

Overview of the Hydrogeology of He'eia Watershed, O'ahu



Scot Izuka, U.S. Geological Survey

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**GEOHYDROLOGY AND POSSIBLE TRANSPORT ROUTES OF POLYCHLORINATED
BIPHENYLS IN HAIKU VALLEY, OAHU, HAWAII**

By Scot K. Izuka, Barry R. Hill, Patricia J. Shade, and Gordon W. Tribble

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 92-4168

Prepared in cooperation with the
U.S. COAST GUARD,
CIVIL ENGINEERING UNIT,
HONOLULU, HAWAII



Honolulu, Hawaii
1993

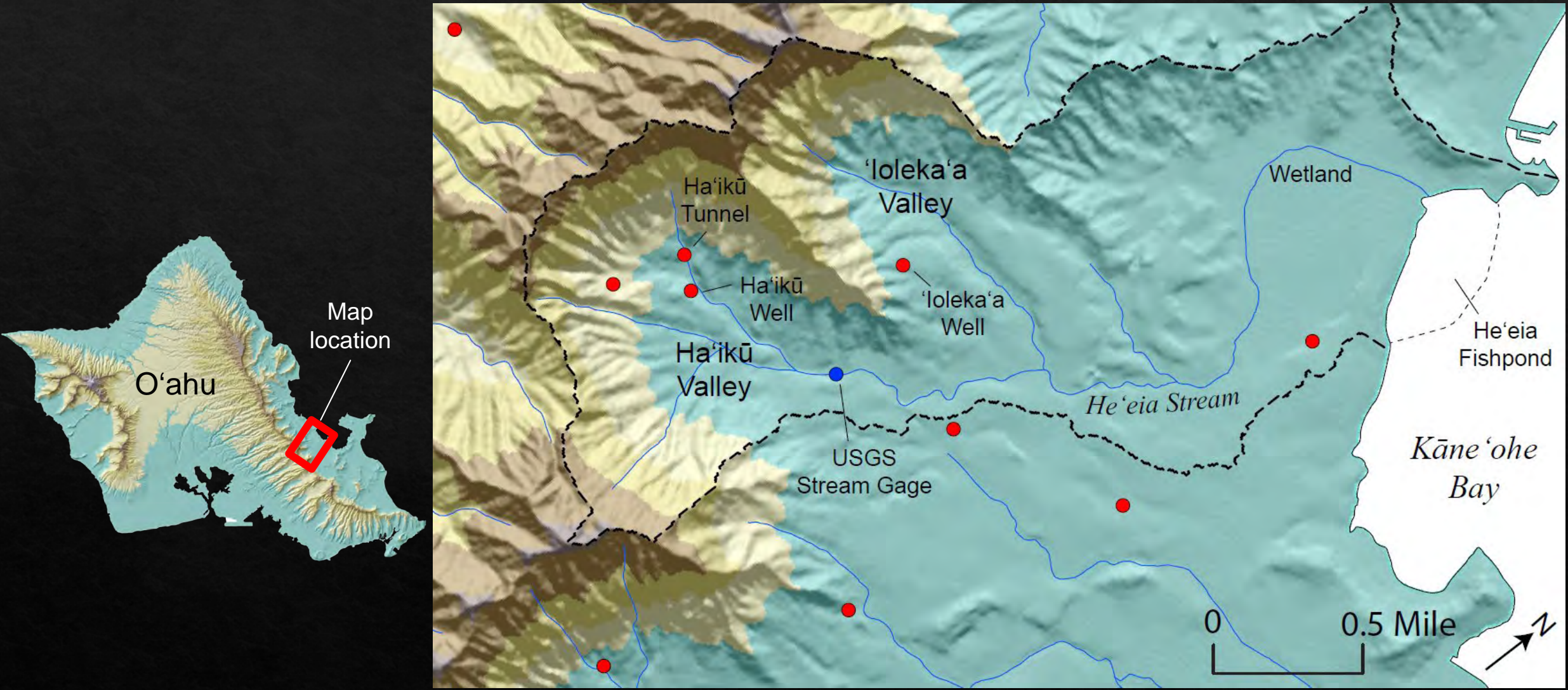
Geohydrology and Possible Transport Routes for Polychlorinated Biphenyls in Haiku Valley, Oahu, Hawaii

by Izuka, S.K., Hill, B.R., Shade, P.J., and Tribble, G.W.
(1992)

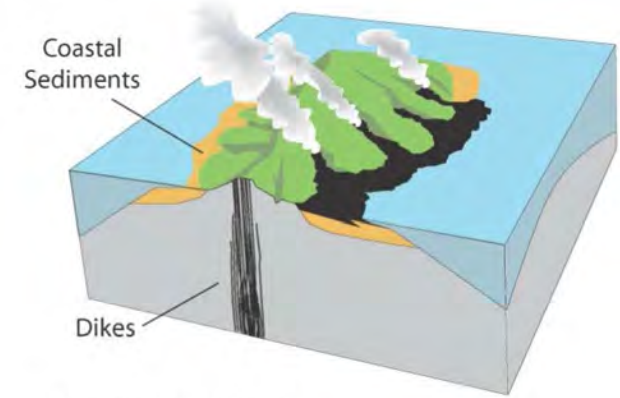
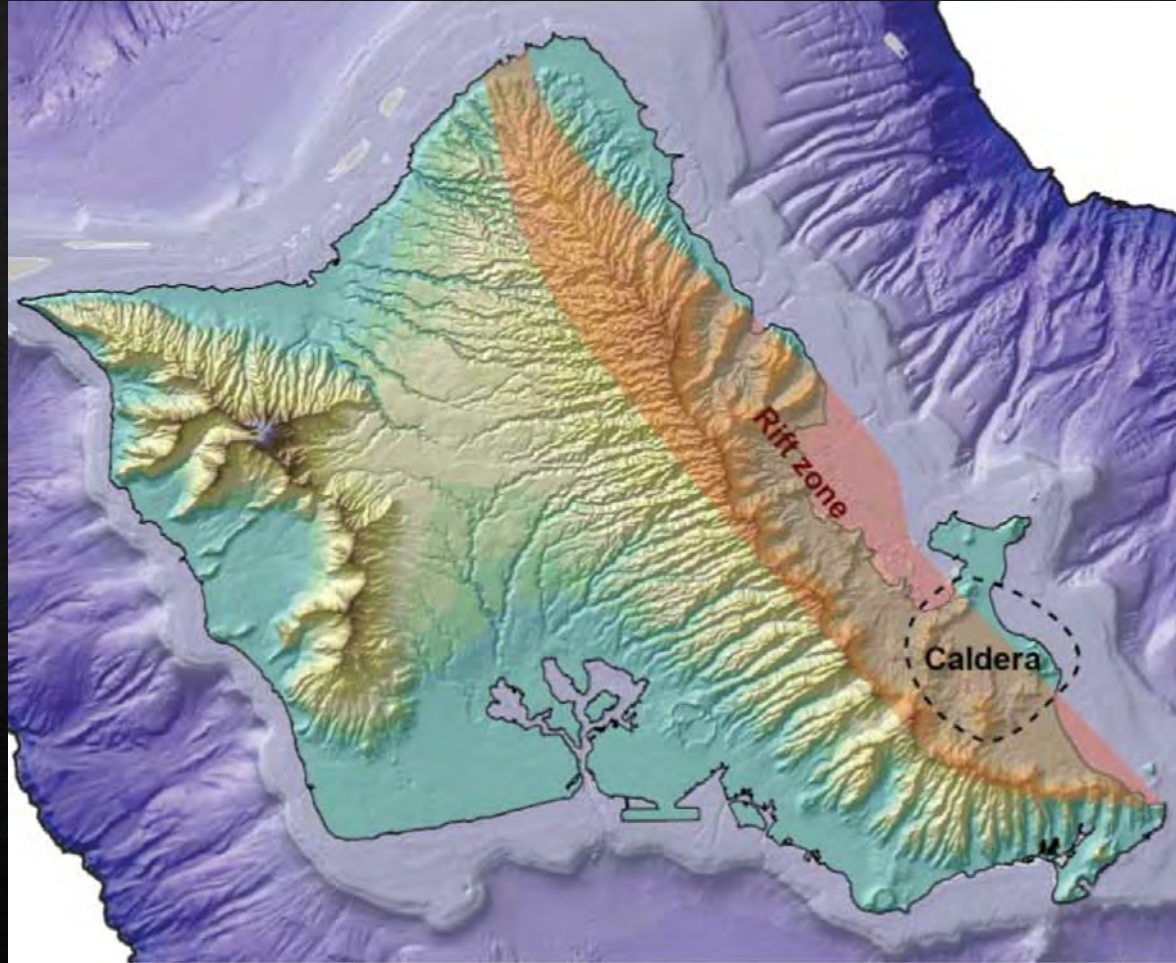
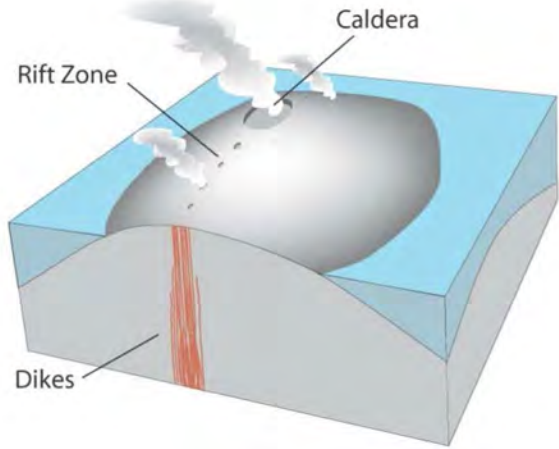
<https://pubs.er.usgs.gov/publication/wri924168>

