

# Man, Land, & Sea

A publication by Guam Coastal Management Program

May 14, 2021



## INSIDE



Coastal Management announces updated guidebook

2



Fluid Lensing 2.0

3

PROTECTING GUAM'S SEASHORE RESERVE



4



Guåhan Sustainable Culture (GSC), host virtual forum: Histories of Farming and Agriculture on Guåhan

6

Protecting Guam from Ridge to Reef



Håfa Adai!

Several weeks ago, the Islandwide Beautification Task Force (IBTF), chaired by Lieutenant Governor Josh Tenorio, in collaboration with the Guam Visitors Bureau (GVB), hosted the #GUAM Earth Month **Islandwide Beautification Cleanup**. The event received overwhelming support from more than 1,000 volunteers.

A total of 17.36 tons (34,720 pounds) of trash was collected and consisted of municipal solid waste, white goods, loose metals, tires, and other bulky waste. The top collection sites were addressed by the Guam Environmental Protection Agency (EPA) at an illegal dump near the Harmon sinkhole in Tamuning and the Palau Community Association of Guam (PCAG) at an illegal dump along Lada Road in Dededo.

We would like to extend our greatest appreciation and *Si Yu'os Ma'åse'* to each and every one of the volunteers who dedicated their time--and, more importantly, took ownership of our island. Special thanks to i\*Recycle Program Administrator Peggy Denny and the Agat Mayors Office for leading efforts to sort and recycle collections and Mr. Rubbishman for sponsoring the roll-off bins.

Our administration remains committed to reforming policy to end our long standing litter problem and reduce the amount of waste we put into the landfill. We each have the power to make positive changes today. Let us continue this momentum to create a cleaner, greener Guam for all.

*Lourdes A. Leon Guerrero*  
LOURDES A. LEON GUERRERO  
Maga'hågan Guåhan  
Governor of Guam

*Joshua F. Tenorio*  
JOSHUA F. TENORIO  
Sigundo Maga'låhen Guåhan  
Lieutenant Governor of Guam

