STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
Stream Protection and Management Branch

FIELD INVESTIGATION REPORT

FI2008120803 (East Maui, Wailuanui IIFS Site)

Date of Field Investigation: December 8, 2008 **Time** (24-hour)**:** 1450 - 1600	
CWRM Staff:	Ed Sakoda, Dean Uyeno, and Chui Ling Cheng
Individuals Present:	
Hydrologic Unit:	Wailuanui (6056)
Stream Name:	Wailuanui Stream

Findings:

At approximately 1450 hours, CWRM staff arrived at the Hana Highway bridge that crosses Wailuanui Stream. CWRM staff hiked down from the bridge to the stream via a small trail that begins on the right bank of the stream, on the downstream side of the bridge. The trail condition was hazardous because of the loose rocks and large boulders on the hill. The IIFS site is below the Hana Highway bridge.

CWRM staff prepared the site for flow measurement. Flow measurement was completed in 40 minutes. Staff also recorded air temperature, water temperature and weather conditions. As computed back in the Honolulu Office, the flow at IIFS Site was 2.803 cubic feet per second (1.812 million gallons per day), with no gage height readings.

According to the flow measurements taken at East Wailuanui tributary (1.067 cubic feet per second, refer to FI2008120801) and at West Wailuanui (1.235 cubic feet per second, refer to FI208120802), the stream gained 0.501 cubic feet per second (0.324 million gallons per day) of flow between Koolau Ditch and the IIFS Site on this day. Calculations are shown below:

Flow at IIFS Site	–	(	Flow at E. Wailuanui	+	Flow at W. Wailuanui	)	=	Flow gains
2.803 CFS	–	(	1.067 CFS	+	1.235 CFS	)	=	0.501 CFS

CWRM staff concluded the field investigation at 1600 hours.

Image Listing: (Attach PDF of image contact sheet)

File Name:	Brief Description:

GPS Listing:

Shapefiles: (List file names of all shapefiles created and a brief description of each)

File Name:	Brief Description:
East_Maui_POI.shp	Points of interest (POI) recorded with the GPS unit during the field visit. The file includes POI recorded from all the East Maui field investigations.

Waypoints: (List all waypoints in decimal degrees and provide a brief description of each)

WP No.	Latitude	Longitude	Brief Description:
0	20.832394	-156.138458	IIFS Site Flow Measurement on Wailuanui Stream
4	20.833606	-156.13696	Parking area near IIFS Site on Wailuanui Stream

Attachments:

Brief Description:

1. Discharge Measurement and Gage Inspection Notes

Recommendations:

Form 9-275F
(Apr. 2001)

U.S. DEPARTMENT OF THE INTERIOR
U.S. Geological Survey
WATER RESOURCES DIVISION
DISCHARGE MEASUREMENT AND GAGE INSPECTION NOTES

Meas. No. _____

Comp. by Chui

Checked by DDL

Sta. No. Wailuanui IIFS Site

Sta. Name _____

Date 12/8 , 20 08 Party Dean (M) Chui, Ed

Width 11.3 Area 11.278 Vel. .249 G.H. / Disch. 2.803 CFS

Method Wading No. secs. 40 G.H. change _____ in _____ hrs.

Method coef. _____ Horiz. angle coef. _____ Susp. _____ Tags checked _____

Meter Type _____ Meter No. _____ Meter _____ ft. above bottom of wt.

Rating used _____ Spin test before meas. _____ ; after _____

Meas. plots _____ % diff. from rating no. _____ Indicated shift _____

GAGE READINGS						
Time					Inside	Outside
	Start	LEW	@	1502		
	Finish	REW	@	1542		
					~	40 min
Weighted MGH						
GH correction						
Correct MGH						

Samples collected: water quality, sediment, biological, other _____

Measurements documented on separate sheets: water quality, aux./base gage, other _____

Rain gage serviced/calibrated _____

Weather: Overcast

Air Temp. 26 °C at 1533

Water Temp. 19 °C at 1542

Check bar/chain found _____

Changed to _____ at _____

Correct _____

Wading, cable, ice, boat, upstr., downstr., side bridge, 60 (ft) mi. upstr., downstr. of waterfall gage.

