

165

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM

1. Name of Property:

historic name: **Cañada Water Wells**

other name/site number: Kanada, Chochugu', To'tu / None

2. Location: Cañada Barrigada, Territory of Guam

street & number: Near intersection of Cañada-Toto Road and Cañada-Toto Loop

not for publication: n/a

city/town: Barrigada-Mangilao; and Sinajana

vicinity: n/a

state: Guam

code: 010

county:

code:

zip code:

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets does not meet the National Register Criteria. I recommend that this property be considered significant nationally statewide X locally.

Signature of certifying official/Title

Date

Guam State Historic Preservation Office

State or Federal agency or bureau

(See continuation sheet for additional comments.)

In my opinion, the property meets does not meet the National Register criteria.

Signature of commenting or other official

Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

 entered in the National Register

 see continuation sheet

 determined eligible for the National Register

 see continuation sheet

 determined not eligible for the National Register

 see continuation sheet

 removed from the National Register

 see continuation sheet

 other (explain):

Signature of the Keeper

Date of Action

Name of Property

County and State

5. Classification

Ownership of Property: Private; Public-State

Number of Resources within Property

Category of Property: Industry/Processing/Extraction

Contributing

Noncontributing

Number of contributing resources previously
listed in the National Register: n/a2 buildings sites structures objects

Name of related multiple property listing: n/a

2 Total**6. Function or Use**

Historic Functions: Water wells for domestic and agricultural use

Current Functions: No longer in use

7. Description**Architectural Classification:**Late 19th and Early 20th Century**Materials:**

foundation: Concrete

walls: Concrete

roof:

other:

Narrative Description**Description of the Cañada Wells**

Cañada Well No. 1 is located near the intersection of Cañada-Toto Road and Cañada-Toto Loop. It appears to be within the utility easement immediately adjacent to the GWA water meter located at the north corner of the Blas residence. The well proper is covered by a concrete platform that is surmounted by a hand pump stand. The pump stand is rusted to the point of having no movement on the pull rod, and the handle is missing. The pump head cover has two large welds and these repairs suggest that at one time this was a heavily used well.

The pump stand is approximately 48 inches from its mounting plate to the end of the pull-rod guides. The handle is missing but the handle fulcrum is entire as it is part of the pump head cover casting. The pump stand has a spigot mounted on one side with a two-bolt flange. The spigot has a bucket hanger and water flow could previously be turned on and off using a valve. This valve is missing and its seat on the spigot is broken out. On the other side of the pump stand directly opposite the spigot is a threaded nipple for the attachment of a pipe that would have allowed outflow without passing through the spigot.

The pump stand is mounted on a concrete platform that remains partially covered by a soil embankment that was cut back to permit better exposure for taking measurements and photographs. The platform was originally designed to measure 72 inches on a side, although this full dimension is today only exposed along the basin side. The concrete platform contains the pump stand near its center, with two roughly square concrete features found on either side. A shallow basin with a plugged drain hole is located under the pump stand spout, and the other feature (of unknown purpose) sits in line with the basin and on the opposite side of the pump stand. The basin measures 24 inches on a side and is elevated approximately 3 inches above the surface of the platform. The outer walls of the basin are vertical and end in a flat rim with a width of 1.5 inches. The inner portion of the basin is broadly concave, shallowest near the front and deepening to 3.25 inches at the drain.

The other feature appears to have been the base for a piece of equipment, possibly a mechanical pump. This feature is roughly 14 inches square and the top surface is irregular because the concrete is damaged, and in addition, coarse aggregate is partially exposed. The remaining intact feature wall shows a height of 2.5 inches. The stubs of four ¼-inch bolts are located at the corners within the rim of the feature.

(See Continuation Sheet)

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7

Page 1

(Description of Resources, continued)

Cañada Well No. 2 is located down a short unimproved track leading to the southwest from Cañada Well No. 1. The well sits in the shade of a small clump of trees and is covered and enclosed by a nearly square concrete structure approximately 60 inches on a side and rising approximately 51 inches from the ground where the ground surface is lowest. The top of this structure is a platform with a lip that extends approximately six inches outwards on all sides. The lip is 6 inches thick and is damaged in several places.

Formed into the top is a basin similar in shape to the one found located on the platform at Cañada Well No. 1. It is also similarly situated with respect to the pump stand as can be ascertained by reference to the impression of the pump stand base plate and the remains of the mounting bolts. Unlike the platform at Well No. 1 there is only one surface feature and no indication that a mechanical pump or other similar device had been previously installed. The basin walls are chipped and missing in several places. In part, we believe this to be scarring from bullets, most likely incurred during the American re-capture of the island from the Japanese in WWII. Since the pump stand is missing, the well casing is exposed. No pump parts are visible in the casing and we suspect that the pump was pulled when the pump stand was removed.

A small iron cleat (of unknown purpose) is located approximately 4.5 inches away from the pump stand base plate. The pump stand platform is reached by climbing three concrete steps that abut the structure on its northwest side. During rainy periods water accumulates around the base of the structure, and may be why the pump stand was elevated in this way in the first place. Alternatively, it might have been designed to facilitate filling large containers such as might have been transported by carabao. The purpose of a pipe found exiting the southwest corner is not known, however it must have been emplaced prior to the construction of the platform as there is otherwise no access to the interior of the well house.

