 90-foot long gabion embankment to stabilize the existing stream bank. (See Exhibit 4.)

III. EXISTING CONDITIONS

A. Topography and Soil Conditions

On the mauka bank of the stream, the ground slopes steeply from the property line of the Manoa Village association to the stream's edge. This slope is characterized by eroded soil, falling rocks, and exposed tree roots. There is very little vegetal growth along this bank. Flanking the exposed bank, on both

the upstream and downstream ends, are concrete rubble masonry (CRM) walls. (See Exhibit 3.)

On the makai side, the ground slopes less steeply and is covered with dense vegetal growth to the water line. The stream bottom is strewn with pebbles and large rocks.

The soil classification for the vicinity is described as Hanalei Silty Clay (HnA) with 0 to 2 percent slopes by the USDA Soil Conservation Service ("Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai"). This class of soil is typically found on stream bottoms and flood plains. It is characterized by very poorly drained to poorly drained clay soils that are strongly mottled and are underlain by peat, muck or massive marine clay.

B. Climate

The project area has a relatively moderate climate typified by warm days, cool nights, and frequent showers within the period from late afternoon to early morning.

C. Flood Zone

According to the Flood Insurance Rate Map (FIRM), Panel 120 of 135, September 4, 1987, Manoa Stream is within Zone AE (base flood elevations determined). The Manoa Village complex lies within Zone AE and Zone X, shaded (area of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or drainage areas less than 1 square mile). (See Exhibit 3.) The stream bank as well as the project site to be stabilized lies within the AE area. The stabilization wall is not meant to take the existing buildings out of the flood plains.

IV. DRAINAGE

Floodway data from the Flood Insurance Study, City and County of Honolulu, Hawaii, Volume 1, by the Federal Management Agency, was used to determine the 100-year runoff flow of 10,580 cfs for Manoa Stream at the proposed site. (See calculations in Appendix.)

Several cross-sections of the stream were plotted, showing both the existing bank profiles and the profile after the construction of the gabion stabilization wall. Existing and new water surfaces for 100-year storm were then determined by use of Manning's Formula:

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$$

Water surface elevations calculated for the stream channel after the construction of the gabion stabilization wall were determined to be lower than those calculated for the existing stream profile, as shown in the hydraulic calculations located in the Appendix.

V. CONCLUSION

Evaluation of Manoa Stream at each cross-section before and after the construction of the gabion wall demonstrated that the proposed improvement would produce no rise of the 100-year storm water surface elevation.

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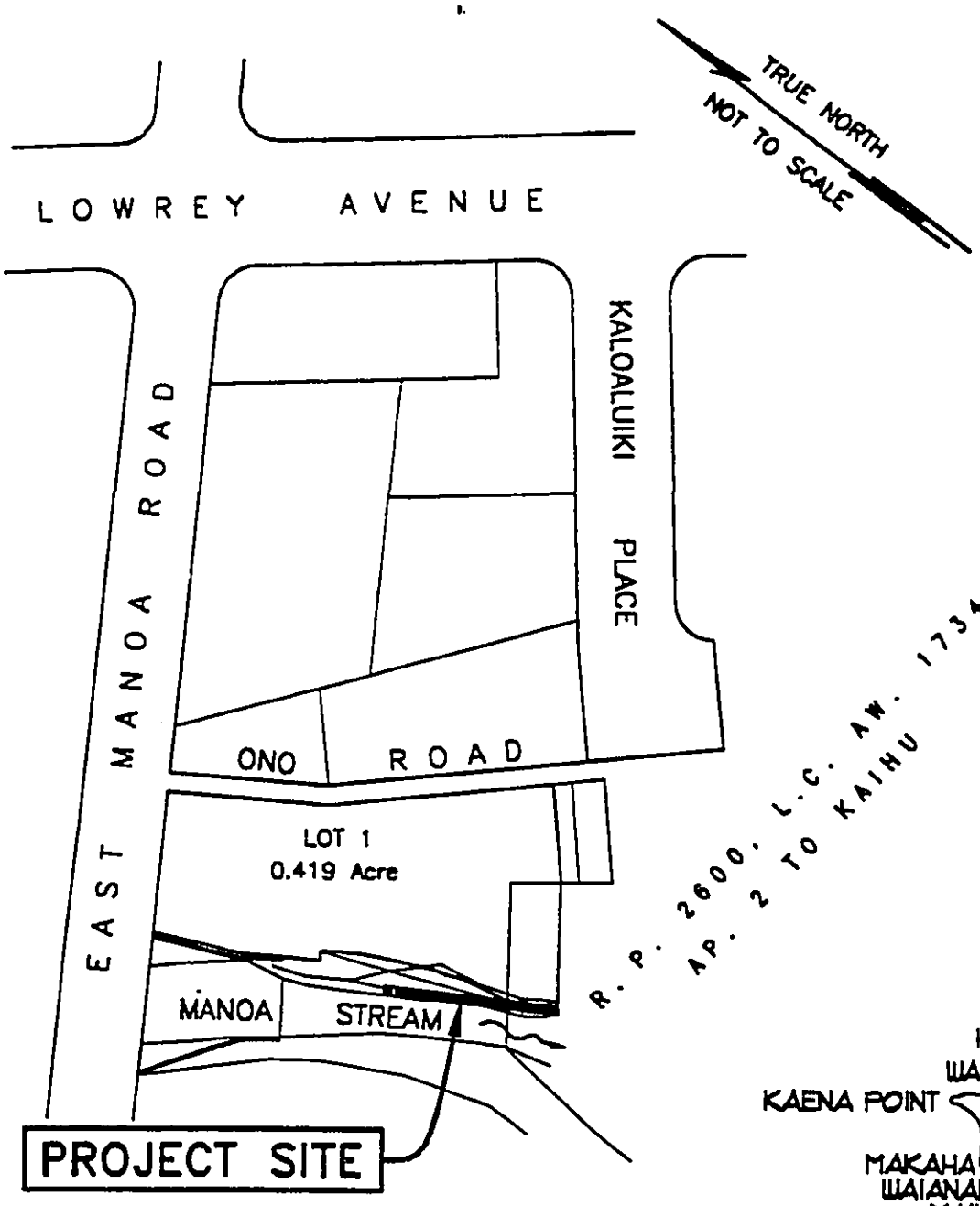
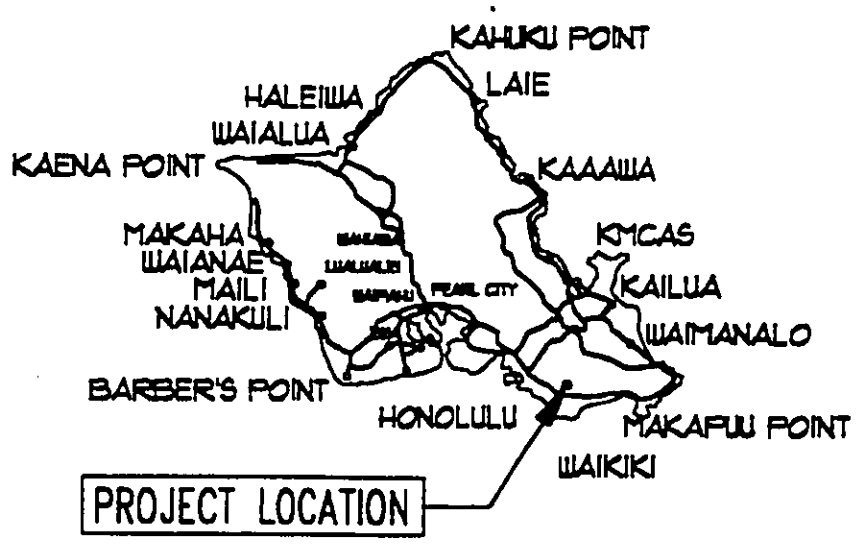


LOCATION MAP



Oahu

VICINITY MAP

NO SCALE

PURPOSE : PREVENT EROSION
DATUM : MEAN SEA LEVEL
ADJACENT PROPERTY OWNERS :
1. CITY & COUNTY OF HONOLULU

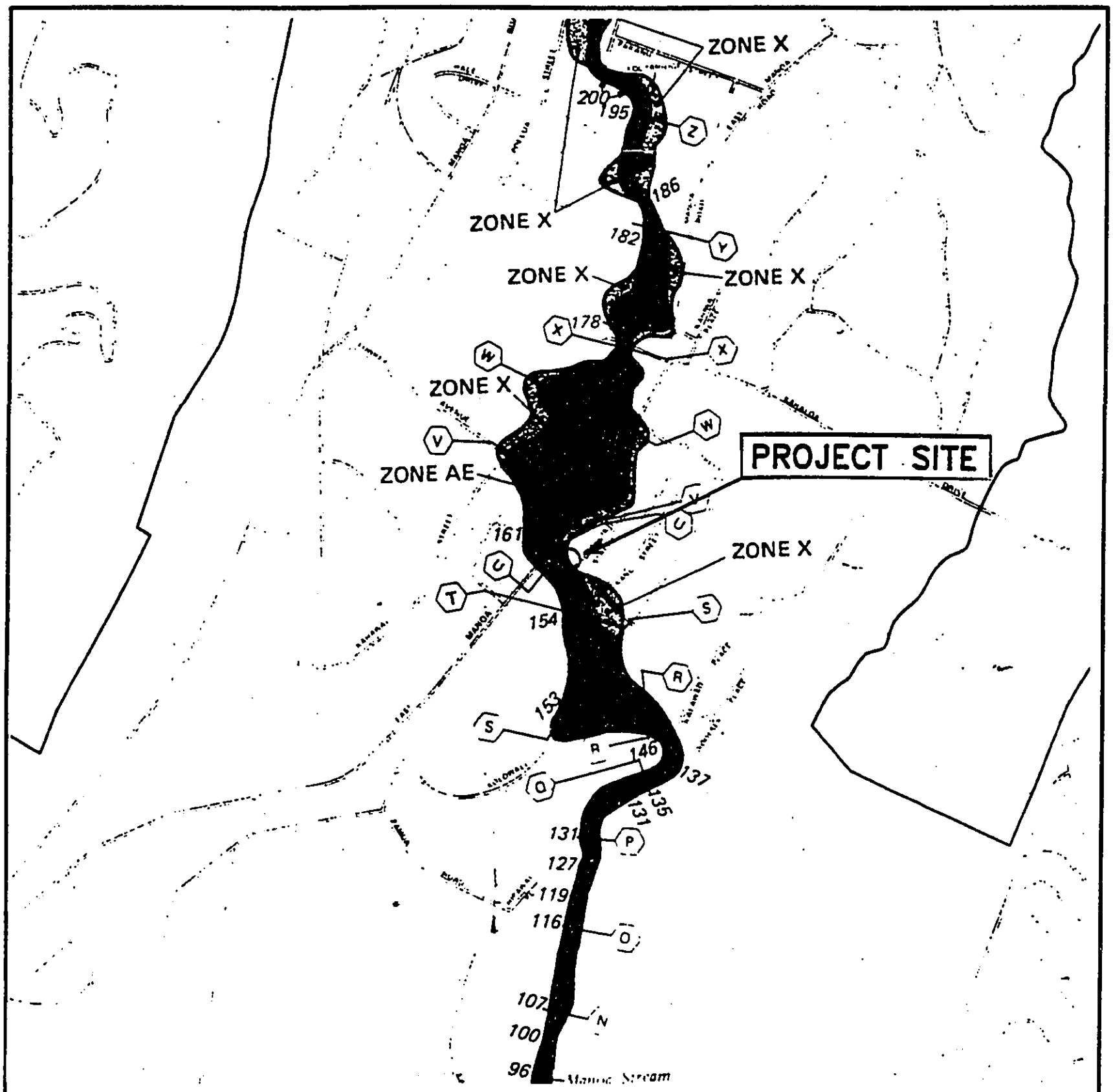
VICINITY MAP & LOCATION MAP
NO SCALE

MANOA VILLAGE HOMEOWNERS ASSN.
2939 E. MANOA ROAD
HONOLULU, HAWAII, 96822

PROPOSED STREAMBANK STABILIZATION
IN : MANOA STREAM (TMK:2-9-26:05)
AT : EAST MANOA ROAD
COUNTY OF: HONOLULU, HAWAII
APPLICATION BY: MANOA VILLAGE HOMEOWNERS ASSN.

