

**Board of Land and Natural Resources Meeting
Kalanimoku Building, Oahu
December 12, 2008**



**Staff Presentation on the
Petition to Amend the Interim Instream Flow
Standards for the Surface Water Hydrologic Units of
Honopou (6034), Hanehoi (6037), Piinaau (6053),
Waiokamilo (6055), and Wailuanui (6056), Maui**



**State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management**

Petition to Amend IIFS

HONOPOU

- Honopou Stream

HANEHOI

- Hanehoi and Puolua Streams

PIINAAU

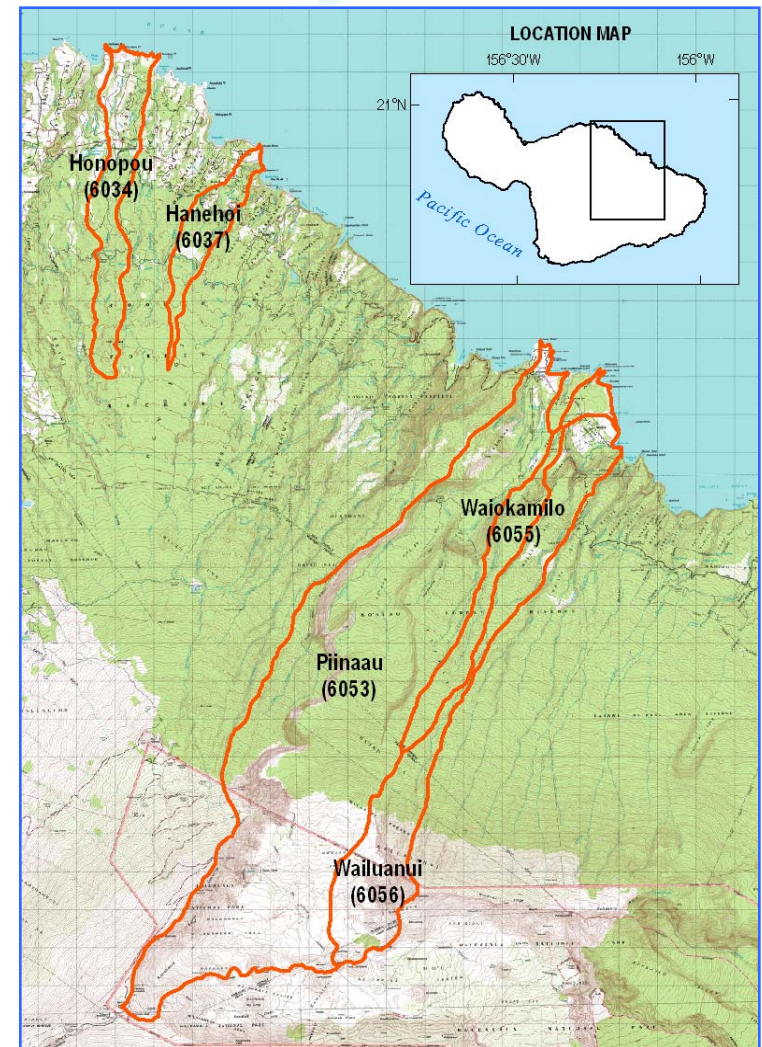
- Piinaau Stream
- Palauhulu Stream

WAIOKAMILO

- Waiokamilo Stream
- Kualani Stream

WAILUANUI

- East and West Wailuanui Streams
- Waikani Waterfall [Stream]



Presentation Overview

- **Background**
 - Timeline
 - Interim IFS process
 - Adaptive Management
 - Hydrology
- **Issues and Analysis**
 - General Considerations
 - Hydrologic Unit-Specific Considerations



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Timeline

- **October 8, 1988**
 - Initial “status quo” interim IFS for East Maui streams
- **May 24, 2001**
 - NHLC filed 27 Petitions to Amend the Interim IFS
- **July 23, 2001**
 - Focus on 5 hydrologic units, 8 petitions
- **March 20, 2002**
 - Commission approved Water Resource Investigations for Northeast Maui Streams



Timeline

- **June 15, 2005**
 - USGS Report: Median and Low-Flow Characteristics for Streams Under Natural and Diverted Conditions, Northeast Maui, Hawaii
- **January 2006**
 - USGS Report: Effects of Surface-Water Diversions on Habitat Availability for Native Macrofauna, Northeast Maui, Hawaii
- **December 13, 2006**
 - Approval of Interim IFS process
- **April 10, 2008**
 - Public fact gathering meeting
- **September 2 & 3, 2008**
 - Commission site visits

