

Agricultural Water Use On Guam 2015-2016

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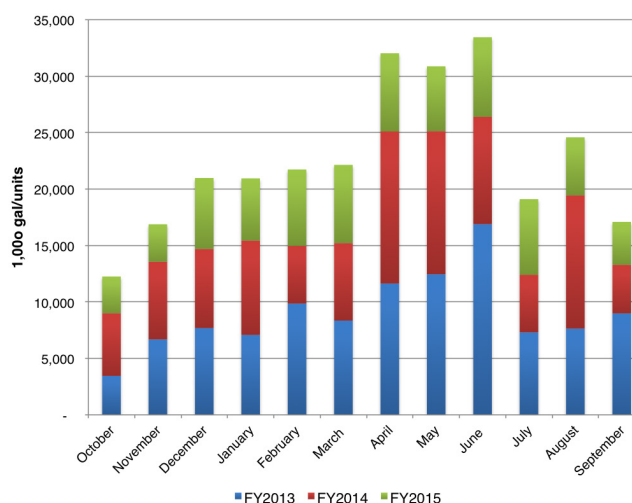
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This fact sheet “kit” answers a range of questions about water use for agriculture on Guam for 2015-2016. It is an interagency effort to provide the agricultural community with facts about agricultural water use and support programs. Besides frequently asked questions, there are fact sheets from the Guam Department of Agriculture (GDOA), Agricultural Development Service’s (ADS) covering its Agricultural Water Rate program and from the USDA Natural Resources Conservation Service’s Environmental Quality Incentives Program (EQIP) program. All rules and regulations that govern the Guam Waterworks Authority (GWA) are posted at <http://guamwaterworks.org/rules-regs/>. If you do not have access to a computer to download a copy, please request one from any GWA customer service representative. This document is for general information only. For all official guidance, seek advice directly from GWA.

Introduction

Growing plants for food, landscaping, medicine and decoration often requires supplemental water. Tending to livestock (i.e. goats, pigs, chickens, carabao) and raising fish for consumption requires additional water as well. Agriculture is one of the 11 Class Types of water usage on Guam, which is used by a certified Bona Fide Farmer as defined by GDOA. For commercial agriculture production, some months require more water, and some less (Figure 1). On average, the months of April-June typically

Figure 1. Agricultural water use on Guam FY 2013-2015.



Source: Data provided by GWA January 2016.

Table 1. Agricultural water use and cost on Guam FY 2013-2015.

Year	1,000-gal units	Cost
FY2013	108,036	\$363,419
FY2014	96,625	\$392,105
FY2015	67,443	\$330,222

Source: Data provided by GWA January 2016.

In cooperation with



require the most water. But, compared to FY 2013, Bona Fide Farmers in FY 2015 used less water and the total amount spent on water by the farmers was correspondingly less. The 345 Bona Fide Farmers that have GWA agriculture water meters spent a total of \$330,222 on water in FY 2015 (Table 1). This is an average per meter cost of \$957/year or \$80/month.

Now, let's look at some Frequently Asked Questions about agriculturally-related water use on Guam.

1. Who sets water rates for all water users on Guam?

By Guam law, the Guam Public Utilities Commission (PUC) establishes and approves all GWA policy, procedures, and sets user fees/ rates. However, the Consolidated Commission on Utilities (CCU), the policy body that oversees both water and power, recommends all procedures, fees, and rates to the PUC. It is up to the PUC to take those rate recommendations or not.

2. How much water do agricultural users (Bona Fide Farmers) consume per year and how does that compare to other user types?

In 1000-gal units, here are recent use amounts.

Class Type	FY15	FY14	FY13
Agricultural	67,443	96,625	108,036
Golf Course	6,850	5,016	6,672
Comm 1A (I)	751,737	747,913	727,915
Comm 2B (II)	103,864	99,541	107,046
Comm 3C (III)	164,363	146,639	136,531
Federal	1,168	1,090	787
Government	515,974	539,227	579,711
Hotel	999,116	943,584	933,992
Irrigation	10,385	9,648	22,120
Residential	3,415,720	3,509,068	3,642,603
TOTAL	6,036,620	6,098,351	6,265,413

Source: Data provided by GWA January 2016.

Commercial I. Bars without Dining Facilities, Car Wash, Department and Retail Stores, Hospital and Convalescent, Laundromat, Professional Offices, Repair Shops and Service Stations, School and Colleges, Soft Water Service, Markets Without Garbage Disposal.