EXHIBIT 1

0000 0013 1691



N

APPROXIMATE SCALE IN FEET

1000 0 1000

EXHIBIT 2

DRAINAGE REPORT

MANOA VILLAGE EMBANKMENT STABILIZATION WALL

MANOA VALLEY, HONOLULU, OAHU, HAWAII

FLOOD ZONING MAP

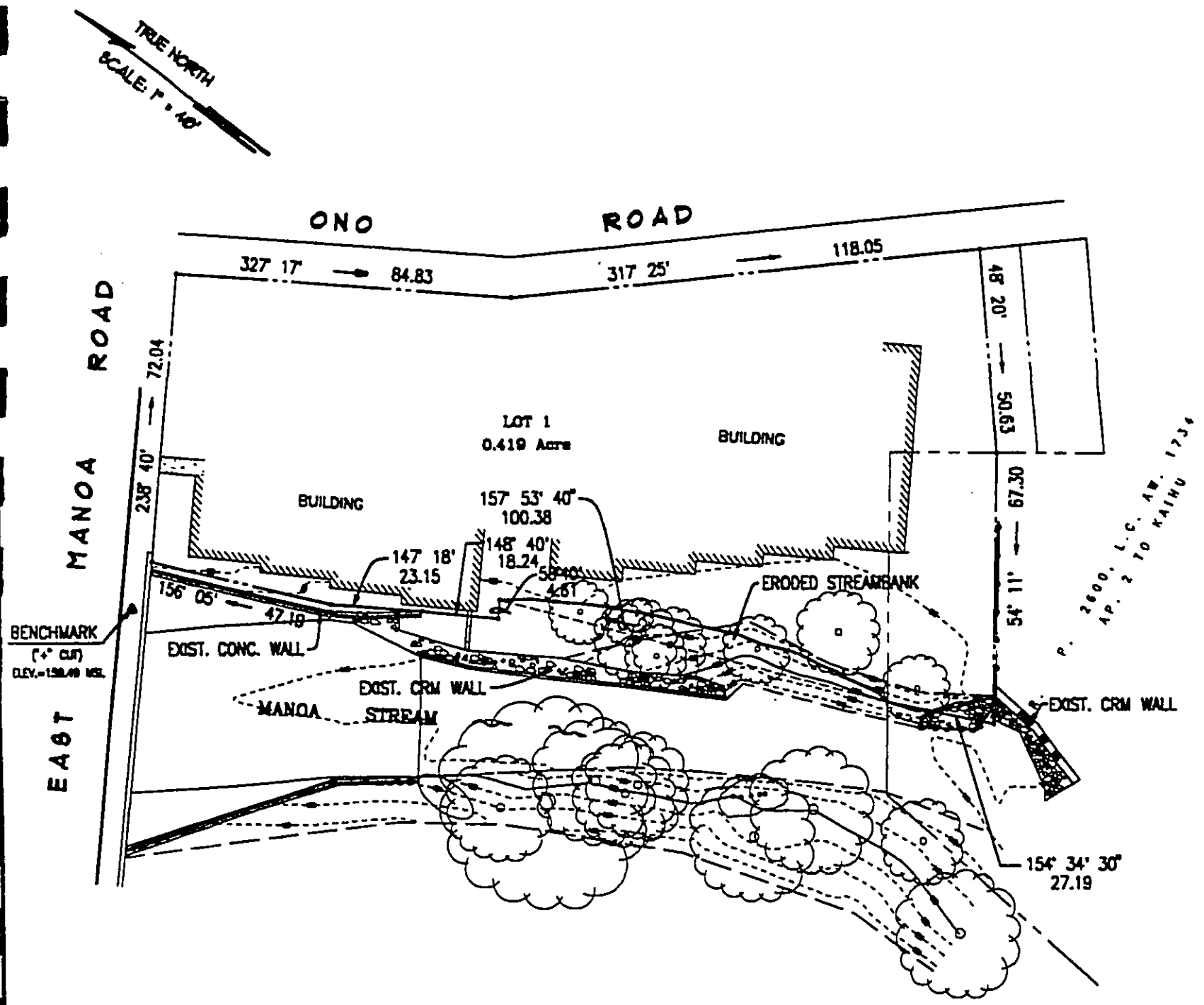
F.I.R.M. PANEL NO. 120

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Manoa-Palolo Drainage Canal								
A	1,490	2,760	8,650	2.6	8.2	8.2	9.2	1.0
B	2,700	660	2,228	10.2	13.5	13.5	14.1	0.6
C	3,225	448	2,279	10.0	17.4	17.4	17.7	0.3
D	3,750	100	1,234	18.5	19.8	19.8	19.8	0.0
E	4,325	116	1,319	17.3	23.6	23.6	24.0	0.4
Manoa Stream								
F	4,740	110	2,036	11.2	29.3	29.3	30.3	1.0
G	5,290	115	1,777	7.7	34.9	34.9	35.5	0.6
H	5,890	280	1,519	9.0	39.4	39.4	39.7	0.3
I	6,690	74	733	18.0	45.1	45.1	45.1	0.0
J	7,290	162	935	14.1	52.6	52.6	52.6	0.0
K	7,740	90	776	16.8	61.8	61.8	61.8	0.0
L	8,490	93	618	20.6	72.1	72.1	72.1	0.0
M	9,290	53	617	20.6	89.8	89.8	89.8	0.0
N	10,090	108	789	15.5	107.0	107.0	107.0	0.0
O	10,690	82	556	21.2	115.7	115.7	115.7	0.0
P	11,290	126	1,307	9.0	130.7	130.7	130.7	0.0
Q	11,890	93	622	18.3	134.8	134.8	134.8	0.0
R	12,490	140	799	13.8	146.4	146.4	146.4	0.0
S	12,990	693	2,035	5.4	151.3	151.3	151.3	0.0
T	13,490	238	1,461	7.3	154.4	154.4	155.4	1.0
(U)	13,890	152	1,449	7.3	158.1	158.1	158.1	0.0
V	14,490	643	1,815	5.5	167.2	167.2	167.2	0.0
W	15,090	693	1,684	5.9	173.4	173.4	173.4	0.0
X	15,640	55	428	22.0	174.0	174.0	174.0	0.0

[1]Feet Above Confluence With Ala Wai Canal

EXHIBIT 2a



EXISTING TOPOGRAPHY

PURPOSE : PREVENT EROSION
DATUM : MEAN SEA LEVEL
ADJACENT PROPERTY OWNERS :
1. CITY & COUNTY OF HONOLULU

PLAN VIEW

40 30 20 10 0 40

SCALE : 1" = 40'

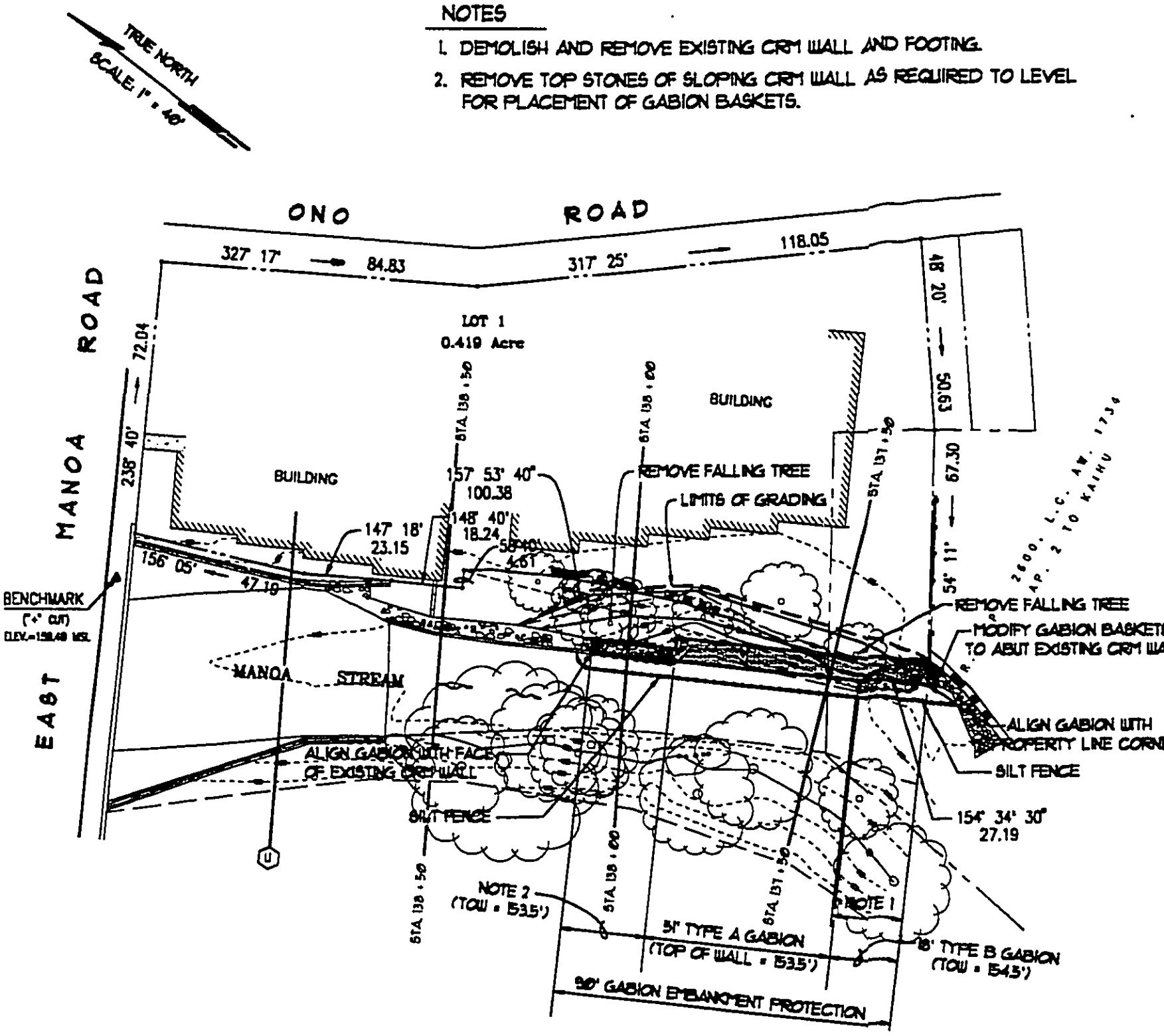
MANOA VILLAGE HOMEOWNERS ASSN.
2939 E. MANOA ROAD
HONOLULU, HAWAII, 96822

PROPOSED STREAMBANK STABILIZATION
IN : MANOA STREAM (TMK: 2-9-26:05
AT : EAST MANOA ROAD
COUNTY OF: HONOLULU, HAWAII
APPLICATION BY: MANOA VILLAGE
HOMEOWNERS ASSN.
JULY 1996

EXHIBIT 3

NOTES

1. DEMOLISH AND REMOVE EXISTING CRM WALL AND FOOTING.
2. REMOVE TOP STONES OF SLOPING CRM WALL AS REQUIRED TO LEVEL FOR PLACEMENT OF GABION BASKETS.



PLAN – GABION WALL

PURPOSE : PREVENT EROSION
DATUM : MEAN SEA LEVEL
ADJACENT PROPERTY OWNERS :
1. CITY & COUNTY OF HONOLULU
2.

PLAN VIEW

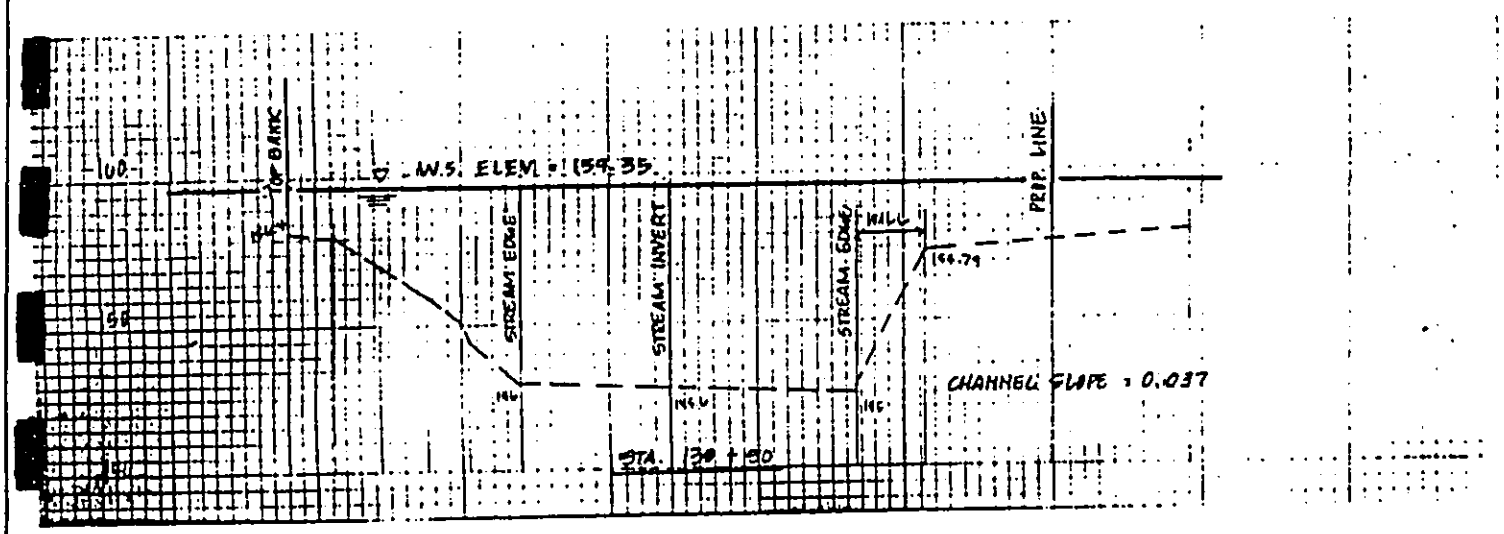
40 30 20 10 0 40

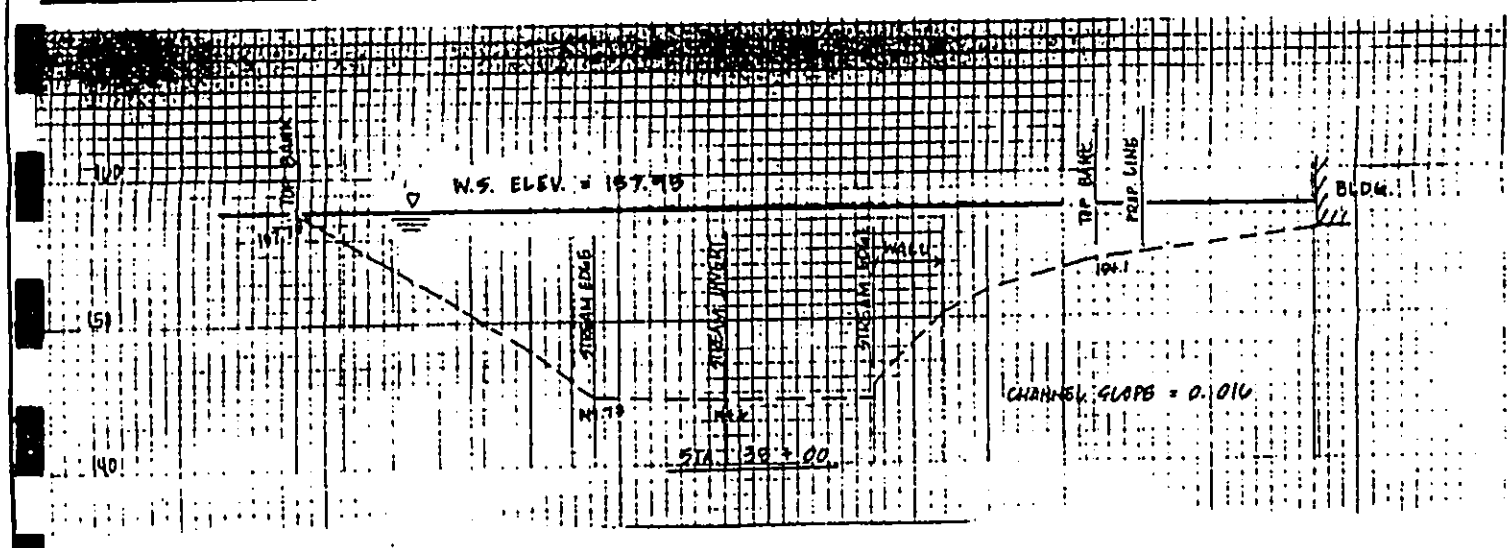
SCALE : 1" = 40'

