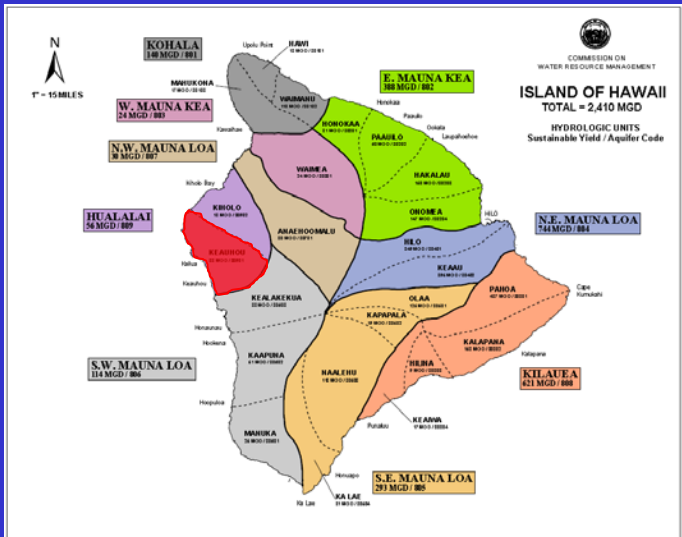
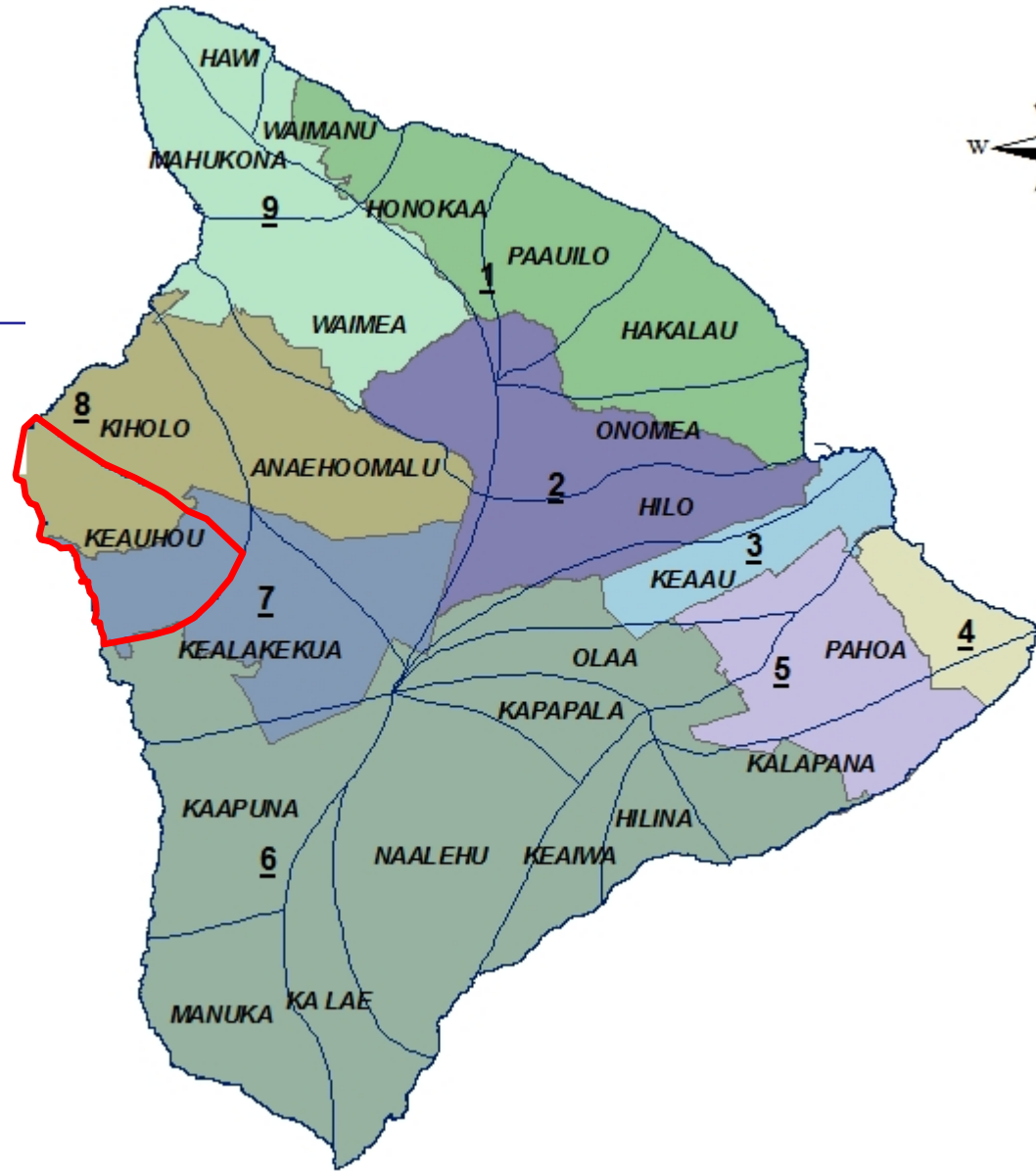


U.S. Department of Interior National Park Service Kaloko-Honokōhau National Historical Park Petition for Ground Water Management Area Designation Keauhou Aquifer System Area, North Kona, Hawaii