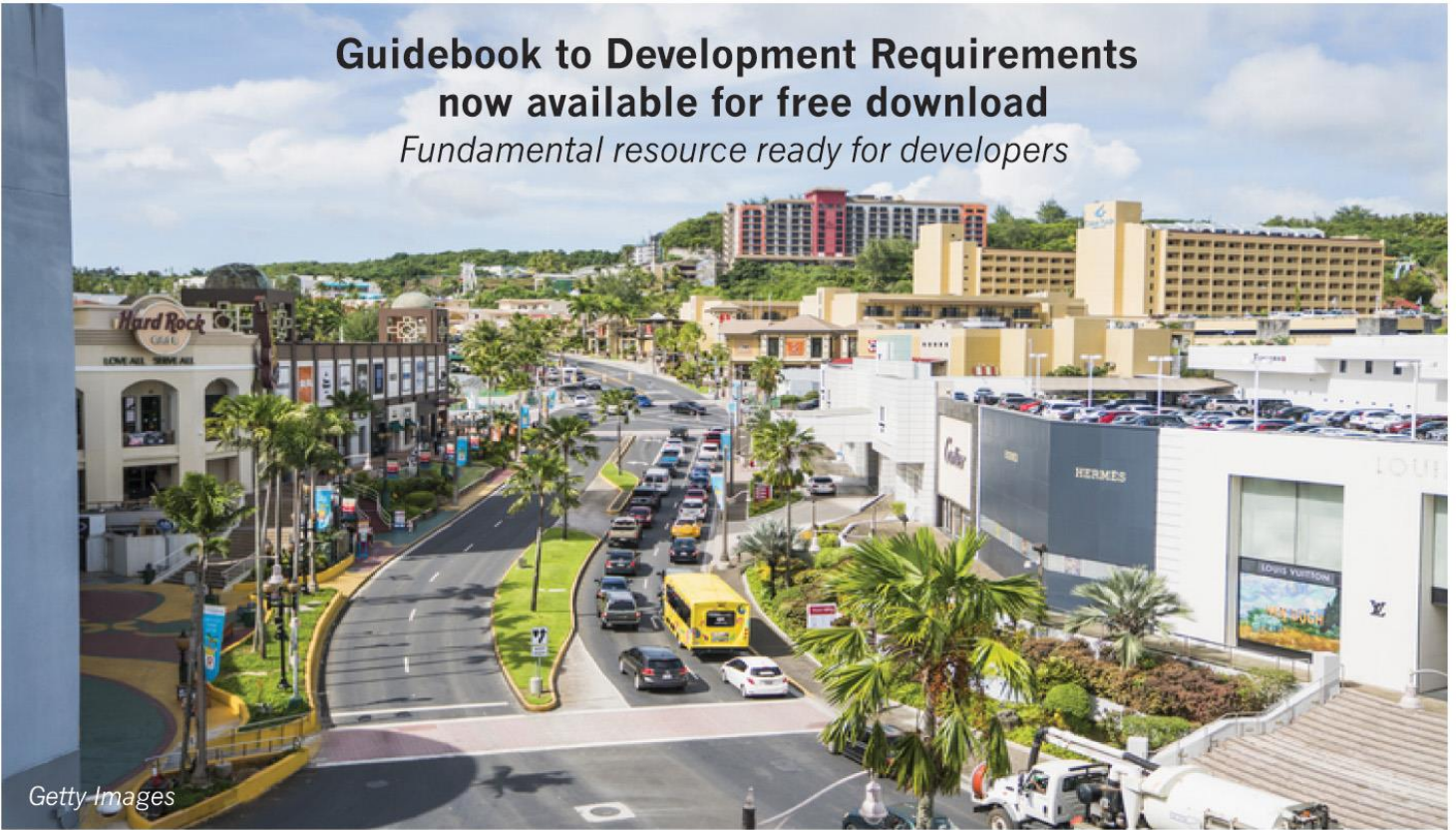
Governor and  
Lt. Governor  
MESSAGE

“ We each have the power to make positive changes today. ”



# Guidebook to Development Requirements now available for free download

*Fundamental resource ready for developers*



*New guide helps developers execute environmentally compliant development projects in Guam.*

## Coastal Management announces updated guidebook, serves as reference for island developers

*By: Guam Coastal Management Program, Bureau of Statistics and Plans*

The Bureau of Statistics and Plans' Guam Coastal Management Program recently updated its Guidebook to Development Requirements on Guam.

This new guide is a fundamental resource that's available free of charge to developers planning to undertake any major or minor project on Guam. Updated as of March 2020, the guide serves as a reference point for developers researching how to execute environmentally compliant development projects.

A key component of the guidebook is the Permit and Construction Enforcement Matrix, which identifies general project types and lists typical types of plans, specifications, calculations, reviews, approvals or other agency permits required. The matrix is useful in finding the description that best corresponds with a proposed project, along with which plans, specifications, calculations and other associated permits and approvals are required.



Within the 236-page guide, you will find information on laws, regulations, permits and clearances, as established by numerous local and federal regulatory agencies. This includes all categories of construction, earthmoving and agriculture, as well as other types of land use and water-oriented construction.

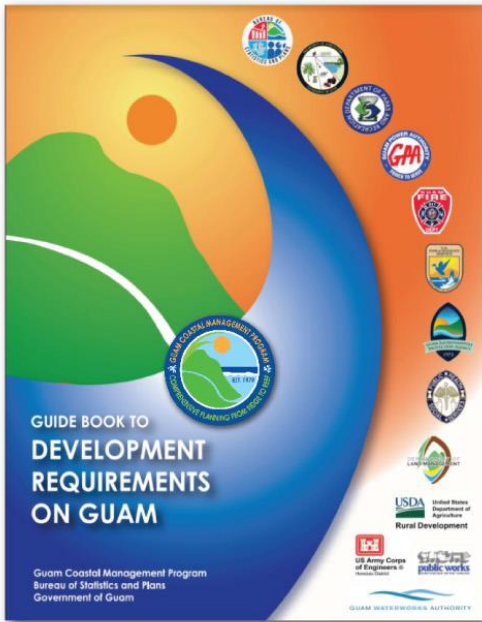
You will also find details on the environmental health and safety requirements for major developments.

The guide outlines each type of requirement for development by:

- summarizing its purpose and nature;
- citing the government agency with authority for approval;
- describing the application review process;
- presenting facsimiles of appropriate applications; and
- suggesting additional references for more detailed information.

*Under the coastal management context, "environment" is broadly defined to include public health and safety, as well as cultural and aesthetic resources.*





The guide provides an overview of development requirements on Guam.

Guam Coastal Management Program, Bureau of Statistics and Plans

The guide also aims to provide an overview of major permitting requirements of typical development projects on Guam. It outlines the applicable considerations at local and federal levels to help streamline the permitting process and support compliance objectives.

