ATTACHMENT to CWB-NOI FORM C
SUPPORTING DOCUMENTS

CWB NOI GENERAL FORM:

5.b. Receiving Separate Drainage Systems

i. Castle Hills Community Association

Latitude (N) 21° 24' 11"
Longitude (W) 157° 48' 34"

ii. City and County of Honolulu

Latitude (N) 21° 24' 15"
Longitude (W) 157° 48' 32"

The requests to the Drainage System Owners for Approval to Discharge are being drafted. These requests for approval to discharge and subsequent drainage system owner approvals will be submitted at least 30 calendar days before the start of construction activities or discharge, whichever is sooner.

CWB-NOI FORM C:

C.2. Quantity of Storm Water Discharge

Based on the total project area, including undisturbed areas within the project limits, the volume of stormwater discharge is calculated using the Rational Method and guidelines in the City and County, Department of Planning and Permitting, "Rules Relating to Storm Drainage Standards", dated January 2000.

Runoff Coefficient, C	=	0.6	Table 2
10-year 1-hour Rainfall, i	=	2.5	Plate 1
Site Area	=	0.11 ac	(North of Stream, Pilina Way)
	=	0.44 ac	(North of Stream)
	=	0.83 ac	(South of Stream)
	=	0.19 ac	(South of Stream, to Kupohu St.)
		1.57 ac	(Total Area)
Time of Concentration, Tc	=	9 min.	Plate 3
Correction Factor, CF	=	2.4	Plate 4

Flow, Q	=	C x I x CF x A
	=	0.6(2.5)(2.4)(0.11) = 0.40 cfs (Pilina)
	=	0.6(2.5)(2.4)(0.44) = 1.58 cfs (North)
	=	0.6(2.5)(2.4)(0.83) = 2.99cfs (South)
	=	0.6(2.5)(2.4)(0.19) = 0.68 cfs (Kupohu)
		5.65 cfs (Total)

C.5. Flow Chart. Refer to Figure 7 – Flow Chart.

C.7.b.vii Describe Any Existing Pollution Source(s)

Lead-based paint and asbestos containing building materials were determined to be present in three (3) of the existing residential structures to be demolished and removed. The residential structures are located at 45-720 Pilina Way (TMK 4-5-24:5), 45-714 Pilina Way (TMK 4-5-24:3) and 45-708 Pilina Way (TMK 4-5-24:2).

C.7.c. Pollution Sources Corrective Measures

Lead-based paint, if needed, will be removed by a qualified lead abatement contractor. Handling and disposal of lead-based paint will be according to the Occupational Safety and Health Administration (OSHA) and Hawaii Occupational Safety and Health Division (HIOSH) lead standard requirements and in compliance with 29 CFR 1926.2.

Asbestos containing materials will be removed and disposed of by a qualified asbestos abatement contractor. Removal activities will comply with applicable Environmental Protection Agency (EPA), OSHA and HIOSH regulations pertaining to the handling of asbestos containing material.

C.8.b. Construction BMPs Plan. Refer to Figure 10 to 13.

C.8.b.i. Construction Activity

(1) What is to be constructed (entire scope of the construction activity):

The nature of the construction activity consists of stream and streambank stabilization measures. The project will consist of the construction of drainage structure within a portion of Kapunahala Stream. Existing residential structures will be demolished and removed. All disturbed areas will be graded and grassed. Gabion walls and stream apron will be installed to stabilize and protect the stream and streambanks.

(2) For multi-phase construction project, include a list of each phase:

General Work Description by Phase	
Phase 1	Phase 2
• Install 6-ft. high vinyl fence with concrete mow strip along exterior of site. • Install 6-ft. high by 15-ft. wide double swing vinyl gates. • Demolish and remove existing house structures. • Install gabion wall along south stream bank. • Perform site grading of areas where houses were removed. • Install erosion control matting. • Install concrete driveway apron.	• Demolish and remove existing concrete drain structure. • Install new concrete drop structure. • Install gabion wall along north stream bank. • Install gabion stream apron. • Install grouted riprap. • Install concrete ditch to connect existing ditch to new structure. • Grading in vicinity of drop structure and gabion wall.

(3) Materials and heavy equipment to be used for the construction activity:

Materials: Concrete, reinforcing steel, asphalt concrete, galvanized steel wire, rock, rip-rap, crushed rock, cushion material, geotextile fabric, polyvinyl chloride (PVC) pipes, vinyl fencing and gates, and fence posts

Heavy Equipment: Backhoe, front-end loader, concrete truck, compactor, dump truck, fork-lift, drill rig, crane, paving equipment, grader

C.8.b.ii. Quality of Discharge

The fill material will consist of reinforced concrete, gabions (galvanized wire baskets and rocks), grouted rip-rap, crushed rock, cushion material, micropiles, polyvinyl chloride (PVC) pipes, geotextile fabric and topsoil. The existing soil consists of Hanalei silty clay, which has a slow runoff and a slight erosion hazard.