**CWRM
Aquifer System
Area Boundaries
vs.
HAWAII COUNCIL
DISTRICTS**



Kaloko-Honokōhau National Park

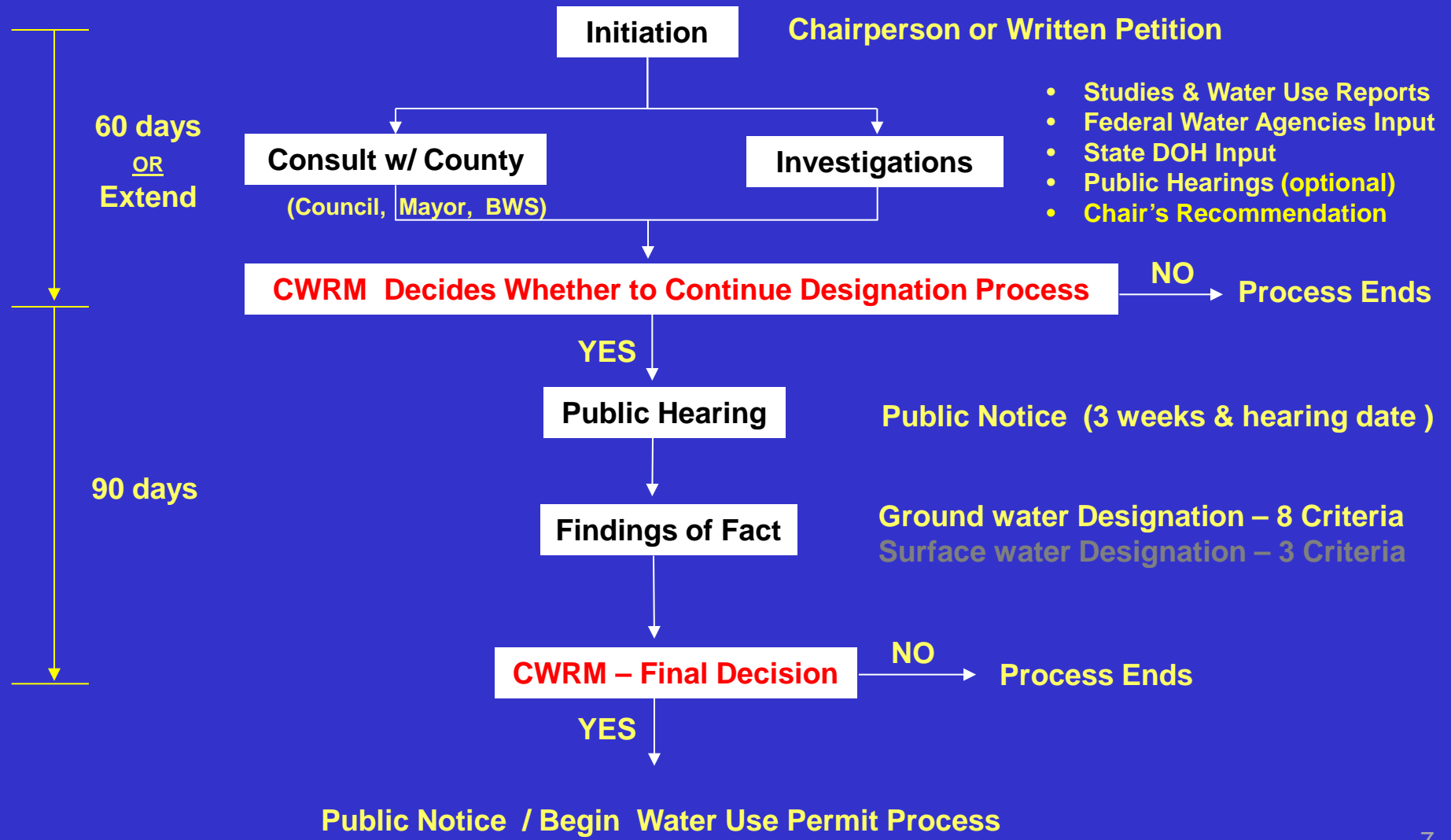


On September 13, 2013, the National Park Service at the Kaloko-Honokōhau National Historical Park submitted a petition to the Commission requesting that the Keauhou Aquifer System Area be designated as a Ground Water Management Area.

Ground Water Management Areas require additional regulation through Commission-approved ground water use permits.