Damage to the basin feature and the top are interpreted as battle scars based upon finding what appear to be three, 30-caliber round craters in the northeast face of the structure. This battle damage may have been the result of Japanese using it for cover during the American recapture, or perhaps it drew cautionary fire because it looks similar to a pillbox.

The final feature found on this structure was an inscription on the wall below the lip on the southwest side of the structure. The inscription includes a shallow pecked date enclosed by a lightly incised medallion-shaped outline. These appear to have been inscribed after the concrete was quite stiff. The date reads 'July 15 1937' and is believed to mark the day when well construction was completed.

8. Statement of Significance

Applicable National Register Criteria: A and D

Areas of Significance: Engineering/Health

Criteria Considerations (Exceptions): n/a

Period(s) of Significance: 1937-1965?

Significant Person(s): n/a

Significant Dates: 1937

Architect/Builder: unknown

Cultural Affiliation: American; Naval Government

Narrative Statement of Significance**Reason for the Cañada Wells**

The Cañada wells were developed by the early American administration of Guam to remedy several problems they had inherited from the Spanish administration that were directly attributable to the inadequate water infrastructure on the island. A brief account of the circumstances leading up to well drilling is provided below.

Water needs were evaluated in the early 1900's, after the US takeover of the island, and found to be inadequate for the development of the island. At the time, the majority of the population obtained their water from springs and hand-dug wells. A few families had constructed cisterns and used these to store rainwater. There were no water delivery systems in place. The first facilities the Americans constructed were a dam on the Fonte River in 1910, and a six-inch pipe that brought water to a concrete reservoir constructed above Hagåtña. Main lines distributed water from this reservoir to the city. Turbidity was a problem during periods of high rainfall (Brooks 1937a:7).

The Medical Corps soon recommended abandonment of the hand dug wells that had previously been used in Hagåtña, and as an alternative modern water supply was developed, these wells were gradually abandoned and filled in. The net result of this one action was a decrease in the death rate and a consequent increase in population. Population increase understandably precipitated the demand for more water. This became particularly problematic during the dry seasons following construction of the Fonte dam when there was a water shortage. A concrete check dam was built at the Hagåtña Spring in 1914 to impound water that was then pumped out and piped to the Hagåtña reservoir. The combined Fonte and Hagåtña Spring water satisfied the 650,000-gallons per day demand of the city through the dry season (*Ibid*). However, development of the spring meant the constant use of pumps. Pumping was an added expense that the government hoped to reduce by developing more sources reliant upon gravity-flow.

In 1915 the Asan water system, which had an 80,000 gallon reservoir, was completed. The reservoir also tapped springs flowing from the cliffs behind the village. Water was piped to the Hagåtña distribution system by gravity flow. Demand soon exceeded the supply of these combined water sources. The March 1925 Guam Recorder contained the following alert illustrating the situation:

"Water Shortage

THE WATER SHORTAGE which began in January still exists. Practically no water has been secured from the Fonte River for two months, and if last year's experience be repeated, it may be two or three months before the river is flowing. From 8 to 12 hours pumping daily from Agana Springs is necessary, and this means money—about \$1,000.00 a month.

We again warn everyone that the utmost economy must be observed in the use of water. Waste cannot be tolerated, and unless the daily consumption decreases, it may be necessary to shut off the water for certain periods each day. The situation is serious as only one pump is in operation, and if it should break down, the town would only receive a small quantity of Asan water.

Report all leaks, whether in your own house or elsewhere.

Do not let water run when you are not using it.

Be economical in the use of water at public hydrants, wash houses, latrines, and showers.

Wash clothes in the Agana or Pigo Rivers.

SAVE WATER"

(see continuation sheet)

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National Park Service

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Section number 8

Page 1

(Narrative Statement of Significance, continued)

In 1936 the dry season extended into July; the Fonte Dam was reported as almost dry and the Hagåtña Springs pumps were running around the clock to supply water to the city (Brooks, 1937b:24). Distribution to Hagåtña from the Asan system was interrupted between 11:00 PM and 5:00 AM daily to conserve water for local community use. According to Brooks prior to the development of a new source in Maina (Bobo Springs connected in April 1937), requests for potable water from visiting ships were routinely reduced illustrating the extent of the problem and the diversity of pressures on the water supply. He goes on to say that "1937 to date has been drier than 1936 for the same period" (Brooks, 1937b:24).

Between 1915 and 1937 the population of Hagåtña had doubled in size. Demands on water had so increased that the measures in place could not supply water to the city on a 24-hour basis. During the dry season water was shut off at night and the villages of Asan, Tepungan and Piti were without water at that time (Ibid). The Naval government devised a multi-pronged strategy to address the continual water shortages. They asked the US Department of the Interior to send a geologist to survey the water potential of the island; they acquired a well drilling rig capable of tapping the deeper water table, prodded ranchers to build reinforced concrete cattle tanks to store water for their herds, and purchased additional pumps to install at Hagåtña Springs. Some of the ranchers and farmers just outside of Hagåtña had continued to use local springs for water, but not everyone had access to these sources and many came into the city by bull cart and transported barrels of water back to supply animals and crops (Peredo 2007).

