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Agenda Item: B.1 Goal 2.4 | Mauka to Makai Watershed Management
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CC: Rob Weltman, Vernon Kalanikau, Mike Moran, Cody Kokoman Nemet
Date: 2/13/2023 7:53 PM
Subject: Riparian setback Rules needed to protect South Maui Gulches; Please Reverse recent SM CPAC Decision.

Riparian setbacks needed for South Maui Gulches:

Attention: Maui County Planning Department, We are South Maui, South Maui CPAC, Mayor's Office, Department Public Works.

Dear All,

Riparian setback Rules are needed to protect South Maui Gulches; so please reverse the recent SM CPAC Decision.

QUICK OVERVIEW (Top-Ten Points):

1. The Draft South Maui Community Plan's "gulch setback rule" helps protect our gulches and neighborhoods from flooding.
2. The setback rule would have Zero impact on existing structures, homes, and developments.
3. Most (90%) of the setbacks will occur on vacant Ag land
4. The SM CPAC recently removed this setback requirement.
5. South Maui CPAC is Planning for our community to Fail
6. Uncontrolled Flooding harms people and property, and the ocean.
7. Streambank setbacks are one of the most effective things we can do to prevent worsening flooding.
8. Most of South Maui is on a floodplain that is a natural flood zone.
9. Protecting streams and open spaces were part of the previous South Maui Community Plan.
10. Our South Maui Watershed is approx 80 square miles in area, and receives 1.4 billion gallons of rainwater for every inch of rain.

South Maui needs to protect its Gulch's Riparian Streambanks with a 100-foot setback: That is why this rule was put into the Draft Community Plan. This setback protection for major gulch streambanks was created with the input of multiple watershed scientists and community experts that have been studying our watershed for decades.

Wider is better: Wide Gulches are better than narrow gulches. Water flows slower in wider gulches, and has less energy to erode the stream banks. Wide riparian setbacks can be stabilized and act as a buffer for water entering the stream. Stormwater flowing off the land will cross the riparian buffer before entering the stream. Stormwater crossing a vegetated buffer zone will have less energy and carry far less sediment into the stream.

Why have a 100-foot setback?

- Narrow sections of the Gulches already pinch into 100-foot-wide choke points and regularly flow up to 12 feet deep.
- Choke points occur at three of the major gulches at the bridges on Pi'ilani Highway for example, where stormwater is accelerated and flows swiftly.
- 100-foot-wide bridges are located at Waiakoa Gulch, Kulanihakoi Gulch, and Waipuilani Gulch where they cross under Pi'ilani Highway.
- The Amanda Cording Kihei Drainage Master Plan Environmental Alternatives Analysis Report also recommended widening the Waipuilani Stream at South Kihei Road with a 70-foot-wide culvert with 15-foot high flood walls, to manage peak Q-100 flows. The county-owned floodway at Waipuilani Gulch below the bridge is approximately 200 feet wide and 6 feet deep and regularly fills to capacity during heavy rains.

The South Maui Community Plan Draft Plan required a 100-ft setback for South Maui's major gulches for good reason: Catastrophic flooding in the South Maui region has increased over the years. The cause for this is the dysfunctional watershed, in particular the encroachment of developments on the major gulches, and nonpoint source pollution coming from ranchlands and agricultural lands adjoining the gulches. In addition to this, the drought conditions and overgrazing in the upper watershed/catchment basin lands, have left many areas with loose degraded soil that is easily transported by stormwater.

The setback rule would have Zero impact on existing structures, homes, and developments:

This setback rule does not apply to existing buildings and developments. This setback rule actually better protects existing buildings and developments close to the gulches. And the setbacks will also help to protect all the adjoining neighborhoods on the floodplains as well.