In addition to the permitting information, the guide contains the following resources:

- **Directory of government agencies, including contact information**
- **Sample forms**
- **Glossary of acronyms**
- **Definitions of key terms**
- **Key public laws**
- **Environmental mapping on Guam**
- **Permitting matrix**

*This guide is not meant to be used as the sole resource that developers should rely on when executing projects. You are advised to consult with the appropriate government agencies as early as possible in the project planning stage. For reference, you can turn to representatives at the Department of Public Works, the Department of Land Management, the Guam Environmental Protection Agency and the Bureau of Statistics and Plans for help in determining which laws, regulations, permits clearances are required for a particular project.*

**A limited number of hard copies of the guidebook are available to the public. You can also download a copy at [bsp.guam.gov/guam-development-guidebook/](http://bsp.guam.gov/guam-development-guidebook/) For more information, please contact via email [steven.dierking@bsp.guam.gov](mailto:steven.dierking@bsp.guam.gov)**

# Fluid Lensing 2.0

## Mapping Guam’s coral from the air!

By Romina King, PhD

Under a grant from the Coral Reef Initiative, the Bureau of Statistics and Plans and the University of Guam is pleased to partner with NASA’s Laboratory for Advanced Sensing to create three-dimensional maps of Guam’s priority coral reefs with sub-centimeter accuracy, using unmanned aerial vehicles (UAVs), or drones! The project leads are Dr. Romina King (UOG) and Dr. Ved Chirayath (NASA). The resulting georeferenced photo maps of corals are classified using machine learning technology. The public can assist in identifying species of coral using Nemo-Net. Classifications are checked by experts and fed into the neural network at NASA, training the AI to identify species of corals from photographs.

This work has allowed for a major scientific breakthrough that Dr. King and Dr. Chirayath are incredibly excited about. “With modifications to the fluid lensing algorithm, referred to as Fluid Lensing 2.0, we are now able to image corals 45 feet below the surface of the water! We shattered the original depth record, which was 20 feet! We are also now able to detect fauna such as sharks, sea turtles and schools of fish,” exclaimed Dr. Chirayath.

With fluid lensing 2.0, we are able to process images using a high-end computer, as opposed to using the supercomputer at NASA. This makes it more accessible and affordable for coral jurisdictions such as Guam to process the imagery on-island and map our benthic habitats, speeding up the process and reducing limitations.

“The products from this project are incredible. We look forward to supplying natural resource managers, researchers, students, and the tourist industry with these three-dimensional maps that can be printed out and put on display,” states Dr. King. Furthermore, the Guam public can participate in the science! Participants can download the Nemo-Net app on OS or Android and classify Guam’s corals from the images collected!



For more information:  
 NASA - What is Fluid Lensing?  
<http://nemonet.info/>



# Public input sought to preserve and protect Seashore Reserve

By: Chelsey Willetts, M.S. Environmental Conservation and NOAA Coastal Management Fellow, for Guam Bureau of Statistics and Plans

## TIME TO PROTECT GUAM'S SEASHORE RESERVE

**GCMP seeking public and community input to address challenges within Seashore Reserve.**

Getty Images

*Help protect Guam's Seashore Reserve for future generations.*

As residents of a small island, everyday life is tied to rhythms of both the land and sea. While today's Guam is diverse in both culture and thought, the connection to the island's rich natural resources remains strong. That is why many in GovGuam are working to protect and preserve these limited resources for current and future generations.

At the Bureau of Statistics and Plans, Guam Coastal Management Program (GCMP), a comprehensive plan is in development to address challenges occurring within one of Guam's essential natural resources: the Seashore Reserve. Through an all-inclusive and adaptive management approach, the Seashore Reserve Plan aims to rebuild and reaffirm the human connection with this natural resource while preserving and protecting it for future generations.

## But what is the Seashore Reserve, you ask? Let's take a step back to 1974.

### The Seashore Reserve

The Seashore Reserve was established under the Guam Territorial Seashore Protection Act of 1974. Its basic boundary is the coastline of Guam, including all islands in GovGuam's jurisdiction. The 12th Guam Legislature labeled the Seashore Reserve as a "...distinct and valuable natural resource belonging to all the people of Guam... a reserve of paramount concern to the present and future residents of the island." These lawmakers determined the universal worth of the Seashore Reserve as priceless, however, swift action is required to protect and preserve it for the use of current and future generations.