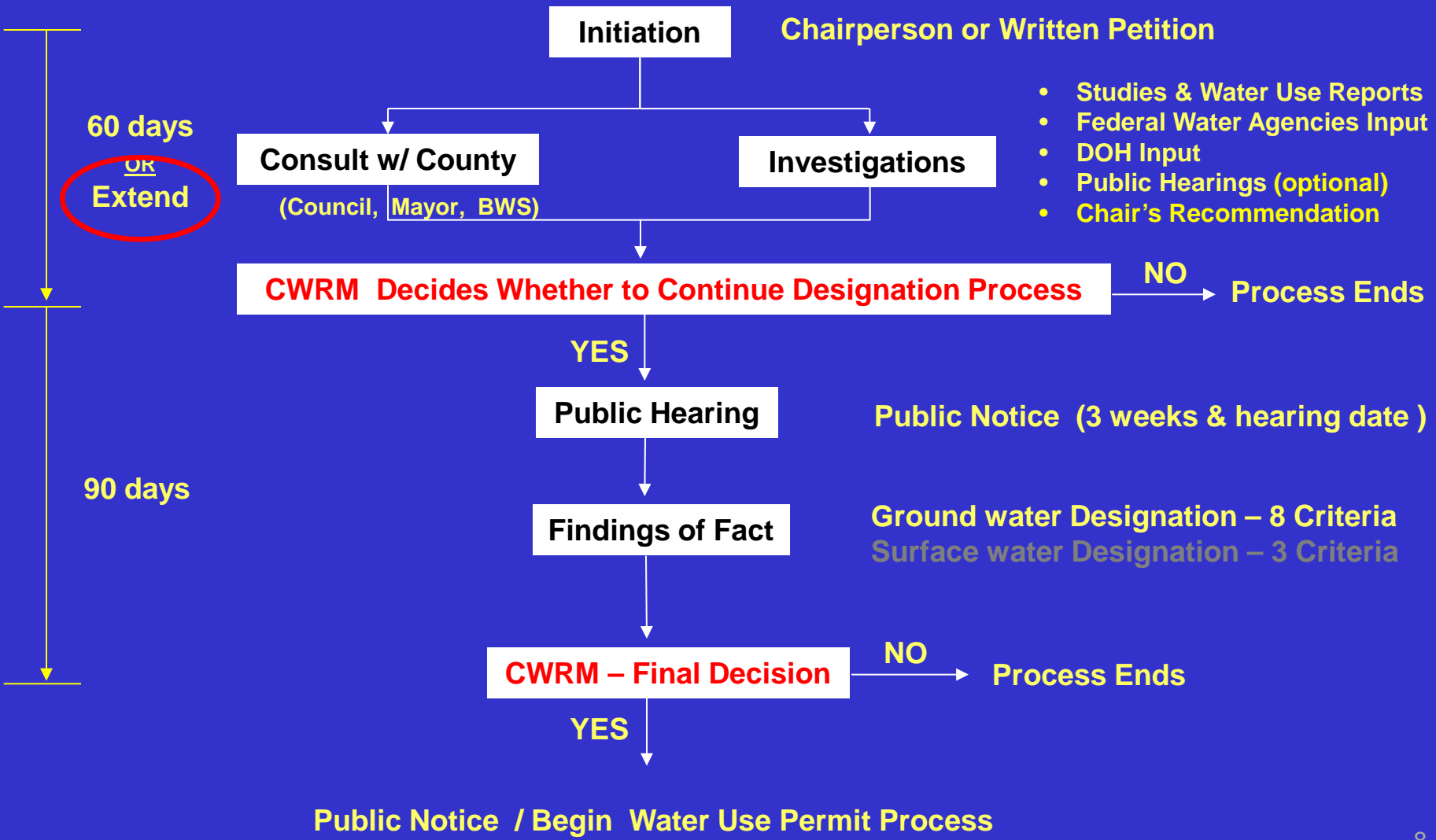
Designation Process

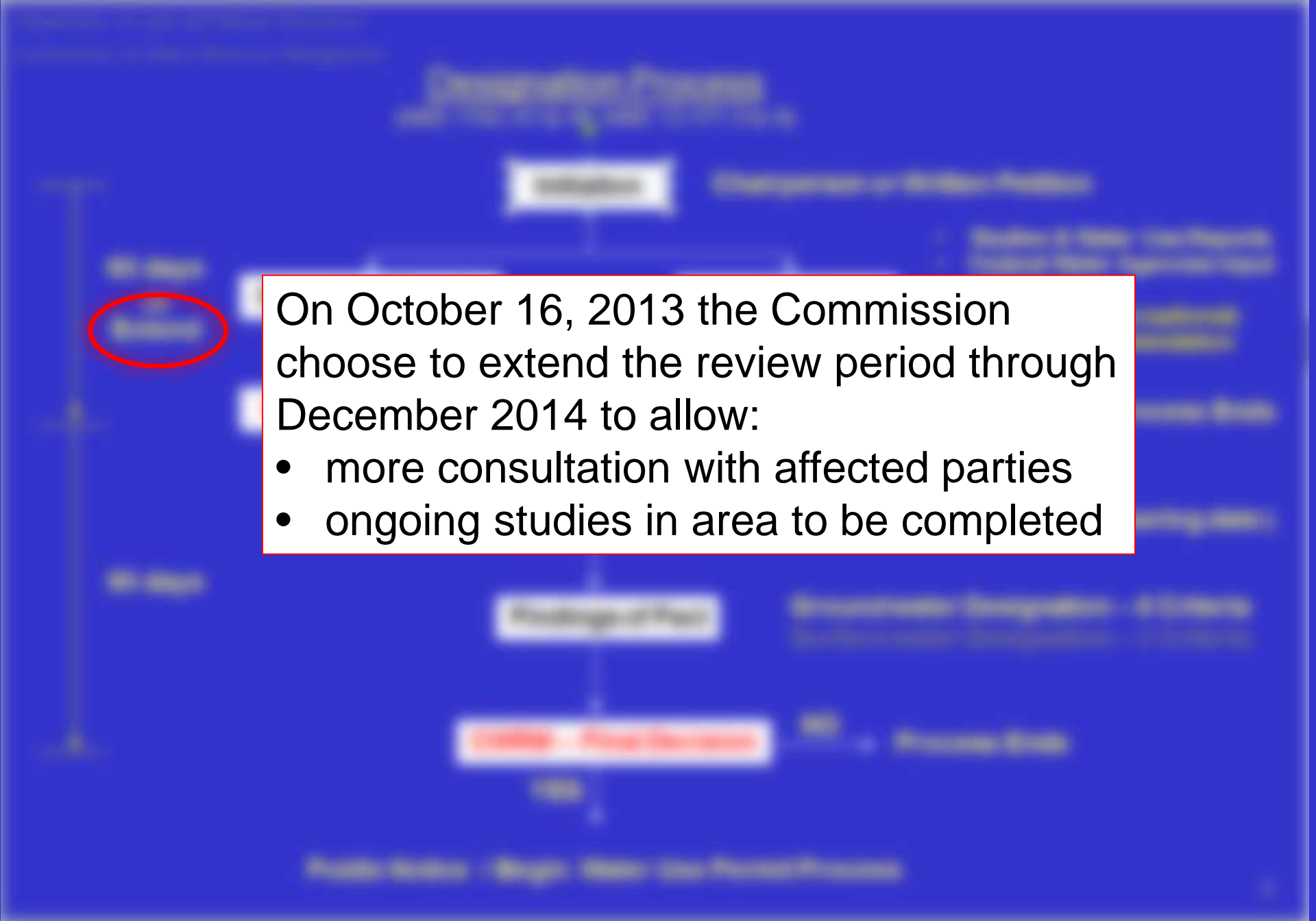
(HRS 174C-41 to 46, HAR 13-171-3 to 9)



Designation Process

(HRS 174C-41 to 46, HAR 13-171-3 to 9)



