

Waipio (Hydrologic Unit: 6036)

DAR historic rankings:

Potential Heritage Stream (1998): No
Hawaii Stream Assessment Rank (1990): not ranked
US Fish and Wildlife High Quality Stream (1988): No
The Nature Conservancy Priority Aquatic Site (1985): No
National Park Service Nationwide Rivers Inventory (1982): No

Watershed Rating

Landcover: 9/10
Shallow Waters Rating: 0/10
Stewardship Rating: 4/10
Size Rating: 1/10
Wetness Rating: 5/10
Reach Diversity Rating: 3/10
Total Score: 5/10

Biological Rating

Native Species Rating: not ranked
Introduced Genera Rating: not ranked
All Species Score: not ranked
Total Biological Rating: not ranked
Overall Rating: not ranked

Hawaii Stream Assessment

HSA aquatic resources: not ranked
HSA riparian resources: Detrimental plants (hau); Detrimental animals (pigs); 0% native forest;
small palustrine wetland
HSA cultural resources: not surveyed
HSA recreational resources: nothing; ranked a "4" by regional committee

Registered Diversions

DIV 201 EMI: New Hamakua Ditch from Waipio Stream (TMK owned by A&B)
DIV 1124 VALLEY FARM: auwai from Waipio Stream
DIV 1125 VALLEY FARM: pump from Waipio Stream
DIV 238 EMI: Lowrie Ditch from Waipio Stream (TMK owned by A&B)
DIV 1104 TROPICAL ORCH: pump from Waipio Stream
DIV 216 EMI: Haiku Ditch from Waipio Stream
DIV 1207 WENTWORTH R: pipe from Waipio Stream
DIV 66 BUNCH WJ: diversion from Waipio Stream
DIV 448 HAROLD FL: pump from Waipio Stream

Ho'olawa (Hydrologic Unit 6035)

The watershed is 3.6 mi² with a maximum elevation of 3481 ft. The Hoolawa stream is perennial, with two tributaries (Ho'olawali'ili'i and Ho'olawanui), with a total stream length of 11 mi in the DAR cluster code is not yet determined.

USGS Hydrologic Data

Station ID	name	Period of Record	Q ₁₀	Q ₂₀	Q ₃₀	Q ₄₀	Q ₅₀	Q ₆₀	Q ₇₀	Q ₈₀	Q ₉₀
16585000	Hoolawanui Str nr Huelo	1911-1971	26	19	9.8	7.4	5.6	4.3	3.3	2.5	1.7
16585000	Hoolawanui Str nr Huelo	1984-2013					4.4	3.5	2.6	1.9	1.4
16585000	Hoolawaliili Str nr Huelo	1912-1957	14	10	6.5	5.3	4.4	3.7	3.2	2.8	2.2
16585000	Hoolawanui Str nr Huelo	1984-2013					3.6	3.1	2.7	2.2	1.7

DAR historic rankings:

Potential Heritage Stream (1998): No

Hawaii Stream Assessment Rank (1990): limited resources

US Fish and Wildlife High Quality Stream (1988): No

The Nature Conservancy Priority Aquatic Site (1985): No

National Park Service Nationwide Rivers Inventory (1982): No

Watershed Rating

Landcover: 10/10

Shallow Waters Rating: 0/10

Stewardship Rating: 5/10

Size Rating: 2/10

Wetness Rating: 6/10

Reach Diversity Rating: 4/10

Total Score: 7/10

Biological Rating

Native Species Rating: 2/10

Introduced Genera Rating: 10/10

All Species Score: 5/10

Total Biological Rating: 5/10

Overall Rating: 6/10

Hawaii Stream Assessment

HSA aquatic resources: Low (0 high value species; 1 low value native species observed); 4 surveys, last was in 1980

HSA riparian resources: Detrimental plants (hau); Detrimental animals (pigs); 0% native forest; small palustrine wetland

HSA cultural resources: very limited survey coverage; 1 archeological site; moderate density; pre-contact/early contact, important information and culturally noteworthy; taro historically associated with stream