In conjunction with other GovGuam's agencies and local organizations, GCMP is developing the Guam Seashore Reserve Plan (GSRP). This inclusive approach began with extensive background research, including various interviews and meetings, a literature review and a compilation of relevant legislation related to the Seashore Reserve.



On Nov. 30, 2020, a GSRP kickoff meeting – garnering attendance by Sen. Kelly Marsh Taitano – was held to discuss progress. Following the meeting, GCMP engaged with the University of Guam, UOG extensions, and the Guam Visitors Bureau to collect ecological and biological data, such as fisheries data and coastal structure studies. This research helped to understand the current state of the reserve and to determine what information might be missing or lacking. GCMP also worked with local organizations, such as the Guam Preservation Trust, to gather cultural and historical data.

As of January 2021, GCMP is collaborating continuously with key stakeholders and working on a draft outline. Before this plan can move forward, however, it needs community input and support.



Getty Images

*Guam has a vibrant marine life, which is why the Seashore Reserve needs to be protected.*

## How you can help

The engagement of local councils and community members plays an essential role in any planning process. The overarching goal of the GSRP is to ensure that this publicly owned natural resource is protected, preserved and managed collectively by and for the current and succeeding generations here in Guam. After all, we are tied intrinsically to the land and sea. It is imperative that together as a community we do our part to preserve its existence for future generations.

Are you a coastline property owner or own submerged land close to shore? Are you a fisherman or marine tour operator/guide? Do you have any experiences and/or challenges with the Seashore Reserve? We would love to hear from you!

*Please send your feedback or comments to Seashore Reserve Project Lead Chelsey Willetts at [chelsey.willetts@bsp.guam.gov](mailto:chelsey.willetts@bsp.guam.gov).*



Office of Senator San Agustin



The community clean up had a good turn out of trash collected as we filled up the 20 cubic feet trash bin provided by Mr. Rubbishman, also, the Yigo mayor had 4 pick-up trucks filled with trash. We have collected trash from one end to the other end of Chalan Eskuela (Wusstig road entry to FBLG Middle School and Simon Sanchez High School). We collected about an estimate of 8000 lbs of trash. We did have about an estimate of 60 volunteers out of a 100 volunteers, who have taken the time to pick up trash and help clean our island.



Senator San Agustin together with our staff and other volunteers also decided to bush cut the area as while they were bush cutting more trash became visible. The volunteers consisted of Our office staff and family, Yigo and

Dededo's Mayor's Office, together with the 36th Security Forces Squadron of Andersen Airforce Base and their families. Our office extends Un Dangkolo na Si Yu'os Ma'ase' to Guam Solid Waste Authority, Guam Environmental Protection Agency, Mr. Rubbishman, and of course Bureau of Planning and Statistics Guam Coastal Management Program for their assistance in making the Clean Up a success.





## Hosts Forum to Launch a New website to Showcase the History of Farming on Guam

By Michelle Crisostomo and Chelsey Willetts

**Did you know that worldwide, around one in nine people are undernourished and do not have sustainable access to nutritious food?**

**Malnutrition can oftentimes lead to violence and has also been attributed to the likelihood of instability within communities.**

Due to geographic isolation and limited natural resources, the Pacific Island region shares a unique set of circumstances that result in a complex set of food security and nutrition challenges. Reliance on food imports, growing population, and fragile natural environments are just a few circumstances that magnify these challenges and make it difficult for Pacific Islands, like Guam, to achieve food security. Despite these prominent challenges, however, local food initiatives are working towards a more sustainable and food secure island by looking through the lens of the past. One of the Guam local initiatives working towards this sustainable movement is Guåhan Sustainable Culture.



Michelle Crisostomo



Marlyn Oberiano

Founded by Michelle Crisostomo and Marlyn Oberiano, Guåhan Sustainable Culture (GSC) is a non-profit organization whose mission is to cultivate ideas and strategies of environmental sustainability, with a focus on food security and food sovereignty. GSC envisions a Guåhan where its people strive toward food sovereignty and greater food security, where its people are proficient in cultivating their food self-sufficiently, and most importantly, where its land, air, and seas are sustained for future generations.

**To start 2021, Guåhan Sustainable Culture (GSC), hosted a virtual forum to showcase GSC's production of Ginen I Gualo' - Histories of Farming and Agriculture on Guåhan (Ginen I Gualo).**

Participants in the forum were treated to ten stories highlighting the accomplishments of Guam farmers and the unveiling of a new website providing knowledge of past and current agricultural practices, preserving and sharing stories of our island's local farmers, and, most importantly, encouraging profound connections to the land and island.