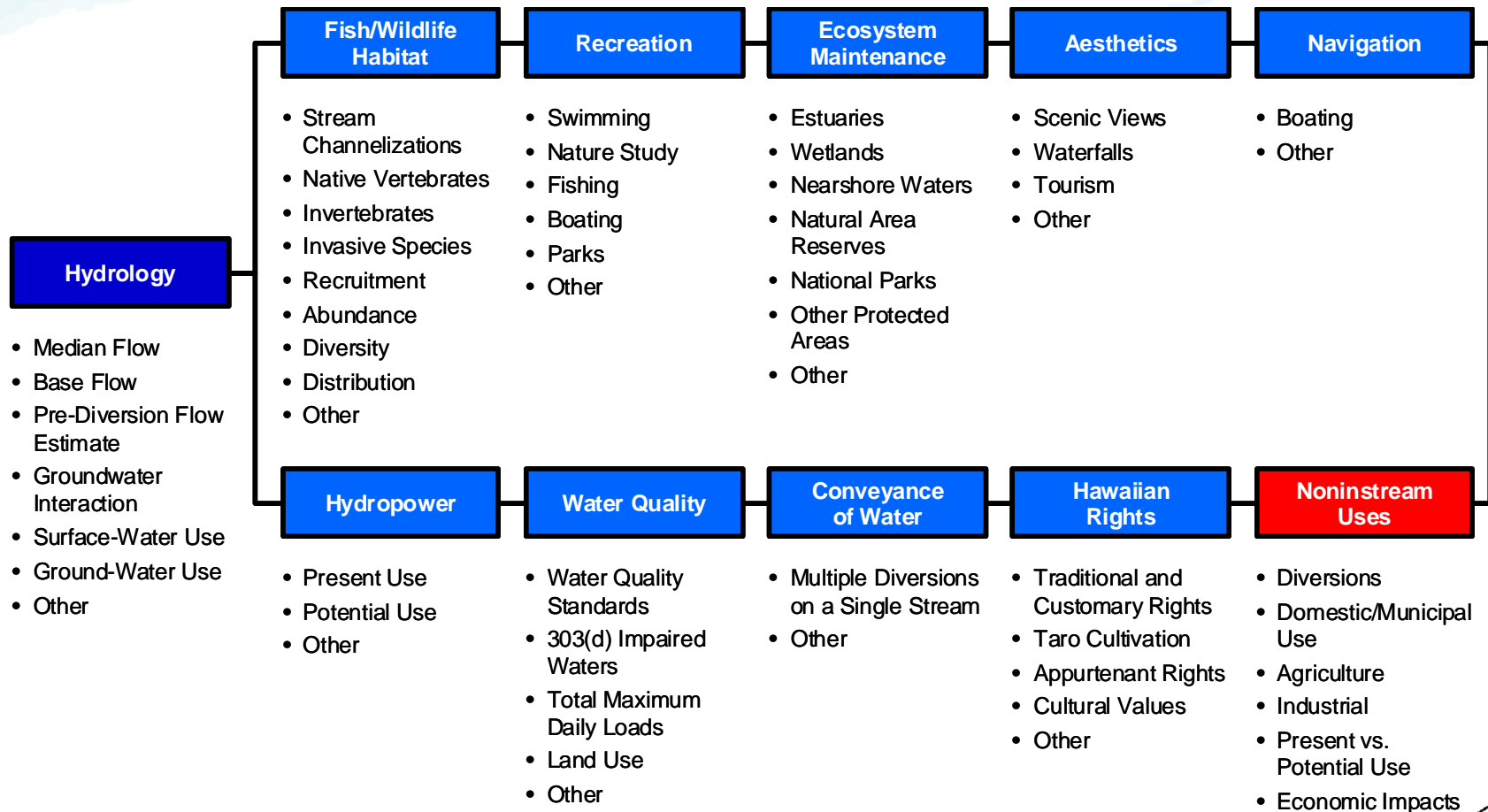


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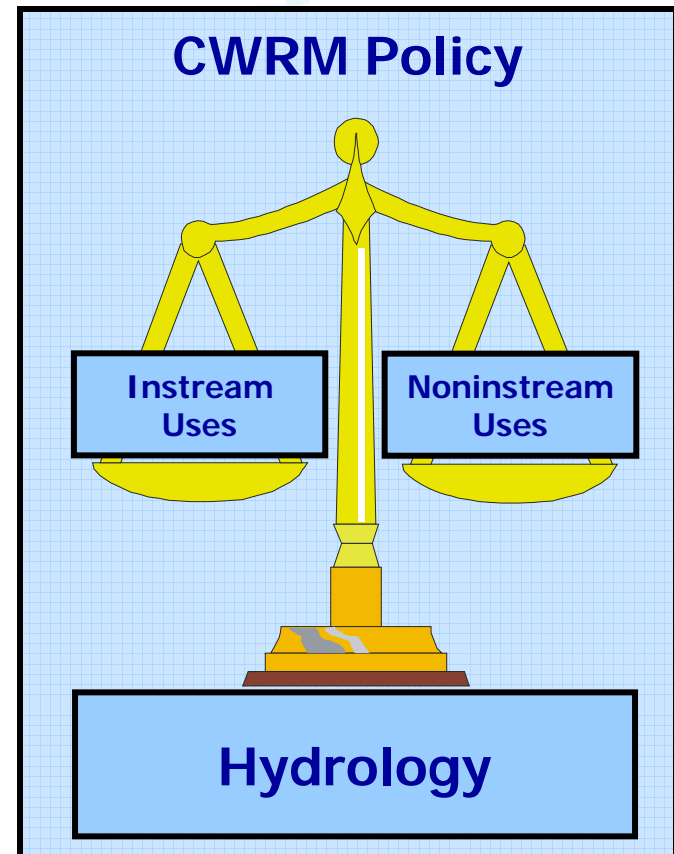