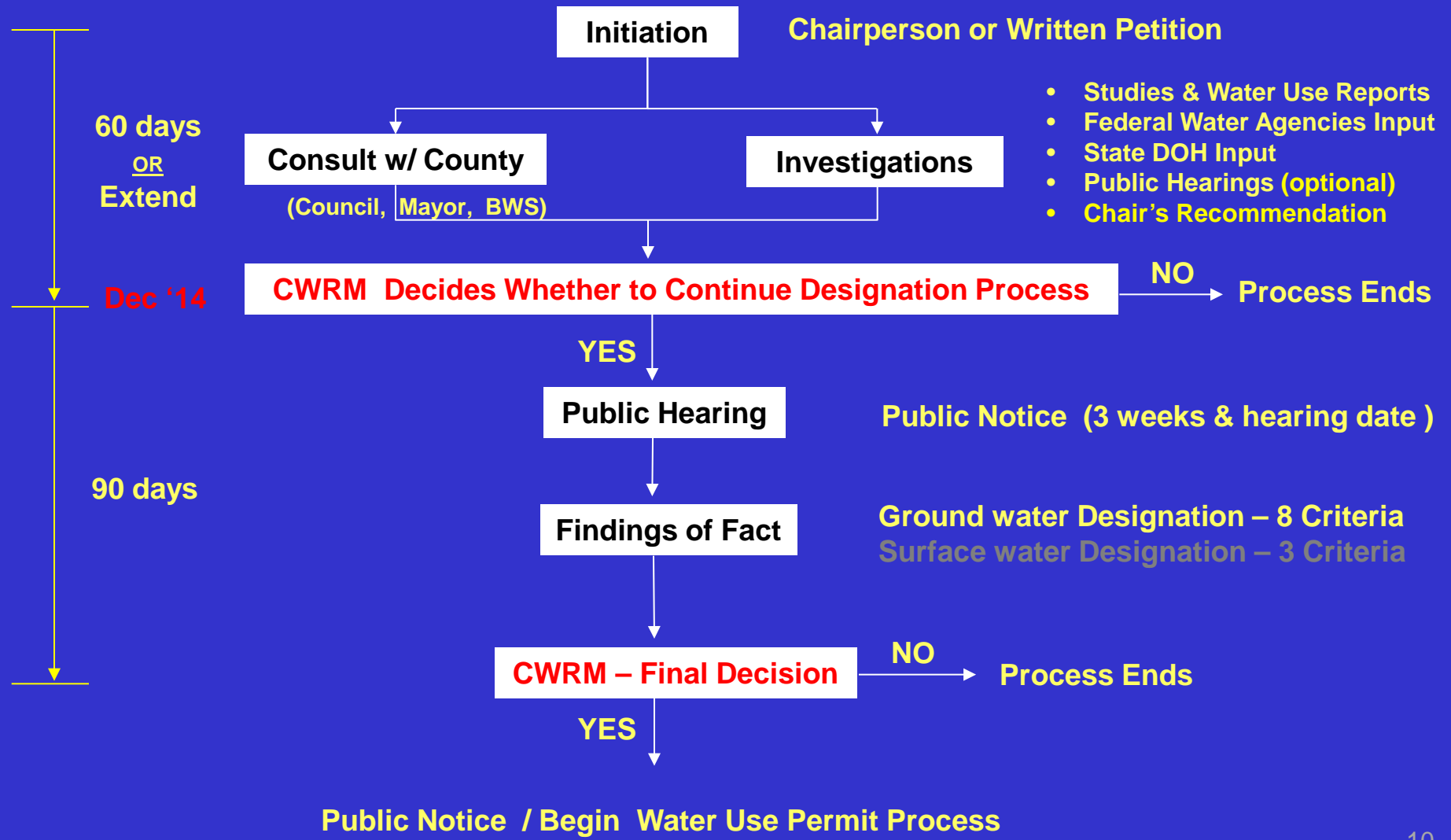


On October 16, 2013 the Commission choose to extend the review period through December 2014 to allow:

- more consultation with affected parties
- ongoing studies in area to be completed

Designation Process

(HRS 174C-41 to 46, HAR 13-171-3 to 9)



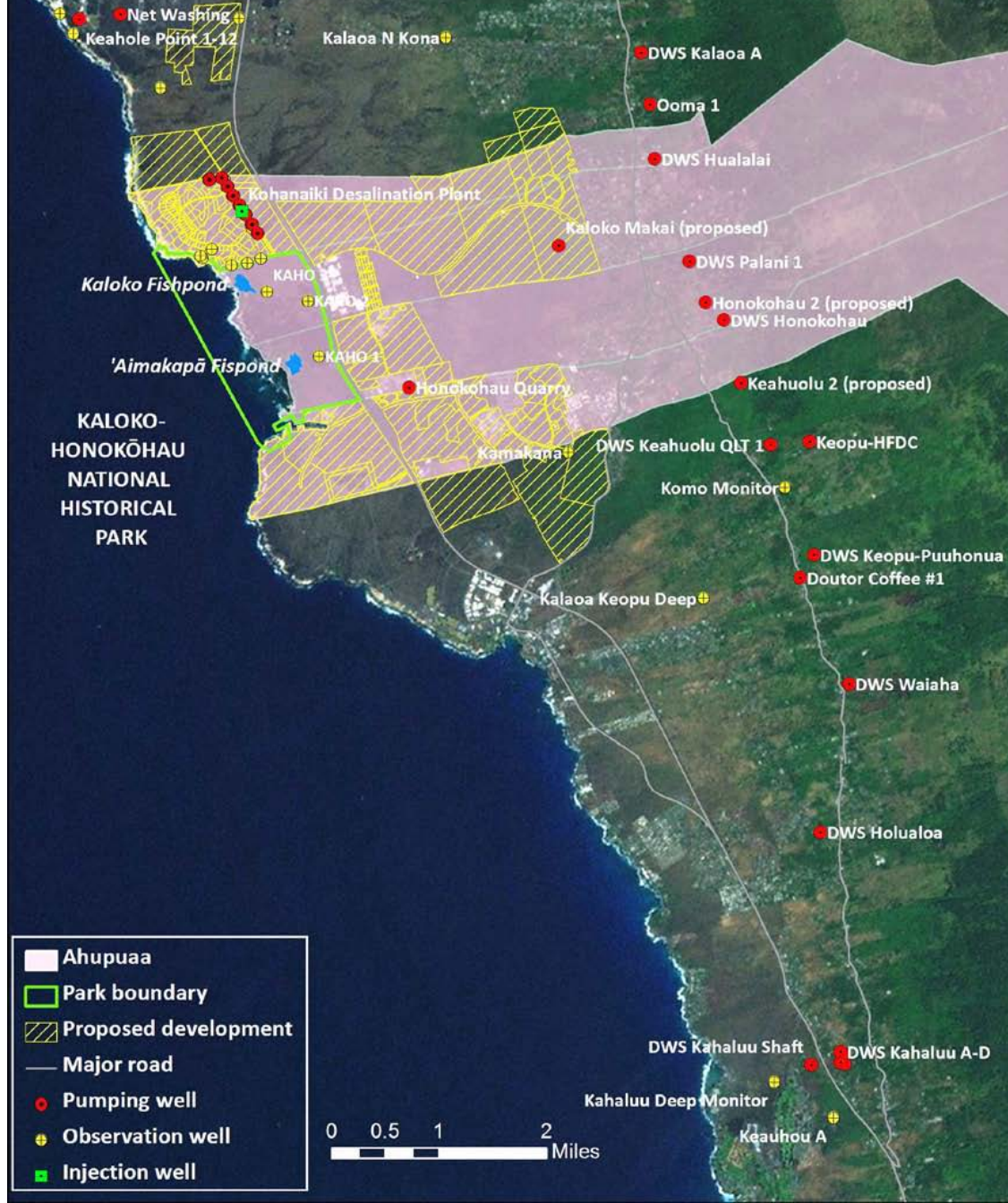
Ground Water Criteria Commission shall Consider (§174c-44):

- (1) Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach 90% of the sustainable yield;
- (2) There is an actual or threatened water quality degradation as determined by DOH;
- (3) Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining ground water levels;
- (4) Whether the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to upconing or encroachment of salt water;

Ground Water Criteria Commission shall Consider (§174C-44):

- (5) Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses;
- (6) Excessive preventable waste of ground water is occurring;
- (7) Serious disputes respecting the use of ground water; or
- (8) Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the commission, in one of the above conditions.