Commercial II. Hotel, Commercial, and Industrial Laundries.

Commercial III. Auto Steam Cleaning, Bakery and Wholesale, Markets with Garbage Disposals.

The average use for the 345 Bona Fide Farms in FY 2015 was 196,000 gallons per average farm per year (196, 1000-gal units). This equates to an average use of 537 gallons per day if water was used every day of the year. By contrast, 38,237 residential users used 3,415,720,000 gallons in FY 2015 for an average annual use of 89,330 gallons per residence and an average daily use of 248 gallons.

Water use by type

By use type, agriculture uses less than 2% of all water distributed on Guam; 38,237 residential meters clearly use the most (as of Oct 1, 2015).

Class Type	FY15	FY14	FY13
Agricultural	1.1%	1.6%	1.7%
Golf Course	0.1%	0.1%	0.1%
Comm 1A (I)	12.5%	12.3%	11.6%
Comm 2B (II)	1.7%	1.6%	1.7%
Comm 3C (III)	2.7%	2.4%	2.2%
Federal	0.0%	0.0%	0.0%
Government	8.5%	8.8%	9.3%
Hotel	16.6%	15.5%	14.9%
Irrigation	0.2%	0.2%	0.4%
Residential	56.6%	57.5%	58.1%
TOTAL	100.0%	100.0%	100.0%

Source: Data provided by GWA January 2016.

3. What are the current water rates for agricultural water users?

Meter Size	Basic Monthly Water Charge	Water Consumption Per K/GAL
¾"	\$20.96	\$4.12
1"	\$24.45	\$4.12
1½"	\$38.38	\$4.12
2"	\$48.88	\$4.12
3"	\$87.31	\$4.12
4"	\$122.20	\$4.12
6"	\$226.94	\$4.12
8"	\$331.66	\$4.12
10"	\$453.87	\$4.12
12"	\$541.12	\$4.12

Source: <http://guamwaterworks.org/rates/>
 Accessed: January 16, 2016

4. When was the last time agricultural water rates were updated?

In October 1, 2015. Rates were increased 16.5%.

5. How do the agricultural water rates compare to residential, commercial, and government rates?

The “basic water charge” is the same for all three types of customers (see Question 3). The difference is in the amount paid by 1000-gallon units (K/GAL).

Class Type	Per 1000 Gal	Per K/Gal < 5000 Gal	Per K/Gal > 5000 Gal
Agricultural & Irrigation	\$4.12		
Commercial & Government	\$12.41		
Residential		\$2.91	\$9.97

Source: <http://guamwaterworks.org/rates/>
 Accessed: January 16, 2016

6. If I am a farmer but not Bona Fide under GDOA, what is the process and cost to get one installed so I can start my farm with a properly installed agricultural water meter?

First, go to the Agricultural Development Services Division Office at the Guam Department of Agriculture located at 163 Dairy Road in Mangilao. Apply for the Bona Fide Farmer’s Certification Program (P.L. 21-90) and Agricultural Water Rate Program (P.L. 9-42). Staff will notify you that your area/lot is approved (or not) based on their agricultural specifications.

In order to be considered for the Bona Fide Farmer/Farmer Certification, your farm needs to be inspected. Depending on the Division’s workload, this process takes between 2 weeks and a month. Once you have the Bona Fide Farmer Certification and a memo from the Guam Department of Agriculture requesting an agricultural water meter, you can apply for agricultural water meter permit at GWA. With GWA approval, you can then contact a private engineer and/or contractor to install a line to your property. You will bear the cost of a water main extension to your property, including design, construction, materials, and permitting costs. *See the Guam Department of Agriculture’s fact sheet on the Agriculture Water Rate Program on page 8.*