HSA recreational resources: hiking, swimming, scenic views; ranked a "2" by regional committee

Registered Diversions

DIV 234 EMI: New Hamakua Ditch from Hoolawanui Stream (**Gov owned**)
DIV 144 EMI: Wailua Ditch from Hoolawanui Stream (**Gov owned**)
DIV 244 EMI: New Hamakua Ditch from West Hoolawanui Stream (**Gov owned**)
DIV 143 EMI: Wailoa Ditch from West Hoolawanui Stream (**Gov owned**)
DIV 145 EMI: Wailoa Ditch from Hoolawaliilii (**Gov owned**)
DIV 254 EMI: New Hamakua Ditch from West Hoolawa Nui Stream (**Gov owned**)
DIV 243 EMI: Lowrie Ditch from Hoolawaliilii Stream (TMK owned by A&B)
DIV 236 EMI: Lowrie Ditch from Hoolawanui Stream (**Gov owned**)
DIV 237 EMI: Lowrie Ditch from West Hoolawanui Stream (TMK owned by A&B)
DIV 1215 WILLIAMS R: pipe from Hoolawa Stream tributary
DIV 32 BAILEY R: 2 inch pipe from spring
DIV 33 BAILEY R: 2 inch pipe from spring
DIV 215 EMI: Haiku Ditch from Hoolawa Stream (**Gov owned**)
DIV 1216 WILLIAMS R: pump from Hoolawa Stream
DIV 1214 WILLIAMS R: pump #1 Hoolawa Stream
DIV 625 KIGER D: pipe from Hoolawa Stream
DIV 34 BAILEY R: pump from Hoolawa Stream
DIV 52 BICKFORD J: pipe from Hoolawa Stream
DIV 637 KLOPPING S: pump from Hoolawa Stream
DIV 83 CARR TL: pump from Hoolawa Stream
DIV 361 GARDIEN K: pipe from Hoolawa Stream
DIV 920 PALMER S: pump from Hoolawa Stream

Hanawana (Hydrologic Unit 6039)

The watershed is 0.7 mi² with a maximum elevation of 1535 ft. The Hanawana stream is perennial, with a total stream length of 0.8 mi in the DAR cluster code 1 (small, narrow, and stream with little embayment).

DAR historic rankings:

- Potential Heritage Stream (1998): No
- Hawaii Stream Assessment Rank (1990): not ranked
- US Fish and Wildlife High Quality Stream (1988): No
- The Nature Conservancy Priority Aquatic Site (1985): No
- National Park Service Nationwide Rivers Inventory (1982): No

Watershed Rating

- Landcover: 9/10
- Shallow Waters Rating: 0/10
- Stewardship Rating: 3/10
- Size Rating: 1/10
- Wetness Rating: 5/10
- Reach Diversity Rating: 1/10
- Total Score: 4/10

Biological Rating

- Native Species Rating: not ranked
- Introduced Genera Rating: not ranked
- All Species Score: not ranked
- Total Biological Rating: not ranked
- Overall Rating: not ranked

Hawaii Stream Assessment

- HSA aquatic resources: not ranked
- HSA riparian resources: not ranked
- HSA cultural resources: not ranked
- HSA recreational resources: hiking, swimming; ranked a "3" by regional committee

Registered Diversions

DIV 1211 WHITE J: 2 pipes from Hanawana Stream for 120 gpm to irrigate 1.5 acres of banana and other fruit; property was resold twice, new land owners are Callahans (in 2006); in 2011 an easement was granted by BLNR for current landowners to utilize pipeline from stream across state lands to their property.