NPS Petition Details



2013 Petition from National Parks Service to designate the Keauhou Aquifer System Area (ASA)

5 of 8 criteria the Commission shall consider were raised:

- Sustainable Yield approach to groundwater management is not adequate to address: 1) potential harm to the biota and potential for limiting the practice of Traditional & Customary Rights caused by the reduction of shoreline discharge from pumping; 2) projected water demands that will exceed SY; 3) rising sea-level and declining rainfall; or 4) climate change.
- Documented Saltwater Encroachment: Kahaluu Area
- Waste: Kona water use is “2.5 higher than other areas of the county”
- Serious Disputes: 1) effects of cumulative future pumping on NPS resources, 2) conceptual models of the hydrogeological structure of the Keauhou ASA
- Potential development projects will contribute to cumulative withdrawals that will exceed the Keauhou Aquifer System Area sustainable yield = 38 mgd



COMMISSION ON
WATER RESOURCE MANAGEMENT

ISLAND OF HAWAII

TOTAL = 2,410 MGD

HYDROLOGIC UNITS
Sustainable Yield / Aquifer Code

N
1" = 15 MILES

KOHALA
140 MGD / 801

Upolu Point
HAWI
18 MGD / 80101

E. MAUNA KEA
388 MGD / 802

MAHUKONA
17 MGD / 80103

W. MAUNA KEA
24 MGD / 803

WAIMANU
110 MGD / 80102

Honokaa

HONOKAA
31 MGD / 80201

Paaulo

PAAUILO
80 MGD / 80202

Ookala

Laupahoehoe

N.W. MAUNA LOA
30 MGD / 807

Kawaihae

WAMEA
24 MGD / 80301

HAKALAU
160 MGD / 80203

Kiholo Bay

HUALALAI
56 MGD / 809

KIHOLO
18 MGD / 80902

ANAEHOOMALU
30 MGD / 80701

ONOMEA
147 MGD / 80204

HILO