7. If a new Bona Fide Farmer started today, what would be the essential, estimated costs for a ¾" or 2" hook-up?

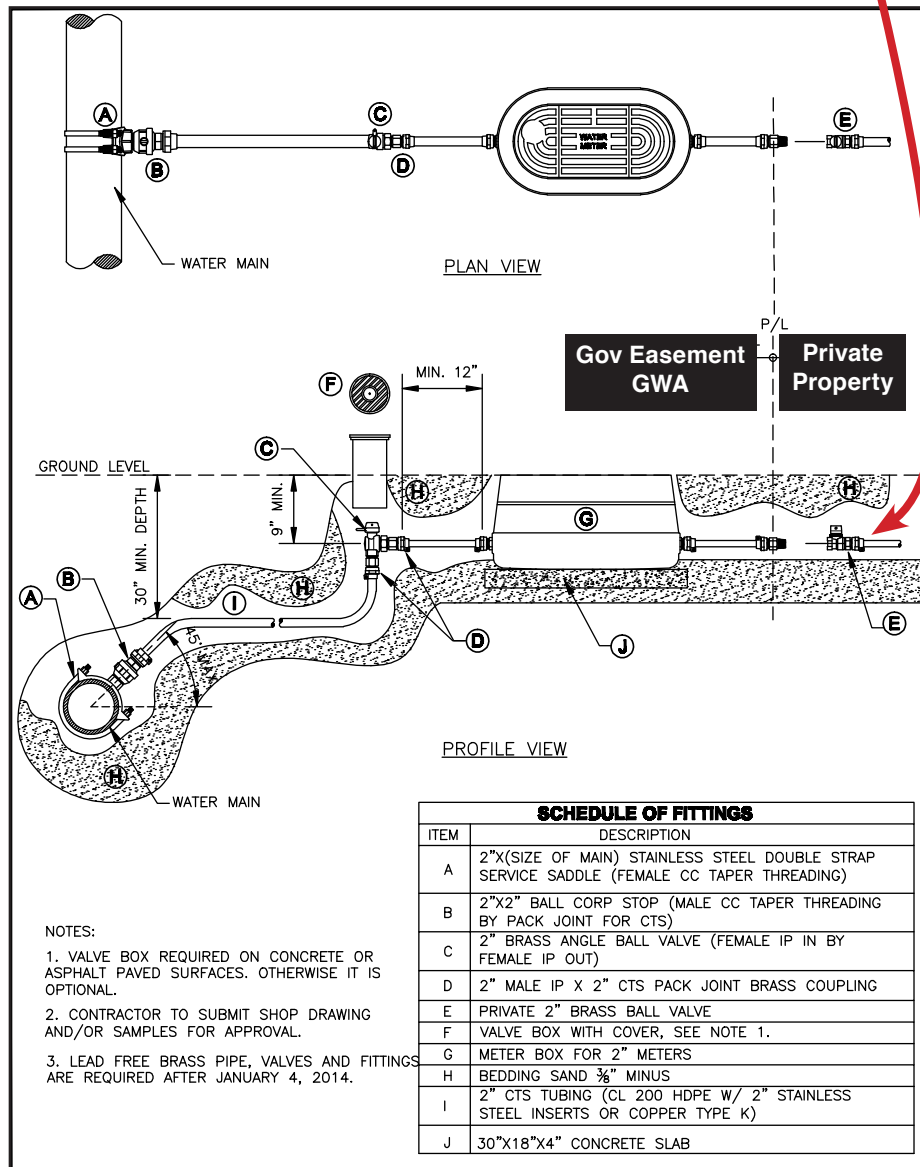
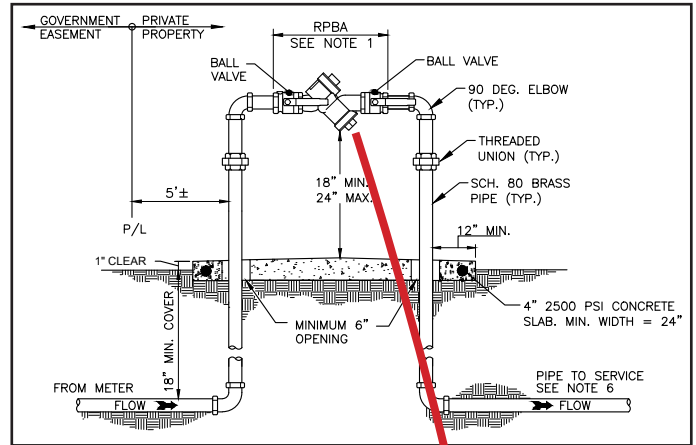
See tables below and Figure 2.