A well drilling rig that had the ability to drill to 600 feet arrived on 12 April 1937 on the *U.S.S. Nitro*. The rig was quickly assembled and taken directly to the Wettengel reservoir in Barrigada, and by 15 May drilling had encountered water at a depth of 289+ feet (June 1937). Drilling went deeper in the effort to increase the productivity of the well and it terminated at a depth of 350 feet (July 1937). Tentative future drilling sites included Dededo, Yoña and Talofofo, but these were conditional on the findings of Dr. Harold T. Stearns, the U.S. Department of the Interior groundwater geologist who had been sent to Guam from Hawai'i and was in the process of assessing the water potential on island.

By July, two wells had been completed in Dededo (Dededo Reservoir and Mamahanao) and another well was being drilled at the Cañada Road (NOIA, July 1937). We believe the author to be referring to Canada Well No. 1, recorded during the survey, and since they are so close to sea level we suspect that the wells were drilled quickly and sequentially. According to the Annual Report of the Governor of Guam, all of the wells drilled during the year had pumps installed by the end of 1937.

The Cañada wells nominated are the only ones that have been identified from this time.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9

Page 1

Bibliographic References

Brooks, George R., Lieutenant Commander USN

1937a Agana Water Supply. *The Guam Recorder* May 1937 pp.7,8. on file with MARC, University of Guam, Mangilao.

1937b Water for the People of Guam. *The Guam Recorder* July 1937 pp.24,25. on file with MARC, University of Guam, Mangilao.

Governor of Guam

1937 *Annual Report of the Governor of Guam, 1937*. On file, Micronesian Area Research Center, University of Guam, Mangilao.

Guam Recorder, The

1925 *Water Shortage*. March 1925 p.2 on file with MARC, University of Guam, Mangilao.

1925 *Water on Your Ranch*. May 1925 p.70 on file with MARC, University of Guam, Mangilao.

1937 *News of Island Affairs: Barrigada*. May 1937 p.16 on file with MARC, University of Guam, Mangilao.

1937 *Water Found At Barrigada*. June 1937 p.25 on file with MARC, University of Guam, Mangilao.

1937 *News of Island Affairs: Barrigada* July 1937 pp.20,21 on file with MARC, University of Guam, Mangilao.

1937 *Water is Precious*. August 1937 pp.31,39 on file with MARC, University of Guam, Mangilao.

1937 *News of Island Affairs: Barrigada* November 1937 pp.32,39 on file with MARC, University of Guam, Mangilao.

Name of Property

County and State

9. Major Bibliographic References

(see continuation sheet)

Previous documentation on file (NPS):

☐ preliminary determination of individual listing (36 CFR 67) has been requested
☐ previously listed in the National Register
☐ previously determined eligible by the National Register
☐ designated a National Historic Landmark
☐ recorded by Historic American Buildings Survey # _____
☐ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data:

☒ State Historic Preservation Office
☐ Other State agency
☐ Federal agency
☐ Local government
☒ University
☐ Other
Specify Repository:

10. Geographical Data

Acreage of Property: less than 1 acre

| UTM References: | Zone | Easting | Northing |
|-------------------|------|-------------|---------------|
| Cañada Well No. 1 | 55N | E 260084.35 | N 1489242.85 |
| Cañada Well No. 2 | 55 N | E 259808.09 | N 1489188.83, |

Legal Location (Township, Range & Section(s)):

Cañada Well No.1 is partially on the utility easement at the corner of Lot 2372-4-1 (Barrigada-Mangilao), and partially on the Lot. Cañada Well No.2 is on Lot L3384 (Sinajana)

Verbal Boundary Description

These are small features measuring 72 inches on a side. While Canada Well No. 1 is partially on the Government of Guam utility easement and partially on Lot 2372-4-1; Canada Well No. 2 is completely on private land. In neither case is a greater area included in the nomination than the structure's footprint.

Boundary Justification

In each case the well is a shaft below the pump platform, and the platforms and well house are the only structures in association.

11. Form Prepared By

name/title: Richard K. Olmo / Consulting Archaeologist
organization: Historic Resources Division, Guam Department of Parks and Recreation
street & number: 490 Chalan Palasyo
city or town: Agana Heights state: Guam
date: 6 September 2007
telephone: 671/ 475-6294
zip code: 96910

Property Owner

name/title: Well #1 Government of Guam; Robert Blas
street & number: 750 Blas Street
city or town: Barrigada state: Guam
telephone:
zip code: 96913

name/title: Well #2 ; Enrique S. Peredo
street & number: 179 Nando Street
city or town: Toto state: Guam
telephone:
zip code: 96910

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY Canada Water Wells
NAME:

MULTIPLE
NAME:

STATE & COUNTY: GUAM, Guam

DATE RECEIVED: 1/30/08 DATE OF PENDING LIST: 2/19/08
DATE OF 16TH DAY: 3/05/08 DATE OF 45TH DAY: 3/14/08
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 08000165

REASONS FOR REVIEW:

APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: Y
OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N
REQUEST: N SAMPLE: N SLR DRAFT: Y NATIONAL: N

COMMENT WAIVER: N

___ACCEPT ___RETURN ___REJECT _____DATE

ABSTRACT/SUMMARY COMMENTS:

RECOM./CRITERIA RETURN

REVIEWER Paul R. Lusignea

DISCIPLINE HISTORIAN

TELEPHONE _____

DATE 3/14/2008

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.

