

session 2

Stream Name	Hililawe	
Date	3-11-2004	
Start Time	2:45	
GPS reading (0 m)	N 20° 06' 22.2 W 155° 35' 46.3	
GPS reading (100 m)		
Observers	Nopili	
Comments		



Transect # 0	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.025	.4	.6	.6	1.1	1.05	.75	.25	.05					
Water Speed	S	M	M	F	F	M	M	M	S					
Substrate Size	S	S	M	L	L	L	S	L	S					
Other maj. feat.				bld										

Transect # 1	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0	.35	N/A	.05	1.5	.85	1	.55	.3	.2	.25			
Water Speed	S	S	N/A	S	F	F	F	F	M	M	S			
Substrate Size	S	M	L	S	M	S	L	M	S	S	S			
Other maj. feat.			Big Boulder											

Transect # 2	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0.01	0.01	.7	.4	.5	.7	1.0	.9	N/A	N/A	1.1	.4	.35	.2
Water Speed	S	S	M	M	M	S	F	F	N/A	N/A	F	M	M	S
Substrate Size	M	M	M	M	M	S	M	M	L	L	M	S	M	S
Other maj. feat.									Big Boulder	Big Boulder				

Transect # 3	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.35	.6	.5	.0	.8	na	.55	.4	1.0	.55	.1	.5	.01	na
Water Speed	M	M	F	S	F	na	F	F	F	S	M	M	M	na
Substrate Size	L	S	S	L	M	L	L	L	L	M	L	S	L	na
Other maj. feat.						L								

Transect # 4	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.01	.45	.65	.02	.5	.3	.8	na	.2	.4	.6	.45	.3	.4
Water Speed	S	S	S	S	S	S	F	na	F	F	F	F	F	F
Substrate Size	S	S	M	S	M	M	S	L	L	M	L	L	L	L
Other maj. feat.														

to be continued Big Boulder

Transect # 5	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth														
Water Speed														
Substrate Size														
Other maj. feat.														

Water Speed (fast, medium, slow)

Substrate Size (small, medium, large)

Stream Name	H1'11'19WE	
Date	3-11-04	
Start Time	1:15	
GPS reading (0 m)	N20°06'24.2"W 155°35'46.8"	
GPS reading (100 m)	N20°06'21.2"W 155°35'44.4"	
Observers	Q1a mo'o	
Comments		

way # 170

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0	1ft	1.5ft	1.1	1.8									
Water Speed	0	M	F	M	M									
Substrate Size	M	L	L	M	M									
Other maj. feat.	stream bank													

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0	1.4	1.2	1	1.1	1.3								
Water Speed	0	F	F	M	F	S								
Substrate Size	S	M	L	M	S	S								
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.1	.9	.7	.4	.9	1ft	.5	0	.3	.2				
Water Speed	slow m		F	m	F	F	m	0	m/s	S				
Substrate Size	S	m	b	L	L	m	S	L	S	S				
Other maj. feat.	big													

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.2	1.1	.9	.9	1.2	1.6	1.1	1.6	.3					
Water Speed	S	m	m	m	S	m	m	m	S					
Substrate Size	S	m	L	L	L	S	S	S	S					
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.05	.5	.6	1	.5	.8	.8	1.1	.1					
Water Speed	S	S	M	M/F	M	M	M	M	S					
Substrate Size	S	M	L	M	S	M	L	S	S					
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	.4	.3	.8	.7	1	.8	.7	.4	.1					
Water Speed	S	M	F	F	F	M	S	S	S					
Substrate Size	S	L	L	L	M	S	S	M	M					
Other maj. feat.														