N.E. MAUNA LOA
744 MGD / 804

SY = 38 mgd

Recharge = 152 mgd
= 4x SY, leaving 114 mgd
to discharge to ocean

KEAUHOU
38 MGD / 80901

HILO
348 MGD / 80401

KEAAU
386 MGD / 80402

Kailua

Keauhou

KEALAKEKUA
38 MGD / 80903

OLAA
126 MGD / 80601

PAHOA
457 MGD / 80801

Cape Kumukahi

Honaunau

Hookena

KAAPUNA
61 MGD / 80602

KAPAPALA
18 MGD / 80602

KALAPANA
168 MGD / 80802

Kalapana

S.W. MAUNA LOA
114 MGD / 806

Hoopuloa

MANUKA
26 MGD / 80801

NAALEHU
118 MGD / 80603

HILINA
8 MGD / 80803

KILAUEA
621 MGD / 808

S.E. MAUNA LOA
293 MGD / 805

KEAIWA
17 MGD / 80804

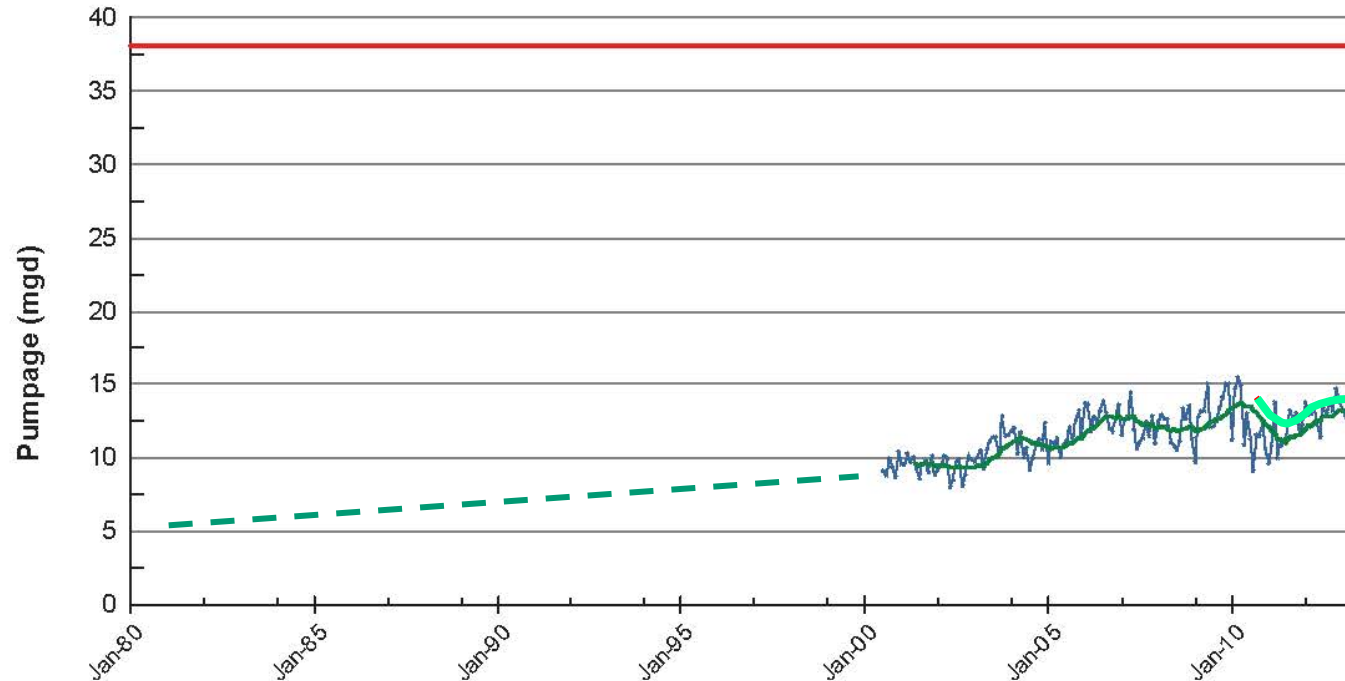
Honuapo

Ka Lae

KA LAE
31 MGD / 80604



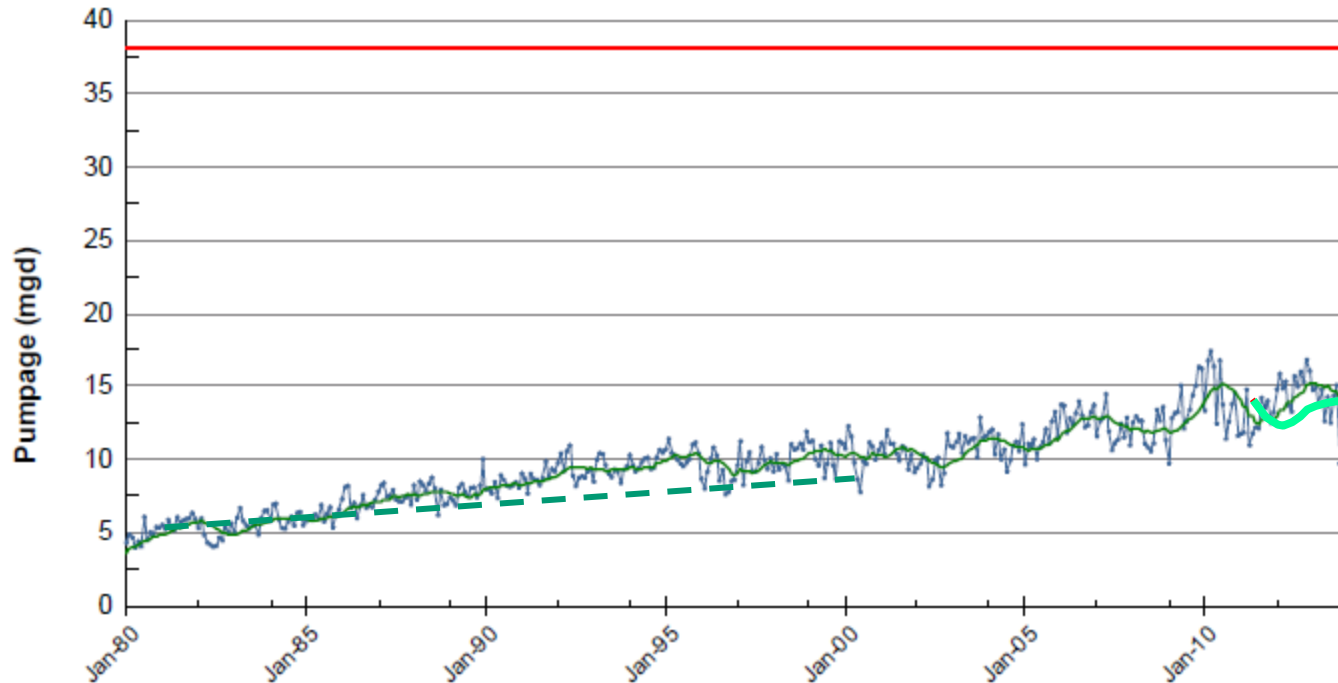
Monthly Pumpage Chart 12 Month Moving Average



105 total wells
39 major pumping



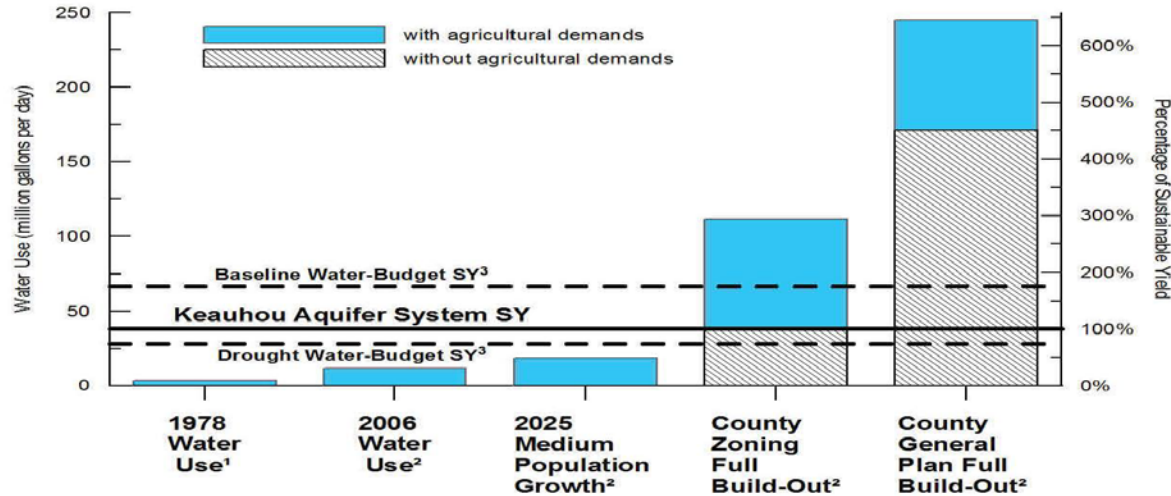
Monthly Pumpage Chart 12 Month Moving Average



40% SY

105 total wells
39 major pumping



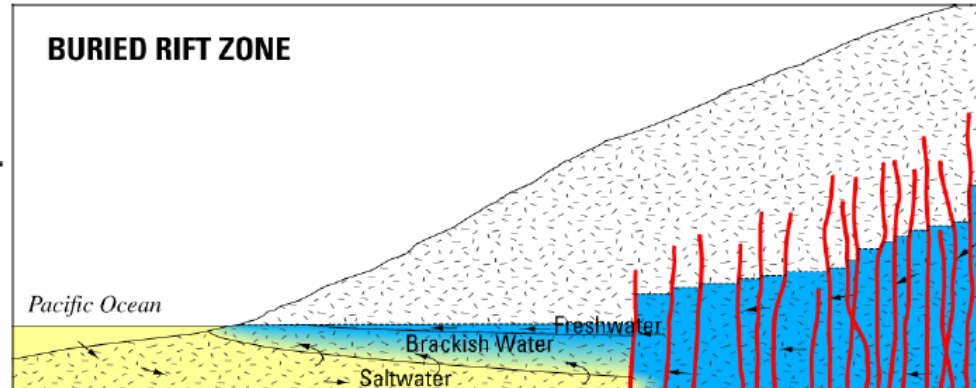


§174C-41 Designation of water management area. (a) When it can be reasonably determined, after conducting scientific investigations and research, that the water resources in an area may be threatened by existing or proposed withdrawals or diversions of water, the commission shall designate the area for the purpose of establishing administrative control over the withdrawals and diversions of ground and surface waters in the area to ensure reasonable-beneficial use of the water resources in the public interest.

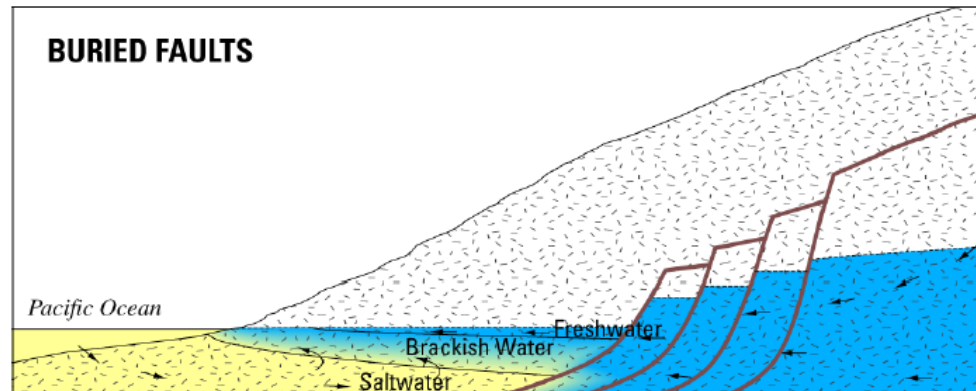
Pumpage of 175 Mgal/d will serve > 1 million people.