Balancing the Needs

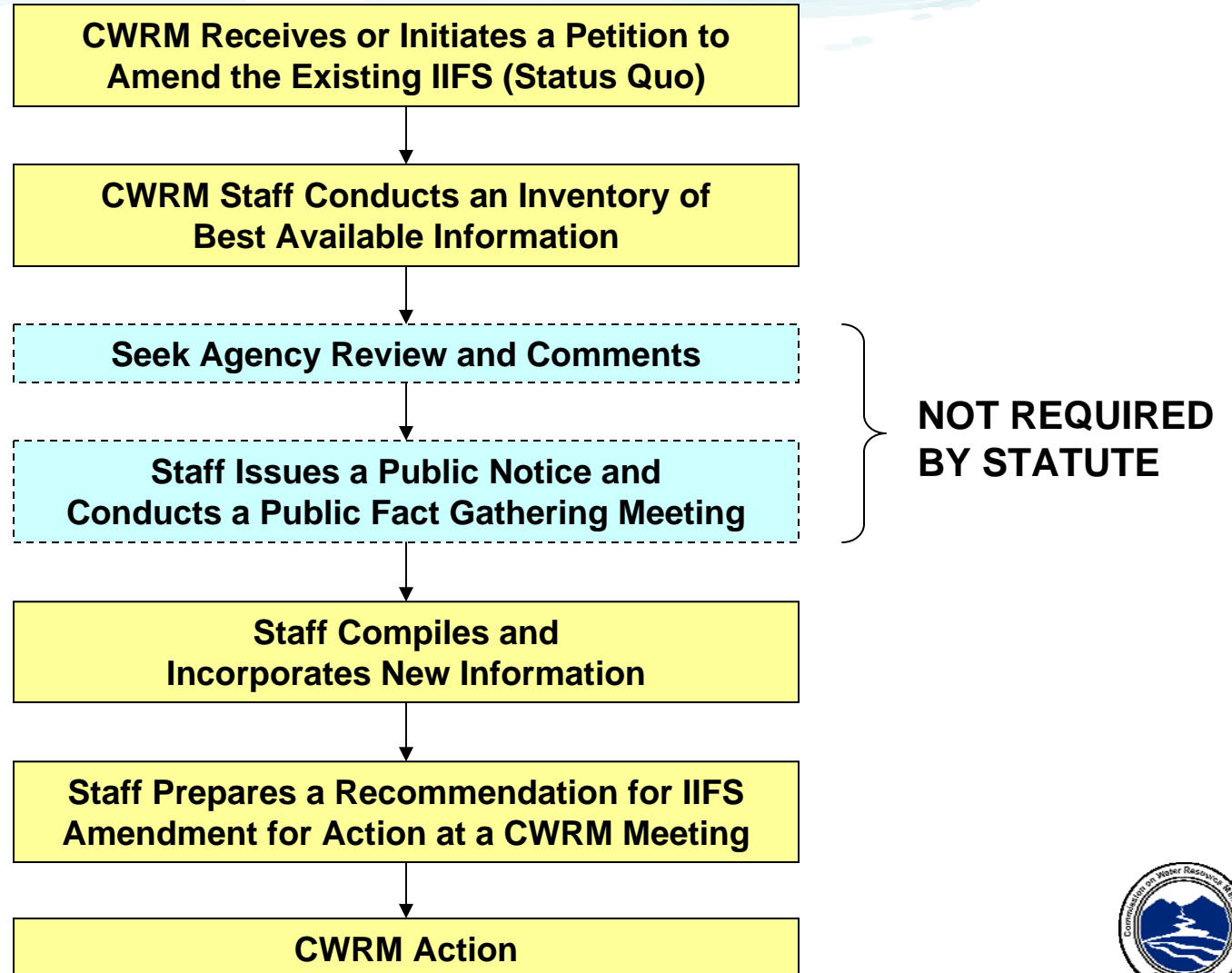


State Water Code

“The Commission shall weigh the importance of the present or potential instream values with the importance of present or potential uses of water for noninstream purposes, including the economic impact of restricting such uses.”