Water Speed (fast, medium, slow)

Substrate Size (small, medium, large)

session 3

Stream Name	Hillawe	Stream Mapping Data Sheet
Date	3/12/04	
Start Time	9:05	
GPS reading (0 m)	N 20° 06' 21.4"	
GPS reading (100 m)	N 20° 06' 21.1" W 155° 35' 44.8"	
Observers	Nakea	
Comments	Wpt. 173 WPA. 175 LB = Large Boulder Isl. Islands Gras. = Grassy	

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0.35		.65	1.0	.45	.03	.07	.85	.95					
Water Speed	S		M	M	M	M	M	F	F					
Substrate Size	M		M	M	S	M	S/M	L	L					
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0		0	0	0	.2	0	.15	1.0	.55				
Water Speed	S		0	0	0	S	0	S	M	M				
Substrate Size	S		L	M	L	M	M	G	M	L				
Other maj. feat.			LB	ISI	ISI		Gras.							

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth	0.3		0.35	0.2	0.25	0.6	0.55	0.75	0.3	0.9				
Water Speed	S		S	S	S	M	M	M	F	F				
Substrate Size	S		M	S	S	M	L	M	L	L				
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth														
Water Speed														
Substrate Size														
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth														
Water Speed														
Substrate Size														
Other maj. feat.														

Transect #	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Est. Depth														
Water Speed														
Substrate Size														
Other maj. feat.														

Water Speed (fast, medium, slow)

Substrate Size (small, medium, large)

FLOW DATA SHEET Mean Velocity¹ = 6/10ths Depth Surface Velocity² = 6/10ths Depth x 2 Bottom Velocity³ = 6/10ths Depth / 2

BANK
FULL

STREAM EDGE

BANK
FULL

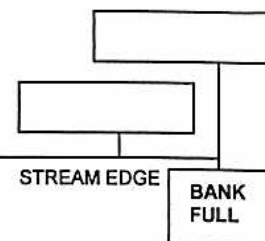
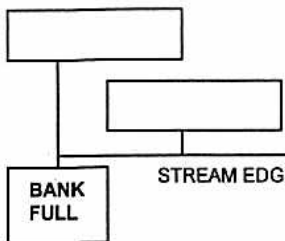
STREAM EDGE

Stream Edge Width (feet)	18.4	16	14	12	10	8	6	4	2	0									
Stream Edge Depth (feet)	0	0.6	1.1	1.8	2.7	2.6	1.0	1.0	1.9	0									
Flow Rate Width (ft/sec)																			
Flow Rate Depth (ft/sec)																			
Substrate/ % Vegetation																			
% Plant Coverage																			
Mean Velocity ¹ (ft/sec)	0	-0.14	-0.10	-0.07	0.02	0.47	0.77	0.80	1.30	0									
Surface Velocity ² (ft/sec)																			
Bottom Velocity ³ (ft/sec)																			

DATE	3/11/04			HYDROLAB	FLOW ↓ J.D. Pua Kayla Tori Kali Transect Line			
TIME	2:08 pm			WIDTH (feet)				
OBSERVER	Nakea			TEMPERATURE (°C)				
REACH				DISSOLVED OXYGEN (mg/L)				
TRANSECT#				CONDUCTIVITY (mS/cm)				
DAR_CODE				pH				
STREAM				TURBIDITY (NTU)				
TRIBUTARY				TOTAL SUSPENDED SOLIDS (mg/L)				

FLOW DATA SHEET

Mean Velocity¹ = 6/10ths Depth
 Surface Velocity² = 6/10ths Depth x 2
 Bottom Velocity³ = 6/10ths Depth / 2



Stream Edge Width (feet)	21.2	20.	18	16	14	12	10	8	6	5.3									
Stream Edge Depth (feet)	0	1.1	1.5	2.8	2.4	2.8	1.2	1.9	1.9	0									
Flow Rate Width (ft/sec)																			
Flow Rate Depth (ft/sec)																			
Substrate/ % Vegetation																			
% Plant Coverage																			
Mean Velocity ¹ (ft/sec)	0	-0.15	-0.15	0.06	0.31	0.65	0.71	0.77	1.07	0									
Surface Velocity ² (ft/sec)																			
Bottom Velocity ³ (ft/sec)																			