<https://doi.org/10.3133/wri924168>

He'eia Watershed



Geology

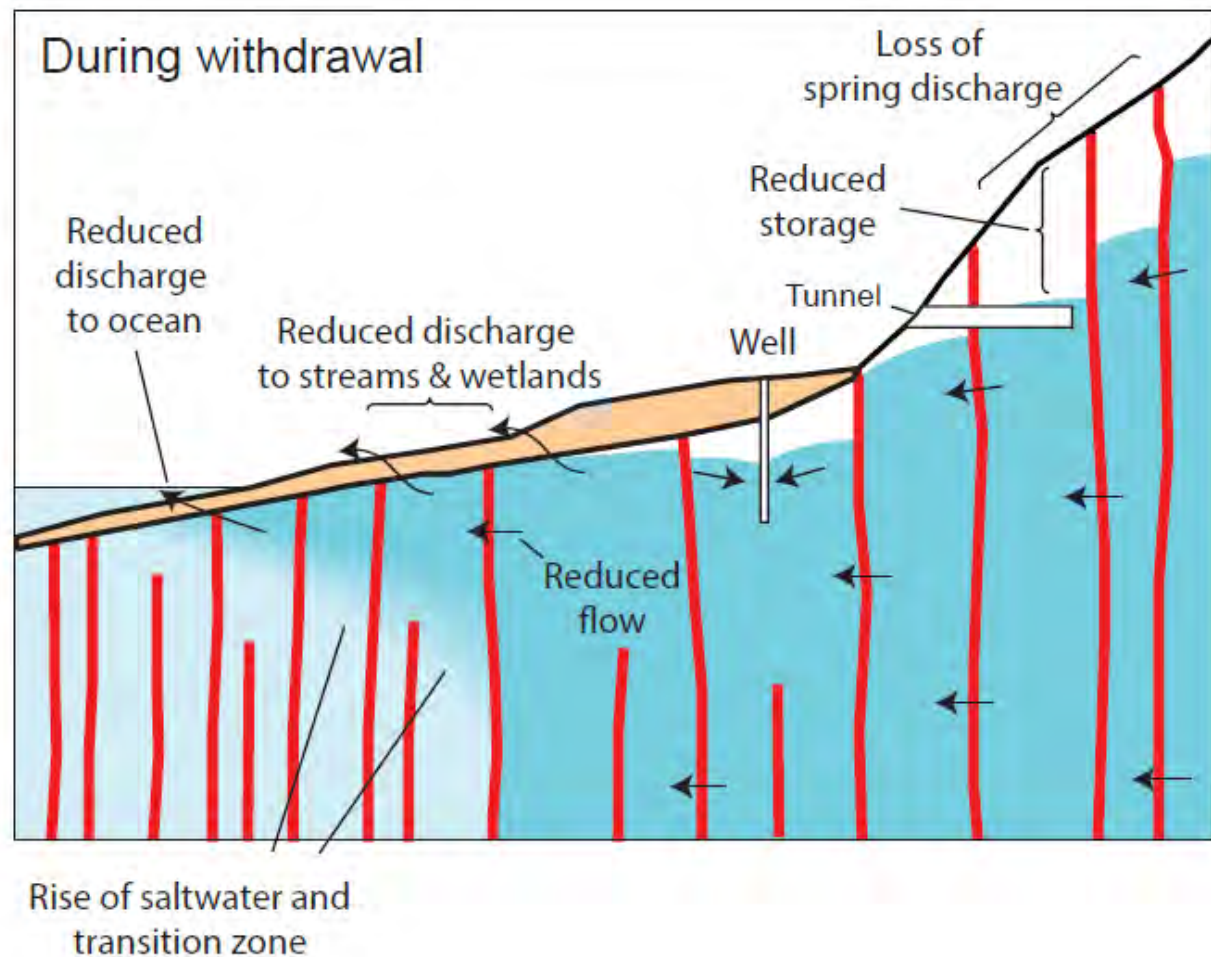
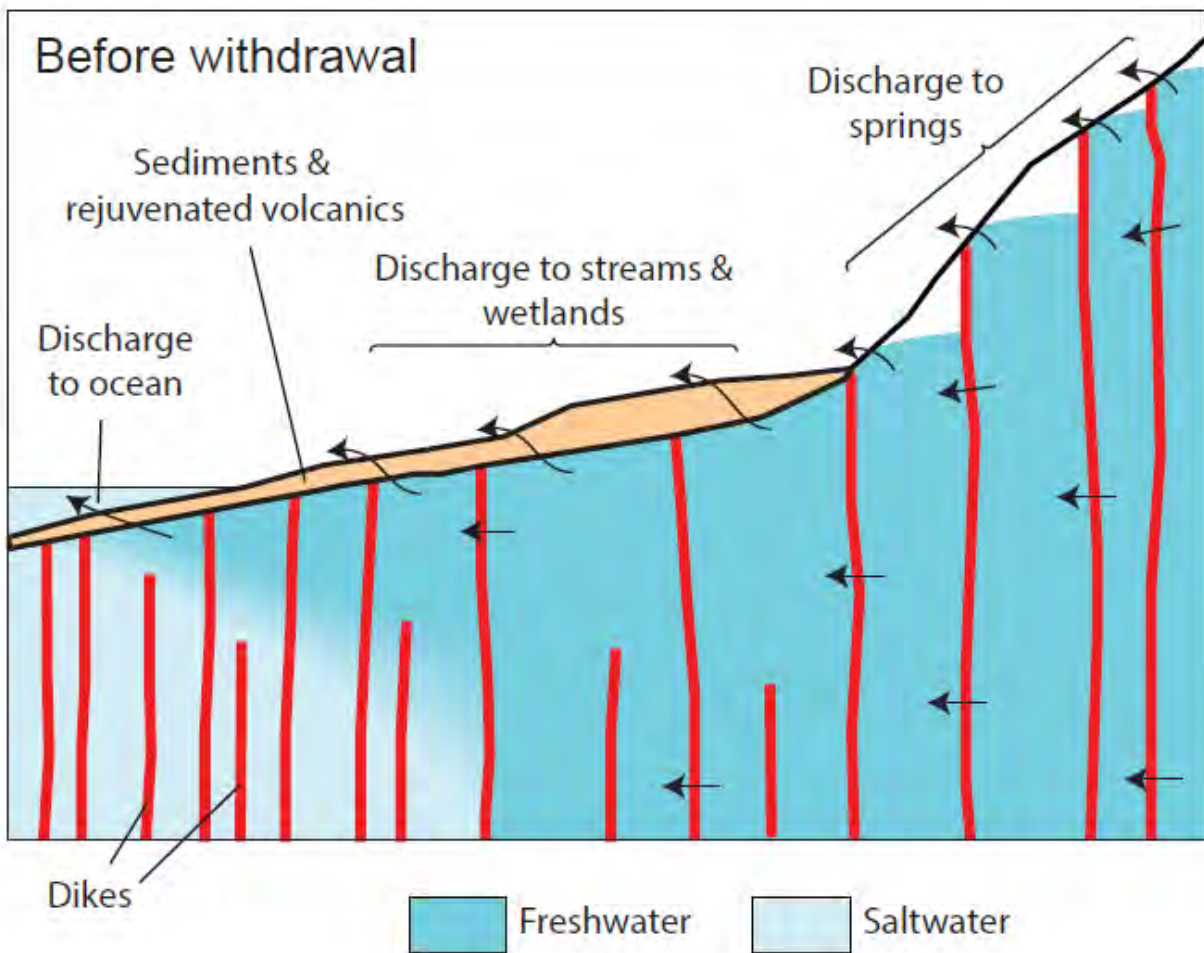