Item for ¾" meter	Cost range
Meter, meter box, tail piece(s), fees (inspection, administrative, and installation), and deposit	\$638
Tail piece	\$53 - \$90
Backflow preventer	\$298 - \$431
Shut off valve	\$13 - \$35
Installation estimate – <i>digging or laying lines is extra</i>	\$200 - \$450
System Development Charge (SDC) for water service	\$2,126
Estimate of a minimum – maximum total cost	\$3,328 – \$3,370

Source: <http://guamwaterworks.org/rates/> and plumbers and plumbing supply stores on Guam. Accessed January 16, 2016.

Figure 2. Fittings, including a backflow preventer, required on a 2" meter installation. Details are in draft form. Contact Guam Waterworks Authority for current details.
Source: Guam Water Authority.

Backflow preventer.



The backflow preventer should be installed downstream of the valve on private property.

Item for 2" meter	Cost range
Meter, meter box, tail piece(s), fees (inspection, administrative, and installation), and deposit	\$2103
Backflow preventer	\$775 - \$1,872
Shut off valve	\$26 - \$162
Installation estimate – <i>digging or laying lines is extra</i>	\$1,500 - \$2,103
System Development Charge (SDC) for water service	\$17,011
Estimate of a minimum – maximum total cost	\$21,415 – \$23,251

Source: <http://guamwaterworks.org/rates/> and plumbers and plumbing supply stores on Guam. Accessed January 16, 2016.

8. **How are agricultural water rates and meter prices determined?**
The PUC decides on costs based on hired consultant analysis.
9. **Who owns the agricultural water meter and backflow preventer that is installed on my property?**
GWA owns your water meter. And, you are required to pay for that meter. It is similar to mailboxes; they are owned by the Postmaster even though you purchased it. You are also responsible to keep the meter in good working order and physical condition. You own the backflow preventer.
10. **Is there a specific kind of backflow preventer needed? Where can I purchase it?**
A reduced pressure principal backflow preventer or air gap separation is required. You can find them at commercial plumbing suppliers on Guam.
11. **What are the maintenance requirements of the customer for the backflow preventer?**
The customer must maintain the backflow preventer and get a periodic test and inspection on a schedule established by GWA. Should the water user fail to perform the tests and/or fail to provide records relating to the test to GWA, GWA may perform tests at the cost of the customer. Source: 28 GAR 2114 § (e)/Accessed January 22, 2016
12. **Where do I install the backflow preventer?**
The backflow preventer should be installed downstream of the valve on private property.

Size of device	Dimension ground level to center line of backflow prevention device		Dimension distance to surrounding obstruction
	Min.	Max.	
¾" to 1 1/2"	18"	48"	24"
2" to 3"	24"	48"	24"
4" to 6"	30"	48"	24"
8" to 10"	36"	48"	24"

Source: 28 GAR § 2114 (c) GWA Rules and Regulations. Accessed January 22, 2016.

13. **How are installation costs for agricultural water meters calculated?**
The PUC decides on costs (and their meetings are open to the public). New customers need to pay for meters and their installation, including administrative and inspection fees. Former customers, whose piping and meters are still in good condition, might be exempt from additional costs when service is reactivated.
14. **Are two meters required if the applicant's permanent residence is co-located with farm/ranch/nursery operation?**
Yes, all Bona Fide farmers who want an agricultural water meter must have one meter for agriculture operations and one meter for other distinct operations. This can include a residence or even in some cases, a commercial entity. Generally, there must be two separate meters. If the customer wants only one meter for the entire property, they will have to pay a higher rate.
15. **What is the process for a Bona Fide Farmer/Farmer to seek any refunds should that user stop his/her Bona Fide Farmer/Farmer operations?**
Once the final bill is paid, the deposit will offset any costs that are remaining and the balance is returned to the customer; if any. The customer cannot remove nor sell the meter even if he/she is no longer using it.
16. **In what cases will a farm be exempt from installing a backflow preventer?**
In no case. Backflow preventers are required by GWA rules and regulations for agricultural operations and most other commercial installations. Again, by GWA rules and the contract signed by the user, such devices shall be

tested and inspected internally not less than once annually or more often in those instances where inspections indicate repeated failure. GWA does not install the backflow preventers; you need to hire a licensed plumber.

17. Why are backflow preventers required?

Backflow preventers protect water quality for all customers by preventing contaminants from entering the local potable (drinkable) water system.

18. What happens if GWA learns about a farm/ranch/nursery operation that has illegally tapped or hooked into a GWA water line?

