



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

FIELD INVESTIGATION REPORT
FI2009032301 (East Maui, Low Flow Channel)

Date of Field Investigation:	March 23, 2009	Time (24-hour):	0900 - 1530
CWRM Staff:	Ed Sakoda, Dean Uyeno, and Chui Ling Cheng		
Individuals Present:	Honopou community - Lynn Scott, Beatrice Kekahuna, Sanford Kekahuna, and Boni Kekahuna EMI Staff - Garret Hew and staff from the HC&S Pump and Power section		
Hydrologic Unit:	Honopou (6034)		
Stream Name:	Honopou Stream		
Findings:	<p>CWRM staff departed Oahu for Maui at 0600 hours.</p> <p>The purpose of this field visit was to document the installation of the low-flow bypass channel on Haiku Ditch in Honopou Stream. In November of 2008, CWRM staff met with EMI staff to discuss the design of the low-flow bypass channel. It was in agreement between the two parties and the Honopou community that the bypass channel would be installed on the Haiku Ditch intake structure in Honopou Stream as a pilot project. Since then, EMI staff has been working to construct the bypass channel in their shop. Because the openings of the Haiku Ditch intake grating structure are not of uniform width, the bypass channel had to be constructed in pieces and assembled on-site to achieve the perfect fit on the intake grating.</p> <p>EMI staff began the installation work at approximately 0730 hours. EMI staff had to close the Lowrie Ditch bypass gate to decrease the amount of water reaching the work site. By the time CWRM staff arrived to Honopou, the low-flow bypass channel was placed on top of the Haiku Ditch intake structure and EMI staff was welding one of the anchor brackets to the main bypass channel (see image 20090323006). There were a total of six anchor brackets (3 on each side of the channel) to secure the bypass channel on the intake structure. A separate piece of metal was welded on the upstream side of the bypass channel and over the side of the intake structure to prevent high water from flowing underneath the bypass channel and lifting it up. During the installation, EMI staff had to pump out more water to draw down the level of water on the upstream side of the intake structure.</p> <p>In order to determine the head (level of water) needed to meet the IIFS established at two sites further downstream, two 2-in x 4-in pieces of wood were installed along the upstream side of the intake structure as a temporary measure to channel stream water into the bypass channel. Mud and other debris were used to fill holes and gaps between the wood and the intake structure to prevent stream water from entering the ditch. When the installation was complete, the intakes of the 3 pipes on the left streambank were plugged to channel stream water into the bypass channel. When the level of water needed to satisfy the IIFS established at the two sites on Honopou Stream have been determined, EMI plans to replace the 2-in x 4-in pieces of wood with a more permanent structure.</p> <p>CWRM staff videotaped parts of the installation work.</p> <p>Upon returning to Honolulu, Garret Hew informed CWRM staff that EMI staff had reopened the Lowrie Ditch bypass gate on Honopou Stream that same day. As a result, more water flowed through the low-flow bypass channel on Haiku Ditch.</p> <p>During the installation, CWRM staff visited Kekahuna's taro loi with the purpose of mapping water flow through the taro patches before water returns to the stream. Coincidentally, one of the Maui USGS staff was conducting field work in the same area. He offered to show CWRM staff the temperature probe that was installed in the auwai near the last taro loi, and the stream gaging station installed at the start of the auwai. He also showed CWRM staff the temperature data logger and how he downloaded the data from the logger to his computer. After the Maui USGS staff left, CWRM staff continued to map water flow in the taro loi.</p> <p>Staff concluded the field visit at 1530 hours.</p>		

Image Listing: (Attach PDF of image contact sheet)

File Name:	Brief Description:
20090323004	Low-flow bypass channel, upstream side
20090323005	Low-flow bypass channel, downstream side
20090323006	EMI staff welding an anchor bracket onto the main low-flow bypass channel
20090323008	Low-flow bypass channel (downstream side) with one of the anchor brackets in place
20090323009	EMI staff installing 2in x 4in wood onto the upstream side of the intake structure
20090323010	EMI staff welding an anchor bracket onto the main low-flow bypass channel
20090323015	EMI staff installing 2in x 4in wood onto the upstream side of the intake structure
20090323018	Left streambank where EMI staff transported the low-flow bypass channel onto the ditch intake structure
20090323020	EMI staff placing the pump line downstream of the ditch
20090323025	EMI staff operating the pump
20090323026	EMI staff operating the pump
20090323029	The pump used to pump water from the above the ditch downstream
20090323030	Pump water line upstream of the ditch
20090323031	Pump water line downstream of the ditch
20090323036	EMI staff installing the low-flow bypass channel
20090323038	EMI staff installing the low-flow bypass channel
20090323039	EMI staff welding an anchor bracket onto the main low-flow bypass channel
20090323040	A piece of metal welded on the upstream side of the bypass channel and over the side of the intake structure to prevent high water from flowing underneath the bypass channel and lifting it up
20090323042	Low-flow bypass channel, upstream side
20090323043	USGS temperature probe in Kekahuna's auwai
20090323046	USGS stream gage at the beginning of Kekahuna's auwai
20090323047	USGS stream gage at the beginning of Kekahuna's auwai
20090323053	Kekahuna's taro loi
20090323058	EMI staff sanding the low-flow bypass channel
20090323061	EMI staff completing the installation of the low-flow bypass channel
20090323065	EMI staff completing the installation of the low-flow bypass channel
20090323067	Metal that was welded on the upstream side of the bypass channel and over the side of the intake structure to prevent high water from flowing underneath the bypass channel and lifting it up
20090323070	One of the anchor brackets of the low-flow bypass channel
20090323074	Downstream view of the low-flow bypass channel. Rocks were placed beneath the intake structure to minimize the amount of water back-flowing into the ditch.
20090323080	Completed low-flow bypass channel
20090323087	First water entering the low-flow bypass channel
20090323090	First water entering the low-flow bypass channel
20090323092	First water entering the low-flow bypass channel
20090323094	First water entering the low-flow bypass channel and flowing downstream
20090323102	First water entering the low-flow bypass channel and flowing downstream
20090323106	EMI staff using mud and other debris to fill holes and gaps between the wood and the intake structure to prevent stream water from entering the ditch
20090323109	Water flowing through the bypass channel while the 3 pipes were plugged

GPS Listing:

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

File Name: **Brief Description:**

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

WP No. **Latitude** **Longitude** **Brief Description:**

Attachments:

- Brief Description:**
 1. Image Contact Sheet

Recommendations:

IMAGE CONTACT SHEET



20090323004.jpg



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20090323006.jpg



20090323008.jpg



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20090323010.jpg



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IMAGE CONTACT SHEET



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IMAGE CONTACT SHEET



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IMAGE CONTACT SHEET



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