DATE 3-11-04	HYDROLAB				pomai keala jonah kaiseh herano Transect Line	FLOW ↓
TIME 3:37	WIDTH (feet)					
OBSERVER alamo'o	TEMPERATURE (°C)					
REACH	DISSOLVED OXYGEN (mg/L)					
TRANSECT#	CONDUCTIVITY (mS/cm)					
DAR_CODE	pH					
STREAM Hailawc	TURBIDITY (NTU)					
TRIBUTARY	TOTAL SUSPENDED SOLIDS (mg/L)					

FLOW DATA SHEET

Mean Velocity¹ = 6/10ths Depth
 Surface Velocity² = 6/10ths Depth x 2
 Bottom Velocity³ = 6/10ths Depth / 2

BANK
FULL

STREAM EDGE

BANK
FULL

Stream Edge Width (feet)	23.8	22	20	18	16	14	12	10	8	6	4	3ft						
Stream Edge Depth (feet)	0	0.5	0.9	.5	1.3	1.7	1.1	1.8	1.7	1.6	1.4	1.3	0.06					
Flow Rate Width (ft/sec)																		
Flow Rate Depth (ft/sec)																		
Substrate/ % Vegetation																		
% Plant Coverage																		
Mean Velocity ¹ (ft/sec)	0	0.01	0.11	0.44	0.47	0.56	0.61	0.82	0.80	0.55	0.31	0.06						
Surface Velocity ² (ft/sec)																		
Bottom Velocity ³ (ft/sec)																		

DATE March 11, 2004	HYDROLAB			TORI KALI KAYLA PUA J.D. ----- Transect Line Stream gage = 1.29 Ft	FLOW ↓
TIME 1:40 pm	WIDTH (feet)				
OBSERVER	TEMPERATURE (°C)	20.9			
REACH NaKea	DISSOLVED OXYGEN (mg/L)	11.3			
TRANSECT#	CONDUCTIVITY (mS/cm)	99.4			
DAR_CODE	pH	8.22			
STREAM Ai'itawe stream	TURBIDITY (NTU)	0.70			
TRIBUTARY	TOTAL SUSPENDED SOLIDS (mg/L)				

FLOW DATA SHEET Mean Velocity¹ = 6/10ths Depth Surface Velocity² = 6/10ths Depth x 2 Bottom Velocity³ = 6/10ths Depth / 2

BANK
FULL

STREAM EDGE

STREAM EDGE

BANK
FULL

Stream Edge Width (feet)	22.3	21	19	17	15	13	11	9	7	5	3	2.7						
Stream Edge Depth (feet)	0.6	0.7	1.6	1.6	1.4	1.4	1.8	1.6	1.5	1.4	0							
Flow Rate Width (ft/sec)																		
Flow Rate Depth (ft/sec)																		
Substrate/ % Vegetation																		
% Plant Coverage																		
Mean Velocity ¹ (ft/sec)	0	-0.03	0.22	-0.08	0.42	0.66	0.51	0.39	0.62	0.44	0.19	0						
Surface Velocity ² (ft/sec)																		
Bottom Velocity ³ (ft/sec)																		

DATE 3-11-04	HYDROLAB			Hinano Pomai Jonah Kaiser Keala Stream Gauge = 1.3 ft. Transect Line FLOW ↓
TIME 2:37pm	WIDTH (feet)			
OBSERVER Alamo'o	TEMPERATURE (°C)	21.2°		
REACH	DISSOLVED OXYGEN (mg/L)	10.95		
TRANSECT#	CONDUCTIVITY (mS/cm)	100.1		
DAR_CODE	pH	8.03		
STREAM	TURBIDITY (NTU)	0.80		
TRIBUTARY	TOTAL SUSPENDED SOLIDS (mg/L)			

FLOW DATA SHEET Mean Velocity¹ = 6/10ths Depth Surface Velocity² = 6/10ths Depth x 2 Bottom Velocity³ = 6/10ths Depth / 2