Measurement rated excellent (2%), good (5%), fair (8%), poor (> 8%); based on following conditions: Flow: parts laminar, parts (sides) no flow.

Cross section: bedrock, not uniform.

Gage operating: _____ Record Removed _____

Battery voltage: _____ Intake/Orifice cleaned/purged: _____

Bubble-gage pressure, psi: Tank _____ , Line _____ ; Bubble-rate _____ /min.

Extreme-GH indicators: max _____ , min _____ .

CSG checked: _____ HWM height on stick _____ Ref. elev. _____ HWM elev. _____

HWM inside/outside: _____

Control: _____

Remarks: Rocks pushed to bank, channel wider

GH of zero flow = GH _____ - depth at control _____ = _____ ft., rated _____

Sheet No. _____ of _____ sheets

.0 .10 .20 .30 .40 .50 .60 .70 .75 .80 .85 .90 .92 .94 .96 .97 .98 .99 1.00 .99 .98 .97 1.512 .96 .94 .92 .90 2.5 .85 2.679 2.743 2.803 .80

River at -

ANGLE COEF-FICIENT	DIST. FROM INITIAL POINT	WIDTH	DEPTH	OBSERVATION DEPTH	REVOLUTIONS	TIME IN SECONDS	VELOCITY AT POINT	VELOCITY MEAN IN VERTICAL	ADJUSTED FOR HOR. ANGLE OR	AREA	DISCHARGE	
	LEW	@	1503									.164
	0.2	.15	0							0	0	
	~~0.4~~		~~0.5~~			~~40~~						
	0.5	.40	0.62	.6		40		0		.248	0	
	1.0	.50	0.70	.6		40		0		.350	0	
	1.5	.50	0.93	.6		40		.04		.465	.019	
	2.0	.50	1.20	.6		40		.06		.600	.036	
	2.5	.50	1.50	.8		40	.09	.145		.750	.109	
				.2		40	.20					
	3.0	.50	1.80	.8		40	.07	.240		.900	.216	
				.2		40	.41					
	3.5	.50	1.92	.8		40	.08	.145		.960	.139	
				.2		40	.21					
	4.0	.50	1.82	.8		40	.14	.265		.910	.241	
⊙				.2		40	.39					
	4.5	.50	1.90	.8		40	.23	.375	6.133	.950	.356	1.116
				.2		40	.52					
	5.0	.50	1.08	.6		40	.	.50		.540	.270	
	5.5	.50	0.68	.6		40		.19		.340	.065	
	6.0	.50	0.94	.6		40		.13	7.183	.470	.061	
	6.5	.50	0.93	.6		40		.54		.465	.251	
	7.0	.50	1.06	.6		40		.34		.530	.180	
	7.5	.50	0.80	.6		40		.46		.400	.184	
	8.0	.50	0.90	.6		40		.41		.450	.185	
	8.5	.50	0.69	.6		40		.33		.345	.114	
	9.0	.50	0.70	.6		40		.21		.350	.074	
	9.5	.50	0.60	.6		40		.33	10.323	.300	.099	
	10.0	.50	0.57	.6		40		.28	10.608	.285	.080	
	10.5	.50	0.67	.6		40		.19		.335	.064	
	11.0	.50	0.67	.6		40		.18	11.278	.335	.060	
	11.5	.25	0							0		
	11.3	11.3					AVE=	0.25 ~~.249~~		11.278	2.803	

.0 .10 .20 .30 .40 .50 .60 .70 .75

River at -

ANGLE COEFFICIENT	DIST. FROM INITIAL POINT	WIDTH	DEPTH	OBSERVATION DEPTH	REVOLUTIONS	TIME IN SECONDS	VELOCITY AT POINT	VELOCITY MEAN IN VERTICAL	ADJUSTED FOR HOR. ANGLE OR	AREA	DISCHARGE	
	REW	@	1542									.80
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
⊙												1.00
												.99
												.98
												.97
												.96
												.94
												.92
												.90
												.85
												.80