The virtual forum was opened by GSC's President and Co-founder, Michelle Crisostomo, who welcomed more than 70 participants to the online event. Kristin Oberiano, GSC's board member and Humanities Scholar for the project, explained the historical overview of Ginen I Gualo' and also highlighted the work of filmmaker and photographer Cami Egurolla who produced the seven featured videos of farmers. "In Cami's work you can see the passion for film and her ability to put together stories that are compelling and interesting," said Crisostomo. "The final product is terrific and captures the successes, challenges, and family lineage of some of Guam's farmers from those who grow for commercial purposes to those who grow to feed their families and live a healthier lifestyle."





Chelsa Muna, who also serves as the director of Guam's Department of Agriculture, is a farmer who was featured for the project. Director Muna farms for her family that grows a multitude of vegetables and fruit trees, as well as raises ducks, chickens, and carabao. Her perspective on farming was poignant and enlightening as she has always strived to be in harmony with her surroundings, "working with the island's ecology to grow fruits and vegetables using the plants' natural relations with each other," said Muna. She farms at her family's home in Talofofo and spoke about utilizing even the smallest of spaces on her land, "what I hope to see are just thousands of little farms where people realize they can grow thousands of pounds of produce on a half-acre, a quarter acre, or even an eighth of an acre."



Chelsa Muna



Cami Egurolla

Another featured farmer, Saina Bernice Nelson, grows more than two hundred varieties of plants to be used for Mariana's traditional medicine, or *ãmot*. Saina Nelson and her farm are dedicated to teaching the power of plants and their historical and traditional role as a product for healing. Her farm is an educational experience as she explains how plants that are often overlooked have had a historical role in healing different ailments. "It takes a trained eye and some experience to identify a plant and know how it can help the body, but this is something I learned growing up in Saipan and now it's a labor of love to share my knowledge of plants and traditional medicine," said Nelson.



Ginen I Gualo was made possible by a grant from Humanities Guåhan and the National Endowment for the Humanities. The presentations were an enormous success and the follow-up conversation from those who attended the virtual event was proof of the growing interest to rediscover farming to promote sustainability. In addition to all seven segments of Guam's farmers, the Ginen I Gualo' website also contains Pre-contact, Spanish, U.S. Naval, Japanese and Postwar research and its relevance to agriculture, focusing on changes to farming that have occurred throughout pivotal stages in Guam's history.

Understanding the history and culture of a place proves exponentially valuable when looking to sustainable future decision-making. Ginen I Gualo serves as just one event in Guam that not only supports a sustainable island lifestyle but also preserves local stories and encourages profound connections with the island's natural resources. After all, we are tied intrinsically to our natural resources. It is imperative that together as a community we do our part to preserve and sustain their existence for future generations.

**Would you like to learn more about GSC and their event, Ginen I Gualo?**

Check out their website <https://gusustainable.org/> and event page <https://gusustainable.org/ginenigualo/>



# Volunteers Collect 17.36 Tons of Trash

Man, Land, and Sea  
Newsletter  
May 14, 2021

**CONTACT US**

P.O. Box 2950  
Hagatna, Guam 96932  
671.472.4201/2/3

For Newsletter  
Information,  
please contact  
Steven Dierking at  
671.475.9647  
or email at  
steven.dierking@bsp.guam.gov

The Man, Land and Sea newsletter is funded by a grant from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) through the Coastal Zone Management Act of 1972, as amended, administered by the Office for Coastal Management and the Guam Coastal Management Program (GCMP) of the Bureau of Statistics and Plans, Government of Guam through Cooperative Agreement Award NA19NOS4190165, <https://bsp.guam.gov/guam-coastal-management-program/>



On Saturday, April 24, 2021, the Islandwide Beautification Task Force (IBTF), chaired by Lieutenant Governor Josh Tenorio, in collaboration with the Guam Visitors Bureau (GVB), hosted the #GUAM Earth Month Islandwide Beautification Cleanup.



The event received overwhelming support from more than 1,000 volunteers. A total of 17.36 tons (34,720 pounds) of trash was collected, as recorded by the Guam Solid Waste Authority (GSA). The collection consisted of municipal solid waste (MSW), white goods, loose metals, tires, and other bulky waste.

Guam Bureau of Statistics and Plans

**THE  
DATA  
HUB**

WITH  
**TYRONE  
TAITANO**

Newstalk



6:30 pm Tuesdays

