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From: [REDACTED]
Sent: Monday, October 28, 2019 4:06 PM
To: General Plan
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Subject: My GP comments
Attachments: GP update RB.edited.docx; ATT00001.htm

Please receive my comments on the attached document

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PLANNING DEPARTMENT
COUNTY OF HAWAII

October 28, 2019

Comments on the COH General Plan Update Draft

[REDACTED]

Applied Life Sciences LLC

Overview

The authors of the draft GP update are to be congratulated for a comprehensive and appropriate document. The emphasis on sustainability and adaptability is critical as the local and global climate events continue to change at an increasing rate. The ability of local and state governments to adapt to these rapidly arising changes will challenge the very operation structure of government. This challenge will alter our way of life and our personal and collective security.

Comments in order of occurrence in the document and do not represent personal priorities

Section 1, page 23

Limiting impervious surfaces in developments will improve water quality in any watershed. Stormwater runoff in urban areas carries nutrients, chemicals, and some microbes of concern to the receiving waters. In West Hawaii, stormwater moves the brackish subterranean estuary (STE) very quickly as it flows ebbing and flooding to the sea.

Most of the receiving waters (marine) are Federally Listed as Impaired.² As such reducing impervious surfaces will be part of any watershed remediation via required TMDL³ programs.

Page 24, 1.17

Water quality monitoring is valuable for many reasons. However, monitoring without action triggers is of little value in improving watershed water quality. Additionally, what is monitored may need to be site and issue-specific.

Page 29 Actions

[REDACTED]

² State of Hawaii 303 (D) Report to the EPA <https://health.hawaii.gov/cwb/files/2018/09/Final-2018-State-of-Hawaii-Water-Quality-Monitoring-Assessment-Report.pdf>

³ Total Daily Maximum Load requirements <https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>

Identify areas at risk of flooding and to the extent possible, prevent development that is not entirely resistant to such risks. The most effective approach is to limit significantly human structures in such areas. This should include regions that have a higher hurricane risk.

Page 34 Limit GHGE's

All county departments must look at what they can do to decrease their carbon footprint and increase CO2 sequestration. This will help develop a similar public ethic and actions.

Wastewater treatment plants release greenhouse gases. Assuring proper aeration limits methane production while encouraging CO2. At Kealahou WWTP, the opportunity to create offsets by local PV arrays is an option that was overlooked, yet still viable.

Page 35 1.73

The mapping of areas at the most significant risk from SLR (sea level rise) is essential. Concurrent with the mapping, introducing the concept of "coastal retreat" should be discussed decades in advance of when it will be appropriate and necessary.

Page 38 Drinking Water Policies

Not mentioned is the Counties prerogative to adopt the most recent Uniform Plumbing Codes. The version currently mandated by the state is the minimum for all counties. The counties are free to adopt more recent versions.

The most recent version provides a requirement for water-conserving appliances and fixtures. It also provides for home greywater reuse. The current standard by HDOH is prohibitive for most people.

Price water on a progressive scale to greatly discourage overuse and waste. Irrigating large lawns in coastal West Hawaii with drinking water should be prohibited within ten years.

Require the significant freshwater irrigators to manage water use consistent with the Environmental Evapotranspiration rate for the specific plants irrigated. The California Irrigation Management System has reduced ag water use in CA by 13% while increasing crop yields by 8%.⁴

Adopt policies to protect the "cloud forests" USGS estimates for Hawaii indicate dewfall in the forest equals the rainfall contribution to the aquifers.

120.

What is meant by water purification? EPA Safe Drinking Water Standard, perhaps?

⁴ CIMIS <https://internetofwater.org/data-stories/evapotranspiration-data-saves-water-and-increases-crop-yield/>

121.

Add emphasis for better congruity between Planning and the Dept of Water Supply as it pertains to new development.

129. Maximize reclaimed water (wastewater is the wrong term) to reduce freshwater use gallon for gallon.

Action 2.13 to 2.19 supported.