DIV 515 HOOPAI J: ditch from Hanawana Stream

- ➔ No EMI diversions (watershed starts below Lowrie Ditch and stream is very small)

Mokupapa (Hydrologic Unit 6039)

Small stream within the Hanawana hydrologic unit

- ➔ No stream information available
- ➔ No diversions on State-owned land

Registered Diversions

DIV 214 EAST MAUI IRR: Intake H-6 from Mokupapa Stream; also 1" pipe at bottom of intake basin provides water to the Mandoe's (TMK 2-9-05-5,46,47,48,49)

DIV 447 HAROLD FL: Pump from Mokupapa Stream

DIV 135 DUNNILL G: Pump from Mokupapa Stream 3xmonth via 30 gpm pump to storage tank used for domestic supply and irrigation

Honokolā (Hydrologic Unit 6039)

Small stream within the Hanawana hydrologic unit

- No stream information available
- No diversions on State-owned land

Registered Diversions

DIV 449 HARVEY EST: water from a ram pump on Honokola Stream used for non-potable domestic supply by less than 10 people.

DIV 1130 VON SHULTZE S: water pumped via 6" pipe for domestic supply at 5 service connections; water diverted from stream via open pipe to supply 10 ponds

DIV 1236 YOULIN V: water diverted via 1/2 " gravity flow pipe and sump pump supplying a 300-gallon storage tank for domestic supply at 3 service connections

DIV 126 DAVIS W&R: water pumped into 2" pipe used for irrigation

DIV 846 MCKINNEY B&E: water diverted via 4" pipe to a 2" pipe used for 3 service connections

DIV 81 Caro J&E: water diverted via 2" pipe used for domestic supply at 5 service connections

Kailua (Hydrologic Unit 6040)

The watershed is 4.9 mi² with a maximum elevation of 6549 ft. The Kailua Stream and its tributary Oanui stream are perennial, with a total stream length of 10.7 mi in the DAR cluster code 2 (small, steep in the upper watershed, and with little embayment).

USGS Hydrologic Data

Station ID	name	Period of Record	Q ₁₀	Q ₂₀	Q ₃₀	Q ₄₀	Q ₅₀	Q ₆₀	Q ₇₀	Q ₈₀	Q ₉₀
16577000	Kailua Str nr Huelo	1913-1958	68	45	19	13	9.4	7.3	5.4	3.9	2.6
16577000	Kailua Str nr Huelo	1984-2013					7.8	5.9	4.2	3.2	2.0

DAR historic rankings:

Potential Heritage Stream (1998): No
Hawaii Stream Assessment Rank (1990): moderate
US Fish and Wildlife High Quality Stream (1988): No
The Nature Conservancy Priority Aquatic Site (1985): No
National Park Service Nationwide Rivers Inventory (1982): No

Watershed Rating

Landcover: 10/10
Shallow Waters Rating: 1/10
Stewardship Rating: 7/10
Size Rating: 2/10
Wetness Rating: 7/10
Reach Diversity Rating: 5/10
Total Score: 8/10

Biological Rating

Native Species Rating: 2/10
Introduced Genera Rating: 10/10
All Species Score: 5/10
Total Biological Rating: 5/10
Overall Rating: 7/10

Hawaii Stream Assessment

HSA aquatic resources: Moderate (1 high value species (nopili); 1 low value native species observed); 2 surveys, last was in 1963
HSA riparian resources: not ranked
HSA cultural resources: very limited survey coverage; 2 archeological sites; very few sites; pre-contact/early contact, important information; moderately sensitive; no taro historically associated with stream
HSA recreational resources: swimming; ranked a "2" by regional committee

Registered Diversions

DIV 250 EMI: Haiku Ditch Kailua Stream (TMK owned by A&B)
DIV 158 EMI: Reservoir in Kailua Stream (TMK owned by A&B)
DIV 188 EMI: Lowrie Ditch from Kailua Stream (TMK owned by A&B)

DIV 273 EMI: New Hamakua Ditch from Ohanui Stream (TMK owned by A&B)
DIV 181 EMI: Wailoa Ditch from Ohanui Stream (TMK owned by A&B)
DIV 185 EMI: Wailoa Ditch from Kailua Stream (TMK owned by A&B)

Civil No. 19-1-0019-01 (JPC)

Defendant A&B/EMI's Exhibit AB-100

FOR IDENTIFICATION _____

RECEIVED IN EVIDENCE _____

CLERK _____