Interim IFS Process

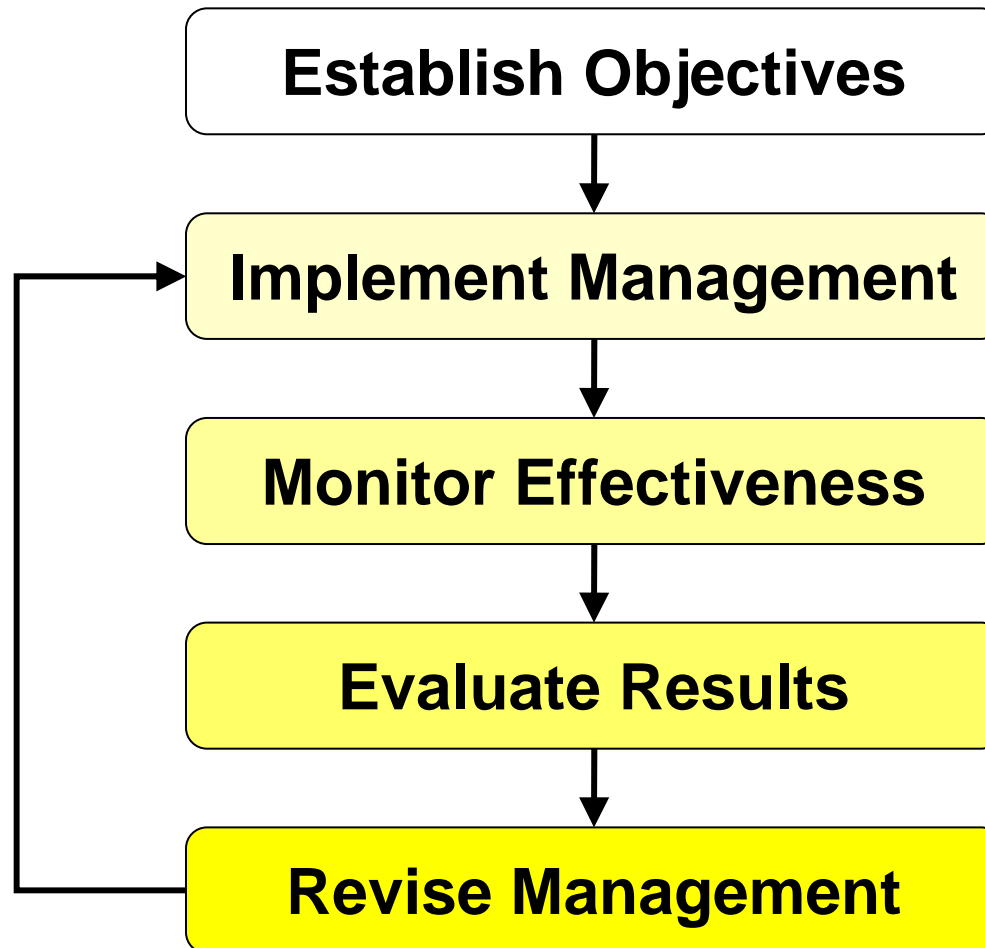


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Adaptive Management

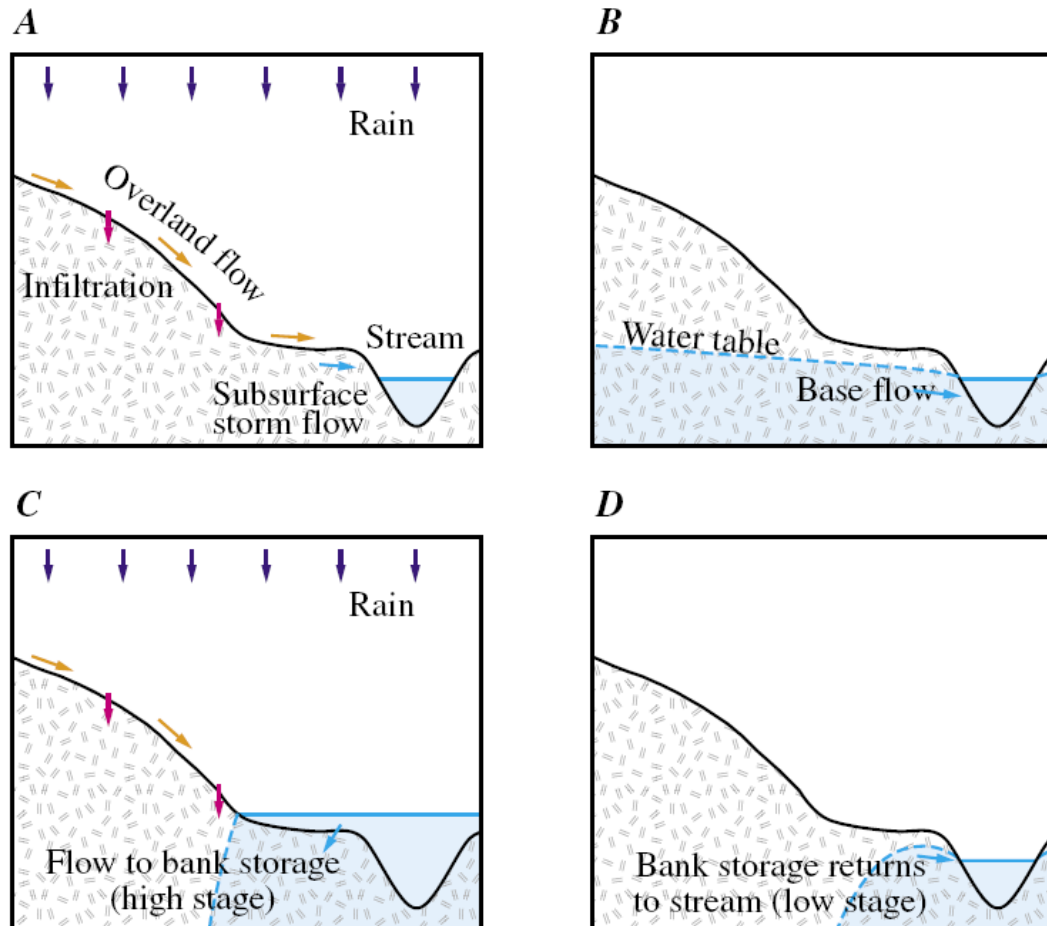


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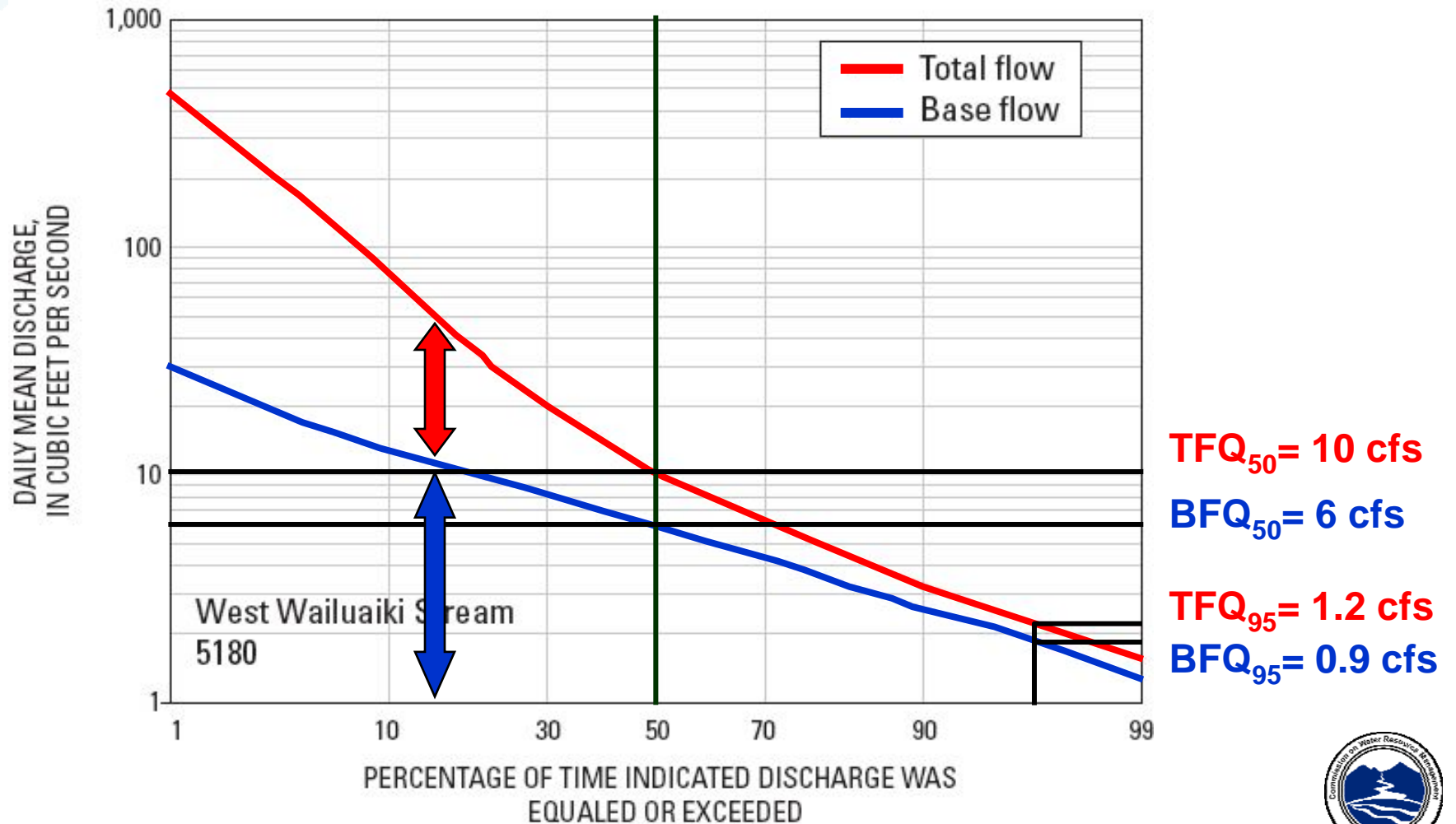
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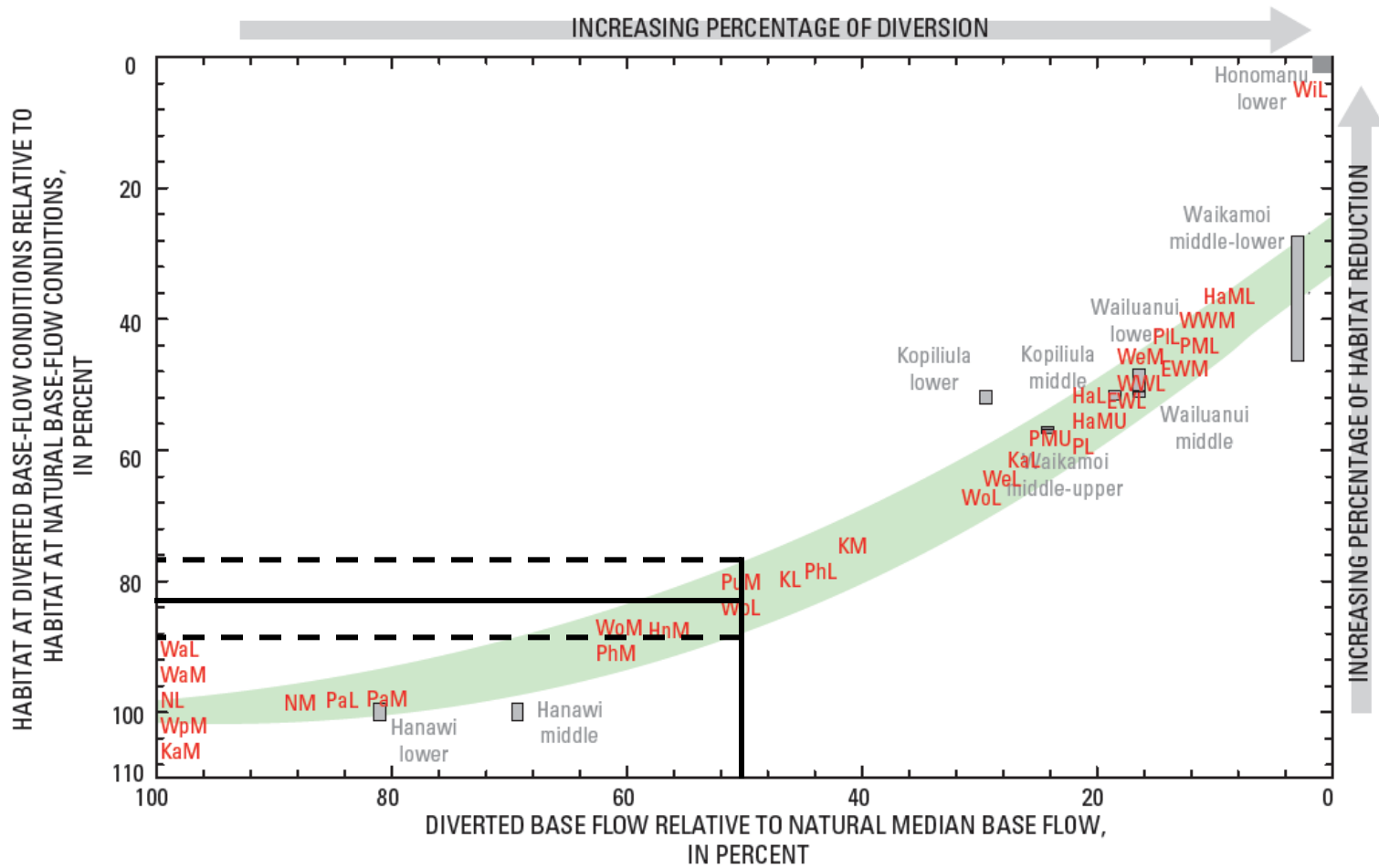
Hydrology