Rejuvenation Stage

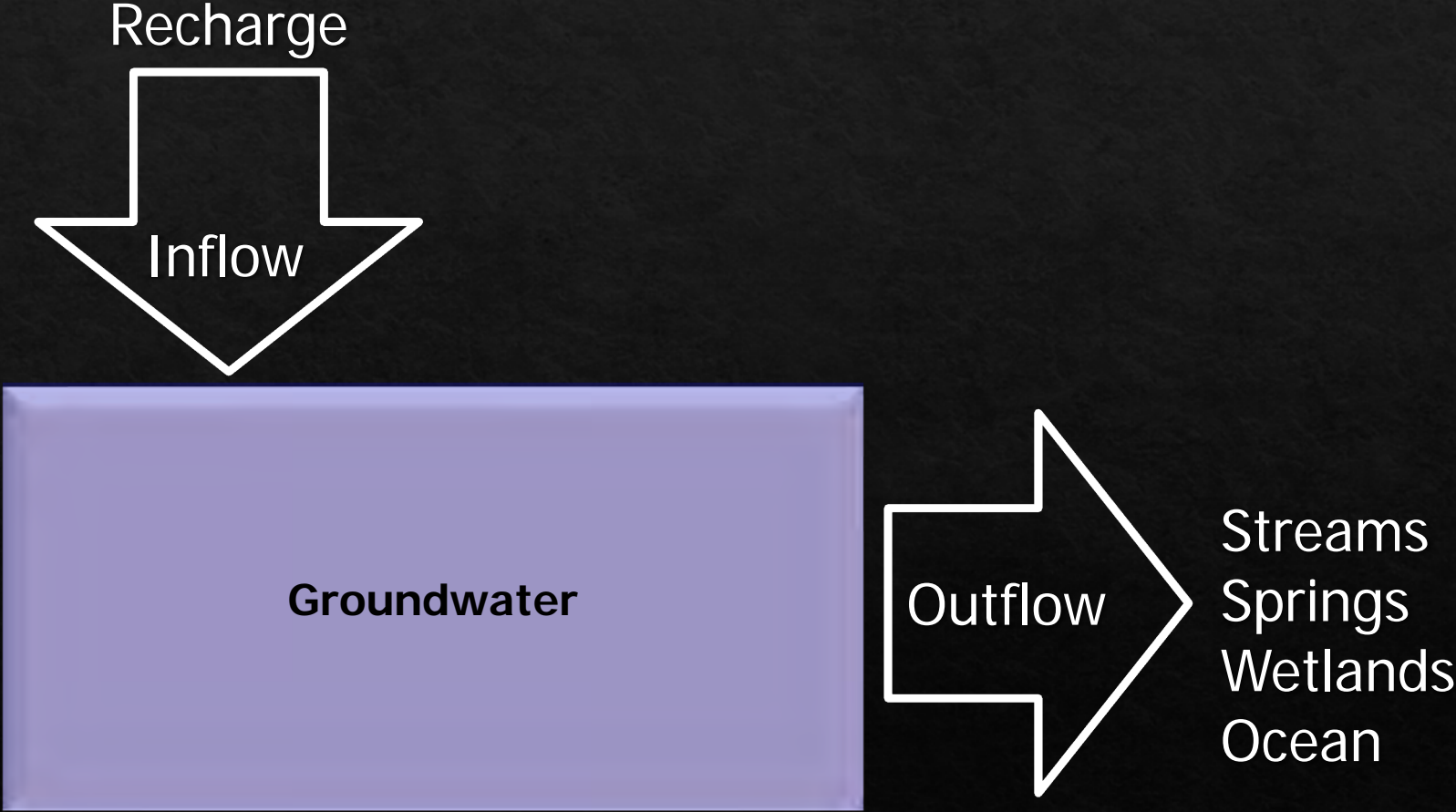


Dikes in the Waianae Range

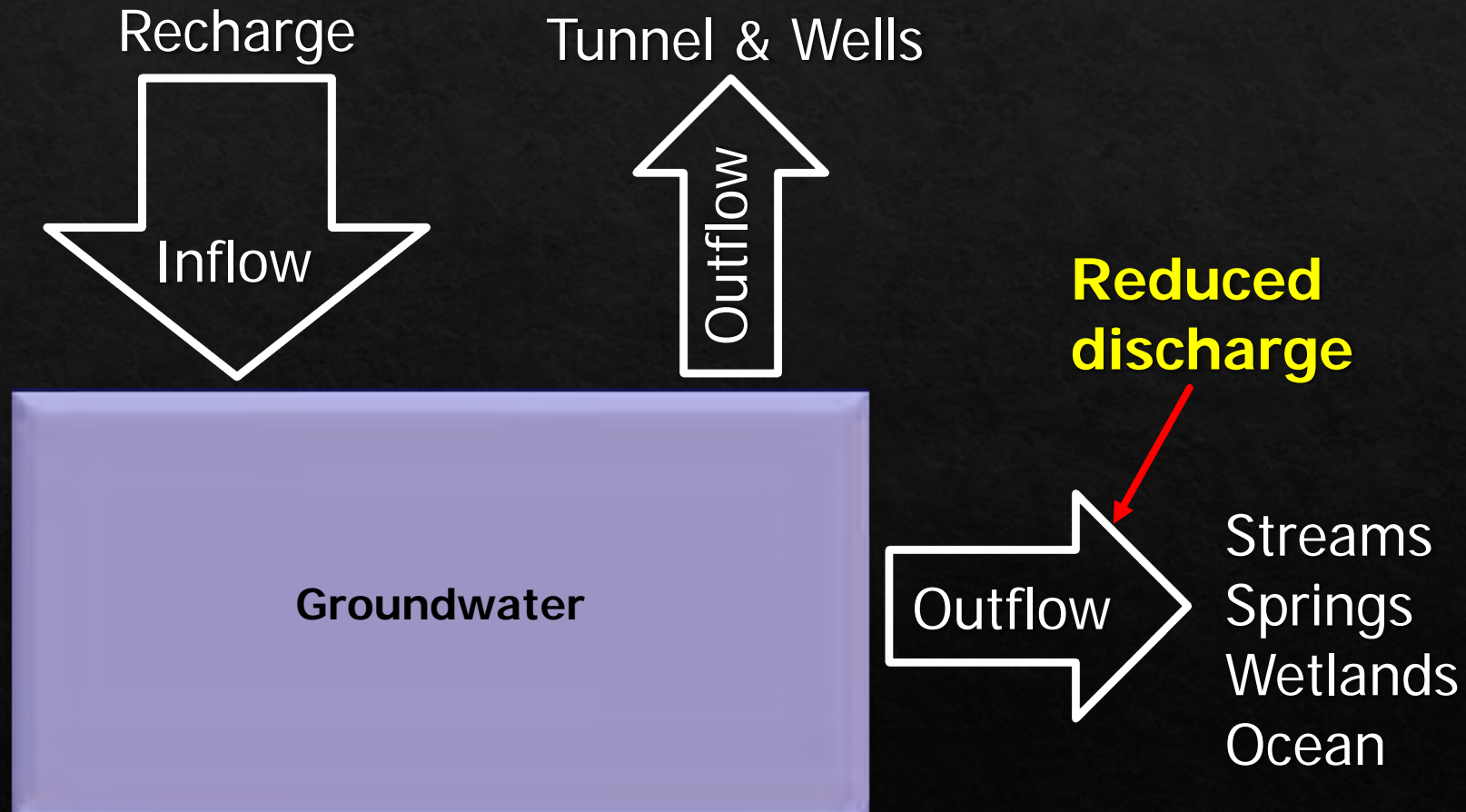
Dike-Impounded Groundwater



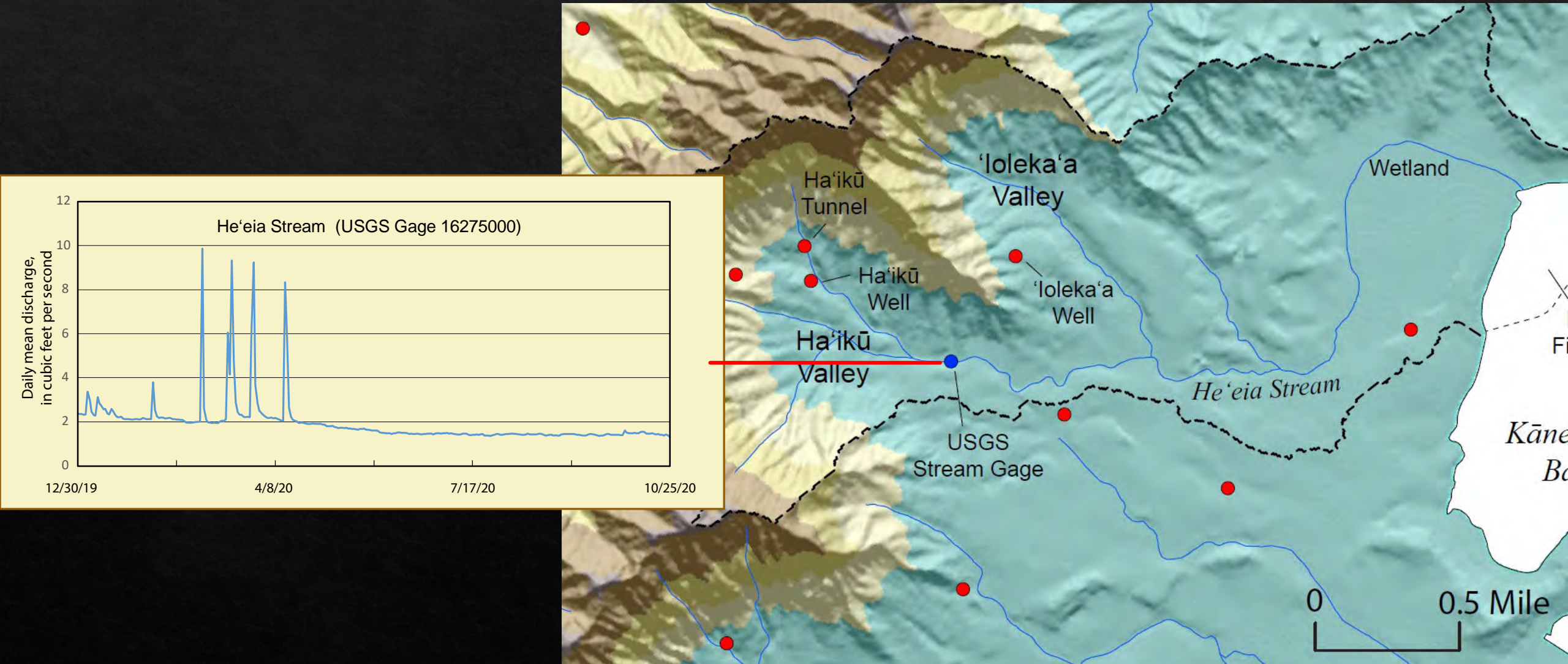
Inflow = Outflow



Withdrawals will be compensated by equal reduction in natural groundwater discharge