Most of the setbacks will occur on vacant Ag land:

Approximately 80-90% of the Gulches affected by this setback rule occur on vacant agricultural land. Most of the erosion and sediment problems in South Maui begin on the ranchlands in the upper watershed. These proposed setbacks provide a way for the ranchers to reduce their impacts on their local gulches. These buffers allow ranchers to manage the erosion and soil loss problem on their own properties, by creating a buffer between their operations and the streams. This setback does not prevent ranchers from using these setbacks for ranching, just from building structures there etc. However, it is hoped that they will ultimately plant these areas or allow vegetation to grow there, to help prevent their own soil from eroding into the streams.

Protecting watershed streambanks also helps to protect other vital watershed features: Protecting the gulches streambeds has the added benefit of protecting many of the remaining South Maui Wetlands, and many of the areas that have been proposed for future drainage and detention basins and other green watershed infrastructure. Protecting the gulch streambed now gives us the ability to begin to address many of the issues associated with wetland loss, and needed stormwater detention areas.

CPAC recently removed this setback requirement: Removing this requirement is irresponsible and shortsighted, and it could have tragic consequences for our community. We have been informed that the removal of this rule by the CPAC, was at the urging of Mr. David Goode, the former Dept Public Works Director for Maui County, who is now a consultant-for-hire, to some of South Maui's largest developers. This influential CPAC member appears to have a substantial conflict of interest in these matters and should be recused.

South Maui CPAC is Planning for our community to Fail: By removing the riparian setbacks that are intended for streambank protection, the CPAC is leaving the community vulnerable to worsening flooding in the South Maui floodplain. If the community plan does not plan to protect the gulches from overdevelopment, then the community planners are condemning the community to live in an ever-worsening flood zone.

Uncontrolled flooding is a risk to public safety and property:

Riparian Setbacks and protected gulches will help manage excessive floodwaters. And work in conjunction with the existing stormwater systems. By managing the gulches and maintaining gulch capacities the County will be able to provide a better standard of public safety.

Uncontrolled Flooding harms the environment: Our flooding problems, even at current levels, are harming the coral reefs and ocean environment. And they will eventually cause the destruction and total collapse of the protective coral reefs that currently provide valuable protection for our vulnerable coastline.

Protecting gulch riparian areas (streambanks) from development is the most cost-effective thing we can do to reduce the degradation of the watershed, and prevent worsening flooding. Preserving riparian buffers is the most cost-effective way to preserve existing watershed services, and help prevent worsening flooding. Gulches and their riparian buffers are where all of the future mitigations for flood-reduction will occur. Including the revegetation of riparian buffers, streambed restorations, wetland restorations, and the creation of stormwater detention basins.

Community Planners should realize that most of South Maui is on a Floodplain that is a natural flood zone. In addition to being located in a natural flood zone, the community has an extreme deficit in drainage infrastructure, and it has also failed to protect its natural assets like gulches and open spaces. South Maui urgently needs to protect its gulches and open spaces from development as they are an essential part of the natural drainage infrastructure. Streams and gulches and open spaces are also essential natural watershed infrastructure.

We cannot afford to lose any more of our watershed's natural drainage infrastructure.

Protecting Streams and Openspaces was part of the previous South Maui Community Plans and Maui Island Plans also (see the reference section for more details):

Implementing Actions in the Kihei-Makena Community Plan 1988 (KMCP1988) include,

- Considering the cumulative impacts of existing and planned development,
- Guide future development while preventing flooding and providing guidance to reduce the degradation of coastal waters,
- Improvements to the storm drainage system,
- Revise the County drainage rules to require that drainage system design shall not adversely affect downstream and coastal water quality.

Leeward Haleakala/Moku Kula Watershed: South Maui is at the foot of an approximately 80-square-mile, steeply-inclined watershed catchment area. This watershed receives 1.4 Billion Gallons of rainwater for every inch of rain that falls.

Large Watersheds in Moku Kula, funnel stormwater into South Maui's gulches that conduct flows directly to the floodplain. These steep gulches are prone to severe flash flooding. Although our streams are mostly ephemeral, they are subject to severe episodic flooding. So maintaining these gulches and floodways is absolutely critical for maintaining the function of our watershed.