CANADA WATER WELLS GUAM

National Register of Historic Places - Return Comments:

The current documentation is being returned for technical revisions. The basic documentation meets the requirements for National Register listing and approval will be completed upon correction of the items noted below and resubmission of the nomination to the National Register.

Format

✓ The name and location of the property should be provided on the top of each page of the nomination so that missing pages can be matched to their respective nomination files.

Classification/Function

✓ The correct Category of Property should be listed as: *Structure*.

The correct Historic Functions should be listed as: *Industry/Processing/Extraction—Waterworks and Other—Water wells*.

Significance

The current nomination fails to adequately document the property's significance under National Register Criterion D and this criterion should be dropped from the nomination. No discussion is provided regarding the type of significant information that this property is likely to yield, nor the specific groups associated with such information. Justification of Criterion D requires a well thought out discussion of the specific research questions that a property has the potential to answer, in this case, for instance, information regarding early engineering practices as applied on Guam. In order to support Criterion D the nomination would need to better document specific research questions associated with the themes identified for the property. In our opinion Criterion A adequately recognizes the historic significance of the resource.

The justification for the end date of the current period of significance (1937—1965?) is not adequately documented. As it includes a period less than fifty (50) years ago, Criteria Consideration G would also have to be met. It might be possible to make a case for the period if the end date corresponded to a specific point in time at which the property ceased to be used for its original functions, but no information is provided regarding the continued use of the site after its circa 1937 construction. Little if any context is provided for the later period of development on the island, or the specific role of water supply systems in the period. Continuing use alone does not necessarily equate to continuing significance. It might be easier to justify a more limited period of significance tied to the initial development of the system, making the importance of the property not simply its continued use as a source of water, but its reflection of governmental efforts at establishing much needed public infrastructure in an era of rapid island development (1937-1941) prior to World War II.

Geographical Data

The nomination was not accompanied by an original, full-scale U.S.G.S. map.

Likewise, a sketch map locating the exact site of the wells is necessary to judge the advisability of nominating two discrete properties on a single nomination form. Perhaps this might be considered an acceptable scenario for the use of a discontinuous nomination, but that is unclear from the information provided. Information regarding properties or features in proximity to the two distinct sites may be useful.

If you have questions regarding these comments, please contact me directly at the number listed below.

Paul R. Lusignan, Historian
(for) Keeper of the National Register
(202) 354-2229

A:\canadawells.rtn

The Canada Water Wells are significant under National Register Criterion A at the local level in the areas of Health and Engineering. Completed in circa 1937 as part of the American government's program to provide necessary public infrastructure to support sustained development on the island of Guam, the simple well structures were essential components of a rudimentary water supply system. Aimed at replacing unreliable spring and hand-dug wells, the deep drilled wells were an important aspect of a multi-component strategy to provide a stable water supply and delivery system through modern engineering.

United States Department of the Interior
National Park Service



NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM

1. Name of Property:

historic name: **Cañada Water Wells**

other name/site number: Kanada, Chochugu', To'tu / None

2. Location: Cañada Barrigada, Territory of Guam

street & number: Near intersection of Cañada-Toto Road and Cañada-Toto Loop

not for publication: n/a

city/town: Barrigada-Mangilao; and Sinajana

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state: Guam

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zip code:

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register Criteria. I recommend that this property be considered significant ☐ nationally ☐ statewide ☒ locally.

Signature of certifying official/Title

Date

Guam State Historic Preservation Office

State or Federal agency or bureau

(☐ See continuation sheet for additional comments.)

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria.

Signature of commenting or other official

Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

☒ entered in the National Register

☐ see continuation sheet

☐ determined eligible for the National Register

☐ see continuation sheet

☐ determined not eligible for the National Register

☐ see continuation sheet

☐ removed from the National Register

☐ see continuation sheet

☐ other (explain):

☒ Signature of the Keeper

Date of Action

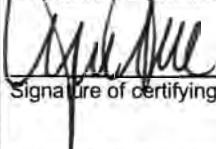
9/26/2008

United States Department of the Interior
National Park ServiceNational Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of PropertyHistoric name Canada Water WellsOther names/site number Kanada, Chochugu', To'tu / 66-01-2268**2. Location**street & number Near intersection of Canada-Toto Road and Canada-Toto Loop ☐ not for publicationcity of town Barrigada-Mangilao; and Sinajana ☐ vicinityState Guam code 010 county _____ code _____ zip code _____**3. State/Federal Agency Certification**

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Signature of certifying official/Deputy SHPO

10/8/08

Date

Guam State Historic Preservation Office
State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of certifying official/Title

Date

State or Federal agency and bureau

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I, hereby, certify that this property is:

Signature of the Keeper

Date of Action

 entered in the National Register
 See continuation sheet determined eligible for the National Register
 See continuation sheet determined not eligible for the National Register removed from the National Register other (explain:)

Name of Property

County and State

5. Classification

Ownership of Property: Private; Public-State

Number of Resources within Property

Category of Property: Structure

Contributing

Noncontributing

Number of contributing resources previously
listed in the National Register: n/a

—

— buildings

2

— sites

—

— structures

2

— objects

Name of related multiple property listing: n/a

— Total

6. Function or UseHistoric Functions: Industry/Processing/Extraction—Waterworks and Other—Water wells.
longer in use

Current Functions: No

7. Description

Architectural Classification:

Materials:

Late 19th and Early 20th Century

foundation: Concrete

walls: Concrete

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(See Continuation Sheet)

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7

Page 1

(Description of Resources, continued)

Cañada Well No. 2 is located down a short unimproved track leading to the southwest from Cañada Well No. 1. The well sits in the shade of a small clump of trees and is covered and enclosed by a nearly square concrete structure approximately 60 inches on a side and rising approximately 51 inches from the ground where the ground surface is lowest. The top of this structure is a platform with a lip that extends approximately six inches outwards on all sides. The lip is 6 inches thick and is damaged in several places.