For illegally tapping into GWA lines, there are fines of up to \$25,000 (depending on the size of the line the water is stolen from), an estimated charge for the stolen water (at \$12.41/Kgal), and possible jail time. There is a \$500 penalty (plus a \$12.41/Kgal charge for estimated water loss) for tampering with a GWA meter. GWA customer service will also engage the Guam Police Department, if necessary, when discovering such an issue.

19. What happens if GWA learns about a customer who is using an agriculture meter - and getting a cheaper water rate at their residence - but are not operating a Bona Fide Farm?

See penalties in Q18. Customers should come to GWA and change their account type.

20. Can a farmer drill his/her own well, and, if not, why not?

No, a farmer *cannot* drill his or her own well – even if it is on their property. The Guam Environmental Protection Agency and the US Environmental Protection Agency standards and requirements prohibit the drilling of personal wells on Guam as a way of protecting the aquifer.

21. Are there any reasons that a farmer can't put in their own water reservoir or catchment?

No. Farmers can put in their own water catchment system at their own expense.

22. If there are water pressure issues, can a Bona Fide Farmer install a separate pressure system to increase water pressure on their water line?

Per § 2113 of GWA rules, Consumer's Pumping

Installations are as follows:

- (a) Consumers shall not be permitted to install or operate pumps on either side of the water meter, except in cases approved in writing by GWA.
- (b) Approvals given by GWA under this will be qualified by clauses making them revocable upon ninety (90) days notice during which period the consumer, if he desires to continue the operation of the pump, shall eliminate the objectionable features causing the giving of such notice. However, if the objectionable operation of a pump, whether approved under this clause or not, constitutes a health hazard to the public water supply system, the operation of such pump shall be discontinued immediately and not resumed until such health hazard has been removed.
- (c) No pump shall be equipped with a direct water supply connection for priming purposes except with the written permission of GWA.

23. If I dispute my agriculture meter water bill, who do I see? Is there a customer ombudsman at GWA?

Please see any customer service representative (CSR) at any of our three locations. If the CSR cannot resolve the problem, then the customer can request to see a supervisor.

24. If there is a leak in my water system, INSIDE (on private property) of the metered area, whose responsibility is it to fix it and whose responsibility is to pay for the water that was leaked?

All water leaking after the meter, i.e. inside the agricultural property, is the responsibility of the customer. Also, it's the customer's responsibility to pay for the water that leaks on their side of the meter. That's why GWA suggests in their rules and regulations that a customer should get their own shut off valve so they can shut off the flow of water in case he/she wants to fix a leak or when there is an extended absence from the farm.

25. If there is a leak in my water system, OUTSIDE (on the government easement) of the metered area, whose responsibility is it to fix it and whose responsibility is to pay for the water that was leaked?

Any leaks or water loss before the meter is GWA's responsibility and will not be reflected on the customer's bill. Please call GWA immediately to report any breaks in the water lines.

26. How long, on average, does it take for GWA to respond and fix a problem with a Bona Fide Farmer's water system?

Repair calls average about 8-10 calendar days.
GWA work crews operate 24/7/365.

27. What are System Development Charges (SDCs)?

SDCs are fees assessed to properties with new connections to the GWA system or that will place an increased demand on the system.

28. Why are System Development Charges (SDC's) assessed and when was it required for all Bona Fide Farmers?

SDCs pay for a portion of the costs GWA incurs to accommodate increased demand for water and wastewater services on Guam. SDCs are commonly used throughout the United States and other developed nations to fund improvements. SDCs became effective on March 1, 2010.

29. SDC's are amortized for first-time homeowners through Public Law 32-075. Can SDC's be amortized for Bona Fide Farmer's as well?

No, according to Public Law 32-075.

30. How can I tell if a water main is near my property?

Request a utility verification from the GWA permits office (2nd floor of the GPWA building in Fadian, Mangilao). GWA will verify the distance from your property to the nearest water main and get a pressure reading in that area to determine if additional customers can be added to the system.

31. Is there any money, such as GovGuam or federal grants, available to support the cost of meters or irrigation installation in part or in whole?

Currently, there are no GovGuam funds available to support water infrastructure projects on farms. The US Department of Agriculture's Natural Resources Conservation Service (NRCS), however, might be able to support your water infrastructure needs at some level. *See NRCS' information on page 10.*

32. What are the responsibilities of each party, the Bona Fide Farmer and GWA, per the GWA's rules?

(1) GWA responsibility. GWA shall be responsible for providing water to the customer's point of delivery and for the safe conduct and handling of the sewage after it passes the point of collection.