Origin of High Water Levels

Intrusive, low-permeability dikes



Faults draped with younger lava flows



Low-permeability lava flows

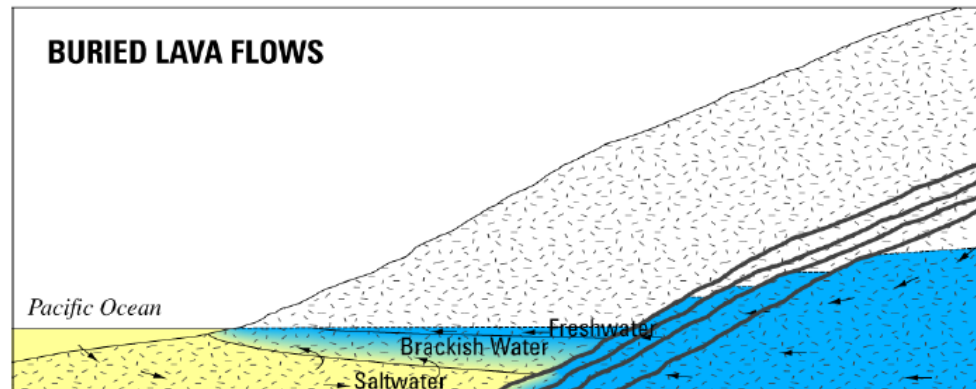
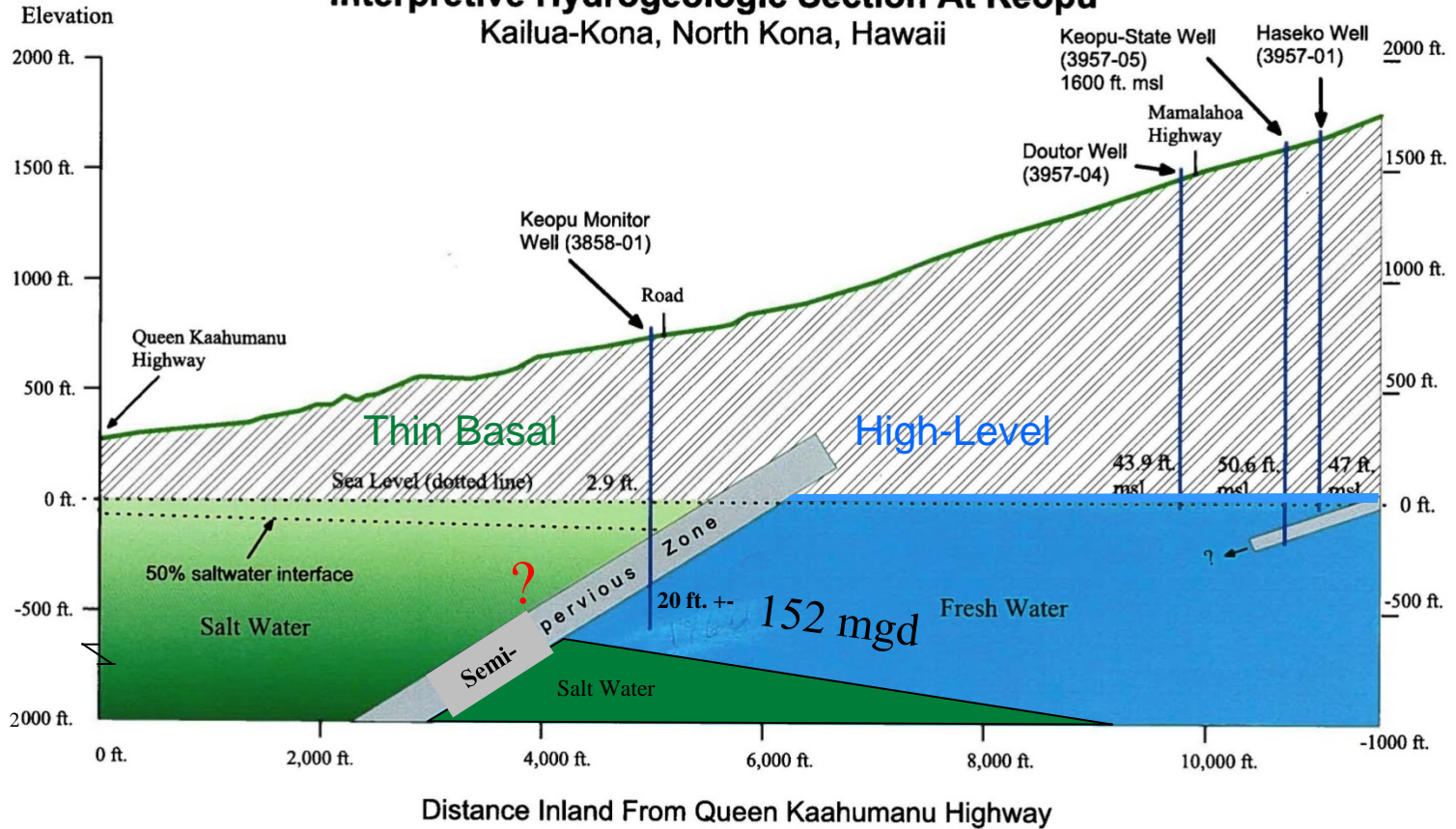


Figure 9
Interpretive Hydrogeologic Section At Keopu
 Kailua-Kona, North Kona, Hawaii



Water Resource Associates 2006
 067 Hydrogeologic Section

Significant collaboration since 2007:

- **Working group** (NPS)
- **Round Table** (HDWS)
- **Professionals Group – 2008 & 2014 WRPP** (CWRM)

Outcomes of these collaborations:

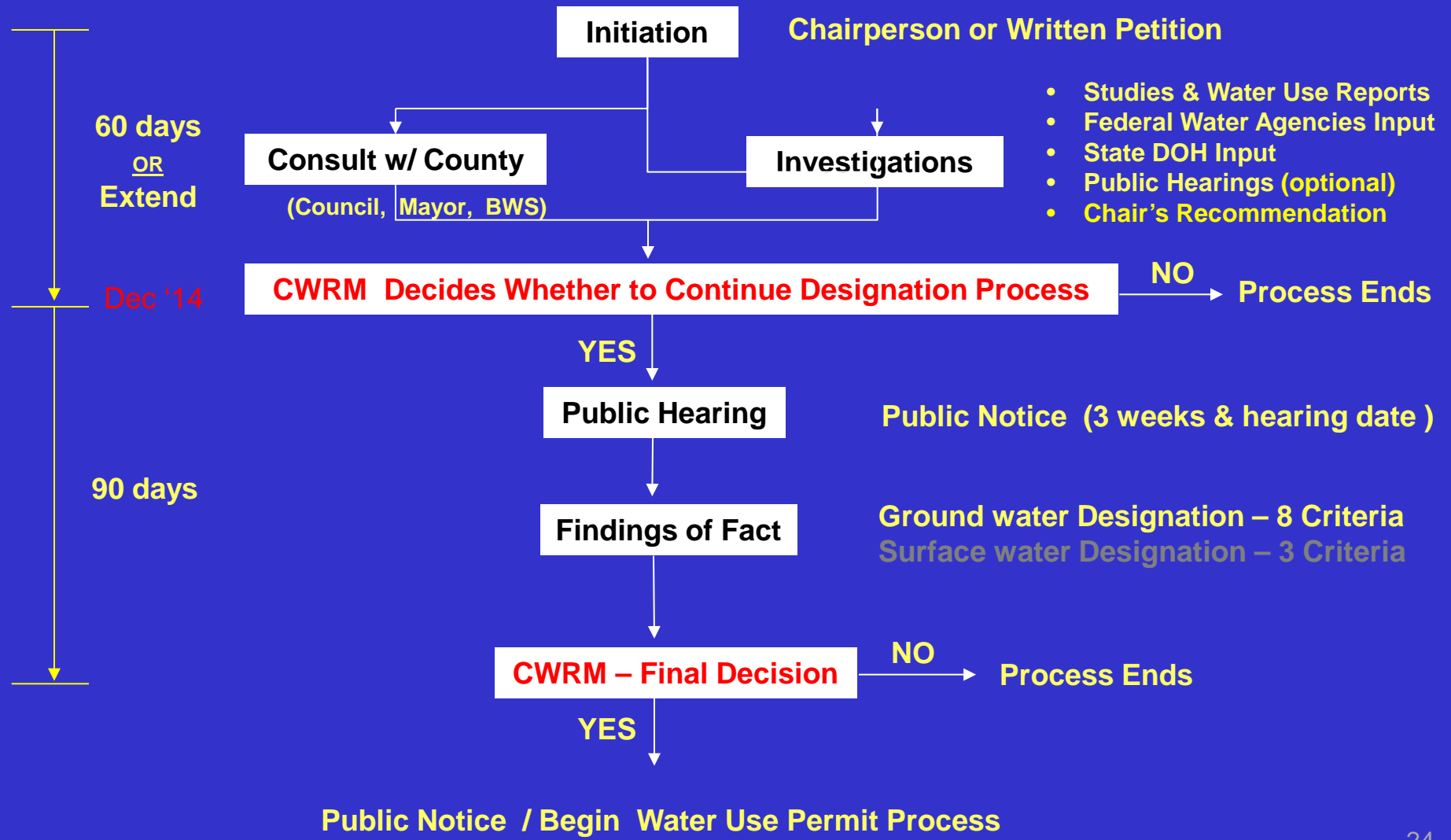
- **Increased monitoring** (increase to quarterly monitoring, 2013 online water use reporting, additional monitor wells: Komo, Kainaliu, Kamakana, Keopu, Kohanaiki, etc.)
- **Current ongoing studies** (2014 WRPP, Evapotranspiration, Recharge, & data trends updates; USGS-High-Level/Basal Isotope Study & 3D Numerical Model)
- **Extensive bibliographies of completed studies** (2011 Big Island Recharge, 2012 Rainfall Atlas, NELHA, NPS, others)

Staff's Preliminary Conclusions & Future Actions

- NPS case rests on potential harm to: 1) near shore biology; 2) the practice of Traditional & Customary Rights, and 3) to the aquifer from future pumpage.
- Commission needs help from the County to determine what constitutes future authorized planned ground water use for Keauhou ASA.
- Ongoing studies will better quantify the hydrology of the Keauhou ASA. These studies will be completed in late 2014.
- Increased studies and monitoring of the Keauhou ASA have improved and will continue to improve our understanding of the resource.
- September & October - field visits by Commission open to the public
- November - Preliminary Findings of Fact
- December 2014 - Continuation Decision in Kona

Designation Process

(HRS 174C-41 to 46, HAR 13-171-3 to 9)



If Keauhou ASA is Designated:

- **Public Notice.** All owners of wells that use ground water have 1 year to apply for “existing” ground water use permit from published notice date.
- Existing uses at the time of designation are determined before “new” or future uses are considered.
- Public & agency review of all ground water use permit applications (GWUPA) that includes Mayor, County Council, Board of Water Supply, HDWS, registered mailing list, & Public comments.
- Individual domestic users and catchment systems are exempted from GWUPs.

If Keauhou ASA is Designated:

Non-Designated vs. Designated

Statewide (Non-designated Areas)	Designated Areas
Well Construction/Pump Installation permits required	Well Construction/Pump Installation permits required
	Ground Water Use permits required

(Courtesy of NPS & J. Scheuer 2014)

If Keauhou ASA is Designated:

GWUPA: Existing Use & New Use forms. \$25 application fee (government agencies are exempted). Applications available on website: <http://www.state.hi.us/dlnr/cwrm/forms.htm>

- Well operator and well landowner must sign.
- 8 criteria applicant must address:
 - a) Can be accommodated with the available water source.
 - b) Is a reasonable-beneficial use.
 - c) Will not interfere with any existing legal use.
 - d) Is consistent with the public interest.
 - e) Is consistent with state and county general plans and land use designations.
 - f) Is consistent with county land use plans and general policies.
 - g) Will not interfere with the rights of the Department of Hawaiian Home Lands.

County

If Keauhou ASA is Designated:

GWUPA (continued)

- Timelines
 - 90-day decision deadline for action on applications with no objections
 - 180-day decision deadline for action on applications with objections (public hearings required to be held in management area. Uses <25,000 gals/month do not require public hearings even if there are objections)
 - Unknown case-by-case: All applications subject to contested case hearings if requested at the appropriate time.

If Keauhou ASA is Designated:

GWUPA (continued)

The Commission:

- Relies heavily on the Hawaii Water Resource Protection Plan & County Water Use and Development Plan (part of Hawaii Water Plan) for guidance
- Relies on zoning for proper land use consistency
- To establish reasonable & beneficial use:
 - Uses County Water System Standards to estimate daily demand
 - Uses an irrigation model (IWREDSS - ver 2.0) to estimate average daily demands for 5-year drought.
 - Reviews available alternative sources

- **QUESTIONS? / THOUGHTS?**