Formed into the top is a basin similar in shape to the one found located on the platform at Cañada Well No. 1. It is also similarly situated with respect to the pump stand as can be ascertained by reference to the impression of the pump stand base plate and the remains of the mounting bolts. Unlike the platform at Well No. 1 there is only one surface feature and no indication that a mechanical pump or other similar device had been previously installed. The basin walls are chipped and missing in several places. In part, we believe this to be scarring from bullets, most likely incurred during the American re-capture of the island from the Japanese in WWII. Since the pump stand is missing, the well casing is exposed. No pump parts are visible in the casing and we suspect that the pump was pulled when the pump stand was removed.

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Name of Property

County and State

8. Statement of Significance

Applicable National Register Criteria: A

Areas of Significance: Engineering/Health

Criteria Considerations (Exceptions): n/a

Period(s) of Significance: 1937-1941

Significant Person(s): n/a

Significant Dates: 1937

Architect/Builder: unknown

Cultural Affiliation: American; Naval Government

Narrative Statement of Significance**Reason for the Cañada Wells**

The Cañada wells were developed by the early American administration of Guam to remedy several problems they had inherited from the Spanish administration that were directly attributable to the inadequate water infrastructure on the island. A brief account of the circumstances leading up to well drilling is provided below.

Water needs were evaluated in the early 1900's, after the US takeover of the island, and found to be inadequate for the development of the island. At the time, the majority of the population obtained their water from springs and hand-dug wells. A few families had constructed cisterns and used these to store rainwater. There were no water delivery systems in place. The first facilities the Americans constructed were a dam on the Fonte River in 1910, and a six-inch pipe that brought water to a concrete reservoir constructed above Hagåtña. Main lines distributed water from this reservoir to the city. Turbidity was a problem during periods of high rainfall (Brooks 1937a:7).

The Medical Corps soon recommended abandonment of the hand dug wells that had previously been used in Hagåtña, and as an alternative modern water supply was developed, these wells were gradually abandoned and filled in. The net result of this one action was a decrease in the death rate and a consequent increase in population. Population increase understandably precipitated the demand for more water. This became particularly problematic during the dry seasons following construction of the Fonte dam when there was a water shortage. A concrete check dam was built at the Hagåtña Spring in 1914 to impound water that was then pumped out and piped to the Hagåtña reservoir. The combined Fonte and Hagåtña Spring water satisfied the 650,000-gallons per day demand of the city through the dry season (*Ibid*). However, development of the spring meant the constant use of pumps. Pumping was an added expense that the government hoped to reduce by developing more sources reliant upon gravity-flow.

In 1915 the Asan water system, which had an 80,000 gallon reservoir, was completed. The reservoir also tapped springs flowing from the cliffs behind the village. Water was piped to the Hagåtña distribution system by gravity flow. Demand soon exceeded the supply of these combined water sources. The March 1925 Guam Recorder contained the following alert illustrating the situation:

"Water Shortage

THE WATER SHORTAGE which began in January still exists. Practically no water has been secured from the Fonte River for two months, and if last year's experience be repeated, it may be two or three months before the river is flowing. From 8 to 12 hours pumping daily from Agana Springs is necessary, and this means money—about \$1,000.00 a month.

We again warn everyone that the utmost economy must be observed in the use of water. Waste cannot be tolerated, and unless the daily consumption decreases, it may be necessary to shut off the water for certain periods each day. The situation is serious as only one pump is in operation, and if it should break down, the town would only receive a small quantity of Asan water.

Report all leaks, whether in your own house or elsewhere.

Do not let water run when you are not using it.

Be economical in the use of water at public hydrants, wash houses, latrines, and showers.

Wash clothes in the Agana or Pigo Rivers.

SAVE WATER"

(see continuation sheet)

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(Narrative Statement of Significance, continued)

In 1936 the dry season extended into July; the Fonte Dam was reported as almost dry and the Hagåtña Springs pumps were running around the clock to supply water to the city (Brooks, 1937b:24). Distribution to Hagåtña from the Asan system was interrupted between 11:00 PM and 5:00 AM daily to conserve water for local community use. According to Brooks prior to the development of a new source in Maina (Bobo Springs connected in April 1937), requests for potable water from visiting ships were routinely reduced illustrating the extent of the problem and the diversity of pressures on the water supply. He goes on to say that "1937 to date has been drier than 1936 for the same period" (Brooks, 1937b:24).

Between 1915 and 1937 the population of Hagåtña had doubled in size. Demands on water had so increased that the measures in place could not supply water to the city on a 24-hour basis. During the dry season water was shut off at night and the villages of Asan, Tepungan and Piti were without water at that time (Ibid). The Naval government devised a multi-pronged strategy to address the continual water shortages. They asked the US Department of the Interior to send a geologist to survey the water potential of the island; they acquired a well drilling rig capable of tapping the deeper water table, prodded ranchers to build reinforced concrete cattle tanks to store water for their herds, and purchased additional pumps to install at Hagåtña Springs. Some of the ranchers and farmers just outside of Hagåtña had continued to use local springs for water, but not everyone had access to these sources and many came into the city by bull cart and transported barrels of water back to supply animals and crops (Peredo 2007).