(i) GWA may, at its option, refuse service until the customer has obtained all required permits and/or inspections indicating that the customer's facilities comply with local construction and safety standards.

(ii) GWA shall be responsible for maintaining in safe operating condition all meters, equipment, and fixtures installed on the customer's premises by the utility for the purpose of delivering water to the customer.

(2) Customer responsibility. Each customer shall be responsible for the carriage, control, handling storage, and distribution of all water furnished by GWA and the maintenance of water and/or sewer facilities from and beyond the point of delivery in safe operating condition.

(i) Each customer shall be responsible for safeguarding all GWA property installed in or on the customer's premises for the purpose of supplying GWA service to that customer.

(ii) Each customer shall be responsible for payment for any equipment damage resulting from unauthorized breaking of seals, interfering, tampering, or bypassing the GWA meter.

(iii) Each customer shall be responsible for notifying GWA of any equipment failure identified in GWA's equipment that is installed in or on the customer's premises for the purpose of supplying water and/or sewer service to that customer.

Source: <http://guamwaterworks.org/rules-regs/>

We appreciate the helpful feedback from UOG-CNAS - Marie Auyong, Emily Shipp, Olympia Terral, Phoebe Wall, Jesse Bamba, from USDA-NRCS - Jocelyn Bamba, Brent Schumacher, Adam Reed, Colleen Simpson, and Rick Lizama from G-DOA. Thanks also to the Guam Southern and Northern Soil & Water Conservation Districts and interested farmers for bringing up the need for information on this topic.



Agriculture Water Rate Program

Guam Department of Agriculture
Agricultural Development Services (ADS)

What is our Agriculture Water Rate Program?

The Guam Department of Agriculture (GDOA), Agricultural Development Services (ADS) offers this program that helps farmers qualify for a lower water rate (See the table for Question 5 above for the water rates). This is a program mandated under Public Law 9-42 that promotes local agriculture by allowing farmers to benefit from a lower water rate upon our approval to install an agriculture water meter by Guam Waterworks Authority (GWA).

What do I need to do to qualify for GWA's agriculture water meter?

After you are a certified Bona Fide Farmer, you are automatically eligible for GDOA's Agricultural Water Rate Program. An official memorandum will be provided to the GWA, from GDOA, certifying agricultural activity to request for installation of an agricultural water meter on your property.

How do I apply for the GDOA's Agriculture Water Rate Program?

In order to apply for our Agriculture Water Rate Program, the applicant must be a certified Bona Fide Farmer.

How do I apply to be a certified Bona Fide Farmer?

Visit our office at the GDOA, Agricultural Development Services (ADS) Division located at 163 Dairy Road in Mangilao. One of our staff will assist you with the necessary forms to fill out.

In order to be eligible to apply for this program, you must show official documents stating you are:

- A U.S. citizen, a permanent resident alien or who has been a resident of Guam for the immediately preceding five (5) years or (b) a corporation or partnership licensed to do business in Guam.
- At least 18 years old

Applicants who do not own the property must have authorization from Chamorro Land Trust or a copy of Land Use Permits, Land Lease Agreement, or notarized authorization of the farm location

We will provide you with an *Agriculture Activity Requirements Worksheet* for the Bona Fide Farmer Certification. In order to completely fill out an *Agricultural Assessment Form*, you will need the following information:

- Last four digits of your social security number
- Farm lot number
- Map showing how to get to your farm
- An illustration of your farm layout

As applicable (This section should meet at least one of the criteria of the Agriculture Activity Requirements Worksheet)

- List of commodities/crops – length of row, distance between plants, number of rows
- Livestock – number of heads, unit (lbs.), value (in dollars and cents)
- Fruit trees – name of tree, number of trees, estimated fruit harvested (lbs.), value (in dollars and cents)
- Aquaculture – name of species, number of species, estimated species harvested (lbs.), value (in dollars and cents)
- Ornaments – name, quantity, value (in dollars and cents)

How long will it take for me to be certified?

Once the Agricultural Assessment Form is filled out it will be given to an agricultural inspector. The inspector will set up an appointment to check if your farm meets at least one of the requirements listed on the Agriculture Activity Requirements Worksheet. It may take 2-4 weeks for the inspection to take place depending on the availability of the inspector.