MANOA VILLAGE HOMEOWNERS ASSN.
2939 E. MANOA ROAD
HONOLULU, HAWAII, 96822

PROPOSED STREAMBANK STABILIZATION
IN : MANOA STREAM (TMK:2-9-26:05
AT : EAST MANOA ROAD
COUNTY OF: HONOLULU, HAWAII
APPLICATION BY: MANOA VILLAGE HOMEOWNERS ASSN.
JULY 1996

EXHIBIT 4





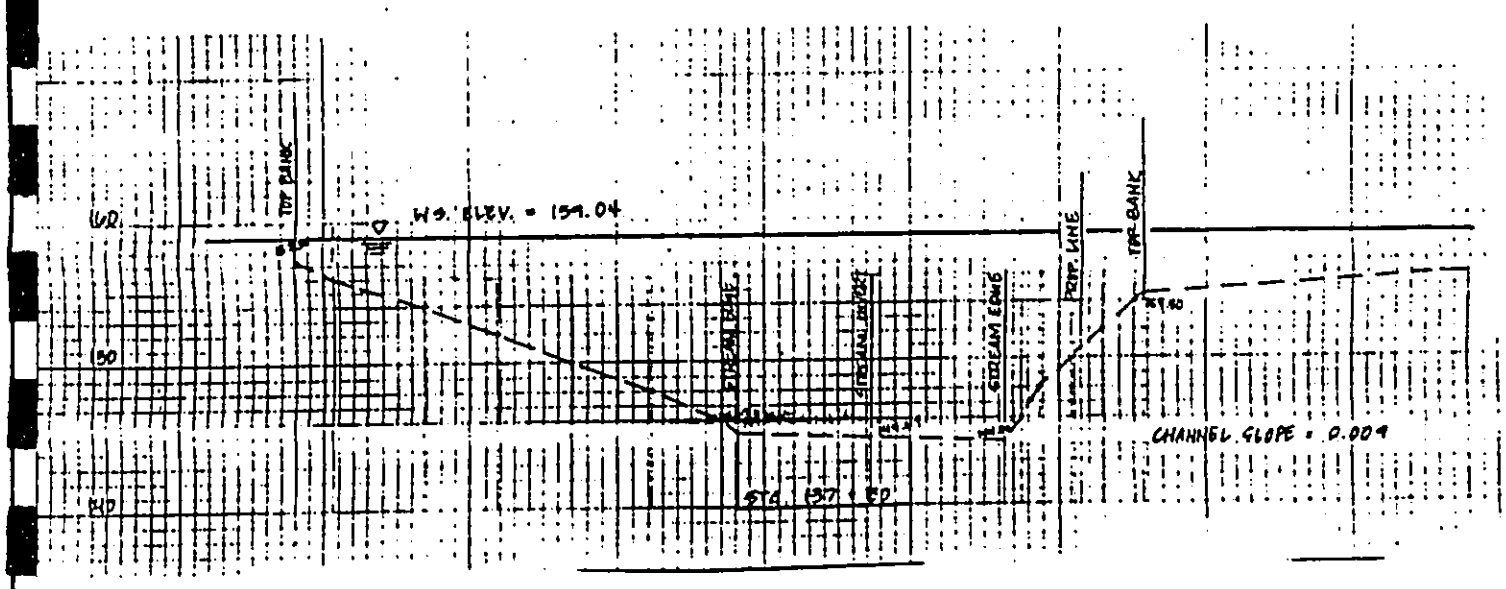


EXHIBIT 5

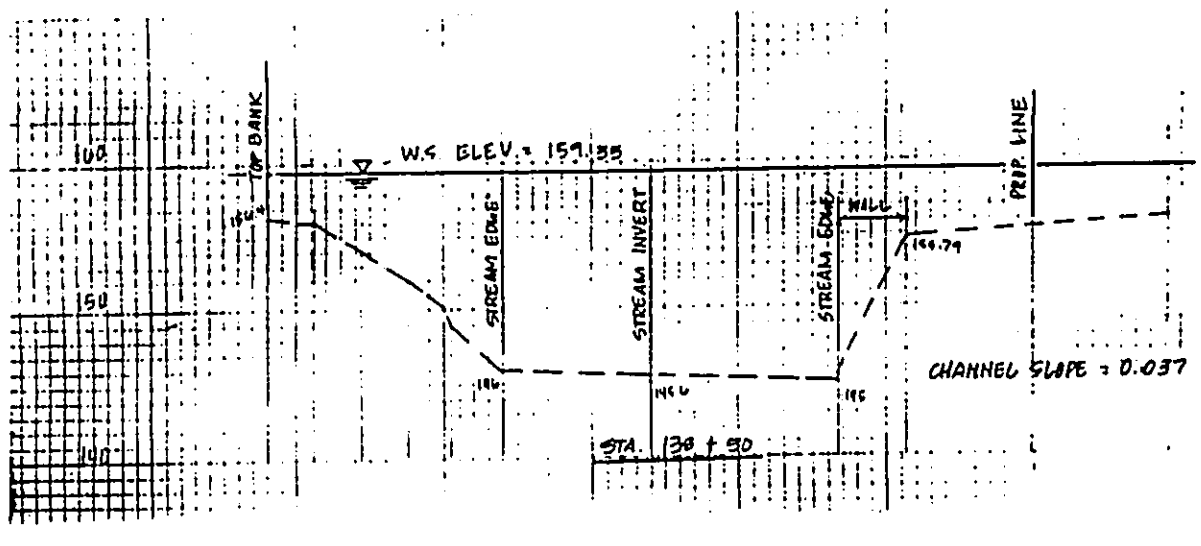
DRAINAGE REPORT

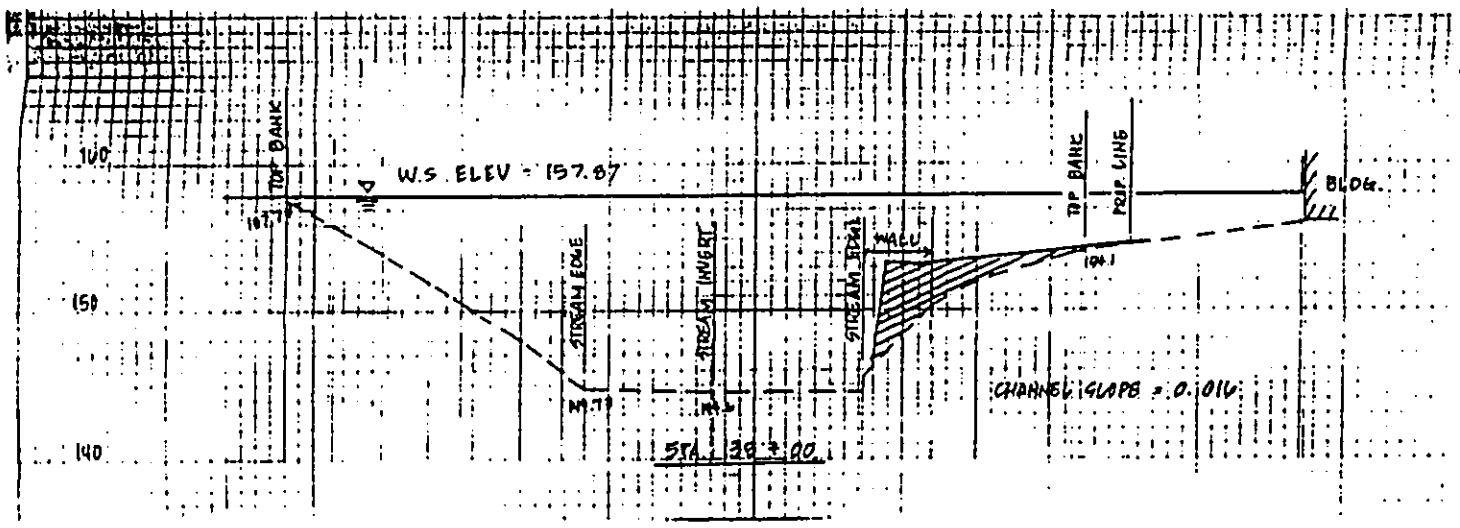
MANOA VILLAGE EMBANKMENT STABILIZATION WALL

MANOA VALLEY, HONOLULU, OAHU, HAWAII

CROSS-SECTIONS: EXISTING CONDITIONS

SCALE: HORIZ. & VERT.: 1" = 10'





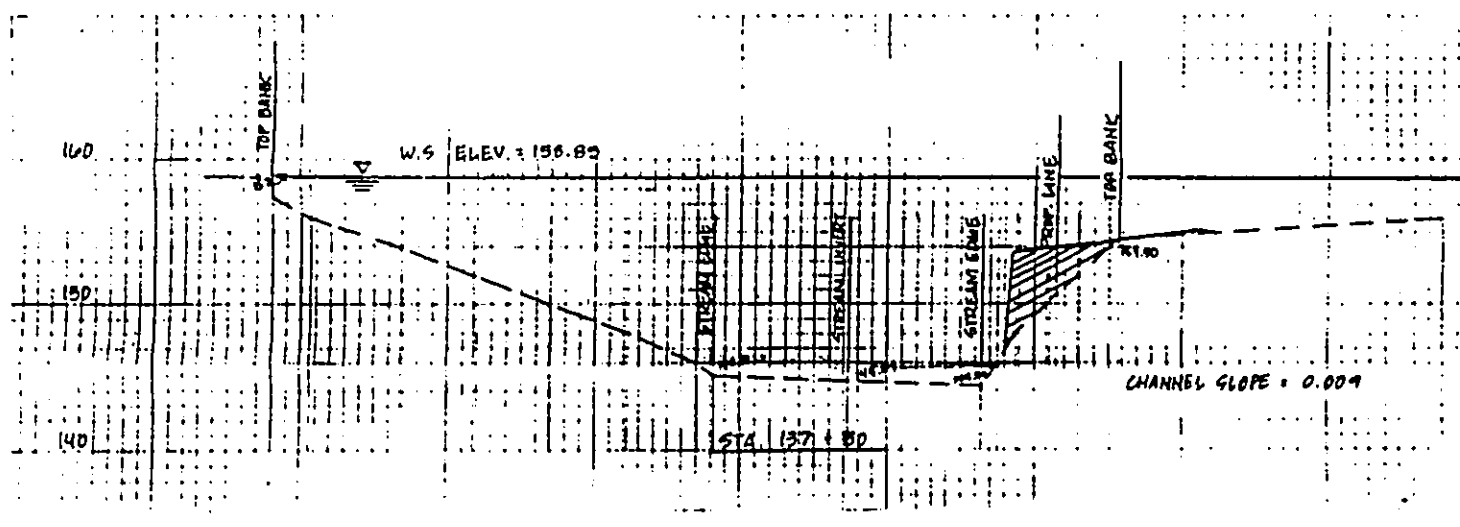


EXHIBIT 6

DRAINAGE REPORT

MANOA VILLAGE EMBANKMENT STABILIZATION WALL

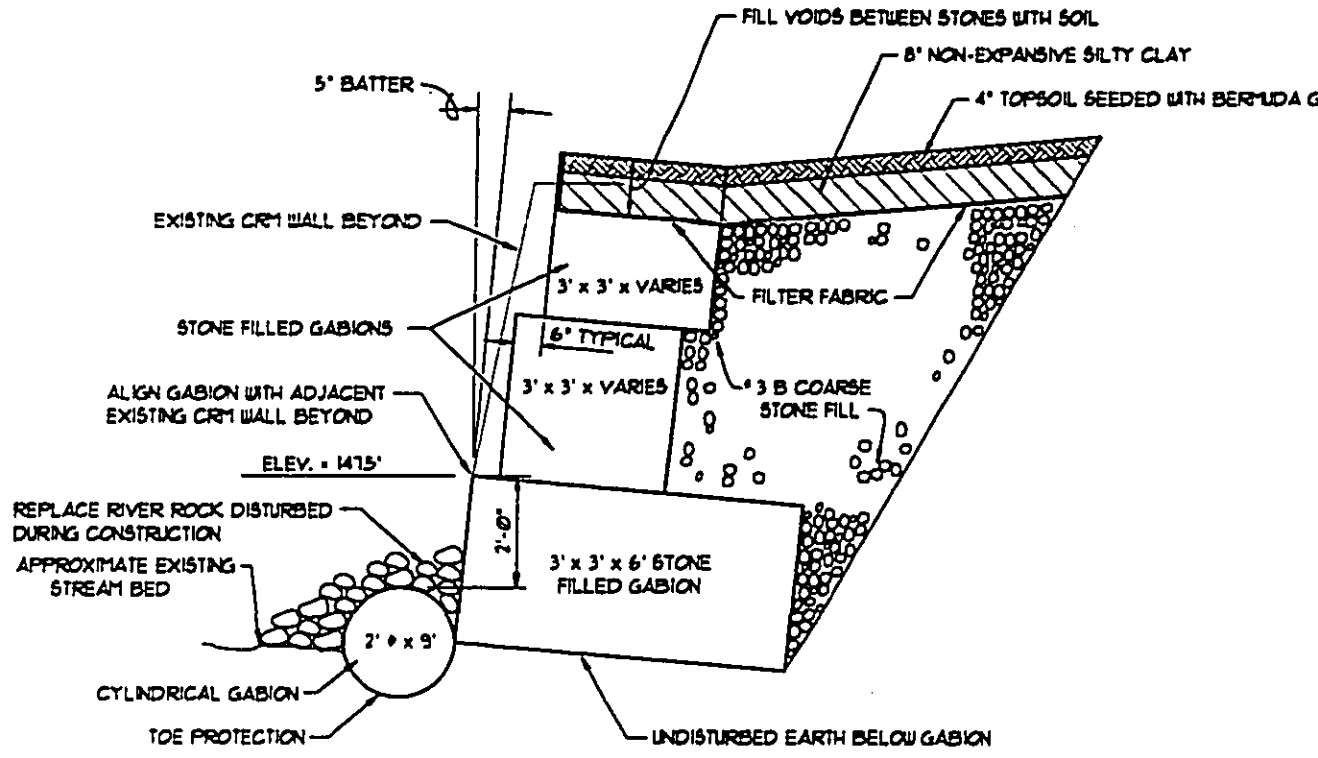
MANOA VALLEY, HONOLULU, OAHU, HAWAII

CROSS-SECTIONS: PROPOSED CONDITIONS

SCALE: HORIZ. & VERT.: 1" = 10'