BANK
FULL

STREAM EDGE

STREAM EDGE

BANK
FULL

Stream Edge Width (feet)	24.4	22	20	18	16	14	12	10	8	6	4	1						
Stream Edge Depth (feet)	0	0.6	.6	1.0	1.5	1.5	1.5	1.4	1.5	1.4	1.0	.0						
Flow Rate Width (ft/sec)																		
Flow Rate Depth (ft/sec)																		
Substrate/ % Vegetation																		
% Plant Coverage																		
Mean Velocity ¹ (ft/sec)	0	0.22	.17	-0.06	.39	.52	.55	.70	.45	0.44	.01	.0						
Surface Velocity ² (ft/sec)																		
Bottom Velocity ³ (ft/sec)																		

DATE 3/12/2004	HYDROLAB			FLOW ↓ Transect Line Steven C. Keoni Chandler Kaili Tara Iokopa
TIME 9:04 am	WIDTH (feet)			
OBSERVER Nopili	TEMPERATURE (°C)	19.5		
REACH	DISSOLVED OXYGEN (mg/L)	11.3		
TRANSECT#	CONDUCTIVITY (mS/cm)			
DAR_CODE	pH 8.38			
STREAM Hikiwe	TURBIDITY (NTU)	0.36		
TRIBUTARY	TOTAL SUSPENDED SOLIDS (mg/L)			

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: Tara
 HSA CODE: _____ TEMPERATURE: _____ (°C)
 NAME: _____ ELEVATION: _____ (ft.)
 DATE: 3 / 11 / 04 TIME: 1:12 AM TO _____ AM
 (Mo. Day Yr.) (START) (PM) (STOP) PM
 SUBSTRATE TYPE (%):
 SEDIMENT 0% SAND 44% GRAVEL 35%
 COBBLE 20% BOULDERS 0-1% BEDROCK 0%
 DETRITUS _____
 HABITAT TYPE: SURVEY AREA (l" x w" x h"): 1m x 1m / 10"
 POOL SIDE POOL PLUNGE POOL (RUN) RIFFLE CASCADE
 NO WATER DIRTY WATER
 SPP: SIZE ♂ ♀ ?

20.10654°
 155.59625°
 NAME: T. Hottendorf

WP 172

COMMENTS:

Random No.: 7, 0

Site No.: 1

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: C. Kara
 HSA CODE: _____ TEMPERATURE: _____ (°C)
 NAME: _____ ELEVATION: _____ (ft.)
 DATE: 3 / 11 / 04 TIME: 1:45 PM AM TO _____ AM
 (Mo. Day Yr.) (START) PM (STOP) PM
 SUBSTRATE TYPE (%):
 SEDIMENT _____ SAND 5% GRAVEL 5%
 COBBLE 20% BOULDERS 10% BEDROCK _____
 DETRITUS _____
 HABITAT TYPE: SURVEY AREA (l" x w" x h"): 1m x 1m / 10"
 POOL SIDE POOL PLUNGE POOL RUN (RIFFLE) CASCADE
 NO WATER DIRTY WATER
 SPP: SIZE ♂ ♀ ?

N 20° 20.10626
 W 155° 59630
 WP 173

COMMENTS:

~~XXXXXXXXXX~~ Caddis Fly (Pupae)

Random No.: 7, 1

Site No.: 2

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: C. Kaoc
HSA CODE: - - - - - TEMPERATURE: (°C)
NAME: ELEVATION: (ft.)
DATE: 3 11 104 TIME: 2:08 AM TO 2:38 AM
Mo. Day Yr. (START) PM (STOP) PM

SUBSTRATE TYPE (%):

SEDIMENT SAND GRAVEL 5%
COBBLE BOULDERS 25% BEDROCK 70%
DETritus

HABITAT TYPE: SURVEY AREA (l" x w" x h"): 1m x 1m / 6"
POOL SIDE POOL PLUNGE POOL RUN RIFFLE CASCADE
NO WATER DIRTY WATER

SPP: SIZE ♂ ♀ ?