Flooding is a landscape-scale problem, and the CPAC districts of Upcountry Maui and South Maui should work together on these problems. Flooding problems in South Maui originate in the upcountry area. However many of the solutions and actionable mitigations need to happen in the South Maui district. Not all of the problems can be solved on the Floodplain, so a mauka-to-makai approach is needed.

Flash Flooding brings not only water but also debris, sediments, and other contaminants: South Maui floods are increasingly characterized as mud floods. This is because the watershed lands are degraded and destabilized by deforestation, overgrazing, and

lack of watershed management practices on the ranchlands. In general Moku Kula Ranchlands can extend all the way up to the Southwest Ridgeline of Haleakala and extend all the way down to Pī'ilani Highway. Ranchlands generate a large portion of the stormwater runoff and contribute most of the soils and sediments that contaminate the stormwater.

Streambank stabilization: The simplest way to combat many of these problems is to stabilize the gulch embankments with vegetation. This will reduce erosion and in turn the volume of sediments present in stormwater. Protecting gulch streambanks will help to maintain the maximum amount of natural surface area, and prevent the overdevelopment of streambanks with impervious surfaces.

Benefits of Natural Gulches: Gulches provide not only a conduit for stormwater but also provide for the infiltration of stormwater into groundwater. And allow for greater aquifer recharge. To do this they need to have natural surfaces and a sufficient surface area.

Proposed Detention Basins: The KDMP 2019 plan has prescribed the building of 14 Stormwater detention basins in the South Maui gulches, several of these would be located within the proposed riparian setback zone of the major gulches. But if we develop these areas instead and allow buildings to encroach on the streambeds, then we will lose the option to build these basins, or locate them as needed.

We need floodable areas in urban landscapes:

Modern urban engineering and flood management practices call for the creation of floodable areas within Urban landscapes. floodable areas give stormwater somewhere to go. If we do not provide floodable areas, then we cannot control where the floods will occur. And our South Maui neighborhoods will continue to flood.

Benefits of detaining flood water on land:

In South Maui's case, the most desirable outcome for stormwater is to keep it on land and not dump it directly into the ocean. It is better to anticipate flooding and have a management plan in place. Open space areas in and around gulches need to be preserved and utilized as floodways, and stormwater detention areas. In most cases, they are already providing these services, but they need to be protected from development, and they could also be optimized to provide their beneficial services.

For example, Waipuilani Park in Kihei naturally and regularly floods. So this area has been identified by Amanda Cording (Kihei Drainage Master Plan, Alternatives Analysis) as an ideal location for a green-infrastructure-style detention basin. The park's beneficial drainage services could be enhanced with minimal earthworks (i.e. the building of a small earthen berm), which would restore its natural ability to attenuate flooding by detaining floodwaters on land.

Raw untreated stormwater is harmful to the ocean environment:

Stormwater contains suspended solids, mud debris, and other contaminants that harm the ocean environment, in particular the reefs. Raw untreated stormwater is harmful to the ocean environment. But if you can detain stormwater on land properly, you can give stormwater the opportunity to unburden itself from its sediment load. De-energizing stormwater by allowing it to slow down and spread out, and allowing it to settle into drainage basins. This will allow it to precipitate (drop) the suspended sediments. This substantially cleaner stormwater can then flow along surface routes to the ocean and it will be significantly less harmful than raw sediment-laden stormwater.

Managed Gulches give us better flood control:

Floodwater needs somewhere to go, and providing space in the gulches for floodwater is far better than allowing it to spill over into surrounding neighborhoods.

South Maui's remaining open spaces tend to be located in and around our major gulches, or at the foot streams. These open spaces are some of the first places to flood, and are also some of the main places where stormwater goes when it floods.