0000 0013 1697

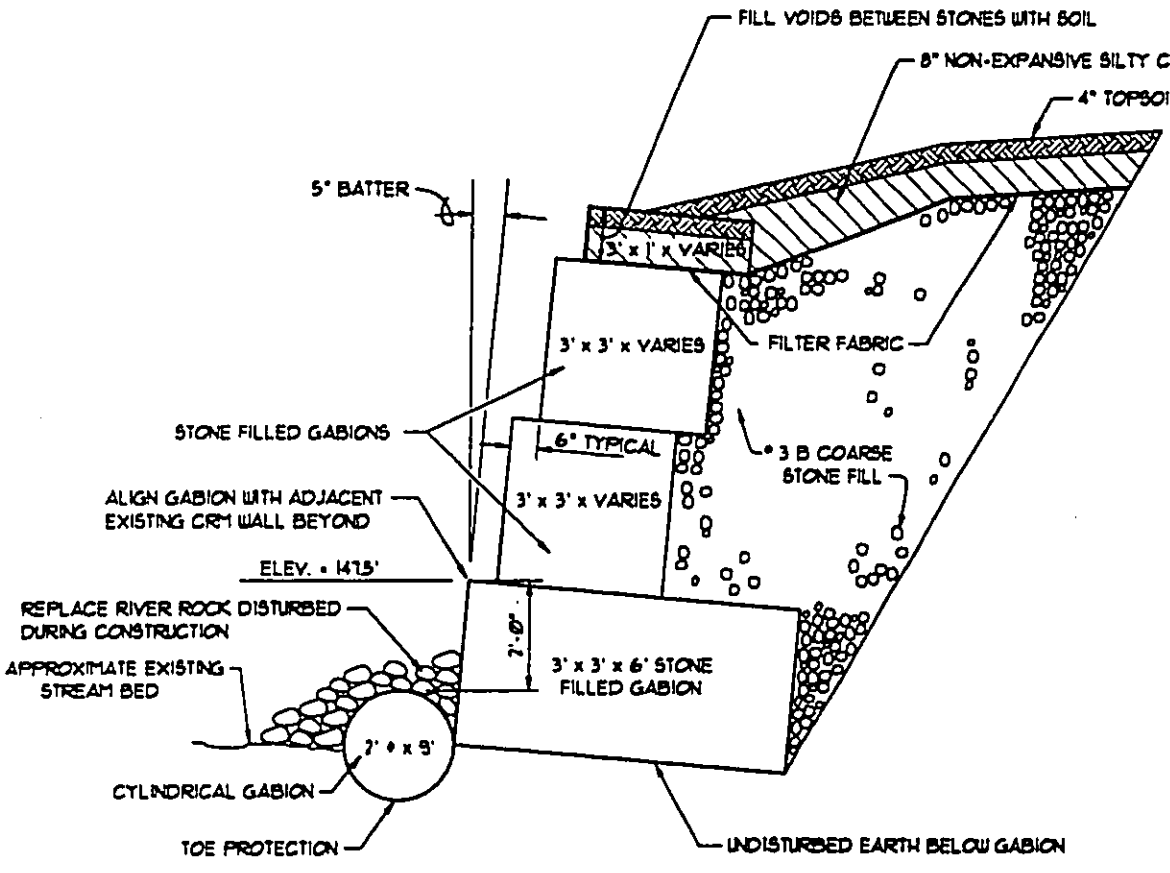
EXHIBIT 7



TYPE - A GABION EMBANKMENT SECTION

SCALE: 3/8" = 1' - 0"

EXHIBIT 8



TYPE - B GABION EMBANKMENT SECTION

SCALE: 3/8" = 1' - 0"

CALCULATIONS

1. Stream Flow Quantity

Floodway data in Table 2 of the Flood Insurance Study, Volume 1, by the Federal Emergency Management Agency, was used to determine the 100-year runoff quantity for Manoa Stream. Calculations follow:

Cross Section	Section Area, A (square feet)	Mean Velocity, v (feet per second)	Flow Quantity Q = Av (cubic feet per second)
R	799	13.8	11,026
S	2,035	5.4	10,989
T	1,461	7.3	10,665
U	1,449	7.3	10,578
V	1,815	5.5	9,983

For this analysis, a flow of 10,580 cfs will be used.

2. Floodway

Six cross-sections across Manoa Stream, fronting the proposed construction, were plotted from the field topographic survey map. (Cross-sections were plotted for both the existing stream profile and the proposed stream profile.) By trial and error, water surface levels were determined using Manning's formula for open channels:

$$Q = \frac{1.486}{n} (A) (R^{2/3}) (S^{1/2})$$

where: Q = quantity of runoff, in cubic feet per second

A = cross-sectional area of waterway, in square feet

$R = \frac{A}{P}$ = hydraulic radius

A = area of cross-section, in square feet

P = wetted perimeter, in feet

S = slope of channel through cross-section, in foot per foot

n = coefficient of roughness of channel surface

Several coefficients of roughness were used in the calculations dependent on the channel conditions. Slope was taken as a constant throughout the channel length. (See following summary and calculation sheets for values used.)

Results of the calculations show that there would be a decrease in stream water surface elevations after the construction of the gabion stabilization wall.

0000 0013 1699

Engineering Solutions, Inc.
98-021 Kamehameha Highway, Suite 211
Aiea, Hawaii 96701

Consulting Engineers
Phone: (808) 488-0477
FAX: (808) 488-3776

Job Title: Manoa Village Embankment Stabilization Wall
TMK: 2-9-26: 05
Job No.: 9520
Date: August 1, 1996

WATER SURFACE ELEVATIONS FOR INSTANTANEOUS CROSS-SECTIONS

*Water surface elevations determined using Manning's Equation
n = 0.035 (unlined channels, natural bed and sides)
n = 0.032 (unlined channels, gabion/rock wall sides)
n = 0.030 (partially lined channel, exist. CRM walls)
*Use Q_{100} = 10,580 cfs (Section ⟨U⟩ from FIRM map Panel No. 120)

	n value		Existing Condition		With Gabion Wall	
Station	Exist.	Proposed	W.S. Elevation (ft)	Velocity (ft/s)	W.S. Elevation (ft)	Velocity (ft/s)
137 + 50	0.035	0.032	159.04	9.1	158.85	9.5
138 + 00	0.034	0.032	157.95	9.4	157.87	9.8
138 + 50	0.030	0.030	159.35	10.3	159.35	10.3

ENGINEERING SOLUTIONS, INC.
CONSULTING ENGINEERS
98-021 Kam Hwy, Suite 211
Aiea, HI 96701
Phone: 488-0477 Fax: 488-3776

Manoa Village Embankment Stabilization Wall
Job No.: 9520
Prepared by: LKH Checked by:
August 1, 1996

FLOW CALCULATIONS FOR EXISTING PROFILES (holding channel slope constant @ s = 0.01 above Sta. 137 + 25))

Station	Water Surf. Elevation	Avg. Slope, S @ section	$S^{1/2}$	Area A (sq. ft.)	Wetted Peri. P (lin. ft.)	Hyd. Radius R = A/P	$R^{2/3}$	Flow $Q = \frac{1.486}{n} AR^{2/3}S^{1/2}$	$V = \frac{Q}{A}$	Remarks
137 + 50	154.00	0.010	0.1000	316.8	102.00	3.106	2.129	2,863		
	156.00	0.010	0.1000	614.3	160.00	3.840	2.452	6,395		
n = 0.035	157.00	0.010	0.1000	796.7	371.70	2.143	1.662	5,623		
	160.00	0.010	0.1000	1343.0	377.40	3.559	2.331	13,290		
	159.00	0.010	0.1000	1161.1	375.40	3.093	2.123	10,465		
	159.10	0.010	0.1000	1179.3	375.60	3.140	2.144	10,736		
	159.03	0.010	0.1000	1166.6	375.46	3.107	2.129	10,546		
	159.04	0.010	0.1000	1168.4	375.48	3.112	2.131	10,573	9.1	**Use W.S. = 159.04**
138 + 00	157.40	0.010	0.1000	1033.1	363.80	2.840	2.005	9,055		
	157.00	0.010	0.1000	944.7	359.60	2.627	1.904	7,862		
n = 0.034	157.10	0.010	0.1000	966.4	359.80	2.686	1.932	8,162		
	158.00	0.010	0.1000	1136.1	359.80	3.158	2.152	10,687		
	157.70	0.010	0.1000	1084.6	359.20	3.020	2.089	9,903		
	157.90	0.010	0.1000	1118.9	359.60	3.112	2.131	10,423		
	157.95	0.010	0.1000	1127.5	359.70	3.135	2.142	10,555	9.4	**Use W.S. = 157.95**
138 + 50	157.80	0.010	0.1000	775.0	336.77	2.301	1.743	6,692		
	159.00	0.010	0.1000	968.3	339.17	2.855	2.012	9,652		
n = 0.030	159.50	0.010	0.1000	1048.8	340.17	3.083	2.118	11,005		
	159.60	0.010	0.1000	1064.9	340.37	3.129	2.139	11,283		
	159.40	0.010	0.1000	1032.7	339.97	3.038	2.097	10,729		
	159.35	0.010	0.1000	1024.6	339.87	3.015	2.087	10,592	10.3	**Use W.S. = 159.35**

ENGINEERING SOLUTIONS, INC.
CONSULTING ENGINEERS
98-021 Kam Hwy, Suite 211
Aiea, HI 96701
Phone: 488-0477 Fax: 488-3776

Manoa Village Embankment Stabilization Wall
Job No.: 9520
Prepared by: LKH Checked by:
August 1, 1996
Sheet 1 of 1

FLOW CALCULATIONS FOR PROPOSED PROFILES (gabion wall, slope = 0.010)

Station	Water Surf. Elevation	Avg. Slope, S @ section	$S^{1/2}$	Area A (sq. ft.)	Wetted Peri. P (lin. ft.)	Hyd. Radius R = A/P	$R^{2/3}$	Flow $Q = \frac{1.486}{n} AR^{2/3}S^{1/2}$	$V = \frac{Q}{A}$	Remarks
137 + 50	158.50	0.010	0.1000	1050.6	383.40	2.740	1.958	9,553		
	158.70	0.010	0.1000	1087.0	384.10	2.830	2.001	10,099		
n = 0.032	158.80	0.010	0.1000	1105.2	384.30	2.876	2.022	10,379		
	158.90	0.010	0.1000	1123.4	384.50	2.922	2.044	10,662		
	158.83	0.010	0.1000	1110.6	384.36	2.890	2.029	10,463		
	158.85	0.010	0.1000	1114.3	384.40	2.899	2.033	10,520	9.5	**Use W.S. = 158.85**
138 + 00	157.70	0.010	0.1000	1044.6	347.40	3.007	2.083	10,106		
	157.80	0.010	0.1000	1061.8	347.56	3.055	2.105	10,381		
n = 0.032	157.90	0.010	0.1000	1078.9	347.67	3.103	2.128	10,660		
	157.87	0.010	0.1000	1073.8	347.70	3.088	2.121	10,574	9.9	**Use W.S. = 157.87**
138 + 50	157.80	0.010	0.1000	775.0	336.77	2.301	1.743	6,692		
	159.00	0.010	0.1000	968.3	339.17	2.855	2.012	9,652		
n = 0.030	159.50	0.010	0.1000	1048.8	340.17	3.083	2.118	11,005		
	159.60	0.010	0.1000	1064.9	340.37	3.129	2.139	11,283		
	159.40	0.010	0.1000	1032.7	339.97	3.038	2.097	10,729		
	159.36	0.010	0.1000	1026.2	339.89	3.019	2.089	10,619		
	159.35	0.010	0.1000	1024.6	339.87	3.015	2.087	10,592	10.3	**Use W.S. = 159.35**

APPENDIX C

REVIEW COMMENTS AND APPROVALS

Federal Agencies

Department of the Army
Operations Branch
U.S. Army Engineering District

Federal Emergency Management Agency
Washington, D.C. 20472

State Agencies

Department of Business, Economic Development & Tourism
Office of Planning

Department of Health
Environmental Management Division

Department of Land and Natural Resources
Commission on Water Resource Management

Department of Land and Natural Resources
Oahu Land Management District Office

Department of Land and Natural Resources
Historic Preservation Division

City and County Agencies

City and County of Honolulu
Department of Public Works

City and County of Honolulu
Department of Land Utilization

Others

Eugene P. Dashiell AICP, Ala Wai Canal Watershed Management Coordinator

Engineering Solutions, Inc.

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DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

RECEIVED
JUN 10 1996

June 7, 1996

REPLY TO
ATTENTION OF

Operations Branch

Mr. Richard E. Frey
Engineering Solutions, Inc.
98-021 Kam Highway, Suite 211
Aiea, HI 96701

Dear Mr. Frey:

This is in response to your May 28, 1996 request for Department of the Army (DA) authorization to construct a 90 foot long gabion embankment for a bank stabilization project in Manoa Stream at East Manoa Road (TMK 2-9-26:05).

Based on your request on behalf of the Manoa Village Association, we have determined that the work can be authorized by the Corps' Nationwide permit (NWP) authority at 33 CFR 330, Appendix A, Paragraph B.13, for Bank Stabilization. No further Department of the Army processing is necessary at this time. However, the DA permit will be valid only after you obtain a Section 401 Water Quality Certification, or waiver thereof, from the State Department of Health, and a Coastal Zone Management Federal Consistency Determination, or waiver, from the Office of State Planning. Until these approvals or waivers are received, we are issuing you a "Provisional Nationwide Permit" for the work.