N 20.10640°

W 155.59627°

WP174

COMMENTS:

Random No.: 5, 6

Site No.: 3

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: Pua Hall
HSA CODE: - - - - - TEMPERATURE:
NAME: ELEVATION:
DATE: 03 11 12004 TIME: 2:42 AM TO 3:12 AM
Mo. Day Yr. (START) (PM) (STOP)

SUBSTRATE TYPE (%):

SEDIMENT SAND 5% GRAVEL 5%
COBBLE 30% BOULDERS 60% BEDROCK
DETritus

HABITAT TYPE: SURVEY AREA (l" x w" x h"): 1m x 1m 8'
POOL SIDE POOL PLUNGE POOL RUN RIFFLE CASCADE
NO WATER DIRTY WATER

SPP: SIZE ♂ ♀ ?

N-20.10628°

W-155.59607°

+ Caddis Flies

COMMENTS:

WP#175

Random No.: 7, 6

Site No.: 4

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: Pua H.
 HSA CODE: _____ TEMPERATURE: _____ (°C)
 NAME: _____ ELEVATION: 111 (ft.)
 DATE: 03 / 11 / 2004 TIME: 3:18 AM TO _____ AM
 (Mo. Day Yr.) (START) (PM) (STOP) (PM)

SUBSTRATE TYPE (%):

SEDIMENT _____ SAND 65% GRAVEL 15%
 COBBLE 20% BOULDERS _____ BEDROCK _____
 DETRITUS _____

HABITAT TYPE:

SURVEY AREA (l" x w" x h"): 1m x 1m / 6"

POOL SIDE POOL PLUNGE POOL RUN RIFFLE CASCADE
 NO WATER DIRTY WATER

SPP: SIZE ♂ ♀ ?

N-20.10604°
 W-155.59590°

COMMENTS:

WP=176

Random No.: 2, 5

Site No.: 5

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: keala alamo's
 HSA CODE: _____ TEMPERATURE: _____ (°C)
 NAME: _____ ELEVATION: _____ (ft.)
 DATE: 3 / 12 / 04 TIME: 9:00 AM TO _____ AM
 (Mo. Day Yr.) (START) (PM) (STOP) (PM)

SUBSTRATE TYPE (%):

SEDIMENT _____ SAND 60% GRAVEL _____
 COBBLE _____ BOULDERS 40% BEDROCK _____
 DETRITUS _____

HABITAT TYPE:

SURVEY AREA (l" x w" x h"): 39 x 32 x 24"

POOL SIDE POOL PLUNGE POOL RUN RIFFLE CASCADE
 NO WATER DIRTY WATER

SPP: SIZE ♂ ♀ ?

N 20.10604° W 155.59591°

COMMENTS: WP#177

Random No.: _____

Site No.: 6

STREAM SURVEY FORM

SURVEY TYPE: RANDOM NONRANDOM OBSERVER: Realg alamo's
HSA CODE: _____ TEMPERATURE: _____ (°C)
NAME: _____ ELEVATION: _____ (ft.)
DATE: / / TIME: _____ AM TO _____ AM
Mo. Day Yr. (START) PM (STOP) PM
SUBSTRATE TYPE (%):
SEDIMENT _____ SAND 40% GRAVEL _____
COBBLE 30% BOULDERS 30% BEDROCK _____
DETRITUS _____
HABITAT TYPE: SURVEY AREA (l" x w" x h"): 39" x 39" x 18"
POOL SIDE POOL PLUNGE POOL RUN RIFFLE CASCADE
NO WATER DIRTY WATER
SPP: SIZE ♂ ♀ ?

20.10647 W155.5963425

COMMENTS: WP# ~~179~~ 179

Random No.: 6, 1

Site No.: 7