Open spaces were left open for a reason: The remaining open spaces in South Maui are in general, still open spaces because they are flood zones and were the last choice for development. But now the developers are looking to develop them all. We should not be allowing more housing to be built in our worst flood zones, we should instead be protecting the gulches and thereby better protecting the people already living in South Maui's flood-prone areas.

Please reinstate the 100-foot setback Rule:

Please reconsider and reinstate the 100-foot Riparian Setback Rule in the South Maui Community plan.

Regards,
David Dorn
(SavetheWetlands.org)

REFERENCES:

Kihei Makena Community Plan 1988 (KMCP1988):

<https://www.mauicounty.gov/DocumentCenter/View/1712/Kihei-Makena-Community-Plan-1998>

“Implementing Actions, (a. Formulate a drainage master plan for Kihei-Makena that considers the cumulative impacts of existing and planned development. The master plan shall guide future development while preventing flooding and providing guidance to reduce the degradation of coastal waters.

b. Establish a comprehensive program of improvements to the storm drainage system; implement a maintenance program; and ensure that safety, property loss, pollutant removal, and the need for comprehensive planning, are considered.

c. Revise the County drainage rules to require that drainage system design shall not adversely affect downstream and coastal water quality”. (Source: KMCP1998)

Preserve Open Space (Source: KMCP1998):

“Preserve coastal vistas, open space, and recreational opportunities for residents by prohibiting further shoreline development except in places designated on the 1997 community plan land use map, and prohibit future community plan amendments along the shoreline that would increase the intensity of land use, with the exception of land use that is public or quasi-public in nature”.

Reclassification of lands to Enhance Environmental Preservation (KMCP1988):

“Maintain State Conservation District boundaries in the planning region. However, State Conservation District reclassification of lands may be warranted to enhance environmental preservation”.

“Prevent urbanization of important agricultural lands” (KMCP1988).

CLIMATE CHANGE IMPACTS IN HAWAII <https://seagrant.soest.hawaii.edu/wp-content/uploads/2018/05/smFINAL-HawaiiClimateChange.pdf>

“Coral reefs and other nearshore habitats face degradation from both climate change and localized anthropogenic influences, including but not limited to, sedimentation, direct physical impacts, overfishing, nutrient loading from runoff, and erosion.”

“Controlling land-based sources of stormwater runoff and water pollution with climate change in mind may help alleviate the effects of climate-related changes”.

“Elevated groundwater tables, due in part to sea-level rise, are contributing to flooding in low coastal areas during higher tides and heavy rainfall events (Guidry and Mackenzie, 2006, Fletcher, 2010; Rotzoll and Fletcher, 2013)”.

“Changes in precipitation, covered more thoroughly in Freshwater Resources, could affect terrestrial ecosystems including flooding, erosion, drought, and fire”.

Hydromodifications - Channelization, Channel Modification, Dams, Streambank and Shoreline Erosion:

https://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/cnpcp_mgmt_plan_sections/III_6-Hydromodifications.pdf

“The counties (Section 46-11.5, HRS) are responsible for the maintenance of channels, streams, streambanks, and drainageways which may remove sources of nonpoint pollution. For lands comprising the channels, streams, streambanks, and drainageways that are privately owned or owned by the State, the respective owner is responsible for maintenance”.

Stratigraphy, Chronology, and Social Context of David Malo's Kalepolepo Church Site from the Island of Maui:

“Ethnohistorical and archaeological evidence indicates Kalepolepo was the location of a small coastal community who relied on a variety of means of subsistence including a coastal fishpond and pondfields located at the mouth of an intermittent stream”.