If the State issues these certifications or waivers, this authorization will take effect from the latter issuance date and will remain valid until the nationwide permit is modified, reissued, or revoked. All of the nationwide permits are scheduled to be modified, reissued or revoked prior to January 21, 1997. At that time, you are responsible for consulting with this office to confirm that your project still complies with the specifications and conditions of NWP #13, including changes or revisions. If the State denies either approval for the proposed project, then this NWP will be denied without prejudice.

Attached are excerpts from the regulations for your information and compliance which include general conditions of the NWP, as well as 404 only conditions (conditions that apply only to the discharge of dredged or fill material).

If you have any further questions, please contact Mr. Alan Everson at 438-9258 extension 11. Refer to File No. 960000218.

Sincerely,

Linda M. Hihara-Endo, Ph.D., P.E.
Acting Chief, Operations Branch

Attachments
Copies Furnished (w/o attachments):
U.S. Environmental Protection Agency, Region IX, ATTN: Jim Branch, 75 Hawthorne Street, San Francisco, CA 94105
Clean Water Branch, Environmental Management Division, Hawaii State Department of Health, P.O. Box 3378, Honolulu, HI 96801-3386
Office of State Planning, Coastal Zone Management Program, P.O. Box 3540, Honolulu, HI 96811-3540
State of Hawaii, Department of Land and Natural Resources, P.O. Box 621, Honolulu, HI 96809
U.S. Fish & Wildlife Service, Environmental Services, P.O. Box 50088, Honolulu, HI 96850
State of Hawaii, Department of Land and Natural Resources, Commission on Water Resource Management, P.O. Box 621, Honolulu, HI 96809
Department of Public Works, City & County of Honolulu, 650 S. King Street, Honolulu, HI 96813

0000 0013 1705

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

February 12, 1997

Operations Branch

RECEIVED
FEB 14 1997

Mr. Richard E. Frey
Engineering Solutions, Inc.
98-021 Kam Highway, Suite 211
Aiea, Hawaii 96701

Dear Mr. Frey:

This is in response to your January 20, 1997, request regarding re-authorization of your provisional Department of Army (DA) permit to construct a 90-foot long gabion embankment for a bank stabilization project in Manoa Stream at East Manoa Road (TMK 2-9-26:05).

The Nationwide permits were revised and reissued on February 11, 1997. Based on the information that you provided, we have determined that the proposed work can be re-authorized by the Corps' Nationwide permit (NWP) for Bank Stabilization. No further Department of the Army processing is necessary at this time. A Section 401 Water Quality Certification (WQC) waiver from the State Department of Health was issued on November 26, 1996. A Coastal Zone Management Federal Consistency Determination from the Office of Planning was issued on January 16, 1997. The conditions of both these approvals are incorporated in and made part of the NWP. This NWP became valid on February 11, 1997, and will remain valid until February 11, 1999.

Enclosed for your information and compliance are the revised general and Section 404 conditions that pertain only to the reissued NWPs.

If you have any further questions, please refer to File Number 960000218 and contact Mr. Alan Everson of my staff at 438-9258, extension 11.

Sincerely,

Linda M. Hihara-Endo, Ph.D., P.E.
Acting Chief, Operations Branch

Enclosures

Copies Furnished (w/o enclosures):
Clean Water Branch, Environmental Management Division, State Department of Health
Office of Planning, Coastal Zone Management Program

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DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

Permit Number: 960000218

Name of Permittee: Richard E. Frey

Date of Issuance: February 11, 1997

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers
Regulatory Branch CEPOD-ET-PO
Building 230
Fort Shafter, HI 96858-5440

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____
Signature of Permittee

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Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFICATION OF A "NO-RISE" DETERMINATION

FOR A PROPOSED FLOODWAY DEVELOPMENT

Honolulu, Oahu, Hawaii
Community Name

Manoa Village
Development Name

TMK 2-9-26:05
Lot/Property Designation

Manoa Village
Homeowner's Association
Property Owner

I hereby certify that the proposed remedial measures, in combination with the property development designated above, will result in no loss of flow conveyance during the occurrence of the 1 percent annual chance of exceedence (100-year flood) discharge.

I further certify that the data submitted herewith in support of this request are accurate to the best of my knowledge, that the analyses have been performed correctly and in accordance with sound engineering practice, and that the proposed structural works are designed in accordance with sound engineering practice.

12 Sept 1996
Date

Registered Professional Engineer

Seal

RICHARD E. FREY
LICENSED PROFESSIONAL ENGINEER
No. 7813-C
HAWAII, U.S.A.

0000 0013 1709

FLOODWAY DISTRICT CERTIFICATION
(Pursuant to Section 7.10 of the Land Use Ordinance)

New Projects, Developments and Substantial Improvements

Project Description: Construction of gabion streambank protection.

Address: 2939 East Manoa Road

City Honolulu State Hawaii Zip 96822

Tax Map Key: 2-9-26: 05

Section I - Flood Insurance Rate Map Information

COMMUNITY NO.	PANEL NO	SUFFIX	DATE OF FIRM	FIRM ZONE	REGULATORY FLOOD ELEV (in AO Zone use depth)	COMMUNITY ESTIMATED REG. FLOOD ELEVATION ESTABLISHED FOR ZONE A IF AVAILABLE
150001	0120	C	9-4-87	AE	160 ft.	not available

Section II - Elevation Information

1. Elevation of Lowest Floor	N/A	ft.
2. Regulatory Flood Elevation	160	ft.
3. Depth Number	N/A	ft.
4. Elevation of Highest Adjacent Grade	N/A	ft.
5. Elevation of Lowest Adjacent Grade	N/A	ft.
6. Elevation to which Structures are Floodproofed	N/A	ft.

Section III - Standard Certification Statement

The plans, specifications and methods of construction for the proposed project are in accordance with accepted standards of practice for meeting the provisions of the Flood Hazard Districts, and:

1) comply with the standards and requirements of the Flood Hazard District Regulations of the Land Use Ordinance;

2) conform to the flood elevations of the Federal Emergency Management Agency Flood Insurance Rate Maps (FIRM);

3) are adequate to resist the regulatory flood forces; do not increase flood elevations; and do not affect flooding on surrounding properties;

4) the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the regulatory flood elevation; and

5) the pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

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Section IV - Certification

Project plans and specifications include:

1) the location of flood hazard boundaries;

2) existing and proposed elevations of the property in relation to the elevation reference marks on the Federal Flood Maps;

3) the flood elevations, velocity and other data from the Federal Flood Maps and study;

4) existing and proposed structures, utilities and improvements; and

5) proposed flood proofing measures and improvements.

This certification is conditioned upon the actual construction of the project being in strict accordance with the plans and specifications as stamped and signed by me.

Affix Seal Below

Certifier's Name Richard Frey
(print or type)

Title Vice-president

Company Name Engineering Solutions, Inc.

Street Address 98-021 Kamehameha Highway, Suite 211

City Aiea State Hawaii Zip 96701

Signature Richard E. Frey Date 9.3.96

Engineer or Architect

RICHARD E. FREY
LICENSED PROFESSIONAL ENGINEER
No. 7813-C
HAWAII, U.S.A.

(0650M.kmy)

11/7/91

0000 0013 1711

BENJAMIN J. CAYETANO
GOVERNOR
SELJI F. NAYA
DIRECTOR
RICK EGGED
DIRECTOR, OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-6454

January 16, 1997

Mr. Richard E. Frey
Vice President
Engineering Solutions, Inc.
98-021 Kamehameha Highway, Suite 211
Aiea, Hawaii 96701

Dear Mr. Frey:

Subject: Hawaii Coastal Zone Management (CZM) Program Federal Consistency for Manoa Stream Bank Stabilization by Manoa Village Homeowner's Association at TMK: 2-9-26: 05; Department of the Army Permit File No. 960000218

Your proposal to construct a gabion erosion protection wall, 90 feet long by 9 feet high, along the Manoa Stream bank fronting the Manoa Village townhouse development has been reviewed for consistency with Hawaii's CZM Program. To reduce pollution from siltation, reduce erosion and potentially reduce flood hazards, we prefer that stream bank stabilization projects be designed with a more natural surface such as ungrouted rip rap, than concrete or grouted structures. The proposed gabion wall is a favorable alternative. On this basis, we concur with your CZM assessment and finding that the activity is consistent with the following conditions.

1. A temporary silt fence will be installed at the bottom of the embankment along the entire length of the project before grading begins, be maintained throughout construction and be removed upon completion.

2. Construction activities, as well as the completed wall, shall comply with State water quality standards and requirements

CZM consistency approval is not an endorsement of the project nor does it convey approval with any other regulations administered by any State or County agency. Thank you for your cooperation in complying with Hawaii's CZM Program. If you have any questions, please call John Nakagawa of our CZM Program at 587-2878.

Sincerely,

Rick Egged
Director
Office of Planning

RECEIVED
JAN 22 1997

0000 00 13 17 12

cc: U.S. Army Corps of Engineers, Operations Branch
U.S. National Marine Fisheries Service, Pacific Area Office
U.S. Fish and Wildlife Service, Pacific Islands Ecoregion
Department of Health, Clean Water Branch
Department of Land & Natural Resources,
Planning & Technical Services Branch
Commission on Water Resource Management
Department of Land Utilization, City & County of Honolulu

0000 0013 1713

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

LAWRENCE MIKE
DIRECTOR OF HEALTH

In reply, please refer to:
EMD/CWB

November 26, 1996

C1113KP

Mr. Mel Miyamoto
Manoa Village Homeowner's Association
2939 East Manoa Road
Honolulu, Hawaii 96822

Dear Mr. Miyamoto:

Subject: **Section 401 Water Quality Certification (WQC)**
Application for Manoa Village Embankment Stabilization
Manoa Valley, Honolulu, Oahu, Hawaii
WQC 345 / Department of the Army File No. 960000218

Based on the application dated September 17, 1996 for a Section 401 Water Quality Certification (WQC) for the subject project and subsequent submittals, the Department of Health ("DOH") understands that the Manoa Village Homeowner's Association ("Applicant") proposes to construct a gabion embankment protection system approximately ninety feet long by nine feet high along the stream bank fronting the 10-unit townhouse association of Manoa Village.

The project feature evaluated by this certification application process shall be limited to the following:

1. Placement of the part of the gabion embankment protection system and stone backing that will be below the mean high water mark of the stream. The gabion embankment protection system consists of prefabricated galvanized steel wire mesh boxes filled on-site with stone approximately 3-6 inches in diameter; and

2. Grading the stream bed in order to install the toe of the gabion embankment system.

The U.S. Army Corps of Engineers (COE), in a letter dated June 7, 1996 has determined that the subject project can be authorized by the COE's Nationwide Permit regulations specified in 33 CFR, Appendix A, Paragraph B.13, Bank Stabilization.

After considering the scope of the proposed project and the COE's determination, DOH has concluded that the potential impact with respect to water quality concerns resulting from the proposed project construction may be considered to be minor.

Therefore, in accordance with Hawaii Administrative Rules (HAR) Section 11-54-09.1.04, the DOH waives the requirements for processing a Section 401 WQC for the subject project with the following conditions:

1. The granting of this Section 401 WQC shall be limited to the discharge of the following to Manoa Stream:

   a. Gabion embankment protection system, including a stone backing, consisting of prefabricated galvanized steel wire mesh boxes filled on-site with stone approximately 3-6 inches in diameter; and

   b. Suspended silt associated with grading activities.

2. The subject activity shall comply with plans, reports, specifications and other related materials submitted in and with the 401 WQC application dated September 17, 1996 and/or later amendments to the application;

3. All mitigative measures shall be properly deployed prior to the commencement of any construction activity and properly maintained throughout the entire period of the construction activity;

4. Materials placed in State waters shall be free of waste metal products, organic materials, debris and any pollutant at toxic or potentially hazardous concentrations to aquatic life, as identified in Section 11-54-04, HAR;

5. Dredged spoils shall be properly stored away from the stream prior to disposal;

6. The construction site shall be maintained to minimize and prevent onsite erosion and construction debris from entering the receiving waters;

7. Any spill or other contamination that occurs at the project site shall be immediately reported to the Clean Water Branch;

8. The applicant shall conduct water quality monitoring in accordance with their monitoring plan dated September 17, 1996 and subsequent revisions;

9. Demolition debris and/or dredged (excavated) spoils shall be removed from the stream environment and be disposed of at the upland State and County approved landfills. The enclosed "Solid Waste Disclosure Form for Construction Sites" shall be completed and returned to the DOH, Office of Solid Waste Management. Construction materials or construction-related materials shall not be stock piled, stored, or placed in the stream environment or in ways that will disturb the aquatic environment;

10. The applicant shall orally notify the DOH, Clean Water Branch on Oahu at 586-4309 at least three (3) days prior to the commencement of the construction activity and invite the DOH to any pre-construction meeting;

11. The following information shall be submitted to the State of Hawaii, DOH, Clean Water Branch:

a. Two (2) copies of the visual inspection reports no later than two (2) weeks after preparation of any such report(s); and

b. Any changes in monitoring locations, frequency, dates or methods or corrections to data already on file with the DOH as such changes or corrections arise.

12. There shall be no discharge, either directly or indirectly, of effluent resulting from construction dewatering, hydrotesting, or any industrial activities (i.e., washdown waters) into State waters. The granting of a Section 401 WQC does not constitute the approval of such effluent discharges into State waters. The applicant must obtain a National Pollutant Discharge Elimination System permit issued under the authorization of Section 402 of the Clean Water Act for authorization to discharge these types of effluent;

13. The effectiveness and adequateness of the implementation of the BMPs shall be reviewed and updated as needed. Any changes to the BMPs or corrections to information already on file with the DOH shall be submitted to the Clean Water Branch for review and comment as such changes and/or corrections arise;

14. The applicant shall inform all contractors of all specifications, BMPs, monitoring plans, and any other requirement related to construction of the subject project as outlined in submittals to the DOH; and

15. The applicant shall notify the DOH upon the termination of the construction activity.

This Section 401 WQC waiver shall remain valid for two (2) years from the date of this letter or until the applicable State Water Quality Standards is revised or modified or the applicable Department of the Army nationwide permit (adopted as of January 21, 1992) expires or is revised or modified, whichever is earliest. If the applicable State Water Quality Standards is revised or modified during the two (2) year period and such that

the activity complies with the revisions or modifications, this waiver shall continue to be valid for the remainder of the two (2) year period.