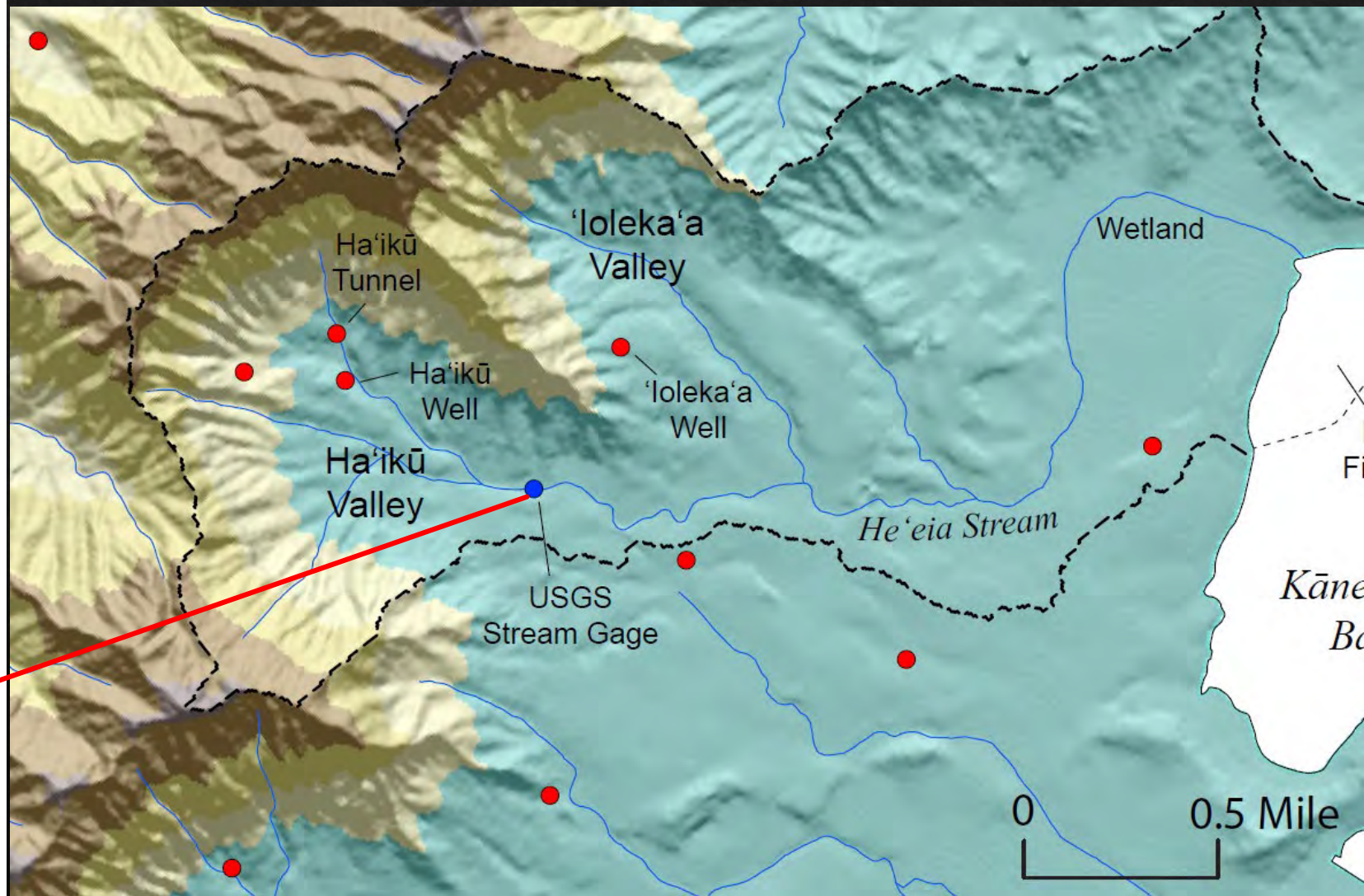
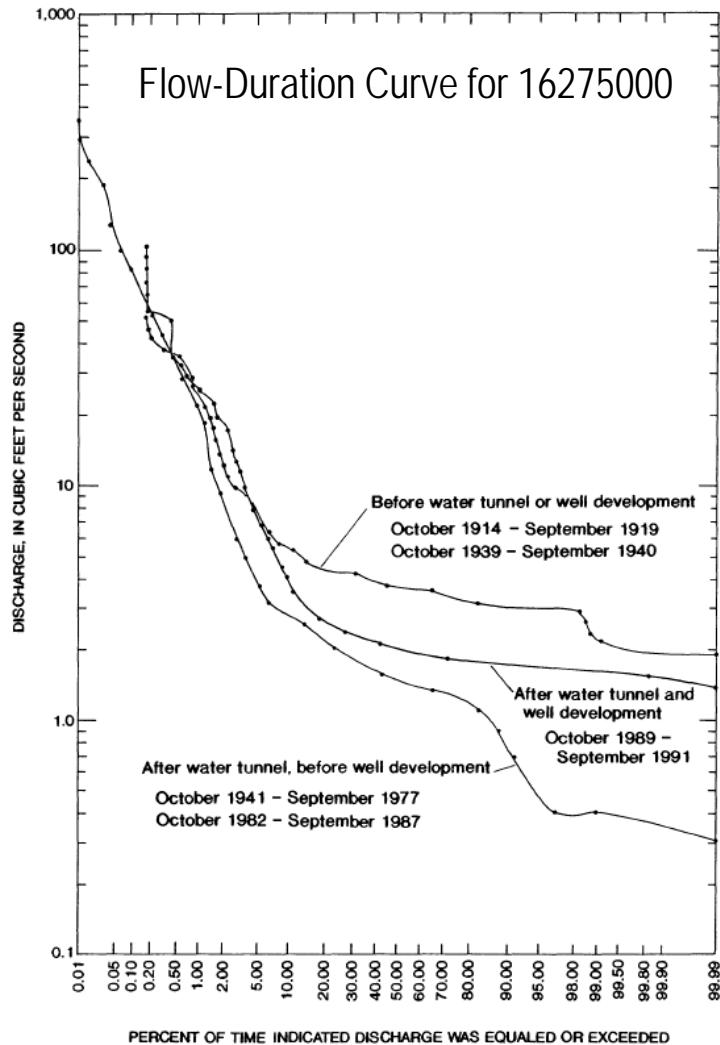


Groundwater Discharge in Stream-Gage Data