Hydrology



Habitat Availability



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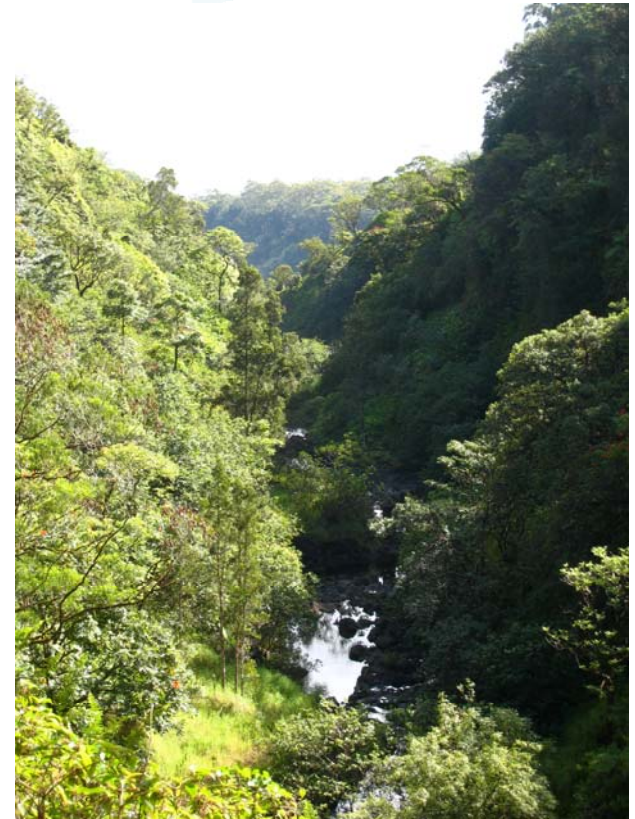
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General Considerations

- **Sustainability**
 - Agriculture
- **Public health**
 - Health risks of stagnant water
 - Nutrition
- **Decreased streamflow**
 - Reduction in ground water storage and recharge
 - Decreased annual rainfall
 - Increased water demand
 - Climate change
 - Landcover change



East Wailuanui Stream, Maui



General Considerations

- **Ongoing water issue**
 - Dates back to the 1881 petition
- **Status quo interim IFS**
 - Initial establishment
 - Differing opinions
 - Lack of data
- **Cultural landscape study**
 - Support return of water and taro farming
- **EMI cultural study**
 - Relationship between EMI and community



General Considerations

- **HC&S water needs**
 - Accuracy of information
 - Other sources of water
- **Agricultural subsidies**
 - Economics of HC&S / EMI operations
- **Upcountry Maui**
 - Residents rely on EMI water
- **Energy**
 - Sales to MECO
 - Renewable energy - hydroelectric and biomass



Wailoa Ditch siphon at Maliko Gulch. It transports water to west and central Maui



General Considerations

- **Water management practices**
 - Release of water downstream
 - Impact to downstream resources
- **Water use by HC&S**
 - NHLC calculation
 - Winter: 134 mgd over 7,560 ac = 17,724 gad
 - Summer: 268 mgd over 7,560 ac = 35,449 gad
 - HC&S calculation
 - Winter: 17,724 gad applied 2 out of 7 days = 5,064 gad
 - Summer: 35,449 gad applied 2 out of 7 days = 10,128 gad



General Considerations

- **Alternative water sources (HC&S)**
 - Brackish water from wells
- **Viability of HC&S**
 - Land size and location
 - Revenue from energy sales
 - Other sources of water
 - Product diversity line



HC&S Co., sugar mill, Maui



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 - **Hydrologic Unit-Specific Considerations**



Discussion Outline

Hydrologic Unit-Specific Considerations

- Assessment Summary
- Additional Considerations
- Rationale
- Diagrams
- Adaptive Management Strategy



An aerial photograph of a forested landscape. The terrain is dark green, indicating dense vegetation. A river or stream flows through the landscape on the right side, with some white water visible. The overall scene is a natural, undeveloped area.