The Department may, on a case by case basis and upon the applicant's written request, administratively extend the expiration date of the WQC if the Department determines that there are no significant changes to the project scope and the changes will not, either individually or cumulatively, cause adverse impact to the receiving water quality.

Should you have any questions, please contact Ms. Kris Poentis, Engineering Section of the Clean Water Branch, at (808) 586-4309.

Sincerely,

THOMAS E. ARIZUMI, P.E., CHIEF
Environmental Management Division

KP:auc

Enclosure: Solid Waste Disclosure Form for Construction Sites

c: U.S. Army Corps of Engineers, Honolulu District (w/o encl.)
U.S. Environmental Protection Agency, Region 9 (W-7) (w/o encl.)
U.S. Fish and Wildlife Service (w/o encl.)
Office of Planning, State Department of Business, Economic Development, and Tourism (w/o encl.)
Richard Frey, Engineering Solutions (w/o encl.)

0000 0013 1718

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

October 31, 1996

MEMORANDUM

LOG NO: 18406
DOC NO: 9610EJ28

TO: Rae M. Loui, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator
Historic Preservation Division

SUBJECT: **Application for a Stream Channel Alteration Permit, Manoa Village Homeowners Association, Gabion Wall Streambank Stabilization, Manoa Stream**
Manoa, Honolulu, Kona, O'ahu
TMK: 2-9-26:05

Thank you for the opportunity to review this project which proposes construction of 90 linear fee of gabion embankment erosion control. A review of our records shows that there are no known historic sites at the project location, although no archaeological survey has been conducted in this area. Although it is possible that historic sites once existed in the flats above the stream it is unlikely that traditional Hawaiian agriculture was practiced in the stream banks affected by this project. Therefore we believe that this project will have "no effect" on historic sites.

It is possible that historic sites, including human burials, will be uncovered during routine construction activities. Should this be the case all work in the vicinity must stop and the Historic Preservation Division must be contacted at 587-0047.

If you have any questions please call Elaine Jourdane at 587-0015.

EJ:jk

Post-it® Fax Note 7671	Date 8/26/97	# of pages ▶ 1
To Michael Chee	From Elaine Jourdane	
Co./Dept.	Co.	
Phone #	Phone # 587-0015	
Fax # 521-9052	Fax #	

OCT 31 1996

0000 0013 1719

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE
DIRECTOR AND CHIEF ENGINEER

IN REPLY REFER TO:
96-12-0623

September 16, 1996

RECEIVED
SEP 18 1996

Engineering Solutions, Incorporated
98-021 Kamehameha Highway, Suite 211
Aiea, Hawaii 96701

Attention: Mr. Richard E. Frey

Gentlemen:

Subject: Drainage Report for Manoa Village Embankment Stabilization Wall
TMK: 2-9-26: 05

We have reviewed your drainage report and find it acceptable. We will retain a copy of the drainage report for our files.

Since the project is located in the State owned Manoa Stream, the Department of Public Works will not be reviewing the construction plans for the project. Therefore, we are returning the construction plans which you have submitted.

If you have any questions, please contact Dennis Toyama of the Division of Engineering at 523-4756.

Very truly yours,

KENNETH E. SPRAGUE
Director and Chief Engineer

Enclosure

0000 0013 1720

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

JEREMY HARRIS
MAYOR

PATRICK T. ONISHI
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

1996--Flood Misc. (MS)

October 1, 1996

RECEIVED
OCT 3 1996
OCT 1 1996

Mr. Richard E. Frey
Engineering Solutions, Inc.
98-021 Kam Highway, Suite 211
Aiea, Hawaii 96701

Dear Mr. Frey:

Certification of "No-Rise" Determination
Manoa Village Embankment Stabilization Wall
2939 East Manoa Road, Honolulu, Hawaii
Tax Map Key: 2-9-26: 5

This is to inform you that we have no objections to your submitted floodway certification and "No-rise" certification for the subject project. The drainage report was reviewed and accepted by the Department of Public Works (DPW) on September 16, 1996 (see attached copy of their letter).

The DPW has also indicated that a grading permit may not be required as long as the work involves less than 50 cubic yards of material, in which case the construction plans would not need to be signed by them. However, a building permit may still be necessary, and you shall contact the Building Department to ascertain their requirements for this project.

To expedite the issuance of any required permits, it is recommended that you attach copies of the floodway certification and "No-rise" certification to your permit applications.

The proposed embankment stabilization wall will be placed within a portion of Manoa Stream that is owned by the State of Hawaii, and may result in alteration to the stream channel. Therefore, please contact the Commission on Water Resource Management at the State Department of Land and Natural Resources since you may need to obtain a stream channel alteration permit.

This letter does not imply the approval of permits for this project. They are subject to separate review and approval. You are still responsible for complying with all applicable laws and regulations, and for obtaining all the approvals or permits required. Should you have any questions, please contact Mr. Mario Siu-Li of my staff at 523-4247.

Very truly yours,

PATRICK T. ONISHI
Director of Land Utilization

PTO:ky
(manoa.msl)
Attachment
cc: Department of Public Works
Building Department

0000 0013 1722

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

MICHAEL D. WILSON
CHAIRPERSON

ROBERT G. GIRALD
DAVID A. NOBRIGA
LAWRENCE H. MIKE
RICHARD H. COX
HERBERT M. RICHARDS, JR.

RAE M. LOUI, P.E.
DEPUTY

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

December 18, 1996
Honolulu, Oahu

Manoa Village Homeowner's Association
Application for a Stream Channel Alteration Permit
Construction of a Gabion Retaining Wall
Manoa Stream, Honolulu, Oahu (TMK 2-9-26:05)

Applicant:

Manoa Village Homeowner's Association
2939 East Manoa Road
Honolulu, Hawaii 96822

Landowner:

Same

DESCRIPTION:

This application for a stream channel alteration permit is to construct a gabion retaining wall in Manoa Stream (Exhibit 1). Exhibits 2 and 3 show a plan view of existing conditions and the proposed work. Exhibit 4 shows a typical cross section of the retaining wall and the configuration of the gabion baskets. Exhibits 5 shows how gabion baskets are assembled.

The project involves construction of a gabion embankment protection system approximately ninety feet long by nine feet high (90 feet x 9 feet). Gabions are prefabricated galvanized steel wire-mesh box-shaped baskets. These baskets are filled on-site with stone and may be used for retaining walls, slope pavings, or river bank protection. The river bank protection proposed will use variable-sized gabion baskets stacked one upon another. A 2 feet diameter by 9 feet long cylindrical gabion basket will be used at the toe of the bottom basket for additional protection. The completed wall would then be topped with soil and seeded.

To control silt, sediment, and other construction debris in the stream during construction, a silt/debris fence will be erected at the bottom of the embankment along the entire length of the project. The fence will be checked periodically for silt and debris and cleaned as necessary. This silt fence will be erected before grading commences and remain in place until final inspection is completed.

The applicant estimates the project will require 93 cubic yards of stone fill and 120 cubic yards of gabions. The excavated material will be used for backfilling.

The applicant estimates construction work to start in March 1997, and the work will last approximately a month.

AGENDA 1
Item 3

Staff Submittal December 18, 1996

BACKGROUND:

On September 24, 1996 the applicant submitted a completed application to the Commission. The Manoa Village Residents Association indicate that over the last 16 years they have seen considerable erosion on Manoa Stream in an area fronting their property. They indicate that what was once a gentle slope leading from their property to the stream's edge is now a steep cliff, eroded and exposing tree roots. They propose to construct a gabion wall to control the erosion.

Exhibit 1 shows the location of the project along Manoa Stream.

ISSUES/ANALYSIS:

The Division of Aquatic Resources (DAR) indicates the applicant should take appropriate measures to minimize erosion and siltation to the extent possible and precautions should be taken to minimize water pollution. DAR recommends the applicant start the project in the summer months rather than in March 1997. To address whether delaying the start of the project to the summer rather than March, the staff reviewed the rainfall data from the Manoa Tunnel rain gage. The rainfall data (Exhibit 7) shows the number of days with rainfall exceeding 1 inch is 4 days/month for March; and 3, 2, and 4 inches for June July and August, respectively. There will be several rainfall events exceeding 1 inch in March as well as for each of the summer months. Therefore, it would be difficult to justify requiring the applicant to construct in the summer months.

In addition to reviewing rainfall data, the staff also discussed the applicant's Best Management Practice Plan (BMPP) with the applicant and the Department of Health. The applicant revised its BMPP by limiting the work in the bed of the stream to 8 days. The staff believes that the BMPP and/or the county grading permit are the appropriate administrative mechanisms to address erosion control and minimizing water pollution. Therefore, the staff did not make any special recommendations or permit conditions to require the applicant to work only during the summer months.

Although the City and County of Honolulu, Department of Pubic Works (DPW) accepted the drainage calculations, the DPW indicates it will not review the construction plans for the project (See Exhibit 6) because the project is on State land. However, the Land Division would like to see that the proposed retaining wall be built entirely on private property.

In addition, the staff also reviewed the City and County of Honolulu's drainage (Article 12, Revised Ordinance of Honolulu (ROH)) and erosion control (Articles 13, 14 and 15 ROH) ordinances for language which exempts projects on State land from DPW's review. Such language was not found. These findings were discussed with the staff at the DPW, and they concurred that the applicant must obtain approvals for drainage and erosion control from DPW. A special condition is added to this permit requiring the applicant to submit written documentation from the DPW indicating compliance with flood and erosion control ordinances.

A special condition has been added to the permit requiring the applicant to locate the wall on Manoa Village Association's property. This condition requires the applicant to submit final working drawings indicating the location of the gabion retaining wall with respect to the property line.

Staff Submittal December 18, 1996

RECOMMENDATION:

That the Commission on Water Resource Management approve the stream channel alteration permit for the construction of a gabion wall at Manoa Stream (TMK: 2-9-26:05), Honolulu, Oahu. The permit will be subject to the standard conditions for stream channel alteration permits (Exhibit 8) and the following special conditions:

1. Prior to construction activities the applicant shall submit to the Commission written documentation indicating compliance with the City and County of Honolulu's drainage and erosion control ordinances.

2. Prior to any construction work on the gabion retaining wall, the applicant shall submit their construction plans to the Land Division and obtain appropriate written documentation from the Land Division indicating that the proposed construction work is not located on State lands. A copy of this documentation shall be submitted to the Commission prior to any construction work on the gabion wall.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachments

Exhibit 1 - Location Map
Exhibit 2 - Existing Site Plan
Exhibit 3 - Proposed Site Plan
Exhibit 4 - Gabion Embankment Section
Exhibit 5 - Gabion Instructions for Assembly and Erection
Exhibit 6 - Letter from C & C of Honolulu accepting drainage report
Exhibit 7 - Monthly and Annual Means Data
Exhibit 8 - Standard Stream Channel Alteration Permit Conditions

0000 00 13 1725

ugene P. Dashiell AICP
A WAI CANAL WATERSHED MANAGEMENT COORDINATOR
1 outh King St., Suite 951
n lu, Hawai'i 96814

Telephone/FAX: 808.593.8330
lephone/Voice-mail/Pager: 256.4112
E-mail: dashiell@lava.net

Member, American Institute of Certified Planners

October 21, 1998

Gordon Smith
DOH Environmental Planning Office
919 Ala Moana Blvd, 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Smith:

Subject: **Manoa Channel Alteration -- Manoa Village Gabion Proposed Project**

The proposed project which uses gabions to stabilize an eroding section of Manoa Stream is a good solution to a difficult problem. The problem is that Manoa Stream is not a natural channel, it has been channelized during the development process of Manoa Valley. I believe that the community is fortunate that the stream has not been lined with concrete -- the typical response to the need for improved drainage in the past. As a result Manoa Stream provides a somewhat natural greenbelt through the heart of Manoa Valley and is a physical feature treasured by residents and visitors, and which is reflected in the higher property values of this community. Furthermore, Manoa Stream is very much a live and healthy stream, with native species present, although the base flow could be higher and we need to do all that we can to preserve this and restore this stream which flows through the center of Honolulu, into the Ala Wai Canal, one of Waikiki's most notable landmarks and in itself an historic waterway in need of water quality improvement.

The proposed project acknowledges the value of Manoa Stream to the community by providing an environmentally friendly solution to the difficult problem of continued erosion which threatens the existing development at this location. Gabions provide for ground water flow from land into the stream, they present a rough and textured appearance which better resembles nature than does concrete, and they provide a medium for vegetation growth (something concrete does not do). The design of the proposed project provides for the top of the gabion wall-structure to be planted with vegetation which will create a vegetative strip along the stream bank. This will be helpful to filter non-point source pollutants from overland flow into the stream.

The proposed project is typical of the type of Best Management Practice which I have recommended to the City with regard to the erosion problem along Manoa Stream adjacent to the Manoa Recreation Center play field. Please consider my comments and forward them to the appropriate permitting authority. I recommend approval of the proposed project.

Sincerely yours,

Eugene P. Dashiell

Copies: A. Ho, DPW; R. Frey, Engineering Solutions, Inc; M. Miyamoto, Manoa Village Homeowner's Assoc.

ENGINEERING SOLUTIONS, INC. • *Civil / Sanitary / Structural Engineers*

Project No. 9520

26 August 1997

Mr. Michael Chu
LP&D Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

Dear Mr. Chu:

SUBJECT: Manoa Village Homeowner's Association
Stream Bank Protection
TMK 2-9-26:05
Manoa Stream, Honolulu, Oahu

The proposed stream bank protection work is located on the outside bend of Manoa stream at this site. Erosion of stream banks typically occurs on the outside bend where a stream changes direction, with deposition occurring on the inside of the bend. Based on this fundamental behavior of stream flow, we expect this project to cause no erosion of the stream bank opposite this project.

In addition, the adjacent banks immediately upstream and downstream of this project have had protective structures installed in the past and no visible erosion has occurred on the opposite stream bank.

Sincerely,

ENGINEERING SOLUTIONS, INC.