A well drilling rig that had the ability to drill to 600 feet arrived on 12 April 1937 on the *U.S.S. Nitro*. The rig was quickly assembled and taken directly to the Wettengel reservoir in Barrigada, and by 15 May drilling had encountered water at a depth of 289+ feet (June 1937). Drilling went deeper in the effort to increase the productivity of the well and it terminated at a depth of 350 feet (July 1937). Tentative future drilling sites included Dededo, Yoña and Talofofo, but these were conditional on the findings of Dr. Harold T. Stearns, the U.S. Department of the Interior groundwater geologist who had been sent to Guam from Hawai'i and was in the process of assessing the water potential on island.

By July, two wells had been completed in Dededo (Dededo Reservoir and Mamahanao) and another well was being drilled at the Cañada Road (NOIA, July 1937). We believe the author to be referring to Canada Well No. 1, recorded during the survey, and since they are so close to sea level we suspect that the wells were drilled quickly and sequentially. According to the Annual Report of the Governor of Guam, all of the wells drilled during the year had pumps installed by the end of 1937.

The Cañada wells nominated are the only ones that have been identified from this time.

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Page 1

Bibliographic References

Brooks, George R., Lieutenant Commander USN

1937a Agana Water Supply. *The Guam Recorder* May 1937 pp.7,8. on file with MARC, University of Guam, Mangilao.

1937b Water for the People of Guam. *The Guam Recorder* July 1937 pp.24,25. on file with MARC, University of Guam, Mangilao.

Governor of Guam

1937 *Annual Report of the Governor of Guam, 1937.* On file, Micronesian Area Research Center, University of Guam, Mangilao.

Guam Recorder, The

1925 *Water Shortage.* March 1925 p.2 on file with MARC, University of Guam, Mangilao.

1925 *Water on Your Ranch.* May 1925 p.70 on file with MARC, University of Guam, Mangilao.

1937 *News of Island Affairs: Barrigada.* May 1937 p.16 on file with MARC, University of Guam, Mangilao.

1937 *Water Found At Barrigada.* June 1937 p.25 on file with MARC, University of Guam, Mangilao.

1937 *News of Island Affairs: Barrigada* July 1937 pp.20,21 on file with MARC, University of Guam, Mangilao.

1937 *Water is Precious.* August 1937 pp.31,39 on file with MARC, University of Guam, Mangilao.

1937 *News of Island Affairs: Barrigada* November 1937 pp.32,39 on file with MARC, University of Guam, Mangilao.

Name of Property

County and State

9. Major Bibliographic References

(see continuation sheet)

Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
☐ previously listed in the National Register
☐ previously determined eligible by the National Register
☐ designated a National Historic Landmark
☐ recorded by Historic American Buildings Survey # _____
☐ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data:

- ☒ State Historic Preservation Office
☐ Other State agency
☐ Federal agency
☐ Local government
☒ University
☐ Other
 Specify Repository: _____

10. Geographical Data

Acreage of Property: less than 1 acre

UTM References:

| Zone | Easting | Northing |
|------|-------------|---------------|
| 55N | E 260084.35 | N 1489242.85 |
| 55 N | E 259808.09 | N 1489188.83, |

Legal Location (Township, Range & Section(s)):

Cañada Well No. 1 is partially on the utility easement at the corner of Lot 2372-4-1 (Barrigada-Mangilao), and partially on the Lot. Cañada Well No. 2 is on Lot L3384 (Sinajana)

Verbal Boundary Description

These are small features measuring 72 inches on a side. While Canada Well No. 1 is partially on the Government of Guam utility easement and partially on Lot 2372-4-1; Canada Well No. 2 is completely on private land. In neither case is a greater area included in the nomination than the structure's footprint.

Boundary Justification

In each case the well is a shaft below the pump platform, and the platforms and well house are the only structures in association.

11. Form Prepared By

name/title: Richard K. Olmo / Consulting Archaeologist

organization: Historic Resources Division, Guam Department of Parks and Recreation

date: 6 September 2007

street & number: 490 Chalan Palasyo

telephone: 671/ 475-6294

city or town: Agana Heights state: Guam

zip code: 96910

Property Owner

name/title: Well #1 Government of Guam; Robert Blas

street & number: 750 Blas Street

telephone:

city or town: Barrigada state: Guam

zip code: 96913

name/title: Well #2; Enrique S. Peredo

street & number: 179 Nando Street

telephone:

city or town: Toto state: Guam

zip code: 96910

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Photographs

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Photographs



Cañada Well #1, platform and pump stand. Basin to left and possible mechanical pump foundation to right. View is to the northeast.

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National Park Service

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Photographs

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Detail of spigot and pump stand bell, Cañada Well #1. Al Masga in photo taking measurements.

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Photographs

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View of Cañada Well #1 looking to the west.

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Photographs

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Cañada Well # 2 showing well house, platform, access steps, drain? pipe and artifacts (bottles). View is to the east.