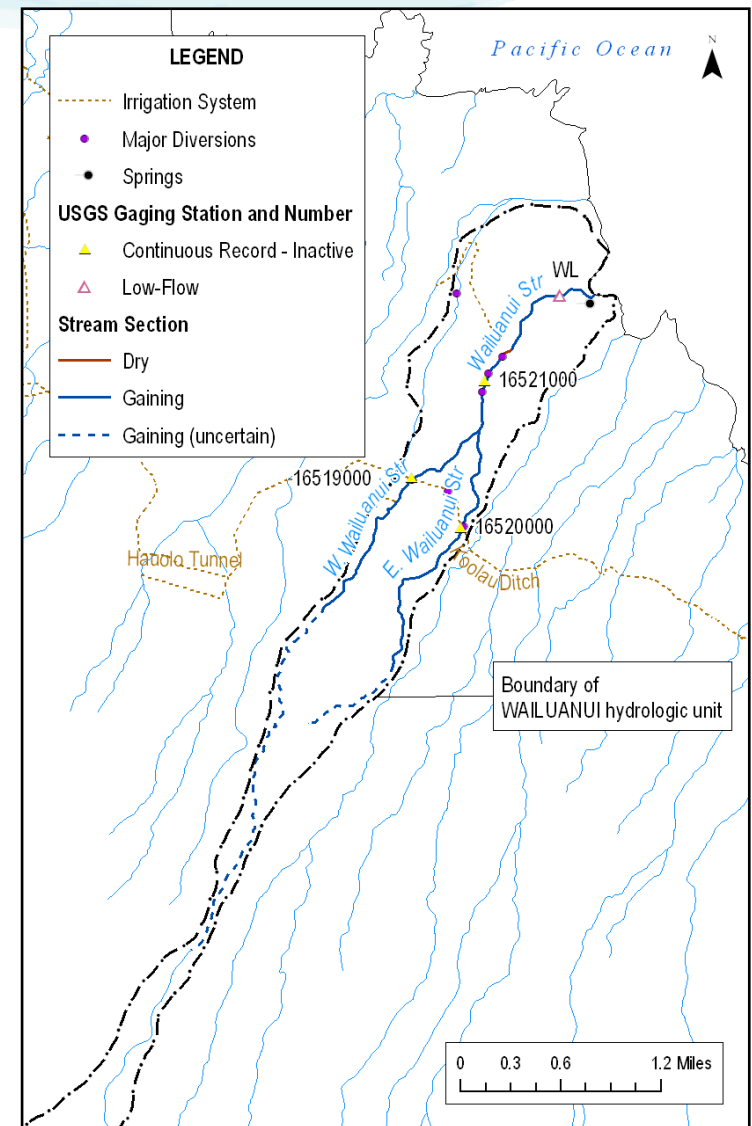
Wailuanui

Discussion Outline

- Assessment Summary
- Additional Considerations
- Proposed Interim IFS
- Rationale
- Adaptive Management Strategy

Assessment Summary

- **Hydrology**
 - Gaining stream
 - Ground water gain above ditch:
 - E. Wailuanui: 1.7 MGD
 - W. Wailuanui: 2.2 MGD
 - Ground water gain below ditch is 0.79 MGD
 - Data from regression equations (USGS)
 - Decreasing long-term trend in streamflow



Assessment Summary

- **Fish and Wildlife**
 - Rich diversity
 - Lacks common introduced species
 - Larval recruitment
 - Lack of streamflow continuity
 - Deep pools and dewatered sections

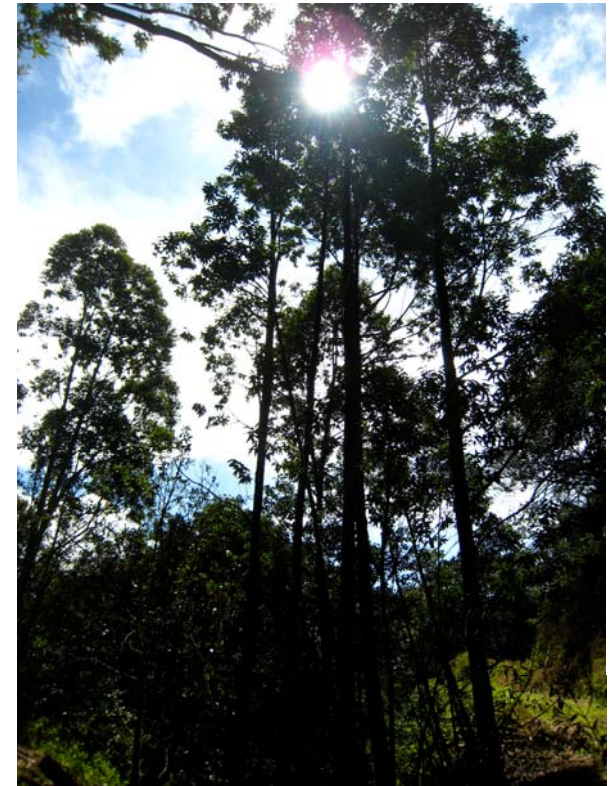
- **Recreational**
 - HSA – “Outstanding”
 - Swimming, hunting, fishing, scenic views



*Native Hawaiian snail:
Hihiwai (Neritina granosa)*

Assessment Summary

- **Ecosystem Maintenance**
 - 80% is part of Haleakala National Park, Koolau Forest Reserve, and Waikamoi Preserve
- **Aesthetic**
 - Wailua State Valley Wayside
 - Wailua Valley lookout
- **Water Quality**
 - Class 1b – “protective” conservation subzone