Richard E. Frey, AIA/PE
Vice President

213 Pearlridge Center, Uptown • 98-1005 Moanalua Road • Aiea, Hawaii 96701 • Telephone: (808) 488-0477 • Fax: (808) 488-3776

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Appendix D

Comments and Responses, Draft EA

0000 0013 1728

MANOA VILLAGE ASSOCIATION ENVIRONMENTAL ASSESSMENT DISTRIBUTION LIST

DRAFT EA PUBLICATION DATE: JANUARY 23, 1998, OEQC BULLETIN
PUBLIC REVIEW PERIOD: JANUARY 23- FEBRUARY 23, 1998

MR. SEIJI NAYA, DIRECTOR
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
250 S. KING ST. 9TH FLR.
HONOLULU, HI 96813

MR. DON HIBBARD, ADMINISTRATOR✓
DEPARTMENT OF LAND & NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
33 SOUTH KING STREET, 6TH FLR.
HONOLULU, HI 96813

ME. BRUCE S. ANDERSON, PhD. ✓
DEPUTY DIRECTOR FOR ENVIRONMENTAL HEALTH
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HI 96801

GARY GILL✓
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BETERANIA STREET SUITE 702
HONOLULU, HI 96813

UNIVERSITY OF HAWAII
WATER RESOURCES RESEARCH CTR.
2540 DOLE ST. HOLMES HALL 283
HONOLULU, HI 96822

MR. PAUL MIZUE, P.E. ✓
ACTING CHIEF PLANNER
DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEERING DISTRICT, HONOLULU
FORT SHAFTER, HI 96858

MS. JAN NAOE SULLIVAN, DIRECTOR✓
DEPARTMENT OF LAND UTILIZATION
650 S. KING ST.
HONOLULU, HI 96813

MR. JOHNATHAN K. SHIMADA, PhD. ✓
DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS
650 S. KING ST.
HONOLULU, HI 96813

HONOLULU POLICE DEPARTMENT
1455 S. BERETANIA ST.
HONOLULU, HI 96813

MR. PATRICK ONISHI, CHIEF PLANNING OFFCER✓
DEPARTMENT OF PLANNING
650 S. KING ST.
HONOLULU, HI 96813

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MR. BRIAN BARON, CHAIR
MANOA NEIGBORHOOD BOARD
C/O NEIGHBORHOOD COMMISSION
530 S. KING ST. RM. 400
HONOLULU, HI 96813

MR. RANDALL OGATA✓
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BLVD. SUITE 500
HONOLULU, HI 96813

MR. ART BAUCKHAM
DEPARTMENT OF HEALTH
ENVIRONMENTAL PLANNING
919 ALA MOANA BLVD. RM. 312
HONOLULU, HI 96814

MR. DAVID FRANKEL✓
SIERRA CLUB
P.O. BOX 2577
HONOLULU, HI 96803

MR. EUGENE P. DASHIELL✓
1314 SOUTH KING STREET SUITE 951
HONOLULU, HI 96814

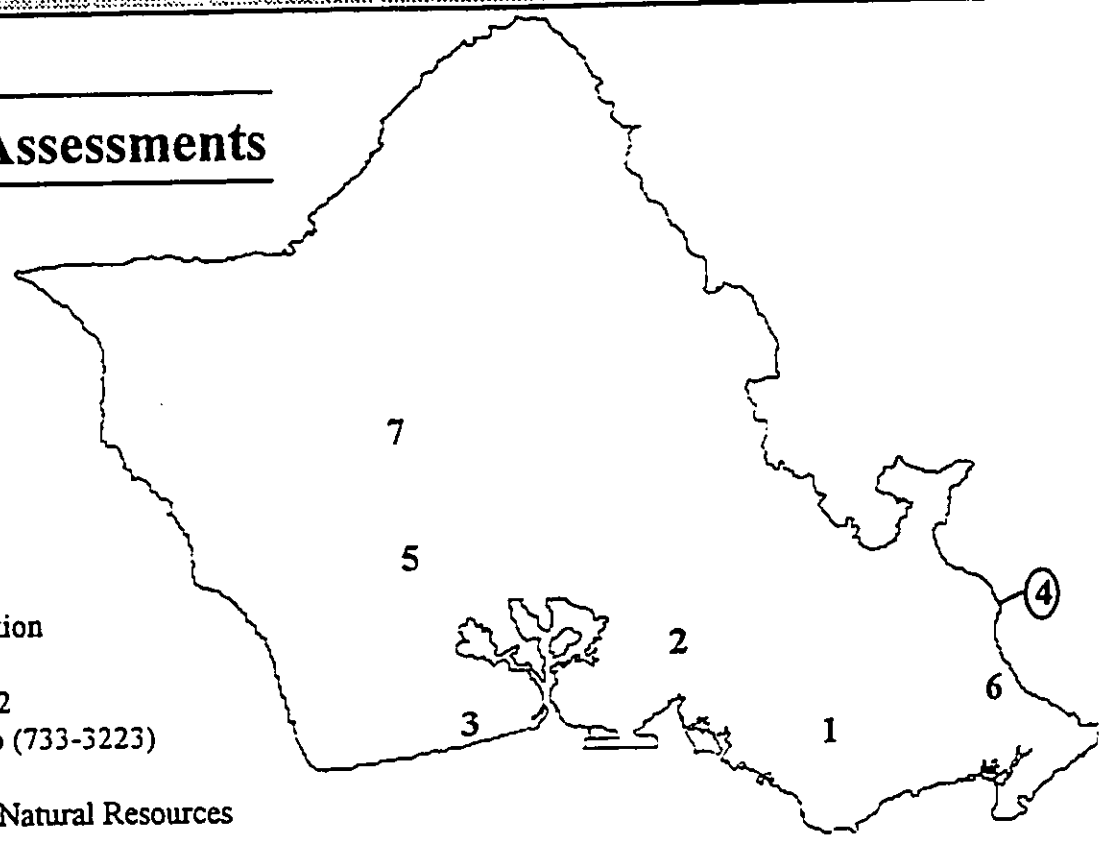
✓ indicates comment letters received

****

Oahu Notices

JANUARY 23, 1997

Draft Environmental Assessments



(1) Manoa Stream Bank Erosion and Stabilization Structure

District: Honolulu
TMK: 2-9-26:04 & 05
Applicant: Manoa Village Association
2939 East Manoa Road
Honolulu, Hawaii 96822
Contact: Mel Miyamoto (733-3223)
Approving Agency/Accepting Authority: Department of Land & Natural Resources
1151 Punchbowl St.
Honolulu, Hawaii 96813
Contact: Cecil Santos (587-0433)
Consultant: LP & D Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813
Contact: Michael Chu (537-4674)
Public Comment Deadline: February 23, 1998
Status: DEA First Notice pending public comment. Address comments to the applicant with copies to the approving agency or accepting authority, the consultant and OEQC.
Permits Required: 401 WQC, grading, stream channel alteration

An improvement project consisting of an erosion and stabilization structure and landscaping is proposed by the Manoa Village Homeowner's Association (applicant). This project is proposed to alleviate erosion that has been steadily occurring along a section of an exposed embankment at Manoa Stream. The project will occur primarily on State land, but shall be funded and constructed by the applicant. It is anticipated that the project will result in improvements to the stream flow, a reduction in erosion and siltation, and will protect the adjacent Manoa Village site from property loss and hazards associated with storm conditions and heavy stream flows.

In proposing the work, the applicant petitions the State of Hawaii for the granting of a retailing wall and landscaping easement (approximately 1550 sf) and necessary approvals that will allow the applicant to construct the proposed erosion and stabilization structure on State property.

Generally, the project will consist of site grading and the construction of a "wall-like" structure along 90 linear feet of Manoa Stream. The applicant proposes to utilize a "gabion" embankment system. It will consist of steel wire mesh baskets which are filled with loose stones and are stacked, in a battered fashion, to a height of approximately 9 feet. The structure will be approximately 90 feet in length and will be located between two existing wall structures.

(2) Moanalua Nonpotable Well

District: Ewa
TMK: 1-1-012:013
Applicant: City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843
Contact: Barry Usagawa (527-5235)

BENJAMIN J. CAYETANO
GOVERNOR

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

February 23, 1998

Mr. Mel Miyamoto
Mānoa Village Association
2939 East Mānoa Road
Honolulu, Hawai'i 96822

Dear Mr. Miyamoto:

Having reviewed the Draft Environmental Assessment (DEA) for a proposed erosion and stabilization structure, a gabion embankment system along a 90 foot section of Mānoa Stream on State land (at Tax Map Key 2-9-26-04) for the Manoa Village Association, Mānoa, O'ahu, we submit the following comments for your response.

1) The significance criteria (found in Section 11-200-12, Hawai'i Administrative Rules), were revised and became effective on August 31, 1996. Please re-evaluate significance according to the revised criteria.

Please submit a copy of this memorandum, any other comment letters and your responses to the Department of Land and Natural Resources for their inclusion in the final environmental assessment for this project. If there are any questions, please call Leslie Segundo of my staff at 586-4185. Thank you for the opportunity to comment.

Sincerely,

GARY GILL

Enclosure

c: Mr. Cecil Santos, State of Hawai'i, Dept. of Land & Natural Resources
Mr. Michael S. Chu, LP&D Hawaii

Land Planning & Design Hawaii

LP&D Hawaii

LAND PLANNING & SITE DESIGN ▼ LANDSCAPE ARCHITECTURE ▼ ENVIRONMENTAL STUDIES
126 Queen Street, Suite 306 ▼ Honolulu, Hawaii 96813 ▼ ph: 808/ 537-4674 ▼ fx: 808/ 521-9054

27 February 1998

Mr. Gary Gill
Office of Environmental Quality Control
235 South Beretania St. Suite 702
Honolulu, Hawaii 96813

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Mr. Gill:
Thank for your comments of February 23, 1998 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand that section 6.1 of our report did not include the two additional significance criteria that were adopted in August 1996. Our final EA will be revised accordingly and will discuss all 13 items contained in Section 11-200-12, Hawaii Administrative Rules.

Yours Truly

MICHAEL S. CHU

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865

February 17, 1998

Mr. Mel Miyamoto
Manoa Village Association
2939 East Manoa Rd.
Honolulu, HI 96822

Doc. No. EIS-137

Subject: Draft Environmental Assessment (DEA) for Manoa Stream Bank Erosion and Stabilization Structure, Island of Oahu

Dear Mr. Miyamoto:

Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for Manoa Stream Bank Erosion and Stabilization Structure, Island of Oahu. The applicant, Manoa Village Homeowner's Association, is proposing to build a physical structure on a portion of the Manoa stream to ameliorate the adverse effects of high stream flow. Portions of the proposed structure will be built on State property as well as private property but the entire project will be financed with private funds.

The Office of Hawaiian Affairs has no concerns at this time to the proposed erosion control measure. Please contact Colin Kippen (594-1938), LNR Officer, or Luis Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,

Randall Ogata
Administrator

for Colin Kippen
Officer,
Land and Natural
Resources Division

cc: Board of Trustees

Land Planning & Design Hawaii
LP&D Hawaii
LAND PLANNING & SITE DESIGN ▾ LANDSCAPE ARCHITECTURE ▾ ENVIRONMENTAL STUDIES
126 Queen Street, Suite 306 ▾ Honolulu, Hawaii 96813 ▾ ph 808/ 537-4674 ▾ fx 808/ 521-9054

27 February 1998

Mr.Randall Ogata
Office of Hawaiian Affairs
711 Kapiolani Blvd. Suite 500
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Ogata:
Thank for your comments of February 17, 1998 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand from your letter that the Office of Hawaiian Affairs has no concerns at this time.

Your comment letter and our response to you shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

BENJAMIN J CAYETANO

LAWRENCE MIKE

STATE OF HAWAII
DEPARTMENT OF HEALTH
P O BOX 3378
HONOLULU HAWAII 96801

In reply please refer to

February 5, 1998 98-014/epo

Mr. Michael Chu
LP & D Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

Dear Mr. Chu:

Subject: Draft Environmental Assessment (DEA)
Manoa Stream Bank Erosion and Stabilization Structure
2939 East Manoa Road
Honolulu, Hawaii
TMK: 2-9-26: 4 & 5

Thank you for allowing us to review the subject DEA. At this time we do not have any comments to offer.

Sincerely,

Bruce S. Anderson, Ph.D.
Deputy Director for Environmental Health

Land Planning & Design Hawaii

LP&D Hawaii

LAND PLANNING & SITE DESIGN ▾ LANDSCAPE ARCHITECTURE ▾ ENVIRONMENTAL STUDIES
126 Queen Street, Suite 306 ▾ Honolulu, Hawaii 96813 ▾ ph: 808/ 537-4674 ▾ fx: 808/ 521-9054

27 February 1998

Mr. Bruce S. Anderson, PhD.
Deputy Director
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Mr. Bruce S. Anderson, PhD.:
Thank for your comments of February 5, 1998 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand that your department has no comments to offer at this time.

Your letter shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 11TH FLOOR • HONOLULU HAWAII 96813
PHONE (808) 523-4341 • FAX (808) 527-5857

JEREMY HARRIS
MAYOR

JONATHAN K SHIMADA PhD
DIRECTOR AND CHIEF ENGINEER
ROLAND D LIBBY JR
DEPUTY DIRECTOR

ENV 97-244

November 5, 1997

Mr. Michael S. Chu
LP&D Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

Dear Mr. Chu:

Subject: Draft Environmental Assessment (DEA)
Manoa Village Association
TMK: 2-29-26:05

We have reviewed the subject DEA and have no comments to offer at this time.

If you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at 523-4150.

Very truly yours,

JONATHAN K. SHIMADA, PhD
Director and Chief Engineer

Land Planning & Design Hawaii
LP&D Hawaii
LAND PLANNING & SITE DESIGN ▼ LANDSCAPE ARCHITECTURE ▼ ENVIRONMENTAL STUDIES
126 Queen Street, Suite 306 ▼ Honolulu, Hawaii 96813 ▼ ph: 808/ 537-4674 ▼ fx: 808/ 521-9054

27 February 1998

Mr. Johnathan K. Shimada, PhD, Director and Chief Engineer
Department of Public Works
650 South King Street
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Dr. Shimada:
Thank for your comments of November 5, 1997 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand that your department has no other comments to offer.