C.8.b.iii. Potential Pollutant(S) & Proposed Control Measures

No.	Potential Pollutant	Proposed Control or Treatment Measure
(1)	Construction debris, removed vegetation	• Covered waste dumpsters that meet City and State waste management regulations will be used for discarded construction debris and non-hazardous wastes. The waste dumpsters shall be emptied at an approved landfill site, periodically or when they become full. Hazardous materials shall be handled, tested and disposed of in accordance with City and State regulations. • Onsite storage areas shall be designated for the stockpiling of removed vegetation. The vegetative matter shall be taken to and discarded at an approved green waste recycling facility.
(2)	Discharges associated with the operation and maintenance of the equipment, such as oil, fuel and hydraulic fluid leakage	• All equipment, machinery and vehicles used onsite shall be monitored and inspected for leaks. Any equipment, machinery or vehicle exhibiting signs of leakage shall be immediately repaired or taken offsite for repairs before being allowed to continue work onsite. • Any oil, fuel or other fluid needed for the operation of equipment, machinery or vehicles shall be kept in leak-proof vessels suited for the intended purpose and liquid being contained. The liquids shall be temporarily stored in a covered area according to the manufacturer's requirements and only in limited quantities necessary for daily operation of the equipment, machinery or vehicle. No liquids shall be allowed to be stored onsite overnight.
(3)	Soil erosion from the disturbed areas and stockpile areas	• Site disturbance activities shall comply with the conditions of HAR, Chapter 11-55, Appendix C, under Special Conditions for Land Disturbance (also stated in C.8.b.iv. of this permit application). • Measures to control erosion and other pollutants shall be in place before soil disturbance is initiated. The measures shall be properly constructed and maintained throughout the construction duration. Refer to "Best Management Practices Manual for Construction Sites in Honolulu", dated May 1999. • Check and repair all erosion control measures as necessary • All temporary measures are to remain in place until permanent measures are in-place and established.

No.	Potential Pollutant	Proposed Control or Treatment Measure
(4)	Location(s) of oil, fuel or any hazardous material storage site(s) and containment structure(s)	• Oil and fuel will be stored at the Contractor's facility and brought to the project site only when, and in the amount needed. • Oil and fuel shall be kept in a secure area protected from stormwater while onsite. • Unused oil and fuel shall be returned to the Contractor's storage area at the end of the workday.
(5)	Discharges associated with emulsified asphalt or prime/tack coat	• Emulsified asphalt shall be used according to the manufacturer's instructions and shall not be applied during or when inclement weather is imminent. Only the amount needed to complete the job being performed shall be used. • In the event of spillage, clean up immediately according to manufacturer's instructions and to the Spill Control Plan described in the Construction Drawings.
(6)	Discharges associated with painting and paint wash solvent/water	• N/A, no work of this nature is anticipated.
(7)	Industrial chemicals, fertilizers, and/or pesticides	• The products, if needed, will be stored at the Contractor's facility and brought to the project only when needed. • The products will be stored in a secure area protected from stormwater while onsite. • Good housekeeping practices will be followed and shall include: following the manufacturer's recommendations for proper use and disposal; using only the minimum amounts recommended; keeping products tightly sealed in their original containers with original manufacturer's label.
(8)	Other Sources	• N/A, no other apparent sources.

C.8.b.vi. Construction Schedule

Refer to Figure 17 – Castle Hills Access Road, Drainage Improvements Tentative Construction Schedule for specific dates for the various construction activities listed in items (1) through (7).

C.9. Post-Construction Pollutant Control Measures

Generally, most of the existing impermeable areas within the project limits will be removed as part of the work. Impermeable areas include ten (10) homes, and their associated paved driveways, and walkways. All areas disturbed by construction activity will be hydromulch seeded as soon as practicable. These areas, once fully established, will provide better pollutant mitigation than the previously removed hardscapes.

The installation of a new concrete drainage outlet with gabion walls at the oulet apron and along the stream banks will also be included as part of the work. These new structures will provide permanent erosion control and slope stability to the bank and stream areas.

Long-term erosion from the project site will be reduced as a result of the decreased impermeable surfaces, increased permeable grassed areas, proposed drainage outlet improvements, proposed landscape improvements and bank stabilization measures.

OTHER SUPPORTING DOCUMENTS:

I. LIST OF FIGURES