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131 a. Nutrient management is best achieved by soil and petiole analysis and not by guidelines. Then the rates of fertilization must be applied with the maximum uptake efficient for each plant species. This may include fertigation.

c. Irrigation is managed by both the evapotranspiration and the plant uptake capacity. In many W. Hawaii golf courses, the soil profile is so shallow the water hold capacity is limited; therefore, the needed water has to be applied at a slower rate. This means the irrigation system has to be sized appropriately.

2.26 Use the green technology for stormwater management and discourage the future use of "dry wells." Dry wells are a large hydrologic conduit to groundwater and the STE. Despite the claims of a few engineers, there is no generic geochemical reaction that removes pollutants from stormwater.⁵

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136. Currently, HDOH prohibits homeowners from receiving and using reclaimed water. They cite health concerns. To be precise modern DNA analysis fails to find bacterial pathogens in human feces.⁶ However, in the arid Irvine Ranch CA, homeowners have been using reclaimed water on their home landscaping for over 40 years.⁷ The HDOH administrative rules must be changed if we are to maximize reuse.

Action 20.27 - 2.31 Supported

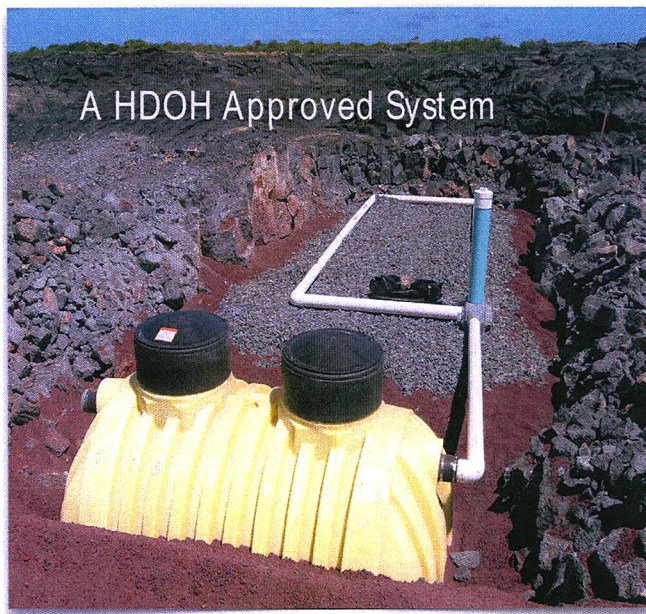
Whenever a sewer line is installed, a parallel reclaimed water line should also be installed. The cost of the pipe is minuscule compared to the cost of digging a trench in blue rock.

⁵ Izuka, S. K. (2011). *Potential effects of roadside dry wells on groundwater quality on the Island of Hawai'i-Assessment using numerical groundwater models*. U. S. Geological Survey.

⁶ Tan, BoonFei, et al. "Next-generation sequencing (NGS) for assessment of microbial water quality: current progress, challenges, and future opportunities." *Frontiers in Microbiology* 6 (2015): 1027.

⁷ <https://www.irwd.com/services/recycled-water>

Objective. **All available evidence suggests that septic systems are every bit as polluting as cesspits and cesspools.** If you are going to recommend a technology, then modify it to include "Nutrient Removal Septic Systems" These simple systems are replacing the tens of thousands of septic systems in New York and Maine.⁸