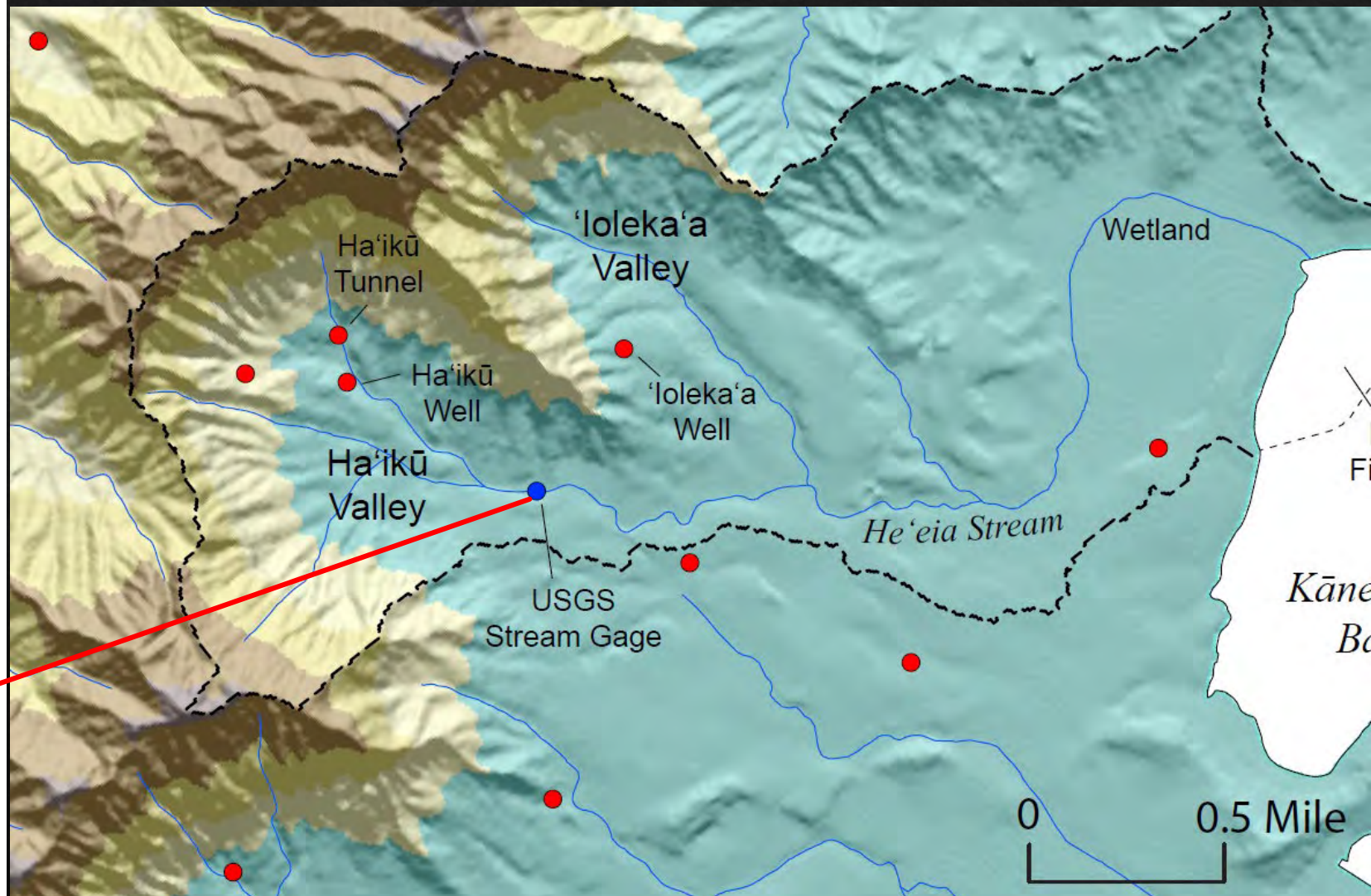
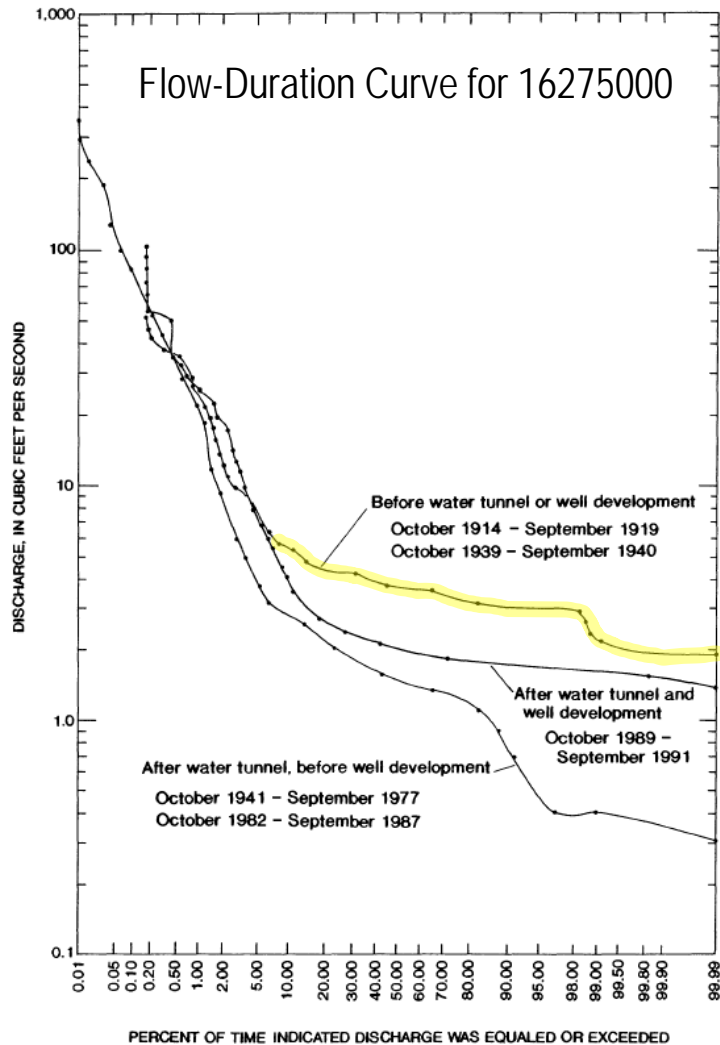
Effects of Withdrawals Seen in Gage Data