Pepalis, Jeanne A., "Stratigraphy, Chronology, and Social Context of David Malo's Kalepolepo Church Site from the Island of Maui" (1997). Honors Capstones. 1049. <https://huskiecommons.lib.niu.edu/studentengagement-honorscapstones/1049>

Southwest Maui Watershed Management Plan Maui County, HI. Final Report 2019, Michael Reyes, Maui Environmental Consulting, LLC: https://www.mauiwatershed.org/_files/ugd/c0882d_9514cad08a164e67a2e81fe9d81fcdcb.pdf

- “Eroded Streambanks - Sediment clogs waterways and drainage systems, enters the ocean, kills fish and other aquatic life, and causes property loss and degradation.”
- “Sediment from improperly managed construction sites, ranch, crop, and forest lands, and eroding streambanks”
- “The Hapapa watershed has been identified as the most troublesome for sediment loading. Specific gulches in the Hapapa watershed, including Kulanihakoi Gulch, Waipuilani Gulch and Keokea Gulch flood and discharge into coastal waters with the most frequency. Storm waters overload coastal wetlands causing flooding in the urban area near the shore”.
- “In Kihei, the Kulanihakoi, Waipuilani, and Keokea gulches are prone to surface water flooding”.
- Historically, freshwater and brackish wetlands occurring near the coastline would have slowed this water, functioning as both a filter and as a means for aquifer recharge. Unfortunately, today many of the wetlands in Kihei, Wailea, and Makena have been impacted by urban development and aquifer drawdown. Continued protection and restoration of existing wetlands will ensure they continue to provide these important ecological functions.
- “Mauka (upslope) of the Pi’ilani Highway, the slope becomes steeper and well-defined gulches are seen in the landscape (R.M. Towill, 2016)”.
- “When functioning properly, these streams provide landscape hydrologic connections; stream energy dissipation during high-water flows to reduce erosion and improve water quality; surface and subsurface water storage and exchange; ground-water recharge and discharge; sediment transport, storage, and deposition to aid in floodplain maintenance and development; nutrient storage and cycling; wildlife habitat and migration corridors; support for vegetation communities to help stabilize stream banks and provide wildlife services; and water supply and water-quality filtering”.
- “Agricultural lands may provide a nonpoint source for sediment, pathogens, and nutrient pollution”.
- “Sediment from agricultural fields, feeding areas, and unimproved roads can make its way into these gulches during stormwater events, ultimately making its way to the ocean”.

Impact of Sea-Level Rise on the Hydrologic Landscape of the Mānā Plain, Kaua’i by Basil Gomez, Department of Geography and Environment, University of Hawai’i, Mānoa, Honolulu, HI 96822, USA Water 2021, 13(6), 766; <https://doi.org/10.3390/w13060766>

Revised Environmental Impact Statement, Kihei Drainage Project 1980 https://files.hawaii.gov/dbedt/erp/EA_EIS_Archive/1980-04-DD-MA-REIS-Kihei-Drainage.pdf

Existing Drainage Facilities

The existing drainage system consists of drainage facilities with capacities which are insignificant compared to the volume surface runoff generated by the urbanized Kihei area during a 50-year storm. These facilities were installed piecemeal with no overall plan in mind, resulting in sporadic locations of facilities throughout the project area.

Rigorously Valuing the Role of U.S. Coral Reefs in Coastal Hazard Risk Reduction - USGS: <https://pubs.usgs.gov/of/2019/1027/ofr20191027.pdf>

FEMA FLOOD STUDY from 2009:

<https://gis.hawaiiinfip.org/fhat/FIS/Maui/150003V001C.pdf>

EPA National Stormwater Calculator

<https://swcweb.epa.gov/stormwatercalculator/>

Rainfall calculator, English units - How much water falls during a storm?

<https://water.usgs.gov/edu/activity-howmuchrain.php>

South Maui Watershed @ 80 square miles receives 1,390,284,800 gallons, per hour when it rains 1 inch per hour. In other words, South Maui receives 1.4 billion Gallons of Water per hour, for every inch/hour of rain.

Further Reading:

<https://savethewetlands.org/wetlands-in-hawaiian-culture/>

<https://savethewetlands.org/fishponds-of-kula-kai/>

<https://savethewetlands.org/mud-floods-and-siltation/>

<https://savethewetlands.org/how-does-climate-change-degrade-watersheds/>