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National Park Service

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Photographs

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Cañada Well #2 showing details of platform: damaged basin, well casing and pump stand base plate impression, cleat.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

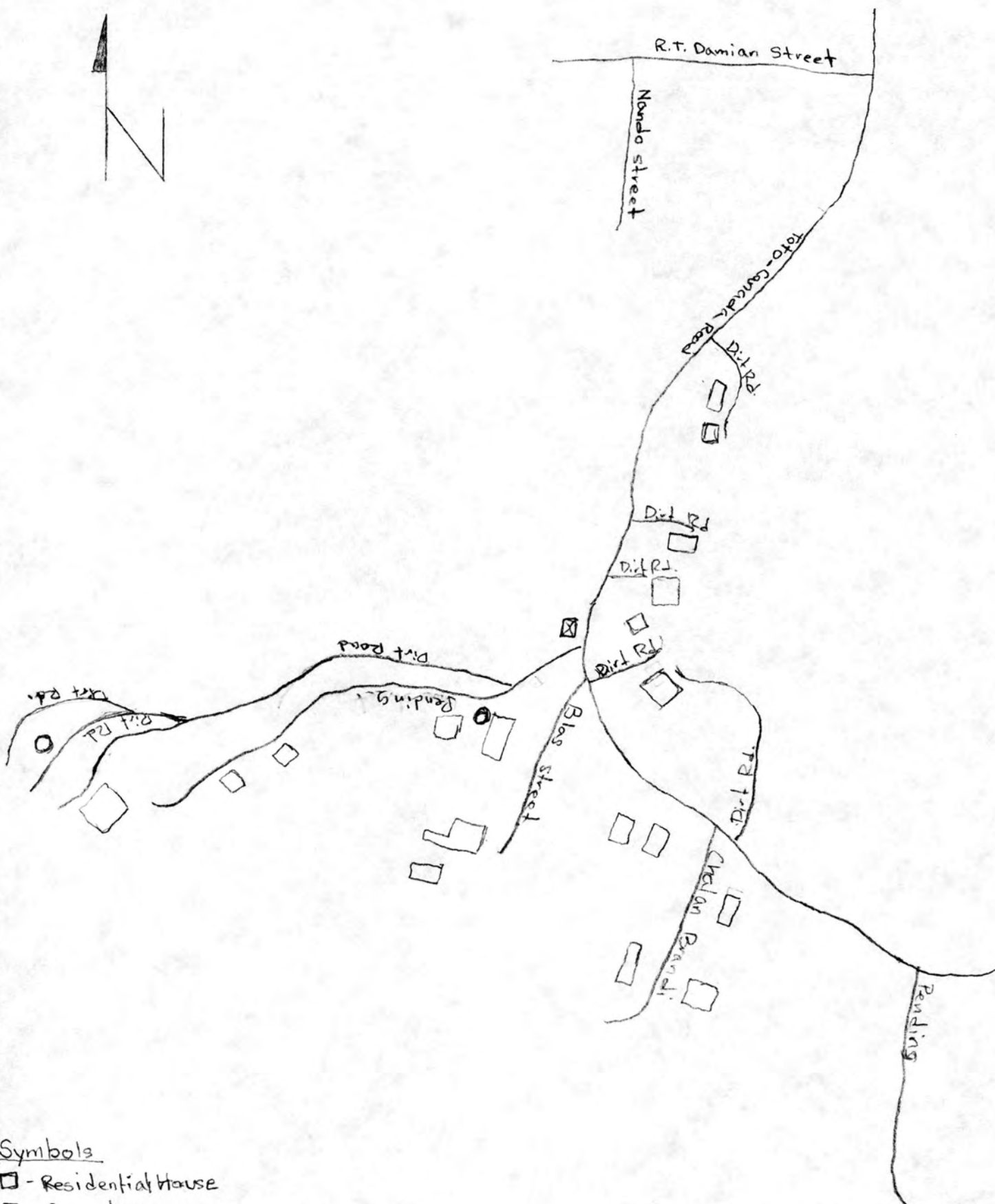
Photographs

Page 6



Cañada Well #2 showing inscribed date of completion.

Scale - 1:2,851



Symbols

- - Residential House
- ⊠ - Bus stop
- Roads
- - Water Well/Pump Structure

CANADA WATER WELLS, GUAM

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: RESUBMISSION

PROPERTY Canada Water Wells
NAME:

MULTIPLE
NAME:

STATE & COUNTY: GUAM, Guam

DATE RECEIVED: 8/13/08
DATE OF 16TH DAY:
DATE OF WEEKLY LIST:

DATE OF PENDING LIST:
DATE OF 45TH DAY: 9/26/08

REFERENCE NUMBER: 08000165

DETAILED EVALUATION:

___ACCEPT ___RETURN ___REJECT _____DATE

ABSTRACT/SUMMARY COMMENTS:

The Canada Water Wells are significant under National Register Criterion A at the local level in the areas of Health and Engineering. Completed in circa 1937 as part of the American government's program to provide necessary public infrastructure to support sustained development on the island of Guam, the simple well structures were essential components of a rudimentary water supply system. Aimed at replacing unreliable spring and hand-dug wells, the deep drilled wells were an important aspect of a multi-component strategy to provide a stable water supply and delivery system through modern engineering. The two extant wells and their associated pump stands are being nominated as a discontinuous property, reflecting their function as part of an engineered water supply system.
(See cover letter for SHPO certifying signature.)