Izuka and others, 1992



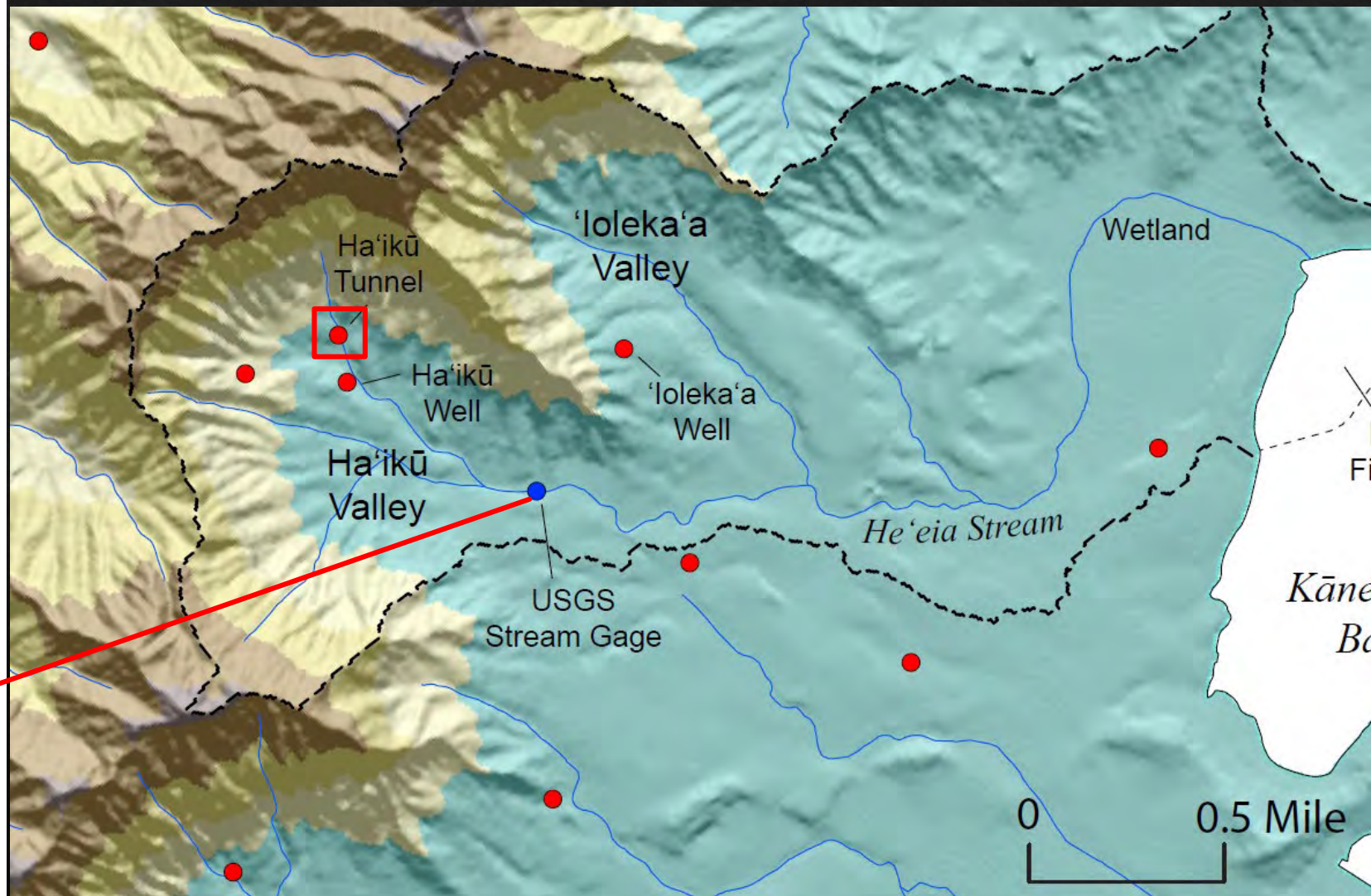
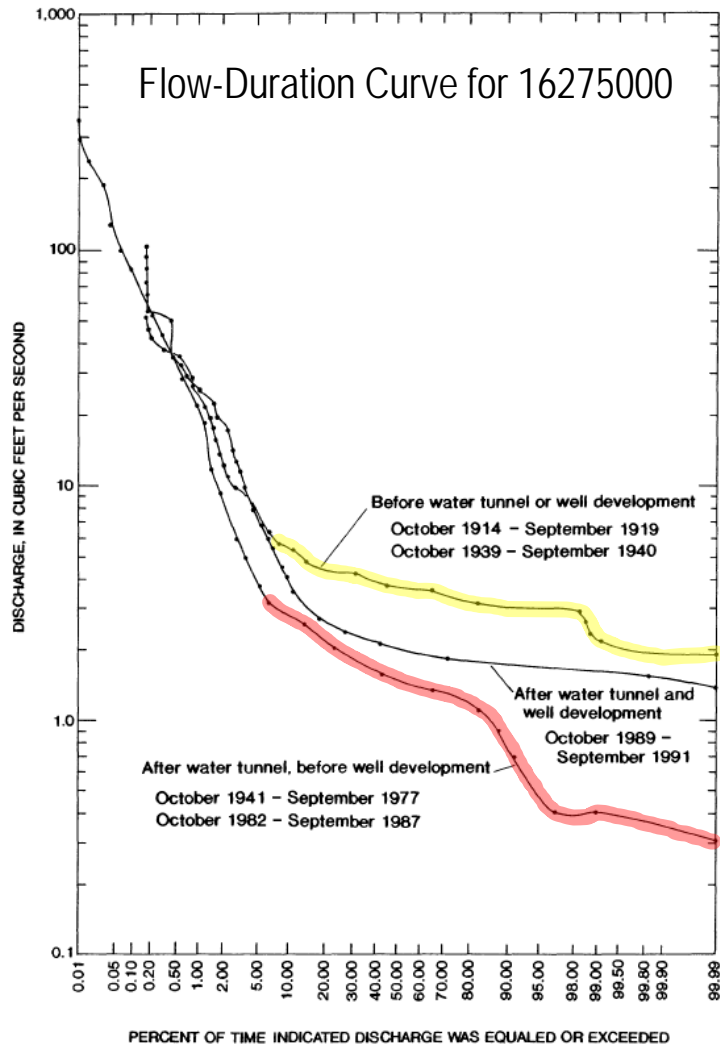
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