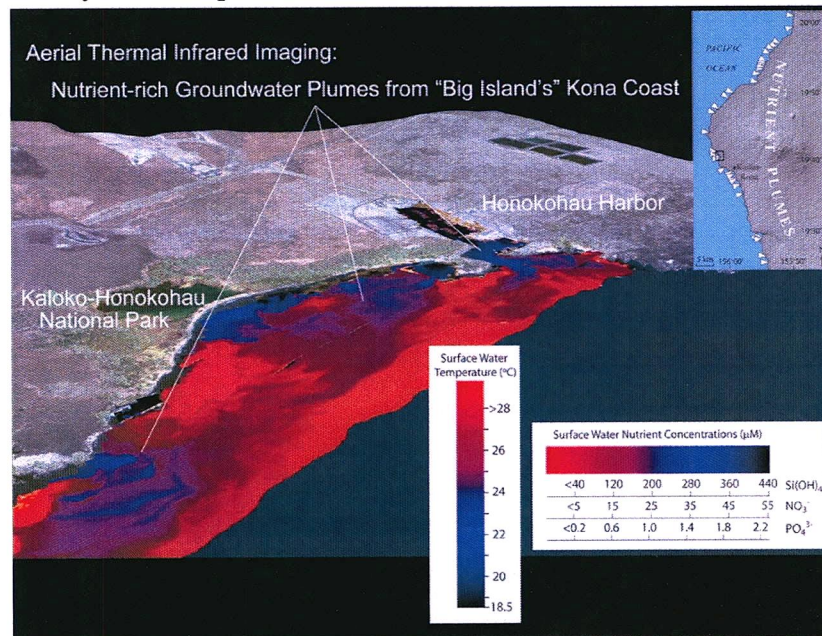
This 2017 approved septic system does not remove nutrients or bacteria. The only function of the tank is to remove solids, so the leach lines do not get blocked.

The hole like most on the island is in lava and blue rock. There is no deep soil. The leach line is bedded in gravel. The wastewater will move downward faster than most established cesspits.

Since this system is completely aerobic there is no denitrification as can occur in anaerobic cesspools with standing water.

⁸ <https://www.savebuzzardsbay.org/wp-content/uploads/2018/05/2018-04-17-Decision-Makers-Workshop-Layer-Cake-Septic-Systems.pdf>

This will be difficult to prove the matter. Given the nearshore water and the STE's are already contaminated. In virtually all STE conveyances of water to the sea are nutrient-rich. Instead, the county could require a 90% reduction of nutrients as a preferred option to prevent further



degradation of the receiving waters.

This research by Johnson and Glenn in 2008⁹ shows cool STE water moving into sea. The cooler water has the greater the nutrient concentration. The nitrogen isotope signature is consistent with sewage sources.

The point is simple where ever there are people, their waste nutrients find their way to the receiving water. Source reduction is key.

138 - 144 Supported

145. DWS needs to become a comprehensive water manager and subject to Council policy directives.

Propose 146. Do not allow the further use of Underground Injection Wells for wastewater. Below the State UIC line homes and businesses dispose of massive volumes of just secondarily treated sewage. The near coastal well communicates directly with the STE and hence, the ocean. For example, Mauna Lani discharges up to 400000 gallons per day into a coastal well.

⁹ Johnson, A. G., Glenn, C. R., Burnett, W. C., Peterson, R. N., & Lucey, P. G. (2008). Aerial infrared imaging reveals large nutrient-rich groundwater inputs to the ocean. *Geophysical Research Letters*, 35(15).

Since UIC is apart of the Safe Drinking Water program, it has not been regulated under the Clean Water Act. The Recent 9th Circuit Ruling now requires an NPDES permit, but HDOH is not enforcing the ruling. However, the legislature in 2018 enacted law that prohibits the Director of HDOH from approving new sewage injection wells. There are other commercial options.

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Action

2.32 - 2.46 Support with comments

2.34 The county should take the lead. The Cesspool working Group has yet to identify any alternatives even though many are commercialized. Frankly, the CWG lacks expertise. The county would be wise to adopt performance criteria for any IWS. Such criteria are rather simple, reduce TSS and BOD to Secondary Treated Sewage Standards. Reduce Total N and Total P by 90%, Reduce E. coli by 5 logs, or 100,000 fold.

2.39 The 300-foot distance to the property line is far too lenient and unfair. The quarter-mile is more appropriate, yet give the blue rock, the cost of a short sewer line could exceed \$400,000. More shallow vacuum sewer lines may reduce the cost when multiple homes fall within the ¼ mile rule.

2.43 This holds the most promise. The small decentralized treatment works privately operated at the neighborhood scale.

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Zero Waste is the goal. How to get there is challenging. Retail packing is a colossal waste for all communities. Congress largely ignores the matter.

2.47 - 2.55 Support

Explore waste to energy but not including incineration or any process that produces GHEGs or toxic ash.