Wailuanui hydrologic unit



Assessment Summary

- **Irrigation and Domestic**
 - Total of 3 non-EMI diversions
 - 2 registered for cultivation of other crops and livestock
 - Keanae Well No. 1 - drinking water for Keanae and Wailuanui communities
- **Traditional and Customary**
 - 2 registered for taro cultivation
 - One of Wailuanui loi complexes relies on Wailuanui Stream



Wailua Valley



Assessment Summary

- **Noninstream**
 - EMI diversions - 4 major, 3 minor
 - EMI supplies water to:
 - HC&S
 - Makawao DWS system
 - MLP
 - Effects of decreasing water diverted
 - Irrigation in west and central Maui
 - Long-term trends in ground water levels



*EMI diversion at Koolau Ditch,
Wailuanui Stream*

Additional Considerations

- **Public testimony**
 - Lack of water
 - Family had to move

- **HC&S**
 - Pipe intake for taro damaged by landslide
 - Questions the need to amend interim IFS



Waikani Falls, Wailuanui Stream



Rationale

- **Why restore flow?**
 - Increase flow continuity for stream biota
 - Support robust native species-dominated community
 - Protection and maintenance of reserves and preserves
 - Taro farmers and domestic users in Wailua Valley
 - Future demand



Mouth of Wailuanui Stream



Rationale

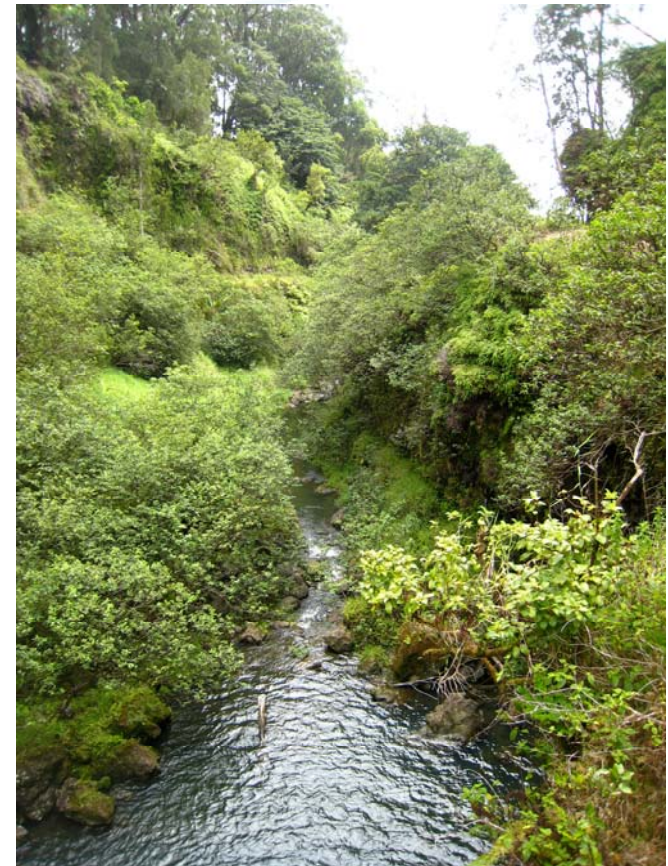
- **Why not full restoration?**
 - Upcountry Maui - domestic use, agriculture
 - Central Maui - agriculture
 - Power to MECO
 - Sustainability - diversified agriculture



Maui Electric Company (MECO)

Rationale

- **Interim IFS**
 - Estimate: Based on median natural base flow (BFQ₅₀)
 - Purpose: Water for taro farmers and stream biota