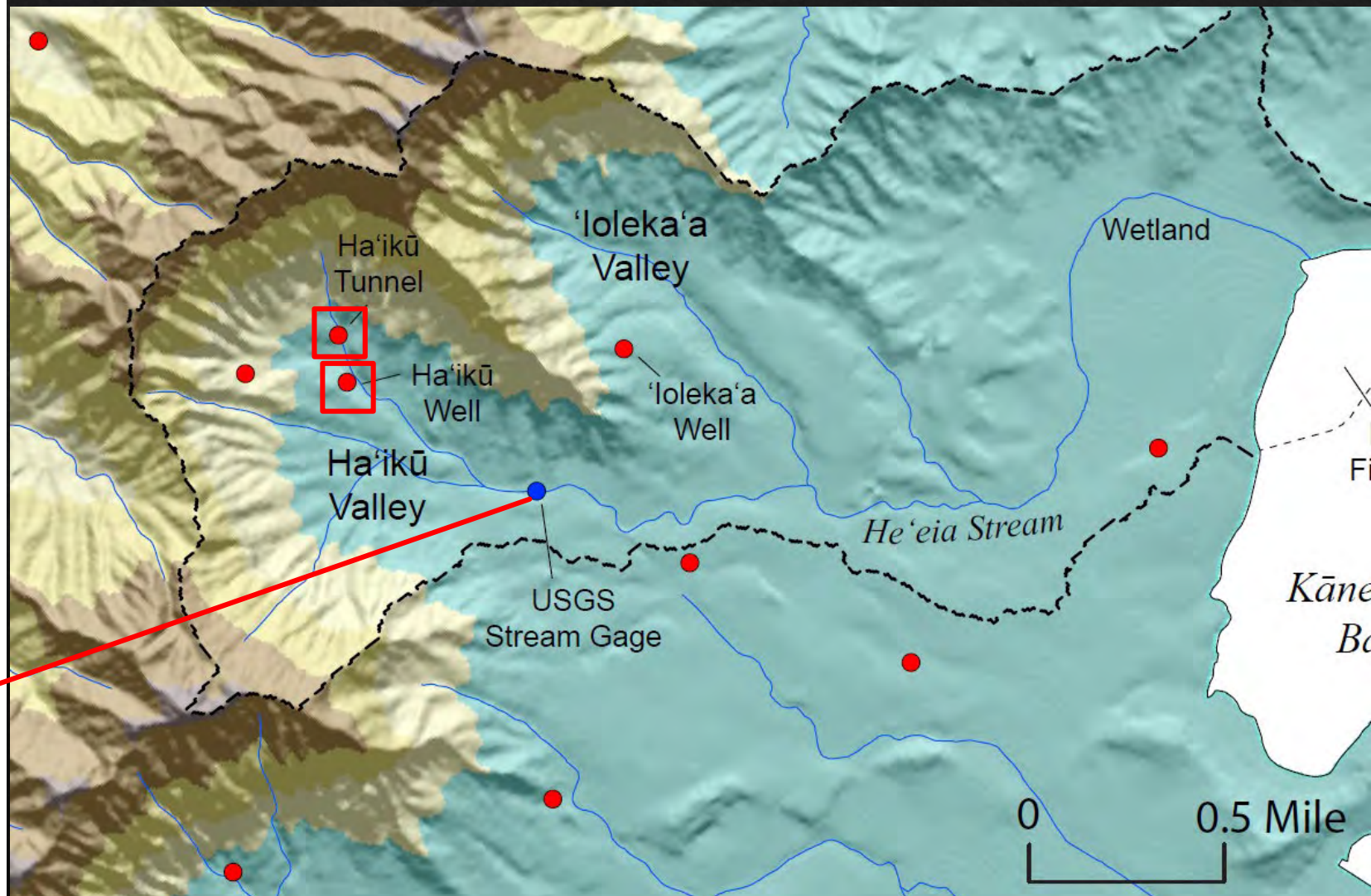
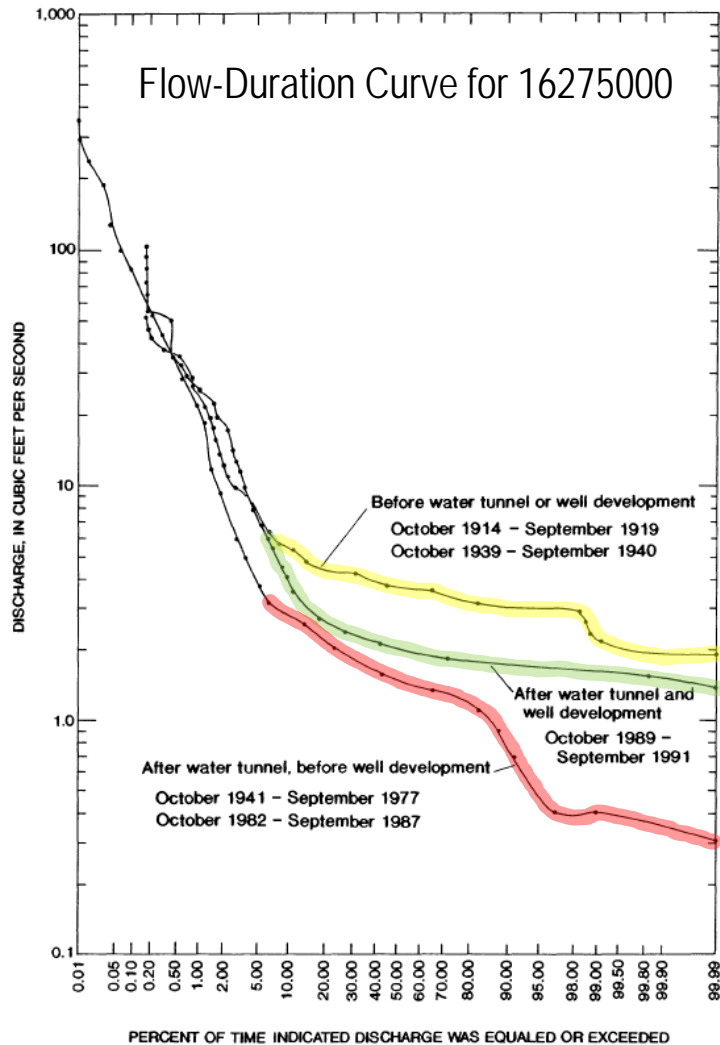
Effects of Withdrawals Seen in Gage Data