Your comment letter shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 8TH FLOOR • HONOLULU HAWAII 96813 3017
PHONE (808) 523 4711 • FAX (808) 523 4950

JEREMY HARRIS
MAYOR

PATRICK T ONISHI
CHIEF PLANNING OFFICER

DONA L HANAIKE
DEPUTY CHIEF PLANNING OFFICER

TH 10/97-2091

November 18, 1997

Mr. Michael S. Chu, ASLA
Land Planning and Design Hawaii, Ltd.
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

Dear Mr. Chu:

Draft Environmental Assessment (DEA) for
the Manoa Village Association, Honolulu,
Oahu, Hawaii, Tax Map Key: 2-29-26: 05

We have reviewed the subject DEA and have no comments to offer on the proposed project.

Thank you for the opportunity to comment on this matter. Should you have any questions, please contact Tim Hata of our staff at 527-6070.

Yours very truly,

PATRICK T. ONISHI
Chief Planning Officer

PTO:ft

Land Planning & Design Hawaii
LP&D Hawaii

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126 Queen Street, Suite 306 ▼ Honolulu, Hawaii 96813 ▼ ph: 808/ 537-4674 ▼ fx: 808/ 521-9054

27 February 1998

Mr.Patrick Onishi, Chief Planning Officer
Planning Department
650 South King Street
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Patrick Onishi:
Thank for your comments of November 18, 1997 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand that your department has no other comments to offer.

Your comment letter shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 7TH FLOOR • HONOLULU HAWAII 96813
PHONE (808) 523-4414 • FAX (808) 527-6743

JEREMY HARRIS
MAYOR

JAN NAOE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

97-07800(AC/SHC)
'97 EA Comments Zone 2

November 21, 1997

Mr. Michael S. Chu
Land Planning & Design Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

Dear Mr. Chu:

Draft Environmental Assessment (EA) For
Manoa Village Association
Tax Map Key: 2-9-26: 04

We have reviewed the above document transmitted via your letter dated October 18, 1997 and find that the project is not within the Special Management Area.

We have no other comments to offer at this time. Should you have any questions, please contact Art Challacombe of our Environmental Review Branch at 523-4107.

Very truly yours,

JAN NAOE SULLIVAN
Director of Land Utilization

JNS:am

g:ppd\9707800.ehc

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26 February 1998

Ms. Jan Naoe Sullivan, Director
Department of Land Utilization
650 South King Street
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Ms. Sullivan:
Thank for your comments of November 21, 1997 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand that your department finds the project to be outside the Special Management Area and that you have no other comments to offer.

Your comment letter shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND DIVISION
STATE PARKS
WATER AND LAND DEVELOPMENT

November 5, 1997

Michael S. Chu
Land Planning & Design Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

LOG NO: 20429
DOC NO: 9710EJ29

Dear Mr. Chu:

SUBJECT: Chapter 6E-42 Historic Preservation Review--Draft Environmental Assessment Manoa Village Association Erosion and Stream Bank Stabilization
Manoa, Kona, O'ahu
TMK: 2-29-26:05

Thank you for the opportunity to review the draft EA for this project. Our comments that this project will have "no effect" on historic sites is incorporated in Appendix C of the DEA. We have no further comments.

Aloha,

Don Hibbard, Administrator
Historic Preservation Division

EJ:jk

Land Planning & Design Hawaii

LP&D Hawaii

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27 February 1998

Mr. Don Hibbard, Administrator
Department of Land and Natural Resources
Historic Preservation Division
33 South King Street 6th Flr.
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Don:
Thank for your comments regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

Based on your letters of October 31, 1996 and November 5, 1997, it is understood that the proposed project will have no effect on historic sites.

Both letters shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

DEPARTMENT OF THE ARMY
U S ARMY ENGINEER DISTRICT, HONOLULU
FT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

October 30, 1997

Planning and Operations Division

Mr. Michael S. Chu
LP&D Hawaii
126 Queen Street, Suite 306
Honolulu, Hawaii 96813

Dear Mr. Chu:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Manoa Village Project, Oahu (TMK 2-29-26: 05). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Our Regulatory Section issued a DA permit for this project on February 11, 1997. Should you require additional information, please contact Mr. Alan Everson at 438-9258 and refer to file number 960000218.

b. The flood hazard information provided on page 3-2 of the DEA is correct.

Sincerely,

Paul Mizue, P.E.
Acting Chief, Planning
and Operations Division

Land Planning & Design Hawaii

LP&D Hawaii

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27 February 1998

Mr. Paul Mizue, P.E.
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858-5440

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Mr. Mizue:
Thank for your comments to the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream.

We understand that you find the information contained in our EA regarding flood hazards is correct. The DA permit for this project, issued by your Regulatory Section on February 11, 1997, as well as your comment letter shall be included in our final EA report.

Yours Truly

MICHAEL S. CHU

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
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CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

'98 JAN -7 A10:50

REF LD JGD

To: Dean Y. Uchida, Administrator
Land Division

From: Cecil B. Santos
Oahu District Land Agent

Subject: Draft Environmental Assessment for an Erosion and Stabilization Structure on the Banks of Manoa Stream on State-Owned Land Situate at Manoa Stream, Manoa, Honolulu, TMK: 1st/2-9-26:04 & 05

The environmental assessment is for a "gabion" embankment system consisting of steel wire mesh baskets filled with loose stones and stacked to a height of approximately nine feet. This is necessary to stabilize the bank of Manoa Stream and protect the Manoa Village site from damage due to stream erosion.

We plan to request the Land Board for a term easement for the structure as the project will occur on State land. The Manoa Village Homeowner's Association will entirely fund the project and manage construction. It is anticipated that the project will aid stream flow, reduce erosion and siltation and will protect the Manoa Village site from property loss.

Should you have any questions, please feel free to contact me at 7-0433.

cc: Mr. Matsumoto

Eugene P. Dashiell
1314 So. King St., Ste. 95
Honolulu, HI 96814 USA
Tel/Fax: 593-8330
e-mail: dashiell@lava.net
http://inix.com/alawai

COORDINATOR
ALA WAI CANAL WATERSHED WATER QUALITY IMPROVEMENT PROJECT

Manoa Village Association
2939 East Manoa Road
Honolulu, HI 96822
Attn: Mr. Mel Miyamoto

January 15, 1998

Dear Mr. Miyamoto:

Subject: Manoa Village Association, Environmental Assessment – Manoa Stream, Bank Erosion and Stabilization Structure.

1) I support the project and stand by my original letter which is included in your EA. However, I recommend that the project be constructed on private land, not on public land.

2) I concur with the recommendation of the Water Commission and the Land Division of the Department of Land and Natural Resources that the project be constructed on private land.

3) I have included a copy of our management and implementation plan which recommends that Manoa (and Makiki and Palolo) streams be restored to a more natural condition and that opportunities for public access be increased. The reasons for these recommendations are that in the process of watershed management, it is up to community members to regain stewardship of the waterways and drainage areas to reduce the contaminants which now enter streams. Under present circumstances, the public is generally unaware that this is a public section of Manoa Stream – which is quite beautiful and a remnant of the natural original stream.

4) I look to private land owners such as yourselves, with strong investments in this community, as a group of people who value the natural attributes of this stream and who recognize the added value to your quality of life and property, in spite of the erosion and flood problems you may have encountered. I hope you will support the broader community to achieve the goals of making Manoa Stream a more valuable aquatic habitat, and more accessible, at the very least visually, if not physically.

5) Please call if you have questions.

Sincerely yours,

Eugene P. Dashiell

Copies (via FAX): A. Ho, DPW; J. Harrigan, DOH; OEQC; DLNR

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27 February 1998

Mr. Eugene P. Dashiell
1314 S. King St. Suite 951
Honolulu, HI 96814

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear Mr. Dashiell:
Thank you for your comments of October 21, 1996 in which you recommended approval of the proposed project; and your second letter of January 15, 1998 in response to the draft Environmental Assessment.

Our response to the 4 points you raised are addressed as follows:

1. We understand from your first letter of 10/21/96 that you find the usage of gabions as a "good solution to a difficult problem" and that the proposed project is typical of the Best Management Practices which you have previously recommended to the City for other erosion problems along Manoa Stream. We understand from your second letter of 1/15/98 that you continue to support the project, however you now recommend that the project be constructed on private land, not public land.

Limiting the erosion control structure to only the Manoa Village property was explored during the EA process under alternative 4. This alternative was ruled out for the following reasons:

- It would be impossible to construct without extensive grading and the removal of the stream bank as it presently exist on public land.
- The stream bed would be widen and the protection structure would not be in alignment with adjacent, existing walls. This in turn would result in a "pocket" or eddy in which stream debris could collect and build up, and could contribute to stream blockage and flooding.
- Due to the proximity of the existing dwelling units, usage of a sloping gabion structure would not be feasible if it were to be located at the property line.
-

It should be noted that existing protection walls both upstream and downstream from the Manoa Village site are located on public land.

*****

2. We understand that you concur with the DLNR Water Commission and Land Division recommendations of 1996 that the project be located on private land.

These recommendations were made in December 1996 for a stream channel alteration permit. The condition that the project be located on private land was based on the fact that no easement existed to facilitate or permit construction on public property. Since that time, the applicant has consulted with the Land Division of DLNR concerning a retaining wall and landscape easement, and efforts to obtain an easement have been initiated through this EA process. A copy of a memo from the Oahu District Land Agent to Mr Dean Uchida, Administrator, DLNR Land Division is enclosed.

*****

3. We understand that your management and implementation plan recommends that Manoa Stream be restored to a more natural condition; that opportunities for public access be increased; and that community members regain stewardship of the waterways and drainage areas.

While the principal purpose of the proposed gabion structure is to solve a site specific erosion problem, it also has secondary aesthetic and environmental value as pointed out in your letter of 10/21/96.

If plans for the restoration of Manoa Stream to a natural condition is pursued, the gabion structure is easier to remove than poured concrete or fixed rock walls.

No public access to the stream through the Manoa Village property currently exist, and there are no opportunities to create such access within the context of this project. Visual access of the stream is available from the Manoa Stream bridge (photos nos. 1-5) and from the parking lot of the Manoa Market Place. Although these viewing points are not established (i.e. recognized resources), the visual appearance of the stream will be enhanced from these locations by the proposed project.

Stewardship of the waterways and drainage areas will occur as a result of the proposed project. The Manoa Village Association will not only pay for the improvements but will also be responsible for landscaping and maintaining the easement area.

*****

4. We understand that you are looking towards private land owners to support the broader community goal of making Manoa Stream a more valuable aquatic resource habitat.

As land owners, the Manoa Village Association is aware of the natural attributes of the stream and its contribution to their quality of life and property values. As citizens of Manoa Valley, they are supportive of established community goals.

*****

Thank you for your comments. Your letters and our response will be included in the final EA report.

Yours Truly

MICHAEL S. CHU

cc: Manoa Village Assoc.
Richard Frey

SIERRA CLUB, HAWAI'I CHAPTER

P.O. Box 2577,
Honolulu, Hawai'i 96803
(808) 538-6616

Cecil Santos
DLNR
(via FAX: 587-0414)

February 23, 1998

Dear Mr. Santos, Manoa Villages DEA

The Sierra Club generally opposes the channelization of streams and instead advocates for the restoration of free-flowing streams. The Manoa Village Homeowner's Association proposal appears to be little more than a channelization proposal. Manoa stream should be left free-flowing wherever possible and concrete removed wherever possible.

Vegetated stream buffers control erosion, provide needed green space, and enhance stream ecosystem values. Removal of trees is not in the public interest.

It is unfortunate that the developers of this project built the housing too near the stream. The public is being asked to pay -- in the form of a degraded resource -- for the foolishness. It is also unfortunate that for no good reason, alternative 1 in the Draft EA has been rejected.

Sincerely,

David Kimo Frankel
Director

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 01
To Michael Chu	From Leslie Segundo
Co.	Co. DOH-OEQC
Dept.	Phone # 586 4185
Fax # 521-9054	Fax # 586 4186

Land Planning & Design Hawaii

LP&D Hawaii

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27 February 1998

Mr. David Frankel
Sierra Club
P.O. Box 2577
Honolulu, HI 96803

SUBJECT: Draft Environmental Assessment, Manoa Village Association
TMK: 2-9-26: 04

Dear:

Thank for your comments of February 23, 1998 regarding the draft environmental assessment for the Manoa Village Association's proposed erosion and stabilization structure along Manoa Stream. Our response to your comments are as follows:

1. We understand that the Sierra Club views the proposed project as "little more than a channelization proposal," something which they are generally opposed to.

Upon careful examination, you will find that the project is significantly different from a channelization project. Usage of gabions are acclaimed as being an "environmentally friendly" solution and consistent with best management practices for situations such as this. This technique does not inhibit groundwater recharge/ percolation, presents a rough and textured appearance which better resembles nature than concrete, helps to reduces stream velocity, and provides opportunities for plants to grow along the face of the embankment and on top of the wall structure.

The proposed gabion is distinctly different from typical channelization projects as illustrated photo nos. 2 and 3, Exhibit 5 of the draft EA.

2. We understand that the Sierra Club finds the removal of trees to be not in the best interest of the public.

We concur, however up to 3 existing trees may need to be removed to accommodate the proposed work. Replacement trees as well as other landscape plantings will be installed behind the gabion structure at the property owners expense, after the work is completed.

It should be noted that several trees along the stream bank have since toppled over due to erosion.

3. We understand that the Sierra Club faults the developer for building the dwelling units too close to the stream, and that the proposed project will result in degrading the resource (stream).

While the Sierra Club takes issue with the developer and the development history of the property, relocating the existing structures was not considered as a reasonable and practical solution to the erosion problem during the preparation of this EA.

4. We understand that the Sierra Club finds no good reason for rejecting alternative 1 (landscape planting).

Utilization of landscape planting to stabilize the stream bank is discussed under Alternative 1 in the draft EA. This alternative represented the most inexpensive solution for the landowners, and it was seriously considered. This alternative was discussed with a licensed professional civil engineer and a landscape architect. It was their professional opinion that this alternative would not be adequate to alleviate the erosion problem.

The caption under photo no. 5 (Exhibit No. 6) describes the stream bank as having a 1:1 slope. It states that "under heavy rainfall, the velocity of water is sufficient to scour away natural vegetation that would otherwise volunteer along the stream bank."

The landowners have attempted to stabilize the stream bank in the past with landscape planting. These efforts were not successful.

Thank you for your comments. Your letter and our response will be included in the final EA.

Yours Truly

MICHAEL S. CHU

cc: Manoa Village Assoc.
Richard Frey

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