Wailuanui Stream



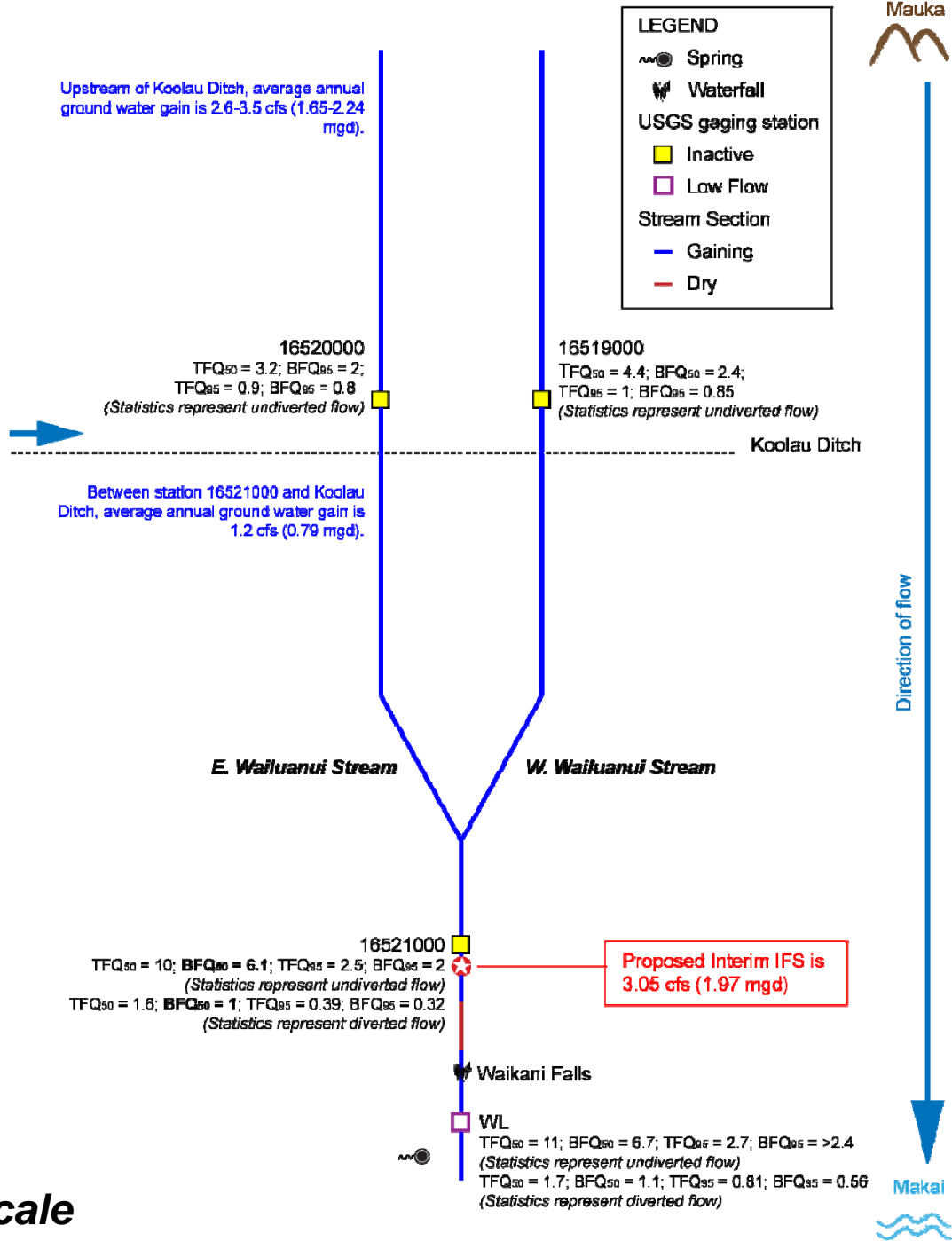


Diagram not to scale

Proposed Interim IFS

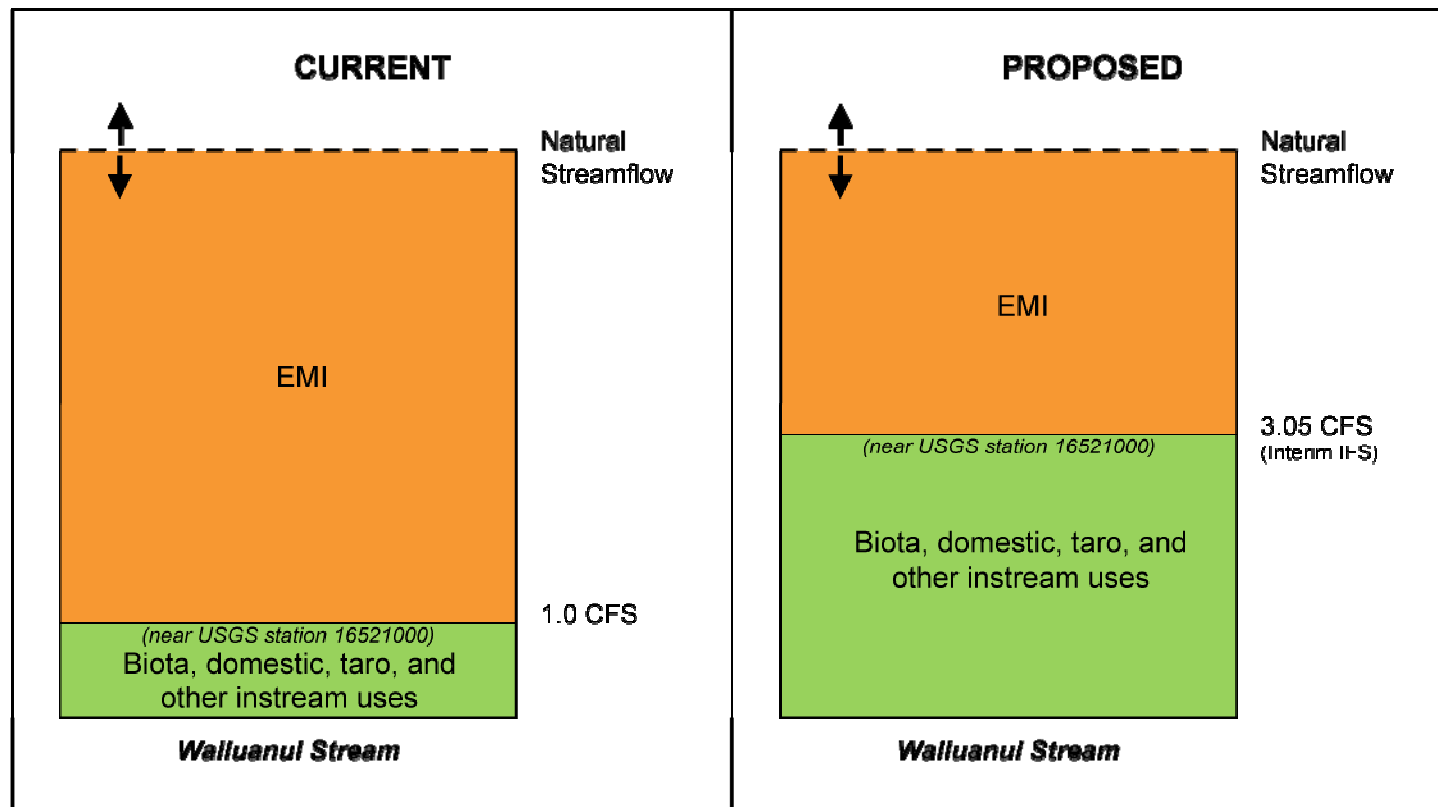


Diagram not to scale



Adaptive Management

- **Hydrologic Unit-Specific**
 - Maintenance of auwai, transmission lines, and intakes
 - Flushing flows for auwai and taro loi
 - Monitor streamflow downstream of Waikani Falls

- **General Strategies**
 - Implementation
 - Monitoring
 - Evaluation



Taro loi in Wailua Valley



RECOMMENDATIONS

- **General Strategies**

- **Implementation**

- Comply with State Water Code for unregistered diversions
 - Collaborate with agency staff and registered diversion owners to determine appropriate actions
 - Coordinate with EMI and DAR to assess existing conditions and status of EMI diversions



RECOMMENDATIONS

- **General Strategies**

- **Monitoring**

- Monitor streamflow by taking periodic measurements
 - Conduct periodic biological surveys
 - Affected parties monitor and document the negative impacts of diversions or adopted interim IFS
 - Conduct investigations with granted access to stream channels and private property



RECOMMENDATIONS

- **General Strategies**

- Evaluation

- Report to Commission within one year from date of adoption
 - Assess implementation of adaptive management strategies
 - Prepare long-term management framework



AMENDMENTS

- **Approved with the following amendments**
 - Moving forward on the staff's recommendation is the first step in an integrated approach to all 27 (twenty-seven) streams that are subjects of these petitions
 - Staff shall provide progress reports to the Commission at regularly scheduled meetings during the course of the year
 - In cases of return of water to losing streams, staff and all parties shall monitor and report whether there are increases in either downstream flow or groundwater in the vicinity



Questions?



Ke Kahuwai Pono

“The trustee who oversees the rightful sharing of water.”