Izuka and others, 1992

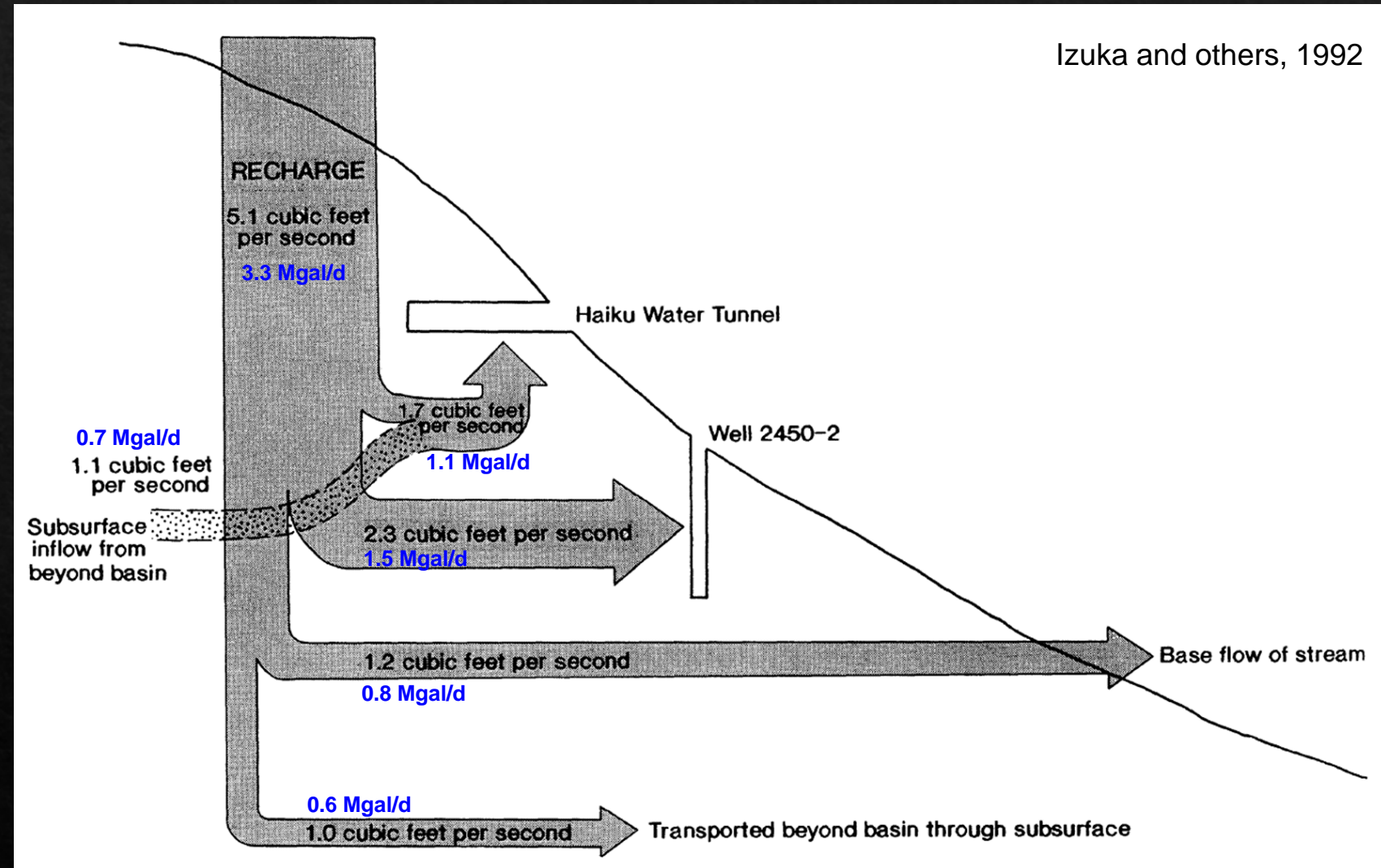
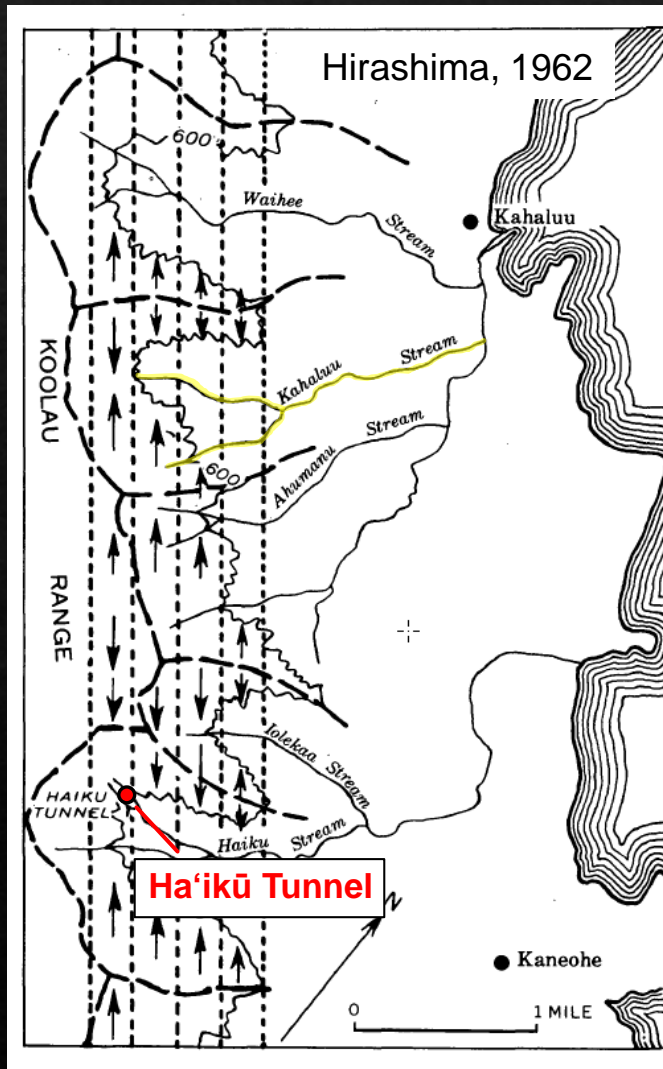


Effects of Withdrawals Seen in Gage Data

Izuka and others, 1992



Withdrawal Affects other Streams



Limitations of the 1992 Study

The 1992 study focused on contaminant transport, analysis of impacts of tunnel and well withdrawals on streams was limited

Nearly all data and analyses in the study were for areas upstream from the USGS gage—Impacts to other areas are possible, but have not been studied

The study was done nearly 30 years ago

Summary

Groundwater in the He'eia watershed exists as dike-impounded groundwater

Substantial groundwater discharges to streams and springs

USGS studies indicate that withdrawals from wells and tunnels have affected streams and springs in the upper He'eia Watershed

USGS studies also indicate that impacts of withdrawal spread beyond the watershed

Withdrawal of groundwater may also cause reductions in natural groundwater discharge in areas that have not yet been studied