Do I have to be present during the farm inspection?

No. However, arrangements may be requested as needed by the inspector. The agricultural inspector and the farmer will determine the best time for the farm inspection.

How will I know if my farm is approved?

Our office will contact you if the farm has been approved or disapproved for certification. Results of the inspection will determine your eligibility for the program. If approved, GDOA will provide a Bona Fide Farmer Certificate. The Bona Fide Farmer is then required to keep annual records of farm production and sales and to provide them to GDOA for statistical purposes.

Can I re-apply if I am not approved the first time?

Yes. If disapproved, read the agricultural inspector's recommendations on the remarks section of your copy of the Agricultural Assessment Form and make the suggested changes. You will need to fill out a new Agricultural Assessment Form. All re-inspections will be made after discrepancies have been addressed.

What am I required to do to maintain "ACTIVE" status as a certified Bona Fide Farmer with GDOA?

Every Bona Fide Farmer is responsible for submitting a Farm Report every six months to the GDOA to maintain "ACTIVE" status. This report is needed to renew your Bona Fide Farmer Certificate annually and to continue participation in the Agriculture Water Rate Program.

What happens if I do not submit a Farm Report every six months?

If the applicant has not submitted a Farm Report, the farm will be considered "INACTIVE." If there is no farming activity on the property, or it is being used as a residence, GWA may convert the agricultural water meter to a residential water meter.

How do I renew my usage of the agriculture water meter?

As mentioned above, all farmers under our Agriculture Water Rate Program renew their agricultural water meter by providing GWA with an annual Bona Fide Farmer Certificate.



Environmental Quality Incentives Program (EQIP)

United States Department of Agriculture
Natural Resources Conservation Service

How do I apply for Technical and Financial Services from USDA Natural Resources Conservation Service?

The NRCS Guam Field Office is co-located with the USDA Farm Services Agency at: 770 East Sunset Blvd., Tiyan, Guam. Stop by Suite 270 and a NRCS conservationist will discuss your vision for your land. NRCS staff will walk you through the USDA conservation program application process. To schedule an appointment, call the USDA NRCS' Guam Field Office at 735-2111.

For all USDA NRCS financial assistance programs, individuals must first register with the USDA Farm Services Agency in Suite 265. To schedule an appointment, call the USDA FSA Office at 300-8550. USDA staff will work with you to fill out required forms.

You may also apply for services on-line: Conservation Client Gateway OR <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=stelprdb1193811>

Here are some basic criteria for applicants:

- (i) In order to be eligible to receive financial assistance from USDA programs, business entities are required to obtain a DUNS number, and to register annually in the System for Award Management (SAM). There is NO charge to register or maintain your entity registration record in SAM.
- (ii) A DUNS number is a unique nine-character identification number Dun & Bradstreet provides free of charge. <http://fedgov.dnb.com/webform>

If all submitted information is correct, the typical application review process takes between 3 and 8 work days.

Can I get financial help for installing an irrigation system on my farm, ranch, or plant nursery?

Yes, in some cases. NRCS can assist you with conservation improvements of your existing irrigation system. An existing irrigation system can be as simple as a hose bib and garden hose you are using to water your crop plants or livestock (i.e. goats, pigs, chickens, carabao, bees, etc.). Each client situation and setting will be unique. NRCS staff will visit your site to determine the resource issues and opportunities to determine what resource issues for your setting that may be eligible for NRCS financial assistance.

Can NRCS help me with the design of a micro-irrigation system?

Yes, call 735-2111 or visit the our office (as above). A trained NRCS conservationist or NRCS engineer will contact you to set an appointment to review your site's specific needs. The assigned NRCS conservationist or engineer will visit your site to begin review the process of developing a micro-irrigation design following NRCS Conservation Practice standards and specifications. There is no charge for NRCS technical assistance.

Which is the best and most accurate method to determine irrigation timing and scheduling?

On Guam, soil moisture monitoring is best for our humid climate, but many methods work and the optimal method depends more on the user and what he or she is comfortable using.

What are ways I can cut down on the amount of money I am spending to irrigate my crops?

Mulching is a good practice to cover the soil and reduce water loss and improve soil health. Mulch can be shredded paper, wood chips, gravel or plastic. Mulch is any material that is safe for food crops and that covers the soil to prevent water loss and weed growth.