RECOM./CRITERIA Accept Criterion A

REVIEWER PAUL R. Lusignan

DISCIPLINE HISTORIAN

TELEPHONE _____

DATE 9/26/2009

DOCUMENTATION see attached comments Y/N see attached SLR Y/N









Produced by the United States Geological Survey
Topography compiled 1966. Planimetry derived from imagery taken 2000 and other sources. Survey control current as of 1968. Boundaries current as of 2002.
Selected hydrographic data compiled from NOS/NOAA chart 4196 (1967) and hydrographic surveys dated 1945.
This information is not intended for navigational purposes.
North American Datum of 1983 (NAD 83)/World Geodetic System of 1984 Projection and 1 000-meter grid: Universal Transverse Mercator, zone 55
2 500-meter ticks: Guam Coordinate System of 1983
There may be private inholdings within the boundaries of the National or State reservations shown on this map.
Houses of worship, schools, and other labeled buildings verified 1968.

UTM GRID and 2002 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
SUPPLEMENTARY CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
DEPTH CURVES AND SOUNDINGS IN FEET-DATUM IS MEAN LOWER LOW WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 2 FEET
TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION
3 3 Rindian Point
4 4 Agaña Harbor
5 5 Delado
6 6 Agat
7 7 Talofofo

ROAD CLASSIFICATION
Primary highway hard surface
Secondary highway hard surface
Light-duty road, hard or improved surface
Unimproved road
Insular Route

HAGATÑA, GU
(FORMERLY AGANA)
2000
NIMA 3126 1 NW-SERIES W844

>Canada Well
#1, Barrigada
GUAM, UTM Reference
55°E260084.35
N1499242.85

>Canada Well
#2, Barrigada,
GUAM, UTM Reference
55°E259803.09
N1489188.83

750607 750390
15510 0 15510



Felix P. Camacho
Governor

Michael W. Cruz, MD
Lt. Governor

Department of Parks and Recreation
Dipattamenton Plaset Yan Dibuetsion

Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910
Director's Office: (671) 477-6296/97
Facsimile: (671) 477-0997
Parks Division: (671) 475-6288/89
Guam Historic Preservation Office: (671) 475-6294/95/72
Facsimile: (671) 477-2822



Joseph W. Duenas
Director

Gregory A. Matanane
Deputy Director

December 31, 2007

NATIONAL PARK SERVICE

Northeast Region
200 Chestnut Street
Philadelphia, PA 19106-2878



To: Keeper, National Register of Historic Places

From: State Historic Preservation Officer, Guam

RE: Nomination to National Register
(Cañada, Barrigada Water Wells)

Greetings from Guam!

Please accept our nomination of the Cañada, Barrigada Water Wells (1930's) to the National Register.

We hope this nomination conforms to the National Park Service's requirements for acceptance.

Should you have any questions or need additional information, please contact our office at (671) 475-6294/5. You may ask for Mr. Patrick Lujan, Deputy SHPO, for further inquiries. Thank you.

Sincerely,

Joseph W. Duenas
Guam State Historic Preservation Officer



Felix P. Camacho
Governor

Michael W. Cruz, MD
Lt. Governor

Department of Parks and Recreation
Dipattamenton Plaset Yan DibuetSION

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Joseph W. Dueñas
Director

Gregory A. Matanane
Deputy Director

July 28, 2008

Paul R. Lusignan, Historian
(for) Keeper of the National Register of Historic Sites
U.S. Department of the Interior
National Park Service
1849 C Street NW
Washington, DC 20240



Subject: National Nominations:
- Cañada Water Wells (Barrigada, Guam)
- Aga Tongan site (Inarajan, Guam)

Dear Mr. Lusignan,

Hafa adai! The Guam Historic Preservation Office has made the proper corrections from your recommendations.

We hope that the changes made are adequate enough to qualify these two sites unto the National Register of Historic Sites.

If you have any questions or concerns regarding above information, please do not hesitate to call our office at (671) 475-6294 / 6295 / 6272. **Si Yu'os Ma'ase'**

Sincerely,

Joseph W. Dueñas
State Historic Preservation Officer

cc: Paula Creech, NPS Micronesia Program Manager



Felix P. Camacho
Governor

Michael W. Cruz, MD
Lt. Governor

Department of Parks and Recreation
Dipattamenton Plaset Yan Dibuetsion

Government of Guam
490 Chalan Palasyo
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Parks Division: (671) 475-6288/89
Guam Historic Resources Division: (671) 475-6294/95/72
Facsimile: (671) 477-2822



Joseph W. Dueñas
Acting Director

Gregory A. Matanane
Deputy Director

TRANSMITTAL SHEET

October 8, 2008



To: Paul R. Lusignan
Historian & Keeper
National Register of Historic Sites
U.S. Department of the Interior
National Park Service
1849 C Street NW
Washington, DC 20240

From: Joseph W. Dueñas
State Historic Preservation Officer

Subject: Re-submittal of page one (1) NRHP Registration form
Canada Water Wells / 66-01-2268

Message:

Hafa Adai! Should you have any questions please feel free to contact Patrick Q. Lujan, Deputy State Historic Preservation Officer, at 475-6294 / 6295 / 6272.

Your attention on this matter is greatly appreciated. ***Si Yu'os Ma'ase***